BMES

BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2012 ANNUAL MEETING

Integrating Academics,
Industry and Translation:
from Discovery to Implementation

October 24–27, 2012

Georgia World Congress Center
Atlanta, Georgia

Hosted by Georgia Institute of Technology and Emory University

Hanjoong Jo
Annual Meeting Chair
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Julia Babensee
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www.bmes.org

BMES

BIOMEDICAL ENGINEERING SOCIETY

Advancing Human Health and Well Being

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September 25-28, 2013
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The **Whitaker International Program** provides young biomedical engineers, and those in a related field, the opportunity to expand their geographic and academic horizons.

Potential activities to pursue overseas include:

- conducting research at an academic institution or with a corporation
- interning at a policy institute
- studying for a post-baccalaureate degree
- pursuing post-doctoral work

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A Whitaker International grant experience will ideally advance your career, while also advancing the goal of increased international collaboration in BME.

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Thank you also to our other supporter: Zimmer

Grants have been provided by the National Institute of Biomedical Imaging and Bioengineering and the National Science Foundation for the BMES 2012 Annual Meeting.

Richard E. Waugh, PhD
BMES President

Chair, Department of Biomedical Engineering
University of Rochester

WELCOME TO THE 2012 Annual Meeting of the Biomedical Engineering Society! The theme this year is "Integrating Academics, Industry and Translation: from Discovery to Implementation," and Conference Chair Hanjoong Jo and Technical Program Chair Julia Babensee have assembled an exciting program. I want to thank all of the track chairs and session chairs for their important role in reviewing the new extended abstracts and assembling an outstanding program that highlighting the latest advances in both basic and translational research.

Our plenary lectures highlight the range of achievement in the field. Professor Ajit Yoganathan from Georgia Tech will deliver the 2012 Robert A. Pritzker Distinguished Award Lecture. Sangeeta Bhatia from MIT will deliver the keynote for the new session honoring the NIH NIBIB – celebration of student design. Christian Metallo from UC San Diego will deliver the Rita Schaffer Award lecture and William Reichert, from Duke University, will deliver the Diversity Award lecture. In addition there will be a Symposium on Translational Biomedical Engineering with principal speakers Don Ingber of Harvard, Paul Yock from Stanford and Jim Burns from Sanofi.

On Wednesday October 24th a number of pre-meeting events are taking place. For the first time, we will be offering the Coulter College, an instructional workshop on the opportunities and pitfalls of translating novel ideas and inventions into commercializable products, and we welcome back the US National Committee on Biomechanics Workshop, also being held that day. Wednesday afternoon from 3:30-5:30pm, the annual "Meet the Candidate" poster session for faculty candidates will be held. A busy day, and the meeting has not even started yet!

There are a number of special events for you to check out. Don't miss the special social event on Friday evening, October 26th at the Georgia Aquarium. This is an awe-inspiring facility in itself, and, of course, there will be plenty of food and drink! In addition, we will have the Celebration of Minorities in BME Luncheon with speaker, Andrés J. García, on Thursday, and the Women in BMES Luncheon with speaker, Natacha DePaola, on Friday. All are welcome (with ticket, of course!).

The student program includes several career related activities starting off on Wednesday with the Coulter College for students, and another workshop, Negotiation 101 for post docs and grad students. Throughout the meeting there will be a series of career development workshops on topics including leadership, interviewing skills, and tips for transitioning from one stage to the next in your career. There are undergraduate technical sessions and design project sessions and special sessions for BMES student chapters. There is a Student Chapter Development workshop and the Student Chapter Leadership workshop Friday morning. We welcome other student and professional groups attending the meeting including the student honor society Alpha Eta Mu Beta, the Council of Chairs, AIMBE, the BMES Career Connections, and the Whitaker International Scholars and Fellows program. Finally, I would be remiss if I did not express a big "Thank You!" to our record number of supporters for the meeting, including Gold sponsors Medtronic, Edwards, Clemson University, Virginia Tech/Wake Forest and St Jude Medical.

I wish you all an enjoyable and productive time at the meeting!

Richard E. Waugh, PhD
BMES President

BY THE GOVERNOR OF THE STATE OF GEORGIA

A PROCLAMATION

BIOMEDICAL ENGINEERING WEEK

WHEREAS: The Georgia Institute of Technology and Emory University's Wallace H. Coulter Department of Biomedical Engineering strives to be a leading force in a new era of medicine where quantitative methods of engineering and systems science play a pivotal role in disease prevention, wellness, diagnostics, treatment, rehabilitation, and health care delivery; and

WHEREAS: The Georgia Institute of Technology and Emory University's Wallace H. Coulter Department of Biomedical Engineering is host to the 2012 Biomedical Engineering Society Annual Conference in Atlanta, Georgia, October 24–27, 2012; and

WHEREAS: The vision of the Biomedical Engineering Society is to serve as the world's leading society of professionals devoted to developing and using engineering and technology to advance human health and well-being; and

WHEREAS: Over 4,000 professionals in the field of Biomedical Engineering will gather in Atlanta to collaborate and communicate recent advances, discoveries and inventions; promote education and professional development; and integrate the perspectives of the academic, medical, governmental, and business sectors; now

THEREFORE: I, NATHAN DEAL, Governor of the State of Georgia, do hereby proclaim October 21–27, 2012, as BIOMEDICAL ENGINEERING WEEK in Georgia.

In witness thereof, I have hereunto set my hand and caused the Seal of the Executive Department to be affixed this 20th day of August in the year of our Lord two thousand twelve.

Nathan Deal

GOVERNOR

ATTEST

CHIEF OF STAFF

Hanjoong Jo, PhD

Annual Meeting Chair
Ada Lee and Pete Correll Professor
The Wallace H. Coulter Department of Biomedical Engineering
Georgia Institute of Technology and Emory University
The Division of Cardiology, Department of Medicine
Emory University School of Medicine
Atlanta, Georgia

WELCOME TO THE BMES 2012 ANNUAL MEETING! On behalf of the Meeting Organizers at the Georgia Institute of Technology and Emory University, I welcome you to Atlanta for this year's BMES Annual Meeting! Our team of the faculty, staff, and student leaders at Georgia Tech and Emory have been working in collaboration with the BMES Headquarters to make this one a successful and memorable BMES Annual Meeting.

The theme for this year's program is "Integrating Academics, Industry, and Translation: From Discovery to Implementation." The Program Chair Julie Babensee has been busy planning scientific and technical sessions to promote this theme, including a special symposium on Translational Biomedical Engineering and a special session to honor Larry McIntire. In addition, the Meeting features hundreds of exhibits by biomedical engineering industry, educational sessions and networking and recruiting opportunities for the BME community. On Friday night, we will take over the world's biggest Georgia Aquarium for the BMES Bash, where we will dine and mingle among fishes and friends.

Atlanta enjoys a rich and dynamic history. The rolling hills of this region were once battlegrounds during the civil war and the streets of this city were the cradle of the civil rights movement. The Meeting venue, Georgia World Congress Center, is close to the birthplace of Martin Luther King, Jr., CNN, the World of Coca-Cola, and Centennial Olympic Park paying tribute to the 1996 Atlanta Olympics. Aside from a vibrant culture and urban lifestyle, Atlanta offers the fourth highest concentration of Fortune 500 companies in the United States. Recently named among the top 15 emerging markets for life sciences companies by Jones Lang LaSalle, Atlanta is fostering a community for bioengineering and biomedical innovation. In addition to Georgia Tech and Emory University, Atlanta is the home of the Centers for Disease Control, the American Cancer Society and the Arthritis Foundation along with hundreds of companies in healthcare information technology, medical devices and vaccines. In celebration of this year's BMES Meeting, the Governor of Georgia Nathan Deal has declared the fourth week of Oct. 2012 to be Biomedical Engineering Week in Georgia.

Atlanta's Hartsfield-Jackson Airport Airport is one of the world's busiest hub, which should make your travel planning easy. The MARTA Subway system will transport you from the airport to the meeting hotels and the meeting venue Georgia Congress Center. Atlanta is the home of the Braves baseball, the Falcons football and the Hawks basketball. We are known as "Hotlanta" with many music and film industries as well as a host of excellent restaurants run by renowned chefs.

Our Meeting organization activity has been truly a team effort by the faculty and staff of the Coulter Department of Biomedical Engineering at Georgia Tech and Emory University. I am especially grateful for Julia Babensee's leadership as the Program Chair and the administrative support given by Susan Camp and Gina Livingston. I deeply appreciate the tremendous financial and personnel support provided by our Department Chair, Larry McIntire. I also want to thank the support of our Dean of Engineering, Gary May, at Georgia Tech and and the Dean of the School of Medicine, Thomas Lawley, at Emory University. We exceeded our fundraising goals thanks to the leadership provided by Robert Nerem and Ajit Yoganathan, and David Stern, a leader in the Georgia Bio Industry. We also thank the National Institute for Biomedical Imaging and Bioengineering and the National Science Foundation for their funding support. I also wish to thank Gilda Barabino, Manu Platt, Mike Davis, Johnna Temenoff, Tom Barker, Xiaoping Hu, Gang Bao, and Sally Gerrish for their time and efforts. And also, it has been a wonderful experience to working together with Ed Schilling and Debby Tucker at BMES headquarters.

I hope you find this year's meeting to be intellectually stimulating and of the highest scientific merit with numerous opportunities to network and connect with new and old friends and colleagues. I also hope you find a moment to enjoy the hospitality and diversity of the largest and finest city of the Southeast.

See you in Atlanta, Y'all!

Hanjoong Jo, PhD, FAHA
Annual Meeting Chair, BMES 2012 Annual Meeting

Julia E. Babensee, PhD

Technical Program Chair
Associate Professor
The Wallace H. Coulter Department of Biomedical Engineering
Georgia Institute of Technology and Emory University
Atlanta, Georgia

IT IS MY SINCERE PLEASURE TO WELCOME YOU to the 2012 Annual Biomedical Engineering Society (BMES) meeting in Atlanta, Georgia. I am delighted to have all of you gathered here to participate and partake in the outstanding technical, career development and social program we have planned for this meeting. Also, Atlanta is a great city and I hope that you have an opportunity to enjoy the amazing restaurants we have here and outstanding attractions such as the Georgia Aquarium for the Friday night BASH.

There are fifteen tracks in the program, some of which are traditionally popular at BMES such as Cellular and Molecular Bioengineering and Cardiovascular and Respiratory Engineering as well as new tracks to highlight the extent of Biomedical Engineering research done in Stem Cell Engineering, Cancer Technology and Biomaterials. This year, our New Frontiers and Special Topics track will feature important emerging topics such as Cellular Machines, Synthetic Biology, and Molecular Imaging Probes. We have been particularly fortunate to have had all tracks chaired and co-chaired by pre-eminent researchers in their fields and their hard work has helped to shape outstanding content for the program. I am truly grateful for their phenomenal demonstration of commitment, effort and assistance. You will be able to see their current and future perspectives on their track topic in Overview Track Talks that many will be presenting in the opening session of their track. Thank you also to abstract reviewers and session chairs for your important contribution in forming and delivering the program.

This is the largest BMES meeting in history with a record number of abstracts submitted to the meeting exceeding 2,800. We also had 186 extended abstracts for Student Research & Design Awards and over 300 Undergraduate Research Abstracts. Thus, the program includes 919 oral presentations (including symposium speakers), in 178 oral sessions to form on average 19 parallel sessions at one time. We are excited to deliver this meeting at the outstanding and accommodating venue of the Georgia World Congress Center. We also have 1,550 presentations in poster format, with poster viewing designated with the authors present at times clearly marked in the program. We expect vibrant and stimulating discussion of results at our poster and platform sessions.

Excellence in technical programming was the goal of the technical program committee. In doing so, we considered incorporating our meeting theme of "Integrating Academics, Industry and Translation — From Discovery to Implementation" throughout the meeting program within tracks and highlighting it particularly in a special plenary symposium — Translational Biomedical Engineering: Models for Practice. We are very happy to have three speakers in this special plenary symposium on Friday afternoon to include Dr. Don Ingber from Harvard University, Dr. Paul Yock from Stanford University and Dr. Jim Burns from Sanofi. They will each speak about their experiences in translation of biomedical engineering from the perspectives of innovation development, education and industry interactions with academia. I would like to acknowledge the assistance of Dr. Robert Nerem in organizing the symposium. Other program highlights include the Larry V. McIntire Symposium honoring his over 40 years of outstanding contributions to biomedical engineering research, education and service. Speakers were drawn from his former trainees and include Drs. Jeffrey Hubbell, Scott Diamond and John Frangos. As one of his former postdoctoral fellows, I will be honored to co-chair this session with the co-organizer, Dr. Robert Nerem. In planning and organizing the program, we aimed to provide an important opportunity for students, trainees and faculty to present their research. Our goal was to make this meeting informative and enjoyable for all constituents of our membership.

Finally, I would like to thank many people who were involved in the great task of putting this program together. First, I would like to thank the staff at BMES, in particular, Debby Tucker, for her constant support, assistance and advice in putting together and organizing this program. Her responsiveness and prompt attention to queries are much appreciated. I also thank the conference chair Dr. Hanjoong Jo for his leadership on conference organization and fundraising. I would like to also thank the outstanding administrative support provided to me by Mrs. Susan Camp and Mrs. Gina Livingston at Georgia Institute of Technology. Thank you to colleagues at Georgia Tech, Emory University and within the Georgia biomedical community and also students for their leadership in organizing aspects of the program such as publicity, fundraising and student events.

Welcome to Atlanta and have a great time at BMES 2012!

Julia E. Babensee, Ph.D.
Technical Program Chair

HUNGRY FOR FOOD?

Atlanta is a haven for foodies and you are just steps away from some of the region's best dining. Scan this code and we'll direct you to the best eating options just outside these conference walls.
bme.gatech.edu/bmes2012.php

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Georgia Tech

EMORY UNIVERSITY

The Wallace H. Coulter Department of Biomedical Engineering

BMES ROBERT A. PRITZKER DISTINGUISHED LECTURE

Pritzker Distinguished Lecturer:

Ajit P. Yoganathan, PhD

Georgia Institute of Technology

THURSDAY, OCTOBER 25, 2012
10:30AM
SIDNEY MARCUS AUDITORIUM
GEORGIA WORLD CONGRESS CENTER

From Bench to Bedside – A Journey through Translational Research

OVER THE PAST FEW DECADES, significant contributions have been made by engineers to healthcare. The successful translation of fundamental engineering concepts has helped improve patient care and diagnosis. This impact has been particularly evident in the field of cardiovascular medicine where the role of fluid and solid dynamics is critical. In 33 years of pioneering research, the Cardiovascular Fluid Mechanics Laboratory has been among the vanguard of this movement: advancing knowledge and technology in native and replacement heart valves, cardiovascular diagnostic techniques, and pediatric surgical planning. Using state-of-the-art fluid dynamic measurement techniques, Dr. Yoganathan and his group have developed methods enabling the optimization of replacement heart valve designs. Novel techniques in the assessment of native heart valve function have provided clinicians with improved tools to assess disease severity and helped identify effective treatment options. For the treatment of congenital heart defects, the development of novel computational modeling tools to simulate surgical procedures and their fluid dynamics outcome has provided clinicians with new ways to plan for treatments for individual patients to increase the probability of success. Combined, these advances have helped bridge the lab bench to the patient's bedside and integrate engineering science with the art of medicine.

AJIT P. YOGANATHAN is the Wallace H. Coulter Distinguished Faculty Chair and and Associate Chair for Research in the Wallace H. Coulter Department of Biomedical Engineering and a Regents' professor at the Georgia Institute of Technology and Emory University. He is also the founder and the Director of the Center for Innovative Cardiovascular Technologies. He received a Bachelor of Science and a Doctor of Philosophy in Chemical Engineering in 1973 from University College, University of London and in 1978 from the California Institute of Technology, respectively. Since joining the faculty at Georgia Tech in 1979, Dr. Yoganathan was instrumental in founding the joint biomedical engineering department with Emory University and has mentored 48 doctoral students, 35 masters' students, and 30 post-doctoral trainees.

Dr. Yoganathan's 40 year research career has been pioneering and translational in nature by applying basic engineering science to develop meaningful human health outcomes, specifically in the realm of cardiovascular engineering and biology. In his effort to take an interdisciplinary and translational approach to his research, Dr. Yoganathan has established collaborations with clinicians, scientists, and industry professionals worldwide. His work utilizes experimental and computational biomechanical techniques to study native and artificial heart valves, structure function of the left and right sides of the heart, congenital heart diseases, and to develop minimally invasive cardiovascular interventions. He also uses non-invansive techniques such as laser Doppler velocimetry, digital particle image velocimetry, and Doppler ultrasound and magnetic resonance imaging to study and quantify blood flow physiology in the cardiovascular system, both on the bench and *in vivo*. His research and work has contributed to the inventions of a variety of medical devices. In 2009, he co-founded APICA Cardiovascular with his invention of an innovative transapical access and closure system that is designed to simplify and standardize the technique used to open and close the apex of a beating heart. In the same year, another one of his inventions, on mitral valve repair, was licensed to a major cardiovascular medical device company. Dr. Yoganathan has published over 300 peer reviewed journal articles and 40 book chapters in leading biomedical journals and books.

Dr. Yoganathan's career has been distinguished by a number of high honors. In 1985, Dr. Yoganathan was awarded an Alexander von Humboldt Fellowship from West Germany to spend 9 months at the Helmholtz Institute for Biomedical Engineering, Technical University of Aachen. He received the Edwin Walker Prize from the Institute of Mechanical Engineers, UK in 1988. In 1992, he was elected a founding fellow of the American Institute of Medical and Biological Engineering. The same year, he also spent six months in at the University of Aarhus, Denmark as a Visiting Professor of the Danish Research Academy. He received the H.R. Lissner Award, for his contributions to the field of bioengineering in 1997 from the American Society of Mechanical Engineers. In 2005, he was awarded the Theo Pilkington award, for his contributions to Biomedical Engineering education by the American Society of Engineering Education. He was appointed the founding editor in chief of *Cardiovascular Engineering and Technology* in 2010, the newest journal of the Biomedical Engineering Society.

In addition to his research and educational activities, Dr. Yoganathan serves as a leading consultant for international, government, professional and industrial organizations. He currently chairs International Standards Organization Subcommittee on Cardiovascular Implants, is a Fellow and former member of the executive committee of the Biomedical Engineering Society. He served as a member of the NIH Surgery and Bioengineering Study Section and former chair of the American Society of Mechanical Engineers Bioengineering Division. He collaborates with and advises professionals in the cardiovascular medical device industry, working with companies such as Medtronic, St. Jude Medical, Edwards Life Sciences and Boston Scientific.

ROBERT E. KLEIN/AP, © HHMI.

NIH National Institute of Biomedical Imaging and Bioengineering Lecture:

Sangeeta Bhatia, PhD

Massachusetts Institute of Technology and HHMI

FRIDAY, OCTOBER 25, 2012
10:30AM
SIDNEY MARCUS AUDITORIUM
GEORGIA WORLD CONGRESS CENTER

It's a Small World: 'Tiny Technologies' and Regenerative Medicine

OUR LABORATORY STUDIES HOW MICRO- AND NANOSCALE SYSTEMS can be deployed to understand, diagnose, and treat human disease. In this talk, I will describe our progress in two application areas: liver disease and cancer. In the area of hepatic tissue engineering, we are developing microtechnology tools to understand how ensembles of cells coordinate to produce tissues with emergent properties in the body. We have used this understanding to fabricate human microliver tissues in both '2D' and '3D' formats enabling us to study the pathogenesis of human drug-drug interaction, drug-induced liver disease, and viral infection. In the area of cancer, we are developing nanotechnology tools to meet the challenge of delivering cargo into the tumor microenvironment where transport is dominated by diffusion. Our strategy is to design nanotechnologies emulating nature's mechanisms of homing, activation, and amplification to deliver cytotoxic drugs, imaging agents, and siRNA to tumors. Thus, using nature as a guide, we are establishing a framework for building systems from micro- and nanoscale components functioning collectively to treat human disease.

Sangeeta N. Bhatia is the John J. and Dorothy Wilson Professor of Health Sciences and Technology (HST) and Electrical Engineering and Computer Science (EECS) at the Massachusetts Institute of Technology and a Howard Hughes Medical Investigator. She also holds appointments at the Brigham & Women's Hospital, the Broad Institute, the Koch Institute for Integrative Cancer Research and the Harvard Stem Cell Institute. She directs the Laboratory for Multiscale Regenerative Technologies working at the intersection of engineering, medicine, and biology to develop novel micro- and nanoscale platforms for understanding, diagnosing and treating human disease. Specifically, her work focuses on elucidating the role of the cellular microenvironment in healthy and diseased liver function using microfabrication and in normalizing cancerous microenvironments using nanodelivery systems. Dr. Bhatia received her B.S. from Brown University, M.S. in Mechanical Engineering and Ph.D. in Biomedical Engineering from the Massachusetts Institute of Technology, M.D. from Harvard Medical School and graduate and post-doctoral training at Massachusetts General Hospital. Prior to MIT, Dr. Bhatia served on the faculty of the Bioengineering Department at the University of California at San Diego and worked in industry at Pfizer, Genetics Institute, ICI Pharmaceuticals, and Organogenesis. Dr. Bhatia's contributions have led to over 120 publications, co-authorship of the first undergraduate textbook on tissue engineering, and over 25 issued or pending patents. In order to translate her inventions into society, Dr. Bhatia co-founded two biotechnology companies. Her work has been profiled by Scientific American, PBS NOVA, and the Economist.

Dr. Bhatia has been recognized as one of the "the nation's most promising young professors in science and engineering" by the David and Lucile Packard Foundation. She is a recipient of the NSF CAREER Award, the Y.C. Fung Young Investigator Award of the American Society of Mechanical Engineers, the Young Investigator Award of the American College of Clinical Pharmacology, and the Brown Engineering Alumni Medal. She has been elected a Fellow of the American Institute for Medical and Biological Engineering, American Society for Clinical Investigation, and the Biomedical Engineering Society. As a passionate mentor and advocate for diversity in science and engineering, she has been the recipient of the Harvard Medical School Diversity Award and the Harvard-MIT Thomas McMahon Mentoring Award.

TRANSLATIONAL BIOMEDICAL ENGINEERING SYMPOSIUM:

MODELS FOR PRACTICE

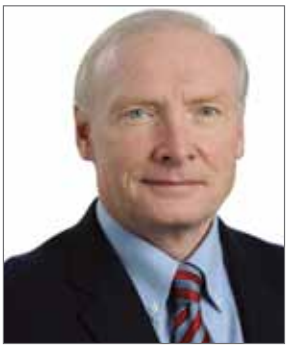
FRIDAY, OCTOBER 26, 2012, 4:45PM - 6:00PM
SIDNEY MARCUS AUDITORIUM, GEORGIA WORLD CONGRESS CENTER

Wyss Institute: A New Model for Innovation and Technology Translation

Donald Ingber
Harvard University

Biodesign: Teaching Biomedical Technology Innovation as a Discipline

Paul Yock
Stanford University



Integrating a Translational Approach into Product Discovery and Development

Jim Burns
Sanofi Boston R&D Hub

Symposium sponsored by Georgia Tech Translational Research Institute for Biomedical Engineering & Science

The Michelson Prize & Grants in Reproductive Biology

Apply for Research Grants

THE MICHELSON GRANTS

The Foundation seeks proposals for up to **$250,000** per year for up to 3 years of funding for research in pursuit of permanent contraceptives for male and female cats and dogs.

The first step in the Michelson Grant process is submission of a Letter of Intent (LOI).

For further details, visit: http://michelson.foundanimals.org.

THE MICHELSON PRIZE

A **$25 million prize** will be awarded to the first entity to provide to Found Animals a safe, effective, and practical non-surgical sterilant for use in cats and dogs. The winning entry for the Michelson Prize in Reproductive Biology must meet the following criteria:

- Single dose, permanent non-surgical sterilant
- Safe and effective in male and female cats and dogs
- Ablates sex steroids and/or their effects
- Suitable for administration in a field setting
- Viable pathway to regulatory approval
- Reasonable manufacturing process and cost

MICHELSON PRIZE & GRANTS

The Michelson Prize & Grants is open to any entity from any nation. Found Animals encourages scientists from a diverse range of fields to compete for the Michelson Prize & Grants.

For more information about the Michelson Prize & Grants, visit: http://michelson.foundanimals.org

Found Animals®

RITA SCHAFFER MEMORIAL LECTURE

BMES 2012 Rita Schaffer Memorial - Young Investigator Lecturer:

Christian Metallo, PhD

University of California, San Diego

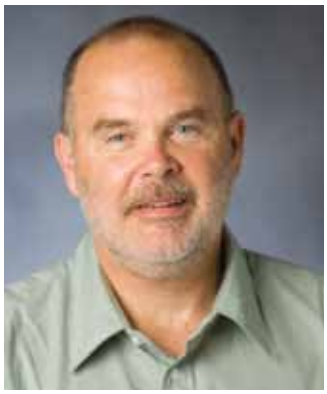
SATURDAY, OCTOBER 27, 2012
8:00AM
SIDNEY MARCUS AUDITORIUM
GEORGIA WORLD CONGRESS CENTER

Understanding Metabolic Regulation in Cancer Using Flux Analysiss

METABOLISM IMPACTS ALL CELLULAR functions and plays a fundamental role in human pathology. Fueled by recent discoveries and new technologies, there is growing interest in characterizing and targeting metabolic pathways in various diseases. For example, tumor cells reprogram their metabolism to proliferate aggressively and survive in stressful microenvironments. To better understand metabolic regulation and function in these contexts we apply stable isotope tracers, mass spectrometry, and metabolic flux analysis (MFA) to identify new avenues for cancer therapy. This data-driven methodology enables estimation of intracellular fluxes in living systems through the quantification of isotope incorporation in metabolite pools. While glucose is conventionally thought to be the source of lipid carbon in human cells, we have demonstrated that tumor cells reductively metabolize the glutamine in the Krebs cycle for lipid biosynthesis when proliferating under low oxygen tensions which mimic tumor hypoxia. Oncogenes and loss of tumor suppressors promote the use of reductive carboxylation, suggesting that this pathway is important for cancer growth. These findings now alter our view of central metabolism and highlight the utility of applying MFA to disease models.

Christian Metallo is an assistant professor of Bioengineering at the University of California, San Diego. He is also a member of the Institute of Engineering in Medicine and Moores Cancer Center at UCSD. He received his B.S. in chemical engineering from the University of Pennsylvania in 2000 and conducted bioprocess engineering research at Merck Research Laboratories from 2000 – 2003. Christian received his Ph.D. from the University of Wisconsin-Madison Department of Chemical Engineering in 2008, where he studied stem cell biology and tissue engineering. Subsequently, he was a postdoctoral fellow in the laboratory of Greg Stephanopoulos at the Massachusetts Institute of Technology from 2008 to 2011. He was awarded postdoctoral fellowships from the National Institute of Health and the American Cancer Society to apply systems biology approaches to study metabolism in diabetes and cancer. His work at MIT involved the study of central carbon metabolism in tumor cells and its regulation by hypoxia and oncogenic signaling pathways. At UCSD he continues to apply experimental systems biology approaches to understand the role of metabolism in cancer and stem cell function.

BMES established this award in 2000 to honor Rita M. Schaffer, former BMES Executive Director. Rita's gift of her estate, along with contributions from her family, friends, and associates, has enabled BMES to create the Rita Schaffer Young Investigator Award, which includes the Rita Schaffer Memorial Lecture.



Diversity Lecture:

William M. Reichert, PhD

Duke University

SATURDAY, OCTOBER 27, 2012
8:45AM
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When Optimization Trumps Opportunity: the Serenity Prayer Run Amuck

THE SERENITY PRAYER

God grant me the serenity
to accept the things I cannot change;
the courage to change the things I can;
and the wisdom to know the difference.

THE OPTIMIZATION PRAYER

God grant me the serenity
to accept the things that work in my favor;
the indifference to resist the things that do not;
and the wisdom to know the difference.

Borrowing liberally from the work of Dan Ariely at Duke University entitled "The Honest Truth About Dishonesty: How We Lie to Everyone - Especially Ourselves," (HarperCollins Press, 2012), here I take a critical look at what motivates us to optimize our own personal agenda versus what motivates us to provide opportunity to others. This dynamic occurs on both sides of the majority-minority axis. These observations are then used to suggest changes in the structure of professional expectations that could in turn be used to merge optimization with opportunity.

WILLIAM "MONTY" REICHERT is the Edmund T. Pratt, Jr. School Distinguished Professor of Biomedical Engineering and Chemistry and Associate Dean for Ph.D. Education and Diversity at Duke University. He began his post-secondary education at Gustavus Adolphus College in Minnesota, receiving a Bachelor of Arts in Biology and Chemistry, and earned his M.S. and Ph.D. in Macromolecular Science and Engineering at the University of Michigan. Dr. Reichert completed postdoctoral fellowships at the University of Utah as a NIH National Research Service Award Fellow, Whitaker Fellow and an NIH New Investigator Fellow. Since joining the Biomedical Engineering Department at Duke in 1989, Dr. Reichert has led numerous research and educational efforts, including serving as the Director of the Center for Biomolecular and Tissue Engineering as well as the Duke Grand Challenge Scholars Program. He is a Fellow of the American Institute of Medical and Biological Engineering, the Biomedical Engineering Society, the International Union of Societies for Biomaterials Science and Engineering, and the American Council on Education. He is also an Assistant Editor for the Journal of Biomedical Materials Research. Dr. Reichert has won numerous awards, including the Duke Graduate School Dean's Award for Excellence in Mentoring, the Catalyst for Institutional Change from the Quality Education for Minorities Network, the Society for Biomaterials Clemson Award for Basic Research in Biomaterials, and the Biomedical Engineering Society Diversity Award.

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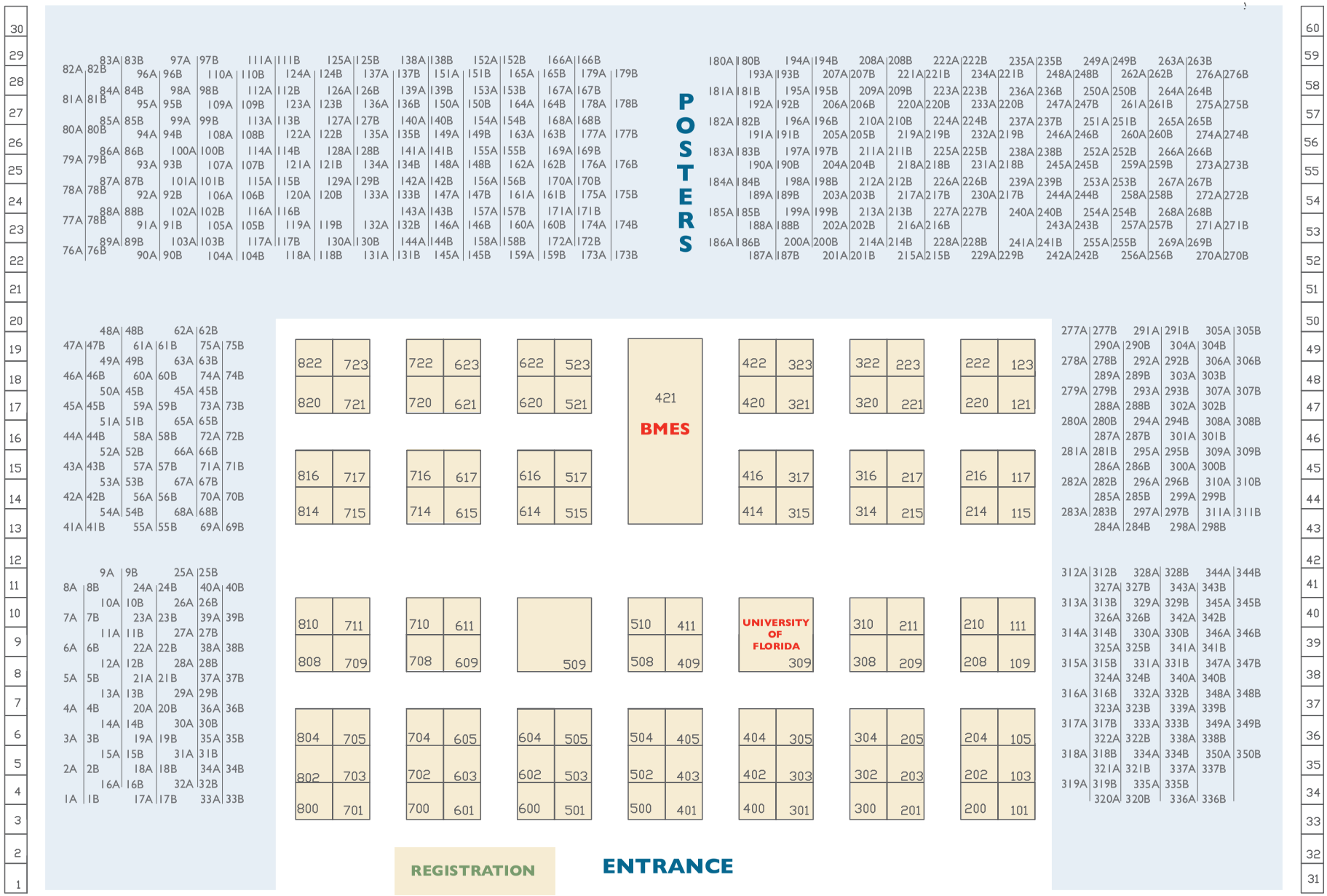
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The booth will be used to distribute literature about the Biomedical Division of the American Society for Engineering Education, such as membership information, award information, and titles/abstracts of recent conference pages.

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SCHOOL OF BIOLOGICAL AND HEALTH SYSTEMS ENGINEERING

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The mission of the School of Biological and Health Systems Engineering at ASU is to create novel solutions to improve human health through research, education, and service to the community. The faculty in SBHSE has a wide range of research expertise with strengths in the following research areas: imaging, biosensors and instrumentation, molecular, cellular and tissue engineering, neural and rehabilitation engineering, synthetic biology and systems bioengineering.

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The Boston University Department of Biomedical Engineering is one of the largest and oldest departments of its kind in the country. We attract exceptional students to our BS, MEng, MS and PhD degree programs, which are known for their highly quantitative approach. We have strengths in numerous research areas including biomechanics, neural engineering, biomedical optics, respiratory dynamics, tissue engineering, biomaterials and synthetic biology. We boast a wealth of research resources, and have strong ties with the BU School of Medicine, and other top medical research centers in the Boston area.

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The Department of Biomedical Engineering at Carnegie Mellon is built upon a long tradition of interdisciplinary research across departmental borders. Its decades-old research program emphasizes a collaborative network that balances four synergistic areas: basic engineering principles of living cells and tissues, engineering tools for biomedical research, interface between living and artificial materials, and clinical applications of biomedical engineering. Training programs encourage students to expand their vision and prepare them for a wide range of careers from academic research in basic sciences, engineering entrepreneurship, to medical care.

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The Department of Biomedical Engineering at Case Western Reserve University offers distinctive programs ranging from the B.S. degree through the Ph.D. degree, including our innovative M.D./Ph.D. degree, M.D./M.S. degree, and our Biomedical Entrepreneurship program. Cutting-edge research thrusts include: biomaterials and tissue engineering, neural engineering and neuroprostheses, biomedical imaging and sensing, transport and metabolic engineering, biomechanics, and targeted therapeutics.

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The City College of New York – the founding college of CUNY. Founded in 1847, it has produced nine Nobel Prize winners and ranks seventh in the number of alumni who have been elected to the National Academy of Sciences. The Biomedical Engineering Department was established in 2002. BME at CCNY: Biomaterials/nanotechnology; Cardiovascular Engineering; Musculoskeletal Biomechanics; and Neural Engineering.

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Biomedical Engineering at Cornell University focuses on interdisciplinary research to achieve a quantitative understanding of human biology at all spatial and temporal scales with the goal of improving human health. The Department has a close relationship with Weill Cornell Medical College and its associated hospitals in New York City, including an "Immersion Term" during which all Ph.D. students spend 7 weeks in a clinical experience at the Medical College. Cornell University is a comprehensive university with outstanding programs of teaching and research in all areas of human inquiry which has its main campus at Ithaca in the Finger Lakes Region of upstate New York. A new Engineering campus is opening in New York City located on a site less than 20 minutes from the Medical College which will catalyze further growth in the Department's interactions with the Medical College and hospitals. The Biomedical Engineering Department has close collaborations with a wide variety of other departments in Ithaca, especially with those in the Colleges of Engineering, Veterinary Medicine, Agriculture and Life Sciences, Arts and Sciences, and Human Ecology. For more information, please visit http://www.bme.cornell.edu/

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The School of Biomedical Engineering at Dalhousie University offers Masters & Doctorate programs with over 40 faculty from Biomaterials and Regenerative Medicine to Biomechanics and Imaging. The new Bio-Medic Entrepreneurship Certificate program includes stipend support , clinician mentoring, industrial placements, training in clinical needs and medical device regulatory & industry standards.

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Engineering World Health is an NGO that works with the BME community to improve healthcare in hospitals of the developing world. We carry out repairs, build local capacity to manage and maintain the equipment and develop low-cost technologies. Come find out how you too can make a lasting impact on healthcare in the developing world!

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The Department of Biomedical Engineering at Florida International University (FIU) in Miami is the only department in the State University System of Florida offering BS (accredited) through PhD degrees as well as a BS/MS and BS/MS in Engineering Management. Established in 2004, the doctoral program has benefitted from the steady expansion of the FIU research enterprise which had one of the largest increases in ranking in federal research and expenditure over the last decade. The department is investing extensively in: Basic Research in Engineered Tissue Model Systems, Diagnostic Bioimaging and Sensor Systems, and Therapeutic and Reparative Neurotechnology. The department has expanding industrial ties and is closely linked with FIU's new College of Medicine.

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The Biomedical Engineering PhD program offered through the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech/Emory University has an emphasis on applications to human health. Research areas include: Biomaterials and Regenerative Medicine, Cardiovascular Biology and Biomechanics, Cellular and Biomolecular Engineering, Integrative Biosystems, Medical Imaging, Neuroengineering.

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IEEE Engineering in Medicine and Biology Society (EMBS) is the world's largest international society of biomedical engineers. The organization's 9,100 members reside in some 97 countries around the world. EMBS provides its members with access to the people, practices, information, ideas and opinions that are shaping one of the fastest growing fields in science.

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DEPARTMENT OF BIOMEDICAL ENGINEERING

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The Department of Biomedical Engineering at Johns Hopkins, consistently ranked #1 in the US, has a long history of ground-breaking and innovative research. The Center for Bioengineering Innovation and Design at Hopkins is a translational research center that offers an intensive one- year masters program that focuses on developing medical devices that solve important clinical problems.

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Khalifa University provides a world-class educational, intellectual and research environment and produce graduates that form a superlative cadre of engineers, technologists and applied scientists capable of making major contributions to the current and future sectors of UAE industry and society. The programs offered by Khalifa University are designed to be flexible, competitive and intellectually stimulating. Students are provided with excellent services, including a comprehensive library collection, laboratories and workshops equipped with the latest technology, and extensive computing facilities, in addition to language learning laboratories, accommodation, and sports and recreational facilities.

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BIOMEDICAL RESEARCH INSTITUTE

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DEPARTMENT OF BIOMEDICAL ENGINEERING

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BIOMEDICAL DEPARTMENT, COLLEGE ENGINEERING

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As one of the fastest developing units of Peking University, the Biomedical Engineering Department focuses on various researches including medical instruments and imaging, regenerative medicine, and computational medicine. The department has also established wide international collaborations, and it is a partner of Georgia Tech/Emory University on both education and research.

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DEPARTMENT OF BIOENGINEERING

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BOOTH **# 215**

Temple University

COLLEGE OF ENGINEERING, BIOENGINEERING DEPAERTMENT

1947 N. 12th Street
Philadelphia, PA 19122
Phone: 215-204-3883
Email: bioeng@temple.edu
Web: http://www.temple.edu/engineering/academic-programs/be/new-bioeng-dep/

Beginning in the fall of 2012, the Department, located in approximately 20,000 ft.^{2} of state-of-the -art of renovated research and educational lab and office space, is welcoming it first class of graduate students for Masters and PhD studies. The undergraduate curriculum will commence in the fall of 2013. Matriculating doctoral students receive financial support that includes a stipend, tuition remission and health insurance. Matriculating master's degree students on the thesis option may be eligible for financial support. Current faculty expertise is focused on cell and regenerative tissue engineering, biomaterials and spectroscopy. Future faculty hires will focus on related areas such as Imaging, Neuroengineering, Bioinformatics and Medical Device Technologies, with a strong emphasis on interdisciplinary collaborations and translational research, leveraging strategic initiatives and institutional strengths in Medicine, Pharmacy, and Oncology.

BOOTH # 605

Texas A & M University

DEPARTMENT OF BIOMEDICAL ENGINEERING

3120 TAMU
College Station, TX 77843-4462
Phone: 979-845-5532
Email: bmen@tamu.edu
Web: biomed.tamu.edu

The Texas A&M Department of Biomedical Engineering offers an opportunity to participate in ground-breaking research in Biomedical Sensing and Imaging, Biomedical Optics, Cardiovascular Biomechanics, and Biomaterials. The outstanding faculty within this ABET-accredited department have strong collaborations with both medical and veterinary schools. Offering degree options at the bachelor's (B.S.), master's (M.S. ,M.Eng., M.Eng./MBA), and doctoral (Ph.D. & D.Eng.) level, the Department of Biomedical Engineering at Texas A&M provides an exceptional academic experience.

BOOTHS **# 321 / 323**

Tufts University

BIOMEDICAL ENGINEERING

4 Colby Street
Medford, MA 02155
Phone: 614-627-2580
Email: milva.ricci@tufts.edu
Web: www.tufts.edu

Biomedical Engineering at Tufts University draws from core disciplines such as engineering, biology, computer science, physics, chemistry, and physiology emphasizing an interdisciplinary approach to research and education. Strong emphasis is placed on interactions with faculty in Arts and Sciences and the professional schools. The Tissue Engineering Resource Center (TERC) was initiated in August of 2004 as a Resource Center supported through the National Institutes of Health P41 program. The core themes in the Center focus on functional tissue engineering achieved through a systems approach—integrating cells, scaffolds and bioreactors to control the environment *in vitro* for translation *in vivo*.

BOOTH **# 604**

Tulane University

500 Lindy Boggs Bldg.
New Orleans, LA 70118
Phone: 504-865-5897
Email: bmen-info@tulane.edu
Web: www.bmen.tulane.edu

An established department (since 1977) that offers B.S. - Ph.D. degrees. Research includes biomechanics, biotransport, regenerative medicine, biomaterials and devices. Within the School of Science and Engineering, opportunities abound for collaboration with the School of Medicine and numerous centers. Tulane is located in New Orleans, a diverse cultural mecca.

BOOTH # 115

The University of Akron

DEPARTMENT OF BIOMEDICAL ENGINEERING

Akron, OH 44325-0302
Phone: 330-972-6650
Email: bmegrad@uakron.edu
Web: www.uakron.edu/engineering/BME/

Biomedical Engineering began as a research institute at The University of Akron in 1980 and became an academic department in 1984. We offer two graduate degree programs: a masters degree in engineering with the biomedical option and the Ph.D. in Engineering. These programs have an individualized curricular approach, designed in coordination with each student's career plans. Our faculty are engaged in a variety of research areas, including but not limited to, instrumentation, biomaterials, biomechanics, and tissue engineering. BME faculty have active collaborations both on campus and with researchers in regional health care institutions and biomedical industry. We encourage interdisciplinary interactions to promote vibrant research activities and to provide exceptional scholarly atmosphere for learning. The BME Department currently has 16 full-time and joint faculty, including 6 recent hires, 3 endowed chairs, and 2 CAREER award recipients. In addition, we are actively seeking a new tenure-track faculty member.

BOOTH # 609

The University of Alabama at Birmingham

DEPARTMENT BIOMEDICAL ENGINEERING

1530 3rd Avenue South, Shelby 801
Birmingham, AL 35294-2182
Phone: 205-996-6936
Email: uabbmegrad@uab.edu
Web: http://www.uab.edu/engineering/departments-research/bme

The Biomedical Engineering Graduate Program at The University of Alabama at Birmingham (UAB) offers both Master's (thesis-based) and Doctoral Degree options. The Biomedical Engineering (BME) Department has developed a strong record of extramurally funded, interdisciplinary research with emphasis in the areas of biomaterials, biomechanics, biofluids, biomedical imaging, biomedical implants, cardiac electrophysiology, computational biology, tissue engineering and regenerative medicine. The BME Department has 13 primary faculty members and more than 45 faculty members from Medicine, Dentistry, Engineering, Physics, Biology, Chemistry and Optometry who hold secondary appointments in BME and mentor our 42 graduate students. Students complete the Master of Science in Biomedical Engineering in 18-24 months. The Ph.D. Degree takes 24-42 months beyond the Master's Degree. UAB graduates find employment in health care delivery, medical devices, pharmaceuticals, biomedical imaging, instrumentation, medical sales and marketing, regulatory agencies, or computer application groups.

BOOTH # 804

The University of Arizona

BIOMEDICAL ENGINEERING

P.O. Box 21240
Tucson, AZ 85721
Phone: 520-629-9134
Email: dhoward@email.arizona.edu
Web: www.bme.arizona.edu

The Biomedical Engineering Graduate Interdisciplinary Program at The University of Arizona offers challenging opportunities for students interested in research and training in biomedical engineering. Students integrate engineering, mathematics, biology, and medicine in a highly collaborative and multi-disciplinary environment, with over 60 faculty mentors. Immediate proximity to the college of medicine as well as several disease centers, facilitates cutting-edge translational research. Students can participate in a number of specialized training programs including biomedical imaging, cardiovascular engineering, computational modeling, and entrepreneurship.

BOOTH # 603

University of Arkansas

COLLEGE OF ENGINEERING

3165 Bell Engineering Center
Fayetteville, AR 72701
Phone: 479-575-7236
Email: engrinfo@uark.edu
Web: www.bmeg.uark.edu

The Biomedical Engineering Program at the University of Arkansas offers MS and PhD degrees. Our active faculty has research programs in: Organ Regeneration; Cell and Molecular Imaging; Nanobiotechnology; Molecular Genetics and Cell Biology in Disease Prevention; Biomaterials; Tissue Engineering; and Vaccine and Immunotherapy Delivery Systems. Stop by our booth and learn how well qualified students can earn $10,000 to $20,000 per year on top of standard assistantship stipends!

BOOTH # 411

University of California at Davis

BIOMEDICAL ENGINEERING

One Shields Avenue
Davis, CA 95616
Phone: 530-752-1033
Email: bme@ucdavis.edu
Web: www.bme.ucdavis.edu

BME at UC Davis consists of 31 primary faculty and a graduate group of ~70 faculty members spanning the Medical and Veterinary Schools.Our mission is to combine exceptional teaching with state-of-the-art research to prepare students for challenges in academics and industry.Visit our exhibit to learn about our BS program emphasizing biomolecular engineering and PhD programs in cellular and molecular systems, bioinformatics, imaging, biomechanics, and tissue engineering and regenerative medicine

BOOTH # 302

University of California, Irvine

DEPARTMENT OF BIOMEDICAL ENGINEERING

3120 Natural Sciences II
Irvine, CA92697-2715
Phone: 949-824-9196
Email: bme@uci.edu
Web: www.wng.uci.edu/dept/bme

Biomedical Engineering UCIrvineoffers a stimulating array of research and training opportunities. The focus areas for our graduate programs include three technology areas of biomedical photonics/optoelectronics, biomedical nano- and microscale systems/fabrication, and biomedical computation/modeling.

BOOTH # 710

University of California at Riverside

DEPARTMENT OF BIOENGINEERING

900 University Drive
MFS 217
Riverside, CA 92521
Phone: 951-827-4303
Email: big@engr.ucr.edu
Web: www.bioengineering.ucr.edu

The Bioengineering Interdepartmental Graduate (BIG) program combines a solid fundamental foundation in biological science and engineering, and aims to equip the students with diverse communication skills and training in the most advanced quantitative bioengineering research so that they can become leaders in their respective fields. Students have the opportunity to interact with, not only their advisors, but continuously with the BIG Faculty in a host of academic settings. The result is a rigorous, but exceptionally interactive and welcoming educational training for BIG students.

BOOTH **# 304**

University of Delaware

BIOMEDICAL ENGINEERING

125 S. Delaware Avenue
Newark, DE 19716
Phone: 302-831-6234
Email: delliott@udel.edu
Web: www.bme.udel.edu

University of Delaware Biomedical Engineering offers undergraduate and graduate programs and we welcome intellectually motivated, creative, and diverse individuals who wish to benefit from our educational and research programs. Our research programs cross the following areas: Bioimaging, Biomedical Computing & Bioelectronics; Biomechanics; Biomolecular Engineering, Cellular Engineering & Systems Biology; Neuroengineering; Tissue Engineering, Biomaterials & Drug Delivery.

BOOTH # 309

University of Florida

J. CRAYTON PRUITT FAMILY DEPARTMENT OF BIOMEDICAL ENGINEERING

Biomedical Sciences Building JG-56
P.O. Box 116131
Gainesville, FL 32611-6131
Phone: 352-273-9222
Email: info@bme.ufl.edu
Web: www.bme.ufl.edu

The BME Department, formed in 2002 and named after its intellectual and financial benefactor, Dr. J. Crayton Pruitt, Sr., has grown to 15 faculty and over 130 graduate students. It is located in superb space in the new Biomedical Sciences Building within the medical complex and adjacent to engineering. The Department announces the appointment, in January 2013, of Dr. Christine Schmidt as Department Chair. We expect a period of rapid growth in faculty, research, and the new undergraduate program. Departmental research areas include: Biomedical Imaging; Neural Engineering; and Cell & Tissue Engineering and Biomaterials. Florida Biomedical Engineers have spun off over a dozen startup companies in the Gainesville area.

BOOTH **# 409**

University of Illinois at Urbana-Champaign

DEPARTMENT OF BIOENGINEERING

1304 W. Springfield Avenue
Room 1270 Digital Computer Laboratory
Urbana, IL 61801
Phone: 217-333-1867
Email: bioengineering@illinois.edu
Web: www.bioengineering.illinois.edu

The Department of Bioengineering offers studies leading to the Master of Science in Bioengineering and the Doctor of Philosophy in Bioengineering. The Bioengineering Graduate Program provides students with educational and research experiences that integrate the sciences of biology and medicine with the practices and principles of engineering. Areas of focus include Bio-imaging, Cell & Tissue Engineering, Micro and Molecular Technologies, and Computational Biology. Opportunity also exists for specializing in (i) computational science and engineering and (ii) energy and sustainability engineering via the Computational Science and Engineering (CSE) Option and the Energy and Sustainability Engineering (EaSE) Option. The Medical Scholars Program permits highly qualified students to integrate the study of medicine with study for a graduate degree in a second discipline, including Bioengineering.

BOOTH # 214

University of Kansas

BIOENGINEERING GRADUATE PROGRAM

1520 West 15th, Room 1, Eaton Hall
Lawrence, KS 66045
Phone: 785-864-5258
E-mail: bioe@ku.edu
Web: www.bio.engr.ku.edu

The University of Kansas' Bioengineering program offers M.S. and Ph.D. degree programs. Coordinating with KU's School of Medicine, the M.D./Ph.D. degree is also offered. The program has six tracks: Bioimaging, Bioninformatics, Biomolecular, Biomedical Product Design & Development, Biomechanics & Neural, and Biomaterials & Tissue. KU Bioengineering provides breadth in engineering and biological sciences, and depth in a particular research area chosen from one of the six tracks.

BOOTH # 602

University of Maryland College Park

FISCHELL DEPARTMENT OF BIOENGINEERING

Room 2330
Jeong H. Kim Engineering Building (Bldg. #225)
College Park, MD 20742
Phone: 301-405-7426
Email: kofinas@umd.edu
Web: http://www.bioe.umd.edu

The Fischell Department of Bioengineering is the home of an emerging academic discipline, exciting degree programs and students who want to make a difference in human health care through education, research and invention. Our programs serve a community that in many universities comprises two departments: biological engineering and biomedical engineering. Our program centers on the cell, subcellular systems, and systems of cells. We integrate engineering and the life sciences in building a quantitative systems approach for the development of tools and techniques that will serve the molecular underpinnings of health care envisioned for the next generation. The Fischell Department of Bioengineering offers undergraduate and graduate educational programs leading to B.S., E.N.P.M, M.S./M.D. and Ph.D. degrees.

BOOTH #315

University of Memphis

UNIVERSITY OF TENNESSEE HEALTH SCIENCES CENTER

330 Engineering Technology Building
Herff College
Memphis, TN 39152-3210
Phone: 901-678-3733
Email: eckstein@memphis.edu
Web: www.memphis.edu/bme

The UM/UT Joint Graduate Program offers M.S. and Ph.D. degrees in biomedical engineering with research specialization in biomaterials, tissue engineering, drug delivery, biomechanics, biomedical sensors, electrophysiology, and bioimaging. Emphasis in these disciplines is in dental/orthopedics, computational models (pulmonary, coronary, and muscoskeletal), sensor nano/microfabrication, and image processing and analyses.

BOOTH # 622

University of Miami

BIOMEDICAL ENGINEERING DEPARTMENT

1251 Memorial Drive, MEA #219A
Coral Gables, FL 33146-0621
Phone: 305-284-2445
E-mail: oozdamar@miami.edu
Web: www.bme.miami.edu

Offering B.S., M.S., B.S./M.S., and Ph.D. degree options in biomedical engineering, our program emphasizes excellence in education and research, while keeping in par with the growing technology. A high ratio of faculty to students ensures students receive personal attention. Our faculty are internationally recognized leaders in their fields, with active areas of research in diverse fields, such as biomedical instrumentation/devices, signal and image processing, neurosensory and neuromuscular systems/devices, optics and lasers, and cellular/tissue engineering.

BOOTH # 300

University of Michigan

DEPARTMENT OF BIOMEDICAL ENGINEERING

1107 Carl A. Gerstacker Building
2200 Bonisteel Blvd.
Ann Arbor, MI 48109-2099
Phone: 734-763-5290
E-mail: biomede@umich.edu
Web: www.bme.umich.edu

The University of Michigan Biomedical Engineering Department provides outstanding education for engineers in biomedical engineering and develops future leaders in the field. The program's primary emphasis is on biomedical engineering fundamentals, while allowing students to personalize their curriculum to prepare them for a wide variety of careers including biomedical engineering, law, medicine, and business.

BOOTH # 701

University of Minnesota

DEPARTMENT OF BIOMEDICAL ENGINEERING

312 Church St. SE
7-105 Nils Hasselmo Hall
Minneapolis, MN 55455
Phone: 612-624-8396
E-mail: bmengp@umn.edu
Web: www.umn.edu/bme

The Department of Biomedical Engineering at the University of Minnesota is located at the intersection of the medical school, engineering, and physical sciences, in the heart of LifeScience Alley (home to Medtronic, Boston Scientific, St. Jude Medical, plus 500 other FDA-registered medtech companies). Research conducted by the faculty spans the full spectrum, with particular depth in cardiovascular/neural engineering, cell/tissue engineering, and biomedical imaging/optics.

BOOTH # 616

UNC – NCSU Biomedical Engineering

152 MacNider Hall
Campus Box 7575
Chapel Hill, NC 27599-7575
Phone: 919-966-0696
E-mail: padayton@bme.unc.edu
Web: www.bme.unc.edu

The UNC-NCSU Joint Department of Biomedical Engineering provides M.S. and Ph.D. students with a unique experience bridging the UNC School of Medicine and the NCSU College of Engineering. Our program has focus areas in Microsystems Engineering, Biomedical Imaging, Rehabilitation Engineering, and Pharmacoengineering. The new program in Pharmacoengineering, a collaboration with the UNC Eshelman School of Pharmacy, provides students with education and experience to work at the interface of engineering and pharmaceutical sciences. For more info: www.bme.unc.edu

BOOTH # 615

University of Pittsburgh

CENTER FOR BIOTECHNOLOGY

300 Technology Drive
Pittsburgh, PA 15219
Phone: 412-624-6445
Email: ngm8@pitt.edu
Web: www.pitt.edu/bioengineering/main/

The University of Pittsburgh Department of Bioengineering conducts world-class research and is home to faculty and students at both the graduate and undergraduate level who have won both nationally and internationally recognized awards. The department also has a close affiliation with the renowned University of Pittsburgh School of Medicine.

BOOTH # 508

University of Rochester

DEPARTMENT OF BIOMEDICAL ENGINEERING

209 Robert E. Georgen Hall
Rochester, NY 14627
Phone: 585-275-3891
Email: hurlbutt@bme.rochester.edu
Web: www.bme.rochester.edu

The Graduate Program in Biomedical Engineering at the University of Rochester provides training at the Masters and Doctoral level. Research covers a broad spectrum, ranging in length scale from molecular to whole animal, and encompassing a wide variety of physiological systems and experimental approaches. With access to over 50 laboratories on the River Campus and the adjacent Medical Center, students can tailor their own interdisciplinary and translational training experience. Multiple active centers and affiliated groups offer collaborative research in Biomedical Optics; Neuroengineering; Biomechanics; Medical Imaging; Biomaterials, Nanotechnology and Cell & Tissue Engineering.

BOOTH # 504

University of Southern California (USC)

VITERBI SCHOOL OF ENGINEERING

3650 McClintock Ave, OHE 106
Los Angeles, CA 90089
Phone: 213-740-4488
Email: viterbi.masters@usc.edu
Web: http://viterbi.usc.edu/gapp

The USC Viterbi School of Engineering's top-ranked graduate program offers Master's and Doctoral programs in a wide range of disciplines. Learn more about our unique programs, including Biomedical Engineering, Medical Imaging, Neuroengineering, Medical Devices and Wireless Health Technologies at viterbi.usc.edu/gapp

BOOTH # 210

University of South Carolina

BIOMEDICAL ENGINEERING PROGRAM

300 Main Street, A217
Columbia, SC 29208
Phone: 803-777-2310
E-mail: carolrdavis@cec.sc.edu
Web: http://biomed.engr.sc.edu

Our program is an interdisciplinary effort, jointly administered by Chemical and Mechanical Engineering and benefiting from collaboration with Computer Science, School of Medicine, and Public Health. With the benefit of two major NSF grants we have built research programs in biomaterials, biomechanics, nanofluidics, cellular and tissue engineering, and biomolecular engineering.

BOOTH # 308

University of Texas at Arlington

BIOENGINEERING DEPARTMENT

500 UTA Blvd., Suite 226
Arlington, TX 76010
Phone: 817-272-2249
Email: cbradfield@uta.edu
Web: www.uta.edu/bioengineering

The Bioengineering Department at the University of Texas Arlington offers joint graduate degrees with The University of Texas Southwestern Medical Center at Dallas with many research opportunities in Biomaterials & Tissue Engineering, Bioinstrumentation, Biomechanics, and Medical Imaging. In our exhibit we will have more information about these activities and also information about scholarships and fellowships. Please visit our booth to learn more.

BOOTH # 517

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

1 University Station, C0800
Austin, TX 78712
Phone: 512-475-8623
Email: utbme-news@austin.utexas.edu
Web: www.bme.utexas.edu

The University of Texas at Austin's Biomedical Engineering Department educates the next generation of biomedical engineers by offering B.S., M.S., and Ph.D. degrees. Scholars and students build interdisciplinary knowledge in areas such as bioinformatics, biomechanics, biomedical imaging and instrumentation, cellular and biomolecular engineering, and computational biomedical engineering, among others.

BOOTH # 301

University of Washington

DEPARTMENT OF BIOENGINEERING

3720 15th Avenue NE, Box 355061
Seattle, WA 98195-5061
Phone: 206-685-3494
Email: bioeng@uw.edu
Web: http://depts.washington.edu/bioe/index.html

University of Washington Bioengineering is a world leader in bioengineering research, education, clinical applications, technology transfer, and service. Our faculty and students are ready to talk about our educational programs, research projects, and employment opportunities in the department. Prospective graduate students, postdoctoral fellows, and faculty candidates are encouraged to stop by. Informational brochures and souvenirs are also available.

Don't miss the 2013 BMES Annual Meeting in Seattle!
Mark your calendar now to attend—September 25-28, 2013!

BOOTH # 501

Valtronic

6168 Cochran Rd.
Solon, OH 44139
Phone: 440-349-1239 x18
Email: inquireusa@valtronic.com
Web: www.valtronic.com

Valtronic is a full service global provider of engineering, design & development and manufacturing services for the medical device, aerospace and alternative energy markets. With facilities on four continents our solutions range from micro-electronics to complete box builds. Our technology has applications for monitoring, sensing, physical restoration, stimulation, and imaging. Medical markets we serve include Active Implants, Medical Equipment and Diagnostic Imaging. Valtronic serves customers who demand the highest quality and reliability. ISO 13485:2003 certified.

BOOTH # 405

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

5824 Stevenson Center
VU Station 35-1631
Nashville, TN 37235
Phone: 615-322-3521
Email: bme-grad@vanderbilt.edu
Web: http://engineering.vanderbilt.edu/BiomedicalEngineering.aspx

VU BME bridges Vanderbilt's engineering, basic science departments, and its renowned medical center; an ideal location for engineering research at the interface of technology and medicine. Research strengths include image-based technologies, nanobiotechnology, biophotonics, modeling, biomaterials, bioregenerative engineering, bioMEMs. VU BME stimulates high impact research and provides unique educational opportunities.

BOOTHS # 101 / 103 / 105

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

VT-WFU SBES:
319 ICTAS, Stanger Street MC0298
Blacksburg, VA 24061
Phone: 540-231-8191
E-mail: headbiomed@vt.edu
Web: www.sbes.vt.edu

The Virginia Tech – Wake Forest University, School for Biomedical Engineering and Sciences offers MS, PhD, MD/PhD, and DVM/PhD degrees. We have 76 biomedical engineering faculty with active research programs in tissue engineering, imaging, biomechanics, medical physics, nano-medicine, neuroengineering, translational oncology, cardiovascular engineering, and other emerging fields.

BOOTH # 601

Washington University in St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

One Brookings Drive, Box 1097
St. Louis, MO 63130
Phone: 314-935-6164
Email: bme@seas.wustl.edu
Web: http://bme.wustl.edu/

In partnership with our world-class medical school, our department emphasizes interdisciplinary training from top-notch faculty. Our main research areas are biomaterials and tissue engineering; cardiovascular engineering; imaging; molecular, cell and systems engineering; and neural engineering. Our department has more than 75,000 sq. ft. of state-of-the-art facilities. We offer BS, MS, MS/MBA, PhD and MD/PhD degrees.

BOOTH # 109

Wayne State University

BIOMEDICAL ENGINEERING

818 W. Hancock
Detroit, MI 48201
Phone: 313-577-1345
Email: murthy@eng.wayne.edu
Web: www.bme.wayne.edu

The Biomedical Engineering Department at Wayne State University offers BS, MS, PhD and MD/PhD degrees. It is involved in some of the newest ground breaking research in the field. From the use of biomaterials to aid in the regeneration of nerves and the tailoring of these materials to optimize cellular response, to the use of advanced human modeling to study the biomechanics of impact injuries, and the study of sports related injuries and prevention of these injuries, Wayne State will play a major role in the development of new standards to better the quality of human life. Our past research has led to improvement in the standards of the automotive industry, better safer equipment for our soldiers, and a better understanding of injury biomechanics to help prevent and repair damage from these injuries.

BOOTH # 614

Whitaker International Institute of International Education (IIE)

809 United Nations Plaza
New York, NY 10017
Phone: 212-984-5442
Email: saltaf@iie.org
Web: www.whitaker.org

The Whitaker International Program, founded in 2005 provides funding to emerging U.S.-based leaders in biomedical engineering to conduct a study and/or research project, with the underlying objective of building international bridges. Grant projects – including research, coursework, public policy work – are intended to enhance both the recipient's career and the BME field. The goal of the Whitaker Program is to assist the development of professional leaders who are not only superb scientists, but who will advance the profession through an international outlook. The Whitaker Program has three sub-programs: Fellows and Scholars Program, Summer Program, and an Undergraduate Program. For more information, including program details, the online application and deadlines, visit: http://www.whitaker.org.

BOOTH # 816

Worcester Polytechnic Institute

100 Institute Road
Worcester, MA 01609
Phone: 508-831-5301
Email: grad@wpi.edu
Web: www.wpi.edu/admissions/graduate

A leader in science, engineering, and business, Worcester Polytechnic Institute anticipated some of the latest trends in higher education by nearly two generations. WPI's founding principle of balancing theory with practice underlies a project-based, experiential curriculum that prepares students to solve important problems through interdisciplinary study and applied research.

BOOTH # 404

World Precision Instruments, Inc.

175 Sarasota Center Blvd.
Sarasota, FL 34240
Phone: 941-371-1003
Email: perryp@wpiinc.com
Web: www.wpiinc.com

World Precision Instruments (WPI). Our Society meeting display will feature product for mechanical and stress-strain properties of cell and tissues. We'll feature the BioTester5000 - Biaxial tissue tester, U-Stretch - uniaxial tissue studies, Mechanoculture - study of cultured cells on flat, strainable silicone membranes, MicroSquisher - compressive properties and the Muscle Tester Platform for contraction study of intact muscle fibers.

BOOTH # 322

Yale University

MALONE ENGINEERING CENTER

55 Prospect Street
New Haven, CT 06511
Phone: 203-432-4262
Email: tarek.fahmy@yale.edu
Web: www.seas.yale.edu/bme

The booth will be staffed with graduate representatives and faculty from the department of Biomedical Engineering at Yale. The faculty and graduate representative will aim to describe the program to interested visitors and answer any questions regarding the program requirements and admissions process.Gendigendisci odio ommodip sundele struptatur?

GENERAL INFORMATION & PRESENTER INFORMATION

Meeting Location

Georgia World Congress Center
285 Andrew Young International Blvd., NW
Atlanta, Georgia 30313-1591
404-223-4000

Hyatt Regency Atlanta
265 Peachtree Street NE
Atlanta,Georgia,USA30303
404 577 1234

Registration

Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the BMES BASH at the Georgia Aquarium. BMES cancellation policy may be found on any registration form. Any applicable refunds will be issued post-meeting. Substitutions are permitted with written permission from the original registrant. Additional social event tickets including the Celebration of Minorities in BME Luncheon, Women in BMES Luncheon are separate and above BMES meeting registration.

On-Site Registration Hours

Wednesday, October 24	9:00am – 7:00pm
Thursday, October 25	7:00am – 6:00pm
Friday, October 26	7:00am – 6:00pm
Saturday, October 27	7:00am – 2:00pm

Exhibits

Exhibit Hall , Georgia World Congress Center

Exhibits are located in the Exhibit Hall on the first level of the Georgia World Congress Center. Exhibits will be open:

Thursday, October 25	9:30am – 5:00pm
Friday, October 26	9:30am – 5:00pm
Saturday, October 27	9:30am – 1:30pm

Shuttle Bus

Shuttle service will be provided between the Hyatt Regency Atlanta and the Georgia World Congress Center as follows:

Wednesday, October 24	7:00am - 8:000pm
Thursday, October 25	7:00am - 8:15pm
Friday, October 26	7:00am - 10:00pm
Saturday, October 27	7:00am - 4:30pm

Peak service will be 15 minutes with off-peak 30 minutes.
The convention center is a 15-20 minute walk from the hotel.

Poster Sessions

Exhibit Hall, Georgia World Congress Center Center

Posters are located in the Exhibit Hall on the first level of the Georgia World Congress Center. Posters are numbered with a card corresponding to the number assigned in the program. Authors should be present during Poster Sessions as indicated in the Scientific Program.

BMES Presenter Information

Platform Presentations

Each technical session room will be equipped with a PC-compatible computer with a USB port and PowerPoint along with an LCD projector, screen and a lectern with microphone.

During the half hour before your session begins, please upload your presentation onto the computer using a memory stick or flash drive. Because of the potential difficulty transferring some Mac files to PC format, we encourage you to avoid use of animation if there is a question about transferability.

Please do not try to connect your own laptop. Please note, it will not be possible to provide special equipment. Any additional equipment will need to be supported by the presenter. Although BMES has paid for WiFi throughout the convention center during the Annual Meeting, there will not be specific dedicated hard-wired internet access in the meeting rooms.

Sessions chairs should keep sessions on the listed schedule so that attendees can move back and forth among sessions. In most cases, presentations should be done in twelve minutes, allowing three minutes for questions and answers and transition to the next speaker.

Poster Presentations

Posters will be presented Thursday, Friday and Saturday. Posters for both the morning and afternoon sessions will be on display throughout the entire day and should be manned by the author during the time indicated in the Scientific Program, especially during the breaks between platform sessions. All posters will be in the Exhibit Hall on the first level of the Georgia World Congress Center. Posters are numbered with a card corresponding to the number assigned in the program.

Speaker Ready Room

Room A303

In the BMES Speaker Ready Room you will find cables, LCD projector and screen to practice your presentation. Please bring your own laptop.

Wednesday, October 24	10:00am – 5:00pm
Thursday, October 25	7:00am – 5:00pm
Friday, October 26	7:00am – 5:00pm
Saturday, October 27	7:00am – 2:30pm

Program Highlights

Don't Miss These Events

WEDNESDAY, October 24

Welcome Reception

5:30pm - 7:00pm

Georgia World Congress Center, Registration Hall A (off main atrium)

Light refreshments will be served. All registrants are invited to attend.

Welcome Reception sponsored by

THURSDAY, October 25

Celebration of Minorities in BME Luncheon*

12:00noon - 1:30pm

Georgia World Congress Center, Room A411

***additional registration and $25 ticket required**

This is the third year of this event sponsored by the BMES Diversity Committee to create a community and network within the Society fostering support and professional development of minorities in BMES at all levels. Everyone is invited to attend, as diversity only increases when all groups play a part.

This year's speaker is **Andrés J. García, Ph.D**., Principal Investigator for the Cellular and Biomaterials Laboratory at Georgia Institute of Technology, Director of the Interdisciplinary Bioengineering Program at Georgia Tech, Woodruff Professor in the George W. Woodruff School of Mechanical Engineering, Fellow of Biomaterials Science and Engineering, Clemson Award Recipient for Basic Research from the Society of Biomaterials, and recognized as a Top Latino educator by the Society of Hispanic Professional Engineers. Dr. Garcia also serves on the editorial board of leading biomaterial and regenerative medicine journals as well as National Institutes of Health and National Science Foundation review panels.This luncheon complements the Diversity Award lecture to be delivered on Saturday and the Women in BMES Networking Luncheon on Friday.

Celebration of Minorities in BME Luncheon Sponsored by

Refreshment Breaks

Please note that your meeting registration includes morning and afternoon refreshments breaks on Thursday, Friday and Saturday. All refreshment breaks will be in the Exhibit Hall.

Thursday morning refreshment break sponsored by

Kimberly-Clark

BMES Town Hall, Fellows Induction & Awards Ceremony

5:45pm – 7:15pm

Convention Center, Ballroom AB

Please join us for a dialogue with BMES President Richard Waugh and other leaders of the Society. The BMES Awards will also be presented. See page X for the award winners.

FRIDAY, October 26

Women in BMES Luncheon*

11:45am - 1:15pm

Georgia World Congress Center, Room A411

***additional registration and $25 ticket required**

Networking Tips from the Experts:
Why Do It and How To Do It Well

With **Natacha DePaola**, Dean of Illinois Institute of Technology and Jane Ammons Chair of of Industrial & Systems Engineering, and former Dean of Faculty Affairs at Georgia Tech

Networking events for women in BMES create a community within the Society fostering support and professional development, while offering opportunities to nourish old ties and forge new relationships. Women in BMES activities have made a visible impact at the meeting, creating a forum for exchange across disciplines, between industry and academia, and between senior leaders in the field and junior faculty, trainees, and students.

Woman in BMES Luncheon Sponsored by

Virginia Tech Wake Forest University

FRIDAY, October 26

BMES Bash at Georgia Aquarium

7:00pm - 10:00pm

225 Baker Street NW

Atlanta, GA 30313

All full and guest registrations receive a ticket for the event including food and one drink ticket. A cash bar will be available. Additional tickets may be purchased for $100 each.

CAREER AND PROFESSIONAL DEVELOPMENT SESSIONS

The career and professional development sessions offer career guidance for job seekers ranging from entry level to experienced professionals. The sessions will highlight both traditional and alternative careers available to BMEs.

Wednesday, October 24

**Pre-registration & pre-qualification required for these events*

Coulter College*

7:30am - 7:45pm

Georgia World Congress Center, Room A311 (Students) Room A312 (Faculty)

For the past seven years, the Wallace H. Coulter Foundation has offered Coulter College to its Early Career and Coulter Translational Research Award recipients. The program provided a multi-disciplinary exploration of topics to which those involved in translational research might not otherwise be exposed. Topics included patent law, regulatory strategy, reimbursement codes, working with technology transfer offices, follow-on funding sources, and more. The curriculum provides participants with the tools required to accelerate the translation of biomedical innovations to the market place to improve patient care.

In order to expand the experience, Coulter College is now being held in conjunction with the 2012 Biomedical Engineering Society Annual Meeting. Two programs will be offered simultaneously: one for students and one for faculty. The programs focus on evolving innovations from the lab into viable medical products. Participants will be guided through a highly dynamic process designed to help them better understand how innovations can meet clinical needs, while providing tools and approaches used to evolve good ideas into great innovations.

In a creative environment, participants will learn how to evaluate the best point of leverage within a given clinical need and understand how to evaluate possible solutions. By the end of the programs, participants will understand how to balance providing clinical benefits alongside a viable commercial model. Coulter College is supported through a grant funded by the Wallace H. Coulter Foundation.

Georgia Tech & Emory Campus Tour

For prospective applicants of Georgia Tech and Emory's BME graduate program

Wednesday, October 24th
Two 1.5 hour tours - 2pm & 5pm

Transportation provided

Sign-up is required at the time of registration

COACH - Negotiation 101 for Graduate Students and Postdoctoral Associates*

11:00am – 3:00pm

Georgia World Congress Center, Room A411

This workshop teaches the fundamentals of negotiation including identifying why negotiation is important, what issues are and aren't negotiable, the steps towards reaching a final agreement, tactics useful for difficult negotiations and identifying when to end the negotiation. The ability to negotiate effectively can play a key role in your career advancement, from determining time on shared equipment, to authorship on papers, to when a thesis will be completed. This workshop will help you reach these goals.

Thursday, October 25

NEW! Effective Interviewing

8:30am - 9:30am

Georgia World Congress Center, Room A412

Featuring Wanda Kiser, MBA, President and CEO of Elite Resume Writing, Inc.

Now that you're in the door, how well do you come across? The goal of an interview is to get you a job offer or at least another interview. This session will teach you interview techniques helping you create a positive professional impression and take-away tools to give you the self-confidence to create the right rapport.

NEW! Networking for Success

1:45pm - 2:45pm

Georgia World Congress Center, Room A412

Featuring Nadia Bilchik, President of Greater Impact Communications and host of CNN's "Weekend Morning Passport" with T.J. Holmes

Networking is an exchange of information, contact, referrals and goodwill. Networking can lead to new relationships, new opportunities and great accomplishments. This session will provide the training and tools to help you interact, establish and develop valuable relationships to propel your success.

NEW! Creating Effective Resumes
3:45pm - 5:00pm
Georgia World Congress Center, Room A411

Featuring Author Ellen Law

Having a well-crafted resume is an investment in your future and it is one of the most important documents you will ever have to present. In today's competitive job market, being qualified isn't enough. You need to stand out from your competition by creating a powerful and compelling resume that will lead to an interview.

NEW! Resume and Cover Letter Review/Critique Workshop
5:00pm - 6:45pm
Georgia World Congress Center, Room A411

Have your cover letter and/or resume reviewed and critiqued by career professionals and take away writing tips.

NEW! Career Alumni Panel
6:45pm - 7:45pm
Georgia World Congress Center, Room A411

BME alumni from all degree levels will share their career paths and experiences, and discuss the various types of careers available to BMEs.

Friday, October 26

Students Affairs & Chapter Development Session
8:00am – 9:00am
Georgia World Congress Center, Room A412

This workshop in intended to provide information in how to charter/renewal a student chapter, and educate participants about its benefits. The winning chapters will provide tips and examples of chapter Best Practices. At this session student members exchange ideas, and generate new ones, as well assist with setting goals for the upcoming year.

BMES Transitioning Students to Industry: Panel Discussion
9:15am – 10:15am
Georgia World Congress Center, Room A412

Presenters:

- **Michael Luedtke,** Sr. Clinical Research Associate at Codman, a Johnson & Johnson Company
- **Stephen Pittman,** Sr. Global Business Manager at Philips Home Healthcare Solutions;
- **Caitlin Weaver,** VT-WF University School of Biomedical Engineering and Sciences

The transition of students (BS, MS, & PhD) from academia to industry will be discussed in a panel format. Student and industry participants will explore strategies for bridging the "gaps" in skills identified when transitioning from academic training to industry employment.

Student Leadership Session: "Aiming for Excellence: The Hallmark of Leadership"
1:30pm – 2:30pm
Georgia World Congress Center, Room A412

Presented by Howard G. Adams, PhD

Aiming for excellence is designed to be an informative and motivational session. Participants will explore the language, philosophy, and critical strategies applicable to excelling as a leader. Participants will be guided through a process examining leadership in the context of excellence and is framed around achievement visioning, tasking, and guiding individual responsibility. This session explores these key topics:

1. A Framework for Understanding Leadership Principles Establishing.
2. Mind-set for Excelling as a Leader.
3. Meeting the Challenge of Preparing to Lead.
4. The Attributes Audit as a Leadership Tool.
5. Distinguishing Between "Leadership" and "Position-ship."
6. Taking Charge of One's Own Leadership Destiny.

Career Fair
1:00pm – 5:00pm
Georgia World Congress Center, Exhibit Hall A2

Employers and candidates come together at the Biomedical Engineering Society (BMES) Career Fair. This event is designed to connect organizations looking to hire high-level people with candidates bringing specialized knowledge and innovation to new product and process development, teaching/training, scientific research, critical resource management, and more.

Mastering the Transition Process as a Graduate Student
2:45pm – 4:15pm
Georgia World Congress Center, Room A412

Presented by Howard G. Adams, PhD

This session will explore:

a. Making the Transition to Graduate School.
b. Identifying and Establishing Plans to Meet Program Requirements and Expectations.
c Becoming a Legitimate Department Student.
d. Developing a Success Routine.
e. Surviving, Thriving, Excelling, and Graduating

One-on-One Career Counseling
BMES will provide complimentary one-on-one career counseling and resume critique to BMEs members in the BMES booth:

Career Counseling Scheduling:
Thursday, October 25, 9:30am—3pm
and at the Career Fair on
Friday, October 26, 1pm—5pm.
Space is limited and sign-up is required

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

Thursday, October 25
1:30pm - 3:30pm
Georgia World Congress Center, Room A409

The Whitaker International Program, founded in 2005, provides funding to emerging U.S.-based leaders in biomedical engineering to conduct a study and/or research project, with the underlying objective of building international bridges. Grant projects—including research, coursework, public policy work—are intended to enhance both the recipient's career and the BME field. The goal of the Whitaker Program is to assist the development of professional leaders who are not only superb scientists, but who will advance the profession through an international outlook. The Whitaker Program has three sub-programs: Fellows and Scholars Program, Summer Program, and an Undergraduate Program. For more information, including program details, the online application and deadlines, visit: http://www.whitaker.org.

1. **Michael Morley**
   Whitaker International Fellow, 2008-09
   Host Institution: Universidad Los Andes, Colombia
   Title: Empowering Carpenter Amputees Through Low-Cost, Robust Prosthetic Tools
2. **Moriel Vandsburger**
   Whitaker International Scholar, 2010-11
   Host Institution: Weizmann Institute of Sciences, Israel
   Title: In vivo measurement of the cell fraction of fibroblasts recruited to a solid tumor using ferritin over-expression as an MRI reporter gene.
3. **Jorge Almodovar**
   Whitaker International Scholar, 2011-12
   Host Institution: Institut Polytechnique de Grenoble, France.
   Title: Engineering of Polysaccharide Nanoassemblies to Guide Cell Fate, from Adhesion to Differentiation
4. **John Ballew**
   Whitaker International Fellow, 2010-11
   Host Institution: KTH Royal Institute of Technology, Sweden
   Title: Autoimmune Disease-Specific Epstein-Barr Nuclear Antigen I Epitopes Revealed By Bacterial Cell Surface Display
5. **Brandon Markway**
   Whitaker International Fellow, 2008-2009
   Host Institution: University of Queensland, Australia
   Title: Enhanced Chondrogenesis of Mesenchymal Stem Cells in Low Oxygen Micropellets

Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Convention

Thursday, October 25
9:30 - 10:30am
Georgia World Congress Center, Room A310

Session Chair: Anthony McGoron, PhD and Dominic Nathan, PhD

At this annual grand meeting, members representing chapters nationwide will come together to discuss important contemporary events relating to AEMB. This year we will be holding national elections. (Attendance is mandatory for all AEMB members).

Alpha Eta Mu Beta Annual Banquet

Thursday, October 25
12:00pm - 2:00pm
McCormick & Schmick's Restaurant

Session Chairs: Alicia Fernandez-Fernandez, DPT, MS, Stephanie Naufel, MS, Stefanie Gonzalez, BS and Dominic Nathan, PhD

The Annual AEMB banquet will be held at McCormick & Schmicks Seafood Restaurant (190 Marietta Street, Atlanta, GA 30303). We are delighted to have Daniel Reneau PhD, president of Louisiana Tech and founder of AEMB as our distinguished banquet key note speaker. This session is open to all AEMB student and faculty members.

For tickets, please contact aemb@alphaetamubeta.org.

Is My Mind Mine? Neuroscience, Privacy, and the Self *(AEMB Sponsored Ethics Session)*

Friday, October 26
9:30-10:30am
Georgia World Congress Center, Room A310

Session Chairs: Paul R. Wolpe, Ph.D. and Dominic E. Nathan, Ph.D. .

For the first time in human history, we are developing the ability to apprehend information directly from the brain. Brain imaging and allied technologies now allow scientists a glimpse into the subjective thoughts and inner dialogues that have always been private and inaccessible to others. By doing so, they are forever changing the very idea of privacy, raising thorny questions about who should have access to our innermost thoughts. In this talk, we explore the implications of brain imaging not only for personal privacy, but also for legal questions such as Fifth Amendment protections.

Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, is committed to promoting ethics in the field of biomedical engineering. This year, AEMB is honored to host Dr. Paul Root Wolpe, Director of the Center of Ethics and a professor in the Departments of Medicine, Pediatrics, Psychiatry and Sociology at Emory University. Dr. Wolpe is also the Asa Griggs Candler Professor of Bioethics and the Raymond F. Schinazi Distinguished Research Chair in Jewish Bioethics. Dr. Wolpe serves as the Editor-in-Chief

of the *American Journal of Bioethics Neuroscience* and is the first Senior Bioethicist for NASA, where he is responsible for formulating policy on bioethical issues and safeguarding research subjects. An accomplished professional in the field, Dr. Wolpe has over 125 articles, editorials and book chapters in sociology, medicine and bioethics and has appeared on numerous broadcasts and printed media, both nationally and internationally.

Student Session: How Recent Legislation and Presidential Decisions Affect You

(Co-sponsored by AEMB and AIMBE)

Friday, October 26

1:00pm - 2:00pm

Georgia World Congress Center, Room A310

Session Co-Chairs: Teresa Murray, Ph.D. and Sean Gallagher, M.S.

How will recent legislation by the US Congress and decisions by the President impact the biomedical engineering field? How could this affect public health? Moreover, how can you influence policy-making? Find the answers at this informative session co-hosted by Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, and the American Institute for Medical and Biological Engineering (AIMBE).

AIMBE is the leading voice for public policy supporting medical and biological engineering innovation to improve public health. During this session, we will demonstrate how advocacy for the profession and the field can have important personal impact and ensure public policy continues to support our work. Furthermore, you will learn about the different types of government funding, how levels have changed, what impact that will have on our field and what you can do to influence policy-makers.

AIMBE represents the top 2% of medical and biological engineers in the field, biomedical and bioengineering university programs through the US, industry and 18 professional societies. We play a critical role in advancing public policy for medical and biological engineering by meeting regularly with key administration officials, Congress, and monitoring trends in public policy that may impact the field. In total we reach nearly 50,000 individuals who are leading the way towards improved medical and biological engineering interventions for human health and well-being.

AEMB members represent the top BME students across the US. Starting in 2006, we have sponsored the Student Ethics Session training future BMEs to evaluate the broader impacts of emerging biomedical innovations. We initiated the first student public policy session at BMES with our co-sponsor, AIMBE and this has successfully been established as an annual event.

This session is open to all participants of the conference.

Congratulations
2012 Coulter Fellows

For successfully completing the requirements of the

Coulter Translational Research Award

- **Corey Berkland**

  University of Kansas

  Drug Nanoparticle Powders in Pulmonary Medicine

- **Rafael Davalos**

  Virginia Polytechnic Institute and State University

  Irreversible Electroporation Devices to Treat Cancer

- **Andre Gobin**

  University of Louisville

  Chitosan Modified NIR Particles for Treating Esophageal Cancer

- **Karl Griswold**
  Dartmouth College
  Genetically Engineered Lysozyme for Treatment of Pulmonary Infections

- **Dean Ho**
  University of California at Los Angeles
  Nanodiamond-Based Chemotherapeutic Drug Delivery

- **Glenn Walker**
  North Carolina State University
  An Adjustable Stiffness Catheter

2012 Awards Recipients

One of the more important — and most enjoyable — tasks of the Society is to recognize contributions to the intellectual and professional development of the field of biomedical engineering. On behalf of the awards committee we would like to thank all the members who submitted nominations and provided letters of support and for the high quality of their nominees. Congratulations to the following award winners.

Robert A. Pritkzer Distinguished Award Lecture

Ajit Prithivira Yoganathan, PhD
Georgia Institute of Technology

NIBIB Lecture

Sangeeta Bhatia, PhD
Massachusetts Institute of Technology

Rita Schaffer Young Investigator Award Lecture

Christian Metallo, PhD
University of California, San Diego

Diversity Award Lecture

William M. Reichert, PhD
Duke University

Distinguished Services

George A. Truskey, PhD
Duke University

Annals of Biomedical Engineering (ABME) Awards

Most Impact Award:

Steven Rowson and Stefan Duma for:
Development of the STAR evaluation system for football helmets: integrating player head impact exposure and risk of concussion.
Ann Biomed Eng. 2011 Aug;39(8):2130-40. Epub 2011 May 7.

Most Cited Review Article:

Tingrui Pan T and Wei Wang for:
From cleanroom to desktop: emerging micro-nanofabrication technology for biomedical applications.
Ann Biomed Eng. 2011 Feb;39(2):600-20. Epub 2010 Dec 14.

NIBIB DEBUT Award Winners

Diagnostic Devices/Methods:

Armin Arshi, David Kuo, Robert Lee, Elizabeth Ng, and Andrew Tan
University of California Los Angeles

Therapeutic Devices/Methods:

Anvesh Annadanam, Luis Herrera, Haley Huang, Leslie Myint, Daniel Peng, Andyg Tu, Stephen Van Kooten, Sohail Zahid
Johns Hopkins University

Technology to Aid Underserved Populations and Individuals with Disabilities:

Andrew Brimer, Abigail Cohen, Olga Neyman, Charles Yong-Chao Wu, Braden Eliason
Washington University in St. Louis

BMES Extended Abstract: Design and Research Awards:

Graduate Student

Noah Johnson
University of Pittsburgh

Shann S Yu
Vanderbilt University

Eric Chris Greenwald
University of Virginia

Yue Geng
Cornell University

Adrienne Li
Massachusetts Institute of Technology

Ya-Jian Cheng
Washington University at St. Louis

Ami Meda Kabadi
Duke University

Nisarg J. Shah
Massachusetts Institute of Technology

Undergraduate Students

Deng Pan
Johns Hopkins University

Hyun Sung Park
Johns Hopkins University

Nathaniel Price
University of Florida

Vihitaben Sureshbhai Patel
Stony Brook University

Medtronic

Medtronic's Excellence in Modeling Award (MEMA)

Ji Wang
Columbia University

Accurate and Fast Strength Predictions of Patient-Specific HR-pQCT-Based Plate-Rod Models Distinguish Vertebral Fractures
OP - Sat - 3 - 11, page 198

Medtronic's Excellence in Biomaterials Award (MEBA)

Christopher E. Nelson
Vanderbilt University

Injectable Tissue Engineering Scaffolds that Mediate Efficient Gene Silencing *In Vivo*
OP - Thurs - 2 - 1, page 86

BMES Student Chapter Awards

2012 Meritorious Achievement Awards

BMES Student Chapter at San Jose State University

2012 Commendable Achievement Awards

BMES Student Chapter at University of California at Davis

2012 Outreach Program Awards

BMES Student Chapter at Purdue University

2011 Fleetest Feet Award

BMES Student Chapter - Virginia Tech/Wake Forest

Additional Meetings

Wednesday, October 24

BMES Board of Directors Meeting
9:00am – 4:30pm
Georgia World Congress Center, Room A309
Organizer: Richard Waugh

AIMBE Board of Directors Meeting
12:00noon - 4:00pm
Georgia World Congress Center, Room A304
Organizer: Katie Goodman

Annals of Biomedical Engineering - Editorial Board
7:00pm - 10:00pm
Hyatt Regency Atlanta, Heritage Room
Organizer: Michael Weston

Thursday, October 25

BMES National Meetings Committee Meeting
8:00am - 10:00am
Georgia World Congress Center, A309
Organizer: David Vorp

BMES Education Committee Meeting
12noon - 1:30pm
Georgia World Congress Center, Room A309
Organizer: Michele Surricchio

Friday, October 26

2013 BMES Annual Meeting Committee Meeting
8:00am - 10:00am
Georgia World Congress Center, Room A309
Organizer: William Wagner

Cardiovascular Engineering and Technology - Editorial Board
11:45am – 1:30pm
Georgia World Congress Center, Room A306
Organizer: Michael Weston

AIMBE Academic Council Meeting
1:30pm - 3:30pm
Georgia World Congress Center, Room A409
Organizer: Katie Goodman

BMES International Affairs Committee Meeting
3:00pm - 4:00pm
Georgia World Congress Center, Room A306
Organizer: Philip Leduc

BMES Diversity Committee Meeting
3:45pm - 4:45pm
Georgia World Congress Center, Room A309
Organizer: Christine Schmidt

Saturday, October 27

2013-2014 BMES Orientation & Board of Directors Meeting
10:00am - 2:30pm
Georgia World Congress Center, Room A309
Organizer: Gilda Barabino

BMES Student Affairs Committee Meeting
Noon - 1:30pm
Georgia World Congress Center, Room A306
Organizer: Regina Borkoski

Hosted Receptions

(by invitation only)

Hyatt Regency Atlanta

Thursday, October 25

Individual organizations have set their own times for their private receptions. Please consult your invitation for the specific time. Generally receptions are from 8-9:30pm.

Biomedical Engineering Opportunities in India
Fairlie Room

Boston University
Embassy E

Case Western Reserve University
Grand Hall West

Cornell University
International North

Georgia Tech & Emory University
International South

Johns Hopkins University
Woodruff Suite

Marquette University
Executive Conference 222

Rensselaer Polytechnic Institute
Embassy D

Rice University
Courtland Room

The University of Alabama at Birmingham
Dunwoody Room

University of California, Berkeley
Spring Room

University of California, Irvine
Executive Conference 226

University of California, Los Angeles
Baker Room

University of California San Diego
Regency V

University of Florida
Regency VI

University of Pennsylvania
Techwood Room

University of Pittsburgh
Roswell Room

University of Rochester
Embassy C

University of Southern California
University Room

University of Texas Austin
Grand Hall East CD

University of Virginia
Grand Hall East AB

University of Washington
Embassy F

Vanderbilt University
Piedmont Room

Virginia Tech - Wake Forest
Embassy AB

Whitaker International Program Alumni and Grantees
Executive Conference 223

2012 TRACK CHAIRS

Bioinformatics and Systems Biology

Melissa Kemp
Georgia Institute of Technology

Andre Levchenko
Johns Hopkins University

Biomaterials

Pat Stayton
University of Washington

Joel Collier
University of Chicago

Biomedical Engineering Education

Ann Saterbak
Rice University

Wendy Newstetter
Georgia Institute of Technology

Biomedical Imaging & Optics

Peter So
Massachusetts Institute of Technology

Kristen Maitland
Texas A&M University

Cancer Technology

Mehmet Toner
Harvard University

Cynthia Reinhart-King
Cornell University

Cardiovascular and Respiratory Engineering

Jim Moore
Texas A&M University

Tzung K. Hsiai
University of Southern California

Cellular and Molecular Bioengineering

Scott Diamond
University of Pennsylvania

Wilbur Lam
Emory University

Nano to Micro Technologies

Shu Takayama
University of Michigan

Warren Chan
University of Toronto

Neural Engineering

David Meaney
University of Pennsylvania

Garrett Stanley
Georgia Institute of Technology

New Frontiers and Special Topics

Roger Kamm
Massachusetts Institute of Technology

Darrell Irvine
Massachusetts Institute of Technology

Alan Jasanoff
Massachusetts Institute of Technology

Ron Weiss
Massachusetts Institute of Technology

Orthopedic and Rehabilitation Engineering

Barbara Boyan
Georgia Institute of Technology

Milos R. Popovic
University of Toronto

Stem Cell Engineering

Peter Zandstra
University of Toronto

Todd McDevitt
Georgia Institute of Technology

Tissue Engineering

Gordana Vunjak – Novakovic
Columbia University

Ed Botchwey
Georgia Institute of Technology

Translational Biomedical Engineering

Donald Peterson
University of Connecticut

Larry McIntire
Georgia Institute of Technology

Undergraduate Research (REU)

Marsha Rolle
Worcester Polytechnic Institute

Melissa Micou
University of California, San Diego

Meet the Faculty Candidate

Mariah Hahn
Rensselaer Polytechnic Institute

Organizing Committee

Annual Meeting Chair

Hanjoong Jo
Emory University

Technical Program Chair

Julia Babensee
Georgia Institute of Technology

Fundraising

Larry McIntire
Georgia Institute of Technology

Robert Nerem
Georgia Institute of Technology

Ajit Yoganathan
Georgia Institute of Technology

David Stern
Georgia Bio

Technical Program Academic, Industry, Translation

Gang Bao
Georgia Institute of Technology

Xioping Hu
Georgia Institute of Technology

Ajit Yoganathan
Georgia Institute of Technology

John Edwards
Apeliotus Technologies

David Stern
Georgia Bio

Robert Taylor
Emory University)

Local Arrangements

Johnna Temenoff
Georgia Institute of Technology

Tom Barker
Georgia Institute of Technology

Publicity

Gilda Barabino
Georgia Institute of Technology

Manu Platt
Georgia Institute of Technology

Student Program

Mike Davis
Emory University and BMED student leadership

ABSTRACT REVIEWERS

Thank you to our reviewers for their time and effort:

Bioinformatics and Systems Biology
Orly Alter
Gabor Balazsi
Oleg Igoshin
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Laxminarayanan Krishnan
Feilim Mac Gabhann
Brian Munsky
Ilya Nemenman
Manu Platt
Amina Qutub
Ann Rundell
Jeffrey Saucerman
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Eberhard Voit

Biomaterials
Eben Alsberg
Randy Ashton
Debra Auguste
Thomas Barker
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Harry Bermudez
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Talar Tokatlian
Lianfang Zhang

Biomedical Engineering Education
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Jenny Amos
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Essy Behravesh
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Robert Linsenmeier
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Maria Oden
Marcia Pool
Renata Ramos
Samhita Rhodes
Charles Roth
Ann Rundell
Ann Saterbak
Natalia Toporikova
Joseph Tranquillo
Conrad Zapanta

Biomedical Imaging and Optics
Bahman Anvari
Jennifer Barton
Lissett Bickford
Shelton Caruthers
Paul Dayton
Stanislav Emelianov
Sergio Fantini
Richard Gilbert
Samuel Grant
Arum Han
Nastaran Hashemi
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Tomasz Tkaczyk
James Tunnell
Urs Utzinger
Steven Wright
Jingyong Ye

Cancer Technology
Saumendra Bajpai
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Pamela Kreeger
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David Mooney
Shelly Peyton
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C. Shad Thaxton
Susan Thomas
Jennifer West

Cardiovascular and Respiratory Engineering
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Lisong Ai
Rita Alevriadou
Said Audi
Kristen Billiar
Konstantin Birukov
Danny Bluestein
Jeffrey Borenstein
Bindi Brook
Nenad Bursac
Stuart Campbell
Juan Cebral
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Naomi Chesler
Daniel Conway
Guohao Dai
Scott Diamond
J. Brandon Dixon
Eno Ebong
Yun Fang
Ender Finol
John Frangos
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Matthew Kay
MIchael Khoo
MIchael King
Clement Kleinstreuer

K Konstantopoulos
Jun Liao
Angie Louie
Susan Marguiles
Alison Marsden
James Moore
Walter Murfee
Sriram Neelamegham
Anthony Passerini
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Anne Robertson
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Fei Yu

Cellular and Molecular Bioengineering

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Hao Cheng
Scott Diamond
Omolola Eniola-Adefeso
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Brenton Hoffman
Elliot Hui
Julie Ji
Sanjay Kumar
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Allen Liu
Kathryn Miller-Jensen
Manu Platt
Arjun Raj
Bala Rao
Cynthia Reinhart-King
Philip Santangelo
Michael Smith
Todd Sulchek
Soichiro Yamada

Nano and Micro Technologies

John Bischof
Dino Di Carlo
Cerasela Zoica Dinu
Craig Duvall
Anthony Guiseppi-Elie
Efstathios Karathanasis
Hang Lu
Padma Rajagopalan
Alexander Revzin
Craig Simmons
Shuichi Takayama
Andrew Tsourkas

Neural Engineering

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Brian Chow
Stacie Chvatal
Kelly Clause
Nate Crosby
D. Kacy Cullen
Gwen Effgen
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Wenju Pan
Tapan Patel
Garrett Stanley
Ann Vanleer
Joost Wagenaar
Qi Wang
John Wolf
Drausin Wulsin
He Zheng

New Frontiers and Special Topics

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Rashid Bashir
Calin Belta
Lance Davidson
Junsang Doh
Patrick Guye
Darrell Irvine
Alan Jasanoff
Ning (Jenny) Jiang
Roger Kamm
Benjamin Keselowsky
Victor Lelyveld
Steven Little
Deepak Mishra
Kristala Prather
Tharathorn Rimchala
Taher Saif
Adrian Slusarczyk
Ron Weiss
Jameel Zayed

Orthopedic and Rehabilitation Engineering

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Tim Bryant
Alejandro Espinoza Orias
John Fisher
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Laxminarayanan Krishnan
Cheryl Lynch
Silvestro Micera
Marko Munih
Mary Nagai
Andrew Nunn
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Soheyl Pourmehdi
Richard Preuss
Francois Roy
Lori Setton
Thomas Stieglitz
Ariel Tankus
Adam Thrasher
Gangadhar Utturkar
Stephen Waldman
Yun Wang
Paul Yoo
Karl Zabjek

Stem Cell Engineering

Taby Ahsan
Eben Alsberg
Julie Audet
Nolan Boyd
Andres Bratt-Leal
Richard Carpenedo
Karen Christman
Michelle Dawson
Adam Engler
John Fisher
Krista Fridley
Brendan Harley
Jeff Karp
Matthias Lutolf
Robert Mauck
Kara McCloskey
Todd McDevitt
Rekha Nair
Barbara Nsiah
Sean Palecek
Bala Rao
Krish Roy
Shelly Sakiyama-Elbert
David Schaffer
Katja Schenke-Layland
Ankur Singh
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Laura Suggs
Johnna Temenoff
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Tissue Engineering

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Translational Biomedical Engineering

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Larry McIntire
Donald Peterson
Kristina Rinker

Undergraduate Research

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Shivaun Archer
Kristen Billiar
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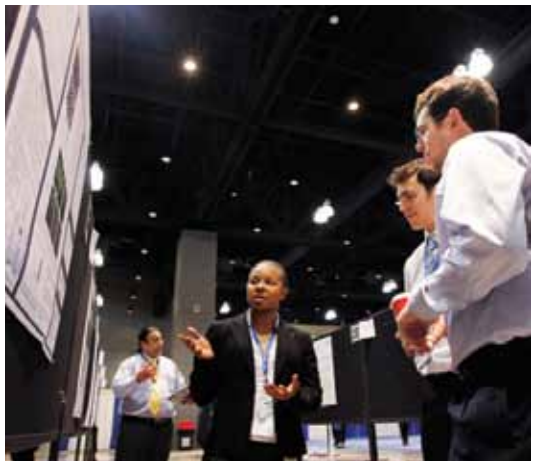
PROGRAM




BMES

THURSDAY, OCTOBER 25

TODAY'S HIGHLIGHTS

PLATFORM SESSIONS Thurs-1 8:00am - 9:30am
See pages 49-55, GWCC

Effective Interviewing 8:30am - 9:30am
GWCC, A412

EXHIBIT HALL OPEN 9:30am - 5:00pm
GWCC, Exhibit Hall A2

POSTER SESSION Thurs A 9:30am - 1:00pm
GWCC, Exhibit Hall A2

Poster Viewing with Authors & Refreshment Break 9:30am - 10:30am

PLENARY SESSION
10:30am - noon
GWCC, Sidney Marcus Auditorium
Robert A. Pritzker Distinguished Lecture
FROM BENCH TO BEDSIDE — A JOURNEY THROUGH TRANSLATIONAL RESEARCH
Ajit P. Yoganathan, PhD
Georgia Institute of Technology

Celebration of Minorities in BME Luncheon 12:15pm - 1:15pm
Additional ticket purchase required
GWCC, A411

PLATFORM SESSIONS Thurs-2 1:30pm - 3:00pm
See pages 86-92, GWCC

POSTER SESSION Thurs B 1:30pm - 5:00pm
GWCC, Exhibit Hall A2

Networking for Success 1:45pm - 2:45pm
GWCC, A412

Poster Viewing with Authors & Refreshment Break 3:00pm - 4:00pm

RESUME WORKSHOP 3:45pm - 6:45pm
GWCC, A411

PLATFORM SESSIONS Thurs-3 4:00pm - 5:30pm
See pages 93-99, GWCC

CAREER ALUMNI PANEL 6:45pm - 7:45pm
GWCC, A411

BMES Town Hall & Award Ceremony 5:45pm - 7:15pm
GWCC, Sidney Marcus Auditiorium

Hosted Receptions
Invitation only

Thursday, October 25, 2012

8:00AM - 9:30AM
PLATFORM SESSION –THURS – 1

Track: Biomaterials
OP - Thurs-1-1 - Room A311
Bioinspired Materials

Chairs: Hyunjoon Kong, Bruce Lee

8:00AM
Biomimetic Design of Lubricin-like Polymers for Joint Lubrication
M. Tan[1], K. J. Samaroo[1], R. Andresen-Eguiluz[1], A. Barrett[1], P. Petersen[1], D. Gourdon[1], L. Bonassar[1], and D. Putnam[1]
[1]Cornell University, Ithaca, NY

8:15AM
A Biomimetic Nanomatrix Gel for Improving Islet Function and Viability
D-J. Lim[1], P. T. Hwang[1], S. M. Rahman[1], W. Cui[1], J. A. Corbett[2], and H-W. Jun[1,3]
[1]U of Alabama at Birmingham, Birmingham, AL, [2]Medical College of Wisconsin, Milwaukee, WI, [3]Comprehensive Diabetes Center, U of Alabama at Birmingham, Birmingham, AL

8:30AM
Design of a Bioinspired Composite Reinforced by Cellulose Nanofibers as a Potential Scaffold in Cardiovascular Tissue Engineering
P. Pooyan[1], R. Tannenbaum[2], and H. Garmestani[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Boston University, Boston, MA

8:45AM
Layer-by-Layer Assembly of Calcium Phosphate-Nanofiber Templates
O. Karaman[1] and E. Jabbari[1]
[1]University of South Carolina, Columbia, SC

9:00AM
Contact Dynamics of Marine Mussel-Inspired Polydopamine Thin Films
F. Yang[1], Y. Han[1], W. Zhang[1], and B. Zhao[1]
[1]University of Waterloo, Waterloo, ON, Canada

9:15AM
Biomimetic End-Capped Polylactide (PLA) Scaffolds Influence Osteoblast Cell Differentiation *In Vitro*
C. T. Gomillion[1], R. K. Lakhman[2], R. M. Kasi[2], R. A. Weiss[3], L. T. Kuhn[1], and A. J. Goldberg[1]
[1]Department of Reconstructive Sciences, University of Connecticut Health Center, Farmington, CT, [2]Institute of Materials Sciences, University of Connecticut, Storrs, CT, [3]Polymer Engineering, University of Akron, Akron, OH

Track: New Frontiers and Special Topics
OP - Thurs - 1 – 2 - Room A312
Engineering Immunology and Immunotherapy I

Chairs: Darrell Irvine, Junsang Doh

8:00AM
Overview Sub-Track Talk: Immunobioengineering: An Emerging Fusion of Engineering with Molecular and Cellular Immunology
D. J. Irvine[1,2]
[1]MIT, Cambridge, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD

8:30AM
Molecular Characterization of the Foreign Body Response
T. Kyriakides[1]
[1]Yale University, New Haven, CT

9:00AM
Altering Levels of the Pro- and Anti- inflammatory Mediators TNF and IL-10 During TB Using an *In Silico* Approach
N. A. Cilfone[1], D. E. Kirschner[1], and J. J. Linderman[1]
[1]*University of Michigan, Ann Arbor, MI*

9:15AM
Targeting the Tumor-draining Lymph Node with Adjuvant Nanoparticles for Cancer Immunotherapy
S. N. Thomas[1], M. A. Swartz[2], and J. A. Hubbell[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

Track: Nano and Micro Technologies
OP - Thurs - 1 – 3 - Room A410
Micro & Nano Fluidic Technologies I

Chairs: Daniel Fletcher, Hang Lu

8:00AM INVITED
Get Out of the Lab: Expanding Applications of Micro and Nano Fluidics
D. A. Fletcher[1]
[1]*UC Berkeley, Berkeley, CA*

8:30AM
On-chip Erythrocyte Deformability Measurement and *In Vivo* Splenic Retention in Malaria Pathology
S. Huang[1], A. Amaladoss[2], M. Liu[2], H. Chen[3], M. Dao[1,2], and J. Han[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Singapore-MIT Alliance for Research and Technology, Singapore, Singapore,* [3]*Harvard School of Public Health, Boston, MA*

8:45AM
Microfluidic Probed Isoelectric Focusing Allows Targeted Posttranslational Modification Analysis
S. Q. Tia [1], A. J. Hughes[1], K. Brown[1], D. Chen[1], and A. E. Herr[1]
[1]*University of California, Berkeley, CA*

9:00AM
Microfluidic High-throughput Platform for Determining Enzyme Kinetics
K. H. Bhatt[1], J. M. Rosano[1], C. Garson[1], I. Mills[1], J. W. Hong[2], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*Auburn University, Auburn, AL*

9:15AM
Microfluidics for High Through-put Study of Stem Cell Mechanobiology
J. Zhou[1] and L. Niklason[1,2]
[1]*Yale School of Medicine, New Haven, CT,* [2]*Yale University, New Haven, CT*

Track: Nano and Micro Technologies
OP - Thurs - 1 – 4 - Room A314
Micro and Nano Technology Based Diagnostics I

Chairs: Dino Di Carlo, Paul Yager

8:00AM INVITED
Medical Diagnostics: Nano to Microdevices
D. Di Carlo[1]
[1]*UCLA, Los Angeles, CA*

8:15AM INVITED
Enabling Sensitive Paper-based Immunoassays and Nucleic Acid Tests
P. Yager[1], E. S. Fu[1], and B. R. Lutz[1]
[1]*Department of Bioengineering, University of Washington, Seattle, WA*

8:45AM
Ultrasensitive Clinical Enumeration of Rare Cells *Ex Vivo* Using a Microfabricated Hall Detector
D. Issadore[1], J. Chung[1], H. Shao[1], C. Castro[1], R. Weissleder[1], and H. Lee[1]
[1]*Massachusetts General Hospital, Boston, MA*

9:00AM
Application of a Novel Tablet PCR Platform for Detection of Influenza Subtypes
S. Angione[1], Z. Inde[1], C. Beck[1], S. Opal[2], A. Artenstein[2], and A. Tripathi[1]
[1]*Brown University, Providence, RI,* [2]*Memorial Hospital, Pawtucket, RI*

9:15AM
Objective Assessment of Long-Term Stability and Sensitivity of NHANES Physical Activity Monitors
R. J. Brychta[1], H. Sasai[1], J. J. McClain[2], R. P. Troiano[2], M. S. Eberhardt[3], C. R. Idelson[1], and K. Y. Chen[1]
[1]*NIDDK, NIH, Bethesda, MD,* [2]*NCI, NIH, Bethesda, MD,* [3]*NCHS, CDC, Hyattsville, MD*

Track: Biomaterials
OP - Thurs - 1 – 5 - Room A315
Targeting Strategies in Drug Delivery

Chairs: Craig Duvall, Daniel Hammer

8:00AM
Dual MMP-7-Proximity-Activated and Folate Targeted Nanoparticles for siRNA Delivery
H. Li[1], M. Miteva[2], T. D. Giorgio[2], M. J. Cheng[2], and C. L. Duvall[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University, Nahville, TN*

8:15AM
RAFT-based glycopolymers for *In Vitro* and *In Vivo* Cell Targeting
E-H. Song[1], M. J. Manganiello[1], Y-H. Chow[1], B. Ghosn[1], D. Hidano[1], A. J. Convertine[1], P. S. Stayton[1], L. M. Schnapp[1], and D. M. Ratner[1]
[1]*University of Washington, Seattle, WA*

8:30AM
Controlled Cellular Uptake by Multivalent Temperature-Triggered Presentation of Cell-Penetrating Peptides
S. MacEwan[1] and A. Chilkoti[1]
[1]*Duke University, Durham, NC*

8:45AM
Encryption of Adeno-associated Virus with Peptide Locks for Targeted Cancer Therapy
J. Judd[1] and J. Suh[1]
[1]*Rice University, Houston, TX*

9:00AM
Targeting Extracellular DNA to Deliver IGF-1 to the Injured Heart
R. Khan[1], J. C. Sy[1], M. Brown[1], M. D. Martinez[1], N. Murthy[2], and M. E. Davis[1]
[1]*Emory University, Atlanta, GA,* [2]*Georgia Tech, Atlanta, GA*

9:15AM
Development of "Bulky" Lipid Microbubbles for Improved Drug loading and Enhanced Ultrasound Triggered Drug Delivery
S. R. Sirsi[1], C. Fung[2], M. Y. Tianning[2], and M. A. Borden[1]
[1]*University of Colorado at Boulder, Boulder, CO,* [2]*Columbia University, New York City, NY*

P = Poster Session
OP = Oral Presentation

Track: Biomaterials
OP - Thurs - 1 – 6 - Room A316
Cell Protein Biomaterial Interfaces

Chairs: Thomas Barker, Hak-Jun Sung

8:00AM
Mechanism of Surface Activation of von Willebrand Factor
E. H. Tronic[1], O. Yakovenko[1], R. Penkala[1], D. G. Castner[1], and W. E. Thomas[1]
[1]*University of Washington, Seattle, WA*

8:15AM
Dual Patterning of Fluorescent Proteins onto Soft Hydrogels for Cellular Traction Force Microscopy
S. R. Polio[1], I. C. MacDonald[1], A. T. Weber[1], D. Stamenovic[1], and M. L. Smith[1]
[1]*Boston University, Boston, MA*

8:30AM
Hydrogel Microwell Arrays for Isolation, Culture, and Analysis of Rare Cells
D. E. Heath[1], C. Ng[1], P. T. Hammond[2], M. B. Chan[3], and L. G. Griffith[2]
[1]*Singapore-MIT Alliance for Research and Technology, Singapore, Singapore,* [2]*Massachuessets Institute of Technology, Cambridge, MA,* [3]*Nanyang Technological University, Singapore, Singapore*

8:45AM
Exploiting A Hydroxyapatite Binding Domain to Enhance Loading and Retention of an Osteogenic Peptide to Allograft Bone
B. K. Culpepper[1] and S. Bellis[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

9:00AM
Substrate-independent Antifouling Zwitterionic Polymer Brushes
J. Kuang[1] and P. Messersmith[1]
[1]*Northwestern University, Evanston, IL*

9:15AM
Helix Versus Coil Polypeptide Macromers: Gel Networks with Decoupled Stiffness and Permeability
A. Oelker[1], S. Morey[1], L. Griffith[1], and P. Hammond[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Cellular and Molecular Bioengineering
OP - Thurs - 1 – 7 - Room A301
Mechanotransduction I

Chairs: Julie Ji, Sanjay Kumar

8:00AM
Substrate Stiffness Alters Fibronectin Matrix Deposition
J. P. Califano[1], L. Yuan[1], J. Charest[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

8:15AM
Substrate Stress Relaxation Influences Cell Phenotype
O. Chaudhuri[1], N. Huebsch[2], D. Klumpers[1], X. Zhao[3], and D. Mooney[1]
[1]*Harvard University, Cambridge, MA,* [2]*UCSF, San Francisco, CA,* [3]*Duke University, Durham, NC*

8:30AM
Combined Effects of Hypoxia and Matrix Stiffness Regulate Brain Tumor Proangiogenic Signaling via Reactive Oxygen Species
D. W. Infanger[1], Y. Cho[1], E. M. Brooks[1], C. A. Reinhart-King[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

8:45AM
Using Active Microrheology to Map Matrix Mechanics in 3D
A. Kurup[1]
[1]*University of California, Irvine, Irvine, CA*

9:00AM
Cdc42 Mediates Contractility-independent Matrix Mechanical and Biochemical Signaling in Mesenchymal Stem Cell Osteogenic Differentiation
W. Chen[1], D. A. Romero[1], C. Amon[1], and C. A. Simmons[1]
[1]*University of Toronto, Toronto, ON, Canada*

9:15AM
Manipulation of Cytoskeletal Tension Using Cell-Derived, Biomimetic Patterning
J. H. Slater[1], J. C. Culver[2], M. E. Dickinson[2], and J. L. West[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

Track: Cellular and Molecular Bioengineering
OP - Thurs - 1 – 8 - Room A302
Cell Adhesion I

Chairs: Omolola Eniola-Adefeso, Brenton Hoffman

8:00AM
Overview Track Talk: Cellular and Molecular Bioengineering
S. Diamond[1], W. Lam[2]
[1]*University of Pennsylvania,* [2]*Emory University*

8:15AM
CD44-based Adhesion and Mechanotransductive Signaling on Engineered Hyaluronic Acid Matrices
Y. Kim[1,2], B. Ananthanarayanan[1], and S. Kumar[1,2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA*

8:30AM
JNK Regulates Rigidity-dependent Adherence Junction Formation of Epithelia
H. You[1], A. Ranganathan[1], and S. T. Andreadis[1]
[1]*University at Buffalo, The State University of New York, Amherst, NY*

8:45AM
Three to Tango: MUC1 as a Ligand for Both E-selectin and ICAM-1 in the Breast Cancer Metastatic Cascade
Y. Geng[1], K. Yeh[1], and M. R. King[1]
[1]*Cornell University, Ithaca, NY*

9:00AM
MUC16 is a Multifunctional Glycoprotein in Pancreatic Cancer Cells
S-H. Chen[1,2] and K. Konstantopoulos[1,2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Physical Sciences-Oncology Center, Baltimore, MD*

9:15AM
Inflammatory Monocytes Mediate Breast Tumor Adhesion to Vascular Endothelium
S. J. Evani[1], R. G. Prabhu[1], and A. K. Ramasubramanian[1]
[1]*university of texas san antonio, san antonio, TX*

Track: Stem Cell Engineering
OP - Thurs - 1 – 9 - Room A305
Stem Cell Tissue Engineering

Chairs: Elisa Cimetta, Todd McDevitt

8:00AM INVITED
Human Blood-Brain Barrier Endothelial Cells Derived from Pluripotent Stem Cells
E. Lippmann[1], S. Azarin[1], E. Shusta[1], and S. Palecek[1]
[1]University of Wisconsin - Madison, Madison, WI

8:30AM
Human ESC-Derived Cardiac Micro-Tissue Particles as a Novel Approach for Myocardial Infarct Repair
K. L. Kreutziger[1], K. A. Beres[1], S. Dupras[1], X. Yang[1], V. Muskheli[1], and C. E. Murry[1]
[1]University of Washington, Seattle, WA

8:45AM
Primary Cilia on Adipose-Derived Stem Cells in 3D Culture: What is the Structure/Function Relationship?
J. C. Bodle[1,2], P. S. Mathieu[1,2], M. E. Phillips[1], A. Charoenpanich[1,2], S. H. Bernacki[1,2], and E. G. Loboa[1,2]
[1]North Carolina State University, Raleigh, NC, [2]University of North Carolina, Chapel Hill, NC

9:00AM
Personalizing the Study of Infectious Disease: Modeling Hepatitis C Virus Using Induced Pluripotent Stem Cells
K. Trehan[1], R. E. Schwartz[2], L. Andrus[3], T. P. Sheahan[3], A. Ploss[3], S. A. Duncan[4], C. M. Rice[3], and S. N. Bhatia[1]
[1]Harvard-MIT, Cambridge, MA, [2]MIT, Cambridge, MA, [3]The Rockefeller University, New York, NY, [4]Medical College of Wisconsin, Milwaukee, WI

9:15AM
Specialized Tip/Stalk and Phalanx Endothelial Cells from Embryonic Stem Cells
A. Blancas[1], L. Wong[1], D. E. Glaser[1], and K. E. McCloskey[1]
[1]UC, Merced, Merced, CA

Track: Biomaterials
OP - Thurs - 1 – 10 - Room A401
High Throughput: Computational Models for Biomaterial Design

Chairs: Nathan Gallant, Kristyn Masters

8:00AM
Nylon-3 Copolymer Libraries as a Model System for Experimental and Computational Characterization of Cell-Material Interactions
R. Liu[1], K. Z. Vang[1], S. H. Gellman[1], P. K. Kreeger[1], and K. S. Masters[1]
[1]University of Wisconsin, Madison, WI

8:15AM
Measuring Mucus Microrheology with an Autonomous High-throughput Microscopy System
J. A. Cribb[1], L. Osborne[1], A. Zhong[1], J. Hsaio[1], E. T. O'Brien[1], L. Vicci[1], R. M. Taylor, II[1], and R. Superfine[1]
[1]Univ. of N. Carolina, Chapel Hill, NC

8:30AM
A Large-Scale, Real-Time Array to Assess Dynamic Changes in Intracellular Signaling in Response to Biomaterial-Mediated Mechanical and Adhesive Stimuli
S. K. Seidlits[1], B. P. Bernabé[1], L. J. Broadbelt[1], and L. D. Shea[1]
[1]Northwestern University, Evanston, IL

8:45AM
Using Molecular Mechanics to Predict Bulk Material Properties of Fibronectin Fibers
M. J. Bradshaw[1], M. C. Cheung[1], D. J. Ehrlich[1], and M. L. Smith[1]
[1]Boston University, Boston, MA

9:00AM
Mechanical Characterization of Human Renal Parenchyma Through Dynamic Tensile Tests Until Failure
Y-C. Lu[1] and C. Untaroiu[1]
[1]Virginia Tech, Blacksburg, VA

9:15AM
An Organotypic Spinal Cord Slice Culture Model to Quantify Neurodegeneration
M. Ravikumar[1,2], S. Jain[1], R. H. Miller[1], J. R. Capadona[1,2], and S. M. Selkirk[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Veterans Affairs Medical Center, Cleveland, OH

Track: Cancer Technology*
OP - Thurs - 1 – 11 - Room A402
Cancer Biomarkers

Chairs: Daniel Irimia, Anubhav Tripathi

8:00AM
ECM Microarrays for Querying Cell-ECM Interactions in Metastasis
N. E. Reticker-Flynn[1], D. F. Braga Malta[1], M. M. Winslow[2], M. J. Xu[1], T. E. Jacks[1], and S. N. Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Stanford University, Stanford, CA

8:15AM
RNA Sequencing of Human Colon Cancer Cells During *In Vitro* Metastasis Induced by Mechanical Microenvironment
X. Tang[1], T. B. Kuhlenschmidt[1], M. S. Kuhlenschmidt[1], and T. A. Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

8:30AM
Molecular Profiling of Circulating Tumor Cells Isolated From Patient Samples Using a Microfluidic Chip
S. L. Stott[1], M. Yu[1], D. T. Ting[1], D. T. Miyamoto[1], S. M. Rothenberg[1], R. Lee[1], L. V. Sequist[1], N. Bardeesy[1], S. Ramaswamy[1], S. Maheswaran[1], M. Toner[1], and D. A. Haber[1]
[1]Massachusetts General Hospital, Charlestown, MA

8:45AM
In Vivo Phage Display to Discover Novel, Non-VEGF Mediated Tumor Angiogenic Factors Such as Hornerin
M. E. Seaman[1] and K. Kelly[1]
[1]University of Virginia, Charlottesville, VA

9:00AM
Characterization of the Pancreatic Cancer Cells Morphology using High throughput Cell phenotyping Assay
P-H. Wu[1,2], J. Phillip[1], W-C. Chen[1], S. Khatau[1], S. Gupta[1], J. Leek[1], A. Maitra[1], and D. Wirtz[1,2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University, Baltimore

9:15AM
Single-Cell Analysis - Devices and Herogeneity
S. P. Ashili[1], L. Kelbauskas[1], H. Zhu[1], K. B. Lee[1], J. Forrester[1], J. Vela[1], J. Houkal[1], Y. Tian[1], A. C. Youngbull[1], P. Senechal-Willis[1], M. R. Holl[1], R. H. Johnson[1], and D. R. Meldrum[1]
[1]Arizona State University, Tempe, AZ

**Track sponsored by* BARD

P = Poster Session
OP = Oral Presentation

Track: Biomedical Imaging and Optics
OP - Thurs - 1 – 12 - Room A403
Contrast Agents: Probes - Optical

Chairs: Summer Gibbs

8:00AM
Chameleon NanoCluster Beacons: DNA-Silver Nanocluster Probes that Differentiate Single-Nucleotide Polymorphisms by Fluorescence Color
H-C. Yeh[1], J. Sharma[1], I-M. Shih[2], D. M. Vu[1], J. S. Martinez[1], and J. H. Werner[1]
[1]Los Alamos National Laboratory, Los Alamos, NM, [2]Johns Hopkins University, Baltimore, MD

8:15AM
The Sensitive Detection and Tracking of Single RNA Transcripts in Living Cells with Ratiometric Bimolecular Beacons
X. Zhang[1], A. Shah[1], V. Lekova[1], A. Raj[1], M. A. Behlke[2], and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Integrated DNA Technologies, Inc., Coralville, IA

8:30AM
Quantum Dot - Fluorescent Protein FRET Probes for Sensing Intracellular pH
A. M. Dennis[1,2], D. Sotto[1], W. J. Rhee[1], S. N. Dublin[1], and G. Bao[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Los Alamos National Laboratory, Los Alamos, NM

8:45AM
Targeted NIR2 Imaging Probe Sensitively Detects Ovarian Cancer Peritoneal Implants and Assists Surgical Debulking
D. Ghosh[1], A. Bagley[1], Y-J. Na[2], S. N. Bhatia[1], and A. M. Belcher[1]
[1]MIT, Cambridge, MA, [2]Massachusetts General Hospital, Cambridge, MA

9:00AM
Using Porphyrin Emission to Monitor Stress in Synthetic Membranes
N. P. Kamat[1], Z. Liao[1], I. J. Dmochowski[1], M. J. Therien[2], J. Rawson[2], and D. A. Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Duke University, Durham, NC

9:15AM
Maltodextrins Image Early Stage Bacterial Infections and Drug Resistance by Positron Emission Tomography
X. Ning[1], S. Lee[1], W. Seo[2], M. Goodman[2], and N. Murthy[1]
[1]UC Berkeley, Berkeley, CA, [2]Emory University School of Medicine, Atlanta, GA

Track: Cardiovascular and Respiratory Engineering*
OP - Thurs - 1 – 13 - Room A404
Cardiovascular Flow Modeling & Development

Chairs: John Frangos

8:00AM
Predicting the Patient-specific Distribution of Systemically Injected Nanoparticles in Vascular Networks
S. S. Hossain[1], Y. Zhang[2], J. Singh[1], T. Hughes[3], and P. Decuzzi[1]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]Carnegie Mellon University, Pittsburgh, PA, [3]The University of Texas at Austin, Austin, TX

8:15AM
Blood Flow Patterns in Infrarenal Aorta due to Increased Peripheral Resistances: Relevance to AAA
T. Passerini[1], A. Smolensky[1], M. Piccinelli[1], J. Oshinsky[1], A. Veneziani[1], and W. Taylor[1]
[1]Emory University, Atlanta, GA

8:30AM
Effects of Intraventricular Flow Patterns on Ventricular Performance
J. Seo[1] and R. Mittal[1]
[1]Johns Hopkins University, Baltimore, MD

8:45AM
Targeted Non-Invasive Occlusion of Phranygneal Arch Arteries During Avian Cardiac Morphogenesis
S. Lindsey[1], A. Shekhar[1], H. C. Yalcin[1], N. Nishimura[1], C. B. Schaffer[1], and J. Butcher[1]
[1]Cornell University, Ithaca, NY

9:00AM
Intrinsic Frequency: A New Index for Quantification of Left Ventricle-Aorta Coupling
N. M. Pahlevan[1], P. Tavallali[1], T. Y. Hou[1], and M. Gharib[1]
[1]California Institute of Technology, Pasadena, CA

9:15AM
The Effect of Red Blood Cells on Microparticle Transport to Glass Surfaces
Y-H. Lee[1], A. Fogelson[2], and V. Turitto[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Utah, Salt Lake City, UT

**Track sponsored by* St. Jude Medical — More control. Less risk.

Track: Cardiovascular and Respiratory Engineering*
OP - Thurs - 1 – 14 - Room A405
Cardiac Contractile Dynamics

Chairs: Nenad Bursac, Mathew Kay

8:00AM
Material Property Estimation Using MRI and Finite Element Modeling Applied to Myocardial Infarction
J. F. Wenk[1], J. J. Pilla[2], J. R. McGarvey[2], J. H. Gorman III[2], and R. C. Gorman[2]
[1]University of Kentucky, Lexington, KY, [2]University of Pennsylvania, Philadelphia, PA

8:15AM
The Effect of Fibrin Biological Sutures on the Infarcted Rat Heart
J. T. Favreau[1], J. P. Guyette[1], Z. Tao[1], A. Demartino[1], N. Duffy[1], J. Fitzpatrick[1], J. Stedman[1], G. D. Pins[1], and G. R. Gaudette[1]
[1]Worcester Polytechnic Institute, Worcester, MA

8:30AM
Engineering the Adenine Nucleotide Pool to Enhance Function of Normal and Infarcted Hearts
S. G. Nowakowski[1], S. C. Kolwicz[1], G. L. Odom[1], S. Lundy[1], F. S. Korte[1], S. D. Hauschka[1], J. S. Chamberlain[1], R. Weiss[2], R. Tian[1], and M. Regnier[1]
[1]University of Washington, Seattle, WA, [2]Cornell University, Ithica, NY

8:45AM
Causal Relationship Between Restitution Slope and Alternans in Human Right Ventricle
Y. Zhao[1], K. Brownson[1], C. Hoopes[1], L. Jing[1], A. Agarwal[1], and A. Patwardhan[1]
[1]University of Kentucky, Lexington, KY

9:00AM
Statistical Model for Anatomically-Realistic Calcium Release Channel Distribution in Cardiomyocytes
G. Bass[1], M. O'Sullivan[2], C. Walker[2], E. Blumgart[1], M. Munro[2], E. Crampin[1], C. Soeller[2], and V. Rajagopal[1]
[1]Auckland Bioengineering Institute, Auckland, New Zealand, [2]University of Auckland, Auckland, New Zealand

9:15AM
β-blockers Simultaneously Inhibit and Enhance Receptor Sensitivity *In Silico* and *In Vitro*
R. K. Amanfu[1] and J. J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

**Track sponsored by* St. Jude Medical — More control. Less risk.

Track: Bioinformatics and Systems Biology
OP - Thurs - 1 – 15 - Room A406
Mathematical & Computation Models of Molecular, Cellular, & Organ Processes

Chairs: Manu Platt, Ann Rundell

8:00AM
Overview Track Talk: Bioinformatics and Systems Biology
M. Kemp [1], A. Levchenko [2]
[1] Georgia Institute of Technology, [2] Johns Hopkins University

8:15AM
Modeling Pluripotency Transitions in Mouse Embryonic Stem Cells Using Spatial Rules Based Modeling
D. White[1], M. Kinney[1], T. McDevitt[1], and M. Kemp[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:30AM
Modeling Hematopoietic Cell Reconstitution After Transplantation
S. Pearce[1], R. P. Nelson[2], and A. E. Rundell[1]
[1]Purdue University, West Lafayette, IN, [2]IU School of Medicine, Indianapolis, IN

8:45AM
Combinations of VEGF and BDNF Determine Cell States and Behavioral Adaptation during Vascular Sprouting
B. L. Long[1], D. T. Ryan[1], R. Rekhi[1], B. Zaunbrecher[1], G. Ching[1], A. Abrego[1], and A. A. Qutub[1]
[1]Rice University, Houston, TX

9:00AM
Mechanical Regulation of Collagen Alignment in Myocardial Infarcts: Computational Modeling Insights
A. D. Rouillard[1] and J. W. Holmes[1]
[1]University of Virginia, Charlottesville, VA

9:15AM
Mathematical Modeling of Trabecular Bone Architecture Using Stochastic Geometry Techniques
S. A. Montelongo[1], D. Mecke[1], and X. Wang[1]
[1]University of Texas at San Antonio, San Antonio, TX

Track: Biomedical Engineering Education
OP - Thurs - 1 – 16 - Room A304
Design in BME Education

Chairs: Jay Goldberg, Conrad Zapanta

8:00AM
Mathematical Modeling in Capstone Design: Improvements via a Scenario-based Strategy
R. A. Linsenmeier[1], J. Cole[1], A. McKenna[2], E. Molina[1], T. Miller[1], and M. Glucksberg[1]
[1]Northwestern University, Evanston, IL, [2]Arizona State University, Mesa, AZ

8:15AM
Aid-to-the-Disabled Design Projects That Combine Mentors and Students From Engineering and Medicine
M. A. Ruegsegger[1], R. Siston[1], J. Case-Smith[1], T. Berner[1], and C. D. Digiovine[1]
[1]The Ohio State University, Columbus, OH

8:30AM
Incorporating Clinical Needs Finding in the Senior Design Experience
A. Louie[1]
[1]UC Davis, Davis, CA

8:45AM
Employing Industrial Principles of Practice in Preliminary Design
M. A. Pool[1], A. L. Sieving[1], A. O. Brightman[1], T. Eustaquio[1], and A. E. Rundell[1]
[1]Purdue University, West Lafayette, IN

9:00AM
The Case for Multi-Disciplinary Capstone Design: A Quantitative Analysis of Impact on Job Placement and Product Quality
B. B. Fasse[1], N. Hotaling[1], L. F. Bost[1], C. D. Hermann[1], and C. R. Forest[1]
[1]Georgia Institute of Technology, Atlanta, GA

9:15AM
Relating Project Outcomes to Changes in a Design Curriculum
R. H. Allen[1], S. Acharya[1], C. Jancuk[1], and A. A. Shoukas[1]
[1]Johns Hopkins University, Baltimore, MD

**Track sponsored by* WHITAKER International Fellows and Scholars Program

Track: Biomedical Imaging and Optics
OP - Thurs - 1 – 17 - Room A408
Novel Imaging Techniques

Chairs: Kristen Maitland, Peter So

8:00AM
Overview Track Talk: Biomedical Imaging and Optics
K. Maitland [1] , P. So [2]
[1] Texas A&M University, [2] Massachusetts Institute of Technology

8:15AM INVITED
MRE and QPCR Indicate Changes in Liver Phenotypes Upon Consumption of a High Fat Diet
V. Khalilzad-Sharghi[1], J. R. Wood[1], W. E. Pohlmeier[1], J. K. Tart[1], R. S. Griess[1], and S. F. Othman[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

8:45AM
Non-invasive Micromorphological Imaging of the Early Onset of Tumor Development
R. Toy[1], E. Hayden[1], A. Camann[1], J. Pansky[1], P. Vicente[1], A. Abramowski[1], Z. Berman[1], D. Wilson[1], K. Ghaghada[2], and E. Karathanasis[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Texas Childrens Hospital, Houston, TX

9:00AM
Space-varying Heterogeneity in Cryo-EM Reconstructions
Q. Wang[1], T. Matsui[2], T. Domitrovic[2], Y. Zheng[3], P. C. Doerschuk[1], and J. E. Johnson[2]
[1]Cornell University, Ithaca, NY, [2]The Scripps Research Institute, San Diego, CA, [3]Lawrence Berkeley National Laboratory, Berkeley, CA

9:15AM
Novel Indirect Magnetic Force Microscopy Technique for Analyzing Magnetic Biological Samples
T. M. Nocera[1], Y. Zeng[1], and G. Agarwal[1,2]
[1]The Ohio State University, Columbus, OH, [2]Davis Heart and Lung Research Instutute, Columbus, OH

Student & Early Career Program
Room A412
8:30am - 9:30am
Effective Interviewing
See page 34

P = Poster Session
OP = Oral Presentation

Track: Neural Engineering
OP - Thurs - 1 – 18 - Room A407
Neural Electrode Tissue Interface & Neural Engineering Technology

Chairs: Jeff Capadona, Yinghui Zhong

8:00AM
Overview Track Talk: Neural Engineering
D. Meaney [1], G. Stanley [2]
[1] University of Pennsylvania, [2]Georgia Institute of Technology

8:30AM
Molecular Mediators of Neurodegeneration at the Cortical-Tissue Device Interface
M. Ravikumar[1,2], D. J. Hageman[1,2], S. M. Selkirk[1,2], and J. R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Veterans Affairs Medical Center, Cleveland, OH

8:45AM
Suppression of Reactive Oxygen Species by Resveratrol Promotes Neuroprotection at the Cortical Tissue-Device Interface
K. A. Potter[1,2], S. Sunil[1,2], W. K. Self[1,2], and J. R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]L Stokes Cleveland VA Medical Center, Cleveland, OH

9:00AM
Monitoring Integrin-Mediated Adhesion and Electrical Activity of Neurons Simultaneously Using a Multi-Modal Biochip in Neuronal Cultures
M. Khraiche[1,2] and J. Muthuswamy[1]
[1]Arizona State University, Tempe, AZ, [2]University of California, San Diego

9:15AM
Modality Specific Neural Interfacing in the Peripheral Nervous System
S. Anand[1], A. Kanneganti[1], R. Granja[1], J. Cheng[2], E. Keefer[3], and M. Romero-Ortega[1]
[1]University of Texas at Arlington, Arlington, TX, [2]UT Southwestern, Dallas, TX, [3]Plexon Inc., Dallas

Track: Tissue Engineering
OP - Thurs - 1 – 19 - Room A313
Tissue Engineering & Mechanobiology

Chairs: Jun Liao, Elizabeth Loboa

8:00AM
The Effect of Variable Vibratory Stimulation on Fibroblast Matrix-related Gene Expression
S. Bae[1], J. Lee[1], J. L. Barth[2], and K. Webb[1]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

8:15AM
Differential Effects of Cyclic Stretch on Angiogenesis Induced by Different Growth Factors
J. R. Wilkins[1], D. B. Pike[1], C. C. Gibson[1], and Y-T. E. Shiu[1]
[1]University of Utah, Salt Lake City, UT

8:30AM
Does Strain Hardening Increase Stress Propagation in Biological Substrates?
M. Weber[1], X. Ma[1], R. Hart[1], K. Gooch[1,2], and S. Ghadiali[1,2]
[1]Department of Biomedical Engineering, The Ohio State University, Columbus, OH, [2]Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH

8:45AM
Important Signals for the Reversion of Myofibroblasts to Quiescent Keratocytes in an *In Vitro* Corneal Model
E. J. Orwin[1]
[1]Harvey Mudd College, Claremont, CO

9:00AM
Measurement of *In Vitro* Local Shear Stiffness of Alginate Beads Using Microscopic MR Elastography
Z. Yin[1], T. K. Yasar[1], and R. L. Magin[1]
[1]University of Illinois at Chicago, CHICAGO, IL

9:15AM
A Stretch/Flexure Bioreactor for Engineered Heart Valve Mechanobiology
N. Masoumi[1,2], J. Hjortnaes[2,3], B. L. Larson[4], A. Khademhosseini[2,4], and K. B. Manning[1]
[1]The Pennsylvania State University, University Park, PA, [2]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [3]University Medical Center Utrecht, Utrecht, Netherlands, [4]Harvard-MIT, Cambridge, MA

Track: Translational Biomedical Engineering*
OP - Thurs - 1 – 20 - Room A411
Clinical and Translational Research and Science in Biomedical Engineering I

Chairs: Colin Drummond, Kristina Rinker

8:00AM
Wireless Microtools for Endoscopic Tissue Sampling
E. Gultepe[1], S. Yamanaka[1], K. E. Laflin[1], E. J. Shin[1], S. Kadam[1], A. N. Kalloo[1], F. M. Selaru[1], and D. H. Gracias[1]
[1]The Johns Hopkins University, Baltimore, MD

8:15AM
Faster Pharmacokinetics and Less Pain with Microneedle Insulin Delivery in Type 1 Diabetic Children
J. J. Norman[1], M. R. Brown[2], N. A. Raviele[2], M. R. Prausnitz[1], and E. I. Felner[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

8:30AM
Heart Rate Reduction with Ivabradine Improves Regional Contractile Function in a Mouse Model of Reperfused Myocardial Infarction
D. M. O'Connor[1], R. S. Smith[2], B. A. Piras[1], D. Lin[1], J. A. Hossack[1], and B. A. French[1]
[1]University of Virginia, Charlottesville, VA, [2]Duke University, Durham, NC

8:45AM
Engineered Peptide Linker for Personalized Medicine: Multifunctional Nanoparticles Generated Through Post-Formulation for Anti-inflammation Applications
H. Pan[1], S. Allen[1], P. Schlesinger[1], and S. A. Wickline[1]
[1]Washington University School of Medicine, Saint Louis, MO

9:00AM
Translating Targeted Induction and Regulation of Gene Expression into Specific, Heritable Treatments of Hemoglobinopathies
F. Reza[1], J. Y. Chin[1], and P. M. Glazer[1]
[1]Yale University, New Haven, CT

9:15AM
Development of a Halloysite/SiRNA Nanocontainer and Nanocarrier
D. Mills[1] and J. Ambrose[2]
[1]Louisiana Tech University, Ruston, [2]Louisiana Tech University, Ruston, LA

*Track sponsored by Fish & Richardson

POSTER SESSION ThA

Thursday, October 25, 2012

9:30AM - 1:00PM, Exhibit Hall A2

POSTER SESSION – THURSDAY- AM

Track: Bioinformatics and Systems Biology

Biological Systems and Control Dynamics

P-Th-A-1
Method of Detecting Repolarisation Events in Gastric High Resolution Serosal Recordings
N. Paskaranandavadivel[1], P. Du[1], G. O'Grady[2], and L. Cheng[1]
[1]Auckland Bioengineering Institute, Auckland, New Zealand, [2]Department of Surgery, University of Auckland, Auckland, New Zealand

P-Th-A-2
Addition of Glucagon to the Meal Simulation of the Glucose-Insulin Subsystem
B. Weisberg[1] and R. T. O'Brien[1]
[1]United States Naval Academy, Annapolis, MD

P-Th-A-3
Temperature and Hydration Dependence of Outflow Facility in Enucleated Mouse Eyes, with Applications to Glaucoma Research
A. Boussommier-Calleja[1], W. D. Stamer[2], C. R. Ethier[1], and D. R. Overby[1]
[1]Imperial College London, London, United Kingdom, [2]Duke University, Durham, NC

P-Th-A-4
A Multiple Model Predictive Control Framework to Alter Intracellular Signaling Dynamics
J. Perley[1], J. Mikolajczak[1], V. Dinh[1], M. Harrison[1], G. Buzzard[1], and A. Rundell[1]
[1]Purdue University, West Lafayette, IN

P-Th-A-5
Experimental Studies and Dynamics Modeling Analysis of Diving of Whirligig Beetles (Coleoptera: Gyrinidae)
Z. Xu[1], B. E. Reese[1], X. Jia[1], S. C. Lenaghan[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

P-Th-A-6
Control Analysis for Gene Regulatory Network
X. Li[1] and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

P-Th-A-7
Hybrid Time-Data-Driven Control and Applications to Biological Cellular System Control
X. Li[1] and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

P-Th-A-8
Estimation of Postural Changes in Human Stroke Volume from Bio-Impedance
S. Wang[1], A. Diedrich[2], V. Kostas[1], R. Moore[1], M. Stasuk[1], M. B. Stenger[3], C. F. Knapp[1], and J. M. Evans[1]
[1]University of Kentucky, Lexington, KY, [2]Vanderbilt University, Nashville, TN, [3]Wyle Science, Technology & Engineering Group, Houston, TX

P-Th-A-9
Observer-based Nonlinear Control of Gene Regulatory Networks
J. Yang[1], X. Li[2], S. C. Lenaghan[2], M. Q-H. Meng[1], W. R. Hamel[2], and M. Zhang[2]
[1]Shandong University, Jinan, China, People's Republic of, [2]University of Tennessee, Knoxville, TN

P-Th-A-10
Capturing Dynamic Reciprocity Using a Multi-Paradigm Modeling Framework
H. Kaul[1], H. Schiffter[1], Z. Cui[1], and Y. Ventikos[1]
[1]University of Oxford, Oxford, United Kingdom

Track: Bioinformatics and Systems Biology

Genomics, Transcriptomics and Computational Proteomics

P-Th-A-11
Role of microRNAs in Cell Survival Decisions in a Liver Cancer Model
N. Guillen[1] and D. A. Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Th-A-12
A Generalized Linear Model with Penalization for Detecting Associations of Phenotypes with Rare and Common Variants
S. Cao[1], H. Qin[1], H. Mei[1], J. Li[1], H-W. Deng[1], and Y-P. Wang[1]
[1]Tulane University, New Orleans, LA

P-Th-A-13
Comparative Studies of Copy Number Variation Detection Methods for Next Generation Sequencing Technologies
J. Duan[1], J-G. Zhang[1], H-W. Deng[1], and Y-P. Wang[1]
[1]Tulane university, new orleans, LA

P-Th-A-14
Extension of Hypergeometric Similarity Measure for Analysis of Imaging Mass Spectrometry Data
C. Kaddi[1], R. M. Parry[1], and M. D. Wang[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Th-A-15
Linear ODE Models of Gene Regulatory Networks Using Literature-Curated and High Throughput Data
V. Kulkarni[1], R. Arastoo[2], M. Riedel[1], and M. Kothare[2]
[1]University of Minnesota, Minneapolis, MN, [2]Lehigh University, Bethlehem, PA

P-Th-A-16
Single Cell Analysis of Gene Expression and Signaling Pathways
L. E. Kippner`[1,2], J. Kim[1], M. L. Kemp[1], and G. Gibson[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Th-A-17
Identification of Proteomic Signatures of Activated Platelets
W. Yin[1], S. Shanmugavlayudam[1], and D. A. Rubenstein[1]
[1]Oklahoma State University, Stillwater, OK

P-Th-A-18
A Bioinformatic Study of Filamin Binding Sites
H. P. Modarres[1] and M. R. Mofrad[1]
[1]University of California Berkeley, Berkeley, CA

P-Th-A-19
Group Sparse Canonical Correlation Analysis for Genomic Data Integration
D. Lin[1], J. Zhang[1], J. Li[1], V. D. Calhoun[2], and Y. Wang[1]
[1]Tulane University, New Orleans, LA, [2]The Mind Research Network, Albuquerque, NM

P-Th-A-20
SIM-TOX :A Biomarker Discovery Model for Drug Toxicity
R. R. Vallabhajosyula[1], B. Prabhakarpandian[2], and K. Pant[3]
[1]CFD Research Corporation, Huntsville, AL, [2]CFD Research Corp, Huntsville, AL, [3]CFD Research Corp, Huntsville

P = Poster Session
OP = Oral Presentation

POSTER SESSION ThA

See page 17 for Poster floor plan

P-Th-A-21
MATLAB Based Genome Browser for Gene Expression Visualization
R. Chen[1], P-Y. Wu[2], J. H. Phan[1], and M. D. Wang[1]
[1]*Georgia Tech and Emory University, Atlanta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

P-Th-A-22
Effect of Quorum-Signaling Molecules on Human Epithelial Cells: Implications for Interkingdom Response and Communication
A. Zargar[1,2], K. Raje[1], and W. Bentley[1,2]
[1]*University of Maryland, College Park, College Park, MD,* [2]*Center for Biosystems Research, College Park, MD*

P-Th-A-23
Identification of Druggable Sites in Protein-Protein Interfaces
D. Kozakov[1]
[1]*Boston University, Boston, MA*

Track: Biomaterials

Bioinspired Materials

P-Th-A-24
Slice and Dice: Re-engineering Natural Materials for Biomedical Applications
Q. Xu[1], K. Alberti[1], and X. Dai[1]
[1]*Tufts University, Medford, MA*

P-Th-A-25
Characterization of Nonlinear Anisotropic Mechanical Properties of Sheep Vaginal Wall Tissue
S. Patnaik[1,2], B. Weed[1,2], A. Borazjani[3], B. Wang[4], B. Brazile[1], L. Williams[1,2], M. Damaser[3], and J. Liao[1,2]
[1]*Mississippi State University, Mississippi State, MS,* [2]*Center for Advanced Vehicular Systems, Mississippi State, MS,* [3]*Cleveland Clinic Lerner Research Institute, Cleveland, OH,* [4]*Northwestern University, Chicago, IL*

P-Th-A-26
Antibacterial Chitosan Composite Genipin Crosslinked Hydrogels
V. Pandit[1] and S. Kotha[2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Renssealer Polytechnic Institute, Troy, NY*

P-Th-A-27
Hybrid Biomimetic Phospholipid Assemblies For Use in Biosensing and Drug Delivery
N. K. Virdone[1,2] and G. P. Lopez[1,2]
[1]*Duke University, Durham, NC,* [2]*NSF Triangle MRSEC, Durham, NC*

P-Th-A-28
Rational Development of Cell Penetrating Peptides for *In Vivo* siRNA Delivery
E. D. Karagiannis[1], A. M. Urbanska[1], R. Langer[1], and D. G. Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Biomaterials

Biomaterial Immunoenengineering

P-Th-A-29
Uptake and Intracellular Fate of C-type Lectin Receptor Targeted Polyanhydride Microparticles
Y. Phanse[1], B. R. Carrillo-Conde[2], A. E. Ramer-Tait[1], R. Roy Choudhury[1], N. L. Pohl[1], B. Narasimhan[1], M. J. Wannemuehler[1], and B. Bellaire[1]
[1]*Iowa State University, Ames, IA,* [2]*University of Texas, Austin, TX*

P-Th-A-30
Inducing Cytotoxic T Lymphocyte Responses through Peptide Self-assemblies
F. J. Kohlhapp[1], C. B. Chesson[2], A. Zloza[3], and J. S. Rudra[2]
[1]*University of Chicago, Chicago, IL,* [2]*University of Texas Medical Branch, Galveston, TX,* [3]*Rush University Medical Center, Chicago, IL*

P-Th-A-31
Expansion of Human T-cells with Beaded Polydimethylsiloxane
G. K. Hickey[1], R. O'Connor[2], M. C. Milone[2], and L. C. Kam[1]
[1]*Columbia University, New York, NY,* [2]*University of Pennsylvania, Philadelphia, PA*

P-Th-A-32
Biologically Inspired Vaccines Based on Multifunctional pH-Responsive Polymers
J. T. Wilson[1], S. Keller[1], M. Manganiello[1], C. Cheng[1], C-C. Lee[1], A. Convertine[1], and P. S. Stayton[1]
[1]*University of Washington, Seattle, WA*

P-Th-A-33
Polyanhydride Nanoparticle Adjuvants Stabilize HIV-1 Antigens and Induce Germinal Center Formation
J. E. Vela Ramirez[1], H. Habte[1], J. Hao[2], L. Tygrett[3], M. Cho[1], N. Greenspan[2], T. Waldschmidt[3], and B. Narasimhan[1]
[1]*Iowa State University, Ames, IA,* [2]*Case Western Reserve University, Cleveland, OH,* [3]*University of Iowa, Iowa City, IA*

P-Th-A-34
Metallic Nanorod Mediated T Cell and Dendritic Cell Interaction
Y. Son[1], H. Kim[1], S. Yoon[1], E. Jo[1], Y. Kim[1], J. Kang[1], and H. Yoo[1]
[1]*Kangwon National University, Chuncheon, Korea, Republic of*

P-Th-A-35
Effect of Chemistry-dependent Adsorption of Serum Proteins onto Polyanhydride Microparticles on Uptake by and Activation of Dendritic Cells
B. R. Carrillo-Conde[1], A. E. Ramer-Tait[1], M. J. Wannemuehler[1], and B. Narasimhan[1]
[1]*Iowa State University, Ames, IA*

P-Th-A-36
Injectable Mesoporous Silica Scaffold for Modulating Microenvironment for Immune Cells to Evoke Cytotoxic T Cell Response
J. Kim[1,2], W. A. Li[3], G. Dranoff[4], and D. J. Mooney[2,3]
[1]*School of Chemical Engineering, SungKyunKwan University, Suwon, Korea, Republic of,* [2]*Wyss Institute for Biologically Inspired Engineering, Cambridge, MA,* [3]*School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [4]*Dana-Farber Cancer Institute and Harvard Medical School, Cambridge, MA*

P-Th-A-37
Engineering Immunomodulatory Surfaces to Mitigate the Host Response to Biomaterials
Y. Kim[1], R. Que[1], S-W. Wang[1], and W. Liu[1]
[1]*Univ of California, Irvine, Irvine, CA*

Track: Biomaterials

Host Response to Biomaterials and Control Thereof

P-Th-A-38
A Study on the Development and Characterization of PEEK for Improved Osseointegration
D. C. Whittingslow[1], N. Evans[1], K. Gall[1], and R. Carson[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-A-39
Regulation of Adhesion-Dependent Apoptosis in Macrophages by PEG-containing Polyurethane Films
A. L. Zachman[1], J. Page[2], A. R. Boone[1], G. Prabhakar[1], S. A. Gulecher[1,3], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt Unversity, Nashville, TN,* [3]*Vanderbilt University, Nashville*

P-Th-A-40
Allogeneic Dermal Fibroblast-Derived ECM Constructs Elicit a Minimal Inflammatory Response as Peripheral Nerve Cuffs
M. B. Christensen[1], N. Khan[1], and P. A. Tresco[1]
[1]University of Utah, Salt Lake City, UT

P-Th-A-41
Pre-implantation Processing of *Ex Vivo*-Derived Vascular Biomaterials: Effects on Peripheral Cell Adhesion
J. S. Uzarski[1], A. B. Van de Walle[1], and P. S. McFetridge[1]
[1]University of Florida, Gainesville, FL

P-Th-A-42
Modeling the Brain Tissue Response to Neural Recording Devices: Towards Informed Design
J. L. Skousen[1], K. Bolick[1], and P. Tresco[1]
[1]University of Utah, Salt Lake City, UT

P-Th-A-43
A New Approach to Reduce Inflammation Surrounding Chronically Implanted Biomedical Devices Using a Permeability Sink
J. Skousen[1] and P. A. Tresco[1]
[1]University of Utah, Salt Lake City, UT

P-Th-A-44
Engineered Electrospun Fiber Nanoporosity Modulates Macrophage Adhesion Markers
N. J. Schaub[1], R. Rajachar[2], and R. J. Gilbert[1]
[1]Rensellaer Polytechnic Institute, Troy, NY, [2]Michigan Technological University, Houghton, MI

P-Th-A-45
Platelet Interaction With A Novel Polymer Valve Biomaterial Under Shear Conditions
S. George[1], J. Sheriff[1], T. E. Claiborne[1], M. J. Slepian[2], J. Jesty[3], and D. Bluestein[1]
[1]Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY, [2]Sarver Heart Center, University of Arizona, Tucson, AZ, [3]School of Medicine, Division of Hematology, Stony Brook University, Stony Brook, NY

P-Th-A-46
A Thermoresponsive Nanocomposite Double Network Hydrogel Membrane to Control Biofouling
A. A. Abraham[1], R. Fei[1], M. A. Grunlan[1], and G. L. Coté[1]
[1]Texas A&M University, College Station, TX

P-Th-A-47
Peptide Grafting onto Silicone Hydrogel Substrates for Contact Lens Applications
A. C. Chen[1], B. Ratner[1], V. Agrawal[2], and S. Badylak[2]
[1]University of Washington, Seattle, WA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

Track: Biomaterials

Self-Assembling Biomaterial Systems

P-Th-A-48
Novel Injectable Biomimetic Hydrogels with Carbon Nanofibers and Self Assembled rosette nanotubes for Myocardial Applications
X. Meng[1], D. Stout[2], L. Sun[2], R. Beigessner[3,4], H. Fenniri[3], and T. Webster[2]
[1]BrownUniversity, Providence, RI, [2]Brown University, Providence, RI, [3]University of Alberta, Edmonton, AB, Canada, [4]University of Alberta, Edmonton, Canada

Track: Biomaterials

Therapeutic Biomaterials

P-Th-A-49
Inhibition of Alzheimer's-Associated Aβ Aggregation by Gold Nanoparticles
K. A. Moore[1], D. Soto-Ortega[1], M. Lim[1], K. Pate[1], S. Lohse[2], K. Jackson[3], R. Mahtab[3], C. Murphy[2], and M. Moss[1]
[1]University of South Carolina, Columbia, SC, [2]University of Illinois at Urbana-Champaign, Champaign, IL, [3]South Carolina State University, Orangeburg, SC

P-Th-A-50
Polyelectrolyte Complex Nanoparticles for the Stabilization and Delivery of FGF-2
L. W. Place[1] and M. Kipper[1]
[1]Colorado State University, Fort Collins, CO

P-Th-A-51
Polycaprolactone Coating for Controlled Corrosion of Mg Implants
M. Park[1], J. Lee[2], C. Park[2], S. Lee[2], S. Cho[3], H. Seok[4], and Y. Choy[2]
[1]Seoul University, Seoul, Korea, Republic of, [2]Seoul National University, Seoul, Korea, Republic of, [3]Research Center,U&I Corporation, Gyeonggi-Do, Korea, Republic of, [4]Institute of Science & Technology, Seoul, Korea, Republic of

P-Th-A-52
Efficacy of Commonly Used Disinfectants for Inactivation of Human Noroviruses and its Surrogates
J. A. Young[1]
[1]Duke University, Durham, NC

P-Th-A-53
Assessment of Bacteriophage Efficacy against CAUTI-Associated Bacteria
M. E. Díaz Ortiz[1], S. M. Lehman[1], and A. J. García[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Th-A-54
Piperlongumine, An Alkaloid Constituent from Piper longum L., Inhibits Platelet-Derived Growth Factor Beta Receptor Tyrosine Phosphorylation and Its Downstream Intracellular Signal Transduction in Rat Aortic Vascular Smooth Muscle Cell
D. J. Son[1], B. S. Park[2], S. E. Lee[2], Y. P. Yun[3], and Y. H. Park[4]
[1]Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, [2]Nanotoxtech Inc., Ansan, Korea, Republic of, [3]College of Pharmacy, Research Center for Bioresource and Health, Chungbuk National University, Cheongju, Korea, Republic of, [4]Department of Food Science and Nutrition, Soonchunhyang University, Asan, Korea, Republic of

P-Th-A-55
ROS-Responsive Scaffold for Angiogenic Differentiation of Mesenchymal Stem Cells
S. Lee[1], A. Zachman[1], D. Deskins[2], T. Boire[1], L. Hofmeister[1], P. Young[2], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, TN

P-Th-A-56
Salicylic Acid-based Poly(anhydride-esters) for the Prevention of Fibrous Adhesions
S. S. Snyder[1] and K. E. Uhrich[1]
[1]Rutgers University, Piscataway, NJ

P-Th-A-57
Cryopreservation Maintains Structural and Biochemical Properties of Fresh Amniotic Membrane
M. T. Cooke[1], C. J. Mandrycky[1], E. K. Tan[2], J. O'Connell[3], and T. C. McDevitt[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]TissueTech Inc., Miami, FL, [3]Amniox Medical, Marietta, GA

P = Poster Session
OP = Oral Presentation

P-Th-A-58
Electrophoretic Deposition of Bio-functionalized Calcium Phosphate Nanoparticles
K. Wallat[1] and M. Epple[2]
[1]University od Duisburg-Essen, Essen, Germany, [2]University of Duisburg-Essen, Essen, Germany

P-Th-A-59
Tunable Mechanical, Structural, and Biological Properties of Urinary Bladder Matrix (UBM) Biomaterials
K. Stuart[1], A. Phipps[1], and A. Janis[1]
[1]ACell Inc, Columbia, MD

P-Th-A-60
Chemical Vapor Deposition of Silica for Glucose Biosensors
J. M. Harris[1], G. Lopez[1], and W. M. Reichert[1]
[1]Duke University, Durham, NC

P-Th-A-61
Radioprotection of Salivary Gland Cells via siRNA Delivery
S. Arany[1], C. Ovitt[1], and D. S. Benoit[1]
[1]University of Rochester, Rochester, NY

P-Th-A-62
Sputum Penetration and Enhanced Airway Gene Transfer by Mucus Penetrating Synthetic Gene Nanocarriers
A. J. Kim[1], J. Suk[1], N. J. Boylan[1], and J. Hanes[1]
[1]Johns Hopkins University School of Medicine, Baltimore, MD

P-Th-A-63
A Leak-Proof Lght Activated Tissue Adhesive
M. M. Nunes Pereira[1], N. Lang[2], I. Friehs[2], N. V. Vasilyev[2], K. Ablasser[2], E. O'Cearbhaill[1], C. Xu[1], H. Yamauchi[2], P. Hammer[2], S. Wasserman[3], R. Langer[3], P. del Nido[2], and J. M. Karp[1]
[1]Brigham and Women's Hospital, Harvard Medical School, Harvard-MIT Health Science and Technology, Cambridge, MA, [2]Children's Hospital Boston, Harvard Medical School, Boston, MA, [3]Massachusetts Institute of Technology, Cambridge, MA

P-Th-A-64
Gold Nanorod Vaccine for Respiratory Syncytial Virus
J. W. Stone[1], J. Crowe[2], N. Thornburg[3], D. Blum[3], S. Kuhn[3], and D. Wright[3]
[1]Armstrong Atlantic State University, Savannah, GA, [2]Vanderbilt University School of Medicine, Nashville, TN, [3]Vanderbilt University, Nashville, TN

P-Th-A-65
Textile Fibers with Induced Hemostasis for Wound Dressing Applications
C. R. Gajjar[1], T. Rush[1], and M. McCord[1,2]
[1]College of Textiles, North Carolina State University, Raleigh, NC, [2]Biomedical Engineering, North Carolina State University, Raleigh, NC

P-Th-A-66
Biocompatible Halloysite Clay Nanotuves in Cosmetics for Encapsulation and Controlled Release of Bioactive Agents
A. Joshi[1], E. Abdullayev[1], Y. Zhao[1], and Y. Lvov[1]
[1]Louisiana Tech University, Ruston, LA

P-Th-A-67
A Comparative Analysis of Synthesis Techniques for the Formation of an Amphiphilic Polymeric Prodrug for Extended Simvastatin Release
T. Asafo-Adjei[1], D. Puleo[1], and T. Dziubla[1]
[1]University of Kentucky, Lexington, KY

POSTER SESSION **ThA**

Track: Biomedical Imaging and Optics

Functional, Physiological, and Molecular Imaging

P-Th-A-68
Variability of Primary Visual Cortex Activation Responses to Tactile Stimulation in Sighted Individuals
S. I. Cunningham[1], J. D. Weiland[1], P. Bao[1], and B. S. Tjan[1]
[1]University of Southern California, Los Angeles, CA

P-Th-A-69
Photoacoustic Lifetime Imaging for Tissue Dissolved Oxygen
Q. Shao[1], E. Morgounova[1], J-H. Choi[1], J. Bischof[1], and S. Ashkenazi[1]
[1]University of Minnesota, Minneapolis, MN

P-Th-A-70
Regional Cardiac Strain Estimates via CMR During Transient Preload Reduction
F. Contijoch[1], W. R. Witschey[1], M. M. Levack[1], J. R. McGarvey[1], V. Ferrari[1], N. Kondo[1], M. Takebe[1], G. A. Zsido[1], C. Dillard[1], K. Lau[1], J. H. Gorman III[1], R. C. Gorman[1], and J. J. Pilla[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Th-A-71
Towards Single-walled Nanotubes-based Theranostics: Pharmacodynamics of Single-Walled Carbon Nanotube Gadolinium Complexes
P. K. Avti[1], Y. Talukdar[1], M. Sirotkin[1], K. R. Shroyer[2], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY, [2]Medical Center, Stony Brook University, Stony Brook, NY

Track: Biomedical Imaging and Optics

Image Processing and Analysis

P-Th-A-72
Automatic Quantification from CT Scans of Morphological Changes in Pulmonary Vasculature in Pulmonary Artery Hypertension
A. Salgia[1], S. T. Govindarajan[2], D. Haight[3], R. White[3], and W. O'Dell[1]
[1]University of Florida, Gainesville, FL, [2]Massachusetts General Hospital, Boston, MA, [3]University of Rochester, Rochester, NY

P-Th-A-73
Automated Identification of Lesion Activity in Multiple Sclerosis
S. Datta[1] and P. A. Narayana[1]
[1]The University of Texas Health Science Center Medical School, Houston, TX

P-Th-A-74
Age-Specific Gray-Matter Changes in Pediatric Subjects is Reveled by Graph Theoretical Analysis Applied to Structural MRI Data
E. A. Moody[1], C. T. Whitlow[1,2], and J. A. Maldjian[1,2]
[1]Wake Forest University, Winston-Salem, NC, [2]Wake Forest University, Winston-Salem

P-Th-A-75
Automated Screening of *C. elegans* Neurodegenerative and Neural Development Mutants Using Image Processing Algorithms and Single-Layer Microfluidic Devices
I. D. Cáceres[1], J. A. Rodríguez-Cordero[2], N. Valmas[3], M. M. Crane[1], H. Lee[1], M. A. Hilliard[3], and H. Lu[1]
[1]The Georgia Institute of Technology, Atlanta, GA, [2]University of Puerto Rico at Mayagüez, Mayagüez, PR, [3]The University of Queensland, Brisbane, Australia

P-Th-A-76
Analysis of T10 Mapping for Vessel Permeability Measurement in Brain Tumors
G. L. Pishko[1], E. M. Thompson[1], L. L. Muldoon[1], and E. A. Neuwelt[1,2]
[1]Oregon Health & Science University, Portland, OR, [2]Portland VA Medical Center, Portland

P-Th-A-77
TissueViz: an Information-Visualization Tool for Studying Histopathological Whole-Slide Images
S. Kothari[1], J. H. Phan[2], and M. D. Wang[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology and Emory University, Atlanta, GA

P-Th-A-78
An Automated Method of Determining Electrospun Fiber Alignment and Diameter
N. Schaub[1], R. J. Gilbert[1], and S. J. Kirkpatrick[2]
[1]Rensellaer Polytechnic Institute, Troy, NY, [2]Michigan Technological University, Houghton, MI

P-Th-A-79
Classification of Multicolor Fluorescence *In-Situ* Hybridization(M-FISH) Image Using Joint Sparsity Model
J. Li[1], D. Lin[1], and Y-P. Wang[1]
[1]Tulane University, New Orleans, LA

P-Th-A-80
Measurement of Aortic Remodeling in CT Images for Cardiovascular Risk Assessment
M. Zheng[1,2], J. Carr[1], and Y. Ge[1,2]
[1]Wake Forest University Health Sciences, Winston-Salem, NC, [2]Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC

P-Th-A-81
Quantitative Cellular Biophysics Via Robust Boundary Acquisition Using Fluorescence Microscopy
S. H. Arce[1], S-H. Hung[1], and Y. Tseng[1]
[1]University of Florida, Gainesville, FL

P-Th-A-82
Automated Image Analysis for High-Throughput Wound-Healing Assay
N. L. DeBenedictis[1], T. J. Cashman[1], and K. D. Costa[1]
[1]Mount Sinai School of Medicine, New York, NY

P-Th-A-83
Registration-Based Segmentation of Intra-Abdominal and Subcutaneous Adipose Tissue in 3D Mouse Micro-CT
B. Shi[1] and J. Liu[1]
[1]Ohio University, Athens, OH

P-Th-A-84
Preliminary Study for Automatic Brain Tissue Quantification on Computed Tomography
Y. P. Tan[1,2], N. Verma[1], R. Hartman[1], M. C. Cowperthwaite[3], and M. K. Markey[1]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Edinburgh, Edinburgh, United Kingdom, [3]NeuroTexas Institute, St. Davids Medical Center, Austin, TX

P-Th-A-85
Fused-based Segmentation Method for Tracking of Human Lung Epithelial Cells
M. Martin[1], X. Li[1], Y. Qian[2], Y. Liu[1], and T. Bourlai[1]
[1]West Virginia University, Morgantown, WV, [2]The National Institute for Occupational Safety and Health, Morgantown, WV

P-Th-A-86
Characterization of Vessel Wall Dynamics Using Ultrasound
F. Zheng[1], H. Zhang[1], and E. Ebbini[1]
[1]University of Minnesota Twin Cities, Minneapolis, MN

P-Th-A-87
Structural and Spatial Image Analysis of Tumor Vascularity in Models of Experimental Colon Cancer
S. Ruderman[1], M. Gonzalez_Haba[2], U. Dougherty[2], A. Kulkarni[2], A. Fichera[2], I. Waxman[2], T. N. Pappas[1], A. Gomes[1], M. Bissonnette[2], V. Konda[2], and V. Backman[1]
[1]Northwestern University, Evanston, IL, [2]University of Chicago, Chicago, IL

P-Th-A-88
Volumetric Analysis of Motor Vehical Crash-Related Brain Injuries from Real-World Head Impact Data
J. Urban[1,2], C. Whitlow[3,4], J. Maldjian[3], A. Powers[3], and J. Stitzel[1,2]
[1]Wake Forest University, Winston-Salem, NC, [2]Virginia Tech - Wake Forest University Center For Injury Biomechanics, Winston-Salem, NC, [3]Wake Forest University School of Medicine, Winston-Salem, NC, [4]Translational Science Institute, Winston-Salem, NC

P-Th-A-89
Evaluating Multiplane Fetal DTI Motion Correction and Reconstruction with Fiber Tracking
X. Cheng[1], J. Wilm[2], M. Fogtmann[1], S. Seshamani[1], C. D. Kroenke[3], and C. Studholme[1]
[1]University of Washington, Seattle, WA, [2]Technical University of Denmark, Kgs. Lyngby, Denmark, [3]Oregon Health & Science University, Portland, OR

P-Th-A-90
A Novel Riemannian Shape Analysis Framework for Subcoritcal Brain Structures
S. Xie[1] and J. Liu[1]
[1]Ohio University, Athens, OH

P-Th-A-91
Robust Point Registration Using Clusters and Generalized Radial Basis Functions (C-GRBF)
H. Xu[1] and J. Liu[1]
[1]Ohio University, Athens, OH

P-Th-A-92
Mapping of ApoE- 4 Related White Matter Damage using Diffusion MRI
S. Tsao[1], D. H. Hwang[1], N. Gajawelli[1], B. Wilkins[1], M. Law[1], and H. C. Chui[1]
[1]University of Southern California, Los Angeles, CA

P-Th-A-93
A Finite Element Simulation for Wave Propagation in Magnetic Resonance Elastography
Y. Liu[1], T. K. Yasar[1], T. J. Royston[1], and R. L. Magin[1]
[1]University of Illinois at Chicago, Chicago, IL

Track: Cancer Technology

Bioengineering and Physical Sciences of Cancer

P-Th-A-94
Interstitial Flow Drives CXCR4-dependent Hepatocellular Carcinoma Cell Invasion
A. D. Shah[1], M. J. Bouchard[2], and A. C. Shieh[1]
[1]Drexel University, Philadelphia, PA, [2]Drexel University College of Medicine, Philadelphia, PA

P-Th-A-95
Reversible Encapsulation Platform for Solitary Cancer Cell Dormancy Model
A. Aksan[1], E. Reategui[2], L. L. Kasinkas[1], and K. Schwertfeger[1]
[1]University of Minnesota, Minneapolis, MN, [2]Center for Engineering in Medicine, Department of Surgical Services, Massachusetts General Hospital, Boston, MA

P-Th-A-96
3D Brain-Mimetic Hydrogel Platforms to Explore Biophysical Regulation of Glioma Cell Malignancy
S. Pedron[1], E. Becka[1], B. Mahadik[1], and B. A. Harley[1]
[1]University of Illinois at Urbana-Champaign, Institute for Genomic Biology, Urbana, IL

P-Th-A-97
The Effect of Sub-Micron Mechanical Stimuli on Hepatocellular Carcinoma Cells
H. Holmes[1], E. L. Tan[1], K. G. Ong[1], and R. M. Rajachar[1]
[1]Michigan Technological University, Houghton, MI

P = Poster Session
OP = Oral Presentation

P-Th-A-98
Shear Stress Regulates Tumor-Expressed Angiogenic Factors in a 3D Microfluidic Co-Culture Model
C. F. Buchanan[1], E. Voigt[1], C. Szot[1], P. Vlachos[1], and M. N. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Th-A-99
Dimensional Modulation in Confined Spaces Elucidates Transition Effects in Cancer Cell Invasion
M. Mak[1], C. A. Reinhart-King[1], and D. Erickson[1]
[1]*Cornell University, Ithaca, NY*

P-Th-A-100
Role of Tissue Factor and Tissue Factor Pathway Inhibitor Protein Complex in Cancer Cell Adhesion
S. Che[1], M. Shuler[1], and T. Stokol[1]
[1]*Cornell University, Ithaca, NY*

P-Th-A-101
Adipose Stromal Cells Exert Opposing Effects on Tumor Angiogenesis due to their Physicochemical Modification of the Microenvironment
Y. Song[1], B. Seo[1], E. M. Chandler[1], S. Shon[1], A. D. Stroock[1], and C. Fischbach-Teschl[1]
[1]*Cornell University, Ithaca, NY*

P-Th-A-102
Engineered Scaffolds with Designer Microstructure and Mechanical Stiffness to Investigate Cancer Cell Migration in Three Dimensions
P. Soman[1], J. A. Kelber[1], J. Lee[1], T. Wright[1], K. S. Vecchio[1], R. L. Klemke[1], and S. Chen[1]
[1]*University of California, San Diego, La Jolla, CA*

P-Th-A-103
Quantification of Tumor Cell and Microbead Arrest and Adhesion in the Microvasculature
P. Guo[1], B. Cai[1], and B. M. Fu[1]
[1]*The City College of the City University of New York, New York, NY*

P-Th-A-104
Myoferlin Depletion Alters Mechanics And Morphology Of Breast Cancer Cells
L. I. Volakis[1], R. Li[2], C. Mihai[1], R. Zielinski[1], M. Bechel[1], B. N. Blackstone[1], J. J. Willard[1], W. E. Ackerman IV[2], H. M. Powell[1], D. A. Kniss[2], and S. N. Ghadiali[2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Wexner Medical Center at the Ohio State University, Columbus, OH*

P-Th-A-105
Assessing *In Vitro* Biomechanical Markers During Oncogenic Epithelial To Mesenchymal Transition
L. I. Volakis[1], R. Li[2], R. Zielinski[1], J. Sanders[1], D. A. Kniss[2], and S. N. Ghadiali[2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Wexner Medical Center at the Ohio State University, Columbus, OH*

P-Th-A-106
Characterize Calmodulin/Fas Death Domain Interaction with Combined ITC, CD and Computational Studies
R. M. Fancy [1], T. Napier[1], L. Wang[1], G. Jing[1], J. McDonald[1,2], T. Zhou[1], and Y. Song[1]
[1]*University of Alabama Birmingham, Birmingham, AL,* [2]*Va Medical Center, Birmingham, AL*

P-Th-A-107
Automated High Throughput Microtechnology for Screening of Migration of Cancer Cells
S. Nasrolahi[1] and H. Tavana[1]
[1]*University of Akron, Akron, OH*

P-Th-A-108
Immunomodulation by Biomechanical Factors of the Tumor Stroma
J. M. Munson[1], V. Weaver[2], and M. Swartz[1]
[1]*Swiss Federal Institute of Technology, Lausanne, Switzerland,* [2]*UCSF, San Francisco, CA*

P-Th-A-109
Micropatterned Tumor-Stromal Assay for Studying Cancer Microenvironments
K. Shen[1], K. Pena[2], E. Seker[1], F. Wang[1], M. L. Yarmush[1], D. Sgroi[3], M. Toner[1], and B. Parekkadan[1]
[1]*Center for Engineering in Medicine, Massachusetts General Hospital and Harvard Medical School, Boston, MA,* [2]*Massachusetts Institute of Technology, Boston, MA,* [3]*Center for Cancer Research, Massachusetts General Hospital and Harvard Medical School, Boston, MA*

P-Th-A-110
Effect of Irregular Tumor Geometry on Interstitial Fluid Pressure and Flow
M. Pyrz[1] and J. W. Baish[1]
[1]*Bucknell University, Lewisburg, PA*

P-Th-A-111
A Biomimetic Model of Angiogenic Sprouting
D-H. T. Nguyen[1], S. C. Stapleton[1], P. A. Galie[1], M. T. Yang[1], D. M. Cohen[1], and C. S. Chen[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Th-A-112
PEG-Fibrinogen Hydrogel Microspheres for Three-Dimensional Breast Cancer Cell Expansion
S. Pradhan[1], S. Chang[1], and E. A. Lipke[1]
[1]*Auburn University, Auburn, AL*

P-Th-A-113
PDMS Well Platform for Culturing Large Tumor Spheroids
S. H. Ratnayaka[1], C. Chen[1], J. M. Sosa[1], O. Forouzan[1], S. S. Shevkoplyas[1], and D. B. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

P-Th-A-114
Thick-Tissue Bioreactor for Maintaining Tumor Specific Microenvironmental cConditions
D. A. Markov[1,2], J. Q. Lu[1], E. M. Lillie[1,2], P. C. Samson[2,3], J. P. Wikswo[2,3], and L. J. McCawley[1,2]
[1]*Vanderbilt University Medical Center, Nashville, TN,* [2]*Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN,* [3]*Vanderbilt University, Nashville, TN*

P-Th-A-115
Novel Cancer Traps For Combating Metastatic Cancers
C-Y. Ko[1], L. Wu[1], A. Nair[1], Y-T. Tsai[1], V. Lin[2], and L. Tang[1]
[1]*The University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas-Southwestern Medical Center at Dallas, Dallas, TX*

P-Th-A-116
Membrane Electropermeability of Breast Carcinoma Cell in Pulsed Electric Fields
P. Ghanbari[1] and R. Davalos[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Th-A-117
Matrix Stiffness is a Kay Factor in Maintenance of Breast Cancer Stem Cells
S. Sarvestani[1], X. Yang[1], X. He[1], and E. Jabbari[1]
[1]*University of South Carolina, Columbia, SC*

P-Th-A-118
In Vitro Prevascularization of a 3D Tissue Engineered Model for Breast Cancer Drug Development
L. Marshall[1], A. Penman[2], J. Murphy-Ullrich[1], A. Frost[1], T. Wick[1], and J. Berry[1]
[1]*University of Alabama at Birmingham, Birmingham, AL,* [2]*Southern Research Institute, Birmingham, AL*

P-Th-A-119
Factors and Processes of Metastatic Cancer Cell Transmigration
S. Hamilla[1], K. Stroka[2], and H. Aranda-Espinoza[1]
[1]*University of Maryland, College Park, MD,* [2]*Johns Hopkins University, Baltimore, MD*

P-Th-A-120
Alteration of Actin-Mediated Cytoskeltal Remodeling Pathways Contributes to Change in Stiffness of Ovarian Cells
W. Xu[1], R. Mezencev[1], B. Kim[1], L. Wang[1], J. McDonald[1], and T. Sulchek[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Th-A-121
In Vitro Three-Dimensional Model of Breast Tumor Microenvironment
H. Jaganathan[1], S. Mitra[1], G. Souza[2], B. Dave[1], and B. Godin[1]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]Nano3D Systems, Houston, TX

P-Th-A-122
Lab on Chip Platform Integrated with Graphics Procfessing Units for Real-Time Detection of Tumor Cells
W. Asghar[1], A. Hafeez[2], A. R. Butt[2], and S. M. Iqbal[1]
[1]University of Texas Arlington, Arlington, TX, [2]Virginia Polytechnic Institute and State University, Blacksburg, VA

P-Th-A-123
Array Microscope for High Throughput Mechanical Measurements of Cancer Biology
L. D. Osborne[1], J. Cribb[1], A. Zhong[1], J. Hsiao[1], T. O'Brien[1], L. Vicci[1], R. Taylor[1], and R. Superfine[1]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC

P-Th-A-124
Force Measurement of Glioblastoma Multiforme (DBTRG Cells) Using STEP Nanofiber Networks
P. Sharma[1], B. Koons[1], and A. S. Nain[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-A-125
Solid- or Liquid-like Behavior for BT-20 and Hs578T Breast Cancer Cells?
A. Mohammadalipour[1], Y. Choi[2], F. Benencia[1], M. M. Burdick[1], and D. F. Tees[1]
[1]Ohio University, Athens, OH, [2]Ohio University, Athens

P-Th-A-126
Irreversible Electroporation using Bursts of Sub-Microsecond Pulses
M. B. Sano[1], M. R. DeWitt[1], C. B. Arena[1], and R. V. Davalos[1]
[1]Virginia Tech, Blacksburg, VA

Track: Cancer Technology

Cancer Drug Delivery

P-Th-A-127
Developing a Graphene Nanoribbon Based Cell Specific Drug Delivery Agent
S. Mullick Chowdhury[1] and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY

P-Th-A-128
Effects of Pulsed Electric Fields on Brain Microvascular Endothelial Cell Monolayers
H. J. Cho[1], J. Aviles[1], C. B. Arena[1], S. Dong[1], M. Roman[1], R. V. Davalos[1], and Y. W. Lee[1,2]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech, Blacksburg

P-Th-A-129
Layer-by-Layer Nanoparticles for Systemic Cancer Therapy
S. Morton[1], Z. Poon[1], and P. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Th-A-130
Targeted Enzyme Prodrug Therapy for the Treatment of Metastatic Prostate Cancer
K. Passlack[1], B. Van Rite[1], J. Krais[1], C. Kurkjian[2], and R. Harrison[1]
[1]University of Oklahoma, Norman, OK, [2]University of OKlahoma Health Sciences Center, Oklahoma City, OK

P-Th-A-131
Protein Resistant Properties of PEGylated Polyelectrolyte Layer-by-Layer Shell on Drug Nanoparticles
P. Pattekari[1], T. Shutava[1], G. Parekh[1], and Y. Lvov[1]
[1]Institute for Micromanufacturing, Ruston, LA

P-Th-A-132
Transdermal Delivery of Platinum-Based Agents for The Local Control of Inflammatory Breast Cancer
J. D. Byrne[1,2], L. R. Bickford[1], A. T. O'Neill[1], K. Sandison[1], A. W. Keeler[1], W. C. Zamboni[1], C. Anders[1], M. E. Napier[1], and J. M. DeSimone[1]
[1]UNC Chapel Hill, Chapel Hill, NC, [2]UNC Chapel Hill, Chapel Hill

P-Th-A-133
Nanoparticle-Based Delivery System to Target Metastasis Sites
I. M. Adjei[1,2] and V. Labhasetwar[1,2]
[1]Cleveland Clinic Lerner Research Institute, Cleveland, OH, [2]Case Western Reserve University, Cleveland, OH

P-Th-A-134
Enzyme Prodrug Therapy Targeted for Treatment of Invasive Breast Cancer
J. J. Krais[1], V. I. Sikavitsas[1], C. D. Kurkjian[2], and R. G. Harrison[1]
[1]University of Oklahoma, Norman, OK, [2]University of Oklahoma Health Sciences Center, Oklahoma City, OK

P-Th-A-135
Targeted Drug Delivery using of Photo Voltaic Cells
M. K. Bhuyan[1], S. S. Ambure[1], J. I. Rodriguez-Devora[1], and T. XU[1]
[1]University of Texas at El paso, El Paso, TX

P-Th-A-136
The Effect of Hyperthermia on Penetration of Nanoparticles in Extracellular Matrix Gels and Tumor Spheroids
A. Nagesetti [1] and A. J. McGoron[1]
[1]Florida International University, Miami, FL

P-Th-A-137
Investigations of Yttrium-90 Microsphere Distribution Around Excised Liver Tumors
C. A. Basciano[1], J. P. Carson[2], D. B. Christensen[1], R. C. Phillips[1], J. M. Cardenas[1], K. Greene[3], and A. S. Kennedy[4,5]
[1]Applied Research Associates, Raleigh, NC, [2]Pacific Northwest National Laboratory, Richland, WA, [3]University of North Carolina, Chapel Hill, NC, [4]Cancer Centers of North Carolina, Cary, NC, [5]North Carolina State University, Raleigh

P-Th-A-138
Elastin Based Nanoparticles for Targeted Therapy of Lung Adenocarcinomas
R. Iglesias[1] and P. Koria[1]
[1]University of South Florida, Tampa, FL

P-Th-A-139
Nanoparticle-Lipid Biophysical Interactions and its Role in Tumor Targeting
R. Bhave[1,2], C. Peetla[1], I. M. Adjei[1,3], and V. Labhasetwar[1]
[1]Cleveland Clinic, Cleveland, OH, [2]Cleveland State University, Cleveland, OH, [3]Case Western Reserve University, Cleveland, OH

P-Th-A-140
Hyaluronan Based Drug Pendant System for Delivery of Hydrophobic Drugs
K. Shah[1], J. H. Overmeyer[2], W. Maltese[2], and Y. H. Yun[1]
[1]The University of Akron, Akron, OH, [2]University of Toledo, Toledo, OH

P-Th-A-141
Clinical and Theoretical Model for Monitoring the Effect of Anti-Angiogenic Tumor Therapy Efficiency in Human Colorectal Biopsy
L. Gruionu[1,2], D. Pirici[2], D. Gheonea[2], T. Cartana[2], A. Ciocalteu[2], A. Saftoiu[2], L. L. Munn[3], and G. Gruionu[2,3]
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P = Poster Session
OP = Oral Presentation

P-Th-A-142
Bioactivities of Polyoxometalates as Novel Inorganic Drugs for Cancer Therapy
J. Song[1], G. Lee[1], Y. Wang[1], C. L. Hill[2], and S. Nie[1]
[1]*Emory University and Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-A-143
Tumor Targeting Delivery of Nano-formulated Cisplatin
Y. Wang[1], X. Peng[2], D. M. Shin[2], and S. Nie[2]
[1]*Emory University, atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-A-144
Enhancing Stability of Anticancer Drug Camptothecin with PEGylated Layer-by-Layer Nanocapsules
G. Parekh[1], T. Shutava[1], P. P. Pattekari[1], and Y. M. Lvov[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Th-A-145
Focused Ultrasound Facilitated Thermo-Chemtherapy for Targeted Retinoblastoma Treatment: A Modeling Study
S. Wang[1], S. Mahesh[1], J. Liu[1], C. Geist[1], and V. Zderic[1]
[1]*The George Washington University, Washington, DC*

P-Th-A-146
Ultrasound Mediated Chemotherapeutic Nanoparticle Drug Delivery: *In-Vitro* and *In-Vivo* Studies
L. Mullin[1], P. Ma[2], S. Wadhwa[2], R. J. Mumper[2], and P. A. Dayton[1]
[1]*University of North Carolina at Chapel Hill and North Carolina State University, Chapel Hill, NC,* [2]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

P-Th-A-147
Cold Non-thermal Atomospheric Plasma for Selectively Treating Metastatic Breast Cancer
M. Wang[1], O. Volotskova[1], M. Keidar[1], and L. Zhang[1]
[1]*George Washington University, washington, DC*

Track: Cardiovascular and Respiratory Engineering

Cardiovascular Fluid Mechanics

P-Th-A-148
Non-invasive Calculation of Energy Loss in Pulmonary Arteries using 4D Phase Contrast MRI Measurement
N. Lee[1], M. Taylor[2], K. Hor[2], and R. Banerjee[1]
[1]*University of Cincinnati, Cincinnati, OH,* [2]*Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

P-Th-A-149
Design of a New Pulsatile Flow Pump System for Aortic Flow Simulation
R. A. Chaudhury[1], V. Atlasman[1], G. Pathangey[1], R. J. Adrian[1], and D. H. Frakes[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-A-150
Incomplete Restoration of Homeostatic Shear Stress in Arteriovenous Fistulae
P. McGah[1], D. Leotta[1], K. Beach[1], and A. Aliseda[1]
[1]*University of Washington, Seattle, WA*

P-Th-A-151
Trans-Stenotic Pressure Drop: Reduced-order Modeling and Sensitivity with Respect to Lesion Geometry
X. Zheng[1], P. Sharma[1], L. Itu[1], A. Kamen[1], B. Georgescu[1], and D. Comaniciu[1]
[1]*Siemens Corporate Research, Princeton, NJ*

P-Th-A-152
The Isovolumic Relaxation to Early Rapid Filling Connection: Model Prediction and *In-Vivo* Validation
S. Mossahebi[1] and S. Kovacs[2]
[1]*Washington University in St. Louis, St. Louis, MO,* [2]*Washington University in St. Louis - School of Medicine, St. Louis, MO*

P-Th-A-153
The Effect of Fibrin and Platelet Density on Interstitial Fluid Transport in Blood Clots
A. A. Wufsus[1] and K. B. Neeves[1,2]
[1]*Colorado School of Mines, Golden, CO,* [2]*University of Colorado Denver, Aurora, CO*

P-Th-A-154
Hemodynamics in the Aortic Arch, and the Relationship to Rupture During Type-A Dissection
L. Shrestha[1], J. Burken[1], D. Calcaterra[1], and S. Vigmostad[1]
[1]*The University of Iowa, Iowa City, IA*

P-Th-A-155
The Role of the Endothelial Glycocalyx in Leukocyte Attachment
S. Cooper[1], K. McDonald[1], and R. Leask[1]
[1]*McGill University, Montreal, QC, Canada*

P-Th-A-156
Endothelial Cell - Platelet Interaction Under Physiologically Relevant Dynamic Shear Stress
S. Shanmugavelayudam[1], F. Rouf[1], D. A. Rubenstein[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

P-Th-A-157
Simulations of Platelet Damage in Bileaflet Mechanical Heart Valve Flows in the Closing Phase
B. M. Yun[1], L. Lee[1], C. Aidun[1], and A. Yoganathan[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

P-Th-A-158
Simulations of Platelet Damage in Pulsatile Flows through Bileaflet Mechanical Heart Valves with Parameter Variation
B. M. Yun[1], C. Aidun[1], and A. Yoganathan[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

P-Th-A-159
GPU Accelerated Simulation of the Human Arterial Circulation
L. M. Itu[1], C. Suciu[1,2], A. Postelnicu[1], and F. Moldoveanu[1]
[1]*Transilvania University of Brasov, Brasov, Romania,* [2]*Siemens Corporate Technology, Brasov, Romania*

P-Th-A-160
Occlusive Deformation as a Mechanism for Hypertension with Renal Artery Aneurysm
E. A. O'Rear[1], L. A. Down[1], and D. V. Papavassiliou[1]
[1]*University of Oklahoma, Norman, OK*

P-Th-A-161
Optimization of the Syncardia and the Helmholtz Reinheart Total Artificial Hearts for Retrofitting with Bileaflet MHV
Y. Alemu[1], T. Kaufmann[2], U. Steinseifer[2], M. Slepian[3], and D. Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Helmholtz Institute, RWTH Aachen University, Aachen, Germany,* [3]*University of Arizona, Tucson, AZ*

P-Th-A-162
Exploring the Shear Stress and Time Domains of VWF Degradation
S. Yang[1], V. Turitto[1], F. Zaman[1], and Z. N. Demou[1]
[1]*Illinois institute of Technology, Chicago, IL*

P-Th-A-163
Coupled Numerical Models of Fenestrated Endovascular Aneurysm Repair Stent-Grafts Using Effective Mechanical Properties and Specific Anatomies
T. Meirson[1], I. Avrahami[2], M. Halak[3], Z. Blechman[1], and M. Brand[2]
[1]*Afeka Academic College of Engineering, Tel Aviv, Israel,* [2]*Ariel University center of Samaria, Ariel, Israel,* [3]*Chaim Sheba Medical Center, Tel Hashomer, Israel*

P-Th-A-164
Interpretation of Guyton's Cardiac Output-Venous Return Curves
M. W. Mohiuddin[1], E. R. Carlson[1], and C. M. Quick[1]
[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Th-A-165
Role of Hematocrit in Hemorheology in Arterioles *In Vivo*
O. Yalcin[1] and P. Cabrales[2]
[1]University of California, San Diego, San Diego, CA, [2]University of California, San Diego, La Jolla, CA

P-Th-A-166
Effect of the Mitral Valve Leaflet Asymmetricity on the Shape of Transmitral Vortex
A. Falahatpisheh[1,2], N. Pahlevan[3], B. Dueitt[1,2], and A. Kheradvar[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA, [3]California Institute of Technology, Pasadena, CA

P-Th-A-167
Evaluating Synthetic Composite Materials Replicating Patient Aortic Aneurysm Material Properties
C. M. Margossian[1], E. Golden[1], F. Pancheri[1], M. D. Iafrati[2], L. Dorfmann[1], and R. A. Peattie[1]
[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

P-Th-A-168
An Experimental and Computational Study in Left Ventricle Models Examining Vortex Formation From Inclined Inflow Nozzles During Diastolic Filling
A. Santhanakrishnan[1], B. D. Chaffins[1], T. B. Le[2], I. U. Okafor[1], F. Sotiropoulos[2], and A. P. Yoganathan[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Minnesota, Minneapolis, MN

P-Th-A-169
Effects of Acoustic Droplet Vaporization on Endothelial Cells
R. Seda[1], D. Li[1], J. B. Fowlkes[1], and J. L. Bull[1]
[1]University of Michigan, Ann Arbor, MI

P-Th-A-170
A New Methodology for Evaluating the Relationship Between Wall Shear Stress and Carotid Artery Plaque
D. Molony[1], C. Arepalli[2], Y. Yang[2], S. Tang[2], J. Oshinski[2], X. Tang[2], R. Veeraswamy[2], A. Stillman[2], and D. Giddens[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Th-A-171
Fluid Shear Stress Analysis in a 3D Aortic Arch Model Under Bicuspid Aortic Valve Flow
K. Cao[1], P. Sucosky[1], and S. Chandra[1]
[1]University of Notre Dame, Notre Dame, IN

P-Th-A-172
High Speed Imaging of Acoustic Droplet Vaporization
D. S. Li[1], O. D. Krifgans[1], J. B. Fowlkes[1], and J. L. Bull[1]
[1]University of Michigan, Ann Arbor, MI

P-Th-A-173
Adaptation of Vacular Wall Thickness and Stiffness to Wall Stress Predicts Arterial Compliances and Pulse Pressures
P. H. Nguyen[1], M. W. Mohiuddin[1,2], S. F. Knezek[1,2], and C. M. Quick[1,2]
[1]Michael E. DeBakey Institute, College Station, TX, [2]Texas A&M University, College Station, TX

P-Th-A-174
Delineating Mass Transfer and Mechanotransduction at the Endothelium
H. C. Bhakta[1], P. Vandrangi[2], and V. G-J. Rodgers[2]
[1]UC Riverside, Sacramento, CA, [2]UC Riverside, Riverside, CA

P-Th-A-175
Impact of Bifurcation Stenting on Endothelial Shear Stress: Implications for Bifurcation Lesions
H. Y. Chen[1], I. D. Moussa[2], C. Davidson[3], and G. S. Kassab[4]
[1]Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN, [2]University of Texas Health Science Center, San Antonio, TX, [3]Northwestern University, Chicago, IL, [4]IU-Purdue, Indianapolis, IN

P-Th-A-176
In Vitro Study of Compliance and Pulmonary Vascular Resistance in the Fontan Circulation with Respiration Effects
M. Vukicevic[1], T. Conover[1], J. Zhou[1], T-Y. Hsia[2], and R. Figliola[1]
[1]Clemson University, Clemson, SC, [2]Great Ormond Street Hospital for Children, London, United Kingdom

Track: Cardiovascular and Respiratory Engineering

Cardiac Structure, Electrophysiology and Contraction

P-Th-A-177
Design of a Cyclic Stretch Bioreactor and its Application in Cardiac Fibroblast Physiology
L. Lu[1], M. Mende[1], C. Werner[2], and U. Ravens[1]
[1]Medical Faculty, TU Dresden, Dresden, Germany, [2]Leibniz Institute for Polymer Research Dresden, Dresden, Germany

P-Th-A-178
Calcium Transients Imaging to Assess Conduction Phenotypes of the Adult Zebrafish Cardiomyocytes
J. Gu[1], A. Cobo[1], F. Yu[1], N. Chi[2], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA, [2]University of California, San Diego, La Jolla, CA

P-Th-A-179
Model Order Reduction for Finite Element Modeling of Cardiac Tissue
D. H. Vu[1] and K. T. Ng[1]
[1]New Mexico State University, Las Cruces, NM

P-Th-A-180
A New Electrode Configuration for Motion Artifact Monitoring in Electrocardiogram
T. Lee[1], B-H. Ko[1], J. Kim[1], and K. Shin[1]
[1]Samsung Advanced Institute of Technology (SAIT), Yongin-si, Korea, Republic of

P-Th-A-181
The Role of Wavefront-Fibrosis Interactions in the Genesis of Complex Fractionated Electrograms in a 2-D Model of Atrial Tissue
M. L. Hubbard[1] and C. S. Henriquez[1]
[1]Duke University, Durham, NC

P-Th-A-182
Local Onset of Calcium Alternans Precedes APD Alternans in Langendorff-Perfused Rabbit Hearts
R. Visweswaran[1], S. McIntyre[1], and E. G. Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN

P-Th-A-183
Failure Strength of the Infarcted Left Ventricle in Matrix Metalloproteinase-28 Null Mice
A. Voorhees[1,2], Y. Ma[3], K. DeLeon[3], G. Halade[3], M. Lindsey[1,3], and H-C. Han[1,2]
[1]UTSA/UTHSCSA Joint Program in Biomedical Engineering, San Antonio, TX, [2]The University of Texas at San Antonio, San Antonio, TX, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX

P-Th-A-184
Semi-Implicit Element Free Modeling of Cardiac Propagation
I. Sturdevant[1] and K. T. Ng[1]
[1]New Mexico State University, Las Cruces, NM

P = Poster Session
OP = Oral Presentation

P-Th-A-185
A Robust Arrhythmia Classification Algorithm to Inter/Intra-Individual Differences from ECG signals
Y. Kim[1], C. Choi[1], K. Shin[1], J. Kim[2], and M. Lee[2]
[1]Samsung Advanced Institute of Technology, Yongin-si, Gyeonggi-do, Korea, Republic of, [2]Yonsei University, Yongin-si, Gyeonggi-do, Korea, Republic of

P-Th-A-186
A Tool for Automatically Extracting Information from Paper Electrocardiography Data
L. Ravichandran[1], C. D. Harless[2], A. J. Shah[1], and S. Tridandapani[1]
[1]Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

P-Th-A-187
Finite Element Bidomain Modeling of Cardiac Propagation on Graphics Processing Units
C. Deng[1] and K. T. Ng[1]
[1]New Mexico State University, Las Cruces, NM

P-Th-A-188
Quantitative Measures of Blood Oxygen Desaturation Reflective of Duration of Simulated Sleep Apnea
J. Swittens[1], R. M. Alex[2], S. Iyer[3], G. Bhave[4], A. Bashaboyina[3], M. A. Al-Abed[5], D. E. Watenpaugh[6], R. Zhang[7], and K. Behbehani[3]
[1]University of Texas at Arlington, Arlington, TX, Jordan, [2]University of Texas at Arlington, Arlington, TX, [3]University of Texas, Arlington, TX, [4]University of Texas at Austin, Austin, TX, [5]Hashemite University, Aaman, Jordan, [6]Sleep Consultants Inc., Fort Worth, TX, [7]IInstitute for Exercise and Environmental Medicine, Dallas, TX

Track: Nano and Micro Technologies

BioMEMs and Nanotech for Cellular Engineering

P-Th-A-189
Automated Cell-Sorting on Micromolded Magnetic Raft Arrays
P. J. Attayek[1,2], Y. L. Wang[1], P. Shah[1,2], C. E. Sims[1], and N. L. Allbritton[1,2]
[1]University of North Carolina, Chapel Hill, NC, [2]North Carolina State University, Raleigh, NC

P-Th-A-190
Hydrodynamic Resistance as an Indicator of Cell Deformability
M. A. Cartas-Ayala[1] and R. Karnik[1]
[1]MIT, Cambridge, MA

P-Th-A-191
Calcium Alginate-Mediated Cellular Reprogramming in a Microfluidic Device
J. F. Betz[1], Y. Cheng[1], C-Y. Tsao[1], H-C. Wu[1], G. F. Payne[1], W. E. Bentley[1], and G. W. Rubloff[1]
[1]University of Maryland, College Park, MD

P-Th-A-192
Characterizing Dynamic Adhesion of Mesenchymal Stem Cells Using a Cell Rolling Cytometer
S. Choi[1], L. Oren[2], J. M. Karp[2], and R. Karnik[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Center for Regenerative Therapeutics, Brigham and Women's Hospital, Cambridge, MA

P-Th-A-193
Development of a Microfluidic Device Forming Oxygen Gradient for Cell Culture
H. Uchida[1], T. Shiwa[1], A. Sato[1], and K. Tsukada[1]
[1]Keio University, Yokohama, Japan

P-Th-A-194
Imaging Cytometer Capable of Single-Cell Isolations Based on Complex Phenotypes
P. K. Shah[1,2], C. Sims[1], and N. Allbritton[1,2]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]North Carolina State University, Raleigh, NC

P-Th-A-195
A Microfluidic Device for *In Vitro* Culture of Gastrulation Stage Mouse Embryos
M-E. Brett[1], J. Hoffman[1], B. Merrill[1], and D. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Th-A-196
Microfluidics-Based, Selective Detachment of Single Cell Through Spatially Controlled Fluid Flow
S. Suri[1], L. Chingozha[1], and H. Lu[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Th-A-197
Long Term Culture of Neuronal Stem Cells C17.2 in Microfluidics
B. Wang[1], S. Jedlicka[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA

P-Th-A-198
Benchtop PDMS Surface Wrinkling for Cellular Mechanotransduction Studies
K. Wei[1] and Y. Zhao[1]
[1]Ohio State University, Columbus, OH

P-Th-A-199
Cell Patterning Using Electrosprayed Microparticles
X. Zhang[1] and Y. Zhao[1]
[1]Ohio State University, Columbus, OH

P-Th-A-200
Studying Axon Guidance with Transwell Microfluidic Gradients
C. G. Sip[1], N. Bhattacharjee[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

P-Th-A-201
Separation of Two Phentypicaly Similar Cell Types Using PEG-ylated Microfluidic Channels
D. Vickers[1], E. Chory[1], and S. Murthy[1]
[1]Northeastern University, Boston, MA

P-Th-A-202
Nanoelectroporation for Safe and Efficient Cell Reprograming
D. Gallego-Perez[1], Y. Wu[1], X. Wang[1], J. Ma[1], P. Boukany[1], K. Gao[1], L. Li[1], L-J. Wang[1], K. Kwak[1], S. Eckardt[2], J. K. Mclaughlin[2], and L. Lee[1]
[1]The Ohio State University, Columbus, OH, [2]Nationwide Children's Hospital, Columbus, OH

P-Th-A-203
Study of Axon-Guidance Interactions in Controlled Microfluidic Environments
S. Moorjani[1], S-E. Huh[1], N. Bhattacharjee[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

P-Th-A-204
A Microdevice for Investigating Intercellular Communication under Uniaxial Strain Gradient
Q. Wang[1] and Y. Zhao[1]
[1]Ohio State University, Columbus, OH

P-Th-A-205
A Microdevice with Varying Thickness Membranes for Live Cell Equi-Biaxial Straining
Q. Wang[1] and Y. Zhao[1]
[1]Ohio State University, Columbus, OH

P-Th-A-206
Synthetic Nanoporous Encapsulants for Cell Therapy
J. Park[1], S. Kadam[1], Y. V. Kalinin[1], C. Randall[1], and D. H. Gracias[1]
[1]Johns Hopkins University, Baltimore, MD

P-Th-A-207
SyM-BBB: Microfluidic Blood Brain Barrier Model
B. Prabhakarpandian[1], M-C. Shen[2], I. Mills[2], M. Aschner[3], and K. Pant[2]
[1]CFD Research Corporation, Huntsville, [2]CFD Research Corporation, Huntsville, AL, [3]Vanderbilt University Medical Center, Nashville, TN

P-Th-A-208
Multicellular 3D Co-Cultures and Assays in Rapid Prototyped Multilevel Microfluidic Devices
H. Hwang[1], J. Park[1], C. Shin[1], Y. Do[1], and Y-K. Cho[1]
[1]UNIST, Ulsan, Korea, Republic of

P-Th-A-209
Micropatterned Hydrogel Stamping for the Production of Giant Vesicle Arrays to Model Natural Membranes
E. Richards[1], H. Nie[1], and S. Majd[1]
[1]Pennsylvania State University, State College, PA

P-Th-A-210
STEP Enabled Hierarchical Nanofiber Networks for Force Measurement of Migratory Single Cells
J. Wang[1], K. Sheets[1], and A. S. Nain[2]
[1]Virginia Tech, Blacksburgh, VA, [2]Virginia Tech, Blacksburg, VA

P-Th-A-211
Electrophysiological Classification and Sorting of Single Cells in a Microfluidic Device
F. Myers[1], O. Abilez[2], C. Zarins[2], and L. Lee[1]
[1]UC Berkeley, Berkeley, CA, [2]Stanford University, Stanford, CA

Track: Nano and Micro Technologies

Biosensors, Bio-Interfaces and Implantable Devices

P-Th-A-212
Colorimetric Viral Detection Using Sialic Acid Covered Gold Nanoparticles
C. Lee[1] and P. Zhang[1]
[1]University of Cincinnati, Cincinnati, OH

P-Th-A-213
Toxin Detection Using Organic ElectroChemical Ttransistors Integrated With Living Cells
S. A. Tria[1], L. H. Jimison[1], M. Bongo[1], A. Hama[1], G. G. Malliaras[1], and R. M. Owens[1]
[1]EMSE, GARDANNE, France, Metropolitan

P-Th-A-214
Rapid Lamination of Multilayer Silk Fibroin Films with Controlled Protein Crystallization
M. A. Brenckle[1], H. Tao[1], Y. Zhang[1], M. Yang[1], D. L. Kaplan[1], and F. Omenetto[1]
[1]Tufts University, Medford, MA

P-Th-A-215
In Vivo, Transcutaneous Glucose Sensing Using Surface-Enhanced Spatially Offset Raman Spectroscopy: Improved Hypoglycemic Accuracy, Low Incident Power, and Extended Lifetime
K. Ma[1], J. Yuen[1], N. Shah[1], J. Walsh[1], M. Glucksberg[1], and R. Van Duyne[1]
[1]Northwestern University, Evanston, IL

P-Th-A-216
A Simple Surface Electrode for Biosignal Monitoring
B. Ko[1], T. Lee[1], Y-H. Kim[1], and K. Shin[1]
[1]SAIT, Yongin, Korea, Republic of

P-Th-A-217
Thrombin Detection and Quantification by AuNR-Aptamer Sensing Technique
S. Jahanian[1], B. Singleton[1], A. K. Ramasubramanian[1], and L. Tang[1]
[1]UTSA, San Antonio, TX

P-Th-A-218
Parylene-based Force Sensor Array Technologies for Mechanical Characterization of Neural Interfaces
B. J. Kim[1], C. A. Gutierrez[2], and E. Meng[1]
[1]University of Southern California, Los Angeles, CA, [2]Independent consultant, Los Angeles, CA

P-Th-A-219
Bioinspired Materials for Targeting Pathogens
J. Larsen[1], V. Nuñez[1], S. Upadhyayula[1], D. Bao[1], and V. I. Vullev[1]
[1]University of California, Riverside, Riverside, CA

P-Th-A-220
Dental Cleaning with Hard Ceramic Transducers and Stable Cavitation
J. Macione[1]
[1]RPI, troy, NY

P-Th-A-221
Real Time Detection of Brain Cell L-Glutamate Dynamics and Metabolism
S. M. Tangutooru[1], V. Kopparthy[1], M. A. DeCoster[1], and E. J. Guilbeau[1]
[1]Louisiana Tech University, RUSTON, LA

P-Th-A-222
Microelectrode Mmicroarray Functionalization Via Continuous Flow Microfluidic Printing
J. W. Chamberlain[1], K. Peyvan[2], W. Lyon[3], D. Danley[1], J. Eckman[4], B. Gale[5], and D. M. Ratner[1]
[1]University of Washington, Seattle, WA, [2]Peyvan Systems, Bothell, WA, [3]Air Force Research Laboratory, Dayton, OH, [4]Wasatch Microfluidics, Salt Lake City, UT, [5]University of Utah, Salt Lake City, UT

P-Th-A-223
Development of a Low-Cost Blood Glucose Monitoring System for Implementation in Resource-Poor Settings
L. Wiles[1], S. Langworthy[1], M. Halsey[1], J. Desjardins[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Th-A-224
Improving the Lateral-Flow Immunoassay for Protein Detection Using an Aqueous Two-Phase Micellar System
F. Mashayekhi[1], P. M. Nafisi[1], A. M. Le[1], C. D. Yamanishi[1], R. Y. Chiu[1], B. M. Wu[1], and D. T. Kamei[1]
[1]University of California, Los Angeles, Los Angeles, CA

P-Th-A-225
A Versatile Strategy for the Biofunctionalization of Cellulose Via Covalent Modification
A. Yu[1], J. Shang[1], F. Cheng[1], B. A. Paik[2], J. Kaplan[3], R. Andrade[3], and D. M. Ratner[1]
[1]University of Washington, Seattle, WA, [2]University of Delaware, Newark, DE, [3]Temple University, Philadelphia, PA

P-Th-A-226
Inorganic/Organic Composite Biosensors as a Platform for the Supersensitive Detection and Quantification of Pancreatic Cell Biomarkers
M. P. Hwang[1], J-W. Lee[1], J. Choi[1], and K-H. Lee[1]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of

P-Th-A-227
SERS on a Bead: New Approaches to Cardiovascular Disease Biomarkers Diagnosis
H. Wei[1], X. Qian[1] and S. Nie[1]
[1]Wallace H. Coulter Department of Biomedical Engineering, Emory University, Atlanta, GA

P-Th-A-228
A Micro-Drive Hearing Aid: A Non-Invasive Hearing Technology
P. E. Paulick[1], H. Mahboubi[2], H. Djalilian[2], and M. Bachman[1]
[1]University of California Irvine, Irvine, CA, [2]University of California Irvine Medical Center, Irvine, CA

P = Poster Session
OP = Oral Presentation

P-Th-A-229
A Novel Biomimetic, Directional, Particle Velocity Microphone
M. Frerck[1], B. Baker[1], and R. Rabbitt[1,2]
[1]*University of Utah, Salt Lake City, UT,* [2]*Marine Biological Laboratory, Woods Hole, MA*

P-Th-A-230
Dynamic Calibration of Two New Accelerometry-Based Raw-Data Activity Monitors
C. R. Idelson[1], R. J. Brychta[1], H. Sasai[1], and K. Y. Chen[1]
[1]*NIDDK, NIH, Bethesda, MD*

P-Th-A-231
Microfabricated Polymer-Based Neural Interface for Electrical Stimulation and Recording, Drug Delivery, and Chemical Sensing
V. Tolosa[1], A. Tooker[1], K. Shah[1], T. DeLima[1], S. Felix[1], H. Sheth[1], and S. Pannu[1]
[1]*Lawrence Livermore National Laboratory, Livermore, CA*

P-Th-A-232
A New Digital Signal Processing (DSP) Model for Studying Sensitivity and Selectivity of a Bionanosensor
V. U. Desai[1], V. K. Kalimisetti[1], S. Cunningham[1], B. Aliane[1], and S. K. Sinha[1]
[1]*University of New Haven, West Haven, CT*

P-Th-A-233
Electric Control of Enzymatic Activity Through Redox Mediators
T. Gordonov[1], E. Kim[1], G. Payne[1], and W. Bentley[1]
[1]*University of Maryland, College Park, College Park, MD*

Track: Nano and Micro Technologies

DNA Nanotechnology and Other Assembly Concepts

P-Th-A-234
Enhancing Magnetic Nanoparticle Based DNA Transfection: Ideal Cassette Features
M. M. Vernon[1] and J. Dobson[1,2]
[1]*University of Florida, Gainesville, FL,* [2]*Institute for Science & Technology in Medicine, Keele University, Stoke-on-Trent, United Kingdom*

P-Th-A-235
DNA Condensate Morphology and Transfection, as Affected by Polycationic Strength
N. Halmagyi[1], D. Crowder[1], G. Howard[1], and Y. Yun[1]
[1]*The University of Akron, Akron, OH*

P-Th-A-236
Detection of DNA Hybridization Event Using Thermoelectric Effect
B. Adapa[1], G. G. Nestorova[1], V. Kopparthy[1], S. Tangutooru[1], and E. J. Guilbeau[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Th-A-237
Sequence-Specific Nucleic Acid Detection from Binary Pore Conductance Measurement
L. Esfandiari[1], H. Monbouquette[1], and J. J. Schmidt[1]
[1]*UC Los Angeles, Los Angeles, CA*

P-Th-A-238
Computer-Aided Engineering for Structural Nucleic Acid Nanotechnology
M. Bathe[1], M. Adendorff[1], I. Gupta[1], and D-N. Kim[1]
[1]*MIT, Cambridge, MA*

Track: Nano and Micro Technologies

Drug Delivery Technologies: Nano to Micro Devices

P-Th-A-239
Targeted Multidrug Delivery System for Overcoming Chemoresistance in Breast Cancer
Y. Tang[1,2], R. Cheheltani[1], G. Lamberti[1], M. F. Kiani[1], and B. Wang[1,2]
[1]*Temple University, Philadelphia, PA,* [2]*Widener University, Chester, PA*

P-Th-A-240
Implantable Drug Delivery Microchip for Chronic Disease
S. Lee[1], M. Park[1], C. Park[1], and Y. Choy[2]
[1]*Interdisciplinary Program in Bioengineering, College of Engineering, Seoul, Korea, Republic of,* [2]*Department of Biomedical Engineering, College of Medicine and Institute of Medical &, Seoul, Korea, Republic of*

P-Th-A-241
An Improved Method for Simultaneous Co-Delivery of Fluids and Laser Energy with the Fiberoptic Microneedle Device
R. L. Hood[1], R. T. Andriani Jr.[1], Y. Chen[1], J. H. Rossmeisl[1,2], and C. G. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA*

P-Th-A-242
Single-cell Level Microfluidic Electroporation for Sequential Molecule Delivery
H. Yun[1] and S. C. Hur[1]
[1]*Rowland Institue at Harvard University, Cambridge, MA*

P-Th-A-243
Simulation of Magnetic Drug Targeting in the Mouse Right Ventricle
J. Suo[1], N. Landazuri[2], S. Tong[1], G. Bao[1], R. Taylor[2], and D. Giddens[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-A-244
Engineered Biodegradable Microparticles for Well-Controlled Drug Delivery
E. H. Roberts[1], Y-P. Ho[1], M. D. Kulis[2], A. W. Burks[2], and K. W. Leong[1]
[1]*Duke University, Durham, NC,* [2]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

P-Th-A-245
Development of Targeted Nanoparticles for Nerve Regeneration
A. N. Kolberg[1] and Z. P. Galliger[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Th-A-246
Electrochemical Drug Infusion Micropump with Wide Dynamic Range and Viscosity Independent Pumping
R. Sheybani[1] and E. Meng[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-A-247
Trauma Targeted Dexamethasone Delivery
Z. Galliger[1] and A. Kolberg[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Th-A-248
A Programmable Drug Delivery Nano-Carrier for Controlled and Extended Release of Daunomycin
P. Sundaram[1], H. Kurniawan[1], M. E. Byrne[1], and J. Wower[2]
[1]*Biomimetic & Biohybrid Materials, Biomedical Devices, & Drug Delivery Laboratorie, Auburn University, Auburn, AL,* [2]*RNA Biochemistry Lab, Auburn University, Auburn, AL*

P-Th-A-249
Polymer Wrapped Carbon Nanotubes for Controlled Gene Delivery
Q. Cheng[1] and E. Jabbarzadeh[1]
[1]*University of South Carolina, Columbia, SC*

P-Th-A-250
Biodegradable Beta-Cyclodextrin-Based Nanoparticles for Drug Delivery
L. Wu[1], D. R. Janagam[1], and T. L. Lowe[1]
[1]*University of Tennessee Health Science Center, Memphis, TN*

P-Th-A-251
Real-time Dose Tracking and Device Status Notification for a Drug Infusion Micropump
N. E. Cabrera-Munoz[1], R. Sheybani[1], and E. Meng[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-A-252
Complexation Hydrogels as Oral Delivery Vehicles of Therapeutic Antibodies
B. R. Carrillo-Conde[1] and N. A. Peppas[1]
[1]*The University of Texas at Austin, Austin, TX*

P-Th-A-253
FITC-TRE for Studying Intracellular Localization of Exogenously-Introduced Trehalose
A. Abazari[1,2], G. Budin[1,3], M. Fernandez-Suarez[1,2], R. Weissleder[1,3], and M. Toner[1,2]
[1]*Massachusetts General Hospital/ Harvard Medical School, Boston, MA,* [2]*The Center for Engineering in Medicine, Charlestown, MA,* [3]*Center for Systems Biology, Boston, MA*

P-Th-A-254
Model Drug Delivery via *In Situ* Production of Microbubbles by a Microfluidic Device
A. J. Dixon[1], A. H. Dhanaliwala[1], J. Chen[1], A. L. Klibanov[1], and J. A. Hossack[1]
[1]*University of Virginia, Charlottesville, VA*

P-Th-A-255
Controlled Delivery of FGF from Dual Stimuli Responsive Microspheres for Therapeutic Angiogenesis
C. E. Nelson[1], R. V. Joshi[1], and C. L. Duvall[1]
[1]*Vanderbilt University, Nashville, TN*

P-Th-A-256
Delivery of Antitumor Agent Lucanthone Using Graphene Oxide Nanoribbons
C. Suhrland[1], A. P. Gadgil[1], S. Lee[2], M. Naidu[3], and B. Sitharaman[1]
[1]*State University of New York, Stony Brook, Stony Brook, NY,* [2]*State University of New York, Stony Brook, Round Rock, TX,* [3]*Stony Brook University Medical Center, Stony Brook, NY*

P-Th-A-257
Impact of Food-associated Stimuli on Nanoparticle Penetration through Gastrointestinal Mucus
H. M. Yildiz[1] and R. L. Carrier[1]
[1]*Northeastern University, Boston, MA*

P-Th-A-258
Feasibility of Intrathecal Magnetic Drug Targeting: Nanoparticle Guidance in a Spinal Canal Model
E. Lueshen[1], I. Venugopal[1], and A. A. Linninger[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P-Th-A-259
Acoustically Driven Microswimmers Via Bubbles Transducer
D. Ahmed[1], M. Lu[1], M. I. Lapsley[1], V. H. Crespi[1], and T. J. Huang[1]
[1]*Penn State University, University Park, PA*

P-Th-A-260
Synthetic Tumor Networks for Screening Drug Delivery Systems
B. Prabhakarpandian[1], M-C. Shen[1], I. Mills[1], M. Matar[2], J. Fewell[2], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*EGEN Inc., Huntsville, AL*

P-Th-A-261
Controllable siRNA Loading in Neurons Using Voltage Pre-conditioning
A. Sridharan[1], C. Patel[1], and J. Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-A-262
High-Throughput Transfection of Precisely Targeted Primary Neurons Using Microscale Electroporation
C. Patel[1], A. Sridharan[1], and J. Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-A-263
Nano-Carriers with Surface-Exposed SOD and Targeting Antibody for Therapeutic Applications
Y. Xiang[1], V. Maximov[1], V. Rekouv[1], and A. Vertegel[1]
[1]*Clemson University, Clemson, SC*

Track: Stem Cell Engineering

Biomaterial-Based Control of Stem Cell Environment

P-Th-A-264
Integrin α6β1 Plays a Role in Neural Stem Cell Proliferation on Endothelial Extracellular Matrix
K. S. Ellison[1,2], C. M. Dumont[1,2], N. DePaola[3], and D. M. Thompson[1,2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Center for Biotechnology and Interdisciplinary Studies, Troy, NY,* [3]*Illinois Institute of Technology, Chicago, IL*

P-Th-A-265
A Stiffness Gradient Scaffold for Stem Cell Based Cardiac Cell Therapy
K. Patel[1], P. Patterson[1], T. Grubb[1], and G. Zhang[1]
[1]*The University of Akron, Akron, OH*

P-Th-A-266
Proliferation, Morphology, and Undifferentiation of Mouse iPS Cell Aggregates in Alginate Hydrogel-Based Microcapsules
I. Horiguchi[1], M. M. Chowdury[1], and Y. Sakai[1]
[1]*The Institute of Industrial Science, The University of Tokyo, Tokyo, Japan*

P-Th-A-267
Towards Guiding Mesenchymal Stem Cell Differentiation on Biologically Inspired Micropatterned Surfaces
A. Shukla[1] and J. West[1]
[1]*Rice University, Houston, TX*

P-Th-A-268
Incorporation of Microparticles within Embryoid Bodies for Cell-Mediated Temporal Growth Factor Delivery
A. H. Nguyen[1], J. M. McKinney[1], R. Reit[1], M. O. Platt[1,2], and T. C. McDevitt[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-A-269
Human Mesenchymal Stem Cell Elastic Modulus Directs Differentiation Capacity
C. LeBlon[1], C. Fodor[1], T. Zhang[1], X. Zhang[1], and S. Jedlicka[1]
[1]*Lehigh University, Bethlehem, PA*

P-Th-A-270
Regulation of Human Mesenchymal Stem Cell Differentiation Into a Cardiomyocyte-Like Direction Based on Dynamic Cellular Behavior
M-H. Kim[1], Y. Ogawa[1], and M. Kino-oka[1]
[1]*Osaka University, Osaka, Japan*

P-Th-A-271
Modulation of Induced Pluripotent Stem Cell Functions by Nanofibrous Scaffolds
M. Maldonado[1], B. Maraglia[1], B. Saad[1], and J. Nam[1]
[1]*University of California, Riverside, CA*

P = Poster Session
OP = Oral Presentation

P-Th-A-272
The Role of The Extracellular Matrix in Direct Cardiac Reprogramming
Y. P. Kong[1] and A. J. Putnam[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Th-A-273
A Novel 3D Microcapsule System for Stem Cell Culture and Differentiation
W. Zhang[1] and X. He[1]
[1]*The Ohio State University, Columbus, OH*

P-Th-A-274
Enhanced Neuronal Differentiation of Neural Stem Cells in 3D Self-Assembled Culture
T. Ramchal[1], Y-T. Liu[1], M. E. Boutin[1], J. Morgan[1], and D. Hoffman-Kim[1]
[1]*Brown University, Providence, RI*

P-Th-A-275
Regulation of Stem Cell Fate in a Three-Dimensional Micropatterned Dual-Crosslinked Hydrogel System
O. Jeon[1] and E. Alsberg[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Th-A-276
Alginate-Encapsulated Mesenchymal Stromal Cells are Neuroprotective in an Organotypic Culture Model of Cerebral Ischemia
E. Stucky[1], I. Ahmed[1], R. Schloss[1], M. L. Yarmush[1], and D. I. Shreiber[1]
[1]*Rutgers University, Piscataway, NJ*

P-Th-A-277
A Synthetic, Micropatterned Culture Surface for Embryonic Stem Cells
F. L. Svedlund[1], E. Irwin[1], J. Wang[1], and K. E. Healy[1]
[1]*UC Berkeley, Berkeley, CA*

P-Th-A-278
Stem Cell Instructive Scaffolds Via Interface Engineering
A. J. Engler[1,2]
[1]*UC San Diego, La Jolla, CA,* [2]*Sanford Consortium for Regenerative Medicine, La Jolla, CA*

P-Th-A-279
Engineering Porous PEG Gels to Support Direct Reprogramming of Mouse Fibroblasts to Cardiomyocytes- Effects of Protein Coatings and Seeding Densities
A. W. Smith[1], I. R. Efimov[1], and D. L. Elbert[1]
[1]*Washington University in Saint Louis, Saint Louis, MO*

P-Th-A-280
Carbon Nanotube Based Substrates for Maintenance and Differentiation of Human Pluripotent Stem Cells
M. V. Pryzhkova[1], Q. Cheng[1], and E. Jabbarzadeh[1]
[1]*University of South Carolina, Columbia, SC*

P-Th-A-281
Surface Modification of a Reconfigurable Co-Culture Device to Assess the Effect of Substrate Stiffness and Cell-Cell Interactions
N. Rao[1], G. N. Grover[1], Y. Choi[1], L. P. Vincent[1], K. Spencer[2], E. Hui[2], A. J. Engler[1], and K. L. Christman[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*University of California, Irvine, Irvine, CA*

P-Th-A-282
Electrically-cConductive Composite Scaffolds for Improved Cardiac Differentation of Mesenchymal Stem Cells
S. W. Crowder[1], Y. Liang[1], R. Rath[1], A. M. Park[1], C. C. Lim[2], X. Wang[1], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University Medical Center, Nashville, TN*

Track: Stem Cell Engineering

Endogenous Stem Cell Recruitment

P-Th-A-283
Endogeneous Neural Crest-like Stem Cell Homing Contributes to Vascular Graft Remodeling
A. Wang[1,2], Z. Tang[1], J. Yu[1], B. Lee[1], F. Yuan[1], and S. Li[1]
[1]*UC Berkeley, Berkeley, CA,* [2]*UC Davis, Sacramento, CA*

P-Th-A-284
Promoting Neurorepair: Adult Subependymal Neural Precursors Undergo Rapid and Directed Migration in the Presence of Direct Current Electric Fields.
R. Babona-Pilipos[1], C. Florez[2], P. Carlen[2], M. Popovic[1], and C. Morshead[1]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*University Health Network - Toronto Western Research Institute, Toronto, ON, Canada*

P-Th-A-285
Investigating the Crosstalk between SDF-1α and ECM Signaling in Neural Stem Cell Recruitment
C. P. Addington[1], C. M. Pauken[1], M. R. Caplan[1], and S. E. Stabenfeldt[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-A-286
Identification of Circulating Lymphatic Endothelial Progenitor Cells from Human Blood
Y-D. Sohn[1], S-J. Lee[1], J. Han[1], J. Byun[1], S-H. Lee[1], W. Kim[1], E. Lee[1], and Y-S. Yoon[1]
[1]*Emory University, Atlanta, GA*

Track: Tissue Engineering

Biomimetics for Tissue Regeneration

P-Th-A-287
3D Microengineered Hydrogels for Cardiac Side Population Cells
G. Camci-Unal[1,2], D. Cuttica[1,2], and A. Khademhosseini[1,2]
[1]*Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA,* [2]*Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA*

P-Th-A-288
Electrospun Nanocomposite Polydioxanone Fibers for Directed Mesenchymal Stem Cell Differentiation
N. J. Castro[1] and L. G. Zhang[1]
[1]*The George Washington University, Washington, DC*

P-Th-A-289
Delivery of Platelet-Derived Growth Factor from Bone-Mimetic Electrospun Matrices as a Chemotactic Factor for Mesenchymal Stem Cells
M. C. Phipps[1], Y. Xu[1], and S. L. Bellis[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

P-Th-A-290
Cell-Secreted Matrix Coatings for Regulating Premature Fusion of Cranial Bone
A. Bhat[1], S. Ho[1], and K. Leach[1]
[1]*University of California Davis, Davis, CA*

P-Th-A-291
Meningeal Fibroblast-derived Biomaterials for Dural Tissue Repair
F. Meng[1], V. Hlady[1], and P. A. Tresco[1]
[1]*University of Utah, Salt Lake City, UT*

P-Th-A-292
Developing a Bio-Inspired Hybrid Nanosack for the Delivery of Pancreatic Islets and FGF-1 to Improve Islet Engraftment at the Omentum Site
P. Hwang[1], D-J. Lim[1], A. Tambralli[1], S. Antipenko[1], W. Cui[1], J. Corbett[2], and H-W. Jun[1]
[1]*University of Alabama at Birmingham, Birmingham, AL,* [2]*Medical College of Wisconsin, Milwaukee, WI*

P-Th-A-293
Tunable Carbodiimide Crosslinking of Fibrin Microthreads Increases Myoblast Attachment, Proliferation, and Outgrowth
J. M. Grasman[1], R. L. Page[1], T. Dominko[1], and G. D. Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

P-Th-A-294
Biopolysaccharides Self-Assemble with Material Property Gradients in Presence of Cation Gradients
M. A. Reilly[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Th-A-295
Effect of Spreading Coefficient on Cellular Phenotypic Response to Thermoresponsive Substrates
A. J. Kaminski[1], K. Ling[1], and L. S. Anderson[1]
[1]Lafayette College, Easton, PA

P-Th-A-296
Bioactive Lactoferrin Based Polymeric Nanofibers for Bone Tissue Engineering
E. James[1,2] and L. S. Nair[1,2]
[1]University of Connecticut Health Center, Farmington, CT, [2]Institute of Regenerative Engineering, University of Connecticut Health Center, Farmington, CT

P-Th-A-297
Optimization of Biomimetic Hydrogels Intended for Myopia Control Through Scleral Regeneration
M. B. Garcia[1], A. K. Jha[1], K. E. Healy[1], and C. F. Wildsoet[1]
[1]University of California - Berkeley, Berkeley, CA

Track: Tissue Engineering

Bioreactors and Bioprocessing

P-Th-A-298
A High-Throughput Mechanostimulation Bioreactor for Tissue Engineering of Articular Cartilage
M. A. Brady[1], H. D. Amin[1], D. R. Overby[1], and C. R. Ethier[1]
[1]Imperial College London, London, United Kingdom

P-Th-A-299
Perfusion Bioreactor Enhances Cryoprotective Agent Permeation into Intact Porcine Articular Cartilage
O. M. Ismail[1], W. H. Dahl[1], K. G. Brockbank[2], E. D. Greene[2], and T. M. Wick[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Cell and Tissue Systems, Inc., North Charleston, SC

P-Th-A-300
A Serum-Free Microcarrier-Based Scalable System for Expansion of Human Adult Stem/Progenitor Cells
F. dos Santos[1], P. Z. Andrade[1], M. M. Abecasis[2], J. Gimble[3], A. Campbell[4], S. Boucher[4], E. Roos[4], S. Kuligowski[4], L. Chase[5], M. Vemuri[4], C. Lobato da Silva[1], and J. M. Cabral[1]
[1]Institute for Biotechnology and Bioengineering - Instituto Superior Técnico, Porto Salvo, Portugal, [2]IPOFG-Instituto Português de Oncologia Francisco Gentil, Lisboa, Portugal, [3]Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, LA, [4]Life Technologies, Corp., Carlsbad, CA, [5]Cellular Dynamics International, Madison, WI

P-Th-A-301
Design and Validation of a Cyclic Strain Bioreactor to Condition Spatially-Selective Scaffolds in Dual Strain Regimes
M. Goodhart[1], J. Cooper[1], W. Haggard[1], and J. Bumgardner[1]
[1]University of Memphis, Memphis, TN

P-Th-A-302
Does Ultrasound Stimulation Aid Cellular Infiltration of Chondrocytes Seeded on Scaffold ?
S. Guha Thakurta[1], M. Kraft[1], and A. Subramanian[1]
[1]University of Nebraska - Lincoln, Lincoln, NE

Track: Tissue Engineering

Biosensors and Tissue Engineering

P-Th-A-303
Integration of PEDOT: PSS with an *In Vitro* Blood Brain Barrier (BBB) for Toxicology
M. Bongo[1], L. H. Jimison[1], A. Da Costa[2], S. A. Tria[1], A. Hama[1], R. Cecchelli[2], M. Culot[2], and R. M. Owens[1]
[1]Department of Bioelectronics, Ecole Nationale Supérieure des Mines, Gardanne, France, [2]Université Lille Nord de France, UArtois, BBB Laboratory, Lens, France

P-Th-A-304
Use of Oxygen-Sensitive Luminescent PLA Nanoparticles in the Design of a Wound Diagnostic Device
S. A. Seaman[1], N. D. Nguyen[1], M. F. Mehr[1], A. R. Reyes[1], C. L. Fraser[1], and S. M. Peirce-Cottler[1]
[1]University of Virginia, Charlottesville, VA

P-Th-A-305
Thermal Measurements for Quantifying Burn Severity in Living Tissue
A. Alkhwaji[1], T. Diller[1], and B. Vick[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-A-306
Microfluidic Strategy for Spatiotemporally Resolved Molecular Sampling From Live Ovary Slices
D. S. Dandy[1], M. Mensack[1], J. Wydallis[1], C. S. Henry[1], C. Eitel[1], and S. Tobet[1]
[1]Colorado State University, Fort Collins, CO

P-Th-A-307
Controlling Localized Xenopus Embryonic Tissue Migration in 3D Microenvironments
J. Song[1], Y. Kim[2], M. Hazar[1], L. A. Davidson[3], M. Sitti[1], and P. R. LeDuc[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]University of Pittsburgh, Pittsburgh, PA

P-Th-A-308
Oxygen Sensing and Control of Engineered Tissue
S. M. Ehsan[1] and S. C. George[1]
[1]University of California, Irvine, Irvine, CA

P = Poster Session
OP = Oral Presentation

Thursday, October 25, 2012

3:00PM - 4:00PM

Poster Viewing with Authors & Refreshment Break

1:30PM - 5:00PM, EXHIBIT HALL A2

POSTER SESSION - THURSDAY – PM

Track: Bioinformatics and Systems Biology

Mathematical and Computational Models of Molecular, Cellular and Organ Processes

P-Th-B-1

Self-Organization of Mitotic Spindle Architecture by Minus-end Directed Kinesin Motors

A. Hepperla[1], M. Gerami-Nejad[1], M. McClellan[1], B. Schuster[1], D. Odde[1], and M. K. Gardner[1]

[1]*University of Minnesota, Minneapolis, MN*

P-Th-B-2

Modeling of the Environmental-Responsive Transcriptional Regulation of Tryptophan Hydroxylase in C. elegans

H. Lee[1] and H. Lu[1]

[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-B-3

A Methodology to Determine Geometry and Boundary Conditions or Breast FEM Simulations

N. Kumaraswamy[1,2], H. Khatam[1,2], G. P. Reece[2], M. K. Markey[1,2], and K. Ravi-Chandar[1]

[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

P-Th-B-4

Negative-Feedback-Pattern Effects on System Sensitivity in the TGF-β Signal Transduction Pathway

D. Nicklas[1] and L. Saiz[1]

[1]*University of California, Davis, CA*

P-Th-B-5

Quantitative Analysis of Autocrine Cascades in Ovarian Cancer

D. L. Bourgeois[1], O. M. Rice[1], and P. K. Kreeger[1]

[1]*University of Wisconsin - Madison, Madison, WI*

P-Th-B-6

Cathepsin S Cannibalism of Cathepsin K During co-Incubation with Elastin and Collagen: Novel Implications for Computational Models of Multi-Cathepsin Systems

Z. T. Barry[1] and M. O. Platt[1]

[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-B-7

Computational Model of Type IV Collagen Network Connectivity for Different Isoforms

L. Gyoneva[1], Y. Segal[1], K. D. Dorfman[1], and V. H. Barocas[1]

[1]*University of Minnesota, Minneapolis, MN*

P-Th-B-8

Material Property Assessment of a Murine Model of Triple Negative Breast Cancer Using Modality Independent Elastography: Preliminary Results

J. A. Weis[1], S. L. Barnes[1], T. E. Yankeelov[1], and M. I. Miga[1]

[1]*Vanderbilt University, Nashville, TN*

P-Th-B-9

Prediction of Therapeutic microRNA based on Human Metabolic Network

M. Wu[1] and C. Chan[1]

[1]*Michigan State University, East Lansing, MI*

P-Th-B-10

Scaffold Proteins Accelerate and Amplify Signaling and Change Drug Activity

E. C. Greenwald[1], J. M. Redden[2], K. Dodge-Kafka[2], and J. J. Saucerman[1]

[1]*University of Virginia, Charlottesville, VA,* [2]*University of Connecticut, Storrs, CT*

P-Th-B-11

The Inflammatory Twitch: An Agent-Based Model of Allergic Airway Inflammation

J. J. Pothen[1], M. E. Poynter[1], and J. H. Bates[1]

[1]*UVM College of Medicine, Burlington, VT*

P-Th-B-12

Distinguishing Convection and Diffusion Effects on Oxygen Uptake Kinetics in Contracting Skeletal Muscle

G. Saidel[1], J. R. Spires[1], and N. Lai[1]

[1]*Case Western Reserve University, Cleveland, OH*

P-Th-B-13

Modeling the Transport of L-Dopa Across the Blood-Brain Barrier

A. Hirani[1], Y. W. Lee[1], and L. E. Achenie[1]

[1]*Virginia Tech, Blacksburg, VA*

P-Th-B-14

Effects of 2 Deoxy-ATO on Myosin Structure and Function

S. G. Nowakowski[1], N. Adamek[2], M. A. Geeves[2], V. Daggett[1], and M. Regnier[1]

[1]*University of Washington, Seattle, WA,* [2]*University of Kent, Canterbury, United Kingdom*

P-Th-B-15

Computational Modeling of Otitis Media in Pediatric Ear

X. Zhang[1] and R. Z. Gan[1]

[1]*University of Oklahoma, Norman, OK*

P-Th-B-16

FEM-Based Insulin Secretion Model with Incorporated Oxygen Dependence for Pancreatic Islets

P. Buchwald[1]

[1]*University of Miami, Miami, FL*

P-Th-B-17

The Role of Action Potential Morphology on Ca^{2+} Release is Predicted by a Local Control Model

L. D. Gauthier[1], J. L. Greenstein[1], and R. L. Winslow[1]

[1]*Johns Hopkins University, Baltimore, MD*

P-Th-B-18

Computational Study of Microvasculature Oxygen Exchange During Ischemic Stroke

I. G. Gould[1], C-Y. Hsu[1], M. Chojechi[1], M. Qader[1], A. Alaraj[2], and A. Linninger[1]

[1]*University of Illinois at Chicago, Chicago, IL,* [2]*University of Illinois at Chicago, College of Medicine, Chicago, IL*

P-Th-B-19

Using Stochastic Simulations to Study Memory T-Cell Repertoire Development and Antigenic Sin

D. Sen[1]

[1]*Columbia University, New York, NY*

P-Th-B-20

A Biophysical Model of the Carboxyatractyloside-insensitive ATP-Mg/Pi Carrier

S. Tewari[1], J. Bazil[1], D. Beard[1], and R. Dash[1]

[1]*Medical College of Wisconsin, Milwaukee, WI*

P-Th-B-21

Computational Modeling of Implantable Glucose Sensors Employing Layer-by-Layer Assembled Flux-Limiting Outer Membranes

R. Croce Jr.[1], S. Vaddiraju[1,2], F. Papadimitrakopoulos[1], and F. Jain[1]

[1]*University of Connecticut, Storrs, CT,* [2]*Biorasis, Inc., Storrs, CT*

POSTER SESSION Thurs B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

POSTER SESSION ThB

Track: Bioinformatics and Systems Biology

Methodology and Applications in Computational Bioengineering and Bioinformatics

P-Th-B-22
A Global Sensitivity Approach for the Analysis of Intracellular PI3K/AKT Signaling Pathway During Definitive Endoderm Induction of Human Embryonic Stem Cells
S. Mathew[1] and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Th-B-23
Assessing the Causes of Coverage Non-uniformity in Next-Generation Sequencing Data
P-Y. Wu[1], J. H. Phan[2], and M. D. Wang[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Tech and Emory University, Atlanta, GA

P-Th-B-24
Identification of Arterial Stiffness and Pulse Wave Velocity Based on Single-Point Measurements
P-J. Lu[1] and C-H. Hung[1]
[1]National Cheng Kung University, Tainan, Taiwan

P-Th-B-25
Quantifying Breast Aesthetics From Clinical Photographs: Symmetry of Lateral Extents (SOLE)
C. S. Sun[1,2], K. Fan[1], G. P. Reece[2], M. A. Crosby[2], E. K. Beahm[2], M. C. Fingeret[2], and M. K. Markey[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas M. D. Anderson Cancer Center, Houston, TX

P-Th-B-26
Computational Frameworks for Imitating Electrophysiology In Gastric ICC Network
S. Sathar[1], M. L. Trew[1], and L. Cheng[1]
[1]Auckland Bioengineering Institute, The University of Auckland, Auckland, New Zealand

P-Th-B-27
ACREM: Automated Context Specific Reconstruction of Metabolic Models
Y. Wang[1,2], J. Eddy[1,2], and N. Price[1,2]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]Institute for Systems Biology, Seattle, WA

P-Th-B-28
A New Bioheat Transfer Model and its Application to RF Ablation in Liver Cancer Treatment
C. Zhou[1], C. Acosta[2], and Y. Feng[2]
[1]UT Austin / UT San Antonio, San Antonio, TX, [2]UT San Antonio, San Antonio, TX

P-Th-B-29
Probabilistic Linkage of Crash and Injury Outcome Databases
A. Daniello[1] and H. C. Gabler[1]
[1]Virginia Tech - Wake Forest University, Blacksburg, VA

P-Th-B-30
Glycosylation Network Analyzer Toolbox (GNAT): A Matlab Based Environment for Systems Glycobiology
G. Liu[1], A. Puri[1], and S. Neelamegham[1,2]
[1]State University of New York, Buffalo, NY, [2]The New York State Center for Excellence in Bioinformatics and Life Sciences, Buffalo

P-Th-B-31
Reconstruct Sparse Transmural Source Location from Surface Mapping
J. Xu[1], P. Shi[1], and L. Wang[1]
[1]Rochester Institute of Technology, Rochester, NY

Track: Biomaterials

Cell/Protein-Biomaterial Interfaces

P-Th-B-32
Synthesis of Functional Monodisperse Silicone Colloids for Bioseparations via Acoustic Microfluidics
C. W. Shields IV[1], L. Johnson[1], L. Gao[1], and G. Lopez[1]
[1]Duke University, Durham, NC

P-Th-B-33
Fibroblast Proliferation on Surface Treated Polyglycolic Acid Trimethylene Carbonate Copolymer
R. Merchant[1], A. Throm[1], J. Mayotte[1], and G. Hodgkinson[1]
[1]Covidien Surgical Solutions, North Haven, CT

P-Th-B-34
Fibril Formation Within the Extracellular Matrix of Adherent Cells, From Preventing Bacterial Infections to Artificial Tissue Generation
P. Koelsch[1]
[1]University of Washington, Seattle, WA

P-Th-B-35
Surface Charge Characterization of GCIB-Treated PEEK Surface Using AFM
M. Rusin[1], H. Yao[1], S. Kirkpatrick[2], C. McCaa[2], R. Svrluga[2], J. Khoury[2], and D. Dean[1]
[1]Clemson University, Clemson, SC, [2]Exogenesis Corp, Billerica, MA

P-Th-B-36
Astrocyte Expression of Chondroitin Sulfate Proteoglycan in Response to Surface-Adsorbed Fibrinogen
T. W. Hsiao[1], V. P. Swarup[1], K. Balagurunathan[1], P. A. Tresco[1], and V. Hlady[1]
[1]University of Utah, Salt Lake City, UT

P-Th-B-37
Cell-Derived Matrix Coatings for Polymeric Scaffolds
M. Decaris[1], B. Binder[1], M. Soicher[1], A. Bhat[1], and K. Leach[1]
[1]UC Davis, Davis, CA

P-Th-B-38
Aptamer-Functionalized Surfaces for Capture of CD4 T-cells
Q. Zhou[1], Y. Liu[1], D-S. Shin[1], and A. Revzin[1]
[1]UC Davis, Davis, CA

P-Th-B-39
Fabricating Metal Nanotube-Based Biosensing Interfaces for Specific Immobilization of Transmembrane Proteins
A. Vaish[1], V. Silin[1], D. Vanderah[1], S. Krueger[1], and K. Gawrisch[2]
[1]National Institute of Standards and Technology, Gaithersburg, MD, [2]National Institutes of Health, Bethesda, MD

P-Th-B-40
Cell Sensing on Strain-Stiffening Substrates is Not Fully Explained by the Nonlinear Mechanical Property
M. Rudnicki[1] and K. Billiar[1]
[1]WPI, Worcester, MA

P-Th-B-41
Elucidation of Pertinent Molecular Factors of Glycan Presentation for Dendritic Cell Phenotype Modulation
N. A. Hotaling[1], X. Song[2], D. F. Smith[2], D. M. Ratner[3], R. D. Cummings[2], and J. E. Babensee[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]University of Washington, Seattle, WA

P-Th-B-42
Controlled Ligand Nanoclustering in a Soft Hydrogel Through a Click Chemistry-based Polymer
J. Valdez[1], C. Chopko[1], P. Hammond[1], and L. Griffith[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P = Poster Session
OP = Oral Presentation

Track: Biomaterials

Computation Models and High Throughput Systems for Biomaterial Design and Characterization

P-Th-B-43
In Silico Comparison of Glass Ionomer and Conventional Bone Cements in a Multi-level Augmented Spine
B. Dickey[1], M. A. Tyndyk[2], and D. Boyd[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*Cork Institue of Technology, Bishopstown, Ireland*

P-Th-B-44
Interacting Network Models Predict Collagen-Fibrin Co-Gel Behavior
V. Barocas[1], J. Hyypio[1], M. Hadi[1], V. Lai[1], and R. T. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

P-Th-B-45
Computationally Evaluating Effects of Osteoconductive Bulking Agents on Stress Distribution in Reconstructed Mandible
R. G. Kozaka[1]
[1]*UC Riverside, Riverside, CA*

P-Th-B-46
A 2D Finite Element Model Assessing the Role of Thread Design on Interference Screw Pullout Performance
K. M. Hawkins[1] and M. McCullough[2]
[1]*NCAT, Jamestown, NC,* [2]*NCAT, Greensboro, NC*

P-Th-B-47
Physically-Based Microstructural Simulations of Electrospun Scaffolds
J. Carleton[1], M. Sacks[1], and G. Rodin[1]
[1]*University of Texas, Austin, TX*

P-Th-B-48
Biomechanical Evaluation of Cancellous Bone Screw Pull-out Strength for the Treatment of Vertebrae Fractures
Q. V. Luong[1] and H. V. Vo[1]
[1]*Mercer University, Macon, GA*

P-Th-B-49
Facilitating Nanoindentation Analysis of Compliant Biomaterials Using A Surfactant
J. Kohn[1] and D. Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA*

Track: Biomaterials

Engineering Spatial and Temporal Control of Biomolecules Using Biomaterials

P-Th-B-50
One Step Diagostics: Ultrasensitive, Highly Specific Molecular Biosensors
J. I. Yeh[1,2] and H. Shi[1]
[1]*Univ of Pittsburgh SOM, Pittsburgh, PA,* [2]*University of Pittsburgh SOM, Pittsburgh, PA*

P-Th-B-51
Controlled Delivery of Epidermal Growth Factor for Wound Healing
N. Johnson[1] and Y. Wang[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Th-B-52
Simulated Digestion of Lipid Nanocarriers and Release of Encapsulated Material Using Real-Time Fluorescence Measurements
D. A. Bricarello[1], Y. P. Pan[1], and N. Nitin[1]
[1]*University of California, Davis, Davis, CA*

P-Th-B-53
Electrospun Constructs With Tunable Fiber Architecture Guide EPC Migration
X. Vial[1], R. Montero[1], F. M. Andreopoulos[1,2], and S. M. Pham[1,2]
[1]*University of Miami, Coral Gables, FL,* [2]*Miller School of Medicine, Miami, FL*

P-Th-B-54
Microcontact Printing of Polyelectrolytes on PEG Using Unmodified PDMS Stamp for Micropatterning Nanoparticles, DNA, Proteins and Cells
Z. Wang[1], P. Zhang[1], B. Kirkland[1], Y. Liu[1], and J. Guan[1]
[1]*Florida State University, Tallahassee, FL*

P-Th-B-55
Control of Micropattern Geometry Via Shape Memory Polymers
K. A. Davis[1] and J. H. Henderson[1]
[1]*Syracuse University, Syracuse, NY*

P-Th-B-56
Optimization of 3D Gradient Hydrogels to Study the Role of Morphogens in Early Tooth Formation
S. Sant[1,2], C-C. Li[3,4], A. Ravisankar[1,2], R. Maas[3], and A. Khademhosseini[1,2]
[1]*Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA,* [3]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA,* [4]*Harvard School of Dental Medicine, Boston*

Track: Biomedical Imaging and Optics

Image-Guided Therapy

P-Th-B-57
Method of Recognition of Poltyps in the Images of Wireless Capsule Endoscopy
D. Mikhaylov[1,2], A. Kukushkin[2], E. Ivanova[3], I. Zhukov[2], A. Starikovski[2], S. Semenov[2], E. Fedorov[3], M. Aristov[2], A. Tolstaya[2], and T. Khabibullin[2]
[1]*National Research Nuclear University "MEPhI", Moscow, Russian Federation,* [2]*National Research Nuclear University "MEPhI", MOSCOW, Russian Federation,* [3]*Moscow University Hospital №31, MOSCOW, Russian Federation*

P-Th-B-58
ICG-loaded Microbubbles for Billiary Imaging in Cholecystectomy
K. Mitra[1], S. Chang[2,3], J. Melvin[1], J. Vargo[1], M. Wendling[1], M. Scott[1], and R. Xu[1,4]
[1]*The Ohio State University, Columbus, OH,* [2]*The Ohio State University, Columbus, OH, China, People's Republic of,* [3]*Chongqing Medical University, Chongqing, China, People's Republic of,* [4]*University of Science and Technology of China, Hefei, China, People's Republic of*

P-Th-B-59
A Simplified Onsite Image-Registration Approach for Radiosurgery by Partial CT
W. Yin[1], X. Wu[2], and W. Zhao[1]
[1]*University of Miami, Coral Gables, FL,* [2]*Biophysics Research Institute of America, Lake Worth, FL*

P-Th-B-60
Quantitative Tissue Property Measurement of High Intensity Focused Ultrasound Induced Lesions *in Vivo*.
A. Haritonova[1], D. Liu[1], A. Casper[1], J. Ballard[1], J. Choi[1], and E. Ebbini[1]
[1]*University of Minnesota, Minneapolis, MN*

P-Th-B-61
Monitoring of Ultrasound Mediated Drug Delivery with a Fluorescence Detection Catheter
A. J. Dixon[1], A. L. Klibanov[1], W. H. Guilford[1], and J. A. Hossack[1]
[1]*University of Virginia, Charlottesville, VA*

P-Th-B-62
Thermal Lesion Formation in Atheromatous Plaques Using High Intensity Focused Ultrasound (HIFU)
M. K. Almekkawy[1], I. A. Shehata[1], A. J. Casper[1], J. R. Ballard[1], M. Troutman[2], and E. S. Ebbini[1]
[1]University of Minnesota, Minneapolis, MN, [2]American Preclinical Services, Minneapolis, MN

Track: Biomaterials

Intelligent Biomaterials

P-Th-B-63
Integrating Inhibitory Feedback Control in Bioresponsive Hydrogels
A. N. Wilson[1] and A. Guiseppi-Elie[1,2]
[1]Clemson University, Clemson, SC, [2]ABTECH Scientific, Inc., Richmond, VA

P-Th-B-64
A Simple Thermoresponsive Substrate for Rapid Cell Sheet Detachment
N. Patel[1], J. Cavicchia[1], B-M. Z. Newby[1], and G. Zhang[1]
[1]The University of Akron, Akron, OH

P-Th-B-65
Target-Responsive Hydrogel Particles for Molecularly-Controlled Drug Delivery
M. Marks[1] and T. Betancourt[1]
[1]Texas State University-San Marcos, San Marcos, TX

P-Th-B-66
Effect of Grafting Substrate on Thermally Reversible Cell Adhesion on PNIPAM Films
D. Leckband[1], S. Choi[1], B-C. Choi[2], and C. Xue[1]
[1]University of Illinois, Urbana, IL, [2]University of Illinois, Urbana

Track: Biomedical Imaging and Optics

Imaging Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroengineering

P-Th-B-67
Multiple Biomarker Quantitation in Circulating Tumor Cells using Multispectral Imaging
S. L. Stott[1], S. M. Rothenberg[1], C. Hoyt[2], P. Miller[2], D. Winokur[1], K. Johnson[2], K. Lane[2], L. V. Sequist[1], S. Maheswaran[1], D. A. Haber[1], and M. Toner[1]
[1]Massachusetts General Hospital, Charlestown, MA, [2]PerkinElmer, Inc., Hopkinton, MA

P-Th-B-68
Laminar Shear Stress Induces the Synthesis and Redistribution of Heparan Sulfate
Y. Zeng[1], E. E. Ebong[1], and J. M. Tarbell[1]
[1]The City college of New York, New York, NY

P-Th-B-69
The Structural Stability of the Endothelial Glycocalyx After Enzymatic Removal of Glycosaminoglycans
Y. Zeng[1], E. E. Ebong[1], B. M. Fu[1], and J. M. Tarbell[1]
[1]The city college of New York, NewYork, NY

P-Th-B-70
A Phantom-Based Investigation into the use of 3D Ultrasound for Vascular Reconstructions- A Repeatability Study
S. L. Gaughan[1,2], B. J. Doyle[1,2], and T. M. McGloughlin[1,2]
[1]Centre for Applied Biomedical Engineering Research, Limerick, Ireland, [2]Materials Surface Science Institute, Limerick, Ireland

P-Th-B-71
Measurement of Load Independent Indices of Cardiac Function Using Real Time MRI During Inflow Occlusion
F. Contijoch[1], W. R. Witschey[1,2], M. M. Levack[1], J. R. McGarvey[1], V. Ferrari[1], N. Kondo[1], M. Takebe[1], G. A. Zsido[1], C. Dillard[1], K. Lau[1], J. H. Gorman III[1], R. C. Gorman[1], and J. J. Pilla[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Pennsylvania, Philadelphia

P-Th-B-72
Diffusivity Determination for Alginate-Based Artificial Cells Using Fluorescent Microscopy
B. Asi[1], E. Wong[1], J. Parasseril[1], M. Keralapura[1], and M. Mobed Miremadi[1]
[1]San Jose State University, San Jose, CA

P-Th-B-73
OCT-Based Non-destructive Monitoring of Tissue-Engineered Blood Vessel Development within a Bioreactor
A. A. Gurjarpadhye[1], B. M. Whited[1], and C. G. Rylander[1]
[1]Virginia Polytechnic and State University, Blacksburg, VA

P-Th-B-74
The Effects of Collagen Hydrogels on Stem Cells Differentiating into the Neuronal Lineage
Y. Hwang[1] and J. Lyubovitsky[1]
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Track: Biomedical Imaging and Optics

Lasers in Medicine

P-Th-B-75
Windows to the Brain: Novel Concept for Providing Non-Invasive, Chronic Access to Brain for Laser-Based Brain Tumor Diagnostics and Therapeutics
Y. Damestani[1], G. Aguilar[1], J. Garay[1], H. Park[1], D. Binder[1], and M. Rao[1]
[1]University of California, Riverside, Riverside, CA

P-Th-B-76
Laser and Fractal Analysis to Enhance Magnetic Protein Detection System
N. Shah[1], A. Hecht[2], P. Commiskey[2], and R. Kopelman[2]
[1]University of Cincinnati, Cincinnati, [2]University of Michigan, Ann Arbor, MI

P-Th-B-77
Imaging of Embryonic-Chick-Heart Development (HH 12-19) Using a Streak Mode OCT
S. Ma[1], R. Wang[1], R. Goodwin[2], R. Markwald[3], T. Borg[3], R. Runyan[4], and Z. Gao[1]
[1]Clemson University, Clemson, SC, [2]University of South Carolina, Columbia, SC, [3]Medical University of South Carolina, Charleston, SC, [4]University of Arizona, Tucson, AZ

Track: Biomedical Imaging and Optics

Medical Imaging

P-Th-B-78
Towards Ultrasound Elastographic Assessment and Staging of Rotator Cuff Disease
E. A. Trent[1], C. Thigpen[2], M. K. Harman[1], R. Hawkins[3], D. Dean[1], and D. M. Kwartowitz[1,4]
[1]Clemson University, Clemson, SC, [2]Proaxis Therapy, Greenville, SC, [3]Steadman Hawkins Clinic of the Carolinas, Greenville, SC, [4]Medical University of South Carolina, Charleston, SC

P-Th-B-79
Experimental Studies on Compressive Sensing based Interior SPECT
B. Liu[1,2], A. Mintz[2], and H. Yu[1,2]
[1]Department of Radiology, Wake Forest University Health Sciences, Winston-Salem, NC, [2]VT-WFU School of Biomedical Engineering and Sciences, Wake Forest University Health Sciences, Winston Salem, NC

P = Poster Session
OP = Oral Presentation

P-Th-B-80
An Improved Distance-Driven Method for Projection and Backprojection
C. Miao[1] and H. Yu[1]
[1]*VT-WFU school of biomedical engineering and sciences, Winston Salem, NC*

P-Th-B-81
Ultra-Low-Dose CT for Lung Cancer Screening
H. Yu[1], Q. Xu[2], B. Liu[1], C. Chiles[1], J. D. Bourland[1], J. Hsieh[3], and G. Wang[4]
[1]*Wake Forest University Health Sciences, Winston-Salem, NC,* [2]*Xi'an Jiaotong University, Xi'an, China, People's Republic of,* [3]*GE Healthcare Technology, Waukesha, WI,* [4]*Virginia Tech, Blacksburg, VA*

P-Th-B-82
Non-Invasive Assessment of Quantitative Pulmonary Arterial Pressure by MRI in Pulmonary Hypertension
O. Bane[1,2], S. J. Shah[2], M. Cuttica[2], J. Collins[2], S. Selvaraj[2], C. Guetter[3], J. C. Carr[2], and T. J. Carroll[1,2]
[1]*Northwestern University, Evanston, IL,* [2]*Northwestern University, Chicago, IL,* [3]*Siemens Corporation, Princeton, NJ*

P-Th-B-83
A Digital Tissue Phantom for Hyperspectral Wound Imaging
R. Xu[1], D. Allen[2], J. Huang[1], S. Gnyawali[1], H. Elgharably[1], V. Bergdall[1], J. Hwang[2], and C. Sen[1]
[1]*The Ohio State University, Columbus, OH,* [2]*NIST, Gaithersburg, MD*

P-Th-B-84
Merit of Ethanol-Fixation for Imaging of Kidney by Phase-Contrast X-ray CT
R. Shirai[1], T. Kunii[1], A. Yoneyama[2], T. Ooizumi[1], H. Maruyama[1], T-T. Lwin[1], K. Hyodo[3], and T. Takeda[1]
[1]*Kitasato University, Sagamihara,Kanagawa, Japan,* [2]*Hitachi,Ltd, Hatoyama,Saitama, Japan,* [3]*High Energy Accelerator Research Organization, Tsukuba, Ibaraki, Japan*

P-Th-B-85
First Observation of Myocardial Layer by Ethanol-Fixed Technique in Phase-Contrast X-ray CT Imaging
T. Kunii[1], R. Shirai[1], A. Yoneyama[2], T. Ooizumi[1], H. Maruyama[1], T-T. Lwin[1], K. Hyodo[3], and T. Takeda[1]
[1]*Kitasato University, Sagamihara, Kanagawa, Japan,* [2]*Hitachi, Ltd, Hatoyama, Saitama, Japan,* [3]*High Energy Accelerator Research Organization, Tsukuba, Ibaraki, Japan*

P-Th-B-86
Technical Trials of a Novel Tracking Fluoroscope System
M. A. Young[1], A. Nycz[1], and W. R. Hamel[1]
[1]*University of Tennessee, Knoxville, TN*

P-Th-B-87
THz and Magnetic Resonance Imaging: A Study of *Ex vivo* Skin Burns
N. Bajwa[1], A. Frew[1], B. Nowroozi[1], Z. Taylor[1], S. Sung[1], J. Garritano[1], N. Fokwa[1], A. Maccabi[1], P. Tewari[1], R. Singh[1], M. Culjat[1], and W. Grundfest[1]
[1]*UCLA, Los Angeles, CA*

P-Th-B-88
Reflectivity Measurements of Water and Dioxane Mixtures using a GHz Gunn Diode Source
A. Maccabi[1], D. Bennett[1], Z. Taylor[1], N. Bajwa[1], P. Tewari[1], S. Sung[1], R. Singh[1], M. Culjat[1], and W. Grundfest[1]
[1]*University of California, Los Angeles, CA*

P-Th-B-89
A New Approach to Enhance Ultrasound Image Contrast: An *Ex-vivo* Validation Study
J. S. Shin[1] and J. Yen[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-B-90
CANCELED BY AUTHOR

P-Th-B-91
Evaluating the Accuracy of Interpolation Techniques on 3D MR Images, a Pre-Processing Step to Super Resolution Reconstruction
A. P. Mahmoudzadeh[1] and N. H. Kashou[1]
[1]*Wright State University, Dayton, OH*

P-Th-B-92
CS-SelZQC for Zero-Quantum Magnetic Resonance Spectroscopic Imaging of Extracranial Tissues Without B_0
Q. He[1], Y. Sun[2], J. W. Barker[1], and S. Chen[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*National University of Singapore, Kent Ridge, Singapore*

P-Th-B-93
Adaptive Doppler Ultrasound to Reduce Coherent Scattering Error
A. Pegallapati[1] and S. A. Jones[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Th-B-94
Combined Multiple-Receiver and Transit-Time Correlation Doppler Ultrasound
V. Gudisena[1] and S. A. Jones[1]
[1]*Louisiana Tech University, Ruston, LA*

Track: Cancer Technology

Biomarkers

P-Th-B-95
Metabolomic Discovery that Imatinib Sensitivity is Modulated by Creatine
K. R. Tech[1], B. J. Dewar[1], N. Cox[1], A. Tikunov[1], E. Holmuhamedov[1], J. M. Macdonald[1], and L. M. Graves[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

P-Th-B-96
Using Gene Expression Analysis to Discover Markers of Sensitivity to MEK Inhibitors in Cancer
J. Beech[1] and K. Kelly[1]
[1]*The University of Virginia, Charlottesville, VA*

P-Th-B-97
The α 2,3-sialyl T-Antigen is Over Expressed in Breast Tissue: From Enzyme Activity to Glycan Structure
S. A. Patil[1], W. Bshara[2], E. V. Chandrasekaran[2], C. Morrison[2], K. L. Matta[2], and S. Neelamegham[1,3]
[1]*State University of New York, Buffalo, NY,* [2]*Roswell Park Cancer Institute, Buffalo, NY,* [3]*NY State Center for Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

Track: Cancer Technology

Cancer Nanotechnology

P-Th-B-98
Synergistically Enhanced Cytotoxic Effect on Cancer Cells by Irreversible Electroporation and Targeted Cellulose Nanocrystals
K. R. Colacino[1], A. Callo[1], C. Arena[1], S. Dong[2], M. Roman[2], R. Davalos[1], and Y. Lee[1,2]
[1]*Virginia Tech-Wake Forest University, Blacksburg, VA,* [2]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Th-B-99
Preparation and Characterization of Covalent IR820-PEG Diamine Conjugates
A. Fernandez-Fernandez[1,2], R. Manchanda[1], T. Lei[1], and A. J. McGoron[1]
[1]*Florida International University, Miami, FL,* [2]*Nova Southeastern University, Fort Lauderdale, FL*

POSTER SESSION ThB

P-Th-B-100
Increased Responses of Human Healthy Osteoblasts and Decreased Responses of Human Osteosarcoma Cells on Specific PLGA Nano Patterns
Y. Wang[1], L. Zhang[1], L. Sun[2], and T. J. Webster[2]
[1]Department of Chemistry, Brown University, Providence, RI, [2]School of Engineering, Brown University, Providence, RI

P-Th-B-101
Thermal and pH Sensitive Multifunctional Polymer Nanoparticles for Cancer Therapy
T. Lei[1], R. Manchanda[1], Y-C. Huang[1], and A. J. McGoron[1]
[1]Florida International University, Miami, FL

P-Th-B-102
Development of Novel Cationic Nanoparticles for Therapeutic Delivery of Anti-MIR-1818 to Hepatocellular Carcinoma
X. Wang[1] and J. L. Lee[1]
[1]The Ohio State University, Columbus, OH

P-Th-B-103
A Biomimetic 3D Nanostructured Bone Model for Tumor Metastasis Study
M. Wang[1], S. Fu[1], and L. Zhang[1]
[1]George Washington University, washington,DC, DC

P-Th-B-104
Dually-Targeted Proteolytic Nanobeacons for Targeted Delivery and Optical Tumor Imaging
I. D. McFadden[1], H. Li[1], A. Parekh[1], A. Weaver[1], T. D. Giorgio[1], L. M. Matrisian[1], and J. O. McIntyre[1]
[1]Vanderbilt University, Nashville, TN

P-Th-B-105
Reduced Cell Viability in Hyperthermia Treatment in the Presence of Concentrated Iron Oxide Nanoparticles
D. Park[1]
[1]Johns Hopkins University, Baltimore, MD

P-Th-B-106
Targeted Thermal Ablation of Colorectal Cancer Cells *In-Vitro* Using Folic Acid-Functionalized Multi-Walled Carbon Nanotubes
E. G. Graham[1,2], C. MacNeill[1], and N. Levi-Polyachenko[1]
[1]Wake Forest University Health Sciences, Winston-Salem, NC, [2]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC

P-Th-B-107
Targeted Knockdown of NF-κB in Tumor Associated Macrophages
R. A. Ortega[1], B. Kumar[1], S. Yu[1], and T. Giorgio[1]
[1]Vanderbilt University, Nashville, TN

P-Th-B-108
Delivery of Biodegradable PEGylated PLGA Nanoparticles across the Blood-Brain Barrier using Focused Ultrasound
K. F. Timbie[1], G. W. Miller[1], E. Nance[2], J. Song[1], A. L. Klibanov[1] and R. J. Price[1],
[1]University of Virginia, Charlottesville, VA, [2]Johns-Hopkins University, Baltimore, MD

P-Th-B-109
Near Infrared Mediated Photothermal Ablation of Cancer Cells using Low Band Gap Donor-Acceptor Conducting Polymer Nanoparticles
C. M. MacNeill[1], R. C. Coffin[1], D. L. Carroll[1], and N. H. Levi-Polyachenko[1]
[1]Wake Forest University, Winston Salem, NC

P-Th-B-110
Single-Cell Epigenomic Analysis Using Integrated Microfluidics
L. Han[1], Y. Lu[1], H. Zhu[2], X. Pan[1], S. Weissman[1], and R. Fan[1]
[1]Yale University, New Haven, CT, [2]Secondary Military Medical University, China, Shanghai, China, People's Republic of

P-Th-B-111
In-vitro Evidence of Mechanically Induced Epithelial to Mesenchymal Transition of Normal and Tumorogenic Colonic Epithelial Cells
S. Bharadwaj[1] and S. Glover[1]
[1]University of Florida, Gainesville, FL

P-Th-B-112
Enhanced Tumor Penetration and Retention of Filamentous Viral Nanoparticle: Shape-Derived Advantages
S. Shukla[1] and N. F. Steinmetz[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Case Western Reserve University, Cleveland

P-Th-B-113
Theranostic Nanoparticles Carrying Conditional Release of Gemcitabine for Targeted Therapy and MRI of Pancreatic Cancer
G. Lee[1,2], W. Qian[2], L. Wang[3], Y. A. Wang[4], C. A. Staley[2], H. Mao[3], S. Nie[1], and L. Yang[2]
[1]Department of Biomedical Engineering, Emory University School of Medicine, Atlanta, GA, [2]Department of Surgery, Emory University School of Medicine, Atlanta, GA, [3]Emory University School of Medicine, Atlanta, GA, [4]Ocean NanoTech, LLC, Springdale, AZ

P-Th-B-114
Metastatic Tumor Cells Show Distinct Behavior on Aptamer Functionalized Chips
M. A. Mahmood[1], U. J. Khan[1], Y. Wan[1], Y-T. Kim,[1], and S. M. Iqbal[1]
[1]University of Texas Arlington, Arlington, TX

P-Th-B-115
Measurement of Single-Walled Carbon Nanohorn Transport at the Cellular Level and in Three-Dimensional Tissue Phantoms
M. R. DeWitt[1], K. Zimmermann[1], R. L. Hood[1], C. Rylander[1,2], and M. N. Rylander[1,2]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]Virginia Polytechnic Institute& State University, Blacksburg, VA

P-Th-B-116
A Novel Single Cell Based DNA Damage/Repair Assay for *In vitro* Chemosensitivity Testing
L. Ma[1]
[1]University of Central Florida, Orlando, FL

Track: Cancer Technology

Imaging Strategies for Cancer Detection and Treatment

P-Th-B-117
CANCELED BY AUTHOR

P-Th-B-118
Directed Targeting of HER-2 Over-expressing Ovarian Cancer Cells by Optical Viral Ghosts
Y. A. Guerrero[1], B. Bahmani[1], B. Jung[1], S. Singh[2], A. L. Rao[1], V. I. Vullev[1], V. Kudra[2], and B. Anvari[1]
[1]University of California at Riverside, Riverside, CA, [2]The University of Texas, MD Anderson Cancer Center, Houston, TX

P-Th-B-119
Targeted Fluorescent Imaging of Ovarian Cancer Cells using ICG-loaded Polymeric Nanocapsules Functionalized with anti-HER2
B. Bahmani[1], Y. Guerrero[1], V. Vullev[1], and B. Anvari[1]
[1]UC Riverside, Riverside, CA

P = Poster Session
OP = Oral Presentation

P-Th-B-120
Multiplex Quantum Dot Stain with Four Different Host Animal Antibodies
M. D. Wang[1], J. K. Tran[1], E. N. Hubbard[1], and T. H. Stokes[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-B-121
Effects of Filter Selection on Unmixing of Spectrally Similar Quantum Dots
E. N. Hubbard[1], T. Stokes[1], B. Kairdolf[2], J. K. Tran[1], and M. D. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-B-122
Targeting Inaccessible Tumors in the Brain with Viral Nanoparticles
S. Chung[1], A. M. Wen[1], C. DeBaz[1], S. Dey[1], N. F. Steinmetz[1], and A-M. Broome[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Medical University of South Carolina, Charleston, SC*

Track: Cancer Technology

Systems Biology and Personalized Medicine in Cancer Therapy

P-Th-B-123
The Identification of Functional miRNA Genes Regulating Cancer Metastasis on a Large Scale
J. Xi[1], M. Ma[1], and H. Zhang[1]
[1]*Peking University, Beijing, China, People's Republic of*

P-Th-B-124
Regulation of Breast 3pithelial Morphogenesis by GDF11
S. S. Bajikar[1] and K. A. Janes[1]
[1]*University of Virginia, Charlottesville, VA*

P-Th-B-125
Insulin-like Growth Factor (IGF) Signaling in Ovarian Cancer
D. Tian[1], H. M. Pezzi[1], and P. K. Kreeger[1]
[1]*University of Wisconsin-Madison, Madison, WI*

P-Th-B-126
Inkjet Based Personalized Screening Platform for Cancer Therapy
J. I. Rodriguez-Devora[1], D. Reyna-Soriano[1], M. Bhuyan[1], and T. Xu[1,2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*Paul L. Forest School of Medicine, Texas Tech University Health Sciences Center, El Paso*

Track: Cardiovascular and Respiratory Engineering

Lung Computational Fluid Dynamics and Particle Deposition

P-Th-B-127
Computational Modeling of Gas Transport and Wall Shear Stresses under High Frequency Oscillation Condition in the Airways
Z. Chen[1], S. Parameswaran[2], Y. Hu[3], Z. He[1], R. Raj[2], and S. Parameswaran[1]
[1]*Texas Tech University, Lubbock, TX,* [2]*Texas Tech Health Sciences Center, Lubbock, TX,* [3]*University of Michigan, Ann Arbor, MI*

P-Th-B-128
A Computational Investigation of Surfactant Transport During Pulsatile Airway Reopening
J. E. Pillert[1], H. Fujioka[1], D. Halpern[2], and D. P. Gaver III[1]
[1]*Tulane University, New Orleans, LA,* [2]*University of Alabama, Tuscaloosa, AL*

P-Th-B-129
The Airway-Instability Problem of Asthma at the Level of the Airway Tree
M. A. M. de Aguiar[1], A. Gros[2], Y. Bar-Yam[2], J. G. Venegas[3], and T. Winkler[3]
[1]*Universidade Estadual de Campinas, Campinas, SP, Brazil,* [2]*New England Complex Systems Institute, Cambridge, MA,* [3]*Harvard Medical School & Massachusetts General Hospital, Boston, MA*

P-Th-B-130
Transient Motion of Herschel-Bulkley Liquid Plugs in Respiratory Airways
P. Zamankhan[1,2], Y. Hu[1], B. Helenbrook[3], S. Takayama[1], and J. B. Grotberg[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*ANSYS Inc., Ann Arbor, MI,* [3]*Clarkson University, Potsdam, NY*

P-Th-B-131
Computational Studies of Medication Transport Using LES
M. Ilie[1] and M. Liu[1]
[1]*University of Central Florida, Orlando, FL*

P-Th-B-132
In Vivo Lung Tissue Strain Measurements in Healthy and Elastase-exposed Rats
R. Jacob[1], J. Carson[1], D. Einstein[1], S. Kabilan[1], and R. Corley[1]
[1]*Pacific Northwest National Laboratory, Richland, WA*

P-Th-B-133
Analytical Solutions for Particle Distribution Profile in a Simplified Airway Tree Deposition Model
S. D. Amin[1], A. Majumdar[1], and B. Suki[1]
[1]*Boston University, Boston, MA*

P-Th-B-134
The Effect of Interdependence on Ventilation and Parenchymal Strains in Computational Lung Models
L. Yoshihara[1], M. Ismail[1], C. Roth[1], and W. A. Wall[1]
[1]*TU Munich, Garching, Germany*

Track: Cardiovascular and Respiratory Engineering

Microvasculature, Angiogenesis, and Remodeling

P-Th-B-135
Exploration of the Coculture of Hep-2 with EPCs
Y. Lai[1,2], X-H. Liu[2], Y. Zeng[3], and Y. Zhang[4]
[1]*Chengdu Women's &Children's Central Hospital, Cheng Du, China, People's Republic of,* [2]*Institute of Biomedical Engineering, ChengDu, China, People's Republic of,* [3]*The City College of New York, New York, NY,* [4]*Laboratory of Biomedical Ultrasonics, ChengDu, China, People's Republic of*

P-Th-B-136
Leukocyte Traffic Mediates Capillary Blood Flow Oscillations in Microvascular Networks
O. Forouzan[1], X. Yang[1], J. M. Sosa[1], J. M. Burns[1], and S. S. Shevkoplyas[1]
[1]*Tulane University, New Orleans, LA*

P-Th-B-137
Mechanical Buckling of Collateral Arteries
Q. Liu[1] and H-C. Han[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Th-B-138
Arterial Critical Buckling Pressure is Increased by Smooth Muscle Contraction
J. Zhang[1], D. M. Hayman[1], Q. Liu[1], Y. Xiao[1], and H. C. Han[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Th-B-139
Effects of VEGF and cAMP on Rat Cerebral Microvessel Permeability to Therapeutic Solutes
L. Shi[1], M. Zeng[1], and B. M. Fu[1]
[1]*The City College of the City University of New York, New York, NY*

P-Th-B-140
Engineering Vascularized Hepatic Tissue Using a Tri-culture in a Bioactive PEG Hydrogel System
S. Higbee[1], M. Green[1], and J. West[1,2]
[1]Rice University, Houston, TX, [2]Duke University, Durham, NC

P-Th-B-141
Computational Analysis of Contribution of Transport Resistances in Lowering NO Consumptions by Erythrocytes
P. Deonikar[1] and M. Kavdia[1]
[1]Wayne State University, Detroit, MI

P-Th-B-142
Structural Adaptation of Microvessels in Disease States
L. Little[1], E. Threlkeld[1], J. Park[1], J. Geddes[1], and A. Sarang- Sieminski[1]
[1]Franklin W. Olin College of Engineering, Needham, MA

P-Th-B-143
Cardiac Fibroblasts from Different Developmental Stages as a Support Cell for Endothelial Cell Sprout Formation
R. L. Twardowski[1] and L. D. Black III[1]
[1]Tufts University, Medford, MA

P-Th-B-144
Macrophage Phenotype Characterization and Their Role in WNT5A Secretion/Expression in Atherosclerosis
H. Seelamneni[1], M. J. Silver[2], and R. Malgor[3]
[1]Ohio University, Athens, OH, [2]Mid West Cardiology Research Foundation, Columbus, OH, [3]Heritage College of Osteopathic Medicine, Ohio University, Athens, OH

P-Th-B-145
Endothelial Glycocalyx Layers of Rat and Mouse Blood Vessels Observed by RF/FS Transmission Electron Microscopy
W-Y. Yen[1], E. E. Ebong[2], J. M. Tarbell[1], and B. M. Fu[1]
[1]The City College of the City University of New York, New York, NY, [2]Albert Einstein College of Medicine of Yeshiva University, Bronx, NY

P-Th-B-146
A New Multilayer Bioscaffold For Blood Vessel Regeneration
S. Amensag[1] and P. McFetridge[1]
[1]University of Florida, Gainesville, FL

P-Th-B-147
"Endothelialized" Microfluidics With Varied Shear and Channel Size for Microvascular Blood Diseases
B. Ahn[1,2], D. R. Myers[1,2], Y. Sakurai[1,2], and W. A. Lam[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Th-B-148
Predicting the Effect of Endothelial Dysfunction in a Network
S. F. Knezek[1,2], P. H. Nguyen[1,2], and C. M. Quick[1,2]
[1]Texas A&M University, College Station, TX, [2]Michael E. DeBakey Institute, College Station, TX

P-Th-B-149
Investigating the Therapeutic Effect of ROCK Inhibition on Pathological Aortic Valve Angiogenesis
C. A. Arevalos[1], A. Walborn[1], and K. J. Grande-Allen[1]
[1]Rice University, Houston, TX

P-Th-B-150
Shear Stress-Induced Protein Kinase *C Epsilon* Modulates Endothelial Tube Formation
T. Beebe[1], R. Li[1], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA

P-Th-B-151
Aortic Mechanisms of Elasticity During Development: Does Ontogeny Recapitulate Phylogeny?
S. M. Wells[1], E. R. Langille[1], E. J. Chua[1], and M. A. Witoski[1]
[1]Dalhousie University, Halifax, NS, Canada

P-Th-B-152
Pregnancy-Induced Cardiovascular Remodeling is Not Reversed
E. P. Brennan-Pierce[1], C. M. Pierlot[1], A. P. Howie[1], E. D. Richardson[1], I. A. Summerby-Murray[1], and S. M. Wells[1]
[1]Dalhousie University, Halifax, NS, Canada

P-Th-B-153
3-D Computational Modeling of Pressure Losses through a Renal Artery Network with a Saccular Aneurysm of the Main Artery
S. S. Peno[1], W. B. Espinoza[1], G. Armstrong[1], E. C. Lemley[1], D. V. Papavassiliou[2], E. A. O'Rear[2], and L. A. Down[2]
[1]University of Central Oklahoma, Edmond, OK, [2]University of Oklahoma, Nrman, OK

Track: Cellular and Molecular Bioengineering

Cell-Cell, Homotypic and Heterotypic Interactions

P-Th-B-154
2D Kinetics of 3.L2 TCR-pMHC Binding Determine T Cell Function
J. Hong[1], B. Evavold[2], and C. Zhu[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Th-B-155
Cytolytic and Secretory Outcomes Associated with Dynamic Natural Killer Cell-Target Cell Interactions
Y. J. Yamanaka[1], C. T. Berger[2], M. Sips[2], P. C. Cheney[2], G. Alter[2], and J. C. Love[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]The Ragon Institute of MGH, MIT, and Harvard, Charlestown Navy Yard, Boston, MA

P-Th-B-156
Cell-Cell Contact Controls Myogenic Differentiation of Mesenchymal Stem Cells Through OB-cadherin
S. Alimperti[1] and S. Andreadis[1,2]
[1]University at Buffalo, Buffalo, NY, [2]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

P-Th-B-157
Design and Characterization of a Thrombin Biosensor
J. D. Welsh[1], T. V. Colace[1], R. Muthard[1], T. Stalker[1], L. F. Brass[1], and S. L. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Th-B-158
Emergence of Collective Cell Movements From Contact Inhibition of Locomotion Behavior of Single Cells
R. A. Desai[1,2], S. B. Gopal[1], S. Chen[1], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

P-Th-B-159
Dissecting Multicellular Coordination of the Vertebrate Segmentation Clock
R. A. Desai[1] and A. C. Oates[1]
[1]Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

P-Th-B-160
Effect of Homotypic and Heterotypic Interactions in 3-D on Adhesive Characteristics of Breast Cancer Cells
S. Chandrasekaran[1], Y. Geng[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

P = Poster Session
OP = Oral Presentation

P-Th-B-161
Mechanical Force Strengthens TCR/pMHC Bond and Triggers T cell Signaling
B. Liu[1], W. Chen[1], B. Evavold[2], and C. Zhu[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Th-B-162
Exosomal Release of K562-derived MicroRNA: Implications for Sickle Cell Anemia
S. Banton[1], M. Platt[1], and G. Barabino[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Th-B-163
Nucleus Pulposus Cell Morphology and Phenotypic Dependence on Substrate Stiffness and Ligand
P. Y. Hwang[1], C. L. Gilchrist[2], J. Chen[2], and L. A. Setton[1,2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

P-Th-B-164
Inference of Human Immune Cell-Cell Communication from Single and Multi-Cell Cytokine Expression
K. F. Benedict[1,2], J. Choi[1], J. C. Love[1,2], and D. A. Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Ragon Institute of MGH, MIT and Harvard, Charlestown, MA

P-Th-B-165
Cortactin Association with ICAM1 via an SH3 Binding Domain in the ICAM1 Cytoplasmic Tail Regulates Leukocyte Transendothelial Migration
M. R. Williams[1], S. D. Auerbach[1], P. Alcaide[1], G. Newton[1], and F. W. Luscinskas[1]
[1]Brigham and Women's Hospital and Harvard Medical School, Boston, MA

P-Th-B-166
Exploring the Role of α-Actinin in Integrin Clustering
H. Shams[1] and M. R. Mofrad[1]
[1]University of California Berkeley, Berkeley, CA

P-Th-B-167
The Array of Nanowells to Characterize Interactions Between Individual Human Mesenchymal Stem Cells and Immune Cells
J. Choi[1], M. Hwang[1], D. Chesler[2], A. Quinones-Hinojosa[2], J. Love[3], and K. Lee[1]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [2]Johns Hopkins University School of Medicine, Baltimore, MD, [3]Massachusetts Institute of Technology, Cambridge, MA

P-Th-B-168
Electrical Properties of Mesenchymal Stem Cells Cocultured with Cardiomyocytes on MEAs
Z. Wang[1], H. Yang[2], Z. Ma[2], T. Borg[3], and B. Gao[2]
[1]Clemson.edu, Clemson, SC, [2]Clemson University, Clemson, SC, [3]Medical University of South Carolina, Charleston, SC

P-Th-B-169
In-Vitro Model Mimicking Peritoneal Fibrosis
V. Shah[1], D. Verma[1], M. L. Previtera[1], R. Schloss[1], and N. Langrana[1]
[1]Rutgers University, Piscataway, NJ

P-Th-B-170
Cell Density in Wound Healing
Q. Peng[1], C-W. Kuo[1], T. Ren[1], S-H. Hung[1,2], and Y. Tseng[1,2]
[1]University of Flordia, Gainesville, FL, [2]National Cancer Institute-Physical Science in Oncology Center, Gainesville, FL

P-Th-B-171
Mechanosensing at Intercellular Junctions
D. Leckband[1], H. Tabdili[1], I. Muhamed[1], J. deRooij[2], C. Gottardi[3], and N. Wang[1]
[1]University of Illinois, Urbana, IL, [2]Hubrecht Institute, Utrecht, Netherlands, [3]Northwestern, Chicago, IL

Track: Cellular and Molecular Bioengineering

Cell Motility

P-Th-B-172
Quantitative Modeling of the Role of Cofilin on the Speed and Shape of Neuronal Growth Cones
N. Nagarajan[1] and C. Wolgemuth[2]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

P-Th-B-173
Gradients in Matrix Mechanics Guide Stem Cell Migration by Altered Cytoskeletal Dynamics
M. Raab[1], D. Discher[1], J. Swift[1], and D. Dingal[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Th-B-174
Agent-based Cell Migration Model for the Study of Cancer Progression
D. A. Vargas[1], O. Bates[1], and M. H. Zaman[1]
[1]Boston University, Boston, MA

P-Th-B-175
Real-time Observation of Actin Dynamics in Migrating Monocytic Cells with Lifeact-GFP Fusion Protein
N. Kataoka[1], K. Hashimoto[2], T. Okamoto[3], S. Mohri[2], and F. Kajiya[1]
[1]Kawasaki University of Medical Welfare, Kurashiki, Japan, [2]Kawasaki Medical School, Kurashiki, Japan, [3]Ehime University, Matsuyama, Japan

P-Th-B-176
Analysis of How Immobilized and Soluble EGF Determine Cellular Response in Wound Healing
M. C. Regier[1], K. Dittloff[1], K. Carlson[1], P. K. Kreeger[1], and K. S. Masters[1]
[1]University of Wisconsin Madison, Madison, WI

P-Th-B-177
Schwann Cell Motility is Directed by Asymmetric Micropatterns
J. A. Mitchel[1] and D. Hoffman-Kim[1]
[1]Brown University, Providence, RI

P-Th-B-178
The Role of c-MET and Her-3 Receptor Crosstalk in HGF-induced Cell Migration in NSCLC and Breast Tumor Cells
E. I. Sanchez Palacios[1], D. Sears[1], S. M. Jay[2], F. M. White[1], and L. G. Griffith[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA

P-Th-B-179
Cellular Assay for Cell Migration Potential
S-H. Hung[1,2], S. H. Arce[1], Z. Li[1], P-H. Wu[1,2], and Y. Tseng[1,2]
[1]University of Flordia, Gainesville, FL, [2]National Cancer Institute-Physical Science in Oncology Center, Gainesville

P-Th-B-180
Z-Ligustilide Affects the Migration Pattern of Glioblastoma T98G cell
J. Yin[1], S. Hung[1], and Y. Tseng[1]
[1]University of Florida, Gainesville, FL

P-Th-B-181
Bridging the Limitations of Single Cell and Collective Cell Migration with Magnetically Attachable Stencils
W. J. Ashby[1], A. Starchenko[1], J. P. Wikswo[1], and A. Zijlstra[2]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, TN

P-Th-B-182
Dimensional and Temporal Controls of 3D Cell Motility: From the Inside-Out and the Outside-In
S. I. Fraley[1], Y. Feng[2], G. D. Longmore[2], and D. Wirtz[1]
[1]The Johns Hopkins University, Baltimore, MD, [2]Washington University School of Medicine, St. Louis, MO

POSTER SESSION **ThB**

P-Th-B-183
The Role of the Nucleus in Cell Migration
D-H. KIM[1,2] AND D. WIRTZ[1,2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University, Baltimore

POSTER SESSION **ThB**

Track: Cellular and Molecular Bioengineering

Cellular and Subcellular Imaging

P-Th-B-184
The Generation and Application of FRET-based EphA4 Receptor Biosensor
Y. PAN[1]
[1]University of Illinois urbana-champaign, Urbana, IL

P-Th-B-185
FRAP Analysis: Accounting for Bleaching during Image Capture
J. WU[1], N. SHEKHAR[1], P. P. LELE[2], AND T. P. LELE[1]
[1]University of Florida, Gainesville, FL, [2]Harvard University, Cambridge, MA

P-Th-B-186
Neutrophil Sling: A Cell-Autonomous Adhesive Structure Enabling Rolling at High Shear
P. SUNDD[1], E. GUTIERREZ[2], E. KOLTSOVA[1], Y. KUWANO[3], S. FUKUDA[3], M. K. POSPIESZALSKA[4], A. GROISMAN[2], AND K. LEY[1]
[1]La Jolla Institute for Allergy and Immunology, La Jolla, CA, [2]University of California San Diego, La Jolla, CA, [3]University of Tokyo, Tokyo, Japan, [4]American University, Washington DC, DC

P-Th-B-187
Mechanical Tension Affects the Activation of TRPC6 Induced by PDGF in a Lipid Raft Dependent Manner
L. LEI[1,2] AND Y. WANG[3]
[1]Beckman institute, Urbana, IL, [2]Bec, Urbana, IL, [3]Beckman institute, Urbana

P-Th-B-188
Tracking Intracellular Movement Of Endothelial Glucocorticoid Receptor Using Bayesian Image Analysis
A. NAYEBOSADRI[1] AND J. Y. JI[2]
[1]Purdue University, West Lafayette, IN, [2]Indiana University Purdue University Indianapolis, Indianapolis, IN

P-Th-B-189
Quantification and Calibration of the reaction between Dihydroethidium and Superoxide
J. CHEN[1] AND M. KAVDIA[1]
[1]Wayne State University, Detroit, MI

P-Th-B-190
A Novel Device for Continuous Microscopic Observation of Live Cells Under Cyclic Mechanical Stimuli
J. IMSIROVIC[1] AND B. SUKI[1]
[1]Boston University, Boston, MA

Track: Nano and Micro Technologies

Medical Diagnostics: Nano to Micro Devices

P-Th-B-191
Engineering a Tethered Enzyme-Based Stroke Diagnostic Platform
J. LATA[1], R. COHEN[1], N. NISHIMURA[1], C. SCHAFFER[1], AND A. TRAVIS[1]
[1]Cornell University, Ithaca, NY

P-Th-B-192
Sperm Sorting and Exhaustion in Nature-Mimicking Microchannels
U. DEMIRCI[1], S. TASOGLU[1], J. L. KINGSLEY[2], H. SAFAEE[1], X. ZHANG[1], AND E. TUZEL[2]
[1]Harvard Medical School, Cambridge, MA, [2]Worcester Polytechnic Institute, Worcester, MA

P-Th-B-193
Rotating Magnetic Bead Clusters as a New Physical Model with Potential Applications Towards Point-of-Care Diagnostics
A. H. HECHT[1], P. COMMISKEY[1], N. SHAH[2], AND R. KOPELMAN[1]
[1]University of Michigan, Ann Arbor, MI, [2]University of Cincinnati, Cincinnati, OH

P-Th-B-194
On-chip Bacterial Detection and Diagnosis with Integrated Electromechanical Micropump for Low-Resource Settings
E. L. CURTIS[1,2], A. KOLE[1,2], E. WERNER[1,2], B. LESNIAK[3], B. BRANTLEY[3], K. SEALE[1,2], AND J. WIKSWO[1,4]
[1]Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, [2]The Searle Systems Biology and Bioengineering Undergraduate Research Experience, Vanderbilt Universi, Nashville, TN, [3]Department of Mechanical Engineering, Vanderbilt University, Nashville, TN, [4]Vanderbilt Institute for Integrative Biosystems Research, Nashville, TN

P-Th-B-195
High Content Evaluation of Platelet Function in a Microfluidic Flow Assay
R. R. HANSEN[1], A. R. WUFSUS[1], S. BARTON[1], R. M. JOHNSON-PABEN[1], A. A. ONASOGA[1], AND K. B. NEEVES[1,2]
[1]Colorado School of Mines, Golden, CO, [2]University of Colorado Denver, Aurora, CO

P-Th-B-196
Droplet-Microfluidics for Single Cell Enzyme Diagnostics
Y-P. HO[1,2], S. JUUL[1,2], M. STOUGAARD[2], J. KOCH[2], F. F. ANDERSEN[2], B. R. KNUDSEN[2], AND K. W. LEONG[1]
[1]Duke University, Durham, NC, [2]Aarhus University, Aarhus, Denmark

P-Th-B-197
Enrichment of Circulating Tumor Cells in Blood by Phase Partitioning Technique Inside High Aspect Ratio Microfluidic Channel
V. PARICHEHREH[1], K. MEDEPALLI[2], AND P. SETHU[2]
[1]University of Louisville, louisville, KY, [2]University of Louisville, Louisville, KY

P-Th-B-198
Enhanced Capture of Circulating Tumor Cells via Concave-Surfaced Microposts
D. J. HOWARD[1], J. W. KWON[1], AND B. HAHM[1]
[1]University of Missouri, Columbia, MO

P-Th-B-199
A Simple Microfluidic Device for Automated, High-Throughput Evaluation of Morphology of Stored Red Blood Cells
X. YANG[1], N. PIETY[1], M. TRISCOTT[1], AND S. SHEVKOPLYAS[1]
[1]Tulane University, New Orleans, LA

P-Th-B-200
A Centrifugal Force-Based Method of Characterization of Membranes Used in Paper Microfluidics
J. R. BUSER[1], G. KIMPEL[1], P. KAUFFMAN[1], E. FU[1], B. LUTZ[1], AND P. YAGER[1]
[1]University of Washington, Seattle, WA

P-Th-B-201
A Mixed Self-Assembled Monolayer For Small Molecule Sensing Using Surface-Enahnced Raman Spectroscopy Remains Viable In Blood For Up To 10 Days
J. M. YUEN[1], A-I. HENRY[1], B. SHARMA[1], N. C. SHAH[1], M. R. GLUCKSBERG[1], AND R. P. VAN DUYNE[1]
[1]Northwestern University, Evanston, IL

P-Th-B-202
Anaerobic Storage Improves the Mechanical Properties of Stored Red Blood Cells
J. M. BURNS[1], X. YANG[1], T. YOSHIDA[2], L. J. DUMONT[3], AND S. S. SHEVKOPLYAS[1]
[1]Tulane University, New Orleans, LA, [2]New Health Sciences, Inc., Bethesda, MD, [3]The Geisel School of Medicine at Dartmouth, Lebanon, NH

P-Th-B-203
A Microfluidic Device For Single Cell PCR
D. N. LOUFAKIS[1], R. VARGHESE[2], D. MITTELMAN[1,2], AND C. LU[1,3]
[1]Virginia Tech, Blakcsburg, VA, [2]Virginia Bioinformatics Institute, Blakcsburg, VA, [3]Virginia Tech-Wake Forest University, Blakcsburg, VA

P = Poster Session
OP = Oral Presentation

P-Th-B-204
Transplant Graft Status Monitoring by ImmunoFET Sensitive in Physiologic Environments
P. Casal[1], Y. Wang[1], A. Theiss[1], G. Hadley[1], L. Brillson[1], W. Lu[1], and S. C. Lee[1]
[1]*The Ohio State University, Columbus, OH*

P-Th-B-205
Electrophoretic Screen and Functionalized Microspheres as Antigen Assays
J. E. Rincon[1], M. Hock[1], and T. Boland[1]
[1]*The University of Texas at El Paso, El Paso, TX*

P-Th-B-206
Sensitive, Microliter PCR with Degenerate Primers for Respiratory Virus Detection and Discovery
C. R. Phaneuf[1], K. Oh[2], N. Pak[1], D. C. Saunders[1], C. Conrardy[3], J. Landers[2], S. Tong[3], and C. R. Forest[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Virginia, Charlottesville, VA,* [3]*Centers for Disease Control and Prevention, Atlanta, GA*

P-Th-B-207
Using Live Cell Arrays to Develop Gene Regulation Fingerprint for Mesenchymal Stem Cell Differentiation Research
R. M. Padmashali[1], M-S. Liang[1], P. Mistriotis[1], and S. T. Andreadis[1,2]
[1]*State University of New York at Buffalo, Amherst, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

P-Th-B-208
Shrink-Induced Rapid Production of SiO2 Nanostructures for Enhanced Fluorescence Detection Capability
S. Lin[1], H. Sharma[1], N. Norouzi[1], J. McLane[1], and M. Khine[1]
[1]*University of California, Irvine, Irvine, CA*

P-Th-B-209
Small Sample Protein Preconcentration Using Photopatterned Tracked-etched Membrane
S. Saedinia[1], K. Nastiuk[1], J. Krolewski[1], G-P. Li[1], and M. Bachman[1]
[1]*University of California, Irvine, Irvine, CA*

P-Th-B-210
Tandem Flexible Micro Spring Array (tFMSA) for Size Based Fractionation in Cancer Monitoring
Y-T. T. Yeh[1], R. Harouaka[1], P. Zheng[1], C. Dong[1], and S. Zheng[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Th-B-211
Real Time *In-vivo* Uric Acid Biosensor System for Biophysical Monitoring of Birds
A. Gumus[1], D. Winkler[1], and D. Erickson[1]
[1]*Cornell University, Ithaca, NY*

P-Th-B-212
A Microfluidic Technique for Enriching Low Abundance Targets
B. C. Hollins[1], H. Xia[1], B. Mathew[1], A. Kunjumon[1], H. Hegab[1], D. S. Mainardi[1], S. Soper[2], and J. Feng[1]
[1]*Louisiana Tech University, Ruston, LA,* [2]*Louisiana State University, Baton Rouge, LA*

P-Th-B-213
Capture and Detection of Circulating Tumor Cells and Exosomes Using Tethered Lipoplex Nanoparticles for Lung Cancer Diagnosis and Surveillance
Y. Wu[1], K. Kwak[1], J. Ma[1], Y. Mao[1], M. Crawford[1], X. Wang[1], H. He[1], A. Lee[1], S. P. Nana-Sinkam[1], and L. J. Lee[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Ohio State University, Columbus*

P-Th-B-214
A Multi-faceted Approach to the Detection of Pancreatic Cancer
M. P. Hwang[1], J-W. Lee[1], J. Choi[1], and K-H. Lee[1]
[1]*Korea Institute of Science and Technology, Seoul, Korea, Republic of*

P-Th-B-215
Permanent Magnet Micro-Needles for Nanobiomagnetic Applications
Z. A. Kaufman[1], J. P. Dobson[1], E. G. Yarmola[1], K. D. Allen[1], and D. P. Arnold[1]
[1]*University of Florida, Gainesville, FL*

P-Th-B-216
On-chip Capture/Sorting and Characterization of Cancerous Cells
D. Gallego-Perez[1], K. Kwak[1], Y. Wu[1], X. Wang[1], J. Ma[1], P. Boukany[1], B. Yu[1], Y. Mao[1], L. Li[1], T. Eubank[1], G. Lafyatis[1], D. Hansford[1], J. Lannutti[1], and L. Lee[1]
[1]*The Ohio State University, Columbus, OH*

P-Th-B-217
Bacterial Lysis and On-Paper Purification of Nucleic Acids for Point-of-Care Applications
S. Byrnes[1], P. Kauffman[1], L. Lafleur[1], E. Fu[1], B. Lutz[1], and P. Yager[1]
[1]*University of Washington, Seattle, Seattle, WA*

P-Th-B-218
Shrink-Induced Superhydrophobic Microfluidics
J. McLane[1], L. Freschauf[1], S. Lin[1], and M. Khine[1]
[1]*University of California, Irvine, Irvine, CA*

P-Th-B-219
Open-Loop, Rapid, Laser PCR System Using Transient Thermal Analysis, Optimization, and Environmental Control
G. L. Holst[1], D. C. Saunders[1], N. Pak[1], C. R. Phaneuf[1], and C. R. Forest[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-B-220
Development of a Coffee-Ring Diagnostic for Malaria
J. Trantum[1], C. Gulka[1], D. Wright[1], and F. Haselton[1]
[1]*Vanderbilt University, Nashville, TN*

P-Th-B-221
Low Resource Extraction of DNA from Human Urine
H. Bordelon[1], A. E. Creecy[1], N. M. Adams[1], P. A. Short[1], D. W. Wright[1], and F. R. Haselton[1]
[1]*Vanderbilt University, Nashville, TN*

P-Th-B-222
Designing Surface Tension Valves for Self-Contained Magnetic Bead-Based Assays
N. M. Adams[1], A. E. Creecy[1], C. E. Majors[1], P. A. Short[1], D. W. Wright[1], and F. R. Haselton[1]
[1]*Vanderbilt University, Nashville, TN*

P-Th-B-223
Silicon Photonics-Based Label-Free Analysis in Blood and Complex Clinical Matrices
J. T. Kirk[1], N. Stender[1], N. D. Brault[1], K. W. Lannert[2], J. M. Johnsen[1,2], S. Jiang[1], and D. M. Ratner[1]
[1]*University of Washington, Seattle, WA,* [2]*Puget Sound Blood Center, Seattle, WA*

P-Th-B-224
Million-Cell FISH Array for Large-Scale Genetic Characterization of Cancers
Y. Liu[1], B. Kirkland[1], J. Shirley[1], Z. Wang[1], P. Zhang[1], S-I. Takebayashi[1], D. M. Gilbert[1], S. Lenhert[1], and J. Guan[1]
[1]*Florida State University, Tallahassee, FL*

P-Th-B-225
Integrating Antibody-Functionalized Microshuttles in a Biomolecular Motor-Driven Microfluidic Sensor
J. Campbell[1], D. Paul[1], K. Kurabayashi[1], and E. Meyhofer[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Th-B-226
In-vitro Molecular Imaging of Tumor Cells by a Highly Integrated PET Microsystem
K. Hwang[1], J. Wang[1], and J. R. Heath[1]
[1]*Caltech, Pasadena, CA*

POSTER SESSION Thurs B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Th-B-227
Dielectrophoresis-Enhanced Immunocapture of Prostate Cancer Cells
C. Huang[1], S. M. Santana[1], B. G. Hawkins[2], H. Liu[3], N. H. Bander[3], and B. J. Kirby[1]
[1]Cornell University, Ithaca, NY, [2]National Institute of Standards and Technology, Gaithersburg, MD, [3]Weill Medical College of Cornell University, New York, NY

P-Th-B-228
A Multiplex Bead-Based Assay for Early Detection of Type I Diabetes
S. Bale[1], G. M. Price[1], G. Martens[2], M. Casali[1], and M. L. Yarmush[1]
[1]Harvard Medical School, Massachusetts General Hospital and the Shriners Hospitals for Children, Boston, MA, [2]UZ Brussel, Laarbeeklaan, Belgium

P-Th-B-229
Detection of *M. tuberculosis* Specific Antigens (ESAT-6) with Integrated Nanoporous Silica Thin-Films
H-J. Wu[1], J. Fan[1], X. Ma[1,2], and Y. Hu[1,3]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Weill Cornell Medical College, New York, NY

P-Th-B-230
Magnetic Biomarker Harvesting for Osteoarthritis Diagnosis
J. Dobson[1], E. Yarmola[1], Z. Kaufman[1], D. Arnold[1], and K. Allen[1]
[1]University of Florida, Gainesville, FL

P-Th-B-231
A Rapid Fiber-Based Immunassay for Early Diagnosis
C. R. Waddell[1], V. Reukov[1], C-C. Tsai[1], K. Kornev[1], and A. Vertegel[1]
[1]Clemson University, Clemson, SC

P-Th-B-232
Device for Near-Instant Diagnosis of Clinical Infection by Convective Droplet Thermocycling and 16s rRNA Hybervariable Region Probes
D. K. Harshman[1], R. Reyes[1], D. J. You[1], and J. Y. Yoon[1]
[1]University of Arizona, Tucson, AZ

P-Th-B-233
Single-Molecule Detection and Microfluidics: Generating Systems for the *in vitro* Diagnosis of Stroke
B. M. Young[1]
[1]UNC at Chapel Hill, Chapel Hill, NC

Track: Nano and Micro Technologies

Miniature Energy Generation & Harvesting for Bio

P-Th-B-234
High Power Density Microbial Fuel Cells for Implantable Medical MicroDevices
Z. Ye[1], J. Hou[1], M. Ellis[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

Track: Neural Engineering

Brain-Computer Interfaces

P-Th-B-235
Decoding of Directional Intention and Movements Using Electrocorticographic (ECoG) Signals in Humans
A. Gunduz[1], P. Brunner[2,3], and G. Schalk[2,3]
[1]University of Florida, Gainesville, FL, [2]Wadsworth Center, Albany, NY, [3]Albany Medical College, Albany, NY

Track: Neural Engineering

Cellular and Molecular Neurophysiology

P-Th-B-236
Hydroxyl Functionalized Flavones Alter Amyloid-β Oligomer Formation
J. W. Reed[1], M. Rodgers[1], K. M. Pate[1], J. Clegg[1], and M. A. Moss[1]
[1]University of South Carolina, Columbia, SC

P-Th-B-237
Enhanced Calcium Staining of Adult Rodent Brain Slices Via a Microfluidic Oxygenator
G. Mauleon[1], J. F. Lo[1], C. P. Fall[1,2], and D. T. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]Georgetown University, Washington, DC

P-Th-B-238
Changes in Spike Rate Modulation Through Correlations in Excitatory and Inhibitory Synaptic Input
F. R. Fernandez[1] and J. A. White[1]
[1]University of Utah, Salt Lake City, UT

P-Th-B-239
Conformational States of the Transmembrane Protein Prestin Measured by FLIM-FRET Techniques
C. Mooney[1] and R. M. Raphael[1]
[1]Rice University, Houston, TX

P-Th-B-240
A Low-Cost Bluetooth DeviceFor Wireless Voltammetric Dopamine Detection
A. Gailey[1], B. N. Kim[1], and M. Lindau[1]
[1]Cornell University, Ithaca, NY

P-Th-B-241
Open Access Multi-Compartmentalized Microfluidic-Based Platform for Extended Long-Term Fluidic Isolation and Study of Axonal Neurobiology
H. Caicedo[1], T. Sarma[1], G. Pigino[1], and S. Brady[1]
[1]University of Illinois at Chicago, Chicago, IL

Track: Neural Engineering

Engineering the Neural Environment

P-Th-B-242
Geometry Confined Neuronal Culture Model on a Biochip
Y. Kuang[1], L. Wei[2], T. Xi[2], K. Mark[3], and B. Z. Gao[1]
[1]Clemson University, Clemson, SC, [2]Center for Biomedical Materials and Tissue Engineering Peking University, Beijing, China, Beijing, China, People's Republic of, [3]Medical University of South Carolina, Charleston, SC, Charleston, SC

P-Th-B-243
Learning Cultured Neural Network Temporal Evolution using Graph Theory
A. Napoli[1], M. Sobel[1], and I. Obeid[1]
[1]Temple University, Philadelphia, PA

P-Th-B-244
Electrical and Chemical Enhancement of Neurite Outgrowth Within a 3D Collagen Scaffold
R. Adams[1], S. R. Rendell[1], L. French[1], J. B. Papke[1], R. K. Willits[2], and A. B. Harkins[1]
[1]Saint Louis University, St. Louis, MO, [2]University of Akron, Akron, OH

P-Th-B-245
A Study of Human Neuroblastoma Cells on Micropatterned Collagen Extracellular Matrix
I. Poudel[1] and J. Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

P = Poster Session
OP = Oral Presentation

P-Th-B-246
A Novel Microfluidic Device to Study Axonal Response to Controlled Gradients of Guidance Cues
A. Blasiak[1], D. Kilinc[1], and G. U. Lee[1]
[1]*University College Dublin, Dublin, Ireland*

P-Th-B-247
Motor Neuron Development on Poly-L-Lactide-Polycaprolactone Fibers
F. Winterroth[1,2], S. J. Tuck[1], M. K. Leach[1,3], and J. M. Corey[1,3]
[1]*The University of Michigan, Ann Arbor, MI,* [2]*The University of Michigan, Ann Arbor,* [3]*Veterans Affairs Ann Arbor Healthcare Center, Ann Arbor, MI*

P-Th-B-248
Compartmentalized Biochip for Neurotoxicity Test of Magnesium Alloy
T. Huang[1,2], L. Wei[1,2], T. Xi[1], and B. Z. Gao[2]
[1]*Peking University, Beijing, China, People's Republic of,* [2]*Clemson University, Clemson, SC*

P-Th-B-249
Silk Hydrogels as Soft Substrates for Neural Tissue Engineering
A. M. Hopkins[1,2], L. De Laporte[2], E. Spedden[1], J. A. Hubbell[2], C. Staii[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA,* [2]*L'École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

P-Th-B-250
Cell-Confinement Test on Chick Forebrain Neurons
L. Wei[1], Y. Kuang[2], T. Xi[1], M. Kindy[3], and Z. Gao[2]
[1]*Peking University, Beijing, China, People's Republic of,* [2]*Clemson University, Clemson, SC,* [3]*Medical University of South Carolina, Charleston, SC*

Track: Stem Cell Engineering

Biomimetic Strategies to Control the Stem Cell Niche

P-Th-B-251
Endothelial-Conditioned Medium Promotes Neural Stem Cell Proliferation
C. M. Dumont[1,2], M. R. Newman[1,2], G. Dai[1,2], and D. M. Thompson[1,2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Center for Biotechnology and Interdisciplinary Studies, Troy, NY*

P-Th-B-252
A Synergistic Relationship between Cell Geometry and Paracrine Signaling during Stem Cell Differentiation
K. A. Kilian[1], M. Mrksich[2], D. Zhang
[1]*Univeristy of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Northwestern University, Evanston, IL*

P-Th-B-253
Non-random DNA Template Segregation in Differentiating Embryonic Stem Cells
C. Elabd[1], R. Chen[1], W. Cousin[1], J. Pham[1], M. Conboy[1], and I. Conboy[1]
[1]*University of California, Berkeley, Berkeley, CA*

P-Th-B-254
Isolation and Culture Optimization of Colonic Crypts For Use on Microfabricated Platforms
A. A. Ahmad[1,2], Y. Wang[1], A. D. Gracz[1], C. E. Sims[1], S. T. Magness[1], and N. L. Allbritton[1,2]
[1]*UNC, Chapel Hill, NC,* [2]*NCSU, Raleigh, NC*

P-Th-B-255
Mechanisms Underlying Peptide Signaling in Self-Renewal of Human Induced Pluripotent Stem Cells on a Xeno-Free Synthetic Peptide-Functionalized Surface
S. Jin[1], H. Yao[2], Z. Melkoumian[3], and K. Ye[4]
[1]*Univeristy of Arkansas, Fayetteville, AR,* [2]*University of Arkansas, Fayetteville,* [3]*Corning, New York, NY,* [4]*University of Arkansas, Fayetteville, AR*

P-Th-B-256
Nanotopography Mediates Functional Reponses of Human Embryonic Stem Cells
W. Chen[1], L. G. Villa-Diaz[1], Y. Sun[1], S. Weng[1], P. H. Krebsbach[1], and J. Fu[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Th-B-257
Extracellular Matrix Proteins are Necessary for Mesendoderm Induction
H. Taylor-Weiner[1], J. E. Schwarzbauer[2], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Princeton University, Princeton, NJ*

P-Th-B-258
A Biomimetic Synthetic Feeder Layer Supports Mouse Embryonic Stem Cell Culture
T. Ramchal[1], C. Lopez-Fagundo[1], N. Labriola[1], D. Hoffman-Kim, Ph.D.[1], and E. M. Darling, Ph.D.[1]
[1]*Brown University, Providence, RI*

P-Th-B-259
Creating an Oxygen Landscape for the Vascular Endothelium and Mesenchymal Stem Cells
M. L. Rexius[1], A. B. Malik[1], J. Rehman[1], and D. T. Eddington[1]
[1]*University of Illinois at Chicago, Chicago, IL*

Track: Stem Cell Engineering

Mechanotransduction and Mechanobiology

P-Th-B-260
Shear Stress-Induced Differentiation of Embryonic Stem Cells is Mediated by the Cytoskeleton
E. T. Pineda[1] and T. Ahsan[1]
[1]*Tulane University, New Orleans, LA*

Track: Stem Cell Engineering

Stem Cell Bioprocessing

P-Th-B-261
The Mechanical Stiffness of Human Mesenchymal Stem Cells is Source-Dependent
T. Bongiorno[1], A. Barua[1,2], C. Henegar[1], Z. Schwartz[1,2], B. Boyan[1,2], T. McDevitt[1,2], and T. Sulchek[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-B-262
Isoproteronol Facilitated Cardiomyocyte Generation From Human Pluripotent Stem Cells
K. Ban[1], S. Kim[1], J. Byun[1], and Y-S. Yoon[1]
[1]*Emory University, Atlanta, GA*

Track: Stem Cell Engineering

Stem Cells and Biomaterials

P-Th-B-263
Effect of Fibronectin Fragment Presentation on Early Mesenchymal Stem Cell Response to BMP-12
J. Lei[1], A. C. Brown[1,2], T. H. Barker[1,2], and J. S. Temenoff[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Th-B-264
Pancreatic Maturation of Alginate Encapsulated Human Embryonic Stem Cells
T. C. Richardson[1], P. N. Kumta[1], and I. Banerjee[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

POSTER SESSION ThB

P-Th-B-265
Temporally-Regulated Mechanotransduction Controls Stem Cell Cardiomyogenesis
J. L. Young[1], K. Kretchmer[1], J. Schaefer[1], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA*

P-Th-B-266
Novel Easy Use Synthetic Substrate for Stem Cell Culture
Y. Zhou[1], Z. Melkoumain[1], J. J. Kelley[1], J. L. Weber[1], P. J. Dolley-Sonneville[1], L. E. Romeo[1], S. K. Pai[1], D. S. Henry[1], and S. J. Caracci[1]
[1]*Conring Incorporated, Corning, NY*

P-Th-B-267
Controlling Stem Cell-derived Cardiomyocyte Maturation Using Soluble Nitric Oxide Donors
A. J. Hodge[1], J. Zhong[1], and E. A. Lipke[1]
[1]*Auburn University, Auburn University, AL*

P-Th-B-268
Injectable Hydrogel Cell Delivery System for Bone Tissue Engineering
C. Dosier[1], H. Stevens[1], O. Chaudhuri[2], and R. Guldberg[1]
[1]*Georgia Tech, Atlanta, GA,* [2]*Harvard, Cambridge, MA*

P-Th-B-269
Stem Cell Therapy: Not All Approaches Are Created Equal
M. Lam[1], Y. Gong[1], A. Nauta[2], J. Wu[1], and M. Longaker[1]
[1]*Stanford University, Stanford, CA,* [2]*Stanford University, Stanford, CO*

P-Th-B-270
Poly-caprolactone Electrospun Fibers: A New Dimension to HSC - MSC Co-cultures for Blood Cell Product Manufacturing.
F. C. Ferreira[1], M. H. Costa[1], P. Z. Andrade[1], J. S. Cabral[1], and C. Lobato da Silva[1]
[1]*IBB - Institute for Biotechnology and Biotechnology; Instituto Superior Técnico, Lisbon, Portugal*

P-Th-B-271
Suspension Based Differentiation of Human Adult Stem Cells
A. Adeniran-Catlett[1] and S. K. Murthy[1]
[1]*Northeastern University, Boston, MA*

P-Th-B-272
Enhanced Therapeutic Effects of Engineered CD31 Expressing Cells and Pluripotent Stem Cell Derived Endothelial Cells in Chitosan Hydrogel Containing VEGF Releasing Microtubes
S. Lee[1], C. M. Valmikinathan[2], J. Byun[1], S. Kim[1], G. Lee[1], N. Mokarram[2], B. Pai[2], R. V. Bellamkonda[2], and Y-S. Yoon[1,2]
[1]*Emory University, Atlanta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

P-Th-B-273
Multifunctional Electrospun Scaffolds for Promoting Neural Differentiation of Induced Pluripotent Stem Cells
A. Montgomery[1], N. Khadem Mohtaram[1], K. Kolehmainen[1], J. Ko[1], and S. M. Willerth[1]
[1]*University of Victoria, Victoria, BC, Canada*

P-Th-B-274
Surface Engineering Nanomaterials for Stem Cell Engineering
W. Suh[1] and M. Tirrell[2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*University of Chicago, Chicago, IL*

P-Th-B-275
Nanoparticle-based Strategy for Generation of Induced Pluripotent Stem Cells to Study Retinitis Pigmentosa
N. Bhise[1], K. Wahlin[1], D. Zack[1], and J. Green[1]
[1]*Johns Hopkins University, Baltimore, MD*

Track: Tissue Engineering

Cardiovascular Tissue Engineering

P-Th-B-276
Effect of Co-Culture Spatial Geometry on Capillary Network Formation *in vitro*
E. Brown Peters[1] and G. Truskey[1]
[1]*Duke University, Durham, NC*

P-Th-B-277
Cardiac Tissue Regeneration: MRI Based Morphological Modeling, Synthesis, and Characterization of Tissue Mimicking Materials
S. Angeli[1], F. Kossivas[1], D. Kafouris[1], V. Tzagarakis[2], C. S. Patrickios[1], and C. Constantinides[1]
[1]*University of Cyprus, Nicosia, Cyprus,* [2]*Alpha Evresis Medical Center, Nicosia, Cyprus*

P-Th-B-278
Designing a Tendon-Derived Tubular Collagen Scaffold
K. A. Alberti[1] and Q. Xu[1]
[1]*Tufts University, Medford, MA*

P-Th-B-279
Hypoxic Conditioning of ADSCs to Promote Vascular Development
M. Skiles[1], L. Rucker[1], and J. Blanchette[1]
[1]*University of South Carolina, Columbia, SC*

P-Th-B-280
Amniotic Fluid Stem Cell-Derived Vascularization Within Thermoresponsive Gelatin-Chitosan Hydrogels
O. M. Benavides[1], J. J. Petsche[1], S. Pok[1], S. Haeri[2,3], and J. G. Jacot[1,3]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX,* [3]*Texas Children's Hospital, Houston, TX*

P-Th-B-281
Improved Design for Cell-Free, Fast Degrading Synthetic Artery Grafts
R. A. Allen[1], M. Yoshida[2], W. Wu[3], L. Volpatti[1], S. A. Guelcher[4], and Y. Wang[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Children's Hospital of Pittsburgh of the University of Pittsburgh School of Medicine, Pittsburgh, PA,* [3]*Yale University, New Haven, CT,* [4]*Vanderbilt University, Nashville, TN*

P-Th-B-282
Regulation of Valvular Interstitial Cell Phenotype by Boundary Stiffness
M. H. Kural[1] and K. L. Billiar[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P-Th-B-283
Stepwise, Solubilization-Based Antigen Removal Maintains Xenogeneic Scaffold Properties
M. L. Wong[1], J. L. Wong[1], and L. G. Griffiths[1]
[1]*University of California, Davis, Davis, CA*

P-Th-B-284
Laser Microchannels in Engineered Heart Tissue: A Novel Vascularization Method in Tissue Engineering
H. Maclean[1], C. Sondergaard[1], R. Witt[1], L. Le[1], S. Najibi[1], G. Mathews[1], S. Wachsmann-Hogiu[1], and M-S. Si[1]
[1]*University of California Davis, Sacramento, CA*

P-Th-B-285
A Three-Dimensional Scaffold Self-Assembled Polycaprolactone in a Gelatin-Chitosan Hydrogel for Reconstruction of Congenital Heart Defects
S. Pok[1] and J. G. Jacot[1,2]
[1]*Rice University, Houston, TX,* [2]*Texas Children's Hospital, Houston, TX*

P = Poster Session
OP = Oral Presentation

P-Th-B-286
Characterization of Cardiac Extracellular Matrix for Improved Recellularization
N. J. Merna[1], C. J. Robertson[1], A. T. La[1], and S. C. George[1]
[1]*University of California, Irvine, Irvine, CA*

P-Th-B-287
Nanog Reverses the Effect of Senescence on Myogenic Differentiation of Human Mesenchymnal Stem Cells
P. Mistriotis[1], M. Liang[1], J. Han[1], and S. Andreadis[1,2]
[1]*University at Buffalo SUNY, Amherst, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

P-Th-B-288
Comparison of Endothelial Differentiation Potential of c-kit Sorted and Unsorted Amniotic Fluid-derived Stem Cells
J. J. Petsche[1], O. M. Benavides[1], S. Haeri[2,3], and J. G. Jacot[1,3]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX,* [3]*Texas Children's Hospital, Houston, TX*

P-Th-B-289
Geometric Changes and Pulsatility Effects on Oscillatory Shear Stress Environments: Implications for Heart Valve Tissue Engineering
M. Salinas[1], M. Libera[1], D. Schmidt[2], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL,* [2]*University of Pittsburgh, Pittsburgh, PA*

P-Th-B-290
Varying Frequency of Mechanical Stimulation Induces a More Physiological Hypertrophic Pathway in Engineered Myocardium
K. Y. Ye[1] and L. D. Black[1]
[1]*Tufts University, Medford, MA*

P-Th-B-291
Fluid-Flow Patterns as Regulatory Mechanisms in Stem-Cell Based Heart Valve Tissue Engineering
S. Van Gulden[1], M. Salinas[1], C. Martinez[1], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

P-Th-B-292
Variation In Cardiac Pulse Frequencies Modulates vSMC Phenotype Switching During Early Phase Vascular Remodeling
Z. Tosun[1] and P. McFetridge[1]
[1]*University of Florida, Gainesville, FL*

P-Th-B-293
Cyclic Flexure, Laminar Flow, and Fibrin Effects on the Production of Stem Cell Derived Engineered Valve Tissue.
A. Alfonso Remigio[1], C. Martinez[1], M. Hernandez[1], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

P-Th-B-294
Promoting Elastin Production Within 3 Dimensional PEGDA Hydrogels Using An Elastin Mimetic Peptide
D. Patel[1], R. Menon[1], and L. Taite[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-B-295
Scaffold Design in Mechanically-Induced Cardiomyogenic Differentiation of Periodontal Ligament Cells
S. Rath[1] and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

P-Th-B-296
Assessment of Thrombogenicity of Decellularized Vascular Grafts
A. B. Van de Walle[1] and P. S. McFetridge[1]
[1]*University of Florida, Gainesville, FL*

P-Th-B-297
Selective Grafting of Amine Groups by Nitrogen Plasma Treatment Enhances Cell Affinity for Poly(vinyl alcohol) Vascular Grafts
J. M. Ino[1,2], P. Chevallier[3], D. Mantovani[3], D. Letourneur[1], and C. Le Visage[1]
[1]*Inserm U*^{698}*, Paris, France,* [2]*Institut Galilée, University Paris* ^{13}*, Villetaneuse, France,* [3]*Laboratory for Biomaterials and Bioengineering, Quebec City, Canada*

P-Th-B-298
The Amniotic Membrane as a Scaffold for a Vascular Graft
J. H. Arrizabalaga[1], J. A. Brennan[1], and M. U. Nollert[1]
[1]*University of Oklahoma, Norman, OK*

P-Th-B-299
Self-Regenerative Engineered Heart Valves: From Conception to Performance
S. Alavi[1,2] and A. Kheradvar[1,2]
[1]*University of California Irvine, Irvine, CA,* [2]*Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA*

P-Th-B-300
siRNA Delivered by an AAV9 Vector Provides Highly-Efficient Knockdown of Ubiquitously Expressed eGFP in Murine Heart But Not Liver
B. A. Piras[1], P. Konkalmatt[1], and B. A. French[1]
[1]*University of Virginia, Charlottesville, VA*

P-Th-B-301
Characterization of Dermal Fibroblasts as a Cell Source for Tissue Engineered Heart Valves
M. Fahrenholtz[1], W. Liu[1], D. Kearney[2], C. D. Fraser[2,3], and K. J. Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*Texas Children's Hospital, Houston, TX,* [3]*Baylor College of Medicine, Houston, TX*

P-Th-B-302
Effect of Oxygen Gradient on Early Vascular Graft Maturation
M. C. Moore[1], R. Moore[1], and P. S. McFetridge[1]
[1]*The University of Florida, Gainesville, FL*

P-Th-B-303
Effect of Stress-Induced Senescence on Cord Blood-Derived Endothelial Cell Permeability
M. P. Ganatra[1], T. M. Cheung[1], J. J. Fu[1], and G. A. Truskey[1]
[1]*Duke University, Durham, NC*

P-Th-B-304
Cell Seeding and Dynamic Conditioning of Long Xenogeneic Acellular Vascular Scaffolds
G. Fercana[1], E. Langan[2], C. Wright[2], D. Bowser[1], and D. Simionescu[1]
[1]*Clemson University, Clemson, SC,* [2]*Greenville Hospital System, Greenville, SC*

P-Th-B-305
Diabetes-Induced Inflammatory Response in Collagen Scaffolds used for Cardiovascular Tissue Engineering; Mitigation with Antioxidants
J. Chow[1], H. Warner[1], D. Simionescu[1], and A. Simionescu[1]
[1]*Clemson University, Clemson, SC*

P-Th-B-306
Dynamic Endothelialization and Conditioning of Aortic Heart Valve Scaffolds Using Adult Stem Cells
R. Pascal[1], L. N. Sierad[1], D. Simionescu[1], and A. Simionescu[1]
[1]*Clemson University, Clemson, SC*

P-Th-B-307
Assessment of Biochemical Contributions to Diabetic Cardiomyopathy Pathology and Development of an Appropriate *In vitro* Model
T. Larrew[1], J. Chow[1], G. Fercana[1], J. Schulte[1], D. Simionescu[1], and A. Simionescu[1]
[1]*Clemson University, Clemson, SC*

Thursday, October 25, 2012

1:30PM - 3:00PM

PLATFORM SESSION –THURS – 2

PLATFORM SESSIONS **Th-2**

Track: Biomaterials
OP - Thurs - 2 – 1 - Room A311
Biomaterials for RNA Delivery

Chairs: Jordan Green, James Moon

1:30PM
Self-Assembled RNAi Microsponges as Self-Delivery Systems
J. Lee[1], J. Hong[1], D. Bonner[1], Z. Poon[1], and P. T. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

1:45PM
Multifunctional Triblock Copolymers for Intracellular mRNA Delivery
C. Cheng[1], A. J. Convertine[1], P. S. Stayton[1], and J. D. Bryers[1]
[1]University of Washington, Seattle, WA

2:00PM
Bioreducible poly(β-amino ester) nanoparticles for siRNA delivery
K. L. Kozielski[1] and J. Green[1]
[1]Johns Hopkins University, Baltimore, MD

2:15PM
Synthesis and Characterization of Composite Hydrogel Particles for Oral Delivery of siRNA
J. M. Knipe[1] and N. A. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

2:30PM
Injectable Tissue Engineering Scaffolds that Mediate Efficient Gene Silencing In Vivo
C. E. Nelson[1], A. J. Kim[1], E. J. Adolph[1], M. K. Gupta[1], F. Yu[1,2], J. M. Davidson[1,2], S. A. Guelcher[1], and C. L. Duvall[1]
[1]Vanderbilt University, Nashville, TN, [2]VA Hospital, Nashville, TN

2:45PM
Development of SiRNA Delivery System for Modulating Angiotensin II Type 1 Receptor Expression in Cardiomyocytes
J. Liu[1,2], C. Gu[3], Y. Luo[2], and M. E. Davis[4]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Peking University, Beijing, China, People's Republic of, [3]Georgia Institute of Technology, Atlanta, GA, [4]Emory University, Atlanta, GA

Track: New Frontiers and Special Topics
OP - Thurs - 2 – 2 - Room A312
Engineering Immunology and Immunotherapy II

Chairs: Darrell Irvine, Melody Swartz

1:30PM
Engineering Single-Cell Technologies to Monitor Dynamic Responses of T cells
J. C. Love[1]
[1]MIT, Cambridge, MA

2:00PM
Photoswitching as a Tool for Quantification of Lck Lateral Diffusion in CD4 T cells
K. T. Bashour[1] and L. C. Kam[1]
[1]Columbia University, New York, NY

2:15PM
Engineering Plant Spores and Pollens as Novel Adjuvants for Oral Vaccination
S. Atwe[1], Y. Ma[1], and H. S. Gill[1]
[1]Texas Tech University, Lubbock, TX

2:30PM
Generating Long Lasting Mucosal and Systemic CD8 T-cell Responses via Pulmonary Vaccination with Synthetic Lipid Nanoparticles
A. V. Li[1], J. J. Moon[1], J. Elkhader[1], W. Abraham[1], H. Suh[1], and D. J. Irvine[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Howard Hughes Medical Institute, Chevy Chase

2:45PM
Development of a Targeted, Immunosuppressive Microparticle Vaccine for the Prevention of Type 1 Diabetes
J. Lewis[1], M. Carstens[1], C. Xia[1], M. Clare-Salzler[1], and B. Keselowsky[1]
[1]University of Florida, Gainesville, FL

Track: Nano and Micro Technologies
OP - Thurs - 2 – 3 - Room A410
Micro & Nano Fluidic Technologies II

Chairs: Axel Guenther, Brian Kirby

1:30PM INVITED
Dielectric Spectrometry of Mycobacterium and GEDI Devices for Circulating Tumor Cells: Cell Capture, Characterization, and Manipulation in Geometrically Patterned Microstructures
B. J. Kirby[1,2]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

2:00PM
Low Pressure Inertial Focusing in Large-scale Microchannels for High-Throughput Flow Cytometry
A. J. Chung[1], D. Pulido[1], M. Masaeli[1], H. Amini[1], and D. Di Carlo[1]
[1]UCLA, Los Angeles, CA

2:15PM
Large-Scale Production and Size-Control of Lipid-Polymer Hybrid Nanoparticles in Microfluidics
Y. Kim[1], B. Lee Chung[1], M. Ma[1], W. J. Mulder[2], Z. A. Fayad[2], O. C. Farokhzad[3], and R. Langer[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Mount Sinai School of Medicine, New York, NY, [3]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

2:30PM
Describing Mast Cell Localization in Response to SCF Using Microfluidic Devices
M. Smith[1], A. Shamloo[1], M. Mani[1], M. Manchandia[1], K. Weinberg[1], and S. Heilshorn[1]
[1]Stanford University, Stanford, CA

2:45PM
Microfluidic Bandage: Delivering Oxygen and Monitoring Collagen for Wound Therapy
J. F. Lo[1], M. Brennan[1], Z. Merchant[1], Z. Nie[2], Q. Fang[3], L. Chen[1], L. DiPietro[1], and D. T. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]McMaster University, West Hamilton, ON, Canada

P = Poster Session
OP = Oral Presentation

Track: Nano and Micro Technologies
OP - Thurs - 2 – 4 - Room A314

Micro and Nano Technology Based Diagnostics II

Chairs: Dino Di Carlo, Rashid Bashir

1:30PM INVITED
Microfluidics and Nanotechnology for Development of Point of Care Sensors
R. Bashir[1]
[1]*UIUC, Urbana, IL*

2:00PM
Antibody-Free Optical Analysis and Sorting of Mammalian Cells
C. G. Hebert[1], A. Terray[1], and S. J. Hart[1]
[1]*Naval Research Lab, Washington, DC*

2:15PM
Patient-Operated, Mobile Phone-Based, Blood Counter for Blood Disease and Cancer Patients
E. L. Hardy[1,2], R. Mannino[1,2], D. A. Fletcher[3], C. Reber[3], A. Skandarajah[3], and W. A. Lam[1,2]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA,* [3]*University of California at Berkeley, Berkeley, CA*

2:30PM
Inducing *S. epidermidis* Biofilm Formation by Fluid Forces Using a Microfluidic Shear Array
W. M. Weaver[1], V. Milisavljevic[1], J. F. Miller[1,2], and D. Di Carlo[1,2]
[1]*University of California Los Angeles, Los Angeles, CA,* [2]*California NanoSystems Institute, Los Angeles, CA*

2:45PM
Stimuli-Responsive Antibody Conjugates for Enabling Highly Sensitive Point-of-Care Diagnostic Assays
J. J. Lai[1], A. L. Golden[1], J. M. Hoffman[1], A. S. Hoffman[1], and P. S. Stayton[1]
[1]*University of Washington, Seattle, WA*

Track: Nano and Micro Technologies
OP - Thurs - 2 – 5 - Room A315

Microphysiology Systems for Drug Toxicity and Efficacy I

Chairs: Sergei Sukharev, Alex Revzin

1:30PM INVITED
Microsystems for Multiplexed Detection of Cell-Secreted Cytokines
Y. Liu[1] and A. Revzin[1]
[1]*University of California Davis, Davis, CA*

1:45PM
A Label-free Magnetic Cell-based Sensor for Real-time Chemical Detections
H. Wang[1,2], A. Mahdavi[2], D. A. Tirrell[2], and A. Hajimiri[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*California Institute of Technology, Pasadena, CA*

2:00PM
Mechanosensitive Channels as Sensors for Drug Partitioning into the Native Bacterial Membrane
I. Rowe[1], K. Kamaraju[1], M. Guo[1], H. O. Sintim[1], and S. Sukharev[1]
[1]*University of Maryland, College Park, MD*

2:15PM
Electrical Control of Protein Conformation and Cell Function with Conducting Polymer Architectures
A. Wan[1], E. Chandler[1], T. Williams[1], C. K. Ober[1], D. Gourdon[1], E. P. Giannelis[1], C. Fischbach[1], and G. G. Malliaras[2]
[1]*Cornell University, Ithaca, NY,* [2]*Ecole des Mines de St. Etienne, Gardanne, France*

2:30PM
Cell Counting Using Contactless Impedance Sensing For Low Resource Settings
M. Javanmard[1], S. Emaminejad[1], R. Dutton[1], and R. W. Davis[1]
[1]*Stanford University, Palo Alto, CA*

2:45PM
Microfluidic Platform for Investigation of Molecular Transport Across Small Blood Vessels
Z. Abdi Dezfooli[1], S. Pinto[1], S. Yasotharan[1], S-S. Bolz[1], and A. Günther[1]
[1]*University of Toronto, Toronto, ON, Canada*

Track: Cancer Technology*
OP - Thurs - 2 – 6 - Room A316

Cancer Drug Delivery I

Chairs: Daniel Kamei, Richard Price

1:30PM
A Microfluidic Co-culture System for Epithelial-Mesenchymal Transition Drug Screening
T-Y. Tu[1], J. Bai[1], R. Huang[2], J-P. Thiery[3], and R. D. Kamm[1]
[1]*BioSystems and Micromechanics IRG, Singapore-MIT Alliance for Research and Technology (SMART), Singapore, Singapore,* [2]*Cancer Science Institute, National University of Singapore, Singapore, Singapore,* [3]*Institute of Molecular Cell Biology (IMCB), A-STAR, Singapore, Singapore*

1:45PM
Optimization of a pH-Sensitive Amphiphilic siRNA Delivery System for Cancer Therapy
A. S. Malamas[1] and Z-R. Lu[1]
[1]*Case Western Reserve University, Cleveland, OH*

2:00PM
Engineered Transferrin for the Targeted Delivery of Drug-Loaded Nanoparticles
R. Y. Chiu[1], T. Tsuji[2], C. T. Liu[1], J. Wang[1], A. B. Mason[3], and D. T. Kamei[1]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*Nagoya University, Nagoya, Japan,* [3]*University of Vermont, Burlington, VT*

2:15PM
Ultrasound-Activated Agents Comprised of 5FU-Bearing Nanoparticles Bonded to Microbubbles Inhibit Tumor Growth and Improve Survival
C. Burke[1], E. Alexander[1], K. Timbie[1], A. Klibanov[1], J. Sheehan[1], and R. J. Price[1]
[1]*University of Virginia, Charlottesville, VA*

2:30PM
Mitoxantrone-loaded Theranostic Nanoparticles for TRAIL-induced Ablation of Cancer Cells
T. Grandhi[1], T. Potta[1], D. TaylorR[1], Y. Tian[1], and K. Rege[1]
[1]*Arizona State University, Tempe, AZ*

2:45PM
In Vivo Test of a Vascular-Targeted Enzyme Prodrug Therapy of Breast Cancer
B. Van Rite[1], M. Cherry[2], V. Sikavitsas[1], C. Kurkjian[2], and R. G. Harrison[1]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Oklahoma Health Sciences Center, Oklahoma City, OK*

**Track sponsored by* BARD

PLATFORM SESSIONS Th-2

Track: Cellular and Molecular Bioengineering
OP - Thurs - 2 – 7 - Room A301
Mechanotransduction II

Chairs: Zhen Gu, Elliot Botvinick

1:30PM
Fluid Shear Stress Increases Leukocyte Sensitivity to Platelet Activating Factor
M. J. Mitchell[1], K. S. Lin[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

1:45PM
Equibiaxial Strain Induces Pore Formation In Schlemm's Canal Endothelial Cells
S. T. Braakman[1], R. M. Pedrigi[1], A. T. Read[2], C. R. Ethier[1], and D. R. Overby[1]
[1]Imperial College London, London, United Kingdom, [2]University of Toronto, Toronto, ON, Canada

2:00PM
Restricting Primary Brain Tumor Initiating Cell Motility By Rewiring Cell-Matrix Mechanosensing
S. Y. Wong[1,2], T. A. Ulrich[1,2], J. L. MacKay[1], L. P. Deleyrolle[3,4], B. A. Reynolds[3,4], and S. Kumar[1,2]
[1]University of California, Berkeley, Berkeley, CA, [2]UC Berkeley-UCSF Graduate Program in Bioengineering, Berkeley, CA, [3]McKnight Brain Institute, University of Florida, Gainesville, FL, [4]Queensland Brain Institute, University of Queensland, Brisbane, Australia

2:15PM
Roles of Rho-associated Kinase and Receptor Tyrosine Kinase Signaling in Cyclic Stretch-Induced Angiogenesis
J. R. Wilkins[1], D. B. Pike[1], C. C. Gibson[1], L. Li[1], and Y-T. E. Shiu[1]
[1]University of Utah, Salt Lake City, UT

2:30PM
Stiffness as an Effector of Lung Branching Morphogenesis
K. Clause[1], T. Segura[2], and T. H. Barker[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of California Los Angeles, Los Angeles, CA

2:45PM
The Glycocalyx Mechanically Regulates Integrin Function
M. J. Paszek[1], C. C. Dufort[1], K. Godula[2], J. E. Hudak[2], J. Lakins[1], C. R. Bertozzi[2], and V. M. Weaver[1]
[1]University of California, San Francisco, San Francisco, CA, [2]University of California, Berkeley, Berkeley, CA

Track: Cellular and Molecular Bioengineering
OP - Thurs - 2 – 8 - Room A302
Cell Mechanics I

Chairs: Jan Lammerding, Todd Sulchek

1:30PM
The Role of Local, Nanoscale Fluctuations in Cellular Mechanosensing
S. Knoll[1] and T. Saif[1]
[1]University of Illinois, Urbana, IL

1:45PM
Effect of Microtubule Motors on Microtubule Mechanics in Living Cells
N. Shekhar[1], J. Wu[1], A. Ladd[1], T. Lele[1], and R. Dickinson[1]
[1]University of Florida, Gainesville, FL

2:00PM
Lamin-A/C is a Nuclear Rheostat that Scales with Tissue Rigidity and Modulates Cell Lineage
J. Swift[1], T. Harada[1], J. Pinter[1], I. Ivanovska[1], A. Buxbiom[1], J-W. Shin[1], and D. E. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

2:15PM
Guidance of Cell Migration by Substrate Dimension
S. Chang[1], W-H. Guo[1], Y. Kim[1], and Y-L. Wang[1]
[1]Carnegie Mellon University, Pittsburgh, PA

2:30PM
Microrheology of a Non-Equilibrium System Produced by Molecular Motor-Generated Forces in Living Celle
M-T. Wei[1], S. Jedlicka[1], D. Vavylonis[1], and H-Y. Ou-Yang[1]
[1]Lehigh University, Bethlehem, PA

2:45PM
Deformability Cytometry, a Label-Free Assay of Stem Cell Pluripotency
M. Masaeli[1], H. T. Tse[1], D. R. Gossett[1], A. T. Clark[1], and D. Di Carlo[1]
[1]University of California, Los Angeles, CA

Track: Stem Cell Engineering
OP - Thurs - 2 – 9 - Room A305
Engineering the Stem Cell Niche

Chairs: Jianping Fu, Stephanie Willerth

1:30PM
Hydrogel Bone Marrow Mimics to Examine Diffusion-Mediated Paracrine Signaling on HSC Fate
B. Mahadik[1], S. Pedron-Haba[1], J. Choi[1], P. J. Kenis[1], and B. A. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

1:45PM
Fibrillar Collagen is Equivalent to Stiff Matrix in Driving Marrow Stromal Cell Differentiation into Matrix-deficient, Myofibroblastic-like Phenotype
P. P. Dingal[1] and D. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

2:00PM
Bone Marrow Mesenchymal Stem Cells Elicit an Angiogenic Response via their Alpha6 Beta1 Integrin Receptor
B. Carrion[1], Y. Kong[1], and A. Putnam[1]
[1]University of Michigan, Ann Arbor, MI

2:15PM
Invasive Breast Cancer Cells Alter Mesenchymal Stem Cell Function and Differentiation using Proteolytic Matrix Remodeling in Heterotypic Clusters
C. Wilder[1] and M. Platt[2]
[1]Georgia Institute of Technology and Emory Univeristy, Atlanta, GA, [2]Georgia Institute of Technology and Emory University, Atlanta, GA

2:30PM
Engineering an *In Vitro* Model of Cancerous Transformation of Adult Stem Cells: Effects of Cell Passage and Senescence
S. W. Crowder[1], S. H. Lee[1], A. M. Palmer[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

2:45PM
Engineering of Endogenous and Exogenous ECM in Pluripotent Stem Cell Aggregate Differentiation
K. M. Fridley[1], R. Nair[1], H. Lynch[1], A. J. Garcia[1], and T. C. McDevitt[1]
[1]Georgia Institute of Technology, Atlanta, GA

P = Poster Session
OP = Oral Presentation

Track: Biomaterials
OP - Thurs - 2 – 10 - Room A401
Micro & Nano Structured Biomaterials I

Chairs: Noah Malmstadt, Daniel Ratner

1:30PM
Adhesion of Staphylococcus aureus to PVC Embedded with Zinc Oxide Nanoparticles
B. M. Geilich[1] and T. J. Webster[1]
[1]Brown University, Providence, RI

1:45PM
Projection Micro-StereoLithography Printed PDMS as Potential Neural Interface Materials
K. N. Cicotte[1,2], G. Reece[3], P. Lin[3], S. Buerger[2], S. M. Dirk[2], and E. L. Hedberg-Dirk[1]
[1]University of New Mexico, Albuquerque, NM, [2]Sandia National Laboratories, Albuquerque, NM, [3]MD Anderson Cancer Center, Houston, TX

2:00PM
Engineering Electrospun Fiber Nanoporosity
N. J. Schaub[1], T. Britton[1], and R. J. Gilbert[1]
[1]Rensellaer Polytechnic Institute, Troy, NY

2:15PM
Fabrication of Cell-laden Microporous Hydrogels Using Gelatin as a Porogen for Bone Regeneration
L. Wang[1], K. F. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

2:30PM
Using Living Radical Polymerization to Improve Tailorable Extended Release from Molecularly Imprinted Biomaterials
V. D. Salian[1] and M. E. Byrne[1]
[1]Biomimetic & Biohybrid Materials, Biomedical Devices & Drug Delivery Laboratories, Auburn University, Auburn, AL

2:45PM
Asparagus Lettuce Peel Extract Mediated Green Synthesis of Gold and Silver Nanoparticles
L. Sun[1], L. Xia[1], S. Yi[1], S. C. Lenaghan[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

Track: Cancer Technology*
OP - Thurs - 2 – 11 - Room A402
Systems Biology & Personalized Medicine in Cancer Therapy

Chairs: Pamela Kreeger, Douglas Lauffenburger

1:30PM
Single Cell Microfluidics for Systems Oncology
R. Fan[1,2]
[1]Department of Biomedical Engineering, Yale University, New Haven, CT, [2]Yale Comprehensive Cancer Center, New Haven, CT

1:45PM
Prediction of Tumor Associated Macrophage Proteolytic and Metastatic Potential Using Multivariate Kinase Analysis
K-Y. Park[1] and M. O. Platt[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

2:00PM
Single Cell Functional Proteomic Evaluation Provided Critical Insights in Clinical Cancer Therapeutics Monitoring, Autoimmune Disease Study and Stem Cell Research
C. Ma[1], A. Cheung[1], L. Lin[2], J. Zhao[1], R. Fan[1], B. Comin-Anduix[2], T. Chodon[2], R. Koya[2], D. Baltimore[1], J. Braun[2], A. Ribas[2], and J. Heath[1]
[1]California Institute of Technology, Pasadena, CA, [2]University of California Los Angeles, Los Angeles, CA

2:15PM
Computational Modeling of Tumor Blood Flow based on High-Resolution Images of Tumor Vasculature
S. K. Stamatelos[1], E. Kim[1], A. S. Popel[1], and A. P. Pathak[1]
[1]The Johns Hopkins University School of Medicine, Baltimore, MD

2:30PM
Development and Characterization of Degron-based Substrates Capable of E3 Ligase-mediated Ubiquitination
A. T. Melvin[1], M. L. Waters[1], and N. L. Allbritton[1,2]
[1]University of North Carolina, Chapel Hill, NC, [2]North Carolina State University, Raleigh, NC

2:45PM
Fluid Shear Stress Sensitizes Cancer Cells to Receptor-Mediated Apoptosis via Trimeric Death Receptors
M. J. Mitchell[1] and M. R. King[1]
[1]Cornell University, Ithaca, NY

**Track sponsored by* BARD

Track: Translational Biomedical Engineering*
OP - Thurs - 2 – 12 - Room A403
Translational Biomedical Imaging Informatics I

Chairs: Mia K. Markey, May D. Wang

1:30PM
Biomedical Informatics and Integrative Brain Tumor Research
J. Saltz[1] , L. A. Cooper[1], J. Kong[1], D. A. Gutman[1], F. Wang[1], J. Gao[11], C. Appin[1], T. Kurc[1], C. S. Moreno[1], and D. J. Brat[1]
[1]Emory University, Atlanta, GA

2:00PM
Aggregating Medical Imaging Data from Multiple Sources: A Critical Capability for Patient Care and Clinical Research
Y. Ge[1], D. Ahn[1], R. Peral[1], B. Ellison[1], B. Unde[1], H. D. Gage[1], and J. J. Carr[1]
[1]Wake Forest University Health Sciences, Winston-Salem, NC

2:30PM
Towards Human-Centered Decision Support in Mammography
G. Tourassi[1] and V. Paquit[1]
[1]Oak Ridge National Laboratory, Oak Ridge, TN

**Track sponsored by* Fish & Richardson

Track: Cardiovascular and Respiratory Engineering*
OP - Thurs - 2 – 13 - Room A404
Arterial Fluid Mechanics

Chairs: Danny Bluestein, Ender Finol

1:30PM
Shear Stress Modulates Fibrous ECM Protein Expression and Tissue Morphogenesis in the Great Vessels
S. Biechler[1], L. Junor[1], J. Potts[1], M. Yost[2], J. Weidner[1], and R. Goodwin[1]
[1]University of South Carolina, Columbia, SC, [2]Medical University of South Carolina, Charleston, SC

1:45PM
Effects of Wall Motion on Coronary Blood Flow – A Fluid Structure Interaction Study
M. Hasan[1], D. A. Rubenstein[1], and W. Yin[1]
[1]Oklahoma State University, Stillwater, OK

2:00PM
Coupling Intravascular Shear Stress with Endoluminal Electrochemical Impedance Spectroscopy to Assess Oxidized LDL-Rich Atherosclerotic Lesions
F. Yu[1], J. Lee[1], N. Jen[1], X. Li[1], Q. Zhang[1], Q. Zhou[1], E. S. Kim[1], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA

2:15PM
Investigation of Pulmonary Artery Hemodynamics in Patients With Sickle Cell Disease Using MRI
S. George[1], P. Ghasemi[1], S. Mehra[1], S. Sharma[1], and J. Cahill[1]
[1]East Carolina University, Greenville, NC

2:30PM
Shear Conditioning Strategies for Improved Endothelial Cell Retention on Vascular Grafts
J. S. Uzarski[1] and P. S. McFetridge[1]
[1]University of Florida, Gainesville, FL

2:45PM
Numerical Modeling of Blood Flow in a New Percutaneously Delivered Hemodialysis Shunt
M. J. Kallok[1], A. S. Yevzlin[2], M. E. Nelson[3], and J. P. Abraham[3]
[1]Phraxis, Inc, St. Paul, MN, [2]University of Wisconsin, Madison, WI, [3]University of St. Thomas, St. Paul, MN

*Track sponsored by St. Jude Medical More control. Less risk.

Track: Cardiovascular and Respiratory Engineering*
OP - Thurs - 2 – 14 - Room A405
Cardiac Electrophysiology

Chairs: Daniel Ennis, Jack Rogers

1:30PM
Simultaneous Reconstruction of Epicardial and Endocardial Potentials with Intracardiac Mapping and Inverse Analysis of Body Surface Potentials
L. R. Bear[1], B. H. Smaill[1], A. J. Pullan[1], I. J. LeGrice[1], G. B. Sands[1], N. A. Lever[1,2], D. J. Patterson[1,3], and L. K. Cheng[1]
[1]University of Auckland, Auckland, New Zealand, [2]Auckland City Hospital, Auckland, New Zealand, [3]University of Oxford, Oxford, United Kingdom

1:45PM
Method to Measure Wave Front Speed, Direction, and Curvature in the Heart
N. Mazeh[1], D. E. Haines[2], and B. J. Roth[3]
[1]Beaumont Health System, Royal Oak, MI, [2]Oakland University William Beaumont School of Medicine, Royal Oak, MI, [3]Oakland University, Rochester, MI

2:00PM
The Dip in the Anodal Strength-Interval Curve in Cardiac Tissue
S. M. Kandel[1] and B. J. Roth[1]
[1]Oakland University, Rochester, MI

2:15PM
Hysteresis in Electrical Restitution of Human Ventricular Myocytes
K. Brownson[1], Y. Zhou[1], C. Hoopes[1], A. Agarwal[1], L. Jing[1], and A. Patwardhan[1]
[1]University of Kentucky, Lexington, KY

2:30PM
Effects of Mechanical Stress on Cardiac Muscle Excitation-Contraction
H. Han[1], J. Shaw[2], P. Pulglisi[1], T. Pan[1], L. Izu[1], K. S. Lam[1], and Y. Chen-Izu[1]
[1]UCDavis, Davis, CA, [2]University of Michigan, Ann Arbor, MI

2:45PM
Microstructural Remodeling in Pacing Induced Heart Failure Measured by Diffusion Tensor MRI
G. L. Kung[1], Y-C. Hsieh[2], J. Gahm[1], A. Garfinkel[1], P-S. Chen[2], and D. B. Ennis[1]
[1]University of California, Los Angeles, CA, [2]Indiana University, Indianapolis, IN

*Track sponsored by St. Jude Medical More control. Less risk.

Track: Bioinformatics and Systems Biology
OP - Thurs - 2 – 15 - Room A406
Genomics, Transcriptomics and Proteomics I

Chairs: Orly Alter, Jason Tennessen

1:30PM INVITED
Dynamics of Cell Fate
J. S. Bader[1] and Y. Park[1]
[1]Johns Hopkins University, Baltimore, MD

2:00PM INVITED
Systems Biology *In Vivo*: Combined Experimental and Computational Studies in Mouse Models at Multiple Scales
D. A. Lauffenburger[1]
[1]MIT, Cambridge, MA

2:30PM INVITED
Discovery of Mechanisms and Prognosis of Cancers from Matrix and Tensor Modeling of Large-Scale Molecular Biological Data
O. Alter[1]
[1]University of Utah, Salt Lake City, UT

Track: Biomedical Engineering Education
OP - Thurs - 2 – 16 - Room A304
Issues Related to Careers in BME: Student Choice & Alumni Success

Chairs: Dan Cavanaugh, Wendy Newstetter

1:30PM
Evaluation of the Impact of Experiencial Activities on Student's Choice of Major and Submajor Concentration
J. M. Connoly[1], M. G. Byrd[1], A. N. Dicks[1], C. P. Macks[1], J. G. Turbeville[1], T. M. Veith[1], D. Dean[1], and D. M. Kwartowitz[1]
[1]Clemson University, Clemson, SC

1:45PM
Differences in Biomedical Engineering Student Motivation Characterize Differences in Student Demographics
A. Kirn[1], B. Morkos[1], and L. Benson[1]
[1]Clemson University, Clemson, SC

2:00PM
Measuring Long-Term Effect of Design Education: Results from an Alumni Survey
C. Jancuk[1], S. Acharya[1], R. H. Allen[1], and A. A. Shoukas[1]
[1]Johns Hopkins University, Baltimore, MD

P = Poster Session
OP = Oral Presentation

2:15PM
The Status of Professional Licensure Among Biomedical and Biological Engineers
J. R. Goldberg[1] and S. Schreiner[2]
[1]Marquette University, Milwaukee, WI, [2]The College of New Jersey, Ewing, NJ

Track: Biomedical Imaging and Optics
OP - Thurs - 2 – 17 - Room A408
Magnetic Resonance Imaging

Chairs: Shella Keilholz, Stephen LaConte

1:30PM INVITED
Magnetic Resonance Electrical Impedance Tomography of Neural Activity at 11.75 T
S. C. Grant[1,2], C. A. Falgas[1,2], E. J. Woo[3], and R. J. Sadleir[4]
[1]The National High Magnetic Field Laboratory, Tallahassee, FL, [2]Chemical & Biomedical Engineering, The Florida State University, Tallahassee, FL, [3]Kyung Hee University, Yongin-si, Korea, Republic of, [4]University of Florida, Gainesville, FL

2:00PM
Multivariate Analysis of Speech MRI
K. McRoberts[1,2], J. Lisinski[2], B. Sutton[3], and S. LaConte[1,2]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech Carilion Research Institute, Roanoke, VA, [3]University of Illinois, Urbana, IL

2:15PM
Mapping the Phase Diagram for Non-Gaussian Diffusion in the Rat Brain at 17.6 Tesla
C. Ingo[1], R. L. Magin[1], L. Colon-Perez[2], W. Triplett[2], and T. H. Mareci[2]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of Florida, Gainesville, FL

2:30PM
In Vivo Quantitative MR Molecular Imaging: An Image-Based B1-Mapping Correction for ^{19}F and ^{1}H
M. J. Goette[1], A. H. Schmieder[1], T. A. Williams[1], J. Keupp[2], G. M. Lanza[1], S. A. Wickline[1], and S. D. Caruthers[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Philips Research Europe, Hamburg, Germany

2:45PM
Focal But Reversible Diastolic Myocardial Architecture Abnormalities Reflect Regional Calcium Mishandling in Dystrophic mdx Mouse Hearts as Defined by Diffusion Tensor MRI (DTI)
Y-J. Cheng[1], J. Chen[2], D. Lang[1], S. D. Caruthers[2], I. R. Efimov[1], and S. A. Wickline[2]
[1]Washington University in St Louis, Saint Louis, MO, [2]Washington University Medical School, Saint Louis, MO

Track: Neural Engineering
OP - Thurs - 2 – 18 - Room A407
Brain-Computer Interfaces & Neural Prosthetics

Chairs: Ravi Bellamkonda, Kevin Otto

1:30PM
Cellular Receptor Targets for Neuroprotection at the Neural Interface
J. K. Nguyen[1,2], M. Ravikumar[1,2], and J. R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH

1:45PM
Microchannels as a Regenerative Construct for Peripheral Nerve Interfacing
A. Srinivasan[1], A. Joseph[1], J. Bentley[2], E. Gaupp[1], G. Stanley[1], and R. Bellamkonda[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Michigan, Ann Arbor, MI

2:00PM
Optimal Depth, Waveform and Rate for Electrical Stimulation of Auditory Cortex
A. Koivuniemi[1] and K. Otto[2]
[1]Purdue University, Indianapolis, IN, [2]Purdue University, West Lafayette, IN

2:15PM
On the EEG Features of Alzheimer's Disease and The Importance of Activated Brain States
P. Ghorbanian[1], A. J. Simon[2], D. M. Devilbiss[3], A. Allan Bernstein[4], T. Hess[4], and H. Ashrafiuon[1]
[1]Villanova University, Villanova, PA, [2]PPortable On-demand Diagnostics, Inc., Doylestown, PA, [3]NexStep Biomarkers, Madison, WI, [4]Palm Drive Hospital, Sebastopol, CA

2:30PM
A Method for Determining Neural Signal Contributions to Kalman Filter Based Decoding in Intracortical Brain Computer Interfaces
M. L. Homer[1], J. A. Perge[1], M. T. Harrison[1], M. J. Black[1,2], and L. R. Hochberg[1,3]
[1]Brown University, Providence, RI, [2]Max Planck Institute for Intelligent Systems, Tuebingen, Germany, [3]Dept. Veterans Affairs Medical Center, Providence, RI

2:45PM
Examining the Benefits of Natural Neuromotor Strategy for Neuroprosthetic Controllers
D. E. Nathan[1], R. W. Prost[2], and D. C. Jeutter[1]
[1]Marquette University, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI

OP - Thurs - 2 – 19 - Room A313
Larry V. McIntire Symposium I

Chairs: Julia Babensee, Robert Nerem

1:30PM INVITED
Induction of Immunological Tolerance to Engineered Erythrocyte-Binding Antigens
J. A. Hubbell[1], S. Kontos[1], I. C. Kourtis[1], K. Y. Dane[1], and K. M. Lorentz[1]
[1]Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

2:00PM INVITED
Microcapillary Immunoregulation of Tissue Neutrophilia
A. L. Gonzalez[1], H. Lauridsen[1], C. E. Ayres-Sander[1], and J. S. Pober[1]
[1]Yale University, New Haven, CT

2:15PM INVITED
Chemokines, Selectins and Intracellular Calcium Flux: Temporal and Spatial Cues for Neutrophil Arrest
S. I. Simon[1]
[1]UC Davis, Davis, CA

2:30PM INVITED
Rheological Testing of Blood Clots with Sonorheometry to Assess Platelet Function and Transfusion Needs in Surgically Induced Coagulopathies
M. Lawrence[1], X. Lin-Schmidt[1], F. Viola[1], W. F. Walker[1], and G. Ailawadi[1]
[1]University of Virginia, Charlottesville, VA

2:45PM INVITED
Blood Systems Biology: A multi-scale and patient-specific approach.
S. L. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

PLATFORM SESSIONS Thurs-2 1:30PM-3:00PM

Track: Tissue Engineering

OP - Thurs - 2 – 20 Sidney Marcus Auditorium

Cell Delivery & Cell Based Therapeutics

Chairs: Kara McCloskey, Jennifer West

1:30PM INVITED

Alternating Electric Current Induces Adult Human Mesenchymal Stem Cell Osteodifferentiation and Functions Pertinent to New Bone-Tissue Formation

M. E. Wechsler[1], S. Laksmanachetty[1], V. A. Wechsler[1], and R. Bizios[1]

[1]The University of Texas at San Antonio, San Antonio, TX

1:45PM

Rapid Vascularization and Localized Immune Modulation Induced by S1P1 Receptor Agonism Enhances Cell-Based Mandibular Defect Repair

A. Das[1], B. Hugely[2], C. Segar[2], and E. Botchwey[3]

[1]UVA, charlottesville, VA, [2]UVA, Charlottesville, VA, [3]GaTech, Atlanta, GA

2:00PM

Infusions of Umbilical Cord Blood-Derived Endothelial Cells Equal or Surpass Human Aortic Endothelial Cells at Treating Endothelial Injury in Vein Grafts.

V. W. Levering[1], L. Zhang[2], L. Brian[2], J. Li[1], N. J. Freedman[2], and G. A. Truskey[1]

[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

2:15PM

Adipose Stem Cells with PEGylated-Fibrin Hydrogels for Wound Healing

S. C. Becerra[1], S. Natesan[2], and R. J. Christy[1]

[1]US Army Institute of Surgical Research, Fort Sam Houston, TX, [2]US Army Insitute of Surgical Research, Fort Sam Houston, TX

2:30PM

Infarct ECM Inhibits Mesenchymal Stem Cell Differentiation Towards a Cardiac Lineage in an *In Vitro* Model of MI

K. E. Sullivan[1], K. Tang[1], K. P. Quinn[1], I. Georgakoudi[1], and L. D. Black III[1]

[1]Tufts University, Medford, MA

2:45PM

Ready, Set, Fold - Design and Patterning of Multiple Cell Types in 3D PLGA Scaffold by Origami

G. J. Ye[1], J-O. You[1], A. Mantzavinou[1], and D. T. Auguste[1]

[1]Harvard University, Cambridge, MA

OP - Thurs - 2 – 21 – Room A409

Whitaker Session

1. **Michael Morley**
   Whitaker International Fellow, 2008-09
   Host Institution: Universidad Los Andes, Colombia
   Title: Empowering Carpenter Amputees Through Low-Cost, Robust Prosthetic Tools

2. **Moriel Vandsburger**
   Whitaker International Scholar, 2010-11
   Host Institution: Weizmann Institute of Sciences, Israel
   Title: *In vivo* measurement of the cell fraction of fibroblasts recruited to a solid tumor using ferritin over-expression as an MRI reporter gene.

3. **Jorge Almodovar**
   Whitaker International Scholar, 2011-12
   Host Institution: Institut Polytechnique de Grenoble, France.
   Title: Engineering of Polysaccharide Nanoassemblies to Guide Cell Fate, from Adhesion to Differentiation

4. **John Ballew**
   Whitaker International Fellow, 2010-11
   Host Institution: KTH Royal Institute of Technology, Sweden
   Title: Autoimmune Disease-Specific Epstein-Barr Nuclear Antigen I Epitopes Revealed By Bacterial Cell Surface Display

5. **Brandon Markway**
   Whitaker International Fellow, 2008-2009
   Host Institution: University of Queensland, Australia
   Title: Enhanced Chondrogenesis of Mesenchymal Stem Cells in Low Oxygen Micropellets

Student & Early Career Program

Room A412

2:45pm - 3:45pm

Networking for Success

See page 34

P = Poster Session
OP = Oral Presentation

Thursday, October 25, 2012

4:00PM - 5:30PM

PLATFORM SESSION –THURSDAY – 3

Track: Biomaterials
OP - Thurs - 3 -1 - Room A311

Biomaterial Immunoengineering

Chairs: Ben Keselowsky, Jai Rudra

4:00PM INVITED

Targeting Drugs to the Immunological Synapse or Lymphoid Organs via Cell-Conjugated Nanoparticles

D. J. Irvine[1,2]

[1]*MIT, Cambridge, MA,* [2]*Howard Hughes Medical Institute, Chevy Chase, MD*

4:30PM

Modulation of Macrophage Phenotype to Enhance Peripheral Nerve Repair

N. Mokarram[1], V. Mukhatyar[1], G. Patel[1], and R. V. Bellamkonda[1]

[1]*Georgia Institute of Technology and Emory School of Medicine, Atlanta, GA*

4:45PM

Local Control of Inflammation with Cytokine-Neutralizing Gels

N. Washburn[1]

[1]*Carnegie Mellon University, Pittsburgh, PA*

5:00PM

Self-adjuvanting Nanofiber Vaccines Carrying a Whole-Protein Antigen

G. A. Hudalla[1], Y. F. Tian[2], J. A. Modica[1], M. Mrksich[3], A. Chong[1], and J. H. Collier[1]

[1]*University of Chicago, Chicago, IL,* [2]*Illinois Institute of Technology, Chicago, IL,* [3]*Northwester University, Chicago, IL*

5:15PM

Antigen Delivery via Lipid Nanocapsules Elicits Robust Cellular and Humoral Responses against Malaria and HIV Antigens

J. J. Moon[1], A. V. Li[1], H. Suh[1], A. Yadava[2], and D. J. Irvine[1,3]

[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Walter Reed Army Institute of Research, Silver Spring, MD,* [3]*Ragon Institute of MGH, MIT, and Harvard, Cambridge, MA*

Track: New Frontiers and Special Topics
OP - Thurs - 3 – 2 - Room A312

Engineering Immunology and Immunotherapy III

Chairs: Lance Kam, Jenny Ning Jiang

4:00PM

Injectable Mesoporous Silica (MPS) Micro Rod Scaffold for Modulating Immune Cell Trafficking and Reprogramming to Evoke Potent Humoral Responses

J. Kim[2,3], W. A. Li[1], G. Dranoff[4], and D. J. Mooney[1,3]

[1]*School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*School of Chemical Engineering, SungKyunKwan University, Suwon, Korea, Republic of,* [3]*Wyss Institute for Biologically Inspired Engineering, Cambridge, MA,* [4]*Dana-Farber Cancer Institute and Harvard Medical School, Cambridge, MA*

4:15PM

Inactivated Polio Vaccination Using a Microneedle Patch

W. C. Edens[1], N. Dybdahl-Sissoko[2], M. A. Pallansch[2], M. S. Oberste[2], and M. R. Prausnitz[1]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Centers for Disease Control and Prevention, Atlanta, GA*

4:30PM

Simultaneous Delivery of Antigen-loaded Nanoparticles of Differing Structural and Chemical Properties Induces the Combined Activation of CD4+ and CD8+ T Cells *In Vivo*

E. A. Scott[1], A. Stano[2], M. Gillard[2], A. Maio-Liu[3], M. Swartz[2], and J. Hubbell[2]

[1]*Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland,* [2]*Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland,* [3]*University of Lausanne, Lausanne, Switzerland*

4:45PM

Achieving Cancer Immunotherapy Through RNAi Interference in Tumor-Associated Macrophages via 'Click', Mannosylated Polymeric Nanoparticles

S. S. Yu[1], C. M. Lau[1], W. J. Barham[2], C. E. Nelson[1], F. E. Yull[2], C. L. Duvall[1], and T. D. Giorgio[1,2]

[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt-Ingram Cancer Center, Nashville, TN*

5:00PM

Dissecting Homotypic Contact-Mediated Interactions Between NK Ccell by Cell-Laden Microwells

M. Kim[1], K. Lee[2], and J. Doh[1]

[1]*POSTECH, Pohang, Korea, Republic of,* [2]*Korea University, Seoul, Korea, Republic of*

5:15PM

High-Throughput Sequencing of the Human Antibody Repertoire in Response to Influenza Vaccination

N. Jiang[1,2], J. He[2,3], J. A. Weinstein[2], L. Penland[2], X-S. He[2], C. Dekker[2], P. Wilson[4], H. B. Greenberg[2], M. M. Davis[2], D. S. Fisher[2], and S. R. Quake[2]

[1]*The University of Texas at Austin, Austin, TX,* [2]*Stanford University, Stanford, CA,* [3]*South University of Science and Technology of China, Shenzhen, China, People's Republic of,* [4]*University of Chicago Pritzker School of Medicine, Chicago, IL*

Track: Nano and Micro Technologies
OP - Thurs - 3 – 3 - Room A410

BioMEMs and Nanotechnology for Cellular Engineering I

Chairs: Craig Simmons, Wilbur Lam

4:00PM INVITED

Mosaic Hydrogels and Arteries-on-a-Chip

A. Guenther[1]

[1]*University of Toronto, Toronto, ON, Canada*

4:30PM

Large Scale Microfluidic Gradient Arrays for Studying Growth and Guidance of Mammalian Neurons

N. Bhattacharjee[1] and A. Folch[1]

[1]*University of Washington, Seattle, WA*

4:45PM

Nanoparticle Mediated Delivery of Synthetic Transcription Factors for Gene Manipulation

P. T. Yin[1], S. Patel[1], D. Jung[2], and K. Lee[1]

[1]*Rutgers University, Piscataway, NJ,* [2]*Kyoto University, Kyoto, Japan*

5:00PM

Halloysite Nanotubes as a Novel Biomaterial Surface for the Suppression of Leukocyte Spreading Response

A. D. Hughes[1] and M. R. King[1]

[1]*Cornell University, Ithaca, NY*

5:15PM

Universal Vitrification of Primary Cells by Ultra Fast Cooling and Its Cell Type Specific Functional Evaluations

Y. Heo[1], S. Nagrath[1], H. Cho[1], D. Irimia[1], A. L. Moore[1], M. Zenali[1], T. L. Toth[2], and M. Toner[1]

[1]*Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [2]*Vincent Obstetrics and Gynecology, Massachusetts General Hospital, Harvard Medical School, Boston, MA*

Track: Nano and Micro Technologies
OP - Thurs - 3 – 4 - Room A314

Micro and Nano Technology Based Diagnostics III

Chairs: Catherine Klapperich, Thomas Inzana

4:00PM INVITED
Blood, Stool and Mucus: Sample Preparation in Microscale Devices
C. Klapperich[1]
[1]*Boston University, Boston, MA*

4:30PM
Development of a Nanoscale Optical Fiber Biosensor Assay to Detect Methicilllin Resistant Staphylococcus aureus
Z. Zuo[1], A. Bandara[1], J. R. Heflin[1], and T. J. Inzana[1]
[1]*Virginia Tech, Blacksburg, VA*

4:45PM
Microchip for Onset Detection of Peritonitis in Peritoneal Dialysis Patients
U. A. Gurkan[1], V. Giannakeas[1], J. IP[1], D. Akkaynak[2], S. Moon[1,3], B. Vijaykumar[1], A. Paul[1], S. Sanjana[1], T. Moore[1], C. Brenan[4], D. R. Kuritzkes[1], L-L. Hsiao[1], J. V. Bonventre[1], J. K. Tucker[1], and U. Demirci[1]
[1]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA,* [2]*Massachusetts Institute of Technology (MIT), Cambridge, MA,* [3]*Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea, Republic of,* [4]*Center for Integration of Medicine and Innovative Technology, Boston, MA*

5:00PM
Detection and Measurement of Micronutrients in Blood Based Samples with Plasma Pencil Atmospheric Mass Spectrometry
E. Lo[1], M. J. Stein[1], and B. D. Ratner[1]
[1]*University of Washington, Seattle, WA*

5:15PM
Significantly Improved Analytical Sensitivity of Lateral Flow Immunoassays by Using Thermal Contrast
Z. Qin[1], W. C. Chan[2], D. R. Boulware[1], T. Akkin[1], E. K. Butler[1], M. von Hohenberg[1], and J. C. Bischof[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*University of Toronto, Toronto, ON, Canada*

Track: Nano and Micro Technologies
OP - Thurs - 3 – 5 - Room A315

Microphysiology Systems for Drug Toxicity and Efficacy II

Chairs: Arul Jayaraman, Alex Revzin

4:00PM
A Microfluidic Platform for Electrochemical Detection of Hydrogen Peroxide Release from Alcohol-Injured Hepatocytes
Z. Matharu[1], J. Enomoto[1], and A. Revzin[1]
[1]*University of California, Davis, Davis, CA*

4:15PM
Functional Imaging of Brain Slices in a Segmented Microfluidic Perfusion Chamber
S. Ahrar[1], T. V. Nguyen[1], Y. Shi[1], P. Thomas[1], T. Ikrar[1], X. Xu[1], and E. E. Hui[1]
[1]*UC Irvine, Irvine, CA*

4:30PM
Mosaic Hydrogels: One-Step Organization of Biomaterials from Cell to Organ Scales
L. Leng[1], A. McAllister[1], B. Zhang[1], M. Radisic[1], and A. Günther[1]
[1]*University of Toronto, Toronto, ON, Canada*

4:45PM
Active Interception and Elimination of Bacterial Signaling with Engineered Cell Communities: Towards *In Vitro* Models of Intestinal Flora
X. Luo[1], C-Y. Tsao[1], H-C. Wu[1], G. W. Rubloff[1], and W. E. Bentley[1]
[1]*University of Maryland, College Park, MD*

5:00PM
Direct Observation of Vascular Endothelial Growth Factor Secretion from a Living Carcinoma Cell Model by *in-situ* Surface Plasmon Resonance
C. Liu[1], T. Matsue[2], and C-Z. Li[1]
[1]*Florida International University, Miami, FL,* [2]*Tohoku University, Sendai, Japan*

5:15PM
Cardiomyocyte Powered Swimming Biohybrid Microrobots
S. V. Anand[1], J. Rajagopalan[2], and T. A. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Arizona State University, Tempe, AZ*

Track: Nano and Micro Technologies
OP - Thurs - 3 – 6 - Room A316

Biosensors, Nano-Bio-Interfaces and Implantable Devices I

Chairs: Steve Soper, Chunyan Li

4:00PM INVITED
Planar Nanogap Electrical Detector for Single molecule sensing and biopolymer Sequencing
F. I. Uba[1], J. Wu[2], S. Park[2], and S. A. Soper[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*Louisiana State University, Baton Rouge, LA*

4:30PM
Multiplexed Biosensor Array for Continuous Monitoring of Cerebral Oxygen Tension, Glucose and Lactate
C. Li[1], P-M. Wu[1], Z. Wu[2], J. Hartings[2], E. Golanov[1], C. Ahn[2], and R. Narayan[1]
[1]*Feinstein Institute for Medical Research, Manhasset, NY,* [2]*University of Cincinnati, Cincinnati, OH*

4:45PM
Peptide Incorporated Sensing Surfaces for Detection of Protease Release from Cells
D-S. Shin[1], A. Chen[1], K. Son[1], T. Pan[1], and A. Revzin[1]
[1]*University of California, Davis, CA*

5:00PM
Disposable Sensors Fabricated By Using High-Throughput, One-Step Deposition of Silver Grating By Holographic Patterning
M. Lu[1], B. Juluri[1], Y. Liu[2], and T. J. Huang[1]
[1]*Pennsylvania State University, University Park, PA,* [2]*Institute of Materials Research and Engineering, Singapore, Singapore*

5:15PM
Biofabrication Techniques for Multi-Analyte Biosensors
C. Kotanen[1] and A. Guiseppi-Elie[1]
[1]*Clemson University, Clemson, SC*

P = Poster Session
OP = Oral Presentation

Track: Biomedical Imaging and Optics
OP - Thurs - 3 – 7 - Room A301
Optical Diagnostic Sensing & Devices I

Chairs: Jennifer Barton, Jonathan Liu

4:00PM INVITED
Spectral Surveillance of Histologic Landscapes to Detect Positive Breast Tumor Margins
N. Ramanujam[1,2] J. Q. Brown[3]
[1]Duke University, Durham, NC, [2]Zenalux Inc, Durham, NC, [3]Tulane University, New Orleans, LA

4:30PM
Photothermal Optical Coherence Tomography for Quantifying Blood Oxygen Saturation *In Vivo*
D. R. McCormack[1], C. A. Patil[1], J. Tucker-Schwartz[2], L. Hofmeister[1], and M. Skala[1]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt, Nashville, TN

4:45PM
Characterization of Cervical Tissue From Preterm Labor Mouse Models Using *In Vivo* Raman Spectroscopy and Ex Vivo Biomechanical Testing
C. M. O'Brien[1], E. Vargis[1], N. Brown[1], B. C. Paria[1], J. Reese[1], and A. Mahadevan-Jansen[1]
[1]Vanderbilt University, Nashville, TN

5:00PM
Dual Wavelength Polarimetry for *In Vivo* (Rabbit) Glucose Monitoring
C. W. Pirnstill[1], B. H. Malik[1], V. C. Gresham[1], and G. L. Cote[1]
[1]Texas A&M University, College Station, TX

5:15PM
Infrared Spectroscopic Imaging for the Assessment of Kidney Tissue Biopsies
M. J. Walsh[1], S. Setty[2], A. Kajdacsy-Balla[2], and R. Bhargava[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Illinois at Chicago, Chicago, IL

Track: Cellular and Molecular Bioengineering
OP - Thurs - 3 – 8 - Room A302
Cell Mechanics II

Chairs: Cynthia Reinhart-King, Jianping Fu

4:00PM
Platelet Generation Under Shear Force Modulated by Site-Specific Phosphorylation of Myosin-IIA Heavy Chain
K. Spinler[1], J-W. Shin[1], and D. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

4:15PM
Nanomechanical Polymeric Flexures for High Throughput Measurements of Single Platelet Contraction
D. R. Myers[1,2], Y. Sakurai[1,2], H. Kim[2], R. G. Mannino[2], Y. Qui[1,2], T. Sulchek[2], and W. A. Lam[1,2]
[1]Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

4:30PM
High Laminar Shear Stress is not Protective Against TNF α or IL-1β Induced E-Selectin Expression in Naïve or Short-Term Preconditioned HUVEC
R. B. Huang[1,2] and O. Eniola-Adefeso[1]
[1]Unversity of Michigan, Ann Arbor, MI, [2]University of Illinois Urbana-Champaign, Urbana, IL

4:45PM
Age-Related Matrix Stiffening Promotes Endothelial Permeability and Leukocyte Transmigration
J. Huynh[1], N. Nishimura[1], K. Rana[1], J. M. Peloquin[1], J. P. Califano[1], C. R. Montague[1], M. R. King[1], C. B. Schaffer[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

5:00PM
Spatiotemporal Biomechanical Variation in the Avian Embryo during Primitive Streak Morphogenesis
J. Henkels[1] and E. Zamir[1]
[1]Georgia Institute of Technology, Atlanta, GA

5:15PM
Mechanical Strain Affects Local Dynamics of Vesicles in Neurons
W. Ahmed[1], B. Williams[1], A. Silver[1], and T. Saif[1]
[1]University of Illinois, Urbana, IL

PLATFORM SESSIONS **Th-3**

Track: Stem Cell Engineering
OP - Thurs - 3 – 9 - Room A305
Biomaterials Control of Stem Cells

Chairs: Brendan Harley, Ankur Singh

4:00PM INVITED
Controlling Cellular Remodeling to Regulate 3D Vascular Tubulogenesis in a Synthetic Matrix
D. Hanjaya-Putra[1], S. Khetan[2], J. A. Burdick[2], and S. Gerecht[1]
[1]Johns hopkins University, Baltimore, MD, [2]University of Pennsylvania, Philadelphia, PA

4:30PM
Generation of Functional, Disease-Specific T Cells from Stem Cells: A Bioengineering Approach
T. Ooi[1], M. Kim[1], I. Fernandez[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

4:45PM
Spatially Patterning Collagen-GAG Scaffold Microstructural, Mechanical, and Biochemical Properties to Regulate Tenocyte and MSC Fate
S. R. Caliari[1], D. W. Weisgerber[1], D. O. Kelkhoff[1], M. A. Ramirez[1], and B. A. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

5:00PM
Desulfated Chondroitin Modulates TGF-β1 Binding and Promotes Chondrogenic Differentiation of MSCs
J. J. Lim[1], R. H. Van Stelle[1], and J. S. Temenoff[1]
[1]Georgia Tech and Emory University, Atlanta, GA

5:15PM
Effect of Initial Substrate Composition on ECM Deposition, Remodeling, and Differentiation of hESCs
A. Laperle[1], S. Palecek[1], and K. Masters[1]
[1]University of Wisconsin - Madison, Madison, WI

Track: Biomaterials
OP - Thurs - 3 – 10 - Room A401
Micro & Nano Structured Biomaterials II

Chairs: Noah Malmstadt, Daniel Ratner

4:00PM
Particle Tracking Microrheology in Non-Ideal Conditions for Characterization of Sputum Digestion
E. Fong[1], Y. Sharma[1], and M. Zaman[1]
[1]Boston University, Boston, MA

4:15PM
Patterned Silk Films Guide Collective Corneal Epithelial Cell Migration
B. D. LAWRENCE[1], Z. PAN[1], AND M. I. ROSENBLATT[1]
[1]Weill Cornell Medical College, New York, NY

4:30PM
Dendritic Polymers for the Conformal Nanocoating of Pancreatic Islets via Staudinger Ligation
K. M. GATTAS-ASFURA[1] AND C. L. STABLER[1]
[1]University of Miami, Miami, FL

4:45PM
Multifunctional Polymeric Thin Films for Local Therapy After Endoscopic Mucosa Resection of Colorectal Polyps
V. PENSABENE[1] AND T. D. GIORGIO[1]
[1]Vanderbilt University, Nashville, TN

PLATFORM SESSIONS **Th-3**

5:00PM
Influence of Bacterial Species on Biofilm Distribution in Nanomodified ETT: A Dynamic Study
M. C. MACHADO[1], K. TARQUINIO[2], AND T. WEBSTER[3]
[1]Brown University, Warwick, RI, [2]Rhode Island Hospital, Providence, RI, [3]Brown University, Providence, RI

5:15PM
Subconjuctivally Injectable Nanogels for Drug Delivery across the Blood Retinal Barrier
D. R. JANAGAM[1], S. JIANG[1], G. P. MISRA[2], J. ZHANG[2], AND T. L. LOWE[1,2]
[1]University of Tennessee Health Science Center, Memphis, TN, [2]Thomas Jefferson University, Philadelphia, PA

Track: Cancer Technology*
OP - Thurs - 3 – 11 - Room A402
Bioengineering & Physical Sciences of Cancer I

Chairs: Nastaran Kuhn, Shannon Stott

4:00PM
Distinct Microvascular Niches Regulate Breast Tumor Dormancy in Divergent Fashions
C. M. GHAJAR[1], H. PEINADO[2], H. MORI[1], I. R. MATEI[2], H. BRAZIER[2], E. I. CHEN[3], D. C. LYDEN[2,4], AND M. J. BISSELL[1]
[1]Lawrence Berkeley National Laboratory, Berkeley, CA, [2]Weill Cornell Medical College, New York, NY, [3]Stony Brook University, Stony Brook, NY, [4]Memorial Sloan Kettering Cancer Center, New York, NY

4:15PM
Microenvironment of Cancer Cell Intravasation: Role of Cell-Cell Interactions and Endothelial Permeability
I. K. ZERVANTONAKIS[1], S. K. HUGHES-ALFORD[1], J. L. CHAREST[2], J. S. CONDEELIS[3], F. B. GERTLER[1], AND R. D. KAMM[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Charles Stark Draper Laboratory, Cambridge, MA, [3]Albert Einstein College of Medicine, New York, NY

4:30PM
Dissecting Intratumor Heterogeneity: Metastatic Cells Induce Follow-the-Leader Invasion of Epithelial Cells
S. P. CAREY[1], A. STARCHENKO[1], AND C. A. REINHART-KING[1]
[1]Cornell University, Ithaca, NY

4:45PM
Exploring Nuclear Deformability as a Rate-Limiting Factor in Cancer Cell Migration
C. DENAIS[1], J. LAMMERDING[1], A. ROWAT[2], J. SLIZ[1], K. KARMANN[1], M. ZWERGER[3,4], P. ISERMANN[1], V. TE BOEKHORST[5], M. KRAUSE[5], AND K. WOLF[5]
[1]Cornell University, Ithaca, NY, [2]UCLA, Los Angeles, CA, [3]Brigham and Women's Hospital, Boston, MA, [4]University of Zurich, Zürich, Switzerland, [5]NCMLS, Radboud University Nijmegen Medical Centre, Nijmegen, Netherlands

5:00PM
Bone Marrow On-A-Chip: A Platform for the Capture and Study of Disseminated Cancer
J. LEE[1,2], J. WANG[1,2], N. KOHL[3], S. SHANBHAG[3], M. YARMUSH[1,2], AND B. PAREKKADAN[1,2]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [2]Shriners Hospital for Children, Boston, MA, [3]Florida State University, Tallahassee, FL

5:15PM
Tumor Cell Motility is Directed by Fibrillar ECM Architecture
L. CASSEREAU[1], M. RUBASHKIN[1], C. DUFORT[2], AND V. WEAVER[2,3]
[1]UC Berkeley/UCSF, San Francisco, CA, [2]University of California San Francisco, San Francisco, CA, [3]University of California San Francisco, San Francisco

*Track sponsored by BARD

Track: Translational Biomedical Engineering*
OP - Thurs - 3 -12 - Room A403
Translational Biomedical Imaging Informatics II

Chairs: Mia K. Markey, May D. Wang

4:00PM
Identify Cell Sub-population During Angiogenesis Using 3D Morphology Analysis
R. ONTI-SRINIVASAN[1], S. SINGH[2], S. ROY[1], R. MACHIRAJU[1], AND K. HUANG[1]
[1]The Ohio State University, Columbus, OH, [2]Broad Institute, Cambridge, MA

4:30PM
Quantifying Human Appearance to Support Decision-Making in Reconstructive Surgery
M. K. MARKEY[1]
[1]The University of Texas at Austin, Austin, TX

5:00PM
Tissue and Molecular Level Imaging Informatics for Personalized Oncology
M. D. WANG[1], T. STOKES[1], S. KOTHARI[2], AND J. PHAN[1]
[1]Georgia Institute of Technology and Emory Univ., Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

*Track sponsored by Fish & Richardson

Track: Cardiovascular and Respiratory Engineering*
OP - Thurs - 3 – 13 - Room A404
Hemodynamics & Disease

Chairs: Anthony Passerini, Ellie Tzima

4:00PM
Fluid Shear Mechanotransduction is Linked to Leukocyte Flow Behavior Via Its Impact on Cell Activity
X. ZHANG[1] AND H. Y. SHIN[1]
[1]University of Kentucky, Lexington, KY

4:15PM
Role of Shear Stress on Endothelial Cell Regulation of Elastases and Collagenases Under the Unique Inflammatory Conditions of Sickle Cell Disease
P. M. KEEGAN[1], I. PARKER[1], AND M. PLATT[1]
[1]Georgia Institute of Technology, Atlanta, GA

P = Poster Session
OP = Oral Presentation

4:30PM
Reduced Formation Rate of Cardiac Intraventricular Vortices Post-Myocardial Infarction
W. R. Witschey[1], M. A. Levack[1], J. R. McGarvey[1], F. Contijoch[1], M. Markl[2], A. Barker[2], N. Kondo[1], M. Takebe[1], G. A. Zsido[1], C. Dillard[1], K. Lau[1], J. J. Pilla[1], J. H. Gorman[1], and R. C. Gorman[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Northwestern University, Evanston, IL*

4:45PM
In Vitro Investigation of Energy Loss in the Total Cavopulmonary Connection at Rest and Exercise Conditions
R. H. Khiabani[1], S. Phonekeo[1], H. Srinimukesh[1], E. Tang[1], M. Fogel[2], and A. P. Yoganathan[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Children's Hospital of Philadelphia, Philadelphia, PA*

5:00PM
HIV Proteins Misregulate Biomechanically Mediated Protease Activity Promoting Arterial Remodeling and Atherogenesis
I. Parker[1], L. Hansen[1], R. Sutliff[2], R. Gleason[1], and M. Platt[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

5:15PM
Co-localization of Low Wall Shear Stress and Coronary Allograft Vasculopathy Lesion Location in Cardiac Transplant Patients
L. H. Timmins[1,2], M. T. Corban[2], D. Gupta[2], H. Samady[2], J. N. Oshinski[1,2], and D. P. Giddens[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA*

**Track sponsored by* St. Jude Medical — More control. Less risk.

Track: Cardiovascular and Respiratory Engineering*
OP - Thurs - 3 – 14 - Room A405
Heart Valve Dynamics & Prosthetics

Chairs: PK Chandran, Hyunggun Kim

4:00PM
A Novel Model for Heart Valve Biomaterial Fatigue Response
M. Sacks[1]
[1]*University of Texas, Austin, TX*

4:15PM
Extracellular Matrix Stabilization in Bioprosthetic Heart Valves for Durability
D. Tripi[1], N. Balakrishnan[1], and N. Vyavahare[1]
[1]*Clemson University, Clemson, SC*

4:30PM
Characterization of Fiber Orientation under Cyclic Load: Correlation to Bioprosthetic Valve Failure
S. Alavi[1,2], V. Ruiz[1,2], T. Krasieva[1,2], E. Botvinick[1,2], and A. Kheradvar[1,2]
[1]*University of California Irvine, Irvine, CA,* [2]*Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA*

4:45PM
Shear- and Side-dependent mRNAs and miRNAs in Aortic Valve Endothelium
C. J. Holliday-Ankeny[1], R. F. Ankeny[2], Z. Ferdous[3], R. M. Nerem[2], and H. Jo[1,4]
[1]*Georgia Tech and Emory University, Atlanta, GA,* [2]*Georgia Tech, Atlanta, GA,* [3]*UT Knoxville, Knoxville, TN,* [4]*Ewha Womans University, Seoul, Korea, Republic of*

5:00PM
In Vitro Micro Particle Image Velocimetry Measurement in the Hinge Region of St. Jude Medical® Regent™ Bileaflet Mechanical Heart Valve
B. H. Jun[1], N. Saikrishnan[1], and A. P. Yoganathan[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

5:15PM
In Vitro Evaluation of a Novel Polymeric Trileaflet Prosthetic Heart Valve
T. E. Claiborne[1], J. Sheriff[1], D. Peter[1], M. Kutting[2], U. Steinseifer[2], M. J. Slepian[3], and D. Bluestein[1]
[1]*Stony Brook University, Dept. of Biomedical Engineering, Stony Brook, NY,* [2]*Helmholtz Inst. of Applied Medical Engineering, Aachen, Germany,* [3]*Sarver Heart Center Univ. of Arizona, Tucson, AZ*

**Track sponsored by* St. Jude Medical — More control. Less risk.

Track: Bioinformatics and Systems Biology
OP - Thurs - 3 - 15 - Room A406
Genomics, Transcriptomics and Proteomics II

Chairs: Orly Alter, Jason Tennessen

PLATFORM SESSIONS **Th-3**

4:00PM INVITED
Dissecting the Mitotic Oscillator
J. Ferrell[1]
[1]*Stanford University School of Medicine, Stanford, CA*

4:30PM INVITED
Deciphering Cancer Growth By Whole-Genome Analyses Of DNA Replication
M. Aladjem[1]
[1]*NCI, Bethesda, MD*

5:00PM INVITED
A New Model System for Studying Cancer Metabolism
J. M. Tennessen[1], K. D. Baker[2], J. Evans[1], G. Lam[1], and C. S. Thummel[1]
[1]*University of Utah School of Medicine, Salt Lake City, UT,* [2]*Virginia Commonwealth University, Richmond, VA*

Track: Biomedical Engineering Education*
OP - Thurs - 3 – 16 - Room A304
Developing & Implementing Best Practices in BME Education

Chairs: Jenny Amos, Rob Linsenmeier

4:00PM
Investigating How Students and Experts Use Diagrams to Solve Engineering Problems
J. M. Le Doux[1], A. Waller[1], and W. Newstetter[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

4:15PM
Assessing Dynamic Transfer of Biomechanics Knowledge Using the Teaching Interview
R. E. Hutchison[1] and L. C. Benson[2]
[1]*Furman University, Greenville, SC,* [2]*Clemson University, Greenville, SC*

4:30PM
Problem-based Learning in a Cell & Molecular Biology Course: Transparency as a Mediator in Reform Pedagogy Enactments
B. B. Fasse[1], T. Barker[1], and P. J. Santangelo[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

4:45PM
Vertical Integration of CATME as a Peer Evaluation Tool for Assessment of Teams
M. Oden[1], J. Grande-Allen[1], O. Igoshin[1], J. Jacot[1], J. Suh[1], and A. Saterbak[1]
[1]*Rice University, Houston, TX*

**Track sponsored by* Whitaker International Fellows and Scholars Program

Track: Biomedical Imaging and Optics
OP - Thurs - 3 – 17 - Room A408
Ultrasound Imaging

Chairs: Paul Dayton

4:00PM INVITED
Comparing Ultrasonic Molecular Imaging, Perfusion Imaging and Volume Measurements to Assess the Response to Therapy in Pancreatic Adenocarcinoma Tumorgrafts
J. E. Streeter[1], G. Herrera[2], K. A. Johnson[1], J. Cao[2], J. Yeh[2], and P. A. Dayton[1]
[1]UNC/NCSU, Chapel Hill, NC, [2]UNC, Chapel Hill, NC

4:30PM
High-Frequency Ultrasound Reveals that Both Infarct Zone Dyskinesia and Left Ventricular Remodeling are Attenuated in Inducible Nitric Oxide Synthase Knockout Mice
D. Lin[1], Y. Xu[1], B. A. French[1], and J. A. Hossack[1]
[1]University of Virginia, Charlottesville, VA

4:45PM
Ultrasound Strain Imaging Determines Myocardial Infarct Size in Mice as Confirmed by Contrast-Enhanced Cardiac MRI
D. Lin[1], D. M. O'Connor[1], R. S. Smith[1], R. J. Beyers[1], B. A. French[1], and J. A. Hossack[1]
[1]University of Virginia, Charlottesville, VA

5:00PM
Model Drug Delivery Using A Multifunction Intravascular Ultrasound Catheter
J. P. Kilroy[1], A. L. Klibanov[1], B. R. Wamhoff[1], and J. A. Hossack[1]
[1]University of Virginia, Charlottesville, VA

5:15PM
Detecting Cancer's Footprint: Non-invasively Mapping Microvasculature With Ultrasound
R. Gessner[1], S. Aylward[2], E. Bullitt[1], and P. A. Dayton[1]
[1]UNC-Chapel Hill, Chapel Hill, NC, [2]Kitware, Carrboro, NC

Track: Tissue Engineering
OP - Thurs - 3 – 18 - Room A407
Cardiovascular Tissue Engineering I

Chairs: Jonathan Butcher, Jeff Holmes

4:00PM
Efficient Isolation of Cardiomyocytes From Differentiating Pluripotent Stem Cells Using Molecular Beacons
B. M. Wile[1], K. Ban[2], S. Kim[2], J. Byun[2], T. Saafir[2], M. Wagner[2], Y-S. Yoon[2], and G. Bao[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

4:15PM
Development and Characterization of Biomimetic Cardiac Tissue Engineered From Human Embryonic Stem Cells
I. C. Turnbull[1], I. Karakikes[1], G. W. Serrao[1], P. Backeris[1], J-J. Lee[1], C. Xie[1], G. Senyei[1], R. E. Gordon[1], R. A. Li[1,2], F. G. Akar[1], R. J. Hajjar[1], J-S. Hulot[1,3], and K. D. Costa[1]
[1]Mount Sinai School of Medicine, New York, NY, [2]Stem Cell & Regenerative Medicine Consortium, University of Hong Kong, Pokfulam, Hong Kong, [3]UPMC Univ Paris 06, Paris, France

4:30PM
Matrix Stiffness-Mediated Cardiac Differentiation of Cardiosphere-Derived Cells in Fibrous Scaffolds
X. Guo[1], Y. Xu[1], Z. Li[1], and J. Guan[1]
[1]The Ohio State University, Columbus, OH

4:45PM
Thermal and pH Sensitive Hydrogels for Delivery of Stem Cells Into Infarcted Hearts Using Catheters
J. Guan[1], Z. Li[1], and X. Guo[1]
[1]Ohio State University, Columbus, OH

5:00PM
Cardiac Cell Culture Model for Cardiac Tissue Generation
M-D. T. Nguyen[1], R. Estrada[1], J. Tinney[1], F. Yuan[1], B. Keller[1], G. A. Giridharan[1], and P. Sethu[1]
[1]University of Louisville, Louisville, KY

5:15PM
Tri-Cellular Microtemplated Fibrin Scaffolds Promote Signal Propagation and Synchronous Contraction of Cardiac Tissue Engineering Constructs
K. S. Thomson[1], B. Van Biber[1], M. A. Laflamme[1], M. Scatena[1], and M. Regnier[1]
[1]University of Washington, Seattle, WA

OP - Thurs - 3 – 19 - Room A313
Larry V. McIntire Symposium II

Chairs: Julia Babensee, Robert Nerem

4:00PM INVITED
Endothelial Mechanotransduction: Role of the Junctional Complex
J. A. Frangos[1]
[1]La Jolla Bioengineering Institute, San Diego, CA

4:15PM INVITED
Direct Measurement of VE-cadherin and PECAM-1 Tension at the Onset of Shear Stress
D. E. Conway[1] and M. A. Schwartz[1,2]
[1]University of Virginia, Charlottesville, VA, [2]Yale University, New Haven, CT

4:30PM INVITED
Physical Confinement Alters Adhesion and Migration Phenotypes
K. Konstantopoulos[1]
[1]The Johns Hopkins University, Baltimore, MD

4:45PM INVITED
Decoupling Mechanical Cues on Cells: Translation to Engineering Design for Personalized Medicine
H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

5:00PM INVITED
Materials for Vascularized Tissue Formation
B. Jiang[1], Y-C. Chiu[2], J. Larson[1], A. Appel[1], and E. Brey[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]Rice University, Houston, TX

5:15PM INVITED
Biomimetic Multi-functional Nanoparticles for Treatment of Cardiovascular Diseases
K. T. Nguyen[1] and Z. Xie[1]
[1]University of Texas at Arlington, Arlington, TX

P = Poster Session
OP = Oral Presentation

Track: Neural Engineering
OP - Thurs - 3 – 20 - Room A412

Translational Neural Engineering

Chairs: Chuck Dorval, Garrett Stanley

4:00PM
Deep Brain Stimulation Restores Information Processing in a Rodent Model of Parkinsonism
A. D. Dorval[1] and W. M. Grill[2]
[1]University of Utah, Salt Lake City, UT, [2]Duke University, Durham, NC

4:15PM
Rapid-Onset of Mirror Epileptic Focus is Mediated by Contralateral AMPA Receptors
T. Sobayo[1] and D. J. Mogul[1]
[1]Illinois Institute of Technology, Chicago, IL

4:30PM
Identifying Parkinsonism in Monkeys Using Wavelet Packet Transform of Local Field Potentials
T. H. Sanders[1], A. D. Devergnas[2], M. A. Clements[1], and T. Wichmann[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

4:45PM
Neonatal Apnea Detection by Diaphragmatic Electromyography, Electrocardiography and Pulse Oximetry
J. S. Osorio[1,2], J. D. Lagos[1,2], V. M. Gonzalez[3], and R. A. Torres[1,2]
[1]Antioquia School of Engineering, Envigado, Colombia, [2]CES University, Medellin, Colombia, [3]Medellin General Hospital, Medellin, Colombia

5:00PM
The Use of Chitosan In a Dura Substitute Device; Is Chitosan a Safe Biomaterial?
P. B. Snowhill[1], R. D. Hubbard[1], K. Buyukhatipoglu[1], and G. G. Cadd[1]
[1]Integra LifeSciences, Plainsboro, NJ

5:15PM
Novel Biphasic Conducting Materials for Peripheral Nerve Repair Assessed *In Vitro*
T. N. Rosenbalm[1,2], N. Levi-Polyachenko[1,2], and W. D. Wagner[1,2]
[1]Wake Forest University, Winston-Salem, NC, [2]Virginia Tech/Wake Forest University, Winston-Salem, NC

Student & Early Career Program
Room A412
3:45pm - 4:45pm
Creating Effective Resume
See page 35

FRIDAY, OCTOBER 26

TODAY'S HIGHLIGHT

PLATFORM SESSIONS Fri-1 8:00am - 9:30am
See pages 100-107, GWCC

Student & Early Career Program 8:00pm - 10:15pm
GWCC, Room A412
See page 35

EXHIBIT HALL OPEN 9:30am - 5:00pm
GWCC, Exhibit Hall A2

POSTER SESSION Fri A 9:30am - 1:00pm
GWCC, Exhibit Hall A2

Poster Viewing with Authors & Refreshment Break 9:30am - 10:30am

PLENARY SESSION & DEBUT AWARDS
10:30am - 11:45am
GWCC, Sidney Marcus Auditiorum

NIH – NBIB Lecture
IT'S A SMALL WORLD: 'TINY TECHNOLOGIES' AND REGENERATIVE MEDICINE
Sangeeta Bhatia, PhD
Massachusetts Institute of Technology

WOMEN IN BMES Luncheon 11:45am - 1:15pm
GWCC, A411

CAREER FAIR 1:00pm - 5:00pm
GWCC, Exhibit Hall A2

PLATFORM SESSIONS Fri-2 1:30pm - 2:30pm
See pages 142-146, GWCC

POSTER SESSION Fri B 1:30pm - 5:00pm
GWCC Exhibit Hall A2

Poster Viewing with Authors & Refreshment Break 3:45pm - 4:45pm

Student & Early Career Program 1:30pm - 4:15pm
GWCC, Room A412
See page 35

PLATFORM SESSION Fri-3 2:45pm - 3:45pm
See pages 147-151, GWCC

Special Symposium: 4:45pm - 6:00pm
TRANSLATIONAL BIOMEDICAL ENGINEERING: MODELS FOR PRACTICE
GWCC, Sidney Marcus Auditorium

BMES BASH 7:00pm - 10:00pm
Georgia Aquariam

P = Poster Session
OP = Oral Presentation

PLATFORM SESSIONS
Fri-1

Friday, October 26, 2012

8:00AM – 9:30AM
PLATFORM SESSIONS –FRI –1

Track: Biomaterials
OP - Fri - 1 – 1 - Room A311

Biomaterials for Controlled Release Systems

Chairs: Danielle Benoit, Patrick Stayton

8:00AM
Controlled Release of Novel Anti-Biofilm Agents From a Poly (2-hydroxyethyl Methacrylate) System
H. MA[1], J. BRYERS[2], AND E. DARMAWAN[2]
[1]University of Washington, Seattle, WA, [2]University of Wahsington, Seattle, WA

8:15AM
Drug Eluting Fibers for STI Inhibition and Contraception
C. BALL[1], E. KROGSTAD[1], AND K. A. WOODROW[1]
[1]University of Washington, Seattle, WA

8:30AM
Increased Concentration Stabilizes Subcutaneously-Injected Depots of Glucagon-Like Peptide-1 Fused to a Thermosensitive Polypeptide
K. M. LUGINBUHL[1]
[1]Duke University, Durham, NC

8:45AM
Hydrogel- Nanoshell Composites for Optically Controlled Cancer Therapeutic Delivery
L. E. STRONG[1,2], G. ACHARYA[3], AND J. L. WEST[1,2]
[1]Rice University, Houston, TX, [2]Duke University, Durham, NC, [3]The Methodist Hospital Research Institute, Houston, TX

9:00AM
Controlled Release of 120 KDa HPMC from Molecularly Imprinted Silicone Hydrogel Contact Lenses
C. J. WHITE[1] AND M. E. BYRNE[1]
[1]Auburn University, Auburn, AL

9:15AM
Dual Release Multilayer Films for Immediate Hemostasis and Sustained Antibiotic Treatment
B. B. HSU[1], F. R. JENSEN[2], AND P. T. HAMMOND[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Ferrosan Medical Devices A/S, Soborg, Denmark

Track: New Frontiers and Special Topics
OP - Fri - 1 – 2 - Room A312

Synthetic Biology in Bioengineering

Chairs: Ron Weiss

8:00AM
Overview Sub-Track Talk: Synthetic Biology in Bioengineering
RON WEISS

8:15AM INVITED
A Control Theory Approach to Ehgineer Biomolecular Circuits
D. DEL VECCHIO[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

8:45AM INVITED

Genetic Architectures for Copy-Number and Noise Control in Human Cells

L. Bleris[1]

[1]*University of Texas, Dallas, Richardson, TX*

9:15AM INVITED

Light-Inducible Spatiotemporal Gene Activation Using Engineered Zinc Finger Transcription Factors

L. R. Polstein[1] and C. A. Gersbach[1]

[1]*Duke University, Durham, NC*

Track: Nano and Micro Technologies
OP - Fri - 1 – 3 - Room A410

BioMEMs and Nanotechnology for Cellular Engineering II

Chairs: Axel Guenther, Nirveek Bhattacharjee

8:00AM INVITED

BioMEMS and Nanotechnologies for Cellular Engineering: Opportunities and Challenges

C. A. Simmons[1]

[1]*University of Toronto, Toronto, ON, Canada*

8:30AM INVITED

Integrated Single-Cell Analysis for Optimizing Secretory Capacity of Microbial Hosts for Biomanufacturing

J. C. Love[1]

[1]*MIT, Cambridge, MA*

8:45AM

Microfluidic Platform for Investigating Cancer Targeting Mechanism of *Salmonella typhimurium*

J. Hong[1], S. Song[1], and J. H. Shin[1]

[1]*KAIST, Daejeon, Korea, Republic of*

9:00AM INVITED

BioMEMs and Microfluidic Systems for Studying and Diagnosing Biophysical Aspects of Hematologic Diseases

W. Lam[1]

[1]*Emory University/Georgia Institute of Technology, Atlanta, GA*

9:15AM

An Anti-Biofilm Formation Design Strategy Based on Fibrous Topographical Cues

M. Kargar[1], J. Wang[1], A. S. Nain[1], and B. Behkam[1]

[1]*Virginia Tech, Blacksburg, VA*

Track: Neural Engineering
OP - Fri - 1 – 4 - Room A314

Neuro Trauma Injury & Repair I

Chairs: Michelle LaPlaca, Barclay Morrison

8:00AM

Label-Free DEP Sorting Isolates Specific Progenitor Cells in the Neural Stem Cell Lineage

J. L. Nourse[1], J. L. Prieto[1], J. Lu[1], F. H. Labeed[2], A. R. Dickson[1], M. P. Hughes[2], A. P. Lee[1], and L. A. Flanagan[1]

[1]*University of California Irvine, Irvine, CA,* [2]*University of Surrey, Guildford, United Kingdom*

8:15AM

Genipin Provides Neuroprotection Following Glutamate Exposure in Organotypic Hippocampal Slice Cultures

I. Ahmed[1], B. Morrison III[2], R. Hughes[2], and D. I. Shreiber[1]

[1]*Rutgers, the State University of New Jersey, Piscataway, NJ,* [2]*Columbia University, New York, NY*

8:30AM

Nanoparticles Loaded Injectable Hydrogels for Versatile Local Delivery of Minocycline after Spinal Cord Injury

Z. Zhang[1], Z. Wang[1], C. A. Nix[1], J. A. Gerstenhaber[1], J. Nong[1], and Y. Zhong[1]

[1]*Drexel University, Philadelphia, PA*

8:45AM

NR2B-NMDA Receptors Contribute to Network Asynchrony and Loss of LTP Following Mild Mechanical Injury *In Vitro*

T. P. Patel[1], S. Ventre[1], and D. F. Meaney[1]

[1]*University of Pennsylvania, Philadelphia, PA*

9:00AM

Dynamic Intracranial Pressure Measurements Using a Telemetry-Based Neuromonitoring System Following Closed-Head Rotational Brain Injury in Swine

X. Meng[1], C. J. Mietus[2], K. D. Browne[2], M. R. Tofighi[3], A. Rosen[1], and D. Cullen[2]

[1]*Drexel University, Philadelphia, PA,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*Pennsylvania State University, the Capital College, Middletown, PA*

9:15AM

Capillary Plugging by Leukocytes Contributes to Blood Flow Reduction in Mouse Models of Alzheimer's Disease

N. Nishimura[1], C. J. Kersbergen[1], J. C. Cruz[1], I. Ivasyk[1], J. Zhou[1], J. D. Beverly[1], G. Otte[1], P. Karlsson[1], E. Slack[1], T. P. Santisakultarm[1], C. Iadecola[2], and C. B. Schaffer[1]

[1]*Cornell University, Ithaca, NY,* [2]*Weill Medical College of Cornell Univ., New York, NY*

Track: Biomaterials
OP - Fri - 1 – 5 - Room A315

Engineering Spatial and Temporal Control of Biomolecules Using Biomaterials

Chairs: Andre Gobin, Lakeshia Taite

8:00AM

Spatiotemporally Controlled Triggered Delivery of Molecules to the Cell Cytosol via Optofluidic Rupture of Oxidation-Sensitive Polymersomes

E. A. Scott[1], A. Vasdekis[2], C. O'Neil[2], D. Psaltis[2], and J. Hubbell[2]

[1]*Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland,* [2]*Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland*

8:15AM

Acoustic Droplet-hydrogel Composite for the Ultrasonic Release of Regenerative Growth Factors

C. G. Wilson[1], M. Fabiilli[2], F. Martin-Saavedra[3], F. Padilla[4], J. Fowlkes[2], and R. Franceschi[1]

[1]*University of Michigan School of Dentistry, Ann Arbor, MI,* [2]*University of Michigan Medical School, Ann Arbor, MI,* [3]*Hospital Universitario La Paz-IdiPAZ & CIBER-BBN, Madrid, Spain,* [4]*INSERM U*^{556}*, Lyon, France*

8:30AM

Nanofabrication Techniques in Application to Cancer Biology and Neuronal Networks

V. Ajeti[1], S. Hart[1], J. Williams[1], and P. J. Campagnola[1]

[1]*University of Wisconsin - Madison, Madison, WI*

8:45AM

Material Composition and Growth Factor Gradient Scaffolds for Tracheal Defect Repair

L. Ott[1], R. Weatherly[2,3], and M. Detamore[1]

[1]*University of Kansas, Lawrence, KS,* [2]*Children's Mercy Hospital, Kansas City, MO,* [3]*University of Kansas, Kansas City, KS*

9:00AM
Generation of Surface Gradients in Polymeric Films Containing Biochemical and Physical Cues for Investigating Cell-Material Interactions
J. Almodovar[1], T. Crouzier[1,2], S. Selimovic[2,3], A. Khademhosseini[2,4], and C. Picart[1]
[1]Grenoble Institute of Technology, Grenoble, France, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]Harvard Medical School, Cambridge, MA, [4]Harvard Univesity, Cambridge, MA

9:15AM
Using Nitric Oxide Releasing Polymers to Studey Platelet Function in a Microfluidic Vascular Injury Model
J. L. Sylman[1], S. Lantvit[2], M. M. Reynolds[2], and K. B. Neeves[1,3]
[1]Colorado School of Mines, Golden, CO, [2]Colorado State University, Ft. Collins, CO, [3]University of Colorado Denver, Aurora, CO

Track: Nano and Micro Technologies
OP - Fri - 1 – 6 - Room A316

PLATFORM SESSIONS
Fri-1

Biosensors, Nanobio Interfaces, & Implantable Devices II

Chairs: Christine Schmidt, Anthony Guiseppi-Elie

8:00AM INVITED
Bionanohybrids and Interface Reactions for Improved Enzyme Activity and Stability
A. S. Campbell[1], C. Dong[1], N. Wu[1], J. S. Dordick[2], and C. Z. Dinu[1], Anthony Guiseppi-Elie
[1]West Virginia University, Morgantown, WV, [2]Rensselaer Polytechnic Institute, Troy, NY

8:15AM INVITED
Electrically Conducting Polymers for Neural Engineering
C. Schmidt[1]
[1]The University of Texas at Austin, Austin, TX

8:45AM
SWCNT-Glucose Oxidase Conjugates via Ultrasonic Processing: Effect of Tube Length, Functionalization and Processing Time
O. Karunwi[1,2] and A. Guiseppi-Elie[1,2]
[1]Clemson University, Clemson, SC, [2]Center for Bioelectronics, Biosensors and Biochips (C[3]B), Anderson, SC

9:00AM
Nanoparticle-emitted Light on Alzheimer's Disease Related Pathways
B. L. Bungart[1], G. Yao[2], and J. C-M. Lee[2]
[1]Univeristy of Missouri, Columbia, MO, [2]University of Missouri, Columbia, MO

9:15AM
Small Form Factor 3D Antennas for Biomedical Implants
E. Gultepe[1], P. Anacleto[2], P. M. Mendes[2], and D. H. Gracias[1]
[1]The Johns Hopkins University, Baltimore, MD, [2]Universidade do Minho, Braga, Portugal

Track: Biomedical Imaging and Optics
OP - Fri - 1 – 7 - Room A301

Optical Diagnostic Sensing & Devices II

Chairs: Gerard Cote, Mahsa Ranji

8:00AM
Quantum Dot Based Sandwich Immunoassay for Sensitive Detection of *Escherichia coli* on a Cell-phone
H. Zhu[1], U. Sikora[1], and A. Ozcan[1]
[1]University of California Los Angeles, Los Angeles, CA

8:15AM
Quantitative Optical Imaging of Biological Cilia-Driven Mixing
S. Jonas[1,2], E. Zhou[3], E. Deniz[1], B. Huang[1], K. Chandrasekera[3], Y. Wu[3], R. Fan[3], M. K. Khokha[1], and M. A. Choma[1]
[1]Yale University School of Medicine, New Haven, CT, [2]RWTH Aachen University, Aachen, Germany, [3]Yale University School of Engineering and Applied Sciences, New Haven, CT

8:30AM
Optical Slide for Point-of-Care Testing of Metabolic Profiles in the ICU: A New, Versatile Platform for Low-Cost Diagnostics
P. Ahuja[1], M. Peshkova[2], and M. Gratzl[1]
[1]Case Western Reserve University, Cleveland, OH, [2]St. Petersburg St University, St Petersburg, Russian Federation

8:45AM
In Situ Generation of Microbubbles from Albumin using an Expanding Nozzle Flow Focusing Microfluidic Device
J. L. Chen[1], A. H. Dhanaliwala[1,2], A. L. Klibanov[1,3], and J. A. Hossack[1,2]
[1]University of Virginia, Charlottesville, VA, [2]R.M. Berne Cardiovascular Research Center, Charlottesville, VA, [3]Department of Medicine, Cardiovascular Division, Charlottesville, VA

9:00AM
Fluorescence Correlation Spectroscopy in a Microfluidic Chip for Viral Whole Particle Enumeration
Y. Hu[1], B. Wang[1], H. Ou-Yang[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA

9:15AM
Development of an Automated Microscopy System for the Diagnosis of Malaria
M. B. Jorgensen[1,2] and R. A. Levine[2]
[1]University of Connecticut, Storrs, CT, [2]QDx, Inc., Branford, CT

Track: Cellular and Molecular Bioengineering
OP - Fri - 1 – 8 - Room A302

Cell Motility I

Chairs: Allen Liu, Jeanne Stachowiak

8:00AM
Growth Factor-Induced Breast Carcinoma Cell Migration in 3D Collagen is Predicted by 2D Protrusion but Not Motility
A. S. Meyer[1], S. Hughes-Alford[1], J. E. Kay[1], A. Castillo[1], F. B. Gertler[1], and D. A. Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

8:15AM
Cellular Traction Stresses Increase with Increasing Metastatic Potential
C. M. Kraning-Rush[1], J. Califano[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

8:30AM
Mechanisms of Glioma Invasion in Brain-Mimetic Hyaluronic Acid Matrices
B. Ananthanarayanan[1], Y. Kim[1], C-W. Chang[1], G. Singh[1], and S. Kumar[1]
[1]University of California, Berkeley, Berkeley, CA

8:45AM
Role of Substrate Stiffness on Migratory Properties and Epithelial to Mesenchymal Transition in Human Lung Cancer Cells
A. D. Subisak[1], J. A. Sanders[1], D. A. Kniss[1,2], and S. N. Ghadiali[1,2]
[1]The Ohio State University, Columbus, OH, [2]The Wexner Medical Center at the Ohio State University, Columbus, OH

9:00AM
Matrix Stiffness Promotes Vascular Smooth Muscle Cell Circular Dorsal Ruffle Formation
J. Huynh[1], C. J. Faber[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

P = Poster Session
OP = Oral Presentation

9:15AM
Differential Stiffness Effects Integrin-Dependent Mononuclear Cell Trans-Endothelial Migration
H. N. Hayenga[1], A. Paraloglou[1], and H. Aranda-Espinoza[1]
[1]*University of Maryland, College Park, MD*

Track: Stem Cell Engineering
OP - Fri - 1 – 9 - Room A305
Systems & Functional Analyses of Stem Cell Fate

Chairs: Ipsita Banerjee, Bala Rao

8:00AM INVITED
A Systems Biology Approach to Dissect Post-Transcriptional Gene Regulatory Networks in Embryonic Stem Cells
W. L. Stanford[1]
[1]*Ottawa Hospital Research Institute, Ottawa, ON, Canada*

8:30AM
Characterization of Embryoid Body Mechanical and Molecular Transport Characteristics During Embryonic Stem Cell Differentiation
M. Kinney[1], R. Saeed[1], B. Zakharin[2], A. Glezer[2], and T. McDevitt[1,2]
[1]*Georgia Institute of Technology & Emory University, Atlanta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

8:45AM
Variability of Action Potentials within Cell Clusters Derived from Human Embryonic Stem Cells
R. Zhu[1], M. A. Millrod[1], E. T. Zambidis[1], and L. Tung[1]
[1]Johns Hopkins University, Baltimore, MD

9:00AM
Mechanical Cues as Predictors of Human Mesenchymal Stem Cell Therapeutic Capacity
D. McGrail[1], K. McAndrews[1], and M. Dawson[1]
[1]Georgia Institute of Technology, Atlanta, GA

9:15AM
High Throughput Analysis of Stem Cell Mechanosensing
A. W. Holle[1], L. Vincent[1], and A. Engler[1]
[1]*University of California San Diego, La Jolla, CA*

Track: Biomaterials
OP - Fri - 1 – 10 - Room A401
Nanomaterials, Cellular Interactions & Toxicity

Chairs: Debra Auguste, Mikhail G. Shapiro

8:00AM
Synergistic Enhancement of Bacterial Killing by Plasmonic Heating of Au@Ag Nanorods
T. S. Sileika[1], K. C. Black[1], J. Yi[1], J. G. Rivera[1], and P. B. Messersmith[1]
[1]*Northwestern University, Evanston, IL*

8:15AM
Surface-modified, Soluble Mixed-ligand Gold Nanoparticles as Cell Penetrating, Tumor-targeted Drug Delivery Carriers.
P. Atukorale[1], R. P. Carney[2], P. Saha[1], F. Stellacci[2], and D. J. Irvine[1,3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland,* [3]*Howard Hughes Medical Institute, Chevy Chase*

8:30AM
Antioxidant Hydrogels for Cellular Encapsulation and Protection using Cerium Oxide Nanoparticles
J. A. Weaver[1] and C. L. Stabler[1]
[1]*University of Miami, Miami, FL*

8:45AM
Using Breast Cancer Cell CXCR4 Surface Expression to Target Liposomes for Doxorubicin Delivery
P. Guo[1] and D. Auguste[2]
[1]*Harvard University, Cambridge, MA,* [2]*Harvard Univeristy, Cambridge, MA*

9:00AM
Lipid Bilayer Membrane Deformation and Poration Induced by Synthetic Nanoparticles
N. Malmstadt[1] and S. Li[1]
[1]*University of Southern California, Los Angeles, CA*

9:15AM
Characterizing Cell Proliferation on Doped Carbon Nanotube and Graphene Substrates
R. Harouaka[1], J. O. Medina[1], A. L. Elias[1], R. Lu[1], M. Terrones[1], and S. Zheng[1]
[1]*The Pennsylvania State University, University Park, PA*

Track: Cancer Technology*
OP - Fri - 1- 11 - Room A402
Cancer Nanotechnology I

Chairs: Taher Saif, Jennifer West

8:00AM
Supporting Transformative Technology Development – the NCI Innovative Molecular Analysis Technologies Program
A. Dickherber[1], C. Johnson[1], and J. Lee[1,2]
[1]*National Institutes of Health, Bethesda, MD,* [2]*Johns Hopkins University, Baltimore, MD*

8:15AM
A Primer on the Design of Thermoresponsive Drug Loaded Polypeptide Nanoparticles
J. R. McDaniel[1], S. R. MacEwan[1], D. C. Radford[1], and A. Chilkoti[1]
[1]*Duke University, Durham, NC*

8:30AM
Loss of Cancer Cell Adhesion During *In Vitro* Cancer Metastasis
X. Tang[1] and T. A. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

8:45AM
Multiplexing Characterization and Quantification of Circulating Tumor Cells in Patient Blood
X. Qian[1] and S. Nie[1]
[1]*Emory Univ., Atlanta, GA*

9:00AM
Nanoparticle Delivered Vascular Disrupting Agents (VDAs): A New Opportunity in Combinatorial Cancer Treatment
M. Shenoi[1], I. Iltis[1], J. Choi[1], N. Koonce[2], R. Griffin[2], G. Metzger[1], and J. Bischof[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*University of Arkansas for Medical Sciences, Little Rock, AR*

9:15AM
Cancer Cell Migration in 3D Microtracks is Differentially Affected by Stiffness and Collagen Density
C. M. Kraning-Rush[1], S. P. Carey[1], and C. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

**Track sponsored by* BARD

Track: Cellular and Molecular Bioengineering
OP - Fri - 1 – 12 - Room A403
Cellular and Subcellular Imaging

Chairs: Arjun Raj, Philip Santangelo

8:00AM
Src Activity Dynamic Detection In The Initiation Of Tension-released Cell Migration
Y. Zhuo[1], T. Qian[2], S. Lu[1], and Y. Wang[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Institute of Zoology, Chinese Academy of Sciences, Beijing, China, People's Republic of

8:15AM
Mapping Single Stress Fiber Contributions to Tensional Homeostasis with Laser Nanosurgery and FRET
C-W. Chang[1] and S. Kumar[1]
[1]University of California, Berkeley, Berkeley, CA

8:30AM
Cell Elastography: Mapping Cellular Mechanical Properties
E. P. Canovic[1], T. Seidl[1], P. Barbone[1], D. Stamenovic[1], and M. Smith[1]
[1]Boston University, Boston, MA

8:45AM
Improving the Accuracy of Microrheology Data through Out-of-plane Probe Removal
J. Michaelson[1], H. Choi[2], P. So[2], and H. Huang[1]
[1]Columbia University, New York, NY, [2]Massachusetts Institute of Technology, Cambridge, MA

9:00AM
High-content Imaging of Viral Infection by Single-Genome Visualization
K. Trehan[1], M-L. Ong[2], J. M. Luna[3], T. P. Sheahan[3], H. Chandrasekar[2], V. Ramanan[1], R. E. Schwartz[2], K. Christine[2], C. M. Rice[3], A. van Oudenaarden[2], and S. N. Bhatia[1]
[1]Harvard-MIT, Cambridge, MA, [2]MIT, Cambridge, MA, [3]The Rockefeller University, New York, NY

9:15AM
Multiphoton Microscopy Reveals Abnormal Ca2+ Signaling in Breast Tumor Endothelial Cells
J. Lapeira-Soto[1], K. S. Madden[1], and E. B. Brown III[1]
[1]University of Rochester, Rochester, NY

Track: Cardiovascular and Respiratory Engineering*
OP - Fri - 1 – 13 - Room A404
Vascular Endothelial Mechanotransduction

Chairs: Rita Alevriadou, Naomi Chesler

8:00AM
Endothelial Cell Biomechanics and the Vascular Pathophysiology of Sickle Cell Disease
R. G. Mannino[1], D. R. Myers[1,2], Y. Sakurai[1,2], G. A. Barabino[1,2], and W. A. Lam[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

8:15AM
Effects of Changing Flow Direction on Endothelial Cells
C. Wang[1], H. Lu[2], and M. Schwartz[3]
[1]University of Virginia, Charlottesville, VA, [2]University of Minnesota-Twin Cities, Minneapolis, MN, [3]Yale University, New Haven, CT

8:30AM
Fibronectin Assembly Regulates Flow-Induced Structural Dynamics Through p190RhoGAP
R. E. Evans[1], R. E. Mott[2], and B. P. Helmke[1]
[1]University of Virginia, Charlottesville, VA, [2]University of Pennsylvania, Philadelphia, PA

8:45AM
Stents Promote Flow Perturbations that Downregulate Endothelial Thrombomodulin
J. M. Jiménez[1], V. Prasad[1], and P. F. Davies[1]
[1]University of Pennsylvania, Philadelphia, PA

9:00AM
Syndecan-1 Regulates Shear Stress-Induced Mechanotransduction Pathways in Endothelial Cells
P. Voyvodic[1], D. Min[1], R. Liu[1], E. Williams[1], and A. Baker[1]
[1]The University of Texas at Austin, Austin, TX

9:15AM
Shear Stress-Induced Nitric Oxide (NO) Production is Dependent on ATP and Capacitative Calcium Entry
A. M. Andrews[1] and K. A. Barbee[1]
[1]Drexel University, Philadelphia, PA

*Track sponsored by St. Jude Medical More control. Less risk.

Track: Cardiovascular and Respiratory Engineering*
OP - Fri - 1 – 14 - Room A405
Heart Valve Pathologies

Chairs: Michael Sacks, Wei Sun

8:00AM
Experimental Comparison of Valvular Hemodynamic Performance in a Tricuspid and Bicuspid Aortic Valve
C. E. Seaman[1] and P. Sucosky[1]
[1]University of Notre Dame, Notre Dame, IN

8:15AM
Development of a MRI-Based Protocol to Analyze Bicuspid Aortic Valve Morphology and Flow
L. Mirabella[1], N. Saikrishnan[1], A. J. Barker[2], E. R. Coco[1], F. von Knobelsdorff-Brenkenhoff[3], and A. P. Yoganathan[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Northwestern University, Chicago, IL, [3]HELIOS Klnikum Berlin-Buch, Berlin, Germany

8:30AM
Pregnancy-Induced Remodeling of Heart Valves
C. M. Pierlot[1], J. M. Lee[1], and S. M. Wells[1]
[1]Dalhousie University, Halifax, NS, Canada

8:45AM
Quantification of Trans-leaflet Pressure Waveform Using Decoupled Fluid-Structure Interaction
E. Sirois[1] and W. Sun[1]
[1]University of Connecticut, Storrs, CT

9:00AM
Analysis of Mitral Valve Prolapse Using a Flow Loop Bioreactor
P. S. Connell[1], A. F. Azimuddin[1], and K. J. Grande-Allen[1]
[1]Rice University, Houston, TX

9:15AM
The Role of FHL2 in Mechanically-Regulated Valve Interstitial Cell Osteogenic Differentiation
A. Y. Lam[1], J-H. Chen[1], X. Jin[1], and C. A. Simmons[1]
[1]University of Toronto, Toronto, ON, Canada

*Track sponsored by St. Jude Medical More control. Less risk.

P = Poster Session
OP = Oral Presentation

Track: Cardiovascular and Respiratory Engineering*
OP - Fri - 1 – 15- Room A406
Microvascular Physiology

Chairs: Jeffrey Holmes, Scott Simon

8:00AM
Identification of Novel Endothelial Cell Dynamics during Angiogenesis Using the Rat Mesentery Culture Model
M. S. Azimi[1], M. R. Kelly-Goss[1], P. C. Stapor[1], and W. L. Murfee[1]
[1]*Tulane University, New Orleans, LA*

8:15AM
An *In Vitro* Model of Neovascularization
D-H. T. Nguyen[1], S. Stapleton[1], P. Galie[1], M. T. Yang[1], D. Cohen[1], and C. Chen[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:30AM
Understanding Stem Cell Tubulogenesis *In Vitro* for Improving Ischemia Cell Therapies
J. A. Rytlewski[1], E. W. Lewis[1], and L. J. Suggs[1]
[1]*The University of Texas at Austin, Austin, TX*

8:45AM
Targeted Delivery of Vascular Endothelial Growth Factor Improves Stem Cell Survival in Infarcted Myocardium in Rats
Y. Tang[1,2], X. Gan[3], R. Cheheltani[1], G. Lamberti[1], B. Krynska[4], M. F. Kiani[1], and B. Wang[1,2]
[1]*Temple University, Philadelphia, PA,* [2]*Widener University, Chester, PA,* [3]*The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, People's Republic of,* [4]*Temple University School of Medicine, Philadelphia*

9:00AM
Alterations in Endothelial Barrier Function Differentially Regulate the Transport of Adiponectin Ooligomers
J. M. Rutkowski[1] and P. E. Scherer[1]
[1]*UT Southwestern Medical Center, Dallas, TX*

9:15AM
Mechanical Strain Enhances the Alignment of Microvessels in Fibrin Gel
P. D. Carlson[1], K. T. Morin[1], and R. T. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

**Track sponsored by* St. Jude Medical — More control. Less risk.

Track: Biomedical Engineering Education*
OP - Fri - 1 – 16 - Room A304
Entry-level BME Experiences

Chairs: Kristin Billiar, Colin Drummond

8:00AM
Appropriate Technology in Introductory Engineering Design
A. W. Eberhardt[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

8:15AM
Medically-focused Projects in a Client-based Freshman Design Course
A. Saterbak[1] and M. Oden[1]
[1]*Rice University, Houston, TX*

8:30AM
Intercollegiate Freshman Project Contrasting Blood Pressure Measurement Approaches
L. Khuon[1], T. Capriotti[1], P. Stephens[1], W. Kelly[1], and K. Buckley[1]
[1]*Villanova University, Villanova, PA*

8:45AM
New Hands-on BME Fundamentals and Design Course for Sophomores
A. J. Nimunkar[1], J. P. Puccinelli[1], and W. J. Tompkins[1]
[1]*University of Wisconsin, Madison, WI*

9:00AM
A First Methods Course in Thinking Like a BME: Its Design, Development and Assessment
W. Newstetter[1]
[1]*Georgia Tech, Atlanta, GA*

9:15AM
The Effects of the Problem-Solving Studio Approach on Student Learning
J. Le Doux[1] and D. Majerich[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

**Track sponsored by* Whitaker International Fellows and Scholars Program

Track: Bioinformatics and Systems Biology
OP - Fri - 1 – 17 - Room A408
Design Principles of Natural and Synthetic Biochemical Networks

Chairs: Gabor Balazsi, Oleg Igoshin

8:00AM INVITED
Discovery of Operating Principles Through Dynamic Modeling
P-W. Chen[1], Y. Lee[1], and E. O. Voit[1]
[1]*Georgia Tech, Atlanta, GA*

8:30AM INVITED
Modeling the Dynamics of Synthetic Gene Networks
M. R. Bennett[1]
[1]*Rice University, Houston, TX*

9:00AM
Hysteresis, Bistability, and Persistence in the Design Space of Toxin-Antitoxin Systems
R. A. Fasani[1] and M. A. Savageau[1]
[1]*University of California, Davis, CA*

9:15AM
Ultrasensitivity of the *Bacillus subtilis* Sporulation Decision
J. Narula[1], S. N. Devi[2], M. Fujita[2], and O. A. Igoshin[1]
[1]*Rice University, Houston, TX,* [2]*University of Houston, Houston, TX*

Track: Tissue Engineering
OP - Fri- 1 – 18 - Room A407
Cardiovascular Tissue Engineering II

Chairs: Milica Radisic, Kevin Costa

8:00AM
Flow-Conditioning Of Mesenchymal Stem Cells On Engineered Tissue Promotes Antithrombogenic Function
L. A. Meier[1], Z. H. Syedain[1], M. H. Chen[1], and R. T. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

8:15AM
Deconstruction of Engineered Cardiac Tissue for Analysis of Cell Phenotype
S. B. Lama[1], T. J. Cashman[1], J. Wang[1,2], R. Li[1,2], and K. Costa[1]
[1]*Mount Sinai School of Medicine, New York, NY,* [2]*University of Hong Kong, Pokfulam, Hong Kong*

8:30AM
Engineered Myocardial Tissue Patches with Functional Properties Comparable to Native Adult Ventricles
C. Jackman[1], D. Zhang[1], and N. Bursac[1]
[1]*Duke University, Durham, NC*

8:45AM
Characterization and Performance of a Tissue-Engineered Bio-inspired Pump
H. AZIZGOLSHANI[1] AND M. GHARIB[1]
[1]California Institute of Technology, Pasadena, CA

9:00AM
A Peptide Modified Hydrogel for Cardiac Tissue Preservation After Acute Myocardial Infarction
L. A. REIS[1], L. L. CHIU[1], J. WU[2], A. MOMEN[2], R-K. LI[1,2], AND M. RADISIC[1]
[1]University of Toronto, Toronto, ON, Canada, [2]Toronto General Research Institute, Toronto, ON, Canada

9:15AM
Optimization Of 3D Printing Parameters For Scaffold Shape Fidelity And Viability Of Encapsulated Aortic Valve Cells
L. A. HOCKADAY[1], K. H. KANG[1], J. AGARWAL[1], B. DUAN[1], AND J. T. BUTCHER[1]
[1]Cornell University, Ithaca, NY

Track: Translational Biomedical Engineering*
OP - Fri - 1 – 19 - Room A313
Translational BME Research to Practice [R2P]

Chairs: Larry McIntire, Donald Peterson

8:00AM
Anisotropic Infarct Reinforcement Improves Left Ventricular Function in Acute Myocardial Infarction
S. CLARK[1], G. FOMOVSKY[2], K. PARKER[1], G. AILAWADI[1], AND J. HOLMES[1]
[1]University of Virginia, Charlottesville, VA, [2]Brigham and Women's Hospital, Cambridge, MA

8:15AM
Characterization of Porous Polymethylmethacrylate for Craniofacial Reconstruction
L. WANG[1], D. M. YOON[1], P. P. SPICER[1], A. M. HENSLEE[1], K. F. KASPER[1], AND A. G. MIKOS[1]
[1]Rice University, Houston, TX

8:30AM
A Novel Chip-based High-Throughput Platform for Antimicrobial Drug Discovery and Combinatorial Drug Screening
A. SRINIVASAN[1,2], J. L. LOPEZ-RIBOT[1,2], AND A. K. RAMASUBRAMANIAN[1,2]
[1]The University of Texas at San Antonio, San Antonio, TX, [2]The South Texas Center for Emerging Infectious Diseases, san antonio, TX

8:45AM
Translation of Novel Sample to Answer Devices for Cancer Related Cell Free Circulating DNA Detection and Diagnostics
A. SONNNENBERG[1], R. KRISHNAN[2], AND M. J. HELLER[1]
[1]University of California San Diego, La Jolla, CA, [2]Biological Dynamics, La Jolla, CA

9:00AM
Restoration of Lordosis in Adult Lumbar Reconstructive Surgery: A Biomechanical Analysis of Three Posterior-Based Techniques
J. A. TANG[1], A. BLY[1], J. P. KELLY[2], C. TELLES[2], J. LEASURE[1,2], J. BUCKLEY[1], D. KONDRASHOV[2], AND C. AMES[3]
[1]The Taylor Collaboration, San Francisco, CA, [2]San Francisco Orthopaedic Residency Program, San Francisco, CA, [3]University of California San Francisco, San Francisco, CA

9:15AM
Low-cost, Mechanical Intravenous Volume Regulator for Children in the Developing World
K. SHAH[1], T. WALKER[1], M. YUAN[1], P. HORTON[1], T. VAUGHN[1], M. ODEN[1], AND A. SATERBAK[1]
[1]Rice University, Houston, TX

*Track sponsored by FISH & RICHARDSON

Track: Tissue Engineering
OP - Fri - 1 – 20 - Sidney Marcus Auditorium
Engineered Tissue Models for Drug Discovery and Disease

Chairs: Lauren Anderson, J. Brandon Dixon

8:00AM
Induction of Bone Resorptive Activity in Breast Cancer Cells By an Engineered Bone Metastasis Microenvironment
J. E. DUMAS[1], C. J. IHENACHO[1], AND M. O. PLATT[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:15AM
Tumor-Endothelial Cell Co-Culture Increases Angiogenic Activity in Collagen I Bioengineered Tumors
C. S. SZOT[1], C. F. BUCHANAN[1], J. W. FREEMAN[2], AND M. N. RYLANDER[1]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]Rutgers University, Piscataway, NJ

8:30AM
Designing Novel Preclinical Drug Screening Platforms Using Protein-Engineered Materials
R. L. DIMARCO[1], R. DEWI[1], J. SU[1], C. KUO[1], AND S. HEILSHORN[1]
[1]Stanford University, Stanford, CA

8:45AM
Epithelial-Stromal Cell Communication During Endometrial Regeneration in an Engineered Endometrium
S. C. SCHUTTE[1], D. J. SHAVER[2], C. L. WILDER[1,2], M. O. PLATT[1,2], N. SIDELL[1], AND R. N. TAYLOR[1,3]
[1]Emory University School of Medicine, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA, [3]Wake Forest School of Medicine, Winston-Salem, NC

9:00AM
Probing the Metastatic Niche Using a 3D Microtissue Flow Assay
C. Y. LI[1], D. K. WOOD[1], J. HUANG[1], AND S. N. BHATIA[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

9:15AM
Development of Tissue Engineered Tumors for Treatment Planning in Electroporation-Based Therapies
C. B. ARENA[1], C. S. SZOT[1], P. A. GARCIA[1], M. N. RYLANDER[1], AND R. V. DAVALOS[1]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA

Track: Tissue Engineering
OP - Fri - 1 – 21 - Room A411
Biomimetics for Tissue Regeneration

Chairs: David Kaplan, Rachael Oldinski

8:00AM
Naturally-derived Cardiac Extracellular Matrix for Cardiac Progenitor Cell Therapy
K. M. FRENCH[1], A. V. BOOPATHY[1], J. A. DEQUACH[2], L. CHINGOZHA[3], H. LU[3,4], K. L. CHRISTMAN[2], AND M. E. DAVIS[1,5]
[1]Wallace H. Coulter Department of Biomedical Engineering at Emory University and Georgia Tech, Atlanta, GA, [2]Department of Bioengineering, University of California, San Diego, La Jolla, CA, [3]School of Chemical and Biomolecular Engineering Georgia Institute of Technology, Atlanta, GA, [4]Institute for Bioengineering and Biosciences, Georgia Institute of Technology, Atlanta, GA, [5]Division of Cardiology, Emory University School of Medicine, Atlanta, GA

8:15AM
Engineering the Corneal Endothelium Using Biomimetic Substrates
R. N. PALCHESKO[1,2], J. L. FUNDERBURGH[2], AND A. W. FEINBERG[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

P = Poster Session
OP = Oral Presentation

8:30AM

Construction of Whole ECM Protein, 3D Micro-environments to Study Stem Cell Behavior

Q. A. Tran[1], P-J. Su[1], V. Ajeti[1], P. Campagnola[1], and B. M. Ogle[1]

[1]University of Wisconsin - Madison, Madison, WI

8:45AM

Ligament Regenerative Engineering: Biomimicing Hierarchical Design

K. L. Lee[1], S. C. Varghese[1], E. A. Lewis[1], and J. A. Cooper Jr.[1]

[1]Rensselaer Polytechnic Institute, Troy, NY

9:00AM

Bone Mimicking Composite Nanomatrix Gel for Guided Osteogenic Response

J. Anderson[1], J. Vines[1], D. Patel[1], and H-W. Jun[1]

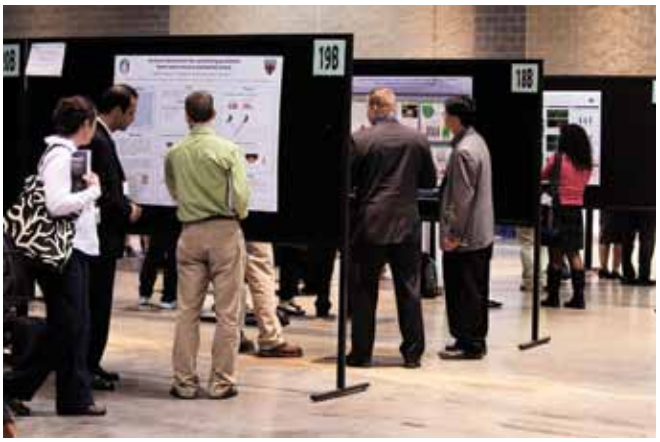
[1]U of Alabama at Birmingham, Birmingham, AL

9:15AM

Self-Assembled Peptide Amphiphile-Based Nanomatrices for Improved MIN6 Beta-Cell Function

D-J. Lim[1], P. T. Hwang[1], S. M. Rahman[1], J. A. Corbett[2], and H-W. Jun[1,3]

[1]U of Alabama at Birmingham, Birmingham, AL, [2]Medical College of Wisconsin, Milwaukee, WI, [3]Comprehensive Diabetes Center, U of Alabama at Birmingham, Birmingham, AL



Student & Early Career Program

Room A412

8:00am - 9:00am

Student Affairs & Chapter Development Session

9:15am - 10:15am

Transitioning Students to Industry: Panel Discussion

See page 35

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

Friday, October 26, 2012

9:30AM - 1:00PM - EXHIBIT HALL A2

POSTER SESSION - FRIDAY – AM

POSTER SESSION FriA

Track: Bioinformatics and Systems Biology

Multi-Scale Modeling

P-Fri-A-1

Evaluating a Finite Element Human Body Model in a Real World Motor Vehicle Crash

A. J. Golman[1,2], K. A. Danelson[1,2], and J. D. Stitzel[1,2]

[1]Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC

P-Fri-A-2

Sprout Formation in Angiogenesis: From Molecules to Tissue

Y. Jiang[1], S. P. Prokopious[2], and L. Iruela-Arispe[3]

[1]Georgia State University, Atlanta, GA, [2]Univ. Nottingham, Nottingham, United Kingdom, [3]Univ. California, Los Angeles, Los Angeles, CA

P-Fri-A-3

In silico Multiscale Models for Identifying Driver Versus Passenger Mutations in Cancer Progression

R. Radhakrishnan[1]

[1]UPenn, Philadelphia, PA

P-Fri-A-4

Mathematical Modeling of Intracellular Calcium Waves: Role of Intracellular Diffusion and Heterogeneity

J. Parikh[1], A. Kapela[1], and N. M. Tsoukias[1]

[1]Florida International University, Miami, FL

P-Fri-A-5

Development of the Free-Solvent Model for the Osmotic Pressure of Crowded Protein Solutions:Validation of the Free-Solvent Model for Binary Protein Solutions

D. W. McBride[1], C. Hale[1], and V. G. Rodgers[1]

[1]University of California, Riverside, CA

P-Fri-A-6

Computational Studies of Two-Phase Hemodynamics

C. Velez[1] and M. Ilie[1]

[1]University of Central Florida, Orlando, FL

P-Fri-A-7

Biphasic Modeling of the Thermo-Mechanical Interaction of Engineered-Tissue During Freezing

J. Wright[1] and C-J. Chuong[1]

[1]University of Texas at Arlington, Arlington, TX

Track: Bioinformatics and Systems Biology

Bioinformatics & Systems Biology - Undergraduate

P-Fri-A-8

Mathematical Modeling and Simulation of Anesthetic Brain Monitors: Implications Affecting the Regulation of Closed-Loop Control Technologies.

A. L. Cook[1,2], U. R. Mohan[1,2], S. S. Gurbani[1,2], and Y. Wei[1,2]

[1]Johns Hopkins University, Baltimore, MD, [2]United States Food and Drug Administration, Silver Spring, MD

P-Fri-A-9

A Stochastic and Integrative Model of Human Cardiorespiratory Function

G. E. Banis[1]

[1]The College of New Jersey, Ewing, NJ

P-Fri-A-10

Characterization of Smad Localization Under Redox Perturbation of TGFβSignaling

M. R. Butler[1], A. Prasanphanich[2], and M. Kemp[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology/Emory University School of Medicine, Atlanta, GA

P-Fri-A-11

Kinematics of Step Initiation in Young and Older Adults

R. Van Ham[1] and A. Mahboobin[1]

[1]University of Pittsburgh, Pittsburgh, PA

P-Fri-A-12

Probabilistic Markov Models Accurately Predict T Cell Cytokine Secretion Dynamics

J. Yu[1], Q. Han[2], C. Love[2], and N. Bagheri[1]

[1]Northwestern University, Evanston, IL, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-A-13

Effects of Aging on ROS Metabolism in Primary CD8+ T Cells

A. S. Potnis[1], A. S. Hill[2], C. A. Rivet[1], and M. L. Kemp[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-A-14

Synthetic Biology and Bioinformatics for Predictable Control of Therapeutic Genes

C. M. Hom[1] and K. A. Haynes[1]

[1]Arizona State University, Tempe, AZ

P-Fri-A-15

Cloud Based Cluster Computation for Increased Efficiency and Accessibility of Bioinformatics Software

N. M. Smith[1], E. Werner[2], and K. Seale[2]

[1]Vanderbilt University, Carmel, IN, [2]Vanderbilt University, Nashville, TN

Track: Biomaterials

Biomaterials for Controlled Release and Drug/Nucleic Acid Delivery

P-Fri-A-16

Photo-Activated Lipoplexes for siRNA and DNA Delivery

J. S. Hersey[1], C. M. LaManna[1], H. Lusic[1], and M. W. Grinstaff[1]

[1]Boston University, Boston, MA

P-Fri-A-17

Using Air to Control Drug Release from 3D Superhydrophobic Meshes

S. T. Yohe[1], Y. L. Colson[2], and M. W. Grinstaff[1]

[1]Boston University, Boston, MA, [2]Brigham and Women's Hospital, Boston, MA

P-Fri-A-18

Hyaluronic Acid Coating Enhances Gene Delivery Efficiency of Polyphosphoramidate/DNA Nanoparticles in Rat Liver Following Retrograde Intrabiliary Infusion

D. Pan[1], X. Jiang[1,2], Y. Ren[1,2], and H-Q. Mao[1,2]

[1]Johns Hopkins University, Baltimore, MD, [2]Whitaker Biomedical Engineering Institute, Baltimore, MD

P = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-19
A New Family of Cationic Biodegradable Non-Viral Gene Vector from Amino Acid-based Poly(ester amide)s: Fundamental Molecular Structure – Transfection Relationship
C. Chu[1] and J. Wu[1]
[1]Cornell University, Ithaca, NY

P-Fri-A-20
Controlled Nitric Oxide Releasing Eendronized Poly(vinyl chloride) for Improved Biocompatibity for Blood Contacting Devices
S. P. Hopkins[1] and M. C. Frost[1]
[1]Michigan Technological University, Houghton, MI

P-Fri-A-21
Drug Delivery Surgical Sutures for Pain Relief
S. Park[1], J. Lee[2], C. Park[2], M. Kim[2], M. Park[2], S. Lee[2], C. Heo[3], and Y. Choy[2,4]
[1]Department of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea, Republic of, [2]Interdisiplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of, [3]Department of Plastic Surgery and Reconstructive Surgery, College of Medicine, Seoul National Univer, Seongnam, Korea, Republic of, [4]. Department of Biomedical Engineering, College of Medicine and Institute of Medical & Biological En, Seoul, Korea, Republic of

P-Fri-A-22
Enzyme Responsive Controlled Drug Release Using Biopolymers Based Micro/Nano Capsules
K. Radhakrishnan[1], J. Tripathy[1], and A. M. Raichur[1,2]
[1]Indian Institute of Science, Bangalore, India, [2]University of Johannesburg, Doornfontein, South Africa

P-Fri-A-23
Fibrin Gels With Microspheres Containing GDNF Enhance Peripheral Nerve Regeneration After Delayed Nerve Repair
M. D. Wood[1], H. Kim[2], M. Szynkaruk[1], P. Phua[1], C. Lafontaine[1], S. W. Kemp[1], T. Gordon[1], M. Shoichet[2], and G. H. Borschel[1,2]
[1]The Hospital for Sick Children, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, Canada

P-Fri-A-24
Sequential Release of Multiple Biomolecules from a biodegradable Layer-by-Layer Coating
M. Keeney[1], E. Cheng[1], and F. Yang[1]
[1]Stanford University, Stanford, CA

P-Fri-A-25
Hybrid T904/Fibrin Hydrogels for Sustained Gene Delivery
J. Zhang[1], A. Sen[1], J. S. Lee[1], and K. Webb[1]
[1]Clemson University, Clemson, SC

P-Fri-A-26
Short and Long Range Forces Influencing Plasmid Nanocarriers Margination and Adhesive Dynamics Under Convective Flow
V. Pensabene[1], E. M. Simpson[1], P. P. Patel[1], and T. D. Giorgio[1]
[1]Vanderbilt University, Nashville, TN

P-Fri-A-27
Enhancement of Thermal Stability of Inactivated H1N1 Flu Vaccine in Solidified Hydrogel Film
J. Lee[1] and M. Prausnitz[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-A-28
Development of a pH-Responsive Hydrogel Network for the Oral Delivery of Human Growth Hormone
S. D. Steichen[1] and N. Peppas[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-A-29
Sustained Lentivirus-Mediated Transgene Delivery Via Biodegradable Polyester Elastomers
M. C. Jen[1], L. D. Shea[1], and G. A. Ameer[1]
[1]Northwestern University, Evanston, IL

P-Fri-A-30
Surface Mediated Delivery of siRNA from Layer-by-Layer Assembled Polyelectrolyte Films
S. Castleberry[1] and P. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-A-31
Targeted, Multifunctional Nanoparticles For Controlled Delivery Of Anabolic Bone Therapy Drugs
T. L. Moore[1], B. Stoner[1], R. Morrison[1], A. Simionescu[1], D. Simionescu[1], C. Recknor[2], and F. Alexis[1]
[1]Clemson University, Clemson, SC, [2]United Osteoporosis Center, Gainesville, GA

P-Fri-A-32
Controlled and Extended Release of an Ocular Anti-Inflammatory via Silicone Hydrogel Lenses
J. C. Kaczmarek[1] and M. E. Byrne[1]
[1]Auburn University, Auburn, AL

P-Fri-A-33
Chitosan's Milieu Alters Its Interactions with Protein Biologics
S. G. Smith[1], S. Jayanthi[1], D. Zaharoff[1], and B. Koppolu[1]
[1]University of Arkansas, Fayetteville, AR

P-Fri-A-34
Novel Cationic Lipids as Efficient siRNA Delivery Systems
Y. Dong[1,2], C. A. Alabi[1], H. Yin[1], R. J. Dorkin[1], D. Chen[1,2], Z. Gu[1,2], R. Langer[1], and D. G. Anderson[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Children's Hospital Boston, Boston, MA

P-Fri-A-35
PEG Microgels Formed by Precipitation Reaction as Drug Delivery Vehicles
S. Thompson[1], A. Alniemi[2], and R. K. Willits[1]
[1]The University of Akron, Akron, OH, [2]St. Vincent St. Mary High School, Akron, OH

P-Fri-A-36
Strategies for Controlling Viral Release from Nanofibrous Scaffolds for Neural Tissue Engineering
S. Lee[1], J-S. Kim[1], and J-H. Jang[1]
[1]Yonsei University, Seoul, Korea, Republic of

P-Fri-A-37
Zein Coated Chitosan Nanoparticles for Oral Gene Delivery
J. M. Gamboa[1] and K. Leong[1]
[1]Duke University, Durham, NC

P-Fri-A-38
Dual-responsive poly(N-isopropylacrylamide-acrylamide-chitosan)-coated Iron Oxide Magnetic Nanoparticles for Controlled and Targeted Drug Delivery Applications
A. S. Wadajkar[1,2], V. Sundaresan[1,2], and K. T. Nguyen[1,2]
[1]University of Texas, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

P-Fri-A-39
Surface Modification by Gas Cluster Ion Beam (GCIB) as a Novel Polymer-free Drug Delivery Method
J. Khoury[1], S. R. Kirkpatrick[1], and R. C. Svrluga[1]
[1]Exogenesis Corp, Billerica, MA

POSTER SESSION **FriA**

See page 17 for Poster floor plan

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-40
Tetronic® T904 Increases Transfection of Polyplex Nonviral Vectors
J. Zhang[1], J. S. Lee[1], and K. Webb[1]
[1]Clemson University, Clemson, SC

P-Fri-A-41
Electro-responsive Affinity Hydrogels for Controlled Protein Release
K. N. Boch[1], M. Battig[1], and Y. Wang[1]
[1]University of Connecticut, Storrs, CT

P-Fri-A-42
New pH Sensitive and Fully Biodegradable Polymer Micelles for Drug Delivery
I. Lee[1], M. Park[1], O. Hwang[1], G. Khang[1], and D. Lee[1]
[1]Chonbuk National University, Jeonju, Korea, Republic of

P-Fri-A-43
Elastomers with Tunable Mechanical Properties for Controlled Delivery of Bioactive Molecules
M. J. Nunes Pereira[1,2], B. Ouyang[1], N. Lang[3], I. Friehs[3], P. del Nido[3], R. Langer[4], L. Ferreira[2], and J. M. Karp[1]
[1]Brigham and Women's Hospital, Harvard Medical School, Harvard-MIT Health Science and Technology, Cambridge, MA, [2]Center of Neurosciences and Cell Biology, University of Coimbra, Coimbra, Portugal, [3]Children's Hospital Boston, Harvard Medical School, Boston, MA, [4]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-A-44
Synthesis and Optimization of Hyperbranched poly(N-isopropylacrylamide) for Drug Delivery
K. Chang[1] and L. J. Taite[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-A-45
Silk Near-Infrared Dye Particles For The Study Of Intra-articular Drug Delivery *In Vivo*
T. K. Mwangi[1], B. A. Mata[2], G. M. Palmer[1], R. D. Bowles[1], D. L. Kaplan[3], and L. A. Setton[1,2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC, [3]Tufts University, Medford, MA

P-Fri-A-46
Drug Delivery System for a Radio-Protective Selenoxanthene
L. A. Heinrich[1,2], B. Pajaziti[1], and R. Roziev[3]
[1]marcotech oHG, Muenster, Germany, [2]Westphalian Wilhelms University, Muenster, Germany, [3]medbiopharm Ltd., Obninsk, Russian Federation

P-Fri-A-47
Electroactive Polymer-based Drug Delivery Systems for the On-demand Loading and Release of Ibuprofen Sodium Salt and Doxycycline Hyclate
T. R. Nicholson III[1], S. Zhu[1], J. Maskrod[1], M. Chase[1], J. Mbugua[1], J-H. Jung[1], C. V. Vause[2], G. Justin[1], P. L. Durham[2], and R. M. Mercado[1]
[1]Crosslink, Fenton, MO, [2]Missouri State University, Springfield, MO

P-Fri-A-48
Effects of Hypoxia and Hypoxia-Mimicking Factors on VEGF Production in Bioactive Glass Scaffolds
H. Griffith[1], P. Bhagwat[1], and D. Henthorn[1]
[1]Saint Louis University, Saint Louis, MO

P-Fri-A-49
Clay Nanotube/Poly(methylmethcrylate) Bone Cement Composites With Sustained Antibioitic Release
W. Wei[1], E. Abdullayev[1], E. Ryland[1], D. Mills[1], and Y. Lvov[1]
[1]Louisiana Tech University, Ruston, LA

P-Fri-A-50
Controlling of Polymer-Shell Morphologies via Emulsion Electrospinning of Biodegradable Polyurethanes
W. P. Qaqish[1], J. A. Smolen[1], and Y. H. Yun[1]
[1]The University of Akron, Akron, OH

P-Fri-A-51
Novel Poly (aminoethers) for Gene Delivery
T. Potta[1], T. Grandhi[1], M. Christensen[1], and K. Rege[1]
[1]Arizona State University, Tempe, AZ

P-Fri-A-52
Novel Biodegradable Polymeric Vectors for Efficient Gene Delivery in 3D Hydrogels with a Broad Range of Stiffness
M. Keeney[1], S. Onyiah[1], and F. Yang[1]
[1]Stanford University, Stanford, CA

P-Fri-A-53
Versatile Amphiphilic Branched Terpolymers for Applications in Nanobiomedicine
J. McFarland[1], T. Betancourt[1], and M. Marks[1]
[1]Texas State University-San Marcos, San Marcos, TX

P-Fri-A-54
Nanoparticle Enhanced Anti-Infective Materials
D. Mills[1] and H. Vandeberg[2]
[1]Louisiana Tech University, Ruston, [2]Louisiana Tech University, Ruston, LA

P-Fri-A-55
Controlled Release of Pioglitazone from Biodegradable Hydrogels to Modify Macrophage Function
K. Sato[1], T. Saito[1], and Y. Tabata[1]
[1]Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan

Track: Biomedical Engineering Education

Best Practices for Interactions with Industrial Partners

P-Fri-A-56
Developing a Sustainable Rehabilitation Engineering Course
S. Sprigle[1] and W. Singhose[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Biomedical Engineering Education

Community Outreach in Biomedical Engineering Education

P-Fri-A-57
Biomedical Engineering and Mechanical Engineering in a General Education Program
P. Fagette[1], S-J. Chen[1], G. Baran[1], S. Samuel[2], and M. Kiani[1]
[1]Temple University, Philadelphia, PA, [2]Albert Einstein Medical Center, Philadelphia, PA

P-Fri-A-58
Inquiry-Based Tissue Engineering Lessons for the K-12 Classroom - Bridging a Knowledge Gap
E. Mangus[1]
[1]University of Kansas, Lawrence, KS

Track: Biomedical Engineering Education

Education Models that Foster Innovative Biomedical Engineering Design

P-Fri-A-59
New Masters of Biomedical Innovation and Development Degree
L. F. Bost[1]
[1]Georgia Institute of Technology, Atlanta, GA

P = Poster Session
OP = Oral Presentation

P-Fri-A-60
A New Undergraduate Program in Biomedical Engineering: Program Design and Early Results
J. Briceno[1], P. Navas[1], and J. Cordovez[1]
[1]*U de los Andes, Bogota, DC, Colombia*

Track: Biomedical Engineering Education

Educational Strategies for Enhancing Diversity in Biomedical Engineering

P-Fri-A-61
Exploring Gender Differences in BMED Major Changes
J. Leonard[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Biomedical Engineering Education

Innovative Assessment Strategies

P-Fri-A-62
Development of Simulation Scenarios for Measuring Professional Skills in Bioengineering
J. R. Amos[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Fri-A-63
Access to the European Medical Device Market: Evaluation of Clinical Performance and Safety
D. R. Dannhorn[1]
[1]*mdt medical device testing GmbH, Ochsenhausen, Germany*

Track: Biomedical Engineering Education

Innovative Learning Modules, Instructional Materials, and Approaches

P-Fri-A-64
A Cost-Effective Project-Based Approach for Teaching Neural Interface Technology
B. R. Campbell[1], A. A. Ericson[1], M. Shaffer[1], and D. P. Cesario[1]
[1]*Robert Morris University, Moon, PA*

P-Fri-A-65
Multi-Disciplinary Approach to Clinical Rotation Course for Biomedical Engineering Students
Y. W. Lee[1], H. C. Gabler[1], and J. L. Sparks[2]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Wake Forest University, Winston-Salem, NC*

P-Fri-A-66
A Cost Effective, Modular, Open Source, Wireless Hardware Platform to Introduce Students to Smart Mobile Health Care Technologies
R. Harder[1], J. Whitfield[1], K. Pence[1], A. Diedrich[2], and F. Baudenbacher[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University School of Medicine, Nashville, TN*

P-Fri-A-67
Biomedical Instrumentation from Start to Finish: A Project-Based Undergraduate Course
A. Kyle[1], M. Bouchard[1], M. Downs[1], and D. Jangraw[1]
[1]*Columbia University, New York, NY*

P-Fri-A-68
Fostering Critical Thinking Skills Through Team-Based Learning
C. K. Drummond[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Fri-A-69
Simulation of Prostate Cryosurgery for the Purpose of Surgical Training: System Design and Benchmarking
R. L. Keelan[1], S. Yamakawa[1], K. Shimada[1], and Y. Rabin[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P-Fri-A-70
Geometric Deformation of Prostate Models for Application to the Computerized Training of Cryosurgery
A. Sehrawat[1], K. Shimada[1], and Y. Rabin[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P-Fri-A-71
Neuroengineering REU Site: The Use of a Wiki as a Shared Interactive Electronic Lab Notebook
R. Perez-Castillejos[1], and B. J. Pfister[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

Track: Biomedical Engineering Education

International Collaborative Biomedical Engineering Education

P-Fri-A-72
Teaching Modalities Comparison of Biomechanics Course in Vietnam
B. S. Kelley[1], R. M. Unruh[2], B. R. Rigby[1], H. D. Vu[3], and T. V. Vo[4]
[1]*Baylor University, Waco, TX,* [2]*Texas A&M University, College Station, TX,* [3]*Hanoi University of Science & Technology, Hanoi, Vietnam,* [4]*VNU-HCMC International University, Ho Chi Minh City, Vietnam*

Track: Biomedical Engineering Education

New Models for Graduate Education

P-Fri-A-73
Incorporating Mandatory Graduate Internships into the Masterâ€™s Program in Biomedical Engineering
S. S. Rhodes[1] and J. P. Farris[1]
[1]*Grand Valley State University, Grand Rapids, MI*

P-Fri-A-74
Training the Next Generation of Biomedical Scientists
S. Tridandapani[1]
[1]*Emory University, Atlanta, GA*

Track: Biomedical Engineering Education

Transformative Instructional Laboratory Activities and Practices

P-Fri-A-75
Mentoring Challenges and Opportunities in an REU Setting
C. Roth[1] and P. Moghe[1]
[1]*Rutgers University, Piscataway, NJ*

P-Fri-A-76
Bioreactor Design Laboratory
J. R. Amos[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

POSTER SESSION **FriA**

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-77
Adaptation of an Electronic Game as a Teaching Aid for Investigating Neural Interface Technology
M. Shaffer[1], A. A. Ericson[1], D. P. Cesario[1], C. M. Acors[1], W. B. Banas[1], B. G. Opp[1], and B. R. Campbell[1]
[1]*Robert Morris University, Moon Twp, PA*

P-Fri-A-78
Navigating Regulatory Compliance for Biomedical Engineering Undergraduate Instructional Labs
E. Behravesh[1] and A. Lee[2]
[1]*Georgia Institute of Technology, ATLANTA, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

Track: Biomedical Imaging and Optics

Multimodality Imaging

P-Fri-A-79
Gold Nanoshelled Microcapsules Operate as Bifunctional Imaging Agents
H. Ke[1], X. Yue[1], Y. Jin[1], S. Wang[2], J. Wang[2], and Z. Dai[3]
[1]*Harbin Institute of Technology, Harbin, China, People's Republic of,* [2]*Peking University Third Hospital, Beijing, China, People's Republic of,* [3]*Peking University, Beijing, China, People's Republic of*

P-Fri-A-80
In Vivo Ultrasound Photoacoustic Multimodal Imaging of Tissue Engineering Scaffolds and Monitoring of the Tissue Regeneration
Y. Talukdar[1], P. Avti[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Fri-A-81
Design and Assessment of PVA-C Phantoms for Use in Histologic Analysis
V. S. Pai Raikar[1], E. A. Trent[1], F. N. Mefleh[1], and D. M. Kwartowitz[1,2]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P-Fri-A-82
Multi-Modality Motion Analysis of a Magnetic Resonance Imaging Compatible Left Ventricular Phantom
B. Chaffins[1], A. Santhanakrishnan[1], L. Mirabella[1], J. Oshinski[1,2], and A. P. Yoganathan[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Fri-A-83
A Survey of Harmonic Generation in Murine Tissues under Multimodal Multiphoton Microscopy
J. J. Field[1], C. Eitel[1], D. Smith[1], S. A. Tobet[1], and R. A. Bartels[1]
[1]*Colorado State University, Fort Collins, CO*

Track: Biomedical Imaging and Optics

Nanotechnology for Biomedical Optics

P-Fri-A-84
Detection of Regional Micrometastasis Using Plasmonic Gold Nanoparticles and Photoacoustic Imaging
A. Papagiannaros[1,2], G. Luke[1], J. Tam[1], J. Myers[2], S. Emelianov[1], and K. Sokolov[1,2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*M. D. Anderson Cancer Center, Houston, TX*

P-Fri-A-85
Non-blinking NIR-Emitting Quantum Dots for Tissue Imaging
A. M. Dennis[1], B. D. Mangum[1], H. Htoon[1], and J. A. Hollingsworth[1]
[1]*Los Alamos National Laboratory, Los Alamos, NM*

Track: Biomedical Imaging and Optics

Novel Biomedical Imaging and Microscopy

P-Fri-A-86
Optochemical Imaging of Functionally Active Surfaces
P. Ahuja[1], S. Narayan[1], and M. Gratzl[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Fri-A-87
Extended Monitoring of 3-Dimensional Tissue Engineered Scaffolds Using an MRI-Compatible Culture System
A. Vaidyanathan[1], S. Ravindran[1], A. George[1], and R. Magin[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P-Fri-A-88
STED Optical Nanoscopy With a Two-Photon Oscillator
Y. Liu[1,2], Y. Ding[2], E. Alonas[3], W. Zhao[2], H. Wang[2], P. J. Santangelo[3], J. Teng[2], D. Jin[4], J. A. Piper[4], and P. Xi[2]
[1]*Shanghai Jiaotong University, Beijing, China, People's Republic of,* [2]*Peking University, Beijing, China, People's Republic of,* [3]*Emory University, Atlanta, GA,* [4]*Macquarie University, Sydney, Australia*

P-Fri-A-89
A Confocal Optical System for Detecting High-Speed Oscillation of a Single Ultrasound Microbubble Attached on a Wall
Y. Liu[1,2] and B. Yuan[1,2]
[1]*The University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas at Arlington and The University of Texas Southwestern Medical Center at Dall, Dallas, TX*

P-Fri-A-90
Man-Machine Interface for Radiology Reporting: Identification of Key Sources of Variability
T. Ganapathi[1,2], R. L. Bassett[2], N. Garg[2], D. J. Vining[2], and M. K. Markey[1,2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

P-Fri-A-91
A Combined Optical Tweezers and SLIM Platform for Thickness Measurements of Cell Membrane Tethers at High Resolution
M. Sarshar[1] and B. Anvari[1]
[1]*University of California, Riverside, Riverside, CA*

P-Fri-A-92
High Speed Second Harmonic Holographic 3D Imaging at >1000 Volumes Per Second
D. Smith[1], D. Winters[1], and R. Bartels[1]
[1]*Colorado State University, Fort Collins, CO*

P-Fri-A-93
Photoacoustic Microscopy Based Multimodal Imaging System
H. F. Zhang[1], S. Jiao[2], W. Song[1], and Q. Wei[1]
[1]*Northwestern University, Evanston, IL,* [2]*The University of Southern California, Los Angeles, CA*

P-Fri-A-94
A Novel Micro Computed Tomography Image-Based Modeling Protocol for the Assessment of Native Aortic Valve Hemodynamics
T. Haller[1], S. Chandra[1], and P. Sucosky[1]
[1]*University of Notre Dame, South Bend, IN*

P-Fri-A-95
In Vivo Multi-photon Imaging of Ovarian Cancer in a Mouse Model
J. Watson[1], S. Marion[1], P. F. Rice[1], D. Bentley[1], D. Besselsen[1], U. Utzinger[1], P. Hoyer[1], and J. K. Barton[1]
[1]*University of Arizona, Tucson, AZ*

POSTER SESSION **FriA**

P = Poster Session
OP = Oral Presentation

P-Fri-A-96
Development of a Low Cost Imaging System for Non-Invasive Determination of Nanoparticle Concentrations
K. Janiec[1], E. Woodard[2], and P. O'Neal[2]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Louisiana Tech University, Ruston, LA

P-Fri-A-97
Imaging of Murine Ischemia by Photoacoustic Microscopy
S. Ye[1], J. Yang[1], J. Xi[1], and C. Li[1]
[1]Peking University, Beijing, China, People's Republic of

P-Fri-A-98
Tracking Action Potentials in Nerve Bundles Using Birefringence
A. H. Badreddine[1]
[1]Boston University, Allston, MA

P-Fri-A-99
Raman Spectroscopy Combined with an Original Data Mining Framework for Classifying and Characterizing Cancerous and Non-Cancerous Breast Cell Lines
M. B. Fenn[1], V. Pappu[1], and P. M. Pardalos[1]
[1]University of Florida, Gainesville, FL

P-Fri-A-100
Expanding the Applicability of Multiphoton Fluorescence Recovery After Photobleaching by Incorporating Shear Stress in a Capillary (Laminar) Flow Model
J. Lapeira-Soto[1], S. W. Perry[1], and E. B. Brown III[1]
[1]University of Rochester, Rochester, NY

P-Fri-A-101
Collateral Artery Blood Flow Measurements Made in the Mouse Ischemic Hindlimb Model Using Deep Laser Speckle Imaging
J. Meisner[1], J. Niu[1], S. Sumer[1], and R. J. Price[1]
[1]University of Virginia, Charlottesville, VA

P-Fri-A-102
Photoacoustic Microscopy with a Multi-Color Laser Source Based on Stimulated Raman Scattering and Four-Wave Mixing
A. Loya[1], J. P. Dumas[1], D. Koeplinger[2], and T. Buma[1]
[1]Union College, Schenectady, NY, [2]University of Delaware, Newark, DE

P-Fri-A-103
Novel System for Conducting High Quality *In Vivo* Laser Speckle Contrast Imaging in the Eye
D. P. Cardenas[1,2], A. Ponticorvo[1,3], and T. Duong[1,3]
[1]University of Texas at San Antonio Health Science Center, San Antonio, TX, [2]University of Texas San Antonio, San Antonio, [3]Research Imaging Institute, San Antonio, TX

P-Fri-A-104
Interactive Acquisition for High Resolution Mass Spectrometric Imaging
M. Thomas[1], B. Heath[1], I. Lanekoff[1], J. Laskin[1], D. Li[1], E. Liu[1], K. Hui[1], V. Lei[1], A. Kuprat[1], K. Kleese van Dam[1], and J. Carson[1]
[1]Pacific Northwest National Laboratory, Richland, WA

P-Fri-A-105
A Comparative Atomic Force Microscope Based Study of Fibroblast Cells Using Hydrogel Substrates
D. D. Sharma[1], K. A. Azeemuddin[1], M. Rossi[1], and S. K. Sinha[1]
[1]University of New Haven, West Haven, CT

P-Fri-A-106
^{23}Na MRI Detection of Cellular Responses to Osmotic Perturbation and Cell Viability
J. J. Walsh[1,2] and S. C. Grant[1,2]
[1]The National High Magnetic Field Laboratory, Tallahassee, FL, [2]Chemical & Biomedical Engineering, The Florida State University, Tallahassee, FL

Track: Biomedical Imaging and Optics

Biomedical Imaging & Optics - Undergraduate

P-Fri-A-107
Hyper-Spectral and ICG Encapsulated Microbubble Fluorescence Imaging for Guided Biliary Surgery
K. Mitra[1], J. Melvin[1], S. Chang[1,2], K. J. Park[1], A. Yilmaz[1], S. Melvin[1], and R. Xu[1]
[1]Ohio State University, Columbus, OH, [2]Chongqing Medical University, Chongqing, China, People's Republic of

P-Fri-A-108
Impact of Signal Processing Methods on Time-of-Flight Shear Wave Speed Estimation
J. Wang[1], N. Rouze[1], M. Palmeri[1], and K. Nightingale[1]
[1]Duke University, Durham, NC

P-Fri-A-109
Characterizing Brain Micromotion Using Diagnostic Ultrasound
V. F. Botteicher[1], J. Hecker[1], and S. Sikdar[1]
[1]George Mason University, Fairfax, VA

P-Fri-A-110
Closed-Loop Control Imaging System for a Stainless Steel MEMS Micromirror Based Confocal Hyperspectral Microscope
N. Triesault[1], Y. Wang[1], D. Gokdel[1], and X. Zhang[1]
[1]The University of Texas at Austin, Austin, TX

P-Fri-A-111
Pharmacokinetics of Near Infrared Fluorescent Contrast Agent for *In Vivo* Breast Cancer Detection
N. A. Mitchell[1], K. Jung[1], T. Yung[1], T. Baran[1], S. Mitra[1,2], K. S. Madden[1,2], E. B. Brown[1], T. Foster[1,2], and R. Choe[1]
[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

P-Fri-A-112
Characterization of *In Vivo* Blood Flow in Human Breast Tumors with Diffuse Correlation Spectroscopy
P. M. Carlile[1], K. W. Jung[1], T. Durduran[2], J. M. Giammarco[3], M. A. Rosen[4], M. D. Schnall[4], B. Czerniecki[4], J. Tchou[4], A. DeMichele[4], C. Mies[4], M. Feldman[4], A. G. Yodh[4], and R. Choe[1]
[1]University of Rochester, Rochester, NY, [2]Institut de Ciencies Fotoniques, Barcelona, Spain, [3]Eastern University, St. Davids, PA, [4]University of Pennsylvania, Philadelphia, PA

P-Fri-A-113
Phantom Models and Tools for Ventricular Fibrillation Studies Using Magnetic Resonance Imaging
K. Magtibay[1]
[1]Ryerson University, Toronto, ON, Canada

P-Fri-A-114
Mass Spectrometry Analysis of Traumatic Brain Injury
C. Crowley[1], B. Rooney[1], R. Bennett[1], F. Fernandez[1], and M. LaPlaca[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-A-115
Assessing the Effects of Ischemia/Reperfusion on Myocardial Structure and Function in Rats
X. Li[1], C. L. Desjardins[2], P. Bhat[3], J. M. Berthiaume[2], T. A. McElfresh[2], X. Chen[2], M. P. Chandler[2], and X. Yu[1,4]
[1]Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, [2]Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH, [3]Heart and Vascular Research Center, Metro-Health Campus, Case Western Reserve University, Cleveland, OH, [4]Case Center for Imaging Research, Case Western Reserve University, Cleveland, OH

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-116
Characterizing Collagen Fiber Angles in Mouse Aortas Using Second-Harmonic Generation Microscopy
S. S. Roach[1], M. A. Sutton[1], and S. M. Lessner[1]
[1]*University of South Carolina, Columbia, SC*

P-Fri-A-117
Development of a Quantitative Metric to Evaluate the Efficacy of Antiangiogenic Therapies
A. E. Blatt[1,2], B. Q. Spring[1], A. Palanisami[1], Z. Zheng[1], and T. Hasan[1]
[1]*Harvard Medical School, Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, MA,* [2]*Health Sciences & Technology, Harvard-MIT, Cambridge, MA*

P-Fri-A-118
The Use of Micro CT to Establish a Volumetric Reference Standard in a Thoracic Phantom Study
M. Hagen[1], M. Gavrielides[2], and Q. Li[2]
[1]*University of Maryland, College Park, MD,* [2]*Food and Drug Administration, Silver Spring, MD*

P-Fri-A-119
Quality of Lamellar Cuts in the Cornea Made Using a Femtosecond Laser and Microkeratome
M. A. Lorenzo[1], J. Chow[2], S. Yoo[2], and N. Ziebarth[1]
[1]*University of Miami, Coral Gables, FL,* [2]*Bascom Palmer Eye Institute, Miami, FL*

POSTER SESSION **FriA**

P-Fri-A-120
Automated Multi-Dimensional Microscopy for Biomedical Imaging
H. M. Skelton[1], T. Kassis[1], and J. B. Dixon[1]
[1]*Georgia Tech, Atlanta, GA*

P-Fri-A-121
Measuring Performance of Different Compression Algorithms for Fourier-Domain OCT Data
N. J. Su[1], K. Lurie[1], and A. Ellerbee[1]
[1]*Stanford University, Stanford, CA*

P-Fri-A-122
NMR Analysis of Age-Related Bone Properties
K. R. Findley[1], M-K. Manhard[1], S. Uppuganti[1], J. Nyman[1], and M. Does[1]
[1]*Vanderbilt University, Nashville, TN*

P-Fri-A-123
Optimization of Cervical Cancer Radiation Therapy through Functional Bone Marrow Sparing
P. J. Loury[1], J. Pritz[1], Y. Liang[1,2], and L. K. Mell[1]
[1]*University of California San Diego, La Jolla, CA,* [2]*West Penn Allegheny Health System, Pittsburgh, PA*

P-Fri-A-124
Postmortem MR Volumetry of the Brain in Elderly Persons With and Without Diabetes
A. A. Eshein[1], A. Kotrotsou[2], Z. Arvanitakis[3], and K. Arfanakis[2,3]
[1]*University of Missouri, Columbia, MO,* [2]*Illinois Institute of Technology, Chicago, IL,* [3]*Rush University Medical Center, Chicago, IL*

P-Fri-A-125
Monitoring the Response of Metastasis to Therapy Using *In Vivo* Imaging
E. Tran[1], J. Pansky[1], E. Doolittle[1], P. Vicente[1], A. Mayer[1], A. Abramowski[1], P. M. Peiris[1], R. Toy[1], R. A. Keri[1], D. Wilson[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Fri-A-126
Pathological Imaging Quality Control: Biopsy Segment Imaging versus Whole Tissue Slide Imaging
A. Meyer[1], T. H. Stokes[2], S. Kothari[3], and M. D. Wang[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Emory University & Georgia Tech, Atlanta, GA,* [3]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-A-127
Medical Equipment Breakdown Survey – Weil Bugando Referral Hospital, Tanzania
M. Kofoed[1], K. Keith[1], J. Nicholas[2], D. Dean[1], and J. DesJardins[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P-Fri-A-128
Semi-automated Segmentation of Branching Patterns From Optical Projection Tomography Images of the Bronchial Tree
T. Shah[1], X. Wu[2], J. Chen[3], I. Kakadiaris[2], S. Shah[2], and F. A. Merchant[2]
[1]*Carnegie Mellon University, Pittsburg, PA,* [2]*University of Houston, Houston, TX,* [3]*The University of Texas MD Anderson Cancer Center, Houston, TX*

P-Fri-A-129
Assessment of Medical Equipment Failures in Mbeya, Tanzania
T. Youngman[1], R. M. Halsey[1], M. Russell[1], M. Toney[1], J. Nicholas[2], J. DesJardins[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P-Fri-A-130
Wireless Doppler Ultrasound Instrument for Quantifying Muscle Kinematics
A. S. Gunda[1], J. J. Esquivel[1], S. Mohammed[1], B. Wooley[1], and S. Sikdar[1]
[1]*George Mason University, Fairfax, VA*

P-Fri-A-131
Analysis and Classification of Individual Digit Movements in Ultrasound Images
E. Eastlake[1], J. Devanathan[1], A. Shin[1], H. Rangwala[1], and S. Sikdar[1]
[1]*George Mason University, Fairfax, VA*

P-Fri-A-132
Custom Image Analysis Tool for Quantifying Aortic Wall Architecture From Multiphoton Microscopy
R. G. Koch[1], A. Tsamis[1], A. D'Amore[1,2], W. R. Wagner[1], and D. A. Vorp[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Fondazione RiMED, Palermo, Italy*

P-Fri-A-133
Development of a Novel Technique to Three-Dimensionally Reconstruct a Mouse Model of Aortopathy
K. E. Maddy[1,2], A. Evans[1], L. Junor[1], S. Biechler[1], and R. Goodwin[1]
[1]*The University of South Carolina, School of Medicine, Columbia, SC,* [2]*The University of Arizona, Tucson, AZ*

P-Fri-A-134
Ultrasound Echotexture Analysis of the Tibialis Anterior Muscle during Isometric Contraction in Children with Cerebral Palsy and Healthy Controls
B. Dougherty[1,2], A. Eranki[1], L. Curatalo[3], D. Damiano[3], and S. Sikdar[1]
[1]*George Mason University, Fairfax, VA,* [2]*University of Virginia, Charlottesville, VA,* [3]*National Institutes of Health, Bethesda, MD*

P-Fri-A-135
Comparison of Oxygen Kinetics Using Near infrared Spectroscopy in the Upper Trapezius in Normal Subjects and Patients with Chronic Neck Pain and Myofascial Trigger Points
M. M. Zaazhoa[1], A. Eranki[1], L. Gerber[1], and S. Sikdar[1]
[1]*George Mason University, Fairfax, VA*

P-Fri-A-136
Speckle Reduction Using a Scanning Source with an Integrating Sphere
A. M. Marn[1], A. Reddington[2], and M. S. Unlu[2]
[1]*Boston University, Smithfield, RI,* [2]*Boston University, Boston, MA*

P-Fri-A-137
Oblique-Illumination Interferometric Reflectance Imaging Sensor for Small Molecule Detection
A. Gokoglu[1], A. Reddington[2], and S. Unlu[2]
[1]*Boston University, Brookline, MA,* [2]*Boston University, Boston, MA*

P = Poster Session
OP = Oral Presentation

Track: Cardiovascular and Respiratory Engineering

Acute Lung Injury

P-Fri-A-138
Lung Uptake of 99mTc- Hexamethylpropyleneamine Oxime (99mTc-HMPAO) in Two Unique Rat Models of Pulmonary Oxygen Toxicity
S. Audi[1], D. Roerig[2], S. Haworth[3], and A. Clough[1]
[1]*Marquette University, Milwaukee, WI,* [2]*Zablocki VA Medical Center, Milwaukee, WI,* [3]*Medical College of Wisconsin, Milwaukee, WI*

P-Fri-A-139
Oxidative Stress Pathways in Lung Tissue Slices under Cyclic Stretch Conditions
N. Davidovich[1], G. G. Lawrence[1], J. Huang[1], P. Chhour[1], and S. S. Margulies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Fri-A-140
Dilute Acidic Sweep Gas with Carbonic Anhydrase on Hollow Fibers Synergistically Accelerates CO2 Removal from Blood
D. Arazawa[1], J. Kimmel[1], and W. Federspiel[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-A-141
Aqueous-Two Phase-Mediated Wound Assay of Epithelial Cells Cultured at Air-Liquid Interface
J. B. White[1] and S. Takayama[1,2]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Ulsan National Institute of Science & Technology, Ulsan, Korea, Republic of*

P-Fri-A-142
A Fractional-Order Quasilinear Viscoelastic Model of Lung Parenchyma for Physiologic and Blast Loading
B. R. Bigler[1], C. R. Bass[1], and M. B. Panzer[1]
[1]*Duke Univsersity, Durham, NC*

P-Fri-A-143
Effect of Shear Stress on MicroRNA Expression in Primary Human Small Airway Epithelial Cells
K. Nelson[1], M. Crawford[2], P. Nana-Sinkam[2], and S. Ghadiali[2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Wexner Medical Center at the Ohio State University, Columbus, OH*

P-Fri-A-144
Pulmonary Airway Reopening Utilizing Pulsatile Flow Waveforms
H. W. Glindmeyer IV[1] and D. P. Gaver III[1]
[1]*Tulane University, New Orleans, LA*

P-Fri-A-145
Microscale Fluid Dynamic Measurement of Interfacial Flows and Transport During the Opening of a Pulmonary Bifurcation
E. Yamaguchi[1], M. J. Giannetti[1], M. J. Van Houten[1], O. Forouzan[1], S. S. Shevkoplyas[1], and D. P. Gaver[1]
[1]*Tulane University, New Orleans, LA*

P-Fri-A-146
Collateral Ventilation and its Impact on Flow and Pressure Distribution in the Canine Lung: A Simulation Study
R. Amini[1,2] and D. W. Kaczka[1,2]
[1]*Harvard Medical School, Boston, MA,* [2]*Beth Israel Deaconess Medical Center, Boston, MA*

P-Fri-A-147
Development of a LabVIEW-Based Data Acquisition System for Evaluation of Respiratory Mechanics
J. Herrmann[1], F. H. Zong[1], and D. W. Kaczka[2,3]
[1]*Boston University, Boston, MA,* [2]*Harvard Medical School, Boston, MA,* [3]*Beth Israel Deaconess Medical Center, Boston, MA*

P-Fri-A-148
Respiratory Elastance After Deep Inspiration Reflect Surfactant Function in Mice Model of Acute Lung Injury
A. Takahashi[1], A. Majumdar[1], E. Bartolák-Suki[1], and B. Suki[1]
[1]*Boston University, Boston, MA*

P-Fri-A-149
Interaction of Ventilation Mode and Positive End-Expiratory Pressure in Mice with Acute Lung Injury
A. Thammanomai[1], H. Hamakawa[1], E. Bartolak-Suki[1], and B. Suki[1]
[1]*Boston University, Boston, MA*

P-Fri-A-150
Using Image Registration to Quantify the Location of Pulmonary Contusion in Motor Vehicle Crash Occupants
K. A. Danelson[1], A. A. Weaver[1], and J. D. Stitzel[1]
[1]*Wake Forest University, Winston Salem, NC*

Track: Cardiovascular and Respiratory Engineering

Thrombosis and Hemostasis

P-Fri-A-151
Thrombus Growth and Embolism on Tissue Factor-Bearing Collagen Surfaces Under Flow: Role of Thrombin With and Without Fibrin.
T. V. Colace[1], R. Muthard[1], and S. L. Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Fri-A-152
Drug Delivery Strategies Employing Angioplasty Balloons For Treatment Of Atherosclerosis
L-C. Su[1], R. Iyer[1], H. Xu[2], S. Banerjee[2], J. Yang[1], and K. Nguyen[1]
[1]*UT Arlington, Arlington, TX,* [2]*UT Southwestern Medical Center, Dallas, TX*

P-Fri-A-153
Thrombin Generation and Fibrin Formation Under Flow Flow on Biomimetic Tissue Factor Rich Surfaces
A. A. Onasoga[1] and K. B. Neeves[1,2]
[1]*Colorado School of Mines, Golden, CO,* [2]*University of Colorado Denver, Aurora, CO*

P-Fri-A-154
Affinity and Kinetics of Von Willebrand Factor (VWF) Propeptide Binding to Mature VWF in Blood
S. R. Madabhushi[1], C. Shang[1], K. M. Dayananada[1], K. Rittenhouse-Olson[1], M. Murphy[2], T. E. Ryan[2], R. R. Montgomery[3], and S. Neelamegham[1]
[1]*State University of New York at Buffalo, Buffalo, NY,* [2]*Reichert Inc., Buffalo, NY,* [3]*Blood Center of Wisconsin, Milwaukee, WI*

P-Fri-A-155
The Role of Different Sub-units of VWF on Shear-Enhanced Platelet Adhesion
O. Yakovenko[1], A. Tu[1], K. Kinoshita[2], and W. Thomas[1]
[1]*University of Washington, Seattle, WA,* [2]*University of British Columbia, Vancouver, BC, Canada*

P-Fri-A-156
Fibrin-specific Microgels for Hemostatic Applications
A. C. Brown[1], S. Sathananthan[1], L. Gartner[1], S. E. Stabenfeldt[2], L. A. Lyon[1], and T. H. Barker[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Arizona State University, Tempe, AZ*

P-Fri-A-157
Magnetic Resonance Imaging of a Formed Thrombus for CFD Simulations
J. Taylor[1], K. Witmer[1], B. Craven[1], R. Meyer[1], T. Neuberger[1], S. Deutsch[1], and K. B. Manning[1]
[1]*The Pennsylvania State University, University Park, PA*

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-158
The Effect of Physiologically Relevant Dynamic Shear Stress on Endothelial Cell ERK1/2 Activation
F. Rouf[1], D. A. Rubenstein[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

P-Fri-A-159
Blockade of Shear Induced Thrombosis With Abciximab
A. N. Para[1], D. Roberts[2], and D. Ku[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Fri-A-160
Computational Modeling of Flow, Transport and Adhesion of Microparticles in Stenotic Flow Chambers
C. L. Hall[1] and M. Calt[1]
[1]*The College of New Jersey, Ewing, NJ*

P-Fri-A-161
Regulation of Platelet-Collagen Interactions by the Collagen Receptor DDR1
J. Tonniges[1], S. Roy[1], S. Chen[1], D. Yeung[1], E. Calomeni[1], and G. Agarwal[1]
[1]*The Ohio State University, Columbus, OH*

P-Fri-A-162
Spatial Regulation of Platelet Aggregation Under Flow
R. Tran[1,2], B. Ahn[1,2], Y. Sakurai[1,2], G. A. Barabino[1,2], and W. A. Lam[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA*

POSTER SESSION **FriA**

P-Fri-A-163
Electrical Activation of Clot Formation and Implications for Clinical Hemostasis
E. L. Hardy[1,2], Y. Sakurai[1,2], B. Chiang[1], and W. A. Lam[1,2]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA*

Track: Cardiovascular and Respiratory Engineering

Vascular and Lung Mechanobiology

P-Fri-A-164
Effects of Anti-Hypertensive Therapies on Arterial Compliance and Elastin/Collagen Amounts in Wildtype (WT) and Elastin Haploinsufficient (Eln+/-) Mice
V. Le[1], L. Bennett[1], and J. E. Wagenseil[1]
[1]*Saint Louis University, St. Louis, MO*

P-Fri-A-165
Simvastatin Alters Substrate Stiffness-Dependent Endothelial Cell Traction Forces, Cell-Cell Junctions, and Permeability
C. J. Faber[1], J. Huynh[1], and C. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-A-166
Mechanical Properties of Arterial Smooth Muscle Cells with Reduced Elastin Expression Measured by Atomic Force Microscopy
G. Espinosa[1], L. Bennett[1], W. Gardner[1], and J. Wagenseil[1]
[1]*Saint Louis University, Saint Louis, MO*

P-Fri-A-167
Elastance Derived From Airway Reactance is a Better Indicator of Peripheral Airway Constriction in Asthma Than Resistance
S. A. Bhatawadekar[1], D. Leary[1], P. Hernandez[2], C. McParland[2], S. Fulton[2], and G. N. Maksym[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*QE-II Health Sciences Centre, Halifax, NS, Canada*

P-Fri-A-168
Biomechanics of Embryonic Airway Peristalsis: Case of Open End
K. Bokka Srinivasa Rao[1] and S. R. Lubkin[1]
[1]*North Carolina State University, Raleigh, NC*

P-Fri-A-169
Variation of Respiratory Resistance Suggests Optimization of Airway Caliber
A. T. Johnson[1], S. Jones[2], and J. Vossoughi[3]
[1]*University of Maryland, College Park, MD,* [2]*Univ of Penn, Philadelphia, PA,* [3]*Univ of MD, College Park, MD*

P-Fri-A-170
Geometrical and Structural Aortic Variations Confer "Optimal Mechanical Operation"
A. Rachev[1] and T. Shazly[1]
[1]*University of South Carolina, Columbia, SC*

P-Fri-A-171
Cardiac Function and Arterial Mechanics in Young Mice Lacking Fibulin-5
V. P. Le[1], H. Yanagisawa[2], and J. E. Wagenseil[1]
[1]*Saint Louis University, Saint Louis, MO,* [2]*University of Texas, Southwestern Medical Center, Dallas, TX*

P-Fri-A-172
Comparison of Passive Mechanical Behavior of Porcine Renal Artery and its First Branch
M. G. Gabr[1], T. Shazly[1], A. Rachev[1], M. Sutton[1], and S. M. Lessner[2]
[1]*University of South Carolina, Columbia, SC,* [2]*University of South Carolina School of Medicine, Columbia, SC*

P-Fri-A-173
A Mathematical Model to Quantify the Effect of Elasticity on the Shape of an Arterial Pulse
E. Ahmadi[1] and J. M. Hyman[1]
[1]*Tulane University, New Orleans, LA*

P-Fri-A-174
Quantification of Changes in Elastin and Collagen Amount and Organization in Postnatal Development of the Mouse Aorta
S. Ficker[1], V. P. Le[1], and J. E. Wagenseil[1]
[1]*Saint Louis University, St. Louis, MO*

P-Fri-A-175
Heterogeneity in Microscopic Deformation of Aortic Wall During Circumferential Stretch
T. Matsumoto[1], Y. Uno[1], and K. Nagayama[1]
[1]*Nagoya Institute of Technology, Nagoya, Japan*

P-Fri-A-176
5-HT2B Antagonism Arrests Non-Canonical TGF-β1-Induced Myofibroblast Differentiation
J. D. Hutcheson[1], L. M. Ryzhova[1], and W. D. Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

P-Fri-A-177
Cyclic Strain Increases Osteopontin Expression in Vascular Smooth Muscle in a Hydrogen Peroxide Dependent Manner
C. Caesar[1,2], A. Lyle[3], and W. R. Taylor[2,4]
[1]*Georgia institute of technology, Atlanta, GA,* [2]*Emory university, Atlanta, GA,* [3]*Emory University, Atlanta, GA,* [4]*Veterans Affairs Medical Center, Atlanta, GA*

P-Fri-A-178
Variable Stretch Patterns Maintain Mitochondrial Network Formation and ATP Supply in Vascular Smooth Muscle Cells
N. Martinez[1], H. Parameswaran[1], A. Majumdar[1], E. Bartolak-Suki[1], and B. Suki[1]
[1]*Boston University, Boston, MA*

P = Poster Session
OP = Oral Presentation

P-Fri-A-179
The Role of HIV Proteins and the Antiretroviral AZT on Protease Activity in Murine Arteries
L. Hansen[1], I. Parker[1], M. Platt[1], R. Sutliff[2,3], and R. Gleason[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Atlanta VAMC, Atlanta, GA

P-Fri-A-180
Regulation of Proliferation of Lung Fibroblasts by Stretch from Several Species
E. Bartolak-Suki[1], N. Martinez[1], and B. Suki[1]
[1]Boston University, Boston, MA

P-Fri-A-181
Shear Stress Modulates VCAM-1 Expression in Response to Dietary Lipids via IRF-1
J. S. DeVerse[1], C. Sun[1], Y. Wang[1], S. Simon[1], and A. Passerini[1]
[1]University of California-Davis, Davis, CA

Track: Cellular and Molecular Bioengineering

Cell Mechanics

P-Fri-A-182
Modulation of Nuclear Shape by Substrate Rigidity
D. Lovett[1], N. Shekhar[1], J. Nickerson[2], K. Roux[3], and T. Lele[1]
[1]University of Florida, Gainesville, FL, [2]University of Massachusetts Medical School, Worcester, MA, [3]University of South Dakota, Sioux Falls, SD

P-Fri-A-183
Study of Cell Spreading Response to Substrate Curvatures Using Micro Glass Embedded Gels
S. J. Lee[1] and S. Yang[1]
[1]Florida Institute of Technology, Melbourne, FL

P-Fri-A-184
A Micropatterning Approach to Investigate the Role of Cell Shape on Macrophage Polarization
Y. F. Ni[1], T. Wang[1], and W. F. Liu[1]
[1]University of California, Irvine, Irvine, CA

P-Fri-A-185
The Frequency-Invariant Active Force Generation by the Cochlear Outer Hair Cell
A. Spector[1], S. Roy[1], and W. Brownell[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Baylor College of Medicine, Houston, TX

P-Fri-A-186
Mechanical Role of Nesprin-1 in Nuclear Shape in Vascular Endothelial Cells Subjected to Stretching
N. Sakamoto[1,2], T. Anno[1], and M. Sato[1]
[1]Tohoku University, Sendai, Japan, [2]Kawasaki University of Medical Welfare, Okayama, Japan

P-Fri-A-187
Mechanical Forces Generated by Mesenchymal Stem Cells Undergoing Differentiation on Hard and Soft Substrates
K. M. McAndrews[1], N. D. Quach[1], D. J. McGrail[1], and M. R. Dawson[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta

P-Fri-A-188
Cytoskeletal Plasticity Assessed by Acute Shear
A. Fuhrmann[1] and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA

P-Fri-A-189
2-D Cell Migration on the 3-D Curved Surfaces: Experiment and Simulation
M-C. Kim[1], C. Kim[2], L. Wood[2], D. Neal[2], R. Kamm[1,2], and H. Asada[1,2]
[1]Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-A-190
Fine Control of Extracellular Matrix Microenvironmental Cues for Tissue Regeneration
M. Markowski[1,2], K. Clause[1], and T. H. Barker[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Fri-A-191
The Mechanics of an Engineered 3D Microtissue Morphogenesis Model
R. Zhao[1], T. Boudou[2], C. S. Chen[2], and D. H. Reich[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Pennsylvania, Philadelphia, PA

P-Fri-A-192
CANCELLED BY AUTHOR

P-Fri-A-193
Assessment of Mechanically Flow Adapted Endothelial Monolayers for *In Vitro* Simulations
J. L. Fischer[1], R. E. Eitel[1], C. A. Trinkle[1], and K. W. Anderson[1]
[1]University of Kentucky, Lexington, KY

P-Fri-A-194
Lamin Mutations That Cause Muscle Defects Disturb Nuclear Mechanics and Nucleo-Cytoskeletal Coupling
M. Zwerger[1], D. E. Jaalouk[2], M. Lombardi[3], P. Isermann[4], M. Mauermann[5], H. Herrmann[6], L. L. Wallrath[7], and J. Lammerding[4]
[1]University of Zurich, Zürich, Switzerland, [2]American University of Beirut, Beirut, Lebanon, [3]Brigham and Women's Hospital, Boston, MA, [4]Cornell University, Ithaca, NY, [5]German Cancer Research Institute, Heidelberg, Germany, [6]German Cancer Research Center (DKFZ), Heidelberg, Germany, [7]University of Iowa, Iowa City, IA

P-Fri-A-195
Cells in 3D Show Regimes of Power Law Rheology
Y. Sharma[1], E. J. Fong[1], and M. H. Zaman[1]
[1]Boston University, Boston, MA

P-Fri-A-196
Cellular Mechanosensing in Constrained Floating Collagen Matrices
H. Mohammadi[1], P. A. Janmey[2], and C. A. McCulloch[1]
[1]University of Toronto, Toronto, ON, Canada, [2]University of Pennsylvania, Philadelphia, PA

P-Fri-A-197
The Role of Matrix Metalloproteinases in Regulating Corneal Stromal Cell Migration in 3D Culture
C. Zhou[1] and W. Petroll[1]
[1]University of Texas Southwestern Medical Center, Dallas, TX

P-Fri-A-198
CANCELED BY AUTHOR

P-Fri-A-199
Biomechanical Study Of Erythrocytes Using Microfluidic Osmotic Lysis
Y. Zhan[1], D. N. Loufakis[2], N. Bao[2,3], and C. Lu[2,4]
[1]Purdue University, West Lafayette, IN, [2]Virginia Tech, Blakcsburg, VA, [3]Nantong University, Nantong, China, People's Republic of, [4]Virginia Tech-Wake Forest University, Blakcsburg, VA

P-Fri-A-200
What Does Traction Force Microscopy Measure?
R. Zielinski[1] and S. N. Ghadiali[1,2]
[1]The Ohio State University, Columbus, OH, [2]Dorothy M. Davis Heart and Lung Research Institute, Columbus, OH

P-Fri-A-201
Multiscale Approach to Modeling the Passive Mechanics of Cells in Tissues
V. K. Lai[1], S. P. Lake[1], R. T. Tranquillo[1], and V. H. Barocas[1]
[1]University of Minnesota, Minneapolis, MN

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-202
Rheological Changes of Cardiac Fibroblasts in Response to Mechanical Stretch
M. Shen[1], J. Michaelson[1], and H. Huang[1]
[1]Columbia University, New York, NY

P-Fri-A-203
Effects of Cell-Cell and Cell-Matrix Interactions on Vascular Smooth Muscle Cell Mechanical Properties under *in vivo* Conditions
A. Desai[1], S. Deitch[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Fri-A-204
Characterizing Mechanical Properties of Endothelial Cells Combining AFM and FEM
R. Vargas-Pinto[1] and M. Johnson[1]
[1]Northwestern University, Evanston, IL

P-Fri-A-205
Effects of Substrate Modulus and Thickness on Fibroblast Attachment and Spreading
L. Y. Lin[1], S. J. Lee[1], and S. Yang[1]
[1]Florida Institute of Technology, Melbourne, FL

P-Fri-A-206
Multi-Dimensional Traction Force Microscopy Reveals Rotational Moments About Focal Adhesions
C. K. Choi[1], W. R. Legant[1], L. Shao[2], L. Gao[2], J. S. Miller[1], E. Betzig[2], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Howard Hughes Medical Institute, Janelia Farm Research Campus, Ashburn, VA

P-Fri-A-207
High Resolution AFM Elastography Reveals Microtubule Effects on Sub-Sarcomere Mechanical Heterogeneity in Adult Cardiomyocytes
S. K. Rao[1], T. J. Cashman[1], and K. D. Costa[1]
[1]Mount Sinai School of Medicine, New York, NY

P-Fri-A-208
The PKA pathway in Extracellular Matrix Protein Deposition by Glucose Treated Mesangial Cells
S. J. Jones[1], K. Stratford[1], M. McCullough[1], N. Bhattarai[1], and E. M. Ongeri[1]
[1]North Carolina Agricultural & Technical State University, Greensboro, NC

P-Fri-A-209
Human Mesenchymal Stem Cells Migration on Matrices With Distinct Elasticity Gradient Magnitudes
L. G. Vincent[1], Y. Choi[1], and A. Engler[1]
[1]University of California, San Diego, La Jolla, CA

P-Fri-A-210
Coarse-Grain Molecular Dynamics Simulation of Vesiculation and Diffusion in Defective Erythrocytes
H. Li[1] and G. Lykotrafitis[1]
[1]University of Connecticut, Storrs, CT

Track: Cellular and Molecular Bioengineering

Mechanotransduction and Mechanobiology

P-Fri-A-211
The Antagonistic Actions of Endogenous Interleukin-1β and 15-deoxy-$\Delta^{12,14}$-Prostaglandin J_2 Regulate the Temporal Synthesis of Matrix Metalloproteinase-9 in Sheared Chondrocytes
P. Wang[1], F. Zhu[1], and K. Konstantopoulos[1]
[1]The Johns Hopkins University, Baltimore, MD

P-Fri-A-212
Mechanical Properties of Electrospun Nanofibers Measured by a Novel Micro-Tensile Testing Platform
T. Fee[1] and J. Berry[1]
[1]University of Alabama at Birmingham, Birmingham, AL

P-Fri-A-213
Spatio-Temporal Recovery of the Endothelial Glycocalyx Following Shear Stimulation
K. Bai[1] and W. Wang[1]
[1]Queen Mary, University of London, London, United Kingdom

P-Fri-A-214
Glycated Collagen Alters Basement Membrane Remodeling in Response to Strain Via Decreased MMP Activity
D. S. Figueroa[1] and A. M. Clyne[2]
[1]Drexel University, Philadelphia, [2]Drexel University, Philadelphia, PA

P-Fri-A-215
Cellular Mechanosensing Within a Gradient of Rigidity is Mediated by Stresses and Strains
M. T. Breckenridge[1], J. Fu[2], R. A. Desai[1], M. T. Yang[1], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Michigan, Ann Arbor, MI

P-Fri-A-216
In-situ Measurement of Traction Force at Focal Adhesions During Macroscopic Stretch/Release of Vascular Smooth Muscle Cells: Tensional Homeostasis of Vascular Smooth Muscle Cells
K. Nagayama[1], A. Adachi[1], and T. Matsumoto[1]
[1]Nagoya Institute of Technology, Nagoya, Japan

P-Fri-A-217
Mitochondrial Calcium Changes in Endothelial Cells Exposed to Mechanochemical Stimuli
C. G. Scheitlin[1], C. J. Lloyd[1], R. J. Giedt[1], and B. R. Alevriadou[1]
[1]Dept. of BME and Davis Heart & Lung Research Inst., Dept. of Intern. Med., The Ohio State University, Columbus, OH

P-Fri-A-218
Computational Validation of Uniform Flow Behavior within a Large Scale Parallel Plate Flow Chamber
S. S. Nidadavolu[1] and D. R. Peterson[1]
[1]University of Connecticut Health Center, Farmington, CT

P-Fri-A-219
Early Endothelial Tubulogenic Activity Exhibits Sensitivity to Local Hydrostatic Pressure Levels
H. Y. Shin[1], R. M. Underwood[1], and M. W. Fannon[1]
[1]University of Kentucky, Lexington, KY

P-Fri-A-220
Morphological Changes of Endothelial Cells Under Combined Condition of Fuid Shear Stress and Its Spatial Gradient
M. Sato[1], D. Yoshino[1], N. Sakamoto[2], and E. Inoue[1]
[1]Tohoku University, Sendai, Japan, [2]Kawasaki University of Medical Welfare, Kurashiki, Japan

P-Fri-A-221
Mechanochemical Modulation of Neuronal Growth Cones using Parallel Magnetic Tweezers
D. Kilinc[1], J. J. O'Mahony[1], A. Blasiak[1], and G. U. Lee[1]
[1]University College Dublin, Dublin, Ireland

P-Fri-A-222
ECM Properties Induced Changes in Human Epidermal Keratinocyte
M. Kim[1], M. Noh[2], and J. Shin[3]
[1]KAIST, Daejeon, Korea, Republic of, [2]Ajou University, Suwon-si, Korea, Republic of, [3]KAIST, Daejon, Korea, Republic of

P-Fri-A-223
Massively Parallel Polarization and Analysis of Single Cell Behavior under Magnetic Nanoparticle-mediated Mechanical Tension
P. Tseng[1], J. Judy[1], and D. Di Carlo[1]
[1]University of California, Los Angeles, CA

P = Poster Session
OP = Oral Presentation

P-Fri-A-224
Shear Stress Induced 3D Angionesis in Microfluidic Platform
S. Song[1], J. Hong[1], H. Han[1], S. Ahn[1], and J. H. Shin[1]
[1]*KAIST, Daejeon, Korea, Republic of*

P-Fri-A-225
'Marker of Self', CD47, Modulates Mechanical Forces Imposed by Macrophages During Phagocytosis
N. Sosale[1], T. Rouhi[2], P. Rodriguez[1], D. Discher[1], and R. Lipowsky[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Max Planck Institute of Colloids and Interfaces, Potsdam, Germany*

P-Fri-A-226
A Packed Lipid Structure Surrounding the Transmembrane Domains Impedes Integrin Clustering
M. Mehrbod[1] and M. R. Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA*

P-Fri-A-227
Electric Field Induced 2D and 3D Migration of Breast Cells in a Microfluidic Platform
H. Han[1], S. Song[1], and J. H. Shin[1]
[1]*Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of*

P-Fri-A-228
Fluid Flow Suppresses Stem Cell Adipogenesis in a PPARγ Dependent Manner
D. E. Menter[1] and J. Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

P-Fri-A-229
A Time-Course Analysis of ATP Release by Bladder Urothelial Cells Under Hydrostatic Pressure
S. M. Olsen[1], L. Eskew[1], and J. Nagatomi[1]
[1]*Clemson University, Clemson, SC*

P-Fri-A-230
Stretch-Induced ERK Activation Downregulates BMP4 Induction of MSC Adipogenesis
J. Lee[1], L. Ha[1], and J. Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

P-Fri-A-231
Thy-1 Expression Confers Lung Fibroblast Mechanosensitivity to Substrate Stiffness
V. F. Fiore[1,2], P. W. Strane[1], and T. H. Barker[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Fri-A-232
Cytoskeletal Stress Dynamics and Cellular Adaptation under Chronic Fluid Shear Stress
D. Verma[1], F. Meng[1], and S. Z. Hua[1,2]
[1]*State University of New York at Buffalo, Buffalo, NY,* [2]*State University of New York at Buffalo, Buffalo*

P-Fri-A-233
Down-modulation of Inter-cellular Tension Precedes Change in Cell-Cell Cohesion
V. Maruthamuthu[1] and M. L. Gardel[1]
[1]*University of Chicago, Chicago, IL*

P-Fri-A-234
Characterizing the Mechanical Behavior of Cancer Cells by Tracking Displacement of Gold Nanorods
K. Garrott[1], S. C. Baxter[1], and E. C. Goldsmith[1]
[1]*University of South Carolina, Columbia, SC*

P-Fri-A-235
Effect of Shear Stress and Substrate on Endothelial DAPK Expression, Caspase Activity, and Apoptosis
K. Rennier[1] and J. Ji[1,2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University Purdue University Indianapolis, Indianapolis, IN*

P-Fri-A-236
Substratum Compliance and Dexamethasone Treatment Modulate Extracellular Matrix Related Gene Expression in Human Trabecular Meshwork Cells
J. T. Morgan[1], V. K. Raghunathan[1], J. A. Wood[1], M. L. Hughbanks[1], I. Ly[1], C. J. Murphy[1], and P. Russell[1]
[1]*University of California, Davis, Davis, CA*

P-Fri-A-237
Pre-treatment with Shear Stress Influences Endothelial Behavior in Wound Recovery
M. F. Mavi[1] and J. Ji[1]
[1]*Indiana University Purdue University, Indianapolis, IN*

P-Fri-A-238
Intracellular Calcium Concentration Increase in Urothelial Cells due to Hydrostatic Pressure Stimulus
K. D. Champaigne[1] and J. Nagatomi[1]
[1]*Clemson University, Clemson, SC*

P-Fri-A-239
Polarized Rac- and Rho-Mediated Actin Structural Dynamics in Response to Cyclic Uniaxial Stretch
L. Huang[1] and B. P. Helmke[1]
[1]*University of Virginia, Charlottesville, VA*

P-Fri-A-240
Roles of Cyclic Stretch and Actin Filaments in bFGF-mediated Sprouting Angiogenesis
J. R. Wilkins[1], C. C. Gibson[1], D. B. Pike[1], and Y-T. E. Shiu[1]
[1]*University of Utah, Salt Lake City, UT*

P-Fri-A-241
Shear Stress Attenuates Apoptosis Due to TNFα, Oxidative Stress, and Serum Depletion via DAPK
K. Rennier[1] and J. Ji[1,2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University Purdue University Indianapolis, Indianapolis, IN*

P-Fri-A-242
Cadherin-integrin Cross Talk in Mechanotransduction
D. Leckband[1], H. Tabdili[1], I. Muhamed[1], and N. Wang[1]
[1]*University of Illinois, Urbana, IL*

P-Fri-A-243
Modeling Smooth Muscle Alpha Actin Expression in Fibroblasts: Regulatory Role of FAK and ERK ½
A. K. Schroer[1], L. M. Ryzhova[1], and W. D. Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

P-Fri-A-244
T Lymphocytes Cytoskeletal Architecture in Synaptic Rigidity
E. Judokusumo[1], S. De Leo[1], and L. C. Kam[1]
[1]*Columbia University in the City of New York, New York, NY*

P-Fri-A-245
Rapid Pulsatile Shear Stress Increases Mitochondrial DNA Damage and Redox State
N. Jen[1] and T. Hsiai[2]
[1]*University of Southern California, Los Angeles, CA,* [2]*University of Southern California, Los ANgeles*

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

Track: Nano and Micro Technologies

Nanomedicine: Contrast Agents, Delivery Systems, and Therapeutics

P-Fri-A-246
Surface-Modified Nanoparticles Interact with Cancer Cell Lipids to Improve Tumor Targeting and Gene Therapy
B. Sharma[1], C. Peetla[1], and V. Labhasetwar[1]
[1]Cleveland Clinic, Cleveland, OH

P-Fri-A-247
Synthesis of GdS:Eu3+ Nanoparticles as a Dual-Mode Imaging Agent for T1-weighted MR and Photoluminescence Imaging
J. Park[1], J. Jung[1], M. Kim[1], and S. Lee[1]
[1]Korea Research Institute of Chemical Technology, Daejeon, Korea, Republic of

P-Fri-A-248
Magnetic Nanoparticles with Hyperthermia Triggered Controlled Drug Release for Cancer Treatment
C. Quinto[1] and G. Bao[1]
[1]Georgia Institute of Technology, Atlanta, GA

POSTER SESSION **FriA**

P-Fri-A-249
'Click' Glycoconjugate Nanoparticles for Dual-Mode Fluorescence/MRI Imaging of siRNA Delivery to Pathologically-Activated Inflammatory Cells *In Vivo*
S. S. Yu[1], N. C. Bloodworth[2], W. J. Barham[3], F. E. Yull[3], C. L. Duvall[1], and T. D. Giorgio[1]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, [3]Vanderbilt-Ingram Cancer Center, Nashville, TN

P-Fri-A-250
Cellular Delivery of Quantum Dots by Electroporation
C. Sun[1], T. Geng[2], M. Wu[3], and C. Lu[1]
[1]Virginia Tech, Blacksburg, VA, [2]Purdue University, West Lafayette, IN, [3]National University of Singapore, Singapore, Singapore

P-Fri-A-251
Shape Matters: A Comparison of Nano-Discoids and Nano-Cylinders for Intracellular Drug Delivery
R. Agarwal[1], V. Singh[1], P. Jurney[1], L. Shi[1], S. Sreenivasan[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-A-252
Metabolite-Enhanced Efficacy of Magnetic Nanoparticles For Antibiotic-Resistant Biofilms
N. G. Durmus[1], E. Taylor[1], K. M. Kummer[1], and T. J. Webster[1]
[1]Brown University, Providence, RI

P-Fri-A-265
Controlled and Sustained Release for the Prevention of Retinal Degeneration
A. A. Puntel[1] and Z-R. Lu[1]
[1]Case Western Reserve University, Cleveland, OH

P-Fri-A-253
Techniques for Reversible Permeabilization of Live Cells for the Intracellular Delivery of Quantum Dots
K. Medepalli[1], B. W. Alphenaar[1], R. S. Keynton[1], and P. Sethu[1]
[1]University of Louisville, Louisville, KY

P-Fri-A-254
EGFR-Targeted Gold Nanoparticles for Intraoperative Detection and Treatment of Brain Tumors
J. Meyers[1], A-M. Broome[2], Y. Cheng[3], R. S. Agnes[1], X. Wang[4], M. E. Kenney[1], C. Burda[1], and J. P. Basilion[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Medical University of South Carolina, Charleston, SC, [3]University of Chicago, Chicago, IL, [4]Case Western Reserve University, Cleveland

P-Fri-A-255
Phospholipid-doped Polymersomes Exhibit Improved Tumor Cell-Targeting
Z. cheng[1], D. R. Elias[2], V. Popik[3], and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Pennsylvania, philadelphia, PA, [3]University of Georgia, Athens, GA

P-Fri-A-256
Gold Nanoparticle-M2e Nanocomplex Induces Protective Immunity Against Influenza A Virus
W. Tao[1] and H. S. Gill[1]
[1]Texas Tech University, Lubbock, TX

P-Fri-A-257
Nanodroplets Enhance High Intensity Focused Ultrasound (HIFU) Ablation over Microbubble Mediators: New Tumor Treatment
L. C. Phillips[1], C. Puett[1], P. S. Sheeran[1], and P. A. Dayton[1]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC

P-Fri-A-258
Sub-100nm Gold Nanoparticle Based Peptide Vaccine and Adjuvant Delivery System
A. Y. Lin[1], J. Mattos Almeida[1], J. Young[1], J. Lunsford[2], A. Bear[2], P. Eckels[2], L. Luo[1], A. Chen[1], A. Foster[2], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

P-Fri-A-259
HCV IRES-Mediated Translation Inhibition of shDNA in Hepatocyte Using CH-DS-PRO-ASOR Nanocapsules
R. Elumalai[1], N. Das[1], S. Das[1], and A. M. Raichur[1,2]
[1]Indian Institute of Science, Bangalore, India, [2]University of Johannesburg, Johannesburg, South Africa

P-Fri-A-260
Nanoparticles-Bearing Monocyte: Evaluation of Flow Dynamics
S. Srinivasan[1], Y. Geng[2], M. R. King[2], and B. Godin[1]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]Cornell University, Ithaca, NY

P-Fri-A-261
Chitosan Particle Based Delivery Systems for Antigen Delivery and Inflammatory Stimulus
B. Koppolu[1] and D. A. Zaharoff[1]
[1]University of Arkansas, Fayetteville, AR

P-Fri-A-262
Reductive Degradation of Poly(ethylene Oxide)-S-S-poly(caprolactone) Assemblies for Drug and siRNA Delivery
N. Sancho Oltra[1], K. Rajagopal[1], and D. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Fri-A-263
Evaluating Drug Synergy of Tenofovir and Nanoparticle-Based Antiretroviral Microbicides
T. Chaowanachan[1], E. A. Krogstad[1], C. S. Ball[1], and K. A. Woodrow[1]
[1]University of Washington, Seattle, WA

P-Fri-A-264
Prostate Cancer Drug Delivery Using the A11 Minibody
K. M. Mayle[1], R. Y. Chiu[1], R. J. Lamm[1], S. Knowles[1], A. M. Wu[1], and D. T. Kamei[1]
[1]University of California, Los Angeles, CA

P-Fri-A-265
Nanomedical Tool for Blood Disease Fighting
E. G. Aznakayev[1], D. E. Aznakayeva[1], and A. V. Vishnevsky[1]
[1]National Aviation University, Kiev, Ukraine

P = Poster Session
OP = Oral Presentation

P-Fri-A-266
Genetically Encoded Albumin Binding Peptide Functionalized Polypeptide Nanoparticles for Delivery of Cancer Chemotherapeutics
P. Yousefpour[1] and A. Chilkoti[1]
[1]*Duke University, Durham, NC*

P-Fri-A-267
Nanoconstructs for Imaging and Therapeutic Applications
A. Gizzatov[1], J. S. Ananta[2], A. Cervadoro[2], X. Liu[2], M. Ferrari[2], L. J. Wilson[1], and P. Decuzzi[2]
[1]*Rice University, Houston, TX,* [2]*The Methodist Hospital Research Institute, Houston, TX*

P-Fri-A-268
Delivery and Controlled Release of Estrogens from Nanoparticles for Treatment of Secondary Spinal Cord Injury
J. N. Barry[1], J. A. Smith[2], N. L. Banik[2], and A. A. Vertegel[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P-Fri-A-269
A Layer-by-Layer Approach to Co-deliver DNA and siRNA Via AuNPs: A Potential Platform for Modifying Release Kinetics
C. J. Bishop[1], S. Y. Tzeng[1], J. C. Sunshine[1], and J. J. Green[1]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD*

P-Fri-A-270
Nanoparticles With SOD Mimetics As Potential Drug Carriers
R. Kiseleva[1], A. Shaporev[1], R. Schlossser[2], and A. Vertegel[1]
[1]*Clemson University, Clemson, SC,* [2]*Ralph H. Johnson VA Medical Center, Charleston, SC*

P-Fri-A-271
Directed Evolution of Virus Nanoparticles for Imaging and Therapy
J. Judd[1], P. Nguyen[2], J. Silberg[2], and J. Suh[2]
[1]*Rice University, Houston,* [2]*Rice University, Houston, TX*

Track: Nano and Micro Technologies

Theranostic Nano- and MicroSystems

P-Fri-A-272
Porphyrin Bilayer Nanohybrid Cerasome for Photodynamic Diagnosis and Therapy of Cancer
X. Liang[1] and Z. Dai[1]
[1]*Department of Biomedical Engineering, College of Engineering, Peking University, Beijing, China, People's Republic of*

P-Fri-A-273
Nanoparticle-Loaded Ultrasound Contrast Agents for Both Diagnosis and Therapy of Cancer
Z. Dai[1,2], H. Ke[2], J. Wang[3], and J. Liu[4]
[1]*Peking University, Beijing, China, People's Republic of,* [2]*Harbin Institute of Technology, Harbin, China, People's Republic of,* [3]*Peking University Third Hospital, Beijing, China, People's Republic of,* [4]*Thomas Jefferson University, Philadelphia, PA*

P-Fri-A-274
Evaluation of Novel Microwell Colony forming Unit (CFU) Assays for Bone Marrow Stromal Cells
C. Ng[1,2], D. Heath[1,3], Y. Liu[1], P. Li[3], C. Tan[1,4], L. Nyan[1,2], J. Chan[2,4], P. Hammond[1,5], M. Chan[1,3], and L. Griffith[1,5]
[1]*Singapore-MIT Alliance for Research and Technology center, Singapore, Singapore,* [2]*KK Women's and Children's Hospital, Singapore, Singapore,* [3]*Nanyang Technological University, Singapore, Singapore,* [4]*National University of Singapore, Singapore, Singapore,* [5]*Massachusetts Institute of Technology, Cambridge, MA*

P-Fri-A-275
Gold and Silver Multistrata Nanoparticles: Biomagnetophotonic Mutilayered Metallodielectric Nanoparticles for Theranostic Applications
C. S. Bell[1], R. A. Ortega[2], A. T. Stevenson[2], and T. D. Giorgio[3]
[1]*Vanderbilt University, Nashville,* [2]*Vanderbilt University, Nashville, TN,* [3]*Vanderbilt University, Vanderbilt University, TN*

P-Fri-A-276
Top-down Fabrication of Theranostic Microparticles
P. Zhang[1], J. Xia[1], Y. Liu[1], and J. Guan[1]
[1]*Florida State University, Tallahassee, FL*

P-Fri-A-277
Specific and Not-Specific Heating of SPIOs for Magnetic Ablation Therapies
A. Cervadoro[1], A. Gizzatov[2], Z. Chani[3], R. Pande[3], S. Sarangi[3], A. Brazdeikis[3], J. Wosik[3], and P. Decuzzi[1]
[1]*The Methodist Hospital Research Institute, Houston, TX,* [2]*Rice University, Hosuton, TX,* [3]*University of Houston, Houston, TX*

P-Fri-A-278
Immunocapture of Circulating Tumor Cells in Tissue-Engineered GEDI Microdevices
S. M. Santana[1], C. Fischbach-Teschl[1], and B. Kirby[1]
[1]*Cornell University, Ithaca, NY*

Track: Neural Engineering

Neural Modeling

P-Fri-A-279
Markov Modeling of Sleep-Wake Dynamics for Tracking Recovery from Brain Injury
F. Yaghouby[1], T. Zhang[2], M. Striz[2], K. Donohue[2], B. O'Hara[2], and S. Sunderam[2]
[1]*University of Kentucky, Lexington, KY,* [2]*University of Kentucky, Lexington, KY*

P-Fri-A-280
Voxelized Model of Infusion into the Rat Brain Hippocampus that Accounts for Fissures and Fiber Tracks
W. Dai[1], G. W. Astary[2], J. H. Kim[1], T. H. Mareci[2], P. R. Carney[3], and M. Sarntinoranont[1]
[1]*Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL,* [2]*Department of Biochemistry and Molecular Biology, University of Florida, Gainesville, FL,* [3]*Division of Pediatric Neurology, Department of Pediatrics, University of Florida, Gainesville, FL*

P-Fri-A-281
Modulation of Sharp Waves by Acetylcholine, Calcium, GABA, and Melatonin in a Hippocampal Network Model
D. A. Stanley[1], P. R. Carney[1], S. S. Talathi[1], and W. L. Ditto[2]
[1]*University of Florida, Gainesville, FL,* [2]*University of Hawaii at Manoa, Honolulu, HI*

P-Fri-A-282
Computational Modeling of Intracortical Microstimulation in Somatosensory Cortex
C. K. Overstreet[1], J. D. Klein[1], and S. I. Helms Tillery[1]
[1]*Arizona State University, Tempe, AZ*

P-Fri-A-283
Dynamics of Compound Astrocyte-Neuron Networks
V. Tiruvadi[1] and J. Birjiniuk[1]
[1]*Emory University School of Medicine, Atlanta, GA*

P-Fri-A-284
Principal Dynamic Mode Analysis of an Autoregressive Volterra Model for the Hodgkin-Huxley Equations
S. E. Eikenberry[1] and V. Z. Marmarelis[1]
[1]*University of Southern California, Los Angeles, CA*

P-Fri-A-285
Prediction of Facet Strains in Simulated Rear-End Impact using a Finite Element Model of a Cervical Spine
L. Zhang[1] and H. Devaraj[1]
[1]*Wayne State University, Detroit, MI*

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-286
A Computational Model of Multi-polar Stimulation In Cochlear Implants in Single and Multi-Channel Contexts
A. Srinivasan[1,2], D. M. Landsberger[2], and R. V. Shannon[1,2]
[1]Univ. of Southern California, Los Angeles, CA, [2]House Research Institute, Los Angeles, CA

P-Fri-A-287
BioSearch: A Physiologically Plausible Learning Strategy for the Sensorimotor System
J. R. Goodner[1], G. Tsianos[1], Y. Li[1], and G. E. Loeb[1]
[1]University of Southern California, Los Angeles, CA

P-Fri-A-288
Assessment of Autonomic Nervous System in Alzheimer's Patients Using Nonlinear Kernel Method
A. K. Kamal[1]
[1]TTU, Cookeville, TN

P-Fri-A-289
Spontaneous Autoresuscitation in a Model of Respiratory Control
C. O. Diekman[1], C. G. Wilson[2], and P. J. Thomas[2]
[1]Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, [2]Case Western Reserve University, Cleveland, OH

Track: Neural Engineering

POSTER SESSION FriA

Neural Prosthetics

P-Fri-A-290
Comparison of Adeno-Associated Viral Vectors to Enable Calcium Imaging of Retinal Ganglion Cells
A. C. Weitz[1], M. S. Humayun[1], R. H. Chow[1], and J. D. Weiland[1]
[1]University of Southern California, Los Angeles, CA

P-Fri-A-291
Fatigue Protocols in Peripheral Nerve Interfaces
N. B. Langhals[1], K. B. Sugg[1], A. E. Snellings[1], P. S. Cederna[1], and M. G. Urbanchek[1]
[1]University of Michigan, Ann Arbor, MI

P-Fri-A-292
Control of Seated Balance after Spinal Cord Injury using Functional Electrical Stimulation
J. O. Murphy[1], M. L. Audu[1], and R. J. Triolo[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH

P-Fri-A-293
Chemical Stimulation of a Rat Retina Toward a Neurotransmitter-based Retinal Prosthesis
C. Rountree[1], S. Inayat[1,2], L. Saggere[2], and J. Troy[1]
[1]Northwestern University, Evanston, IL, [2]University of Illinois at Chicago, Chicago, IL

P-Fri-A-294
Wavelet Denoising of *In Vivo* Recordings of Peripheral Nerve Signal
M. Ravi[1], V. Desai[1], M. Romero-Ortega[2], and K. Behbehani[3]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas, Arlington, TX, [3]University of Texas at Arlington, Arlington

P-Fri-A-295
Ultrahigh Photosensitivity and Responsivity Silicon Nanowires for Retinal Prosthesis
M. L. Khraiche[1,2], S. Ha[3], Y. Jing[3], Y. Lo[3], D. Wang[3], W. Freeman[4], G. Cauwenberghs[3], and G. A. Silva[5]
[1]UCSD, San Diego, CA, [2]Jacob Retina Center, La jolla, CA, [3]UCSD, La jolla, CA, [4]Jacobs Retina Center, La jolla, CA, [5]UCSD, La jolla

Track: Orthopedic and Rehabilitation Engineering

Assistive Technology

P-Fri-A-296
A Comparative Study of Model-Free Feedback Controllers Used in Skeletal Muscle Contraction
P. Jaramillo[1], A. Shoemaker[1], and A. Leonessa[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-A-297
Voice Onset Time Variation in Stop Consonant to Vowel Transitions
A. G. Parikh[1,2], R. Foulds[1], B. Bain[2,3], D. Kristol[1], and W. Hunter[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Matheny Medical and Educational Center, Peapack, NJ, [3]NYU, New York, NY

P-Fri-A-298
Rehabilitation Engineering in Clinical Practice: A Case Study
C. P. DiGiovine[1,2]
[1]The Ohio State University, Columbus, OH, [2]The Ohio State University Wexner Medical Center, Columbus, OH

P-Fri-A-299
Baseline Characteristics of Cerebral Blood Flow in the Middle Cerebral Arteries Measured Via Transcranial Doppler Ultrasound
D. Kalika[1], N. Czarnek[1], and E. Sejdic[1]
[1]University of Pittsburgh, Pittsburgh, PA

Track: Orthopedic and Rehabilitation Engineering

Model-based Experiment Design and Computer Model Validation

P-Fri-A-300
Development and Preliminary Validation of Chestband Data from a Full Body Finite Element Model
A. C. Rhyne[1], D. P. Moreno[1], N. A. Vavalle[1], J. D. Stitzel[1], and F. S. Gayzik[1]
[1]Wake Forest University School of Medicine, Winston-Salem, NC

P-Fri-A-301
Quantification of Lateral Impact Validation Results of a Full Human Body Finite Element Model
N. A. Vavalle[1,2], D. P. Moreno[1,2], A. C. Rhyne[1,2], J. D. Stitzel[1,2], and F. S. Gayzik[1,2]
[1]Wake Forest University, Winston-Salem, NC, [2]Virginia Tech - Wake Forest Center for Injury Biomechanics, Winston-Salem, NC

Track: Orthopedic and Rehabilitation Engineering

Musculoskeletal Tissue Interfaces

P-Fri-A-302
A Graded Co-Electrospun Scaffold for the Regeneration of Ligament-Bone Transitions
S. Samavedi[1], P. Gaddam[1], A. R. Whittington[1], and A. S. Goldstein[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-A-303
A Subject-Specific Model With the Novel Objective Function to Predict Reasonable Muscle Forces
J. Son[1], S. Kim[1], J. Ryu[1], and Y. Kim[1]
[1]Yonsei University, Wonju, Korea, Republic of

P-Fri-A-304
Bioactive Rosette Nanotubes/poly(2-hydroxyethyl methacrylate) Composites for Cartilage Applications
L. Sun[1], X. Meng[1], H. Fenniri[2], and T. J. Webster[1]
[1]Brown University, Providence, RI, [2]University of Alberta, Alberta, Canada

P = Poster Session
OP = Oral Presentation

P-Fri-A-305
Characterization of Muscle Contraction Force, Electromyogram and Fatigue in Response to Electrical stimuli - A Preliminary Study
X. Tao[1,2], C. Chen[2], B. Cheng[1], J. M. Cavanaugh[2], Z. Wang[2], and W. Wang[1]
[1]Tsinghua University, Beijing, China, People's Republic of, [2]Wayne State University, Detroit, MI

Track: Orthopedic and Rehabilitation Engineering

Orthopedic Bioengineering and Imaging

P-Fri-A-306
Predictions of Tensile Material Properties of Cortical Bone by Quantitative Computer Tomography Data
C. D. Untaroiu[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-A-307
A Multiscale Model Of The Influence Of Hypoxia During Bone Fracture Healing
A. Carlier[1], L. Geris[2], and H. Van Oosterwyck[1]
[1]KU Leuven, Leuven, Belgium, [2]Université de Liège, Liège, Belgium

P-Fri-A-308
Genetic Variability in Different Skeletal Sites of Femur and Tibia in BXD Recombinant Inbred Lines Mouse
Y. Zhang[1], J. Huang[1], W. Gu[1], L. D. Quarles[1], N. V. David[1], and Y. Jiao[1]
[1]University of Tennessee Health Science Center, Memphis, TN

P-Fri-A-309
Mechanical Fluid Pressure Regulated Cortical Adaptation In A Disuse Osteopenia Rat Model
M. Lien[1], M. Hu[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

P-Fri-A-310
Release of Glycosaminoglycans in Cartilage Explants Following X-Ray Radiation Exposure
C. A. Lindburg[1] and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Fri-A-311
Quantitative Toolbox to Measure Osteoclast and Cathepsin K Activity in Orthopedic Tissues
B. Chen[1], L. M. Roberts[1], S. R. Banton[1], D. Chambers[1], J. S. Temenoff[1], G. A. Barabino[1], and M. O. Platt[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

Track: Tissue Engineering

Cell Delivery and Cell-Based Therapeutics

P-Fri-A-312
Development of a Pancreatic Substitute Based on Genetically Engineered Intestinal Endocrine Cells
A. R. Tiernan[1], K. Durvasula[1], and A. Sambanis[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-A-313
Microencapsulation Of Genetically Engineered MSCs For Sustained Delivery Of Erythropoietin In A Mouse Model Of Anemia
S. T. Robinson[1], N. Landazuri[1], B. M. Wynne[1], C. J. Weber[1], S. A. Safley[1], I. B. Copland[1], J. Galipeau[1], and W. R. Taylor[2,3]
[1]Emory University, Atlanta, GA, [2]Emory University and Georgia Institute of Technology, Atlanta, GA, [3]Atlanta Veterans Affairs Medical Center, Decatur, GA

P-Fri-A-314
Sub-Retinal Tissue Engineering for the Treatment of Age-Related Macular Degeneration
K. J. McHugh[1,2], S. L. Tao[3,4], and M. Saint-Geniez[1,5]
[1]Schepens Eye Research Institute, Boston, MA, [2]Boston University, Boston, MA, [3]The Charles Stark Draper Laboratory, Inc., Cambridge, MA, [4]Current Affiliation: Coopervision, Inc., Pleasanton, CA, [5]Harvard Medical School, Boston, MA

P-Fri-A-315
Tissue Engineering Implications of Inflammatory Cytokine Induced MMP Upregulation by hMSCs
D. L. Alge[1,2], J. L. Leight[1,2], and K. S. Anseth[1,2]
[1]University of Colorado, Boulder, CO, [2]Howard Hughes Medical Institute, Boulder, CO

P-Fri-A-316
Microencapsulation of Biological Agents For The Management of Renal Disease
R. G. Duque[1] and M. Mobed-Miremadi[2]
[1]San Jose Stare University, San Jose, CA, [2]San Jose State University, San Jose, CA

P-Fri-A-317
A Tunable Thermo-Responsive, Self-Adhesive, Injectable Heart Patch for Stem Cell Delivery and Differentiation
X. Wang[1], T. Boire[1], M. Gupta[1], S. Maltais[2], and H-J. Sung[1,2]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, TN

P-Fri-A-318
Delivery of CXCL12 to a Tissue Engineered Pancreatic Substitute to Improve Viability and Function Under Hypoxic Conditions
S. Duncanson[1] and A. Sambanis[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-A-319
Systemic FTY720 Improves the Survival and Osteogenic Capacity of Implanted Allogeneic Mesenchymal Stem Cells
A. Das[1], A. Dighe[1], V. Madhu[1], Q. Cui[1], and E. Botchwey[2]
[1]UVA, Charlottesville, VA, [2]GaTech, Atlanta, GA

P-Fri-A-320
HIF Activity in Beta-Cell Clusters is Predictive of Poor Morphology and Reduced Insulin Secretion
M. Skiles[1], S. Sahai[1], N. Wilder[1], and J. Blanchette[1]
[1]University of South Carolina, Columbia, SC

P-Fri-A-321
Uniform Beads with Controllable Pore Sizes for Biomedical Applications
Y. Zhang[1,2], S-W. Choi[2], Y-C. Yeh[2], H-W. Sung[3], and Y. Xia[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Washington University in St. Louis, St. Louis, MO, [3]National Tsing Hua University, Hsinchu, Taiwan

P-Fri-A-322
Optimization of the Post-Thaw Wash Process for Cryopreserved Red Blood Cells
R. E. Lusianti[1]
[1]Oregon State University, Corvallis, OR

P-Fri-A-323
Biomineralization of Silica Encapsulated Pancreatic Beta Islets for Type 1 Diabetes Therapy
J. Lu[1,2], D. B. Jaroch[3], N. Stull[4], R. Madangopal[3], M. Stensberg[3], J. Shi[3], M. Zeitchek[1], D. Porterfield[1], R. G. Mirmira[4], and J. L. Rickus[1,3]
[1]Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, IN, [2]Birck-Bindley Physiological Sensing Facility, Purdue University, West Lafayette, IN, [3]Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, [4]Indiana University School of Medicine, Indianapolis, IN

P-Fri-A-324
Engineering Subcutaneous Tissue Pockets for Minimally Invasive Cell Transplantation
D. T. Bowers[1], D. A. Barker[1], P. Chhabra[1], L. W. Langman[1], K. L. Brayman[1], and E. A. Botchwey[1,2]
[1]University of Virginia, Charlottesville, VA, [2]Georgia Tech, Atlanta, GA

POSTER SESSION Fri A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

Track: Tissue Engineering

Engineered Tissue Models for Drug Discovery and Disease

P-Fri-A-325
An *In Vitro* Model of Cell-Cell Interactions in Endometriosis
K. Pollock[1] and P. K. Kreeger[1]
[1]*UW-Madison, Madison, WI*

P-Fri-A-326
Proton NMR Characterization of Chondrocyte Re-differentiation in Alginate Beads and Pellet Culture
M. Kotecha[1], T. M. Schmid[2], and R. L. Magin[1]
[1]*University of Illinois at Chicago, Chicago, IL,* [2]*Rush University, Chicago, IL*

P-Fri-A-327
Development of a 3D On-Chip Model of the Gastrointestinal Tract Epithelium for use in Microfluidic Drug Testing Systems
M. B. Esch[1], J. Yang[1], and M. Shuler[1]
[1]*Cornell University, Ithaca, NY*

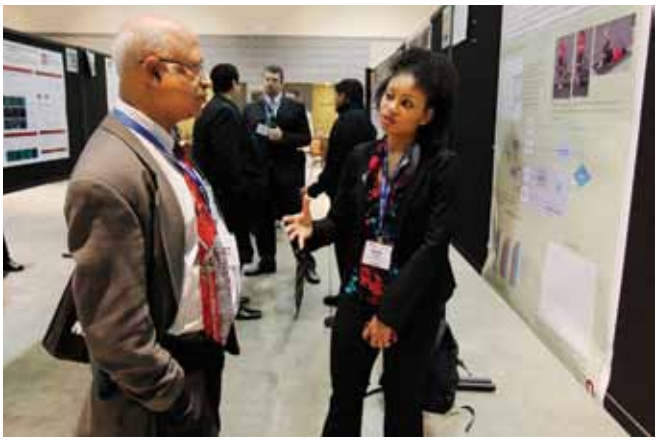
P-Fri-A-328
Microfluidic Chip for High-Resolution Glucose Uptake Measurements on Patient-Derived Adipose Tissue Culture
A. Zambon[1,2], A. Zoso[1,2], E. Magrofuoco[1,2], G. Fadini[2], S. Quake[3], and N. Elvassore[1,2]
[1]*University of Padua, Padova, Italy,* [2]*Venetian Institute of Molecular Medicine, Padova, Italy,* [3]*Stanford University, Stanford, CA*

P-Fri-A-329
A Novel Functional Role for the Inhibitory Antibody Receptor in Dendritic Cell Motiliy
M. R. Clatworthy[1,2], C. E. Petrie Aronin[2], S. Harford[1], K. G. Smith[1], and R. N. Germain[2]
[1]*Cambridge Institute for Medical Research, Cambridge, United Kingdom,* [2]*NIH, NIAID, Bethesda, MD*

P-Fri-A-330
A Model of Tumor Angiogenesis in Biomimetic Hydrogels
L. C. Roudsari[1,2], B. J. Gill[1], D. L. Gibbons[3], J. M. Kurie[3], and J. L. West[1,2]
[1]*Rice University, Houston, TX,* [2]*Duke University, Durham, NC,* [3]*The University of Texas MD Anderson Cancer Center, Houston, TX*

P-Fri-A-331
Development of Cell Self-Assembled, 3-Dimensional Skeletal Muscle Tissue Models *In Vitro*
C. Malcuit[1,2], T. Gwyther[1], M. McCorry[1], C. Ohlson[1], K. Larson[1], S. Delfosse[1], M. Aschettino[3], C. Quinn[1], S. Higginbottom[1], S. Gunnel[1], M. Rolle[1], and R. Page[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Kent State University, Kent, OH,* [3]*Worcester Polytechnic Institute, Worcester*

P-Fri-A-332
Using Tissue Engineering Strategies to Study the Mechanism of Breast Cancer Cell Dormancy Within the Bone Microenvironment
K. Guiro[1], T. R. Buirkle[1], T. Livingston Arinzeh[2], P. Rameshwar[3], and S. Bliss[4]
[1]*New Jersey Institute of Technology, Newark, NJ,* [2]*New Jersey Institute of Technology, Newark,* [3]*University of Medicine and Dentistry of New Jersey, Newark, NJ,* [4]*University of Medicine and Dentistry of New Jersey, Newark*



P = Poster Session
OP = Oral Presentation

Friday, October 26, 2012

3:45PM - 4:45PM

Poster Viewing with Authors & Refreshment Break

1:30PM - 15:00PM - EXHIBIT HALL A2

POSTER - FRIDAY – PM

Track: Bioinformatics and Systems Biology

Model-based Experiment Design and Computer Model Validation

P-Fri-B-1

Antioxidant Attenuation of TGF-β Induced Smad Transcriptional Activity

A. F. Prasanphanich[1,2], M. Butler[1,2], and M. L. Kemp[1,2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Fri-B-2

An Experimental and Theoretical Study of DAF-FM Activation by NO: Toward Calibration of a NO-Sensitive Fluorescent Dye

S. M. Namin[1] and N. M. Tsoukias[1]

[1]Florida International University, Miami, FL

P-Fri-B-3

Calcium Dynamics in Cardiac Mitochondria: Influx, Efflux and Buffering

A-C. Wei[1], B. O'Rourke[1], and R. L. Winslow[1]

[1]Johns Hopkins University, Baltimore, MD

P-Fri-B-4

Discerning Dynamics of Cellular Processes Using Sparse-grid-based Experimental Design

T. Mdluli[1], J. Perley[1], S. L. Noble[1], G. T. Buzzard[1], and A. E. Rundell[1]

[1]Purdue University, West Lafayette, IN

P-Fri-B-5

An Integrative Modeling and Imaging Approach to Characterize Insulin Signaling in Glioma

K. Lin[1], A. Qadeer[1], and A. A. Qutub[1]

[1]Rice University, Houston, TX

P-Fri-B-6

Systems Biology Approaches to Direct human Embryonic Stem Cell Differentiation Using siRNAs

E. D. Karagiannis[1], J. Zoldan[1], R. Langer[1], and D. G. Anderson[1]

[1]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-B-7

Attenuation Wave Propagation in Acoustic Reflectometry Using a Chirp Signal

E. R. Vazquez[1], J. H. Pierluissi[2], M. Ontiveros Rodriguez[1], V. R. Barrales Guadarrama[1], E. M. Rodriguez Rodriguez[1], and R. Barrales Guadarrama[1]

[1]Universidad Autonoma Metropolitana, Mexico D. F., Mexico, [2]The University of Texas at El Paso, El Paso, TX

P-Fri-B-8

Optimization of Pectus Bar Shape Prior to Implantation in Children Affected by Pectus Excavatum

N. Kidane[1], R. N. Nikam[1], F. D. McKenzie[1], R. E. Kelly[2], and S. B. Knisley[1]

[1]Old Dominion University, Norfolk, VA, [2]Children's Hospital of The King's Daughters and Eastern Virginia Medical School, Norfolk, VA

P-Fri-B-9

Multivariate Analysis of Cytokine Secretion Profiles in Human Peripheral Blood Mononuclear Cells

G. L. Szeto[1,2], K. F. Benedict[1,2], D. A. Lauffenburger[1], and D. J. Irvine[1,3]

[1]MIT, Cambridge, MA, [2]The Ragon Institute of MGH, MIT and Harvard, Charlestown, MA, [3]Howard Hughes Medical Institute, Chevy Chase, MD

P-Fri-B-10

Integration of Transcriptomic Data in Kinetic Modeling of Eicosanoids Fluxes Reveals Functional Coupling Between Cyclooxygenases and Terminal Synthases

S. Gupta[1], Y. Kihara[1], M. R. Maurya[1], O. Quehenberger[1], A. Armando[1], C. K. Glass[1], E. A. Dennis[1], and S. Subramaniam[1]

[1]University of California, San Diego, La Jolla, CA

P-Fri-B-11

Computational Techniques for Modeling and Analysis of Fluorescent Protein Labeled Cell Populations

L. Bansal[1], A. Jayaraman[1], and J. Hahn[2]

[1]Texas A&M University, College Station, TX, [2]Rensselaer Polytechnic Institute, Troy, NY

P-Fri-B-12

A Novel Full Human Body Finite Element Model Utilizing a Multi-Modality Medical Imaging Protocol: Development and Validation

F. S. Gayzik[1,2], D. P. Moreno[1,2], N. A. Vavalle[1,2], A. C. Rhyne[1,2], and J. D. Stitzel[1,2]

[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC

P-Fri-B-13

Merging Partial Measurements of Microvascular Flows Taken at Different Times to Estimate All Flows at Any Time

N. Cornelius[1], T. Bollu[1], J. Sunwoo[1], P. Doerschuk[1], C. Schaffer[1], and N. Nishimura[1]

[1]Cornell University, Ithaca, NY

POSTER SESSION **FriB**

Track: Biomaterials

Micro- and Nanostructured Biomaterials

P-Fri-B-14

Valvular Interstitial Cell Seeded Scaffolds: Biomimetic Benchmark for Heart Valve Tissue Engineering

N. Masoumi[1,2], B. L. Larson[3], J. Hjortnaes[2,4], K. L. Johnson[1], K. B. Manning[1], and A. Khademhosseini[2,3]

[1]The Pennsylvania State Unievrsity, University Park, PA, [2]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [3]Harvard-MIT, Cambridge, MA, [4]University Medical Center Utrecht, Utrecht, Netherlands

P-Fri-B-15

Effect of Nanowire Structures on the Osseointegration

Y-S. Yun[1], J-Y. Lee[1], I-S. Yun[2], Y-O. Kim[2], and J-S. Yeo[1]

[1]Yonsei University, Incheon, Korea, Republic of, [2]Yonsei University, Seoul, Korea, Republic of

P-Fri-B-16

Decoupling Nanoscale Spacing and Bulk Density of Adhesion Ligands in a Biomimetic, 3D Matrix

P. L. Benitez[1], J. A. Sweet[1], and S. C. Heilshorn[1]

[1]Stanford University, Stanford, CA

P-Fri-B-17

Inorganic and Carbon Nanoparticle-Reinforced Polypropylene Fumarate Nanocomposites for Bone Tissue Engineering

G. Lalwani[1], B. Farshid[1], A. Henslee[2], A. G. Mikos[2], and B. Sitharaman[1]

[1]Stony Brook University, Stony Brook, NY, [2]Rice University, Houston, TX

P-Fri-B-18

Color Responsive Polymer Films for Small Biomolecule Detection

O. Ayyub[1], M. Ibrahim[1], and P. Kofinas[1]

[1]University of Maryland College Park, College Park, MD

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-19
Self-Assembly of Polysaccharide and Amino Acid-based Poly(ester amide) Cross-linked Nanosphere for Simultaneous Release of Hydrophilic and Hydrophobic Drugs
D. Wu[1] and C-C. Chu[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-B-20
One Step Synthesis of Multi-Functional Mesoporous Silica Nanorods
C. Smid[1], S. Z. Khaled[2], L. Isenhart[2], I. Yazdi[2], M. R. Moreno[3], M. Becker[4], and E. Tasciotti[2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The Methodist Hospital Research Institute, Houston, TX,* [3]*Texas A&M University, College Station, TX,* [4]*The University of Akron, Akron, OH*

P-Fri-B-21
Nanosurface Modification by Gas Cluster Ion Beam Technology Enhances Device Integration
J. Khoury[1], R. E. Cherian[1], M. Maxwell[1], K. Doshi[1], S. R. Kirkpatrick[1], M. J. Walsh[1], and R. C. Svrluga[1]
[1]*Exogenesis Corp, Billerica, MA*

P-Fri-B-22
Molecularly Imprinted Polymers for Virus Capture: Whole Particle Versus Small Molecule Imprinting
C. Multari[1] and X. Cheng[1]
[1]*Lehigh University, Bethlehem, PA*

P-Fri-B-23
Biocompatibility of Nanoscale HAp-embedded Chitosan Films
F. Sun[1] and J. Lee[1]
[1]*Pusan National University, Miryang, Korea, Republic of*

POSTER SESSION **FriB**

P-Fri-B-24
Multifunctional Nanoparticle Releasing Nanofibers for Wound Healing Applications
C. B. Paras[1], Z. Xie[1], Y-T. Kim[1], J. Yang[1,2], and K. T. Nguyen[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*UT Southwestern Medical Center at Dallas, Dallas, TX*

P-Fri-B-25
Neovascularization Mediated through Micorpatterned Alginate-g-pyrrole Hydrogels
R. J. DeVolder[1] and H. Kong[2]
[1]*University of Illinois, Champaign, IL,* [2]*University of Illinois, Urbana, IL*

P-Fri-B-26
Efficient Separation and Quantitative Analysis of Coronary Artery Disease Biomarkers
H. Park[1], J. Choi[1], and K-H. Lee[1]
[1]*Korea Institute of Science and Technology, Seoul, Korea, Republic of*

P-Fri-B-27
Forcespinning Scaffold Composed of Poly(L-lactic acid) and Hydroxyapatite
G. Rodriguez Perea[1], L. Ribeiro Rodriguez[1], C. de Carvalho Zavaglia[1], C. Barroso Tavares Dias[1], and M. Akira d' Ávila[1]
[1]*UNICAMP, Campinas, Brazil*

P-Fri-B-28
Lipidoid Nanoparticle-Containing Alginate Microparticles for Small Molecule Oral Delivery in Colorectal Cancer
A. Urbanska[1], E. Karagiannis[1], D. Anderson[1], and R. Langer[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

P-Fri-B-29
Sensitive Aptasensing Based on Suppression of Enzyme Catalysis in Polymeric Bionanocomposites
Y. Fu[1,2], C. Zou[2], Q. Xie[2], S. Yao[2], and Y. Li[1]
[1]*University of Arkansas, Fayetteville, AR,* [2]*Hunan Normal Univeristy, Changsha, China, People's Republic of*

P-Fri-B-30
Development of Cermaic Biomaterial Coatings for Implant Applications
T. M. Haywood[1], D. Kumar[1], K. Darkwa[1], and R. Gupta[1]
[1]*North Carolina Agricultural and Technical State University, Greensboro, NC*

P-Fri-B-31
Fabrication and Characterization of Metallo-Ceramic Composite Films For Bone Implant Applications
K. Mensah-Darkwa[1], D. Kumar[1], and R. Gupta[1]
[1]*North Carolina A&T State University, Greensboro, NC*

P-Fri-B-32
Identification of a Novel Protein-based Nanoparticle Secreted from English Ivy
S. C. Lenaghan[1], J. N. Burris[1], L. Xia[1], C. N. Stewart[1,2], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN,* [2]*The BioEnergy Science Center, Oak Ridge National laboratory, Oak Ridge, TN*

P-Fri-B-33
Glycosaminoglycan-based Nanoparticles from Arthrobotrys oligospora as a Novel Biomaterial for Biomedical Application
Y. Wang[1], L. Sun[1], S. Yi[1], L. Xia[1], Y. Huang[1], S. C. Lenaghan[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

P-Fri-B-34
A Novel Method to Prepare Chitosan Nanoparticles through Electrospinning
L. Sun[1], S. Yi[1], S. C. Lenaghan[1], L. Xia[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

P-Fri-B-35
Micropatterned Thermo-Responsive Surfaces for Modulating Cellular Morphology and Cell Detachment
H. He[1], F. Wang[1], X. Wang[1], and L. J. Lee[1]
[1]*The Ohio State University, Columbus, OH*

P-Fri-B-36
Evaluation of Corrosion and Platelet Adhesion on PLGA/paclitaxel Coated AZ31B Magnesium Alloy Using a Microfluidic Device
Y. Jang[1], V. Giridharan[1], S. Ye[2], T. A. Barrio[1], B. Collins[1], J. Sankar[1], and Y. Yun[1]
[1]*North Carolina Agricultural & Technical State University, Greensboro, NC,* [2]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-B-37
Buckling and Strain-Stiffening in Insect Respiratory Tissue
M. R. Webster[1] and R. De Vita[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Fri-B-38
Nanotextured Biomaterials for Stem Cell Interfacing
W. Suh[1] and M. Tirrell[2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*University of Chicago, Chicago, IL*

Track: Biomaterials

Nanomaterials, Cellular Interactions and Toxicity

P-Fri-B-39
Effect of Silver Nanoparticle Shape on Antibacterial Activity and Mammalian Cell Cytotoxicity
L. Actis[1,2], L. Chu[2], and J. Ong[1]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

P = Poster Session
OP = Oral Presentation

P-Fri-B-40

Inhibition of Collagen Gel Contraction by Fibroblasts using Carbon Nanotubes

E. Wailes[1,2] and N. Levi-Polyachenko[1,2]

[1]Wake Forest University Health Sciences, Winston Salem, NC, [2]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC

P-Fri-B-41

Assessment of Titanium Biocoating for Coloring the Backplate of Boston Keratoprosthesis: An *In-vitro* study with Human Corneal-Limbal Epithelial Cells

E. Paschalis[1], J. Chodosh[1], I. Gipson[2], and C. Dohlman[1]

[1]Massachusetts Eye and Ear Infirmary - Harvard Medical School, Boston, MA, [2]Schepens Eye Research Institute - Harvard Medical School, Boston, MA

P-Fri-B-42

Novel Three Dimensional Silicon Nanofibrous Matrix Fabricated by Ultrafast Laser Synthesis

P. Premnath[1]

[1]Ryerson University, Toronto, ON, Canada

P-Fri-B-43

Incorporation of Silver Nanoparticles Into a Degradable Poly(L-lactide-co-epsilon-caprolactone) Copolymer Scaffold for Skin Regeneration

M. E. Samberg[1], P. Mente[1], T. He[2], M. W. King[2,3], and N. A. Monteiro-Riviere[1]

[1]The University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC, [2]North Carolina State University, Raleigh, NC, [3]Donghua University, Shanghai, China, People's Republic of

P-Fri-B-44

Development of PLGA Magnetic Nanoparticles for Inhalational Drug Delivery

J. U. Menon[1], P. Ravikumar[2], H. Homayoni[1], O. Togao[2], M. Takahashi[2], K. T. Nguyen[1], O. W. Moe[2], and C. C. Hsia[2]

[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

P-Fri-B-45

Screening of Nanoparticles for Inhalational Drug Delivery

J. U. Menon[1], A. Pise[1], P. Ravikumar[2], K. T. Nguyen[1], O. W. Moe[2], and C. C. Hsia[2]

[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

P-Fri-B-46

In Vitro Biocompatibility of Mg-based Cardiovascular Implants

N. Watson[1], Z. Xu[1], J. Waterman[1], J. Sankar[1], and D. Zhu[1]

[1]North Carolina A&T State University, Greensboro, NC

P-Fri-B-47

The Effect of Magnesium on Angiogenesis Evaluated Utilizing the *Ex Ovo* Chick Chorioallantoic Membrane (CAM) Assay

L. A. Douglas-Byrd[1], B. Collins[1], Y. Jang[1], W. Willis[1], A. Hooks[1], J. Sankar[1], and Y. Yun[1]

[1]North Carolina A&T State University, Greensboro, NC

P-Fri-B-48

Corrosion Characterization of Magnesium Alloy with Multi-functional Coatings of Plasma Electrolytic Oxidation and PLGA for Possible Airway Stent Application

D. Owuor[1], Y. Jang[1], J. Waterman[1], B. Collins[1], D. Conklin[1], J. Sankar[1], and Y. Yun[1]

[1]North Carolina A&T State University, Greensboro, NC

Track: Biomaterials

Targeting Strategies in Drug Delivery

P-Fri-B-49

Inhibition of Amoeba-host Cell Interactions by Novel Colon-Specific Polymeric Prodrugs

J. Lee[1], W. Reeder[1], J. Lau[1], T. Reed[1], and L. Temesvari[1]

[1]Clemson University, Clemson, SC

P-Fri-B-50

Enhancing Target Drug Delivery with Ellipsoidal Polyaspartamide Polymersome

M-H. Lai[1], J. Jeong[1], R. J. DeVolder[1], C. Brockman[1], C. Schroeder[1], and H. Kong[1]

[1]University of Illinois, Urbana-Champaign, Urbana, IL

P-Fri-B-51

Heteromultivalent Ligand Modification to Enhance Specific Bioactivity of Nanomedicine Platforms

C. Modery[1], M. Ravikumar[1], T. Wong[1], M. Dzuricky[1], M. Livingston[1], and A. Sen Gupta[1]

[1]Case Western Reserve University, Cleveland, OH

P-Fri-B-52

Screening Prostate Cancer-specific Ligands and Efficacy of Thermo-responsive Polymer- coated Iron Oxide Nanoparticles *In Vivo*

A. S. Wadajkar[1], J. U. Menon[1], K. Kangasniemi[2], T. Dobin[2], L. Gandee[2], M. Takahashi[2], J-T. Hsieh[2], K. T. Nguyen[1], and J. U. Menon[1]

[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

P-Fri-B-53

Evaluation of Rod-Shape Carriers for Imaging and Drug Delivery in Atherosclerosis

K. Namdee[1], A. J. Thompson[1], and O. Eniola-Adefeso[2]

[1]University of Michigan, Ann Arbor, MI, [2]Unversity of Michigan, Ann Arbor, MI

P-Fri-B-54

Star-Branched Thermo-responsive and Biodegradable Nanoparticles for Controlled Drug Delivery across the Blood Brain Barrier

X. Li[1], S. Jiang[1], and T. L. Lowe[1]

[1]University of Tennessee-Health Science Center, Memphis, TN

P-Fri-B-55

Targeting, Intracellular Uptake, and Delivery *In Vivo* of Nanocarriers Addressed to ICAM-1 vs TfR

J. T. Papademetriou[1], C. Garnacho[2], D. Serrano[3], T. Bhowmick[2], E. Schuchman[4], and S. Muro[1,2]

[1]Fischell Bioengineering University of Maryland-College Park, College Park, MD, [2]Institute for Bioscience and Biotechnology Research, College Park, MD, [3]MOCB, University of Maryland-College Park, College Park, MD, [4]Mount Sinai School of Medicine, New York, NY

P-Fri-B-56

DDR1 as a Drug Target-Pilot Study

E. Tsung[1], D. Kallile[1], M. Yang[1], J. Tonniges[2], K. Lagree[2], S. M. MacDonnell[3], and G. Agarwal[1,2]

[1]The Ohio State University College of Medicine, Columbus, OH, [2]The Ohio State University, Columbus, OH, [3]Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

Track: Biomaterials

Translation of Novel Biomaterials to the Clinic

P-Fri-B-57
Preventing Biofilm Formation on Paper Towels using Nanostructured Selenium
Q. Wang[1] and T. Webster[1]
[1]*Brown University, Providence, RI*

Track: Cellular and Molecular Bioengineering

Cell Adhesion

P-Fri-B-58
Investigation of Endothelial Progenitor Cell Rolling on Peptide-Grafted Hydrogels
W. J. Seeto[1] and E. A. Lipke[2]
[1]*Auburn University, Auburn University, AL,* [2]*Auburn University, Auburn, AL*

P-Fri-B-59
Determining Blastocyst Implantation Mechanics With Tissue Engineered 'Trophospheres'
R. W. Yucha[1], M. Jost[2], N. M. Robertson[2], and M. S. Marcolongo[1]
[1]*Drexel University, Philadelphia, PA,* [2]*Drexel University College of Medicine, Philadelphia, PA*

POSTER SESSION **FriB**

P-Fri-B-60
Effect of Divalent Cations on Spatially Guided Platelet Adhesion Using Double Protein Microstamping
Y. Sakurai[1,2], Y. Qiu[1,2], B. Ahn[1,2], G. Bao[2], and W. A. Lam[1,2]
[1]*Emory University, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

P-Fri-B-61
Dynamics of Neutrophil Cytoskeleton in Transmigration
H. N. Hayenga[1], H. Aranda-Espinoza[1], and K. M. Stroka[2]
[1]*University of Maryland, College Park, MD,* [2]*Johns Hopkins University, Baltimore, MD*

P-Fri-B-62
Inflammatory Monocyte Activation and Adhesion in Coronary Artery Disease
G. A. Foster[1], R. M. Gower[1], C. E. Radecke[1], E. J. Armstrong[1], and S. I. Simon[1]
[1]*University of California Davis, Davis, CA*

P-Fri-B-63
Neutrophil Membrane and Microvillus Deformability in Rolling
A. C. Szatmary[1] and C. D. Eggleton[1]
[1]*University of Maryland, Baltimore County, Baltimore, MD*

P-Fri-B-64
Adhesion Patterns of Functionalized Particles are Significantly Different between Parallel Plate Flow Chambers and Bifurcating Microchannels
G. Lamberti[1], Y. Tang[1], B. Prabhakarpandian[2], K. Pant[2], M. F. Kiani[1], and B. Wang[3]
[1]*Temple University, Philadelphia, PA,* [2]*CFD Research Corporation, Huntsville, AL,* [3]*Widener University, Philadelphia, PA*

P-Fri-B-65
Amyloid-β peptide on Membrane Mechanical Dynamics in Cerebral Endothelial Cells
J. C-M. Lee[1] and S. Askarova[1]
[1]*University of Missouri, Columbia, MO*

P-Fri-B-66
Novel Markers for Detection of Deep-Space Radiation Damaged Cells in a Microfluidic Cell Sorter
M. P. Achary[1,2], D. T. Teka[1,2], A. Jhaveri[2], G. Lamberti[2], B. P. Pandian[3], K. Pant[3], and M. F. Kiani[1,2]
[1]*Temple University School of Medicine, Philadelphia, PA,* [2]*Temple University College of Engineering, Philadelphia, PA,* [3]*CFD Research Corporation, Huntsville, AL*

P-Fri-B-67
Epinephrine Modulates Sickle Cell Disease Erythrocyte Adhesion via ICAM-4 Receptor Overexpression
J. Maciaszek[1] and G. Lykotrafitis[1]
[1]*University of Connecticut, Storrs, CT*

P-Fri-B-68
On the Metastasis Like Phenotype of HCT-8 Cells on E-cadherin Coated Soft Substrates
M. Ali[1] and T. A. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Fri-B-69
Cooperative Effect of Oxidized LDL and Histamine on Monocyte-Endothelium Interactions
C. Chen[1] and D. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

P-Fri-B-70
E-selectin Ligand Expression on Breast Cancer Cells Varies with Mesenchymal or Epithelial Phenotype
V. S. Shirure[1], L. F. Delgadillo[1], T. Liu[1], C. M. Cuckler[1], G. E. Carlson[1], F. Benencia[1], D. J. Goetz[1], and M. M. Burdick[1]
[1]*Ohio University, Athens, OH*

P-Fri-B-71
Determination of the Kinetic Parameters of Dissociation From Multiple Bbond Force Spectroscopy
V. K. Gupta[1] and C. D. Eggleton[1]
[1]*University of Maryland Baltimore County, Baltimore, MD*

P-Fri-B-72
Magnetically Controlled Self-assembly of Cells
L. M. Gonzalez[1], P. R. LeDuc[1], and W. C. Messner[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P-Fri-B-73
FRET Reporter Reveals Roles for PDGF and Integrins in Regulating ROS at Focal Adhesion Sites
J. M. Grimme[1], L-J. Lin[2], D. Cropek[1], and Y. Wang[2]
[1]*U.S. Army Engineer Research and Development Center- Construction Engineering Research Laboratory, Champaign, IL,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Fri-B-74
Observing Real-Time Bending/Unbending Conformational Changes of Single Integrins in A Cell-Free System
Y. Chen[1] and C. Zhu[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-B-75
Migratory Tendencies of Cells Attached to Suspended Nanofibers in Specific Shapes
K. Sheets[1] and A. Nain[1]
[1]*Virginia Tech, Blacksburgh, VA*

P-Fri-B-76
Bio-sensing Device for Single Cell Nano-toxicity Analysis
P. Shah[1] and C. Li[1]
[1]*Florida International University, Miami, FL*

P-Fri-B-77
New Focal Adhesion Kinase Binding Sites Play Significant Role in Integrin Activation
H. Huang[1], M. Mehrbod[1], and M. R. Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA*

P = Poster Session
OP = Oral Presentation

Track: Cellular and Molecular Bioengineering

Cellular Engineering

P-Fri-B-78
Numerical Simulation and Experimental Studies of Electric Field- Induced Vascular Cell Responses
T. Taghian[1], A. Sheikh[1], D. Narmoneva[1], and A. Kogan[1]
[1]*University of Cincinnati, Cincinnati, OH*

P-Fri-B-79
Measurement and Modeling of Surface Distribution of Neutrophil Receptors upon Cell Spreading
R. E. Waugh[1], G. Marsh[1], T. Khire[1], E. Lomakina[1], and J. McGrath[1]
[1]*University of Rochester, Rochester, NY*

P-Fri-B-80
Intracellular Ice Nucleation Protein Reduces Cryogenic Injury in Eukaryotic Cells
A. M. Harder[1], M. Toner[2], N. Chakraborty[1,2], and M. A. Menze[1]
[1]*Eastern Illinois University, Charleston, IL,* [2]*Center for Engineering in Medicine Harvard Medical School, Boston, MA*

P-Fri-B-81
NADPH Oxidase Mediates Radiation-induced Pro-oxidative and Pro-inflammatory Pathways in Mouse Brain
H. J. Cho[1], W. E. Sonntag[2], and Y. W. Lee[1,3]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of Oklahoma Health Sciences Center, Oklahoma City, OK,* [3]*Virginia Tech, Blacksburg*

P-Fri-B-82
Autophagy in Vascular Endothelial Cells Exposed to Hypoxia/Reoxygenation
S. Zhao[1], D. M. Nair[1], R. J. Giedt[1], and B. R. Alevriadou[1]
[1]*Dept. of BME and Davis Heart & Lung Research Inst., Dept. of Intern. Med., The Ohio State University, Columbus, OH*

P-Fri-B-83
Dynamics of Mechanical Signal Transmission Through a Network of Prestressed Actin Fibers
C. L. Gouget[1], Y. Hwang[1], and A. I. Barakat[1,2]
[1]*Ecole Polytechnique, Palaiseau, France,* [2]*University of California, Davis, CA*

P-Fri-B-84
Deglycosylation Increases Ligand Binding Affinity of Fcγ Receptor III
P. Jothikumar[1], R. Shashidharamurthy[2], P. Selvaraj[2], and C. Zhu[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Fri-B-85
Engineering a Quantitative Erythroprogenitor Cellular Model with Fluorescent Hemoglobins to Optimize Sickle Cell Gene Therapy Strategies
D. W. Clough[1], I. Akinsanmi[1], G. A. Barabino[1], and M. O. Platt[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA*

P-Fri-B-86
Rational Design of Vitrification Procedures for Cryopreservation of Adherent Cell Monolayers
A. Fry[1], A. Z. Higgins[1], and R. Lusianti[1]
[1]*Oregon State University, Corvallis, OR*

P-Fri-B-87
Comparison of Efficacy of Endogenous and Exogenous IGF-I in Stimulating Matrix Production in Neonatal and Mature Chondrocytes
I. N. Aguilar [1], S. B. Trippel[2], and L. J. Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Indiana University School of Medicine, Indianapolis, IN*

P-Fri-B-88
Generation of Muscle Using Synthetic Biology
V. Grubisic[1], M. K. Gottipati[1], R. F. Stout Jr.[1], R. J. Grammer[1], and V. Parpura[1]
[1]*University of Alabama, Birmingham, Birmingham, AL*

P-Fri-B-89
Investigating the Dielectrophoretic Properties of Human Primary Prostate Cancer Cells
A. Salmanzadeh[1], M. Bonakdar[1], M. B. Sano[1], L. Romero[2], M. A. Stremler[1], S. D. Cramer[2], and R. V. Davalos[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of Colorado, Anschutz Medical Campus, Aurora, CO*

Track: Nano and Micro Technologies

Nano to Micro: Fluidic Technologies

P-Fri-B-90
Urea Clearance and Biocompatibility of Compact Hemodialysis Device with Silicon Nanomembranes
D. G. Johnson[1], T. S. Khire[1], and J. L. McGrath[1]
[1]*University of Rochester, Rochester, NY*

P-Fri-B-91
Opto-thermal Microfluidics Towards Solar-powered Diagnostics
L. Jiang[1], M. Mancuso[1], and D. Erickson[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-B-92
Numerical Simulation of Red Blood Cell Motion in Six-Stage Cascade Paramagnetic Mode Magnetophoretic Separation Systems
S. Kim[1] and D. P. Giddens[1]
[1]*Georgia Tech and Emory University, Atlanta, GA*

P-Fri-B-93
Droplet Sorting by the Number of Encapsulated Particles with A Monstable Microfluidic Diverter
Z. Cao[1], F. Chen[2], N. Bao[3], H. He[4], P. Xu[4], S. Jana[1], S. Jung[1], and C. Lu[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Nanjing University, Nanjing, China, People's Republic of,* [3]*Nantong University, Nantong, China, People's Republic of,* [4]*University of South Carolina, Columbia, SC*

P-Fri-B-94
Microfluidic Cells Sorting Via Surface Acoustic Wave Based Acoustophoresis
X. Ding[1], C. Chan[1], M. I. Lapsley[1], and T. Huang[1]
[1]*The pennsylvania State University, State college, PA*

P-Fri-B-95
Paper-Microfluidic pH Gradients for Protein Analysis
C. A. Holstein[1], K. A. Keniston[1], and P. Yager[1]
[1]*University of Washington, Seattle, WA*

P-Fri-B-96
Non-dimensional Analysis of Retinal Microaneurysms: Critical Threshold for Treatment
E. Ezra[1], E. Keinan[1], Y. Mandel[1], M. E. Boulton[2], and Y. Nahmias[1]
[1]*The Hebrew University, Jerusalem, Israel,* [2]*University of Florida, Lake City, FL*

P-Fri-B-97
Using Microfluidic Devices to Study Diseases of the Eye
E. Vargis[1], N. Mortensen[1], C. Foster[1], S. Retterer[1], and P. Collier[1]
[1]*Oak Ridge National Laboratory, Oak Ridge, TN*

P-Fri-B-98
Investigating Diffusion and Viscosity Using Optofluidics
M. I. Lapsley[1], N. Nama[1], S. Yazdi[1], P-H. Huang[1], and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA*

POSTER SESSION **FriB**

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-99
Gravity Induced Archimedean Spiral in Density Mismatched Multistream flow
C. Zhao[1] and X. Cheng[1]
[1]*Lehigh University, Bethlehem, PA*

P-Fri-B-100
A Selectively Permeable Microenvironment for Integrative Biology Via Microfluidics-assisted Double Emulsion
Y. Zhang[1], Y-P. Ho[1], T. Schuhmann[1], B. Chlebina[1], L. You[1], and K. W. Leong[1]
[1]*Duke University, Durham, NC*

P-Fri-B-101
Controlling Fluid Cross-sectional Shape by Programs of Pillars
H. Amini[1,2], M. Masaeli[1,2], E. Sollier[1,2], Y. Xie[3], B. Ganapathysubramanian[3], H. A. Stone[4], and D. Di Carlo[1,2]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*California NanoSystems Institute (CNSI), Los Angeles, CA,* [3]*Iowa State University, Ames, IA,* [4]*Princeton University, Princeton, NJ*

P-Fri-B-102
An Optofluidic Interferometer Capable of Measuring Minute Bubble Oscillations
M. I. Lapsley[1], D. Ahmed[1], C. Chindam[1], F. Guo[1], and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Fri-B-103
Continuous Particles Separation Via Surface Acoustic Wave Based Acoustophoresis
X. Ding[1], S. Li[1], C. Chan[1], and T. Huang[1]
[1]*The Pennsylvania State University, State college, PA*

POSTER SESSION **FriB**

P-Fri-B-104
Optical Switch Using Acoustically Driven Microbubbles
P-H. Huang[1], M. I. Lapsley[1], D. Ahmed[1], and T. J. Huang[1]
[1]*The Pennsylvania State University, State College, PA*

P-Fri-B-105
Deriving 2D Velocity Profile Using Streamlines Image Velocimetry (SIV)
E. Keinan[1], E. Ezra[1], and Y. Nahmias[1]
[1]*The Hebrew University, Jerusalem, Israel*

P-Fri-B-106
On-chip Standing Surface Acoustic Waves (SSAW) - based Droplet Sorter
S. Li[1], X. Ding[1], F. Guo[1], Y. Chen[1], M. I. Lapsley[1], and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Fri-B-107
Shear-free Microfluidic System for the Chemotaxis and Labeling of Cells
H. H. Chung[1], C. K. Chan[1,2], T. S. Khire[1], N. Nataraj[2], T. R. Gaborski[2], R. E. Waugh[1], and J. L. McGrath[1]
[1]*University of Rochester, Rochester, NY,* [2]*SiMPore Inc., West Henrietta, NY*

P-Fri-B-108
A Microfluidic Device for the Automated Delivery of Chemicals to Brain Slices and Other Tissues
E. Sinkala[1] and D. T. Eddington[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P-Fri-B-109
Magnetic Cell Separation by Inkjet Printing for Disease Monitoring
S. L. Natividad[1], M. Arevalo[2], J. Rincon[1], M. Yanez[1], M. Zeng[2], and T. Boland[1]
[1]*The University of Texas at El Paso, El Paso, TX,* [2]*Texas Tech University Health Sciences Center, Center of Excellence for Infectious Diseases, El Paso, TX*

P-Fri-B-110
The Use of Dielectrophoresis to Characterize Dielectric Properties of Cells Through the Cell Cycle
N. Naeemi Khondabi[1], H. J. Mulhall[1], H. O. Fatoyinbo[1], M. P. Hughes[1], and F. H. Labeed[1]
[1]*University of Surrey, Guildford, United Kingdom*

P-Fri-B-111
Gene Correction of Rare Non-adherent Cells Using a Capture Microfluidic and Microinjection System
D. R. Myers[1,2], R. N. Cottle[2], R. G. Mannino[2], H. Kim[2], G. Bao[1,2], and W. A. Lam[1,2]
[1]*Emory University, Atlanta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-B-112
Fabrication of Silk Fibroin Microspheres Using a Microfluidic Flow-Focusing Device
A. N. Mitropoulos[1], G. Perotto[1], D. Kaplan[1], and F. Omenetto[1]
[1]*Tufts University, Medford, MA*

P-Fri-B-113
A New Method for Simplifying Production of Monodisperse Microbubbles by Coupling Microfluidic Devices to a Pressurized Liquid Compartment
J. L. Chen[1], A. H. Dhanaliwala[1,2], S. Wang[1], and J. A. Hossack[1,2]
[1]*University of Virginia, Charlottesville, VA,* [2]*R.M. Berne Cardiovascular Research Center, Charlottesville, VA*

P-Fri-B-114
Lateral Dielectrophoretic Deflection Using Liquid Vertical Electrodes
J. Luo[1], E. Nelson[1], G-P. Li[1], and M. Bachman[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-B-115
High-throughput Selective Stimulation for *In Vivo* Imaging of *C. elegans* Based on High-Density Array Device
S. Kim[1], H. Lee[1], P. Mugno[2], M. Hilliard[2], and H. Lu[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*The University of Queensland, Brisbane, Australia*

P-Fri-B-116
Nanocomposites Synthesis by Three-Dimensional (3D) Hydrodynamic Focusing
M. Lu[1], Q. Hao[1], A. A. Nawaz[1], and T. J. Huang[1]
[1]*Pennsylvania State University, University Park, PA*

P-Fri-B-117
Separation of Cells by Stiffness Using Microfluidic Technology
G. Wang[1], W. Mao[1], C. Henegar[1], A. Alexeev[1], and T. Sulchek[1]
[1]*Georgia Tech, Atlanta, GA*

P-Fri-B-118
Self-Assembly and Characterization of Microfluidic Channels Made with Phase-Separation Approach
W. T. Kahsai[1] and S. M. Iqbal[1]
[1]*University of Texas Arlington, Arlington, TX*

P-Fri-B-119
Alginate Microgel Encapsulation of Microbes Using a 3D Microfluidic Droplet Generator
M. Lian[1], C. P. Collier[1], M. J. Doktycz[1], and S. T. Retterer[1]
[1]*Oak Ridge National Laboratory, Oak Ridge, TN*

P-Fri-B-120
Characterization of Enzyme Reaction Constant Via Acoustic Bubble Mixer
Y. Xie[1], D. Ahmed[1], M. I. Lapsley[1], S-C. S. Lin[1], A. A. Nawaz[1], and T. J. Huang[1]
[1]*Pennsylvania State University, State College, PA*

P-Fri-B-121
Progress in Microfluidic Digital Logic Towards an Autonomous Microcontroller
P. N. Duncan[1], T. V. Nguyen[1], S. Ahrar[1], and E. E. Hui[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-B-122
Microfluidic Nuclei Extraction from Circulating Tumor Cells for Genetic Analyses
E. Pratt[1], M. Blattner[2], A. Stepansky[3], H. Liu[2], N. Bander[2], J. Hicks[3], M. Rubin[2], and B. Kirby[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York City, NY,* [3]*Cold Spring Harbor, Cold Spring Harbor, NY*

P = Poster Session
OP = Oral Presentation

P-Fri-B-123
Chemical Waveform and Switch Using Acoustically Activated Bubbles
D. Ahmed[1], H. S. Muddana[1], M. Lu[1], B. Kiraly[1], A. Manz[2], S. J. Benkovic[1], and T. J. Huang[1]
[1]*Penn State University, University Park, PA,* [2]*Korea Institute of Science and Technology (KIST), Saarbruecken, Germany*

P-Fri-B-124
Pulsatile and High Precision Chemical Interface for Studying Cellular Dynamics
D. Ahmed[1], C. Chan[1], S. Yazdi[1], and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Fri-B-125
Passive Microfluidic Technique For Rotational Orientation of *C. elegans*
M. Zhan[1] and H. Lu[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-B-126
A PEG-DA Microfluidic Device for Cellular Chemotaxis Studies
A. Traore[1] and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-B-127
A Multi-Orientation Mmicrofluidic Device for Imaging of *C. elegans*
M. Casas[1], J. Stirman[1], M. Zhan[1], and H. Lu[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-B-128
Self-assembling Microfluidics for 3D Chemical Delivery
M. Jamal[1], Y. Kalinin[2], A. Zarafshar[2], L. Romer[2], and D. Gracias[2]
[1]*Johns Hopkins University, Baltimore,* [2]*Johns Hopkins University, Baltimore, MD*

P-Fri-B-129
Patternable, High Surface Area Electrodes for Integrated Microfluidic Systems
J. D. Pegan[1], M. Bachman[1], and M. Khine[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-B-130
MOVED TO ORAL

P-Fri-B-131
A Novel Fluid Wing Structure for Microfluidic Blood Plasma Separation
J. Park[1] and J-S. Yeo[1]
[1]*Yonsei University, Incheon, Korea, Republic of*

Track: Nano and Micro Technologies

Nanotoxicity and Nano-Bio Interfaces

P-Fri-B-132
Immortalization of Cells and Serum Opsonization Reduce Nanoparticle Cytotoxicity
K. I. McConnell[1], S. Ferrati[1], and R. E. Serda[1]
[1]*The Methodist Hospital Research Institute, Houston, TX*

P-Fri-B-133
Towards Carbon Nanoparticle-Based Stem Cell Tracking for Regenerative Medicine: Cytotoxicity of Carbon Nano-onions and Nanoribbons on Human Mesenchymal Stem Cells
J. T. Rashkow[1], Y. Talukdar[1], G. Lalwani[1], H. Liu[1], I. Cohen[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Fri-B-134
Ivy Nanoparticle, Suitable Candidate to Be Applied in Sunscreen Products
Y. Huang[1], S. C. Lenaghan[1], L. Xia[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

P-Fri-B-135
Functionalized Water Soluble Single-Walled Carbon Nanotubes Induce Hypertrophy and Hyper Reactivity of Cultured Mouse Cortical Astrocytes
M. K. Gottipati[1], E. Bekyarova[2], R. Haddon[2], and V. Parpura[1]
[1]*University of Alabama, Birmingham, AL,* [2]*University of California, Riverside, CA*

P-Fri-B-136
Evaluation of Cellular Function Upon Nanovector Exposure
J. O. Martinez[1,2], I. Yazdi[1,3], A. Parodi[1], M. V. Frazier[1,3], M. G. Kolonin[2], M. Ferrari[1], and E. Tasciotti[1]
[1]*The Methodist Hospital Research Institute, Houston, TX,* [2]*The University of Texas Health Science Center, Houston, TX,* [3]*University of Houston, Houston, TX*

P-Fri-B-137
Protein Corona Composition and Role in the Toxicity of Silica Nanoparticles
N. P. Mortensen[1], G. B. Hurst[1], W. Wang[1], C. M. Foster[1], P. D. Nallamthamby[2], and S. T. Retterer[1]
[1]*Oak Ridge National Laboratory, Oak Ridge, TN,* [2]*Battelle Memorial Institute, Columbus, OH*

P-Fri-B-138
Recovery of Cell Functions After the Disruption of the Endo-lysosomal Compartment
A. Parodi[1], S. Z. Khaled[1], B. S. Brown[1], L. Isenheart[1], and E. Tasciotti[1]
[1]*The Methodist Hospital Research Institute, Houston, TX*

P-Fri-B-139
Testing the Toxicity of Nanoparticles with Micro Cell Culture Analogs
M. B. Esch[1] and M. Shuler[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-B-140
In Silico Simulation of Carbon Nanotube and Pulmonary Surfactant Protein Binding
B. V. Dharmadhikari[1], L. V. Hmurcik[1], P. K. Patra[1], N. A. Mohammed[1], and D. Gondi[1]
[1]*University of Bridgeport, Bridgeport, CT*

POSTER SESSION **FriB**

Track: Neural Engineering

Neural Electrode Tissue Interface

P-Fri-B-141
Neural Toxicity and Adhesion Strength on Layer-by-Layer Carbon Nanotube Depositions
E. Franca[1], E. Keefer[2], L. Pan[1], S. Alagapan[1], and B. Wheeler[1]
[1]*University of Florida, Gainesville, FL,* [2]*Plexon, Inc., Dallas, TX*

P-Fri-B-142
Fabrication of a Neural Electrode with Gold Nanograin Structures Using Electrochemical Deposition
R. Kim[1] and Y. Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

P-Fri-B-143
Conducting Polymer Electrodes for Human Electrophysiological Recordings
P. Leleux[1,2], C. Benar[2], J-M. Badier[2], T. HervÃ©[3], P. Chauvel[2], and G. G. Malliaras[1]
[1]*Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan,* [2]*UniversitÃ© de la MÃ©diterranÃ©e, Marseille Cedex 05, France, Metropolitan,* [3]*Microvitae Technologies, Gardanne, France, Metropolitan*

P-Fri-B-144
Assessing the State of the Blood-Brain Barrier in Rats Implanted with Cortical Electrodes
T. Saxena[1], L. Karumbaiah[1], E. Gaupp[1], R. Patkar[1], M. Betancur[1], and R. Bellamkonda[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-145
Biodissolvable Delivery Vehicle for Ultra-Small, Ultra-Compliant, Ultra-Structured Neural Probes
T. D. Kozai[1], P. J. Gilgunn[2], R. Khilwani[2], X. Li[3], O. Ozdoganlar[2], G. K. Fedder[2], D. J. Weber[3], and X. Cui[3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon University, Pittsbrugh, PA, [3]University of Pittsburgh, Pittsbrugh, PA

P-Fri-B-146
A Novel Mechanism for Sustained Release of Minocycline and Neurotrophin from Hydrophilic Layer-by-Layer Assemblies for Neural Prostheses
Z. Zhang[1], C. A. Nix[1], J. A. Gerstenhaber[1], and Y. Zhong[1]
[1]Drexel University, Philadelphia, PA

P-Fri-B-147
In vivo Imaging of the Intracortical Microelectrode Interface Through a Thinned-Skull Window
A. J. Woolley[1], H. A. Desai[1], and K. J. Otto[1]
[1]Purdue University, West Lafayette, IN

P-Fri-B-148
A Novel Device for Securing Chronic Cortically Implanted Microelectrode Arrays in Rats
N. F. Nolta[1], J. L. Skousen[1], M. B. Christensen[1], S. A. Hudson[1], R. S. Oakes[1], and P. A. Tresco[1]
[1]University of Utah, Salt Lake City, UT

P-Fri-B-149
In Vivo Sensory Recordings using a Novel Skin-Flap Chamber and Custom Mechanical Indenter
K. B. Sugg[1], M. G. Urbanchek[1], Y. Baba[2], E. K. Kim[3], E. A. Lumpkin[2], G. J. Gerling[3], P. S. Cederna[1], and N. B. Langhals[1]
[1]University of Michigan, Ann Arbor, MI, [2]Columbia University College of Physicians & Surgeons, New York, NY, [3]University of Virginia, Charlottesville, VA

P-Fri-B-150
In Vivo Electrically Controlled Release of Dexamethasone from Carbon Nanotube-Doped PEDOT-Coated Microwires in Rat Cortex
N. A. Alba[1], K. A. Catt[1], Z. Du[1], T. D. Kozai[1], and X. T. Cui[1]
[1]University of Pittsburgh, Pittsburgh, PA

Track: Neural Engineering

Neural Engineering Technology

P-Fri-B-151
Recording of Rabbit Sciatic Nerve Activity Using Interfascicular Electrodes
I. Kolb[1] and D. J. Tyler[1]
[1]Case Western Reserve University, Cleveland, OH

P-Fri-B-152
Artifact Setection in EEG Using Spatial Distribution of Signal Energy
A. M. Skupch[1], M. Hartmann[1], H. Perko[1], F. Fürbass[1], G. Gritsch[1], T. Kluge[1], and C. Baumgartner[2]
[1]AIT, Vienna, Austria, [2]General Hospital Hietzing, Vienna, Austria

P-Fri-B-153
Development of Real-time Feedback System for the Study of Neural Plasticity
S. Joo[1], S. Lee[1], and Y. Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

P-Fri-B-154
A Novel High-Contact Deep Brain Stimulating Electrode for Charge Steering
A. Willsie[1] and A. D. Dorval[1]
[1]University of Utah, Salt Lake City, UT

P-Fri-B-155
A Removable Multi-Well Chambering System for Neuronal Networks Cultured on Micro-Electrode Arrays
M. P. Powell[1], M-F. Fong[1,2], and S. M. Potter[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory Unitversity, Atlanta, GA

P-Fri-B-156
Determination of Electrode Current in Microwave Powered Neurostimulators
B. Towe[1] and D. Gulick[1]
[1]Arizona State University, Tempe, AZ

Track: Neural Engineering

Neuro Trauma, Injury, and Repair

P-Fri-B-157
Application of Numerical C57BL/6J and Transgenic Mouse Brain Models to Guide Controlled Cortical Impact Experiments
H. Mao[1], B. Jiang[1,2], V. Genthikatti[1], and K. Yang[1]
[1]Wayne State University, Detroit, MI, [2]Hunan University, Changsha, China, People's Republic of

P-Fri-B-158
Neurochemical Changes in Motor Cortex, Cerebellum and Brain Stem Following Overpressure Exposure
S. Sajja[1], F. Ghoddoussi[2], M. Galloway[2], and P. VandeVord[1,3]
[1]Virginia Polytechnic and State University, Blacksburg, VA, [2]Wayne State University, Detroit, MI, [3]Veteran's Administration Medical Center, Salem, VA

P-Fri-B-159
Intracranial Pressures in Mice Subject to Shockwaves
Y. Chen[1], D. M. Gullotti[1], and D. F. Meaney[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Fri-B-160
A Model of Blast Induced Traumatic Brain Injury in Mice
D. Gullotti[1], Y. Chen[1], T. Patel[1], T. Merdiushev[1], N. Jaumard[1], B. Winkelstien[1], B. Morrison[2], D. Bass[3], M. Panzer[3], and D. Meaney[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Columbia University, New York, NY, [3]Duke University, Durham, NC

P-Fri-B-161
Modeling Brain Injury Response with Translations and Rotations of Varying Directions and Magnitudes
A. A. Weaver[1,2], K. A. Danelson[1,2], and J. D. Stitzel[1,2]
[1]Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

P-Fri-B-162
High Throughput, 3D Compression Injury Model of an Axon in the Setting of a Gradient
B. G. Chennuri[1], K. Krick[2], L. Rajbhandari[2], R. Siddique[2], S. Hosmane[2], A. Fournier[1], I. Yang[2], A. Venkatesan[2], H-Q. Mao[1], and N. Thakor[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University School of Medicine, Baltimore, MD

P-Fri-B-163
Blast Wave Effects on Neural Cell Cultures
R. McCulloch[1], A. Bagchi[1], K. Simmonds[2], and T. O'Shaughnessy[1]
[1]U.S. Naval Research Laboratory, Washington, DC, [2]Science Applications International Corporation, Washington, DC

P-Fri-B-164
Novel Simulation-Based Analysis of the Biomechanics of Blast-Related Traumatic Brain Injury
R. Prabhu[1], M. F. Horstemeyer[2], Y. Mao[2], E. B. Marin[2], L. N. Williams[1], and J. Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]Mississippi State University, Starkville, MS

POSTER SESSION FriB

P = Poster Session
OP = Oral Presentation

P-Fri-B-165
Investigation of Traumatic Brain Injury Mechanisms with Magnetic Resonance Spectroscopy and Immunohistochemistry
E. M. Fievisohn[1], B. M. Vaughn[1], and W. N. Hardy[1]
[1]Virginia Tech-Wake Forest Center for Injury Biomechanics, Blacksburg, VA

P-Fri-B-166
Characterization of a Novel Device for *In Vitro* Blast Neurotrauma
C. E. Hampton[1], B. A. Mathie[2], and P. J. VandeVord[1]
[1]Virginia Tech, Blacksburg, VA, [2]Wayne State University, Detroit, MI

P-Fri-B-167
Inversely Multiphasic Neuroinflammatory and Neurodegenerative Responses Exist Following Stab Injury and Device Implantation within the Cerebral Cortex
K. A. Potter[1,2], A. C. Buck[1,2], W. K. Self[1,2], and J. R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]L Stokes Cleveland VA Medical Center, Cleveland, OH

P-Fri-B-168
Head Impact Exposure in Youth Football
R. W. Daniel II[1], S. Rowson[1], and S. M. Duma[1]
[1]Virginia Tech - Wake Forest University, Blacksburg, VA

P-Fri-B-169
Validation of 7-day-old Pig Head Finite Element Model and Applications in Pediatric Head Trauma
P. Skelton[1], X. Jin[1], and K. Yang[1]
[1]Wayne State Univeristy, Detroit, MI

P-Fri-B-170
Molecular Response of Peripheral Nerve to Chronic Electrode Implants
T. Musa[1], M. Romero-Ortega[2], and E. Keefer[1]
[1]Plexon Inc, Dallas, TX, [2]University of Texas at Arlington, Arlington, TX

P-Fri-B-171
Balance Impairment After Closed Head Mild Traumatic Brain Injury in the Rat
P. Kwon[1], M. Park[2], and M. LaPlaca[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Techonology, Atlanta, GA

P-Fri-B-172
Mechanical Injury-Induced Neuroinflammation in a 3-D Neural Cell Culture Model
J. T. Shoemaker[1,2], S. Selvam[1], A. J. Garcia[1], and M. C. LaPlaca[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Fri-B-173
The Effect of High Frequency AC Electrical Stimulation on Neurite Growth
P. J. Kumar[1], E. D. Engeberg[1], and R. K. Willits[1]
[1]The University of Akron, Akron, OH

P-Fri-B-174
3-Dimensional Characterization of Axon Tortuosity in White Matter
S. Singh[1], V. Patel[1], D. I. Shreiber[1], and A. Pelegri[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

P-Fri-B-175
Predicting Brain Injury: The Combined Probability of Concussion
S. Rowson[1] and S. M. Duma[1]
[1]Virginia Tech, Blacksburg, VA

Track: New Frontiers and Special Topics

Cellular Machines

P-Fri-B-176
Walking Biological Machines with Hydrogels and Cardiomyocytes using a 3D Stereolithographic Printer
V. Chan[1], M. Collens[1], T. Saif[1], H. Kong[1], and R. Bashir[1]
[1]University of Illinois, Urbana-Champaign, Urbana, IL

Track: New Frontiers and Special Topics

Engineering Immunology and Immunotherapy

P-Fri-B-177
Clustering Antibodies in Tumors Using a Self-Assembling Injectable System
W. S. Meng[1,2], Y. Wen[1], N. G. Giannoukakis[3], and E. S. Gawalt[1,4]
[1]Duquesne University, Pittsburgh, PA, [2]CMU Molecular Biosensor and Imaging Center, Pittsburgh, PA, [3]University of Pittsburgh, Pittsburgh, PA, [4]McGowan Institute of Regenerative Medicine, Pittsburgh, PA

P-Fri-B-178
Optical Manipulation of T-lymphocyte Activation
H. Chen[1], K. Bashour[1], M. Huse[2], and L. Kam[1]
[1]Columbia University, NEW YORK, NY, [2]Memorial Sloan-Kettering Cancer Center, New York, NY

P-Fri-B-179
Microfluidic Devices for Investigation of Rare T cell Population
J-H. Lee[1] and L. C. Kam[1]
[1]Columbia University, New York, NY

P-Fri-B-180
Engineering Therapeutic Proteins for Immune Modulation
T. F. Chen[1], K. Li[1], and K. D. Wittrup[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-B-181
Topography and Nuclei of Endothelial Cells Guided Intralumenal Crawling Direction of T Cells under Flow
K. Song[1], K. Kwon[2], K-Y. Suh[3], and J. Doh[1]
[1]POSTECH, Pohang-si, Korea, Republic of, [2]Cornell University, Ithaca, NY, [3]Seoul National University, Seoul, Korea, Republic of

P-Fri-B-182
Nanotopography-guided Migration of T Cells
K. Kwon[1], H-J. Park[2], K-Y. Suh[1], and J. Doh[2]
[1]Seoul National University, Seoul, Korea, Republic of, [2]POSTECH, Pohang, Korea, Republic of

P-Fri-B-183
Oxidation of Protein Tyrosine Phosphatases in T Cell Receptor Signaling
M. A. Phillips[1] and M. L. Kemp[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Fri-B-184
Pharmacological Manipulation of Human T-cell Expansion
G. K. Hickey[1], R. O'Connor[2], M. C. Milone[2], and L. C. Kam[1]
[1]Columbia University, New York, NY, [2]University of Pennsylvania, Philadephia, PA

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-185
Photoactivation of Micropatterned Antibodies
D. Dutta[1], M. Akeju[1], and L. Kam[1]
[1]Columbia University, New York, NY

P-Fri-B-186
Exchange Sialylation Mediated by Human ST3Gal-I Allows Swapping of N-glycolylneuraminic Acid and N-acetylneuraminic Acid in O-glycans
R. Gupta[1], K. L. Matta[2,3], W. F. Vann[4], and S. Neelamegham[1]
[1]Chemical and Biological Engineering, State University of New York, Buffalo, NY, [2]TumorEnd, LLC, Louisiana Emerging Technology Center, Baton Rouge, LA, [3]Dept. of Biological Sciences, Louisiana State University, Baton Rouge, LA, [4]Laboratory of Bacterial Polysaccharides, DBPAP, OVRR, CBER, FDA, Bethesda, MD

P-Fri-B-187
Fc Functionalized Microparticles for Macrophage and Complement System Modulation
P. M. Pacheco[1], D. White[2], and T. Sulchek[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Centers for Disease Control and Prevention, Atlanta, GA

P-Fri-B-188
Select Chemokines Program Dendritic Cell Maturation and Control Antigen-Specific T Cell Proliferation
J. Park[1] and J. D. Bryers[1]
[1]University of Washington, Seattle, WA

P-Fri-B-189
Combinatorial Delivery of Nucleic Acid Loaded Micro- and Nanoparticles and Chemokine to Dendritic Cells Via *In Situ* Crosslinking Hydrogel: A Synthetic Immune-Priming Center (sIPC) for Cancer Immunotherapy
P. Pradhan[1], J. Leleux[1], E. Dawson[1], I. Sakamaki[2], H. Qin[2], L. W. Kwak[2], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX, [2]UT MD Anderson Cancer Center, Houston, TX

P-Fri-B-190
Directed Evolution of a Scaffold Protein for Targeted Delivery of Antigens
L. Xiao[1], K-C. Hung[2], R. Roberts[3], and P. Wang[2]
[1]University of Southern California, Los Angeles, CA, [2]University of Southern California, LOS ANGELES, CA, [3]University of Southern California, Los Angeles

Track: New Frontiers and Special Topics

Molecular Imaging Probes

P-Fri-B-191
Discretized Antibody Signal Level Modulation Using Branched DNA Probes for Fluorescence Imaging
J. Zimak[1], R. M. Schweller[1], D. Y. Duose[1], W. M. Hittelman[2], and M. R. Diehl[1]
[1]Rice University, Houston, TX, [2]MD Anderson Cancer Center, Houston, TX

P-Fri-B-192
Ultrasensitive Detection of Tuberculosis and Fungi Pathogens in Clinical Samples Using Modified Commercial ELISA with 4 Orders Higher Sensitivity
A. P. Acharya[1], X. Feng[1], K. Kundu[2], B. Kline[1], S. Miller[3], D. Portnoy[1], J. Rengarajan[4], and N. Murthy[1]
[1]University of California, Berkeley, CA, [2]Li-Cor Biosciences, Lincoln, NE, [3]University of California, San Francisco, CA, [4]Emory Vaccine Center, Emory University, Atlanta, GA

P-Fri-B-193
Design and Validation of a Novel Protein Beacon for Studies of HIV-1 CA Protein
H. shen[1], P. Spearman[2], and G. Bao[1]
[1]Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Department of Pediatrics, Children¡¯s Healthcare of Atlanta and Emory University, Atlanta, GA

P-Fri-B-194
Protein Beacon Targeting of Endogenous Heterotrimeric Guanine-Nucleotide Binding Proteins
R. N. Cottle[1], G. Bao[1], and J. Hepler[2]
[1]Georgia Tech, Atlanta, GA, [2]Emory University School of Medicine, Atlanta, GA

P-Fri-B-195
Batch Synthesis of Molecular Imaging Probes in High-Pressure Microreactor with Phase-Change Valves
X. Ma[1], W-Y. Tseng[1], M. Eddings[1], and R. M. van Dam[1]
[1]University of California, Los Angeles (UCLA), Los Angeles, CA

Track: New Frontiers and Special Topics

Synthetic Biology in Bioengineering

P-Fri-B-196
Error Correction of Microchip Synthesized Genes using Surveyor Nuclease: Enabling High-throughput Gene Synthesis for Synthetic Biology
S. Ma[1], I. Saaem[1], and J. Tian[1]
[1]Duke University, Durham, NC

P-Fri-B-197
A Tissue-Engineered Jellyfish with Biomimetic Propulsion and Feeding Currents
J. C. Nawroth[1], H. Lee[2], A. W. Feinberg[2], C. M. Ripplinger[2], M. L. McCain[2], A. Grosberg[2], J. O. Dabiri[1], and K. K. Parker[2]
[1]Caltech, Pasadena, CA, [2]Harvard University, Cambridge, MA

P-Fri-B-198
Using Noncanonical Amino Acids to Study Cell-cell Interactions: Identifying Secreted Proteins
A. Mahdavi[1] and D. A. Tirrell[1]
[1]Caltech, Pasadena, CA

P-Fri-B-199
Molecular Crowding Shaping of Gene Expression Dynamics
C. Tan[1], S. Saurabh[1], M. P. Bruchez[1], R. S. Schwartz[1], and P. R. LeDuc[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P-Fri-B-200
Metabolic Channeling in Enzyme Cascades
O. Idan[1] and H. Hess[1]
[1]Columbia University, New York, NY

Track: New Frontiers and Special Topics

New Frontiers & Special Topics - Undergraduate

P-Fri-B-201
Application of a Mathematical Tool to Study Cell Aggregation and Viscosity in Diabetics with End Stage Renal Disease
D. Stewart[1], N. Mitrovic[2], N. Beltran[2,3], M. Hammes[4], and P. Dhar[2]
[1]Florida International University, Miami, FL, [2]Illinois Institute of Technology, Chicago, IL, [3]St. Ignatius College Prep, Chicago, [4]University of Chicago, Chicago, IL

P-Fri-B-202
Needle Steering via Duty-Cycled Rotation with Different Bevel Angles
A. Sutanto[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P-Fri-B-203
A Computer-Controlled System to Simulate Heat Stroke *In Vitro*
D. W. Zhou[1], D. C. Clarke[1], W. Inman[1], L. R. Leon[2], and D. A. Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Thermal and Mountain Medicine Division, U.S. Army Research Institute for Environmental Medicine, Natick, MA

POSTER SESSION **FriB**

P = Poster Session
OP = Oral Presentation

P-Fri-B-204
Quantifying the Forces and Position of an Endoscope
J. Shui[1], K. Bieryla[1], E. Geist[1], and D. Diehl[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

P-Fri-B-205
Integrated Punch Biopsy Kit
N. Ganesh Kumar[1], K. Cheng[1], A. Guduru[1], S. Kwon[1], M. Tanigawa[1], T. Gaigalas[1], and B. Zhang[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Fri-B-206
Quantifying Galpha-i1 Subunit Protein Beacon Delivery into Live Cells Permeabilized with Streptolysin-O
A. Sundararaghavan[1], R. Cottle[2], and G. Bao[2]
[1]*Georgia Institute of Technology, Alpharetta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-B-207
Construction of an a Translucent Upper GI Model for Endoscopic Testing
S. Talbot[1], K. Bieryla[1], E. Geist[1], and D. Diehl[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

P-Fri-B-201
A Complete Methodology for Determining Head Impacts
K. McNamara[1], R. Bar-Kochba[2], L. Litichevskiy[1], C. Franck[1], and J. Blume[1]
[1]*Brown University, Providence, RI,* [2]*University at Buffalo, Buffalo, NY*

P-Fri-B-202
Investigating the Microfibrillar Structure of Cellulose from a Macroalgae using High Resolution Imaging
M. Malleswaran[1], P. J. O'Dell[2], and T. Jeoh[2]
[1]*University of California San Diego, La Jolla, CA,* [2]*University of California Davis, Davis, CA*

P-Fri-B-203
A Biomechanical Description of the Head Movement During Locomotion in the Cat
A. K. Rollando[1,2], I. N. Beloozerova[2], and T. J. Rivers[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Barrow Neurological Institute, Phoenix, AZ*

P-Fri-B-204
A Molecular Dynamics Investigation of the Impact of Surface Chemistry on the Binding of Surrogate Human Norovirus Capsid Proteins
D. J. Peeler[1] and S. Matysiak[1]
[1]*University of Maryland, College Park, MD*

P-Fri-B-205
Effect of Curcumin on Glioma Single Cell Force Generation
S. Bhatia[1], P. Sharma[2], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia Tech, Blacksburg*

P-Fri-B-206
Toward a Biophysical Model for the Gilding Motility of Infectious Bacteria Clostridium perfringens
J. Mason[1], S. Melville[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-B-207
Evaluation of Design Gate Methods Applied to Clinical and Industry Sponsors
A. Kaiser[1] and J. D. DesJardins[2]
[1]*Clemson University, Clemson,* [2]*Clemson University, Clemson, SC*

Track: Orthopedic and Rehabilitation Engineering

Orthopedic Biomechanics

P-Fri-B-208
Low Intensity Vibrations Following Radiation Exposure Reduce Bone Marrow Adiposity in C57BL/6 Mice
J. Lennon[1], D. Green[2], M. E. Chan[2], and C. T. Rubin[2]
[1]*Stony Brook University, West Babylon, NY,* [2]*Stony Brook University, Stony Brook, NY*

P-Fri-B-209
Vertebral Endplate Subsidence Mapping Under Fatigue Loading
A. Valdevit[1], T. Errico[2], and A. Ritter[1]
[1]*The Stevens Institute of Technology, Hoboken, NJ,* [2]*NYU Langone Medical Center, New York, NY*

P-Fri-B-210
Preliminary Results for Determining the Duration of Slip Induced Gait Alterations
D. Beringer[1], M. Madigan[1], and S. Matrangola[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-B-211
Biomechanical Model of the Knee Joint to Understand the Role of the Anterior Cruciate Ligament
J. M. Jaslove[1] and N. A. Langrana[1]
[1]*Rutgers University, Piscataway, NJ*

P-Fri-B-212
Effects of Dynamic Hydraulic Stimulation in a Rat Hind-Limb Disuse Model
M. Teeratananon[1], M. Hu[1], and Y-X. Qin[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Fri-B-213
Finite Element Model Predicting the Initiation of Superior Labrum Anterior-Posterior Lesion
E. Hwang[1], J. Carpenter[1], and M. Palmer[1,2]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Reveal Technologies Group, Grand Rapid, MI*

P-Fri-B-214
Sensitivity of Body Region Injury Risk Prediction to Vehicle Age in Motor Vehicle Collisions
K. D. Kusano[1] and H. C. Gabler[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-B-215
Estimate of Endurance Capacity of Biceps Brachii Muscle Using Alternative Spectral Ratio
S. Lee[1] and K. Lee[1]
[1]*Kwandong University, Gangneung, Korea, Republic of*

P-Fri-B-216
Distal Biceps Tendon Repair: A Biomechanical Comparison of an Interference Screw and New Hybrid Button/Screw Technique
W. Camisa[1], H. Patel[1], A. Arianjam[2], J. Leasure[1], and W. Montgomery[3]
[1]*The Taylor Collaboration, San Francisco, CA,* [2]*St. Mary's Medical Center, San Francisco, CA,* [3]*San Francisco Orthopaedic Surgeons Medical Group, San Francisco, CA*

P-Fri-B-217
Development of a Torsion Tester for Measuring Murine Bone Properties Following Distraction Osteogenesis
B. Sherrod[1]
[1]*University of Alabama at Birmingham, Bimingham, AL*

POSTER SESSION **FriB**

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-218
Mechanical Performance of Matrix-Assisted Chondrocyte Implantation (MACI) Grafts
D. J. Griffin[1], D. Lachowsky[1], E. Bonnevie[1], J. Hart[1], H. Sparks[1], I. Cohen[1], A. Nixon[1], and L. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-B-219
Kinetics of Relaxed and Braced Human Volunteers in Low-Speed Frontal Sled Tests
S. M. Beeman[1], A. R. Kemper[1], M. L. Madigan[2], and S. M. Duma[1]
[1]*Virginia Tech - Wake Forest University, Blacksburg, VA,* [2]*Virginia Tech, Blacksburg, VA*

P-Fri-B-220
Mechanical Characterization of an External Fixator For Use in a Mouse Model
J. A. Currey[1] and T. Albano[1]
[1]*Union College, Schenectacy, NY*

P-Fri-B-221
Age-related Degenerative Morphological Changes in Lumbar Discs: A CT Scan Study in Mid-sagittal Plane
M. Hussain[1], C. De Geer[1], and K. P. Storm[1]
[1]*Logan University, Chesterfield, MO*

P-Fri-B-222
Elasticity of Normal and Degraded Bovine Caudal Intervertebral Discs
G. Nijsure[1], E. Growney[1], G. Espinosa[1], and J. G. Bledsoe[1]
[1]*Saint Louis University, St Louis, MO*

POSTER SESSION **FriB**

P-Fri-B-223
Characteristics of Child Fatalities in US Motor Vehicle Crashes from 1995-2009
L. M. Sandberg[1] and H. C. Gabler[1]
[1]*Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Blacksburg, VA*

P-Fri-B-224
Injury Risk to Children Exposed to Low Risk Deployment of Advanced Airbags
L. M. Sandberg[1] and H. C. Gabler[1]
[1]*Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Blacksburg, VA*

P-Fri-B-225
Motorcyclist Fatality Risk: The Influence of Collision Partner Body Style
A. Daniello[1] and H. C. Gabler[1]
[1]*Virginia Tech - Wake Forest University, Blacksburg, VA*

P-Fri-B-226
Effects of Pre-Impact Bracing on Human Occupant Muscle Activation in Low-Speed Frontal Sled Tests
A. R. Kemper[1], S. M. Beeman[1], M. L. Madigan[2], and S. M. Duma[1]
[1]*Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA,* [2]*Virginia Tech, Blacksburg, VA*

P-Fri-B-227
Evaluation of Angular Velocity Data from Inertial Measurement Units for Use in Clinical Settings
C. Ex-Lubeskie[1], R. Hutchinson[2], and L. Benson[1]
[1]*Clemson University, Clemson, SC,* [2]*Furman University, Greenville, SC*

P-Fri-B-228
Design of a New Transducer for Measuring Shear Stresses at the Foot-Shoe Interface
E. C. MacAslan[1], B. Roux[1], K. N. Lewis[1], and G. A. Livesay[1]
[1]*Rose-Hulman Institute of Technology, Terre Haute, IN*

P-Fri-B-229
Finite Element Analysis and Validation of a Clavicle under Transient Loading
R. Rusovici[1] and M. Pendergast[1,2]
[1]*Florida Institute of Technology, Melbourne, FL,* [2]*Harris Corporation, Melbourne, FL*

P-Fri-B-230
The Effects of Cortical Thickness, Bone Strength, and Screw Length on Rigid Sternal Fixation Stability
N. B. Price[1], N. H. Kim[1], B. Wilcox[2], and B. Hatcher[2]
[1]*University of Florida, Gainesville, FL,* [2]*Biomet, Jacksonville, FL*

P-Fri-B-231
Modeling the Action of Multiarticular Muscles: Importance of Tendon, Anatomic Pulley and Joint Contact Forces
J. Towles[1] and V. Hentz[2]
[1]*University of Wisconsin-Madison, Madison, WI,* [2]*Stanford University, Palo Alto, CA*

P-Fri-B-232
Correlation of Extraction Force of Kirschner (K-) Wire to Bone Mineral Density: A Pilot Study
E. A. Kennedy[1], K. E. Desharnais[1], and T. R. Bowen[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

P-Fri-B-233
Finite Element Design and Experimental Testing of a Novel Triangular External Fixator Configuration for Tibial Shaft Fracture Treatment
C. Salas[1], M. Reda Taha[1], T. A. DeCoster[1], and D. Hoopes[1]
[1]*University of New Mexico, Albuquerque, NM*

P-Fri-B-234
Micro-scale Mechanical Effect of the Micro-Textured Carbide-Coated CoCrMo Alloy Surfaces After Wear Testing
G. Ettienne-Modeste[1]
[1]*University of Maryland, Baltimore County, Baltimore, MD*

P-Fri-B-235
Biomedical Testing of PRP Augmented Microfracture on Cartilage Regeneration in a Lapine Model
M. C. Ware[1]
[1]*Clemson University, Seneca, SC*

Track: Orthopedic and Rehabilitation Engineering

Prostheses

P-Fri-B-236
Kinematic Asymmetries While Using a Common Ankle Foot Orthosis
A. B. Wanamaker[1], B. S. Davidson[1,2], and C. L. Christiansen[2], D. Saint-Phard[1]
[1]*University of Denver, Denver, CO,* [2]*University of Colorado Anschutz Medical Campus, Aurora, CO*

P-Fri-B-237
The Correlation of Implant Surface Micro-Hardness and Service Lifetime for Different Retrieved Femoral Component Materials
R. Freed[1], E. Alvarez[1], C. Eljach[1], and J. D. DesJardins[1]
[1]*Clemson University, Clemson, SC*

P-Fri-B-238
Mechanical Disassmbly and Damage Assessment of Retrieved Femoral Stems with Modular Necks
R. Csernica[1], M. Harman[1,2], M. Baleani[2], G. Tozzi[2], P. Erani[2], S. Stea[2], and A. Toni[2]
[1]*Clemson University, Clemson, SC,* [2]*Rizzoli Orthopaedic Institute, Bologna, Italy*

P-Fri-B-239
Characterizing Metal-Polymer Bearing Couples of Knee Replacement Prostheses Retrieved After *In Vivo* Function
N. Durig[1], E. Alvarez[1], and M. Harman[1]
[1]*Clemson University, Clemson, SC*

P = Poster Session
OP = Oral Presentation

P-Fri-B-240
Surface Roughness of Dislocated Metal Hip Heads Retrieved After Total Hip Replacement
K. Keith[1], A. Hodge[2], and M. Harman[1]
[1]Clemson University, Clemson, SC, [2]University of Maine, Bangor, ME

P-Fri-B-241
Comparison of Zero-Order and First-Order Control in Noisy Prosthesis Control Systems
R. E. Van Aartsen[1] and J. W. Sensinger[1]
[1]Northwestern University, Chicago, IL

P-Fri-B-242
The Effect of Press-Fit on the Seating of an Endoprosthesis: An Idealized Model
G. J. Noble[1], M. J. Allen[1], N. Fitzpatrick[2], and R. T. Hart[1]
[1]The Ohio State University, Columbus, OH, [2]Fitzpatrick Referrals, Godalming, Surrey, United Kingdom

P-Fri-B-243
Failure Analysis of a UHMWPE Articular Tibial Component from a TKR
N. Camacho[1] and S. W. Stafford[1]
[1]University of Texas at El Paso, El Paso, TX

P-Fri-B-244
Baseball Swing Performance of a Transradial Amputee
S. L. Carey[1], M. Wernke[1], D. Lura[1], and R. Dubey[1]
[1]University of South Florida, Tampa, FL

P-Fri-B-245
Real-time Myoelectric Control of a Virtual Arm
C. Pulliam[1], J. Lambrecht[1], and R. Kirsch[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH

P-Fri-B-246
Prosthetic Socket Interface Motion: A Case Study
M. Wernke[1], D. Lura[1], S. Carey[1], and R. Dubey[1]
[1]University of South Florida, Tampa, FL

P-Fri-B-247
Hydroxyapatite Coating On Titanium Alloy (Ti6Al4V) Substrate By Sol-gel Based Dip Coating
G. Bhatt[1], C. Tinajero[1], G. Selvaduray[1], and M. Mobed-Miremadi[1]
[1]San Jose State University, San Jose, CA

P-Fri-B-248
Novel Design of Finger and Toe Total Joint Replacement
A. C. Weems[1] and H. V. Vo[1]
[1]Mercer University, Macon, GA

P-Fri-B-249
Novel Design of Total Elbow Replacement Joint
A. C. Weems[1] and H. V. Vo[1]
[1]Mercer University, Macon, GA

P-Fri-B-250
Conditions of Lower Limb Amputees in the State of Chihuahua Mexico.
D. Comaduran[1], K. Bustamante[1], F. Mendoza[2], and M. Madrigal[2]
[1]ITESM Campus Chihuahua, Chihuahua, Mexico, [2]Centro de Rehabilitacion y Educacion Especial, Chihuahua, Mexico

Track: Stem Cell Engineering

Stem Cells and Tissue Engineering

P-Fri-B-251
Vocal Fold-Mimetic Environment for the Modulation of Stem Cell Behaviors
Z. Tong[1] and X. Jia[1,2]
[1]University of Delaware, Newark, DE, [2]University of Delaware, newark, DE

P-Fri-B-252
Coculture-Driven MSC-Differentiated Cells Resemble Articular Chondrocytes with Reduced Hypertrophy
Y-H. Yang[1] and G. A. Barabino[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-B-253
Adult Neural Progenitor Cells Partially Protect Mature MEA-plated Neuronal Networks From OGD-induced Death and Silencing
B. K. Ormerod[1], C. L. Stephens[1], and T. B. DeMarse[1]
[1]University of Florida, Gainesville, FL

P-Fri-B-254
Modulating Cell Cycle Inhibitors to Control Progenitor Cell Fate Decisions
P. Thakore[1] and C. A. Gersbach[1]
[1]Duke University, Durham, NC

P-Fri-B-255
Role of Membrane Cholesterol in Adipogenesis: Involvement of ERM Linker Proteins
S. Sun[1], D. Adyshev[1], B. Lutz[2], E. Smith[3], S. Dudek[1], and M. Cho[1]
[1]University of Illinois, Chicago, IL, [2]Baxter Healthcare, Deerfield, IL, [3]West Aurora High School, West Aurora, IL

P-Fri-B-256
Adipose-derived Stem Cell Differentiation to Uroepithelial-like Cells *In Vitro*
J. P. Turner[1] and J. Nagatomi[2]
[1]Clemson University, Central, SC, [2]Clemson University, Clemson, SC

P-Fri-B-257
Robust Vessel-forming Capability of Endothelial Cells Differentiated from Human Ppluripotent Stem Cells Via a Novel Two-Dimensional Serum Free Differentiation System
S-J. Lee[1], S. Kim[1], J. Byun[1], J. Han[1], and Y-S. Yoon[1]
[1]EMORY University, Atlanta, GA

P-Fri-B-258
Characterizing the Effect of Matrices, Growth Factors, and Inhibitors on Mouse Embryonic Stem Cells for Early Vascular Differentiation.
D. Kim[1], E. Lynch[1], and G. Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Fri-B-259
Lentiviral Arrays for High Throughput Monitoring of Pathway Activation in Nanog-Expressing Human Mesenchymal Stem Cells
J. Moharil[1], P. Mistriotis[1], H. You[1], P. Lei[1], J. Tian[1], and S. Andreadis[1,2]
[1]University at Buffalo-SUNY, Amherst, NY, [2]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

P-Fri-B-260
Chondrotuning of hESCs for Hyaline Cartilage Regeneration
J. K. Lee[1], V. P. Willard[2], J. Sanchez-Adams[2], and K. A. Athanasiou[1]
[1]University of California, Davis, Davis, CA, [2]Duke University, Durham, NC

P-Fri-B-261
Human Embryonic Stem Cell-Derived Villous Cytotrophoblast Model for Studying Human Placental Development
P. Sarkar[1], S. Randall[1], T. Collier[1], A. Nero[1], T. Russell[1], D. Muddiman[1], and B. Rao[1]
[1]North Carolina State University, Raleigh, NC

POSTER SESSION **FriB**

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-262
Inhibiting Non-Stem Cell Proliferation by Etoposide
O. S. Beane[1] and E. M. Darling[1]
[1]Brown University, Providence, RI

P-Fri-B-263
Elucidation of Stem Cell Adipogenic Differentiation in Response to Mechano-Topographical Cues
H. Naimipour[1], S. Sun[2], and M. Cho[2]
[1]University of Illinios, Chicago, IL, [2]University of Illinois, Chicago, IL

P-Fri-B-264
Platelet Rich Plasma (PRP) and Connective Tissue Growth Factor (CTGF) Promote Differential Patterns of Scaffold Ingrowth on a Porcine Acellular Dermal Matrix.
J. Fernandez-Moure[1,2], B. Bass[1], E. Tasciotti[2], and B. Weiner[1]
[1]The Methodist Hospital, Houston, TX, [2]The Methodist Hospital Research Institute, Houston, TX

P-Fri-B-265
Investigating Mechanical Property Change During Vascular Smooth Muscle Cell Differentiation of Stem Cells from Different Sources
R. Chen[1] and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Fri-B-266
Quantifying the Effects of Nuclease Delivery on the Functionality of Hematopoietic Stem Cells
R. N. Cottle[1], G. Bao[1], D. Archer[2], W. A. Lam[1,2], and D. R. Myers[1]
[1]Georgia Tech, Atlanta, GA, [2]Emory University School of Medicine, Atlanta, GA

POSTER SESSION **FriB**

P-Fri-B-267
SMAD and PI3K Signaling Pathways Involved in Shear Stress-Induced Pluripotency Gene Expression in Embryonic Stem Cells
K. D. Rinker[1], R. D. Shepherd[1], G. Lara[1], D. Rancourt[1], and M. Kallos[1]
[1]University of Calgary, Calgary, AB, Canada

P-Fri-B-268
Influence of Extracellular Matrix Alignment on Mesenchymal Stem Cell Invasion
N. K. Weidenhamer[1], F. Lobo[1], and R. T. Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

P-Fri-B-269
Lipid Metabolism During Adipogenesis of Stem Cells Increases With Reduced Cytoskeletal Tension
Z. A. Schiller[1] and C. K. Kuo[1]
[1]Tufts University, Medford, MA

P-Fri-B-270
The Alignment of Smooth Muscle Cell and Shear Stress Affect Differentiation of Mesenchymal Stem Cell
J. Shin[1], S. Park[1], Y. Kang[1], S. Kim[1], K. Jeon[1], J-S. Hyeon[1], M-J. Oh[1], and J-W. Shin[1,2]
[1]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [2]First Research Team/ Inst. of Aged Life Redesign/Cardiovascular and Metabolic Disease Center/ UHRC, Gimhae, Korea, Republic of

P-Fri-B-271
The Early Change of MSCS Nucleus Depending on Methods of Inducing Osteogenic Differentiation
J-S. Hyun[1], J. Shin[1], S. Park[1], Y. Kang[1], K. Jeon[1], S. Kim[1], and J-W. Shin[1,2]
[1]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [2]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Gimhae, Korea, Republic of

P-Fri-B-272
Visualization of VE-Cadherin Expression in Endothelial Cell Cultured Close to Mesenchymal Stem Cell
S. Kim[1], J. Shin[1], S. Park[1], Y. Kang[1], K. Jeon[1], J-S. Hyun[1], and J-W. Shin[1,2]
[1]Department of Biomedical engineering, Gimahe, Korea, Republic of, [2]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Gimhae, Korea, Republic of

P-Fri-B-273
Evaluation of Neuronal Differentiation of hMSCs on Micropatterned Surface Based on Image Analysis
K. Jeon[1], S. Park[1], J. Shin[1], Y. Kang[1], S. Kim[1], J-S. Hyun[1], and J-W. Shin[1,2]
[1]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [2]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Gimhae, Gyeongnam, Korea, Republic of

P-Fri-B-274
Evaluation of Stem Cell Marker Expression in Amniotic Fluid Cells in Varying Media Conditions
J. J. Petsche[1], E. Augustini[1], S. Haeri[2,3], and J. G. Jacot[1,3]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Children's Hospital, Houston, TX

P-Fri-B-275
Mesenchymal Stem Cells Cultured in Human Platelet Lysate as an Alternative to Fetal Bovine Serum Demonstrated Increased CXCR4 Expression and Reduced Cell Doubling Time
D. Nass[1], I. Copland[2], J. Galipeau[2], R. Nerem[1], and S. Griffiths[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University School of Medicine, Atlanta, GA

P-Fri-B-276
Human Pluripotent Stem Cell Differentiate into Smooth Muscle Via Mesenchymal Stem Cell Intermediates
V. K. Bajpai[1] and S. Andreadis[1]
[1]State University of New York at Buffalo, Amherst, NY

P-Fri-B-277
Effect of Mild Heating on the Osteogenesis of Mesenchymal Stem Cells During Inflammation
K. Sunderic[1], D. Dawkins[1], and S. Wang[1]
[1]City College of New York, New York, NY

P-Fri-B-278
Enhancement of Pancreatic Differentiation of Human Embryonic Stem Cells in Three-Dimensional Extracellular Matrices
W. Wang[1], J. Sha[1], and Y. Kaiming[1]
[1]University of Arkansas, Fayetteville, AR

P-Fri-B-279
Endothelial Cells Mediate Maturation of Human Embryonic Stem Cell (hESC) Derived Pancreatic Progenitors into Insulin Expressing Cells
M. Jaramillo[1], S. K. Goh[1], and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Fri-B-280
Effect of Early Endoderm Induction in Late Pancreatic Commitment During Differentiation oh Human Embryonic Stem Cells (hESC)
M. Jaramillo[1], S. Mathew[2], and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh

P-Fri-B-281
Comparing Bone Marrow- and Periosteum- Derived Cells Morphologies and Differentiation Capacities
H. Chang[1] and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH

P-Fri-B-282
Whole Organ 3D Microenvironment as a Regulatory Cue for Pancreatic Differentiation of Embryonic Stem Cells
S. Goh[1], S. Bertera[2], P. Olson[1], L. Yang[1], and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Children's Hospital of Pittsburgh, Pittsburgh, PA

P = Poster Session
OP = Oral Presentation

P-Fri-B-283
Genetically Autologous Stromal Vascular Fraction Cells Form a Functional Vasculature in a Disease Model
N. L. Boyd[1], J. R. Dale[1], A. R. Bugg[1], J. B. Hoying[1], and S. K. Williams[1]
[1]*University of Louisville, Louisville, KY*

P-Fri-B-284
Effect of Cell-Cell Interaction and Cell Area on MSC Differentiation
A. S. Mao[1] and D. J. Mooney[1,2]
[1]*School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Cambridge, MA*

P-Fri-B-285
Homotypic Fusion of Human Adipose-Derived Stem Cells in Co-Culture With a Myogenic Cell Line
G. A. Meyer[1], Y. Choi[1], and A. Engler[1]
[1]*University of California, San Diego, San Diego, CA*

P-Fri-B-286
Evaluation of BMP-12 to Induce Differentiation of Adipose Derived Stem Cells Into Tenocytes to Improve Rotator Cuff Repair
G. Dion[1], J. Mercuri[1], D. Simionescu[1], and R. Hawkins[1,2]
[1]*Clemson University, Clemson, SC,* [2]*Steadman Hawkins Clinic of the Carolinas, Greenville, SC*

Track: Stem Cell Engineering

Stem Cell Engineering - Undergraduate

P-Fri-B-287
Induction of V2a Interneurons from Mouse Embryonic Stem Cells
J. Butts[1], C. Brown[1], D. McCreedy[1], and S. Sakiyama-Elbert[1]
[1]*Washington University in St. Louis, St. Louis, MO*

P-Fri-B-288
Pulsed IR Stimulation of Human and Stem Cell-Derived Cardiomyocytes
N. U. Ecker[1], J. M. Greenberg[1], S. Rajguru[1], D. Pelaez[2], and H. Cheung[1,2]
[1]*University of Miami, Coral Gables, FL,* [2]*Miami VA Medical Center, Miami, FL*

P-Fri-B-289
IGF-I Characterization of Periodontal Ligament Stem Cells and their Connexin 43+ Counterparts
M. Izquierdo[1], D. Pawley[1], V. Fortino[1], D. Pelaez[2], and H. Cheung[1,2]
[1]*University of Miami, Coral Gables, FL,* [2]*Miami VA Medical Center, Miami, FL*

P-Fri-B-290
Incorporation Of Refractory Periods In Low Intensity Vibration Treatment Increases B-Cell Differentiation and Bone Remodeling In Healthy Mouse Models
E. Zuckerman[1], K. Appiah-Nkansah[2], M. E. Chan[2], and C. T. Rubin[2]
[1]*Harvard University, Cambridge, MA,* [2]*Stony Brook University, Stony Brook, NY*

P-Fri-B-291
Fibronectin Matrix Mimetics Support Mesenchymal Stem Cell Proliferation and Differentiation
J. M. Nicosia[1], S. Z. Child[1], D. Dalecki[1], and D. C. Hocking[1,2]
[1]*Department of Biomedical Engineering, University of Rochester, Rochester, NY,*
[2]*Department of Pharmacology and Physiology, University of Rochester, Rochester, NY*

P-Fri-B-292
Identification of Long Non-coding RNA with Roles in Cardiac Lineage Specification
N. Kim[1,2], C. Klattenhoff[2], and L. A. Boyer[2]
[1]*Columbia University, New York, NY,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

P-Fri-B-293
Hyperactivation of mTOR Pathway Potentially Leads to Aberrant Adult Neural Stem Cell Function
S. Sood[1,2], A. Conway[2], and D. V. Schaffer[2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*University of California, Berkeley, Berkeley, CA*

P-Fri-B-294
Neurogenesis of a Novel Pluripotent Stem Cell Population from Adult Periodontal Ligament
D. Pawley[1], M. Izquierdo[1], V. Fortino[1], D. Pelaez[2], and H. Cheung[1,2]
[1]*University of Miami, Coral Gables, FL,* [2]*Miami VA Medical Center, Miami, FL*

P-Fri-B-295
Characterization and Recellularization of Extracellular Matrix Secreted by Embryoid Bodies
P. Olsen[1], S. K. Goh[1], and I. Banerjee[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-B-296
Encapsulated Mesenchymal Stem Cells Attenuate Astrocyte Activation Induced by *In Vitro* Ischemia and Lipopolysaccharide Stimulation
J. D. Erndt-Marino[1], E. Stucky[2], and D. I. Shreiber[2]
[1]*The College of New Jersey, Ewing, NJ,* [2]*Rutgers University, New Brunswick, NJ*

P-Fri-B-297
Shear Pre-Conditioning Enhances the Pericyte Function of Mesenchymal Stem Cells *In Vitro*
R. Meltzer[1], L. McGinley[1], and R. Nerem[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-B-298
Adipose Stem Cell Differentiation towards Vascular Smooth Muscle Cells
S. Olang[1], R. Chen[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

P-Fri-B-299
Characterization of Integrin Expression in Differentiating Stem Cells
E. G. Neal[1], K. F. Peucker[1], and T. Ahsan[1]
[1]*Tulane University, New Orleans, LA*

P-Fri-B-300
The Effect of Hydroxyapatite and Fluoroapatite on Dental Cell Differentiation
A. Farley[1], A. Cusik[1], M. S. Kennedy[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Fri-B-301
Effect of Fluid Flow on Dental Pulp Stem Cells in 2D and 3D Culture
W. Senn[1], S. Shuford[1], J. Wood[1], M. S. Kennedy[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

Track: Tissue Engineering

Musculoskeletal and Orthopedic Tissue Engineering

P-Fri-B-302
Achieving Articular Cartilage Integration via Lysyl Oxidase
A. A. Athens[1,2], E. A. Makris[1], and J. C. Hu[1]
[1]*University of California, Davis, Davis, CA,* [2]*Davis Senior High School, Davis, CA*

P-Fri-B-303
Bulk Regional Shear Mechanics of the Temporomandibular Disc and Correlation of Findings to Clinical Observation
C. M. Juran[1] and P. S. McFetridge[1]
[1]*University of Florida, Gainesville, FL*

POSTER SESSION **FriB**

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:00PM - 4:00PM

P-Fri-B-304
Integrated Bioprocess for Production of Tissue Engineered Cartilage
C. A. Carmona-Moran[1] and T. M. Wick[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

P-Fri-B-305
Inverse-preference Corrosion Phenomena between Mg_2Ca(Zn) and Primary Mg Phase of Mg-Ca-Zn Ternary Aloy for Use of Biodegradable Orthopedic Devices
J. Jung[1], H. Han[1], Y. Kim[1], H. Seok[1], S. Cho[2], and J. Ahn[1]
[1]*Korea Institute of Science and Technology, Seoul, Korea, Republic of,* [2]*U&i Corporation, Uijeongbu, Korea, Republic of*

P-Fri-B-306
Effects of Mechanical Stimulation on Differentiation of Adipose-Derived Stem Cells
K. Megerle[1], W. Cole[2], I. Mahaffey[2], J. Chang[1,2], and A. B. Castillo[1,2]
[1]*Stanford University School of Medicine, Stanford, CA,* [2]*VA Palo Alto Medical Center, Palo Alto, CA*

P-Fri-B-307
Network Structure Impacts Chondrocyte Tissue Deposition In Mechanically-Stimulated PEG Hydrogels
J. Roberts[1] and S. Bryant[1]
[1]*University of Colorado, Boulder, CO*

P-Fri-B-308
A Polymer/Hydrogel Scaffold for Ligament Tissue Engineering
P. Thayer[1] and A. Goldstein[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

POSTER SESSION **FriB**

P-Fri-B-309
3D Culture Models for Investigating the Role of Mechanical Loading in Bone Metastasis
M. E. Lynch[1], D. J. Brooks[1], M. J. Lee[1], A. B. Madans[1], S. R. Ramshankar[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-B-310
Influence of Themal Stress to Induce Osteogenic Protein Expression for Bone Regeneration
A. C. Sampson[1], E. Chung[2], and M. N. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA,* [2]*University of Texas at Austin, Austin, TX*

P-Fri-B-311
Polymeric Coatings for Cortical Bone Allografts Towards Orthopedic Tissue Engineering Applications
J. Almodovar[1,2], J. Mower[2], A. Banerjee[2], A. K. Sarkar[2], N. P. Ehrhart[2], and M. J. Kipper[2]
[1]*Grenoble Institute of Technology, Grenoble, France,* [2]*Colorado State University, Fort Collins, CO*

P-Fri-B-312
Cyclic Mechanical Stretch and microRNA Therapies to Enhance Human Skeletal Muscle Differentiation
C. S. Cheng[1], W. E. Kraus[2], and G. A. Truskey[1]
[1]*Duke University Department of Biomedical Engineering, Durham, NC,* [2]*Duke University Medical Center, Durham, NC*

P-Fri-B-313
Enhancing Osteoconductivity of Fibrin Gels with Apatite-Coated Polymer Microspheres
H. Davis[1], B. Binder[1], P. Schaecher[1], D. Yakoobinsky[1], A. Bhat[1], and K. Leach[1]
[1]*UC Davis, Davis, CA*

P-Fri-B-314
Differential Regulation of Axial vs. Limb Tendon Progenitors by Mechanical Loading
J. P. Brown[1] and C. K. Kuo[1]
[1]*Tufts University, Medford, MA*

P-Fri-B-315
Enhanced Regeneration of Rabbit Mandibular Defects through Combined Treatment of Electrical Stimulation and rhBMP-2 application
J. Kim[1], T. Cho[2], S. Lee[1], H. Yang[2,3], I. Kim[2], S. Hwang[2,3], and S. Kim[1]
[1]*Seoul National University, Seoul, Korea, Republic of,* [2]*Brain Korea 21 2nd Program for Craniomaxillofacial Life Science, Seoul National University, Seoul, Korea, Republic of,* [3]*School of Dentistry, BrainKorea 21 2nd Program for Craniomaxillofacial Life Science, Seoul National, Seoul, Korea, Republic of*

P-Fri-B-316
Correlating Inflammation to Scar Tissue Formation in Healing Skeletal Muscle Tissue
G. L. Koons[1], M. Morales[2], K. Carnevale[2], E. Yost[1], R. G. Gourdie[3], and M. J. Yost[2]
[1]*University of South Carolina, Columbia, SC,* [2]*University of South Carolina School of Medicine, Columbia, SC,* [3]*Medical University of South Carolina, Charleston, SC*

P-Fri-B-317
Poly (glycerol sebacate): A Novel Scaffold Material for Temporomandibular Joint Disc Engineering
C. Hagandora[1], J. Gao[1], Y. Wang[1], and A. Almarza[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-B-318
Analysis of Magnesium Screws in the Craniofacial Region of a Rabbit
S. E. Henderson[1], W. L. Chung[1], D-T. Chou[1], P. N. Kumta[1], and A. J. Almarza[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-B-319
Comparison of Collagen- and Alginate- Based Injection Molding for Whole Meniscus Tissue Engineering
J. L. Puetzer[1] and L. J. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-B-320
Tetrapod Bone Chip with Hydroxyapatite as a Hybrid Bone Substitute for Bone Tissue Engineering
S. Park[1], J. Shin[1], Y. Kang[1], S. Kim[1], K. Jeon[1], J-S. Hyun[1], M-J. Oh[1], and J-W. Shin[1,2]
[1]*Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of,* [2]*First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Gimhae, Korea, Republic of*

P-Fri-B-321
Enhancing the Mechanical Properties of Self-Assembled Articular Cartilage Through the Modulation of Intracellular Ca2+ and Na+
E. A. Makris[1], B. J. Huang[1], and K. A. Athanasiou[1]
[1]*UC Davis, Davis, CA*

P-Fri-B-322
Slowing the Onset of Hypoxia Increases Colony Forming Efficiency of Human Connective Tissue Progenitor Cells *In Vitro*
C. Heylman[1], T. Caralla[1], C. Boehm[1], T. Patterson[1], and G. Muschler[1]
[1]*Cleveland Clinic, Cleveland, OH*

P-Fri-B-323
Acellular Approach to Meniscus Repair Through Application of Chondroitin Sulfate-Bone Marrow Adhesive
J. A. Simson[1] and J. H. Elisseeff[1]
[1]*Johns Hopkins University, Baltimore, MD*

P = Poster Session
OP = Oral Presentation

P-Fri-B-324
The Effect of Offset of Solid Freefrom Fabricated PCL/beta-TCP Scaffold With the Same Porosity and Pore Shape on Cellular Activities of MG63
M. Yeo[1], Y. Kim[1], G. Jin[1], H. Jeon[1], M-S. Kim[1], H. Lee[1], C. G. Simon[2], and G. Kim[1]
[1]Chosun University, Gwangju, Korea, Republic of, [2]NIST, Gaithersburg, MD

P-Fri-B-325
Development of a Novel Tissue Engineered Muscle Repair Construct with Potential for Enhanced Motor End Plate Formation and Function
J. B. Scott[1,2], J. M. Saul[3], and G. J. Christ[1,2]
[1]Wake Forest University Institute for Regenerative Medicine, Winston-Salem, NC, [2]Virginia Tech - Wake Forest University School for Biomedical Engineering and Sciences, Winston-Salem, NC, [3]Miami University School of Engineering and Applied Science, Oxford, OH

P-Fri-B-326
Functional Assessment of a Multi-Compartment Collagen-GAG Scaffold for Orthopedic Interface Repair
D. Weisgerber[1], S. Caliari[1], Y. Wang[1], D. Kelkhoff[1], M. Insana[1], and B. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P-Fri-B-327
Enhanced Osteogenic Differentiation of Human Embryonic Stem Cells on Bone ECM Containing Osteomimetic Scaffolds for Bone Tissue Engineering
K. E. Rutledge[1], Q. Cheng[1], M. Pryzhkova[1], and E. Jabbarzadeh[1]
[1]University of South Carolina, Columbia, SC

P-Fri-B-328
Proliferation and Differentiation of Myoblasts in Response to Platelet Rich Plasma.
M. J. McClure[1,2], S. Sell[1,2], D. Simpson[2], J. Ryan[2], G. Bowlin[2], and J. Ericksen[1]
[1]Hunter Holmes McGuire Veterans Affairs Hospital, Richmond, VA, [2]Virginia Commonwealth University, Richmond, VA

P-Fri-B-329
TMJ Tissue Engineering with Bioactive Hydrogels
D. Mills[1] and S. Karnik[2]
[1]Louisiana Tech University, Ruston, [2]Louisiana Tech University, Ruston, LA

P-Fri-B-330
Tissue Engineered Composite Matrix for Bone Allograft Incorporation
S. Dukleska[1], S. Subramanian[2], A. Bakhtina[1], S. S. Lin[2], and T. L. Arinzeh[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]University of Medicine and Dentistry of New Jersey, Newark, NJ

P-Fri-B-331
Effect of Boron Doping on Pre-Osteoblast Adhesion and Spreading on 'TAMP' Bioactive Scaffolds
J. Chakraborti[1,2], J. Y. Marzillier[2], T. J. Kowal[2], H. Jain[2], and M. M. Falk[2]
[1]Central Glass and Ceramic Research Institute, Kolkata-[700032], India, [2]Lehigh University, Bethlehem, PA

Track: Tissue Engineering

Nano- and Micro-Systems in Tissue Engineering

P-Fri-B-332
A Prototype Device for Passive Epicardial Elasticity Mapping of the Murine Myocardium using AFM
C. Constantinides[1], F. Kossivas[1], P. Epameinonda[1], K. Sofocleous[1], C. Keravnou[1], C. Karipi[1], C. Socratous[1], M. Hadjizorzis[1], and C. Rebholz[1]
[1]University of Cyprus, Nicosia, Cyprus

P-Fri-B-333
Cylindrical Microfluidic Channel Network for Microvascular Research
X. Li[1] and Y. Liu[1]
[1]West Virginia University, Morgantown, WV

P-Fri-B-334
A Novel Approach to Tune Poisson's Ratio of Biological Scaffolds
P. Soman[1], J. Lee[1], A. Phadke[1], D. Fozdar[1], S. Varghese[1], and S. Chen[1]
[1]University of California, San Diego, La Jolla, CA

P-Fri-B-335
Microfluidic Agarose Hydrogels Support Development of Tissue Engineered Articular Cartilage
S. M. Goldman[1] and G. A. Barabino[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-B-336
Sensitivity of Fibroblast Cell Directionality to Surface Charge Uniformities on Aligned Electrospun Nanofibers
Y-H. Su[1,2], V. Chaurey[1], F. Block[1], P-C. Chiang[2], E. Botchwey[1], C-F. Chou[2], and N. S. Swami[1]
[1]University of Virginia, Charlottesville, VA, [2]Academia Sinica, Taipei, Taiwan

P-Fri-B-337
Diffraction of a Cylindrical Wave by an Elastic Sphere Embedded in a Cylindrical Elastic Medium: An Axisymmetric Problem
B. L. Schwartz[1], L. Ansari[1], H. Chokshi[1], L. Gjoni[1], and R. L. Magin[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Fri-B-338
In Vitro Evaluation of HA/TCP Scaffold
L. R. Rodrigues[1], A. A. Rodrigues[2], N. A. Batista[2], F. J. Monteiro[3], W. D. Belangero[2], and C. A. Zavaglia[4]
[1]FEM-UNICAMP-BR, Maua, Brazil, [2]FCM-UNICAMP-BR, Campinas, Brazil, [3]DEMM-FEUP-PT, Porto, Portugal, [4]FEM-UNICAMP-BR, Campinas, Brazil

P-Fri-B-339
Cell-laden Microporous Hydrogels Using Carboxymethylcellulose as a Porogen for Cartilage Regeneration
L. Wang[1], K. F. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

POSTER SESSION **FriB**

Friday, October 26, 2012

1:30PM – 2:30PM

PLATFORM SESSIONS –FRI –2

Track: Biomaterials
OP - Fri - 2 – 1 - Room A311
Intelligent Biomaterials

Chairs: Andre Gobin, Lakeshia Taite

1:30PM

Engineered Multimodal Protein Scaffolds Enable Early and Specific Detection of Metastatic Cancers

J. Leelawattanachai[1] and M. M. Jin[1]

[1]Cornell University, Ithaca, NY

1:45PM

Controlling Cellular Adhesion with Tunable Thermosensitive PEG Analogues

F. Gambinossi[1], L. S. Anderson[1], and J. K. Ferri[1]

[1]Lafayette College, Easton, PA

2:00PM

Biocompatibility and Mechanical Properties of Self-healing Poly(methyl methacrylate) Bone Cement Embedded with Microencapsulated Tissue Adhesive

A. Brochu[1], G. Evans[1], and W. Reichert[1]

[1]Duke University, Durham, NC

2:15PM

Ultra Low Density Shape Memory Polymer Foams for Embolic Medical Devices

P. Singhal[1,2], W. Small[2], D. J. Maitland[1,2], and T. S. Wilson[2]

[1]Texas A&M University, College Station, TX, [2]Lawrence Livermore National Laboratory, Livermore, CA

PLATFORM SESSIONS
Fri-2

Track: New Frontiers and Special Topics
OP - Fri - 2 – 2 - Room A312
Cellular Machines I

Chairs: Roger Kamm, Rashid Bashir

1:30PM

Overview Sub-Track Talk: Biological Machines: A Critical Look at Current Capabilities and Future Challenges

R. D. Kamm[1]

[1]Massachusetts Institute of Technology, Cambridge, MA

1:45PM

3-D Biofabrication for Development of Cellular Systems

R. Bashir[1]

[1]University of Illinois at Urbana-Champaign, Urbana, IL

2:00PM

A Swimming Biobot From Emergent Synchrony Among Cardiac Cells Due to Long-Range Force Interaction

T. Saif[1], B. Williams[1], and E. deSousa[1]

[1]University of Illinois at Urbana-Champaign, Urbana, IL

2:15PM

Improving Directionality of Bio-Hybrid Micro-Robots Using Non-Spherical Geometries

A. Sahari[1] and B. Behkam[1]

[1]Virginia Tech, Blacksburg, VA

P = Poster Session
OP = Oral Presentation

Track: Nano and Micro Technologies
OP - Fri - 2 – 3 - Room A410
Micro & Nano Fluidic Technologies III

Chairs: Xuanhong Cheng, Daniel Irimia

1:30PM

Enzymatic Approach for Capture Application of Low Antigen-Expressing Circulating Tumor Cells

A. N. Hoang[1], A. M. Shah[1], E. Reategui[1], T. Barber[1], D. C. Winokur[2], M. Phillips[1], S. Maheswaran[2], D. A. Haber[2], S. L. Stott[1], and M. Toner[1]

[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, [2]Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA

1:45PM

Single Cell Manipulation via Standing Surface Acoustic Wave Based Tunnable Acoustophoresis

X. Ding[1], S-C. Lin[1], S. Li[1], and T. Huang[1]

[1]The pennsylvania State University, State college, PA

2:00PM

Dielectrophoretic Separation of Activated Neutrophils for the Treatment of Sepsis

J. L. Prieto[1] and J. Voldman[1]

[1]Massachusetts Institute of Technology, Cambridge, MA

2:15PM

Microfluidic Chambers for Monitoring Leukocyte Trafficking: Modulation by Humanized Nano Pro-Resolving Medicines

C. N. Jones[1], J. Dalli[2], L. Dimisko[1], C. N. Serhan[2], and D. Irimia[1]

[1]Harvard Medical School, Charlestown, MA, [2]Harvard Institute of Medicine, Boston, MA

Track: Neural Engineering
OP - Fri - 2 – 4 - Room A314
Neural Control & Modeling I

Chairs: Dustin Taylor, Jason Ritt

1:30PM

Reduced Sensorimotor Cortical Activation During Continuous, Cyclic Movement of the Ankle

R. J. McKindles[1] and B. D. Schmit[1]

[1]Marquette University, Milwaukee, WI

1:45PM

Stability Radius as a Method to Identify Neural Feedback Parameters Necessary to Stabilize Changes in Biomechanics

J. T. Bingham[1] and L. H. Ting[1,2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

2:00PM

Absence of Postural Muscle Synergies for Balance Following Spinal Cord Transection in Cats

S. A. Chvatal[1], J. M. Macpherson[2], G. Torres-Oviedo[3], C. F. Honeycutt[4], and L. H. Ting[1]

[1]Georgia Institute of Technology/Emory University, Atlanta, GA, [2]Oregon Health and Sciences University, Portland, OR, [3]University of Pittsburgh, Pittsburg, PA, [4]Northwestern University and Rehabilitation Institute of Chicago, Chicago, IL

2:15PM

Optimization and Validation of Fractional QLV for Brain Material Property Characterization

C. Urbanczyk[1], M. Panzer[1], and C. Bass[1]

[1]Duke University, Durham, NC

Track: Biomaterials
OP - Fri - 2 – 5 - Room A315
Controlling Host Responses to Biomaterials

Chairs: Joel Collier, Newell Washburn

1:30PM
Small-Scale Chronic Implants in Both the Central and Peripheral Nervous Systems Negatively Affect Hippocampal Neurogenesis
M. B. Christensen[1], B. D. Winslow[1], A. E. Higgins[1], and P. A. Tresco[1]
[1]*University of Utah, Salt Lake City, UT*

1:45PM
Controlling Cell Response and Host Integration by Changing Bead Size in Titanium Microbead based Implants
N. E. Vrana[1], A. Dupret-Bories[1,2], P. Schultz[1,2], C. Debry[1,2], D. Vautier[1,3], and P. Lavalle[1,3]
[1]*INSERM, Strasbourg, France,* [2]*Hautepierre Hospital, Strasbourg, France,* [3]*Université de Strasbourg, Strasbourg, France*

2:00PM
Immunohistological Analysis of Endotoxin Removal at Cortical Tissue Device Interface
M. Ravikumar[1], D. J. Hageman[1], and J. R. Capadona[1]
[1]*Case Western Reserve University, Cleveland, OH*

2:15PM
Topographical Modulation of Macrophage Phenotype by Shrink-film Multi-scale Wrinkles
T. Wang[1], A. Chen[1], M. Khine[1], and W. F. Liu[1]
[1]*University of California, Irvine, Irvine, CA*

Track: Nano and Micro Technologies
OP - Fri - 2 – 6 - Room A316
Biosensors, Nanobio Interfaces, & Implantable Devices III

Chairs: Anthony Guiseppi-Elie, William M. Reichert

1:30PM INVITED
Engineering the Bio-Abio Interface to Enable Next Gen Bionics
A. Guiseppi-Elie[1,2]
[1]*C³B, Clemson University, Anderson, SC,* [2]*ABTECH Scientific, Inc., Anderson, SC*

1:45PM INVITED
Photo-defined Protein Gradients for Studying Immune Cell Migration
S. Wallace[1], V. Hlady[2], and W. M. Reichert[1]
[1]*Duke University, Durham,* [2]*University of Utah, Salt Lake City, UT*

2:15PM
Ultrahigh Enrichment of Neutrophils from Whole Blood Using Biomimetic Adhesive Surfaces
S. Bose[1], R. Singh[1], M. H. Hollatz[1], C. H. Lee[1], J. M. Karp[2], and R. Karnik[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Brigham and Women's Hospital, Cambridge, MA*

Track: Cellular and Molecular Bioengineering
OP - Fri - 2 – 7 - Room A301
Cellular Engineering

Chairs: Kathryn Miller-Jensen, Konstantinos Konstantopoulos

1:30PM
Oscillatory Dynamics of Nrf2 in HeLa Cells Initiated by Hydrogen Peroxide
S. Sarkar[1], C. Payne[1], and M. Kemp[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

1:45PM
Use of Late Embryogenesis Proteins to Engineer Desiccation Tolerance in Mammalian Cells
N. Chakraborty[1], S. C. Li[2], A. Borcar[2], S. C. Hand[2], and M. Toner[1]
[1]*Center for Engineering in Medicine, Harvard Medical School, Charlestown, MA,* [2]*Louisiana State University, Baton Rouge, LA*

2:00PM
Controlling Local Hepatic Phenotype Expression with Growth Factor-Encoded Surfaces
D. G. Patel[1], C. Jones[1], N. Tuleuova[1], E. Foster[1], T. Vu[1], and A. Revzin[1]
[1]*University of California, Davis, Davis, CA*

2:15PM
Effects Of Membrane Potential On Mechanical Properties Of Plasma Cell Membrane
P. Mahmoudian[1], N. Khatibzadeh[1], B. Farrell[2], W. E. Brownell[2], and B. Anvari[1]
[1]*University of California Riverside, Riverside, CA,* [2]*Baylor College of Medicine, Houston, TX*

Track: Cellular and Molecular Bioengineering
OP - Fri - 2 – 8 - Room A302
Cell Adhesion II

Chairs: Jared Haun, Anand Ramasubramanian

1:30PM
Spatiotemporal Dynamics of IntegrinαIIbβ3 Activation in Platelets Using Microcontact Printing
Y. Qiu[1], Y. Sakurai[1], B. Ahn[1], D. R. Myers[1], G. Bao[1], and W. A. Lam[1,2]
[1]*Georgia Institute of Technology and Emory Univeristy, Atlanta, GA,* [2]*Emory Univeristy School of Medicine, Atlanta, GA*

1:45PM
Physical Regulation of Binding Kinetics of Platelet Glycoprotein Ibî± with von Willebrand Factor
L. Ju[1,2], C. Zhu[1], J-F. Dong[3], and M. Cruz[4]
[1]*Georgia Institution of Technology, Atlanta, GA,* [2]*Emory University, Decatur, GA,* [3]*Puget Sound Blood Research Institute, Seattle, WA,* [4]*Baylor College of Medicine, Houston, TX*

2:00PM
Steric Inhibition of von Willebrand Factor-A1 Domain by the D'D3 Domain Regulates Platelet Adhesion Under Hydrodynamic Shear
S. R. Madabhushi[1], K. M. Dayananada[1], C. Shang[1], J. Qu[1], and S. Neelamegham[1]
[1]*State University of New York at Buffalo, Buffalo, NY*

2:15PM
The Role of Catch Bonds and Nonlinear Elasticity in Cell Adhesion
W. E. Thomas[1], M. Whitfield[1,2], and O. Yakovenko[1]
[1]*University of Washington, Seattle, WA,* [2]*MIT, Boston, MA*

Track: Stem Cell Engineering
OP - Fri - 2 – 9 - Room A305
Stem Cell Delivery & Recruitment

Chairs: Sarah Griffiths, Tracy Hookway

1:30PM
Erythropoietin Enhances Osteogenic Differentiation of Autologous Stem Cells In Bone Defects
A. Nair[1], J. Shen[1], Y-T. Tsai[1], X. Sun[2], R. Saxena[2], and L. Tang[1]
[1]The University of Texas at Arlington, Arlington, TX, [2]The University of Texas-Southwestern Medical Center at Dallas, Dallas, TX

1:45PM
Molecular Pharmacokinetic-Guided Delivery of Mesenchymal Stem Cells
F. Wang[1,2], K. Shen[1,2], J. Elman[1,2], M. Li[1,2], T. Li[3], S. Gao[1,2], J. Milwid[1,2], R. Weissleder[4], M. Yarmush[1,2], and B. Parekkadan[1,2]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [2]Shriners Hospital for Children, Boston, MA, [3]Beijing Jishuitan Hospital, Beijing University, Beijing, China, People's Republic of, [4]Center for Systems Biology, Massachusetts General Hospital, Harvard Medical School, Boston, MA

2:00PM
S1P3 Receptor Antagonism Results in the Mobilization of Hematopoetic Stem and Progenitor Cells from the Bone Marrow
A. Das[1], A. Awojoodu[2], and E. Botchwey[2]
[1]University of Virginia, Charlottesville, VA, [2]Georgia Institute of Technology, Atlanta, GA

2:15PM
Hetero-Assembling Protein-Engineered Physical Hydrogels to Improve Injectable Therapy
W. Mulyasasmita[1], A. Parisi-Amon[1], R. E. Dewi[1], C. Chung[1], and S. C. Heilshorn[1]
[1]Stanford University, Stanford, CA

PLATFORM SESSIONS
Fri-2

Track: Nano and Micro Technologies
OP - Fri - 2 – 10 - Room A401
Nanotoxicity I

Chairs: John Bischof, Padma Rajagopalan

1:30PM INVITED
3D Liver Models to Investigate Hepatotoxicity
A. L. Larkin[1], E. Jain[1], R. Rodrigues[1], T. Murali[1], and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

2:00PM
In Vivo Splenocyte Distribution of Gold Nanoparticles
J. Mattos Almeida[1], A. Lin[1], P. Eckels[2,3], N. Liu[1], A. Foster[2,3], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Children's Hospital, Houston, TX

2:15PM
Nanoparticle Diffusion in Normal Human Respiratory Mucus
B. S. Schuster[1], J. Suk[1], G. F. Woodworth[1], and J. Hanes[1]
[1]Johns Hopkins University, Baltimore, MD

OP - Fri - 2 – 11 - Room A402
Undergraduate Research I - Design and Special Topics

Chairs: Marsha Rolle, Sinjae Hyun

1:30PM
Validation and Calibration of the Wii Balance Board as an Inexpensive Force Plate
H. L. Bartlett[1], L. Ting[1,2], and J. Bingham[1]
[1]Georgia Tech, Atlanta, GA, [2]Emory University, Atlanta, GA

1:40PM
Optimizing Regenerative Electrode Design and Stability
A. Watt[1], M. R. MacEwan[2], and D. Moran[2]
[1]University of Denver, Denver, CO, [2]Washington University, Saint Louis, MO

1:50PM
Design of Glucose Testing Strips Using Inkjet Printing
K. Gainey[1], K. Byrd[1], J. Wilson[2], L. Wiles[1], J. DesJardins[1], and D. Dean[1]
[1]Clemson University, Clemson, SC, [2]SC Governor's School for Science and Mathematics, Hartsville, SC

2:00PM
Development of a Leukocyte Programming Device
E. M. Harbert[1], E. Nichols[1], W. J. Federspiel[1] , J. A. Kellum[1] and K Singbartl
[1]University of Pittsburgh, Pittsburgh, PA

2:10PM
Derivation of an Unbiased Anatomical and Diffusion Tensor Template for the Chimpanzee Brain
F. W. Damen[1,2], L. Li[2], B. Yousefi[1,2], and X. Hu[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

2:20PM
The Impact of Chronic Pulmonary Hypertension on Pulmonary Vascular Impedance in a Mouse Model
D. A. Schreier[1], D. Tabima[2], T. Hacker[1], and N. C. Chesler[1]
[1]University of Wisconsin - Madison, Madison, WI, [2]University of Los Andes, Bogota, Colombia

Track: Bioinformatics and Systems Biology
OP - Fri - 2 – 12 - Room A403
Modeling & Simulation in Personalized Medicine

Chairs: Feilim Mac Gabhann, Scott Diamond

1:30PM
Predicting the Effects of Anti-Angiogenic Therapies Targeting the VEGF Pathway
S. D. Finley[1] and A. S. Popel[1]
[1]Johns Hopkins University, Baltimore, MD

1:45PM
Brain Dynamics at Seizure Onsets in Drug-Resistant Epilepsy: A Multivariate Bayesian Model
S. Santaniello[1], S. P. Burns[1], and S. V. Sarma[1]
[1]Johns Hopkins University, Baltimore, MD

2:00PM
VEGF and Semaphorin Expression in Breast Cancer: Harnessing High-Throughput Data for Improved Targeting of Angiogenesis
R. J. Bender[1] and F. Mac Gabhann[1]
[1]Johns Hopkins University, Baltimore, MD

P = Poster Session
OP = Oral Presentation

2:15PM
Integrating fMRI Imaging with Genome-wide Association Studies for the Diagnosis of Complex Diseases
H. Cao[1], D. Lin[1], V. Calhoun[2], and Y-P. Wang[1]
[1]*Tulane University, New Orleans, LA,* [2]*University of New Mexico, Albuquerque, NM*

Track: Orthopedic and Rehabilitation Engineering
OP - Fri - 2 – 13 - Room A404
Mechanical Loading & Soft Tissue Response

Chairs: Martine LaBerge

1:30PM
The Effects of Surgical Augmentation on the Gliding Resistance of a Standard Core Suture Repair of the Flexor Digitorum Profundus Tendon
P. J. Brown[1], N. M. Xu[2], G. Gluck[2], Z. J. Li[2], and J. D. Stitzel[1]
[1]*Virginia Tech – Wake Forest University, Winston Salem, NC,* [2]*Wake Forest University Baptist Medical Center, Winston Salem, NC*

1:45PM
Temporal Effect of Massage on Recovery of Muscle Mechanical Properties Following Eccentric Exercise
S. K. Crawford[1], C. Haas[1], Q. Wang[1], Y. Zhao[1], and T. M. Best[1]
[1]*The Ohio State University, Columbus, OH*

2:00PM
Tissue Deformation in the Seated Buttocks Model
S. E. Sonenblum[1], J. Cathcart[2], J. Winder[2], and S. Sprigle[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Ulster, Belfast, United Kingdom*

2:15PM
Kinematics of the Thoracoabdominal Contents Under Various Loading Scenarios
M. K. Howes[1], T. S. Gregory[1], and W. N. Hardy[1]
[1]*Virginia Tech-Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA*

Track: Orthopedic and Rehabilitation Engineering
OP - Fri - 2 – 14 - Room A405
Orthopedic Imaging

Chairs: Nick Willett, Alexandra Peister

1:30PM
Pain Response and *In Vivo* Imaging of NF-κB Activity in a Mouse Model of Knee Joint Osteoarthritis
R. D. Bowles[1], B. A. Mata[2], T. K. Mwangi[1], and L. A. Setton[1,2]
[1]*Duke University, Durham, NC,* [2]*Duke University School of Medicine, Durham, NC*

1:45PM
Raloxifene Does Not Affect the Raman Spectroscopic Signature of Canine Bone
M. Hammond[1], M. A. Gallant[2], D. B. Burr[2,3], and J. M. Wallace[1,3]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University School of Medicine, Indianapolis, IN,* [3]*Indiana University-Purdue University at Indianapolis, Indianapolis, IN*

2:00PM
Measuring Three-Dimensional Bone Strain by Digital Volume Correlation of Second Harmonic Images
S. A. Wentzell[1], R. S. Nesbitt[1], S. Garrabrant[1], J. Macione[1], and S. P. Kotha[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

2:15PM
Measurement of Musculoskeletal Kinematics in Real Time using Ultrasound Imaging
A. Eranki[1], N. Cortes[1], and S. Sikdar[1]
[1]*George Mason University, Fairfax, VA*

Track: Cardiovascular and Respiratory Engineering*
OP - Fri - 2 – 15 - Room A406
Lymphatic System Biomechanics

Chairs: J. Brandon Dixon, Melody Swartz

1:30PM
Mesoscale Simulations of Self-sustained Lymphatic Pumping
C. Kunert[1], T. P. Padera[1], and L. M. Munn[1]
[1]*Mass. General Hospital/ Harvard Medical School, Boston, MA*

1:45PM
Exploring the Role of Biomechanics in Lymphatic Endothelial Function
M. E. Nipper[1], J. A. Kornuta[1], and J. B. Dixon[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:00PM
Mathematical Modeling of Lymphatic Vessels Using Lumped Parameter Approach
S. Jamalian[1], J. E. Moore Jr.[1], C. D. Bertram[2], and W. Richardson[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Sydney, New South Wales, Australia*

2:15PM
In Situ Quantification of Lipid Concentration Effects on Lymphatic Pump Function
T. Kassis[1,2], R. Cornelius[1], and J. B. Dixon[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Parker H. Petit Institute for Bioengineering and Bioscience, Atlanta, GA*

**Track sponsored by* St. Jude Medical — More control. Less risk.

Track: Biomedical Engineering Education*
OP - Fri - 2 – 16 - Room A304
A Teaching Workshop: Techniques for Enhancing & Evaluating Student Learning in the Classroom

Chairs: Angie Louie, Ann Saterbak

Techniques for Enhancing and Evaluating Student Learning in the Classroom: A Teaching Workshop
J. Ahmed[1], K. C. Dee[1], and G. A. Livesay[1]
[1]*Rose-Hulman Institute of Technology, Terre Haute, IN*

**Track sponsored by* Whitaker International Fellows and Scholars Program

PLATFORM SESSIONS Fri-2 1:30PM-2:30PM

Track: New Frontiers and Special Topics*
OP - Fri - 2 – 17 - Room A408

Molecular Imaging Probes I

Chairs: Xioaping Hu

1:30PM INVITED
Overview Sub-track Talk: Bridging Levels of Biology with Molecular Imaging
A. Jasanoff[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

1:45PM
Size-Minimized Quantum Dot-HaloTag Conjugates for Dynamic Cellular Imaging
M. M. Wen[1], A. M. Smith[1], and S. Nie[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

2:00PM
Evaluating the Accuracy of Tractography-Derived Brain Networks Using Tracer Connections in Monkeys
L. Li[1], J. K. Rilling[2], T. M. Preuss[3], M. Glasser[4], F. Damen[1], and X. Hu[1]
[1]Emory University/Georgia Tech, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Yerkes National Primate Research Center, Atlanta, GA, [4]Washington University, St louis, MO

2:15PM
PLGA Encapsulated Magnetite Nano- and Microparticles are Clinically Viable Magnetic Labels for MRI-based Cell Tracking
D. Granot[1], M. K. Nkansah[2], M. F. Bennewitz[2], K. S. Tang[2], E. A. Markakis[1], and E. M. Shapiro[1,2]
[1]Yale University School of Medicine, New Haven, CT, [2]Yale University, New Haven, CT

Track: New Frontiers and Special Topics
OP - Fri - 2 – 18 - Room A407

Molecular Aspects of Regeneration & Engineering Thereof

Chairs: Themis Kyriakides

1:30PM
Non-Viral Direct Conversion of Fibroblasts to Neuronal Cells
A. F. Adler[1], C. L. Grigsby[1], K. Kulangara[1], H. Wang[1], R. Yasuda[1], and K. W. Leong[1]
[1]Duke University, Durham, NC

1:45PM
Single-cell Dynamics of Induced Lineage Commitment
T. M. Gibson[1] and C. A. Gersbach[1]
[1]Duke University, Durham, NC

2:00PM
Embryonic Wound Healing Mechanisms Investigated by Experiment and Computer Modeling
M. A. Wyczalkowski[1] and L. A. Taber[1]
[1]Washington University in St. Louis, St. Louis, MO

2:15PM
Hepatic Cell-Mediated Protection of Ischemic Myocardium
S. Q. Liu[1], D. Roberts[1], D. Zhang[1], and Y. H. Wu[1]
[1]Northwestern University, Evanston, IL

Track: Tissue Engineering
OP - Fri - 2 – 19 - Room A313

Neural Tissue Engineering

Chairs: Shelly Sakiyama-Elbert, Sarah Stabenfeldt

1:30PM
Effect of Schwann Cell Phenotype on Axon Extension
L. M. Marquardt[1] and S. Sakiyama-Elbert[1]
[1]Washington University in St. Louis, St. Louis, MO

1:45PM
A Strategy for Functional Restoration of Brain Pathways Using Micro-Tissue Engineered Constructs Containing Living Axon Tracts
L. A. Struzyna[1], J. A. Wolf[1], C. J. Mietus[1], D. H. Smith[1], and D. K. Cullen[1]
[1]University of Pennsylvania, Philadelphia, PA

2:00PM
Release of Nerve Growth Factor by a Poly(ethylene glycol) Scaffold
M. Perez[1], B. K. Mann[2], and R. Wicker[1]
[1]University of Texas at El Paso, El Paso, TX, [2]SentrX Animal Care, Salt Lake City, UT

2:15PM
Microdevice Development to Study the Effect of Toxins on Axonal Transport
X. Lu[1], S. Sakiyama-Elbert[1], J. S. Kim-Han[1], and K. O'Malley[1]
[1]Washington University in St. Louis, Saint Louis, MO

Student & Early Career Program
Room A412

1:30pm - 2:30pm
Student Leadership Session: "Aiming for Excellence: The Hallmark of Leadership"

2:45pm - 4:15pm
Mastering the Transitioning Process as a Graduate Student
See page 35

P = Poster Session
OP = Oral Presentation

Friday, October 26, 2012

2:45PM – 3:45PM

PLATFORM SESSIONS –FRI –3

Track: Biomaterials
OP - Fri - 3 – 1 - Room A311

Biomaterials to Control Cellular Environments I

Chairs: Gregory Hudalla, Bill Murphy

2:45PM

Collagen-Mimetic Hydrogels for Elucidating Mesenchymal Stem Cell Fate Decisions

S. Becerra-Bayona[1], D. Munoz-Pinto[1], J. Rivera[2], B. Russell[2], M. Hook[2], and M. Hahn[1]

[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Health Science Center, Houston, TX*

3:00PM

Gene Releasing Scaffolds for Local Immunomodulation and Enhanced Cell Transplant

R. M. Gower[1], J. G. Graham[1], R. M. Boehler[1], S. M. Azarin[1], and L. D. Shea[1]

[1]*Northwestern University, Chicago, IL*

3:15PM

Matrix Stiffness Affects Vasculogenesis, Network Arrangement, and Lumen Formation Independently of Matrix Density

B. N. Mason[1], R. M. Williams[1], L. J. Bonassar[1], and C. A. Reinhart-King[1]

[1]*Cornell University, Ithaca, NY*

3:30PM

Differential Phase Structure of Polyurethane Matrix Regulates Stem Cell Migration

M. J. Hill[1], W. M. Fox[1], G. Krishnan[1], and D. Sarkar[1]

[1]*University at Buffalo, Buffalo, NY*

Track: New Frontiers and Special Topic
OP - Fri - 3 – 2 - Room A312

Cellular Machines II

Chairs: Roger Kamm, Rashid Bashir

2:45PM

Living Clocks: Emergence of Periodic Rotation During Collective Cell Migration

S. Manivannan[1], J. P. Gleghorn[1], J. M. Nestor[1], and C. M. Nelson[1]

[1]*Princeton University, Princeton, NJ*

3:00PM

Tissue-Forming Processes of Morphogenesis: Lessons from Biological Machines in the Embryo.

L. Davidson[1]

[1]*University of Pittsburgh, Pittsburgh, PA*

3:15PM

Mechanochemical Control of Epithelial Contractility in a Xenopus Embryonic Tissue

Y. Kim[1], P. R. LeDuc[2], L. A. Davidson[3], and W. C. Messner[2]

[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Carnegie Mellon University, Pittsburgh, PA,* [3]*University of Pittsburgh, Pittsburgh, PA*

3:30PM

Models of the Nuclear Pore Complex Nanomachinery

M. R. Mofrad[1]

[1]*University of California Berkeley, Berkeley, CA*

Track: Neural Engineering
OP - Fri - 3 – 3 - Room A314

Neural Control & Modeling II

Chairs: Brian Chow, Christopher Fang-Yen

2:45PM

Towards Optogenetic Assisted Design of Sensory Neurocontrol Strategies

J. Schroeder[1], G. Telian[1], B. Perrone[1], and J. Ritt[1]

[1]*Boston University, Boston, MA*

3:00PM

Integration of Automated Patch Clam Electrophysiology System with Optogenetics for Cell Type Identification In Vivo

S. B. Kodandaramaiah[1,2], A. S. Chuong[2], M. Ogawa[2], N. Klapoetke[2], M. Baratta[2,3], L. C. Acker[2], P. E. Monahan[2], F. Yoshida[2], E. S. Boyden[2], and C. R. Forest[1]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Massachusetts Institute of Technology, Cambridge, MA,* [3]*University of Colorado, Boulder, Boulder, CO*

3:15PM

Optopatch: All-Optical Electrophysiology

D. Hochbaum[1], N. Klapoetke[2], E. Boyden[2], and A. Cohen[1]

[1]*Harvard University, Cambridge, MA,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

3:30PM

Topography and Neuromodulation of Native SK Channels in Living Neurons

K. Abiraman[1], J. Maciaszek[1], A. Tzingounis[1], and G. Lykotrafitis[1]

[1]*University of Connecticut, Storrs, CT*

Track: Biomaterials
OP - Fri - 3 – 4 - Room A315

Translation of Novel Biomaterials to the Clinic

Chairs: Eben Alsberg, Hyunjoon Kong

2:45PM

Biomechanical Evaluation of Diaphyseal Femur Fracture Fixation Employing Cortical Screws Bonded with Kryptonite Bone Cement – An *In Vitro* Study of Porcine Bones

Q. V. Luong[1], K. Ngo[1], H. V. Vo[1], and L. Webb[2]

[1]*Mercer University, Macon, GA,* [2]*Medical Center Central of Georgia, Macon, GA*

3:00PM

In Vitro Biocompatibility of Suprachoroidal Shunts

H. Tseng[1], Z. Zhang[1], J. T. Oatts[1], and N. A. Loewen[1]

[1]*Yale University, New Haven, CT*

3:15PM

Lubricin as a Means to Reduce and Prevent Surface Post-operative Biofouling and Infection

G. E. Aninwene II[1], D. Hall[2], A. Mei[2], G. D. Jay[3], and T. J. Webster[2]

[1]*Brown University, Provodence, RI,* [2]*Brown University, Providence, RI,* [3]*Brown University, School of Medicine, Providence, RI*

3:30PM

Cornea Tissue Engineering using Porous Poly(2-hydroxyethyl methacrylate) (PHEMA) – Poly(methyl methacrylate) (PMMA)

A. Zellander[1], M. Makhsous[2], B. Milani[3], A. Djalilian[1], and M. Cho[1]

[1]*University of Illinois, Chicago, IL,* [2]*Northwestern University, Chicago, IL,* [3]*Univesity of Illinois, Chicago, IL*

Track: Nano and Micro Technologies
OP - Fri - 3 – 5 - Room A316

Biosensors, Nanobio Interfaces, & Implantable Devices IV

Chairs: Daniel Ratner, Jeffrey La Belle

2:45PM
Label-Free Biosensor Characterization of the Anti-Norovirus Activity of Human Milk Glycans
J. Shang[1], V. Piskarev[2], X. Jiang[3], D. S. Newburg[4], and D. M. Ratner[1]
[1]University of Washington, Seattle, WA, [2]Nesmeyanov Institute of Organoelement Compounds, Moscow, Russian Federation, [3]Cincinnati Children's Hospital Medical Center, Cincinnati, OH, [4]Boston College, Boston, MA

3:00PM
The Design of TOUCH Tears Glucose Sensor for Diabetes Management
K. Lan[1], S. Santhanaraman[1], J. T. La Belle[1], T. Adamson[1], E. Engelschall[1], P. Shah[1], M. Abou-Eid[1], S. Maxwell[1], N. Saez[1], C. B. Cook[2], and D. R. Patel[2]
[1]Arizona State Unviersity, Tempe, AZ, [2]Mayo Clinic Arizona, Scottsdale, AZ

3:15PM
Rapid Prototyping of Silicon Photonic Devices for Label-Free Biosensing
S. Schmidt[1], W. Shi[2], J. Flueckiger[2], O. Y. Wang[2], S. Grist[2], J. T. Kirk[1], M. Hochberg[3], R. J. Bojko[1], L. Chrostowski[2], and D. M. Ratner[1]
[1]University of Washington, Seattle, WA, [2]University of British Columbia, Vancouver, BC, Canada, [3]University of Delaware, Newark, DE

3:30PM
Fiber Based Biosensors for mRNA Detection in Cell Lysates
V. Maximov[1], Y. Xiang[1], C-C. Tsai[1], K. Kornev[1], and A. Vertegel[1]
[1]Clemson University, Clemson, SC

Track: Cellular and Molecular Bioengineering
OP - Fri - 3 – 6 - Room A301

Molecular Engineering and Protein Design

Chairs: Thomas Barker, Michael Smith

2:45PM
Identifying and Quantifying the Off-target Cleavage Sites of Engineered Nucleases Using PROGNOS
E. J. Fine[1], C. L. Zhao[1], T. J. Cradick[1], Y. Lin[1], C. J. Antico[1], and G. Bao[1]
[1]Georgia Tech/Emory University, Atlanta, GA

3:00PM
Cyclic Mechanical Reinforcement of Actin Depolymerization
H. Lee[1], C. Zhu[1], S. G. Eskin[1], and L. V. McIntire[1]
[1]Georgia Institute of Technology, Atlanta, GA

3:15PM
Predicting and Quantifying the Activities of Transcription Activator-Like (TAL) Effector Nucleases for Geneomic Editing
Y. Lin[1], T. J. Cradick[1], E. J. Fine[1], C. J. Antico[1], R. Voit[2,3], M. H. Porteus[3], and G. Bao[1]
[1]Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, [2]The University of Texas Southwestern Medical School, Dallas, TX, [3]Stanford University, Palo Alto, CA

3:30PM
Developing Rationally Designed FRET-based Molecular Tension Sensors
B. D. Hoffman[1] and M. A. Schwartz[2]
[1]Duke University, Durham, NC, [2]Yale University, New Haven, CT

Track: Cellular and Molecular Bioengineering
OP - Fri - 3 – 7 - Room A302

Cell Adhesion III

Chairs: Justin Brown, Wendy Liu

2:45PM
The α 2,3 sialyltransferase ST3Gal-IV Regulates Human Leukocyte Binding to All Three Selectins: Distinction Between Mice and Men
A. Buffone Jr[1], N. Mondal[1], and S. Neelamegham[1]
[1]State University of New York at Buffalo, Buffalo, NY

3:00PM
Neutrophil Motion and Activation in Straight and Tapering P-selectin-coated *In Vitro* Models of Lung Capillaries
D. F. Tees[1], Y. Choi[1], A. J. Burdette[1], and P. Sundd[2]
[1]Ohio University, Athens, OH, [2]La Jolla Institute of Allergy and Immunology, La Jolla, CA

3:15PM
Effect of Shear Stress on Contact Area During Neutrophil Rolling
P. Coghill[1] and D. W. Schmidtke[1]
[1]University of Oklahoma, Norman, OK

3:30PM
Dissecting the Mechanisms of LFA-1 Activation
C. T. Lefort[1] and K. Ley[1]
[1]La Jolla Institute for Allergy and Immunology, La Jolla, CA

Track: Stem Cell Engineering
OP - Fri - 3 – 8 - Room A305

Mechanical Control of Stem Cells

Chairs: Michelle Dawson, Adam Engler

2:45PM
Mechanical Derivation of Functional Myotubes from Adipose-Derived Stem Cells
Y. Choi[1], L. G. Vincent[1], A. R. Lee[1], M. K. Dobke[1], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA

3:00PM
Matrix Elasticity Regulates Bone Regeneration by Stem Cells Deployed from Void Forming Hydrogels
N. Huebsch[1,2], K. Lee[1,3], M. Mehta[1,4], E. Lippens[1], C. M. Madl[1], M. Xu[1], X. Zhao[1,5], O. Chaudhuri[1,3], A. Mammato[3], D. Ingber[3], G. Duda[4], and D. J. Mooney[1,3]
[1]Harvard University School of Engineering and Applied Sciences, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge, [3]Wyss Institute for Biologically Inspired Engineering, Boston, MA, [4]Julius Wolff Institute, Charite - Universitatsmedizin Berlin, Berlin, Germany, [5]Duke University, Durham, NC

3:15PM
High Cell Aspect Ratio Alters Stem Cell Traction Stresses and Lineage
L. G. Vincent[1], T. Yong[2], J. del Alamo[1], L. Tan[2], and A. Engler[1]
[1]University of California, San Diego, La Jolla, CA, [2]Nangyang Technical University, Singapore, Singapore

3:30PM
Dissecting Mechanobiology of Human Embryonic Stem Cells Using Micromechanical Elastomeric Devices
Y. Sun[1], L. G. Villa-Diaz[1], R. H. Lam[1], W. Chen[1], P. H. Krebsbach[1], and J. Fu[1]
[1]University of Michigan, Ann Arbor, MI

PLATFORM SESSIONS
Fri-3

P = Poster Session
OP = Oral Presentation

Track: Nano and Micro Technologies
OP - Fri - 3 – 9 - Room A401
Nanotoxicity II

Chairs: John Bischof, Padma Rajagopalan

2:45PM
Effect of Active Targeting and Microfluidic Flow Rate on Nanoparticle Distribution in a Cell Spheroid
A. Albanese[1], A. K. Lam[1], J. V. Rocheleau[1], and W. C. Chan[1]
[1]*University of Toronto, Toronto, ON, Canada*

3:00PM
Au NP based Colorimetric Assay for microRNA Detection
H-I. Peng[1], M. Baker[2], and G. Bao[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

3:15PM
Multilayer Stacks of Porous Silicon Disks for Cancer Therapy
X. Liu[1], C. Chiappini[1], H-J. Wu[1], H. Shen[1], and M. Ferrari[1]
[1]*The Methodist Hospital Research Institute, Houston, TX*

3:30PM
Intratumoral Distribution of Polymer Therapeutics After Enhanced Delivery by Plasmonic Photothermal Therapy
A. J. Gormley[1,2], N. Larson[1,2], A. Banisadr[1], A. Ray[1,2], and H. Ghandehari[1,2]
[1]*University of Utah, Salt Lake City, UT,* [2]*Nano Institute of Utah, Salt Lake City, UT*

OP - Fri - 3 – 10 - Room A402
Undergraduate Research II - Mechanobiology

Chairs: Melissa Micou, Edward Sander

2:45PM
Quantifying the Mechanics of Blastopore Closure in Xenopus Embryos
R. A. Feroze[1] and L. Davidson[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

2:55PM
Migratory Single Cell Force Measurement using STEP Nanonets
E. Marquez[1], J. Wang[1], P. Sharma[1], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA*

3:05PM
SMC Traction Force Generation is Modulated by Substrate Stiffness and Ligand Presentation
A. Purwada[1], B. C. Isenberg[1], O. V. Sazonova[1], M. A. Nugent[1,2], and J. Y. Wong[1]
[1]*Boston University, Boston, MA,* [2]*Boston University School of Medicine, Boston, MA*

3:15PM
Applied Traction Force Changes and Actin Rearrangement in Endothelial Cells Result from an Inflammatory Response
J. A. Vaitkus[1], K. M. Stroka[1], and H. Aranda-Espinoza[1]
[1]*University of Maryland, College Park, College Park, MD*

3:25PM
A Novel 3D Mineralized Model to Study the Effects of Loading on Bone Metastasis
M. Lee[1], M. E. Lynch[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

3:35PM
Mechanical Trauma to Neural Tissue Decreases Spinal GLT1 Expression
T. Gilliland[1], K. Nicholson[1], Y-W. Chang[1], and B. A. Winkelstein[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Bioinformatics and Systems Biology
OP - Fri - 3 – 11 - Room A403
Multiscale Modeling

Chairs: Amina Qutub, Eberhard Voit

2:45PM INVITED
Interactions among Cardiomyocyte, Smooth Muscle, and Endothelial Cells in Coronary Flow Regulation
J. B. Bassingthwaighte[1] and M. Bindschadler[1]
[1]*University of Washington, Seattle, WA*

3:00PM INVITED
Genome-Scale, Model-Driven Prediction and Validation of Antimicrobial Drug Targets
J. Papin[1]
[1]*University of Virginia, Charlottesville, VA*

3:15PM INVITED
Asymptotic Estimates of Asymptomatic Malaria Persistence in Low Endemicity Areas of Latin America
J. B. Gutierrez[1]
[1]*University of Georgia, Athens, GA*

3:30PM INVITED
Multi-level Multi-scale Modeling of the Heat Stress Response in Saccharomyces cerevisiae
L. L. Fonseca[1], P-W. Chen[1], and E. O. Voit[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Orthopedic and Rehabilitation Engineering
OP - Fri - 3 – 12 - Room A404
Orthopedic Bioengineering Musculoskeletal Tissue Interfaces & Ligaments

Chairs: Johnna Temenoff

2:45PM
Nonlinear Viscoelastic Constitutive Relation for Ligaments
F. M. Davis[1] and R. De Vita[1]
[1]*Virginia Tech, Blacksburg, VA*

3:00PM
Engineering the Next-Generation Prosthetic Anterior Cruciate Ligament
J. Bach[1], L. Corté[2], and D. N. Ku[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Mines Paris, Paristech, Evry, France*

3:15PM
Cathepsin Activity Increases Only at Bony Insertion During Tendon Overuse Injuries
S. P. Seto[1], Y. Qiu[1], J. Lei[1], L. J. Soslowsky[2], M. O. Platt[1], and J. S. Temenoff[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Pennsylvania, Philadelphia, PA*

3:30PM
A Hydrogel-Mineral Composite Scaffold to Improve the Interfacial Shear Stress Between Engineered Cartilage and Bone
R. Dua[1], P. Gill[1], N. Munroe[1], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

Track: Orthopedic and Rehabilitation Engineering
OP - Fri - 3 – 13 - Room A405

Orthopedic Biomechanics: Vertebrae & Discs

Chairs: Dawn Elliot, Syam Nukavarapu

2:45PM

Intervertebral Disc Degeneration is Associated with Larger Axial Area in a 3D Shape Model

J. M. Peloquin[1], J. H. Yoder[1], N. T. Jacobs[1], S. M. Moon[1], A. C. Wright[1], E. J. Vresilovic[2], and D. M. Elliott[1,3]

[1]University of Pennsylvania, Philadelphia, PA, [2]Penn State Hershey Medical Center, Hershey, PA, [3]University of Delaware, Newark, DE

3:00PM

Influence of Artificial Degeneration Methods on Stress Distribution in Intervertebral Disc

M. Nikkhoo[1,2], Y-W. Kuo[2], I-T. Chuang[2], Y-C. Hsu[2], M. Haghpanahi[1], M. Parnianpour[3], and J-L. Wang[2]

[1]Iran University of Science and Technology, Tehran, Iran, [2]National Taiwan University, Taipei, Taiwan, [3]Sharif University of Technology, Tehran, Iran

3:15PM

High Fat Diet Induced Deterioration of Vertebral Strength and Structure is Rescued by Diet Correction in Young Mice

J. A. Inzana[1], M. H. Kung[1], H. A. Awad[1], M. J. Zuscik[1], and R. A. Mooney[1]

[1]University of Rochester, Rochester, NY

3:30PM

Spinal Fusion through a Non-Invasive Injectable Cell-Based Gene Therapy Method

C. L. Simpson[1], Z. Lazard[2], R. Olabisi[1], A. Davis[2], E. Olmsted-Davis[2], and J. West[1]

[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

Track: Cardiovascular and Respiratory Engineering*
OP - Fri - 3 – 14 - Room A406

Microvessel Development in Tissue Engineering Constructs

Chairs: Walter (Lee) Murfee, Shayn Peirce-Cottler

2:45PM

New Considerations for Vascularizing Artificial Tissues: The Role of the Pericyte

C. E. Ayres-Sander[1], J. S. Pober[1], and A. L. Gonzalez[1]

[1]Yale University, New Haven, CT

3:00PM

Engineering Functional Capillary Networks via Cell Therapy

S. J. Grainger[1], M. Vigen[1], and A. J. Putnam[1]

[1]University of Michigan, Ann Arbor, MI

3:15PM

Involvement of Fluid Flow in Vessel Guidance and Morphogenesis

J. W. Song[1], D. Bazou[1], and L. L. Munn[1]

[1]Massachusetts General Hospital/Harvard Medical School, Charlestown, MA

3:30PM

Interstitial Flow Improves Lumen Formation and Mural Cell Recruitment in Engineered Microvasculature

K. T. Morin[1] and R. T. Tranquillo[1]

[1]University of Minnesota, Minneapolis, MN

**Track sponsored by* St. Jude Medical — More control. Less risk.

PLATFORM SESSIONS
Fri-3

P = Poster Session
OP = Oral Presentation

Track: Biomedical Engineering Education*
OP - Fri - 3 – 15 - Room A407

Hands-on Learning in BME

Chairs: Jameel Ahmed, Marcia Pool

2:45PM

Developing Scaffolding for Labs Modules That Integrate Key Concepts From Lecture-Based Courses

E. Behravesh[1]

[1]Georgia Institute of Technology, ATLANTA, GA

3:00PM

A Failure Analysis Learning Module for an Undergraduate Bioinstrumentation Course

M. Rust[1]

[1]Western New England University, Springfield, MA

3:15PM

Appropriate Technology Development Hub: A Pathway to Bring Innovative Student Designed Biomedical Technologies to Resource Poor Hospitals

B. E. Fleishman[1]

[1]Engineering World Health, Durham, NC

3:30PM

Biology-on-a-Chip Internship Program (BioChIP): Hands-on Technology Development and Biological Discovery at UC Berkeley

F. Myers[1], B. Turner[1], M. Dueck[2], and L. Lee[1]

[1]University of California Berkeley, Berkeley, CA, [2]University of California San Diego, San Diego, CA

**Track sponsored by* Whitaker International Fellows and Scholars Program

Track: New Frontiers and Special Topics
OP - Fri - 3 – 16 - Room A408

Molecular Imaging Probes II

Chairs: Alan Jasanoff, Erik Shapiro

2:45PM

Alternative Approaches For Quantifying Iron Oxide Nanoparticles: Off-resonance Saturation and Adiabatic Pulse Preparation

S. Harris[1] and X. P. Hu[1]

[1]Emory University/Georgia Institute of Technology, Atlanta, GA

3:00PM

Bioengineering Novel Reporter Proteins

B. B. Bartelle[1], C. A. Berrios-Otero[2], K. U. Szulc[1], and D. H. Turnbull[1]

[1]Skirball Institute for Biomolecular Medicine, New York, NY, [2]Mount Sinai Medical Center, New York, NY

3:15PM

New Platform for Imaging Gene Expression in Cancer

A. A. Giald[1]

[1]Johns Hopkins University, Baltimore, MD

3:30PM

Genetically Encoded Reporters for Multiplexed MRI Imaging with Picomolar Molecular Sensitivity

M. G. Shapiro[1], R. M. Ramirez[1], L. J. Sperling[1,2], G. Sun[1], A. Pines[1,2], D. V. Schaffer[1], and V. S. Bajaj[1,2]

[1]University of California Berkeley, Berkeley, CA, [2]Lawrence Berkeley National Laboratory, Berkeley, CA

Track: Tissue Engineering
OP - Fri - 3 – 17 – Room A410

Cardiovascular Tissue Engineering III

Chairs: Ehsan Jabbarzadeh, Shayn Peirce-Cottler

2:45PM INVITED

A Novel Injectable Thermoresponsive Gel System for the Recruitment of Pprimary and Progenitor Endothelial Cells

R. Hoshi[1] and G. A. Ameer[1]

[1]Northwestern University, Evanston, IL

3:00PM

S1P3 Regulates Implant Arteriogenesis by Recruitment and Localization of Anti-Inflammatory Monocytes to Surrounding Microvessels

A. O. Awojoodu[1], K. Martin[2], L. S. Anderson[3], S. M. Peirce-Cottler[2], and E. A. Botchwey[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Virginia, Charlottesville, VA, [3]Lafayette College, Easton, PA

3:15PM

Engineer Bioactive Vascular Grafts to Recruit Endogenous Progenitor Cells for *In Situ* Regeneration of Blood Vessels

A. Wang[1,2], J. Yu[1], Z. Tang[1], J. Henry[1], B. Lee[1], Y. Zhu[1], F. Yuan[1], and S. Li[1]

[1]UC Berkeley, Berkeley, CA, [2]UC Davis, Sacramento, CA

3:30PM

MSC Recellularization of a Tissue Engineered Heart Valve Leaf

Z. Syedain[1], A. Bradee[1], D. Taylor[1], R. Tranquillo[1]

[1]University of Minnesota, Minneapolis, MN

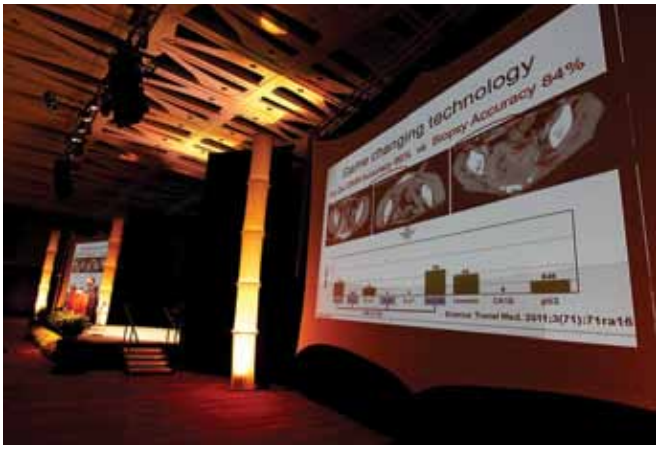
Track: Translational Biomedical Engineering*
OP - Fri - 3 – 18 - Room A313

Disparities & Inequalities in Healthcare

Chairs: Gilda Barabino, Jerry Collins

AEMB has helped put together a special session for the 2012 BMES meeting addressing health care discrepancies facing African Americans. Distinguished panel members include: Atty. Fred Gray, Counsel for Martin Luther King Jr., Rosa Parks, and the survivors of the Tuskegee Syphilis study; and Dr. Gilda Barabino, professor and associate chair of biomedical engineering at Georgia Tech and President-elect of the Biomedical Engineering Society. Respondents include Dr. Raphael Lee, Paul S. and Ailene T. Professor of Surgery, Medicine, Organismal Biology & Anatomy, and Molecular Medicine at the University of Chicago and President of the American Institute of Medical and Biological Engineering.

**Track sponsored by* Fish & Richardson



POSTER SESSION Sat A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

SATURDAY, OCTOBER 27
TODAY'S HIGHLIGHTS

PLENARY SESSION
8:00am - 9:30am
GWCC, Sidney Marcus Auditorium

BMES 2012 Rita Schaffer Memorial Young Investigator Lecturer:
UNDERSTANDING METABOLIC REGULATION IN CANCER USING FLUX ANALYSIS
Christian Metallo, PhD
University of California, San Diego

Diversity Lecture:
WHEN OPTIMIZATION TRUMPS OPPORTUNITY: THE SERENITY PRAYER RUN AMUCK
William M. Reichert, PhD
Duke University

EXHIBIT HALL OPEN
9:30am - 1:30pm
GWCC, Exhibit Hall A2

POSTER SESSION A & B
9:30am - 1:00pm
GWCC, Exhibit Hall A2

Poster Viewing with Authors & Refreshment Break
9:30am - 10:30am

PLATFORM SESSIONS Sat-1
10:30am - noon
See pages 180-187, GWCC

PLATFORM SESSIONS Sat-2
1:30pm - 3:00pm
See pages 188-194, GWCC

PLATFORM SESSIONS Sat-3
3:45pm - 5:15pm
See pages 195-200, GWCC

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

Saturday, October 27, 2012
9:30AM – 1:00PM - Exhibit Hall A2
POSTER – SATURDAY – A & B

Track: Bioinformatics and Systems Biology

Modeling, Simulation and Control in Personalized Medicine

P-Sat-A-1
Analysis of Critical Transitions in a Model of Human Endotoxemia
J. D. Scheff[1], S. E. Calvano[2], and I. P. Androulakis[1]
[1]Rutgers University, Piscataway, NJ, [2]UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ

P-Sat-A-2
A Molecular Mechanism of Triggered Arrhythmia in Version 2 of the LQT Syndrome
J. Beaumont[1], A. Raba[1], J. Cordeiro[2], M. Epstein[1], and C. Antzelevitch[2]
[1]Binghamton University, Binghamton, NY, [2]Masonic Medical Research Laboratory, Utica, NY

P-Sat-A-3
Physiological Mobile Acquisition and Storage System Based on Smartphones
J. E. García[1,2] and R. A. Torres[1,2]
[1]Antioquia School of Engineering, Envigado, Colombia, [2]CES University, Medellin, Colombia

P-Sat-A-4
The Investigation of the Effects of Shear Loading on Erythrocytes *In Silico*
N. Bethel[1]
[1]Stony Brook University, Northport, NY

P-Sat-A-5
Development of a Colorectal Neoplasia Natural History Model From Colonoscopy Procedure Reports
E. Sherer[1,2] and T. F. Imperiale[1,2]
[1]Indiana University, Indianapolis, IN, [2]Roudebush VAMC, Indianapolis, IN

Track: Bioinformatics and Systems Biology

Systems Biology & Metabolism

P-Sat-A-6
Bactericidal Antibiotics Induce Mitochondrial Dysfunction and Oxidative Stress via a Common Mechanism in Mammalian Cells
S. Kalghatgi[1], J. Costello[1], C. Spina[2], A. Molina[3], and J. J. Collins[1,4]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA, [3]Wake Forest University School of Medicine, Winston-Salem, NC, [4]Harvard University, Boston, MA

P-Sat-A-7
Modeling and Experimental Correlation of the Glutathione Metabolic Network
R. E. Jeffries[1], K. Xu[2], S. Gomez[2], J. Macdonald[2], and M. Gamcsik[1]
[1]North Carolina State University, Raleigh, NC, [2]University of North Carolina, Chapel Hill, NC

P-Sat-A-8
Computational Systems Analysis of the Glycolytic Pathway in *Lactococcus lactis*
S. Dolatshahi[1] and E. O. Voit[1]
[1]Georgia Institute of Technology, ATLANTA, GA

P-Sat-A-9
Elucidating the Transcriptional-Metabolic Reprogramming of HCV Infection Through Clinically Relevant Tissue Engineering Culture Models
M. A. Guzzardi[1], N. Habib[1], D. Kitsberg[1], B. E. Uygun[2], K. Uygun[2], M. Trippler[3], J. F. Schlaak[3], J. Timm[3], N. Friedman[1], and Y. Nahmias[1,2]
[1]The Hebrew University of Jerusalem, Jerusalem, Israel, [2]Harvard Medical School, Boston, MA, [3]University Hospital Essen, Essen, Germany

P-Sat-A-10
Kinetic Analysis and Design of Experiments to Identify a Catalytic Mechanism for Cardiac Mitochondrial Malate Dehydrogenase
S. K. Dasika[1], K. C. Vinnakota[1], and D. A. Beard[1]
[1]*Medical College of Wisconsin, Milwaukee, WI*

P-Sat-A-11
CANCELED BY AUTHOR

P-Sat-A-12
Cardiovascular Responses of Men and Women to Orthostasis in Simulated Lunar and Martian Gravities
Q. Zhang[1], V. Kostas[1], S. Wang[1], M. B. Stenger[2], C. F. Knapp[1], and J. M. Evans[1]
[1]*University of Kentucky, Lexington, KY,* [2]*Wyle Science, Technology and Engineering Group, Houston, TX*

P-Sat-A-13
Computational Modeling of Glutathione/Glutathione Peroxidase in Oxidative Stress
J. Chen[1] and M. Kavdia[1]
[1]*Wayne State University, Detroit, MI*

P-Sat-A-14
Regulation of Oxidative and Reductive Metabolism in Tumor Cells
C. Metallo[1], G. Stephanopoulos[2], and S. Parker[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Biomaterials

Biomaterials to Control Cellular Environments

P-Sat-A-15
Enhancing Human Islet Transplantation using Protein Functionalized PLG scaffolds
K. Hlavaty[1], R. Gibly[1], X. Zhang[1], L. Shea[1], W. Lowe[1], and X. Luo[1]
[1]*Northwestern University, Chicago, IL*

P-Sat-A-16
Microloading of Polydimethylsiloxane Membranes for Applications in Mechanotransduction Research
K. Shah[1], S. York[1], A. R. Arida[1], P. Sethu[2], and M. M. Saunders[1]
[1]*The University of Akron, Akron, OH,* [2]*University of Louisville, Louisville, KY*

P-Sat-A-17
Effect of Silica Gel Properties on the Viability of Encapsulated Mammalian Cells
A. Aksan[1], E. Reategui[2], and L. L. Kasinkas[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Center for Engineering in Medicine, Department of Surgical Services, Massachusetts General Hospital, Boston, MA*

P-Sat-A-18
The Use of a Library of Industrial Materials to Determine the Nature of Substrate-Dependent Performance of Primary Adherent Human Cells
M. Ni[1], P. Zimmermann[1], K. Kandasamy[1], E. Lai[1], Y. Li[1], M. Leong[1], A. Wan[1], and D. Zink[1]
[1]*Institute of Bioengineering and Nanotechnology, Singapore, Singapore*

P-Sat-A-19
Magnetic-based Multi-layer Microparticles for Stem Cell Isolation, Enrichment, and Detachment
A. S. Wadajkar[1,2], S. Santimano[1,2], and K. T. Nguyen[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

P-Sat-A-20
Gas Cluster Ion Beam Surface Modification of Collagen Scaffolds Enhances Cell Attachment, Proliferation, and Degradation Time
K. Doshi[1], S. R. Kirkpatrick[1], L. B. Tarrant[1], R. C. Svrluga[1], and J. Khoury[1]
[1]*Exogenesis Corp, Billerica, MA*

P-Sat-A-21
Modular Design of Multifunctional Hydrogels From Nanobeads
A. Singh[1], J. Zhan[1], and J. Elisseeff[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Sat-A-22
Preparation of Enzyme-Responsible Hydrogels to Change the Stiffness Associated With Mesenchymal Stem Cells Differentiation
H. Toda[1], M. Yamamoto[1], and Y. Tabata[1]
[1]*Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan*

P-Sat-A-23
Polydopamine-Assisted Bio-modification for Probing and Modulating Cell-Material Interactions
K. Wang[1], S. Ni[1], and Y. Luo[1]
[1]*Peking University, Beijing, China, People's Republic of*

P-Sat-A-24
The Effects of Three Dimensional Hybrid Scaffold on *Ex Vivo* Expansion of Hematopoietic Stem Cells
Y. Kang[1], J. Shin[1], S. Park[1], K. Jeon[1], S. Kim[1], J-S. Hyun[1], M-J. Oh[1], and J-W. Shin[1,2]
[1]*Department of Biomedical Engineering, Inje University, Gimhae, Gyeongnam, Korea, Republic of,* [2]*First Research Team/Inst. of Aged Life Redesign/Cardiovascular and Metabolic Disease Center/UHRC, Gimhae, Gyeongnam, Korea, Republic of*

P-Sat-A-25
Combination Collagen-Hyaluronic Acid Gels Promote Endocardial EMT *In Vitro*
M. K. Sewell-Loftin[1], D. M. DeLaughter[1], J. V. Barnett[1], and W. D. Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

P-Sat-A-26
Effect of Network Composition on Cellular Remodeling of PEG Diacrylate / Hyaluronic Acid Semi-IPNs
H. Lee[1], A. Sen[1], J. Lee[1], and K. Webb[1]
[1]*Clemson University, Clemson, SC*

P-Sat-A-27
Engineering Patterned Co-Cultures Using Dynamically Adhesive Substrates to Study Cell-Cell Interactions
N. M. Rodriguez[1], R. A. Desai[1,2], and C. S. Chen[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Max Planck Institute for Molecular Cell Biology and Genetics, Dresden, Germany*

P-Sat-A-28
Engineering *Ex-Vivo* 3D Microenvironment for Studying Stability and Communication of Pancreatic β Cells
W. Li[1], S. Lee[2], S. Kim[2], R. T. Lee[2], and P. T. Hammond[1]
[1]*MIT, Cambridge, MA,* [2]*Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA*

P-Sat-A-29
Synergistic Signaling Between Integrin Receptors and Matrix-Bound Growth Factor Receptors Revealed Vvia Biopolymeric Films Containing the Bone Morphogenetic Protein 2
L. Fourel[1,2], J. Almodovar[1], R. Guillot[1], C. Albiges-Rizo[2], and C. Picart[1]
[1]*Grenoble Institute of Technology, Grenoble, France,* [2]*Institut Albert Bonniot, La Tronche, France*

P-Sat-A-30
Aortic Valve Interstitial Cell Phenotype is Controlled by Stiffness of Hyaluronic Acid Hydrogels With Different Molecular Weight in 3D Culture
B. Duan[1], L. A. Hockaday[1], K. H. Kang[1], E. Kapetanovic[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

POSTER SESSION **SatA**

See page 17 for Poster floor plan

Track: Biomaterials

Novel Biomaterials and Scaffolds

P-Sat-A-31
Calcium Phosphate Cement Containing Geltain: Compressive Strength and Degradation Rate Evaluation
M. D. Pereira Ribeiro[1], E. de Sousa[1], C. A. Bertran[2], and M. Motisuke[1,3]
[1]Federal University of São Paulo, São José dos Campos, Brazil, [2]State University of Campinas, Campinas, Brazil, [3]INCT-Biofabris, Campinas, Brazil

P-Sat-A-32
Novel Citrate-Enabled One-Step Syntheses of Strong Wet Tissue Adhesives for Sutureless Wound Closure
M. Mehdizadeh[1], J. Yang[1], L. Tang[1], H. Weng[1], and M. Mehdizadeh[2]
[1]University of Texas at Arlington, Arlington, TX, [2]University ot Texas Arlington, Arlington, TX

P-Sat-A-33
In-vitro Evaluation of the Antibacterial Properties of Two-Solution Bone Cement (^{TI}-TSBC) Containing Strontium Substituted Hydroxyapatite Microspheres
S. H. Jariwala[1], S. F. Smith[1], D. Ren[1], and J. Hasenwinkel[1]
[1]Syracuse University, Syracuse, NY

P-Sat-A-34
In Vitro Biocompatibility of EAA/PCL/PEG/PEO Electrospun Scaffolds Towards Endothelial Cells
N. Nosoudi[1], W. Yin[1], and D. A. Rubenstein[1]
[1]Oklahoma state University, Stillwater, OK

P-Sat-A-35
Electrospun Porous Polymer Fibers With Incorporated Nanomaterial for cartilage Tissue Regeneration
B. B. Holmes[1], N. J. Castro[1], and L. G. Zhang[1]
[1]The George Washington University, Washington, DC

P-Sat-A-36
Characterization of the Physiomechanical Properties of Patterned Electrospun Polycaprolactone Scaffolds for Hernia Repair Applications
M. D. Pichert[1], A. A. Xu[1], B. J. Eliason[1], E. G. Buettmann[1], M. R. MacEwan[1], M. M. Frisella[1], B. D. Matthews[1], and C. R. Deeken[1]
[1]Washington University in St. Louis, St. Louis, MO

P-Sat-A-37
In Vitro Degradation Characteristics of Novel, Electrospun Polycaprolactone Scaffolds
A. A. Xu[1], B. J. Eliason[1], E. G. Buettmann[1], M. R. MacEwan[1], M. M. Frisella[1], B. D. Matthews[1], and C. R. Deeken[1]
[1]Washington University in St. Louis, St. Louis, MO

P-Sat-A-38
Freeze-Dried Chitosan-Hydroxyapatite 3D Scaffolds with Agar or Gelatin as Support Matrix
L. Bui[1], P. M. Mehl[2], R. de Silva[3], and O. C. Wilson[1]
[1]The Catholic University of America, Washington, DC, [2]The Catholic Universiy of America, Washington, DC, [3]The Catholic Univesity of America, Washington, DC

P-Sat-A-39
Fabrication of Electrospun Composite Nanofibers and Their Application in Early Detection of Femtogram C- reactive protein (CRP)
A. Aphale[1], S. Bhosale[1], I. Macwan[1], K. Mahakalkar[1], J. Zhang[1], K. Vattipalli[2], S. Prasad[2], and P. Patra[1]
[1]University of Bridgeport, Bridgeport, CT, [2]University of Texas, Dallas, Richardson, TX

P-Sat-A-40
Material and Cytocompatibility Characteristics of Carbon Nanofibers for Cardiovascular Applications
D. A. Stout[1], J. Yoo[1], and T. J. Webster[1]
[1]Brown University, Providence, RI

P-Sat-A-41
Enhancing Mechanical Strength in Aginate/Pluronic® Composite Hydrogels
J. White[1] and S. Bhatia[1]
[1]University of Massachusetts Amherst, Amherst, MA

P-Sat-A-42
Evaluation of Newly Developed Ternary Biodegradable Magnesium Alloy in Rabbit Models
H-S. Han[1], Y-Y. Kim[2], Y-C. Kim[1], H-K. Seok[1], and S-J. Yang[3]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [2]The Catholic University, Daejeon, Korea, Republic of, [3]Chungnam National Unversity, Daejeon, Korea, Republic of

P-Sat-A-43
Selecting Processing Specifications to Tune Characteristics of Polylactide Polymeric Beads for Tissue Engineering
E. McCave[1,2], D. Kole[1,2], and K. Burg[1,2]
[1]Clemson University, Clemson, SC, [2]Institute for Biological Interfaces of Engineering, Clemson

P-Sat-A-44
Mechanical Analysis and Computational Modeling of Bacterial Nanocellulose as a Surgical Mesh
J. Schwertz[1] and A. Eberhardt[1]
[1]University of Alabama at Birmingham, Birmingham, AL

P-Sat-A-45
Preparation of Keratin-based Biomaterials via an Inexpensive, Robust and Easy-to-Handle Approach and Their Applications for Bone Regeneration
Y-L. Wu[1], J. Yu[1], P-L. Lai[2], and C-M. Cheng[3]
[1]National Taiwan University, Taipei, Taiwan, [2]Chang Gung Memorial Hospital, Taipei, Taiwan, [3]National Tsing Hua University, Hsinchu, Taiwan

P-Sat-A-46
The Effect of Tissue Microenvironment on Material Performance
N. Artzi[1,2], M. Carcole[2,3], N. Oliva[2], A. Hayward[2], N. M. Parry[2], and E. Edelman[1,2]
[1]Brigham and Women's Hospital, Boston, MA, [2]MIT, Cambridge, MA, [3]IQS, Barcelona, Spain

P-Sat-A-47
Biological Characterization of TAMP Scaffolds for Hard Tissue Regeneration
T. J. Kowal[1], S. Wang[1], J. Y. Marzillier[1], P. Y. Krzyszczyk[1], H. Jain[1], and M. M. Falk[1]
[1]Lehigh University, Bethlehem, PA

P-Sat-A-48
A Photopolymerizable PEG-Protein Hydrogel that Supports Capillary Morphogenesis in 3D
R. K. Singh[1], D. Seliktar[2], and A. J. Putnam[1]
[1]University of Michigan, Ann Arbor, MI, [2]Technion - Israel Institute of Technology, Haifa, Israel

P-Sat-A-49
Fabrication of Coaxial Electrospun Silk Fibroin Mats
E. Fanti[1] and D. Kaplan[1]
[1]Tufts University, Medford, MA

P-Sat-A-50
Novel Nanofiber-Based Graft for Heart Valve Replacement
R. Wang[1,2], N. Levi-Polyachenko[1,2], and W. D. Wagner[1,2]
[1]Virginia Tech - Wake Forest University School of Biomedical Engineering, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

P-Sat-A-51
Mechanically Controlled Nitric Oxide Releasing Natural Polymers for Tissue Engineering
A. Lebovsky[1], M. Lancina[1], K. Snyder[1], B. Pereles[1], K. Ong[1], M. Frost[1], and R. Rajachar[1]
[1]Michigan Technological University, Houghton, MI

POSTER SESSION SatA

P = Poster Session
OP = Oral Presentation

P-Sat-A-52
Keratin Based Composite Fibers for Neural Tissue Engineering Application
A. M. Edwards[1], C. Mahoney[1], and N. Bhattarai[1]
[1]*North Carolina A&T State University, Greensboro, NC*

P-Sat-A-53
A Novel Three-Dimensional Cotton Ball-like Electrospun Nanofibrous Scaffold
P. Hwang[1], B. Blakeney[1], A. Tambralli[1], J. Anderson[1], A. Andukuri[1], D-J. Lim[1], D. Dean[1], and H-W. Jun[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

P-Sat-A-54
Polycaprolactone\Hydroxyapatite Whiskers Composite Porous Scaffold with Dense Core
G. B. Cardoso[1], A. S. Duarte[1], P. Bordeax- Rego[1], S. T. Saad[1], C. A. Zavaglia[1], and A. F. Arruda[1]
[1]*Unicamp, Campinas, Brazil*

P-Sat-A-55
Dual-imaging Nanoparticles Based on Modified Fe3O4 Magnetic Nanoparticles and Biodegradable Photoluminescent Polymers
A. S. Wadajkar[1,2], T. Kadapure[1,2], Z. Xie[1,2], K. T. Nguyen[1,2], and J. Yang[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

P-Sat-A-56
Electrospun Fibers of Poly (glycerol dodecanoate co-fumarate) for Neural Tissue Engineering
X. Dai[1] and Y-C. Huang[1]
[1]*Florida International University, Miami, FL*

P-Sat-A-57
Controlled Release of Growth Factors in Mesenchymal Stem Cell Aggregates Containing Sugar-Responsive Gelatin Hydrogel Microspheres
M. Yamamoto[1], K. Inoo[1], T. Kodo[1], and Y. Tabata[1]
[1]*Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan*

P-Sat-A-58
Swelling Behavior of PVA-PEG Hydrogels for Biomedical Application
D. Feliciano[1], C. Dias[2], and C. Zavaglia[1]
[1]*UNICAMP, Campinas, Brazil,* [2]*UFPA, Belem, Brazil*

P-Sat-A-59
Study of Swelling for the Repair of Articular Cartilage Mandibular
F-H. Santos[1] and C. Zavaglia[1]
[1]*Unicamp, Campinas, Brazil*

P-Sat-A-60
Lung Derived Extra cellular Matrix Hydrogels Conduct Pulomonary Epithelial Cell Growth
R. A. Pouliot[1] and R. L. Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Sat-A-61
Effects of Multi-Walled Carbon Nano Tubes on the Mechanical Properties of Monetite Cement
N. Mansouri[1], H. Zhou[1], and S. B. Bhaduri[1]
[1]*The University of Toledo, Toledo, OH*

P-Sat-A-62
Injectable Hydrogels for Biomedical Applications
T. Potta[1], T. Grandhi[1], and K. Rege[1]
[1]*Arizona State University, Tempe, AZ*

P-Sat-A-63
Enhancing the Stiffness of Electrospun Nanofiber Scaffolds with a Controlled Surface Coating and Mineralization
W. Liu[1], Y-C. Yeh[2,3], J. Lipner[2], J. Xie[2], H-W. Sung[3], S. Thomopoulos[2], and Y. Xia[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Washington University in St. Louis, Saint Louis, MO,* [3]*National Tsing Hua University, Hshin Chu, Taiwan*

P-Sat-A-64
Characterizing Collagen Biopolymer Microthreads with Microscale Surface Topographies
J. M. Forte[1], J. M. Grasman[1], and G. D. Pins[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-A-65
3D Biological Scaffolds for Evaluating Therapeutic Ultrasound Exposures
B. Nguyen[1], L. Bui[1], R. Silva[1], O. C. Wilson[1], P. M. Mehl[1], and V. Frenkel[1]
[1]*Catholic University of America, Washington, DC*

P-Sat-A-66
Fabrication of Highly Elastic Cell-laden Methacrylated Tropoelastin Hydrogels
N. Annabi[1,2], P. Zorlutuna[1,2], S. Mithieux[3], A. Weiss[3], and A. khademhosseini[1,2]
[1]*Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA,* [2]*Center for Biomedical Engineering, Department of Medicine, Brigham and Women's Hospital, cambridge, MA,* [3]*The University of Sydney, Sydney, Australia*

P-Sat-A-67
Developing an Enzymatically-Trigged, Rapidly Degradable Polyurethane Hollow Fiber Membrane
Y. Hong[1], S. R. Little[1], and W. R. Wagner[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-A-68
Synthesis and Characterization of Nanostructured Hydrolytically Degradable Polyethylene Glycol Gels with Short Dioxanone Segments
D. Barati[1], S. Moeinzadeh[1], and E. Jabbari[1]
[1]*University of South Carolina, Columbia, SC*

P-Sat-A-69
Improved Mesenchymal Stem Cell and Osteoblast Functions on Biomimetic Nanoparticle/Nanotube Composite for Improved Osseointegration
M. Wang[1], J. Li[1], M. Keidar[1], and L. Zhang[1]
[1]*George Washington University, washington,DC, DC*

P-Sat-A-70
Hydrogel Microparticles for Hemostatic Application
A. M. Behrens[1], Z. J. Wu[2], B. P. Griffith[2], and P. Kofinas[1]
[1]*University of Maryland, College Park, MD,* [2]*University of Maryland School of Medicine, Baltimore, MD*

P-Sat-A-71
Inkjet Bioprinting of Oxygen-Generating Microcomposites Scaffolds
D. Reyna-Soriano[1], J. I. Rodriguez-Devora[2], and T. Xu[2]
[1]*University of Texas at El Paso, EL Paso, TX,* [2]*University of Texas at El Paso, El Paso, TX*

P-Sat-A-72
Electrospun Nano-fibers for the Controlled Release of Nitric Oxide
M. G. Lancina III[1], A. Lebovsky[1], H. R. Holmes[1], R. Rajachar[1], M. Frost[1], and K. Snyder[1]
[1]*Michigan Technological University, Houghton, MI*

P-Sat-A-73
Injectable Alginate Hydrogels for Stem Cell Delivery in Bone Regeneration Applications
S. Leslie[1], B. Boyan[1], and Z. Schwartz[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-A-74
Synthesis of a Cell Derived Vocal Biomaterial
J. Evans[1] and J. C. Wolchok[2]
[1]*University of Utah, Salt Lake CIty,* [2]*University of Arkansas, Fayetteville, AR*

P-Sat-A-75
Synthesis and Characterization of Biodegradable Elastomers Based on Poly(glycerol dodecanoate) for Soft Tissue Engineering
S. Rath[1] and Y. C. Huang[1]
[1]*Florida International University, Miami, FL*

P-Sat-A-76
Synthesis of a Novel Injectable, ROS-degradable Tissue-Engineering Scaffold
J. R. Martin[1], M. Gupta[1], J. Page[1], E. Adolph[1], S. Guelcher[1], and C. Duvall[1]
[1]Vanderbilt University, Nashville, TN

P-Sat-A-77
Production and Characterization of B-TCP Scaffolds for Bone Tissue Engineering
J. A. Magalhães[1], C. G. de Paula[1], M. Motisuke[1], C. A. Bertran[2], and E. de Sousa[1]
[1]Federal University of São Paulo, São José dos Campos, Brazil, [2]State University of Campinas, Campinas, Brazil

P-Sat-A-78
Ex vivo Laser Tissue Welding using Polypeptide-Gold Nanorod Nanocomposite Solders
H-C. Huang[1], C. Walker[1], A. Nanda[1], M. Christensen[1], and K. Rege[1]
[1]Arizona State University, Tempe, AZ

P-Sat-A-79
Multifunctional Polysaccharide Hydrogels for Bone and Vascular Tissue Engineering
V. Pandit[1], J. M. Zuidema[1], G. Dai[1], R. J. Gilbert[1], and S. P. Kotha[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Sat-A-80
Characterization of an Oxygen-Monitoring, Nanofiber Scaffold Electrospun from BF_2dbm(I)PLA for the Assessment of Cells in Tissue Engineering Contructs
M. L. Tanes[1], N. A. Keane[1], Y. Lin[1], D. T. Bowers[1], A. Das[1], E. A. Botchwey[1,2], and C. L. Fraser[1]
[1]University of Virginia, Charlottesville, VA, [2]Georgia Institute of Technology, Atlanta

P-Sat-A-81
Swelling and Mechanical Behavior of Novel Thermally and Chemically Gelling Injectable Hydrogels
A. K. Ekenseair[1], K. W. Boere[1], T. N. Vo[1], F. K. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

P-Sat-A-82
Biocompatibility and Mechanical Properties of Magnetoelectropolished Nitinol Alloys
N. Munroe[1], P. Gill[1], R. Dua[1], W. Haider[2], A. Datye[3], R. Rokicki[4], and S. Ramaswamy[1]
[1]Florida International University, Miami, FL, [2]University of Texas Pan American, Edinburg, TX, [3]The University of Tennessee, Knoxville, TN, [4]Electrobright, Macungie, PA

POSTER SESSION **SatA**

P-Sat-A-83
Graded Biomimetic Scaffold for Osteochondral Repair
S. Minardi[1], S. Z. Khaled[1], A. Parodi[1], J. O. Martinez[1,2], B. Brown[1,2], I. Yazdi[1], J. S. Fernandez-Moure[1], M. Sandri[3], M. Ferrari[1], A. Tampieri[3], and E. Tasciotti[1]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]The University of Texas-Graduate School Of Biomedical Sciences At Houston, Houston, TX, [3]Institute of Science and Technology for Ceramics - National Research Council of Italy, Faenza, Italy

P-Sat-A-84
Aligned and Suspended PLGA Fibrous Biophysical Cues for Improved Wound Healing
C. Ng[1] and A. S. Nain[1]
[1]Virginia Tech, Blacksburg, VA

P-Sat-A-85
Engineering ECM-Based Modular Scaffolds for Perfusion and Functional Vascularization
R. T. Annamalai[1], D. R. Armant[1], and H. W. Matthew[1]
[1]Wayne State University, Detroit, MI

P = Poster Session
OP = Oral Presentation

Track: Biomaterials

Biomaterials - Undergraduate

P-Sat-A-86
Investigation of a Dynamic Biomimetic Apatite Nanoparticle Delivery System for Gene Transfection
D. Das[1], E. J. Tsang[1], P. A. Zuk[2], and B. M. Wu[1,3]
[1]Henry Samueli School of Engineering and Applied Science, University of California at Los Angeles, Los Angeles, CA, [2]David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA, [3]School of Dentistry, University of California at Los Angeles, Los Angeles

P-Sat-A-87
Conductive Hydrogel Nanofibers for Highly Sensitive Detection of Glucose
S. Ahmed[1], G. Kim[1], and M. Abidian[1]
[1]Pennsylvania State University, University Park, PA

P-Sat-A-88
In Vitro Effects of Anti-inflammatory Coatings for Glucose Biosensors on THP-1 Monocytes
H. A. Motowski[1], S. G. Vallejo-Heligon[2], and W. M. Reichert[2]
[1]University of Illinois Urbana-Champaign, Champaign, IL, [2]Duke University, Durham, NC

P-Sat-A-89
Modified PEGDA Hydrogels for Adhesion of MSCs
M. E. Prendergast[1], K. M. Ferlin[1], and J. P. Fisher[1]
[1]University of Maryland, College Park, MD

P-Sat-A-90
A Cellulose Ester Composite Reinforced by Cellulose Nanofibers as a Potential Scaffold in Tissue Engineering
A. Williams[1], P. Pooyan[2], R. Tannenbaum[3], and H. Garmestani[2]
[1]University of South Carolina, Columbia, SC, [2]Georgia Institute of Technology, Atlanta, GA, [3]Boston University, Boston, MA

P-Sat-A-91
Mechanistic Inhibition of Amyloid-beta Aggregation in Alzheimer's Disease by Green Tea Catechin
S. E. Chastain[1] and M. Moss[2]
[1]University of South Carolina, Columbia, SC, [2]University of South Carolina, Columnbia, SC

P-Sat-A-92
Cancer Cell Adhesion on Non-Biological Substrates
Z. Feliciano-Muñiz[1] and P. Sundaram[1]
[1]University of Puerto Rico at Mayaguez, Mayaguez, PR, Puerto Rico

P-Sat-A-93
Composite Silicone-Acrylamide Substrate Transfers Strain to Adherent Cells
M. K. Taylor[1], C. Simmons[1], A. Ribeiro[1], and B. Pruitt[1]
[1]Stanford University, Stanford, CA

P-Sat-A-94
Analysis of the Mechanical Properties of Titanium Alloys Manufactured with Additive Processes for Use in Biomedical Applications
B. Steffen[1], S. K. Kumpaty[1], S. Kamara[1], and K. Balasubramanian[2]
[1]Milwaukee School of Engineering, Milwaukee, WI, [2]Non-Ferrous Materials Technology Development Centre, Hyderabad, India

P-Sat-A-95
Analysis of Grain Structure and Surface Roughness in Heat Treated EOS GP1 Stainless Steel Parts
B. Tomlin[1], S. K. Kumpaty[1], S. Kamara[1], D. Anderson[2], and K. Balasubramanian[3]
[1]Milwaukee School of Engineering, Milwaukee, WI, [2]Greatbatch Medical, Warsaw, IN, [3]Non-Ferrous Materials Technology Development Centre, Hyderabad, India

P-Sat-A-96
Comparative Study of EOS Stainless Steel GP1: Analysis of Mechanical Properties
J. Yoo[1], S. K. Kumpaty[2], S. Kamara[2], D. Anderson[3], and K. Balasubramanian[4]
[1]Marquette University, Milwaukee, WI, [2]Milwaukee School of Engineering, Milwaukee, WI, [3]Greatbatch Medical, Warsaw, IN, [4]Non-Ferrous Materials Technology Development Centre, Hyderabad, India

P-Sat-A-97
Analysis of the Surface Finish of Additively Manufactured Titanium-64 for Biomedical Implants
J. Anderson[1], S. K. Kumpaty[1], S. Kamara[1], and K. Balasubramanian[2]
[1]Milwaukee School of Engineering, Milwaukee, WI, [2]Non-Ferrous Materials Technology Development Centre, Hyderabad, India

P-Sat-A-98
Rheological Characterization of Hydrogel Composites Containing Carbon Nanobrushes for Tissue Scaffolding
W. H. Marks[1], S. C. Yang[2], G. W. Dombi[2], and S. K. Bhatia[1]
[1]Harvard University, Cambridge, MA, [2]University of Rhode Island, Kingston, RI

P-Sat-A-99
Development of 'Smart' Hydrogels for Controllable Cell Delivery
M. R. Newman[1,2], A. H. Van Hove[1], and D. S. W. Benoit[1,3]
[1]University of Rochester, Rochester, NY, [2]Rensselaer Polytechnic Institute, Troy, NY, [3]University of Rochester Medical Center, Rochester, NY

P-Sat-A-100
Investigation of Material Properties of Red-Eared Slider Turtle Shell Bone Using Microindentation
N. Diamantides[1], A. Dincer[1], C. Stayton[1], and D. Ebenstein[1]
[1]Bucknell University, Lewisburg, PA

P-Sat-A-101
Development of Porous Hydrogel Microparticles for Sensitive Analysis of Cancer Markers
M. Al Ameen[1] and G. Ghosh[1]
[1]University of Michigan, Dearborn, Dearborn, MI

P-Sat-A-102
Testing LCST Shrinking Kinetics and Mechanical Properties of Three Classes of pNIPAAm Hydrogel
B. J. Laccetti[1], K. Chang[1], and L. J. Taite[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-A-103
CANCELED BY AUTHOR

P-Sat-A-104
Parameter Identification of Material Models of Liver Tissue under High Tensile Strain Rates
R. C. Untaroiu[1,2], Y-C. Lu[1], and C. D. Untaroiu[1]
[1]Virginia Tech, Blacksburg, VA, [2]University of Virginia, Charlottesville, VA

P-Sat-A-105
Conjugation of Dermis-derived Protein with Polyethylene Glycol Diacrylate
T. Waller[1], M. Sorokina[2], M. Vaicik[3], J. Gandhi[3], and E. Brey[3]
[1]Illinois Institute of Technology, Tinley Park, IL, [2]Harold Washington College, Chicago, IL, [3]Illinois Institute of Technology, Chicago, IL

P-Sat-A-106
The Effect of Proton-Source Radiation on the Wear Properties of UHMWPE
J. O'Donnell[1], K. Norasak[1], J. Ball[1], E. Lucas[1], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC

P-Sat-A-107
Optimization of Design and Processing of Polydimethylsiloxane Stamps
E. S. Gargus[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Sat-A-108
Fabrication of PEG-fibrinogen Hydrogels for Controlled Release of Nitric Oxide
M. A. Brunette[1], H. R. Holmes[1], M. G. Lancina[1], W. He[1], B. P. Lee[1], M. C. Frost[1], and R. M. Rajachar[1]
[1]Michigan Technological University, Houghton, MI

P-Sat-A-109
Creating a Variable-Stiffness Modular Scaffold for Tissue Regeneration
S. A. Schoemer[1] and R. K. Willits[1]
[1]The University of Akron, Akron, OH

P-Sat-A-110
Hypoxia-Mimicking Composite Scaffolds for Wound Healing
E. Kreienkamp[1] and D. Henthorn[1]
[1]Saint Louis University, Saint Louis, MO

P-Sat-A-111
Impact of Sterilization on Antibiotic Release and Bioactivity from Affinity-Based Drug Delivery Systems
C. A. Gormley[1], J. M. Halpern[1], and H. A. von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-A-112
Transformation of Tobacco Mosaic Virus to Spherical Viruses with Potential for Chemical Conjugation
M. A. Bruckman[1], A. L. VanMeter[2], S. Hern[1], and N. F. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Case Western Reserve University, Columbus, OH

P-Sat-A-113
Extraction and Synthesis of Keratin based Nanofibers by Electrospinning for Wound Healing Applications
D. D. Jarvis[1], A. M. Edwards[1], G. Goins[1], and N. Bhattarai[1]
[1]North Carolina A&T State University, Greensboro, NC

P-Sat-A-114
Biodistribution Studies of Plant Viral Nanoparticle - Potato Virus X
S. Shukla[1], N. Ayat[1], and N. F. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-A-115
Using Immobilized Chemistries and Magnetic Nanoparticles to Target Antibiotic Resistance for Bacterial Infections
K. Leuba[1], G. Durmus[1], E. Handy[1], K. Totaro[1], J. Sello[1], and T. Webster[1]
[1]Brown University, Providence, RI

P-Sat-A-116
Endotoxin Levels Facilitate Device-Associated Neuroinflammation
D. J. Hageman[1,2], M. Ravikumar[1,2], and J. R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Veterans Affairs Medical Center, Cleveland, OH

P-Sat-A-117
Cell-mediated Degradation and Metabolism of Implantable Polymers: *In Vitro* Study of Tyrosine-derived Polycarbonate Monomer
W. H. Stokes[1], X. Wang[1], A. Zachman[1], J. Zeltinger[2], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN, [2]REVA Medical, Inc., San Diego, CA

P-Sat-A-118
Mouse Derived Extracellular Matrix Hydrogels Improve Mesenchymal Stem Cell Attachment
M. S. Malik[1], R. Pouliot[1], and R. L. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

P-Sat-A-119
Design of Dynamic Flow Test Bench for Evaluating Corrosion
J. Bontrager[1] and A. Mahapatro[1]
[1]Wichita State University, Wichita, KS

P-Sat-A-120
The Stiffness of Self-assembling Peptide Gels Affects Microvascular Network Formation
H. C. Piristine[1,2], M. D. Stevenson[3], K. J. Gooch[3], and A. L. Sarang-Sieminski[2]
[1]Wellesley College, Wellesley, MA, [2]Franklin W. Olin College of Engineering, Needham, MA, [3]Ohio State University, Columbus, OH

POSTER SESSION **SatA**

POSTER SESSION Sat A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-121
Nitric Oxide-Releasing Gelatin Nanofibrous Matrix for Antibacterial Wound Dressing
C. D. Vogt[1], Q. Xing[1], M. Frost[1], and F. Zhao[1]
[1]Michigan Technological University, Houghton, MI

P-Sat-A-122
Mg-Y Alloy Development for Orthopedic Trauma Applications
J. T. Ferrero[1], D. Hong[1], D-T. Chou[1], P. Saha[1], and P. Kumta[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-A-123
Mechanical Characterization of Electrospun Microfiber Scaffolds for Use in Anterior Cruciate Ligament (ACL) Tissue Engineering
J. Seta[1], M. Salisbury[1,2], K. Chov[1], T. Maerz[2], K. Baker[2], S. Tuck[3], Y. Naim[3], J. Corey[3], and Y. Li[1]
[1]Lawrence Technological University, Southfield, MI, [2]William Beaumont Hospital, Royal Oak, MI, [3]University of Michigan, Ann Arbor, MI

P-Sat-A-124
Alginate Hydrogels as Molecularly Imprinted Polymers for Virus Capture and Release
M. Chu[1], C. Multari[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA

P-Sat-A-125
Effects of Blending on the Crystallization Rate of Random Propylene 1-Hexene Copolymers
G. Trujillo[1], H. Janani[1], J. M. Lopez-Majada[1], and R. G. Alamo[1]
[1]FAMU/FSU College of Engineering, Tallahassee, FL

P-Sat-A-126
Pegylation Of Dermal Extract Hydrogels
L. V. Sorokina[1], E. M. Brey[1], M. Vaicik[1], J. Gandhi[1], and T. Waller[1]
[1]Illinois Institute of Technology, Chicago, IL

P-Sat-A-127
Concerted Effect of BSA and DiI on Drug Release from *In Situ* Forming Polymer Implants
D. Sundarapandiyan[1], L. Solorio[1], and A. A. Exner[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-A-128
Hydrogels for Optimizing Localized Delivery of Non-steroidal Anti-inflammatory Drugs
K. A. Williamson[1], S. Mirza[1], W. H. Marks[1], and S. K. Bhatia[1]
[1]Harvard University, Cambridge, MA

P-Sat-A-129
Increased Binding Affinity of DNA in the Presence of Calcium Aluminosilicate Nanoparticles
T. D. Denman[1], A. Watson[1], V. Pandit[1], and L. Ren[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Sat-A-130
Fabrication of Porous Poly(L-lactic Acid) Fiber as Cell-scaffold from a Novel Process
J. Elkin[1], L. Ren[1], V. Pandit[1], S. Krom[1], T. Denman[1], and J. Smith[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Sat-A-131
Investigating the Mechanical Properties of Fibronectin and Laminin Nanofibers
M. Antensteiner[1], R. Wells[2], J. Szymanski[2], and A. W. Feinberg[2]
[1]Pennsylvania State Univerity, State College, PA, [2]Carnegie Mellon University, Pittsburgh, PA

P-Sat-A-132
Development of Biodegradable, Biocompatible Shape Memory Polymers for Vascular Patch Applications
T. Boire[1], M. Gupta[1], J. Stewart[1], J. Taylor[2], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN, [2]University of Maryland Baltimore County, Baltimore, MD

P-Sat-A-133
One Step Acrylation of Hyaluronic Acid Hydrogels for Neural Tissue Engineering
A. M. Dede[1], C. M. Valmikinathan[2], and A. Jain[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Johnson and Johnson, Summerville, NJ

P-Sat-A-134
Voltage-Triggered Drug Delivery from Porous Cryogels
L. Weinstock[1,2], S. Kennedy[1], S. Bencherif[1], and D. Mooney[1]
[1]Harvard University, Cambridge, MA, [2]Northeastern University, Boston, MA

P-Sat-A-135
Fracture Resistant Nanocomposite Hydrogel Enhanced by Adhesive Moeity
M. Bostwick[1], K. O'Connor[1,2], S. Skelton[1], S. Konst[1], and B. Lee[1]
[1]Michigan Technological University, Houghton, MI, [2]Grand Rapids Community College, Grand Rapids, MI

P-Sat-A-136
3D printed Iron-Manganese for Degradable Metallic Medical Implants
D. M. Wells[1], D-T. Chou[2], D. Hong[2], H. Kuhn[2], and P. Kumta[2]
[1]Robert Morris University, Coraopolis, PA, [2]University of Pittsburgh, Pittsburgh, PA

P-Sat-A-137
Surface Immobilized Anti-Inflammatory Peptides To Enhance Device-Tissue Integration
A. Buck[1,2], K. Potter[1,2], and J. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes VA Medical Center, Cleveland, OH

P-Sat-A-138
Conducting Polymer Surfaces Alter Progenitor Cell Adhesion and Secretion
M. Madhavan[1], A. Wan[2], E. Chandler[2], D. Gourdon[2], C. Ober[2], G. Malliaras[2], and C. Fischbach[2]
[1]Cornell University, Broadview Heights, OH, [2]Cornell University, Ithaca, NY

P-Sat-A-139
Effect of Thermal Processing on the Mechanical Stability of Nanofiber Substrates
P. Mendez[1], M. R. MacEwan[1], and Z. Ray[2]
[1]Washington University in St. Louis, Saint Louis, MO, [2]Washington University School of Medicine, Saint Louis, MO

P-Sat-A-140
Response of Dental Pulp Stem Cells to Surface Micropatterning
T. Hafner[1], M. S. Kennedy[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Sat-A-141
Biological and Mechanical Characterization of Bamboo for Tissue Engineering Applications
S. J. Yim[1] and S. K. Bhatia[1]
[1]Harvard University, Cambridge, MA

P-Sat-A-142
Vesicle Trafficking as a Mechanism to Sense and Respond to Nanofiber Architecture
A. Higgins[1] and J. Brown[1]
[1]The Pennsylvania State University, University Park, PA

P-Sat-A-143
Degradation of Oxidized Alginate for Applications in Islet Encapsulation
R. Rubin[1], J. Larson[2], and E. Brey[2]
[1]University of Maryland, College Park, MD, [2]Illinois Institute of Technology, Chicago, IL

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

P-Sat-A-144
Electrically Conductive Nanostructures: Analysis of Polydimethylsiloxane and Polycaprolactone
J. L. Porter[1], E. Lipke[1], and X. Zhang[1]
[1]*Auburn University, Auburn, AL*

Track: Biomedical Imaging and Optics

Novel Imaging Contrast Agents

P-Sat-A-145
A Shape Shifting Viral Nanoparticle MRI Contrast Agent with Incredibly High T1 Relaxivities
M. A. Bruckman[1] and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Sat-A-146
An Efficient Method to Achieve Fc-Region Specific IgG Conjugation onto Nanoparticle
J. Z. Hui[1] and A. Tsourkas[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Sat-A-147
Adeno-Associated Virus Nanoparticles as Scaffolds For Gold Contrast Agent Nucleation
C. J. Dempsey[1], R. Drezek[1], D. Evans[2], and J. Suh[1]
[1]*Rice University, Houston, TX,* [2]*The University of Hull, Hull, United Kingdom*

Track: Biomedical Imaging and Optics

Novel Imaging Probes

P-Sat-A-148
Membrane Binding Glycol Chitosan Coated QD-FP FRET pH Sensors for Extracellular pH Measurements
D. C. Sotto[1], J. Lin[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-A-149
Gadolinium-Based Porous Polymersomes as a T1 Magnetic Resonance Imaging Contrast Agent
Z. Cheng[1] and A. Tsourkas[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Sat-A-150
Single Cell Cytometry Using Fluorescence and Surface Enhanced Raman Scattering (SERS)-based Multiplexing
E. Liu[1], E. Duggan[1], and J. P. Nolan[1]
[1]*La Jolla Bioengineering Institute, San Diego, CA*

P-Sat-A-151
Mid-infrared Photothermal Spectroscopy Enhanced by Plasmonic Metamaterial using Quantum Cascade Laser
A. Mertiri[1], R. Adato[1], M. Hong[1], H. Altug[1], and S. Erramilli[1]
[1]*Boston University, Boston, MA*

P-Sat-A-152
Novel Ultrasound Contrast Agent for Noninvasive Diagnosis of Eosinophil Esophagitis
H. Saffari[1], A. Kennedy[2], K. A. Peterson[3], G. J. Gleich[3,4], and L. F. Pease III[1,3]
[1]*Department of Chemical Engineering, University of Utah, Salt Lake City, UT,* [2]*Department of Clinical Radiology, University of Utah, Salt Lake City, UT,* [3]*Department of Internal Medicine, Division of Gastroenterology, University of Utah, Salt Lake City, UT,* [4]*Department of Dermatology, University of Utah, Salt Lake City, UT*

P-Sat-A-153
Quantum Dotrs Hydrodynamic Size Minimization With Hydroxyl Corss-Linked Thioglucose
H. Wang[1], A. M. Smith[1], and S. Nie[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA*

P-Sat-A-154
Synthesis, Functionalization and Evaluation of Nanoparticle Probes for *In Vivo* MR and PET Imaging
N. H. Masoodzadehgan[1], W. Seo[2], S. Tong[1], M. Goodman[2], and G. Bao[1]
[1]*georgia institute of technology, atlanta, GA,* [2]*Emory University School of Medicine, atlanta, GA*

P-Sat-A-155
Nanoparticle Targeting to Aortic Aneurysms for Imaging and Therapy
A. Sinha[1], A. Shaporev[1], A. Vertegel[1], and N. Vyavahare[1]
[1]*Clemson University, Clemson, SC*

Track: Biomedical Imaging and Optics

Optical Diagnostics, Sensing and Devices

P-Sat-A-156
In-vivo Screening of Lung Cancer By Evaluating Optical Properties in Buccal Mucosa
N. N. Mutyal[1], A. Radosevich[1], J. D. Rogers[1], H. K. Roy[2], and V. Backman[1]
[1]*Northwestern University, Evanston, IL,* [2]*Northshore University Healthsystems, Evanston, IL*

P-Sat-A-157
Parallel Monte Carlo-based Inverse Model for Determining Optical Properties in Multilayer Tissues
R. Hennessy[1], M. K. Markey[1], and J. W. Tunnell[1]
[1]*The University of Texas, Austin, TX*

P-Sat-A-158
An Optofluidic Approach for Characterization of Phytoplankton
N. Hashemi[1], P. Asrar[1], and D. Lim[1]
[1]*Iowa State University, Ames, IA*

P-Sat-A-159
Eye Injuries from Fireworks are Caused by Projectiles and Not Blast Overpressure
V. D. Alphonse[1], A. R. Kemper[1], B. T. Strom III[1], S. M. Beeman[1], and S. M. Duma[1]
[1]*Virginia Tech - Wake Forest Center for Injury Biomechanics, Blacksburg, VA*

P-Sat-A-160
Optical Imaging of Oxidative Stress in Diabetic Retinopathy
Z. Ghanian[1], S. Maleki[1], R. Sepehr[1], C. Sorenson[2], N. Sheibani[3], and M. Ranji[1]
[1]*Biophotonics lab, Department of Electrical Engineering, University of Wisconsin Milwaukee, Milwaukee, WI,* [2]*Department of Pediatrics, School of Medicine, University of Wisconsin, Madison, WI,* [3]*Departments of Ophthalmology and Visual Sciences, School of Medicine, University of Wisconsin, Madison, WI*

P-Sat-A-161
Nanomembrane-Based Microfluidic Surface Enhanced Raman Spectroscopy (SERS) Device for Biosensing Applications
H. Marks[1], M. Benford[1], P-H. Tsou[1], J. Kameoka[1], and G. Coté[1]
[1]*Texas A&M University, College Station, TX*

P-Sat-A-162
Fluorescence Reduction in Time-Resolved Raman Spectroscopy for the Detection of Circulating Tumor Cells
H. Osaki[1], Y. Tamano[1], and K. Tsukada[1]
[1]*Keio university, Yokohama, Japan*

POSTER SESSION **SatA**

POSTER SESSION Sat A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-163
Development of a Phosphorescence-Based Oxygen Sensor Using Organic Electroluminescence
R. Yoshida[1], Y. Yanagisawa[1], and K. Tsukada[1]
[1]*Keio University, Yokohama, Japan*

P-Sat-A-164
In the Right Light: Broadband Optical Mammography With Quantitative Oximetry and Clinical Measurements
P. G. Anderson[1], R. Cantor-Balan[1], G. Weliwitigoda[1], J. M. Kainerstorfer[1], A. Sassaroli[1], F. Larusson[1], E. L. Miller[1], M. E. Kilmer[1], M. J. Homer[2], R. A. Graham[2], and S. Fantini[1]
[1]*Tufts University, Medford, MA,* [2]*Tufts Medical Center, Boston, MA*

P-Sat-A-165
Droplet Optofluidic Chip for High Throughput Flourescence Detection
F. Guo[1], M. I. Lapsley[1], and T. J. Huang[1]
[1]*Department of Engineering Science and Mechanics, The Pennsylvania State University, State College, PA*

P-Sat-A-166
Optical Monitoring of Venous Oxygenation in Liver
T. J. Akl[1], M. A. Wilson[2,3], M. N. Ericson[4], and G. L. Coté[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, PA,* [4]*Oak Ridge National Laboratory, Oak Ridge, TN*

P-Sat-A-167
Designing a Sustainable IR Blood Loss Monitor for the Developing World
T. Youngman[1], M. B. Kofoed[1], C. T. Burns-Heffner[1], A. Dicks[1], J. DesJardins[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

P-Sat-A-168
Tuning the Equilibrium Association Constant to Improve Sensitivity of a Competitive Binding Glucose Sensor
B. M. Cummins[1], J. T. Garza[1], J. Lim[2], E. E. Simanek[2], M. V. Pishko[1], and G. L. Cote[1]
[1]*Texas A&M University, College Station, TX,* [2]*Texas Christian University, Fort Worth, TX*

P-Sat-A-169
Monitoring of Cell Motility by Intracellular Delivery of Anti-tubulin Antibodies into Live Cells
L. Xia[1], S. Tang[1], B. A. Graham[1], S. C. Lenaghan[1], Y. Cao[1], W. He[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

POSTER SESSION **SatA**

P-Sat-A-170
Dynamic Mechanical Optical Clearing Effects are Predicted by Coupled Mechanical and Optical Simulation of Tissue Poroviscoelastic Stress Relaxation
W. C. Vogt[1] and C. G. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Sat-A-171
Label-free Detection of Cardiac Biomakers with an Open-cavity Optical Biosensor
B. Zhang[1], R. Peterson[1], J. M. Vela[1], L. Tang[1], and J. Ye[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Sat-A-172
Silver Nanoparticle Based SERS Biosensor for Detection and Assessment of Nonspecific Environmental Toxin Exposure
S. Srinivasan[1], V. Bhardwaj[1], J. F. John[1], and A. J. McGoron[1]
[1]*Florida International University, Miami, FL*

P-Sat-A-173
In Vivo Imaging and Multiplexed Spectroscopic Detection with Quantum Dots and a Hand-Held Device
B. A. Kairdolf[1] and S. Nie[1]
[1]*Georgia Tech and Emory University, Atlanta, GA*

P-Sat-A-174
A Highly-Portable Optoelectronic CMOS-Based Biochip for Real-Time Multi-Analyte Diagnostics
T. A. Erickson[1] and K. L. Lear[1]
[1]*Colorado State University, Fort Collins, CO*

P-Sat-A-175
Performance Characteristics of a Pulse Photoplethysomograph Employed in Conjunction with Gold Nanoparticle-assisted Photo-thermal Cancer Therapy
P. Adhikari[1], I. B. Magana[1], G. P. Goodrich[2], J. A. Schwartz[2], and D. P. O'Neal[1]
[1]*Louisiana Tech University, Ruston, LA,* [2]*Nanospectra Biosciences, Inc., Houston, TX*

P-Sat-A-176
Rapid and Accurate Antibiotic Susceptibility Test with Maltohexoase-Conjugated Dye and a New Statistical Test
T-H. Huang[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Cardiovascular and Respiratory Engineering

Cardiovascular Stents and Devices

P-Sat-A-177
Designing the Next Generation Mechanical Circulatory Support systems: Are Pulsatile Pumps Extinct?
H. M. Sherif[1]
[1]Christiana Hospital, Newark, DE

P-Sat-A-178
A Bioinspired Multifunctional Nanomatrix Coating for Stents
A. Andukuri[1], C. Anakwenze[1], Y-D. Sohn[2], Y-S. Yoon[2], B. Brott[1], and H-W. Jun[1]
[1]*University of Alabama at Birmingham, Birmingham, AL,* [2]*Emory University, Atlanta, GA*

P-Sat-A-179
A New Strategy for Engineering Thromboresistant and Cell Compatible Vascular Grafts
R. Hoshi[1] and G. A. Ameer[1]
[1]*Northwestern University, Evanston, IL*

P-Sat-A-180
Mechanical Properties and *In-Vivo* Results of a Novel Bioresorbable Stent for Congenital Heart Disease
T. Welch[1], S. V. Reddy[1], J. Wang[1], R. Eberhart[1], F. Berstein[1], J. Richardson[1], J. Forbess[1], and A. Nugent[1]
[1]*UT Southwestern Medical Center, Dallas, TX*

P-Sat-A-181
Corrosion Effects of Nitinol Stents Under Flow Conditions
E. Trillo[1] and J. Dante[1]
[1]*Southwest Research Institute, San Antonio, TX*

P-Sat-A-182
Controlled, Perivascular Delivery of Resveratrol to Mitigate Intimal Hyperplasia After Bypass Graft Surgery
K. A. Lapidos[1], S. J. Patel[1], J-J. Wang[2], Z. Zhang[2], and G. A. Ameer[1]
[1]*Northwestern University, Evanston, IL,* [2]*Northwestern University, Chicago, IL*

P-Sat-A-183
Hydrodynamic Evaluation of a Novel Tri-Leaflet Silicone Heart Valve Prosthesis
K. K. Pierre[1], M. Salinas[1], R. Carroll[2], K. Landaburo[1], H. Yamaguchi[2], C. DeGroff[3], F. Al-Mousily[3,4], M. Bleiweis[3], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL,* [2]*Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL,* [3]*College of Medicine, University of Florida, Gainesville, FL,* [4]*King Faisal Specialty Hospital and Research Center (KFSH&RC), Jeddah, Saudi Arabia*

P = Poster Session
OP = Oral Presentation

P-Sat-A-184
Ambulatory Wi-Fi TM Pulse Oximeter for Group Measurements
H. Damodaran[1,2] and M. Bergen[3]
[1]Stress and Motivated Behavioural Institute, East Orange, NJ, [2]Department of Veterans Affairs, New Jersey Health Care System, East Orange, NJ, [3]Stress and Motivated Behavioural Institute, East orange, NJ

P-Sat-A-185
The Effect of Nitric Oxide on Endothelial Progenitor Cell Proliferation
P. Kerscher[1], W. Seeto[1], A. Hodge[1], and E. Lipke[1]
[1]Auburn University, Auburn, AL

P-Sat-A-186
Novel Computational Model for Optimal Reduction of the Stent Collapsed Profile: Applications in Transcatheter Aortic Valve Implantation
A. Falahatpisheh[1,2] and A. Kheradvar[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

P-Sat-A-187
Development of an Apical Left Ventricular (ALV) Cannula System for Aortic Valve Bypass
K. G. Soucy[1], C. J. Benzinger[1], A. C. Ansert[1], K. P. Holley[1], T. C. Spalding[1], G. A. Giridharan[1], M. A. Sobieski[1], M. S. Slaughter[1], and S. C. Koenig[1]
[1]University of Louisville, Louisville, KY

P-Sat-A-188
Development of a TAVI Catheter System for Percutaneous Repositioning and Retrieval of the Valve
J. L. Su[1], A. Falahatpisheh[1], and A. Kheradvar[1]
[1]University of California at Irvine, Irvine, CA

P-Sat-A-189
A Method to Quantify Tension Force in Percutaneous Transvenous Mitral Annuloplasty
T. Pham[1], S. Bhattacharya[1], and W. Sun[1]
[1]University of Connecticut, Storrs, CT

Track: Cardiovascular and Respiratory Engineering

Cerebrovasculature and Blood-Brain Barrier

P-Sat-A-190
Transcellular Model for Nanoparticle Transport across the Blood-Brain Barrier
L. Zhang[1], J. Fan[1], P. Guo[1], and B. Fu[1]
[1]The City College of New York, New York, NY

P-Sat-A-191
The Fung Strain Energy Function Captures Passive Middle Cerebral Artery Response
E. D. Bell[1] and K. Monson[1]
[1]University of Utah, Salt Lake City, UT

Track: Cardiovascular and Respiratory Engineering

Heart Valve Structure-Function Relations and Simulation

P-Sat-A-192
In Vivo Validation of an *In Vitro* Model of Ischemic Mitral Regurgitation
S. L. Touchton[1], A. W. Siefert[1], K. J. Koomalsingh[2], J. Rabbah[1], L. Strohsnitter[1], N. Saikrishnan[1], R. C. Gorman[2], J. H. Gorman, III[2], and A. P. Yoganathan[1]
[1]Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, [2]Gorman Cardiovascular Research Group, University of Pennsylvania, Glenolden, PA

P-Sat-A-193
Patient Specific Modeling of Mitral Stenosis: Isolated Effect of Restricted Leaflet Opening on Transvalvular Pressure Gradient
T. A. Herrmann[1], H. R. Gollin[1], A. W. Siefert[2], C. M. Haggerty[1], K. Telling[1], G. Pressman[3], and A. P. Yoganathan[1]
[1]Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA, [3]Einstein Healthcare Network, Philadelphia, PA

P-Sat-A-194
Design of a Three-Dimensional Fluid-Structure Interaction Aortic Valve Model Using a Modified Arbitrary-Lagrangian Eulerian Approach
S. Chandra[1] and P. Sucosky[1]
[1]University of Notre Dame, Notre Dame, IN

P-Sat-A-195
In situ Estimation of Extracellular Matrix-interstitial Cell Mechanical Coupling in the Aortic Heart Valve Leaflet Using a Multi-scale Finite Element Approach
R. M. Buchanan[1] and M. S. Sacks[1]
[1]The University of Texas at Austin, Austin, TX

P-Sat-A-196
Biaxial Properties of Decellularized and ECM Conditioned Pulmonary Artery and Sinus Tissue
G. Converse[1], M. Armstrong[1], E. Buse[1], R. Quinn[1], S. Hilbert[1], G. Lofland[1], and R. Hopkins[1]
[1]Children's Mercy Hospital and Clinics, Kansas City, MO

P-Sat-A-197
Hydrodynamic and Viscoelastic Properties of Decellularized and Conditioned Ovine Pulmonary Valves
E. Buse[1], G. Converse[1], S. Hilbert[1], G. Lofland[1], and R. Hopkins[1]
[1]Children's Mercy Hospitals and Clinics, Kansas City, MO

P-Sat-A-198
Quantitative Evaluation of Leaflet Coaptation for Patient-Specific Mitral Regurgitation
Y. Rim[1], S. T. Laing[1], P. Kee[1], D. D. McPherson[1], K. B. Chandran[2], and H. Kim[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]The University of Iowa, Iowa City, IA

P-Sat-A-199
Papillary Muscle and Annulus Dilation Effect on Annulus Tension in the Tricuspid Valve: An *In-Vitro* Study
Z. He[1] and D. Smith[1]
[1]Texas Tech University, Lubbock, TX

P-Sat-A-200
In-plane Tricuspid Valve Force Measurements: Development of Strain Gauge Instrumented Annuloplasty Ring
E. Kragsnaes[1], J. Honge[1,2], J. Askov[1,2], S. Nielsen[1,2], H. Nygaard[1,2], and M. Jensen[1,2]
[1]University of Aarhus, Aarhus, Denmark, [2]Aarhus University Hospital, Aarhus, Denmark

P-Sat-A-201
Dynamic Finite Element Evaluation of Mitral Valve Function Following Rupture of Chordae Tendineae
Y. Rim[1], S. T. Laing[1], D. D. McPherson[1], K. B. Chandran[2], and H. Kim[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]The University of Iowa, Iowa City, IA

P-Sat-A-202
Mitral Valve Modeling - Material Model Selection, Parameter Identification, and the Effect of Prestrain
M. K. Rausch[1], N. Famaey[2], T. O. Shultz[1], C. Miller[1], and E. Kuhl[1]
[1]Stanford University, Stanford, CA, [2]University of Leuven, Leuven, Belgium

P-Sat-A-203
TGF-β1-Induced Changes in Cadherin Expression Lead to Calcific Nodule Morphogenesis
J. Chen[1], J. D. Hutcheson[1], L. M. Ryzhova[1], and W. D. Merryman[1]
[1]Vanderbilt University, Nashville, TN

P-Sat-A-204
The Role of the Wall Shear Stress in Valvulogenesis in Zebrafish *In Vivo*
H. Kang[1] and M. Gharib[1]
[1]*California Institute of Technology, Pasadena, CA*

P-Sat-A-205
Age-Related Changes in Cardiac Valve Endothelial Cell Hemostatic Behavior
L. R. Balaoing[1], A. D. Post[1], J. L. Moake[1], and K. J. Grande-Allen[1]
[1]*Rice University, Houston, TX*

P-Sat-A-206
Bicuspid Aortic Valve Hemodynamic Abnormalities Stimulate Early Leaflet Calcification
L. Sun[1], S. Chandra[1], and P. Sucosky[1]
[1]*University of Notre Dame, Notre Dame, IN*

Track: Cardiovascular and Respiratory Engineering

In Vitro and Multi-scale Models of Cardiovascular Disease

P-Sat-A-207
Valvular EMT Undergoes Time-Dependent Phases in Both Transforming and Non-transforming Cell Populations
E. Farrar[1] and J. Butcher[1]
[1]*Cornell University, Ithaca, NY*

P-Sat-A-208
Effect of Resveratrol on Aging Cord-Blood Derived Endothelial Cells
T. M. Cheung[1] and G. A. Truskey[1]
[1]*Duke University, Durham, NC*

P-Sat-A-209
Evaluation of the Effect of Disturbed Flow on S1P Signaling and Endothelial Cell Inflammation
R. Estrada[1], G. Giridharan[1], V. Parichehreh[1], J. An[2], M-J. Lee[2], and P. Sethu[1]
[1]*University of Louisville, Louisville, KY,* [2]*Wayne State University, Detroit, MI*

P-Sat-A-210
Cholesterol Impairs Shear Stress-Induced Nitric Oxide Production by Inhibiting Capacitative Calcium Entry
A. M. Andrews[1] and K. A. Barbee[1]
[1]*Drexel University, Philadelphia, PA*

POSTER SESSION SatA

P-Sat-A-211
Leukocyte-Endothelial Cell Interactions in Endothelial Dysfunction Affects Distribution of Free Radicals in Arteriolar Microcirculation
S. Kar[1] and M. Kavdia[1]
[1]*Wayne State University, Detroit, MI*

P-Sat-A-212
An Integrated Platform for the *In Vitro* Characterization and Modeling of Cardiovascular Disease
B. E. Reese[1], S. C. Lenaghan[1], Z. Xu[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

P-Sat-A-213
Effect of Endothelial Kir Channel Mutants in Agonist Induced Vasoactivity
M. Stevenson[1], I. Levitan[2], and K. Gooch[1]
[1]*Ohio State University, Columbus, OH,* [2]*University of Illinois-Chicago, Chicago, IL*

P-Sat-A-214
3D Cell Culture Construct for the Analysis of Valvular Interstitial Cells in a Hypoxic Environment
M. C. Sapp[1], A. C. Estrada[1], and K. J. Grande-Allen[1]
[1]*Rice University, Houston, TX*

P-Sat-A-215
In vitro Simulation of PhysioBank Pathological Conditions Accomplished Using a Simulink Simscape Model, Parameter Estimation Toolbox, and a Fully Automated Mock Circulatory Loop
C. E. Taylor[1], G. S. Kelly[1], N. S. Panwar[1], S. J. Warren[1], and G. E. Miller[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Sat-A-216
Role of Side-Specific and Shear-Dependent eNOS Expression in Aortic Valve Calcification
J. M. Richards[1], I. El-Hamamsy[2], Z. Sarang[2], P. Sarathchandra[2], A. H. Chester[2], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY,* [2]*Imperial College London, Middlesex, United Kingdom*

P-Sat-A-217
Measures Derived from Photoplethysmography for Enhanced Detection of Obstructive Sleep Apnea
R. M. Alex[1], S. Iyer[1], A. Bashaboyina[2], G. Bhave[2], M. A. Al-Abed[3], D. E. Watenpaugh[4], R. Zhang[5], J. Burk[6], and K. Behbehani[7]
[1]*University of Texas Arlington, Arlington, TX,* [2]*University of Texas, Arlington, TX,* [3]*Hashemite University, Amman, Jordan,* [4]*Sleep Consultants Inc., Fort Worth, TX,* [5]*Institute for Exercise and Environmental Medicine, Dallas, TX,* [6]*Sleep Consutants Inc., Fort Worth, TX,* [7]*University of Texas, Arlington, Arlington, TX*

Track: Cardiovascular and Respiratory Engineering

Lymphatic Engineering and Biomechanics

P-Sat-A-218
ATP-dependent Transport Plays a Pivotal Role in Movement of Lipid Across the Lymphatic Endothelium
A. L. Reed[1], S. A. Rowson[1], and J. B. Dixon[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-A-219
Low-cost Microcontroller Platform for Real-time Control of an Isolated Lymphatic Vessel Perfusion Device
J. A. Kornuta[1], E. Salazar[1], Z. Danielak[1], and J. B. Dixon[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-A-220
Advances in Near-Infrared Lymphatic Imaging and Long-Term Effects of Indocyanine Green (ICG)
M. Weiler[1] and J. B. Dixon[1]
[1]*Georgia Tech, Atlanta, GA*

P-Sat-A-221
Non-Invasive Quantification of Lymphatic Vessel Pumping Pressure in a Rat Tail
R. E. Akin[1], M. Weiler[1], and J. B. Dixon[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-A-222
Differential Sensitivity of the Lymphatic System to Changes in Capillary and Central Venous Pressures Prevents Edema
R. M. Dongaonkar[1], T. L. Nguyen[1], R. H. Stewart[1], G. A. Laine[1], and C. M. Quick[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Sat-A-223
Prediction of the Behavior of a Lymphatic Network Emerging from Complex Interactions of Lymphangions
T. L. Nguyen[1], R. M. Dongaonkar[1], R. H. Stewart[1], G. A. Laine[1], and C. M. Quick[1]
[1]*Texas A&M University, College Station, TX*

P = Poster Session
OP = Oral Presentation

Track: Cardiovascular and Respiratory Engineering

Microfluidics and Tissue Engineering Constructs for the Lung

P-Sat-A-224
Geometries of the Reopening of an Occluded Pulmonary Bifurcation: a Microfluidics Approach
M. J. Van Houten[1], M. Giannetti[1], E. Yamaguchi[1], and D. Gaver[1]
[1]*Tulane University, New Orleans, LA*

P-Sat-A-225
Stability Analysis of the Reopening of a Microfluidic Model of a Pulmonary Bifurcation
M. J. Giannetti[1], M. J. Van Houten[1], E. Yamaguchi[1], and D. P. Gaver[1]
[1]*Tulane University, New Orleans, LA*

P-Sat-A-226
A Microfluidics Model of Mucus Plug Rupture Dynamics
Y. Hu[1], M. Filoche[1,2], J. C. Grotberg[3], S. Bian[1], Y-C. Chen[1,4], S. Takayama[1], and J. B. Grotberg[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Ecole Polytechnique, CNRS, Palaiseau, France,* [3]*University of Illinois at Chicago, Chicago, IL,* [4]*National Cheng Kung University, Tainan City, Taiwan*

P-Sat-A-227
A Multifluidic Platform for Studying Pulmonary Epithelial Barrier Injury
D. D. Nalayanda[1], W. B. Fulton[2], T-H. Wang[3], and F. Abdullah[2]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD,* [2]*Johns Hopkins School of Medicine, Baltimore, MD,* [3]*Johns Hopkins University, Baltimore, MD*

P-Sat-A-228
Epithelialization of Artificial Lung Airways
R. A. Huynh[1], H. W. Glindmeyer[1], O. Forouzan[1], D. P. Gaver[1], and S. S. Shevkoplyas[1]
[1]*Tulane University, New Orleans, LA*

Track: Cardiovascular and Respiratory Engineering

Cardiovascular & Respiratory Engineering - Undergraduate

P-Sat-A-229
Derivation and Characterization of Endothelial Cell Subpopulations from Embryonic Stem Cells Using Serum-Free Conditions
L. E. Wong[1], A. A. Blancas[1], D. E. Glaser[1], and K. E. McCloskey[1]
[1]*University of California, Merced, Merced, CA*

P-Sat-A-230
Mechanical Stretch-Induced Damage in Human Bronchial Epithelial Cells
P. A. Patel[1] and R. L. Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Sat-A-231
Mechanical Characterization of a PGLA/P(LA/CL) Vascular Graft
Z. Brandes[1], A. Melchiorri[1], N. Hibino[2], and J. P. Fisher[1]
[1]*University of Maryland, College Park, MD,* [2]*Children's National Medical Center, Washington, DC*

P-Sat-A-232
The Role of Extracellular Matrix Proteins on Angiogenic Processes
A. Quinn[1], K. Duxstad[1], C. Mccoy[1], and K. Masters[1]
[1]*University of Wisconsin - Madison, Madison, WI*

P-Sat-A-233
Role of Glycocalyx Shedding and Apoptosis on Atherosclerotic Plaque Formation
C. I. Hirschberg[1,2], J. M. Tarbell[3], L. M. Cancel[3], and E. E. Ebong[1,3]
[1]*Albert Einstein College of Medicine, New York, NY,* [2]*Emory University, Atlanta, GA,* [3]*The City College of New York, New York, NY*

P-Sat-A-234
A 3D Co-Culture Model of the Aortic Valve Using Magnetic Levitation
B. Grigoryan[1], L. R. Balaoing[2], H. Tseng[2], R. M. Raphael[2,3], T. C. Killian[3,4], G. R. Souza[3], and K. Grande-Allen[2]
[1]*Texas A&M University, College Station, TX,* [2]*Rice University, Houston, TX,* [3]*Nano3D Biosciences, Houston, TX,* [4]*Rice University, Houston*

P-Sat-A-235
Pilot Study on the Effects of Pharmaceuticals on Arterial Compliance
C. M. Luetkemeyer[1] and J. E. Wagenseil[1]
[1]*Saint Louis University, St. Louis, MO*

P-Sat-A-236
Molding of Patient-Specific Abdominal Aortic Aneurysms Phantoms for the Study of Ultrasound-measured Regional Wall Strain
M. W. Wingate[1], D. Mix[2], J. Featherall[1], D. Phillips[1], S. W. Day[1], K. Q. Schwarz[2], and A. Chandra[2]
[1]*Rochester Institute of Technology, Rochester, NY,* [2]*University of Rochester School of Medicine and Dentistry, Rochester, NY*

P-Sat-A-237
Characterizing the Anisotropic Mechanical Properties of Reactive Bovine Airways
A. Rajshekar[1], H. Parameswaran[1], B. Harvey[1], J. Imsirovic[1], and K. R. Lutchen[1]
[1]*Boston University, Boston, MA*

P-Sat-A-238
Comparing *In Vivo* and *Ex Vivo* Pulse Wave Velocity Measurements in Eln +/+ and +/- Mice
W. Gardner[1], J. Kim[1], and J. Wagenseil[1]
[1]*Saint Louis University, St. Louis, MO*

P-Sat-A-239
Mapping the Regional Distribution of Proteins in the Rat Heart
S. M. Vanderheiden[1] and J. H. Omens[2]
[1]*University of Minnesota, Minneapolis, MN,* [2]*University of California San Diego, La Jolla, CA*

P-Sat-A-240
Three-Dimensional Sonomicrometry for Regional Myocardial Strain: Comparison with High-Resolution Computed Tomography
D. Yu[1], B. A. Lin[1], K. Purushothaman[1], L. W. Dobrucki[2], D. P. Dione[1], J. S. Duncan[1], and A. J. Sinusas[1]
[1]*Yale University, New Haven, CT,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Sat-A-241
Endothelial Cell Attachment And Growth On An Amniotic Membrane For A Vascular Graft
R. E. Ulrich[1], J. A. Brennan[1], J. H. Arrizabalaga[1], and M. U. Nollert[1]
[1]*University of Oklahoma, Norman, OK*

P-Sat-A-242
Mechanical Properties of Carpentier-Edwards Magna Pericardial Aortic Bioprosthesis
H. Kuang[1], A. Mookhoek[2,3], M. Lu[4], A. Wisneski[3], and E. E. Tseng[3]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Erasmus University Medical Center, Rotterdam, Netherlands,* [3]*University of California San Francisco, San Francisco, CA,* [4]*Massachussets Institute of Technology, Boston, MA*

P-Sat-A-243
Development of an Agent-Based Model Simulating the Effects of Angioplasty and Bare-Metal Stent Implantation in an Atherosclerotic Blood Vessel
A. E. Curtin[1] and L. Zhou[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

POSTER SESSION Sat A 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-244
Atmospheric Ultrafine Particles Promote Vascular Calcification via NF-κB Signaling
D. Mittelstein[1], R. Li[1], W. Kam[1], C. Sioutas[1], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA

P-Sat-A-245
Mechanisms by Which Oscillatory Shear Stress Causes Mitochondrial DNA Damage
K. L. Fang[1], K. Quigley[1], N. Jen[1], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA

P-Sat-A-246
Cardiac Specific CaMKIIδc Overexpression Increases Susceptibility to Spontaneous Sarcoplasmic Reticulum Ca^{2+} Release Prior to Heart Failure
S. Patel[1], A. G. Edwards[1], and A. D. McCulloch[1]
[1]University of California San Diego, San Diego, CA

P-Sat-A-247
Relative Importance of Active Transport in Transcellular and Paracellular Lymphatic Lipid Transport
S. A. Rowson[1], A. L. Reed[1], and J. B. Dixon[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-A-248
Mechanical Stretch-Induced Inflammation: Human Bronchial Epithelial and Murine Type II Alveolar Cells
A. Venkatasubramanian[1], J. A. Herbert[1], and R. L. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

P-Sat-A-249
The Role of Shear Stress on Thrombospondin-1 Expression in Human Aortic Valvular Endothelial Cells
S. R. Holloway[1], C. J. Ankeny[2], and H. Jo[2,3]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology & Emory University, Atlanta, GA, [3]Ewha Womans University School of Medicine, Seoul, Korea, Republic of

P-Sat-A-250
Sex-Related Differences in the Regulation of Valvular Angiogenesis
K. Duxstad[1], A. Quinn[1], C. McCoy[1], and K. Masters[1]
[1]University of Wisconsin- Madison, Madison, WI

P-Sat-A-251
Relation of Plasma Viscosity and ADMA in Control and Diabetics With ESRD.
N. N. Mitrovic[1], D. Stewart[2], R. Sashank[3], N. Beltran[4], J. Hines[5], M. Hammes[5], and P. Dhar[3]
[1]Illinois Institute of Technology, Chicag, IL, [2]Florida International University, Miami, FL, [3]Illinois Institute of Technology, Chicago, IL, [4]St. Ignatius College Prep, Chicago, IL, [5]University of Chicago, Chicago, IL

P-Sat-A-252
Isolation and Characterization of Mural Cells From Abdominal Aortic Aneurysms
E. Ofstun[1], H. Tran[1], J. Rao[1], and D. Vorp[1,2]
[1]University of Pittsburgh Vascular Bioengineering Laboratory, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

P-Sat-A-253
Investigations of Atelectrauma Using a Novel Flexible Tube Model of a Pulmonary Airway
Y. B. Kaplan[1] and D. P. Gaver[1]
[1]Tulane University, New Orleans, LA

P-Sat-A-254
Vascular Islands Increase during Regression in Adult Rat Mesenteric Microvascular Networks
M. R. Kelly-Goss[1], R. S. Sweat[1], and W. L. Murfee[1]
[1]Tulane University, New Orleans, LA

P-Sat-A-255
Computational and Experimental Measurements of Inhaled Aerosol Deposition in Simplified Dry and Moist-and-Temperature-Controlled Mouth-Throat Airway Models
D. D. Yoon[1], Y-E. Hyun[2], S. Hyun[1], and C. S. Kim[3]
[1]Mercer University, Macon, GA, [2]Yale University, New Haven, CT, [3]U.S. Environmental Protection Agency, Chapel Hill, NC

P-Sat-A-256
Experimental Study of Micron-Sized Aerosol Deposition Within a Subject-Specific Human Airway Model
A. L. Fratino[1], D. D. Yoon[1], S. Hyun[1], and C. S. Kim[2]
[1]Mercer University, Macon, GA, [2]U.S. Environmental Protection Agency, Chapel Hill, NC

P-Sat-A-257
Determining the Effects of Aneurysm on Artery Stability
R. H. Shadfan[1], Y. Xiao[1], and H-C. Han[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Sat-A-258
Three-Dimensional Cell Culture Construct for the Study of Hypoxia and Calcification in Valvular Interstitial Cells
A. C. Estrada[1], M. Sapp[1], and K. J. Grande-Allen[1]
[1]Rice University, Houston, TX

P-Sat-A-259
Analytical Solution for the Minimal Closed-Loop Cardiovascular Model
E. R. Carlson[1] and C. M. Quick[1]
[1]Texas A&M University, College Station, TX

P-Sat-A-260
Endothelial Cells Derived from Embryonic Stem Cells Respond to Cues from Topographical Surface Patterns
R. Hatano[1], J. Luna[1], K. Mercurio[1], D. E. Glaser[1], V. Leppert[1], and K. E. McCloskey[1]
[1]University of California Merced, Merced, CA

Track: Cellular and Molecular Bioengineering

Directed Evolution

P-Sat-A-261
A Platform for Targeted Mutagenesis *In Vivo*
S. Finney-Manchester[1] and N. Maheshri[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

Track: Cellular and Molecular Bioengineering

Mathematical and Computational Models of Molecular, Cellular and Organ Processes

P-Sat-A-262
Modeling Soft Tissue Stress Relaxation as a Random Sequence of Mictro-Yield Events
J. H. Bates[1]
[1]University of Vermont, Burlington, VT

P-Sat-A-263
Computational Model of Mechanically Induced Morphogenesis in Embryonic Heart Valves
P. R. Buskohl[1], J. T. Jenkins[1], and J. T. Butcher[1]
[1]Cornell University, Ithaca, NY

POSTER SESSION SatA

P = Poster Session
OP = Oral Presentation

Track: Cellular and Molecular Bioengineering

Molecular Engineering and Protein Design

P-Sat-A-264
Naphthalimide Analogs Inhibit Amyloid-βAggregation and Acetylcholinesterase Activity Associated with Alzheimer's Disease
J-H. Tseng[1], C. Suo[1], J. Gao[1], A. Terry[2], J. Chapman[1], and M. A. Moss[1]
[1]University of South Carolina, Columbia, SC, [2]Georgia Health Sciences University, Augusta, GA

P-Sat-A-265
Aptameric Peptide for One-step Detection of Protein Kinase in Cell Lysate
X. Xu[1,2], J. Zhou[2], Z. Nie[2], S. Yao[2], and Y. Li[1]
[1]Zhejiang University, Hangzhou, China, People's Republic of, [2]Hunan University, Changsha, China, People's Republic of

P-Sat-A-266
Calibrating a Structure-Guided Protein Engineering Approach for Adeno-Associated Virus Chimeras
M. L. Ho[1], M. Torre[1], B. Adler[1], J. Chen[1], A. Khan[1], J. Silberg[1], and J. Suh[1]
[1]William Marsh Rice University, Houston, TX

P-Sat-A-267
Production of Influenza H5H1 Hemagglutinin in Pichia pastoris for Development of Subunit Flu Vaccines
L. Zhang[1], H. Lei[1], Q. Liang[1], S. Jin[1], and K. Ye[1]
[1]University of Arkansas, Fayetteville, AR

P-Sat-A-268
Increased Potency of Transcription Factor Activity by Protein Engineering
A. M. Kabadi[1] and C. A. Gersbach[1]
[1]Duke University, Durham, NC

P-Sat-A-269
The Development of an Shp2 Activator in Live Cells
P. Wang[1] and Y. Wang[2,3]
[1]Neuroscience program, University of Illinois, Urbana-Champaign, Urbana, IL, [2]Department of Bioengineering, University of Illinois, Urbana-Champaign, Urbana, IL, [3]Beckman Institute for Advanced Science and Technology, Urbana, IL

P-Sat-A-270
Functional Evaluation of Periodic Peptide that Induces Formation of Spheroid
Y. Hirano[1], M. Tanaka[1], and Y. Tabata[2]
[1]Kansai University, Suita, Japan, [2]Kyoto University, Kyoto, Japan

P-Sat-A-271
Competition Between Core-2 GlcNAc Transferase and ST6GalNAc Transferase Regulates the Synthesis of the Leukocyte Selectin-Ligand on P-selectin Glycoprotein Ligand-1
C. Lo[1], A. Antonopoulos[2], S. Haslam[2], A. Dell[2], and S. Neelamegham[1]
[1]SUNY at Buffalo, Amherst, NY, [2]Imperial College, London, United Kingdom

P-Sat-A-272
Implicit Solvent Methods for Protein-Protein Interactions
M. H. Peters[1]
[1]VCU, Richmond, VA

P-Sat-A-273
Novel Quantitative FRET Analysis for Full SUMOylation Pathway Kinetics
J. Liao[1], Y. Song[2], Y. Liu[1], V. Madahar[1], and L. Jiang[1]
[1]University of California at Riverside, Riverside, CA, [21]University of California at Riverside, Riverside, CA

P-Sat-A-274
Immune Responses of PEI-Mediated Staphylococcus epidermidis DNA/mRNA Vaccination in Mice
L. Yan[1] and J. Bryers[1]
[1]University of Washington, Seattle, WA

P-Sat-A-275
Molecular and Functional Transitions in the Virolytic Breakdown of HIV-1 by Sulfhydryl Peptide Triazole
A. Rosemary Bastian[1], M. Contarino[1], K. Kantharaju[1], D. R. Moreira[2], K. Freedman[1], K. McFadden[3], and C. Duffy[1]
[1]Drexel University, Philadelphia, PA, [2]Federal University of Pernambuco, ReficÑ -PE, Brazil, [3]Duke University, Durham, NC

P-Sat-A-276
Hydroxyl-dependent Effects of Isoflavones on Amyloid-β Aggregation
B. L. Bungart[1], J. C-M. Lee[2], and M. Moss[3]
[1]Univeristy of Missouri, Columbia, MO, [2]University of Missouri, Columbia, MO, [3]University of South Carolina, Columbia, SC

P-Sat-A-277
Designing Zinc Finger Nucleases for Increased Activity and Specificity in Genome Editing
T. J. Cradick[1], C. J. Antico[1], and G. Bao[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

P-Sat-A-278
Multivalent Protein Kinetics and Robust Antibody Targeting Vehicles
D. Potter[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Cellular and Molecular Bioengineering

Translational Cellular and Molecular Engineering

P-Sat-A-279
Low Intensity Vibration Treatment Tapers Obesity-Induced Type II Diabetes Potentially by Reducing Adipocyte Size in Mice
V. S. Patel[1], M. Cheung[1], M. E. Chan[1], and C. T. Rubin[1]
[1]Stony Brook University, Stony Brook, NY

P-Sat-A-280
Stiletto: A Safe Laser-based Mammalian Cell Culture Manipulation System
M. Maserati[1] and D. Douglas-Hamilton[2]
[1]UMASS Amherst/ Hamilton Thorne, Amherst, MA, [2]Hamilton Thorne, Beverly, MA

P-Sat-A-281
Characterizing a Human PCD-Related Mutation by Kinematic Analysis of Chlamydomonas Swimming
K. Wilson[1], P. Bayly[1], R. Okamoto[1], S. Dutcher[1], and T. Ferkol[1]
[1]Washington University in St. Louis, Saint Louis, MO

P-Sat-A-282
Role Of Cell Morphology In Epithelial-Mesenchymal Transition
V. C. Shukla[1], N. Higuita-Castro[1], M. Crawford[2], P. Nana-Sinkam[2], D. Hansford[1], D. A. Kniss[1,2], and S. N. Ghadiali[1,2]
[1]Ohio State University, Columbus, OH, [2]Wexner Medical Center at Ohio State University, Columbus, OH

P-Sat-A-283
Quantifying the Effects of Transient Cellular Characteristics Using a Novel Streaming Potential Method
N. Carvajal[1], P. Vandrangi[1], D. Lo[1], and V. Rodgers[1]
[1]University of California, Riverside, Riverside, CA

P-Sat-A-284
Fluid Shear Stress Modulates Chlamydia pneumoniae-mediated Inflammatory Response
S. J. Evani[1], S. F. Dallo[1], and A. K. ramasubramanian[1]
[1]university of texas san antonio, san antonio, TX

P-Sat-A-285
Effect of Secondhand Smoke on Endothelial Cell Functions Under Dynamic Shear Stress
W. Yin[1], E. Ngwe[1], and D. A. Rubenstein[1]
[1]Oklahoma State University, Stillwater, OK

P-Sat-A-286
Electric Field Modeling in a 3D Tissue Engineered Tumor Treated with Irreversible Electroporation
P. A. Garcia[1], C. B. Arena[1], C. S. Szot[1], and R. V. Davalos[1]
[1]Virginia Tech - Wake Forest University, Blacksburg, VA

P-Sat-A-287
Probing SCFA-Hexosamine Esterase Hydrolysis by Computational Docking Studies
F. A. Espinoza[1], J. Wang[1], M. Chow[1], R. Srinivas[1], R. Bhattacharya[1], and K. J. Yarema[1]
[1]Johns Hopkins, Baltimore, MD

Track: Cellular and Molecular Bioengineering

Cellular & Molecular Engineering - Undergraduate

P-Sat-A-288
A Library Approach For Creating Circularly Permuted Protein Zymogens
S. Sidell[1], M. M. Mehta[2], and J. J. Silberg[2]
[1]West Houston Center for Science and Engineering, Houston Community College, Houston, TX, [2]Rice University, Houston, TX

P-Sat-A-289
Electrically Induced Contractility of Intact Embryonic Tissues on a Microelectrode Array
E. B. Weston[1], D. S. Vijayraghavan[1], C. L. Weaver[1], S. M. Trier[1], X. T. Cui[1], and L. A. Davidson[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-A-290
Cell Decision Between Cell Cycle Arrest and Apoptosis
Y. Shi[1]
[1]Carnegie Mellon University/Imperial College London(occasional), Pittsburgh, PA

P-Sat-A-291
The Effects of Biomechanical Properties on Spinal Cord Regeneration
K. Shores[1], C. Luna[2], H. Aranda-Espinoza[2], and A. Cohen[2]
[1]Clemson University, Clemson, SC, [2]University of Maryland, College Park, MD

P-Sat-A-292
Genetic Modification of Potato Virus X as a Platform for Targeted Breast Cancer Therapy
P. L. Chariou[1], K. L. Lee[1], and N. F. Steinmetz[1]
[1]Case Western Reserve Univsersity, Cleveland, OH

P-Sat-A-293
Fluid Shear Stress Sensitizes Neutrophil Activation to Platelet Activating Factor
K. S. Lin[1]
[1]Cornell University, Ithaca, NY

P-Sat-A-294
Effectiveness of Phenolic Acid Derived from Coconut Oil on Amyloid-β Inhibition
S. Z. Vance[1], J-H. Tseng[2], S. Chastain[2], K. Pate[2], W. Reed[2], and M. Moss[2]
[1]University of Kentucky, Lexington, KY, [2]University of South Carolina, Columbia, SC

P-Sat-A-295
Understanding the Role of Reductive Metabolism and Lipid Uptake
C. R. Green[1], S. J. Parker[1], and C. M. Metallo[1]
[1]University of California, San Diego, La Jolla, CA

P-Sat-A-296
Phenolic Acids Alter Amyloid-β Oligomerization and Consequent Cellular Responses
J. R. Clegg[1], K. M. Pate[1], S. Z. Vance[2], J. W. Reed[1], and M. A. Moss[1]
[1]University of South Carolina, Columbia, SC, [2]University of Kentucky, Lexington, KY

P-Sat-A-297
Myosin IIA Deficient Cells Migrate With Minimal Traction Forces
M. H. Jorrisch[1], W. Shih[1], and S. Yamada[1]
[1]University of California, Davis, Davis, CA

P-Sat-A-298
Study of Intrinsic Temporal Mechanical Oscillations of Cells
N. Ray[1,2] and E. Dimitriadis[2]
[1]University of California, Berkeley, Berkeley, CA, [2]National Institutes of Health, Bethesda, MD

P-Sat-A-299
Characterization and Comparison of SDF–1 Mediated Cell Migration Across Various Cell Lines
S. Steib[1], C. S. Wallace[2], M. Wu[2], and W. Reichert[2]
[1]Louisiana State University, Baton Rouge, LA, [2]Duke University, Durham, NC

P-Sat-A-300
Using Recombinant DNA to Alter the Mechanical Domain of Kinesin Motor Proteins
N. Suresh[1], S. Shastry[1], and W. O. Hancock[1]
[1]Pennsylvania State University, University Park, PA

P-Sat-A-301
Using Partial Treatment of Lat A via Microfluidics and ATPS to Study Clathrin-Coated Pit Dynamics
J. Muncie[1] and A. Liu[2]
[1]University of Michigan, Novi, MI, [2]University of Michigan, Ann Arbor, MI

P-Sat-A-302
Engineering Synthetic Transcription Factors for Myogenic Differentiation
C. M. Kim[1], T. M. Gibson[1], L. R. Polstein[1], and C. A. Gersbach[1]
[1]Duke University, Durham, NC

P-Sat-A-303
A Computational Model of Dynamic Surface Tension of Pulmonary Surfactant Using the Langmuir Trough/Wilhemy Plate
S. Chen[1], B. Fowler[1], E. Yamaguchi[1], and D. Gaver[1]
[1]Tulane University, New Orleans, LA

P-Sat-A-304
Novel Computational and Analytical Tools for Modeling Kinesin Motor Protein Biochemistry
N. C. Deffenbaugh[1]
[1]Penn State University, State College, PA

P-Sat-A-305
A Computational Model of Fibroblast Growth Factor-2 Binding to Endothelial Cells
T. Cai[1], N. Petal[1], and A. M. Clyne[1]
[1]Drexel University, Philadelphia, PA

P-Sat-A-306
Force Threshold Relationship With Applied Force Rate For Membrane Tether Development Independent Of Biotin Linkage
P. Y. Borden[1], D. J. Stark[1], T. Killian[1], and R. Raphael[1]
[1]Rice University, Houston, TX

POSTER SESSION SatA

P = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-307

Small Molecule Inhibition of Extracellular Matrix Proteases Initiates Negative Feedback of Increased Cathepsin S Proteolytic Expression and Activity in Breast Cancer Cells

J. Chic[1], C. L. Wilder[2], and M. O. Platt[2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]The Wallace H. Coulter Department of Biomedical Engineering, Atlanta, GA

P-Sat-A-308

The Possible Role of Neurotransmitter and Neurotrophic Factor Secretion in Cancer Progression through the Mechanism of Neoneurogenesis.

A. L. McGregor[1,2] and G. Edick[1]

[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Cornell University, Ithaca, NY

P-Sat-A-309

Effects of Shock Wave Pressures on Astrocyte Reactivity Over Time

L. M. Lemieux[1], E. Ereifej[1], C. E. Hampton[1], A. Leonardi[1], and P. J. VandeVord[1]

[1]Virginia Tech, Blacksburg, VA

P-Sat-A-310

Effects of Chromatin-Modifying Drugs on the Activity of Engineered Nucleases Targeted to the Dystrophin Gene

M. T. Brown[1], D. G. Ousterout[1], P. Perez-Pinera[1], and C. A. Gersbach[1]

[1]Duke University, Durham, NC

P-Sat-A-311

Optimization of Polymer Films for the Study of the Dysregulated Protease Activity Profiles of Endometriosis Cells

R. Cruz Acuna[1], C. Chopko[2], and L. Griffith[2]

[1]University of Puerto Rico, Mayaguez Campus, Mayaguez, PR, Puerto Rico, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Sat-A-312

Strain and Stiffness Dependent Effects on Intracellular Calcium Levels in Fibroblasts

S. Preston[1], J. Hutcheson[1], M. Sewell-Loftin[1], and D. Merryman[1]

[1]Vanderbilt University, Nashville, TN

P-Sat-A-313

Analyzing the Behavior of Normoxic and Hypoxic Cells Through the Use of Microfluidic Devices

M. Rexius[1], K. Chen[2], and D. T. Eddington[1]

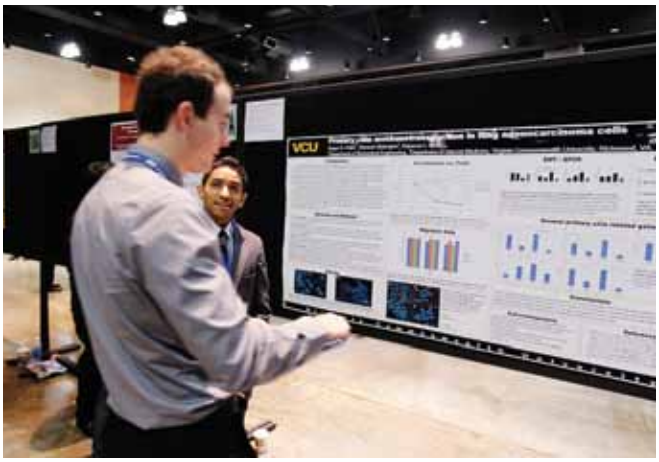
[1]University of Illinois at Chicago, Chicago, IL, [2]University of California, Berkeley, Berkeley, CA

P-Sat-A-314

Single Cell Whole Genome Amplification and SNP Analysis using Microarrays and qPCR

S. Goswami[1], S. Titus[1], and S. Roy[1]

[1]Yeshiva University, New York, NY



POSTER SESSION **SatA**

POSTER SESSION SatB 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

Track: Neural Engineering

Neural Control

P-Sat-B-1
Improving the Dynamic Programming of a Spinal-Like Regulator by Using Preceding Results to Devise Efficient Search Strategies
J. SUNWOO[1], G. A. TSIANOS[1], J. GOODNER[1], AND G. E. LOEB[1]
[1]University of Southern California, Los Angeles, CA

P-Sat-B-2
Coordination of Activity Between One-joint, Slow Soleus and Two-joint, Fast Gastrocnemius Muscles
R. MEHTA[1] AND B. I. PRILUTSKY[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-B-3
Biomechanics Constrains Variability in Spatial Structure of Muscle Coordination for Endpoint Force Generation
M. SOHN[1], J. MCKAY[1,2], AND L. H. TING[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Sat-B-4
The Potential of Aligned, Electrospun Fibers Chemisorbed With Laminin Bbinding Domains in Peripheral Nerve Regeneration
M. K. LEACH[1], E. W. FRANZ[1], J. GOODMAN[1], S. J. TUCK[1], Y. I. NAIM[1], B. KULICK[1], T. REGAN[1], A. RASTOGI[1], J. T. PENDY[1], M. KIRSCH[1], N. PATEL[1], S. FERRIS[1], AND J. M. COREY[1]
[1]The University of Michigan, Ann Arbor, MI,

P-Sat-B-5
Nano-Neurotechnology: Controlling Neural Network Activity by Gold Nanorods
S. YOO[1], J. PARK[1], AND Y. NAM[1]
[1]KAIST, Daejeon, Korea, Republic of

P-Sat-B-6
Nonlinear Dynamical Modeling of the Cortical Response to Thalamic Microstimulation
D. C. MILLARD[1], Q. WANG[1], AND G. B. STANLEY[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-B-7
An On-Chip Neuron Guidance Model for Studying Pioneer Axonal Pathfinding
N. R. ERDMAN[1], L. WEI[2], Y. KUANG[1], M. KINDY[3], AND B. Z. GAO[1]
[1]Clemson University, Clemson, SC, [2]Peking University, Beijing, China, People's Republic of, [3]Medical University of South Carolina, Charleston, SC

POSTER SESSION **SatB**

P-Sat-B-8
Active Feedback System to Record and Stimulate Simultaneously from a Single Electrode during Deep Brain Stimulation
C. POLAR[1] AND A. D. DORVAL[1]
[1]University of Utah, Salt Lake City, UT

P-Sat-B-9
Closed-loop Extracellular Electrical Stimulation and Optical Recording for Increasing the Selectivity of the Stimulus-Evoked Response Within a Neuronal Population
M. L. KUYKENDAL[1], G. S. GUVANASEN[2], M. A. GROVER[2], S. M. POTTER[2], AND S. P. DEWEERTH[2]
[1]Georgia Inst of Tech, Atlanta, GA, [2]Georgia inst of tech, Atlanta, GA

P-Sat-B-10
Integration of Tactile Feedback into Control of a Telerobotic Gripper
C-H. LIN[1]
[1]University of Southern California, Los Angeles, CA

Track: Neural Engineering

Neuroimaging

P-Sat-B-11
Vascular Involvement with Bilateral Connectivity during Resting State in Rat Somatosensory System
R. M. VARMAN[1], M. E. MAGNUSON[2], AND S. KEILHOLZ[2]
[1]Emory University, Atlanta, GA, [2]Georgia Institute of Technology / Emory University, Atlanta, GA

P-Sat-B-12
Is Granger Causality a Viable Method for Analyzing fMRI Ddata?
X. WEN[1], G. RANGARAJAN[2], AND M. DING[1]
[1]University of Florida, Gainesville, FL, [2]Indian Institute of Science, Bangalore, India

P-Sat-B-13
Method for Magnetic Susceptibility Adjustment of Metal Alloys and Characterization with MRI
G. W. ASTARY[1], M. K. PEPRAH[2], C. R. FISHER[3], P. R. CARNEY[4], M. SARNTINORANONT[5], M. W. MEISEL[2], M. V. MANUEL[3], AND T. H. MARECI[1]
[1]Biochemistry and Molecular Biology, University of Florida, Gainesville, FL, [2]Physics, University of Florida, Gainesville, FL, [3]Materials Science and Engineering, University of Florida, Gainesville, FL, [4]Biomedical Engineering, University of Florida, Gainesville, FL, [5]Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL

P-Sat-B-14
Change in Relative Delta Power During Attention Task to Index Sport Related Concussion
S. KOTA[1], K. M. KELSEY[1], J. B. RIGONI[1], AND D. L. MOLFESE[1]
[1]University of Nebraska Lincoln, Lincoln, NE

P-Sat-B-15
Low Frequency EEG Correlates of fMRI in the Resting State
J. K. GROOMS[1], G. J. THOMPSON[1], H. D. SCHWARB[1], E. H. SCHUMACHER[1], R. M. SCHMIDT[2], C. M. EPSTEIN[3], AND S. D. KEILHOLZ[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Air Force Research Laboratory, Atlanta, GA, [3]Emory University Hospital, Atlanta, GA

P-Sat-B-16
BOLD Signal Changes in Resting State Networks Are Related to Performance on a Vigilance Task
M. D. MERRITT[1], G. THOMPSON[1], M. MAGNUSON[1], S. HILLARY[2], W-J. PAN[1], L. TRIPP[3], A. MCKINLEY[3], E. SCHUMACHER[2], AND S. KEILHOLZ[1]
[1]Emory University and Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA, [3]AFRL, WPAFB, OH

P-Sat-B-17
Constructing a Channelome Atlas for the P14 Rat Brain
V. SHCHERBATYY[1], J. CARSON[2], K. JÄCKLE[1], F. GRABBE[1], M. BROCKMEYER[1], E. GOMEZ[2], T. JU[3], AND G. EICHELE[1]
[1]Max Plank Institute for Biophysical Chemistry, Gottingen, Germany, [2]Pacific Northwest National Laboratory, Richland, WA, [3]Washington University in St. Louis, St. Louis, MO

Track: Neural Engineering

Neuro Rehabilitation

P-Sat-B-18
A Preliminary Spectral Analysis of Surface Electromyograms Post-Stroke
H. H. SHIN[1], X. LI[2], AND W. Z. RYMER[1,2]
[1]Northwestern University, Evanston, IL, [2]Rehabilitation Institute of Chicago, Chicago, IL

P-Sat-B-19
Influencing Ankle Flexor Activity with Neuromuscular Electrical Stimulation Timed to Treadmill Stepping
A. AGARWAL[1], P. KAMGAR[1], T. CHAO[1], P. SANCHEZ[1], F. ARROYO[1], AND D. WON[1]
[1]California State University, Los Angeles, Los Angeles, CA

P = Poster Session
OP = Oral Presentation

P-Sat-B-20
Enhancing Volitional Control at the Hand in High Tetraplegia Using a Vertical Assist Device
S. Solanki[1] and R. F. Kirsch[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

Track: Neural Engineering

Translational Neural Engineering

P-Sat-B-21
A Novel Electrical Stimulation Technique for Temporal Lobe Epilepsy
S. Arcot Desai[1], J. D. Rolston[2], A. D. Parekh[1], S. M. Potter[1], and R. E. Gross[1,3]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of California, San Francisco, CA, [3]Emory University, Atlanta, GA

P-Sat-B-22
A Multiplex Approach for Designing a Biomarker Assay for Age-related Cognitive Decline
R. B. Speisman[1], A. Kumar[1], A. Rani[1], A. Asokan[1], T. C. Foster[1], and B. K. Ormerod[1]
[1]University of Florida, Gainesville, FL

P-Sat-B-23
Neuroinflammation-Induced Vascular Remodeling May Compromise Neuronal Differentiation
V. V. Munikoti[1], J. Fonts[1], and B. K. Ormerod[1]
[1]University of Florida, Gainesville, FL

P-Sat-B-24
Network-Based Analysis of Stereotaxic EEG to Identify Seizure Foci
R. Yaffe[1], S. Burns[1], J. Gale[2], J. Bulacio[2], J. Gonzalez-Martinez[2], H-J. Park[2], and S. Sarma[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Cleveland Clinic, Cleveland, OH

P-Sat-B-25
Hyaluronic Acid-Based Hydrogels as Scaffolds for Ocular Stem Cells to Differentiate Into Neuronal Cells
K. Compton[1], L. Wu[1], and T. Lowe[1]
[1]University of Tennessee Health Science Center, Memphis, TN

Track: Neural Engineering

Neural Engineering - Undergraduate

P-Sat-B-26
Surface Electrical Stimulation for Referred Sensation
J. C. Forst[1], D. C. Blok[1], J. P. Slopsema[1], and K. H. Polasek[1]
[1]Hope College, Holland, MI

P-Sat-B-27
Exploration of the Nonlinear Behavior of the steady state PERG as Function of Contrast Using Deconvolution
J. Iles[1], J. Bohórquez[1], J. Toft-Nielsen[1], and Ö. Özdamar[1]
[1]University of Miami, Coral Gables, FL

P-Sat-B-28
Fluid Flow Stimulation of SH-SY5Y Cell Neurogenesis
K. Thorson[1], D. E. Menter[1], and J. Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

P-Sat-B-29
Trap Closure of Venus Flytrap via Mid-IR Stimulation
D. Eisen[1], D. Janssen[2], X. Chen[1], F-S. Choa[1], D. Kostov[1], and J. Fan[3]
[1]University of Maryland Baltimore County, Baltimore, MD, [2]Greater Grace Christian Academy, Baltimore, MD, [3]Adtech Optics Inc., City of Industry, CA

P-Sat-B-30
Development of Detergent Free Acellular Grafts for Peripheral Nerve Regeneration
U. Mendez[1], T-H. Chuang[2], and S. Shah[2]
[1]Michigan Technological University, Houghton, MI, [2]University of California at San Diego, La Jolla, CA

P-Sat-B-31
Comparison of a Rat and Mouse Model for Evaluation of Acute and Chronic Neuroinflammation Following Device Implantation in the Brain
K. Potter[1,2], M. Ravikumar[1,2], K. Householder[1], S. Sunil[1], J. Simon[1], and J. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]L Stokes Cleveland VA Medical Center, Cleveland, OH

P-Sat-B-32
Filament Tracing For Quantifying Tissue Response To Implanted Intracortical Microelectrodes
E. T. Moc[1,2], H. Duong[2], and M. Han[2]
[1]California Polytechnic State University, San Luis Obispo, CA, [2]Neural Engineering Program, Huntington Medical Research Institutes, Pasadena, CA

P-Sat-B-33
Cerebral Binaural Beats: Investigating the Effects of Beat Duration
E. M. Bello[1], J. Bohorquez[1], and O. Ozdamar[1]
[1]University of Miami, Coral Gables, FL

P-Sat-B-34
Biocompatible Dry Adhesives Mimicking Gecko Spatulae for EEG Electrodes
J. Gilbertson[1], P. Leleux[2], and G. Malliaras[2]
[1]Beloit College, Beloit, WI, [2]Ecole Nationale Superieure des Mines de Saint Etienne, Gardanne, France

P-Sat-B-35
Electronic Bridge for Spinal Cord Injury
T. C. Schlichenmeyer[1,2], J. D. Holman[2,3], and M. Sahin[2]
[1]Tulane University, New Orleans, LA, [2]New Jersey Institute of Technology, Newark, NJ, [3]George Fox University, Newberg, OR

P-Sat-B-36
Validation of a Method to Measure ERP Responses
B. Almeida[1,2], P. Tendolkar[2], B. Mantilla[2], M. Bergen[2,3], and R. Servatius[3]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]New Jersey Institute of Technology, Newark, NJ, [3]University of Medicine and Dentistry of New Jersey, Newark, NJ

P-Sat-B-37
Comparing Neurite Outgrowth Using Random and Aligned Electrospun Scaffolds
K. M. Fedorchak[1,2], S. J. Kays[2,3], R. K. Reddy[2,4], J. M. Cardenas[2], and G. Collins[2]
[1]University of Rochester, Rochester, NY, [2]New Jersey Institute of Technology, Newark, NJ, [3]Rose Hulman Institute of Technology, Terre Haute, IN, [4]The College of New Jersey, Ewing, NJ

P-Sat-B-38
The Role of CASK in Neurodevelopment
B. Allen[1,2], V. Chavan[2], L. Leconte[2], and K. Mukherjee[2]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA, [2]Virginia Tech-Carillion Research Institute, Roanoke, VA

P-Sat-B-39
Recording and Analyzing Speech Communication in Typical Everyday Listening Situations
K. Thomas[1], H. S. Colburn[1], and S. T. Goverts[2]
[1]Boston University, Boston, MA, [2]VUmc Amsterdam, Amsterdam, Netherlands

P-Sat-B-40
Cochlear-Implant Speech-Coding Strategy Based on the Time Waveform Zero-Crossing Behavior
C. Tinang Sime[1], M. G. Bingabr[1], and B. Espinoza-Varas[2]
[1]University Of Central Oklahoma, Edmond, OK, [2]Oklahoma University Health Science Center, Oklahoma City, OK

POSTER SESSION **SatB**

POSTER SESSION SatB 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-B-41
A Novel *In Vitro* Laser-induced Blast Trauma Model Using 3D Cell Cultures
J. C. Smith III[1], J. Shoemaker[1], G. Kennedy[1], J. Breidenich[1], N. Thadhani[1], and M. LaPlaca[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-B-42
Vascular and Cellular Characterization of Brain Tissue Around Implanted Electrodes
Z. Gugel[1], T. D. Kozai[1], and X. T. Cui[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-B-43
Quantification of Tissue Response to Implantable Hybrid Arrays With Silicon and Bi-morphic Probes
H. Zhong[1,2], E. Moc[2,3], H. Duong[2], and M. Han[2]
[1]*Biomedical Engineering Department, University of Southern California, Los Angeles, CA,* [2]*Neural Engineering Program, Huntington Medical Research Institutes, Pasadena, CA,* [3]*California Polytechnic State University, San Luis Obispo, CA*

P-Sat-B-44
Electrophoretic Approach to Immunostaining Neural Tissues
H. Ho[1,2], M. Han[2], and H. Duong[2]
[1]*Louisiana Tech University, Ruston, LA,* [2]*Neural Engineering Program, Huntington Medical Research Institute, Pasadena, CA*

P-Sat-B-45
Characterization of Implantable, Thin-Film Wireless Receivers for Functional Electrical Stimulation
D. Skrainka[1], M. R. MacEwan[2], and D. Moran[2]
[1]*George Washington University, Washington, DC,* [2]*Washington University, Saint Louis, MO*

Track: Orthopedic and Rehabilitation Engineering

Musculoskeletal Cell Mechanotransduction

P-Sat-B-46
Aging Mice Exhibit Reduced Periosteal and Greater Endosteal Mechanoresponsiveness Following Two Weeks of Tibial Axial Compressive Loading
I. Mahaffey[1], W. Cole[1], and A. B. Castillo[1,2]
[1]*VA Palo Alto Medical Center, Palo Alto, CA,* [2]*Stanford University School of Medicine, Stanford, CA*

P-Sat-B-47
Differential Micro-Scale Strain Transfer in Fiber-Reinforced Native Tissues and Cell-Seeded Aligned Nanofibrous Scaffolds
W. M. Han[1,2], S-J. Heo[1], T. P. Driscoll[1], R. L. Mauck[1], and D. M. Elliott[1,2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Delaware, Newark, DE*

POSTER SESSION **SatB**

P-Sat-B-48
A 3-D Culture Construct to Promote Mouse Mesenchymal Stem Cell Survival
B. H. McGowan[1], B. Golz[1], and J. Nagatomi[1]
[1]*Clemson University, Clemson, SC*

Track: Orthopedic and Rehabilitation Engineering

Rehabilitation Engineering

P-Sat-B-49
The Impact of an Upper Limb Brace on Upper Body Kinematics During Activities of Daily Living
D. Lura[1], M. Wernke[1], S. Carey[1], and R. Dubey[1]
[1]*University of South Florida, Tampa, FL*

P-Sat-B-50
Validation and Calibration of the WII Balance Board as an Inexpensive Force Plate
H. L. Bartlett[1], L. H. Ting[1,2], and J. T. Bingham[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Sat-B-51
Sit-to-stand Eevaluation in Young and Older Adults Using Body Worn Sensors
R. Soangra[1] and T. E. Lockhart[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Sat-B-52
Biomechanical Injury Analysis of Treadmill Accidents
D. Strickland[1] and S. Kumar[1]
[1]*Safety Research Institute, Hoschton, GA*

Track: Orthopedic and Rehabilitation Engineering

Robotics in Rehabilitation

P-Sat-B-53
Improved Walking in Human With Spinal Cord Injury Through One Session of 3D Cable-Driven Robitic Treadmill Training
M. Wu[1], J. MacDonald[1], S-C. Yen[1], D. Chen[1], and J. Kim[1]
[1]*Rehabilitation Institute of Chicago, Chicago, IL*

P-Sat-B-54
Development of a Cable Driven Flexible Robotic Rehabilitation Glove
M. A. Delph II[1], S. A. Fischer[1], P. W. Gauthier[1], C. H. Martinez Luna[1], E. A. Clancy[1], and G. S. Fischer[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

Track: Orthopedic and Rehabilitation Engineering

Skeletal Biomechanics

P-Sat-B-55
Application of a Finite Element Thorax Model to Investigate Potential Risk of Rib Injury during Pediatric Cardiopulmonary Resuscitation on a Hard Surface
B. Jiang[1,2], H. Mao[2], L. Cao[1], and K. Yang[2]
[1]*Hunan University, Changsha, China, People's Republic of,* [2]*Wayne State University, Detroit, MI*

P-Sat-B-56
Effect of Using Hand-Weights on Performance in the Standing Long Jump
A. J. Filush[1] and B. M. Ashby[1]
[1]*Grand Valley State University, Grand Rapids, MI*

P-Sat-B-57
The Effect of Synthetic Collagen Crosslinking on Ligament Damage
C. Herman[1], R. De Vita[1], A. Kwansa[1], and Z. Guo[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Sat-B-58
Bone Allograft Embrittlement Due to High Dose Gamma-Irradiation Sterilization and a Potential Solution
B. M. Burton[1,2], M. D. Grynpas[1,2], and T. L. Willett[1,2]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*Mount Sinai Hospital, Toronto, ON, Canada*

P-Sat-B-59
Beyond Mineral Density: Bone Quality Assessment with the Mechanical Response Tissue Analyzer
A. E. Gaspar[1,2], T. L. Willett[1,2], and M. D. Grynpas[1,2]
[1]*Mount Sinai Hospital, Toronto, ON, Canada,* [2]*University of Toronto, Toronto, ON, Canada*

P = Poster Session
OP = Oral Presentation

P-Sat-B-60
Biomechanical Changes During Various Cross-Legged Sitting Postures
S. Ahn[1], S. Kim[1], S. Kang[2], and Y. Kim[1]
[1]Department of Biomedical Engineering and Institute of Medical Engineering, Yonsei University, Wonju, Korea, Republic of, [2]Department of Rehabilitation Therapy, Yonsei University, Wonju, Korea, Republic of

P-Sat-B-61
Pressure Patterns of the Professional Circular Friction Massage
J. Ryu[1], J. Son[1], and Y. Kim[1]
[1]Yonsei University, Wonju, Korea, Republic of

P-Sat-B-62
Role of Bone Mineral in Physical and Microstructural Characteristics of Cortical Bone
O. Oyeka[1,2], S. Patnaik[1,2], H. Grewal[1,2], O. Asafa[1,2], J. Schneider[1], J. Liao[1,2], and L. Williams[1,2]
[1]Mississippi State University, Mississippi State, MS, [2]Center for Advanced Vehicular Systems, Mississippi State, MS

P-Sat-B-63
Strain Field Gradients on the Surface of a Model Human Skull while Axially Loaded to Simulate Head Loading
J. A. Currey[1] and M. Graveley[1]
[1]Union College, Schenectacy, NY

P-Sat-B-64
Upper Extremity Kinematics in Sonographers During Kidney Scanning
J. Edwards[1] and B. Ashby[2]
[1]Grand Valley State University, Pittsburgh, PA, [2]Grand Valley State University, Grand Rapids, MI

P-Sat-B-65
Comparison of Stress Distribution Patterns Within Trigonal, Quadrangle, and Hexagonal Screw Drive Designs of an ACL Interference Screw Using Finite Element Analysis
J. R. Flowers[1] and M. B. McCullough[1]
[1]North Carolina A&T State University, Greensboro, NC

P-Sat-B-66
A Novel Approach to Muscle Modeling Using Fractional Quasilinear Viscoelasticity
C. A. Cox[1] and C. R. Bass[1]
[1]Duke University, Durham, NC

P-Sat-B-67
Thoracic Spine Morphology Characterization of a Novel Animal Model
J. R. Peters[1], L. Robinson[1], R. W. Kent[2], and S. Balasubramanian[1]
[1]Drexel University, Philadelphia, PA, [2]University of Virginia, Charlottesville, VA

Track: Orthopedic and Rehabilitation Engineering

Translational Orthopedic and Rehabilitation Engineering

P-Sat-B-68
Assessment of Horse-Rider Biomechanics in Hippotherapy
M. C. Donaldson[1], J. D. DesJardins[1], K. Vernon[1], and R. Blob[1]
[1]Clemson University, Clemson, SC

P-Sat-B-69
Suppressed Trabecular Bone Growth Rate in Obesity Compensated by Relative Increase in Cortical Bone
D. Nguyen[1], M. Chan[1], and C. Rubin[1]
[1]Stony Brook University, Stony Brook, NY

Track: Orthopedic and Rehabilitation Engineering

Orthopedic & Rehabilitation Engineering - Undergraduate

P-Sat-B-70
Gender Differences in the Relationship Between Hamstrings and Quadriceps Strength and KOOS Score in Knee OA Patients
L. M. van der Post[1], A. T. Collins[1], and J. S. Higginson[1]
[1]University of Delaware, Newark, DE

P-Sat-B-71
Assessing Changes in Ground Reaction Forces in a Rat Model of Knee Osteoarthritis
B. L. Jacobs[1], H. E. Kloefkorn[1], and K. D. Allen[1]
[1]University of Florida, Gainesville, FL

P-Sat-B-72
Does Touch Sensitivity Correlate to Gait Abnormalities in a Rodent Model of Knee Osteoarthritis?
A. Y. Loye[1], H. E. Kloefkorn[1], and K. D. Allen[1]
[1]University of Florida, Gainesville, FL

P-Sat-B-73
Functional Electromagnetic Stimulation to Aid Patients with Unilateral Vocal Fold Paralysis
W. G. Burks[1], K. A. Harring[1], M. T. Preib[1] ,, P. Jaramillo[1], and A. Leonessa[1]
[1]Virginia Tech, Blacksburg, VA

P-Sat-B-74
Development of a Biomechanical Model for Sacroiliac Range of Motion
B. Condez[1], E. Redelsheimer[1], J. Leasure[1], J. Buckley[1], D. Kondrashov[2,3], and C. Ames[4]
[1]The Taylor Collaborations, San Francisco, CA, [2]St. Mary's Spine Center, San Francisco, CA, [3]San Francisco ORP, San Francisco, CA, [4]UCSF Department of Neurosurgery, San Francisco, CA

P-Sat-B-75
Biomechanical Characterization of Proximal Biceps Tenodesis Repair using Unicortical Button Fixation
M. T. Wexler[1,2], B. Hertz[1,2], A. Chen[2,3], J. P. DeAngelis[2], L. Grimaldi Bournissaint[2], A. Nazarian[2], and A. Ramappa[2]
[1]Boston University, Boston, MA, [2]Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, [3]Harvard Medical School, Boston, MA

P-Sat-B-76
Biomechanical Evaluation of Different Screw Angle Fixations for Oblique Fractures of Long Bone
B. N. Nguyen[1]
[1]Mercer University, Macon, GA

P-Sat-B-77
Femoral Flexion Axis Alignment For Improved Implant Wear Testing Simulation
K. Fritchman[1], C. Eljach[1], J. O'Donnell[1], J. Lake[1], T. Warrick[1], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC

P-Sat-B-78
Design and Evaluation of a Magnesium-based Ring for Repair of a Torn Anterior Cruciate Ligament
H. Eason[1], K. Farraro[1], A. Speziali[1], and S. L-Y. Woo[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-B-79
Spinal Mobilization Treatment Increases Pelvis Mobility in a Reach Test for Parkinson`s Disease Patients
H. Kainz[1,2], V. Suarez[1], A. Popovich[1], M. Venglar[1], A. van Duijn[1], T. Bevins[1], and K. Csavina[1]
[1]Florida Gulf Coast University, Fort Myers, FL, [2]University of Applied Science Technikum Wien, Vienna, Austria

P-Sat-B-80
Development of a Bbiomechanical Model Producing Proximal Pedicle Pullout of Long Fusion Spinal Constructs
A. Martin[1], P. Wanberg[1], J. Leasure[1,2], J. Buckley[1], D. Kondrashov[2,3], and C. Ames[4]
[1]The Taylor Collaboration Laboratories, San Francisco, CA, [2]San Francisco Orthopaedic Residency Program, San Francisco, CA, [3]St. Mary's Spine Center, San Francisco, CA, [4]UCSF Department of Nerosurgery, San Francisco, CA

P-Sat-B-81
Effect of Electrical Stimulation in the Supine Position of Spinal Cord Injury Patients
A. Mukherjee[1], P. Barrance[2], and G. F. Forrest[2]
[1]Duke University, Durham, NC, [2]Kessler Foundation, West Orange, NJ

P-Sat-B-82
Semi-Automatic Self Feeding Device
S. H. Mahmoud[1], H. Song[1], and N. Peixoto[1]
[1]George Mason University, Fairfax, VA

P-Sat-B-83
Demands on Posterior Fusion Hardware During Lordosis Restoration Procedures
A. Martin[1], C. Telles[2], J. Leasure[1,3], J. Tang[1], C. Ames[4], and D. Kondrashov[2,3]
[1]The Taylor Collaboration Laboratories, San Francisco, CA, [2]St. Mary's Spine Center, San Francisco, CA, [3]San Francisco Orthopaedic Residency Program, San Francisco, CA, [4]UCSF Department of Nerosurgery, San Fancisco, CA

P-Sat-B-84
Comparative Muscle Activation Patterns for Transtibial Amputees and Controls at Higher than Comfortable Walking Speeds
T. K. Evans[1], T. Norman[1], and Y-H. Chang[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-B-85
Individuals with Patellofemoral Pain Exhibit Altered Joint Contact Location and Pattern Compared to Healthy Controls: A Dynamic, *In-Vivo* Study During Concentric and Eccentric Muscle Control
A. Polhemus[1,2], B. Borotikar[2], and F. T. Sheehan[2]
[1]The College of New Jersey, Medford Lakes, NJ, [2]National Institutes of Health, Bethesda, MD

P-Sat-B-86
The Effect of Spinal Mobilization Treatment on Gait Parameters in Parkinson's Disease Subjects
A. N. Popovich[1], V. Suarez[1], M. Venglar[1], A. van Duijn[1], T. Bevins[1], and K. R. Csavina[1]
[1]Florida Gulf Coast University, Fort Myers, FL

P-Sat-B-87
A Simple, Cost Effective Shoulder Dislocation Task Trainer
A. Cao[1] and M. H. Mehdi[1]
[1]East Carolina University, Greenville, NC

P-Sat-B-88
Comparison of Frontal Plane Compensatory Strategies Between Ambulation Categories in Individuals Post-Stroke
V. A. Stanhope[1],, B. A. Knarr[1] and J. S. Higginson[1]
[1]University of Delaware, Newark, DE

P-Sat-B-89
Time-Zero Evaluation of Magnesium-Based Screws
A. N. Pickering[1], K. E. Kim[1], A. Speziali[1], and S. L-Y. Woo[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-B-90
Comparing Upper Body Motion Using Kinect and Vicon Systems
S. Tudor[1], J. Cathell[1], and S. Carey[1]
[1]University of South Florida, Tampa, FL

P-Sat-B-91
Force Sension Ultrasound Probe Design for Better Rotator Cuff Injury Diagnosis
H. Scruggs[1], A. Cusik[1], K. Grove[1], Q. Guo[1], K. Perry[1], M. Rogers[1], D. Kwartowitz[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Sat-B-92
The Effect of Vision Loss on the Time to Complete Upper Extremity Peg Tasks
A. Chambers[1], J. Haney[1], and J. Lopez[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]UMBC, Baltimore, MD

P-Sat-B-93
Potting Alignment Accuracy of Implanted Glenospheres in a Reverse Shoulder Arthroplasty Micromotion Study
A. Devon[1], A. Marionneaux[1], A. Sedler[1], W. Simpson[1], S. J. Tolan[2], A. D. Bries[2], R. J. Hawkins[2], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Steadman Hawkins Clinic of the Carolinas, Greenville, SC

P-Sat-B-94
Biomechanical Gait Analysis in Patients Post Stroke: A Randomized Controlled Trial – A Pilot Study
R. M. Yusufbekov[1], H. Kainz[1], M. Venglar[2], A. van Duijn[2], T. Bevins[2], and K. Csavina[1]
[1]U.A. Whitaker College of Engineering, Florida Gulf Coast University, FL, USA, Fort Myers, FL, [2]Department of Physical Therapy and Human Performance, Florida Gulf Coast University, FL, USA, Fort Myers, FL

P-Sat-B-95
Site-specific Proteoglycan Depletion following Anterior Cruciate Ligament Transection in the Rabbit
K. K. Gillette[1], B. C. Hansen[2], W. J. McCarty[2], E. Cory[2], E. F. Chan[2], T. Yamaguchi[2], K. Masuda[2], and R. L. Sah[2]
[1]University of Utah, Salt Lake City, UT, [2]University of California, San Diego, La Jolla, CA

Track: Tissue Engineering

Neural Tissue Engineering

P-Sat-B-96
Electrical Stimulation Increases Neurite Outgrowth and Cell Galvanotaxis Within 3D Hydrogels
A. N. Koppes[1,2], K. W. Keating[1,2], G. R. Paolillo[1,2], H. M. Darwish[1,2], N. M. Goodsell[1,2], L. A. Williams[1,2], and D. M. Thompson[1,2]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Center for Biotechnology and Interdisciplinary Studies, Troy, NY

P-Sat-B-97
CANCELED BY AUTHOR

P-Sat-B-98
An Interactive Engineered Protein Hydrogel: Controlling and Responding to Neurite Growth
K. J. Lampe[1] and S. C. Heilshorn[1]
[1]Stanford University, Stanford, CA

P-Sat-B-99
In Situ Implanted Bioengineered Human Internal Anal Sphincter Innervated With Human Enteric Neuronal Progenitor Cells Maintain Myogenic and Neurogenic Physiological Functionality
S. Raghavan[1,2], R. R. Gilmont[2], E. A. Miyasaka[3], D. H. Teitelbaum[3], and K. N. Bitar[1,2]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering & Sciences, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC, [3]University of Michigan Medical School, Ann Arbor, MI

POSTER SESSION SatB

P = Poster Session
OP = Oral Presentation

P-Sat-B-100
In Vitro Models of Spinal Cord Injury: Probing the Role of Multicellular Interactions in 3D Microenvironments
S. Balasubramanian[1] and J. B. Leach[1]
[1]*University of Maryland Baltimore County, Baltimore, MD*

P-Sat-B-101
Encapsulated Neural Stem Cells Alter the Physical Properties of Three-Dimensional Poly(Ethylene Glycol) Scaffolds
H. Gaifem[1] and J. B. Leach[1]
[1]*UMBC, Baltimore, MD*

P-Sat-B-102
In vitro Study of the Effects of Nanogel Incorporation into Agarose on Neural Cell Growth
E. Morin[1], S. Tang[1], and W. He[1]
[1]*The University of Tennessee, Knoxville, TN*

Track: Tissue Engineering

Printing and Patterning in Tissue Engineering

P-Sat-B-103
Spatial Control of Magnetic Nanoparticles in Cellular Spheroids as Tissue Engineered Building Blocks
B. Mattix[1], T. Poole[1], M. Casco[1], R. Visconti[2], D. Simionescu[1], A. Simionescu[1], and F. Alexis[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical Univeristy of South Carolina, Charleston, SC*

P-Sat-B-104
Density Gradient Multilayer Polymerization to Create Complex Tissue
J. V. Karpiak[1], Y. Ner[1], and A. Almutairi[1]
[1]*University of California, San Diego, La Jolla, CA*

P-Sat-B-105
Patterned Hydrogels with Complementary Biomechanical Properties for Vascularized Osteogenesis
E. Jabbari[1] and A. Khademhosseini[2]
[1]*University of South Carolina, Columbia, SC,* [2]*Harvard, Boston, MA*

P-Sat-B-106
Decoupling the Role of Topographical, Mechanical, and Chemical Cues in Regulation of Cell Spreading
G. Harris[1] and E. Jabbarzadeh[1]
[1]*University of South Carolina, Columbia, SC*

P-Sat-B-107
Cell-dispensing Process for Fabricating Alginate Scaffold Embedded With Preosteoblasts
S. Ahn[1], H. Lee[1], J. Puetzer[2], L. J. Bonassar[2], and G. Kim[1]
[1]*Chosun University, Gwangju, Korea, Republic of,* [2]*Cornell University, Ithaca, NY*

P-Sat-B-108
Inkjet Bioprinting of Oxygen-Generating Microcomposites Scaffolds
D. Reyna-Soriano[1], J. Rodriguez-Devora[1], and T. Xu[1]
[1]*University of Texas, El Paso, TX*

P-Sat-B-109
Sculpting Three Dimensional Cell-Laden Hydrogel Scaffolds by Controlled Release
Y. V. Kalinin[1], A. Murali[1], and D. H. Gracias[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Sat-B-110
Flexible Platforms for Micron Scale Protein and Cell Printing via Laser Direct-Write
B. R. Mintz[1], T. Phamduy[1], D. B. Chrisey[1], and J. A. Cooper Jr.[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P-Sat-B-111
Aqueous Two-phase Printing of Contractile Collagen Hydrogel Droplets
C. Moraes[1], A. Simon[1], and S. Takayama[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Sat-B-112
Biomems Substrates for Endothelial Cell Network Formation
S. Das[1], W. Zagozdzon-Wosik[1], and F. Merchant[1]
[1]*University of Houston, Houston, TX*

Track: Tissue Engineering

Skin and Adipose Tissue Engineering

P-Sat-B-113
Diabetic Adipose Tissue Within a Three-Dimensional Hollow Fiber-Based Bioreactor
D. M. Minteer[1], Y. C. Lin[1,2], M. Young[2], P. Over[2], J. C. Gerlach[1,2], J. P. Rubin[1,2], and K. G. Marra[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*The McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P-Sat-B-114
Novel Printable Skin Graft to Treat Chronic Wounds
M. G. Yanez[1], J. Rincon[1], S. Natividad[1], and T. Boland[1]
[1]*University of Texas at El Paso, El Paso, TX*

P-Sat-B-115
Mesenchymal Stem Cells, TGF-β_3, and an Albumin Scaffold to Promote Full Thickness Wound Healing
D. Feldman[1] and J. McCauley[1,2]
[1]*UAB, Birmingham, AL,* [2]*University of Florida, Gainesville, FL*

Track: Tissue Engineering

Tissue Engineering and Mechanobiology

P-Sat-B-116
Collagen and F-Actin Alignment in Cell-Derived Tissue: Influence of Cyclic Mechanical Stretch
N. K. Weidenhamer[1] and R. T. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

P-Sat-B-117
Epicardial Elasticity Measurements of the *Ex-Vivo* Murine Heart using Atomic Force Microscopy
F. Kossivas[1], M. Michaelides[1], L. Cao[2], A. Kyprianou[1], G. Truskey[2], and C. Constantinides[1]
[1]*University of Cyprus, Nicosia, Cyprus,* [2]*Duke University, Durham, NC*

P-Sat-B-118
Boundary Layers in the Mechanical Bidomain Model
B. J. Roth[1]
[1]*Oakland University, Rochester, MI*

P-Sat-B-119
Experimental and Theoretical Analysis of the Bending Component of Cardiac Looping
Y. Shi[1], G. Xu[1], and L. A. Taber[1]
[1]*Washington University in St Louis, Saint Louis, MO*

POSTER SESSION **SatB**

POSTER SESSION SatB 9:30AM – 1:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-B-120
The Mechanosensitive Role of Kindlin-2 in Cardiac Fibroblasts
S. M. Hume[1], E. Zimina[1], and B. Hinz[1]
[1]*University of Toronto, Toronto, ON, Canada*

P-Sat-B-121
The Role of Demineralized Bone Particle in a PLGA Scaffold Designed to Create a Media Equivalent for a Tissue Engineering Blood Vessel
S. Jung Bo[1], K. Hyeong Seok[1], K. Gilson[1], and N. M. Robert[1,2]
[1]*Chonbuk National University, Jeonju, Korea, Republic of,* [2]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-B-122
Fibroblast-Matrix Interactions Observed and Quantified Using Time-Lapse Microscopy
A. M. De Jesus[1], D. Ahram[1], and E. Sander[1]
[1]*University of Iowa, Iowa City, IA*

P-Sat-B-123
A Distensibility System for Mechanotransduction of Polycaprolactone/ Elastin Scaffolds
S. J. Bonfig[1] and C. Miller[1]
[1]*Saint Louis University, Saint Louis, MO*

P-Sat-B-124
Complementary Effect of Mechanical and Chemical Stimuli on Mesenchymal Stem Cell Differentiation
C. Liu[1], S. Baek[2], and C. Chan[1]
[1]*Michigan State University, East Lansing, MI,* [2]*Michigan State University, East Lansing, MI*

P-Sat-B-125
Parameter Identification of Polyethylene Glycol Diacrylate (PEGDA) Hydrogels Using a Single Invariant Constitutive Model.
N. Karasala Kotaiah[1], Y. Wang[1], M. Sutton[1], T. Shazly[1], and S. M. Lessner[1]
[1]*University of South Carolina, Columbia, SC*

P-Sat-B-126
Actomyosin-mediated Contraction and Failure in Self-Constrained 3D Microtissues
H. Wang[1] and V. B. Shenoy[1]
[1]*Brown University, Providence, RI*

P-Sat-B-127
Characterization of Microstructural Alignment in Prestressed Collagen Gels
C. Robertson[1,2], K. Ikemura[1,2], T. Krasieva[3], and S. C. George[1,2]
[1]*Biomedical Engineering, University of California Irvine, Irvine, CA,* [2]*Edwards Lifesciences Center for Advanced Cardiovascular Technology, University of California Irvine, Irvine,* [3]*Beckman Laser Institute, University of California Irvine, Irvine, CA*

P-Sat-B-128
Hybrid Hydrogel Based Scaffolds for Urinary Bladder Tissue Engineering
S. Sivaraman[1], J. Hyde[1], and J. Nagatomi[1]
[1]*Clemson University, Clemson, SC*

P-Sat-B-129
Biomechanical Response of Isolated Whole Human Livers in Compression: Effect of Perfusion and Loading Rate
A. R. Kemper[1], A. C. Santago[2], J. L. Sparks[2], J. D. Stitzel[3], and S. M. Duma[1]
[1]*Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA,* [2]*Virginia Tech – Wake Forest University, School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [3]*Virginia Tech – Wake Forest University, Center for Injury Biomechanics, Winston-Salem, NC*

P-Sat-B-130
Material Properties of the Post-Mortem Gastrointensinal Tract in High-Rate Equibiaxial Elongation
M. K. Howes[1] and W. N. Hardy[1]
[1]*Virginia Tech-Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA*

P-Sat-B-131
Engineering Emergence: Feasibility of Engineering Higher Order Tissue Architectures through Delivery of Mechanical Signals to Cells Seeded on Scaffolds
M. J. Song[1], D. Dean[1], and M. L. Knothe Tate[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Sat-B-132
Force-induced Cyclic Strain Mediated Prostate Cancer Cell and Collagen Alignment in Three-Dimensional Environment
M. J. Ditto[1], M. Harris[1], and E. D. Yildirim[1]
[1]*The University of Toledo, Toledo, OH*

P-Sat-B-133
Effect of Fiber Organization and Composition on the Expression of alpha-SMA In a Tissue-Engineered Cornea Model
N. Atwi[1], C. Lee[1], C. Rhee[1], A. Zhang[1], and E. Orwin[1]
[1]*Harvey Mudd College, Claremont, CA*

P-Sat-B-134
Preliminary Investigation of Airway Remodeling in Magnetically Levitated Tissue
R. M. Raphael[1], C. Mooney[1], and R. Moore[2]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

P-Sat-B-135
A Forward Incremental Approach for Determining the Unloaded Configuration of the Growing Pulmonary Artery
H. Qi[1], B. Fatar[2], and M. Sacks[3]
[1]*University of Colorado, Boulder, CO,* [2]*University of Pittsburg, Pittsburg, PA,* [3]*University of Texas, Austin, TX*

Track: Tissue Engineering

Tissue Engineering - Undergraduate

P-Sat-B-136
Extracellular Matrix Proteins Veriscan and Decorin are Required for Vasculogenesis *in vitro*: Implications for Therapeutic Angiogenesis
H. C. Ray III[1], L. L. Satterwhite[1], G. A. Truskey[1], and W. M. Reichert[1]
[1]*Duke University, Durham, NC*

P-Sat-B-137
Biologically Inspired Rosette Nanotube Treated PLLA Scaffolds for Cartilage Tissue Engineering
A. S. Childs[1], N. J. Castro[2], R. L. Beingessner[3], H. Fenniri[3], and L. Zhang[2]
[1]*George Mason University, Fairfax, VA,* [2]*The George Washington University, Washington, DC,* [3]*University of Alberta, Edmonton, AB, Canada*

P-Sat-B-138
Programmable Electrospinning Setup and Unified Control Interface
K. Fujii[1] and E. Orwin[1]
[1]*Harvey Mudd College, Claremont, CA*

P-Sat-B-139
Whole Organ Engineering: The Effect of Decellularization Methods on Endothelial Cell-ECM Interactions
H. J. Warner[1], D. Faulk[2,3], and S. F. Badylak[2,3]
[1]*Clemson University, Clemson, SC,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA,* [3]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-B-140
Breast Cancer Cell Patterning and Encapsulation in Alginate-Gelatin Hydrogel
D. M. Kingsley[1], T. B. Phamduy[1], D. B. Chrisey[1], and N. Abdul Raof[2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*University Albany, Albany, NY*

POSTER SESSION **SatB**

P = Poster Session
OP = Oral Presentation

P-Sat-B-141
A Microfluidic Gradient Generating Device Integrated with Nanopatterned Matrices for Studying Cell Migration in Response to Matrix Topography and Diffusible Guidance Cues
R. Reit[1], D. Britain[2], N. Bhattacharjee[2], A. Folch[2], and D-H. Kim[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Washington, Seattle, WA*

P-Sat-B-142
Biomaterial-based Ligand Presentation to Stimulate Notch Signaling *in Vitro*
N. Mehta[1], M. H. Kim[1], and K. Roy[1]
[1]*University of Texas at Austin, Austin, TX*

P-Sat-B-143
Hyaluronan Oligomer-delivering Nanoparticles for Localized *In Vivo* Elastic Matrix Regenerative Therapies
A. D. Sylvester[1], B. Sivaraman[2], and A. Ramamurthi[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cleveland Clinic, Cleveland, OH*

P-Sat-B-144
Use of Electrical Stimulation on Human Dermal Fibroblasts to Enhance Wound Healing
S. Snyder[1] and R. K. Willits[1]
[1]*The University of Akron, Akron, OH*

P-Sat-B-145
The Effects of Aminocaproic Acid and Aprotinin on Myotube Development in Fascicle-Like Constructs
Q. King-McAlpin[1] and D. Neal[2]
[1]*Morehouse College, Atlanta, GA,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

P-Sat-B-146
Effects of Nerve Growth Factor on Schwann Cell Viability and Proliferation
J. A. Kwasa[1], N. J. Jesuraj[1], and S. Sakiyama-Elbert[1]
[1]*Washington University in St. Louis, St. Louis, MO*

P-Sat-B-147
Synthesis of MMP-sensitive Porous PEGDA Hydrogels for Tissue Engineering Applications
M. Christenson[1], S. Sokic[1], and G. Papavasiliou[1]
[1]*Illinois Institute of Technology, Chicago, IL*

P-Sat-B-148
The Effects of Static Bending on Cell Distribution in Immature Bovine Articular Cartilage Shaped *In Vitro*
J. D. Gutierrez-Franco[1], C. B. Raub[2], D. J. Grisafe[1], N. T. Balcom[1], A. C. Chen[2], S. J. Hazelwood[1], R. L. Sah[2], and S. M. Klisch[1]
[1]*California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA,* [2]*University of California, San Diego, La Jolla, CA*

P-Sat-B-149
Ultrasound Mediated Enhancement of Nanoparticle Delivery to Cancer Cells
P. Baldwin[1], A. Thomas[1], and Y. Liu[1]
[1]*Lehigh University, Bethlehem, PA*

P-Sat-B-150
The Effect of BMP-2 Loaded PDO Spheres and Nano Hydroxyapatite in PCL Scaffolds for Bone Regeneration
C. M. O'Brien[1], N. Castro[1], and L. G. Zhang[1]
[1]*The George Washington University, Washington, DC*

P-Sat-B-151
IL-8 Signaling Promotes Glioblastoma Stem Cell Migration to the Brain Perivascular Niche
Y. Cho[1], D. Infanger[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

P-Sat-B-152
Assessment of Anterior Spinal Artery Blood Flow following Spinal Cord Injury
A. Alshareef[1]
[1]*Duke University, Durham, NC*

P-Sat-B-153
Contractile and Mechanical Properties of Engineered Intervertebral Discs Composed of MSCs
B. Cameron[1], B. Borde[1], K. Hudson[1], J. Puetzer[1], and L. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

P-Sat-B-154
Education Through Tissue Engineering
M. C. Finn[1], H. Smith[1], D. Pelkey[1], J. Yeager[1], E. Flinchbaugh[1], A. McCreary[2], and G. Nelson[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*North Carolina A&T University, Greensboro, NC*

P-Sat-B-155
Tissue Engineered Model of Bone Metastasis Using Bone Biocomposites
A. N. Parks[1,2], J. Dumas[2], and M. Platt[2]
[1]*University of Missouri-Columbia, Columbia, MO,* [2]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-B-156
Chitosan-based Electrospun Nanofibers and Their Interaction With Airway Epithelial Cells
E. Slattery[1], C. Mahoney[2], J. Waterman[2], and N. Bhattarai[2]
[1]*MiraCosta College, Oceanside, CA,* [2]*North Carolina A&T State University, Greensboro, NC*

P-Sat-B-157
Characterizing Amniotic Membrane as a Scaffold in Wound Healing Applications
C. M. McKiernan[1], J. L. Wehmeyer[2], S. Natesan[1,2], and R. J. Christy[2]
[1]*Pittsburgh Tissue Engineering Initiative, Pittsburgh, PA,* [2]*United States Army Institute of Surgical Research, Fort Sam Houston, TX*

P-Sat-B-158
Modulation of Valvular Interstitial Cell Activity Using Poly(ethylene glycol) Diacrylate Hydrogels
A. Yonezawa[1], X. Zhang[2], and K. J. Grande-Allen[2]
[1]*University of Florida, Boca Ration, FL,* [2]*Rice University, Houston, TX*

P-Sat-B-159
Force Analysis of Recombinant Bovine Fibrinogen &[alpha]C domain by Molecular Dynamics Simulation
B. Menn[1], R. Averett[1], and T. Barker[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-B-160
Effect of Controlled Delivery of Glial-Derived Neurotrophic Factor on Schwann Cell Phenotype
C. G. Welker[1], L. Marquardt[2], and S. Sakiyama-Elbert[2]
[1]*Vanderbilt University, Nashville, TN,* [2]*Washington University of Saint Louis, St. Louis, MO*

P-Sat-B-161
Polycaprolactone Nanofibers Interspersed-Collagen Scaffold (P-NCOL) for Injectable Bone Tissue Scaffold
N. Baylan [1], S. Bhat[1], and E. Yildirim-Ayan[1,2]
[1]*University of Toledo, Toledo, OH,* [2]*University of Toledo Medical Campus, Toledo*

P-Sat-B-162
Re-Engineering Mosaics of Cone Photoreceptors in Retinas Affected by Retinitis Pigmentosa
D. Nair[1], S. Grzywacz[2], Y. Ji[3], E. Lee[3], and N. Grzywacz[3]
[1]*University of Southern California, Los Angeles,* [2]*Palos Verdes Peninsula High School, Los Angeles, CA,* [3]*University of Southern California, Los Angeles, CA*

P-Sat-B-163
Designing Naturally Derived Hydrogels for Neuronal Tissue
G. O. Abiola[1], S. C. Yang[2], G. W. Dombi[2], W. H. Marks[1], and S. K. Bhatia[1]
[1]*Havard University, Cambridge, MA,* [2]*University of Rhode Island, Kingston, RI*

Track: Translational Biomedical Engineering

Clinical and Translational Research and Science in Biomedical Engineering

P-Sat-B-164
Drug Packaging and Delivery for the Prevention of Mother to Child Transmission of HIV
A. Britt[1], L. E. Perry[1], and R. A. Malkin[1]
[1]Duke University, Durham, NC

P-Sat-B-165
The Impact of Obesity on the Accuracy of Predicting Body Fat Percentage in Older Women
E. D. Parise[1], A. J. Chambers[1], J. L. McCrory[1,2], and R. Cham[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]West Virginia University, Morgantown, WV

P-Sat-B-166
Speech-distortionless Beamformer with an Integral Method for Two-microphone Digital Hearing Aids
J. Han[1], K. Cho[2], I. Kim[2], S. Hong[3], and D. Kim[1]
[1]Samsung Electronics Co., LTD, Yongin, Korea, Republic of, [2]Hanyang University, Seoul, Korea, Republic of, [3]Samsung Medical Center, Seoul, Korea, Republic of

P-Sat-B-167
Altering and Synergizing Mass Transport Using Mild Hyperthermia
D. Kirui[1], E. J. Koay[1], H. Shen[1], and M. Ferrari[1]
[1]Methodist Hospital Research Institute, Houston, TX

P-Sat-B-168
A Remote Tactile Feedback System for Telesurgery and Telementoring
C. R. Wottawa[1], C. Lim[1], R. E. Fan[1], M. O. Culjat[1], E. P. Dutson[1], T. C. Tsao[1], and W. S. Grundfest[1]
[1]University of California Los Angeles, Los Angeles, CA

P-Sat-B-169
Effect Of Laser-Induced Shockwaves On Bacterial Biofilm Grown On Polymeric Surfaces And Adhesion Measurements
V. Ramaprasad[1], A. Navarro[2], Z. Taylor[1], S. Patel[1], A. Matolek[3], S. Huang[1], D. Beenhouwer[1], V. Gupta[1], and W. Grundfest[1]
[1]University of California Los Angeles, Los Angeles, CA, [2]University of California Los Angeles, Carson, CA, [3]VA Greater Los Angeles Healthcare System, Los Angeles, CA

P-Sat-B-170
Effect Of Laser Generated Shockwaves On Mammalian Cells and *Ex Vivo* Pigskin
V. Ramaprasad[1], A. Navarro[1], Z. Taylor[1], S. Patel[1], V. Patel[1], G. Arom[1], V. Gupta[1], and W. Grundfest[1,2]
[1]University of California Los Angeles, Los Angeles, CA, [2]University of California Los Angeles, Los Angeles

P-Sat-B-171
Quantifying the Mechanical Characteristics of Pelvic Adhesions
K. Shah[1], M. Chapman[2], B. Fenton[2], and M. M. Saunders[1]
[1]The University of Akron, Akron, OH, [2]Summa Health System, Akron, OH

P-Sat-B-172
Activity and School Attendance Monitoring System for Adolescents with Sickle Cell Disease
J. Venugopalan[1,2], C. Brown[3], C. Cheng[1], T. Stokes[1,2], and M. D. Wang[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Children's Healthcare of Atlanta, Atlanta, GA

P-Sat-B-173
Advanced Algorithms for Telemetry-Based Triage of Crash Injuries
A. H. Tsoi[1], K. D. Kusano[1], and H. C. Gabler[1]
[1]Virginia Tech, Blacksburg, VA

P-Sat-B-174
Deposition of Electrolyte Films Via Ultrasonic Nebulization for Extended Release
R. Grimes[1] and D. Mills[1]
[1]Louisiana Tech University, Ruston, LA

P-Sat-B-175
Comparison of Middle Ear Energy Absorbance, Tympanic Membrane Displacement, and Hearing Threshold in a Chinchilla Acute Otitis Media Model
X. Guan[1], Y. Chen[1], and R. Z. Gan[1]
[1]University of Oklahoma, Norman, OK

P-Sat-B-176
Pressure Relief and Weight Shift Behavior During Prolonged Sitting in Patients With a Spinal Cord Injury
T. E. Vonk[1], S. E. Sonenblum[1], S. Sprigle[1], R. Schofield[2], M. Stinson[2], and A. Porter-Armstrong[2]
[1]Georgia institute of Technology, Atlanta, GA, [2]University of Ulster, Jordanstown, United Kingdom

P-Sat-B-177
Analysis of Wheel Rotation Tracking Methods to Monitor Wheelchair Usage
P. Dao[1], S. Sprigle[1], and J. Caspall[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Translational Biomedical Engineering

Education and Promotion of Translational Biomedical Engineering

P-Sat-B-178
Integrated Common Technologies Platform to Promote Wellness in Adolescents with Sickle Cell Disease
C. Cheng[1], C. Brown[2,3], T. Stokes[1,4], J. Venugopalan[1], and M. D. Wang[1,4]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Healthcare of Atlanta, Atlanta, GA, [3]Emory University School of Medicine, Atlanta, GA, [4]Emory University, Atlanta, GA

Track: Translational Biomedical Engineering

Translational Biomedical Engineering: Research to Practice (R2P)

P-Sat-B-179
A Stochastic Simulation Model of Alarm Response Strategies on a Telemetry Floor
T. M. Pishori[1,2]
[1]University of Connecticut, Storrs, CT, [2]Baystate Health, Springfield, MA

P-Sat-B-180
Robotic Endoscope: A Stacked Segment Puppet
J. K. Edwards[1] and R. Dennis[1]
[1]UNC, Chapel Hill, NC

P-Sat-B-181
Effect of Severity of Rod Contour on Posterior Road Failure in Setting of Lumbar Pedicle Osteotomy (PSO): A Biomechanical Study
J. A. Tang[1], J. Leasure[1], J. Buckley[1], D. Kondrashov[2], and C. Ames[3]
[1]The Taylor Collaboration, San Francisco, CA, [2]San Francisco Orthopaedic Residency Program, San Francisco, CA, [3]University of California San Francisco, San Francisco, CA

P-Sat-B-182
Translational Research of Solar-Powered Backpack-Size Portable Laboratory
J. I. Rodriguez-Devora[1], E. Rios[1], R. Espinoza[1], D. Terreros[2], and T. Xu[1,2]
[1]University of Texas at El Paso, El Paso, TX, [2]Paul L. Forest School of Medicine, Texas Tech University Health Sciences Center, El Paso, TX

POSTER SESSION SatB

P = Poster Session
OP = Oral Presentation

P-Sat-B-183
A Novel Electronic Laparoscopic Training Device
P. Shields[1], J. Farris[1], G. Jewell[2], and S. Rhodes[1]
[1]Grand Valley State University, Grand Rapids, MI, [2]Grand Rapids Medical Education Partners, Grand Rapids, MI

P-Sat-B-184
A System and Framework for Evaluating Color Calibration Kits
H. E. Caceres[1], W. Tannous[1], A. Nasrallah[1], and M. H. Loew[1]
[1]George Washington University, Washington, DC

P-Sat-B-185
Umbrella Valve Design for Intravenous Fluid Delivery System
A. R. Jones[1], D. F. Miranda[1], Y. Choo[1], J. A. Guerra[1], J. F. Chapman[1], Y. Choi[1], and C. R. Forest[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-B-186
Particle Size Measurements of the Human Powered Nebulizer
L. E. Olson[1], C. E. Zmudka[2], C. J. Hallberg[1], W. K. Kopesky[2], and M. T. Lysaught[1]
[1]Marquette University, Milwaukee, WI, [2]Particle Technology Labs, Downers Grove, IL

Track: Translational Biomedical Engineering

The Translational Triad: Clinical, Industrial, and Academic Collaboration

P-Sat-B-187
Novel 3-D Brachial Plexus Reconstruction from 2-D Ultrasound Using XBOX Kinect Tracking
P. J. Boutros[1], C. X. Lee[1], S. J. Mathews[1], P. J. Wilkens[1], D. Peterson[1], and J. H. McIsaac[1,2]
[1]University of Connecticut, Storrs, CT, [2]Hartford Hospital, Hartford, CT

P-Sat-B-188
High Performance Nanoconstructs for Tumor Visualization Using Contrast Enhanced MRI
R. Sethi[1], J. S. Ananta[2], X. Liu[2], L. J. Wilson[1], and P. Decuzzi[2]
[1]Rice University, Houston, TX, [2]The Methodist Hospital Research Institute, Houston, TX

Track: Translational Biomedical Engineering

Translational Biomedical Engineering - Undergrad

P-Sat-B-189
Development of a Surgical Simulator for Open, Abdominal Training Procedures
D. Matteson[1], A. Moats[1], K. Shute[1], M. Shabahang[2], N. Woll[2], J. W. Baish[1], K. Bieryla[1], and D. Cavanagh[1]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Health System, Danville, PA

P-Sat-B-190
Characterization of the Immune Response to Tobacco Mosaic Virus for HIV Vaccine Platform Applications
P. Rambhia[1], S. Shukla[1], C. DeBaz[1], N. Greenspan[1], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-B-191
Development of a Novel Gold Nanoparticle-Collagen Scaffold for Soft Tissue Applications
C. Spradling[1], A. Ross[1], D. Grant[1], D. Grant[1], and S. Grant[1]
[1]University of Missouri, Columbia, MO

P-Sat-B-192
Integrative Analysis of Genomic, Proteomic, and Histopathological Ovarian Cancer Data
A. Poruthoor[1], S. Kothari[1], S. J. Rosenthal[1], J. H. Phan[2], and M. D. Wang[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Tech and Emory University, Atlanta, GA

P-Sat-B-193
Development of a Sensor Board System for a Multi-Modality Seizure Detection Platform
D. Wang[1], S. R. Gouravajhala[1], and L. Khuon[1]
[1]Villanova University, Villanova, PA

P-Sat-B-194
A Fascial Closure Device That Reduces Postoperative Risks After Open Abdominal Surgery
A. A. Tu[1], S. Van Kooten[1], S. Zahid[1], D. Peng[1], L. Myint[1], H. Huang[1], A. Annadanam[1], and L. Herrera[1]
[1]Johns Hopkins University, Baltimore, MD

P-Sat-B-195
Monitoring Brainstem Auditory Evoked Responses during Hemorrhagic Shock as Marker for Brain Oxygen Availability in Hamsters
J. Iles[1] and P. Cabrales[2]
[1]University of Miami, Coral Gables, FL, [2]University of California San Diego, La Jolla, CA

P-Sat-B-196
Pediatric Electronic Device for Emergency Resuscitation, PED-ER
H. C. Barber[1], A. Muelenaer[2], A. Wicks[1], O. Pyon[1], and S. Hitchcock[1]
[1]Virginia Polytechnic and State University, Blacksburg, VA, [2]Virginia Tech Carilion School of Medicine and Research Institute, Roanoke, VA

P-Sat-B-197
Electrooculography-Based Human Computer Interface Using MyDAQ and LabVIEW
J. Tripiciano[1], L. Khuon[1], K. Zurn[2], and J. B. Zurn[2,3]
[1]Villanova University, Villanova, PA, [2]Florida Research Instruments, Cocoa Beach, FL, [3]Virginia Commonwealth University, Richmond, VA

Track: Cancer Technology

Cancer Technology - Undergraduate

P-Sat-B-198
In Vitro Delivery of Paclitaxel with Genetically Engineered Elastin-like Polypeptides
P. Praveschotinunt[1], J. Bhattacharyya[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

P-Sat-B-199
A Microfluidic Platform for Protein Biomarker Based Diagnosis of Thyroid Cancer
L. Liu[1], S. Huang[1], S. Sharma[2], J. Rosen[2], and C. Klapperich[1]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA

P-Sat-B-200
Cytotoxic Evaluation of Novel Triphenylmethane Compounds on Cancer Cells
M. Cruz-Acuña[1], S. Khalek[2], K. McNeeley[2], J. Arbiser[3], and R. Bellamkonda[2]
[1]University of Puerto Rico at Mayaguez, Mayaguez, PR, [2]Georgia Institute of Technology, Atlanta, GA, [3]Emory University, Atlanta, GA

P-Sat-B-201
Design and Manufacture of Optical Calibration Plates for a Cell Counting Metrology System
S. M. Robb[1], B. G. Opp[1], J. DiLoreto[1], and B. Campbell[1]
[1]Robert Morris University, Moon Township, PA

P-Sat-B-202
An Intelligent, Coupled, and Automated Diagnostic and Multiplexed Drug Delivery Device for Next-Generation Cancer Therapy
N. Mehandru[1], A. Chalah[1], and S. K. Bhatia[1]
[1]Harvard University, Cambridge, MA

P-Sat-B-203
Vitrification of Human Sera: Effect of Additives on the Stability of Proteins for Long-term Storage
R. Less[1,2], K. Boylan[3], A. Skubitz[3,4], and A. Aksan[1,4]
[1]Biostabilization Laboratory, Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, [2]Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, [3]Department of Laboratory Medicine and Pathology, University of Minnesota, Minneapolis, MN, [4]Institute for Engineering in Medicine, University of Minnesota, Minneapolis, MN

P-Sat-B-204
Engineering Viral Nanoparticles for Applications in Medicine: Developing CPMV as an Efficient Drug-Delivery Platform
K. Chen[1], K. L. Lee[1], I. Yildiz[1], and N. F. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-B-205
Mimicking Platelet-Cancer Cell Interactions for Targeted Drug Delivery in Metastatic Breast Cancer
V. Pan[1], G. Howard[2], C. Modery[1], A. Master[1], and A. Sen Gupta[1]
[1]Case Western Reserve University, Cleveland, OH, [2]The University of Akron, Akron, OH

P-Sat-B-206
Spatial Resolution Increase of Tumor Permeability Maps via Mixed-Resolution DCE-MRI
E. T. Muldoon[1], G. L. Pishko[1], and E. A. Neuwelt[1]
[1]Oregon Health and Science University, Portland, OR

P-Sat-B-207
Development of Self-Heating Microparticles for Transarterial Embolization and Tumor Ablation Therapy
A. Beiswenger[1], C. Kakish[1], L. Solorio[1], A. Abramson[1], and A. Exner[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-B-208
Electrosprayed Poly(Lactic-co-Glycolic Acid) Microspheres for Controlled Release of Anticancer Agent
J. Briselden[1], P. Fattahi[1], and M. Abidian[1]
[1]Pennsylvania State University, University Park, PA

P-Sat-B-209
Modification of a Viral Nanoparticle with C60 for Applications in Photodynamic Therapy
A. Yang[1], A. Wen[1], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

POSTER SESSION SatB

P-Sat-B-210
Melanoma Migration and Chemotaxis in a 3-Dimensional Microfluidic Device
M. Scott[1,2], H. Onishko[1], J. Ehrman[1], and E. Rericha[1]
[1]Vanderbilt University, Nashville, TN, [2]Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE) Searle-SyBBURE, Nashville, TN

P-Sat-B-211
Fused Nanofiber Scaffolds as Force Measurement Probes for Migratory Breast Cancer Cells
C. Hughes[1], P. Sharma[1], and A. Nain[1]
[1]Virginia Tech, Blacksburg, VA

Track: Nano and Micro Technologies

Nano & Micro Technologies - Undergraduate

P-Sat-B-212
Functionalized Graphene Oxide Nanoplatelets as a Novel MRI Contrast Agent
T. Tembulkar[1], S. Kanakia[1], S. M. Chowdhary[1], J. Toussaint[1], B. Adewale[1], K. Shroyer[1], W. Moore[1], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY

P-Sat-B-213
Enhanced Genetic Delivery, Endosomal Escape and Cytoplasmic Release Kinetics with Multi-Layered Polymeric Nanoparticles of Polyethylenimine, Chitosan and Alginate
A. Watson[1], V. Pandit[1], and M. O'Neil[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Sat-B-214
Enzyme-Degradable Microgel Carriers for Pulmonary Disease-Triggered Release of Biologics
P. Wanakule[1], G. Liu[1], A. Fleury[1], and K. Roy[1]
[1]The University of Texas at Austin, Austin, TX

P-Sat-B-215
Design, Fabrication, and Characterization of a Continuous Microfluidic Formulator
W. J. Matloff[1], K. T. Seale[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

P-Sat-B-216
Leukocyte-medical Stainless Steel Adhesion Revealed by Single-cell Force Spectroscopy
A. Sgarlato[1], Y. Guo[1], K. Vojir[1], and X. Zhang[1]
[1]Lehigh University, Bethlehem, PA

P-Sat-B-217
Increasing Curcumin Solubility Via Spray Dried Albumin Particles
I. Jain[1], P. Soucy[1], M. O'Toole[1], B. Totten[1], P. Hoblitzel[1], R. Keynton[1], W. Ehringer[1], and A. Gobin[1]
[1]University of Louisville, Louisville, KY

P-Sat-B-218
Optimization of Virus Sample Enrichment in a Microfluidic Chip
R. LaCroix[1], N. T. Ho[1], M. Wong[1], J. Connor[1], C. Klapperich[1], and M. Cabodi[1]
[1]Boston University, Boston, MA

P-Sat-B-219
Electrokinetic Isolation of Free Circulating DNA from Physiological Samples
A. Lamanda[1], Y. Lu[1], T. Liu[1], and P. K. Wong[1,2]
[1]University of Arizona, Tucson, AZ, [2]BIO[5] Institute, Tucson, AZ

P-Sat-B-220
Design and Mechanical Properties of Poly(propylene fumarate) Sleeve Scaffolds
C. E. Vorwald[1], M. O. Wang[1], D. Dean[2], and J. P. Fisher[1]
[1]University of Maryland, College Park, MD, [2]Case Western Reserve University, Cleveland, OH

P-Sat-B-221
A Simulation Study of Geometry Induced Directional-dependant Flow Resistance Pumping Mechanism
X. Gao[1], Y-T. Yeh[1], and S. Zheng[1]
[1]The Pennsylvania State University, University Park, PA

P = Poster Session
OP = Oral Presentation

P-Sat-B-222
Improving Electric Contact of CuO Nanowires for Glucose Sensor
M. W. Kang[1], A. Haghdoost[1], and R. Pitchumani[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Sat-B-223
Biodistribution of Tobacco Mosaic Virus Rods and Spheres
M. A. Bruckman[1], L. N. Randolph[1], S. Hern[1], A. VanMeter[1], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Sat-B-224
Development of Paper-based LIPS Assay for Rapid Serum Antibody Detection
M. Dhar[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Sat-B-225
Optimizing Lysis of Neisseria gonorrhea for Point-of-Care Diagnostics
C. Ellenson[1], A. Lai[1], J. C. Linnes[1], and C. M. Klapperich[1]
[1]*Boston University, Boston, MA*

P-Sat-B-226
A Microfluidic Device for Long-term Visualization of Motile Cells
C. T. Poling[1] and S. Halperin[2]
[1]*Arizona State University, Phoenix, AZ,* [2]*University of Missouri, St. Louis, MO*

P-Sat-B-227
A Microfluidic Device for Producing and Imaging Bilayer Vesicles
W. Snead[1,2], S. Dalvin[1,3], F. Meyers[1], B. Turner[1], M. Vahey[1], and D. Fletcher[1]
[1]*UC Berkeley, Berkeley, CA,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*Johns Hopkins University, Baltimore, MD*

P-Sat-B-228
IgG-DOTA Conjugation to Improve Blood Circulation Half-life
N. Virani[1] and N. Masoodzadehgan[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Sat-B-229
Fibroblasts Solving Mazes in Response to Growth Factor Concentration
A. Nguyen[1], E. Mappus[1], T. Harvey[1], B. Peterson[1], M. O'Kelly[1], E. Hammes[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

P-Sat-B-230
Flow Control in Darkling Beetles: Testing the Compartmentalization Hypothesis
J. Aviles[1], H. Pendar[1], and J. Socha[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Sat-B-231
Surface Micro-topography Enhances Human Cardiomyocytes Functions on PLGA Scaffolds
A. N. Santiago-Miranda[1], D. A. Stout[2], and T. J. Webster[2]
[1]*University of Puerto Rico-Mayaguez, Mayaguez, PR,* [2]*Brown University, Providence, RI*

P-Sat-B-232
Analysis of Hydrogen Peroxide Production by Peristaltic Micropumps Using Spectrophotometry
O. S. Hoilett[1], D. A. Markov[1], J. P. Wikswo[1], and P. C. Samson[1]
[1]*Vanderbilt University, Nashville, TN*

P-Sat-B-233
Lipid-Polymer Hybrid Nanoparticles for Sustained Delivery of Doxorubicin
E. Steranka[1]
[1]*Boston University, Boston, MA*

P-Sat-B-234
High-throughput Microfluidic Immobilization of *Caenorhabditis elegans* for 3D High-Resolution Imaging of Chromosome Behavior During Meiosis
X. Y. Zhou[1,2], E. Wasson[1,3], S-M. Park[1], F. Myers[1], B. Turner[1], and L. Lee[1]
[1]*UC Berkeley, Berkeley, CA,* [2]*University of Maryland, College Park,* [3]*University of New Mexico, Albuquerque, NM*

P-Sat-B-235
Towards Intelligent Drug Delivery Agents: Quorum Sensing Based Actuation Regulation of Bacteria-Powered MicroRobots (BacteriaBots)
M. Canter[1], A. Sahari[1], B. Scharf[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Sat-B-236
The Application of Inverse Mathematics and Beam Theory to Determine Migratory Single Cell Forces
T. O'Brien[1], K. Sheets[1], P. Sharma[1], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Sat-B-237
A Microfluidic Platform for Chemotaxis based sorting of Micro-particles
L. Steinberger[1], M. A. Traore[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

Saturday, October 27, 2012
10:30AM – 12:00NOON
PLATFORM SESSION – SAT – 1

Track: Biomaterials
OP - Sat - 1 – 1 - Room A311
Biomaterials to Control Cellular Environments II

Chairs: Gregory Hudalla, Bill Murphy

10:30AM
Role of Intermolecular Cross-links in Engineering Tunable, Cell-Instructive Collagen-Based Matrices
S. L. Voytik-Harbin[1]
[1]Purdue University, West Lafayette, IN

10:45AM
Dynamic Photo-Tuning of Matrix Stiffness in 3D Hydrogels
R. S. Stowers[1], B. Han[1], and L. J. Suggs[1]
[1]University of Texas at Austin, Austin, TX

11:00AM
Enzyme-Degradable Glues for Temporal and Spatial Control in 3D Culture Systems
T. E. Rinker[1,2], S. K. Hamilton[1], N. C. Bloodworth[1,2], T. M. Hammoudi[1,2], C. S. Massad[1,2], H. Lu[1], and J. S. Temenoff[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

11:15AM
Dynamic Tissue Engineering Scaffolds with Stimuli-Responsive Macroporosity Formation
L-H. Han[1], J. Lai[1], S. Yu[1], and F. Yang[1]
[1]Stanford University, Palo Alto, CA

11:30AM
Bioinspired Alteration of Collagen-GAG Scaffold Glycosaminoglycan Content to Regulate Cell Activity
R. A. Hortensius[1] and B. A. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

11:45AM
Lighting the Way: Photochemical Approaches to Creating Dynamic Cell-Instructive Hydrogels
D. L. Alge[1,2] and K. S. Anseth[1,2]
[1]University of Colorado, Boulder, CO, [2]Howard Hughes Medical Institute, Boulder, CO

Track: Biomaterials
OP - Sat - 1 – 2 - Room A312
Novel Biomaterials & Scaffolds I

Chairs: Evan Scott, Cherie Stabler

10:30AM
Microribbon-like Elastomers for Fabricating Macroporous and Highly Flexible Scaffolds that Support Cell Proliferation in 3D
L-H. Han[1], S. Yu[1], T. Wang[1], A. W. Behn[1], and F. Yang[1]
[1]Stanford University, Stanford, CA

10:45AM
Extracellular Matrix Protein-Coated Scaffolds Enhance Islet Survival and Function
W. T. Yap[1], D. M. Salvay[2], M. A. Silliman[1], X. Zhang[1], Z. G. Bannon[1], D. B. Kaufman[3], W. L. Lowe[1], and L. D. Shea[1]
[1]Northwestern University, Chicago, IL, [2]Evanston Hospital, NorthShore University Health System, The University of Chicago Medical Center, Evanston, IL, [3]University of Wisconsin, Madison, WI

11:00AM
Injectable Laminin-Functionalized PEG Hydrogels for Cell Delivery
R. J. Mancino[1], A. T. Francisco[1], S. L. Craig[1], and L. A. Setton[1,2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

11:15AM
Inverse Opal Scaffolds for Tissue Engineering and Regenerative Medicine
Y. Zhang[1,2], S-W. Choi[2], X. Cai[2], L. V. Wang[2], and Y. Xia[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Washington University in St. Louis, St. Louis, MO

11:30AM
Injectable Methylcellulose Hydrogels for Soft Tissue Filler Applications
G. T. Gold[1], D. M. Varma[1], D. Harbottle[2], A. Rahman[1], and S. B. Nicoll[1]
[1]The City College of New York, New York, NY, [2]University of Alberta, Alberta, Canada

11:45AM
Fabrication of Collagen Films Suspended Over Micropost Arrays and Their Viability for Cell Culture
M. J. Roberts[1], N. Bhatt[1], C. M. Voge[1], E. R. Meshot[1], J. Stegemann[1], and A. J. Hart[1]
[1]University of Michigan, Ann Arbor, MI

OP - Sat - 1 – 3 - Room A410
Undergraduate Research III- Tissue Engineering and Biomaterials

Chairs: Rupak Rajachar, Marsha Rolle

10:30AM
The Effect of Neuron-Glial Antigen 2 on Retinal Microvascular Remodeling in a Murine Model of Chronic Hypoxia
T. Brobst[1], A. Long[1], J. Ungerleider[1], and S. Peirce[1]
[1]University of Virginia, Charlottesville, VA

10:40AM
Hypoxic Conditioning Alters Encapsulated Stem Cell Factor Secretion
M. T. Najia[1], J. L. Wilson[1], and T. C. McDevitt[1,2]
[1]Georgia Institute of Technology & Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta

10:50AM
Role of Paracrine Signaling in Mesenchymal Stem Cell-Mediated Enhancement of Engineered Cardiac Tissue Function
J. Mayourian[1], T. J. Cashman[1], and K. D. Costa[1]
[1]Mount Sinai School of Medicine, New York, NY

11:00AM
Induced Osseous and Odontous Differentiation in Dental Pulp Stem Cells through Static Compression
M. Monterosso[1], M. Cupelli[2], M. S. Kennedy[2], and D. Dean[2]
[1]Sweet Briar College, Sweet Briar, VA, [2]Clemson University, Clemson, SC

11:10AM
Monocyte Polarization in Response to Central Nervous System Derived Extracellular Matrix
E. Stahl[1], C. J. Medberry[1], J. Kelly[1], T. J. Keane[1], and S. F. Badylak[1]
[1]McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA

P = Poster Session
OP = Oral Presentation

11:20AM
Derivatization of a Microfiber Matrix with Type III Neuregulin Peptides and Applicaiton to Schwann Cell Culture
J. Meyer[1], D. Schreier[1], C. Krueger[1], N. Shiley[1], B. Lindevig[1], and J. Svaren[1]
[1]*University of Wisconsin - Madison, Madison, WI*

11:30AM
Anti-oxidant Releasing Mechanically-Adaptive Materials Improve Neural Device Tissue Integration
K. T. Householder[1,2], K. A. Potter[1,2], M. Jorfi[3], C. Weder[3], and J. R. Capadona[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*L. Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH,* [3]*University of Fribourg, Marly, Switzerland*

11:40AM
Dually Responsive Carboxylated N-vinyl Caprolactam Copolymers: Synthesis and Characterization
S. Goddard[1], Y. Cao[1], S. Tang[1], and W. He[1]
[1]*University of Tennessee, Knoxville, TN*

11:50AM
Evaluating the Cytotoxicity of Poly(propylene fumarate) per ISO Standard 10993-5
J. M. Etheridge[1], M. O. Wang[1], D. Dean[2], and J. P. Fisher[1]
[1]*University of Maryland, College Park, MD,* [2]*Case Western Reserve University, Cleveland, OH*

Track: Neural Engineering
OP - Sat - 1 – 4 - Room A314
Engineering the Neural Environment

Chairs: Lisa Flanagan, Dave Meaney

10:30AM
Tissue Engineering Early- and Late-Stage Neurons Using Collagen
M. L. Previtera[1], A. Shahin[1], M. Gidwani[1], R. Kleiman[1], D. Verma[1], R. Schloss[1], and N. Langrana[1]
[1]*Rutgers University, Piscataway, NJ*

10:45AM
Optoelectronics for Neural Recording and Stimulation
P. Anikeeva[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

11:00AM
Neurite Outgrowth On Electrospun PLLA Fibers Is Enhanced By Exogenous Electrical Stimulation
A. N. Koppes[1,2], C. J. Rivet[1,2], L. A. Williams[1,2], J. M. Piselli[1,2], R. A. Gilbert[1,2], and D. M. Thompson[1,2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Center for Biotechnology and Interdisciplinary Studies, Troy, NY*

11:15AM
Lentiviral-Mediated Growth Factor Delivery from Multichannel Bridges for Spinal Cord Injury Repair
S. K. Seidlits[1], A. Thomas[1], T. Kukushliev[1], D. Hassani[1], A. Goodman[1], B. Cummings[2], A. Andersen[2], and L. D. Shea[1]
[1]*Northwestern University, Evanston, IL,* [2]*University of California-Irvine, Irvine, CA*

11:30AM
Ex Vivo Alzheimer's Disease Model Characterizing Accumulation of Microglia Cells Recruited and Localized by Soluble and Surface-Bound Amyloid Beta
H. Cho[1,2], T. Hashimoto[2], E. Wong[2], B. T. Hyman[1,2], and D. Irimia[1,2]
[1]*Harvard Medical School, Charlestown, MA,* [2]*Massachusetts General Hospital, Charlestown, MA*

11:45AM
Formation of Neuromuscular Junction in a Microfluidic Device
H. Park[1], S. Liu[2], J. W. McDonald[1,2], N. Thakor[1,3], and I. H. Yang[1,3]
[1]*The Johns Hopkins University School of Medicine, Baltimore, MD,* [2]*ICSCI at The Kennedy Krieger Institute, Baltimore, MD,* [3]*SiNAPSE at National Univeristy of Singapore, Singapore City, Singapore*

Track: Cancer Technology*
OP - Sat - 1 – 5 - Room A315
Cancer Imaging

Chairs: Edward Brown, Aaron Mohs

10:30AM
Anti-EGFR Fluorescent Nanoparticles for Targeted Optical Imaging of Esophageal Cancer
L. W-G. Chan[1], Y-N. W. Wang[1], M. W. Upton[1], L. W. Lin[1], J. W. Hwang[1], and S. H. Pun[1]
[1]*University of Washington, Seattle, WA*

10:45AM
Imaging Metastasis Using Targeted Iron Oxide Nanochains
P. M. Peiris[1], R. Toy[1], J. Pansky[1], E. Doolittle[1], A. Abramowski[1], M. Tam[1], E. Schmidt[1], E. Tran[1], E. Hayden[1], A. Camann[1], C. Flask[1], R. A. Keri[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

11:00AM
Viscoelastic Mechanical Properties of the Canine Liver Before and After Focused Ultrasound-Induced Thermal Ablation *In Vitro*
D. Shahmirzadi[1], G. Y. Hou[1], and E. E. Konofagou[1]
[1]*Columbia University, New York, NY*

11:15AM
Near Infrared Image-Guided Tumor Removal: Epidermal Growth Factor Receptor as a Target
T. K. Hill[1,2], F. C. Marini[1], and A. M. Mohs[1,2]
[1]*Wake Forest University, Winston Salem, NC,* [2]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

11:30AM
Multifunctional Gold Nanoshelled Nanomicelles for Potential MRI Imaging and Photothermal Therapy
Y. Ma[1] and Z. Dai[1]
[1]*Peking University, Beijing, China, People's Republic of*

11:45AM
Engineering Coupled Viral Nanoparticles for Cancer Imaging and Therapy
A. M. Wen[1] and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

**Track sponsored by* BARD

Track: Cancer Technology*
OP - Sat - 1 – 6 - Room A316
Cancer Drug Delivery II

Chairs: Valeria Milam, David Putnam

10:30AM
Drug Encapsulated Polymeric Microspheres for Temporally-Staged, Localized Brain Tumor Therapy
J. Floyd[1], A. Galperin[1], R. Ramakrishna[1], R. Rostomily[1], and B. D. Ratner[1]
[1]*University of Washington, Seattle, WA*

10:45AM
Induction of Chemosensitivity in Glioma Cells to BCNU and TMZ Using a Targeted Nitric Oxide Donor
S. Safdar[1], C. A. Payne[2], and L. J. Taite[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Spelman College, Atlanta, GA

11:00AM
Optimization of a Nanomedicine Strategy for Cell-Targeted Photodynamic Therapy of Head-&-Neck Cancers
A. M. Master[1], N. L. Oleinick[1], and A. Sen Gupta[1]
[1]Case Western Reserve University, Cleveland, OH

11:15AM
MicroRNA-29b Delivery via EpCAM Targeted Cationic Lipoplexes in Lung Cancer Treatment
Y. Wu[1], M. Crawford[1], Y. Mao[1], L. Lee[1,2], and S. P. Nana-Sinkam[1]
[1]The Ohio State University, Columbus, OH, [2]The Ohio State University, columbus, OH

11:30AM
Molecular Farming in Plants to Produce Nanomedicines for Breast Cancer Treatment
K. L. Lee[1] and N. F. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

11:45AM
A Novel Intravesical Therapy in an Orthotopic Bladder Cancer Model
J-W. Hsu[1], J. Messing[1], and M. King[1]
[1]Cornell University, Ithaca, NY

*Track sponsored by BARD

Track: Cellular and Molecular Bioengineering OP - Sat - 1 – 7 - Room A301

Cell - Cell, Homotypic and Heterotypic Interactions

Chairs: Volkmar Heinrich, Eliott Hui

10:30AM
Distinct Roles of TCR and LFA-1 Adhesions in Immune Synapse Dual Structural Dynamics
E. Tabdanov[1], A. Gondarenko[1], J. Hone[1], and L. C. Kam[1]
[1]Columbia University, New York, NY

10:45AM
Rapid Formation of Hybrid Cells via Fusion of Human Mesenchymal Stem Cells with Cardiomyocytes
I. Shadrin[1], W. Yoon[1], L. Li[1], and N. Bursac[1]
[1]Duke University, Durham, NC

11:00AM
Probing the Lateral Interactions Among Members of the TCR Complex
C. Ge[1], M. Birnbaum[2], C. Garcia[2], and C. Zhu[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Stanford University School of Medicine, Stanford, CA

11:15AM
Tunneling Nanotube Formation between Single Neonatal Cardiomyocyte and Mesenchymal Stem Cell on a Biochip
H. Yang[1], M. Zhen[2], L. Schmidt[1], Z. Wang[1], T. K. Borg[3], and B. Z. Gao[1]
[1]Clemson University, Clemson, SC, [2]University of California, Berkeley, Berkeley, CA, [3]Medical University of South Carolina, Charleston, SC

11:30AM
A Screening Platform for Short-Range Paracrine Signaling
K. M. Spencer[1], N. G. Thompson[1], L. F. Lock[1], and E. E. Hui[1]
[1]University of California-Irvine, Irvine, CA

11:45AM
Fibronectin Matrix Assembly on a Recombinant Protein Substrate Stimulates 3D Cellular Self-Assembly
J. R. Brennan[1] and D. C. Hocking[1]
[1]University of Rochester, Rochester, NY

Track: Cellular and Molecular Bioengineering - OP - Sat - 1 – 8 - Room A302

Cell Motility II

Chairs: Allen Liu, Behareh Behkam

10:30AM
N-cadherin-mediated Cell-Cell Adhesion Promotes Cell Migration in a Three-Dimensional Matrix
W. Shih[1] and S. Yamada[1]
[1]University of California, Davis, Davis, CA

10:45AM
The Role of Fiber Beam Stiffness (N/m) in Migration Dynamics of Mouse C2C12 Myoblasts
S. Meehan[1] and A. S. Nain[1]
[1]Virginia Tech, Blacksburg, VA

11:00AM
Stetch Activation: Mechanoregulation of Tropnin-Actin Bonds in Cardiac Muscle
S. M. Mijailovich[1], B. Stojanovic[2], D. Nedic[2], M. Svicevic[2], R. Gilbert[1], and T. Irving[3]
[1]Tufts University School of Medicine, Boston, MA, [2]Faculty of Science, University of Kragujevac, Kragujevac, Serbia, [3]Illinois Institute of Technology, Chicago, IL

11:15AM
Chemoattractant Hierarchy Dictates Differential Regulation of Persistant Immune Cell Chemotaxis
C. E. Petrie Aronin[1], J. Yoon[2], M. Meier-Schellershiem[1], N. Y. Morgan[2], and R. N. Germain[1]
[1]NIH, NIAID, Bethesda, MD, [2]NIH, NIBIB, Bethesda, MD

11:30AM
Cell Migration and Volume Regulation by Osmolarity in Confined Microenvironments
K. M. Stroka[1], H. Jiang[1], Z. Tong[1], S. X. Sun[1], and K. Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD

11:45AM
Development of a Novel Axon Pathfinding Assay for Neurotoxicity Screening
A. J. Sweeney[1] and Z. Gao[1]
[1]Clemson University, Clemson, SC

Track: Stem Cell Engineering OP - Sat - 1 – 9 - Room A305

Stem Cell Bio Processing

Chairs: Taby Ahsan, Claudia Lobato da Silva

10:30AM INVITED
Large-Format Solid-State Microwell Bioreactors, The Cellular Dynamics of Differentiation, and Rational Bioprocess Design: A New Strategy for Efficient, Scalable Cell Production From Human Pluripotent Stem Cells
M. D. Ungrin[1], G. Clarke[2], T. Yin[2], S. Niebrugge[2], C. Woodford[2], C. Nostro[3], F. Sarangi[3], G. Wood[4], G. Keller[3], and P. W. Zandstra[2]
[1]University of Calgary, Calgary, AB, Canada, [2]University of Toronto, Toronto, ON, Canada, [3]University Health Network, Toronto, ON, Canada, [4]University of Guelph, Guelph, ON, Canada

PLATFORM SESSIONS Sat-1

P = Poster Session
OP = Oral Presentation

11:00AM
Alginate poly-L-lysine Microencapsulation of Single and Aggregated Embryonic Stem Cells
J. Wilson[1], J. Zimmermann[1], D. Villa Moreno[2], and T. McDevitt[1,3]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*La Escuela de Ingeniería de Antioquia and CES Universities, Medellín, Colombia,* [3]*The Parker H. Petit Institute for Bioengineering and Bioscience, Atlanta, GA*

11:15AM
Shear Stress Promotes Hematopoietic and Endothelial Differentiation in ESCs via FLK1
R. P. Wolfe[1] and T. Ahsan[1]
[1]*Tulane University, New Orleans, LA*

11:30AM
Pluripotent Stem Cell Differentiation Using a Scalable Hydrogel Microsphere Encapsulation System
S. S. Chang[1], B. A. Williams[1], and E. A. Lipke[1]
[1]*Auburn University, Auburn, AL*

11:45AM
Isolation and Characterization of Mesenchymal Stem Cells From Umbilical Cord Matrix Using a Fully Defined Serum-/Xeno-free System
I. N. Simões[1], J. S. Boura[1], F. dos Santos[1], P. Z. Andrade[1], C. Cardoso[2], C. L. da Silva[1], and J. M. Cabral[1]
[1]*Institute for Biotechnology and Bioengineering – Instituto Superior Técnico, Lisboa, Portugal,* [2]*Crioestaminal,Saúde e Tecnologia S.A., Cantanhede, Portugal*

Track: Nano and Micro Technologies
OP - Sat - 1 – 10 - Room A401
Nanotherapeutics I

Chairs: Xiaohu Gao, Andrew Tsourkas

10:30AM INVITED
Multifunctional Nanoparticles for Molecular Imaging and Therapy
X. Gao[1]
[1]*University of Washington, Seattle, WA*

10:45AM
Gold Polymeric Micelles as Theranostic Agents
A. Al Zaki[1], D. Joh[1,2], Z. Cheng[1], G. Kao[1], J. Dorsey[1], and A. Tsourkas[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Georgetown, Washington, DC*

11:00AM
Evaluation of Active and Passive Nanoparticles Designs on the Targeting of Solid Tumours
E. A. Sykes[1] and W. C. Chan[1]
[1]*University of Toronto, Toronto, ON, Canada*

11:15AM
Hemostatic Nanoparticles Increase Survival in Rat Liver Injury Model
A. Shoffstall[1], J. Ustin[1,2], K. Atkins[1], B. Martyn-Dow[1], R. Groynom[1], L. Everhart[1], M. Sullivan[1], and E. Lavik[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cleveland Clinic, Cleveland, OH*

11:30AM
Magnetically Guided Delivery of Human Mesenchymal Stem Cells
S. Tong[1], N. Landázuri[2], J. Suo[1], W. R. Taylor[1,2], D. Giddens[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

Track: Cancer Technology*
OP - Sat - 1 – 11 - Room A402
Cancer Nanotechnology II

Chairs: Michael King, Nicole Steinmetz

10:30AM
In vivo Arming of Adoptively Transferred T-cells with Drug-loaded Nanoparticles for Cancer Immunotherapy
Y. Zheng[1], B. Kwong[1], and D. Irvine[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Howard Hughes Medical Institute, Chevy Chase, MD*

10:45AM
Gadolinium-Conjugated Gold Nanoshells: Agents for Magnetic Resonance, X-Ray, and Optical Imaging and Photothermal Therapy
A. J. Coughlin[1], J. S. Ananta[2], P. Decuzzi[2], and J. L. West[1,3]
[1]*Rice University, Houston, TX,* [2]*The Methodist Hospital Research Institute, Houston, TX,* [3]*Duke University, Durham, NC*

11:00AM
Nanotechnology for Spectroscopic and Image-Guided Tumor Resection
A. M. Mohs[1,2], Y. Wang[3], X. Qian[3], M. C. Mancini[4], J. M. Provenzale[3,5], and S. Nie[3]
[1]*Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [2]*Wake Forest Institute for Regenerative Medicine, Winston-Salem,* [3]*Emory University, Atlanta, GA,* [4]*Spectropath, Inc., Atlanta, GA,* [5]*Duke University, Durham, NC*

11:15AM
Real-time Measurement of the Bioavailability Curve of Experimental Gold Nanorods towards Dose Optimization
I. B. Magana[1], P. Adhikari[1], S. S. Bracey[1], R. Yendluri[1], G. P. Goodrich[2], J. A. Schwartz[2], K. A. Evans[1], and D. P. O'Neal[1]
[1]*Louisiana Tech University, Ruston, LA,* [2]*Nanospectra Biosciences, Houston, TX*

11:30AM
3D Spatial Measurement of Viability in Tissue Phantoms in response to Photothermal Therapy and Single Walled Carbon Nanohorns
J. Whitney[1], W. Carswell[1], M. DeWitt[1], J. Robertson[2], C. Rylander[1], and M. N. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia Maryland regional college of Veterenary Bedicine, Blacksburg, VA*

11:45AM
Polymeric Nanoparticles for Photothermal Ablation of Colorectal Cancer
N. H. Levi-Polyachenko[1] and C. MacNeill[1]
[1]*Wake Forest University Health Sciences, Winston-Salem, NC*

**Track sponsored by* BARD

Track: Orthopedic and Rehabilitation Engineering
OP - Sat - 1 - 12 - Room A403
Assistive Technology & Robotics in Rehabilitation Engineering

Chairs: Warren Grundfest, Charlie Kemp

10:30AM
Biomechanical Evaluation of Mobile Haptic Feedback System for Gait Rehabilitation from Sensory Loss
Z. McKinney[1,2], B. Nowroozi[1,2], and W. Grundfest[1,2]
[1]*University of California, Los Angeles (UCLA), Los Angeles, CA,* [2]*Center for Advanced Surgical & Interventional Technology (CASIT), Los Angeles, CA*

10:45AM
A Music-Based Device for Hand Rehabilitation Following a Neurologic Event: A Pilot Study
N. Friedman[1], V. Chan[1], A. Reinkensmeyer[1], D. J. Reinkensmeyer[1], and M. Bachman[1]
[1]University of California, Irvine, Irvine, CA

11:00AM
Robots for Humanity: Developing Assistive Mobile Manipulation
P. M. Grice[1], T. L. Chen[1], M. Ciocarlie[2], S. Cousins[2], K. Hawkins[1], K. Hsiao[2], C-H. King[1], D. Lazewatsky[3], A. Leeper[2], H. Nguyen[1], A. Paepcke[2], C. Pantofaru[2], W. D. Smart[3], L. Takayama[2], and C. C. Kemp[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Willow Garage, Inc, Menlo Park, CA, [3]Washington University in St. Louis, St. Louis, MO

11:15AM
Use of Tactile Feedback to Control Robotic Palpation to Characterize Object Hardness
Z. Su[1], J. A. Fishel[1,2], T. Yamamoto[2], and G. E. Loeb[1,2]
[1]University of Southern California, Los Angeles, CA, [2]Syntouch, Los Angeles, CA

11:30AM
Gaze-Contingent Human-Robot Interaction for Promoting Independent Living
X. Zhang[1], S. Li[1], and J. Zhang[2]
[1]Wilkes University, Wilkes-Barre, PA, [2]A[123] System Inc., Livonia, MI

11:45AM
Partnered Human-Robot Stepping Based on Interactive Forces at the Hand
T. L. Chen[1], J. L. McKay[1,2], T. Bhattacharjee[1], M. E. Hackney[2,3], C. C. Kemp[1], and L. H. Ting[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Atlanta VA Medical Center Rehabilitation R&D Center of Excellence, Atlanta, GA

Track: Cardiovascular and Respiratory Engineering*
OP - Sat - 1 - 13 Room A404

Circulatory Assist & Blood Damage

Chairs: David Ku, Amy Throckmorton

10:30AM
Comparative: Thrombogenic Pontential of Ventricular Assist Devices: The Impact of Device Thrombogenicity Emulation Methodology
W-C. Chiu[1], M. Xenos[1], G. Girdhar[1], J. S. Soares[1], Y. Alemu[1], B. Lynch[2], J. Jesty[1], S. Einav[1], M. Slepian[3], and D. Bluestein[1]
[1]Dept. of Biomedical Engineering, Stony Brook University, Stony Brook, NY, [2]MicroMed Cardiovascular Inc., Houston, TX, [3]Sarver Heart Center, University of Arizona, Tucson, AZ

10:45AM
A Multiscale, Biophyscal Model for Flow-Induced Hemolysis
F. Vitale[1,2], J. Nam[1,3], L. Turchetti[4], R. M. Raphael[1], M. C. Annesini[2], and M. Pasquali[1]
[1]Rice University, Houston, TX, [2]University of Rome "La Sapienza", Rome, Italy, [3]Sungkyunkwan University, Suwon, Korea, Republic of, [4]Università Campus Bio-Medico di Roma, Rome, Italy

11:00AM
Thrombus Formation in Extracorporeal Membrane Oxygenation (ECMO) Circuits
S. M. Hastings[1], K. O. Maher[2], L. A. Lyon[1], S. F. Wagoner[2], and D. N. Ku[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Healthcare of Atlanta, Atlanta, GA

11:15AM
Computational Evaluation and *In Silico* Testing of a Novel Aortic Outflow Cannula Designed for Pediatric Cardiopulmonary Bypass Procedures
P. G. Menon[1], A. Undar[2], and K. Pekkan[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Pennsylvania State University College of Medicine, Hershey, PA

11:30AM
Flow Patterns of the LVAD-assisted Left Ventricle Studied in a Mock Circulatory Loop
Y. K. Wong[1], I. Reveles[1], G. Samaroo[1], F. Olea[1], W. Dembitsky[2], and K. May-Newman[1]
[1]San Diego State University, San Diego, CA, [2]Sharp Memorial Hospital, San Diego, CA

11:45AM
CFD Study of Different Design Options of LVAD Implantation
T. Passerini[1], M. Piccinelli[1], and A. Veneziani[1]
[1]Emory University, Atlanta, GA

*Track sponsored by St. Jude Medical More control. Less risk.

Track: Orthopedic and Rehabilitation Engineering
OP - Sat - 1 – 14 - Room A405

Orthopedic Biomechanics: Bone & Cartilage

Chairs: William Murphy

10:30AM
Implant Biofilm Quantification: Osteomyelitis Caprine Model
N. L. Tran[1,2], P. A. Tran[1], J. D. Jarrell[3], R. A. Hayda[1,2], and C. T. Born[1,2]
[1]Rhode Island Hospital, Providence, RI, [2]Alpert Medical School, Brown University, Providence, RI, [3]BioIntraface inc, Providence, RI

10:45AM
Dynamic Fluid Flow Stimulation on Interaction of Trabecular Mineralization and Muscle Fiber Growth
M. Hu[1], R. Yeh[1], M. Teeratananon[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

11:00AM
Mechano-Stimulation Amplifies Bone Growth in Obese Young Mice
M. Cheung[1], B. Ananthabhotla[2], V. Patel[2], M. E. Chan[2], and C. T. Rubin[2]
[1]Stony Brook University, New York City, NY, [2]Stony Brook University, Stony Brook, NY

11:15AM
Enhanced Integration of Orthopedic Implants by Gas Cluster Ion Beam Surface Modification
J. Khoury[1], M. Maxwell[1], R. E. Cherian[1], S. R. Kirkpatrick[1], and R. C. Svrluga[1]
[1]Exogenesis Corp, Billerica, MA

11:30AM
Joint Trauma Effects on Tissue Adjacent to the Loading Site in Articular Cartilage
R. McCulloch[1], M. Ashwell[2], A. O'Nan[2], and P. Mente[1]
[1]NCSU / UNC, Raleigh, NC, [2]NCSU, Raleigh, NC

11:45AM
Mechanical Properties of Cartilage after Electro-Mechanical Reshaping with Micro Electrodes
D. Protsenko[1] and B. Wong[1]
[1]University of California Irvine, Irvine, CA

P = Poster Session
OP = Oral Presentation

Track: Cardiovascular and Respiratory Engineering
OP - Sat - 1 – 15 - Room A406
Pulmonary Biomechanics

Chairs: Jeff Borenstein, Thomas Gilbert

10:30AM
Imaging-Based Multiscale Models Of The Respiratory System That Account For Regional Heterogeneity In Health And Disease
S. Kabilan[1], A. Kuprat[1], R. Jacob[1], J. Carson[1], K. Minard[1], R. Corley[1], and D. Einstein[1]
[1]Pacific Northwest National Laboratory, Richland, WA

10:45AM
Targeting Aerosol Deposition in the Tracheobronchial Airways Using an Excipient Enhanced Growth Approach
P. W. Longest[1], G. Tian[1], Y-J. Son[1], and M. Hindle[1]
[1]Virginia Commonwealth University, Richmond, VA

11:00AM
Deconstructing the Mucociliary Apparatus: A Microfluidics Based Approach to Probing Mucociliary Dynamics
J. Carpenter[1], S. Lynch[1], E. Kazura[1], J. Cribb[1], and R. Superfine[1]
[1]UNC Chapel Hill, Chapel HIll, NC

11:15AM
Simulating The Alveolar Microenvironment: Effect of the Extracellular Matrix Structure on Cell Injury During Airway Reopening
N. Higuita-Castro[1], M. T. Nelson[1], J. J. Lannutti[1], D. J. Hansford[1], and S. N. Ghadiali[2]
[1]The Ohio State University, Columbus, OH, [2]The Wexner Medical Center at The Ohio State University, Columbus, OH

11:30AM
Cyclic Stretch-induced HER Activation in the Pulmonary Alveolar Epithelia Mediates ERK Signaling
N. Davidovich[1], G. G. Lawrence[1], B. C. Dipaolo[1], N. Yehya[1], and S. Margulies[1]
[1]University of Pennsylvania, Philadelphia, PA

11:45AM
Effect of Regional Tidal Volumetric Strain on Local Inflammation in Normal and Endotoxin-Exposed Mechanically Ventilated Sheep Lungs
T. Wellman[1], E. L. Costa[2], T. Winkler[2], G. Musch[2], R. S. Harris[2], J. G. Venegas[2], and M. F. Vidal Melo[2]
[1]Boston University, Boston, MA, [2]Massachusetts General Hospital, Boston, MA

Track: Biomedical Imaging and Optics
OP - Sat - 1 – 16 - Room A304
Optical Imaging I

Chairs: Darren Roblyer, Caroline Boudoux

10:30AM INVITED
Scanning Angle Interference Microscopy Reveals Cellular Dynamics at the Nanoscale
M. J. Paszek[1], C. C. Dufort[1], M. G. Rubashkin[1], K. S. Thorn[1], J. T. Liphardt[2], and V. M. Weaver[1]
[1]University of California, San Francisco, San Francisco, CA, [2]University of California, Berkeley, Berkeley, CA

11:00AM
Surpassing the Diffraction Lmited Resolution by Laser Scanning Structured Illumination Microscopy
J. Yi[1], Q. Wei[1], H. F. Zhang[1], and V. Backman[1]
[1]Northwestern University, Evanston, IL

11:15AM
Uncrimping and Reorganization of Collagen Fibers in the Adventitia Using Digital Image Correlation
R. Wang[1], R. Gleason[1], and L. Brewster[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University School of Medicine, Atlanta, GA

11:30AM
Inverse Spectroscopic Optical Coherence Tomography: Quantifying Tissue Refractive Index Correlation Function with nanoscale sensitivity
J. Yi[1] and V. Backman[1]
[1]Northwestern University, Evanston, IL

11:45AM
Recovering Optically Modulated Fluorescence Signals in Tissue Phantoms with Two Laser Illuminated Molecular Imaging
S. Sarkar[1] and R. M. Dickson[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Bioinformatics and Systems Biology
OP - Sat - 1 – 17 - Room A408
Modeling & Experimental System Approaches for Cellular Signaling

Chairs: Pamela Kreeger, Jeffrey Saucerman

10:30AM INVITED
An ERK-p38 Subnetwork Coordinates Host-Cell Apoptosis and Necrosis during Coxsackievirus B3 Infection
K. Jensen[1], F. Garmaroudi[2], J. Lin[1], B. McManus[2], and K. Janes[1]
[1]University of Virginia, Charlottesville, VA, [2]University of British Columbia, Vancouver, BC, Canada

11:00AM INVITED
Reconstructing Signaling Dynamics Among Heterogeneous Immune Cell Populations During Chronic Inflammation
M. T. Beste[1], N. Pfaeffle-Doyle[1], E. A. Prentice[1], K. B. Isaacson[2,3], D. A. Lauffenburger[1], and L. G. Griffith[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Harvard University, Newton, MA, [3]Newton-Wellesley Hospital, Newton, MA

11:30AM
Analysis of Core Architecture Regulating TGFB Induced EMT Reveals Phenotypic Switches through NFATc1 Expression and Phospho-SP1
R. A. Gould[1], A. Chakrabarti[1], J. Varner[1], and J. Butcher[1]
[1]Cornell University, Ithaca, NY

11:45AM
Glucose Deprivation Activates a Metabolic and Signaling Amplification Loop Leading to Cell Death
N. A. Graham[1], M. Tahmasian[1], B. Kohli[1], E. Komisopoulou[1], M. Zhu[1], I. Vivanco[2], A. Ribas[1], R. S. Lo[1], I. K. Mellinghoff[2], P. S. Mischel[1], and T. G. Graeber[1]
[1]University of California, Los Angeles, Los Angeles, CA, [2]Memorial Sloan-Kettering Cancer Center, New York, NY

Track: Tissue Engineering
OP - Sat - 1 – 18 - Room A407
Musculoskeletal & Orthopedic Tissue Engineering I

Chairs: Guillermo Ameer, Lijie Grace Zhang

10:30AM
Composite Bone and Muscle Injury Attenuates rhBMP-2 Mediated Tissue Regeneration, Limb Function, and Vascular Supply
N. Willett[1], A. Li[1], B. Uhrig[1], J. Boerckel[1], G. Warren[2], and R. Guldberg[1]
[1]Georgia Institute Of Technology, Atlanta, GA, [2]Georgia State University, Atlanta, GA

10:45AM
S1P3 Dependent Mobilization of Mesenchymal Stem Cells From the Bone Marrow Enhances Bone Defect Repair
A. Das[1], A. Kaushik[1], A. Awojoodu[2], and E. Botchwey[2]
[1]UVA, Charlottesville, VA, [2]GaTech, Atlanta, GA

11:00AM
Accelerated Osteogenesis of Human Mesenchymal Stem Cells in Co-Culture with Endothelial Cells in 3D-scaffolds
J. G. Gershovich[1], F. K. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

11:15AM
3D Co-cultures of Chondrocytes and MSCs are Resistant to Hypertrophy in Normoxia and Hypoxia
V. V. Meretoja[1], R. L. Dahlin[1], F. K. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

11:30AM
Oxygen Tension Controlled Matrices For Enhanced Bone Tissue Engineering
A. R. Amini[1], C. T. Laurencin[1], and S. P. Nukavarapu[1]
[1]University of Connecticut, Farmington, CT

11:45AM
Role of Hypoxia Inducible Factor-1 in Osteogenic Differentiation of Adipose-Derived Stem Cells
S. Sahai[1], A. Williams[1], B. W. Hanna[1], and J. O. Blanchette[1]
[1]University of South Carolina, Columbia, SC

Track: Tissue Engineering
OP - Sat - 1 – 19 - Room A411
Host Response to Tissue Engineered Constructs

Chairs: Benjamin Keselowsky, Laura Suggs

10:30AM
Artificial Lymphatic Drainage Systems for Vascularized Fibrin Scaffolds
K. H. Wong[1], J. G. Truslow[1], A. H. Khankhel[1], K. L. Chan[1], and J. Tien[1]
[1]Boston University, Boston, MA

10:45AM
Therapeutic Scaffolds for Peripheral Artery Disease: Pro-angiogenic and Anti-inflammatory Regulation
A. L. Zachman[1], K. M. Poole[1], A. R. Boone[1], C. L. Duvall[1], M. C. Skala[1], D. G. Harrison[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

11:00AM
Increased Vascularization in Heparan Sulfate Coated Electrospun PCL Scaffolds
C. M. Walthers[1]
[1]University of California, Los Angeles, Los Angeles, CA

11:15AM
Macrophages Promote Stable Microvascularization of Engineered Tissue Constructs
C-W. Hsu[1], R. A. Poché[1], J. E. Saik[2], S. Ali[2], T. J. Vadakkan[1], J. L. West[2], and M. E. Dickinson[1]
[1]Baylor College of Medicine, Houston, TX, [2]Rice University, Houston, TX

11:30AM
Autogenic or Allogeneic Extracellular Matrix Scaffolds and Novel Device Coatings
J. L. Skousen[1], R. S. Oakes[1], F-W. Meng[1], M. B. Christensen[1], J. C. Wolchok[1], and P. A. Tresco[1]
[1]University of Utah, Salt Lake City, UT

11:45AM
Interactions between Inflammatory Cells and Stem Cell Cardiac Constructs
D. O. Freytes[1], C. Fenioux[1], R. Anfang[1], D. Ge[1], J. W. Kang[1], S. Cannizzo[2], L. Santambrogio[2], and G. Vunjak-Novakovic[1]
[1]Columbia University, New York, NY, [2]Albert Einstein College of Medicine, Bronx, NY

Track: Tissue Engineering
OP - Sat - 1 – 20 - Sidney Marcus Auditorium
Nano & Micro Systems in Tissue Engineering

Chairs: Chris Bettinger, Joseph Freeman

10:30AM
Controlling Spatial Distribution of Biological Entities and Materials within Defined Microenvironments
H. Tekin[1,2], J. G. Sanchez[3], C. Landeros[4], K. Dubbin[5], T. Tsinman[4], B. J. Jones[5], R. S. Langer*[3], and A. Khademhosseini*[2,6]
[1]Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, [2]Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [3]Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, [4]Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, [5]Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, [6]Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA

10:45AM
The Development of *In Vitro* Perfused Human Capillaries Under Fluid Forces
M. L. Moya[1], Y-H. Hsu[1], C. C. Hughes[1], A. P. Lee[1], and S. C. George[1]
[1]University of California, Irvine, Irvine, CA

11:00AM
Radially Align, Electrospun Nanofibers as Dural Substitute for Wound Closure and Tissue Regeneration Applications
W. Liu[1], J. Xie[2], M. MacEwan[2], W. Ray[2], D. Siewe[2], and Y. Xia[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Washington University in St. Louis, Saint Louis, MO

11:15AM
Double-Emulsion Based Droplet Microfluidics as Bioreactor for Tissue Engineering Applications
H. Chan[1], Y. Zhang[1], Y-L. Chiu[1], Y. Ho[1], and K. Leong[1]
[1]Duke University, Durham, NC

PLATFORM SESSIONS Sat-1

P = Poster Session
OP = Oral Presentation

11:30AM
3D Microfluidic Vascular Networks Fabricated in a Hydrogel Using Sacrificial Microfibers
L. M. Bellan[1], D. M. Cropek[2], and R. Langer[1]
[1]*MIT, Cambridge, MA,* [2]*ERDC-CERL, Champaign, IL*

11:45AM
Elastomeric Hydrogel Adhesives for Tissue Engineering
C-J. Wu[1], B. Chan[1], J. J. Wilker[1], and G. Schmidt[1]
[1]*Purdue University, West Lafayette, IN*

Track: Translational Biomedical Engineering*
OP - Sat - 1 – 21 - Room A412

Translational Triad: Clinical, Industrial, & Academic Collaboration

Chairs: Colin Drummond, Donald Peterson

10:30AM
The Paradox of Success: Critical Barriers in Translational Research
C. Drummond[1], A. Hdeib[2], J. Jankowski[1], and W. D. Hawthorne[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*University Hospitals, Cleveland, OH*

11:00AM
Northwestern Global Health Foundation: model for medical devices in the developing world
M. Glucksberg[1], K. Palamountain[1], and D. Kelso[1]
[1]*Northwestern University, Evanston, IL*

11:30AM
The BMES Boston Industry Chapter: Bridging the Gap Among Clinicians, Industry and Academia
G. Gruionu[1], M. Luedtke[2], L. Hueser[3], A. Kruise[4], R. Coleman[5], and S. Pittman[3]
[1]*Massachusetts General Hospital and Harvard Medical School, Charlestown, MA,* [2]*Codman & Shurtleff, a Johnson & Johnson company, Raynham, MA,* [3]*Philips Healthcare, Boston, MA,* [4]*Atrium Medical, Hudson, MA,* [5]*landiorio Teska & Coleman, Waltham, MA*

**Track sponsored by* Fish & Richardson

Saturday, October 27, 2012

1:30AM – 3:00N

PLATFORM SESSION – SAT – 2

Track: Biomaterials
OP - Sat - 2 – 1 - Room A311
Therapeutic Biomaterials

Chairs: Jordan Green, Kim A. Woodrow

1:30PM INVITED

Engineering Therapies: from Ocular Disease to Trauma

E. Lavik[1]

[1]Case Western University, Cleveland, OH

2:00PM

Antioxidant and Anti-Inflammatory Polyoxalate Nanoparticles as Novel Therapeutics for Airway Inflammatory Diseases

D. Lee[1], K. Guk[1], I. Lee[1], M. Park[1], B. Kim[1], and G. Khang[1]

[1]Chonbuk National University, Jeonju, Korea, Republic of

2:15PM

Sustained *In Vivo* and *In Vitro* Drug Release from Imprinted Therapeutic Contact Lenses

A. Tieppo[1] and M. E. Byrne[1]

[1]Biomimetic & Biohybrid Materials, Biomedical Devices, & Drug Delivery Laboratories Auburn University, Auburn, AL

2:30PM

A Segmented Reservoir Intravaginal Ring for 90 Day Delivery of Tenofovir and Levonorgestrel

J. T. Clark[1], T. J. Johnson[1], N. B. Shelke[1], J. S. Nebeker[1], M. R. Clark[2], G. F. Doncel[2], D. R. Friend[2], and P. F. Kiser[1]

[1]University of Utah, Salt Lake City, UT, [2]CONRAD, Arlington, VA

2:45PM

Dynamic Biomaterials for Chronic Wound Healing Applications

B. D. Almquist[1], S. Castleberry[1], and P. T. Hammond[1]

[1]Massachusetts Institute of Technology, Cambridge, MA

Track: Biomaterials
OP - Sat - 2 – 2 - Room A312
Novel Biomaterials & Scaffolds II

Chairs: Jaime Giraldo, Rachael Oldinski

1:30PM

Oxygen Generating Biomaterials for Enhancing Cell Survival in Tissue Engineered Constructs

M. M. Coronel[1], E. Pedraza[1], and C. L. Stabler[1]

[1]University of Miami, Miami, FL

1:45PM

Methacrylated kappa-Carrageenan as a Photocrosslinkable Biopolymer for Tissue Engineering Applications

S. M. Mihaila[1,2], A. Gaharwar[3,4], A. P. Marques[1,5], M. E. Gomes[1,5], R. L. Reis[1,5], and A. Khademhosseini[2,3]

[13]B´s Research Group- Biomaterials, Biodegradables and Biomimetics; University of Minho, Guimarães, Portugal, [2]Center for Biomedical Engineering, Department of Medicine, Brigham and Women´s Hospital, Boston, MA, [3]HST Harvard MIT Center for Biomedical Engineering, Department of Medicine, Boston, MA, [4]Wyss Institute for Biologically Inspired Engineering, Boston, MA, [5]ICVS/3B's - PT Government Associate Laboratory, Braga/Guimaraes, Portugal

2:00PM

"Smart" Multifunctional Polymers Built from Bioactive Peptide Repeats

F. Garcia Quiroz[1] and A. Chilkoti[1]

[1]Duke University, Durham, NC

2:15PM

Aptamer Functionalized Hydrogel Coating for Reversible Cell Capture and Release

S. Li[1], N. Chen[1], Z. Zhang[2], and Y. Wang[2]

[1]Program of Biomedical Engineering, University of Connecticut, Storrs, CT, [2]Department of chemical, Materials, & Biomolecular Engineering, University of Connecticut, Storrs, CT

2:30PM

Wound Healing Bilayer Polysaccharide-based Hydrogel Film

S. Mayes[1], J. Scott[1], J. Davis[1], D. Peterson[2], S. Zawko[1], and C. Schmidt[1]

[1]The University of Texas at Austin, Austin, TX, [2]Seton Family of Doctors, Austin, TX

2:45PM

PEG and PEG/PDMS Hydrogels with Novel Network Structures

E. M. Saffer[1], M. A. Lackey[1], J. Cui[1], D. M. Griffin[1], G. N. Tew[1], A. J. Crosby[1], and S. R. Bhatia[1]

[1]University of Massachusetts Amherst, Amherst, MA

Track: Neural Engineering
OP - Sat - 2 – 3 - Room A410
Neuro Trauma Injury & Repair II

Chairs: Michelle La Placa, Barclay Morrison

1:30PM

Neurophysiologic and Histological Studies of Spinal Nerve Root Injury Tolerance to Stretch

C. Chen[1], S. Kallakuri[1], J. Yaldo[1], G. Virk[1], K. Tanimoto[1], and J. Cavanaugh[1]

[1]Wayne State University, Detroit, MI

1:45PM

Pre-Adolescent Juvenile Brain Tissue Strain Thresholds for Traumatic Axonal Injury in a Porcine Animal Model

M. R. Maltese[1,2], S. Sullivan[1], and S. S. Margulies[1]

[1]The University of Pennsylvania, Philadelphia, PA, [2]The Children's Hospital of Philadelphia, Philadelphia

2:00PM

Acute Biophysical Disruptions in Neural Cells Following Head Rotational Acceleration-Deceleration Induced Traumatic Brain Injury in Swine

C. J. Mietus[1], K. Browne[1], L. Struzyna[1], J. Wolf[1], D. H. Smith[1], and D. K. Cullen[1]

[1]University of Pennsylvania, Philadelphia, PA

2:15PM

Differentiating Lumbar Drain Outcome Response Based on Intracranial Pressure Waveform Morphology for Patients with Normal Pressure Hydrocephalus

R. B. Hamilton[1], X. Hu[1], and M. Bergsneider[1]

[1]University of California, Los Angeles, Los Angeles, CA

2:30PM

Characterization of Blood Brain Barrier Disruption at the Cortical Tissue Device Interface

M. Ravikumar[1,2], D. J. Hageman[1,2], S. Sunil[1,2], S. M. Selkirk[1,2], and J. R. Capadona[1,2]

[1]Case Western Reserve University, Cleveland, OH, [2]Veterans Affairs Medical Center, Cleveland, OH

PLATFORM SESSIONS **Sat-2**

P = Poster Session
OP = Oral Presentation

2:45PM
Microstructural and Biomechanical Response of Mouse Sciatic Nerve
M. J. Alexander[1], U. Utzinger[1], J. Barkmeier-Kraemer[2], and J. P. Vande Geest[1]
[1]*University of Arizona, Tucson, AZ,* [2]*University of California-Davis, Davis, CA*

Track: Neural Engineering
OP - Sat - 2 – 4 - Room A314
Neuro Imaging

Chairs: Shella Keilholz

1:30PM
CLARITY: Technology for High-throughput and High-content Whole Tissue Analysis
K. Chung[1], S. Kim[1], K. A. Zalocusky[1], J. H. Mattis[1], V. Gradinaru[1], S. Kalyanasundaram[1], S. M. Pak[1], J. J. Mirzabekov[1], and K. Deisseroth[1]
[1]*Stanford University, Palo Alto, CA*

1:45PM
Automated Microscopy for High-Throughput Interrogation of Neural Activity in Freely-Behaving Nematodes
D. R. Albrecht[1], J. Larsch[1], and C. Bargmann[1]
[1]*The Rockefeller University, New York, NY*

2:00PM
Tools for Targeting GCaMP3 to Cytosol, Membrane and Mitochondria With in Utero Electroporation.
J. M. Gee[1], K. P. Flood[1], S. C. Morris[1], R. M. Smeal[1], M. N. Economo[1], M. R. Capecchi[1], P. Tvrdik[1], K. S. Wilcox[1], and J. A. White[1]
[1]*University of Utah, Salt Lake City, UT*

2:15PM
Boosting Steady State Visual Evoked Potentials (SSVEP) Using Phase Shifted Stimulus Segments
M. I. Vanegas[1], A. Blangero[1], and S. P. Kelly[1]
[1]*The City College of New York, New York, NY*

2:30PM
Comparing the Hemodynamic Activity Evoked by Cold Pressor Tests and Hot Plates; a fNIRS Study Measured on Forehead
R. Vyas[1], K. Pourrezaei[1], Z. Barati[1] and D. Omire-Mayor[1]
[1]*Drexel University, Philadelphia, PA*

2:45PM
Severity of a Contusion Injury Assessed in Distal Portions of the Spinal Cord
M. Jirjis[1], S. Kurpad[2], and B. Schmit[1]
[1]*Marquette University, Milwaukee, WI,* [2]*Medical College of Wisconsin, Milwaukee, WI*

Track: Biomedical Imaging and Optics
OP - Sat - 2 – 5 - Room A315
Contrast Agents & Probes - Ultrasound

Chairs: John Hossack, Younan Xia

1:30PM INVITED
The Unique Voyage of Nanoparticles in Tumor Microcirculation
R. Toy[1], P. Vicente[1], E. Tran[1], D. Lin[1], J. Einstein[1], E. Hayden[1], A. Camann[1], Z. Berman[1], P. Wuttisarnwattana[1], J. Meyers[1], H. Wu[1], A. Exner[1], J. Basilion[1], D. Wilson[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

2:00PM
A Facile and General Method for the Encapsulation of Different Types of Imaging Contrast Agents Within Micrometer-Sized Polymer Beads
C. H. Moran[1,2], M-Y. Bai[3], and Y. Xia[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory, Atlanta, GA,* [3]*National Taiwan University of Science and Technology, Taipei, Taiwan*

2:15PM
An Improved Ultrasound Contrast Agent using Microbubble-loaded Red Blood Cells
A. H. Dhanaliwala[1], A. L. Klibanov[1], and J. A. Hossack[1]
[1]*University of Virginia, Charlottesville, VA*

2:30PM
Phase-Change Perfluorocarbon Droplets for Ultrasound Imaging and Therapy: Methods of Customizing Sensitivity and Stability
P. S. Sheeran[1], S. Luois[2], L. Mullin[1], T. O. Matsunaga[2], and P. A. Dayton[1]
[1]*University of North Carolina and North Carolina State University, Chapel Hill, NC,* [2]*University of Arizona, Tucson, AZ*

2:45PM
Preclinical Imaging Solution for Assessing Molecular Delivery via Ultrasound Therapy
A. Sorace[1], R. Saini[1], J. Warram[1], E. Rosenthal[1], K. Zinn[1], and K. Hoyt[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

Track: Nano and Micro Technologies
OP - Sat - 2 – 6 - Room A316
Drug Delivery Technologies I

Chairs: Craig L. Duvall, Hossein Tavana

1:30PM INVITED
Local and Targeted siRNA Delivery Technologies
C. L. Duvall[1], C. E. Nelson[1], H. Li[1], S. S. Yu[1], J. M. Davidson[1,2], S. A. Guelcher[1], and T. D. Giorgio[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*VA Hospital, Nashville, TN*

1:45PM
Drug Delivering Cellular Microarrays for Investigation of Signaling Pathway Regulators
M. Carstens[1], E. Huang[1], and B. Keselowsky[1]
[1]*University of Florida, Gainesville, FL*

2:00PM
Spatially-defined Systemic Gene Delivery to Tumors Via a Magneto-Acoustically Actuated Microplatform
B. Chertok[1], R. Langer[1], and D. G. Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:15PM
Cytosolic Delivery of Macromolecules by Rapid Mechanical Deformation
A. Sharei[1], J. Zoldan[1], A. Adamo[1], W. Sim[1], N. Cho[1], E. Jackson[1], S. Mao[1], S. Schneider[1], A. Lytton-Jean[1], J. Lee[1], D. Anderson[1], R. Langer[1], and K. Jensen[1]
[1]*MIT, Cambridge, MA*

2:30PM
Lentiviral Vectors Nano-engineered with 'Marker of Self' CD47 to Avoid Immune Surveillance
N. Sosale[1], I. Ivanovska[1], R. Tsai[1], P. Rodriguez[1], Y. Goldman[2], P. Zoltick[3], and D. Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Pennslyvania, Philadelphia, PA,* [3]*Harvard University, Boston, MA*

2:45PM
Biodegradable, Immunoprotective, Dual Nanoporous Devices for Cell-based Therapies
H. He[1], X. Zhang[1], B. Yu[1], and L. J. Lee[1]
[1]*The Ohio State University, Columbus, OH*

Track: Cellular and Molecular Bioengineering
OP - Sat - 2 – 7 - Room A301
Translational Cellular & Molecular Bioengineering

Chairs: Hao Cheng, Bala Rao

1:30PM
Correction of Multiple Dystrophin Mutations Using Designer Enzymes
D. G. Ousterout[1], P. Perez-Pinera[1], M. T. Brown[1], and C. A. Gersbach[1]
[1]Duke University, Durham, NC

1:45PM
Independently-Controlled Surface Topography and FSS Enhance Kidney Tissue Structure Formation *In Vitro*
E. Frohlich[1,2], X. Zhang[2], and J. Charest[1]
[1]Charles Stark Draper Laboratory, Cambridge, MA, [2]Boston University, Boston, MA

2:00PM
Conformational and Mechanical Characterization of Tumor-Associated Extracellular Matrices *In Vitro*
K. Wang[1,2], R. C. Andresen[1], S. Hu[1], B. Seo[2], C. Fischbach[2], and D. Gourdon[1,2]
[1]Dept of Materials Science & Engineering, Cornell University, Ithaca, NY, [2]Dept of Biomedical Engineering, Cornell University, Ithaca, NY

2:15PM
Engineering Stem Cell Membranes to Target Inflamed Tissues
H. Cheng[1,2], M. Byrska-Bishop[1], C. J. Kastrup[1], N. S. Hwang[1], R. Langer[1], and D. Anderson[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Drexel University, Philadelphia, PA

2:30PM
Cell Stiffness is a Biomarker of the Metastatic Potential of Ovarian Cancer Cells
W. Xu[1], R. Mezencev[1], B. Kim[1], L. Wang[1], J. McDonald[1], and T. Sulchek[2]
[1]Georgia Tech, Atlanta, [2]Georgia Tech, Atlanta, GA

2:45PM
Expression of Load-Inducible Genes under Ultrasound Stimulation: A Frequency Dependent Hypotheses
G. Budhiraja[1], T. Louw[1], H. Viljoen[1], and A. Subramanian[1]
[1]University of Nebraska, Lincoln, NE

Track: Cellular and Molecular Bioengineering
OP - Sat - 2 – 8 - Room A302
Cell Motility III

Chairs: Amrinder Nain, Soichiro Yamada

1:30PM
Controlling Embryonic Cell Sheet Migration Using Microfluidics
M. Hazar[1], Y. Kim[2], J. Song[1], L. A. Davidson[3], W. C. Messner[1], and P. R. LeDuc[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]University of Pittsburgh, Pittsburgh, PA

1:45PM
Structural Reorganization of Active Actin Networks via Competition between Force Generation and Dissipation
T. Kim[1], E. Munro[1], and M. L. Gardel[1]
[1]University of Chicago, Chicago, IL

2:00PM
Introduction of Integrated Cell migration Model: Comparisons with Cell Migration Experiments
M-C. Kim[1], R. Kamm[1,2], and H. Asada[1,2]
[1]Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, [2]Massachusetts Institute of Technology, Cambridge, MA

2:15PM
Chlamydomonas Axonemal Dynein Prefers Chlamydomonas tubulin to Porcine Tubulin
J. D. Alper[1], M. Tovar[1], and J. Howard[1]
[1]Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany

2:30PM
Modeling of Adhesion, Protrusion, and Contraction Coordination for Cell Migration Simulations
Y. Sakamoto[1], S. Prudhomme[1], and M. H. Zaman[2]
[1]The University of Texas at Austin, Austin, TX, [2]Boston University, Boston, MA

2:45PM
Mapping Protein Structure Changes with Cysteine Labeling Kinetics by Mass Spectrometry
B. Chase[1], J. D. Pajerowski[2], J. Swift[1], H-Y. Tang[3], D. Speicher[3], and D. Discher[1]
[1]University of Pennsylvania, Philadephia, PA, [2]Merck, Whitehouse Station, NJ, [3]Wistar Institute, Philadephia, PA

Track: Stem Cell Engineering
OP - Sat - 2 – 9 - Room A305
Engineering Stem Cell Differentiation

Chairs: Melissa Kinney, Mark Ungrin

1:30PM
Flexible Hydrogels and Small Molecules in Combinatorial Control of Hematopoiesis
J-W. Shin[1], A. Buxboim[1], J. Swift[1], K. R. Spinler[1], and D. E. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

1:45PM
Scaffold Immobilized Jagged1 Enhances Cardiac Progenitor Cell Differentiation
A. V. Boopathy[1,2], Y. Narui[2], K. Salaita[2], and M. E. Davis[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

2:00PM
Mesenchymal Stem Cells Enhance Endothelial-like Behavior of a Partially Differentiated Population of Embryonic Stem Cells
L. M. McGinley[1] and R. M. Nerem[1]
[1]Georgia Institute of Technology, Atlanta, GA

2:15PM
Electrical Stimulation to Enhance Neurite Outgrowth and Differentiation in Neural Stem Cells
L. J. Kobelt[1], A. E. Wilkinson[1], and N. D. Leipzig[1]
[1]The University of Akron, Akron, OH

2:30PM
Incorporation of Chondroitin Sulfate-Based Microparticles in MSC Spheroids Promotes Expression of Chondrogenic Markers
M. C. Goude[1], P. R. Baraniak[1], J. J. Lim[1], J. A. Zimmerman[1], T. C. McDevitt[1], and J. S. Temenoff[1]
[1]Georgia Institute of Technology, Atlanta, GA

P = Poster Session
OP = Oral Presentation

2:45PM
Stimulation of Chondrogenic Differentiation of Adult Human Bone Marrow-Derived Mesenchymal Stromal Cells (BMSC) and Articular Cartilage Cells (ACC) Using a Static Magnetic Field (SMF) *In Vitro*
H. D. Amin[1], M. A. Brady[1], J. Tian[1], S. McCullen[1], M. M. Stevens[1], D. R. Overby[1], and C. R. Ethier[1]
[1]*Imperial College London, London, United Kingdom*

Track: Nano and Micro Technologies
OP - Sat - 2 – 10 - Room A401
Nanotherapeutics II

Chairs: Katherine Ferrera, Andrew Tsourkas

1:30PM INVITED
A Dendrimeric Form of the LyP-1 peptide Enhances PET Imaging of Atherosclerosis
J. Seo[1], H. Baek[1], L. M. Mahakian[1], J. Hamzah[2], E. Ruoslahti[2], and K. W. Ferrara[1]
[1]*University of California Davis, Davis, CA,* [2]*University of California Santa Barbara, Santa Barbara, CA*

2:00PM
Radio-frequency Triggered Release of Chemotherapy From a Multicomponent Nanochain
P. M. Peiris[1], L. Bauer[1], R. Toy[1], E. Tran[1], J. Pansky[1], E. Doolittle[1], E. Schmidt[1], E. Hayden[1], A. Mayer[1], R. A. Keri[1], M. A. Griswold[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

2:15PM
siRNA-Gold Nanoparticle Conjugates for Treatment of Malignant Glioma
E. S. Day[1], J. P. Luciano[2], C. H. Ko-Dauk[1], S. A. Jensen[2], A. H. Stegh[2], and C. A. Mirkin[1]
[1]*Northwestern University, Evanston, IL,* [2]*Northwestern University, Chicago, IL*

2:30PM
Nanoparticulate Antigen Carriers for the Treatment of Autoimmune Diseases and Allergies
W. Yap[1], D. P. McCarthy[1], C. B. Smarr[1], C. T. Harp[1], Z. Hunter[1], S. D. Miller[1], and L. D. Shea[1]
[1]*Northwestern University, Chicago, IL*

2:45PM
Biodegradable Brain-Tissue Penetrating Nanoparticles
E. Nance[1], T-Y. Shih[1], C. Zhang[1], Q. Xu[1], G. Woodworth[1], and J. Hanes[1]
[1]*Johns Hopkins University, Baltimore, MD*

Track: Cancer Technology*
OP - Sat - 2 – 11 - Room A402
Bioengineering & Physical Sciences of Cancer II

Chairs: Manu Platt, Cynthia Reinhart-King

1:30PM
A High-Throughput Universal System for Circulating Tumor Cell (CTC) Isolation with Single Cell Resolution
A. M. Shah[1,2], E. Ozkumur[1], J. Ciciliano[1], T. Barber[1], M. Yu[1], R. Kapur[1], S. Maheswaran[1], D. Haber[1], and M. Toner[1]
[1]*MGH, Charelstown, MA,* [2]*MIT, Cambridge, MA*

1:45PM
Label-Free Biomechanical Single Cell Microfluidic Analysis Of Cancer Stem Cells Derived From Patient Brain Tumors
M. Masterman-Smith[1], H. Tse[1], D. Gossett[1], and D. Di Carlo[1]
[1]*UCLA, Los Angeles, CA*

2:00PM
Structural Adaptation of Tumor Vasculature Induced by Micro-Laser Ablation
G. Gruionu[1], L. G. Gruionu[2], and L. L. Munn[1]
[1]*Massachusetts General Hospital and Harvard Medical School, Charlestown, MA,* [2]*University of Craiova, Craiova, Romania*

2:15PM
The Impact of Fucosylation In Bone Metastasis of Prostate Cancer
J. Li[1], A. Guillebon[1], and M. R. King[1]
[1]*Cornell University, Ithaca, NY*

2:30PM
Tissue Engineered Tumor-Microenvironments to Assess Stromal Regulation of Anti-Tumor Immunity
A. W. Lund[1], V. E. Kennedy[1], L. Nguyen[1], I. Oikonomidi[1], and M. A. Swartz[1]
[1]*Swiss Federal Institute of Technology, Lausanne, Switzerland*

2:45PM
Interstitial Flow Stimulates Invasion of ErbB2-overexpressing Breast Cancer Cells via PI3K Activation
A. M. Tchafa[1], M. J. Reginato[2], and A. C. Shieh[1]
[1]*Drexel University, Philadelphia, PA,* [2]*Drexel University College of Medicine, Philadelphia, PA*

**Track sponsored by* BARD

Track: Orthopedic and Rehabilitation Engineering
OP - Sat - 2 – 12 - Room A403
Rehabilitation Engineering - Blast Effects & Acoustics

Chairs: Namas Chandra, Cameron Bass

1:30PM
Modeling of High Intensity Sound Transmission in Human Ear with Blast Effect
T. Hawa[1] and R. Gan[1]
[1]*The University of Oklahoma, Norman, OK*

1:45PM
Auditory Injury Induced by Blast Exposure – Changes of Middle Ear Structure and Transfer Function
R. Gan[1], D. Nakmali[1], X. Guan[1], and Y. Chen[1]
[1]*University of Oklahoma, Norman, OK*

2:00PM
Mouse Lethality Risk and Intracranial Pressure During Exposure to Blast
A. W. Yu[1], H. Wang[2], K. Matthews[1], K. A. Rafaels[3], D. T. Laskowitz[2], D. Gullotti[4], D. F. Meaney[4], B. Morrison III[5], and C. R. Bass[1]
[1]*Duke University, Durham, NC,* [2]*Duke University Medical Center, Durham, NC,* [3]*University of Virginia, Charlottesville, VA,* [4]*University of Pennsylvania, Philadelphia, PA,* [5]*Columbia University, New York, NY*

2:15PM
Interspecies Scaling of Blast-Induced Apnea
G. Wood[1], K. Rafaels[2], A. Yu[1], J. Shridharani[1], M. Panzer[1], D. Meaney[3], B. Morrison[4], D. Laskowitz[6], H. Wang[5], and C. Bass[1]
[1]*Duke University, Durham, NC,* [2]*United States Army Research Laboratory, Adelphi, MD,* [3]*University of Pennsylvania, Philadelphia, PA,* [4]*Columbia University, New York, NY,* [5]*Duke University Medical Center, Durham, NC*

2:30PM
Finite Element Analysis of Lower Extremity at Blast Conditions
R. Bertucci[1], Y. Mao[1], R. Gilbrech[1], R. Prabhu[1], J. Sheng[2], M. F. Horstemeyer[1], J. Liao[1], and L. Williams[1]
[1]Mississippi State University, Starkville, MS, [2]U.S. Army Tank Automotive Research, Development and Engineering Center, Warren, MI

2:45PM
Enhancement of Speech Intelligibility by Changing the Direction of Background Noise
J. Sohn[1], J. Choi[1], D. Kim[1], K. Lee[2], and J. Lee[2]
[1]Samsung Advanced Institute of Technology, Yongin-si, Korea, Republic of, [2]Hallym University of Graduate Studies, Seoul, Korea, Republic of

Track: Cardiovascular and Respiratory Engineering*
OP - Sat - 2 – 13 - Room A404
Biomechanics of Percutaneous Interventions

Chairs: Matt Gounis, Masaru P. Rao

1:30PM
Vascular Wall Compliance Assessed with Optical Coherence Tomography
C. Robertson[1,2], A. E. Heidari[3], Z. Chen[1,2], and S. C. George[1,2]
[1]Biomedical Engineering, University of California Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, University of California Irvine, Irvine, CA, [3]OCT Medical Inc, Irvine, CA

1:45PM
Simulating Local Nanoparticulate Drug Delivery in Patient-specific Coronary Arteries to treat Vulnerable Plaques: Active vs. Passive Targeting
S. S. Hossain[1], S. Hossainy[2], and T. Hughes[1]
[1]The University of Texas at Austin, Austin, TX, [2]Abbott Vascular Inc., Santa Clara, CA

2:00PM
Feasibility of Cryo-Anchoring for Increased Catheter Stability in Percutaneous RF Ablation Treatment
S. M. Boronyak[1] and W. D. Merryman[1]
[1]Vanderbilt University, Nashville, TN

2:15PM
Vascular Response to Treatment with a Paclitaxel Coated Balloon in a preclinical Femoral Artery Model
S. K. Yazdani[1], F. D. Kolodgie[1], and R. Virmani[1]
[1]CVPath Institute, Gaithersburg, MD

2:30PM
Impact of Stent Mis-positioning and Mis-sizing on Coronary Endothelial Shear and Intramural Stress
H. Y. Chen[1], B-K. Koo[2], D. L. Bhatt[3], and G. S. Kassab[1]
[1]Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN, [2]Seoul National University Hospital, Seoul, Korea, Republic of, [3]Harvard Medical School, Boston, MA

2:45PM
Optimal Drug-Eluting Stents Require Markedly Different Release Strategies for Paclitaxel and Sirolimus
F. Bozsak[1], D. Gonzalez-Rodriguez[1], P. Belitz[2], T. Bewley[2], P. Schmid[1], J-M. Chomaz[1], and A. I. Barakat[1,3]
[1]Ecole Polytechnique - LadHyX, Palaiseau, France, [2]University of California at San Diego, San Diego, CA, [3]University of California at Davis, Davis, CA

*Track sponsored by St. Jude Medical More control. Less risk.

Track: Cardiovascular and Respiratory Engineering*
OP - Sat - 2 – 14 - Room A405
Arterial Solid Mechanics

Chairs: Jane-Grande Allen, Amnina Qutub

1:30PM
Fiber Architecture in the Longitudinal-Radial Plane of Human Ascending Thoracic Aortic Media
A. Tsamis[1], J. A. Phillippi[1], S. Pasta[1,2], A. D'Amore[1,2], S. C. Watkins[1], W. Wagner[1], T. G. Gleason[1], and D. A. Vorp[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Fondazione RiMED, Palermo, Italy

1:45PM
Numerical Study of Delamination through Human Aortic Media Using Cohesive Elements and Two Different Material Laws: Linear Elastic and Hyperelastic
B. Merei[1], S. Avril[1], P. Badel[1], M. A. Sutton[2], and S. M. Lessner[2]
[1]Ecole Nationale Supérieure des Mines, St.-Etienne, France, [2]University of South Carolina, Columbia, SC

2:00PM
Infrared Spectroscopy to Map Extracellular Components in Abdominal Aortic Aneurysm Wall
R. Cheheltani[1], R. Jayashree[2], D. A. Vorp[2], M. F. Kiani[1], and N. Pleshko[1]
[1]Temple University, Philadelphia, PA, [2]University of Pittsburgh, Pittsburgh, PA

2:15PM
On the Fluid-Structure Coupling in FSI Modeling of Patient Specific Abdominal Aortic Aneurysms
S. Chandra[1], S. Raut[2], A. Jana[3], S. Muluk[4], and E. A. Finol[5]
[1]University of Notre Dame, Notre Dame, IN, [2]Carnegie Mellon University, Pittsburgh, PA, [3]Pittsburgh Supercomputing Center, Pittsburgh, PA, [4]Western Pennsylvania Allegheny Health Systems, Pittsburgh, PA, [5]The University of Texas at San Antonio, San Antonio, TX

2:30PM
A Forward Incremental Approach for Determining the Unloaded Configuration of the Growing Pulmonary Artery
J. Qi[1], B. Fata[2], and M. Sacks[3]
[1]University of Colorado, Denver, CO, [2]University of Pittsburgh, Pittsburgh, PA, [3]University of Texas, Austin, TX

2:45PM
Arterial Wall Stiffness Variations Along the Canine Aorta using Pulse Wave Imaging with Validation *in vitro*
D. Shahmirzadi[1], R. X. Li[1], W. W. Qaqish[1], and E. E. Konofagou[1]
[1]Columbia University, New York, NY

*Track sponsored by St. Jude Medical More control. Less risk.

P = Poster Session
OP = Oral Presentation

Track: Cardiovascular and Respiratory Engineering
OP - Sat - 2 – 15 - Room A406
Lung Pathology & Therapeutics

Chairs: Konstantin Birukov, Susan Margulies

1:30PM
Modeling the Interaction of Passive Stiffness and Active Force Generation in Airway Smooth Muscle Cells
H. Parameswaran[1], B. C. Harvey[1], B. Suki[1], and K. R. Lutchen[1]
[1]Boston University, Boston, MA

1:45PM
The Biostructural and Biomechanical Effects of Ets-2 Phosphorylation in Pulmonary Fibrosis
M. Weber[1], S. N. Fischer[2,3], C. P. Baran[3], J. J. Lannutti[4], H. M. Powell[1,4], S. N. Ghadiali[1,3], and C. B. Marsh[3]
[1]Department of Biomedical Engineering, The Ohio State University, Columbus, OH, [2]Integrated Biomedical Science Graduate Program, The Ohio State University, Columbus, OH, [3]Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH, [4]Department of Materials Science and Engineering, The Ohio State University, Columbus, OH

2:00PM
A New Numerical Model for Surfactant Transport with a Particle Method
H. Fujioka[1] and D. P. Gaver III[1]
[1]Tulane University, New Orleans, LA

2:15PM
Model of Surfactant Delivery Into an Asymmetric Airway Tree
M. Filoche[1,2], M. Florens[3], C-F. Tai[2], and J. B. Grotberg[2]
[1]Ecole Polytechnique, Palaiseau, France, [2]University of Michigan, Ann Arbor, MI, [3]ENS Cachan, Cachan, France

2:30PM
Bioactive Hollow Fiber Membranes Coated with Chitosan and Carbonic Anhydrase for Artificial Lung Applications
J. Kimmel[1,2], D. Arazawa[1,2], and W. Federspiel[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

2:45PM
Lung Development on a Chip: Lumenal Fluid Flows Regulate Airway Architecture
J. P. Gleghorn[1], V. D. Varner[1], H. A. Stone[1], and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ

Track: Biomedical Imaging and Optics
OP - Sat - 2 – 16 - Room A304
Optical Imaging II

Chairs: Irene Georgakoudi, Marissa Nichole Rylander

1:30PM
Validation of a Non-Destructive, Label-Free Optical Technique to Assess Stem Cell Differentiation
K. P. Quinn[1], R. S. Hayden[1], G. V. Sridharan[1], K. Lee[1], D. L. Kaplan[1], and I. Georgakoudi[1]
[1]Tufts University, Medford, MA

1:45PM
Dynamic, Nondestructive Imaging of Bioengineered Vascular Grafts
B. M. Whited[1], M. Hofmann[1], Y. Xu[1], G. Wang[1], S. Soker[2], and M. N. Rylander[1]
[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC

2:00PM
Non-Invasive Multiscale Photoacoustic Microscopy of Living Cells in Three-Dimensional Scaffolds for Tissue Engineering and Regenerative Medicine Applications
Y. Zhang[1,2], X. Cai[2], Y. Wang[2], C. Zhang[2], L. Li[2], S-W. Choi[2], C. Kim[2], L. V. Wang[2], and Y. Xia[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Washington University in St. Louis, St. Louis, MO

2:15PM
An Integrated Imaging-Bioreactor System for Blood Vessel Engineering
M. C. Hofmann[1], B. Whited[2], P. Lu[1], T. Criswell[3], S. Soker[3], M. N. Rylander[2], and Y. Xu[1]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech - Wake Forest University, Blacksburg, VA, [3]Wake Forest Institute for Regenerative Medicine (WFIRM), Winston-Salem, NC

2:30PM
Orientation and Strain of Skin Collagen Fibrils under Load are Dependent on Hair Follicle Proximity
R. Nesbitt[1], J. Macione[1], S. Wentzell[1], and S. P. Kotha[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

2:45PM
Optical Angiography and OCT Reveal Novel Microfluidic-Scale Embryonic Cardiovascular Physiology
B. K. Huang[1], T. Tong[1], S. Jonas[1,2], and M. A. Choma[1]
[1]Yale University, New Haven, CT, [2]RWTH Aachen University, Aachen, Germany

Track: Bioinformatics and Systems Biology
OP - Sat - 2 – 17 - Room A408
Biological Systems & Control Dynamics

Chairs: Brian Munsky, Ilya Nemenman

1:30PM
Coordination of Rapid Sphingolipid Responses to Heat Stress in Yeast
P-W. Chen[1], F. L. Luis[1], and E. O. Voit[1]
[1]Georgia Tech, Atlanta, GA

1:45PM
Transcription Factor Dynamics Control Germ Layer Commitment of Single Mouse ES Cells
A. M. Doyle[1], L-N. Zou[1], and S. Ramanathan[1]
[1]Harvard University, Cambridge, MA

2:00PM
Bayesian Approach to Classifying Biomolecular and Cellular Dynamics
M. Bathe[1], N. Monnier[1,2], S-M. Guo[1], S. Xie[1], J. Bigness[1], and A. Martin[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Harvard, Cambridge, MA

2:15PM
A Systems-Level Analysis of HIV Nef-induced Proinflammatory Responses in Primary Human Macrophages
Q. Xue[1], Y. Lu[1], J. Gluck[2], D. Willbold[2], R. Fan[1], and K. Miller-Jensen[1]
[1]Yale University, New Haven, CT, [2]Institute of Structural Biology and Biophysics, Research Centre Jülich, Jülich, Germany

2:30PM
Mathematical Modeling of a Gene Circuit Governing Progression of Population Growth Phases in *E. coli*
J. G. Lomnitz[1], A. Martinez-Antonio[2], and M. A. Savageau[1]
[1]University of California, Davis, CA, [2]Cinvestav, Irapuato, Mexico

2:45PM
Analysis of the Swimming Motion of Tritrichomonas foetus: Key Insight for Bioinspiration
S. O. Nwandu-Vincent[1], S. C. Lenaghan[1], J. Chen[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

Track: Tissue Engineering
OP - Sat - 2 – 18 - Room A407
Musculoskeletal & Orthopedic Tissue Engineering II

Chairs: Gilda Barabino, Saadiq El-Amin

1:30PM
Local Sustained Delivery of FTY720 Accelerates Bone Growth and Enhances Bone Graft Integration
C. S. Huang[1], E. L. Nyberg[2], R. C. Ogle[3], and E. A. Botchwey[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Virginia, Charlottesville, VA, [3]LifeNet Health Institute of Regenerative Medicine, Norfolk, VA

1:45PM
Poly(caprolactone) Shape Memory Scaffold for Bone Tissue Engineering
R. M. Baker[1], J. H. Henderson[1], and P. T. Mather[1]
[1]Syracuse University, Syracuse, NY

2:00PM
Directed Assembly of Biomaterials for Bone Tissue Regeneration
N. J. Shah[1] and P. T. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

2:15PM
Development of Novel Silk-Calcium Phosphate Ceramic Composites for Healing Critical-Size Bone Defects
S. L. McNamara[1] and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

2:30PM
Stimulation Effects on a Novel Engineered Tendon Construct
B. Engebretson[1] and V. I. Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

2:45PM
Engineered Skeletal Muscle Tissues Replicating Structure and Function of Native Muscle
M. Juhas[1] and N. Bursac[1]
[1]Duke University, Durham, NC

Track: Tissue Engineering
OP - Sat - 2 – 19 - Room A411
Printing & Patterning in Tissue Engineering I

Chairs: Debra Auguste, Newell Washburn

1:30PM
Complex 3D Cell-Laden Hydrogels via Dynamic Stereolithography for Co-Culture Applications
P. Chung[1], P. Soman[1], and S. Chen[1]
[1]University of California, San Diego, La Jolla, CA

1:45PM
Multiscale Vascularization of Engineered 3D Tissues: From Patterned Channels to Capillaries
J. S. Miller[1], K. R. Stevens[2], M. T. Yang[1], B. M. Baker[1], D-H. T. Nguyen[1], D. M. Cohen[1], E. Toro[1], A. A. Chen[2], P. A. Galie[1], X. Yu[1], R. Chaturvedi[1], S. N. Bhatia[2], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Massachusetts Institute of Technology, Cambridge, MA

2:00PM
Micropatterning of Proteins in Hydrogels Via Two Photon Laser Scanning Photolithography for Guided Vessel Growth
S. Ali[1,2] and J. West[1,2]
[1]Rice University, Houston, TX, [2]Duke University, Durham, NC

2:15PM
Patterning Branched Tissues: Molecular Insights From Engineered Tissue Models
W. Zhu[1] and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ

2:30PM
A 'Microvascular Stamp' for Guiding New Blood Vessel Growth in Physiologically-Relevant Patterns
V. Chan[1], J. Jeong[1], C. Cvetkovic[1], H. Kong[1], and R. Bashir[1]
[1]University of Illinois, Urbana-Champaign, Urbana, IL

2:45PM
Using Bio-Printing Technology to Generate Dynamically-Perfused Functional Vascular Channels within 3D Tissue Structure
V. K. Lee[1], S-S. Yoo[2], and G. Dai[1]
[1]Rensselear Polytechnic Institute, Troy, NY, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

Track: Translational Biomedical Engineering*
OP - Sat - 2 – 20 - Room A412
Clinical & Translational Research & Science in BME II

Chairs: Donald Peterson, Kristina Rinker

1:30PM
Relationship Between Clinical Deformability Metrics and the Ability of Red Blood Cells to Perfuse an Artificial Microvascular Network
J. M. Sosa[1], S. M. Vignes[1], T. G. Chen[1], N. D. Nielsen[2], and S. S. Shevkoplyas[1]
[1]Tulane University, New Orleans, LA, [2]Tulane University School of Medicine, New Orleans, LA

1:45PM
Separation of Plasma from Whole Blood in Paper-Fluidic Format
X. Yang[1], O. Forouzan[1], T. Brown[1], and S. Shevkoplyas[1]
[1]Tulane University, New Orleans, LA

2:00PM
Simultaneous Amplification of Multiple DNA Targets with Optimized Annealing Temperatures
N. Pak[1], C. R. Phaneuf[1], D. C. Saunders[1], and C. R. Forest[1]
[1]Georgia Institute of Technology, Atlanta, GA

2:15PM
Effect of Geometry on Wall Stresses in a Computational Model of the Heineke-Mikulicz Strictureplasty
A. Tsamis[1], L. Pocivavsek[1], and D. A. Vorp[1]
[1]University of Pittsburgh, Pittsburgh, PA

2:30PM
Ultrasound-enhanced Delivery of Antibiotics and Anti-inflammatory Drugs into the Eye
M. Nabili[1], H. Patel[1], S. Mahesh[1], J. Liu[1], C. Geist[1], and V. Zderic[1]
[1]The George Washington University, Washington, DC

2:45PM
Automated Mobile Phone Telemicroscopy for Sickle Cell Disease Screening
R. G. Mannino[1], D. R. Myers[1,2], E. T. Hardy[1,2], S. Jain[2], M. Franco[2], C. Reber[3], D. Archer[2], D. A. Fletcher[3], and W. A. Lam[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]University of California at Berkeley, Berkeley, CA

**Track sponsored by* Fish & Richardson

PLATFORM SESSIONS Sat-2

P = Poster Session
OP = Oral Presentation

Saturday, October 27, 2012

3:15AM – 4:45PM

PLATFORM SESSION – SAT – 3

Track: Biomaterials
OP - Sat - 3 -1 - Room A311
Biomaterial Topics in Drug Delivery

Chairs: Princess U II Imoukhuede, Sarah Mayes

3:15PM

Histone Polyplexes Utilize Caveolar Uptake and Traffic Through the Golgi and ER During Gene Transfer

M. J. Reilly[1], J. D. Larsen[2], and M. O. Sullivan[1]

[1]University of Delaware, Newark, DE, [2]ABS Global, DeForest, WI

3:30PM

Microfluidic Manufacturing of Nanocomplexes Improves Nonviral Gene Delivery

C. L. Grigsby[1], Y. P. Ho[1], A. F. Adler[1], and K. W. Leong[1]

[1]Duke University, Durham, NC

3:45PM

Intelligent Nanoscale Hydrogels for the Oral Delivery of Chemotherapeutics

A. S. Puranik[1] and N. A. Peppas[1]

[1]The University of Texas at Austin, Austin, TX

4:00PM

Evidence of Oral Translocation of Dendritic Polymers in Mice

G. Thiagarajan[1], A. Ray[1], S. Sadekar[1], K. Griesh[1,2], and H. Ghandehari[1]

[1]University of Utah, Salt Lake City, UT, [2]University of Otago, Dunedin, New Zealand

4:15PM

Development of a miR-loaded bifunctional PAMAM-derived vehicle to induce angiogenesis

W. Gray[1,2], M. E. Davis[1], and Y. Luo[1,2]

[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Peking University, Beijing, China, People's Republic of

4:30PM

TNF Specific DNAzyme Functionalized Gold Particles as Anti-Inflammatory Therapeutic for Cardiac Preservation Following Myocardial Infarciton

K. Yehl[1], I. Somasuntharam[1,2], M. Davis[1,2], and K. Salaita[1]

[1]Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

Track: Biomaterials
OP - Sat - 3 – 2 - Room A312
Novel Biomaterials & Scaffolds III

Chairs: Felipe Garcia-Quiroz, Jessica Weaver

3:15PM

An Integrated Bi-Layered Scaffold for Osteochondral Tissue Engineering: Fabrication and *In Vitro* Study

A. Galperin[1], R. A. Oldinski[1], S. J. Florczyk[1], J. D. Bryers[1], M. Zhang[1], and B. D. Ratner[1]

[1]University of Washington, Seattle, WA

3:30PM

In Situ Reendothelialization via Multifunctional Nano-scaffolds

L-C. Su[1], H. Xu[2], Y-T. Tsai[1], R. T. Tran[1], L. Tang[1], J. Yang[1], and K. T. Nguyen[1]

[1]UT Arlington, Arlington, TX, [2]UT Southwestern Medical Center, Dallas, TX

3:45PM

Calorimetric Measurement of Process-induced Damages in Biological Scaffolds and the Effect of Processing Methods on the Resistance to Enzyme Degradation

W. Q. Sun[1]

[1]LifeCell Corporation, Branchburg, NJ

4:00PM

Designer Collagen Hydrogels to Regulate Satellite Cell Phenotype

V. Rodriguez-Rivera[1], R. L. Goodwin[2], M. Morales[2], N. Mohsen[1], L. Terracio[3], J. W. Weidner[1], and M. J. Yost[4]

[1]University of South Carolina, Columbia, SC, [2]University of South Carolina-School of Medicine, Columbia, SC, [3]New York University, New York, NY, [4]Medical University of South Carolina, Charleston, SC

4:15PM

Osteogenic Potential of 3-Dimensional Porous Titanium Scaffolds on Osteoblast Maturation

X. Wang[1,2], R. Gittensi[2], Z. Schwartz[2], H. Chen[1], and B. D. Boyan[2]

[1]Peking University, Beijing, China, People's Republic of, [2]Georgia Institution of Technology, Atlanta, GA

4:30PM

Characterization of Calcium Polyphosphate Scaffolds with Embedded Micro-Channels for Osteochondral Tissue Replacement or Augmentation

M. Vlasea[1], Y. Shanjani[1], E. Toyserkani[1], and R. Kandel[2]

[1]University of Waterloo, Waterloo, ON, Canada, [2]Mount Sinai Hospital, Toronto, ON, Canada

Track: Tissue Engineering
OP - Sat - 3 – 3 - Room A410
Skin & Adipose Tissue Engineering

Chairs: Karen Burg, Lakshmi Nair

3:15PM

Antimicrobial PLA Nanofibers Releasing Silver Ions as a Skin Substitute for Burn Wound Healing Applications

M. Mohiti-Asli[1], B. M. Pourdeyhimi[1], and E. G. Loboa[1,2]

[1]North Carolina State University, Raleigh, NC, [2]University of North Carolina, Chapel Hill, NC

3:30PM

Effect of Matrix Topography on Keloid Fibroblast Proliferation and Wound Healing

L. Muthusubramaniam[1], T. Zaitseva[2], M. Paukshto[2], G. Martin[3], and T. Desai[1]

[1]UCSF, San Francisco, CA, [2]Fibralign Corporation, Sunnyvale, CA, [3]National Institute of Health, Bethesda, MD

3:45PM

Elastin Based Nano-particles for Treatment of Chronic Wounds

Y. Yuan[1] and P. Koria[1]

[1]University of South Florida, Tampa, FL

4:00PM

Modified Skin Scaffolds to Improve Closure in Diabetic Wounds

M. Przyborowski[1], R. Faulknor[1], A. Bandekar[1], S. Sofou[1], A. Schmidt[2], and F. Berthiaume[1]

[1]Rutgers University, Piscataway, NJ, [2]New York University, New York, NY

4:15PM

Designing Electrospun Scaffolds for Skin Regeneration

P. P. Bonvallet[1] and S. L. Bellis[1]

[1]University of Alabama at Birmingham, Birmingham, AL

4:30PM
The Use of a Combination of Manuka Honey and Platelet-Rich Plasma to Stimulate Dermal Regeneration
S. A. Sell[1,2], P. S. Wolfe[2], A. J. Spence[2], I. A. Rodriguez[2], J. M. McCool[2], K. Garg[2], J. J. Ericksen[1,2], and G. L. Bowlin[2]
[1]Hunter Holmes McGuire VA Medical Center, Richmond, VA, [2]Virginia Commonwealth University, Richmond, VA

Track: Neural Engineering
OP - Sat - 3 – 4 - Room A314
Neural Control & Modeling III

Chairs: Brian Chow, Christopher Fang-Yen

3:15PM
Infrared Neural Stimulation: Highly General Capacitive Mechanism
M. G. Shapiro[1], K. Homma[2], S. Villarreal[3], C-P. Richter[2], and F. Bezanilla[3]
[1]University of California Berkeley, Berkeley, CA, [2]Northwestern University, Chicago, IL, [3]University of Chicago, Chicago, IL

3:30PM
Transgene Induction in Arbitrary Single Cells via Pulsed Infrared Laser Illumination
M. A. Churgin[1] and C. Fang-Yen[1]
[1]University of Pennsylvania, Philadelphia, PA

3:45PM
Pulsed Infrared Excitabiloity of Intracellular Ca2+ Stores and Presynaptic Vesicular Release
R. D. Rabbitt[1,2], Q. Liu[1], H. H. Holman[1], M. J. Frerck[1], and E. M. Jorgensen[1]
[1]University of Utah, Salt Lake City, UT, [2]Marine Biological Laboratory, Woods Hole, MA

4:00PM
Pulse Duration-Dependent Recruitment in Peripheral Nerves Using Infrared Neural Stimulation
E. Peterson[1] and D. Tyler[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis-Stokes, Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

Track: Biomedical Imaging and Optics
OP - Sat - 3 – 5 - Room A315
Contrast Agents & Probes - MRI

Chairs: Samuel Grant, Efstathios Karathanasis

3:15PM
Tracking hMSCs Under Ischemic Neuronal Injury Utilizing ^{1}H and ^{23}Na MRI at 21.1T
J. Rosenberg[1,2], K. Sellgren[2], F. Calixto-Bejarano[1], M. W. Davidson[1], M. A. Baird[1], T. Ma[2], and S. C. Grant[1,2]
[1]The National High Magnetic Field Laboratory, Tallahassee, FL, [2]Chemical & Biomedical Engineering, The Florida State University, Tallahassee, FL

3:30PM
Preclinical *In Vitro* and *In Vivo* Assessment of a Novel Graphene Based MRI Contrast Agent
S. Kanakia[1], J. Touissaint[1], S. Chowdhury[1], B. Adewale[1], T. Tembulkar[1], K. Shroyer[2], W. Moore[2], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY, [2]Stony Brook University Medical Center, Stony Brook, NY

3:45PM
Biodegradable Polydisulfide Dendrimer Nanocusters as MRI Contrast Agents
C-H. Huang[1], K. Nwe[2], A. Al-Zaki[1], M. Brechbiel[2], and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]National Cancer Institute, Bethesda, MD

4:00PM
MR Relaxivity of Gd-DTPA-HSA in Brain Tissue: Towards Quantification of Tissue Concentration *In Vivo*
G. W. Astary[1], S. Kantorovich[2], J. W. Munson[3], S. J. Lee[4], P. R. Carney[5], M. Sarntinoranont[4], and T. H. Mareci[1]
[1]Biochemistry and Molecular Biology, University of Florida, Gainesville, FL, [2]Neuroscience, University of Florida, Gainesville, FL, [3]Center for Environmental and Human Toxicology, University of Florida, Gainesville, FL, [4]Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL, [5]Biomedical Engineering, University of Florida, Gainesville, FL

4:15PM
In Vitro and *In Vivo* Uptake of an MR Molecular Imaging Agent for Detection of Inflammatory Cells
A. L. Doiron[1], R. D. Shepherd[1], K. D. Rinker[1], R. Frayne[1], and L. B. Andersen[1]
[1]University of Calgary, Calgary, AB, Canada

4:30PM
Biological and MR Impacts of Long Term SPIO Exposure on hMSCs Under Hypoxic-Ischemic Conditions
J. Rosenberg[1], K. Sellgren[2], M. W. Davidson[1], M. A. Baird[1], T. Ma[2], and S. C. Grant[1]
[1]The National High Magnetic Field Laboratory, Tallahassee, FL, [2]Chemical & Biomedical Engineering, The Florida State University, Tallahassee, FL

Track: Nano and Micro Technologies
OP - Sat - 3 – 6 - Room A316
Drug Delivery Technologies II

Chairs: Ben Keselowsky, Andrew Smith

3:15PM
Shape-Engineered Porous Silicon Nanoparticles by Direct Imprinting for Drug Delivery
J. W. Mares[1], J. Ryckman[1], K. R. Beavers[1], C. L. Duvall[1], and S. M. Weiss[1]
[1]Vanderbilt University, Nashville, TN

3:30PM
Implantable Microneedles for Rapid Transcutaneous Delivery and Controlled Release of Therapeutics
P. C. DeMuth[1], W. Garcia[1], M. Lim Ai-Ling[2], P. T. Hammond[1], and D. J. Irvine[1,3]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Oxford University, Oxford, United Kingdom, [3]Howard Hughes Medical Institute, Chevy Chase

3:45PM
New Catonic Lipid Nanoparticles for Hepatic Delivery of MIR-26A
X. Wang[1] and J. L. Lee[1]
[1]The Ohio State University, Columbus, OH

4:00PM
Mucus-penetrating Particles for Vaginal Drug Delivery
L. Ensign[1,2], B. Tang[1,2], Y-Y. Wang[1,2], T. Tse[1,2], T. Hoen[1,2], R. Cone[1,2], and J. Hanes[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University School of Medicine, Baltimore, MD

4:15PM
Drug-encapsulated Tunable Polymerized Shell Ultrasound Contrast Agents
Y. Park[1], A. C. Luce[1], T. A. Pham[1], R. D. Whitaker[1,2], B. Amin[1], C. Beigie[1], M. Cabodi[1], R. Nap[3], I. Szleifer[3], R. Cleveland[1,4], J. O. Nagy[5], and J. Y. Wong[1]
[1]Boston University, Boston, MA, [2]University of Tromsoe, Tromsoe, Norway, [3]Northwestern University, Evanston, IL, [4]University of Oxford, Oxford, United Kingdom, [5]NanoValent Pharmaceuticals, Inc., Bozeman, MT

4:30PM
Gold Nanostructures for Fluorescence Enhancement
H. Sharma[1], S. Lin[1], A. Gupta[1], and M. Khine[1]
[1]University of California-Irvine, Irvine, CA

P = Poster Session
OP = Oral Presentation

OP - Sat - 3 – 7 - Room A301

Undergraduate Research IV - Nano and Micro Technologies

Chairs: Anjana Jain, Melissa Micou

3:15PM
Collective Behavior of Neural Cells in Various Geometric Shapes Using Micropatterning Techniques
N. V. Chavali[1,2], B. L. Andersen[2,3], S. L. Willett[2,4], C. H. Cho[2], and R. Perez-Castillejos[5]
[1]Johns Hopkins University, Baltimore, MD, [2]New Jersey Institute of Technology, Newark, NJ, [3]University of Florida, Gainesville, FL, [4]Arkansas Tech University, Russellville, AR, [5]NJIT, Newark, NJ

3:25PM
Microfluidic Encapsulation for Control of Stem Cell Fate
C. Highley[1], D. Guo[1], and S. Zappe[1]
[1]Carnegie Mellon University, Pittsburgh, PA

3:35PM
Cellular Uptake of Liposomes Containing a Boron Lipid
A. Chen[1], M. Bartok[2], D. Awad[2], and D. Gabel[2]
[1]University of Rochester, Rochester, NY, [2]Jacobs University Bremen, Bremen, Germany

3:45PM
Testing of a Novel RAFT-Synthesized Polymer Library for Efficient, Hemocompatible siRNA Delivery
J. Kintzing[1], C. Nelson[2], J. Shannon[2], M. Gupta[2], and C. Duvall[2]
[1]Grove City College, Grove City, PA, [2]Vanderbilt University, Nashville, TN

3:55PM
Characterization of Nanografted DNA Motors For Drug Delivery Applications
K. A. Hujsak[1], J. Lee[1], P. Landon[1], A. Mo[1], and R. Lal[1]
[1]University of California San Diego, San Diego, CA

4:05PM
Optimizing the storage stability of drug-loaded polymeric micelles
M. Bux[1], M. Baranello[1], and D. S. Benoit[1]
[1]University of Rochester, Rochester, NY

4:15PM
Increasing Local Oxygen Tension Through a Nanomagnets Based Targeted Drug Delivery System in a Whole Animal Model
C. Liong[1] and P. Cabrales[1]
[1]University of California, San Diego, La Jolla, CA

4:25PM
Nanofiber Texturing for Prevention of Biofilm Formation on Medical Implants
A. Kim[1], M. Kargar[1], A. Nain[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

4:35PM
High Resolution Imaging of Non-Crystalline Connexin 26 Hemichannels
H. Barnard[1], B. Meckes[2], C. Ambrosi[2], G. Sosinsky[2], and R. Lal[2]
[1]University of California, Santa Barbara, Santa Barbara, CA, [2]University of California, San Diego, La Jolla, CA

Track: Biomaterials
OP - Sat - 3 – 8 - Room A401

Self-Assembling Biomaterials Systems

Chairs: Ho-Wook Jun, , Elizabeth Lipke

3:15PM
Highly potent, biodegradable, coacervating radionuclide depot of a stimulus responsive polypeptide for brachytherapy
W. Liu[1], J. McDaniel[1], X. Li[1], D. Asai[1], F. G. Quiroz[1], J. Schaal[1], J. Park[1], M. Zalutsky[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

3:30PM
Characterizing and Functionalizing Double-Emulsion Templated Polymersomes
N. P. Kamat[1], M. Lee[1], D. Lee[1], and D. A. Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA

3:45PM
Chemoenzymatic Synthesis of Lectin-Binding Peptide Nanofibers
G. A. Hudalla[1], Y. F. Tian[2], and J. H. Collier[1]
[1]University of Chicago, Chicago, IL, [2]Illinois Institute of Technology, Chicago, IL

4:00PM
Three-dimensional PEG-based Scaffolds by Self-Folding
M. Jamal[1], S. Kadam[1], R. Xiao[1], F. Jivan[1], T. Onn[1], R. Fernandes[1], T. Nguyen[1], and D. Gracias[1]
[1]Johns Hopkins University, Baltimore, MD

4:15PM
Investigation of Cancer-Targeted Block Copolypeptide Vesicles
U-J. Choe[1], A. R. Rodriguez[1], B. S. Lee[1], T. J. Deming[1], and D. T. Kamei[1]
[1]University of California, Los Angeles, Los Angeles, CA

4:30PM
Sustainable Green Synthesis of Gold Nanoparticle for Biomedical Applications
S. Yi[1], L. Xia[1], S. C. Lenaghan[1], L. Sun[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

Track: Cancer Technology*
OP - Sat - 3 – 9 - Room A402

Bioengineering & Physical Sciences of Cancer III

Chairs: Susan Thomas, Scott Verbridge

3:15PM
Interstitial Hypertension and the Phenotype of Engineered Human Breast Tumors
J. Tien[1], J. G. Truslow[1], and C. M. Nelson[2]
[1]Boston University, Boston, MA, [2]Princeton University, Princeton, NJ

3:30PM
Phenotypic Switch of Metastatic Breast Cancer Cells Via Pro-Inflammatory Cytokines Found in Blood
Y. Geng[1], S. Chandrasekaran[1], J-W. Hsu[1], A. D. Hugues[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

3:45PM
Adhesive Heterogeneity as an Indicator of Metastatic State
A. Fuhrmann[1], T. D. Tlsty[2], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA, [2]University of California, San Francisco, San Francisco, CA

4:00PM
Cross Talk Between M2 Macrophages and Glioma Cancer Stem Cells
L. M. Nusblat[1], M. J. Carroll[1], and C. M. Roth[1]
[1]Rutgers University, Piscataway, NJ

4:15PM
Microfluidic Sample Preparation of Pleural Effusions for Cytodiagnostics
J. Che[1], A. J. Mach[1], D. E. Go[1], I. Talati[1], Y. Ying[1], R. Kulkarni[1], J. Rao[1], and D. Di Carlo[1]
[1]University of California, Los Angeles, Los Angeles, CA

4:30PM
Microengineered *In Vitro* Blood Vessels to Study Paracrine Triggers of the Tumor Angiogenic Switch
S. S. Verbridge[1,2], A. Chakrabarti[2], P. DelNero[2], J. D. Varner[2], A. D. Stroock[2], and C. Fischbach[2]
[1]Virginia Tech, Blacksburg, VA, [2]Cornell University, Ithaca, NY

*Track sponsored by BARD

Track: Cardiovascular and Respiratory Engineering*
OP - Sat - 3 – 10 - Room A404
Thrombosis Biomechanics

Chairs: Mike King, David Ku

3:15PM
Direct Visualization of Flow Induced vWF Unfolding on Collagen Surfaces at High Shear Rates
T. V. Colace[1] and S. L. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

3:30PM
Fibrin Formation on Microparticle Deposited Glass Surfaces under Flow
Y-H. Lee[1], A. Fogelson[2], and V. Turitto[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Utah, Salt Lake City, UT

3:45PM
Multiscale Modeling of Shear Induced Platelet Activation Using Dissipative Particle Dynamics and Molecular Dynamics
J. S. Soares[1], C. Gao[1], J. Sheriff[1], Y. Alemu[1], P. Zhang[2], S. Pothapragada[2], G. Yu[2], Y. Deng[2], and D. Bluestein[1]
[1]Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY, [2]Department of Applied Mathematics, Stony Brook University, Stony Brook, NY

4:00PM
Interstitial Permeation of Human Blood Clots Formed Under Flow Using Controlled Pressure Gradients in a Microfluidic Model of Bleeding
R. Muthard[1] and S. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

4:15PM
Analysis of the Uniaxial and Biaxial Mechnical Behavior of Intraluminal Thrombus
S. O'Leary[1], E. Kavanagh[2], P. Grace[2], B. Doyle[1], and T. McGloughlin[1]
[1]University of Limerick, Limerick, Ireland, [2]Mid Western Regional Hospital, Limerick, Ireland

4:30PM
Experimental Measurement of Spectral Transmission of Platelet Thrombus in Comparison to Whole Blood
M. Li[1], N. Sondej[1], and C. R. Forest[1]
[1]Georgia Institute of Technology, Atlanta, GA

*Track sponsored by St. Jude Medical More control. Less risk.

Track: Orthopedic and Rehabilitation Engineering
OP - Sat - 3 – 11 - Room A405
Skeletal Biomechanics

Chairs: Daniel Nicolella, Lena Ting

3:15PM
Knee Movement Patterns for Identifying Biomarkers for Sit to Stand Task
T. Bejarano[1], D. Bhatia[1], M. Munoz[1], M. Novo[1], D. Brunt[1], and R. Jung[1]
[1]Florida International University, Miami, FL

3:30PM
Human Arm Posture Prediction – Numerical and Experimental Models
B. Kashi[1,2], J. Rosen[3], Z. Li[3], I. Avrahami[2], and M. Brand[2]
[1]Tel-Aviv University, Tel Aviv, Israel, [2]Ariel University Center of Samaria, Ariel, Israel, [3]University of California Santa Cruz, Santa Cruz, CA

3:45PM
Development and Validation of a Ten Years Old Child Neck Finite Element Model
L. Dong[1,2], H. Mao[2], G. Li[1], and K. Yang[3]
[1]Hunan University, Changsha, China, People's Republic of, [2]Wayne State University, Detroit, MI, [3]Wayne State University, Detroit, MI, China, People's Republic of

4:00PM
Kinematic and Electromyographic Comparison of Pediatric and Young Adult Volunteers in Low-Speed Frontal Impacts
E. A. Mathews[1,2], T. Seacrist[2], M. R. Maltese[2], R. Sterner[3], K. B. Arbogast[2], and S. Balasubramanian[1]
[1]Drexel University, Philadelphia, PA, [2]Children's Hospital of Philadelphia, Philadelphia, PA, [3]Rowan University, Glassboro, NJ

4:15PM
Influence of Age and Gender on Current Hybrid III ATD Impact Rresponse and Injury Tolerance Corridors
S. D. Shimada[1] and N. Merrier[1]
[1]Biomechanical Consultants of CA, Davis, CA

4:30PM
Accurate and Fast Strength Predictions of Patient-Specific HR-pQCT-Based Plate-Rod Models Distinguish Vertebral Fractures
J. Wang[1], B. Zhou[1], X. Liu[2], E. Stein[3], E. Shane[3], and X. Guo[1]
[1]Columbia University, New York, NY, [2]University of Pennsylvania, Philadelphia, PA, [3]Columbia University College of Physicians and Surgeons, New York, NY

Track: Cardiovascular and Respiratory Engineering*
OP - Sat - 3 – 12 - Room A406
Respiratory Biomechanics

Chairs: Ken Lutchen, Bradford Smith

3:15PM
Progressive Recruitment and Derecruitment Reflects the Development of Ventilator Induced Lung Injury
B. J. Smith[1], G. Allen[1], and J. H. Bates[1]
[1]University of Vermont, Burlington, VT

3:30PM
Spatial Heterogeneity of Deformation Within An Airway Wall During Bronchoconstriction
B. C. Harvey[1], P. E. Barbone[1], T. L. Szabo[1], H. Parameswaran[1], and K. R. Lutchen[1]
[1]Boston University, Boston, MA

P = Poster Session
OP = Oral Presentation

3:45PM
Uptake Of Soluble Gases In The Entire Respiratory Systems Of Rats And Humans Using Transient CFD/PBPK Models
S. Kabilan[1], A. Kuprat[1], D. Einstein[1], J. Carson[1], R. Jacob[1], K. Minard[1], and R. Corley[1]
[1]*Pacific Northwest National Laboratory, Richland, WA*

4:00PM
Aerosol Particle Deposition In An Air-Finger Propagating Into A Liquid Filled Channel
Y-C. Chen[1,2], Y. Hu[1], C-F. Tai[1], P. Zamankhan[1], S-Y. Lin[2], M. Filoche[1,3], and J. B. Grotberg[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*National Cheng Kung University, Tainan City, Taiwan,* [3]*Ecole Polytechnique, CNRS, Palaiseau, France*

4:15PM
Comparison of Two Exogenous Surfactants Using a Langmuir Film Balance
D. M. Martinez[1], J. M. Valencia Rivas[1], H. T. Moriya[1], C. M. Rebello[1], and A. M. Alencar[1]
[1]*University of Sao Paulo, Sao Paulo, Brazil*

4:30PM
Novel Bioreactor System to Define the Rheological and Biochemical Properties of Mucus Needed for Successful Mucociliary Transport
S. Lynch[1], J. Carpenter[1], E. Kazura[1], J. Cribb[1], and R. Superfine[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

**Track sponsored by* St. Jude Medical More control. Less risk.

Track: Biomedical Imaging and Optics
OP - Sat - 3 – 13 - Room A304
Optical Imaging III

Chairs: Christopher Rylander, Melissa Skala

3:15PM INVITED
Using Optical Coherence Tomography to Visualize the Effect of Chemopreventive and Chemotherapeutic Agents in a Mouse Model of Colon Cancer
J. Barton[1], S. LeGendre-McGhee[1], P. Rice[1], A. Luttmann[1], and E. Gerner[1]
[1]*The University of Arizona, Tucson, AZ*

3:45PM
Multi-Spectral Fluorescence Lifetime Contrast Imaging for Brain Cancer Detection
A. Papour[1], Z. Taylor[1], M. A. St. John[1], W. H. Yong[1], O. Stafsudd[1], and W. Grundfest[1]
[1]*University of California Los Angeles, Los Angeles, CA*

4:00PM
Noninvasive Quantification of Hemoglobin Oxygen Saturation in a Model of Peripheral Arterial Disease
K. M. Poole[1], W. W. Sit[1], A. J. Walsh[1], M. C. Skala[1], and C. L. Duvall[1]
[1]*Vanderbilt University, Nashville, TN*

4:15PM
Infrared Spectroscopy to Map Collagen Distribution in Post MI Cardiac Tissue
R. Cheheltani[1], B. Wang[1,2], A. Sabri[1], N. Pleshko[1], and M. F. Kiani[1]
[1]*Temple University, Philadelphia, PA,* [2]*Widener University, Chester, PA*

4:30PM
Optical Coherence Tractography of Murine Cardiac Tissue Using Intrinsic Contrast
C. J. Goergen[1], S. Sakadzic[1], H. Radhakrishnan[1,2], D. E. Sosnovik[1], and V. J. Srinivasan[1]
[1]*Massachusetts General Hospital, Boston, MA,* [2]*Pennsylvania State University, University Park, PA*

Track: Tissue Engineering
OP - Sat - 3 – 14 - Room A407
Musculoskeletal & Orthopedic Tissue Engineering III

Chairs: Xinqiao Jia, Helen Lu

3:15PM INVITED
Dynamic Loading Enhances Tension Compression Nonlinearity In Engineered Cartilage
T-A. N. Kelly[1], B. L. Roach[1], Z. D. Weidner[2], C. R. Mackenzie-Smith[1], G. A. Ateshian[1], and C. T. Hung[1]
[1]*Columbia University, New York, NY,* [2]*St. Lukes-Roosevelt Hospital Center, New York*

3:30PM
Feasibility of Using M-mode Ultrasound Imaging for Cartilage Tissue Engineering Quality Control
J. F. Welter[1], S. Abdalian[2], and J. M. Mansour[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Gilmour Academy, Gates Mills, OH*

3:45PM
Effects of Dynamic Compression Stimulation on Tissue Engineered Intervertebral Discs
K. D. Hudson[1], R. I. Mozia[1], and L. J. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

4:00PM
Effect of Platelet-Rich Plasma on Chondrogenic Differentiation in Three-Dimensional Culture
S. Elder[1] and J. Thomason[1]
[1]*Mississippi State University, Mississippi State, MS*

4:15PM
In Vivo Repair of Annulus Fibrosus Defects Using Injectable High Density Collagen Gels
B. Borde[1], P. Grunert[2], M. Macielak[2], R. Härtl[2], and L. Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York City, NY*

4:30PM
A Novel Extracellular Matrix-Derived Hydrogel for Stem Cell-Based Meniscus Tissue Engineering
X. Yuan[1], D. E. Arkonac[1], A. B. Taubman[1], and G. Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

Track: Tissue Engineering
OP - Sat - 3 – 15 - Room A411
Printing & Patterning in Tissue Engineering II

Chairs: William Reichert, James Cooper

3:15PM INVITED
Alignment of Embryonic Stem Cell-Derived Endothelial Cells on Wrinkled Microchips
R. Hatano[1], J. Luna[1], D. E. Glaser[1], K. Mercurio[1], and K. E. McCloskey[1]
[1]*UC, Merced, Merced, CA*

3:30PM
Controlling Stem Cell Fate with Spatially Varying Extracellular Matrix Stiffness
Y. Choi[1], L. G. Vincent[1], A. R. Lee[1], K. C. kretchmer[1], S. Chirasatitsin[1], M. K. Dobke[1], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA*

3:45PM

Patterning the Activation of Heat- and Ligand-Inducible Gene Switches with Focused Ultrasound

C. G. Wilson[1], F. Martin-Saavedra[1,2], F. Padilla[3], M. Fabiilli[4], O. Kripfgans[4], N. Vilaboa-Diaz[2], J. B. Fowlkes[4], and R. T. Franceschi[1,4]

[1]University of Michigan School of Dentistry, Ann Arbor, MI, [2]Hospital Universitario La Paz-IdiPAZ & CIBER-BBN, Madrid, Spain, [3]INSERM U[556], Lyon, France, [4]University of Michigan Medical School, Ann Arbor, MI

4:00PM

InVERT Molding for Versatile and Scalable Control of Complex Tissue Micro-architecture

K. R. Stevens[1], M. D. Ungrin[2], B. Carvalho[1], R. Chaturvedi[3], P. W. Zandstra[2], C. S. Chen[3], and S. N. Bhatia[1]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]University of Toronto, Toronto, ON, Canada, [3]University of Pennsylvania, Philadelphia, PA

4:15PM

Engineered Skeletal Muscle Sheets: Optimizing Structure and Contractility

Y. Sun[1,2], R. Duffy[1], A. Lee[1], and A. W. Feinberg[1]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]Beihang University, Beijing, China, People's Republic of

4:30PM

Combinatorial Effects of Aligned Substrate Pattern and Electrical Simulation on Myoblasts Differentiation

U. Ko[1], M. Kim[1], H. Bang[1], S. Park[2], H. Shin[1], and J. H. Shin[1]

[1]KAIST, Daejeon, Korea, Republic of, [2]KIST, Seoul, Korea, Republic of

Track: Tissue Engineering
OP - Sat - 3 – 16 - Room A305
Cardiovascular Tissue Engineering IV

Chairs: Anusuya Das, Gordana Vunjak-Novakovic

3:15PM

Long-term *In Vivo* Evaluation of Completely Biological Tissue Engineered Vascular Grafts

Z. Syedain[1], L. Meier[1], M. Lahti[1], J. Berry[1], S. Johnson[1], R. Bianco[1], and R. Tranquillo[1]

[1]University of Minnesota, Minneapolis, MN

3:30PM

Implantation of Vascular Grafts from Hair Follicle Stem Cells in the Arterial System of an Ovine Animal Model

S. Row[1], E. Schlaich[1], H. Peng[1], D. Swartz[1,2], and S. Andreadis[1,3]

[1]SUNY Buffalo, Buffalo, NY, [2]Women and Children's Hospital of Buffalo, Buffalo, NY, [3]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

3:45PM

Intermittent Hypoxia Conditioning of *in Vitro* Vascularized Fibrin Gels

S. M. Ehsan[1] and S. C. George[1]

[1]University of California, Irvine, Irvine, CA

P = Poster Session
OP = Oral Presentation

KEY TO PROGRAM CODES:

P – Poster Session
OP – Oral Presentation

P-Th-A-175 = Poster Session on Thursday in the A session (morning) – poster board 175

Th - A - Thursday morning – 10/25
Th - B - Thursday afternoon - 10/25
Fri - A - Friday morning - 10/26
Fri - B - Friday afternoon - 10/26
Sat -A - Saturday morning - 10/27
Sat - B - Saturday morning - 10/27

OP-Th-1-4 – Oral Presentation on 10/25 (Thursday) in the 4th session in the 1st platform time

Th-1 Thursday Platform Session 1 – 8:00an - 9:30am
Th-2 Thursday Platform Session 2 – 1:30pm – 3:00pm
Th-3 Thursday Platform Session 3 – 4:00pm – 5:30pm
Fri-1 Friday Platform Session 1 – 8:00an - 9:30am
Fri-2 Friday Platform Session 2 – 1:30pm – 2:30pm
Fri-3 Friday Platform Session 3 – 2:45pm – 3:45pm
Sat-1 Saturday Platform Session 1 – 10:30am – 12noon
Sat-2 Saturday Platform Session 2 – 1:30pm – 3:00pm
Sat-3 Saturday Platform Session 3 – 3:15pm – 4:45pm

A

AUTHOR INDEX

B

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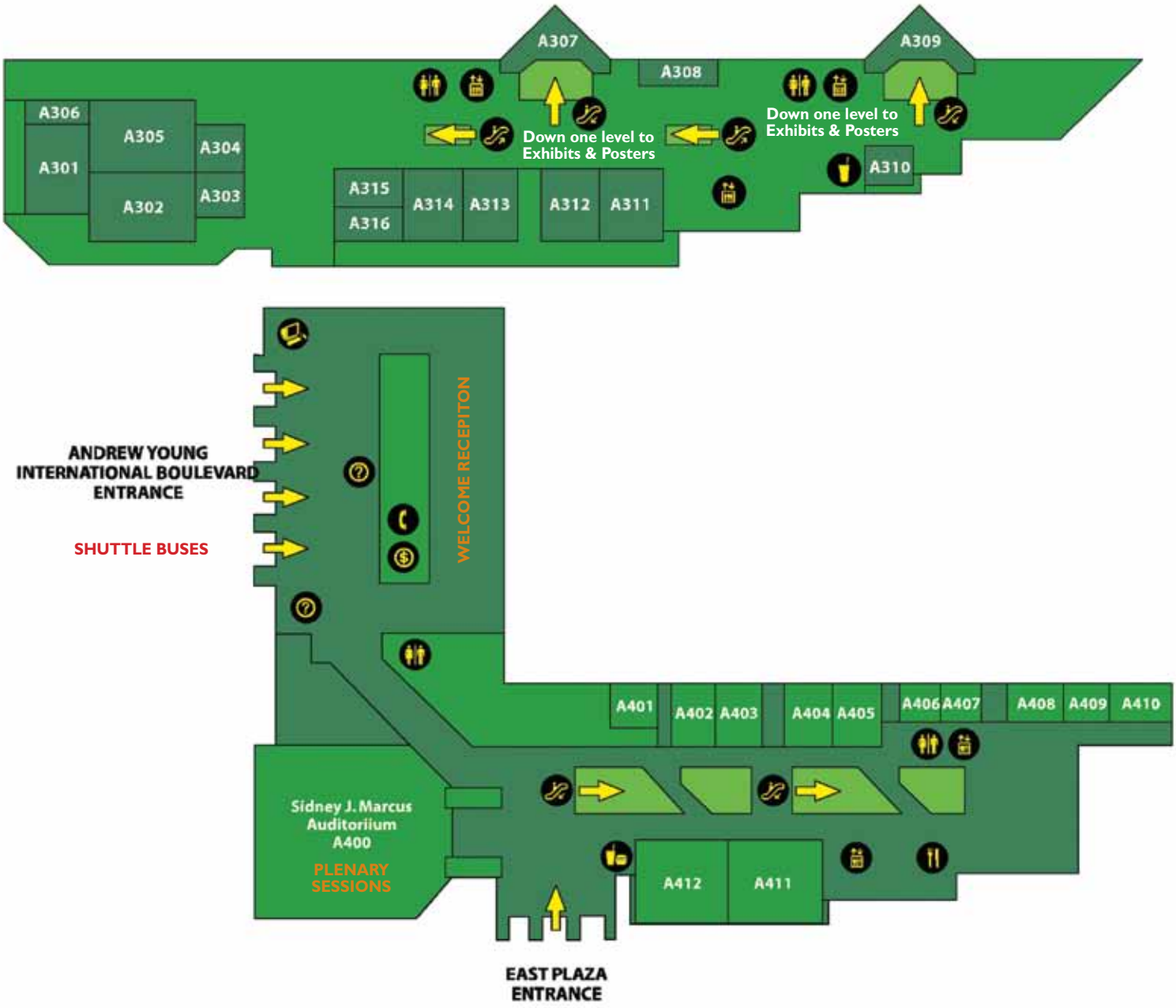
Georgia World Congress Center

285 Andrew Young International Blvd., NW
Atlanta, Georgia 30313-1591
404-223-4000

LEVEL 3
DOWN ONE LEVEL TO EXHIBIT HALL A2
Registration, Exhibits & Posters



Hyatt Regency Atlanta

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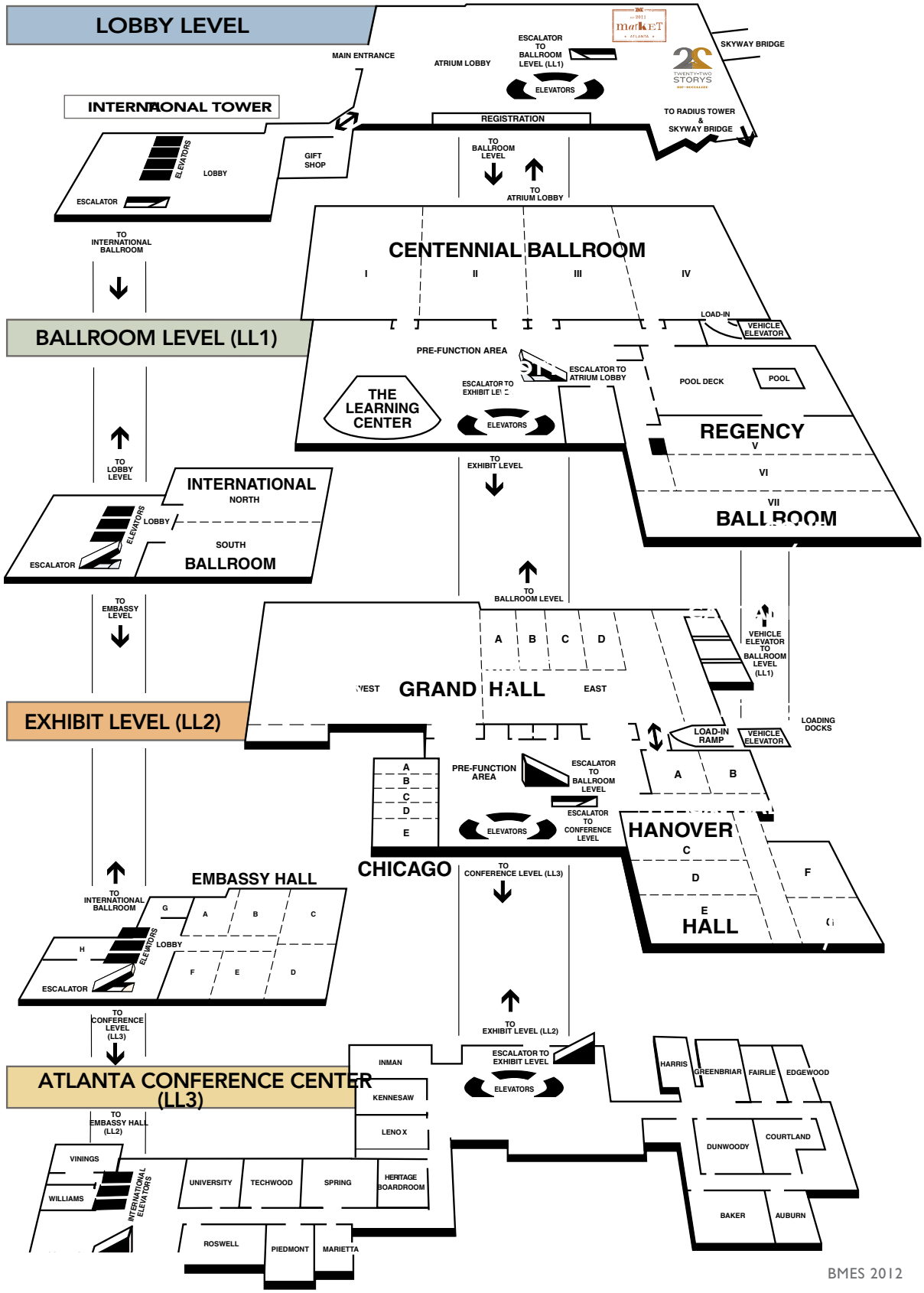
Atlanta,Georgia,USA30303
404 577 1234



PROGRAM AT-A-GLANCE

Track	8:00am – 9:30am	1:30pm - 3:00pm	4:00pm - 5:30pm
BIOINFORMATICS & SYSTEMS BIOLOGY	**Mathematical & Computation Models of Molecular, Cellular, & Organ Processes** Room A406	**Genomics, Transcriptomics and Proteomics I** Room A406 **Systems Biology & Personalized Medicine in Cancer Therapy** *(Cancer Track)* Room A402	**Genomics, Transcriptomics and Proteomics** Room A406
BIOMATERIALS	**Bioinspired Materials** Room A311 **Targeting Strategies in Drug Delivery** Room A315 **Cell/Protein Biomaterial Interfaces** Room A316 **High Throughput: Computational Models for Biomaterial Design** Room A401	**Biomaterials for RNA Delivery** Room A311 **Micro & Nano Structured Biomaterials I** Room A401	**Biomaterial Immunoengineering** Room A311 **Micro & Nano Structured Biomaterials II** Room A401
BIOMEDICAL ENGINEERING EDUCATION **Track sponsored by* WHITAKER International Fellows and Scholars Program	**Design in BME Education** Room A304	**Issues Related to Careers in BME: Student Choice & Alumni Success** Room A304	**Developing & Implementing Best Practices in BME Education** Room A304
BIOMEDICAL IMAGING & OPTICS	**Contrast Agents: Probes – Optical** Room A403 **Novel Imaging Techniques** Room A408	**Translational Biomedical Imaging Informatics I** *(Translational Track)* Room A403 **Magnetic Resonance Imaging** Room A408	**Optical Diagnostic Sensing & Devices I** Room A301 **Ultrasound Imaging** Room A408
CANCER TECHNOLOGY **Track sponsored by* BARD	**Cancer Biomarkers** Room A402	**Translational Biomedical Imaging Informatics I** *(Translational Track)* Room A403 **Cancer Drug Delivery I** Room A316 **Systems Biology & Personalized Medicine in Cancer Therapy** Room A402	**Translational Biomedical Imaging Informatics II** *(Translational Track)* Room A403 **Bioengineering & Physical Sciences of Cancer I** Room A402
CARDIOVASCULAR & RESPIRATORY ENGINEERING **Track sponsored by* St. Jude Medical More control. Less risk.	**Cardiovascular Flow Modeling & Development** Room A404 **Cardiac Contractile Dynamics** Room A405	**Arterial Fluid Mechanics** Room A404 **Cardiac Electrophysiology** Room A405	**Hemodynamics & Disease** Room A404 **Heart Valve Dynamics & Prosthetics** Room A405 **Cardiovascular Tissue Engineering I** *(Tissue Engineering Track)* Room A407
CELLULAR & MOLECULAR BIOENGINEERING	**Mechanotransduction I** Room A301 **Cell Adhesion I** Room A302	**Mechanotransduction II** Room A301 **Cell Mechanics I** Room A302	**Cell Mechanics II** Room A302
NANO TO MICRO TECHNOLOGIES	**Micro & Nano Fluidic Technologies I** Room A410 **Micro and Nano Technology Based Diagnostics I** Room A314	**Micro & Nano Fluidic Technologies II** Room A410 **Micro and Nano Technology Based Diagnostics II** Room A314 **Microphysiology Systems for Drug Toxicity and Efficacy I** Room A315	**BioMEMS and Nanotechnology for Cellular Engineering I** Room A410 **Micro and Nano Technology Based Diagnostics III** Room A314 **Microphysiology Systems for Drug Toxicity and Efficacy II** Room A315 **Biosensors, Nano-Bio-Interfaces and Implantable Devices I** Room A316

Track	8:00am – 9:30am	1:30pm -3:00pm	4:00pm – 5:00pm
NEURAL ENGINEERING	**Neural Electrode Tissue Interface & Neural Engineering Technology** Room A407	**Brain-Computer Interfaces & Neural Prosthetics** Room A407	**Translational Neural Engineering** Room A412
NEW FRONTIERS & SPECIAL TOPICS	**Engineering Immunology and Immunotherapy I** Room A312	**Engineering Immunology and Immunotherapy II** Room A312	**Engineering Immunology and Immunotherapy III** Room A312
STEM CELL ENGINEERING	**Stem Cell Tissue Engineering** Room A305	**Engineering the Stem Cell Niche** Room A305	**Biomaterials Control of Stem Cells** Room A305
TISSUE ENGINEERING	**Tissue Engineering & Mechanobiology** Room A313	**Cell Delivery & Cell Based Therapeutics** Sidney Marcus Auditorium	**Cardiovascular Tissue Engineering I** Room A407
TRANSLATIONAL BIOMEDICAL ENGINEERING **Track sponsored by* Fish & Richardson	**Clinical and Translational Research and Science in Biomedical Engineering I** Room A411	**Translational Biomedical Imaging Informatics I** Room A403	**Translational Biomedical Imaging Informatics II** Room A403 **Translational Neural Engineering** *(Neural Engineering Track)* Room A412
OTHER	**Student & Early Career Program: 8:45am – 9:45am Effective Interviewing** Room A412	**McIntire Symposium I** Room A313 **Whitaker Session** Room A409 **Student & Early Career Program: 1:45pm – 2:45pm Networking for Success** Room A412	**McIntire Symposium II** Room A313 **Student & Early Career Program:** 3:45pm – 5:00pm **Creating Effective Resumes** 5:00pm - 6:45pm **Resume & Cover Letter Review/ Critique Workshop** 6:45pm – 7:45pm **Career Alumni Panel** Room A411

PROGRAM AT-A-GLANCE

Track	8:00am – 9:30am	1:30pm -2:30pm	2:45pm – 3:45pm
BIOINFORMATICS & SYSTEMS BIOLOGY	**Design Principles of Natural and Synthetic Biochemical Networks** Room A408	**Modeling & Simulation in Personalized Medicine** Room A403	**Multiscale Modeling** Room A403
BIOMATERIALS	**Biomaterials for Controlled Release Systems** Room A311 **Engineering Spatial and Temporal Control of Biomolecules Using Biomaterials** Room A315 **Nanomaterials, Cellular Interactions & Toxicity** Room A401	**Intelligent Biomaterials** Room A311 **Controlling Host Responses to Biomaterials** Room A315	**Biomaterials to Control Cellular Environments I** Room A311 **Translation of Novel Biomaterials to the Clinic** Room A315
BIOMEDICAL ENGINEERING EDUCATION *Track sponsored by* WHITAKER International Fellows and Scholars Program	**Entry-level BME Experiences** Room A304	**A Teaching Workshop: Techniques for Enhancing & Evaluating Student Learning in the Classroom** Room A304	**Hands-on Learning in BME** Room A407
BIOMEDICAL IMAGING & OPTICS	**Optical Diagnostic Sensing & Devices II** Room A301	**Orthopedic Imaging** *(Orthopedic Track)* Room A405	
CANCER TECHNOLOGY *Track sponsored b* BARD	**Cancer Nanotechnology I** Room A402		
CARDIOVASCULAR & RESPIRATORY ENGINEERING *Track sponsored by* St. Jude Medical More control. Less risk.	**Vascular Endothelial Mechanotransduction** Room A404 **Heart Valve Pathologies** Room A405 **Microvascular Physiology** Room A406 **Cardiovascular Tissue Engineering II** *(Tissue Engineering Track)* Room A407	**Lymphatic System Biomechanics** Room A406	**Microvessel Development in Tissue Engineering Constructs** Room A406 **Cardiovascular Tissue Engineering III** *(Tissue Engineering Track)* Room A410
CELLULAR & MOLECULAR BIOENGINEERING	**Cell Motility I** Room A302 **Cellular and Subcellular Imaging** Room A403	**Cellular Engineering** Room A301 **Cell Adhesion II** Room A302	**Molecular Engineering and Protein Design** Room A301 **Cell Adhesion III** Room A302
NANO TO MICRO TECHNOLOGIES	**Biosensors, Nano-Bio Interfaces, & Implantable Devices II** Room A316 **BioMEMS and Nanotechnology for Cellular Engineering II** Room A410	**Biosensors, Nano-Bio-Interfaces and Implantable Devices III** Room A316 **Nanotoxicity I** Room A401 **Micro & Nano Fluidic Technologies II** Room A410	**Biosensors, Nano-Bio-Interfaces and Implantable Devices IV** Room A316 **Nanotoxicity II** Room A401 **Micro & Nano Fluidic Technologies III** Room A410
NEURAL ENGINEERING	**Neuro Trauma Injury & Repair I** Room A314	**Neural Control & Modeling I** Room A314 **Neural Tissue Engineering** *(Tissue Engineering Track)* Room A313	**Neural Control & Modeling II** Room A314

Track	8:00am – 9:30am	1:30pm -2:30pm	2:45pm – 3:45pm
NEW Frontiers & Special Topics	**Synthetic Biology in Bioengineering** Room A312	**Cellular Machines I** Room A312 **Molecular Imaging Probes I** Room A408 **Molecular Aspects of Regeneration & Engineering Thereof** Room A407	**Cellular Machines II** Room A312 **Molecular Imaging Probes II** Room A408
ORTHOPEDIC & Rehabilitation Engineering		**Mechanical Loading & Soft Tissue Response** Room A404 **Orthopedic Imaging** Room A405	**Orthopedic Bioengineering Musculoskeletal Tissue Interfaces & Ligaments** Room A404 **Orthopedic Biomechanics: Vertebrae & Discs** Room A405
STEM Cell Engineering	**Systems & Functional Analyses of Stem Cell Fate** Room A305	**Stem Cell Delivery & Recruitment** Room A305	**Mechanical Control of Stem Cells** Room A305
TISSUE Engineering	**Cardiovascular Tissue Engineering II** Room A407 **Engineered Tissue Models for Drug Discovery and Disease** Sidney Marcus Auditorium **Biomimetics for Tissue Regeneration** Room A411	**Neural Tissue Engineering** Room A313	**Cardiovascular Tissue Engineering III** Room A410
TRANSLATIONAL Biomedical Engineering *Track sponsored by* St. Jude Medical More control. Less risk.	**Translational BME Research to Practice [R2P]** Room A313		**Disparities & Inequalities in Healthcare** Room A313
UNDERGRADUATE Research (REU)		**Undergraduate Research I - Design and Special Topics** Room A402	**Undergraduate Research II - Mechanobiology** Room A402
OTHER	**Student & Early Career Program:** 8:00am – 9:00am **Student Affairs & Chapter Development Session** 9:15am- 10:15am **BMES Transitioning Students to Industry: Panel Discussion** Room A412	**Student & Early Career Program:** 1:30pm-2:30pm **Student Leadership Session: "Aiming for Excellence: The Hallmark of Leadership"** Room A412	**Student & Early Career Program:** 2:45pm – 4:15pm **Mastering the Transition Process as a Graduate Student** Room A412

PROGRAM AT-A-GLANCE

Track	10:30am – 12noon	1:30pm - 3:00pm	3:15pm – 4:45pm
BIOINFORMATICS & SYSTEMS BIOLOGY	**Modeling & Experimental System Approaches for Cellular Signaling** Room A408	**Biological Systems & Control Dynamics** Room A408	
BIOMATERIALS	**Biomaterials to Control Cellular Environments II** Room A311 **Novel Biomaterials & Scaffolds I** Room A312	**Therapeutic Biomaterials** Room A311 **Novel Biomaterials & Scaffolds II** Room A312	**Biomaterial Topics in Drug Delivery** Room A311 **Novel Biomaterials & Scaffolds III** Room A312 **Self-Assembling Biomaterial Systems** Room A401
BIOMEDICAL IMAGING & OPTICS	**Optical Imaging I** Room A304 **Cancer Imaging** *(Cancer Track)* Room A315	**Optical Imaging II** Room A304 **Contrast Agents & Probes – Ultrasound** Room A315 **Neuro Imaging** *(Neural Engineering Track)* Room A314	**Optical Imaging III** Room A304 **Contrast Agents & Probes – MRI** Room A315
CANCER TECHNOLOGY *Track sponsored b* BARD	**Cancer Imaging** Room A315 **Cancer Drug Delivery II** Room A316 **Cancer Nanotechnology II** Room A402	**Bioengineering & Physical Sciences of Cancer II** Room A402	**Bioengineering & Physical Sciences of Cancer III** Room A402
CARDIOVASCULAR & RESPIRATORY ENGINEERING *Track sponsored by* St. Jude Medical More control. Less risk.	**Circulatory Assist & Blood Damage** Room A404 **Pulmonary Biomechanics** Room A406	**Biomechanics of Percutaneous Interventions** Room A404 **Arterial Solid Mechanics** Room A405 **Lung Pathology & Therapeutics** Room A406	**Thrombosis Biomechanics** Room A404 **Respiratory Biomechanics** Room A406 **Cardiovascular Tissue Engineering IV** *(Tissue Engineering Track)* Room A305
CELLULAR & MOLECULAR BIOENGINEERING	**Cell - Cell, Homotypic and Heterotypic Interactions** Room A301 **Cell Motility II** Room A302	**Translational Cellular & Molecular Bioengineering** Room A301 **Cell Motility III** Room A302	
NANO TO MICRO TECHNOLOGIES	**Nanotherapeutics I** Room A401	**Nanotherapeutics II** Room A401 **Drug Delivery Technologies I** Room A316	**Drug Delivery Technologies II** Room A316
NEURAL ENGINEERING	**Engineering the Neural Environment** Room A314	**Neuro Trauma Injury & Repair II** Room A410 **Neuro Imaging** Room A314	**Neural Control & Modeling III** Room A314

Track	8:00am – 9:30am	1:30pm -3:00pm	3:15pm – 4:45pm
ORTHOPEDIC & REHABILITATION ENGINEERING	**Muscuskeletal & Orthopedic Tissue Engineering I** *(Tissue Engineering Track)* Room A407 **Orthopedic Biomechanics: Bone & Cartilage** Room A405 **Assistive Technology and Robotics in Rehabilitation Engineering** Room A403	**Musculoskeletal & Orthopedic Tissue Engineering II** *(Tissue Engineering Track)* Room A407 **Rehabilitation Engineering - Blast Effects & Acoustics** Room A403	**Musculoskeletal & Orthopedic Tissue Engineering III** *(Tissue Engineering Track)* Room A407 **Skeletal Biomechanics** Room A405
STEM CELL ENGINEERING	**Stem Cell Bio Processing** Room A305	**Engineering Stem Cell Differentiation** Room A305	
TISSUE ENGINEERING	**Musculoskeletal & Orthopedic Tissue Engineering I** Room A407 **Host Response to Tissue Engineered Constructs** Room A411 **Nano & Micro Systems in Tissue Engineering** Sidney Marcus Auditorium	**Musculoskeletal & Orthopedic Tissue Engineering II** Room A407 **Printing & Patterning in Tissue Engineering I** Room A411	**Musculoskeletal & Orthopedic Tissue Engineering III** Room A407 **Printing & Patterning in Tissue Engineering II** Room A411 **Skin & Adipose Tissue Engineering** Room A410 **Cardiovascular Tissue Engineering IV** Room A305
TRANSLATIONAL BIOMEDICAL ENGINEERING **Track sponsored by* Fish & Richardson	**Translational Triad: Clinical, Industrial, & Academic Collaboration** Room A412	**Clinical & Translational Research & Science in Biomedical Engineering II** Room A412 **Translational Cellular & Molecular Bioengineering** (Cellular and Molecular Track) Room A301	
UNDERGRADUATE RESEARCH (REU)	**Undergraduate Research III - Tissue Engineering and Biomaterials** Room A410		**Undergraduate Research IV – Nano and Micro Technologies** Room A410

SCHEDULE-A-GLANCE

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

WEDNESDAY, October 24, 2012

9:00am – 7:00pm	Registration	GWCC, Exhibit Hall A2
9:00am - 11:00	CMBE SIG Meeting	GWCC, Room A306
10:00am – 5:00pm	Speaker Ready Room	GWCC, A303
9:00am – 4:30pm	BMES Board of Directors Meeting	GWCC, A309
11:00am – 5:00pm	Exhibits & Posters | Set-Up	GWCC, Exhibit Hall A2
7:30am - 7:45pm	Coulter College | Student	GWCC, A311
7:30am - 7:45pm	Coulter College | Faculty	GWCC, A312
11:00am – 3:00pm	COACH - Negotiation 101 for Graduate Students and Postdoctoral Associates	GWCC, A411
3:30pm – 5:30pm	Meet the Faculty Candidate Poster	GWCC, Exhibit Hall A2
5:30pm – 7:00pm	Welcome Reception	GWCC, Registration Hall A
7:00pm – 9:30pm	Council of Chairs Meeting & Dinner	Georgia Tech, IBB Lobby

AFFILIATE EVENTS:

9:30am - 5:30pm
US National Committee on Biomechanics Workshop
GWCC, Room A301

12noon - 4:00pm
AIMBE Board of Directors Meeting
GWCC, Room A304

THURSDAY, October 25, 2012

7:00am – 6:00pm	Registration	GWCC, Exhibit Hall A2
7:00am – 5:00pm	Speaker Ready Room	GWCC, A303
8:00am – 9:30am	**Platform Sessions - Thurs-1** *See pages 49-55*	GWCC
8:30am – 9:30am	Effective Interviewing	GWCC, A412
9:30am – 5:00pm	Exhibit Hall Open	GWCC, Exhibit Hall A2
9:30am – 1:00pm	**Poster Session – Thurs - A** *See pages 56-70*	GWCC, Exhibit Hall A2
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	GWCC, Exhibit Hall A2
8:00am – 10:00am	National Meetings Committee Meeting	GWCC, A309
10:30am – noon	**Plenary Session** State of the Society Address & Pritzker Distinguished Lecturer	GWCC, Sidney Marcus Auditorium
12:15pm – 1:15pm	Celebration of Minorities in BME Luncheon	GWCC, A411
noon – 1:30pm	Lunch on Own	
noon - 1:30pm	BMES Education Committee Meeting	GWCC, Room A309
1:30pm – 5:00pm	**Poster Session – Thurs - B** *See pages 71-85*	GWCC, Exhibit Hall A2
1:30pm – 3:00pm	**Platform Session – Thurs - 2** *See pages 86-92*	GWCC
1:30pm – 3:00pm	Whitaker Session	GWCC, A409
1:45pm – 2:45pm	Networking for Success	GWCC, A412
3:00pm – 4:00pm	Poster Viewing with Authors & Refreshment Break	GWCC, Exhibit Hall A2
3:00pm - 4:00pm	BMES International Affairs Committee Meeting	GWCC, A306
4:00pm – 5:30pm	**Platform Session – Thurs - 3** *See pages 93-99*	GWCC
3:45pm – 5:00pm	Creating Effective Resumes	GWCC, A411
5:00pm – 6:45pm	Resume & Cover Letter Review/ Critique Workshop	GWCC, A411
6:45pm – 7:45pm	Career Alumni Panel	GWCC, A411
5:45pm – 7:15pm	BMES Town Hall & Award Ceremony	GWCC, Sidney Marcus Auditorium
8:00pm – 9:30pm	University Receptions *Invitation Only*	Hyatt

Plenary Sessions
Platform Sessions
Posters
Workshops
Student & Early Career
Exhibits
Special Events
General

AFFILIATE EVENTS:

9:30am - 10:30am
AEMB Annual Grand Meeting
GWCC, Room A310

8:00pm - 9:30pm
University Receptions
Hyatt
See page 42

SCHEDULE-A-GLANCE

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

FRIDAY, October 26, 2012

7:00am – 6:00pm	Registration	GWCC, Exhibit Hall A2
7:00am – 5:00pm	Speaker Ready Room	GWCC, A303
8:00am – 9:30am	**Platform Session - Fri-1-1** *See pages 100-107*	GWCC
8:00am - 10:00am	2013 Annual Meeting Planning Committee	GWCC, A309
8:00am – 9:00am	BMES Students Affairs & Chapter Development Session	GWCC, A412
9:15am - 10:15am	BMES Transitioning Students to Industry: Panel Discussion	GWCC, Room A412
9:30am – 5:00pm	Exhibit Hall Open	GWCC, Exhibit Hall A2
9:30am – 1:00pm	**Poster Session – Fri - A** *see pages 108-124*	GWCC, Exhibit Hall A2
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	GWCC, Exhibit Hall A2
10:30am – 11:45am	**Plenary Session** NIBIB Lecture & DEBUT Awards Ceremony	GWCC, Sidney Marcus Auditorium
11:45am – 1:30pm	Lunch on Own	
11:45am – 1:15pm	Women in BMES Luncheon	GWCC, A411
1:00pm – 5:00pm	Career Fair	GWCC, Exhibit Hall A2
1:30pm – 5:00pm	**Poster Session – Fri - B** *See pages 125-144*	GWCC, Exhibit Hall A2
1:30pm – 2:30pm	**Platform Sessions – Fri - 2** *See pages 142-146*	GWCC
1:30pm – 2:30pm	BMES Student Leadership Session "Aiming for Excellence: The Hallmark of Leadership" w/ Howard G. Adams, PhD	GWCC, A412
2:45pm – 4:15pm	Mastering the Transition Process as a Graduate Student w/ Howard G. Adams, PhD	GWCC, A412
2:45pm – 3:45pm	**Platform Sessions – Fri -3** *See pages 147-151*	GWCC
3:45pm – 4:45pm	Poster Viewing with Authors & Refreshment Break	GWCC, Exhibit Hall A2
3:45pm - 4:45pm	BMES Diversity Committee Meeting	GWCC, A309
4:45pm – 6:00pm	Translational BME Symposium	GWCC, Sidney Marcus Auditorium
7:00pm – 10:00pm	BMES BASH	Georgia Aquarium

AFFILIATE EVENTS:

9:30am - 10:30am
AEMB Ethics Session
GWCC, Room A310

1:00pm - 2:00pm
AEMB-AIMBE Public Policy Session
GWCC, A310

11:45am - 1:30pm
Cardiovascular Engineering & Technology Editorial Board
GWCC, Room A306

SATURDAY, October 27, 2012

7:00am – 3:00pm	Registration	GWCC, Exhibit Hall A2
7:00am – 3:30pm	Speaker Ready Room	GWCC, A303
8:00am – 9:30am	**Plenary Session** Rita Schaffer Young Investigator Lecture Diversity Award Winner	GWCC, Sidney Marcus Auditorium
10:00am – 2:30pm	BMES Board of Directors Meeting	GWCC, A309
9:30am – 1:30pm	Exhibit Hall Open	GWCC, Exhibit Hall A2
9:30am – 1:00pm	**Poster Session -Sat - A & B** *See pages 152-179*	GWCC, Exhibit Hall A2
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	GWCC, Exhibit Hall A2
10:30am – 12noon	**Platform Session - Sat-1** *See Pages 180-187*	GWCC
noon – 1:30pm	Lunch on Own	
noon – 1:30pm	BMES Student Affairs Committee Meeting	GWCC, A306
1:30pm – 3:00pm	**Platform Session - Sat-2** *See Pages 188-194*	GWCC
3:15pm – 4:15pm	**Platform Session - Sat-3** *See Pages 195-200*	GWCC

Plenary Sessions
Platform Sessions
Posters
Workshops
Student & Early Career
Exhibits
Special Events
General

NOTES