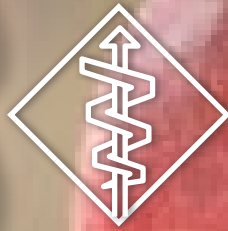


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BMES

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

hanjoong.jo@bme.gatech.edu

Julia Babensee

Program Chair

julia.babensee@bme.gatech.edu

www.bmes.org



BMES

BIOMEDICAL ENGINEERING SOCIETY
Advancing Human Health and Well Being

8201 Corporate Drive, Suite 1125
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Web: www.bmes.org

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October 22-25, 2014
San Antonio, Texas

October 7-10, 2015
Tampa, Florida

October 5-8, 2016
Minneapolis, Minnesota

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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*

WELCOMETO 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

Ch. R.

CHIEF OF STAFF



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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 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 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

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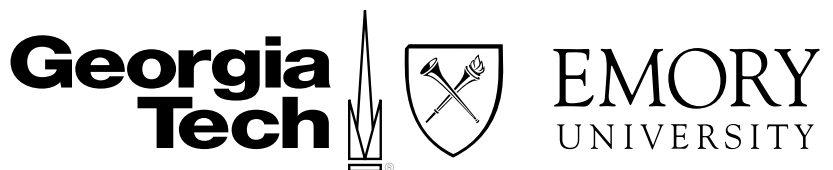
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The Wallace H. Coulter Department of Biomedical Engineering



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 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-invasive 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.

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



OBERT E. KLEIN/AP. © HHMI.

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 mi-

crofabrication 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  **Translational Research
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**Visit us
at Booth
611**

Want more information?

Plan to attend a reception sponsored by the Marquette University Department of Biomedical Engineering. You will be able to meet with faculty, students, and alumni who can answer any questions you might have about our graduate programs.

Refreshments will be served.

**Thursday, October 25, 2012
8:00 – 10:00 pm**

Hyatt Regency Atlanta
Executive Conference Room 222

Apply for Research Grants

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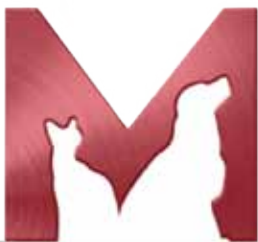
For further details, visit: <http://michelson.foundanimals.org>.

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- 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>





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

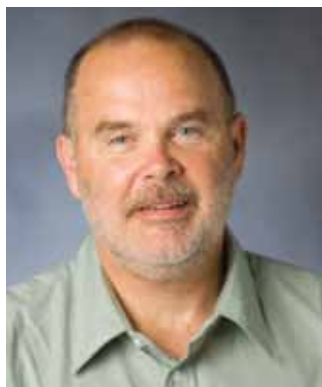
GEORGIA WORLD CONGRESS CENTER

Understanding Metabolic Regulation in Cancer Using Flux Analysis

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
 SIDNEY MARCUS AUDITORIUM
 GEORGIA WORLD CONGRESS CENTER

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

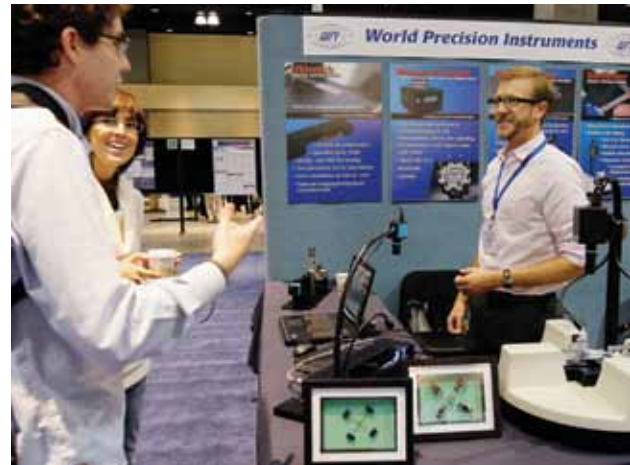
*God grant me the serenity
 to accept the things that work in my favor;
 the indifference to resist the things that do not;
 and the wisdom to know the difference.*

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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American Physiological Society

9650 Rockville Pike
 Bethesda, MD 20814
 Phone: 301-634-7164
 Email: info@the-aps.org
 Web: www.the-aps.org

Founded in 1887, the American Physiological Society was established to advance understanding of how living organisms function. Today APS helps disseminate physiological research through its scientific meetings and journals. APS also offers outstanding educational, professional development, and science policy programs. Complimentary journals, luggage tags, and pens will also be available.

BOOTH # 623

Biomedical Engineering Division of the American Society for Engineering Education

1818 N Street, NW, Suite 600
 Washington, DC 20036
 Phone: 202-331-3500
 Email: czapanta@cmu.edu
 Web: www.asee.org/member-resources/groups/divisions#Biomedical

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.

BOOTH # 121

Arizona State University**SCHOOL OF BIOLOGICAL AND HEALTH SYSTEMS ENGINEERING**

P.O. Box 879709
 Tempe, AZ 85287-9709
 Phone: 480-965-3028
 Email: sbhse@asu.edu
 Web: engineering.asu.edu/sbhse

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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Boston University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

44 Cummings Street
 Boston, MA 02215
 Phone: 617-353-2805
 Email: christen@bu.edu
 Web: www.bu.edu/bme

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.

BOOTH # 515

Cambridge University Press

32 Avenue of the Americas
 New York, NY 10013-2473
 Phone: 212-924-3900
 Email: jmurphy@cambridge.org
 Web: www.cambridge.org/us

For a 20% discount on a range of biomedical engineering books, stop by the Cambridge University Press booth. Titles on display include Beard, Biosimulation; Pruitt/Chakravartula, Mechanics of Biomaterials; Saltzman, Biomedical Engineering; Zenios/Yock/Makower, Biodesign; and Webb/Barrie-Smith, Introduction to Medical Imaging.

BOOTH # 422

Carnegie Mellon University/BME

700 Technology Drive
 Pittsburgh, PA 15219
 Phone: 412-268-6222
 Email: yuliwang@andrew.cmu.edu
 Web: www.bme.cmu.edu

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.

BOOTH # 700

Case Western Reserve University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

309 Wickenden Building
 10900 Euclid Avenue
 Cleveland, OH 44106-7207
 Phone: 216-368-4094
 Email: bmedept@case.edu
 Web: <http://bme.case.edu/>

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.

BOOTH # 822

The City College of New York**DEPARTMENT OF BIOMEDICAL ENGINEERING**

160 Convent Avenue, T401
 New York, NY 10031
 Phone: 212-650-7531
 Email: snicoll@ccny.cuny.edu
 Web: bme.ccny.cuny.edu

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.

BOOTH # 414

Clemson University**DEPARTMENT OF BIOENGINEERING**

301 Rhodes Research Center
 Clemson, SC 29634-0905
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 Email: mariam@clemson.edu
 Web: www.clemson.edu/ces/bioe

Adding 30,000 sqft of research labs and innovation space for business partnership, our newest facility is CUBEInC, Clemson University Biomedical Engineering Innovation Campus, where student-faculty-clinician teams develop and test emerging technologies. Our continuing commitment to excellence in undergraduate and graduate education assures degree market value and stimulates economic development.

BOOTH # 500

Cornell University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

101 Weill Hall

Ithaca, NY 14853

Phone: 607-255-2573

Email: bh42@cornell.eduWeb: www.bme.cornell.edu

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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Dalhousie University**SCHOOL OF BIOMEDICAL ENGINEERING**

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Email: bme@dal.caWeb: www.dal.ca/bme

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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1250 Poydras Street

Suite 1000, 10th Floor

New Orleans, LA 70113

Phone: 504-565-4900

Email: susan.montelius@va.govWeb: www.vacareers.va.gov

The Department of Veterans Affairs focuses on recruiting healthcare professionals and students throughout the US to provide the best care for our veterans. Promoting a diverse workforce and offering a wide array of employment benefits, scholarships and retention initiatives, the VA is a leader in our nation's health care industry.

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Drexel University**SCHOOL OF BIOMEDICAL ENGINEERING**

3141 Chestnut Street

Philadelphia, PA 19104

Phone: 215-895-2215

Email: biomed@drexel.eduWeb: www.biomed.drexel.edu

Our academic thrust areas bring life saving solutions to health care in the framework of translational, entrepreneurial and international initiatives. We offer BS, MS and PhD programs as well as Advanced Professional Certificates. Core competences of our faculty are at the forefront of cellular tissue engineering, neuroengineering, drug delivery, biomedical technology development, biomechanics, human performance, bionanotechnology, and integrated bioinformatics.

BOOTH # 502

Edwards Lifesciences

One Edwards Way

Irvine, CA 92614

Phone: 949-250-2014

Email: erin_spinner@edwards.comWeb: www.edwards.com

Edwards Lifesciences is the global leader in the science of heart valves and hemodynamic monitoring. Driven by a passion to help patients, the company partners with clinicians to develop innovative technologies in the areas of structural heart disease and critical care monitoring that save and enhance lives.

BOOTH # 314

Engineering World Health

The Prizery, Suite 230
302 East Pettigrew Street
Durham, NC 27701
Phone: 919-682-7788
Email: jbenchetrit@ewh.org
Web: <http://ewh.org/>

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!

BOOTH # 303

FASEB Marc Program

9650 Rockville Pike
Bethesda, MD 20814
Phone: 301-654-7930
Email: cadams@faseb.org
Web: www.faseb.org/marc

FASEB MARC Program provides a variety of activities to support the training of minority students, postdoctorates, faculty and scientists in the biomedical and behavioral sciences. We offer travel awards for scientific meetings, research conferences, and student summer research opportunities programs. We also sponsor Career Development Programs including grantsmanship training seminars.

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Florida International University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

10555 West Flagler Street
Miami, FL 33174
Phone: 305-348-6717
Email: bmeinfo@fiu.edu
Web: www.bme.fiu.edu

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.

BOOTHS # 200 / 202

Georgia Tech / Emory University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

313 Ferst Drive
Atlanta, GA 30332-0535
Phone: 404-894-7063
Email: sallygerrish@bme.gatech.edu
Web: www.bme.gatech.edu

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.

BOOTH #814

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Bridgewater, NJ 08807
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Email: hbylicki@hamamatsu.com
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BOOTH # 209

IEEE Engineering in Medicine and Biology Society

445 Hoes Lane
Piscataway, NJ 08854
Phone: 732-465-6460
Email: emb-exec@ieee.org
Web: www.embs.org

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.

BOOTHS # 203 / 205

Johns Hopkins University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

720 Rutland Avenue
Traylor 406
Baltimore, MD 21205
Phone: 410-614-4280
Email: hlanl@jhmi.edu
Web: www.bme.jhu.edu/academics/phds.htm

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.

BOOTH # 208

Khalifa University of Science, Technology & Research

P.O. Box 127788 Al Saada Street
Abu Dhabi, United Arab Emirates
Phone: 001-971-2-401-8000
Email: areej.alhaddad@kustar.ac.ae
Web: www.kustar.ac.ae

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.

BOOTH # 723

Korea Institute of Science and Technology

BIOMEDICAL RESEARCH INSTITUTE

Hwarang-no 14-gil 5
Seongbuk-gu, Republic of Korea
Phone: 82-2-958-6738
Email: jonghchoi@kist.re.kr
Web: cbm.kist.re.kr

The Biomedical Research Institute at KIST is the Korea's most prestigious medical research agency —making important discoveries that improve health and save lives. We will exhibit the introduction of our institute and research accomplishments. We will also provide individual interviewing opportunities to the interested students, postdocs, scientists with our research staffs.

BOOTH # 611

Marquette University

P.O. Box 1881
Milwaukee, WI 53201
Phone: 414-288-6059
Email: jay.goldberg@mu.edu
Web: www.mu.edu

Graduate Program in Healthcare Technologies Management (Marquette University and the Medical College of Wisconsin) - Unique curriculum combines business, technology, and healthcare to prepare engineers for management positions with medical device companies, hospitals, and healthcare consulting firms. Full time students can earn the MS degree in Healthcare Technologies Management in one year.

Graduate programs in Biomedical Engineering at Marquette University include MS, ME, and PhD degrees in Biomedical Engineering. Research opportunities are available in areas such as rehabilitation engineering, neurorehabilitation, cardiovascular and pulmonary systems, imaging, biomechanics, systems physiology, biotelemetry and others. The program is recognized for strong industry ties and research collaborations with the Medical College of Wisconsin, Froedert Hospital, Children's Hospital of Wisconsin, Zablocki VA Medical Center, and Shriners' Hospital (Chicago).

BOOTH # 400

Materialise

44650 Helm Court
Plymouth, MI 48170
Phone: 734-259-6672
Email: jamie.milas@materialise.com
Web: www.materialise.com

Materialise is a world leader in software for Additive Manufacturing. Our Mimics Innovation Suite is a CT based, 3D medical imaging solution for biomedical engineers and clinicians. Our Magics software improves the efficiency of the AM process through CAD translation, data preparation, automation, advanced support generation, part tracking and more.

BOOTH # 201

Medtronic, Inc.

710 Medtronic Parkway
Minneapolis, MN 55432-5604
Phone: 763-505-4542
Email: jan.mason@medtronic.com
Web: www.medtronic.com

At Medtronic, we're changing the face of chronic disease. By working closely with physicians around the world, we create therapies to help patients do things they never thought possible. Our medical technologies help make it possible for millions of people to resume everyday activities, return to work, and live better, longer. We're able to do this with the help of some very special people around the world: 42,000 dedicated employees who share a passionate purpose to improve lives, thousands of medical professionals who share their insights and ideas, and hundreds of advocacy associations that help us share information so people with debilitating diseases know relief is possible. Visit us online at www.medtronic.com.

BOOTH # 510

The Methodist Hospital Research Institute

6670 Bertner Street, M.S. R2-216

Houston, TX 77030

Phone: 713-441-7267

Email: aswright@tmhs.orgWeb: www.tmhri.org

The Methodist Hospital Research Institute fosters research collaboration across multiple disciplines, and is equipped with the world's most advanced technology to cure diseases. The Methodist Academy, within the Research Institute, is instrumental in developing educational and research partnerships for medical innovation around the world.

BOOTH # 211

Morgan & Claypool Publishers

40 Oak View Drive

San Rafael, CA 94903

Phone: 415-785-8003

Email: jones@morganclypool.comWeb: www.morganclypool.com

Morgan & Claypool is a leading digital publisher of books in biomedical and tissue engineering. All titles are brief, focused treatments of core topics in teaching and research, perfect for beginning or advanced students, practicing researchers, and faculty. Stop by our booth and talk to us about getting access to our online collection, or about becoming an author. Visit us online at www.morganclypool.com/r/bme.

BOOTH # 217

National Institute of Biomedical Imaging and Bioengineering

31 Center Drive, Room IC14

Bethesda, MD 20892

Phone: 301-496-9208

Email: info@nibib.nih.govWeb: <http://www.nibib.nih.gov>

The mission of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) is to improve health by leading the development and accelerating the application of biomedical technologies. The Institute is committed to integrating the physical and engineering sciences with the life sciences to advance basic research and medical care.

BOOTH # 715

National Instruments

11500 N. Mopac Expressway

Austin, TX 78759

Phone: 512-683-0100

Email: info@ni.comWeb: www.ni.com/biomedical

National Instruments provides powerful graphical system design software and modular hardware for biomedical engineering education and research. Professors and students benefit from industry-leading tools such as NI LabVIEW software, which helps students visualize and implement engineering concepts. NI also offers resources to universities to support laboratories and research. For more information about NI products, curriculum resources, and discounts, visit www.ni.com/biomedical.

BOOTH # 714

Northeastern University

313A Snell Engineering Center

360 Huntington Avenue

Boston, MA 02115

Phone: 617-373-6585

Email: coecheme@neu.eduWeb: www.coe.neu.edu/gse/programs/bioe/bion/index.html

Northeastern University is a private university which receives more undergraduate applications annually than any other university in the United States, earning Northeastern the title of the "most applied to private university in the United States". Northeastern University offers M.S. and Ph.D. degrees in Bioengineering in the heart of Boston's rich clinical, entrepreneurial, and academic environments. Unique strengths include Northeastern's internationally renowned experiential classroom-based education and Cooperative (Co-op) Education Program allowing students to closely work with industry while completing their undergraduate or graduate degrees. Research areas of strength include biomaterials, tissue engineering, neuroscience, biomechanics, nanotechnology, drug delivery, imaging, and many more. Please contact Dr. Thomas J. Webster (th.webster@neu.edu, Department Chair of Chemical Engineering) to learn why Northeastern has consistently been listed among the top "up-and-coming national universities" by the U.S. News and World Report.

BOOTH # 123

Northwestern University

2145 Sheridan Road

Evanston, IL 60026

Phone: 847-467-2369

Email: s-olds@northwestern.eduWeb: www.bme.northwestern.edu

With cutting-edge research in neural engineering and rehabilitation, biomaterials, tissue engineering and regenerative medicine, medical imaging, biophotonics, vision and global health technology, Northwestern University BME attracts top faculty and students alike. Research takes place on the main campus in Evanston and on the medical school campus in downtown Chicago.

BOOTH # 111

The Ohio State University

DEPARTMENT OF BIOMEDICAL ENGINEERING

270 Bevis Hall, 1080 Carmack Road

Columbus, OH 43210

Phone: 614-292-7152

Email: bmegrad@osu.eduWeb: www.bme.ohio-state.edu

Offering B.S., M.S., Ph.D., and M.D./Ph.D. degree options, researchers in biomechanics/biotransport; biomaterials; bioimaging; molecular, cellular, tissue engineering; biomedical devices, instrumentation and micro/nanotechnology collaborate campus-wide. State-of-the-art facilities include the Davis Heart and Lung Research Institute, Nanotech West, Ohio Supercomputing Center, Children's Hospital of Columbus, and The Ohio State University Medical Center.

BOOTH # 204

Peking University**BIOMEDICAL DEPARTMENT, COLLEGE ENGINEERING**

A-504, Peking University Hospital Building
 Zhong Guan Cun Bei, Hai Dian district
 Beijing 100871 China
 Phone: +86 62767113
 Email: jllo@coe.pku.edu.cn
 Web: <http://bme.pku.edu.cn/en/>

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.

BOOTH # 310

Pennsylvania State University**DEPARTMENT OF BIOENGINEERING**

206 Hallowell Building
 University Park, PA 16802
 Phone: 814-865-8092
 Email: mjs436@enr.psu.edu
 Web: <http://bioeng.psu.edu>

Offering B.S., M.S. and Ph.D. programs in Bioengineering, our mission is to educate students to become world-class engineers who contribute to social and economic development through innovative solutions to problems in medicine and the life sciences. Our uniquely trained faculty and specialized facilities enable cutting-edge research in fundamental biology, medical device design, and disease diagnosis, with a goal to translate discovery from academia to society. Come by for a visit. We look forward to meeting you!

BOOTH # 402

PolySciTech Division: Akina, Inc.

1291 Cumberland Avenue
 West Lafayette, IN 47906
 Phone: 765-464-0501x6
 Email: jg@akinainc.com
 Web: www.polysciotech.com

PolySciTech Division of Akina, Inc. specializes in providing biodegradable block copolymers, fluorescent dyes/probes, rapidly swelling hydrogels, and other 'hard to find' research materials. PST also performs custom synthesis to match your specifications check out www.polysciotech.com to learn more.

BOOTH # 600

Purdue University**WELDON SCHOOL OF BIOMEDICAL ENGINEERING**

206 S. Martin Jischke Drive
 West Lafayette, IN 47907-2032
 Phone: 765-494-2995
 Email: weldonbmegrad@purdue.edu
 Web: www.purdue.edu/bme

BOOTH # 617

Rensselaer Polytechnic Institute

110 8th Street
 Troy, NY 12180
 Phone: 518-276-6216
 Email: gradadmissions@rpi.edu
 Web: www.rpi.edu

Rensselaer Polytechnic Institute is the nation's oldest technological research university and home to one of the oldest biomedical engineering departments, educating outstanding academics, industry leaders and research scientists. Research is centered on Biomolecular Science and Engineering, Multiscale Modeling, Imaging and Biocomputation, Musculoskeletal Engineering, Neural Engineering, and Vascular Engineering (bme.rpi.edu).

BOOTH # 223

Rothman and Company, PA

1930 Gulf Shore Blvd. N, Suite A-302
 Naples, FL 34102
 Phone: 626-993-8424
 Email: info@rothmanandcompany.com
 Web: www.rothmanandcompany.com

With nearly three decades of experience, Rothman and Company, P.A. is ideally suited to help entrepreneur-scientists start and grow newly formed companies. Often our clients are starting companies based on research developed in university and government labs. With our unique expertise we provide invaluable insight into the technology start-up process.

BOOTH # 403

RURO Inc.

321 Ballenger Center Drive
 Suite 102
 Frederick, MD 21703
 Phone: 888-881-7876
 Email: sales@ruro.com
 Web: www.ruro.com

RURO develops state of the art computer software and RFID solutions for research, biotechnological, pharmaceutical, healthcare and government laboratories in the US and worldwide. Our RURO Smart RFID program was designed specifically for life sciences applications that will benefit from enhanced accuracy, safety, security and productivity that RFID technology enables.

BOOTH # 416

Rutgers University

599 Taylor Road
 Piscataway, NJ 08854
 Phone: 732-445-4500 x6113
 Email: langrana@rci.rutgers.edu
 Web: <http://biomedical.rutgers.edu>

The Rutgers Department of Biomedical Engineering (BME) is a vibrant and dynamic enterprise of scholarship, learning, and technology development. Located in the heart of New Jersey's "Cure Corridor", BME offers a remarkably diverse array of opportunities for undergraduate, graduate, and postgraduate training and research in molecular systems bioengineering, biomaterials and tissue engineering, bionanotechnology, biomechanics, rehabilitation engineering, and biomedical imaging.

BOOTH # 702

Springer

233 Spring Street
 New York, NY 10013
 Phone: 201-348-4033
 Email: Michael.Weston@springer.com
 Web: www.springer.com

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BOOTH # 215

Temple University**COLLEGE OF ENGINEERING, BIOENGINEERING DEPARTMENT**

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 its 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.eduWeb: 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.eduWeb: <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.eduWeb: 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.eduWeb: 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.eduWeb: 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, CA 92697-2715

Phone: 949-824-9196

Email: bme@uci.eduWeb: www.wng.uci.edu/dept/bme

Biomedical Engineering UC Irvine offers 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.eduWeb: 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.eduWeb: 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; Neuro-engineering; 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.eduWeb: 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.eduWeb: 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 musculoskeletal), 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: biomed@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.eduWeb: 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.eduWeb: <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.comWeb: 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.eduWeb: <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.eduWeb: 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.eduWeb: <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.eduWeb: 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.orgWeb: 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.eduWeb: 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: perry@wpiinc.comWeb: 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.eduWeb: 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, USA 30303
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 - 8:00pm
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

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. García 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



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



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 is 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.

DISCOVER. INNOVATE. ACHIEVE.

At Worcester Polytechnic Institute, graduate students work in teams with faculty who challenge them to conduct research that matters in the real world. We invite you to discover WPI—a premier university for graduate studies in science, engineering, and business.

Visit WPI's table at the graduate fair.

➔ grad.wpi.edu/+science



www.bme.umich.edu



U-M BME's newly formed joint department in the top-ranked Medical School and top-ranked College of Engineering will foster collaboration between engineers and physicians to accelerate discovery of healthcare technology.

With the support of the Wallace H. Coulter Translational Research Partnership Program, U-M BME embraces the translation of research into lifesaving technologies.

The BME design program consistently produces student teams that compete and win awards in design competitions on the national stage.



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. Pritzker 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, Andy 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

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Johns Hopkins University

Hyun Sung Park
Johns Hopkins University

Nathaniel Price
University of Florida

Vihitaben Sureshbhai Patel
Stony Brook University



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

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

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
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Massachusetts Institute of Technology
Ron Weiss
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Orthopedic and Rehabilitation Engineering

Barbara Boyan
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Stem Cell Engineering

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University of Toronto
Todd McDevitt
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Tissue Engineering

Gordana Vunjak – Novakovic
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Ed Botchway
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Translational Biomedical Engineering

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Larry McIntire
Georgia Institute of Technology

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University of California, San Diego

Meet the Faculty Candidate

Mariah Hahn
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Emory University and BMED student leadership

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 Sarah Stabenfeldt
 Laura Suggs
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 Emmanuel Tzanakakis

ABSTRACT REVIEWERS

Mark Ungrin
Shyni Varghese
Joel Voldman
Yun Wang
Stephanie Willerth

Tissue Engineering

Guillermo Ameer
Lauren Anderson
Gilda Barabino
Gary Bowlin
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Karen Burg
James Cooper
Quanjun (Trey) Cui
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Abby Whittington
Pamela Yelick
Lijie Zhang


Translational Biomedical Engineering

Joseph Bronzino
Colin Drummond
Larry McIntire
Donald Peterson
Kristina Rinker

Undergraduate Research

Taby Ahsan
Frank Alexis
Helim Aranda-Espinoza
Shivaun Archer
Kristen Billiar
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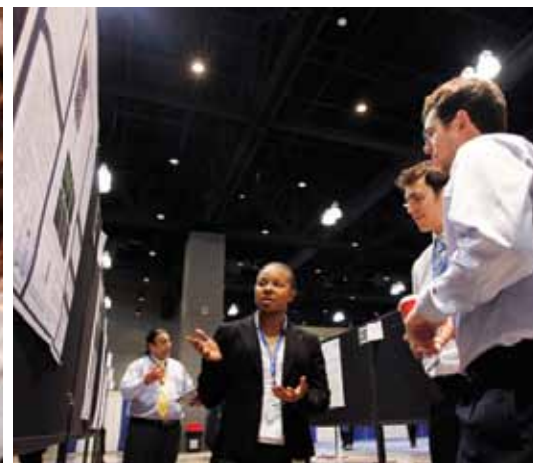


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PROGRAM



THURSDAY, OCTOBER 25

TODAY'S HIGHLIGHTS

PLATFORM SESSIONS Thurs-I 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
LectureFROM BENCH TO BEDSIDE —
A JOURNEY THROUGH
TRANSLATIONAL RESEARCHAjit 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 Auditorium

Hosted Receptions
Invitation only

Thursday, October 25, 2012

8:00AM - 9:30AM

PLATFORM SESSION - THURS - I

Track: Biomaterials

OP - Thurs-I-I - Room A311

Bioinspired Materials

Chairs: Hyunjoon Kong, Bruce Lee

8:00AM

Biomimetic Design of Lubricin-like Polymers for Joint Lubrication

M. TAN¹, K. J. SAMAROO¹, R. ANDRESEN-EGUILUZ¹, A. BARRETT¹, P. PETERSEN¹, D. GOURDON¹, L. BONASSAR¹, AND D. PUTNAM¹¹Cornell University, Ithaca, NY

8:15AM

A Biomimetic Nanomatrix Gel for Improving Islet Function and Viability

D.-J. LIM¹, P. T. HWANG¹, S. M. RAHMAN¹, W. CUI¹, J. A. CORBETT², AND H.-W. JUN^{1,3}¹U of Alabama at Birmingham, Birmingham, AL, ²Medical College of Wisconsin, Milwaukee, WI, ³Comprehensive 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. POOYAN¹, R. TANNENBAUM², AND H. GARMESTANI¹¹Georgia Institute of Technology, Atlanta, GA, ²Boston University, Boston, MA

8:45AM

Layer-by-Layer Assembly of Calcium Phosphate-Nanofiber Templates

O. KARAMAN¹ AND E. JABBARI¹¹University of South Carolina, Columbia, SC

9:00AM

Contact Dynamics of Marine Mussel-Inspired Polydopamine Thin Films

F. YANG¹, Y. HAN¹, W. ZHANG¹, AND B. ZHAO¹¹University of Waterloo, Waterloo, ON, Canada

9:15AM

Biomimetic End-Capped Polylactide (PLA) Scaffolds Influence Osteoblast Cell Differentiation *In Vitro*C. T. GOMILLION¹, R. K. LAKHMAN², R. M. KASI², R. A. WEISS³, L. T. KUHN¹, AND A. J. GOLDBERG¹¹Department of Reconstructive Sciences, University of Connecticut Health Center, Farmington, CT, ²Institute of Materials Sciences, University of Connecticut, Storrs, CT, ³Polymer Engineering, University of Akron, Akron, OH

Track: New Frontiers and Special Topics

OP - Thurs - I - 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}¹MIT, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD

8:30AM

Molecular Characterization of the Foreign Body Response

T. KYRIAKIDES¹¹Yale 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. CILFONE¹, D. E. KIRSCHNER¹, AND J. J. LINDERMAN¹¹University of Michigan, Ann Arbor, MI**9:15AM****Targeting the Tumor-draining Lymph Node with Adjuvant Nanoparticles for Cancer Immunotherapy**S. N. THOMAS¹, M. A. SWARTZ², AND J. A. HUBBELL²¹Georgia Institute of Technology, Atlanta, GA, ²École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**Track: Nano and Micro Technologies****OP - Thurs - I - 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. FLETCHER¹¹UC Berkeley, Berkeley, CA**8:30AM****On-chip Erythrocyte Deformability Measurement and *In Vivo* Splenic Retention in Malaria Pathology**S. HUANG¹, A. AMALADOSS², M. LIU², H. CHEN³, M. DAO^{1,2}, AND J. HAN^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Singapore-MIT Alliance for Research and Technology, Singapore, Singapore, ³Harvard School of Public Health, Boston, MA**8:45AM****Microfluidic Probed Isoelectric Focusing Allows Targeted Posttranslational Modification Analysis**S. Q. TIA¹, A. J. HUGHES¹, K. BROWN¹, D. CHEN¹, AND A. E. HERR¹¹University of California, Berkeley, CA**9:00AM****Microfluidic High-throughput Platform for Determining Enzyme Kinetics**K. H. BHATT¹, J. M. ROSANO¹, C. GARSON¹, I. MILLS¹, J. W. HONG², AND K. PANT¹¹CFD Research Corporation, Huntsville, AL, ²Auburn University, Auburn, AL**9:15AM****Microfluidics for High Through-put Study of Stem Cell Mechanobiology**J. ZHOU¹ AND L. NIKLASON^{1,2}¹Yale School of Medicine, New Haven, CT, ²Yale University, New Haven, CT**Track: Nano and Micro Technologies****OP - Thurs - I - 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 CARLO¹¹UCLA, Los Angeles, CA**8:15AM** INVITED**Enabling Sensitive Paper-based Immunoassays and Nucleic Acid Tests**P. YAGER¹, E. S. FU¹, AND B. R. LUTZ¹¹Department of Bioengineering, University of Washington, Seattle, WA**8:45AM****Ultrasensitive Clinical Enumeration of Rare Cells *Ex Vivo* Using a Microfabricated Hall Detector**D. ISSADORE¹, J. CHUNG¹, H. SHAO¹, C. CASTRO¹, R. WEISSELER¹, AND H. LEE¹¹Massachusetts General Hospital, Boston, MA**9:00AM****Application of a Novel Tablet PCR Platform for Detection of Influenza Subtypes**S. ANGIONE¹, Z. INDE¹, C. BECK¹, S. OPAL², A. ARTENSTEIN², AND A. TRIPATHI¹¹Brown University, Providence, RI, ²Memorial Hospital, Pawtucket, RI**9:15AM****Objective Assessment of Long-Term Stability and Sensitivity of NHANES Physical Activity Monitors**R. J. BRYCHTA¹, H. SASAI¹, J. J. MCCLAIN², R. P. TROIANO², M. S. EBERHARDT³, C. R. IDELSON¹, AND K. Y. CHEN¹¹NIDDK, NIH, Bethesda, MD, ²NCI, NIH, Bethesda, MD, ³NCHS, CDC, Hyattsville, MD**Track: Biomaterials****OP - Thurs - I - 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. LI¹, M. MITEVA², T. D. GIORGIO², M. J. CHENG², AND C. L. DUVALL¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt University, Nashville, TN**8:15AM****RAFT-based glycopolymers for *In Vitro* and *In Vivo* Cell Targeting**E-H. SONG¹, M. J. MANGANIELLO¹, Y-H. CHOW¹, B. GHOSH¹, D. HIDANO¹, A. J. CONVERTINE¹, P. S. STAYTON¹, L. M. SCHNAPP¹, AND D. M. RATNER¹¹University of Washington, Seattle, WA**8:30AM****Controlled Cellular Uptake by Multivalent Temperature-Triggered Presentation of Cell-Penetrating Peptides**S. MACEWAN¹ AND A. CHILKOTI¹¹Duke University, Durham, NC**8:45AM****Encryption of Adeno-associated Virus with Peptide Locks for Targeted Cancer Therapy**J. JUDD¹ AND J. SUH¹¹Rice University, Houston, TX**9:00AM****Targeting Extracellular DNA to Deliver IGF-1 to the Injured Heart**R. KHAN¹, J. C. SY¹, M. BROWN¹, M. D. MARTINEZ¹, N. MURTHY², AND M. E. DAVIS¹¹Emory University, Atlanta, GA, ²Georgia Tech, Atlanta, GA**9:15AM****Development of "Bulky" Lipid Microbubbles for Improved Drug loading and Enhanced Ultrasound Triggered Drug Delivery**S. R. SIRSI¹, C. FUNG², M. Y. TIANNING², AND M. A. BORDEN¹¹University of Colorado at Boulder, Boulder, CO, ²Columbia University, New York City, NY

Track: Biomaterials**OP - Thurs - I - 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. TRONIC¹, O. YAKOVENKO¹, R. PENKALA¹, D. G. CASTNER¹, AND W. E. THOMAS¹¹University of Washington, Seattle, WA**8:15AM****Dual Patterning of Fluorescent Proteins onto Soft Hydrogels for Cellular Traction Force Microscopy**S. R. POLIO¹, I. C. MACDONALD¹, A. T. WEBER¹, D. STAMENOVIC¹, AND M. L. SMITH¹¹Boston University, Boston, MA**8:30AM****Hydrogel Microwell Arrays for Isolation, Culture, and Analysis of Rare Cells**D. E. HEATH¹, C. NG¹, P. T. HAMMOND², M. B. CHAN³, AND L. G. GRIFFITH²¹Singapore-MIT Alliance for Research and Technology, Singapore, Singapore,²Massachusetts Institute of Technology, Cambridge, MA, ³Nanyang 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. CULPEPPER¹ AND S. BELLIS¹¹University of Alabama at Birmingham, Birmingham, AL**9:00AM****Substrate-independent Antifouling Zwitterionic Polymer Brushes**J. KUANG¹ AND P. MESSERSMITH¹¹Northwestern University, Evanston, IL**9:15AM****Helix Versus Coil Polypeptide Macromers: Gel Networks with Decoupled Stiffness and Permeability**A. OELKER¹, S. MOREY¹, L. GRIFFITH¹, AND P. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Cellular and Molecular Bioengineering****OP - Thurs - I - 7 - Room A301****Mechanotransduction I****Chairs:** Julie Ji, Sanjay Kumar**8:00AM****Substrate Stiffness Alters Fibronectin Matrix Deposition**J. P. CALIFANO¹, L. YUAN¹, J. CHAREST¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**8:15AM****Substrate Stress Relaxation Influences Cell Phenotype**O. CHAUDHURI¹, N. HUEBSCH², D. KLUMPERS¹, X. ZHAO³, AND D. MOONEY¹¹Harvard University, Cambridge, MA, ²UCSF, San Francisco, CA, ³Duke University, Durham, NC**8:30AM****Combined Effects of Hypoxia and Matrix Stiffness Regulate Brain Tumor Proangiogenic Signaling via Reactive Oxygen Species**D. W. INFANGER¹, Y. CHO¹, E. M. BROOKS¹, C. A. REINHART-KING¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**8:45AM****Using Active Microrheology to Map Matrix Mechanics in 3D**A. KURUP¹¹University of California, Irvine, Irvine, CA**9:00AM****Cdc42 Mediates Contractility-independent Matrix Mechanical and Biochemical Signaling in Mesenchymal Stem Cell Osteogenic Differentiation**W. CHEN¹, D. A. ROMERO¹, C. AMON¹, AND C. A. SIMMONS¹¹University of Toronto, Toronto, ON, Canada**9:15AM****Manipulation of Cytoskeletal Tension Using Cell-Derived, Biomimetic Patterning**J. H. SLATER¹, J. C. CULVER², M. E. DICKINSON², AND J. L. WEST¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**Track: Cellular and Molecular Bioengineering****OP - Thurs - I - 8 - Room A302****Cell Adhesion I****Chairs:** Omolola Eniola-Adefeso, Brenton Hoffman**8:00AM****Overview Track Talk: Cellular and Molecular Bioengineering**S. DIAMOND¹, W. LAM²¹University of Pennsylvania, ²Emory University**8:15AM****CD44-based Adhesion and Mechanotransductive Signaling on Engineered Hyaluronic Acid Matrices**Y. KIM^{1,2}, B. ANANTHANARAYANAN¹, AND S. KUMAR^{1,2}¹University of California, Berkeley, Berkeley, CA, ²UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA**8:30AM****JNK Regulates Rigidity-dependent Adherence Junction Formation of Epithelia**H. YOU¹, A. RANGANATHAN¹, AND S. T. ANDREADIS¹¹University 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. GENG¹, K. YEH¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**9:00AM****MUC16 is a Multifunctional Glycoprotein in Pancreatic Cancer Cells**S-H. CHEN^{1,2} AND K. KONSTANTOPOULOS^{1,2}¹Johns Hopkins University, Baltimore, MD, ²Physical Sciences-Oncology Center, Baltimore, MD**9:15AM****Inflammatory Monocytes Mediate Breast Tumor Adhesion to Vascular Endothelium**S. J. EVANI¹, R. G. PRABHU¹, AND A. K. RAMASUBRAMANIAN¹¹university of texas san antonio, san antonio, TX

Track: Stem Cell Engineering OP - Thurs - I - 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. LIPPMANN¹, S. AZARIN¹, E. SHUSTA¹, AND S. PALECEK¹

¹University of Wisconsin - Madison, Madison, WI

8:30AM

Human ESC-Derived Cardiac Micro-Tissue Particles as a Novel Approach for Myocardial Infarct Repair

K. L. KREUTZIGER¹, K. A. BERES¹, S. DUPRAS¹, X. YANG¹, V. MUSKHELI¹, AND C. E. MURRY¹

¹University 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. PHILLIPS¹, A. CHAROENPANICH^{1,2}, S. H. BERNACKI^{1,2}, AND E. G. LOBOA^{1,2}

¹North Carolina State University, Raleigh, NC, ²University of North Carolina, Chapel Hill, NC

9:00AM

Personalizing the Study of Infectious Disease: Modeling Hepatitis C Virus Using Induced Pluripotent Stem Cells

K. TREHAN¹, R. E. SCHWARTZ², L. ANDRUS³, T. P. SHEAHAN³, A. PLOSS³, S. A. DUNCAN⁴, C. M. RICE³, AND S. N. BHATIA¹

¹Harvard-MIT, Cambridge, MA, ²MIT, Cambridge, MA, ³The Rockefeller University, New York, NY, ⁴Medical College of Wisconsin, Milwaukee, WI

9:15AM

Specialized Tip/Stalk and Phalanx Endothelial Cells from Embryonic Stem Cells

A. BLANCAS¹, L. WONG¹, D. E. GLASER¹, AND K. E. MCCLOSKEY¹

¹UC, Merced, Merced, CA

Track: Biomaterials

OP - Thurs - I - 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. LIU¹, K. Z. VANG¹, S. H. GELLMAN¹, P. K. KREEGER¹, AND K. S. MASTERS¹

¹University of Wisconsin, Madison, WI

8:15AM

Measuring Mucus Microrheology with an Autonomous High-throughput Microscopy System

J. A. CRIBB¹, L. OSBORNE¹, A. ZHONG¹, J. HSAIO¹, E. T. O'BRIEN¹, L. VICCI¹, R. M. TAYLOR, II¹, AND R. SUPERFINE¹

¹Univ. 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. SEIDLITS¹, B. P. BERNABÉ¹, L. J. BROADBELT¹, AND L. D. SHEA¹

¹Northwestern University, Evanston, IL

8:45AM

Using Molecular Mechanics to Predict Bulk Material Properties of Fibronectin Fibers

M. J. BRADSHAW¹, M. C. CHEUNG¹, D. J. EHRLICH¹, AND M. L. SMITH¹

¹Boston University, Boston, MA

9:00AM

Mechanical Characterization of Human Renal Parenchyma Through Dynamic Tensile Tests Until Failure

Y-C. LU¹ AND C. UNTAROIU¹

¹Virginia Tech, Blacksburg, VA

9:15AM

An Organotypic Spinal Cord Slice Culture Model to Quantify Neurodegeneration

M. RAVIKUMAR^{1,2}, S. JAIN¹, R. H. MILLER¹, J. R. CAPADONA^{1,2}, AND S. M. SELKIRK^{1,2}

¹Case Western Reserve University, Cleveland, OH, ²Veterans Affairs Medical Center, Cleveland, OH

Track: Cancer Technology*

OP - Thurs - I - 11 - Room A402

Cancer Biomarkers

Chairs: Daniel Irimia, Anubhav Tripathi

8:00AM

ECM Microarrays for Querying Cell-ECM Interactions in Metastasis

N. E. RETICKER-FLYNN¹, D. F. BRAGA MALTA¹, M. M. WINSLOW², M. J. XU¹, T. E. JACKS¹, AND S. N. BHATIA¹

¹Massachusetts Institute of Technology, Cambridge, MA, ²Stanford University, Stanford, CA

8:15AM

RNA Sequencing of Human Colon Cancer Cells During *In Vitro* Metastasis Induced by Mechanical Microenvironment

X. TANG¹, T. B. KUHLENSCHMIDT¹, M. S. KUHLENSCHMIDT¹, AND T. A. SAIF¹

¹University 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. STOTT¹, M. YU¹, D. T. TING¹, D. T. MIYAMOTO¹, S. M. ROTHENBERG¹, R. LEE¹, L. V. SEQUIST¹, N. BARDEESY¹, S. RAMASWAMY¹, S. MAHESWARAN¹, M. TONER¹, AND D. A. HABER¹

¹Massachusetts General Hospital, Charlestown, MA

8:45AM

In Vivo Phage Display to Discover Novel, Non-VEGF Mediated Tumor Angiogenic Factors Such as Hornerin

M. E. SEAMAN¹ AND K. KELLY¹

¹University 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. PHILLIP¹, W-C. CHEN¹, S. KHATAU¹, S. GUPTA¹, J. LEEK¹, A. MAITRA¹, AND D. WIRTZ^{1,2}

¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins University, Baltimore

9:15AM

Single-Cell Analysis - Devices and Heterogeneity

S. P. ASHILI¹, L. KELBAUSKAS¹, H. ZHU¹, K. B. LEE¹, J. FORRESTER¹, J. VELA¹, J. HOUKAL¹, Y. TIAN¹, A. C. YOUNGBULL¹, P. SENECHAL-WILLIS¹, M. R. HOLL¹, R. H. JOHNSON¹, AND D. R. MELDRUM¹

¹Arizona State University, Tempe, AZ

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Track: Biomedical Imaging and Optics**OP - Thurs - I - 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. YEH¹, J. SHARMA¹, I-M. SHIH², D. M. VU¹, J. S. MARTINEZ¹, AND J. H. WERNER¹
¹Los Alamos National Laboratory, Los Alamos, NM, ²Johns Hopkins University, Baltimore, MD

8:15AM

The Sensitive Detection and Tracking of Single RNA Transcripts in Living Cells with Ratiometric Bimolecular Beacons

X. ZHANG¹, A. SHAH¹, V. LEKOVA¹, A. RAJ¹, M. A. BEHLKE², AND A. TSOURKAS¹
¹University of Pennsylvania, Philadelphia, PA, ²Integrated DNA Technologies, Inc., Coralville, IA

8:30AM

Quantum Dot - Fluorescent Protein FRET Probes for Sensing Intracellular pH

A. M. DENNIS^{1,2}, D. SOTTO¹, W. J. RHEE¹, S. N. DUBLIN¹, AND G. BAO¹
¹Georgia Institute of Technology, Atlanta, GA, ²Los Alamos National Laboratory, Los Alamos, NM

8:45AM

Targeted NIR2 Imaging Probe Sensitive Detects Ovarian Cancer Peritoneal Implants and Assists Surgical Debulking

D. GHOSH¹, A. BAGLEY¹, Y-J. NA², S. N. BHATIA¹, AND A. M. BELCHER¹
¹MIT, Cambridge, MA, ²Massachusetts General Hospital, Cambridge, MA

9:00AM

Using Porphyrin Emission to Monitor Stress in Synthetic Membranes

N. P. KAMAT¹, Z. LIAO¹, I. J. DMOCHOWSKI¹, M. J. THERIEN², J. RAWSON², AND D. A. HAMMER¹
¹University of Pennsylvania, Philadelphia, PA, ²Duke University, Durham, NC

9:15AM

Maltodextrins Image Early Stage Bacterial Infections and Drug Resistance by Positron Emission Tomography

X. NING¹, S. LEE¹, W. SEO², M. GOODMAN², AND N. MURTHY¹
¹UC Berkeley, Berkeley, CA, ²Emory University School of Medicine, Atlanta, GA

Track: Cardiovascular and Respiratory Engineering***OP - Thurs - I - 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. HOSSAIN¹, Y. ZHANG², J. SINGH¹, T. HUGHES³, AND P. DECUZZI¹
¹The Methodist Hospital Research Institute, Houston, TX, ²Carnegie Mellon University, Pittsburgh, PA, ³The University of Texas at Austin, Austin, TX

8:15AM

Blood Flow Patterns in Infrarenal Aorta due to Increased Peripheral Resistances: Relevance to AAA

T. PASSERINI¹, A. SMOLENSKY¹, M. PICCINELLI¹, J. OSHINSKY¹, A. VENEZIANI¹, AND W. TAYLOR¹
¹Emory University, Atlanta, GA

8:30AM

Effects of Intraventricular Flow Patterns on Ventricular Performance

J. SEO¹ AND R. MITTAL¹
¹Johns Hopkins University, Baltimore, MD

8:45AM

Targeted Non-Invasive Occlusion of Pharyngeal Arch Arteries During Avian Cardiac Morphogenesis

S. LINDSEY¹, A. SHEKHAR¹, H. C. YALCIN¹, N. NISHIMURA¹, C. B. SCHAFER¹, AND J. BUTCHER¹
¹Cornell University, Ithaca, NY

9:00AM

Intrinsic Frequency: A New Index for Quantification of Left Ventricle-Aorta Coupling

N. M. PAHLEVAN¹, P. TAVALLALI¹, T. Y. HOU¹, AND M. GHARIB¹
¹California Institute of Technology, Pasadena, CA

9:15AM

The Effect of Red Blood Cells on Microparticle Transport to Glass Surfaces

Y-H. LEE¹, A. FOGELSON², AND V. TURITTO¹
¹Illinois Institute of Technology, Chicago, IL, ²University of Utah, Salt Lake City, UT

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Track: Cardiovascular and Respiratory Engineering***OP - Thurs - I - 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. WENK¹, J. J. PILLA², J. R. MCGARVEY², J. H. GORMAN III², AND R. C. GORMAN¹
¹University of Kentucky, Lexington, KY, ²University of Pennsylvania, Philadelphia, PA

8:15AM

The Effect of Fibrin Biological Sutures on the Infarcted Rat Heart

J. T. FAVREAU¹, J. P. GUYETTE¹, Z. TAO¹, A. DEMARTINO¹, N. DUFFY¹, J. FITZPATRICK¹, J. STEDMAN¹, G. D. PINS¹, AND G. R. GAUDETTE¹
¹Worcester Polytechnic Institute, Worcester, MA

8:30AM

Engineering the Adenine Nucleotide Pool to Enhance Function of Normal and Infarcted Hearts

S. G. NOWAKOWSKI¹, S. C. KOLWICZ¹, G. L. ODOM¹, S. LUNDY¹, F. S. KORTE¹, S. D. HAUSCHKA¹, J. S. CHAMBERLAIN¹, R. WEISS², R. TIAN¹, AND M. REGNIER¹
¹University of Washington, Seattle, WA, ²Cornell University, Ithaca, NY

8:45AM

Causal Relationship Between Restitution Slope and Alternans in Human Right Ventricle

Y. ZHAO¹, K. BROWNSON¹, C. HOOPES¹, L. JING¹, A. AGARWAL¹, AND A. PATWARDHAN¹
¹University of Kentucky, Lexington, KY

9:00AM

Statistical Model for Anatomically-Realistic Calcium Release Channel Distribution in Cardiomyocytes

G. BASS¹, M. O'SULLIVAN², C. WALKER², E. BLUMGART¹, M. MUNRO², E. CRAMPIN¹, C. SOELLER², AND V. RAJAGOPAL¹
¹Auckland Bioengineering Institute, Auckland, New Zealand, ²University of Auckland, Auckland, New Zealand

9:15AM

β -blockers Simultaneously Inhibit and Enhance Receptor Sensitivity *In Silico* and *In Vitro*

R. K. AMANFU¹ AND J. J. SAUCERMAN¹
¹University of Virginia, Charlottesville, VA

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Track: Bioinformatics and Systems Biology**OP - Thurs - I - 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. KEMP¹, A. LEVCHENKO²¹Georgia Institute of Technology, ²Johns Hopkins University**8:15AM****Modeling Pluripotency Transitions in Mouse Embryonic Stem Cells Using Spatial Rules Based Modeling**D. WHITE¹, M. KINNEY¹, T. MCDEVITT¹, AND M. KEMP¹¹Georgia Institute of Technology, Atlanta, GA**8:30AM****Modeling Hematopoietic Cell Reconstitution After Transplantation**S. PEARCE¹, R. P. NELSON², AND A. E. RUNDELL¹¹Purdue University, West Lafayette, IN, ²IU School of Medicine, Indianapolis, IN**8:45AM****Combinations of VEGF and BDNF Determine Cell States and Behavioral Adaptation during Vascular Sprouting**B. L. LONG¹, D. T. RYAN¹, R. REKHI¹, B. ZAUNBRECHER¹, G. CHING¹, A. ABREGO¹, AND A. A. QUTUB¹¹Rice University, Houston, TX**9:00AM****Mechanical Regulation of Collagen Alignment in Myocardial Infarcts: Computational Modeling Insights**A. D. ROUILLARD¹ AND J. W. HOLMES¹¹University of Virginia, Charlottesville, VA**9:15AM****Mathematical Modeling of Trabecular Bone Architecture Using Stochastic Geometry Techniques**S. A. MONTELONGO¹, D. MECKE¹, AND X. WANG¹¹University of Texas at San Antonio, San Antonio, TX**Track: Biomedical Engineering Education****OP - Thurs - I - 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. LINSSENMEIER¹, J. COLE¹, A. MCKENNA², E. MOLINA¹, T. MILLER¹, AND M. GLUCKSBERG¹¹Northwestern University, Evanston, IL, ²Arizona State University, Mesa, AZ**8:15AM****Aid-to-the-Disabled Design Projects That Combine Mentors and Students From Engineering and Medicine**M. A. RUEGSEGGER¹, R. SISON¹, J. CASE-SMITH¹, T. BERNER¹, AND C. D. DIGIOVINE¹¹The Ohio State University, Columbus, OH**8:30AM****Incorporating Clinical Needs Finding in the Senior Design Experience**A. LOUIE¹¹UC Davis, Davis, CA**8:45AM****Employing Industrial Principles of Practice in Preliminary Design**M. A. POOL¹, A. L. SIEVING¹, A. O. BRIGHTMAN¹, T. EUSTAQUIO¹, AND A. E. RUNDELL¹¹Purdue 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. FASSE¹, N. HOTALING¹, L. F. BOST¹, C. D. HERMANN¹, AND C. R. FOREST¹¹Georgia Institute of Technology, Atlanta, GA**9:15AM****Relating Project Outcomes to Changes in a Design Curriculum**R. H. ALLEN¹, S. ACHARYA¹, C. JANCUK¹, AND A. A. SHOUKAS¹¹Johns Hopkins University, Baltimore, MD

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**Track: Biomedical Imaging and Optics****OP - Thurs - I - 17 - Room A408****Novel Imaging Techniques****Chairs:** Kristen Maitland, Peter So**8:00AM****Overview Track Talk: Biomedical Imaging and Optics**K. MAITLAND¹, P. SO²¹Texas A&M University, ²Massachusetts Institute of Technology**8:15AM INVITED****MRE and QPCR Indicate Changes in Liver Phenotypes Upon Consumption of a High Fat Diet**V. KHALILZAD-SHARGHI¹, J. R. WOOD¹, W. E. POHLMEIER¹, J. K. TART¹, R. S. GRIESS¹, AND S. F. OTHMAN¹¹University of Nebraska-Lincoln, Lincoln, NE**8:45AM****Non-invasive Micromorphological Imaging of the Early Onset of Tumor Development**R. TOY¹, E. HAYDEN¹, A. CAMANN¹, J. PANSKY¹, P. VICENTE¹, A. ABRAMOWSKI¹, Z. BERMAN¹, D. WILSON¹, K. GHAGHADA², AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH, ²Texas Childrens Hospital, Houston, TX**9:00AM****Space-varying Heterogeneity in Cryo-EM Reconstructions**Q. WANG¹, T. MATSUI², T. DOMITROVIC², Y. ZHENG³, P. C. DOERSCHUK¹, AND J. E. JOHNSON²¹Cornell University, Ithaca, NY, ²The Scripps Research Institute, San Diego, CA, ³Lawrence Berkeley National Laboratory, Berkeley, CA**9:15AM****Novel Indirect Magnetic Force Microscopy Technique for Analyzing Magnetic Biological Samples**T. M. NOCERA¹, Y. ZENG¹, AND G. AGARWAL^{1,2}¹The Ohio State University, Columbus, OH, ²Davis Heart and Lung Research Institute, 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 - I - 18 - Room A407****Neural Electrode Tissue Interface & Neural Engineering Technology****Chairs:** Jeff Capadona, Yinghui Zhong**8:00AM****Overview Track Talk: Neural Engineering**D. MEANEY¹, G. STANLEY²¹University of Pennsylvania, ²Georgia 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}¹Case Western Reserve University, Cleveland, OH, ²Veterans 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}¹Case Western Reserve University, Cleveland, OH, ²L 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. MUTHUSWAMY¹¹Arizona State University, Tempe, AZ, ²University of California, San Diego**9:15AM****Modality Specific Neural Interfacing in the Peripheral Nervous System**S. ANAND¹, A. KANNEGANTI¹, R. GRANJA¹, J. CHENG², E. KEEFER³, AND M. ROMERO-ORTEGA¹¹University of Texas at Arlington, Arlington, TX, ²UT Southwestern, Dallas, TX, ³Plexon Inc., Dallas**Track: Tissue Engineering****OP - Thurs - I - 19 - Room A313****Tissue Engineering & Mechanobiology****Chairs:** Jun Liao, Elizabeth Lobo**8:00AM****The Effect of Variable Vibratory Stimulation on Fibroblast Matrix-related Gene Expression**S. BAE¹, J. LEE¹, J. L. BARTH², AND K. WEBB¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**8:15AM****Differential Effects of Cyclic Stretch on Angiogenesis Induced by Different Growth Factors**J. R. WILKINS¹, D. B. PIKE¹, C. C. GIBSON¹, AND Y-T. E. SHIU¹¹University of Utah, Salt Lake City, UT**8:30AM****Does Strain Hardening Increase Stress Propagation in Biological Substrates?**M. WEBER¹, X. MA¹, R. HART¹, K. GOOCH^{1,2}, AND S. GHADIALI^{1,2}¹Department of Biomedical Engineering, The Ohio State University, Columbus, OH, ²Dorothy 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. ORWIN¹¹Harvey Mudd College, Claremont, CO**9:00AM****Measurement of *In Vitro* Local Shear Stiffness of Alginate Beads Using Microscopic MR Elastography**Z. YIN¹, T. K. YASAR¹, AND R. L. MAGIN¹¹University 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. LARSON⁴, A. KHADEMOSSEINI^{2,4}, AND K. B. MANNING¹¹The Pennsylvania State University, University Park, PA, ²Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ³University Medical Center Utrecht, Utrecht, Netherlands, ⁴Harvard-MIT, Cambridge, MA**Track: Translational Biomedical Engineering*****OP - Thurs - I - 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. GULTEPE¹, S. YAMANAKA¹, K. E. LAFLIN¹, E. J. SHIN¹, S. KADAM¹, A. N. KALLOO¹, F. M. SELARU¹, AND D. H. GRACIAS¹¹The Johns Hopkins University, Baltimore, MD**8:15AM****Faster Pharmacokinetics and Less Pain with Microneedle Insulin Delivery in Type I Diabetic Children**J. J. NORMAN¹, M. R. BROWN², N. A. RAVIELE², M. R. PRAUSNITZ¹, AND E. I. FELNER²¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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'CONNOR¹, R. S. SMITH², B. A. PIRAS¹, D. LIN¹, J. A. HOSSACK¹, AND B. A. FRENCH¹¹University of Virginia, Charlottesville, VA, ²Duke University, Durham, NC**8:45AM****Engineered Peptide Linker for Personalized Medicine: Multifunctional Nanoparticles Generated Through Post-Formulation for Anti-inflammatory Applications**H. PAN¹, S. ALLEN¹, P. SCHLESINGER¹, AND S. A. WICKLINE¹¹Washington University School of Medicine, Saint Louis, MO**9:00AM****Translating Targeted Induction and Regulation of Gene Expression into Specific, Heritable Treatments of Hemoglobinopathies**F. REZA¹, J. Y. CHIN¹, AND P. M. GLAZER¹¹Yale University, New Haven, CT**9:15AM****Development of a Halloysite/SiRNA Nanocontainer and Nanocarrier**D. MILLS¹ AND J. AMBROSE²¹Louisiana Tech University, Ruston, ²Louisiana Tech University, Ruston, LA*Track sponsored by  FISH & RICHARDSON

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. PASKARANANADAVIVEL¹, P. DU¹, G. O'GRADY², AND L. CHENG¹¹Auckland Bioengineering Institute, Auckland, New Zealand, ²Department 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. WEISBERG¹ AND R. T. O'BRIEN¹¹United 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-CALLEJA¹, W. D. STAMER², C. R. ETHIER¹, AND D. R. OVERBY¹¹Imperial College London, London, United Kingdom, ²Duke University, Durham, NC

P-Th-A-4

A Multiple Model Predictive Control Framework to Alter Intracellular Signaling Dynamics

J. PERLEY¹, J. MIKOLAJCZAK¹, V. DINH¹, M. HARRISON¹, G. BUZZARD¹, AND A. RUNDELL¹¹Purdue University, West Lafayette, IN

P-Th-A-5

Experimental Studies and Dynamics Modeling Analysis of Diving of Whirligig Beetles (Coleoptera: Gyrynidae)

Z. XU¹, B. E. REESE¹, X. JIA¹, S. C. LENAGHAN¹, AND M. ZHANG¹¹University of Tennessee, Knoxville, TN

P-Th-A-6

Control Analysis for Gene Regulatory Network

X. LI¹ AND M. ZHANG¹¹University of Tennessee, Knoxville, TN

P-Th-A-7

Hybrid Time-Data-Driven Control and Applications to Biological Cellular System Control

X. LI¹ AND M. ZHANG¹¹University of Tennessee, Knoxville, TN

P-Th-A-8

Estimation of Postural Changes in Human Stroke Volume from Bio-Impedance

S. WANG¹, A. DIEDRICH², V. KOSTAS¹, R. MOORE¹, M. STASUK¹, M. B. STENGER³, C. F. KNAPP¹, AND J. M. EVANS¹¹University of Kentucky, Lexington, KY, ²Vanderbilt University, Nashville, TN, ³Wyle Science, Technology & Engineering Group, Houston, TX

P-Th-A-9

Observer-based Nonlinear Control of Gene Regulatory Networks

J. YANG¹, X. LI², S. C. LENAGHAN², M. Q-H. MENG¹, W. R. HAMEL², AND M. ZHANG²¹Shandong University, Jinan, China, People's Republic of, ²University of Tennessee, Knoxville, TN

P-Th-A-10

Capturing Dynamic Reciprocity Using a Multi-Paradigm Modeling Framework

H. KAUL¹, H. SCHIFFTER¹, Z. CUI¹, AND Y. VENTIKOS¹¹University 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. GUILLEN¹ AND D. A. LAUFFENBURGER¹¹Massachusetts 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. CAO¹, H. QIN¹, H. MEI¹, J. LI¹, H-W. DENG¹, AND Y-P. WANG¹¹Tulane University, New Orleans, LA

P-Th-A-13

Comparative Studies of Copy Number Variation Detection Methods for Next Generation Sequencing Technologies

J. DUAN¹, J-G. ZHANG¹, H-W. DENG¹, AND Y-P. WANG¹¹Tulane university, new orleans, LA

P-Th-A-14

Extension of Hypergeometric Similarity Measure for Analysis of Imaging Mass Spectrometry Data

C. Kaddi¹, R. M. Parry¹, and M. D. Wang¹¹Georgia Institute of Technology, Atlanta, GA

P-Th-A-15

Linear ODE Models of Gene Regulatory Networks Using Literature-Curated and High Throughput Data

V. KULKARNI¹, R. ARASTOO², M. RIEDEL¹, AND M. KOTHARE²¹University of Minnesota, Minneapolis, MN, ²Lehigh University, Bethlehem, PA

P-Th-A-16

Single Cell Analysis of Gene Expression and Signaling Pathways

L. E. KIPPNER^{1,2}, J. KIM¹, M. L. KEMP¹, AND G. GIBSON¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Th-A-17

Identification of Proteomic Signatures of Activated Platelets

W. YIN¹, S. SHANMUGAVLAYUDAM¹, AND D. A. RUBENSTEIN¹¹Oklahoma State University, Stillwater, OK

P-Th-A-18

A Bioinformatic Study of Filamin Binding Sites

H. P. MODARRES¹ AND M. R. MOFRAD¹¹University of California Berkeley, Berkeley, CA

P-Th-A-19

Group Sparse Canonical Correlation Analysis for Genomic Data Integration

D. LIN¹, J. ZHANG¹, J. LI¹, V. D. CALHOUN², AND Y. WANG¹¹Tulane University, New Orleans, LA, ²The Mind Research Network, Albuquerque, NM

P-Th-A-20

SIM-TOX :A Biomarker Discovery Model for Drug Toxicity

R. R. VALLABHAJOSYULA¹, B. PRABHAKARPANDIAN², AND K. PANT³¹CFD Research Corporation, Huntsville, AL, ²CFD Research Corp, Huntsville, AL, ³CFD Research Corp, Huntsville

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Th-A-21**MATLAB Based Genome Browser for Gene Expression Visualization**R. CHEN¹, P-Y. WU², J. H. PHAN¹, AND M. D. WANG¹¹Georgia Tech and Emory University, Atlanta, GA, ²Georgia 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. RAJE¹, AND W. BENTLEY^{1,2}¹University of Maryland, College Park, College Park, MD, ²Center for Biosystems Research, College Park, MD**P-Th-A-23****Identification of Druggable Sites in Protein-Protein Interfaces**D. KOZAKOV¹¹Boston University, Boston, MA**Track: Biomaterials****Bioinspired Materials****P-Th-A-24****Slice and Dice: Re-engineering Natural Materials for Biomedical Applications**Q. XU¹, K. ALBERTI¹, AND X. DAI¹¹Tufts 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. BORAZJANI³, B. WANG⁴, B. BRAZILE¹, L. WILLIAMS^{1,2}, M. DAMASER³, AND J. LIAO^{1,2}¹Mississippi State University, Mississippi State, MS, ²Center for Advanced Vehicular Systems, Mississippi State, MS, ³Cleveland Clinic Lerner Research Institute, Cleveland, OH, ⁴Northwestern University, Chicago, IL**P-Th-A-26****Antibacterial Chitosan Composite Genipin Crosslinked Hydrogels**V. PANDIT¹ AND S. KOTHA²¹Rensselaer Polytechnic Institute, Troy, NY, ²Rensselaer 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}¹Duke University, Durham, NC, ²NSF Triangle MRSEC, Durham, NC**P-Th-A-28****Rational Development of Cell Penetrating Peptides for *In Vivo* siRNA Delivery**E. D. KARAGIANNIS¹, A. M. URBANSKA¹, R. LANGER¹, AND D. G. ANDERSON¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Biomaterials****Biomaterial Immunoengineering****P-Th-A-29****Uptake and Intracellular Fate of C-type Lectin Receptor Targeted Polyanhydride Microparticles**Y. PHANSE¹, B. R. CARRILLO-CONDE², A. E. RAMER-TAIT¹, R. ROY CHOUDHURY¹, N. L. POHL¹, B. NARASIMHAN¹, M. J. WANNEMUEHLER¹, AND B. BELLAIRE¹¹Iowa State University, Ames, IA, ²University of Texas, Austin, TX**P-Th-A-30****Inducing Cytotoxic T Lymphocyte Responses through Peptide Self-assemblies**F. J. KOHLHAPP¹, C. B. CHESSON², A. ZLOZA³, AND J. S. RUDRA²¹University of Chicago, Chicago, IL, ²University of Texas Medical Branch, Galveston, TX, ³Rush University Medical Center, Chicago, IL**P-Th-A-31****Expansion of Human T-cells with Beaded Polydimethylsiloxane**G. K. HICKEY¹, R. O'CONNOR², M. C. MILONE², AND L. C. KAM¹¹Columbia University, New York, NY, ²University of Pennsylvania, Philadelphia, PA**P-Th-A-32****Biologically Inspired Vaccines Based on Multifunctional pH-Responsive Polymers**J. T. WILSON¹, S. KELLER¹, M. MANGANIELLO¹, C. CHENG¹, C-C. LEE¹, A. CONVERTINE¹, AND P. S. STAYTON¹¹University of Washington, Seattle, WA**P-Th-A-33****Polyanhydride Nanoparticle Adjuvants Stabilize HIV-1 Antigens and Induce Germinal Center Formation**J. E. VELA RAMIREZ¹, H. HABTE¹, J. HAO², L. TYGRET³, M. CHO¹, N. GREENSPAN², T. WALDSCHMIDT³, AND B. NARASIMHAN¹¹Iowa State University, Ames, IA, ²Case Western Reserve University, Cleveland, OH,³University of Iowa, Iowa City, IA**P-Th-A-34****Metallic Nanorod Mediated T Cell and Dendritic Cell Interaction**Y. SON¹, H. KIM¹, S. YOON¹, E. JO¹, Y. KIM¹, J. KANG¹, AND H. YOO¹¹Kangwon 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-CONDE¹, A. E. RAMER-TAIT¹, M. J. WANNEMUEHLER¹, AND B. NARASIMHAN¹¹Iowa 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. LI³, G. DRANOFF⁴, AND D. J. MOONEY^{2,3}¹School of Chemical Engineering, SungKyunKwan University, Suwon, Korea, Republic of, ²Wyss Institute for Biologically Inspired Engineering, Cambridge, MA, ³School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, ⁴Dana-Farber Cancer Institute and Harvard Medical School, Cambridge, MA**P-Th-A-37****Engineering Immunomodulatory Surfaces to Mitigate the Host Response to Biomaterials**Y. KIM¹, R. QUE¹, S-W. WANG¹, AND W. LIU¹¹Univ 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. WHITTINGSLOW¹, N. EVANS¹, K. GALL¹, AND R. CARSON¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-A-39****Regulation of Adhesion-Dependent Apoptosis in Macrophages by PEG-containing Polyurethane Films**A. L. ZACHMAN¹, J. PAGE², A. R. BOONE¹, G. PRABHAKAR¹, S. A. GULECHER^{1,3}, AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt University, Nashville, TN, ³Vanderbilt University, Nashville

P-Th-A-40**Allogeneic Dermal Fibroblast-Derived ECM Constructs Elicit a Minimal Inflammatory Response as Peripheral Nerve Cuffs**M. B. CHRISTENSEN¹, N. KHAN¹, AND P. A. TRESKO¹¹University 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. UZARSKI¹, A. B. VAN DE WALLE¹, AND P. S. MCFETRIDGE¹¹University of Florida, Gainesville, FL**P-Th-A-42****Modeling the Brain Tissue Response to Neural Recording Devices: Towards Informed Design**J. L. SKOUSEN¹, K. BOLICK¹, AND P. TRESKO¹¹University 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. SKOUSEN¹ AND P. A. TRESKO¹¹University of Utah, Salt Lake City, UT**P-Th-A-44****Engineered Electrospun Fiber Nanoporosity Modulates Macrophage Adhesion Markers**N. J. SCHAUB¹, R. RAJACHAR², AND R. J. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Michigan Technological University, Houghton, MI**P-Th-A-45****Platelet Interaction With A Novel Polymer Valve Biomaterial Under Shear Conditions**S. GEORGE¹, J. SHERIFF¹, T. E. CLAIBORNE¹, M. J. SLEPIAN², J. JESTY³, AND D. BLUESTEIN¹¹Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY, ²Sarver Heart Center, University of Arizona, Tucson, AZ, ³School 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. ABRAHAM¹, R. FEI¹, M. A. GRUNLAN¹, AND G. L. COTÉ¹¹Texas A&M University, College Station, TX**P-Th-A-47****Peptide Grafting onto Silicone Hydrogel Substrates for Contact Lens Applications**A. C. CHEN¹, B. RATNER¹, V. AGRAWAL², AND S. BADYLAK²¹University of Washington, Seattle, WA, ²McGowan 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. MENG¹, D. STOUT², L. SUN², R. BEIGESSNER^{3,4}, H. FENNIRI³, AND T. WEBSTER²¹Brown University, Providence, RI, ²Brown University, Providence, RI, ³University of Alberta, Edmonton, AB, Canada, ⁴University of Alberta, Edmonton, Canada**Track: Biomaterials****Therapeutic Biomaterials****P-Th-A-49****Inhibition of Alzheimer's-Associated A β Aggregation by Gold Nanoparticles**K. A. MOORE¹, D. SOTO-ORTEGA¹, M. LIM¹, K. PATE¹, S. LOHSE², K. JACKSON³, R. MAHTAB³, C. MURPHY², AND M. MOSS¹¹University of South Carolina, Columbia, SC, ²University of Illinois at Urbana-Champaign, Champaign, IL, ³South Carolina State University, Orangeburg, SC**P-Th-A-50****Polyelectrolyte Complex Nanoparticles for the Stabilization and Delivery of FGF-2**L. W. PLACE¹ AND M. KIPPER¹¹Colorado State University, Fort Collins, CO**P-Th-A-51****Polycaprolactone Coating for Controlled Corrosion of Mg Implants**M. PARK¹, J. LEE², C. PARK², S. LEE², S. CHO³, H. SEOK⁴, AND Y. CHOY²¹Seoul University, Seoul, Korea, Republic of, ²Seoul National University, Seoul, Korea, Republic of, ³Research Center, U&I Corporation, Gyeonggi-Do, Korea, Republic of, ⁴Institute 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. YOUNG¹¹Duke University, Durham, NC**P-Th-A-53****Assessment of Bacteriophage Efficacy against CAUTI-Associated Bacteria**M. E. DÍAZ ORTIZ¹, S. M. LEHMAN¹, AND A. J. GARCÍA¹¹Georgia 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. SON¹, B. S. PARK², S. E. LEE², Y. P. YUN³, AND Y. H. PARK⁴¹Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, ²Nanotextech Inc., Ansan, Korea, Republic of, ³College of Pharmacy, Research Center for Bioresource and Health, Chungbuk National University, Cheongju, Korea, Republic of, ⁴Department 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. LEE¹, A. ZACHMAN¹, D. DESKINS², T. BOIRE¹, L. HOFMEISTER¹, P. YOUNG², AND H.-J. SUNG¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt University Medical Center, Nashville, TN**P-Th-A-56****Salicylic Acid-based Poly(anhydride-esters) for the Prevention of Fibrous Adhesions**S. S. SNYDER¹ AND K. E. UHRICH¹¹Rutgers University, Piscataway, NJ**P-Th-A-57****Cryopreservation Maintains Structural and Biochemical Properties of Fresh Amniotic Membrane**M. T. COOKE¹, C. J. MANDRYCKY¹, E. K. TAN², J. O'CONNELL³, AND T. C. MCDEVITT¹¹Georgia Institute of Technology, Atlanta, GA, ²TissueTech Inc., Miami, FL, ³Amnioc Medical, Marietta, GA

P-Th-A-58**Electrophoretic Deposition of Bio-functionalized Calcium Phosphate Nanoparticles**K. WALLAT¹ AND M. EPPLE²¹University of Duisburg-Essen, Essen, Germany, ²University of Duisburg-Essen, Essen, Germany**P-Th-A-59****Tunable Mechanical, Structural, and Biological Properties of Urinary Bladder Matrix (UBM) Biomaterials**K. STUART¹, A. PHIPPS¹, AND A. JANIS¹¹ACell Inc, Columbia, MD**P-Th-A-60****Chemical Vapor Deposition of Silica for Glucose Biosensors**J. M. HARRIS¹, G. LOPEZ¹, AND W. M. REICHERT¹¹Duke University, Durham, NC**P-Th-A-61****Radioprotection of Salivary Gland Cells via siRNA Delivery**S. ARANY¹, C. OVIIT¹, AND D. S. BENOIT¹¹University of Rochester, Rochester, NY**P-Th-A-62****Sputum Penetration and Enhanced Airway Gene Transfer by Mucus Penetrating Synthetic Gene Nanocarriers**A. J. KIM¹, J. SUK¹, N. J. BOYLAN¹, AND J. HANES¹¹Johns Hopkins University School of Medicine, Baltimore, MD**P-Th-A-63****A Leak-Proof Light Activated Tissue Adhesive**M. M. NUNES PEREIRA¹, N. LANG², I. FRIEHS², N. V. VASILYEV², K. ABLASSER², E. O'CEARBHALL¹, C. XU¹, H. YAMAUCHI², P. HAMMER², S. WASSERMAN³, R. LANGER³, P. DEL NIDO², AND J. M. KARP¹¹Brigham and Women's Hospital, Harvard Medical School, Harvard-MIT Health Science and Technology, Cambridge, MA, ²Children's Hospital Boston, Harvard Medical School, Boston, MA, ³Massachusetts Institute of Technology, Cambridge, MA**P-Th-A-64****Gold Nanorod Vaccine for Respiratory Syncytial Virus**J. W. STONE¹, J. CROWE², N. THORNBURG³, D. BLUM³, S. KUHN³, AND D. WRIGHT³¹Armstrong Atlantic State University, Savannah, GA, ²Vanderbilt University School of Medicine, Nashville, TN, ³Vanderbilt University, Nashville, TN**P-Th-A-65****Textile Fibers with Induced Hemostasis for Wound Dressing Applications**C. R. GAJJAR¹, T. RUSH¹, AND M. MCCORD^{1,2}¹College of Textiles, North Carolina State University, Raleigh, NC, ²Biomedical Engineering, North Carolina State University, Raleigh, NC**P-Th-A-66****Biocompatible Halloysite Clay Nanotubes in Cosmetics for Encapsulation and Controlled Release of Bioactive Agents**A. JOSHI¹, E. ABDULLAYEV¹, Y. ZHAO¹, AND Y. LVOV¹¹Louisiana 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-ADJEI¹, D. PULEO¹, AND T. DZIUBLA¹¹University of Kentucky, Lexington, KY**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. CUNNINGHAM¹, J. D. WEILAND¹, P. BAO¹, AND B. S. TJAN¹¹University of Southern California, Los Angeles, CA**P-Th-A-69****Photoacoustic Lifetime Imaging for Tissue Dissolved Oxygen**Q. SHAO¹, E. MORGOUNOVA¹, J.-H. CHOI¹, J. BISCHOP¹, AND S. ASHKENAZI¹¹University of Minnesota, Minneapolis, MN**P-Th-A-70****Regional Cardiac Strain Estimates via CMR During Transient Preload Reduction**F. CONTIJOCH¹, W. R. WITSCHY¹, M. M. LEVACK¹, J. R. MCGARVEY¹, V. FERRARI¹, N. KONDO¹, M. TAKEBE¹, G. A. ZSIDO¹, C. DILLARD¹, K. LAU¹, J. H. GORMAN III¹, R. C. GORMAN¹, AND J. J. PILLA¹¹University of Pennsylvania, Philadelphia, PA**P-Th-A-71****Towards Single-walled Nanotubes-based Theranostics: Pharmacodynamics of Single-Walled Carbon Nanotube Gadolinium Complexes**P. K. AVTI¹, Y. TALUKDAR¹, M. SIROTKIN¹, K. R. SHROYER², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²Medical 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. SALGIA¹, S. T. GOVINDARAJAN², D. HAIGHT³, R. WHITE³, AND W. O'DELL¹¹University of Florida, Gainesville, FL, ²Massachusetts General Hospital, Boston, MA, ³University of Rochester, Rochester, NY**P-Th-A-73****Automated Identification of Lesion Activity in Multiple Sclerosis**S. DATTA¹ AND P. A. NARAYANA¹¹The University of Texas Health Science Center Medical School, Houston, TX**P-Th-A-74****Age-Specific Gray-Matter Changes in Pediatric Subjects is Revealed by Graph Theoretical Analysis Applied to Structural MRI Data**E. A. MOODY¹, C. T. WHITLOW^{1,2}, AND J. A. MALDJIAN^{1,2}¹Wake Forest University, Winston-Salem, NC, ²Wake 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. CÁCERES¹, J. A. RODRÍGUEZ-CORDERO², N. VALMAS³, M. M. CRANE¹, H. LEE¹, M. A. HILLIARD³, AND H. LU¹¹The Georgia Institute of Technology, Atlanta, GA, ²University of Puerto Rico at Mayagüez, Mayagüez, PR, ³The University of Queensland, Brisbane, Australia**P-Th-A-76****Analysis of T10 Mapping for Vessel Permeability Measurement in Brain Tumors**G. L. PISHKO¹, E. M. THOMPSON¹, L. L. MULDOON¹, AND E. A. NEUWELT^{1,2}¹Oregon Health & Science University, Portland, OR, ²Portland VA Medical Center, Portland

P-Th-A-77**TissueViz: an Information-Visualization Tool for Studying Histopathological Whole-Slide Images**S. KOTHARI¹, J. H. PHAN², AND M. D. WANG²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA**P-Th-A-78****An Automated Method of Determining Electrospun Fiber Alignment and Diameter**N. SCHAUB¹, R. J. GILBERT¹, AND S. J. KIRKPATRICK²¹Rensselaer Polytechnic Institute, Troy, NY, ²Michigan Technological University, Houghton, MI**P-Th-A-79****Classification of Multicolor Fluorescence In-Situ Hybridization(M-FISH) Image Using Joint Sparsity Model**J. LI¹, D. LIN¹, AND Y-P. WANG¹¹Tulane University, New Orleans, LA**P-Th-A-80****Measurement of Aortic Remodeling in CT Images for Cardiovascular Risk Assessment**M. ZHENG^{1,2}, J. CARR¹, AND Y. GE^{1,2}¹Wake Forest University Health Sciences, Winston-Salem, NC, ²Virginia 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. ARCE¹, S-H. HUNG¹, AND Y. TSENG¹¹University of Florida, Gainesville, FL**P-Th-A-82****Automated Image Analysis for High-Throughput Wound-Healing Assay**N. L. DEBENEDICTIS¹, T. J. CASHMAN¹, AND K. D. COSTA¹¹Mount 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. SHI¹ AND J. LIU¹¹Ohio University, Athens, OH**P-Th-A-84****Preliminary Study for Automatic Brain Tissue Quantification on Computed Tomography**Y. P. TAN^{1,2}, N. VERMA¹, R. HARTMAN¹, M. C. COWPERTHWAIT³, AND M. K. MARKEY¹¹The University of Texas at Austin, Austin, TX, ²The University of Edinburgh, Edinburgh, United Kingdom, ³NeuroTexas Institute, St. Davids Medical Center, Austin, TX**P-Th-A-85****Fused-based Segmentation Method for Tracking of Human Lung Epithelial Cells**M. MARTIN¹, X. LI¹, Y. QIAN², Y. LIU¹, AND T. BOURLAI¹¹West Virginia University, Morgantown, WV, ²The National Institute for Occupational Safety and Health, Morgantown, WV**P-Th-A-86****Characterization of Vessel Wall Dynamics Using Ultrasound**F. ZHENG¹, H. ZHANG¹, AND E. EBBINI¹¹University 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. RUDERMAN¹, M. GONZALEZ_HABA², U. DOUGHERTY², A. KULKARNI², A. FICHERA², I. WAXMAN², T. N. PAPPAS¹, A. GOMES¹, M. BISSONNETTE², V. KONDA², AND V. BACKMAN¹¹Northwestern University, Evanston, IL, ²University of Chicago, Chicago, IL**P-Th-A-88****Volumetric Analysis of Motor Vehicle Crash-Related Brain Injuries from Real-World Head Impact Data**J. URBAN^{1,2}, C. WHITLOW^{3,4}, J. MALDJIAN³, A. POWERS³, AND J. STITZEL^{1,2}¹Wake Forest University, Winston-Salem, NC, ²Virginia Tech - Wake Forest University Center For Injury Biomechanics, Winston-Salem, NC, ³Wake Forest University School of Medicine, Winston-Salem, NC, ⁴Translational Science Institute, Winston-Salem, NC**P-Th-A-89****Evaluating Multiplane Fetal DTI Motion Correction and Reconstruction with Fiber Tracking**X. CHENG¹, J. WILM², M. FOGTMANN¹, S. SESHAMANI¹, C. D. KROENKE³, AND C. STUDHOLME¹¹University of Washington, Seattle, WA, ²Technical University of Denmark, Kgs. Lyngby, Denmark, ³Oregon Health & Science University, Portland, OR**P-Th-A-90****A Novel Riemannian Shape Analysis Framework for Subcortical Brain Structures**S. XIE¹ AND J. LIU¹¹Ohio University, Athens, OH**P-Th-A-91****Robust Point Registration Using Clusters and Generalized Radial Basis Functions (C-GRBF)**H. XU¹ AND J. LIU¹¹Ohio University, Athens, OH**P-Th-A-92****Mapping of ApoE-4 Related White Matter Damage using Diffusion MRI**S. TSAO¹, D. H. HWANG¹, N. GAJAWELL¹, B. WILKINS¹, M. LAW¹, AND H. C. CHUI¹¹University of Southern California, Los Angeles, CA**P-Th-A-93****A Finite Element Simulation for Wave Propagation in Magnetic Resonance Elastography**Y. LIU¹, T. K. YASAR¹, T. J. ROYSTON¹, AND R. L. MAGIN¹¹University 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. SHAH¹, M. J. BOUCHARD², AND A. C. SHIEH¹¹Drexel University, Philadelphia, PA, ²Drexel University College of Medicine, Philadelphia, PA**P-Th-A-95****Reversible Encapsulation Platform for Solitary Cancer Cell Dormancy Model**A. AKSAN¹, E. REATEGUI², L. L. KASINKAS¹, AND K. SCHWERTFEGER¹¹University of Minnesota, Minneapolis, MN, ²Center 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. PEDRON¹, E. BECKA¹, B. MAHADIK¹, AND B. A. HARLEY¹¹University 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. HOLMES¹, E. L. TAN¹, K. G. ONG¹, AND R. M. RAJACHAR¹¹Michigan Technological University, Houghton, MI

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Th-A-98**Shear Stress Regulates Tumor-Expressed Angiogenic Factors in a 3D Microfluidic Co-Culture Model**C. F. BUCHANAN¹, E. VOIGT¹, C. SZOT¹, P. VLACHOS¹, AND M. N. RYLANDER¹
¹Virginia Tech, Blacksburg, VA**P-Th-A-99****Dimensional Modulation in Confined Spaces Elucidates Transition Effects in Cancer Cell Invasion**M. MAK¹, C. A. REINHART-KING¹, AND D. ERICKSON¹
¹Cornell University, Ithaca, NY**P-Th-A-100****Role of Tissue Factor and Tissue Factor Pathway Inhibitor Protein Complex in Cancer Cell Adhesion**S. CHE¹, M. SHULER¹, AND T. STOKOL¹
¹Cornell 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. SONG¹, B. SEO¹, E. M. CHANDLER¹, S. SHON¹, A. D. STROOCK¹, AND C. FISCHBACH-TESCHL¹
¹Cornell University, Ithaca, NY**P-Th-A-102****Engineered Scaffolds with Designer Microstructure and Mechanical Stiffness to Investigate Cancer Cell Migration in Three Dimensions**P. SOMAN¹, J. A. KELBER¹, J. LEE¹, T. WRIGHT¹, K. S. VECCHIO¹, R. L. KLEMKE¹, AND S. CHEN¹
¹University of California, San Diego, La Jolla, CA**P-Th-A-103****Quantification of Tumor Cell and Microbead Arrest and Adhesion in the Microvasculature**P. GUO¹, B. CAI¹, AND B. M. FU¹
¹The 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. VOLAKIS¹, R. LI², C. MIHAI¹, R. ZIELINSKI¹, M. BEHEL¹, B. N. BLACKSTONE¹, J. J. WILLARD¹, W. E. ACKERMAN IV², H. M. POWELL¹, D. A. KNISS², AND S. N. GHADIALI²
¹The Ohio State University, Columbus, OH, ²The 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. VOLAKIS¹, R. LI², R. ZIELINSKI¹, J. SANDERS¹, D. A. KNISS², AND S. N. GHADIALI²
¹The Ohio State University, Columbus, OH, ²The 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. FANCY¹, T. NAPIER¹, L. WANG¹, G. JING¹, J. McDONALD^{1,2}, T. ZHOU¹, AND Y. SONG¹¹University of Alabama Birmingham, Birmingham, AL, ²Va Medical Center, Birmingham, AL**P-Th-A-107****Automated High Throughput Microtechnology for Screening of Migration of Cancer Cells**S. NASROLAHI¹ AND H. TAVANA¹
¹University of Akron, Akron, OH**P-Th-A-108****Immunomodulation by Biomechanical Factors of the Tumor Stroma**J. M. MUNSON¹, V. WEAVER², AND M. SWARTZ¹¹Swiss Federal Institute of Technology, Lausanne, Switzerland, ²UCSF, San Francisco, CA**P-Th-A-109****Micropatterned Tumor-Stromal Assay for Studying Cancer Microenvironments**K. SHEN¹, K. PENA², E. SEKER¹, F. WANG¹, M. L. YARMUSH¹, D. SGROI³, M. TONER¹, AND B. PAREKKADAN¹¹Center for Engineering in Medicine, Massachusetts General Hospital and Harvard Medical School, Boston, MA, ²Massachusetts Institute of Technology, Boston, MA, ³Center 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. PYRZ¹ AND J. W. BAISH¹¹Bucknell University, Lewisburg, PA**P-Th-A-111****A Biomimetic Model of Angiogenic Sprouting**D-H. T. NGUYEN¹, S. C. STAPLETON¹, P. A. GALIE¹, M. T. YANG¹, D. M. COHEN¹, AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA**P-Th-A-112****PEG-Fibrinogen Hydrogel Microspheres for Three-Dimensional Breast Cancer Cell Expansion**S. PRADHAN¹, S. CHANG¹, AND E. A. LIPKE¹¹Auburn University, Auburn, AL**P-Th-A-113****PDMS Well Platform for Culturing Large Tumor Spheroids**S. H. RATNAYAKA¹, C. CHEN¹, J. M. SOSA¹, O. FOROUZAN¹, S. S. SHEVKOPOLYAS¹, AND D. B. KHISMATULLIN¹¹Tulane University, New Orleans, LA**P-Th-A-114****Thick-Tissue Bioreactor for Maintaining Tumor Specific Microenvironmental cConditions**D. A. MARKOV^{1,2}, J. Q. LU¹, E. M. LILLIE^{1,2}, P. C. SAMSON^{2,3}, J. P. WIKSWO^{2,3}, AND L. J. MCCAWLEY^{1,2}¹Vanderbilt University Medical Center, Nashville, TN, ²Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN, ³Vanderbilt University, Nashville, TN**P-Th-A-115****Novel Cancer Traps For Combating Metastatic Cancers**C-Y. KO¹, L. WU¹, A. NAIR¹, Y-T. TSAI¹, V. LIN², AND L. TANG¹¹The University of Texas at Arlington, Arlington, TX, ²The University of Texas-Southwestern Medical Center at Dallas, Dallas, TX**P-Th-A-116****Membrane Electroporability of Breast Carcinoma Cell in Pulsed Electric Fields**P. GHANBARI¹ AND R. DAVALOS¹¹Virginia Tech, Blacksburg, VA**P-Th-A-117****Matrix Stiffness is a Key Factor in Maintenance of Breast Cancer Stem Cells**S. SARVESTANI¹, X. YANG¹, X. HE¹, AND E. JABBARI¹¹University of South Carolina, Columbia, SC**P-Th-A-118****In Vitro Prevascularization of a 3D Tissue Engineered Model for Breast Cancer Drug Development**L. MARSHALL¹, A. PENMAN², J. MURPHY-ULLRICH¹, A. FROST¹, T. WICK¹, AND J. BERRY¹¹University of Alabama at Birmingham, Birmingham, AL, ²Southern Research Institute, Birmingham, AL**P-Th-A-119****Factors and Processes of Metastatic Cancer Cell Transmigration**S. HAMILLA¹, K. STROKA², AND H. ARANDA-ESPINOZA¹¹University of Maryland, College Park, MD, ²Johns Hopkins University, Baltimore, MD

P-Th-A-120**Alteration of Actin-Mediated Cytoskeletal Remodeling Pathways Contributes to Change in Stiffness of Ovarian Cells**W. XU¹, R. MEZENCEV¹, B. KIM¹, L. WANG¹, J. McDONALD¹, AND T. SULCHEK¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-A-121****In Vitro Three-Dimensional Model of Breast Tumor Microenvironment**H. JAGANATHAN¹, S. MITRA¹, G. SOUZA², B. DAVE¹, AND B. GODIN¹¹The Methodist Hospital Research Institute, Houston, TX, ²Nano²D Systems, Houston, TX**P-Th-A-122****Lab on Chip Platform Integrated with Graphics Processing Units for Real-Time Detection of Tumor Cells**W. ASGHAR¹, A. HAFEEZ², A. R. BUTT², AND S. M. IQBAL¹¹University of Texas Arlington, Arlington, TX, ²Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Th-A-123****Array Microscope for High Throughput Mechanical Measurements of Cancer Biology**L. D. OSBORNE¹, J. CRIBB¹, A. ZHONG¹, J. HSIAO¹, T. O'BRIEN¹, L. VICCI¹, R. TAYLOR¹, AND R. SUPERFINE¹¹University 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. SHARMA¹, B. KOONS¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**P-Th-A-125****Solid- or Liquid-like Behavior for BT-20 and Hs578T Breast Cancer Cells?**A. MOHAMMADALIPOUR¹, Y. CHOI², F. BENENCIA¹, M. M. BURDICK¹, AND D. F. TEES¹¹Ohio University, Athens, OH, ²Ohio University, Athens**P-Th-A-126****Irreversible Electroporation using Bursts of Sub-Microsecond Pulses**M. B. SANO¹, M. R. DEWITT¹, C. B. ARENA¹, AND R. V. DAVALOS¹¹Virginia 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 CHOWDHURY¹ AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Th-A-128****Effects of Pulsed Electric Fields on Brain Microvascular Endothelial Cell Monolayers**H. J. CHO¹, J. AVILES¹, C. B. ARENA¹, S. DONG¹, M. ROMAN¹, R. V. DAVALOS¹, AND Y. W. LEE^{1,2}¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Blacksburg**P-Th-A-129****Layer-by-Layer Nanoparticles for Systemic Cancer Therapy**S. MORTON¹, Z. POON¹, AND P. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Th-A-130****Targeted Enzyme Prodrug Therapy for the Treatment of Metastatic Prostate Cancer**K. PASSLACK¹, B. VAN RITE¹, J. KRAIS¹, C. KURKJIAN², AND R. HARRISON¹¹University of Oklahoma, Norman, OK, ²University 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. PATTEKARI¹, T. SHUTAVA¹, G. PAREKH¹, AND Y. LVOV¹¹Institute 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. BICKFORD¹, A. T. O'NEILL¹, K. SANDISON¹, A. W. KEELER¹, W. C. ZAMBONI¹, C. ANDERS¹, M. E. NAPIER¹, AND J. M. DESIMONE¹¹UNC Chapel Hill, Chapel Hill, NC, ²UNC 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}¹Cleveland Clinic Lerner Research Institute, Cleveland, OH, ²Case Western Reserve University, Cleveland, OH**P-Th-A-134****Enzyme Prodrug Therapy Targeted for Treatment of Invasive Breast Cancer**J. J. KRAIS¹, V. I. SIKAVITSAS¹, C. D. KURKJIAN², AND R. G. HARRISON¹¹University of Oklahoma, Norman, OK, ²University of Oklahoma Health Sciences Center, Oklahoma City, OK**P-Th-A-135****Targeted Drug Delivery using of Photo Voltaic Cells**M. K. BHUYAN¹, S. S. AMBURE¹, J. I. RODRIGUEZ-DEVORA¹, AND T. XU¹¹University 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. NAGESETTI¹ AND A. J. MCGORON¹¹Florida International University, Miami, FL**P-Th-A-137****Investigations of Yttrium-90 Microsphere Distribution Around Excised Liver Tumors**C. A. BASCIANO¹, J. P. CARSON², D. B. CHRISTENSEN¹, R. C. PHILLIPS¹, J. M. CARDENAS¹, K. GREENE³, AND A. S. KENNEDY^{4,5}¹Applied Research Associates, Raleigh, NC, ²Pacific Northwest National Laboratory, Richland, WA, ³University of North Carolina, Chapel Hill, NC, ⁴Cancer Centers of North Carolina, Cary, NC, ⁵North Carolina State University, Raleigh**P-Th-A-138****Elastin Based Nanoparticles for Targeted Therapy of Lung Adenocarcinomas**R. IGLESIAS¹ AND P. KORJA¹¹University of South Florida, Tampa, FL**P-Th-A-139****Nanoparticle-Lipid Biophysical Interactions and its Role in Tumor Targeting**R. BHAVE^{1,2}, C. PEETLA¹, I. M. ADJEI^{1,3}, AND V. LABHASETWAR¹¹Cleveland Clinic, Cleveland, OH, ²Cleveland State University, Cleveland, OH, ³Case Western Reserve University, Cleveland, OH**P-Th-A-140****Hyaluronan Based Drug Pendant System for Delivery of Hydrophobic Drugs**K. SHAH¹, J. H. OVERMEYER², W. MALTESE², AND Y. H. YUN¹¹The University of Akron, Akron, OH, ²University 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. PIRIC², D. GHEONEA², T. CARTANA², A. CIOCALTEU², A. SAFTOIU², L. L. MUNN³, AND G. GRUIONU^{2,3}¹University of Craiova, Craiova, Romania, ²University of Medicine and Pharmacy of Craiova, Craiova, Romania, ³Massachusetts General Hospital and Harvard Medical School, Charlestown, MA

P-Th-A-142**Bioactivities of Polyoxometalates as Novel Inorganic Drugs for Cancer Therapy**J. SONG¹, G. LEE¹, Y. WANG¹, C. L. HILL², AND S. NIE¹¹Emory University and Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-A-143****Tumor Targeting Delivery of Nano-formulated Cisplatin**Y. WANG¹, X. PENG², D. M. SHIN², AND S. NIE²¹Emory University, atlanta, GA, ²Emory University, Atlanta, GA**P-Th-A-144****Enhancing Stability of Anticancer Drug Camptothecin with PEGylated Layer-by-Layer Nanocapsules**G. PAREKH¹, T. SHUTAVA¹, P. P. PATTEKARI¹, AND Y. M. LVOV¹¹Louisiana Tech University, Ruston, LA**P-Th-A-145****Focused Ultrasound Facilitated Thermo-Chemotherapy for Targeted Retinoblastoma Treatment: A Modeling Study**S. WANG¹, S. MAHESH¹, J. LIU¹, C. GEIST¹, AND V. ZDERIC¹¹The George Washington University, Washington, DC**P-Th-A-146****Ultrasound Mediated Chemotherapeutic Nanoparticle Drug Delivery: In-Vitro and In-Vivo Studies**L. MULLIN¹, P. MA², S. WADHWA², R. J. MUMPER², AND P. A. DAYTON¹¹University of North Carolina at Chapel Hill and North Carolina State University, Chapel Hill, NC, ²University of North Carolina at Chapel Hill, Chapel Hill, NC**P-Th-A-147****Cold Non-thermal Atmospheric Plasma for Selectively Treating Metastatic Breast Cancer**M. WANG¹, O. VOLOTSKOVA¹, M. KEIDAR¹, AND L. ZHANG¹¹George 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. LEE¹, M. TAYLOR², K. HOR², AND R. BANERJEE¹¹University of Cincinnati, Cincinnati, OH, ²Cincinnati 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. CHAUDHURY¹, V. ATLASMAN¹, G. PATHANGEY¹, R. J. ADRIAN¹, AND D. H. FRAKES¹¹Arizona State University, Tempe, AZ**P-Th-A-150****Incomplete Restoration of Homeostatic Shear Stress in Arteriovenous Fistulae**P. MCGAH¹, D. LEOTTA¹, K. BEACH¹, AND A. ALISEDA¹¹University of Washington, Seattle, WA**P-Th-A-151****Trans-Stenotic Pressure Drop: Reduced-order Modeling and Sensitivity with Respect to Lesion Geometry**X. ZHENG¹, P. SHARMA¹, L. ITU¹, A. KAMEN¹, B. GEORGESCU¹, AND D. COMANICIU¹¹Siemens Corporate Research, Princeton, NJ**P-Th-A-152****The Isovolumic Relaxation to Early Rapid Filling Connection: Model Prediction and In-Vivo Validation**S. MOSSAHEBI¹ AND S. KOVACS²¹Washington University in St. Louis, St. Louis, MO, ²Washington 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. WUFUSUS¹ AND K. B. NEEVES^{1,2}¹Colorado School of Mines, Golden, CO, ²University of Colorado Denver, Aurora, CO**P-Th-A-154****Hemodynamics in the Aortic Arch, and the Relationship to Rupture During Type-A Dissection**L. SHRESTHA¹, J. BURKEN¹, D. CALCATERRA¹, AND S. VIGMOSTAD¹¹The University of Iowa, Iowa City, IA**P-Th-A-155****The Role of the Endothelial Glycocalyx in Leukocyte Attachment**S. COOPER¹, K. McDONALD¹, AND R. LEASK¹¹McGill University, Montreal, QC, Canada**P-Th-A-156****Endothelial Cell - Platelet Interaction Under Physiologically Relevant Dynamic Shear Stress**S. SHANMUGAVELAYUDAM¹, F. ROUF¹, D. A. RUBENSTEIN¹, AND W. YIN¹¹Oklahoma State University, Stillwater, OK**P-Th-A-157****Simulations of Platelet Damage in Bileaflet Mechanical Heart Valve Flows in the Closing Phase**B. M. YUN¹, L. LEE¹, C. AIDUN¹, AND A. YOGANATHAN²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia 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. YUN¹, C. AIDUN¹, AND A. YOGANATHAN²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA**P-Th-A-159****GPU Accelerated Simulation of the Human Arterial Circulation**L. M. ITU¹, C. SUCIU^{1,2}, A. POSTELNICU¹, AND F. MOLDOVEANU¹¹Transilvania University of Brasov, Brasov, Romania, ²Siemens Corporate Technology, Brasov, Romania**P-Th-A-160****Occlusive Deformation as a Mechanism for Hypertension with Renal Artery Aneurysm**E. A. O'REAR¹, L. A. DOWN¹, AND D. V. PAPAVALIIOU¹¹University 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. ALEMU¹, T. KAUFMANN², U. STEINSEIFER², M. SLEPIAN³, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²Helmholtz Institute, RWTH Aachen University, Aachen, Germany, ³University of Arizona, Tucson, AZ**P-Th-A-162****Exploring the Shear Stress and Time Domains of VWF Degradation**S. YANG¹, V. TURITTO¹, F. ZAMAN¹, AND Z. N. DEMOU¹¹Illinois 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. MEIRSON¹, I. AVRAHAM², M. HALAK³, Z. BLECHMAN¹, AND M. BRAND²¹Afeke Academic College of Engineering, Tel Aviv, Israel, ²Ariel University center of Samaria, Ariel, Israel, ³Chaim Sheba Medical Center, Tel Hashomer, Israel

P-Th-A-164**Interpretation of Guyton's Cardiac Output-Venous Return Curves**M. W. MOHIUDDIN¹, E. R. CARLSON¹, AND C. M. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Th-A-165****Role of Hematocrit in Hemorheology in Arterioles *In Vivo***O. YALCIN¹ AND P. CABRALES²¹University of California, San Diego, San Diego, CA, ²University of California, San Diego, La Jolla, CA**P-Th-A-166****Effect of the Mitral Valve Leaflet Asymmetry on the Shape of Transmitral Vortex**A. FALAHATPISHEH^{1,2}, N. PAHLEVAN³, B. DUEITT^{1,2}, AND A. KHERADVAR^{1,2}¹University of California, Irvine, Irvine, CA, ²Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA, ³California Institute of Technology, Pasadena, CA**P-Th-A-167****Evaluating Synthetic Composite Materials Replicating Patient Aortic Aneurysm Material Properties**C. M. MARGOSSIAN¹, E. GOLDEN¹, F. PANCHERI¹, M. D. IAFRATI², L. DORFMANN¹, AND R. A. PEATTIE¹¹Tufts University, Medford, MA, ²Tufts 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. SANTHANAKRISHNAN¹, B. D. CHAFFINS¹, T. B. LE², I. U. OKAFOR¹, F. SOTIROPOULOS², AND A. P. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Minnesota, Minneapolis, MN**P-Th-A-169****Effects of Acoustic Droplet Vaporization on Endothelial Cells**R. SEDA¹, D. LI¹, J. B. FOWLKES¹, AND J. L. BULL¹¹University 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. MOLONY¹, C. AREPALLI², Y. YANG², S. TANG², J. OSHINSKI², X. TANG², R. VEERASWAMY², A. STILLMAN², AND D. GIDDENS¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-A-171****Fluid Shear Stress Analysis in a 3D Aortic Arch Model Under Bicuspid Aortic Valve Flow**K. CAO¹, P. SUCOSKY¹, AND S. CHANDRA¹¹University of Notre Dame, Notre Dame, IN**P-Th-A-172****High Speed Imaging of Acoustic Droplet Vaporization**D. S. LI¹, O. D. KRIFGANS¹, J. B. FOWLKES¹, AND J. L. BULL¹¹University of Michigan, Ann Arbor, MI**P-Th-A-173****Adaptation of Vascular Wall Thickness and Stiffness to Wall Stress Predicts Arterial Compliances and Pulse Pressures**P. H. NGUYEN¹, M. W. MOHIUDDIN^{1,2}, S. F. KNEZEK^{1,2}, AND C. M. QUICK^{1,2}¹Michael E. DeBakey Institute, College Station, TX, ²Texas A&M University, College Station, TX**P-Th-A-174****Delineating Mass Transfer and Mechanotransduction at the Endothelium**H. C. BHAKTA¹, P. VANDRANGI², AND V. G.-J. RODGERS²¹UC Riverside, Sacramento, CA, ²UC Riverside, Riverside, CA**P-Th-A-175****Impact of Bifurcation Stenting on Endothelial Shear Stress: Implications for Bifurcation Lesions**H. Y. CHEN¹, I. D. MOUSSA², C. DAVIDSON³, AND G. S. KASSAB⁴¹Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN, ²University of Texas Health Science Center, San Antonio, TX, ³Northwestern University, Chicago, IL, ⁴IU-Purdue, Indianapolis, IN**P-Th-A-176*****In Vitro* Study of Compliance and Pulmonary Vascular Resistance in the Fontan Circulation with Respiration Effects**M. VUKICEVIC¹, T. CONOVER¹, J. ZHOU¹, T.-Y. HSIA², AND R. FIGLIOLA¹¹Clemson University, Clemson, SC, ²Great 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. LU¹, M. MENDE¹, C. WERNER², AND U. RAVENS¹¹Medical Faculty, TU Dresden, Dresden, Germany, ²Leibniz Institute for Polymer Research Dresden, Dresden, Germany**P-Th-A-178****Calcium Transients Imaging to Assess Conduction Phenotypes of the Adult Zebrafish Cardiomyocytes**J. GU¹, A. COBO¹, F. YU¹, N. CHI², AND T. HSIAI¹¹University of Southern California, Los Angeles, CA, ²University of California, San Diego, La Jolla, CA**P-Th-A-179****Model Order Reduction for Finite Element Modeling of Cardiac Tissue**D. H. VU¹ AND K. T. NG¹¹New Mexico State University, Las Cruces, NM**P-Th-A-180****A New Electrode Configuration for Motion Artifact Monitoring in Electrocardiogram**T. LEE¹, B.-H. KO¹, J. KIM¹, AND K. SHIN¹¹Samsung 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. HUBBARD¹ AND C. S. HENRIQUEZ¹¹Duke University, Durham, NC**P-Th-A-182****Local Onset of Calcium Alternans Precedes APD Alternans in Langendorff-Perfused Rabbit Hearts**R. VISWESWARAN¹, S. MCINTYRE¹, AND E. G. TOLKACHEVA¹¹University 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. MA³, K. DELEON³, G. HALADE³, M. LINDSEY^{1,3}, AND H.-C. HAN^{1,2}¹UTSA/UTHSCSA Joint Program in Biomedical Engineering, San Antonio, TX, ²The University of Texas at San Antonio, San Antonio, TX, ³University of Texas Health Science Center at San Antonio, San Antonio, TX**P-Th-A-184****Semi-Implicit Element Free Modeling of Cardiac Propagation**I. STURDEVANT¹ AND K. T. NG¹¹New Mexico State University, Las Cruces, NMP = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Th-A-185**A Robust Arrhythmia Classification Algorithm to Inter/Intra-Individual Differences from ECG signals**Y. KIM¹, C. CHOI¹, K. SHIN¹, J. KIM², AND M. LEE²¹Samsung Advanced Institute of Technology, Yongin-si, Gyeonggi-do, Korea, Republic of, ²Yonsei University, Yongin-si, Gyeonggi-do, Korea, Republic of**P-Th-A-186****A Tool for Automatically Extracting Information from Paper Electrocardiography Data**L. RAVICHANDRAN¹, C. D. HARLESS², A. J. SHAH¹, AND S. TRIDANDAPANI¹¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**P-Th-A-187****Finite Element Bidomain Modeling of Cardiac Propagation on Graphics Processing Units**C. DENG¹ AND K. T. NG¹¹New Mexico State University, Las Cruces, NM**P-Th-A-188****Quantitative Measures of Blood Oxygen Desaturation Reflective of Duration of Simulated Sleep Apnea**J. SWITTENS¹, R. M. ALEX², S. IYER³, G. BHAVE⁴, A. BASHABOYINA³, M. A. AL-ABED⁵, D. E. WATENPAUGH⁶, R. ZHANG⁷, AND K. BEHBEHANI⁸¹University of Texas at Arlington, Arlington, TX, Jordan, ²University of Texas at Arlington, Arlington, TX, ³University of Texas, Arlington, TX, ⁴University of Texas at Austin, Austin, TX, ⁵Hashemite University, Aaman, Jordan, ⁶Sleep Consultants Inc., Fort Worth, TX, ⁷Institute 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. WANG¹, P. SHAH^{1,2}, C. E. SIMS¹, AND N. L. ALLBRITTON^{1,2}¹University of North Carolina, Chapel Hill, NC, ²North Carolina State University, Raleigh, NC**P-Th-A-190****Hydrodynamic Resistance as an Indicator of Cell Deformability**M. A. CARTAS-AYALA¹ AND R. KARNIK¹¹MIT, Cambridge, MA**P-Th-A-191****Calcium Alginate-Mediated Cellular Reprogramming in a Microfluidic Device**J. F. BETZ¹, Y. CHENG¹, C-Y. TSAO¹, H-C. WU¹, G. F. PAYNE¹, W. E. BENTLEY¹, AND G. W. RUBLOFF¹¹University of Maryland, College Park, MD**P-Th-A-192****Characterizing Dynamic Adhesion of Mesenchymal Stem Cells Using a Cell Rolling Cytometer**S. CHOI¹, L. OREN², J. M. KARP², AND R. KARNIK¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Center 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. UCHIDA¹, T. SHIWA¹, A. SATO¹, AND K. TSUKADA¹¹Keio University, Yokohama, Japan**P-Th-A-194****Imaging Cytometer Capable of Single-Cell Isolations Based on Complex Phenotypes**P. K. SHAH^{1,2}, C. SIMS¹, AND N. ALLBRITTON^{1,2}¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²North Carolina State University, Raleigh, NC**P-Th-A-195****A Microfluidic Device for In Vitro Culture of Gastrulation Stage Mouse Embryos**M-E. BRETT¹, J. HOFFMAN¹, B. MERRILL¹, AND D. EDDINGTON¹¹University of Illinois at Chicago, Chicago, IL**P-Th-A-196****Microfluidics-Based, Selective Detachment of Single Cell Through Spatially Controlled Fluid Flow**S. SURI¹, L. CHINGOZHA¹, AND H. LU¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-A-197****Long Term Culture of Neuronal Stem Cells C17.2 in Microfluidics**B. WANG¹, S. JEDLIKA¹, AND X. CHENG¹¹Lehigh University, Bethlehem, PA**P-Th-A-198****Benchtop PDMS Surface Wrinkling for Cellular Mechanotransduction Studies**K. WEI¹ AND Y. ZHAO¹¹Ohio State University, Columbus, OH**P-Th-A-199****Cell Patterning Using Electrosprayed Microparticles**X. ZHANG¹ AND Y. ZHAO¹¹Ohio State University, Columbus, OH**P-Th-A-200****Studying Axon Guidance with Transwell Microfluidic Gradients**C. G. SIP¹, N. BHATTACHARJEE¹, AND A. FOLCH¹¹University of Washington, Seattle, WA**P-Th-A-201****Separation of Two Phenotypically Similar Cell Types Using PEG-ylated Microfluidic Channels**D. VICKERS¹, E. CHORY¹, AND S. MURTHY¹¹Northeastern University, Boston, MA**P-Th-A-202****Nanoelectroporation for Safe and Efficient Cell Reprogramming**D. GALLEGO-PEREZ¹, Y. WU¹, X. WANG¹, J. MA¹, P. BOUKANY¹, K. GAO¹, L. LI¹, L-J. WANG¹, K. KWAK¹, S. ECKARDT², J. K. MCLAUGHLIN², AND L. LEE¹¹The Ohio State University, Columbus, OH, ²Nationwide Children's Hospital, Columbus, OH**P-Th-A-203****Study of Axon-Guidance Interactions in Controlled Microfluidic Environments**S. MOORJANI¹, S-E. HUH¹, N. BHATTACHARJEE¹, AND A. FOLCH¹¹University of Washington, Seattle, WA**P-Th-A-204****A Microdevice for Investigating Intercellular Communication under Uniaxial Strain Gradient**Q. WANG¹ AND Y. ZHAO¹¹Ohio State University, Columbus, OH**P-Th-A-205****A Microdevice with Varying Thickness Membranes for Live Cell Equi-Biaxial Straining**Q. WANG¹ AND Y. ZHAO¹¹Ohio State University, Columbus, OH**P-Th-A-206****Synthetic Nanoporous Encapsulants for Cell Therapy**J. PARK¹, S. KADAM¹, Y. V. KALININ¹, C. RANDALL¹, AND D. H. GRACIAS¹¹Johns Hopkins University, Baltimore, MD

P-Th-A-207**SyM-BBB: Microfluidic Blood Brain Barrier Model**

B. PRABHAKARPANDIAN¹, M-C. SHEN², I. MILLS², M. ASCHNER³, AND K. PANT²
¹CFD Research Corporation, Huntsville, ²CFD Research Corporation, Huntsville, AL, ³Vanderbilt University Medical Center, Nashville, TN

P-Th-A-208**Multicellular 3D Co-Cultures and Assays in Rapid Prototyped Multilevel Microfluidic Devices**

H. HWANG¹, J. PARK¹, C. SHIN¹, Y. DO¹, AND Y-K. CHO¹
¹UNIST, Ulsan, Korea, Republic of

P-Th-A-209**Micropatterned Hydrogel Stamping for the Production of Giant Vesicle Arrays to Model Natural Membranes**

E. RICHARDS¹, H. NIE¹, AND S. MAJD¹
¹Pennsylvania State University, State College, PA

P-Th-A-210**STEP Enabled Hierarchical Nanofiber Networks for Force Measurement of Migratory Single Cells**

J. WANG¹, K. SHEETS¹, AND A. S. NAIN²
¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA

P-Th-A-211**Electrophysiological Classification and Sorting of Single Cells in a Microfluidic Device**

F. MYERS¹, O. ABILEZ², C. ZARINS², AND L. LEE¹
¹UC Berkeley, Berkeley, CA, ²Stanford 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. LEE¹ AND P. ZHANG¹
¹University of Cincinnati, Cincinnati, OH

P-Th-A-213**Toxin Detection Using Organic Electrochemical Transistors Integrated With Living Cells**

S. A. TRIA¹, L. H. JIMISON¹, M. BONGO¹, A. HAMA¹, G. G. MALLIARAS¹, AND R. M. OWENS¹
¹EMSE, GARDANNE, France, Metropolitan

P-Th-A-214**Rapid Lamination of Multilayer Silk Fibroin Films with Controlled Protein Crystallization**

M. A. BRECKLE¹, H. TAO¹, Y. ZHANG¹, M. YANG¹, D. L. KAPLAN¹, AND F. OMENETTO¹
¹Tufts 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. MA¹, J. YUEN¹, N. SHAH¹, J. WALSH¹, M. GLUCKSBERG¹, AND R. VAN DUYN¹
¹Northwestern University, Evanston, IL

P-Th-A-216**A Simple Surface Electrode for Biosignal Monitoring**

B. KO¹, T. LEE¹, Y-H. KIM¹, AND K. SHIN¹
¹SAIT, Yongin, Korea, Republic of

P-Th-A-217**Thrombin Detection and Quantification by AuNR-Aptamer Sensing Technique**

S. JAHANIAN¹, B. SINGLETON¹, A. K. RAMASUBRAMANIAN¹, AND L. TANG¹
¹UTSA, San Antonio, TX

P-Th-A-218**Parylene-based Force Sensor Array Technologies for Mechanical Characterization of Neural Interfaces**

B. J. KIM¹, C. A. GUTIERREZ², AND E. MENG¹
¹University of Southern California, Los Angeles, CA, ²Independent consultant, Los Angeles, CA

P-Th-A-219**Bioinspired Materials for Targeting Pathogens**

J. LARSEN¹, V. NUÑEZ¹, S. UPADHYAYULA¹, D. BAO¹, AND V. I. VULLEV¹
¹University of California, Riverside, Riverside, CA

P-Th-A-220**Dental Cleaning with Hard Ceramic Transducers and Stable Cavitation**

J. MACIONE¹
¹RPI, Troy, NY

P-Th-A-221**Real Time Detection of Brain Cell L-Glutamate Dynamics and Metabolism**

S. M. TANGUTOORU¹, V. KOPPARTHY¹, M. A. DECOSTER¹, AND E. J. GUILBEAU¹
¹Louisiana Tech University, RUSTON, LA

P-Th-A-222**Microelectrode Mmicroarray Functionalization Via Continuous Flow Microfluidic Printing**

J. W. CHAMBERLAIN¹, K. PEYVAN², W. LYON³, D. DANLEY¹, J. ECKMAN⁴, B. GALE⁵, AND D. M. RATNER¹
¹University of Washington, Seattle, WA, ²Peyvan Systems, Bothell, WA, ³Air Force Research Laboratory, Dayton, OH, ⁴Wasatch Microfluidics, Salt Lake City, UT, ⁵University 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. WILES¹, S. LANGWORTHY¹, M. HALSEY¹, J. DESJARDINS¹, AND D. DEAN¹
¹Clemson University, Clemson, SC

P-Th-A-224**Improving the Lateral-Flow Immunoassay for Protein Detection Using an Aqueous Two-Phase Micellar System**

F. MASHAYEKHI¹, P. M. NAFISI¹, A. M. LE¹, C. D. YAMANISHI¹, R. Y. CHIU¹, B. M. WU¹, AND D. T. KAMEI¹
¹University of California, Los Angeles, Los Angeles, CA

P-Th-A-225**A Versatile Strategy for the Biofunctionalization of Cellulose Via Covalent Modification**

A. YU¹, J. SHANG¹, F. CHENG¹, B. A. PAIK², J. KAPLAN³, R. ANDRADE³, AND D. M. RATNER¹
¹University of Washington, Seattle, WA, ²University of Delaware, Newark, DE, ³Temple 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. HWANG¹, J-W. LEE¹, J. CHOI¹, AND K-H. LEE¹
¹Korea 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. WEI¹, X. QIAN¹ AND S. NIE¹
¹Wallace 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. PAULICK¹, H. MAHBOUBI², H. DJALILIAN², AND M. BACHMAN¹
¹University of California Irvine, Irvine, CA, ²University of California Irvine Medical Center, Irvine, CA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Th-A-229**A Novel Biomimetic, Directional, Particle Velocity Microphone**M. FRERCK¹, B. BAKER¹, AND R. RABBITT^{1,2}¹University of Utah, Salt Lake City, UT, ²Marine Biological Laboratory, Woods Hole, MA**P-Th-A-230****Dynamic Calibration of Two New Accelerometry-Based Raw-Data Activity Monitors**C. R. IDELSON¹, R. J. BRYCHTA¹, H. SASAI¹, AND K. Y. CHEN¹¹NIDDK, NIH, Bethesda, MD**P-Th-A-231****Microfabricated Polymer-Based Neural Interface for Electrical Stimulation and Recording, Drug Delivery, and Chemical Sensing**V. TOLOSA¹, A. TOOKER¹, K. SHAH¹, T. DELIMA¹, S. FELIX¹, H. SHETH¹, AND S. PANNU¹¹Lawrence 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. DESAI¹, V. K. KALIMISSETTI¹, S. CUNNINGHAM¹, B. ALIANE¹, AND S. K. SINHA¹¹University of New Haven, West Haven, CT**P-Th-A-233****Electric Control of Enzymatic Activity Through Redox Mediators**T. GORDONOV¹, E. KIM¹, G. PAYNE¹, AND W. BENTLEY¹¹University 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. VERNON¹ AND J. DOBSON^{1,2}¹University of Florida, Gainesville, FL, ²Institute 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. HALMAGYI¹, D. CROWDER¹, G. HOWARD¹, AND Y. YUN¹¹The University of Akron, Akron, OH**P-Th-A-236****Detection of DNA Hybridization Event Using Thermoelectric Effect**B. ADAPA¹, G. G. NESTOROVA¹, V. KOPPARTHY¹, S. TANGUTOORU¹, AND E. J. GUILBEAU¹¹Louisiana Tech University, Ruston, LA**P-Th-A-237****Sequence-Specific Nucleic Acid Detection from Binary Pore Conductance Measurement**L. ESFANDIARI¹, H. MONBOUQUETTE¹, AND J. J. SCHMIDT¹¹UC Los Angeles, Los Angeles, CA**P-Th-A-238****Computer-Aided Engineering for Structural Nucleic Acid Nanotechnology**M. BATHE¹, M. ADENDORFF¹, I. GUPTA¹, AND D-N. KIM¹¹MIT, 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. CHEHELTANI¹, G. LAMBERTI¹, M. F. KIANI¹, AND B. WANG^{1,2}¹Temple University, Philadelphia, PA, ²Widener University, Chester, PA**P-Th-A-240****Implantable Drug Delivery Microchip for Chronic Disease**S. LEE¹, M. PARK¹, C. PARK¹, AND Y. CHOY²¹Interdisciplinary Program in Bioengineering, College of Engineering, Seoul, Korea, Republic of, ²Department 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. HOOD¹, R. T. ANDRIANI JR.¹, Y. CHEN¹, J. H. ROSSMEISL^{1,2}, AND C. G. RYLANDER¹¹Virginia Tech, Blacksburg, VA, ²Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA**P-Th-A-242****Single-cell Level Microfluidic Electroporation for Sequential Molecule Delivery**H. YUN¹ AND S. C. HUR¹¹Rowland Institute at Harvard University, Cambridge, MA**P-Th-A-243****Simulation of Magnetic Drug Targeting in the Mouse Right Ventricle**J. SUO¹, N. LANDAZURI², S. TONG¹, G. BAO¹, R. TAYLOR², AND D. GIDDENS¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-A-244****Engineered Biodegradable Microparticles for Well-Controlled Drug Delivery**E. H. ROBERTS¹, Y-P. HO¹, M. D. KULIS², A. W. BURKS², AND K. W. LEONG¹¹Duke University, Durham, NC, ²University of North Carolina at Chapel Hill, Chapel Hill, NC**P-Th-A-245****Development of Targeted Nanoparticles for Nerve Regeneration**A. N. KOLBERG¹ AND Z. P. GALLIGER¹¹Case Western Reserve University, Cleveland, OH**P-Th-A-246****Electrochemical Drug Infusion Micropump with Wide Dynamic Range and Viscosity Independent Pumping**R. SHEYBANI¹ AND E. MENG¹¹University of Southern California, Los Angeles, CA**P-Th-A-247****Trauma Targeted Dexamethasone Delivery**Z. GALLIGER¹ AND A. KOLBERG¹¹Case Western Reserve University, Cleveland, OH**P-Th-A-248****A Programmable Drug Delivery Nano-Carrier for Controlled and Extended Release of Daunomycin**P. SUNDARAM¹, H. KURNIAWAN¹, M. E. BYRNE¹, AND J. WOWER²¹Biomimetic & Biohybrid Materials, Biomedical Devices, & Drug Delivery Laboratory, Auburn University, Auburn, AL, ²RNA Biochemistry Lab, Auburn University, Auburn, AL**P-Th-A-249****Polymer Wrapped Carbon Nanotubes for Controlled Gene Delivery**Q. CHENG¹ AND E. JABBARZADEH¹¹University of South Carolina, Columbia, SC

P-Th-A-250**Biodegradable Beta-Cyclodextrin-Based Nanoparticles for Drug Delivery**L. WU¹, D. R. JANAGAM¹, AND T. L. LOWE¹¹University 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-MUNOZ¹, R. SHEYBANI¹, AND E. MENG¹¹University of Southern California, Los Angeles, CA**P-Th-A-252****Complexation Hydrogels as Oral Delivery Vehicles of Therapeutic Antibodies**B. R. CARRILLO-CONDE¹ AND N. A. PEPPAS¹¹The 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^{1,2}, AND M. TONER^{1,2}¹Massachusetts General Hospital/ Harvard Medical School, Boston, MA, ²The Center for Engineering in Medicine, Charlestown, MA, ³Center for Systems Biology, Boston, MA**P-Th-A-254****Model Drug Delivery via In Situ Production of Microbubbles by a Microfluidic Device**A. J. DIXON¹, A. H. DHANALIWALA¹, J. CHEN¹, A. L. KLIBANOV¹, AND J. A. HOSSACK¹¹University of Virginia, Charlottesville, VA**P-Th-A-255****Controlled Delivery of FGF from Dual Stimuli Responsive Microspheres for Therapeutic Angiogenesis**C. E. NELSON¹, R. V. JOSHI¹, AND C. L. DUVAL¹¹Vanderbilt University, Nashville, TN**P-Th-A-256****Delivery of Antitumor Agent Lucanthonone Using Graphene Oxide Nanoribbons**C. SUHRLAND¹, A. P. GADGIL¹, S. LEE², M. NAIDU³, AND B. SITHARAMAN¹¹State University of New York, Stony Brook, Stony Brook, NY, ²State University of New York, Stony Brook, Round Rock, TX, ³Stony Brook University Medical Center, Stony Brook, NY**P-Th-A-257****Impact of Food-associated Stimuli on Nanoparticle Penetration through Gastrointestinal Mucus**H. M. YILDIZ¹ AND R. L. CARRIER¹¹Northeastern University, Boston, MA**P-Th-A-258****Feasibility of Intrathecal Magnetic Drug Targeting: Nanoparticle Guidance in a Spinal Canal Model**E. LUESHEN¹, I. VENUGOPAL¹, AND A. A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL**P-Th-A-259****Acoustically Driven Microswimmers Via Bubbles Transducer**D. AHMED¹, M. LU¹, M. I. LAPSELEY¹, V. H. CRESPI¹, AND T. J. HUANG¹¹Penn State University, University Park, PA**P-Th-A-260****Synthetic Tumor Networks for Screening Drug Delivery Systems**B. PRABHAKARPANDIAN¹, M-C. SHEN¹, I. MILLS¹, M. MATAR², J. FEWELL², AND K. PANT¹¹CFD Research Corporation, Huntsville, AL, ²EGEN Inc., Huntsville, AL**P-Th-A-261****Controllable siRNA Loading in Neurons Using Voltage Pre-conditioning**A. SRIDHARAN¹, C. PATEL¹, AND J. MUTHUSWAMY¹¹Arizona State University, Tempe, AZ**P-Th-A-262****High-Throughput Transfection of Precisely Targeted Primary Neurons Using Microscale Electroporation**C. PATEL¹, A. SRIDHARAN¹, AND J. MUTHUSWAMY¹¹Arizona State University, Tempe, AZ**P-Th-A-263****Nano-Carriers with Surface-Exposed SOD and Targeting Antibody for Therapeutic Applications**Y. XIANG¹, V. MAXIMOV¹, V. REKOUV¹, AND A. VERTEGEL¹¹Clemson University, Clemson, SC**Track: Stem Cell Engineering****Biomaterial-Based Control of Stem Cell Environment****P-Th-A-264****Integrin $\alpha\beta 1$ Plays a Role in Neural Stem Cell Proliferation on Endothelial Extracellular Matrix**K. S. ELLISON^{1,2}, C. M. DUMONT^{1,2}, N. DEPAOLA³, AND D. M. THOMPSON^{1,2}¹Rensselaer Polytechnic Institute, Troy, NY, ²Center for Biotechnology and Interdisciplinary Studies, Troy, NY, ³Illinois Institute of Technology, Chicago, IL**P-Th-A-265****A Stiffness Gradient Scaffold for Stem Cell Based Cardiac Cell Therapy**K. PATEL¹, P. PATTERSON¹, T. GRUBB¹, AND G. ZHANG¹¹The University of Akron, Akron, OH**P-Th-A-266****Proliferation, Morphology, and Undifferentiation of Mouse iPS Cell Aggregates in Alginate Hydrogel-Based Microcapsules**I. HORIGUCHI¹, M. M. CHOWDURY¹, AND Y. SAKAI¹¹The 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. SHUKLA¹ AND J. WEST¹¹Rice University, Houston, TX**P-Th-A-268****Incorporation of Microparticles within Embryoid Bodies for Cell-Mediated Temporal Growth Factor Delivery**A. H. NGUYEN¹, J. M. MCKINNEY¹, R. REIT¹, M. O. PLATT^{1,2}, AND T. C. MCDEVITT^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-A-269****Human Mesenchymal Stem Cell Elastic Modulus Directs Differentiation Capacity**C. LEBLON¹, C. FODOR¹, T. ZHANG¹, X. ZHANG¹, AND S. JEDLICKA¹¹Lehigh 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. KIM¹, Y. OGAWA¹, AND M. KINO-OKA¹¹Osaka University, Osaka, Japan**P-Th-A-271****Modulation of Induced Pluripotent Stem Cell Functions by Nanofibrous Scaffolds**M. MALDONADO¹, B. MARAGLIA¹, B. SAAD¹, AND J. NAM¹¹University of California, Riverside, CAP = Poster Session
OP = Oral Presentation

P-Th-A-272**The Role of The Extracellular Matrix in Direct Cardiac Reprogramming**Y. P. KONG¹ AND A. J. PUTNAM¹¹University of Michigan, Ann Arbor, MI**P-Th-A-273****A Novel 3D Microcapsule System for Stem Cell Culture and Differentiation**W. ZHANG¹ AND X. HE¹¹The Ohio State University, Columbus, OH**P-Th-A-274****Enhanced Neuronal Differentiation of Neural Stem Cells in 3D Self-Assembled Culture**T. RAMCHAL¹, Y-T. LIU¹, M. E. BOUTIN¹, J. MORGAN¹, AND D. HOFFMAN-KIM¹¹Brown University, Providence, RI**P-Th-A-275****Regulation of Stem Cell Fate in a Three-Dimensional Micropatterned Dual-Crosslinked Hydrogel System**O. JEON¹ AND E. ALSBERG¹¹Case 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. STUCKY¹, I. AHMED¹, R. SCHLOSS¹, M. L. YARMUSH¹, AND D. I. SHREIBER¹¹Rutgers University, Piscataway, NJ**P-Th-A-277****A Synthetic, Micropatterned Culture Surface for Embryonic Stem Cells**F. L. SVEDLUND¹, E. IRWIN¹, J. WANG¹, AND K. E. HEALY¹¹UC Berkeley, Berkeley, CA**P-Th-A-278****Stem Cell Instructive Scaffolds Via Interface Engineering**A. J. ENGLER^{1,2}¹UC San Diego, La Jolla, CA, ²Sanford 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. SMITH¹, I. R. EFIMOV¹, AND D. L. ELBERT¹¹Washington 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. PRYZHKOVA¹, Q. CHENG¹, AND E. JABBARZADEH¹¹University 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. RAO¹, G. N. GROVER¹, Y. CHOI¹, L. P. VINCENT¹, K. SPENCER², E. HUI²,A. J. ENGLER¹, AND K. L. CHRISTMAN¹¹University of California, San Diego, La Jolla, CA, ²University of California, Irvine, Irvine, CA**P-Th-A-282****Electrically-cConductive Composite Scaffolds for Improved Cardiac Differentiation of Mesenchymal Stem Cells**S. W. CROWDER¹, Y. LIANG¹, R. RATH¹, A. M. PARK¹, C. C. LIM², X. WANG¹, AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt 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. TANG¹, J. YU¹, B. LEE¹, F. YUAN¹, AND S. LI¹¹UC Berkeley, Berkeley, CA, ²UC 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-PILIPOS¹, C. FLOREZ², P. CARLEN², M. POPOVIC¹, AND C. MORSHEAD¹¹University of Toronto, Toronto, ON, Canada, ²University Health Network - Toronto Western Research Institute, Toronto, ON, Canada**P-Th-A-285****Investigating the Crosstalk between SDF-1 α and ECM Signaling in Neural Stem Cell Recruitment**C. P. ADDINGTON¹, C. M. PAUKEN¹, M. R. CAPLAN¹, AND S. E. STABENFELDT¹¹Arizona State University, Tempe, AZ**P-Th-A-286****Identification of Circulating Lymphatic Endothelial Progenitor Cells from Human Blood**Y-D. SOHN¹, S-J. LEE¹, J. HAN¹, J. BYUN¹, S-H. LEE¹, W. KIM¹, E. LEE¹, AND Y-S. YOON¹¹Emory 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. KHADEMOSSEINI^{1,2}¹Harvard/MIT Division of Health Sciences and Technology, Cambridge, MA, ²Brigham 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. CASTRO¹ AND L. G. ZHANG¹¹The 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. PHIPPS¹, Y. XU¹, AND S. L. BELLIS¹¹University of Alabama at Birmingham, Birmingham, AL**P-Th-A-290****Cell-Secreted Matrix Coatings for Regulating Premature Fusion of Cranial Bone**A. BHAT¹, S. HO¹, AND K. LEACH¹¹University of California Davis, Davis, CA**P-Th-A-291****Meningeal Fibroblast-derived Biomaterials for Dural Tissue Repair**F. MENG¹, V. HLADY¹, AND P. A. TRESKO¹¹University 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. HWANG¹, D-J. LIM¹, A. TAMBRALLI¹, S. ANTIPENKO¹, W. CUI¹, J. CORBETT², AND H-W. JUN¹¹University of Alabama at Birmingham, Birmingham, AL, ²Medical College of Wisconsin, Milwaukee, WI

P-Th-A-293**Tunable Carbodiimide Crosslinking of Fibrin Microthreads Increases Myoblast Attachment, Proliferation, and Outgrowth**J. M. GRASMAN¹, R. L. PAGE¹, T. DOMINKO¹, AND G. D. PINS¹¹Worcester Polytechnic Institute, Worcester, MA**P-Th-A-294****Biopolysaccharides Self-Assemble with Material Property Gradients in Presence of Cation Gradients**M. A. REILLY¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-A-295****Effect of Spreading Coefficient on Cellular Phenotypic Response to Thermo-responsive Substrates**A. J. KAMINSKI¹, K. LING¹, AND L. S. ANDERSON¹¹Lafayette 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}¹University of Connecticut Health Center, Farmington, CT, ²Institute 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. GARCIA¹, A. K. JHA¹, K. E. HEALY¹, AND C. F. WILDSOET¹¹University 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. BRADY¹, H. D. AMIN¹, D. R. OVERBY¹, AND C. R. ETHIER¹¹Imperial College London, London, United Kingdom**P-Th-A-299****Perfusion Bioreactor Enhances Cryoprotective Agent Permeation into Intact Porcine Articular Cartilage**O. M. ISMAIL¹, W. H. DAHL¹, K. G. BROCKBANK², E. D. GREENE², AND T. M. WICK¹¹University of Alabama at Birmingham, Birmingham, AL, ²Cell 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 SANTOS¹, P. Z. ANDRADE¹, M. M. ABECASIS², J. GIMBLE³, A. CAMPBELL⁴, S. BOUCHER⁴, E. ROOS⁴, S. KULIGOWSKI⁴, L. CHASE⁵, M. VEMURI⁴, C. LOBATO DA SILVA¹, AND J. M. CABRAL¹¹Institute for Biotechnology and Bioengineering - Instituto Superior Técnico, Porto Salvo, Portugal, ²IPOFG-Instituto Português de Oncologia Francisco Gentil, Lisboa, Portugal, ³Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge, LA, ⁴Life Technologies, Corp., Carlsbad, CA, ⁵Cellular 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. GOODHART¹, J. COOPER¹, W. HAGGARD¹, AND J. BUMGARDNER¹¹University of Memphis, Memphis, TN**P-Th-A-302****Does Ultrasound Stimulation Aid Cellular Infiltration of Chondrocytes Seeded on Scaffold ?**S. GUHA THAKURTA¹, M. KRAFT¹, AND A. SUBRAMANIAN¹¹University 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. BONGO¹, L. H. JIMISON¹, A. DA COSTA², S. A. TRIA¹, A. HAMA¹, R. CECHELLI², M. CULOT², AND R. M. OWENS¹¹Department of Bioelectronics, Ecole Nationale Supérieure des Mines, Gardanne, France, ²Université 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. SEAMAN¹, N. D. NGUYEN¹, M. F. MEHR¹, A. R. REYES¹, C. L. FRASER¹, AND S. M. PEIRCE-COTTLER¹¹University of Virginia, Charlottesville, VA**P-Th-A-305****Thermal Measurements for Quantifying Burn Severity in Living Tissue**A. ALKHWAJI¹, T. DILLER¹, AND B. VICK¹¹Virginia Tech, Blacksburg, VA**P-Th-A-306****Microfluidic Strategy for Spatiotemporally Resolved Molecular Sampling From Live Ovary Slices**D. S. DANDY¹, M. MENSACK¹, J. WYDALLIS¹, C. S. HENRY¹, C. EITEL¹, AND S. TOBET¹¹Colorado State University, Fort Collins, CO**P-Th-A-307****Controlling Localized Xenopus Embryonic Tissue Migration in 3D Microenvironments**J. SONG¹, Y. KIM², M. HAZAR¹, L. A. DAVIDSON³, M. SITTI¹, AND P. R. LEDUC¹¹Carnegie Mellon University, Pittsburgh, PA, ²Massachusetts Institute of Technology, Cambridge, MA, ³University of Pittsburgh, Pittsburgh, PA**P-Th-A-308****Oxygen Sensing and Control of Engineered Tissue**S. M. EHSAN¹ AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA

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

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. HEPPERLA¹, M. GERAMI-NEJAD¹, M. MCCLELLAN¹, B. SCHUSTER¹, D. ODDE¹, AND M. K. GARDNER¹¹University of Minnesota, Minneapolis, MN**P-Th-B-2***Modeling of the Environmental-Responsive Transcriptional Regulation of Tryptophan Hydroxylase in C. elegans*H. LEE¹ AND H. LU¹¹Georgia 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. REECE², M. K. MARKEY^{1,2}, AND K. RAVI-CHANDAR¹¹The University of Texas at Austin, Austin, TX, ²The 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. NICKLAS¹ AND L. SAIZ¹¹University of California, Davis, CA**P-Th-B-5***Quantitative Analysis of Autocrine Cascades in Ovarian Cancer*D. L. BOURGEOIS¹, O. M. RICE¹, AND P. K. KREEGER¹¹University 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. BARRY¹ AND M. O. PLATT¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-B-7***Computational Model of Type IV Collagen Network Connectivity for Different Isoforms*L. GYONEVA¹, Y. SEGAL¹, K. D. DORFMAN¹, AND V. H. BAROCAS¹¹University 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. WEIS¹, S. L. BARNES¹, T. E. YANKEELOV¹, AND M. I. MIGA¹¹Vanderbilt University, Nashville, TN**P-Th-B-9***Prediction of Therapeutic microRNA based on Human Metabolic Network*M. WU¹ AND C. CHAN¹¹Michigan State University, East Lansing, MI**P-Th-B-10***Scaffold Proteins Accelerate and Amplify Signaling and Change Drug Activity*E. C. GREENWALD¹, J. M. REDDEN², K. DODGE-KAFKA², AND J. J. SAUCERMAN¹¹University of Virginia, Charlottesville, VA, ²University of Connecticut, Storrs, CT**P-Th-B-11***The Inflammatory Twitch: An Agent-Based Model of Allergic Airway Inflammation*J. J. POTHEN¹, M. E. POYNTER¹, AND J. H. BATES¹¹UVM College of Medicine, Burlington, VT**P-Th-B-12***Distinguishing Convection and Diffusion Effects on Oxygen Uptake Kinetics in Contracting Skeletal Muscle*G. SAIDEL¹, J. R. SPIRES¹, AND N. LAI¹¹Case Western Reserve University, Cleveland, OH**P-Th-B-13***Modeling the Transport of L-Dopa Across the Blood-Brain Barrier*A. HIRANI¹, Y. W. LEE¹, AND L. E. ACHENIE¹¹Virginia Tech, Blacksburg, VA**P-Th-B-14***Effects of 2 Deoxy-ATO on Myosin Structure and Function*S. G. NOWAKOWSKI¹, N. ADAMEK², M. A. GEEVES², V. DAGGETT¹, AND M. REGNIER¹¹University of Washington, Seattle, WA, ²University of Kent, Canterbury, United Kingdom**P-Th-B-15***Computational Modeling of Otitis Media in Pediatric Ear*X. ZHANG¹ AND R. Z. GAN¹¹University of Oklahoma, Norman, OK**P-Th-B-16***FEM-Based Insulin Secretion Model with Incorporated Oxygen Dependence for Pancreatic Islets*P. BUCHWALD¹¹University of Miami, Miami, FL**P-Th-B-17***The Role of Action Potential Morphology on Ca²⁺ Release is Predicted by a Local Control Model*L. D. GAUTHIER¹, J. L. GREENSTEIN¹, AND R. L. WINSLOW¹¹Johns Hopkins University, Baltimore, MD**P-Th-B-18***Computational Study of Microvasculature Oxygen Exchange During Ischemic Stroke*I. G. GOULD¹, C-Y. HSU¹, M. CHOJECHI¹, M. QADER¹, A. ALARAJ², AND A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL, ²University 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. SEN¹¹Columbia University, New York, NY**P-Th-B-20***A Biophysical Model of the Carboxyatractyloside-insensitive ATP-Mg/Pi Carrier*S. TEWARI¹, J. BAZIL¹, D. BEARD¹, AND R. DASH¹¹Medical 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. PAPANIMITRAKOPOULOS¹, AND F. JAIN¹¹University of Connecticut, Storrs, CT, ²Biorasis, Inc., Storrs, CT

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. MATHEW¹ AND I. BANERJEE¹

¹University of Pittsburgh, Pittsburgh, PA

P-Th-B-23

Assessing the Causes of Coverage Non-uniformity in Next-Generation Sequencing Data

P-Y. WU¹, J. H. PHAN², AND M. D. WANG²

¹Georgia Institute of Technology, Atlanta, GA, ²Georgia 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. LU¹ AND C-H. HUNG¹

¹National 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. FAN¹, G. P. REECE², M. A. CROSBY², E. K. BEAHM², M. C. FINGERET², AND M. K. MARKEY^{1,2}

¹The University of Texas at Austin, Austin, TX, ²The University of Texas M. D. Anderson Cancer Center, Houston, TX

P-Th-B-26

Computational Frameworks for Imitating Electrophysiology In Gastric ICC Network

S. SATHAR¹, M. L. TREW¹, AND L. CHENG¹

¹Auckland 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}

¹University of Illinois at Urbana Champaign, Urbana, IL, ²Institute 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. ZHOU¹, C. ACOSTA², AND Y. FENG²

¹UT Austin / UT San Antonio, San Antonio, TX, ²UT San Antonio, San Antonio, TX

P-Th-B-29

Probabilistic Linkage of Crash and Injury Outcome Databases

A. DANIELLO¹ AND H. C. GABLER¹

¹Virginia Tech - Wake Forest University, Blacksburg, VA

P-Th-B-30

Glycosylation Network Analyzer Toolbox (GNAT): A Matlab Based Environment for Systems Glycobiology

G. LIU¹, A. PURI¹, AND S. NEELAMEGHAM^{1,2}

¹State University of New York, Buffalo, NY, ²The 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. XU¹, P. SHI¹, AND L. WANG¹

¹Rochester 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 IV¹, L. JOHNSON¹, L. GAO¹, AND G. LOPEZ¹

¹Duke University, Durham, NC

P-Th-B-33

Fibroblast Proliferation on Surface Treated Polyglycolic Acid Trimethylene Carbonate Copolymer

R. MERCHANT¹, A. THROM¹, J. MAYOTTE¹, AND G. HODGKINSON¹

¹Covidien 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. KOELSCH¹

¹University of Washington, Seattle, WA

P-Th-B-35

Surface Charge Characterization of GCIB-Treated PEEK Surface Using AFM

M. RUSIN¹, H. YAO¹, S. KIRKPATRICK², C. MCCAA², R. SVRLUGA², J. KHOURY², AND D. DEAN¹

¹Clemson University, Clemson, SC, ²Exogenesis Corp, Billerica, MA

P-Th-B-36

Astrocyte Expression of Chondroitin Sulfate Proteoglycan in Response to Surface-Adsorbed Fibrinogen

T. W. HSIAO¹, V. P. SWARUP¹, K. BALAGURUNATHAN¹, P. A. TRESICO¹, AND V. HLADY¹

¹University of Utah, Salt Lake City, UT

P-Th-B-37

Cell-Derived Matrix Coatings for Polymeric Scaffolds

M. DECARIS¹, B. BINDER¹, M. SOICHER¹, A. BHAT¹, AND K. LEACH¹

¹UC Davis, Davis, CA

P-Th-B-38

Aptamer-Functionalized Surfaces for Capture of CD4 T-cells

Q. ZHOU¹, Y. LIU¹, D-S. SHIN¹, AND A. REVZIN¹

¹UC Davis, Davis, CA

P-Th-B-39

Fabricating Metal Nanotube-Based Biosensing Interfaces for Specific Immobilization of Transmembrane Proteins

A. VAISH¹, V. SILIN¹, D. VANDERAH¹, S. KRUEGER¹, AND K. GAWRISCH²

¹National Institute of Standards and Technology, Gaithersburg, MD, ²National 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. RUDNICKI¹ AND K. BILLIAR¹

¹WPI, Worcester, MA

P-Th-B-41

Elucidation of Pertinent Molecular Factors of Glycan Presentation for Dendritic Cell Phenotype Modulation

N. A. HOTALING¹, X. SONG², D. F. SMITH², D. M. RATNER³, R. D. CUMMINGS², AND J. E. BABENSEE¹

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³University of Washington, Seattle, WA

P-Th-B-42

Controlled Ligand Nanoclustering in a Soft Hydrogel Through a Click Chemistry-based Polymer

J. VALDEZ¹, C. CHOPKO¹, P. HAMMOND¹, AND L. GRIFFITH¹

¹Massachusetts Institute of Technology, Cambridge, MA

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. DICKEY¹, M. A. TYNDYK², AND D. BOYD¹

¹Dalhousie University, Halifax, NS, Canada, ²Cork Institute of Technology, Bishopstown, Ireland

P-Th-B-44

Interacting Network Models Predict Collagen-Fibrin Co-Gel Behavior

V. BAROCAS¹, J. HYPPIO¹, M. HADI¹, V. LAI¹, AND R. T. TRANQUILLO¹

¹University of Minnesota, Minneapolis, MN

P-Th-B-45

Computationally Evaluating Effects of Osteoconductive Bulking Agents on Stress Distribution in Reconstructed Mandible

R. G. KOZAKA¹

¹UC 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. HAWKINS¹ AND M. McCULLOUGH²

¹NCAT, Jamestown, NC, ²NCAT, Greensboro, NC

P-Th-B-47

Physically-Based Microstructural Simulations of Electrospun Scaffolds

J. CARLETON¹, M. SACKS¹, AND G. RODIN¹

¹University 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. LUONG¹ AND H. V. VO¹

¹Mercer University, Macon, GA

P-Th-B-49

Facilitating Nanoindentation Analysis of Compliant Biomaterials Using A Surfactant

J. KOHN¹ AND D. EBENSTEIN¹

¹Bucknell University, Lewisburg, PA

Track: Biomaterials**Engineering Spatial and Temporal Control of Biomolecules Using Biomaterials****P-Th-B-50**

One Step Diagnostics: Ultrasensitive, Highly Specific Molecular Biosensors

J. I. YEH^{1,2} AND H. SHI¹

¹Univ of Pittsburgh SOM, Pittsburgh, PA, ²University of Pittsburgh SOM, Pittsburgh, PA

P-Th-B-51

Controlled Delivery of Epidermal Growth Factor for Wound Healing

N. JOHNSON¹ AND Y. WANG¹

¹University 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. BRICARELLO¹, Y. P. PAN¹, AND N. NITIN¹

¹University of California, Davis, Davis, CA

P-Th-B-53

Electrospun Constructs With Tunable Fiber Architecture Guide EPC Migration

X. VIAL¹, R. MONTERO¹, F. M. ANDREOPOULOS^{1,2}, AND S. M. PHAM^{1,2}

¹University of Miami, Coral Gables, FL, ²Miller 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. WANG¹, P. ZHANG¹, B. KIRKLAND¹, Y. LIU¹, AND J. GUAN¹

¹Florida State University, Tallahassee, FL

P-Th-B-55

Control of Micropattern Geometry Via Shape Memory Polymers

K. A. DAVIS¹ AND J. H. HENDERSON¹

¹Syracuse 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. MAAS³, AND A. KHADEMOSSEINI^{1,2}

¹Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA, ³Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ⁴Harvard School of Dental Medicine, Boston

Track: Biomedical Imaging and Optics**Image-Guided Therapy****P-Th-B-57**

Method of Recognition of Polyps in the Images of Wireless Capsule Endoscopy

D. MIKHAYLOV^{1,2}, A. KUKUSHKIN², E. IVANOVA³, I. ZHUKOV², A. STARIKOVSKI², S. SEMENOV², E. FEDOROV³, M. ARISTOV², A. TOLSTAYA², AND T. KHABIBULLIN²

¹National Research Nuclear University "MEPhI", Moscow, Russian Federation, ²National Research Nuclear University "MEPhI", MOSCOW, Russian Federation, ³Moscow University Hospital #1, MOSCOW, Russian Federation

P-Th-B-58

ICG-loaded Microbubbles for Biliary Imaging in Cholecystectomy

K. MITRA¹, S. CHANG^{2,3}, J. MELVIN¹, J. VARGO¹, M. WENDLING¹, M. SCOTT¹, AND R. XU^{1,4}

¹The Ohio State University, Columbus, OH, ²The Ohio State University, Columbus, OH, China, People's Republic of, ³Chongqing Medical University, Chongqing, China, People's Republic of, ⁴University 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. YIN¹, X. WU², AND W. ZHAO¹

¹University of Miami, Coral Gables, FL, ²Biophysics 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. HARITONOVA¹, D. LIU¹, A. CASPER¹, J. BALLARD¹, J. CHOI¹, AND E. EBBINI¹

¹University of Minnesota, Minneapolis, MN

P-Th-B-61

Monitoring of Ultrasound Mediated Drug Delivery with a Fluorescence Detection Catheter

A. J. DIXON¹, A. L. KLIBANOV¹, W. H. GUILFORD¹, AND J. A. HOSSACK¹

¹University of Virginia, Charlottesville, VA

P-Th-B-62**Thermal Lesion Formation in Atheromatous Plaques Using High Intensity Focused Ultrasound (HIFU)**M. K. ALMEKKAWY¹, I. A. SHEHATA¹, A. J. CASPER¹, J. R. BALLARD¹, M. TROUTMAN², AND E. S. EBBINI¹¹University of Minnesota, Minneapolis, MN, ²American Preclinical Services, Minneapolis, MN**Track: Biomaterials****Intelligent Biomaterials****P-Th-B-63****Integrating Inhibitory Feedback Control in Bioresponsive Hydrogels**A. N. WILSON¹ AND A. GUISEPPI-ELIE^{1,2}¹Clemson University, Clemson, SC, ²ABTECH Scientific, Inc., Richmond, VA**P-Th-B-64****A Simple Thermoresponsive Substrate for Rapid Cell Sheet Detachment**N. PATEL¹, J. CAVICCHIA¹, B-M. Z. NEWBY¹, AND G. ZHANG¹¹The University of Akron, Akron, OH**P-Th-B-65****Target-Responsive Hydrogel Particles for Molecularly-Controlled Drug Delivery**M. MARKS¹ AND T. BETANCOURT¹¹Texas State University-San Marcos, San Marcos, TX**P-Th-B-66****Effect of Grafting Substrate on Thermally Reversible Cell Adhesion on PNIPAM Films**D. LECKBAND¹, S. CHOI¹, B-C. CHOI², AND C. XUE¹¹University of Illinois, Urbana, IL, ²University 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. STOTT¹, S. M. ROTHENBERG¹, C. HOYT², P. MILLER², D. WINOKUR¹, K. JOHNSON², K. LANE², L. V. SEQUIST¹, S. MAHESWARAN¹, D. A. HABER¹, AND M. TONER¹¹Massachusetts General Hospital, Charlestown, MA, ²PerkinElmer, Inc., Hopkinton, MA**P-Th-B-68****Laminar Shear Stress Induces the Synthesis and Redistribution of Heparan Sulfate**Y. ZENG¹, E. E. EBONG¹, AND J. M. TARBELL¹¹The 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. ZENG¹, E. E. EBONG¹, B. M. FU¹, AND J. M. TARBELL¹¹The city college of New York, New York, 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}¹Centre for Applied Biomedical Engineering Research, Limerick, Ireland, ²Materials 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. CONTIJOCH¹, W. R. WITSCHY^{1,2}, M. M. LEVACK¹, J. R. MCGARVEY¹, V. FERRARI¹, N. KONDO¹, M. TAKEBE¹, G. A. ZSIDO¹, C. DILLARD¹, K. LAU¹, J. H. GORMAN III¹, R. C. GORMAN¹, AND J. J. PILLA¹¹University of Pennsylvania, Philadelphia, PA, ²University of Pennsylvania, Philadelphia**P-Th-B-72****Diffusivity Determination for Alginate-Based Artificial Cells Using Fluorescent Microscopy**B. ASI¹, E. WONG¹, J. PARASSERIL¹, M. KERALAPURA¹, AND M. MOBED MIREMADI¹¹San 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. GURJARPADHYE¹, B. M. WHITED¹, AND C. G. RYLANDER¹¹Virginia Polytechnic and State University, Blacksburg, VA**P-Th-B-74****The Effects of Collagen Hydrogels on Stem Cells Differentiating into the Neuronal Lineage**Y. HWANG¹ AND J. LYUBOVITSKY¹¹University of California Riverside, Riverside, CA**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. DAMESTANI¹, G. AGUILAR¹, J. GARAY¹, H. PARK¹, D. BINDER¹, AND M. RAO¹¹University of California, Riverside, Riverside, CA**P-Th-B-76****Laser and Fractal Analysis to Enhance Magnetic Protein Detection System**N. SHAH¹, A. HECHT², P. COMMISKEY², AND R. KOPELMAN²¹University of Cincinnati, Cincinnati, ²University of Michigan, Ann Arbor, MI**P-Th-B-77****Imaging of Embryonic-Chick-Heart Development (HH 12-19) Using a Streak Mode OCT**S. MA¹, R. WANG¹, R. GOODWIN², R. MARKWALD³, T. BORG³, R. RUNYAN⁴, AND Z. GAO¹¹Clemson University, Clemson, SC, ²University of South Carolina, Columbia, SC, ³Medical University of South Carolina, Charleston, SC, ⁴University 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. TRENT¹, C. THIGPEN², M. K. HARMAN¹, R. HAWKINS³, D. DEAN¹, AND D. M. KWARTOWITZ^{1,4}¹Clemson University, Clemson, SC, ²Proaxis Therapy, Greenville, SC, ³Steadman Hawkins Clinic of the Carolinas, Greenville, SC, ⁴Medical University of South Carolina, Charleston, SC**P-Th-B-79****Experimental Studies on Compressive Sensing based Interior SPECT**B. LIU^{1,2}, A. MINTZ², AND H. YU^{1,2}¹Department of Radiology, Wake Forest University Health Sciences, Winston-Salem, NC, ²VT-WFU School of Biomedical Engineering and Sciences, Wake Forest University Health Sciences, Winston Salem, NC

P-Th-B-80**An Improved Distance-Driven Method for Projection and Backprojection**C. MIAO¹ AND H. YU¹¹VT-WFU school of biomedical engineering and sciences, Winston Salem, NC**P-Th-B-81****Ultra-Low-Dose CT for Lung Cancer Screening**H. YU¹, Q. XU², B. LIU¹, C. CHILES¹, J. D. BOURLAND¹, J. HSIEH³, AND G. WANG⁴¹Wake Forest University Health Sciences, Winston-Salem, NC, ²Xi'an Jiaotong University, Xi'an, China, People's Republic of, ³GE Healthcare Technology, Waukesha, WI, ⁴Virginia 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. SHAH², M. CUTTICA², J. COLLINS², S. SELVARAJ², C. GUETTER³, J. C. CARR², AND T. J. CARROLL^{1,2}¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL, ³Siemens Corporation, Princeton, NJ**P-Th-B-83****A Digital Tissue Phantom for Hyperspectral Wound Imaging**R. XU¹, D. ALLEN², J. HUANG¹, S. GNYAWALI¹, H. ELGHARABLY¹, V. BERGDALL¹, J. HWANG², AND C. SEN¹¹The Ohio State University, Columbus, OH, ²NIST, Gaithersburg, MD**P-Th-B-84****Merit of Ethanol-Fixation for Imaging of Kidney by Phase-Contrast X-ray CT**R. SHIRAI¹, T. KUNII¹, A. YONEYAMA², T. OOIZUMI¹, H. MARUYAMA¹, T-T. LWIN¹, K. HYODO³, AND T. TAKEDA¹¹Kitasato University, Sagami-hara, Kanagawa, Japan, ²Hitachi, Ltd, Hatoyama, Saitama, Japan, ³High 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. KUNII¹, R. SHIRAI¹, A. YONEYAMA², T. OOIZUMI¹, H. MARUYAMA¹, T-T. LWIN¹, K. HYODO³, AND T. TAKEDA¹¹Kitasato University, Sagami-hara, Kanagawa, Japan, ²Hitachi, Ltd, Hatoyama, Saitama, Japan, ³High Energy Accelerator Research Organization, Tsukuba, Ibaraki, Japan**P-Th-B-86****Technical Trials of a Novel Tracking Fluoroscope System**M. A. YOUNG¹, A. NYCZ¹, AND W. R. HAMEL¹¹University of Tennessee, Knoxville, TN**P-Th-B-87****THz and Magnetic Resonance Imaging: A Study of Ex vivo Skin Burns**N. BAJWA¹, A. FREW¹, B. NOWROOZI¹, Z. TAYLOR¹, S. SUNG¹, J. GARRITANO¹, N. FOKWA¹, A. MACCABI¹, P. TEWARI¹, R. SINGH¹, M. CULJAT¹, AND W. GRUNDFEST¹¹UCLA, Los Angeles, CA**P-Th-B-88****Reflectivity Measurements of Water and Dioxane Mixtures using a GHz Gunn Diode Source**A. MACCABI¹, D. BENNETT¹, Z. TAYLOR¹, N. BAJWA¹, P. TEWARI¹, S. SUNG¹, R. SINGH¹, M. CULJAT¹, AND W. GRUNDFEST¹¹University of California, Los Angeles, CA**P-Th-B-89****A New Approach to Enhance Ultrasound Image Contrast: An Ex-vivo Validation Study**J. S. SHIN¹ AND J. YEN¹¹University of Southern California, Los Angeles, CA**P-Th-B-90**

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P-Th-B-91**Evaluating the Accuracy of Interpolation Techniques on 3D MR Images, a Pre-Processing Step to Super Resolution Reconstruction**A. P. MAHMOUDZADEH¹ AND N. H. KASHOU¹¹Wright State University, Dayton, OH**P-Th-B-92****CS-SELZQC for Zero-Quantum Magnetic Resonance Spectroscopic Imaging of Extracranial Tissues Without B₀**Q. HE¹, Y. SUN², J. W. BARKER¹, AND S. CHEN¹¹University of Pittsburgh, Pittsburgh, PA, ²National University of Singapore, Kent Ridge, Singapore**P-Th-B-93****Adaptive Doppler Ultrasound to Reduce Coherent Scattering Error**A. PEGALLAPATI¹ AND S. A. JONES¹¹Louisiana Tech University, Ruston, LA**P-Th-B-94****Combined Multiple-Receiver and Transit-Time Correlation Doppler Ultrasound**V. GUDISENA¹ AND S. A. JONES¹¹Louisiana Tech University, Ruston, LA**Track: Cancer Technology****Biomarkers****P-Th-B-95****Metabolomic Discovery that Imatinib Sensitivity is Modulated by Creatine**K. R. TECH¹, B. J. DEWAR¹, N. COX¹, A. TIKUNOV¹, E. HOLMUHAMEDOV¹, J. M. MACDONALD¹, AND L. M. GRAVES¹¹University 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. BEECH¹ AND K. KELLY¹¹The 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. PATIL¹, W. BSHARA², E. V. CHANDRASEKARAN², C. MORRISON², K. L. MATTA², AND S. NEELAMEGHAM^{1,3}¹State University of New York, Buffalo, NY, ²Roswell Park Cancer Institute, Buffalo, NY, ³NY 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. COLACINO¹, A. CALLO¹, C. ARENA¹, S. DONG², M. ROMAN², R. DAVALOS¹, AND Y. LEE^{1,2}¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Virginia 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. MANCHANDA¹, T. LEI¹, AND A. J. MCGORON¹¹Florida International University, Miami, FL, ²Nova Southeastern University, Fort Lauderdale, FL

P-Th-B-100**Increased Responses of Human Healthy Osteoblasts and Decreased Responses of Human Osteosarcoma Cells on Specific PLGA Nano Patterns**Y. WANG¹, L. ZHANG¹, L. SUN², AND T. J. WEBSTER²¹Department of Chemistry, Brown University, Providence, RI, ²School of Engineering, Brown University, Providence, RI**P-Th-B-101****Thermal and pH Sensitive Multifunctional Polymer Nanoparticles for Cancer Therapy**T. LEI¹, R. MANCHANDA¹, Y-C. HUANG¹, AND A. J. MCGORON¹¹Florida International University, Miami, FL**P-Th-B-102****Development of Novel Cationic Nanoparticles for Therapeutic Delivery of Anti-MIR-1818 to Hepatocellular Carcinoma**X. WANG¹ AND J. L. LEE¹¹The Ohio State University, Columbus, OH**P-Th-B-103****A Biomimetic 3D Nanostructured Bone Model for Tumor Metastasis Study**M. WANG¹, S. FU¹, AND L. ZHANG¹¹George Washington University, Washington, DC, DC**P-Th-B-104****Dually-Targeted Proteolytic Nanobeacons for Targeted Delivery and Optical Tumor Imaging**I. D. MCFADDEN¹, H. LI¹, A. PAREKH¹, A. WEAVER¹, T. D. GIORGIO¹, L. M. MATRISIAN¹, AND J. O. MCINTYRE¹¹Vanderbilt University, Nashville, TN**P-Th-B-105****Reduced Cell Viability in Hyperthermia Treatment in the Presence of Concentrated Iron Oxide Nanoparticles**D. PARK¹¹Johns 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. MACNEILL¹, AND N. LEVI-POLYACHENKO¹¹Wake Forest University Health Sciences, Winston-Salem, NC, ²Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC**P-Th-B-107****Targeted Knockdown of NF- κ B in Tumor Associated Macrophages**R. A. ORTEGA¹, B. KUMAR¹, S. YU¹, AND T. GIORGIO¹¹Vanderbilt University, Nashville, TN**P-Th-B-108****Delivery of Biodegradable PEGylated PLGA Nanoparticles across the Blood-Brain Barrier using Focused Ultrasound**K. F. TIMBIE¹, G. W. MILLER¹, E. NANCE², J. SONG¹, A. L. KLIBANOV¹ AND R. J. PRICE¹,¹University of Virginia, Charlottesville, VA, ²Johns-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. MACNEILL¹, R. C. COFFIN¹, D. L. CARROLL¹, AND N. H. LEVI-POLYACHENKO¹¹Wake Forest University, Winston Salem, NC**P-Th-B-110****Single-Cell Epigenomic Analysis Using Integrated Microfluidics**L. HAN¹, Y. LU¹, H. ZHU², X. PAN¹, S. WEISSMAN¹, AND R. FAN¹¹Yale University, New Haven, CT, ²Secondary 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 Tumorigenic Colonic Epithelial Cells**S. BHARADWAJ¹ AND S. GLOVER¹¹University of Florida, Gainesville, FL**P-Th-B-112****Enhanced Tumor Penetration and Retention of Filamentous Viral Nanoparticle: Shape-Derived Advantages**S. SHUKLA¹ AND N. F. STEINMETZ^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Case 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. QIAN², L. WANG³, Y. A. WANG⁴, C. A. STALEY², H. MAO³, S. NIE¹, AND L. YANG²¹Department of Biomedical Engineering, Emory University School of Medicine, Atlanta, GA, ²Department of Surgery, Emory University School of Medicine, Atlanta, GA, ³Emory University School of Medicine, Atlanta, GA, ⁴Ocean NanoTech, LLC, Springdale, AZ**P-Th-B-114****Metastatic Tumor Cells Show Distinct Behavior on Aptamer Functionalized Chips**M. A. MAHMOOD¹, U. J. KHAN¹, Y. WAN¹, Y-T. KIM¹, AND S. M. IQBAL¹¹University 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. DEWITT¹, K. ZIMMERMANN¹, R. L. HOOD¹, C. RYLANDER^{1,2}, AND M. N. RYLANDER^{1,2}¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Virginia 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. MA¹¹University of Central Florida, Orlando, FL**Track: Cancer Technology****Imaging Strategies for Cancer Detection and Treatment****P-Th-B-117**

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P-Th-B-118**Directed Targeting of HER-2 Over-expressing Ovarian Cancer Cells by Optical Viral Ghosts**Y. A. GUERRERO¹, B. BAHMANI¹, B. JUNG¹, S. SINGH², A. L. RAO¹, V. I. VULLEV¹, V. KUDRA², AND B. ANVARI¹¹University of California at Riverside, Riverside, CA, ²The 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. BAHMANI¹, Y. GUERRERO¹, V. VULLEV¹, AND B. ANVARI¹¹UC Riverside, Riverside, CA

P-Th-B-120**Multiplex Quantum Dot Stain with Four Different Host Animal Antibodies**M. D. WANG¹, J. K. TRAN¹, E. N. HUBBARD¹, AND T. H. STOKES¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-B-121****Effects of Filter Selection on Unmixing of Spectrally Similar Quantum Dots**E. N. HUBBARD¹, T. STOKES¹, B. KAIRDOLF², J. K. TRAN¹, AND M. D. WANG¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-B-122****Targeting Inaccessible Tumors in the Brain with Viral Nanoparticles**S. CHUNG¹, A. M. WEN¹, C. DEBAZ¹, S. DEY¹, N. F. STEINMETZ¹, AND A-M. BROOME²¹Case Western Reserve University, Cleveland, OH, ²Medical 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. XI¹, M. MA¹, AND H. ZHANG¹¹Peking University, Beijing, China, People's Republic of**P-Th-B-124****Regulation of Breast 3epithelial Morphogenesis by GDF11**S. S. BAJIKAR¹ AND K. A. JANES¹¹University of Virginia, Charlottesville, VA**P-Th-B-125****Insulin-like Growth Factor (IGF) Signaling in Ovarian Cancer**D. TIAN¹, H. M. PEZZI¹, AND P. K. KREEGER¹¹University of Wisconsin-Madison, Madison, WI**P-Th-B-126****Inkjet Based Personalized Screening Platform for Cancer Therapy**J. I. RODRIGUEZ-DEVORA¹, D. REYNA-SORIANO¹, M. BHUYAN¹, AND T. XU^{1,2}¹University of Texas at El Paso, El Paso, TX, ²Paul 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. CHEN¹, S. PARAMESWARAN², Y. HU³, Z. HE¹, R. RAJ², AND S. PARAMESWARAN¹¹Texas Tech University, Lubbock, TX, ²Texas Tech Health Sciences Center, Lubbock, TX, ³University of Michigan, Ann Arbor, MI**P-Th-B-128****A Computational Investigation of Surfactant Transport During Pulsatile Airway Reopening**J. E. PILLERT¹, H. FUJIOKA¹, D. HALPERN², AND D. P. GAVER III¹¹Tulane University, New Orleans, LA, ²University 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 AGUIAR¹, A. GROS², Y. BAR-YAM², J. G. VENEGAS³, AND T. WINKLER³¹Universidade Estadual de Campinas, Campinas, SP, Brazil, ²New England Complex Systems Institute, Cambridge, MA, ³Harvard 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. HU¹, B. HELENBROOK³, S. TAKAYAMA¹, AND J. B. GROTBORG¹¹University of Michigan, Ann Arbor, MI, ²ANSYS Inc., Ann Arbor, MI, ³Clarkson University, Potsdam, NY**P-Th-B-131****Computational Studies of Medication Transport Using LES**M. ILIE¹ AND M. LIU¹¹University of Central Florida, Orlando, FL**P-Th-B-132****In Vivo Lung Tissue Strain Measurements in Healthy and Elastase-exposed Rats**R. JACOB¹, J. CARSON¹, D. EINSTEIN¹, S. KABILAN¹, AND R. CORLEY¹¹Pacific Northwest National Laboratory, Richland, WA**P-Th-B-133****Analytical Solutions for Particle Distribution Profile in a Simplified Airway Tree Deposition Model**S. D. AMIN¹, A. MAJUMDAR¹, AND B. SUKI¹¹Boston University, Boston, MA**P-Th-B-134****The Effect of Interdependence on Ventilation and Parenchymal Strains in Computational Lung Models**L. YOSHIHARA¹, M. ISMAIL¹, C. ROTH¹, AND W. A. WALL¹¹TU 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. LIU², Y. ZENG³, AND Y. ZHANG⁴¹Chengdu Women's & Children's Central Hospital, Cheng Du, China, People's Republic of, ²Institute of Biomedical Engineering, ChengDu, China, People's Republic of, ³The City College of New York, New York, NY, ⁴Laboratory of Biomedical Ultrasonics, ChengDu, China, People's Republic of**P-Th-B-136****Leukocyte Traffic Mediates Capillary Blood Flow Oscillations in Microvascular Networks**O. FOROUZAN¹, X. YANG¹, J. M. SOSA¹, J. M. BURNS¹, AND S. S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA**P-Th-B-137****Mechanical Buckling of Collateral Arteries**Q. LIU¹ AND H-C. HAN¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-B-138****Arterial Critical Buckling Pressure is Increased by Smooth Muscle Contraction**J. ZHANG¹, D. M. HAYMAN¹, Q. LIU¹, Y. XIAO¹, AND H. C. HAN¹¹University 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. SHI¹, M. ZENG¹, AND B. M. FU¹¹The 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. HIGBEE¹, M. GREEN¹, AND J. WEST^{1,2}¹Rice University, Houston, TX, ²Duke University, Durham, NC**P-Th-B-141****Computational Analysis of Contribution of Transport Resistances in Lowering NO Consumptions by Erythrocytes**P. DEONIKAR¹ AND M. KAVDIA¹¹Wayne State University, Detroit, MI**P-Th-B-142****Structural Adaptation of Microvessels in Disease States**L. LITTLE¹, E. THRELKELD¹, J. PARK¹, J. GEDDES¹, AND A. SARANG-SIEMINSKI¹¹Franklin 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. TWARDOWSKI¹ AND L. D. BLACK III¹¹Tufts University, Medford, MA**P-Th-B-144****Macrophage Phenotype Characterization and Their Role in WNT5A Secretion/Expression in Atherosclerosis**H. SEELAMNENI¹, M. J. SILVER², AND R. MALGOR³¹Ohio University, Athens, OH, ²Mid West Cardiology Research Foundation, Columbus, OH,³Heritage 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. YEN¹, E. E. EBONG², J. M. TARBELL¹, AND B. M. FU¹¹The City College of the City University of New York, New York, NY, ²Albert Einstein College of Medicine of Yeshiva University, Bronx, NY**P-Th-B-146****A New Multilayer Bioscaffold For Blood Vessel Regeneration**S. AMENSAG¹ AND P. MCFETRIDGE¹¹University 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}¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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}¹Texas A&M University, College Station, TX, ²Michael E. DeBakey Institute, College Station, TX**P-Th-B-149****Investigating the Therapeutic Effect of ROCK Inhibition on Pathological Aortic Valve Angiogenesis**C. A. AREVALOS¹, A. WALBORN¹, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX**P-Th-B-150****Shear Stress-Induced Protein Kinase C Epsilon Modulates Endothelial Tube Formation**T. BEEBE¹, R. LI¹, AND T. HSIANG¹¹University of Southern California, Los Angeles, CA**P-Th-B-151****Aortic Mechanisms of Elasticity During Development: Does Ontogeny Recapitulate Phylogeny?**S. M. WELLS¹, E. R. LANGILLE¹, E. J. CHUA¹, AND M. A. WITOSKI¹¹Dalhousie University, Halifax, NS, Canada**P-Th-B-152****Pregnancy-Induced Cardiovascular Remodeling is Not Reversed**E. P. BRENNAN-PIERCE¹, C. M. PIERLOT¹, A. P. HOWIE¹, E. D. RICHARDSON¹, I. A. SUMMERBY-MURRAY¹, AND S. M. WELLS¹¹Dalhousie 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. PENO¹, W. B. ESPINOZA¹, G. ARMSTRONG¹, E. C. LEMLEY¹, D. V. PAPAVALIIOU², E. A. O'REAR², AND L. A. DOWN²¹University of Central Oklahoma, Edmond, OK, ²University of Oklahoma, Norman, 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. HONG¹, B. EVAVOLD², AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-B-155****Cytolytic and Secretory Outcomes Associated with Dynamic Natural Killer Cell-Target Cell Interactions**Y. J. YAMANAKA¹, C. T. BERGER², M. SIPS², P. C. CHENEY², G. ALTER², AND J. C. LOVE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²The 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. ALIMPERTI¹ AND S. ANDREADIS^{1,2}¹University at Buffalo, Buffalo, NY, ²Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY**P-Th-B-157****Design and Characterization of a Thrombin Biosensor**J. D. WELSH¹, T. V. COLACE¹, R. MUTHARD¹, T. STALKER¹, L. F. BRASS¹, AND S. L. DIAMOND¹¹University 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. GOPAL¹, S. CHEN¹, AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany**P-Th-B-159****Dissecting Multicellular Coordination of the Vertebrate Segmentation Clock**R. A. DESAI¹ AND A. C. OATES¹¹Max 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. CHANDRASEKARAN¹, Y. GENG¹, AND M. R. KING¹¹Cornell University, Ithaca, NY

P-Th-B-161**Mechanical Force Strengthens TCR/pMHC Bond and Triggers T cell Signaling**B. LIU¹, W. CHEN¹, B. EVAVOLD², AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-B-162****Exosomal Release of K562-derived MicroRNA: Implications for Sickle Cell Anemia**S. BANTON¹, M. PLATT¹, AND G. BARABINO¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-B-163****Nucleus Pulposus Cell Morphology and Phenotypic Dependence on Substrate Stiffness and Ligand**P. Y. HWANG¹, C. L. GILCHRIST², J. CHEN², AND L. A. SETTON^{1,2}¹Duke University, Durham, NC, ²Duke 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. CHOI¹, J. C. LOVE^{1,2}, AND D. A. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Ragon Institute of MGH, MIT and Harvard, Charlestown, MA**P-Th-B-165****Cortactin Association with ICAMI via an SH3 Binding Domain in the ICAMI Cytoplasmic Tail Regulates Leukocyte Transendothelial Migration**M. R. WILLIAMS¹, S. D. AUERBACH¹, P. ALCAIDE¹, G. NEWTON¹, AND F. W. LUSCINSKAS¹¹Brigham and Women's Hospital and Harvard Medical School, Boston, MA**P-Th-B-166****Exploring the Role of α -Actinin in Integrin Clustering**H. SHAMS¹ AND M. R. MOFRAD¹¹University 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. CHOI¹, M. HWANG¹, D. CHESLER², A. QUINONES-HINOJOSA², J. LOVE³, AND K. LEE¹¹Korea Institute of Science and Technology, Seoul, Korea, Republic of, ²Johns Hopkins University School of Medicine, Baltimore, MD, ³Massachusetts Institute of Technology, Cambridge, MA**P-Th-B-168****Electrical Properties of Mesenchymal Stem Cells Cocultured with Cardiomyocytes on MEAs**Z. WANG¹, H. YANG², Z. MA², T. BORG³, AND B. GAO²¹Clemson.edu, Clemson, SC, ²Clemson University, Clemson, SC, ³Medical University of South Carolina, Charleston, SC**P-Th-B-169****In-Vitro Model Mimicking Peritoneal Fibrosis**V. SHAH¹, D. VERMA¹, M. L. PREVITERA¹, R. SCHLOSS¹, AND N. LANGRANA¹¹Rutgers University, Piscataway, NJ**P-Th-B-170****Cell Density in Wound Healing**Q. PENG¹, C-W. KUO¹, T. REN¹, S-H. HUNG^{1,2}, AND Y. TSENG^{1,2}¹University of Florida, Gainesville, FL, ²National Cancer Institute-Physical Science in Oncology Center, Gainesville, FL**P-Th-B-171****Mechanosensing at Intercellular Junctions**D. LECKBAND¹, H. TABDILI¹, I. MUHAMED¹, J. DEROOIJ², C. GOTTARDI³, AND N. WANG¹¹University of Illinois, Urbana, IL, ²Hubrecht Institute, Utrecht, Netherlands, ³Northwestern, 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. NAGARAJAN¹ AND C. WOLGEMUTH²¹University of Connecticut, Storrs, CT, ²University of Connecticut Health Center, Farmington, CT**P-Th-B-173****Gradients in Matrix Mechanics Guide Stem Cell Migration by Altered Cytoskeletal Dynamics**M. RAAB¹, D. DISCHER¹, J. SWIFT¹, AND D. DINGAL¹¹University of Pennsylvania, Philadelphia, PA**P-Th-B-174****Agent-based Cell Migration Model for the Study of Cancer Progression**D. A. VARGAS¹, O. BATES¹, AND M. H. ZAMAN¹¹Boston University, Boston, MA**P-Th-B-175****Real-time Observation of Actin Dynamics in Migrating Monocytic Cells with Lifeact-GFP Fusion Protein**N. KATAOKA¹, K. HASHIMOTO², T. OKAMOTO³, S. MOHRI², AND F. KAJIYA¹¹Kawasaki University of Medical Welfare, Kurashiki, Japan, ²Kawasaki Medical School, Kurashiki, Japan, ³Ehime University, Matsuyama, Japan**P-Th-B-176****Analysis of How Immobilized and Soluble EGF Determine Cellular Response in Wound Healing**M. C. REGIER¹, K. DITTOFF¹, K. CARLSON¹, P. K. KREEGER¹, AND K. S. MASTERS¹¹University of Wisconsin Madison, Madison, WI**P-Th-B-177****Schwann Cell Motility is Directed by Asymmetric Micropatterns**J. A. MITCHEL¹ AND D. HOFFMAN-KIM¹¹Brown 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 PALACIOS¹, D. SEARS¹, S. M. JAY², F. M. WHITE¹, AND L. G. GRIFFITH¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Brigham 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. ARCE¹, Z. LI¹, P-H. WU^{1,2}, AND Y. TSENG^{1,2}¹University of Florida, Gainesville, FL, ²National Cancer Institute-Physical Science in Oncology Center, Gainesville**P-Th-B-180****Z-Ligustilide Affects the Migration Pattern of Glioblastoma T98G cell**J. YIN¹, S. HUNG¹, AND Y. TSENG¹¹University of Florida, Gainesville, FL**P-Th-B-181****Bridging the Limitations of Single Cell and Collective Cell Migration with Magnetically Attachable Stencils**W. J. ASHBY¹, A. STARCHENKO¹, J. P. WIKSWO¹, AND A. ZIJLSTRA²¹Vanderbilt University, Nashville, TN, ²Vanderbilt 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. FRALEY¹, Y. FENG², G. D. LONGMORE², AND D. WIRTZ¹¹The Johns Hopkins University, Baltimore, MD, ²Washington University School of Medicine, St. Louis, MO

P-Th-B-183**The Role of the Nucleus in Cell Migration**D-H. KIM^{1,2} AND D. WIRTZ^{1,2}¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins University, Baltimore**Track: Cellular and Molecular Bioengineering****Cellular and Subcellular Imaging****P-Th-B-184****The Generation and Application of FRET-based EphA4 Receptor Biosensor**Y. PAN¹¹University of Illinois urbana-champaign, Urbana, IL**P-Th-B-185****FRAP Analysis: Accounting for Bleaching during Image Capture**J. WU¹, N. SHEKHAR¹, P. P. LELE², AND T. P. LELE¹¹University of Florida, Gainesville, FL, ²Harvard University, Cambridge, MA**P-Th-B-186****Neutrophil Sling: A Cell-Autonomous Adhesive Structure Enabling Rolling at High Shear**P. SUND¹, E. GUTIERREZ², E. KOLTSOVA¹, Y. KUWANO³, S. FUKUDA³, M. K. POSPIESZALSKA⁴, A. GROISMAN², AND K. LEY¹¹La Jolla Institute for Allergy and Immunology, La Jolla, CA, ²University of California San Diego, La Jolla, CA, ³University of Tokyo, Tokyo, Japan, ⁴American 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. WANG³¹Beckman institute, Urbana, IL, ²Bec, Urbana, IL, ³Beckman institute, Urbana**P-Th-B-188****Tracking Intracellular Movement Of Endothelial Glucocorticoid Receptor Using Bayesian Image Analysis**A. NAYEBOSADRI¹ AND J. Y. JI²¹Purdue University, West Lafayette, IN, ²Indiana University Purdue University Indianapolis, Indianapolis, IN**P-Th-B-189****Quantification and Calibration of the reaction between Dihydroethidium and Superoxide**J. CHEN¹ AND M. KAVDIA¹¹Wayne State University, Detroit, MI**P-Th-B-190****A Novel Device for Continuous Microscopic Observation of Live Cells Under Cyclic Mechanical Stimuli**J. IMSIROVIC¹ AND B. SUKI¹¹Boston 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. LATA¹, R. COHEN¹, N. NISHIMURA¹, C. SCHAFFER¹, AND A. TRAVIS¹¹Cornell University, Ithaca, NY**P-Th-B-192****Sperm Sorting and Exhaustion in Nature-Mimicking Microchannels**U. DEMIRCI¹, S. TASOGLU¹, J. L. KINGSLEY², H. SAFAEE¹, X. ZHANG¹, AND E. TUZEL²¹Harvard Medical School, Cambridge, MA, ²Worcester 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. HECHT¹, P. COMMISKEY¹, N. SHAH², AND R. KOPELMAN¹¹University of Michigan, Ann Arbor, MI, ²University 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. LESNIAK³, B. BRANTLEY³, K. SEALE^{1,2}, AND J. WIKSWO^{1,4}¹Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, ²The Searle Systems Biology and Bioengineering Undergraduate Research Experience, Vanderbilt University, Nashville, TN, ³Department of Mechanical Engineering, Vanderbilt University, Nashville, TN, ⁴Vanderbilt Institute for Integrative Biosystems Research, Nashville, TN**P-Th-B-195****High Content Evaluation of Platelet Function in a Microfluidic Flow Assay**R. R. HANSEN¹, A. R. WUFSUS¹, S. BARTON¹, R. M. JOHNSON-PABEN¹, A. A. ONASOGA¹, AND K. B. NEEVES^{1,2}¹Colorado School of Mines, Golden, CO, ²University 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. STOUGAARD², J. KOCH², F. F. ANDERSEN², B. R. KNUDSEN², AND K. W. LEONG¹¹Duke University, Durham, NC, ²Aarhus 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. PARICHEHREH¹, K. MEDEPALLI², AND P. SETHU²¹University of Louisville, Louisville, KY, ²University of Louisville, Louisville, KY**P-Th-B-198****Enhanced Capture of Circulating Tumor Cells via Concave-Surfaced Microposts**D. J. HOWARD¹, J. W. KWON¹, AND B. HAHM¹¹University 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. YANG¹, N. PIETY¹, M. TRISCOTT¹, AND S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA**P-Th-B-200****A Centrifugal Force-Based Method of Characterization of Membranes Used in Paper Microfluidics**J. R. BUSER¹, G. KIMPEL¹, P. KAUFFMAN¹, E. FU¹, B. LUTZ¹, AND P. YAGER¹¹University of Washington, Seattle, WA**P-Th-B-201****A Mixed Self-Assembled Monolayer For Small Molecule Sensing Using Surface-Enhanced Raman Spectroscopy Remains Viable In Blood For Up To 10 Days**J. M. YUEN¹, A-I. HENRY¹, B. SHARMA¹, N. C. SHAH¹, M. R. GLUCKSBERG¹, AND R. P. VAN DUYN¹¹Northwestern University, Evanston, IL**P-Th-B-202****Anaerobic Storage Improves the Mechanical Properties of Stored Red Blood Cells**J. M. BURNS¹, X. YANG¹, T. YOSHIDA², L. J. DUMONT³, AND S. S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA, ²New Health Sciences, Inc., Bethesda, MD, ³The Geisel School of Medicine at Dartmouth, Lebanon, NH**P-Th-B-203****A Microfluidic Device For Single Cell PCR**D. N. LOUFAKIS¹, R. VARGHESE², D. MITTELMAN^{1,2}, AND C. LU^{1,3}¹Virginia Tech, Blacksburg, VA, ²Virginia Bioinformatics Institute, Blacksburg, VA, ³Virginia Tech-Wake Forest University, Blacksburg, VAP = Poster Session
OP = Oral Presentation

P-Th-B-204**Transplant Graft Status Monitoring by ImmunoFET Sensitive in Physiologic Environments**

P. CASAL¹, Y. WANG¹, A. THEISS¹, G. HADLEY¹, L. BRILLSON¹, W. LU¹, AND S. C. LEE¹
¹The Ohio State University, Columbus, OH

P-Th-B-205**Electrophoretic Screen and Functionalized Microspheres as Antigen Assays**

J. E. RINCON¹, M. HOCK¹, AND T. BOLAND¹
¹The 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. PHANEUF¹, K. OH², N. PAK¹, D. C. SAUNDERS¹, C. CONRARDY², J. LANDERS², S. TONG², AND C. R. FOREST¹
¹Georgia Institute of Technology, Atlanta, GA, ²University of Virginia, Charlottesville, VA, ³Centers 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. PADMASHALI¹, M-S. LIANG¹, P. MISTRIOTIS¹, AND S. T. ANDREADIS^{1,2}
¹State University of New York at Buffalo, Amherst, NY, ²Center 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. LIN¹, H. SHARMA¹, N. NOROUZI¹, J. MCLANE¹, AND M. KHINE¹
¹University of California, Irvine, Irvine, CA

P-Th-B-209**Small Sample Protein Preconcentration Using Photopatterned Tracked-etched Membrane**

S. SAEDINIA¹, K. NASTIUK¹, J. KROLEWSKI¹, G-P. LI¹, AND M. BACHMAN¹
¹University 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. YEH¹, R. HAROUAKA¹, P. ZHENG¹, C. DONG¹, AND S. ZHENG¹
¹The Pennsylvania State University, University Park, PA

P-Th-B-211**Real Time *In-vivo* Uric Acid Biosensor System for Biophysical Monitoring of Birds**

A. GUMUS¹, D. WINKLER¹, AND D. ERICKSON¹
¹Cornell University, Ithaca, NY

P-Th-B-212**A Microfluidic Technique for Enriching Low Abundance Targets**

B. C. HOLLINS¹, H. XIA¹, B. MATHEW¹, A. KUNJUMON¹, H. HEGAB¹, D. S. MAINARDI¹, S. SOPER², AND J. FENG¹
¹Louisiana Tech University, Ruston, LA, ²Louisiana 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. WU¹, K. KWAK¹, J. MA¹, Y. MAO¹, M. CRAWFORD¹, X. WANG¹, H. HE¹, A. LEE¹, S. P. NANA-SINKAM¹, AND L. J. LEE^{1,2}
¹The Ohio State University, Columbus, OH, ²The Ohio State University, Columbus

P-Th-B-214**A Multi-faceted Approach to the Detection of Pancreatic Cancer**

M. P. HWANG¹, J-W. LEE¹, J. CHOI¹, AND K-H. LEE¹
¹Korea Institute of Science and Technology, Seoul, Korea, Republic of

P-Th-B-215**Permanent Magnet Micro-Needles for Nanobiomagnetic Applications**

Z. A. KAUFMAN¹, J. P. DOBSON¹, E. G. YARMOLA¹, K. D. ALLEN¹, AND D. P. ARNOLD¹
¹University of Florida, Gainesville, FL

P-Th-B-216**On-chip Capture/Sorting and Characterization of Cancerous Cells**

D. GALLEG0-PEREZ¹, K. KWAK¹, Y. WU¹, X. WANG¹, J. MA¹, P. BOUKANY¹, B. YU¹, Y. MAO¹, L. LI¹, T. EUBANK¹, G. LAFYATIS¹, D. HANSFORD¹, J. LANNUTTI¹, AND L. LEE¹
¹The Ohio State University, Columbus, OH

P-Th-B-217**Bacterial Lysis and On-Paper Purification of Nucleic Acids for Point-of-Care Applications**

S. BYRNES¹, P. KAUFFMAN¹, L. LAFLEUR¹, E. FU¹, B. LUTZ¹, AND P. YAGER¹
¹University of Washington, Seattle, Seattle, WA

P-Th-B-218**Shrink-Induced Superhydrophobic Microfluidics**

J. MCLANE¹, L. FRESCHAUF¹, S. LIN¹, AND M. KHINE¹
¹University 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. HOLST¹, D. C. SAUNDERS¹, N. PAK¹, C. R. PHANEUF¹, AND C. R. FOREST¹
¹Georgia Institute of Technology, Atlanta, GA

P-Th-B-220**Development of a Coffee-Ring Diagnostic for Malaria**

J. TRANTUM¹, C. GULKA¹, D. WRIGHT¹, AND F. HASELTON¹
¹Vanderbilt University, Nashville, TN

P-Th-B-221**Low Resource Extraction of DNA from Human Urine**

H. BORDELON¹, A. E. CREECY¹, N. M. ADAMS¹, P. A. SHORT¹, D. W. WRIGHT¹, AND F. R. HASELTON¹
¹Vanderbilt University, Nashville, TN

P-Th-B-222**Designing Surface Tension Valves for Self-Contained Magnetic Bead-Based Assays**

N. M. ADAMS¹, A. E. CREECY¹, C. E. MAJORS¹, P. A. SHORT¹, D. W. WRIGHT¹, AND F. R. HASELTON¹
¹Vanderbilt University, Nashville, TN

P-Th-B-223**Silicon Photonics-Based Label-Free Analysis in Blood and Complex Clinical Matrices**

J. T. KIRK¹, N. STENDER¹, N. D. BRAULT¹, K. W. LANNERT², J. M. JOHNSEN^{1,2}, S. JIANG¹, AND D. M. RATNER¹
¹University of Washington, Seattle, WA, ²Puget Sound Blood Center, Seattle, WA

P-Th-B-224**Million-Cell FISH Array for Large-Scale Genetic Characterization of Cancers**

Y. LIU¹, B. KIRKLAND¹, J. SHIRLEY¹, Z. WANG¹, P. ZHANG¹, S-I. TAKEBAYASHI¹, D. M. GILBERT¹, S. LENHERT¹, AND J. GUAN¹
¹Florida State University, Tallahassee, FL

P-Th-B-225**Integrating Antibody-Functionalized Microshuttles in a Biomolecular Motor-Driven Microfluidic Sensor**

J. CAMPBELL¹, D. PAUL¹, K. KURABAYASHI¹, AND E. MEYHOFER¹
¹University of Michigan, Ann Arbor, MI

P-Th-B-226***In-vitro* Molecular Imaging of Tumor Cells by a Highly Integrated PET Microsystem**

K. HWANG¹, J. WANG¹, AND J. R. HEATH¹
¹Caltech, Pasadena, CA

P-Th-B-227**Dielectrophoresis-Enhanced Immunocapture of Prostate Cancer Cells**C. HUANG¹, S. M. SANTANA¹, B. G. HAWKINS², H. LIU³, N. H. BANDER³, AND B. J. KIRBY¹¹Cornell University, Ithaca, NY, ²National Institute of Standards and Technology, Gaithersburg, MD, ³Weill 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. BALE¹, G. M. PRICE¹, G. MARTENS², M. CASALI¹, AND M. L. YARMUSH¹¹Harvard Medical School, Massachusetts General Hospital and the Shriners Hospitals for Children, Boston, MA, ²UZ Brussel, Laarbeeklaan, Belgium**P-Th-B-229****Detection of *M. tuberculosis* Specific Antigens (ESAT-6) with Integrated Nanoporous Silica Thin-Films**H-J. WU¹, J. FAN¹, X. MA^{1,2}, AND Y. HU^{1,3}¹The Methodist Hospital Research Institute, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Weill Cornell Medical College, New York, NY**P-Th-B-230****Magnetic Biomarker Harvesting for Osteoarthritis Diagnosis**J. DOBSON¹, E. YARMOLA¹, Z. KAUFMAN¹, D. ARNOLD¹, AND K. ALLEN¹¹University of Florida, Gainesville, FL**P-Th-B-231****A Rapid Fiber-Based Immunassay for Early Diagnosis**C. R. WADDELL¹, V. REUKOV¹, C-C. TSAI¹, K. KORNEV¹, AND A. VERTEGEL¹¹Clemson 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. HARSHMAN¹, R. REYES¹, D. J. YOU¹, AND J. Y. YOON¹¹University of Arizona, Tucson, AZ**P-Th-B-233****Single-Molecule Detection and Microfluidics: Generating Systems for the *in vitro* Diagnosis of Stroke**B. M. YOUNG¹¹UNC 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. YE¹, J. HOU¹, M. ELLIS¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**Track: Neural Engineering****Brain-Computer Interfaces****P-Th-B-235****Decoding of Directional Intention and Movements Using Electrographic (ECoG) Signals in Humans**A. GUNDUZ¹, P. BRUNNER^{2,3}, AND G. SCHALK^{2,3}¹University of Florida, Gainesville, FL, ²Wadsworth Center, Albany, NY, ³Albany 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. REED¹, M. RODGERS¹, K. M. PATE¹, J. CLEGG¹, AND M. A. MOSS¹¹University of South Carolina, Columbia, SC**P-Th-B-237****Enhanced Calcium Staining of Adult Rodent Brain Slices Via a Microfluidic Oxygenator**G. MAULEON¹, J. F. LO¹, C. P. FALL^{1,2}, AND D. T. EDDINGTON¹¹University of Illinois at Chicago, Chicago, IL, ²Georgetown University, Washington, DC**P-Th-B-238****Changes in Spike Rate Modulation Through Correlations in Excitatory and Inhibitory Synaptic Input**F. R. FERNANDEZ¹ AND J. A. WHITE¹¹University of Utah, Salt Lake City, UT**P-Th-B-239****Conformational States of the Transmembrane Protein Prestin Measured by FLIM-FRET Techniques**C. MOONEY¹ AND R. M. RAPHAEL¹¹Rice University, Houston, TX**P-Th-B-240****A Low-Cost Bluetooth Device For Wireless Voltammetric Dopamine Detection**A. GAILEY¹, B. N. KIM¹, AND M. LINDAU¹¹Cornell 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. CAICEDO¹, T. SARMA¹, G. PIGINO¹, AND S. BRADY¹¹University 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. KUANG¹, L. WEI², T. XI², K. MARK³, AND B. Z. GAO¹¹Clemson University, Clemson, SC, ²Center for Biomedical Materials and Tissue Engineering Peking University, Beijing, China, ³People's Republic of, ³Medical University of South Carolina, Charleston, SC, Charleston, SC**P-Th-B-243****Learning Cultured Neural Network Temporal Evolution using Graph Theory**A. NAPOLI¹, M. SOBEL¹, AND I. OBEID¹¹Temple University, Philadelphia, PA**P-Th-B-244****Electrical and Chemical Enhancement of Neurite Outgrowth Within a ³D Collagen Scaffold**R. ADAMS¹, S. R. RENDELL¹, L. FRENCH¹, J. B. PAPKE¹, R. K. WILLITS², AND A. B. HARKINS¹¹Saint Louis University, St. Louis, MO, ²University of Akron, Akron, OH**P-Th-B-245****A Study of Human Neuroblastoma Cells on Micropatterned Collagen Extracellular Matrix**I. POUDEL¹ AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE

P-Th-B-246**A Novel Microfluidic Device to Study Axonal Response to Controlled Gradients of Guidance Cues**A. BLASIAK¹, D. KILINC¹, AND G. U. LEE¹¹University College Dublin, Dublin, Ireland**P-Th-B-247****Motor Neuron Development on Poly-L-Lactide-Polycaprolactone Fibers**F. WINTERROTH^{1,2}, S. J. TUCK¹, M. K. LEACH^{1,3}, AND J. M. COREY^{1,3}¹The University of Michigan, Ann Arbor, MI, ²The University of Michigan, Ann Arbor, MI, ³Veterans 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. XI¹, AND B. Z. GAO²¹Peking University, Beijing, China, People's Republic of, ²Clemson University, Clemson, SC**P-Th-B-249****Silk Hydrogels as Soft Substrates for Neural Tissue Engineering**A. M. HOPKINS^{1,2}, L. DE LAPORTE², E. SPEDDEN¹, J. A. HUBBELL², C. STAI¹, AND D. L. KAPLAN¹¹Tufts University, Medford, MA, ²L'École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**P-Th-B-250****Cell-Confinement Test on Chick Forebrain Neurons**L. WEI¹, Y. KUANG², T. XI¹, M. KINDY³, AND Z. GAO²¹Peking University, Beijing, China, People's Republic of, ²Clemson University, Clemson, SC, ³Medical 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}¹Rensselaer Polytechnic Institute, Troy, NY, ²Center 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. KILIAN¹, M. MRKSICH², D. ZHANG¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Northwestern University, Evanston, IL**P-Th-B-253****Non-random DNA Template Segregation in Differentiating Embryonic Stem Cells**C. ELABD¹, R. CHEN¹, W. COUSIN¹, J. PHAM¹, M. CONBOY¹, AND I. CONBOY¹¹University 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. WANG¹, A. D. GRACZ¹, C. E. SIMS¹, S. T. MAGNESS¹, AND N. L. ALLBRITTON^{1,2}¹UNC, Chapel Hill, NC, ²NCSU, 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. JIN¹, H. YAO², Z. MELKOUMIAN³, AND K. YE⁴¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Fayetteville, AR, ³Corning, New York, NY, ⁴University of Arkansas, Fayetteville, AR**P-Th-B-256****Nanotopography Mediates Functional Responses of Human Embryonic Stem Cells**W. CHEN¹, L. G. VILLA-DIAZ¹, Y. SUN¹, S. WENG¹, P. H. KREBSBACH¹, AND J. FU¹¹University of Michigan, Ann Arbor, MI**P-Th-B-257****Extracellular Matrix Proteins are Necessary for Mesendoderm Induction**H. TAYLOR-WEINER¹, J. E. SCHWARZBAUER², AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²Princeton University, Princeton, NJ**P-Th-B-258****A Biomimetic Synthetic Feeder Layer Supports Mouse Embryonic Stem Cell Culture**T. RAMCHAL¹, C. LOPEZ-FAGUNDO¹, N. LABRIOLA¹, D. HOFFMAN-KIM, PH.D.¹, AND E. M. DARLING, PH.D.¹¹Brown University, Providence, RI**P-Th-B-259****Creating an Oxygen Landscape for the Vascular Endothelium and Mesenchymal Stem Cells**M. L. REXIUS¹, A. B. MALIK¹, J. REHMAN¹, AND D. T. EDDINGTON¹¹University 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. PINEDA¹ AND T. AHSAN¹¹Tulane 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. BONGIORNO¹, A. BARUA^{1,2}, C. HENEGAR¹, Z. SCHWARTZ^{1,2}, B. BOYAN^{1,2}, T. MCDEVITT^{1,2}, AND T. SULCHEK^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-B-262****Isoproterenol Facilitated Cardiomyocyte Generation From Human Pluripotent Stem Cells**K. BAN¹, S. KIM¹, J. BYUN¹, AND Y-S. YOON¹¹Emory 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. LEI¹, A. C. BROWN^{1,2}, T. H. BARKER^{1,2}, AND J. S. TEMENOFF^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Th-B-264****Pancreatic Maturation of Alginate Encapsulated Human Embryonic Stem Cells**T. C. RICHARDSON¹, P. N. KUMTA¹, AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA

P-Th-B-265**Temporally-Regulated Mechanotransduction Controls Stem Cell Cardiomyogenesis**J. L. YOUNG¹, K. KRETCHMER¹, J. SCHAEFER¹, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA**P-Th-B-266****Novel Easy Use Synthetic Substrate for Stem Cell Culture**Y. ZHOU¹, Z. MELKOUMAIN¹, J. J. KELLEY¹, J. L. WEBER¹, P. J. DOLLEY-SONNEVILLE¹, L. E. ROMEO¹, S. K. PAI¹, D. S. HENRY¹, AND S. J. CARACCI¹¹Corning Incorporated, Corning, NY**P-Th-B-267****Controlling Stem Cell-derived Cardiomyocyte Maturation Using Soluble Nitric Oxide Donors**A. J. HODGE¹, J. ZHONG¹, AND E. A. LIPKE¹¹Auburn University, Auburn University, AL**P-Th-B-268****Injectable Hydrogel Cell Delivery System for Bone Tissue Engineering**C. DOSIER¹, H. STEVENS¹, O. CHAUDHURI², AND R. GULDBERG¹¹Georgia Tech, Atlanta, GA, ²Harvard, Cambridge, MA**P-Th-B-269****Stem Cell Therapy: Not All Approaches Are Created Equal**M. LAM¹, Y. GONG¹, A. NAUTA², J. WU¹, AND M. LONGAKER¹¹Stanford University, Stanford, CA, ²Stanford 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. FERREIRA¹, M. H. COSTA¹, P. Z. ANDRADE¹, J. S. CABRAL¹, AND C. LOBATO DA SILVA¹¹IBB - Institute for Biotechnology and Biotechnology; Instituto Superior Técnico, Lisbon, Portugal**P-Th-B-271****Suspension Based Differentiation of Human Adult Stem Cells**A. ADENIRAN-CATLETT¹ AND S. K. MURTHY¹¹Northeastern 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. LEE¹, C. M. VALMIKINATHAN², J. BYUN¹, S. KIM¹, G. LEE¹, N. MOKARRAM², B. PAI², R. V. BELLAMKONDA², AND Y-S. YOON^{1,2}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**P-Th-B-273****Multifunctional Electrospun Scaffolds for Promoting Neural Differentiation of Induced Pluripotent Stem Cells**A. MONTGOMERY¹, N. KHADEM MOHTARAM¹, K. KOLEHMAINEN¹, J. KO¹, AND S. M. WILLERTH¹¹University of Victoria, Victoria, BC, Canada**P-Th-B-274****Surface Engineering Nanomaterials for Stem Cell Engineering**W. SUH¹ AND M. TIRRELL²¹University of California, Berkeley, Berkeley, CA, ²University of Chicago, Chicago, IL**P-Th-B-275****Nanoparticle-based Strategy for Generation of Induced Pluripotent Stem Cells to Study Retinitis Pigmentosa**N. BHISE¹, K. WAHLIN¹, D. ZACK¹, AND J. GREEN¹¹Johns 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 PETERS¹ AND G. TRUSKEY¹¹Duke University, Durham, NC**P-Th-B-277****Cardiac Tissue Regeneration: MRI Based Morphological Modeling, Synthesis, and Characterization of Tissue Mimicking Materials**S. ANGELI¹, F. KOSSIVAS¹, D. KAFOURIS¹, V. TZAGARAKIS², C. S. PATRIKIOS¹, AND C. CONSTANTINIDES¹¹University of Cyprus, Nicosia, Cyprus, ²Alpha Evresis Medical Center, Nicosia, Cyprus**P-Th-B-278****Designing a Tendon-Derived Tubular Collagen Scaffold**K. A. ALBERTI¹ AND Q. XU¹¹Tufts University, Medford, MA**P-Th-B-279****Hypoxic Conditioning of ADSCs to Promote Vascular Development**M. SKILES¹, L. RUCKER¹, AND J. BLANCHETTE¹¹University of South Carolina, Columbia, SC**P-Th-B-280****Amniotic Fluid Stem Cell-Derived Vascularization Within Thermo-responsive Gelatin-Chitosan Hydrogels**O. M. BENAVIDES¹, J. J. PETSCHER¹, S. POK¹, S. HAERI^{2,3}, AND J. G. JACOT^{1,3}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas Children's Hospital, Houston, TX**P-Th-B-281****Improved Design for Cell-Free, Fast Degrading Synthetic Artery Grafts**R. A. ALLEN¹, M. YOSHIDA², W. WU³, L. VOLPATTI¹, S. A. GUELCHER⁴, AND Y. WANG¹¹University of Pittsburgh, Pittsburgh, PA, ²Children's Hospital of Pittsburgh of the University of Pittsburgh School of Medicine, Pittsburgh, PA, ³Yale University, New Haven, CT, ⁴Vanderbilt University, Nashville, TN**P-Th-B-282****Regulation of Valvular Interstitial Cell Phenotype by Boundary Stiffness**M. H. KURAL¹ AND K. L. BILLIAR¹¹Worcester Polytechnic Institute, Worcester, MA**P-Th-B-283****Stepwise, Solubilization-Based Antigen Removal Maintains Xenogeneic Scaffold Properties**M. L. WONG¹, J. L. WONG¹, AND L. G. GRIFFITHS¹¹University of California, Davis, Davis, CA**P-Th-B-284****Laser Microchannels in Engineered Heart Tissue: A Novel Vascularization Method in Tissue Engineering**H. MACLEAN¹, C. SONDERGAARD¹, R. WITT¹, L. LE¹, S. NAJIBI¹, G. MATHEWS¹, S. WACHSMANN-HOGIU¹, AND M-S. SI¹¹University 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. POK¹ AND J. G. JACOT^{1,2}¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX

P-Th-B-286**Characterization of Cardiac Extracellular Matrix for Improved Recellularization**N. J. MERNA¹, C. J. ROBERTSON¹, A. T. LA¹, AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA**P-Th-B-287****Nanog Reverses the Effect of Senescence on Myogenic Differentiation of Human Mesenchymal Stem Cells**P. MISTRIOTIS¹, M. LIANG¹, J. HAN¹, AND S. ANDREADIS^{1,2}¹University at Buffalo SUNY, Amherst, NY, ²Center 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. PETSCHÉ¹, O. M. BENAVIDES¹, S. HAERIP^{2,3}, AND J. G. JACOT^{1,3}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas 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. SALINAS¹, M. LIBERA¹, D. SCHMIDT², AND S. RAMASWAMY¹¹Florida International University, Miami, FL, ²University of Pittsburgh, Pittsburgh, PA**P-Th-B-290****Varying Frequency of Mechanical Stimulation Induces a More Physiological Hypertrophic Pathway in Engineered Myocardium**K. Y. YE¹ AND L. D. BLACK¹¹Tufts University, Medford, MA**P-Th-B-291****Fluid-Flow Patterns as Regulatory Mechanisms in Stem-Cell Based Heart Valve Tissue Engineering**S. VAN GULDEN¹, M. SALINAS¹, C. MARTINEZ¹, AND S. RAMASWAMY¹¹Florida International University, Miami, FL**P-Th-B-292****Variation In Cardiac Pulse Frequencies Modulates vSMC Phenotype Switching During Early Phase Vascular Remodeling**Z. TOSUN¹ AND P. MCFETRIDGE¹¹University 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 REMIGIO¹, C. MARTINEZ¹, M. HERNANDEZ¹, AND S. RAMASWAMY¹¹Florida International University, Miami, FL**P-Th-B-294****Promoting Elastin Production Within 3 Dimensional PEGDA Hydrogels Using An Elastin Mimetic Peptide**D. PATEL¹, R. MENON¹, AND L. TAITE¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-B-295****Scaffold Design in Mechanically-Induced Cardiomyogenic Differentiation of Periodontal Ligament Cells**S. RATH¹ AND S. RAMASWAMY¹¹Florida International University, Miami, FL**P-Th-B-296****Assessment of Thrombogenicity of Decellularized Vascular Grafts**A. B. VAN DE WALLE¹ AND P. S. MCFETRIDGE¹¹University 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. CHEVALLIER³, D. MANTOVANI³, D. LETOURNEUR¹, AND C. LE VISAGE¹¹Inserm U698, Paris, France, ²Institut Galilée, University Paris 13, Villetaneuse, France, ³Laboratory for Biomaterials and Bioengineering, Quebec City, Canada**P-Th-B-298****The Amniotic Membrane as a Scaffold for a Vascular Graft**J. H. ARRIZABALAGA¹, J. A. BRENNAN¹, AND M. U. NOLLERT¹¹University 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}¹University of California Irvine, Irvine, CA, ²Edwards 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. PIRAS¹, P. KONKALMATT¹, AND B. A. FRENCH¹¹University of Virginia, Charlottesville, VA**P-Th-B-301****Characterization of Dermal Fibroblasts as a Cell Source for Tissue Engineered Heart Valves**M. FAHRENHOLTZ¹, W. LIU¹, D. KEARNEY², C. D. FRASER^{2,3}, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX, ³Baylor College of Medicine, Houston, TX**P-Th-B-302****Effect of Oxygen Gradient on Early Vascular Graft Maturation**M. C. MOORE¹, R. MOORE¹, AND P. S. MCFETRIDGE¹¹The University of Florida, Gainesville, FL**P-Th-B-303****Effect of Stress-Induced Senescence on Cord Blood-Derived Endothelial Cell Permeability**M. P. GANATRA¹, T. M. CHEUNG¹, J. J. FU¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC**P-Th-B-304****Cell Seeding and Dynamic Conditioning of Long Xenogeneic Acellular Vascular Scaffolds**G. FERCANA¹, E. LANGAN², C. WRIGHT², D. BOWSER¹, AND D. SIMIONESCU¹¹Clemson University, Clemson, SC, ²Greenville Hospital System, Greenville, SC**P-Th-B-305****Diabetes-Induced Inflammatory Response in Collagen Scaffolds used for Cardiovascular Tissue Engineering: Mitigation with Antioxidants**J. CHOW¹, H. WARNER¹, D. SIMIONESCU¹, AND A. SIMIONESCU¹¹Clemson University, Clemson, SC**P-Th-B-306****Dynamic Endothelialization and Conditioning of Aortic Heart Valve Scaffolds Using Adult Stem Cells**R. PASCAL¹, L. N. SIERAD¹, D. SIMIONESCU¹, AND A. SIMIONESCU¹¹Clemson University, Clemson, SC**P-Th-B-307****Assessment of Biochemical Contributions to Diabetic Cardiomyopathy Pathology and Development of an Appropriate *In vitro* Model**T. LARREW¹, J. CHOW¹, G. FERCANA¹, J. SCHULTE¹, D. SIMIONESCU¹, AND A. SIMIONESCU¹¹Clemson University, Clemson, SC

Thursday, October 25, 2012

1:30PM - 3:00PM

PLATFORM SESSION - THURS - 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. LEE¹, J. HONG¹, D. BONNER¹, Z. POON¹, AND P. T. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA

1:45PM

Multifunctional Triblock Copolymers for Intracellular mRNA Delivery

C. CHENG¹, A. J. CONVERTINE¹, P. S. STAYTON¹, AND J. D. BRYERS¹¹University of Washington, Seattle, WA

2:00PM

Bioreducible poly(β -amino ester) nanoparticles for siRNA deliveryK. L. KOZIELSKI¹ AND J. GREEN¹¹Johns Hopkins University, Baltimore, MD

2:15PM

Synthesis and Characterization of Composite Hydrogel Particles for Oral Delivery of siRNA

J. M. KNIPE¹ AND N. A. PEPPAS¹¹The University of Texas at Austin, Austin, TX

2:30PM

Injectable Tissue Engineering Scaffolds that Mediate Efficient Gene Silencing In Vivo

C. E. NELSON¹, A. J. KIM¹, E. J. ADOLPH¹, M. K. GUPTA¹, F. YU^{1,2}, J. M. DAVIDSON^{1,2}, S. A. GUELCHER¹, AND C. L. DUVAL¹¹Vanderbilt University, Nashville, TN, ²VA Hospital, Nashville, TN

2:45PM

Development of siRNA Delivery System for Modulating Angiotensin II Type I Receptor Expression in Cardiomyocytes

J. LIU^{1,2}, C. GU³, Y. LUO², AND M. E. DAVIS⁴¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Peking University, Beijing, China, People's Republic of, ³Georgia Institute of Technology, Atlanta, GA, ⁴Emory 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. LOVE¹¹MIT, Cambridge, MA

2:00PM

Photoswitching as a Tool for Quantification of Lck Lateral Diffusion in CD4 T cells

K. T. BASHOUR¹ AND L. C. KAM¹¹Columbia University, New York, NY

2:15PM

Engineering Plant Spores and Pollens as Novel Adjuvants for Oral Vaccination

S. ATWE¹, Y. MA¹, AND H. S. GILL¹¹Texas 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. LI¹, J. J. MOON¹, J. ELKHADER¹, W. ABRAHAM¹, H. SUH¹, AND D. J. IRVINE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase

2:45PM

Development of a Targeted, Immunosuppressive Microparticle Vaccine for the Prevention of Type I Diabetes

J. LEWIS¹, M. CARSTENS¹, C. XIA¹, M. CLARE-SALZLER¹, AND B. KESELOWSKY¹¹University 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}¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY

2:00PM

Low Pressure Inertial Focusing in Large-scale Microchannels for High-Throughput Flow Cytometry

A. J. CHUNG¹, D. PULIDO¹, M. MASAELI¹, H. AMINI¹, AND D. DI CARLO¹¹UCLA, Los Angeles, CA

2:15PM

Large-Scale Production and Size-Control of Lipid-Polymer Hybrid Nanoparticles in Microfluidics

Y. KIM¹, B. LEE CHUNG¹, M. MA¹, W. J. MULDER², Z. A. FAYAD², O. C. FAROKHZAD², AND R. LANGER¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Mount Sinai School of Medicine, New York, NY, ³Brigham and Women's Hospital, Harvard Medical School, Boston, MA

2:30PM


Describing Mast Cell Localization in Response to SCF Using Microfluidic Devices

M. SMITH¹, A. SHAMLOO¹, M. MANI¹, M. MANCHANDIA¹, K. WEINBERG¹, AND S. HEILSHORN¹¹Stanford University, Stanford, CA

2:45PM

Microfluidic Bandage: Delivering Oxygen and Monitoring Collagen for Wound Therapy

J. F. LO¹, M. BRENNAN¹, Z. MERCHANT¹, Z. NIE², Q. FANG³, L. CHEN³, L. DIPIETRO¹, AND D. T. EDDINGTON¹¹University of Illinois at Chicago, Chicago, IL, ²McMaster University, West Hamilton, ON, CanadaP = 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. BASHIR¹¹UIUC, Urbana, IL**2:00PM****Antibody-Free Optical Analysis and Sorting of Mammalian Cells**C. G. HEBERT¹, A. TERRAY¹, AND S. J. HART¹¹Naval 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. FLETCHER³, C. REBER³, A. SKANDARAJAH³, AND W. A. LAM^{1,2}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA, ³University of California at Berkeley, Berkeley, CA**2:30PM****Inducing *S. epidermidis* Biofilm Formation by Fluid Forces Using a Microfluidic Shear Array**W. M. WEAVER¹, V. MILISAVLJEVIC¹, J. F. MILLER^{1,2}, AND D. DI CARLO^{1,2}¹University of California Los Angeles, Los Angeles, CA, ²California NanoSystems Institute, Los Angeles, CA**2:45PM****Stimuli-Responsive Antibody Conjugates for Enabling Highly Sensitive Point-of-Care Diagnostic Assays**J. J. LAI¹, A. L. GOLDEN¹, J. M. HOFFMAN¹, A. S. HOFFMAN¹, AND P. S. STAYTON¹¹University 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. LIU¹ AND A. REVZIN¹¹University of California Davis, Davis, CA**1:45PM****A Label-free Magnetic Cell-based Sensor for Real-time Chemical Detections**H. WANG^{1,2}, A. MAHDAVI², D. A. TIRRELL², AND A. HAJIMIRI²¹Georgia Institute of Technology, Atlanta, GA, ²California Institute of Technology, Pasadena, CA**2:00PM****Mechanosensitive Channels as Sensors for Drug Partitioning into the Native Bacterial Membrane**I. ROWE¹, K. KAMARAJU¹, M. GUO¹, H. O. SINTIM¹, AND S. SUKHAREV¹¹University of Maryland, College Park, MD**2:15PM****Electrical Control of Protein Conformation and Cell Function with Conducting Polymer Architectures**A. WAN¹, E. CHANDLER¹, T. WILLIAMS¹, C. K. OBER¹, D. GOURDON¹, E. P. GIANNELIS¹, C. FISCHBACH¹, AND G. G. MALLIARAS²¹Cornell University, Ithaca, NY, ²Ecole des Mines de St. Etienne, Gardanne, France**2:30PM****Cell Counting Using Contactless Impedance Sensing For Low Resource Settings**M. JAVANMARD¹, S. EMAMINEJAD¹, R. DUTTON¹, AND R. W. DAVIS¹¹Stanford University, Palo Alto, CA**2:45PM****Microfluidic Platform for Investigation of Molecular Transport Across Small Blood Vessels**Z. ABDI DEZFOOLI¹, S. PINTO¹, S. YASOTHARAN¹, S-S. BOLZ¹, AND A. GÜNTHER¹¹University 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. TU¹, J. BAI¹, R. HUANG², J-P. THIERY³, AND R. D. KAMM¹¹BioSystems and Micromechanics IRG, Singapore-MIT Alliance for Research and Technology (SMART), Singapore, Singapore, ²Cancer Science Institute, National University of Singapore, Singapore, Singapore, ³Institute 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. MALAMAS¹ AND Z-R. LU¹¹Case Western Reserve University, Cleveland, OH**2:00PM****Engineered Transferrin for the Targeted Delivery of Drug-Loaded Nanoparticles**R. Y. CHIU¹, T. TSUJI², C. T. LIU¹, J. WANG¹, A. B. MASON³, AND D. T. KAMEI¹¹University of California, Los Angeles, Los Angeles, CA, ²Nagoya University, Nagoya, Japan, ³University of Vermont, Burlington, VT**2:15PM****Ultrasound-Activated Agents Comprised of 5FU-Bearing Nanoparticles Bonded to Microbubbles Inhibit Tumor Growth and Improve Survival**C. BURKE¹, E. ALEXANDER¹, K. TIMBIE¹, A. KLIBANOV¹, J. SHEEHAN¹, AND R. J. PRICE¹¹University of Virginia, Charlottesville, VA**2:30PM****Mitoxantrone-loaded Theranostic Nanoparticles for TRAIL-induced Ablation of Cancer Cells**T. GRANDHI¹, T. POTTA¹, D. TAYLOR¹, Y. TIAN¹, AND K. REGE¹¹Arizona State University, Tempe, AZ**2:45PM****In Vivo Test of a Vascular-Targeted Enzyme Prodrug Therapy of Breast Cancer**B. VAN RITE¹, M. CHERRY², V. SIKAVITSAS¹, C. KURKJIAN², AND R. G. HARRISON¹¹University of Oklahoma, Norman, OK, ²University of Oklahoma Health Sciences Center, Oklahoma City, OK*Track sponsored by 

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. MITCHELL¹, K. S. LIN¹, AND M. R. KING¹
¹Cornell University, Ithaca, NY

1:45PM

Equibiaxial Strain Induces Pore Formation In Schlemm's Canal Endothelial Cells

S. T. BRAAKMAN¹, R. M. PEDRIGI¹, A. T. READ², C. R. ETHIER¹, AND D. R. OVERBY¹
¹Imperial College London, London, United Kingdom, ²University 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. MACKAY¹, L. P. DELEYROLLE^{3,4}, B. A. REYNOLDS^{3,4}, AND S. KUMAR^{1,2}
¹University of California, Berkeley, Berkeley, CA, ²UC Berkeley-UCSF Graduate Program in Bioengineering, Berkeley, CA, ³McKnight Brain Institute, University of Florida, Gainesville, FL, ⁴Queensland 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. WILKINS¹, D. B. PIKE¹, C. C. GIBSON¹, L. LI¹, AND Y-T. E. SHIU¹
¹University of Utah, Salt Lake City, UT

2:30PM

Stiffness as an Effector of Lung Branching Morphogenesis

K. CLAUSE¹, T. SEGURA², AND T. H. BARKER¹
¹Georgia Institute of Technology, Atlanta, GA, ²University of California Los Angeles, Los Angeles, CA

2:45PM

The Glycocalyx Mechanically Regulates Integrin Function

M. J. PASZEK¹, C. C. DUFORT¹, K. GODULA², J. E. HUDAK², J. LAKINS¹, C. R. BERTOZZI², AND V. M. WEAVER¹
¹University of California, San Francisco, San Francisco, CA, ²University 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. KNOLL¹ AND T. SAIF¹
¹University of Illinois, Urbana, IL

1:45PM

Effect of Microtubule Motors on Microtubule Mechanics in Living Cells

N. SHEKHAR¹, J. WU¹, A. LADD¹, T. LELE¹, AND R. DICKINSON¹
¹University of Florida, Gainesville, FL

2:00PM

Lamin-A/C is a Nuclear Rheostat that Scales with Tissue Rigidity and Modulates Cell Lineage

J. SWIFT¹, T. HARADA¹, J. PINTER¹, I. IVANOVSKA¹, A. BUXBIOM¹, J-W. SHIN¹, AND D. E. DISCHER¹
¹University of Pennsylvania, Philadelphia, PA

2:15PM

Guidance of Cell Migration by Substrate Dimension

S. CHANG¹, W-H. GUO¹, Y. KIM¹, AND Y-L. WANG¹
¹Carnegie Mellon University, Pittsburgh, PA

2:30PM

Microrheology of a Non-Equilibrium System Produced by Molecular Motor-Generated Forces in Living Cells

M-T. WEI¹, S. JEDLICKA¹, D. VAVYLONIS¹, AND H-Y. OU-YANG¹
¹Lehigh University, Bethlehem, PA

2:45PM

Deformability Cytometry, a Label-Free Assay of Stem Cell Pluripotency

M. MASAELI¹, H. T. TSE¹, D. R. GOSSETT¹, A. T. CLARK¹, AND D. DI CARLO¹
¹University 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. MAHADIK¹, S. PEDRON-HABA¹, J. CHOI¹, P. J. KENIS¹, AND B. A. HARLEY¹
¹University 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. DINGAL¹ AND D. DISCHER¹
¹University of Pennsylvania, Philadelphia, PA

2:00PM

Bone Marrow Mesenchymal Stem Cells Elicit an Angiogenic Response via their Alpha6 Beta1 Integrin Receptor

B. CARRION¹, Y. KONG¹, AND A. PUTNAM¹
¹University 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. WILDER¹ AND M. PLATT²
¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Georgia 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. CROWDER¹, S. H. LEE¹, A. M. PALMER¹, AND H-J. SUNG¹
¹Vanderbilt University, Nashville, TN

2:45PM

Engineering of Endogenous and Exogenous ECM in Pluripotent Stem Cell Aggregate Differentiation

K. M. FRIDLEY¹, R. NAIR¹, H. LYNCH¹, A. J. GARCIA¹, AND T. C. MCDEVITT¹
¹Georgia 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. GEILICH¹ AND T. J. WEBSTER¹¹Brown University, Providence, RI**1:45PM****Projection Micro-StereoLithography Printed PDMS as Potential Neural Interface Materials**K. N. CICOTTE^{1,2}, G. REECE³, P. LIN³, S. BUERGER², S. M. DIRK², AND E. L. HEDBERG-DIRK¹¹University of New Mexico, Albuquerque, NM, ²Sandia National Laboratories, Albuquerque, NM, ³MD Anderson Cancer Center, Houston, TX**2:00PM****Engineering Electrospun Fiber Nanoporosity**N. J. SCHAUB¹, T. BRITTON¹, AND R. J. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY**2:15PM****Fabrication of Cell-laden Microporous Hydrogels Using Gelatin as a Porogen for Bone Regeneration**L. WANG¹, K. F. KASPER¹, AND A. G. MIKOS¹¹Rice University, Houston, TX**2:30PM****Using Living Radical Polymerization to Improve Tailorable Extended Release from Molecularly Imprinted Biomaterials**V. D. SALIAN¹ AND M. E. BYRNE¹¹Biomimetic & 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. SUN¹, L. XIA¹, S. YI¹, S. C. LENAGHAN¹, AND M. ZHANG¹¹University 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}¹Department of Biomedical Engineering, Yale University, New Haven, CT, ²Yale Comprehensive Cancer Center, New Haven, CT**1:45PM****Prediction of Tumor Associated Macrophage Proteolytic and Metastatic Potential Using Multivariate Kinase Analysis**K-Y. PARK¹ AND M. O. PLATT¹¹Georgia 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. MA¹, A. CHEUNG¹, L. LIN², J. ZHAO¹, R. FAN¹, B. COMIN-ANDUIX², T. CHODON², R. KOYA², D. BALTIMORE¹, J. BRAUN², A. RIBAS², AND J. HEATH¹¹California Institute of Technology, Pasadena, CA, ²University 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. STAMATELOS¹, E. KIM¹, A. S. POPEL¹, AND A. P. PATHAK¹¹The 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. MELVIN¹, M. L. WATERS¹, AND N. L. ALLBRITTON^{1,2}¹University of North Carolina, Chapel Hill, NC, ²North Carolina State University, Raleigh, NC**2:45PM****Fluid Shear Stress Sensitizes Cancer Cells to Receptor-Mediated Apoptosis via Trimeric Death Receptors**M. J. MITCHELL¹ AND M. R. KING¹¹Cornell University, Ithaca, NY*Track sponsored by **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. SALTZ¹, L. A. COOPER¹, J. KONG¹, D. A. GUTMAN¹, F. WANG¹, J. GAO¹, C. APPIN¹, T. KURC¹, C. S. MORENO¹, AND D. J. BRAT¹¹Emory University, Atlanta, GA**2:00PM****Aggregating Medical Imaging Data from Multiple Sources: A Critical Capability for Patient Care and Clinical Research**Y. GE¹, D. AHN¹, R. PERAL¹, B. ELLISON¹, B. UNDE¹, H. D. GAGE¹, AND J. J. CARR¹¹Wake Forest University Health Sciences, Winston-Salem, NC**2:30PM****Towards Human-Centered Decision Support in Mammography**G. TOURASSI¹ AND V. PAQUIT¹¹Oak Ridge National Laboratory, Oak Ridge, TN*Track sponsored by **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. BIECHLER¹, L. JUNOR¹, J. POTTS¹, M. YOST², J. WEIDNER¹, AND R. GOODWIN¹¹University of South Carolina, Columbia, SC, ²Medical University of South Carolina, Charleston, SC

1:45PM**Effects of Wall Motion on Coronary Blood Flow – A Fluid Structure Interaction Study**

M. HASAN¹, D. A. RUBENSTEIN¹, AND W. YIN¹
¹Oklahoma State University, Stillwater, OK

2:00PM**Coupling Intravascular Shear Stress with Endoluminal Electrochemical Impedance Spectroscopy to Assess Oxidized LDL-Rich Atherosclerotic Lesions**

F. YU¹, J. LEE¹, N. JEN¹, X. LI¹, Q. ZHANG¹, Q. ZHOU¹, E. S. KIM¹, AND T. HSIAI¹
¹University of Southern California, Los Angeles, CA

2:15PM**Investigation of Pulmonary Artery Hemodynamics in Patients With Sickle Cell Disease Using MRI**

S. GEORGE¹, P. GHASEMI¹, S. MEHRA¹, S. SHARMA¹, AND J. CAHILL¹
¹East Carolina University, Greenville, NC

2:30PM**Shear Conditioning Strategies for Improved Endothelial Cell Retention on Vascular Grafts**

J. S. UZARSKI¹ AND P. S. MCFETRIDGE¹
¹University of Florida, Gainesville, FL

2:45PM**Numerical Modeling of Blood Flow in a New Percutaneously Delivered Hemodialysis Shunt**

M. J. KALLOK¹, A. S. YEVZLIN², M. E. NELSON³, AND J. P. ABRAHAM³
¹Phraxis, Inc, St. Paul, MN, ²University of Wisconsin, Madison, WI, ³University of St. Thomas, St. Paul, MN

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**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. BEAR¹, B. H. SMAILL¹, A. J. PULLAN¹, I. J. LEGRICE¹, G. B. SANDS¹, N. A. LEVER^{1,2}, D. J. PATTERSON^{1,3}, AND L. K. CHENG¹
¹University of Auckland, Auckland, New Zealand, ²Auckland City Hospital, Auckland, New Zealand, ³University of Oxford, Oxford, United Kingdom

1:45PM**Method to Measure Wave Front Speed, Direction, and Curvature in the Heart**

N. MAZEH¹, D. E. HAINES², AND B. J. ROTH³
¹Beaumont Health System, Royal Oak, MI, ²Oakland University William Beaumont School of Medicine, Royal Oak, MI, ³Oakland University, Rochester, MI

2:00PM**The Dip in the Anodal Strength-Interval Curve in Cardiac Tissue**

S. M. KANDEL¹ AND B. J. ROTH¹
¹Oakland University, Rochester, MI

2:15PM**Hysteresis in Electrical Restitution of Human Ventricular Myocytes**

K. BROWNSON¹, Y. ZHOU¹, C. HOOPES¹, A. AGARWAL¹, L. JING¹, AND A. PATWARDHAN¹
¹University of Kentucky, Lexington, KY

2:30PM**Effects of Mechanical Stress on Cardiac Muscle Excitation-Contraction**

H. HAN¹, J. SHAW², P. PULGLISI¹, T. PAN¹, L. IZU¹, K. S. LAM¹, AND Y. CHEN-IZU¹
¹UCDavis, Davis, CA, ²University of Michigan, Ann Arbor, MI

2:45PM**Microstructural Remodeling in Pacing Induced Heart Failure Measured by Diffusion Tensor MRI**

G. L. KUNG¹, Y-C. HSIEH², J. GAHM¹, A. GARFINKEL¹, P-S. CHEN², AND D. B. ENNIS¹
¹University of California, Los Angeles, CA, ²Indiana University, Indianapolis, IN

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**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. BADER¹ AND Y. PARK¹
¹Johns Hopkins University, Baltimore, MD

2:00PM INVITED**Systems Biology In Vivo: Combined Experimental and Computational Studies in Mouse Models at Multiple Scales**

D. A. LAUFFENBURGER¹
¹MIT, Cambridge, MA

2:30PM INVITED**Discovery of Mechanisms and Prognosis of Cancers from Matrix and Tensor Modeling of Large-Scale Molecular Biological Data**

O. ALTER¹
¹University 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 Experiential Activities on Student's Choice of Major and Submajor Concentration**

J. M. CONNOLLY¹, M. G. BYRD¹, A. N. DICKS¹, C. P. MACKS¹, J. G. TURBEVILLE¹, T. M. VEITH¹, D. DEAN¹, AND D. M. KWARTOWITZ¹
¹Clemson University, Clemson, SC

1:45PM**Differences in Biomedical Engineering Student Motivation Characterize Differences in Student Demographics**

A. KIRN¹, B. MORKOS¹, AND L. BENSON¹
¹Clemson University, Clemson, SC

2:00PM**Measuring Long-Term Effect of Design Education: Results from an Alumni Survey**

C. JANCUK¹, S. ACHARYA¹, R. H. ALLEN¹, AND A. A. SHOUKAS¹
¹Johns Hopkins University, Baltimore, MD

2:15PM**The Status of Professional Licensure Among Biomedical and Biological Engineers**J. R. GOLDBERG¹ AND S. SCHREINER²¹Marquette University, Milwaukee, WI, ²The 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. WOO³, AND R. J. SADLEIR⁴¹The National High Magnetic Field Laboratory, Tallahassee, FL, ²Chemical & Biomedical Engineering, The Florida State University, Tallahassee, FL, ³Kyung Hee University, Yongin-si, Korea, Republic of, ⁴University of Florida, Gainesville, FL**2:00PM****Multivariate Analysis of Speech MRI**K. MCROBERTS^{1,2}, J. LISINSKI², B. SUTTON³, AND S. LACONTE^{1,2}¹Virginia Tech, Blacksburg, VA, ²Virginia Tech Carilion Research Institute, Roanoke, VA, ³University of Illinois, Urbana, IL**2:15PM****Mapping the Phase Diagram for Non-Gaussian Diffusion in the Rat Brain at 17.6 Tesla**C. INGO¹, R. L. MAGIN¹, L. COLON-PEREZ², W. TRIPLETT², AND T. H. MARECI²¹University of Illinois at Chicago, Chicago, IL, ²University of Florida, Gainesville, FL**2:30PM****In Vivo Quantitative MR Molecular Imaging: An Image-Based BI-Mapping Correction for ¹⁹F and ¹H**M. J. GOETTE¹, A. H. SCHMIEDER¹, T. A. WILLIAMS¹, J. KEUPP², G. M. LANZA¹, S. A. WICKLINE¹, AND S. D. CARUTHERS¹¹Washington University in St. Louis, St. Louis, MO, ²Philips 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. CHENG¹, J. CHEN², D. LANG¹, S. D. CARUTHERS², I. R. EFIMOV¹, AND S. A. WICKLINE²¹Washington University in St. Louis, Saint Louis, MO, ²Washington 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}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH**1:45PM****Microchannels as a Regenerative Construct for Peripheral Nerve Interfacing**A. SRINIVASAN¹, A. JOSEPH¹, J. BENTLEY², E. GAUPP¹, G. STANLEY¹, AND R. BELLAMKONDA¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Michigan, Ann Arbor, MI**2:00PM****Optimal Depth, Waveform and Rate for Electrical Stimulation of Auditory Cortex**A. KOIVUNEMI¹ AND K. OTTO²¹Purdue University, Indianapolis, IN, ²Purdue University, West Lafayette, IN**2:15PM****On the EEG Features of Alzheimer's Disease and The Importance of Activated Brain States**P. GHORBANIAN¹, A. J. SIMON², D. M. DEVILBISS³, A. ALLAN BERNSTEIN⁴, T. HESS⁴, AND H. ASHRAFIUN¹¹Villanova University, Villanova, PA, ²Portable On-demand Diagnostics, Inc., Doylestown, PA, ³NexStep Biomarkers, Madison, WI, ⁴Palm 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. HOMER¹, J. A. PERGE¹, M. T. HARRISON¹, M. J. BLACK^{1,2}, AND L. R. HOCHBERG^{1,3}¹Brown University, Providence, RI, ²Max Planck Institute for Intelligent Systems, Tuebingen, Germany, ³Dept. Veterans Affairs Medical Center, Providence, RI**2:45PM****Examining the Benefits of Natural Neuromotor Strategy for Neuroprosthetic Controllers**D. E. NATHAN¹, R. W. PROST², AND D. C. JEUTTER¹¹Marquette University, Milwaukee, WI, ²Medical 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. HUBBELL¹, S. KONTOS¹, I. C. KOURTIS¹, K. Y. DANE¹, AND K. M. LORENTZ¹¹Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland**2:00PM INVITED****Microcapillary Immunoregulation of Tissue Neutrophilia**A. L. GONZALEZ¹, H. LAURIDSEN¹, C. E. AYRES-SANDER¹, AND J. S. POBER¹¹Yale University, New Haven, CT**2:15PM INVITED****Chemokines, Selectins and Intracellular Calcium Flux: Temporal and Spatial Cues for Neutrophil Arrest**S. I. SIMON¹¹UC 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. LAWRENCE¹, X. LIN-SCHMIDT¹, F. VIOLA¹, W. F. WALKER¹, AND G. AILAWADI¹¹University of Virginia, Charlottesville, VA**2:45PM INVITED****Blood Systems Biology: A multi-scale and patient-specific approach.**S. L. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA

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. WECHSLER¹, S. LAKSMANACHETTY¹, V. A. WECHSLER¹, AND R. BIZIOS¹
¹The University of Texas at San Antonio, San Antonio, TX**1:45PM****Rapid Vascularization and Localized Immune Modulation Induced by SIPI Receptor Agonism Enhances Cell-Based Mandibular Defect Repair**A. DAS¹, B. HUGELY², C. SEGAR², AND E. BOTCHWEY³¹UVA, Charlottesville, VA, ²UVA, Charlottesville, VA, ³GaTech, 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. LEVERING¹, L. ZHANG², L. BRIAN², J. LI¹, N. J. FREEDMAN², AND G. A. TRUSKEY¹¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC**2:15PM****Adipose Stem Cells with PEGylated-Fibrin Hydrogels for Wound Healing**S. C. BECERRA¹, S. NATESAN², AND R. J. CHRISTY¹¹US Army Institute of Surgical Research, Fort Sam Houston, TX, ²US Army Institute 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. SULLIVAN¹, K. TANG¹, K. P. QUINN¹, I. GEORGAKOUDI¹, AND L. D. BLACK III¹¹Tufts University, Medford, MA**2:45PM****Ready, Set, Fold - Design and Patterning of Multiple Cell Types in 3D PLGA Scaffold by Origami**G. J. YE¹, J-O. YOU¹, A. MANTZAVINO¹, AND D. T. AUGUSTE¹¹Harvard 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

Thursday, October 25, 2012

4:00PM - 5:30PM

PLATFORM SESSION –THURSDAY – 3

Track: Biomaterials

OP - Thurs - 3 - I - 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}¹MIT, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD

4:30PM

Modulation of Macrophage Phenotype to Enhance Peripheral Nerve Repair

N. MOKARRAM¹, V. MUKHATYAR¹, G. PATEL¹, AND R. V. BELLAMKONDA¹¹Georgia Institute of Technology and Emory School of Medicine, Atlanta, GA

4:45PM

Local Control of Inflammation with Cytokine-Neutralizing Gels

N. WASHBURN¹¹Carnegie Mellon University, Pittsburgh, PA

5:00PM

Self-adjuvanting Nanofiber Vaccines Carrying a Whole-Protein Antigen

G. A. HUDALLA¹, Y. F. TIAN², J. A. MODICA¹, M. MRKSICH³, A. CHONG¹, AND J. H. COLLIER¹¹University of Chicago, Chicago, IL, ²Illinois Institute of Technology, Chicago, IL,³Northwestern University, Chicago, IL

5:15PM

Antigen Delivery via Lipid Nanocapsules Elicits Robust Cellular and Humoral Responses against Malaria and HIV Antigens

J. J. MOON¹, A. V. LI¹, H. SUH¹, A. YADAVA², AND D. J. IRVINE^{1,3}¹Massachusetts Institute of Technology, Cambridge, MA, ²Walter Reed Army Institute of Research, Silver Spring, MD, ³Ragon 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. LI¹, G. DRANOFF⁴, AND D. J. MOONEY^{1,3}¹School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, ²School of Chemical Engineering, SungKyunKwan University, Suwon, Korea, Republic of, ³Wyss Institute for Biologically Inspired Engineering, Cambridge, MA, ⁴Dana-Farber Cancer Institute and Harvard Medical School, Cambridge, MA

4:15PM

Inactivated Polio Vaccination Using a Microneedle Patch

W. C. EDENS¹, N. DYBDAHL-SISSOKO², M. A. PALLANSCH², M. S. OBERSTE², AND M. R. PRAUSNITZ¹¹Georgia Institute of Technology, Atlanta, GA, ²Centers 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. SCOTT¹, A. STANO², M. GILLARD², A. MAIO-LIU³, M. SWARTZ², AND J. HUBBELL²¹Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, ²Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, ³University of Lausanne, Lausanne, Switzerland

4:45PM

Achieving Cancer Immunotherapy Through RNAi Interference in Tumor-Associated Macrophages via 'Click', Mannosylated Polymeric Nanoparticles

S. S. YU¹, C. M. LAU¹, W. J. BARHAM², C. E. NELSON¹, F. E. YULL², C. L. DUVALL¹, AND T. D. GIORGIO^{1,2}¹Vanderbilt University, Nashville, TN, ²Vanderbilt-Ingram Cancer Center, Nashville, TN

5:00PM

Dissecting Homotypic Contact-Mediated Interactions Between NK Cell by Cell-Laden Microwells

M. KIM¹, K. LEE², AND J. DOH¹¹POSTECH, Pohang, Korea, Republic of, ²Korea 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. WEINSTEIN², L. PENLAND², X-S. HE², C. DEKKER², P. WILSON⁴, H. B. GREENBERG², M. M. DAVIS², D. S. FISHER², AND S. R. QUAKE²¹The University of Texas at Austin, Austin, TX, ²Stanford University, Stanford, CA,³South University of Science and Technology of China, Shenzhen, China, People's Republic of, ⁴University 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. GUENTHER¹¹University of Toronto, Toronto, ON, Canada

4:30PM

Large Scale Microfluidic Gradient Arrays for Studying Growth and Guidance of Mammalian Neurons

N. BHATTACHARJEE¹ AND A. FOLCH¹¹University of Washington, Seattle, WA

4:45PM

Nanoparticle Mediated Delivery of Synthetic Transcription Factors for Gene Manipulation

P. T. YIN¹, S. PATEL¹, D. JUNG², AND K. LEE¹¹Rutgers University, Piscataway, NJ, ²Kyoto University, Kyoto, Japan

5:00PM

Haloysite Nanotubes as a Novel Biomaterial Surface for the Suppression of Leukocyte Spreading Response

A. D. HUGHES¹ AND M. R. KING¹¹Cornell University, Ithaca, NY


5:15PM

Universal Vitrification of Primary Cells by Ultra Fast Cooling and Its Cell Type Specific Functional Evaluations

Y. HE¹, S. NAGRATH¹, H. CHO¹, D. IRIMIA¹, A. L. MOORE¹, M. ZENALI¹, T. L. TOTH², AND M. TONER¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Vincent 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. KLAPPERICH¹¹Boston University, Boston, MA**4:30PM****Development of a Nanoscale Optical Fiber Biosensor Assay to Detect Methicillin Resistant Staphylococcus aureus**Z. ZUO¹, A. BANDARA¹, J. R. HEFLIN¹, AND T. J. INZANA¹¹Virginia Tech, Blacksburg, VA**4:45PM****Microchip for Onset Detection of Peritonitis in Peritoneal Dialysis Patients**U. A. GURKAN¹, V. GIANNAKEAS¹, J. IP¹, D. AKKAYNAK², S. MOON^{1,3}, B. VIJAYKUMAR¹, A. PAUL¹, S. SANJANA¹, T. MOORE¹, C. BRENNAN⁴, D. R. KURITZKES¹, L-L. HSIAO¹, J. V. BONVENTRE¹, J. K. TUCKER¹, AND U. DEMIRCI¹¹Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ²Massachusetts Institute of Technology (MIT), Cambridge, MA, ³Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea, Republic of, ⁴Center 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. LO¹, M. J. STEIN¹, AND B. D. RATNER¹¹University of Washington, Seattle, WA**5:15PM****Significantly Improved Analytical Sensitivity of Lateral Flow Immunoassays by Using Thermal Contrast**Z. QIN¹, W. C. CHAN², D. R. BOULWARE¹, T. AKKIN¹, E. K. BUTLER¹, M. VON HOHENBERG¹, AND J. C. BISCHOF¹¹University of Minnesota, Minneapolis, MN, ²University 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. MATHARU¹, J. ENOMOTO¹, AND A. REVZIN¹¹University of California, Davis, Davis, CA**4:15PM****Functional Imaging of Brain Slices in a Segmented Microfluidic Perfusion Chamber**S. AHRAR¹, T. V. NGUYEN¹, Y. SHI¹, P. THOMAS¹, T. IKRAR¹, X. XU¹, AND E. E. HUI¹¹UC Irvine, Irvine, CA**4:30PM****Mosaic Hydrogels: One-Step Organization of Biomaterials from Cell to Organ Scales**L. LENG¹, A. MCALLISTER¹, B. ZHANG¹, M. RADISIC¹, AND A. GÜNTHER¹¹University 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. LUO¹, C-Y. TSAO¹, H-C. WU¹, G. W. RUBLOFF¹, AND W. E. BENTLEY¹¹University 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. LIU¹, T. MATSUE², AND C-Z. LI¹¹Florida International University, Miami, FL, ²Tohoku University, Sendai, Japan**5:15PM****Cardiomyocyte Powered Swimming Biohybrid Microrobots**S. V. ANAND¹, J. RAJAGOPALAN², AND T. A. SAI¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Arizona 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. UBA¹, J. WU², S. PARK², AND S. A. SOPER¹¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²Louisiana State University, Baton Rouge, LA**4:30PM****Multiplexed Biosensor Array for Continuous Monitoring of Cerebral Oxygen Tension, Glucose and Lactate**C. LI¹, P-M. WU¹, Z. WU², J. HARTINGS², E. GOLANOV¹, C. AHN², AND R. NARAYAN¹¹Feinstein Institute for Medical Research, Manhasset, NY, ²University of Cincinnati, Cincinnati, OH**4:45PM****Peptide Incorporated Sensing Surfaces for Detection of Protease Release from Cells**D-S. SHIN¹, A. CHEN¹, K. SON¹, T. PAN¹, AND A. REVZIN¹¹University of California, Davis, CA**5:00PM****Disposable Sensors Fabricated By Using High-Throughput, One-Step Deposition of Silver Grating By Holographic Patterning**M. LU¹, B. JULURI¹, Y. LIU², AND T. J. HUANG¹¹Pennsylvania State University, University Park, PA, ²Institute of Materials Research and Engineering, Singapore, Singapore**5:15PM****Biofabrication Techniques for Multi-Analyte Biosensors**C. KOTANEN¹ AND A. GUISEPPI-ELIE¹¹Clemson University, Clemson, SC

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. BROWN³¹Duke University, Durham, NC, ²Zenlux Inc, Durham, NC, ³Tulane University, New Orleans, LA**4:30PM****Photothermal Optical Coherence Tomography for Quantifying Blood Oxygen Saturation *In Vivo***D. R. MCCORMACK¹, C. A. PATIL¹, J. TUCKER-SCHWARTZ², L. HOFMEISTER¹, AND M. SKALA¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt, 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'BRIEN¹, E. VARGIS¹, N. BROWN¹, B. C. PARIA¹, J. REESE¹, AND A. MAHADEVAN-JANSEN¹¹Vanderbilt University, Nashville, TN**5:00PM****Dual Wavelength Polarimetry for *In Vivo* (Rabbit) Glucose Monitoring**C. W. PIRNSTILL¹, B. H. MALIK¹, V. C. GRESHAM¹, AND G. L. COTE¹¹Texas A&M University, College Station, TX**5:15PM****Infrared Spectroscopic Imaging for the Assessment of Kidney Tissue Biopsies**M. J. WALSH¹, S. SETTY², A. KAJDACSY-BALLA², AND R. BHARGAVA¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University 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. SPINLER¹, J.-W. SHIN¹, AND D. DISCHER¹¹University 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. KIM², R. G. MANNINO², Y. QUI^{1,2}, T. SULCHEK², AND W. A. LAM^{1,2}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**4:30PM****High Lamina Shear Stress is not Protective Against TNF α or IL-1 β Induced E-Selectin Expression in Naïve or Short-Term Preconditioned HUVEC**R. B. HUANG^{1,2} AND O. ENIOLA-ADEFESO¹¹University of Michigan, Ann Arbor, MI, ²University of Illinois Urbana-Champaign, Urbana, IL**4:45PM****Age-Related Matrix Stiffening Promotes Endothelial Permeability and Leukocyte Transmigration**J. HUYNH¹, N. NISHIMURA¹, K. RANA¹, J. M. PELOQUIN¹, J. P. CALIFANO¹, C. R. MONTAGUE¹, M. R. KING¹, C. B. SCHAFFER¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**5:00PM****Spatiotemporal Biomechanical Variation in the Avian Embryo during Primitive Streak Morphogenesis**J. HENKELS¹ AND E. ZAMIR¹¹Georgia Institute of Technology, Atlanta, GA**5:15PM****Mechanical Strain Affects Local Dynamics of Vesicles in Neurons**W. AHMED¹, B. WILLIAMS¹, A. SILVER¹, AND T. SAIF¹¹University of Illinois, Urbana, IL**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-PUTRA¹, S. KHETAN², J. A. BURDICK², AND S. GERECHT¹¹Johns Hopkins University, Baltimore, MD, ²University of Pennsylvania, Philadelphia, PA**4:30PM****Generation of Functional, Disease-Specific T Cells from Stem Cells: A Bioengineering Approach**T. OOI¹, M. KIM¹, I. FERNANDEZ¹, AND K. ROY¹¹University 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. CALIARI¹, D. W. WEISGERBER¹, D. O. KELKHOFF¹, M. A. RAMIREZ¹, AND B. A. HARLEY¹¹University of Illinois at Urbana-Champaign, Urbana, IL**5:00PM****Desulfated Chondroitin Modulates TGF- β 1 Binding and Promotes Chondrogenic Differentiation of MSCs**J. J. LIM¹, R. H. VAN STELLE¹, AND J. S. TEMENOFF¹¹Georgia Tech and Emory University, Atlanta, GA**5:15PM****Effect of Initial Substrate Composition on ECM Deposition, Remodeling, and Differentiation of hESCs**A. LAPERLE¹, S. PALECEK¹, AND K. MASTERS¹¹University 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. FONG¹, Y. SHARMA¹, AND M. ZAMAN¹¹Boston University, Boston, MA

4:15PM**Patterned Silk Films Guide Collective Corneal Epithelial Cell Migration**B. D. LAWRENCE¹, Z. PAN¹, AND M. I. ROSENBLATT¹¹Weill Cornell Medical College, New York, NY**4:30PM****Dendritic Polymers for the Conformal Nanocoating of Pancreatic Islets via Staudinger Ligation**K. M. GATTAS-ASFURA¹ AND C. L. STABLER¹¹University of Miami, Miami, FL**4:45PM****Multifunctional Polymeric Thin Films for Local Therapy After Endoscopic Mucosa Resection of Colorectal Polyps**V. PENSABENE¹ AND T. D. GIORGIO¹¹Vanderbilt University, Nashville, TN**5:00PM****Influence of Bacterial Species on Biofilm Distribution in Nanomodified ETT:A Dynamic Study**M. C. MACHADO¹, K. TARQUINIO², AND T. WEBSTER³¹Brown University, Warwick, RI, ²Rhode Island Hospital, Providence, RI, ³Brown University, Providence, RI**5:15PM****Subconjunctivally Injectable Nanogels for Drug Delivery across the Blood Retinal Barrier**D. R. JANAGAM¹, S. JIANG¹, G. P. MISRA², J. ZHANG², AND T. L. LOWE^{1,2}¹University of Tennessee Health Science Center, Memphis, TN, ²Thomas 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. GHAJAR¹, H. PEINADO², H. MORI¹, I. R. MATEI², H. BRAZIER², E. I. CHEN³, D. C. LYDEN^{2,4}, AND M. J. BISSELL¹¹Lawrence Berkeley National Laboratory, Berkeley, CA, ²Weill Cornell Medical College, New York, NY, ³Stony Brook University, Stony Brook, NY, ⁴Memorial Sloan Kettering Cancer Center, New York, NY**4:15PM****Microenvironment of Cancer Cell Intravasation: Role of Cell-Cell Interactions and Endothelial Permeability**I. K. ZERVANTONAKIS¹, S. K. HUGHES-ALFORD¹, J. L. CHAREST², J. S. CONDEELIS³, F. B. GERTLER¹, AND R. D. KAMM¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Charles Stark Draper Laboratory, Cambridge, MA, ³Albert Einstein College of Medicine, New York, NY**4:30PM****Dissecting Intratumor Heterogeneity: Metastatic Cells Induce Follow-the-Leader Invasion of Epithelial Cells**S. P. CAREY¹, A. STARCHENKO¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**4:45PM****Exploring Nuclear Deformability as a Rate-Limiting Factor in Cancer Cell Migration**C. DENAIS¹, J. LAMMERDING¹, A. ROWAT², J. SLIZ¹, K. KARMANN¹, M. ZWERGER^{3,4}, P. ISERMANN¹, V. TE BOEKHORST⁵, M. KRAUSE⁵, AND K. WOLF⁵¹Cornell University, Ithaca, NY, ²UCLA, Los Angeles, CA, ³Brigham and Women's Hospital, Boston, MA, ⁴University of Zurich, Zürich, Switzerland, ⁵NCMLS, 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. KOHL³, S. SHANBHAG³, M. YARMUSH^{1,2}, AND B. PAREKKADAN^{1,2}¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Shriners Hospital for Children, Boston, MA, ³Florida State University, Tallahassee, FL**5:15PM****Tumor Cell Motility is Directed by Fibrillar ECM Architecture**L. CASSEREAU¹, M. RUBASHKIN¹, C. DUFORT², AND V. WEAVER^{2,3}¹UC Berkeley/UCSF, San Francisco, CA, ²University of California San Francisco, San Francisco, CA, ³University of California San Francisco, San Francisco*Track sponsored by **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-SRINIVASAN¹, S. SINGH², S. ROY¹, R. MACHIRAJU¹, AND K. HUANG¹¹The Ohio State University, Columbus, OH, ²Broad Institute, Cambridge, MA**4:30PM****Quantifying Human Appearance to Support Decision-Making in Reconstructive Surgery**M. K. MARKEY¹¹The University of Texas at Austin, Austin, TX**5:00PM****Tissue and Molecular Level Imaging Informatics for Personalized Oncology**M. D. WANG¹, T. STOKES¹, S. KOTHARI², AND J. PHAN¹¹Georgia Institute of Technology and Emory Univ., Atlanta, GA, ²Georgia 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. ZHANG¹ AND H. Y. SHIN¹¹University 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. KEEGAN¹, I. PARKER¹, AND M. PLATT¹¹Georgia Institute of Technology, Atlanta, GA

4:30PM**Reduced Formation Rate of Cardiac Intraventricular Vortices Post-Myocardial Infarction**

W. R. WITSCHY¹, M. A. LEVACK¹, J. R. MCGARVEY¹, F. CONTIJOCH¹, M. MARKL², A. BARKER², N. KONDO¹, M. TAKEBE¹, G. A. ZSIDO¹, C. DILLARD¹, K. LAU¹, J. J. PILLA¹, J. H. GORMAN¹, AND R. C. GORMAN¹

¹University of Pennsylvania, Philadelphia, PA, ²Northwestern University, Evanston, IL

4:45PM**In Vitro Investigation of Energy Loss in the Total Cavopulmonary Connection at Rest and Exercise Conditions**

R. H. KHIABANI¹, S. PHONEKEO¹, H. SRINIMUKESH¹, E. TANG¹, M. FOGEL², AND A. P. YOGANATHAN¹

¹Georgia Institute of Technology, Atlanta, GA, ²Children's Hospital of Philadelphia, Philadelphia, PA

5:00PM**HIV Proteins Misregulate Biomechanically Mediated Protease Activity Promoting Arterial Remodeling and Atherogenesis**

I. PARKER¹, L. HANSEN¹, R. SUTLIFF², R. GLEASON¹, AND M. PLATT^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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. CORBAN², D. GUPTA², H. SAMADY², J. N. OSHINSKI^{1,2}, AND D. P. GIDDENS^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA

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**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. SACKS¹

¹University of Texas, Austin, TX

4:15PM**Extracellular Matrix Stabilization in Bioprosthetic Heart Valves for Durability**

D. TRIPI¹, N. BALAKRISHNAN¹, AND N. VYAVAHARE¹

¹Clemson 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. BOTVINIK^{1,2}, AND A. KHERADVAR^{1,2}

¹University of California Irvine, Irvine, CA, ²Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

4:45PM**Shear- and Side-dependent mRNAs and miRNAs in Aortic Valve Endothelium**

C. J. HOLLIDAY-ANKENY¹, R. F. ANKENY², Z. FERDOUS³, R. M. NEREM², AND H. JO^{1,4}

¹Georgia Tech and Emory University, Atlanta, GA, ²Georgia Tech, Atlanta, GA, ³UT Knoxville, Knoxville, TN, ⁴Ewha 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. JUN¹, N. SAIKRISHNAN¹, AND A. P. YOGANATHAN¹

¹Georgia Institute of Technology, Atlanta, GA

5:15PM**In Vitro Evaluation of a Novel Polymeric Trileaflet Prosthetic Heart Valve**

T. E. CLAIBORNE¹, J. SHERIFF¹, D. PETER¹, M. KUTTING², U. STEINSEIFER², M. J. SLEPIAN², AND D. BLUESTEIN¹

¹Stony Brook University, Dept. of Biomedical Engineering, Stony Brook, NY, ²Helmholtz Inst. of Applied Medical Engineering, Aachen, Germany, ³Sarver Heart Center Univ. of Arizona, Tucson, AZ

*Track sponsored by  ST. JUDE MEDICAL
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**Track: Bioinformatics and Systems Biology
OP - Thurs - 3 - 15 - Room A406****Genomics, Transcriptomics and Proteomics II**

Chairs: Orly Alter, Jason Tennesen

4:00PM INVITED**Dissecting the Mitotic Oscillator**

J. FERRELL¹

¹Stanford University School of Medicine, Stanford, CA

4:30PM INVITED**Deciphering Cancer Growth By Whole-Genome Analyses Of DNA Replication**

M. ALADJEM¹

¹NCI, Bethesda, MD

5:00PM INVITED**A New Model System for Studying Cancer Metabolism**

J. M. TENNESSEN¹, K. D. BAKER², J. EVANS¹, G. LAM¹, AND C. S. THUMMEL¹

¹University of Utah School of Medicine, Salt Lake City, UT, ²Virginia 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 DOUX¹, A. WALLER¹, AND W. NEWSTETTER¹

¹Georgia Institute of Technology, Atlanta, GA

4:15PM**Assessing Dynamic Transfer of Biomechanics Knowledge Using the Teaching Interview**

R. E. HUTCHISON¹ AND L. C. BENSON²

¹Furman University, Greenville, SC, ²Clemson University, Greenville, SC

4:30PM**Problem-based Learning in a Cell & Molecular Biology Course: Transparency as a Mediator in Reform Pedagogy Enactments**

B. B. FASSE¹, T. BARKER¹, AND P. J. SANTANGELO¹

¹Georgia Institute of Technology, Atlanta, GA

4:45PM**Vertical Integration of CATME as a Peer Evaluation Tool for Assessment of Teams**

M. ODEN¹, J. GRANDE-ALLEN¹, O. IGOSHIN¹, J. JACOT¹, J. SUH¹, AND A. SATERBAK¹

¹Rice 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. STREETER¹, G. HERRERA², K. A. JOHNSON¹, J. CAO², J. YE², AND P. A. DAYTON¹
¹UNC/NCSSU, Chapel Hill, NC, ²UNC, 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. LIN¹, Y. XU¹, B. A. FRENCH¹, AND J. A. HOSSACK¹
¹University of Virginia, Charlottesville, VA

4:45PM

Ultrasound Strain Imaging Determines Myocardial Infarct Size in Mice as Confirmed by Contrast-Enhanced Cardiac MRI

D. LIN¹, D. M. O'CONNOR¹, R. S. SMITH¹, R. J. BEYERS¹, B. A. FRENCH¹, AND J. A. HOSSACK¹

¹University of Virginia, Charlottesville, VA

5:00PM

Model Drug Delivery Using A Multifunction Intravascular Ultrasound Catheter

J. P. KILROY¹, A. L. KLIBANOV¹, B. R. WAMHOFF¹, AND J. A. HOSSACK¹
¹University of Virginia, Charlottesville, VA

5:15PM

Detecting Cancer's Footprint: Non-invasively Mapping Microvasculature With Ultrasound

R. GESSNER¹, S. AYLWARD², E. BULLITT¹, AND P. A. DAYTON¹
¹UNC-Chapel Hill, Chapel Hill, NC, ²Kitware, 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. WILE¹, K. BAN², S. KIM², J. BYUN², T. SAAFIR², M. WAGNER², Y-S. YOON², AND G. BAO¹

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

4:15PM

Development and Characterization of Biomimetic Cardiac Tissue Engineered From Human Embryonic Stem Cells

I. C. TURNBULL¹, I. KARAKIKES¹, G. W. SERRAO¹, P. BACKERIS¹, J-J. LEE¹, C. XIE¹, G. SENYEI¹, R. E. GORDON¹, R. A. LI^{1,2}, F. G. AKAR¹, R. J. HAJJAR¹, J-S. HULOT^{1,3}, AND K. D. COSTA¹

¹Mount Sinai School of Medicine, New York, NY, ²Stem Cell & Regenerative Medicine Consortium, University of Hong Kong, Pokfulam, Hong Kong, ³UPMC Univ Paris 06, Paris, France

4:30PM

Matrix Stiffness-Mediated Cardiac Differentiation of Cardiosphere-Derived Cells in Fibrous Scaffolds

X. GUO¹, Y. XU¹, Z. LI¹, AND J. GUAN¹

¹The Ohio State University, Columbus, OH

4:45PM

Thermal and pH Sensitive Hydrogels for Delivery of Stem Cells Into Infarcted Hearts Using Catheters

J. GUAN¹, Z. LI¹, AND X. GUO¹

¹Ohio State University, Columbus, OH

5:00PM

Cardiac Cell Culture Model for Cardiac Tissue Generation

M-D. T. NGUYEN¹, R. ESTRADA¹, J. TINNEY¹, F. YUAN¹, B. KELLER¹, G. A. GIRIDHARAN¹, AND P. SETHU¹

¹University of Louisville, Louisville, KY

5:15PM

Tri-Cellular Microtemplated Fibrin Scaffolds Promote Signal Propagation and Synchronous Contraction of Cardiac Tissue Engineering Constructs

K. S. THOMSON¹, B. VAN BIBER¹, M. A. LAFLAMME¹, M. SCATENA¹, AND M. REGNIER¹

¹University 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. FRANGOS¹

¹La 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. CONWAY¹ AND M. A. SCHWARTZ^{1,2}

¹University of Virginia, Charlottesville, VA, ²Yale University, New Haven, CT

4:30PM INVITED

Physical Confinement Alters Adhesion and Migration Phenotypes

K. KONSTANTOPOULOS¹

¹The Johns Hopkins University, Baltimore, MD

4:45PM INVITED

Decoupling Mechanical Cues on Cells: Translation to Engineering Design for Personalized Medicine

H-J. SUNG¹

¹Vanderbilt University, Nashville, TN

5:00PM INVITED

Materials for Vascularized Tissue Formation

B. JIANG¹, Y-C. CHIU², J. LARSON¹, A. APPEL¹, AND E. BREY¹

¹Illinois Institute of Technology, Chicago, IL, ²Rice University, Houston, TX

5:15PM INVITED

Biomimetic Multi-functional Nanoparticles for Treatment of Cardiovascular Diseases

K. T. NGUYEN¹ AND Z. XIE¹

¹University of Texas at Arlington, Arlington, TX

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. DORVAL¹ AND W. M. GRILL²¹University of Utah, Salt Lake City, UT, ²Duke University, Durham, NC**4:15PM****Rapid-Onset of Mirror Epileptic Focus is Mediated by Contralateral AMPA Receptors**T. SOBAYO¹ AND D. J. MOGUL¹¹Illinois Institute of Technology, Chicago, IL**4:30PM****Identifying Parkinsonism in Monkeys Using Wavelet Packet Transform of Local Field Potentials**T. H. SANDERS¹, A. D. DEVERGNAS², M. A. CLEMENTS¹, AND T. WICHMANN²¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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. GONZALEZ³, AND R. A. TORRES^{1,2}¹Antioquia School of Engineering, Envigado, Colombia, ²CES University, Medellin, Colombia, ³Medellin General Hospital, Medellin, Colombia**5:00PM****The Use of Chitosan In a Dura Substitute Device; Is Chitosan a Safe Biomaterial?**P. B. SNOWHILL¹, R. D. HUBBARD¹, K. BUYUKHATIPOGLU¹, AND G. G. CADD¹¹Integra 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}¹Wake Forest University, Winston-Salem, NC, ²Virginia Tech/Wake Forest University, Winston-Salem, NC**Student & Early Career Program**

Room A412

3:45pm - 4:45pm**Creating Effective Resume**

See page 35

PLATFORM
SESSIONS
Th-3

FRIDAY, OCTOBER 26
TODAY'S HIGHLIGHT

PLATFORM SESSIONS Fri-I 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 Auditorium

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 Aquarium

P = Poster Session
OP = Oral Presentation

Friday, October 26, 2012

8:00AM – 9:30AM

PLATFORM SESSIONS –FRI –I

Track: Biomaterials

OP - Fri - I - I - 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. MA¹, J. BRYERS², AND E. DARMAWAN²¹University of Washington, Seattle, WA, ²University of Washington, Seattle, WA

8:15AM

Drug Eluting Fibers for STI Inhibition and Contraception

C. BALL¹, E. KROGSTAD¹, AND K. A. WOODROW¹¹University of Washington, Seattle, WA

8:30AM

Increased Concentration Stabilizes Subcutaneously-Injected Depots of Glucagon-Like Peptide-I Fused to a Thermosensitive Polypeptide

K. M. LUGINBUHL¹¹Duke University, Durham, NC

8:45AM

Hydrogel- Nanoshell Composites for Optically Controlled Cancer Therapeutic Delivery

L. E. STRONG^{1,2}, G. ACHARYA³, AND J. L. WEST^{1,2}¹Rice University, Houston, TX, ²Duke University, Durham, NC, ³The Methodist Hospital Research Institute, Houston, TX

9:00AM

Controlled Release of 120 KDa HPMC from Molecularly Imprinted Silicone Hydrogel Contact Lenses

C. J. WHITE¹ AND M. E. BYRNE¹¹Auburn University, Auburn, AL

9:15AM

Dual Release Multilayer Films for Immediate Hemostasis and Sustained Antibiotic Treatment

B. B. HSU¹, F. R. JENSEN², AND P. T. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Ferrosan Medical Devices A/S, Soborg, Denmark

Track: New Frontiers and Special Topics

OP - Fri - I - 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 Engineer Biomolecular Circuits

D. DEL VECCHIO¹¹Massachusetts Institute of Technology, Cambridge, MA

8:45AM INVITED**Genetic Architectures for Copy-Number and Noise Control in Human Cells**L. BLERIS¹¹University of Texas, Dallas, Richardson, TX**9:15AM** INVITED**Light-Inducible Spatiotemporal Gene Activation Using Engineered Zinc Finger Transcription Factors**L. R. POLSTEIN¹ AND C. A. GERSBACH¹¹Duke 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. SIMMONS¹¹University of Toronto, Toronto, ON, Canada**8:30AM** INVITED**Integrated Single-Cell Analysis for Optimizing Secretory Capacity of Microbial Hosts for Biomanufacturing**J. C. LOVE¹¹MIT, Cambridge, MA**8:45AM****Microfluidic Platform for Investigating Cancer Targeting Mechanism of *Salmonella typhimurium***J. HONG¹, S. SONG¹, AND J. H. SHIN¹¹KAIST, Daejeon, Korea, Republic of**9:00AM** INVITED**BioMEMs and Microfluidic Systems for Studying and Diagnosing Biophysical Aspects of Hematologic Diseases**W. LAM¹¹Emory University/Georgia Institute of Technology, Atlanta, GA**9:15AM****An Anti-Biofilm Formation Design Strategy Based on Fibrous Topographical Cues**M. KARGAR¹, J. WANG¹, A. S. NAIN¹, AND B. BEHKAM¹¹Virginia 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. NOURSE¹, J. L. PRIETO¹, J. LU¹, F. H. LABEED², A. R. DICKSON¹, M. P. HUGHES², A. P. LEE¹, AND L. A. FLANAGAN¹¹University of California Irvine, Irvine, CA, ²University of Surrey, Guildford, United Kingdom**8:15AM****Genipin Provides Neuroprotection Following Glutamate Exposure in Organotypic Hippocampal Slice Cultures**I. AHMED¹, B. MORRISON III², R. HUGHES², AND D. I. SHREIBER¹¹Rutgers, the State University of New Jersey, Piscataway, NJ, ²Columbia University, New York, NY**8:30AM****Nanoparticles Loaded Injectable Hydrogels for Versatile Local Delivery of Minocycline after Spinal Cord Injury**Z. ZHANG¹, Z. WANG¹, C. A. NIX¹, J. A. GERSTENHABER¹, J. NONG¹, AND Y. ZHONG¹¹Drexel University, Philadelphia, PA**8:45AM****NR2B-NMDA Receptors Contribute to Network Asynchrony and Loss of LTP Following Mild Mechanical Injury *In Vitro***T. P. PATEL¹, S. VENTRE¹, AND D. F. MEANEY¹¹University 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. MENG¹, C. J. MIETUS², K. D. BROWNE², M. R. TOFIGHI³, A. ROSEN¹, AND D. CULLEN²¹Drexel University, Philadelphia, PA, ²University of Pennsylvania, Philadelphia, PA, ³Pennsylvania 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. NISHIMURA¹, C. J. KERSBERGEN¹, J. C. CRUZ¹, I. IVASYK¹, J. ZHOU¹, J. D. BEVERLY¹, G. OTTE¹, P. KARLSSON¹, E. SLACK¹, T. P. SANTISAKULTARM¹, C. IADECOLA², AND C. B. SCHAFFER¹¹Cornell University, Ithaca, NY, ²Weill 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. SCOTT¹, A. VASDEKIS², C. O'NEIL², D. PSALTIS², AND J. HUBBELL²¹Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, ²Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**8:15AM****Acoustic Droplet-hydrogel Composite for the Ultrasonic Release of Regenerative Growth Factors**C. G. WILSON¹, M. FABIILLI², F. MARTIN-SAAVEDRA³, F. PADILLA⁴, J. FOWLKES², AND R. FRANCESCHI¹¹University of Michigan School of Dentistry, Ann Arbor, MI, ²University of Michigan Medical School, Ann Arbor, MI, ³Hospital Universitario La Paz-IdiPAZ & CIBER-BBN, Madrid, Spain, ⁴INSERM U666, Lyon, France**8:30AM****Nanofabrication Techniques in Application to Cancer Biology and Neuronal Networks**V. AJETI¹, S. HART¹, J. WILLIAMS¹, AND P. J. CAMPAGNOLA¹¹University of Wisconsin - Madison, Madison, WI**8:45AM****Material Composition and Growth Factor Gradient Scaffolds for Tracheal Defect Repair**L. OTT¹, R. WEATHERLY^{2,3}, AND M. DETAMORE¹¹University of Kansas, Lawrence, KS, ²Children's Mercy Hospital, Kansas City, MO, ³University 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. ALMODOVAR¹, T. CROUZIER^{1,2}, S. SELIMOVIC^{2,3}, A. KHADEMOSSEINI^{2,4}, AND C. PICART¹¹Grenoble Institute of Technology, Grenoble, France, ²Massachusetts Institute of Technology, Cambridge, MA, ³Harvard Medical School, Cambridge, MA, ⁴Harvard University, Cambridge, MA**9:15AM****Using Nitric Oxide Releasing Polymers to Study Platelet Function in a Microfluidic Vascular Injury Model**J. L. SYLMAN¹, S. LANTVIT², M. M. REYNOLDS², AND K. B. NEEVES^{1,3}¹Colorado School of Mines, Golden, CO, ²Colorado State University, Ft. Collins, CO, ³University of Colorado Denver, Aurora, CO**Track: Nano and Micro Technologies****OP - Fri - I - 6 - Room A316****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. CAMPBELL¹, C. DONG¹, N. WU¹, J. S. DORDICK², AND C. Z. DINU¹, ANTHONY GUISEPPi-ELIE¹West Virginia University, Morgantown, WV, ²Rensselaer Polytechnic Institute, Troy, NY**8:15AM INVITED****Electrically Conducting Polymers for Neural Engineering**C. SCHMIDT¹¹The 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}¹Clemson University, Clemson, SC, ²Center for Bioelectronics, Biosensors and Biochips (C³B), Anderson, SC**9:00AM****Nanoparticle-emitted Light on Alzheimer's Disease Related Pathways**B. L. BUNGART¹, G. YAO², AND J. C-M. LEE²¹University of Missouri, Columbia, MO, ²University of Missouri, Columbia, MO**9:15AM****Small Form Factor 3D Antennas for Biomedical Implants**E. GULTEPE¹, P. ANACLETO², P. M. MENDES², AND D. H. GRACIAS¹¹The Johns Hopkins University, Baltimore, MD, ²Universidade do Minho, Braga, Portugal**Track: Biomedical Imaging and Optics****OP - Fri - I - 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. ZHU¹, U. SIKORA¹, AND A. OZCAN¹¹University of California Los Angeles, Los Angeles, CA**8:15AM****Quantitative Optical Imaging of Biological Cilia-Driven Mixing**S. JONAS^{1,2}, E. ZHOU³, E. DENIZ¹, B. HUANG¹, K. CHANDRASEKERA³, Y. WU³, R. FAN³, M. K. KHOKHA¹, AND M. A. CHOMA¹¹Yale University School of Medicine, New Haven, CT, ²RWTH Aachen University, Aachen, Germany, ³Yale 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. AHUJA¹, M. PESHKOVA², AND M. GRATZL¹¹Case Western Reserve University, Cleveland, OH, ²St. 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. CHEN¹, A. H. DHANALIWALA^{1,2}, A. L. KLIBANOV^{1,3}, AND J. A. HOSSACK^{1,2}¹University of Virginia, Charlottesville, VA, ²R.M. Berne Cardiovascular Research Center, Charlottesville, VA, ³Department of Medicine, Cardiovascular Division, Charlottesville, VA**9:00AM****Fluorescence Correlation Spectroscopy in a Microfluidic Chip for Viral Whole Particle Enumeration**Y. HU¹, B. WANG¹, H. OU-YANG¹, AND X. CHENG¹¹Lehigh University, Bethlehem, PA**9:15AM****Development of an Automated Microscopy System for the Diagnosis of Malaria**M. B. JORGENSEN^{1,2} AND R. A. LEVINE²¹University of Connecticut, Storrs, CT, ²QDx, Inc., Branford, CT**Track: Cellular and Molecular Bioengineering****OP - Fri - I - 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. MEYER¹, S. HUGHES-ALFORD¹, J. E. KAY¹, A. CASTILLO¹, F. B. GERTLER¹, AND D. A. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA**8:15AM****Cellular Traction Stresses Increase with Increasing Metastatic Potential**C. M. KRANING-RUSH¹, J. CALIFANO¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**8:30AM****Mechanisms of Glioma Invasion in Brain-Mimetic Hyaluronic Acid Matrices**B. ANANTHANARAYANAN¹, Y. KIM¹, C-W. CHANG¹, G. SINGH¹, AND S. KUMAR¹¹University 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. SUBISAK¹, J. A. SANDERS¹, D. A. KNISS^{1,2}, AND S. N. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²The Wexner Medical Center at the Ohio State University, Columbus, OH**9:00AM****Matrix Stiffness Promotes Vascular Smooth Muscle Cell Circular Dorsal Ruffle Formation**J. HUYNH¹, C. J. FABER¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NYP = Poster Session
OP = Oral Presentation


9:15AM**Differential Stiffness Effects Integrin-Dependent Mononuclear Cell Trans-Endothelial Migration**H. N. HAYENGA¹, A. PARALOGLOU¹, AND H. ARANDA-ESPINOZA¹¹University of Maryland, College Park, MD**Track: Stem Cell Engineering****OP - Fri - I - 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. STANFORD¹¹Ottawa Hospital Research Institute, Ottawa, ON, Canada**8:30AM****Characterization of Embryoid Body Mechanical and Molecular Transport Characteristics During Embryonic Stem Cell Differentiation**M. KINNEY¹, R. SAEED¹, B. ZAKHARIN², A. GLEZER², AND T. MCDEVITT^{1,2}¹Georgia Institute of Technology & Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**8:45AM****Variability of Action Potentials within Cell Clusters Derived from Human Embryonic Stem Cells**R. ZHU¹, M. A. MILLROD¹, E. T. ZAMBIDIS¹, AND L. TUNG¹¹JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD**9:00AM****Mechanical Cues as Predictors of Human Mesenchymal Stem Cell Therapeutic Capacity**D. MCGRAIL¹, K. MCANDREWS¹, AND M. DAWSON¹¹GEORGIA INSTITUTE OF TECHNOLOGY, ATLANTA, GA**9:15AM****High Throughput Analysis of Stem Cell Mechanosensing**A. W. HOLLE¹, L. VINCENT¹, AND A. ENGLER¹¹University of California San Diego, La Jolla, CA**Track: Biomaterials****OP - Fri - I - 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. SILEIKA¹, K. C. BLACK¹, J. YI¹, J. G. RIVERA¹, AND P. B. MESSERSMITH¹¹Northwestern University, Evanston, IL**8:15AM****Surface-modified, Soluble Mixed-ligand Gold Nanoparticles as Cell Penetrating, Tumor-targeted Drug Delivery Carriers.**P. ATUKORALE¹, R. P. CARNEY², P. SAHA¹, F. STELLACCI², AND D. J. IRVINE^{1,3}¹Massachusetts Institute of Technology, Cambridge, MA, ²Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland, ³Howard Hughes Medical Institute, Chevy Chase**8:30AM****Antioxidant Hydrogels for Cellular Encapsulation and Protection using Cerium Oxide Nanoparticles**J. A. WEAVER¹ AND C. L. STABLER¹¹University of Miami, Miami, FL**8:45AM****Using Breast Cancer Cell CXCR4 Surface Expression to Target Liposomes for Doxorubicin Delivery**P. GUO¹ AND D. AUGUSTE²¹Harvard University, Cambridge, MA, ²Harvard University, Cambridge, MA**9:00AM****Lipid Bilayer Membrane Deformation and Poration Induced by Synthetic Nanoparticles**N. MALMSTADT¹ AND S. LI¹¹University of Southern California, Los Angeles, CA**9:15AM****Characterizing Cell Proliferation on Doped Carbon Nanotube and Graphene Substrates**R. HAROUAKA¹, J. O. MEDINA¹, A. L. ELIAS¹, R. LU¹, M. TERRONES¹, AND S. ZHENG¹¹The Pennsylvania State University, University Park, PA**Track: Cancer Technology*****OP - Fri - I - 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. DICKHERBER¹, C. JOHNSON¹, AND J. LEE^{1,2}¹National Institutes of Health, Bethesda, MD, ²Johns Hopkins University, Baltimore, MD**8:15AM****A Primer on the Design of Thermoresponsive Drug Loaded Polypeptide Nanoparticles**J. R. MCDANIEL¹, S. R. MACEWAN¹, D. C. RADFORD¹, AND A. CHILKOTI¹¹Duke University, Durham, NC**8:30AM****Loss of Cancer Cell Adhesion During *In Vitro* Cancer Metastasis**X. TANG¹ AND T. A. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL**8:45AM****Multiplexing Characterization and Quantification of Circulating Tumor Cells in Patient Blood**X. QIAN¹ AND S. NIE¹¹Emory Univ., Atlanta, GA**9:00AM****Nanoparticle Delivered Vascular Disrupting Agents (VDAs): A New Opportunity in Combinatorial Cancer Treatment**M. SHENOI¹, I. ILTIS¹, J. CHOI¹, N. KOONCE², R. GRIFFIN², G. METZGER¹, AND J. BISCHOF¹¹University of Minnesota, Minneapolis, MN, ²University 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-RUSH¹, S. P. CAREY¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY*Track sponsored by 

Track: Cellular and Molecular Bioengineering**OP - Fri - I - 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. ZHUO¹, T. QIAN², S. LU¹, AND Y. WANG¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Institute 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. CHANG¹ AND S. KUMAR¹¹University of California, Berkeley, Berkeley, CA**8:30AM****Cell Elastography: Mapping Cellular Mechanical Properties**E. P. CANOVIC¹, T. SEIDL¹, P. BARBONE¹, D. STAMENOVIC¹, AND M. SMITH¹¹Boston University, Boston, MA**8:45AM****Improving the Accuracy of Microrheology Data through Out-of-plane Probe Removal**J. MICHAELSON¹, H. CHOI², P. SO², AND H. HUANG¹¹Columbia University, New York, NY, ²Massachusetts Institute of Technology, Cambridge, MA**9:00AM****High-content Imaging of Viral Infection by Single-Genome Visualization**K. TREHAN¹, M-L. ONG², J. M. LUNA³, T. P. SHEAHAN², H. CHANDRASEKAR², V. RAMANAN¹, R. E. SCHWARTZ², K. CHRISTINE², C. M. RICE², A. VAN OUDENAARDEN², AND S. N. BHATIA¹¹Harvard-MIT, Cambridge, MA, ²MIT, Cambridge, MA, ³The Rockefeller University, New York, NY**9:15AM****Multiphoton Microscopy Reveals Abnormal Ca²⁺ Signaling in Breast Tumor Endothelial Cells**J. LAPEIRA-SOTO¹, K. S. MADDEN¹, AND E. B. BROWN III¹¹University of Rochester, Rochester, NY**Track: Cardiovascular and Respiratory Engineering*****OP - Fri - I - 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. MANNINO¹, D. R. MYERS^{1,2}, Y. SAKURAI^{1,2}, G. A. BARABINO^{1,2}, AND W. A. LAM^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**8:15AM****Effects of Changing Flow Direction on Endothelial Cells**C. WANG¹, H. LU², AND M. SCHWARTZ³¹University of Virginia, Charlottesville, VA, ²University of Minnesota-Twin Cities, Minneapolis, MN, ³Yale University, New Haven, CT**8:30AM****Fibronectin Assembly Regulates Flow-Induced Structural Dynamics Through p190RhoGAP**R. E. EVANS¹, R. E. MOTT², AND B. P. HELMKE¹¹University of Virginia, Charlottesville, VA, ²University of Pennsylvania, Philadelphia, PA**8:45AM****Stents Promote Flow Perturbations that Downregulate Endothelial Thrombomodulin**J. M. JIMÉNEZ¹, V. PRASAD¹, AND P. F. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**9:00AM****Syndecan-1 Regulates Shear Stress-Induced Mechanotransduction Pathways in Endothelial Cells**P. VOJVODIC¹, D. MIN¹, R. LIU¹, E. WILLIAMS¹, AND A. BAKER¹¹The 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. ANDREWS¹ AND K. A. BARBEE¹¹Drexel University, Philadelphia, PA*Track sponsored by  ST. JUDE MEDICAL
MORE CONTROL. LESS RISK.**Track: Cardiovascular and Respiratory Engineering*****OP - Fri - I - 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. SEAMAN¹ AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, IN**8:15AM****Development of a MRI-Based Protocol to Analyze Bicuspid Aortic Valve Morphology and Flow**L. MIRABELLA¹, N. SAIKRISHNAN¹, A. J. BARKER², E. R. COCO¹, F. VON KNOBELSDORFF-BRENKENHOFF³, AND A. P. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²Northwestern University, Chicago, IL, ³HELIOS Klinikum Berlin-Buch, Berlin, Germany**8:30AM****Pregnancy-Induced Remodeling of Heart Valves**C. M. PIERLOT¹, J. M. LEE¹, AND S. M. WELLS¹¹Dalhousie University, Halifax, NS, Canada**8:45AM****Quantification of Trans-leaflet Pressure Waveform Using Decoupled Fluid-Structure Interaction**E. SIROIS¹ AND W. SUN¹¹University of Connecticut, Storrs, CT**9:00AM****Analysis of Mitral Valve Prolapse Using a Flow Loop Bioreactor**P. S. CONNELL¹, A. F. AZIMUDDIN¹, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX**9:15AM****The Role of FHL2 in Mechanically-Regulated Valve Interstitial Cell Osteogenic Differentiation**A. Y. LAM¹, J-H. CHEN¹, X. JIN¹, AND C. A. SIMMONS¹¹University of Toronto, Toronto, ON, Canada*Track sponsored by  ST. JUDE MEDICAL
MORE CONTROL. LESS RISK.PLATFORM
SESSIONS

Fri-1

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. AZIMI¹, M. R. KELLY-GOSS¹, P. C. STAPOR¹, AND W. L. MURFEE¹¹Tulane University, New Orleans, LA**8:15AM****An In Vitro Model of Neovascularization**D-H. T. NGUYEN¹, S. STAPLETON¹, P. GALIE¹, M. T. YANG¹, D. COHEN¹, AND C. CHEN¹¹University of Pennsylvania, Philadelphia, PA**8:30AM****Understanding Stem Cell Tubulogenesis In Vitro for Improving Ischemia Cell Therapies**J. A. RYTLEWSKI¹, E. W. LEWIS¹, AND L. J. SUGGS¹¹The 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. GAN³, R. CHEHELTANI¹, G. LAMBERTI¹, B. KRYNSKA⁴, M. F. KIANI¹, AND B. WANG^{1,2}¹Temple University, Philadelphia, PA, ²Widener University, Chester, PA, ³The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, People's Republic of, ⁴Temple University School of Medicine, Philadelphia**9:00AM****Alterations in Endothelial Barrier Function Differentially Regulate the Transport of Adiponectin Oligomers**J. M. RUTKOWSKI¹ AND P. E. SCHERER¹¹UT Southwestern Medical Center, Dallas, TX**9:15AM****Mechanical Strain Enhances the Alignment of Microvessels in Fibrin Gel**P. D. CARLSON¹, K. T. MORIN¹, AND R. T. TRANQUILLO¹¹University 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. EBERHARDT¹¹University of Alabama at Birmingham, Birmingham, AL**8:15AM****Medically-focused Projects in a Client-based Freshman Design Course**A. SATERBAK¹ AND M. ODEN¹¹Rice University, Houston, TX**8:30AM****Intercollegiate Freshman Project Contrasting Blood Pressure Measurement Approaches**L. KHUON¹, T. CAPRIOTTI¹, P. STEPHENS¹, W. KELLY¹, AND K. BUCKLEY¹¹Villanova University, Villanova, PA**8:45AM****New Hands-on BME Fundamentals and Design Course for Sophomores**A. J. NIMUNKAR¹, J. P. PUCCINELLI¹, AND W. J. TOMPKINS¹¹University of Wisconsin, Madison, WI**9:00AM****A First Methods Course in Thinking Like a BME: Its Design, Development and Assessment**W. NEWSTETTER¹¹Georgia Tech, Atlanta, GA**9:15AM****The Effects of the Problem-Solving Studio Approach on Student Learning**J. LE DOUX¹ AND D. MAJERICH¹¹Georgia Institute of Technology, Atlanta, GA*Track sponsored by  **WHITAKER**
International Fellow 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. CHEN¹, Y. LEE¹, AND E. O. VOIT¹¹Georgia Tech, Atlanta, GA**8:30AM INVITED****Modeling the Dynamics of Synthetic Gene Networks**M. R. BENNETT¹¹Rice University, Houston, TX**9:00AM****Hysteresis, Bistability, and Persistence in the Design Space of Toxin-Antitoxin Systems**R. A. FASANI¹ AND M. A. SAVAGEAU¹¹University of California, Davis, CA**9:15AM****Ultrasensitivity of the *Bacillus subtilis* Sporulation Decision**J. NARULA¹, S. N. DEVI², M. FUJITA², AND O. A. IGOSHIN¹¹Rice University, Houston, TX, ²University 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 Antithrombotic Function**L. A. MEIER¹, Z. H. SYEDAIN¹, M. H. CHEN¹, AND R. T. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**8:15AM****Deconstruction of Engineered Cardiac Tissue for Analysis of Cell Phenotype**S. B. LAMA¹, T. J. CASHMAN¹, J. WANG^{1,2}, R. LI^{1,2}, AND K. COSTA¹¹Mount Sinai School of Medicine, New York, NY, ²University of Hong Kong, Pokfulam, Hong Kong**8:30AM****Engineered Myocardial Tissue Patches with Functional Properties Comparable to Native Adult Ventricles**C. JACKMAN¹, D. ZHANG¹, AND N. BURSAC¹¹Duke University, Durham, NC

8:45AM**Characterization and Performance of a Tissue-Engineered Bio-inspired Pump**H. AZIZGOLSHANI¹ AND M. GHARIB¹¹California Institute of Technology, Pasadena, CA**9:00AM****A Peptide Modified Hydrogel for Cardiac Tissue Preservation After Acute Myocardial Infarction**L. A. REIS¹, L. L. CHIU¹, J. WU², A. MOMEN², R-K. LI^{1,2}, AND M. RADISIC¹¹University of Toronto, Toronto, ON, Canada, ²Toronto 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. HOCKADAY¹, K. H. KANG¹, J. AGARWAL¹, B. DUAN¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY**Track: Translational Biomedical Engineering*****OP - Fri - I - 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. CLARK¹, G. FOMOVSKY², K. PARKER¹, G. AILAWADI¹, AND J. HOLMES¹¹University of Virginia, Charlottesville, VA, ²Brigham and Women's Hospital, Cambridge, MA**8:15AM****Characterization of Porous Polymethylmethacrylate for Craniofacial Reconstruction**L. WANG¹, D. M. YOON¹, P. P. SPICER¹, A. M. HENSLEE¹, K. F. KASPER¹, AND A. G. MIKOS¹¹Rice 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}¹The University of Texas at San Antonio, San Antonio, TX, ²The 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. SONNENBERG¹, R. KRISHNAN², AND M. J. HELLER¹¹University of California San Diego, La Jolla, CA, ²Biological Dynamics, La Jolla, CA**9:00AM****Restoration of Lordosis in Adult Lumbar Reconstructive Surgery: A Biomechanical Analysis of Three Posterior-Based Techniques**J. A. TANG¹, A. BLY¹, J. P. KELLY², C. TELLES², J. LEASURE^{1,2}, J. BUCKLEY¹, D. KONDRASHOV², AND C. AMES³¹The Taylor Collaboration, San Francisco, CA, ²San Francisco Orthopaedic Residency Program, San Francisco, CA, ³University of California San Francisco, San Francisco, CA**9:15AM****Low-cost, Mechanical Intravenous Volume Regulator for Children in the Developing World**K. SHAH¹, T. WALKER¹, M. YUAN¹, P. HORTON¹, T. VAUGHN¹, M. ODEN¹, AND A. SATERBAK¹¹Rice University, Houston, TX*Track sponsored by  FISH & RICHARDSON**Track: Tissue Engineering****OP - Fri - I - 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. DUMAS¹, C. J. IHENACHO¹, AND M. O. PLATT¹¹Georgia Institute of Technology, Atlanta, GA**8:15AM****Tumor-Endothelial Cell Co-Culture Increases Angiogenic Activity in Collagen I Bioengineered Tumors**C. S. SZOT¹, C. F. BUCHANAN¹, J. W. FREEMAN², AND M. N. RYLANDER¹¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Rutgers University, Piscataway, NJ**8:30AM****Designing Novel Preclinical Drug Screening Platforms Using Protein-Engineered Materials**R. L. DIMARCO¹, R. DEWI¹, J. SU¹, C. KUO¹, AND S. HEILSHORN¹¹Stanford University, Stanford, CA**8:45AM****Epithelial-Stromal Cell Communication During Endometrial Regeneration in an Engineered Endometrium**S. C. SCHUTTE¹, D. J. SHAVER², C. L. WILDER^{1,2}, M. O. PLATT^{1,2}, N. SIDELL¹, AND R. N. TAYLOR^{1,3}¹Emory University School of Medicine, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA, ³Wake Forest School of Medicine, Winston-Salem, NC**9:00AM****Probing the Metastatic Niche Using a 3D Microtissue Flow Assay**C. Y. LI¹, D. K. WOOD¹, J. HUANG¹, AND S. N. BHATIA¹¹Massachusetts Institute of Technology, Cambridge, MA**9:15AM****Development of Tissue Engineered Tumors for Treatment Planning in Electroporation-Based Therapies**C. B. ARENA¹, C. S. SZOT¹, P. A. GARCIA¹, M. N. RYLANDER¹, AND R. V. DAVALOS¹¹Virginia Tech-Wake Forest University, Blacksburg, VA**Track: Tissue Engineering****OP - Fri - I - 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. FRENCH¹, A. V. BOOPATHY¹, J. A. DEQUACH², L. CHINGOZHA³, H. LU^{3,4}, K. L. CHRISTMAN², AND M. E. DAVIS^{1,5}¹Wallace H. Coulter Department of Biomedical Engineering at Emory University and Georgia Tech, Atlanta, GA, ²Department of Bioengineering, University of California, San Diego, La Jolla, CA, ³School of Chemical and Biomolecular Engineering Georgia Institute of Technology, Atlanta, GA, ⁴Institute for Bioengineering and Biosciences, Georgia Institute of Technology, Atlanta, GA, ⁵Division 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. FUNDERBURGH², AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA

8:30AM**Construction of Whole ECM Protein, 3D Micro-environments to Study Stem Cell Behavior**

Q. A. TRAN¹, P.-J. SU¹, V. AJETI¹, P. CAMPAGNOLA¹, AND B. M. OGLE¹
¹University of Wisconsin - Madison, Madison, WI

8:45AM**Ligament Regenerative Engineering: Biomimicking Hierarchical Design**

K. L. LEE¹, S. C. VARGHESE¹, E. A. LEWIS¹, AND J. A. COOPER JR.¹
¹Rensselaer Polytechnic Institute, Troy, NY

9:00AM**Bone Mimicking Composite Nanomatrix Gel for Guided Osteogenic Response**

J. ANDERSON¹, J. VINES¹, D. PATEL¹, AND H-W. JUN¹
¹U of Alabama at Birmingham, Birmingham, AL

9:15AM**Self-Assembled Peptide Amphiphile-Based Nanomatrices for Improved MIN6 Beta-Cell Function**

D-J. LIM¹, P. T. HWANG¹, S. M. RAHMAN¹, J. A. CORBETT², AND H-W. JUN^{1,3}
¹U of Alabama at Birmingham, Birmingham, AL, ²Medical College of Wisconsin, Milwaukee, WI, ³Comprehensive Diabetes Center, U of Alabama at Birmingham, Birmingham, AL

PLATFORM
SESSIONS**Fri-1****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

Friday, October 26, 2012**9:30AM - 1:00PM - EXHIBIT HALL A2
POSTER SESSION - FRIDAY – AM****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}¹Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest School of Medicine, Winston-Salem, NC**P-Fri-A-2****Sprout Formation in Angiogenesis: From Molecules to Tissue**Y. JIANG¹, S. P. PROKOPIOUS², AND L. IRUELA-ARISPE³¹Georgia State University, Atlanta, GA, ²Univ. Nottingham, Nottingham, United Kingdom, ³Univ. California, Los Angeles, Los Angeles, CA**P-Fri-A-3****In silico Multiscale Models for Identifying Driver Versus Passenger Mutations in Cancer Progression**R. RADHAKRISHNAN¹¹UPenn, Philadelphia, PA**P-Fri-A-4****Mathematical Modeling of Intracellular Calcium Waves: Role of Intracellular Diffusion and Heterogeneity**J. PARIKH¹, A. KAPELA¹, AND N. M. TSOUKIAS¹¹Florida 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. MCBRIDE¹, C. HALE¹, AND V. G. RODGERS¹¹University of California, Riverside, CA**P-Fri-A-6****Computational Studies of Two-Phase Hemodynamics**C. VELEZ¹ AND M. ILIE¹¹University of Central Florida, Orlando, FL**P-Fri-A-7****Biphasic Modeling of the Thermo-Mechanical Interaction of Engineered-Tissue During Freezing**J. WRIGHT¹ AND C-J. CHUONG¹¹University 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}¹Johns Hopkins University, Baltimore, MD, ²United States Food and Drug Administration, Silver Spring, MD**P-Fri-A-9****A Stochastic and Integrative Model of Human Cardiorespiratory Function**G. E. BANIS¹¹The College of New Jersey, Ewing, NJ**P-Fri-A-10****Characterization of Smad Localization Under Redox Perturbation of TGF Signaling**M. R. BUTLER¹, A. PRASANPHANICH², AND M. KEMP¹¹Georgia Institute of Technology, Atlanta, GA, ²Georgia 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 HAM¹ AND A. MAHBOOBIN¹¹University of Pittsburgh, Pittsburgh, PA**P-Fri-A-12****Probabilistic Markov Models Accurately Predict T Cell Cytokine Secretion Dynamics**J. YU¹, Q. HAN², C. LOVE², AND N. BAGHERI¹¹Northwestern University, Evanston, IL, ²Massachusetts Institute of Technology, Cambridge, MA**P-Fri-A-13****Effects of Aging on ROS Metabolism in Primary CD8+ T Cells**A. S. POTNIS¹, A. S. HILL², C. A. RIVET¹, AND M. L. KEMP¹¹Georgia Institute of Technology, Atlanta, GA, ²Massachusetts Institute of Technology, Cambridge, MA**P-Fri-A-14****Synthetic Biology and Bioinformatics for Predictable Control of Therapeutic Genes**C. M. HOM¹ AND K. A. HAYNES¹¹Arizona State University, Tempe, AZ**P-Fri-A-15****Cloud Based Cluster Computation for Increased Efficiency and Accessibility of Bioinformatics Software**N. M. SMITH¹, E. WERNER², AND K. SEALE²¹Vanderbilt University, Carmel, IN, ²Vanderbilt 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. HERSEY¹, C. M. LAMANNA¹, H. LUSIC¹, AND M. W. GRINSTAFF¹¹Boston University, Boston, MA**P-Fri-A-17****Using Air to Control Drug Release from 3D Superhydrophobic Meshes**S. T. YOHE¹, Y. L. COLSON², AND M. W. GRINSTAFF¹¹Boston University, Boston, MA, ²Brigham 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. PAN¹, X. JIANG^{1,2}, Y. REN^{1,2}, AND H-Q. MAO^{1,2}¹Johns Hopkins University, Baltimore, MD, ²Whitaker Biomedical Engineering Institute, Baltimore, MD

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. CHU¹ AND J. WU¹¹Cornell University, Ithaca, NY**P-Fri-A-20**

Controlled Nitric Oxide Releasing Eendronized Poly(vinyl chloride) for Improved Biocompatibility for Blood Contacting Devices

S. P. HOPKINS¹ AND M. C. FROST¹¹Michigan Technological University, Houghton, MI**P-Fri-A-21**

Drug Delivery Surgical Sutures for Pain Relief

S. PARK¹, J. LEE², C. PARK², M. KIM², M. PARK², S. LEE², C. HEO³, AND Y. CHOY^{2,4}

¹Department of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea, Republic of, ²Interdisciplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of, ³Department 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. RADHAKRISHNAN¹, J. TRIPATHY¹, AND A. M. RAICHUR^{1,2}¹Indian Institute of Science, Bangalore, India, ²University 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. WOOD¹, H. KIM², M. SZYNKARUK¹, P. PHUA¹, C. LAFONTAINE¹, S. W. KEMP¹, T. GORDON¹, M. SHOICHET², AND G. H. BORSCHEL^{1,2}¹The Hospital for Sick Children, Toronto, ON, Canada, ²University of Toronto, Toronto, ON, Canada**P-Fri-A-24**

Sequential Release of Multiple Biomolecules from a biodegradable Layer-by-Layer Coating

M. KEENEY¹, E. CHENG¹, AND F. YANG¹¹Stanford University, Stanford, CA**P-Fri-A-25**

Hybrid T904/Fibrin Hydrogels for Sustained Gene Delivery

J. ZHANG¹, A. SEN¹, J. S. LEE¹, AND K. WEBB¹¹Clemson University, Clemson, SC**P-Fri-A-26**

Short and Long Range Forces Influencing Plasmid Nanocarriers Margination and Adhesive Dynamics Under Convective Flow

V. PENSABENE¹, E. M. SIMPSON¹, P. P. PATEL¹, AND T. D. GIORGIO¹¹Vanderbilt University, Nashville, TN**P-Fri-A-27**

Enhancement of Thermal Stability of Inactivated H1N1 Flu Vaccine in Solidified Hydrogel Film

J. LEE¹ AND M. PRAUSNITZ¹¹Georgia 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. STEICHEN¹ AND N. PEPPAS¹¹University of Texas at Austin, Austin, TX**P-Fri-A-29**

Sustained Lentivirus-Mediated Transgene Delivery Via Biodegradable Polyester Elastomers

M. C. JEN¹, L. D. SHEA¹, AND G. A. AMEER¹¹Northwestern University, Evanston, IL**P-Fri-A-30**

Surface Mediated Delivery of siRNA from Layer-by-Layer Assembled Polyelectrolyte Films

S. CASTLEBERRY¹ AND P. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Fri-A-31**

Targeted, Multifunctional Nanoparticles For Controlled Delivery Of Anabolic Bone Therapy Drugs

T. L. MOORE¹, B. STONER¹, R. MORRISON¹, A. SIMIONESCU¹, D. SIMIONESCU¹, C. RECKNOR², AND F. ALEXIS¹¹Clemson University, Clemson, SC, ²United Osteoporosis Center, Gainesville, GA**P-Fri-A-32**

Controlled and Extended Release of an Ocular Anti-Inflammatory via Silicone Hydrogel Lenses

J. C. KACZMAREK¹ AND M. E. BYRNE¹¹Auburn University, Auburn, AL**P-Fri-A-33**

Chitosan's Milieu Alters Its Interactions with Protein Biologics

S. G. SMITH¹, S. JAYANTHI¹, D. ZAHAROFF¹, AND B. KOPPOLU¹¹University of Arkansas, Fayetteville, AR**P-Fri-A-34**

Novel Cationic Lipids as Efficient siRNA Delivery Systems

Y. DONG^{1,2}, C. A. ALABI¹, H. YIN¹, R. J. DORKIN¹, D. CHEN^{1,2}, Z. GU^{1,2}, R. LANGER¹, AND D. G. ANDERSON^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Children's Hospital Boston, Boston, MA**P-Fri-A-35**

PEG Microgels Formed by Precipitation Reaction as Drug Delivery Vehicles

S. THOMPSON¹, A. ALNIEMI², AND R. K. WILLITS¹¹The University of Akron, Akron, OH, ²St. Vincent St. Mary High School, Akron, OH**P-Fri-A-36**

Strategies for Controlling Viral Release from Nanofibrous Scaffolds for Neural Tissue Engineering

S. LEE¹, J-S. KIM¹, AND J-H. JANG¹¹Yonsei University, Seoul, Korea, Republic of**P-Fri-A-37**

Zein Coated Chitosan Nanoparticles for Oral Gene Delivery

J. M. GAMBOA¹ AND K. LEONG¹¹Duke 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}¹University of Texas, Arlington, TX, ²University 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. KHOURY¹, S. R. KIRKPATRICK¹, AND R. C. SVRLUGA¹¹Exogenesis Corp, Billerica, MAPOSTER
SESSION
FriA

See page 17 for Poster floor plan

P-Fri-A-40**Tetronic® T904 Increases Transfection of Polyplex Nonviral Vectors**J. ZHANG¹, J. S. LEE¹, AND K. WEBB¹¹Clemson University, Clemson, SC**P-Fri-A-41****Electro-responsive Affinity Hydrogels for Controlled Protein Release**K. N. BOCH¹, M. BATTIG¹, AND Y. WANG¹¹University of Connecticut, Storrs, CT**P-Fri-A-42****New pH Sensitive and Fully Biodegradable Polymer Micelles for Drug Delivery**I. LEE¹, M. PARK¹, O. HWANG¹, G. KHANG¹, AND D. LEE¹¹Chonbuk 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. OUYANG¹, N. LANG³, I. FRIEHS³, P. DEL NIDO³, R. LANGER⁴, L. FERREIRA², AND J. M. KARP¹¹Brigham and Women's Hospital, Harvard Medical School, Harvard-MIT Health Science and Technology, Cambridge, MA, ²Center of Neurosciences and Cell Biology, University of Coimbra, Coimbra, Portugal, ³Children's Hospital Boston, Harvard Medical School, Boston, MA, ⁴Massachusetts Institute of Technology, Cambridge, MA**P-Fri-A-44****Synthesis and Optimization of Hyperbranched poly(N-isopropylacrylamide) for Drug Delivery**K. CHANG¹ AND L. J. TAITE¹¹Georgia 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. MWANGI¹, B. A. MATA², G. M. PALMER¹, R. D. BOWLES¹, D. L. KAPLAN³, AND L. A. SETTON^{1,2}¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC, ³Tufts University, Medford, MA**P-Fri-A-46****Drug Delivery System for a Radio-Protective Selenoxanthene**L. A. HEINRICH^{1,2}, B. PAJAZITI¹, AND R. ROZIEV³¹marcotec oHG, Muenster, Germany, ²Westphalian Wilhelms University, Muenster, Germany, ³medbiopharm 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 III¹, S. ZHU¹, J. MASKROD¹, M. CHASE¹, J. MBUGUA¹, J.-H. JUNG¹, C. V. VAUSE², G. JUSTIN¹, P. L. DURHAM², AND R. M. MERCADO¹¹Crosslink, Fenton, MO, ²Missouri State University, Springfield, MO**P-Fri-A-48****Effects of Hypoxia and Hypoxia-Mimicking Factors on VEGF Production in Bioactive Glass Scaffolds**H. GRIFFITH¹, P. BHAGWAT¹, AND D. HENTHORN¹¹Saint Louis University, Saint Louis, MO**P-Fri-A-49****Clay Nanotube/Poly(methylmethacrylate) Bone Cement Composites With Sustained Antibiotic Release**W. WEI¹, E. ABDULLAYEV¹, E. RYLAND¹, D. MILLS¹, AND Y. LVOV¹¹Louisiana Tech University, Ruston, LA**P-Fri-A-50****Controlling of Polymer-Shell Morphologies via Emulsion Electrospinning of Biodegradable Polyurethanes**W. P. QAIQISH¹, J. A. SMOLEN¹, AND Y. H. YUN¹¹The University of Akron, Akron, OH**P-Fri-A-51****Novel Poly (aminoethers) for Gene Delivery**T. POTTA¹, T. GRANDHI¹, M. CHRISTENSEN¹, AND K. REGE¹¹Arizona 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. KEENEY¹, S. ONYIAH¹, AND F. YANG¹¹Stanford University, Stanford, CA**P-Fri-A-53****Versatile Amphiphilic Branched Terpolymers for Applications in Nanobiomedicine**J. MCFARLAND¹, T. BETANCOURT¹, AND M. MARKS¹¹Texas State University-San Marcos, San Marcos, TX**P-Fri-A-54****Nanoparticle Enhanced Anti-Infective Materials**D. MILLS¹ AND H. VANDEBERG²¹Louisiana Tech University, Ruston, ²Louisiana Tech University, Ruston, LA**P-Fri-A-55****Controlled Release of Pioglitazone from Biodegradable Hydrogels to Modify Macrophage Function**K. SATO¹, T. SAITO¹, AND Y. TABATA¹¹Institute 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. SPRIGLE¹ AND W. SINGHOSE¹¹Georgia 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. FAGETTE¹, S.-J. CHEN¹, G. BARAN¹, S. SAMUEL², AND M. KIANI¹¹Temple University, Philadelphia, PA, ²Albert Einstein Medical Center, Philadelphia, PA**P-Fri-A-58****Inquiry-Based Tissue Engineering Lessons for the K-12 Classroom - Bridging a Knowledge Gap**E. MANGUS¹¹University 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. BOST¹¹Georgia Institute of Technology, Atlanta, GA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-60**A New Undergraduate Program in Biomedical Engineering: Program Design and Early Results**J. BRICENO¹, P. NAVAS¹, AND J. CORDOVEZ¹¹U 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. LEONARD¹¹Georgia 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. AMOS¹¹University 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. DANNHORN¹¹mdt 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. CAMPBELL¹, A. A. ERICSON¹, M. SHAFFER¹, AND D. P. CESARIO¹¹Robert Morris University, Moon, PA**P-Fri-A-65****Multi-Disciplinary Approach to Clinical Rotation Course for Biomedical Engineering Students**Y. W. LEE¹, H. C. GABLER¹, AND J. L. SPARKS²¹Virginia Tech, Blacksburg, VA, ²Wake 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. HARDER¹, J. WHITFIELD¹, K. PENCE¹, A. DIEDRICH², AND F. BAUDENBACHER¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt University School of Medicine, Nashville, TN**P-Fri-A-67****Biomedical Instrumentation from Start to Finish: A Project-Based Undergraduate Course**A. KYLE¹, M. BOUCHARD¹, M. DOWNS¹, AND D. JANGRAW¹¹Columbia University, New York, NY**P-Fri-A-68****Fostering Critical Thinking Skills Through Team-Based Learning**C. K. DRUMMOND¹¹Case 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. KEELAN¹, S. YAMAKAWA¹, K. SHIMADA¹, AND Y. RABIN¹¹Carnegie Mellon University, Pittsburgh, PA**P-Fri-A-70****Geometric Deformation of Prostate Models for Application to the Computerized Training of Cryosurgery**A. SEHRAWAT¹, K. SHIMADA¹, AND Y. RABIN¹¹Carnegie 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-CASTILLEJOS¹, AND B. J. PFISTER¹¹New 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. KELLEY¹, R. M. UNRUH², B. R. RIGBY¹, H. D. VU³, AND T. V. VO⁴¹Baylor University, Waco, TX, ²Texas A&M University, College Station, TX, ³Hanoi University of Science & Technology, Hanoi, Vietnam, ⁴VNU-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 Master's[®] Program in Biomedical Engineering**S. S. RHODES¹ AND J. P. FARRIS¹¹Grand Valley State University, Grand Rapids, MI**P-Fri-A-74****Training the Next Generation of Biomedical Scientists**S. TRIDANDAPANI¹¹Emory 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. ROTH¹ AND P. MOGHE¹¹Rutgers University, Piscataway, NJ**P-Fri-A-76****Bioreactor Design Laboratory**J. R. AMOS¹¹University of Illinois at Urbana-Champaign, Urbana, IL

P-Fri-A-77**Adaptation of an Electronic Game as a Teaching Aid for Investigating Neural Interface Technology**M. SHAFFER¹, A. A. ERICSON¹, D. P. CESARIO¹, C. M. ACORS¹, W. B. BANAS¹, B. G. OPP¹, AND B. R. CAMPBELL¹¹Robert Morris University, Moon Twp, PA**P-Fri-A-78****Navigating Regulatory Compliance for Biomedical Engineering Undergraduate Instructional Labs**E. BEHRAVESH¹ AND A. LEE²¹Georgia Institute of Technology, ATLANTA, GA, ²Georgia 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. KE¹, X. YUE¹, Y. JIN¹, S. WANG², J. WANG², AND Z. DAI³¹Harbin Institute of Technology, Harbin, China, People's Republic of, ²Peking University Third Hospital, Beijing, China, People's Republic of, ³Peking 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. TALUKDAR¹, P. AVTI¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Fri-A-81****Design and Assessment of PVA-C Phantoms for Use in Histologic Analysis**V. S. PAI RAIKAR¹, E. A. TRENT¹, F. N. MEFLER¹, AND D. M. KWARTOWITZ^{1,2}¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**P-Fri-A-82****Multi-Modality Motion Analysis of a Magnetic Resonance Imaging Compatible Left Ventricular Phantom**B. CHAFFINS¹, A. SANTHANAKRISHNAN¹, L. MIRABELLA¹, J. OSHINSKI^{1,2}, AND A. P. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-A-83****A Survey of Harmonic Generation in Murine Tissues under Multimodal Multiphoton Microscopy**J. J. FIELD¹, C. EITEL¹, D. SMITH¹, S. A. TOBET¹, AND R. A. BARTELS¹¹Colorado 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. LUKE¹, J. TAM¹, J. MYERS², S. EMELIANOV¹, AND K. SOKOLOV^{1,2}¹The University of Texas at Austin, Austin, TX, ²M. D. Anderson Cancer Center, Houston, TX**P-Fri-A-85****Non-blinking NIR-Emitting Quantum Dots for Tissue Imaging**A. M. DENNIS¹, B. D. MANGUM¹, H. HTOON¹, AND J. A. HOLLINGSWORTH¹¹Los 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. AHUJA¹, S. NARAYAN¹, AND M. GRATZL¹¹Case Western Reserve University, Cleveland, OH**P-Fri-A-87****Extended Monitoring of 3-Dimensional Tissue Engineered Scaffolds Using an MRI-Compatible Culture System**A. VAIDYANATHAN¹, S. RAVINDRAN¹, A. GEORGE¹, AND R. MAGIN¹¹University of Illinois at Chicago, Chicago, IL**P-Fri-A-88****STED Optical Nanoscopy With a Two-Photon Oscillator**Y. LIU^{1,2}, Y. DING², E. ALONAS³, W. ZHAO², H. WANG², P. J. SANTANGELO³, J. TENG², D. JIN⁴, J. A. PIPER⁴, AND P. XI²¹Shanghai Jiaotong University, Beijing, China, People's Republic of, ²Peking University, Beijing, China, People's Republic of, ³Emory University, Atlanta, GA, ⁴Macquarie 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}¹The University of Texas at Arlington, Arlington, TX, ²The 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. BASSETT², N. GARG², D. J. VINING², AND M. K. MARKEY^{1,2}¹The University of Texas at Austin, Austin, TX, ²The 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. SARSHAR¹ AND B. ANVARI¹¹University of California, Riverside, Riverside, CA**P-Fri-A-92****High Speed Second Harmonic Holographic 3D Imaging at >1000 Volumes Per Second**D. SMITH¹, D. WINTERS¹, AND R. BARTELS¹¹Colorado State University, Fort Collins, CO**P-Fri-A-93****Photoacoustic Microscopy Based Multimodal Imaging System**H. F. ZHANG¹, S. JIAO², W. SONG¹, AND Q. WEI¹¹Northwestern University, Evanston, IL, ²The 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. HALLER¹, S. CHANDRA¹, AND P. SUCOSKY¹¹University of Notre Dame, South Bend, IN**P-Fri-A-95****In Vivo Multi-photon Imaging of Ovarian Cancer in a Mouse Model**J. WATSON¹, S. MARION¹, P. F. RICE¹, D. BENTLEY¹, D. BESSELSSEN¹, U. UTZINGER¹, P. HOYER¹, AND J. K. BARTON¹¹University of Arizona, Tucson, AZ

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-96

Development of a Low Cost Imaging System for Non-Invasive Determination of Nanoparticle Concentrations

K. JANIEC¹, E. WOODARD², AND P. O'NEAL²¹New Jersey Institute of Technology, Newark, NJ, ²Louisiana Tech University, Ruston, LA**P-Fri-A-97**

Imaging of Murine Ischemia by Photoacoustic Microscopy

S. YE¹, J. YANG¹, J. XI¹, AND C. LI¹¹Peking University, Beijing, China, People's Republic of**P-Fri-A-98**

Tracking Action Potentials in Nerve Bundles Using Birefringence

A. H. BADREDDINE¹¹Boston 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. FENN¹, V. PAPPU¹, AND P. M. PARDALOS¹¹University 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-SOTO¹, S. W. PERRY¹, AND E. B. BROWN III¹¹University 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. MEISNER¹, J. NIU¹, S. SUMER¹, AND R. J. PRICE¹¹University 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. LOYA¹, J. P. DUMAS¹, D. KOEPLINGER², AND T. BUMA¹¹Union College, Schenectady, NY, ²University of Delaware, Newark, DE**P-Fri-A-103**Novel System for Conducting High Quality *In Vivo* Laser Speckle Contrast Imaging in the EyeD. P. CARDENAS^{1,2}, A. PONTICORVO^{1,3}, AND T. DUONG^{1,3}¹University of Texas at San Antonio Health Science Center, San Antonio, TX, ²University of Texas San Antonio, San Antonio, TX, ³Research Imaging Institute, San Antonio, TX**P-Fri-A-104**

Interactive Acquisition for High Resolution Mass Spectrometric Imaging

M. THOMAS¹, B. HEATH¹, I. LANEKOFF¹, J. LASKIN¹, D. LI¹, E. LIU¹, K. HUI¹, V. LEI¹, A. KUPRAT¹, K. KLEESE VAN DAM¹, AND J. CARSON¹¹Pacific Northwest National Laboratory, Richland, WA**P-Fri-A-105**

A Comparative Atomic Force Microscope Based Study of Fibroblast Cells Using Hydrogel Substrates

D. D. SHARMA¹, K. A. AZEEMUDDIN¹, M. ROSSI¹, AND S. K. SINHA¹¹University of New Haven, West Haven, CT**P-Fri-A-106**²³Na MRI Detection of Cellular Responses to Osmotic Perturbation and Cell ViabilityJ. J. WALSH^{1,2} AND S. C. GRANT^{1,2}¹The National High Magnetic Field Laboratory, Tallahassee, FL, ²Chemical & 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. MITRA¹, J. MELVIN¹, S. CHANG^{1,2}, K. J. PARK¹, A. YILMAZ¹, S. MELVIN¹, AND R. XU¹¹Ohio State University, Columbus, OH, ²Chongqing 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. WANG¹, N. ROUZE¹, M. PALMERI¹, AND K. NIGHTINGALE¹¹Duke University, Durham, NC**P-Fri-A-109**

Characterizing Brain Micromotion Using Diagnostic Ultrasound

V. F. BOTTEICHER¹, J. HECKER¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**P-Fri-A-110**

Closed-Loop Control Imaging System for a Stainless Steel MEMS Micromirror Based Confocal Hyperspectral Microscope

N. TRIESAULT¹, Y. WANG¹, D. GOKDEL¹, AND X. ZHANG¹¹The University of Texas at Austin, Austin, TX**P-Fri-A-111**Pharmacokinetics of Near Infrared Fluorescent Contrast Agent for *In Vivo* Breast Cancer DetectionN. A. MITCHELL¹, K. JUNG¹, T. YUNG¹, T. BARAN¹, S. MITRA^{1,2}, K. S. MADDEN^{1,2}, E. B. BROWN¹, T. FOSTER^{1,2}, AND R. CHOE¹¹University of Rochester, Rochester, NY, ²University of Rochester Medical Center, Rochester, NY**P-Fri-A-112**Characterization of *In Vivo* Blood Flow in Human Breast Tumors with Diffuse Correlation SpectroscopyP. M. CARLILE¹, K. W. JUNG¹, T. DURDURAN², J. M. GIAMMARCO³, M. A. ROSEN⁴, M. D. SCHNALL⁴, B. CZERNIECKI⁴, J. TCHOU⁴, A. DEMICHELE⁴, C. MIES⁴, M. FELDMAN⁴, A. G. YODH⁴, AND R. CHOE¹¹University of Rochester, Rochester, NY, ²Institut de Ciències Fotòniques, Barcelona, Spain, ³Eastern University, St. Davids, PA, ⁴University of Pennsylvania, Philadelphia, PA**P-Fri-A-113**

Phantom Models and Tools for Ventricular Fibrillation Studies Using Magnetic Resonance Imaging

K. MAGTIBAY¹¹Ryerson University, Toronto, ON, Canada**P-Fri-A-114**

Mass Spectrometry Analysis of Traumatic Brain Injury

C. CROWLEY¹, B. ROONEY¹, R. BENNETT¹, F. FERNANDEZ¹, AND M. LAPLACA¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-A-115**

Assessing the Effects of Ischemia/Reperfusion on Myocardial Structure and Function in Rats

X. LI¹, C. L. DESJARDINS², P. BHAT³, J. M. BERTHIAUME², T. A. MCELFRISH², X. CHEN², M. P. CHANDLER², AND X. YU^{1,4}¹Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH,²Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH,³Heart and Vascular Research Center, Metro-Health Campus, Case Western Reserve University, Cleveland, OH,⁴Case Center for Imaging Research, Case Western Reserve University, Cleveland, OH

P-Fri-A-116**Characterizing Collagen Fiber Angles in Mouse Aortas Using Second-Harmonic Generation Microscopy**S. S. ROACH¹, M. A. SUTTON¹, AND S. M. LESSNER¹¹University 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. SPRING¹, A. PALANISAMI¹, Z. ZHENG¹, AND T. HASAN¹¹Harvard Medical School, Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, MA, ²Health 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. HAGEN¹, M. GAVRIELIDES², AND Q. LI²¹University of Maryland, College Park, MD, ²Food 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. LORENZO¹, J. CHOW², S. YOO², AND N. ZIEBARTH¹¹University of Miami, Coral Gables, FL, ²Bascrom Palmer Eye Institute, Miami, FL**P-Fri-A-120****Automated Multi-Dimensional Microscopy for Biomedical Imaging**H. M. SKELTON¹, T. KASSIS¹, AND J. B. DIXON¹¹Georgia Tech, Atlanta, GA**P-Fri-A-121****Measuring Performance of Different Compression Algorithms for Fourier-Domain OCT Data**N. J. SU¹, K. LURIE¹, AND A. ELLERBEE¹¹Stanford University, Stanford, CA**P-Fri-A-122****NMR Analysis of Age-Related Bone Properties**K. R. FINDLEY¹, M-K. MANHARD¹, S. UPPUGANTI¹, J. NYMAN¹, AND M. DOES¹¹Vanderbilt University, Nashville, TN**P-Fri-A-123****Optimization of Cervical Cancer Radiation Therapy through Functional Bone Marrow Sparing**P. J. LOURY¹, J. PRITZ¹, Y. LIANG^{1,2}, AND L. K. MELL¹¹University of California San Diego, La Jolla, CA, ²West 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. ESHEIN¹, A. KOTROTSOU², Z. ARVANITAKIS³, AND K. ARFANAKIS^{2,3}¹University of Missouri, Columbia, MO, ²Illinois Institute of Technology, Chicago, IL, ³Rush University Medical Center, Chicago, IL**P-Fri-A-125****Monitoring the Response of Metastasis to Therapy Using *In Vivo* Imaging**E. TRAN¹, J. PANSKY¹, E. DOOLITTLE¹, P. VICENTE¹, A. MAYER¹, A. ABRAMOWSKI¹, P. M. PEIRIS¹, R. TOY¹, R. A. KERI¹, D. WILSON¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**P-Fri-A-126****Pathological Imaging Quality Control: Biopsy Segment Imaging versus Whole Tissue Slide Imaging**A. MEYER¹, T. H. STOKES², S. KOTHARI³, AND M. D. WANG²¹Purdue University, West Lafayette, IN, ²Emory University & Georgia Tech, Atlanta, GA, ³Georgia Institute of Technology, Atlanta, GA**P-Fri-A-127****Medical Equipment Breakdown Survey – Weil Bugando Referral Hospital, Tanzania**M. KOFOED¹, K. KEITH¹, J. NICHOLAS², D. DEAN¹, AND J. DESJARDINS¹¹Clemson University, Clemson, SC, ²Medical 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. SHAH¹, X. WU², J. CHEN³, I. KAKADIARIS², S. SHAH², AND F. A. MERCHANT²¹Carnegie Mellon University, Pittsburg, PA, ²University of Houston, Houston, TX, ³The University of Texas MD Anderson Cancer Center, Houston, TX**P-Fri-A-129****Assessment of Medical Equipment Failures in Mbeya, Tanzania**T. YOUNGMAN¹, R. M. HALSEY¹, M. RUSSELL¹, M. TONEY¹, J. NICHOLAS², J. DESJARDINS¹, AND D. DEAN¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**P-Fri-A-130****Wireless Doppler Ultrasound Instrument for Quantifying Muscle Kinematics**A. S. GUNDA¹, J. J. ESQUIVEL¹, S. MOHAMMED¹, B. WOOLEY¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**P-Fri-A-131****Analysis and Classification of Individual Digit Movements in Ultrasound Images**E. EASTLAKE¹, J. DEVANATHAN¹, A. SHIN¹, H. RANGWALA¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**P-Fri-A-132****Custom Image Analysis Tool for Quantifying Aortic Wall Architecture From Multiphoton Microscopy**R. G. KOCH¹, A. TSAMIS¹, A. D'AMORE^{1,2}, W. R. WAGNER¹, AND D. A. VORP¹¹University of Pittsburgh, Pittsburgh, PA, ²Fondazione 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. EVANS¹, L. JUNOR¹, S. BIECHLER¹, AND R. GOODWIN¹¹The University of South Carolina, School of Medicine, Columbia, SC, ²The 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. ERANKI¹, L. CURATALO³, D. DAMIANO³, AND S. SIKDAR¹¹George Mason University, Fairfax, VA, ²University of Virginia, Charlottesville, VA, ³National 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. ZAAZHOA¹, A. ERANKI¹, L. GERBER¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**P-Fri-A-136****Speckle Reduction Using a Scanning Source with an Integrating Sphere**A. M. MARN¹, A. REDDINGTON², AND M. S. UNLU²¹Boston University, Smithfield, RI, ²Boston University, Boston, MA**P-Fri-A-137****Oblique-Illumination Interferometric Reflectance Imaging Sensor for Small Molecule Detection**A. GOKOGLU¹, A. REDDINGTON², AND S. UNLU²¹Boston University, Brookline, MA, ²Boston University, Boston, MA

Track: Cardiovascular and Respiratory Engineering**Acute Lung Injury****P-Fri-A-138**

Lung Uptake of ^{99m}Tc- Hexamethylpropyleneamine Oxime (^{99m}Tc-HMPAO) in Two Unique Rat Models of Pulmonary Oxygen Toxicity

S. AUDI¹, D. ROERIG², S. HAWORTH³, AND A. CLOUGH¹

¹Marquette University, Milwaukee, WI, ²Zablocki VA Medical Center, Milwaukee, WI, ³Medical College of Wisconsin, Milwaukee, WI

P-Fri-A-139

Oxidative Stress Pathways in Lung Tissue Slices under Cyclic Stretch Conditions

N. DAVIDOVICH¹, G. G. LAWRENCE¹, J. HUANG¹, P. CHHOUR¹, AND S. S. MARGULIES¹

¹University 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. ARAZAWA¹, J. KIMMEL¹, AND W. FEDERSPIEL¹

¹University of Pittsburgh, Pittsburgh, PA

P-Fri-A-141

Aqueous-Two Phase-Mediated Wound Assay of Epithelial Cells Cultured at Air-Liquid Interface

J. B. WHITE¹ AND S. TAKAYAMA^{1,2}

¹University of Michigan, Ann Arbor, MI, ²Ulsan 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. BIGLER¹, C. R. BASS¹, AND M. B. PANZER¹

¹Duke University, Durham, NC

P-Fri-A-143

Effect of Shear Stress on MicroRNA Expression in Primary Human Small Airway Epithelial Cells

K. NELSON¹, M. CRAWFORD², P. NANA-SINKAM², AND S. GHADIALI²

¹The Ohio State University, Columbus, OH, ²The Wexner Medical Center at the Ohio State University, Columbus, OH

P-Fri-A-144

Pulmonary Airway Reopening Utilizing Pulsatile Flow Waveforms

H. W. GLINDMEYER IV¹ AND D. P. GAVER III¹

¹Tulane 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. YAMAGUCHI¹, M. J. GIANNETTI¹, M. J. VAN HOUTEN¹, O. FOROUZAN¹, S. S. SHEVKOPLYAS¹, AND D. P. GAVER¹

¹Tulane 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}

¹Harvard Medical School, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA

P-Fri-A-147

Development of a LabVIEW-Based Data Acquisition System for Evaluation of Respiratory Mechanics

J. HERRMANN¹, F. H. ZONG¹, AND D. W. KACZKA^{2,3}

¹Boston University, Boston, MA, ²Harvard Medical School, Boston, MA, ³Beth 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. TAKAHASHI¹, A. MAJUMDAR¹, E. BARTOLÁK-SUKI¹, AND B. SUKI¹

¹Boston University, Boston, MA

P-Fri-A-149

Interaction of Ventilation Mode and Positive End-Expiratory Pressure in Mice with Acute Lung Injury

A. THAMMANOMAI¹, H. HAMAKAWA¹, E. BARTOLAK-SUKI¹, AND B. SUKI¹

¹Boston University, Boston, MA

P-Fri-A-150

Using Image Registration to Quantify the Location of Pulmonary Contusion in Motor Vehicle Crash Occupants

K. A. DANELSON¹, A. A. WEAVER¹, AND J. D. STITZEL¹

¹Wake 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. COLACE¹, R. MUTHARD¹, AND S. L. DIAMOND¹

¹University of Pennsylvania, Philadelphia, PA

P-Fri-A-152

Drug Delivery Strategies Employing Angioplasty Balloons For Treatment Of Atherosclerosis

L-C. SU¹, R. IYER¹, H. XU², S. BANERJEE², J. YANG¹, AND K. NGUYEN¹

¹UT Arlington, Arlington, TX, ²UT 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. ONASOGA¹ AND K. B. NEEVES^{1,2}

¹Colorado School of Mines, Golden, CO, ²University 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. MADABHUSHI¹, C. SHANG¹, K. M. DAYANANADA¹, K. RITTENHOUSE-OLSON¹, M. MURPHY², T. E. RYAN², R. R. MONTGOMERY³, AND S. NEELAMEGHAM¹

¹State University of New York at Buffalo, Buffalo, NY, ²Reichert Inc., Buffalo, NY, ³Blood Center of Wisconsin, Milwaukee, WI

P-Fri-A-155

The Role of Different Sub-units of VWF on Shear-Enhanced Platelet Adhesion

O. YAKOVENKO¹, A. TU¹, K. KINOSHITA², AND W. THOMAS¹

¹University of Washington, Seattle, WA, ²University of British Columbia, Vancouver, BC, Canada

P-Fri-A-156

Fibrin-specific Microgels for Hemostatic Applications

A. C. BROWN¹, S. SATHANANTHAN¹, L. GARTNER¹, S. E. STABENFELDT², L. A. LYON¹, AND T. H. BARKER¹

¹Georgia Institute of Technology, Atlanta, GA, ²Arizona State University, Tempe, AZ

P-Fri-A-157

Magnetic Resonance Imaging of a Formed Thrombus for CFD Simulations

J. TAYLOR¹, K. WITMER¹, B. CRAVEN¹, R. MEYER¹, T. NEUBERGER¹, S. DEUTSCH¹, AND K. B. MANNING¹

¹The Pennsylvania State University, University Park, PA

P-Fri-A-158**The Effect of Physiologically Relevant Dynamic Shear Stress on Endothelial Cell ERK1/2 Activation**F. ROUF¹, D. A. RUBENSTEIN¹, AND W. YIN¹¹Oklahoma State University, Stillwater, OK**P-Fri-A-159****Blockade of Shear Induced Thrombosis With Abciximab**A. N. PARA¹, D. ROBERTS², AND D. KU¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-A-160****Computational Modeling of Flow, Transport and Adhesion of Microparticles in Stenotic Flow Chambers**C. L. HALL¹ AND M. CALT¹¹The College of New Jersey, Ewing, NJ**P-Fri-A-161****Regulation of Platelet-Collagen Interactions by the Collagen Receptor DDR1**J. TONNIGES¹, S. ROY¹, S. CHEN¹, D. YEUNG¹, E. CALOMENI¹, AND G. AGARWAL¹¹The 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}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA**P-Fri-A-163****Electrical Activation of Clot Formation and Implications for Clinical Hemostasis**E. L. HARDY^{1,2}, Y. SAKURAI^{1,2}, B. CHIANG¹, AND W. A. LAM^{1,2}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Emory 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. LE¹, L. BENNETT¹, AND J. E. WAGENSEIL¹¹Saint 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. FABER¹, J. HUYNH¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**P-Fri-A-166****Mechanical Properties of Arterial Smooth Muscle Cells with Reduced Elastin Expression Measured by Atomic Force Microscopy**G. ESPINOSA¹, L. BENNETT¹, W. GARDNER¹, AND J. WAGENSEIL¹¹Saint 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. BHATAWADEKAR¹, D. LEARY¹, P. HERNANDEZ², C. MCPARLAND², S. FULTON², AND G. N. MAKSYM¹¹Dalhousie University, Halifax, NS, Canada, ²QE-II Health Sciences Centre, Halifax, NS, Canada**P-Fri-A-168****Biomechanics of Embryonic Airway Peristalsis: Case of Open End**K. BOKKA SRINIVASA RAO¹ AND S. R. LUBKIN¹¹North Carolina State University, Raleigh, NC**P-Fri-A-169****Variation of Respiratory Resistance Suggests Optimization of Airway Caliber**A. T. JOHNSON¹, S. JONES², AND J. VOSSOUGH³¹University of Maryland, College Park, MD, ²Univ of Penn, Philadelphia, PA, ³Univ of MD, College Park, MD**P-Fri-A-170****Geometrical and Structural Aortic Variations Confer "Optimal Mechanical Operation"**A. RACHEV¹ AND T. SHAZLY¹¹University of South Carolina, Columbia, SC**P-Fri-A-171****Cardiac Function and Arterial Mechanics in Young Mice Lacking Fibulin-5**V. P. LE¹, H. YANAGISAWA², AND J. E. WAGENSEIL¹¹Saint Louis University, Saint Louis, MO, ²University 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. GABR¹, T. SHAZLY¹, A. RACHEV¹, M. SUTTON¹, AND S. M. LESSNER²¹University of South Carolina, Columbia, SC, ²University 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. AHMADI¹ AND J. M. HYMAN¹¹Tulane 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. FICKER¹, V. P. LE¹, AND J. E. WAGENSEIL¹¹Saint Louis University, St. Louis, MO**P-Fri-A-175****Heterogeneity in Microscopic Deformation of Aortic Wall During Circumferential Stretch**T. MATSUMOTO¹, Y. UNO¹, AND K. NAGAYAMA¹¹Nagoya Institute of Technology, Nagoya, Japan**P-Fri-A-176****5-HT_{2B} Antagonism Arrests Non-Canonical TGF- β 1-Induced Myofibroblast Differentiation**J. D. HUTCHESON¹, L. M. RYZHOVA¹, AND W. D. MERRYMAN¹¹Vanderbilt 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. LYLE³, AND W. R. TAYLOR^{2,4}¹Georgia institute of technology, Atlanta, GA, ²Emory university, Atlanta, GA, ³Emory University, Atlanta, GA, ⁴Veterans 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. MARTINEZ¹, H. PARAMESWARAN¹, A. MAJUMDAR¹, E. BARTOLAK-SUKI¹, AND B. SUKI¹¹Boston University, Boston, MA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-179**The Role of HIV Proteins and the Antiretroviral AZT on Protease Activity in Murine Arteries**L. HANSEN¹, I. PARKER¹, M. PLATT¹, R. SUTLIFF^{2,3}, AND R. GLEASON¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³Atlanta VAMC, Atlanta, GA**P-Fri-A-180****Regulation of Proliferation of Lung Fibroblasts by Stretch from Several Species**E. BARTOLAK-SUKI¹, N. MARTINEZ¹, AND B. SUKI¹¹Boston University, Boston, MA**P-Fri-A-181****Shear Stress Modulates VCAM-1 Expression in Response to Dietary Lipids via IRF-1**J. S. DEVERSE¹, C. SUN¹, Y. WANG¹, S. SIMON¹, AND A. PASSERINI¹¹University of California-Davis, Davis, CA**Track: Cellular and Molecular Bioengineering****Cell Mechanics****P-Fri-A-182****Modulation of Nuclear Shape by Substrate Rigidity**D. LOVETT¹, N. SHEKHAR¹, J. NICKERSON², K. ROUX³, AND T. LELE¹¹University of Florida, Gainesville, FL, ²University of Massachusetts Medical School, Worcester, MA, ³University 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. LEE¹ AND S. YANG¹¹Florida Institute of Technology, Melbourne, FL**P-Fri-A-184****A Micropatterning Approach to Investigate the Role of Cell Shape on Macrophage Polarization**Y. F. NI¹, T. WANG¹, AND W. F. LIU¹¹University of California, Irvine, Irvine, CA**P-Fri-A-185****The Frequency-Invariant Active Force Generation by the Cochlear Outer Hair Cell**A. SPECTOR¹, S. ROY¹, AND W. BROWNELL²¹Johns Hopkins University, Baltimore, MD, ²Baylor 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. ANNO¹, AND M. SATO¹¹Tohoku University, Sendai, Japan, ²Kawasaki 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. MCANDREWS¹, N. D. QUACH¹, D. J. MCGRAIL¹, AND M. R. DAWSON^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology, Atlanta**P-Fri-A-188****Cytoskeletal Plasticity Assessed by Acute Shear**A. FUHRMANN¹ AND A. J. ENGLER¹¹University 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. KIM¹, C. KIM¹, L. WOOD², D. NEAL², R. KAMM^{1,2}, AND H. ASADA^{1,2}¹Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, ²Massachusetts Institute of Technology, Cambridge, MA**P-Fri-A-190****Fine Control of Extracellular Matrix Microenvironmental Cues for Tissue Regeneration**M. MARKOWSKI^{1,2}, K. CLAUSE¹, AND T. H. BARKER^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-A-191****The Mechanics of an Engineered 3D Microtissue Morphogenesis Model**R. ZHAO¹, T. BOUDOU², C. S. CHEN², AND D. H. REICH¹¹Johns Hopkins University, Baltimore, MD, ²University 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. FISCHER¹, R. E. EITEL¹, C. A. TRINKLE¹, AND K. W. ANDERSON¹¹University of Kentucky, Lexington, KY**P-Fri-A-194****Lamin Mutations That Cause Muscle Defects Disturb Nuclear Mechanics and Nucleo-Cytoskeletal Coupling**M. ZWARGER¹, D. E. JAALOUK², M. LOMBARDI³, P. ISERMANN⁴, M. MAUERMANN⁵, H. HERRMANN⁶, L. L. WALLRATH⁷, AND J. LAMMERDING⁴¹University of Zurich, Zurich, Switzerland, ²American University of Beirut, Beirut, Lebanon, ³Brigham and Women's Hospital, Boston, MA, ⁴Cornell University, Ithaca, NY, ⁵German Cancer Research Institute, Heidelberg, Germany, ⁶German Cancer Research Center (DKFZ), Heidelberg, Germany, ⁷University of Iowa, Iowa City, IA**P-Fri-A-195****Cells in 3D Show Regimes of Power Law Rheology**Y. SHARMA¹, E. J. FONG¹, AND M. H. ZAMAN¹¹Boston University, Boston, MA**P-Fri-A-196****Cellular Mechanosensing in Constrained Floating Collagen Matrices**H. MOHAMMADI¹, P. A. JANMEY², AND C. A. MCCULLOCH¹¹University of Toronto, Toronto, ON, Canada, ²University of Pennsylvania, Philadelphia, PA**P-Fri-A-197****The Role of Matrix Metalloproteinases in Regulating Corneal Stromal Cell Migration in 3D Culture**C. ZHOU¹ AND W. PETROLL¹¹University of Texas Southwestern Medical Center, Dallas, TX**P-Fri-A-198****CANCELLED BY AUTHOR****P-Fri-A-199****Biomechanical Study Of Erythrocytes Using Microfluidic Osmotic Lysis**Y. ZHAN¹, D. N. LOUFAKIS², N. BAO^{2,3}, AND C. LU^{2,4}¹Purdue University, West Lafayette, IN, ²Virginia Tech, Blacksburg, VA, ³Nantong University, Nantong, China, People's Republic of, ⁴Virginia Tech-Wake Forest University, Blacksburg, VA**P-Fri-A-200****What Does Traction Force Microscopy Measure?**R. ZIELINSKI¹ AND S. N. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²Dorothy 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. LAI¹, S. P. LAKE¹, R. T. TRANQUILLO¹, AND V. H. BAROCAS¹¹University of Minnesota, Minneapolis, MN

P-Fri-A-202**Rheological Changes of Cardiac Fibroblasts in Response to Mechanical Stretch**M. SHEN¹, J. MICHAELSON¹, AND H. HUANG¹¹Columbia 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. DESAI¹, S. DEITCH¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Fri-A-204****Characterizing Mechanical Properties of Endothelial Cells Combining AFM and FEM**R. VARGAS-PINTO¹ AND M. JOHNSON¹¹Northwestern University, Evanston, IL**P-Fri-A-205****Effects of Substrate Modulus and Thickness on Fibroblast Attachment and Spreading**L. Y. LIN¹, S. J. LEE¹, AND S. YANG¹¹Florida Institute of Technology, Melbourne, FL**P-Fri-A-206****Multi-Dimensional Traction Force Microscopy Reveals Rotational Moments About Focal Adhesions**C. K. CHOI¹, W. R. LEGANT¹, L. SHAO², L. GAO², J. S. MILLER¹, E. BETZIG², AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²Howard 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. RAO¹, T. J. CASHMAN¹, AND K. D. COSTA¹¹Mount 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. JONES¹, K. STRATFORD¹, M. MCCULLOUGH¹, N. BHATTARAI¹, AND E. M. ONGERI¹¹North 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. VINCENT¹, Y. CHOI¹, AND A. ENGLER¹¹University of California, San Diego, La Jolla, CA**P-Fri-A-210****Coarse-Grain Molecular Dynamics Simulation of Vesiculation and Diffusion in Defective Erythrocytes**H. LI¹ AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT**Track: Cellular and Molecular Bioengineering****Mechanotransduction and Mechanobiology****P-Fri-A-211****The Antagonistic Actions of Endogenous Interleukin-1 β and 15-deoxy- $\Delta^{12,14}$ -Prostaglandin J₂ Regulate the Temporal Synthesis of Matrix Metalloproteinase-9 in Sheared Chondrocytes**P. WANG¹, F. ZHU¹, AND K. KONSTANTOPOULOS¹¹The Johns Hopkins University, Baltimore, MD**P-Fri-A-212****Mechanical Properties of Electrospun Nanofibers Measured by a Novel Micro-Tensile Testing Platform**T. FEE¹ AND J. BERRY¹¹University of Alabama at Birmingham, Birmingham, AL**P-Fri-A-213****Spatio-Temporal Recovery of the Endothelial Glycocalyx Following Shear Stimulation**K. BAI¹ AND W. WANG¹¹Queen 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. FIGUEROA¹ AND A. M. CLYNE²¹Drexel University, Philadelphia, ²Drexel University, Philadelphia, PA**P-Fri-A-215****Cellular Mechanosensing Within a Gradient of Rigidity is Mediated by Stresses and Strains**M. T. BRECKENRIDGE¹, J. FU², R. A. DESAI¹, M. T. YANG¹, AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²University 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. NAGAYAMA¹, A. ADACHI¹, AND T. MATSUMOTO¹¹Nagoya Institute of Technology, Nagoya, Japan**P-Fri-A-217****Mitochondrial Calcium Changes in Endothelial Cells Exposed to Mechanochemical Stimuli**C. G. SCHEITLIN¹, C. J. LLOYD¹, R. J. GIETD¹, AND B. R. ALEVRIADOU¹¹Dept. 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. NIDAVOLU¹ AND D. R. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**P-Fri-A-219****Early Endothelial Tubulogenic Activity Exhibits Sensitivity to Local Hydrostatic Pressure Levels**H. Y. SHIN¹, R. M. UNDERWOOD¹, AND M. W. FANNON¹¹University of Kentucky, Lexington, KY**P-Fri-A-220****Morphological Changes of Endothelial Cells Under Combined Condition of Fluid Shear Stress and Its Spatial Gradient**M. SATO¹, D. YOSHINO¹, N. SAKAMOTO², AND E. INOUE¹¹Tohoku University, Sendai, Japan, ²Kawasaki University of Medical Welfare, Kurashiki, Japan**P-Fri-A-221****Mechanochemical Modulation of Neuronal Growth Cones using Parallel Magnetic Tweezers**D. KILINC¹, J. J. O'MAHONY¹, A. BLASIAK¹, AND G. U. LEE¹¹University College Dublin, Dublin, Ireland**P-Fri-A-222****ECM Properties Induced Changes in Human Epidermal Keratinocyte**M. KIM¹, M. NOH², AND J. SHIN³¹KAIST, Daejeon, Korea, Republic of, ²Ajou University, Suwon-si, Korea, Republic of, ³KAIST, Daejeon, Korea, Republic of**P-Fri-A-223****Massively Parallel Polarization and Analysis of Single Cell Behavior under Magnetic Nanoparticle-mediated Mechanical Tension**P. TSENG¹, J. JUDY¹, AND D. DI CARLO¹¹University of California, Los Angeles, CAP = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-224**Shear Stress Induced 3D Angiogenesis in Microfluidic Platform**S. SONG¹, J. HONG¹, H. HAN¹, S. AHN¹, AND J. H. SHIN¹¹KAIST, Daejeon, Korea, Republic of**P-Fri-A-225****'Marker of Self', CD47, Modulates Mechanical Forces Imposed by Macrophages During Phagocytosis**N. SOSALE¹, T. ROUHI², P. RODRIGUEZ¹, D. DISCHER¹, AND R. LIPOWSKY²¹University of Pennsylvania, Philadelphia, PA, ²Max Planck Institute of Colloids and Interfaces, Potsdam, Germany**P-Fri-A-226****A Packed Lipid Structure Surrounding the Transmembrane Domains Impedes Integrin Clustering**M. MEHRBOD¹ AND M. R. MOFRAD¹¹University of California Berkeley, Berkeley, CA**P-Fri-A-227****Electric Field Induced 2D and 3D Migration of Breast Cells in a Microfluidic Platform**H. HAN¹, S. SONG¹, AND J. H. SHIN¹¹Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of**P-Fri-A-228****Fluid Flow Suppresses Stem Cell Adipogenesis in a PPAR γ Dependent Manner**D. E. MENTER¹ AND J. L. LIM¹¹University 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. OLSEN¹, L. ESKEW¹, AND J. NAGATOMI¹¹Clemson University, Clemson, SC**P-Fri-A-230****Stretch-Induced ERK Activation Downregulates BMP4 Induction of MSC Adipogenesis**J. LEE¹, L. HA¹, AND J. LIM¹¹University 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. STRANE¹, AND T. H. BARKER^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-A-232****Cytoskeletal Stress Dynamics and Cellular Adaptation under Chronic Fluid Shear Stress**D. VERMA¹, F. MENG¹, AND S. Z. HUA^{1,2}¹State University of New York at Buffalo, Buffalo, NY, ²State University of New York at Buffalo, Buffalo**P-Fri-A-233****Down-modulation of Inter-cellular Tension Precedes Change in Cell-Cell Cohesion**V. MARUTHAMUTHU¹ AND M. L. GARDEL¹¹University of Chicago, Chicago, IL**P-Fri-A-234****Characterizing the Mechanical Behavior of Cancer Cells by Tracking Displacement of Gold Nanorods**K. GARROTT¹, S. C. BAXTER¹, AND E. C. GOLDSMITH¹¹University of South Carolina, Columbia, SC**P-Fri-A-235****Effect of Shear Stress and Substrate on Endothelial DAPK Expression, Caspase Activity, and Apoptosis**K. RENNIER¹ AND J. JI^{1,2}¹Purdue University, West Lafayette, IN, ²Indiana 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. MORGAN¹, V. K. RAGHUNATHAN¹, J. A. WOOD¹, M. L. HUGHBANKS¹, I. LY¹, C. J. MURPHY¹, AND P. RUSSELL¹¹University of California, Davis, Davis, CA**P-Fri-A-237****Pre-treatment with Shear Stress Influences Endothelial Behavior in Wound Recovery**M. F. MAVI¹ AND J. JI¹¹Indiana University Purdue University, Indianapolis, IN**P-Fri-A-238****Intracellular Calcium Concentration Increase in Urothelial Cells due to Hydrostatic Pressure Stimulus**K. D. CHAMPAIGNE¹ AND J. NAGATOMI¹¹Clemson University, Clemson, SC**P-Fri-A-239****Polarized Rac- and Rho-Mediated Actin Structural Dynamics in Response to Cyclic Uniaxial Stretch**L. HUANG¹ AND B. P. HELMKE¹¹University of Virginia, Charlottesville, VA**P-Fri-A-240****Roles of Cyclic Stretch and Actin Filaments in bFGF-mediated Sprouting Angiogenesis**J. R. WILKINS¹, C. C. GIBSON¹, D. B. PIKE¹, AND Y-T. E. SHIU¹¹University of Utah, Salt Lake City, UT**P-Fri-A-241****Shear Stress Attenuates Apoptosis Due to TNF α , Oxidative Stress, and Serum Depletion via DAPK**K. RENNIER¹ AND J. JI^{1,2}¹Purdue University, West Lafayette, IN, ²Indiana University Purdue University Indianapolis, Indianapolis, IN**P-Fri-A-242****Cadherin-integrin Cross Talk in Mechanotransduction**D. LECKBAND¹, H. TABDILI¹, I. MUHAMED¹, AND N. WANG¹¹University of Illinois, Urbana, IL**P-Fri-A-243****Modeling Smooth Muscle Alpha Actin Expression in Fibroblasts: Regulatory Role of FAK and ERK $\frac{1}{2}$** A. K. SCHROER¹, L. M. RYZHOVA¹, AND W. D. MERRYMAN¹¹Vanderbilt University, Nashville, TN**P-Fri-A-244****T Lymphocytes Cytoskeletal Architecture in Synaptic Rigidity**E. JUDOKUSUMO¹, S. DE LEO¹, AND L. C. KAM¹¹Columbia 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. JEN¹ AND T. HSIAI²¹University of Southern California, Los Angeles, CA, ²University of Southern California, Los Angeles

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. SHARMA¹, C. PEETLA¹, AND V. LABHASETWAR¹¹Cleveland Clinic, Cleveland, OH

P-Fri-A-247

Synthesis of GdS:Eu³⁺ Nanoparticles as a Dual-Mode Imaging Agent for T1-weighted MR and Photoluminescence ImagingJ. PARK¹, J. JUNG¹, M. KIM¹, AND S. LEE¹¹Korea 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. QUINTO¹ AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA

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. YU¹, N. C. BLOODWORTH², W. J. BARHAM³, F. E. YULL³, C. L. DUVAL¹, AND T. D. GIORGIO¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt University Medical Center, Nashville, ³Vanderbilt-Ingram Cancer Center, Nashville, TN

P-Fri-A-250

Cellular Delivery of Quantum Dots by Electroporation

C. SUN¹, T. GENG², M. WU³, AND C. LU¹¹Virginia Tech, Blacksburg, VA, ²Purdue University, West Lafayette, IN, ³National University of Singapore, Singapore, Singapore

P-Fri-A-251

Shape Matters: A Comparison of Nano-Discoids and Nano-Cylinders for Intracellular Drug Delivery

R. AGARWAL¹, V. SINGH¹, P. JURNEY¹, L. SHI¹, S. SREENIVASAN¹, AND K. ROY¹¹University of Texas at Austin, Austin, TX

P-Fri-A-252

Metabolite-Enhanced Efficacy of Magnetic Nanoparticles For Antibiotic-Resistant Biofilms

N. G. DURMUS¹, E. TAYLOR¹, K. M. KUMMER¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI

P-Fri-A-265

Controlled and Sustained Release for the Prevention of Retinal Degeneration

A. A. PUNTEL¹ AND Z-R. LU¹¹Case Western Reserve University, Cleveland, OH

P-Fri-A-253

Techniques for Reversible Permeabilization of Live Cells for the Intracellular Delivery of Quantum Dots

K. MEDEPALLI¹, B. W. ALPHENAAR¹, R. S. KEYNTON¹, AND P. SETHU¹¹University of Louisville, Louisville, KY

P-Fri-A-254

EGFR-Targeted Gold Nanoparticles for Intraoperative Detection and Treatment of Brain Tumors

J. MEYERS¹, A-M. BROOME², Y. CHENG³, R. S. AGNES¹, X. WANG⁴, M. E. KENNEY¹, C. BURDA¹, AND J. P. BASILION¹¹Case Western Reserve University, Cleveland, OH, ²Medical University of South Carolina, Charleston, SC, ³University of Chicago, Chicago, IL, ⁴Case Western Reserve University, Cleveland

P-Fri-A-255

Phospholipid-doped Polymersomes Exhibit Improved Tumor Cell-Targeting

Z. CHENG¹, D. R. ELIAS², V. POPIK³, AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA, ²University of Pennsylvania, Philadelphia, PA, ³University of Georgia, Athens, GA

P-Fri-A-256

Gold Nanoparticle-M2e Nanocomplex Induces Protective Immunity Against Influenza A Virus

W. TAO¹ AND H. S. GILL¹¹Texas Tech University, Lubbock, TX

P-Fri-A-257

Nanodroplets Enhance High Intensity Focused Ultrasound (HIFU) Ablation over Microbubble Mediators: New Tumor Treatment

L. C. PHILLIPS¹, C. PUETT¹, P. S. SHEERAN¹, AND P. A. DAYTON¹¹University 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. LIN¹, J. MATTOS ALMEIDA¹, J. YOUNG¹, J. LUNSFORD², A. BEAR², P. ECKELS², L. LUO¹, A. CHEN¹, A. FOSTER², AND R. DREZEK¹¹Rice University, Houston, TX, ²Baylor 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. ELUMALAI¹, N. DAS¹, S. DAS¹, AND A. M. RAICHUR^{1,2}¹Indian Institute of Science, Bangalore, India, ²University of Johannesburg, Johannesburg, South Africa

P-Fri-A-260

Nanoparticles-Bearing Monocyte: Evaluation of Flow Dynamics

S. SRINIVASAN¹, Y. GENG², M. R. KING², AND B. GODIN¹¹The Methodist Hospital Research Institute, Houston, TX, ²Cornell University, Ithaca, NY

P-Fri-A-261

Chitosan Particle Based Delivery Systems for Antigen Delivery and Inflammatory Stimulus

B. KOPPOLU¹ AND D. A. ZAHAROFF¹¹University 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 OLTRA¹, K. RAJAGOPAL¹, AND D. DISCHER¹¹University of Pennsylvania, Philadelphia, PA

P-Fri-A-263

Evaluating Drug Synergy of Tenofovir and Nanoparticle-Based Antiretroviral Microbicides

T. CHAOWANACHAN¹, E. A. KROGSTAD¹, C. S. BALL¹, AND K. A. WOODROW¹¹University of Washington, Seattle, WA

P-Fri-A-264

Prostate Cancer Drug Delivery Using the A11 Minibody

K. M. MAYLE¹, R. Y. CHIU¹, R. J. LAMM¹, S. KNOWLES¹, A. M. WU¹, AND D. T. KAMEI¹¹University of California, Los Angeles, CA

P-Fri-A-265

Nanomaterial Tool for Blood Disease Fighting

E. G. AZNAKAYEV¹, D. E. AZNAKAYEVA¹, AND A. V. VISHNEVSKY¹¹National Aviation University, Kiev, UkraineP = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-A-266**Genetically Encoded Albumin Binding Peptide Functionalized Polypeptide Nanoparticles for Delivery of Cancer Chemotherapeutics**P. YOUSEFPOUR¹ AND A. CHILKOTI¹¹Duke University, Durham, NC**P-Fri-A-267****Nanoconstructs for Imaging and Therapeutic Applications**A. GIZZATOV¹, J. S. ANANTA², A. CERVADORO², X. LIU², M. FERRARI², L. J. WILSON¹, AND P. DECUZZI²¹Rice University, Houston, TX, ²The 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. BARRY¹, J. A. SMITH², N. L. BANIK², AND A. A. VERTEGEL¹¹Clemson University, Clemson, SC, ²Medical 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. BISHOP¹, S. Y. TZENG¹, J. C. SUNSHINE¹, AND J. J. GREEN¹¹Johns Hopkins University School of Medicine, Baltimore, MD**P-Fri-A-270****Nanoparticles With SOD Mimetics As Potential Drug Carriers**R. KISELEVA¹, A. SHAPOREV¹, R. SCHLOSSER², AND A. VERTEGEL¹¹Clemson University, Clemson, SC, ²Ralph H. Johnson VA Medical Center, Charleston, SC**P-Fri-A-271****Directed Evolution of Virus Nanoparticles for Imaging and Therapy**J. JUDD¹, P. NGUYEN², J. SILBERG², AND J. SUH²¹Rice University, Houston, ²Rice 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. LIANG¹ AND Z. DAI¹¹Department 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. KE², J. WANG³, AND J. LIU⁴¹Peking University, Beijing, China, People's Republic of, ²Harbin Institute of Technology, Harbin, China, People's Republic of, ³Peking University Third Hospital, Beijing, China, People's Republic of, ⁴Thomas 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. LIU¹, P. LI³, 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}¹Singapore-MIT Alliance for Research and Technology center, Singapore, Singapore,²KK Women's and Children's Hospital, Singapore, Singapore, ³Nanyang Technological University, Singapore, Singapore, ⁴National University of Singapore, Singapore, Singapore,⁵Massachusetts Institute of Technology, Cambridge, MA**P-Fri-A-275****Gold and Silver Multistrata Nanoparticles: Biomagnetophotonic Mutilayered Metallodielectric Nanoparticles for Theranostic Applications**C. S. BELL¹, R. A. ORTEGA², A. T. STEVENSON², AND T. D. GIORGIO³¹Vanderbilt University, Nashville, ²Vanderbilt University, Nashville, TN, ³Vanderbilt University, Vanderbilt University, TN**P-Fri-A-276****Top-down Fabrication of Theranostic Microparticles**P. ZHANG¹, J. XIA¹, Y. LIU¹, AND J. GUAN¹¹Florida State University, Tallahassee, FL**P-Fri-A-277****Specific and Not-Specific Heating of SPIOs for Magnetic Ablation Therapies**A. CERVADORO¹, A. GIZZATOV², Z. CHANI³, R. PANDE³, S. SARANGI³, A. BRAZDEKIS³, J. WOSIK³, AND P. DECUZZI¹¹The Methodist Hospital Research Institute, Houston, TX, ²Rice University, Houston, TX,³University of Houston, Houston, TX**P-Fri-A-278****Immunocapture of Circulating Tumor Cells in Tissue-Engineered GEDI Microdevices**S. M. SANTANA¹, C. FISCHBACH-TESCHL¹, AND B. KIRBY¹¹Cornell 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. YAGHOUBI¹, T. ZHANG², M. STRIZ², K. DONOHUE², B. O'HARA², AND S. SUNDERAM²¹University of Kentucky, Lexington, KY, ²University 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. DAI¹, G. W. ASTARY², J. H. KIM¹, T. H. MARECI², P. R. CARNEY³, AND M. SARTINORANONT¹¹Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville,²Department of Biochemistry and Molecular Biology, University of Florida, Gainesville,³Division 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. STANLEY¹, P. R. CARNEY¹, S. S. TALATHI¹, AND W. L. DITTO²¹University of Florida, Gainesville, FL, ²University of Hawaii at Manoa, Honolulu, HI**P-Fri-A-282****Computational Modeling of Intracortical Microstimulation in Somatosensory Cortex**C. K. OVERSTREET¹, J. D. KLEIN¹, AND S. I. HELMS TILLERY¹¹Arizona State University, Tempe, AZ**P-Fri-A-283****Dynamics of Compound Astrocyte-Neuron Networks**V. TIRUVADI¹ AND J. BIRJINIUK¹¹Emory 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. EIKENBERRY¹ AND V. Z. MARMARELIS¹¹University 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. ZHANG¹ AND H. DEVARAJ¹¹Wayne State University, Detroit, MI

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. LANDSBERGER², AND R. V. SHANNON^{1,2}¹Univ. of Southern California, Los Angeles, CA, ²House Research Institute, Los Angeles, CA**P-Fri-A-287****BioSearch: A Physiologically Plausible Learning Strategy for the Sensorimotor System**J. R. GOODNER¹, G. TSIANOS¹, Y. LI¹, AND G. E. LOEB¹¹University 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. KAMAL¹¹TTU, Cookeville, TN**P-Fri-A-289****Spontaneous Autoresuscitation in a Model of Respiratory Control**C. O. DIEKMAN¹, C. G. WILSON², AND P. J. THOMAS²¹Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, ²Case Western Reserve University, Cleveland, OH**Track: Neural Engineering****Neural Prosthetics****P-Fri-A-290****Comparison of Adeno-Associated Viral Vectors to Enable Calcium Imaging of Retinal Ganglion Cells**A. C. WEITZ¹, M. S. HUMAYUN¹, R. H. CHOW¹, AND J. D. WEILAND¹¹University of Southern California, Los Angeles, CA**P-Fri-A-291****Fatigue Protocols in Peripheral Nerve Interfaces**N. B. LANGHALS¹, K. B. SUGG¹, A. E. SNELLINGS¹, P. S. CEDERNA¹, AND M. G. URBANCHEK¹¹University of Michigan, Ann Arbor, MI**P-Fri-A-292****Control of Seated Balance after Spinal Cord Injury using Functional Electrical Stimulation**J. O. MURPHY¹, M. L. AUDU¹, AND R. J. TRIOLO^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH**P-Fri-A-293****Chemical Stimulation of a Rat Retina Toward a Neurotransmitter-based Retinal Prosthesis**C. ROUNTREE¹, S. INAYAT^{1,2}, L. SAGGERE², AND J. TROY¹¹Northwestern University, Evanston, IL, ²University of Illinois at Chicago, Chicago, IL**P-Fri-A-294****Wavelet Denoising of In Vivo Recordings of Peripheral Nerve Signal**M. RAVI¹, V. DESAI¹, M. ROMERO-ORTEGA², AND K. BEHBEHANI³¹University of Texas at Arlington, Arlington, TX, ²University of Texas, Arlington, TX, ³University of Texas at Arlington, Arlington**P-Fri-A-295****Ultrahigh Photosensitivity and Responsivity Silicon Nanowires for Retinal Prosthesis**M. L. KHRAICHE^{1,2}, S. HA³, Y. JING³, Y. LO³, D. WANG³, W. FREEMAN⁴, G. CAUWENBERGHS³, AND G. A. SILVA⁵¹UCSD, San Diego, CA, ²Jacob Retina Center, La Jolla, CA, ³UCSD, La Jolla, CA, ⁴Jacobs Retina Center, La Jolla, CA, ⁵UCSD, 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. JARAMILLO¹, A. SHOEMAKER¹, AND A. LEONESSA¹¹Virginia Tech, Blacksburg, VA**P-Fri-A-297****Voice Onset Time Variation in Stop Consonant to Vowel Transitions**A. G. PARIKH^{1,2}, R. FOULDS¹, B. BAIN^{2,3}, D. KRISTOL¹, AND W. HUNTER¹¹New Jersey Institute of Technology, Newark, NJ, ²Matheny Medical and Educational Center, Peapack, NJ, ³NYU, New York, NY**P-Fri-A-298****Rehabilitation Engineering in Clinical Practice: A Case Study**C. P. DIGIOVINE^{1,2}¹The Ohio State University, Columbus, OH, ²The 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. KALIKA¹, N. CZARNEK¹, AND E. SEJDIC¹¹University 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. RHYNE¹, D. P. MORENO¹, N. A. VAVALLE¹, J. D. STITZEL¹, AND F. S. GAYZIK¹¹Wake 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}¹Wake Forest University, Winston-Salem, NC, ²Virginia 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. SAMAVEDI¹, P. GADDAM¹, A. R. WHITTINGTON¹, AND A. S. GOLDSTEIN¹¹Virginia Tech, Blacksburg, VA**P-Fri-A-303****A Subject-Specific Model With the Novel Objective Function to Predict Reasonable Muscle Forces**J. SON¹, S. KIM¹, J. RYU¹, AND Y. KIM¹¹Yonsei University, Wonju, Korea, Republic of**P-Fri-A-304****Bioactive Rosette Nanotubes/poly(2-hydroxyethyl methacrylate) Composites for Cartilage Applications**L. SUN¹, X. MENG¹, H. FENNIRI², AND T. J. WEBSTER¹¹Brown University, Providence, RI, ²University of Alberta, Alberta, Canada

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

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. CHEN², B. CHENG¹, J. M. CAVANAUGH², Z. WANG², AND W. WANG¹¹Tsinghua University, Beijing, China, People's Republic of, ²Wayne 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. UNTAROIU¹¹Virginia Tech, Blacksburg, VA**P-Fri-A-307****A Multiscale Model Of The Influence Of Hypoxia During Bone Fracture Healing**A. CARLIER¹, L. GERIS², AND H. VAN OOSTERWYCK¹¹KU Leuven, Leuven, Belgium, ²Université 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. ZHANG¹, J. HUANG¹, W. GU¹, L. D. QUARLES¹, N. V. DAVID¹, AND Y. JIAO¹¹University of Tennessee Health Science Center, Memphis, TN**P-Fri-A-309****Mechanical Fluid Pressure Regulated Cortical Adaptation In A Disuse Osteopenia Rat Model**M. LIEN¹, M. HU¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**P-Fri-A-310****Release of Glycosaminoglycans in Cartilage Explants Following X-Ray Radiation Exposure**C. A. LINDBURG¹ AND D. DEAN¹¹Clemson University, Clemson, SC**P-Fri-A-311****Quantitative Toolbox to Measure Osteoclast and Cathepsin K Activity in Orthopedic Tissues**B. CHEN¹, L. M. ROBERTS¹, S. R. BANTON¹, D. CHAMBERS¹, J. S. TEMENOFF¹, G. A. BARABINO¹, AND M. O. PLATT¹¹Georgia 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. TIERNAN¹, K. DURVASULA¹, AND A. SAMBANIS¹¹Georgia 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. ROBINSON¹, N. LANDAZURI¹, B. M. WYNNE¹, C. J. WEBER¹, S. A. SAFLEY¹, I. B. COPLAND¹, J. GALIPEAU¹, AND W. R. TAYLOR^{2,3}¹Emory University, Atlanta, GA, ²Emory University and Georgia Institute of Technology, Atlanta, GA, ³Atlanta 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}¹Schepens Eye Research Institute, Boston, MA, ²Boston University, Boston, MA, ³The Charles Stark Draper Laboratory, Inc., Cambridge, MA, ⁴Current Affiliation: Coopervision, Inc., Pleasanton, CA, ⁵Harvard 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}¹University of Colorado, Boulder, CO, ²Howard Hughes Medical Institute, Boulder, CO**P-Fri-A-316****Microencapsulation of Biological Agents For The Management of Renal Disease**R. G. DUQUE¹ AND M. MOBED-MIREMADI²¹San Jose State University, San Jose, CA, ²San 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. WANG¹, T. BOIRE¹, M. GUPTA¹, S. MALTAIS², AND H-J. SUNG^{1,2}¹Vanderbilt University, Nashville, TN, ²Vanderbilt 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. DUNCANSON¹ AND A. SAMBANIS¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-A-319****Systemic FTY720 Improves the Survival and Osteogenic Capacity of Implanted Allogeneic Mesenchymal Stem Cells**A. DAS¹, A. DIGHE¹, V. MADHU¹, Q. CUI¹, AND E. BOTCHWEY²¹UVA, Charlottesville, VA, ²GaTech, Atlanta, GA**P-Fri-A-320****HIF Activity in Beta-Cell Clusters is Predictive of Poor Morphology and Reduced Insulin Secretion**M. SKILES¹, S. SAHAI¹, N. WILDER¹, AND J. BLANCHETTE¹¹University of South Carolina, Columbia, SC**P-Fri-A-321****Uniform Beads with Controllable Pore Sizes for Biomedical Applications**Y. ZHANG^{1,2}, S-W. CHOI², Y-C. YEH², H-W. SUNG³, AND Y. XIA^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Washington University in St. Louis, St. Louis, MO, ³National Tsing Hua University, Hsinchu, Taiwan**P-Fri-A-322****Optimization of the Post-Thaw Wash Process for Cryopreserved Red Blood Cells**R. E. LUSIANTI¹¹Oregon State University, Corvallis, OR**P-Fri-A-323****Biomimetic Mineralization of Silica Encapsulated Pancreatic Beta Islets for Type I Diabetes Therapy**J. LU^{1,2}, D. B. JAROCH³, N. STULL⁴, R. MADANGOPAL³, M. STENSBERG³, J. SHI³, M. ZEITCHEK¹, D. PORTERFIELD¹, R. G. MIRMIRA⁴, AND J. L. RICKUS^{1,3}¹Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, IN, ²Birk-Bindley Physiological Sensing Facility, Purdue University, West Lafayette, IN, ³Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, ⁴Indiana University School of Medicine, Indianapolis, IN**P-Fri-A-324****Engineering Subcutaneous Tissue Pockets for Minimally Invasive Cell Transplantation**D. T. BOWERS¹, D. A. BARKER¹, P. CHHABRA¹, L. W. LANGMAN¹, K. L. BRAYMAN¹, AND E. A. BOTCHWEY^{1,2}¹University of Virginia, Charlottesville, VA, ²Georgia Tech, Atlanta, GA

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. POLLOCK¹ AND P. K. KREEGER¹¹UW-Madison, Madison, WI**P-Fri-A-326****Proton NMR Characterization of Chondrocyte Re-differentiation in Alginate Beads and Pellet Culture**M. KOTECHA¹, T. M. SCHMID², AND R. L. MAGIN¹¹University of Illinois at Chicago, Chicago, IL, ²Rush 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. ESCH¹, J. YANG¹, AND M. SHULER¹¹Cornell 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. FADINI², S. QUAKE³, AND N. ELVASSORE^{1,2}¹University of Padua, Padua, Italy, ²Venetian Institute of Molecular Medicine, Padua, Italy, ³Stanford University, Stanford, CA**P-Fri-A-329****A Novel Functional Role for the Inhibitory Antibody Receptor in Dendritic Cell Motility**M. R. CLATWORTHY^{1,2}, C. E. PETRIE ARONIN², S. HARFORD¹, K. G. SMITH¹, AND R. N. GERMAIN²¹Cambridge Institute for Medical Research, Cambridge, United Kingdom, ²NIH, NIAID, Bethesda, MD**P-Fri-A-330****A Model of Tumor Angiogenesis in Biomimetic Hydrogels**L. C. ROUDSARI^{1,2}, B. J. GILL¹, D. L. GIBBONS³, J. M. KURIE³, AND J. L. WEST^{1,2}¹Rice University, Houston, TX, ²Duke University, Durham, NC, ³The 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. GWYTHYER¹, M. MCCORRY¹, C. OHLSON¹, K. LARSON¹, S. DELFOSSE¹, M. ASCHETTINO³, C. QUINN¹, S. HIGGINBOTTOM¹, S. GUNNEL¹, M. ROLLE¹, AND R. PAGE¹¹Worcester Polytechnic Institute, Worcester, MA, ²Kent State University, Kent, OH, ³Worcester 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. GUIRO¹, T. R. BUIRKLE¹, T. LIVINGSTON ARINZEH², P. RAMESHWAR³, AND S. BLISS⁴¹New Jersey Institute of Technology, Newark, NJ, ²New Jersey Institute of Technology, Newark, NJ, ³University of Medicine and Dentistry of New Jersey, Newark, NJ, ⁴University of Medicine and Dentistry of New Jersey, Newark

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

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}¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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. NAMIN¹ AND N. M. TSOUKIAS¹¹Florida International University, Miami, FL**P-Fri-B-3****Calcium Dynamics in Cardiac Mitochondria: Influx, Efflux and Buffering**A-C. WEI¹, B. O'ROURKE¹, AND R. L. WINSLOW¹¹Johns Hopkins University, Baltimore, MD**P-Fri-B-4****Discerning Dynamics of Cellular Processes Using Sparse-grid-based Experimental Design**T. MDLULI¹, J. PERLEY¹, S. L. NOBLE¹, G. T. BUZZARD¹, AND A. E. RUNDELL¹¹Purdue University, West Lafayette, IN**P-Fri-B-5****An Integrative Modeling and Imaging Approach to Characterize Insulin Signaling in Glioma**K. LIN¹, A. QADEER¹, AND A. A. QUTUB¹¹Rice University, Houston, TX**P-Fri-B-6****Systems Biology Approaches to Direct human Embryonic Stem Cell Differentiation Using siRNAs**E. D. KARAGIANNIS¹, J. ZOLDAN¹, R. LANGER¹, AND D. G. ANDERSON¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Fri-B-7****Attenuation Wave Propagation in Acoustic Reflectometry Using a Chirp Signal**E. R. VAZQUEZ¹, J. H. PIERLUISSI², M. ONTIVEROS RODRIGUEZ¹, V. R. BARRALES GUADARRAMA¹, E. M. RODRIGUEZ RODRIGUEZ¹, AND R. BARRALES GUADARRAMA¹¹Universidad Autonoma Metropolitana, Mexico D. F., Mexico, ²The 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. KIDANE¹, R. N. NIKAM¹, F. D. MCKENZIE¹, R. E. KELLY², AND S. B. KNISLEY¹¹Old Dominion University, Norfolk, VA, ²Children'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. LAUFFENBURGER¹, AND D. J. IRVINE^{1,3}¹MIT, Cambridge, MA, ²The Ragon Institute of MGH, MIT and Harvard, Charlestown, MA, ³Howard 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. GUPTA¹, Y. KIHARA¹, M. R. MAURYA¹, O. QUEHENBERGER¹, A. ARMANDO¹, C. K. GLASS¹, E. A. DENNIS¹, AND S. SUBRAMANIAM¹¹University of California, San Diego, La Jolla, CA**P-Fri-B-11****Computational Techniques for Modeling and Analysis of Fluorescent Protein Labeled Cell Populations**L. BANSAL¹, A. JAYARAMAN¹, AND J. HAHN²¹Texas A&M University, College Station, TX, ²Rensselaer 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}¹Wake Forest University School of Medicine, Winston-Salem, NC, ²Virginia 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. CORNELIUS¹, T. BOLLU¹, J. SUNWOO¹, P. DOERSCHUK¹, C. SCHAFFER¹, AND N. NISHIMURA¹¹Cornell University, Ithaca, NY**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. LARSON³, J. HJORTNAES^{2,4}, K. L. JOHNSON¹, K. B. MANNING¹, AND A. KHADEMOSSEINI^{2,3}¹The Pennsylvania State University, University Park, PA, ²Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ³Harvard-MIT, Cambridge, MA, ⁴University Medical Center Utrecht, Utrecht, Netherlands**P-Fri-B-15****Effect of Nanowire Structures on the Osseointegration**Y-S. YUN¹, J-Y. LEE¹, I-S. YUN², Y-O. KIM², AND J-S. YEO¹¹Yonsei University, Incheon, Korea, Republic of, ²Yonsei 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. BENITEZ¹, J. A. SWEET¹, AND S. C. HEILSHORN¹¹Stanford University, Stanford, CA**P-Fri-B-17****Inorganic and Carbon Nanoparticle-Reinforced Polypropylene Fumarate Nanocomposites for Bone Tissue Engineering**G. LALWANI¹, B. FARSHID¹, A. HENSLEE², A. G. MIKOS², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²Rice University, Houston, TX**P-Fri-B-18****Color Responsive Polymer Films for Small Biomolecule Detection**O. AYYUB¹, M. IBRAHIM¹, AND P. KOFINAS¹¹University of Maryland College Park, College Park, MDPOSTER
SESSION
FriB

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. WU¹ AND C-C. CHU¹

¹Cornell University, Ithaca, NY

P-Fri-B-20

One Step Synthesis of Multi-Functional Mesoporous Silica Nanorods

C. SMID¹, S. Z. KHALED², L. ISENHART², I. YAZDI², M. R. MORENO³, M. BECKER⁴, AND E. TASCOTTI²

¹The University of Texas at Austin, Austin, TX, ²The Methodist Hospital Research Institute, Houston, TX, ³Texas A&M University, College Station, TX, ⁴The University of Akron, Akron, OH

P-Fri-B-21

Nanosurface Modification by Gas Cluster Ion Beam Technology Enhances Device Integration

J. KHOURY¹, R. E. CHERIAN¹, M. MAXWELL¹, K. DOSHI¹, S. R. KIRKPATRICK¹, M. J. WALSH¹, AND R. C. SVRLUGA¹

¹Exogenesis Corp, Billerica, MA

P-Fri-B-22

Molecularly Imprinted Polymers for Virus Capture: Whole Particle Versus Small Molecule Imprinting

C. MULTARI¹ AND X. CHENG¹

¹Lehigh University, Bethlehem, PA

P-Fri-B-23

Biocompatibility of Nanoscale HAP-embedded Chitosan Films

F. SUN¹ AND J. LEE¹

¹Pusan National University, Miryang, Korea, Republic of

P-Fri-B-24

Multifunctional Nanoparticle Releasing Nanofibers for Wound Healing Applications

C. B. PARAS¹, Z. XIE¹, Y-T. KIM¹, J. YANG^{1,2}, AND K. T. NGUYEN¹

¹University of Texas at Arlington, Arlington, TX, ²UT Southwestern Medical Center at Dallas, Dallas, TX

P-Fri-B-25

Neovascularization Mediated through Micropatterned Alginate-g-pyrrole Hydrogels

R. J. DEVOLDER¹ AND H. KONG²

¹University of Illinois, Champaign, IL, ²University of Illinois, Urbana, IL

P-Fri-B-26

Efficient Separation and Quantitative Analysis of Coronary Artery Disease Biomarkers

H. PARK¹, J. CHOI¹, AND K-H. LEE¹

¹Korea 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 PEREA¹, L. RIBEIRO RODRIGUEZ¹, C. DE CARVALHO ZAVAGLIA¹, C. BARROSO TAVARES DIAS¹, AND M. AKIRA D'ÁVILA¹

¹UNICAMP, Campinas, Brazil

P-Fri-B-28

Lipidoid Nanoparticle-Containing Alginate Microparticles for Small Molecule Oral Delivery in Colorectal Cancer

A. URBANSKA¹, E. KARAGIANNIS¹, D. ANDERSON¹, AND R. LANGER¹

¹Massachusetts 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. ZOU², Q. XIE², S. YAO², AND Y. LI¹

¹University of Arkansas, Fayetteville, AR, ²Hunan Normal University, Changsha, China, People's Republic of

P-Fri-B-30

Development of Cermaic Biomaterial Coatings for Implant Applications

T. M. HAYWOOD¹, D. KUMAR¹, K. DARKWA¹, AND R. GUPTA¹

¹North 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-DARKWA¹, D. KUMAR¹, AND R. GUPTA¹

¹North Carolina A&T State University, Greensboro, NC

P-Fri-B-32

Identification of a Novel Protein-based Nanoparticle Secreted from English Ivy

S. C. LENAGHAN¹, J. N. BURRIS¹, L. XIA¹, C. N. STEWART^{1,2}, AND M. ZHANG¹

¹University of Tennessee, Knoxville, TN, ²The BioEnergy Science Center, Oak Ridge National Laboratory, Oak Ridge, TN

P-Fri-B-33

Glycosaminoglycan-based Nanoparticles from *Arthrotrichy oligospora* as a Novel Biomaterial for Biomedical Application

Y. WANG¹, L. SUN¹, S. YI¹, L. XIA¹, Y. HUANG¹, S. C. LENAGHAN¹, AND M. ZHANG¹

¹University of Tennessee, Knoxville, TN

P-Fri-B-34

A Novel Method to Prepare Chitosan Nanoparticles through Electrospinning

L. SUN¹, S. YI¹, S. C. LENAGHAN¹, L. XIA¹, AND M. ZHANG¹

¹University of Tennessee, Knoxville, TN

P-Fri-B-35

Micropatterned Thermo-Responsive Surfaces for Modulating Cellular Morphology and Cell Detachment

H. HE¹, F. WANG¹, X. WANG¹, AND L. J. LEE¹

¹The 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. JANG¹, V. GIRIDHARAN¹, S. YE², T. A. BARRIO¹, B. COLLINS¹, J. SANKAR¹, AND Y. YUN¹

¹North Carolina Agricultural & Technical State University, Greensboro, NC, ²University of Pittsburgh, Pittsburgh, PA

P-Fri-B-37

Buckling and Strain-Stiffening in Insect Respiratory Tissue

M. R. WEBSTER¹ AND R. DE VITA¹

¹Virginia Polytechnic Institute and State University, Blacksburg, VA

P-Fri-B-38

Nanotextured Biomaterials for Stem Cell Interfacing

W. SUH¹ AND M. TIRRELL²

¹University of California, Berkeley, Berkeley, CA, ²University 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. CHU², AND J. ONG¹

¹University of Texas at San Antonio, San Antonio, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-B-40**Inhibition of Collagen Gel Contraction by Fibroblasts using Carbon Nanotubes**E. WAILES^{1,2} AND N. LEVI-POLYACHENKO^{1,2}¹Wake Forest University Health Sciences, Winston Salem, NC, ²Virginia 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. PASCHALIS¹, J. CHODOSH¹, I. GIPSON², AND C. DOHLMAN¹¹Massachusetts Eye and Ear Infirmary - Harvard Medical School, Boston, MA, ²Schepens Eye Research Institute - Harvard Medical School, Boston, MA**P-Fri-B-42****Novel Three Dimensional Silicon Nanofibrous Matrix Fabricated by Ultrafast Laser Synthesis**P. PREMNATH¹¹Ryerson 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. SAMBERG¹, P. MENTE¹, T. HE², M. W. KING^{2,3}, AND N. A. MONTEIRO-RIVIERE¹¹The University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC, ²North Carolina State University, Raleigh, NC, ³Donghua University, Shanghai, China, People's Republic of**P-Fri-B-44****Development of PLGA Magnetic Nanoparticles for Inhalational Drug Delivery**J. U. MENON¹, P. RAVIKUMAR², H. HOMAYONI¹, O. TOGAO², M. TAKAHASHI², K. T. NGUYEN¹, O. W. MOE², AND C. C. HSIA²¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**P-Fri-B-45****Screening of Nanoparticles for Inhalational Drug Delivery**J. U. MENON¹, A. PISE¹, P. RAVIKUMAR², K. T. NGUYEN¹, O. W. MOE², AND C. C. HSIA²¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**P-Fri-B-46*****In Vitro* Biocompatibility of Mg-based Cardiovascular Implants**N. WATSON¹, Z. XU¹, J. WATERMAN¹, J. SANKAR¹, AND D. ZHU¹¹North 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-BYRD¹, B. COLLINS¹, Y. JANG¹, W. WILLIS¹, A. HOOKS¹, J. SANKAR¹, AND Y. YUN¹¹North 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. OWUOR¹, Y. JANG¹, J. WATERMAN¹, B. COLLINS¹, D. CONKLIN¹, J. SANKAR¹, AND Y. YUN¹¹North 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. LEE¹, W. REEDER¹, J. LAU¹, T. REED¹, AND L. TEMESVARI¹¹Clemson University, Clemson, SC**P-Fri-B-50****Enhancing Target Drug Delivery with Ellipsoidal Polyspartamide Polymersome**M-H. LAI¹, J. JEONG¹, R. J. DEVOLDER¹, C. BROCKMAN¹, C. SCHROEDER¹, AND H. KONG¹¹University of Illinois, Urbana-Champaign, Urbana, IL**P-Fri-B-51****Heteromultivalent Ligand Modification to Enhance Specific Bioactivity of Nanomedicine Platforms**C. MODERY¹, M. RAVIKUMAR¹, T. WONG¹, M. DZURICKY¹, M. LIVINGSTON¹, AND A. SEN GUPTA¹¹Case 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. WADAJKAR¹, J. U. MENON¹, K. KANGASNIEMI², T. DOBIN², L. GANDEE², M. TAKAHASHI², J-T. HSIEH², K. T. NGUYEN¹, AND J. U. MENON¹¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**P-Fri-B-53****Evaluation of Rod-Shape Carriers for Imaging and Drug Delivery in Atherosclerosis**K. NAMDEE¹, A. J. THOMPSON¹, AND O. ENIOLA-ADEFESO²¹University of Michigan, Ann Arbor, MI, ²University 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. LI¹, S. JIANG¹, AND T. L. LOWE¹¹University 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. PAPADEMETRIOU¹, C. GARNACHO², D. SERRANO³, T. BHOWMICK², E. SCHUCHMAN⁴, AND S. MURO^{1,2}¹Fischell Bioengineering University of Maryland-College Park, College Park, MD, ²Institute for Bioscience and Biotechnology Research, College Park, MD, ³MOCB, University of Maryland-College Park, College Park, MD, ⁴Mount Sinai School of Medicine, New York, NY**P-Fri-B-56****DDR1 as a Drug Target-Pilot Study**E. TSUNG¹, D. KALLILE¹, M. YANG¹, J. TONNIGES², K. LAGREE², S. M. MACDONNELL³, AND G. AGARWAL^{1,2}¹The Ohio State University College of Medicine, Columbus, OH, ²The Ohio State University, Columbus, OH, ³Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT

Track: Biomaterials**Translation of Novel Biomaterials to the Clinic****P-Fri-B-57**

Preventing Biofilm Formation on Paper Towels using Nanostructured Selenium

Q. WANG¹ AND T. WEBSTER¹¹Brown 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. SEETO¹ AND E. A. LIPKE²¹Auburn University, Auburn University, AL, ²Auburn University, Auburn, AL**P-Fri-B-59**

Determining Blastocyst Implantation Mechanics With Tissue Engineered 'Trophospheres'

R. W. YUHA¹, M. JOST², N. M. ROBERTSON², AND M. S. MARCOLONGO¹¹Drexel University, Philadelphia, PA, ²Drexel University College of Medicine, Philadelphia, PA**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. BAO², AND W. A. LAM^{1,2}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA**P-Fri-B-61**

Dynamics of Neutrophil Cytoskeleton in Transmigration

H. N. HAYENGA¹, H. ARANDA-ESPINOZA¹, AND K. M. STROKA²¹University of Maryland, College Park, MD, ²Johns Hopkins University, Baltimore, MD**P-Fri-B-62**

Inflammatory Monocyte Activation and Adhesion in Coronary Artery Disease

G. A. FOSTER¹, R. M. GOWER¹, C. E. RADECKE¹, E. J. ARMSTRONG¹, AND S. I. SIMON¹¹University of California Davis, Davis, CA**P-Fri-B-63**

Neutrophil Membrane and Microvillus Deformability in Rolling

A. C. SZATMARY¹ AND C. D. EGGLETON¹¹University 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. LAMBERTI¹, Y. TANG¹, B. PRABHAKARPANDIAN², K. PANT², M. F. KIANI¹, AND B. WANG³¹Temple University, Philadelphia, PA, ²CFD Research Corporation, Huntsville, AL, ³Widener University, Philadelphia, PA**P-Fri-B-65**Amyloid- β peptide on Membrane Mechanical Dynamics in Cerebral Endothelial CellsJ. C-M. LEE¹ AND S. ASKAROVA¹¹University 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. JHAVERI², G. LAMBERTI², B. P. PANDIAN³, K. PANT³, AND M. F. KIANI^{1,2}¹Temple University School of Medicine, Philadelphia, PA, ²Temple University College of Engineering, Philadelphia, PA, ³CFD Research Corporation, Huntsville, AL**P-Fri-B-67**

Epinephrine Modulates Sick Cell Disease Erythrocyte Adhesion via ICAM-4 Receptor Overexpression

J. MACIASZEK¹ AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT**P-Fri-B-68**

On the Metastasis Like Phenotype of HCT-8 Cells on E-cadherin Coated Soft Substrates

M. ALI¹ AND T. A. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Fri-B-69**

Cooperative Effect of Oxidized LDL and Histamine on Monocyte-Endothelium Interactions

C. CHEN¹ AND D. KHISMATULLIN¹¹Tulane University, New Orleans, LA**P-Fri-B-70**

E-selectin Ligand Expression on Breast Cancer Cells Varies with Mesenchymal or Epithelial Phenotype

V. S. SHIRURE¹, L. F. DELGADILLO¹, T. LIU¹, C. M. CUCKLER¹, G. E. CARLSON¹, F. BENENCIA¹, D. J. GOETZ¹, AND M. M. BURDICK¹¹Ohio University, Athens, OH**P-Fri-B-71**

Determination of the Kinetic Parameters of Dissociation From Multiple Bond Force Spectroscopy

V. K. GUPTA¹ AND C. D. EGGLETON¹¹University of Maryland Baltimore County, Baltimore, MD**P-Fri-B-72**

Magnetically Controlled Self-assembly of Cells

L. M. GONZALEZ¹, P. R. LEDUC¹, AND W. C. MESSNER¹¹Carnegie 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. GRIMME¹, L-J. LIN², D. CROPEK¹, AND Y. WANG²¹U.S. Army Engineer Research and Development Center- Construction Engineering Research Laboratory, Champaign, IL, ²University 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. CHEN¹ AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-B-75**

Migratory Tendencies of Cells Attached to Suspended Nanofibers in Specific Shapes

K. SHEETS¹ AND A. NAIN¹¹Virginia Tech, Blacksburg, VA**P-Fri-B-76**

Bio-sensing Device for Single Cell Nano-toxicity Analysis

P. SHAH¹ AND C. LI¹¹Florida International University, Miami, FL**P-Fri-B-77**

New Focal Adhesion Kinase Binding Sites Play Significant Role in Integrin Activation

H. HUANG¹, M. MEHRBOD¹, AND M. R. MOFRAD¹¹University of California Berkeley, Berkeley, CAP = 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. TAGHIAN¹, A. SHEIKH¹, D. NARMONEVA¹, AND A. KOGAN¹¹University of Cincinnati, Cincinnati, OH**P-Fri-B-79****Measurement and Modeling of Surface Distribution of Neutrophil Receptors upon Cell Spreading**R. E. WAUGH¹, G. MARSH¹, T. KHIRE¹, E. LOMAKINA¹, AND J. MCGRATH¹¹University of Rochester, Rochester, NY**P-Fri-B-80****Intracellular Ice Nucleation Protein Reduces Cryogenic Injury in Eukaryotic Cells**A. M. HARDER¹, M. TONER², N. CHAKRABORTY^{1,2}, AND M. A. MENZE¹¹Eastern Illinois University, Charleston, IL, ²Center 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. CHO¹, W. E. SONNTAG², AND Y. W. LEE^{1,3}¹Virginia Tech, Blacksburg, VA, ²University of Oklahoma Health Sciences Center, Oklahoma City, OK, ³Virginia Tech, Blacksburg**P-Fri-B-82****Autophagy in Vascular Endothelial Cells Exposed to Hypoxia/Reoxygenation**S. ZHAO¹, D. M. NAIR¹, R. J. GIEDIT¹, AND B. R. ALEVRIADOU¹¹Dept. 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. GOUGET¹, Y. HWANG¹, AND A. I. BARAKAT^{1,2}¹Ecole Polytechnique, Palaiseau, France, ²University of California, Davis, CA**P-Fri-B-84****Deglycosylation Increases Ligand Binding Affinity of Fcγ Receptor III**P. JOTHIKUMAR¹, R. SHASHIDHARAMURTHY², P. SELVARAJ², AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-B-85****Engineering a Quantitative Erythropoietin Cell Model with Fluorescent Hemoglobins to Optimize Sickle Cell Gene Therapy Strategies**D. W. CLOUGH¹, I. AKINSANMI¹, G. A. BARABINO¹, AND M. O. PLATT¹¹Georgia Institute of Technology and Emory University, Atlanta, GA**P-Fri-B-86****Rational Design of Vitrification Procedures for Cryopreservation of Adherent Cell Monolayers**A. FRY¹, A. Z. HIGGINS¹, AND R. LUSIANTI¹¹Oregon 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. AGUILAR¹, S. B. TRIPPEL², AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY, ²Indiana University School of Medicine, Indianapolis, IN**P-Fri-B-88****Generation of Muscle Using Synthetic Biology**V. GRUBISIC¹, M. K. GOTTIPATI¹, R. F. STOUT JR.¹, R. J. GRAMMER¹, AND V. PAPPAS¹¹University of Alabama, Birmingham, Birmingham, AL**P-Fri-B-89****Investigating the Dielectrophoretic Properties of Human Primary Prostate Cancer Cells**A. SALMANZADEH¹, M. BONAKDAR¹, M. B. SANO¹, L. ROMERO², M. A. STREMLER¹, S. D. CRAMER², AND R. V. DAVALOS¹¹Virginia Tech, Blacksburg, VA, ²University 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. JOHNSON¹, T. S. KHIRE¹, AND J. L. MCGRATH¹¹University of Rochester, Rochester, NY**P-Fri-B-91****Opto-thermal Microfluidics Towards Solar-powered Diagnostics**L. JIANG¹, M. MANCUSO¹, AND D. ERICKSON¹¹Cornell University, Ithaca, NY**P-Fri-B-92****Numerical Simulation of Red Blood Cell Motion in Six-Stage Cascade Paramagnetic Mode Magnetophoretic Separation Systems**S. KIM¹ AND D. P. GIDDENS¹¹Georgia Tech and Emory University, Atlanta, GA**P-Fri-B-93****Droplet Sorting by the Number of Encapsulated Particles with a Monostable Microfluidic Diverter**Z. CAO¹, F. CHEN², N. BAO³, H. HE⁴, P. XU⁴, S. JANA¹, S. JUNG¹, AND C. LU¹¹Virginia Tech, Blacksburg, VA, ²Nanjing University, Nanjing, China, People's Republic of, ³Nantong University, Nantong, China, People's Republic of, ⁴University of South Carolina, Columbia, SC**P-Fri-B-94****Microfluidic Cells Sorting Via Surface Acoustic Wave Based Acoustophoresis**X. DING¹, C. CHAN¹, M. I. LAPSLEY¹, AND T. HUANG¹¹The Pennsylvania State University, State college, PA**P-Fri-B-95****Paper-Microfluidic pH Gradients for Protein Analysis**C. A. HOLSTEIN¹, K. A. KENISTON¹, AND P. YAGER¹¹University of Washington, Seattle, WA**P-Fri-B-96****Non-dimensional Analysis of Retinal Microaneurysms: Critical Threshold for Treatment**E. EZRA¹, E. KEINAN¹, Y. MANDEL¹, M. E. BOULTON², AND Y. NAHMIA¹¹The Hebrew University, Jerusalem, Israel, ²University of Florida, Lake City, FL**P-Fri-B-97****Using Microfluidic Devices to Study Diseases of the Eye**E. VARGIS¹, N. MORTENSEN¹, C. FOSTER¹, S. RETTERER¹, AND P. COLLIER¹¹Oak Ridge National Laboratory, Oak Ridge, TN**P-Fri-B-98****Investigating Diffusion and Viscosity Using Optofluidics**M. I. LAPSLEY¹, N. NAMA¹, S. YAZDI¹, P-H. HUANG¹, AND T. J. HUANG¹¹The Pennsylvania State University, University Park, PA

P-Fri-B-99**Gravity Induced Archimedean Spiral in Density Mismatched Multistream flow**C. ZHAO¹ AND X. CHENG¹¹Lehigh University, Bethlehem, PA**P-Fri-B-100****A Selectively Permeable Microenvironment for Integrative Biology Via Microfluidics-assisted Double Emulsion**Y. ZHANG¹, Y-P. HO¹, T. SCHUHMAN¹, B. CHLEBINA¹, L. YOU¹, AND K. W. LEONG¹¹Duke University, Durham, NC**P-Fri-B-101****Controlling Fluid Cross-sectional Shape by Programs of Pillars**H. AMINI^{1,2}, M. MASAEI^{1,2}, E. SOLLIER^{1,2}, Y. XIE³, B. GANAPATHYSUBRAMANIAN³, H. A. STONE⁴, AND D. DI CARLO^{1,2}¹University of California, Los Angeles, Los Angeles, CA, ²California NanoSystems Institute (CNSI), Los Angeles, CA, ³Iowa State University, Ames, IA, ⁴Princeton University, Princeton, NJ**P-Fri-B-102****An Optofluidic Interferometer Capable of Measuring Minute Bubble Oscillations**M. I. LAPSLEY¹, D. AHMED¹, C. CHINDAM¹, F. GUO¹, AND T. J. HUANG¹¹The Pennsylvania State University, University Park, PA**P-Fri-B-103****Continuous Particles Separation Via Surface Acoustic Wave Based Acoustophoresis**X. DING¹, S. LI¹, C. CHAN¹, AND T. HUANG¹¹The Pennsylvania State University, State college, PA**P-Fri-B-104****Optical Switch Using Acoustically Driven Microbubbles**P-H. HUANG¹, M. I. LAPSLEY¹, D. AHMED¹, AND T. J. HUANG¹¹The Pennsylvania State University, State College, PA**P-Fri-B-105****Deriving 2D Velocity Profile Using Streamlines Image Velocimetry (SIV)**E. KEINAN¹, E. EZRA¹, AND Y. NAHMIA¹¹The Hebrew University, Jerusalem, Israel**P-Fri-B-106****On-chip Standing Surface Acoustic Waves (SSAW) - based Droplet Sorter**S. LI¹, X. DING¹, F. GUO¹, Y. CHEN¹, M. I. LAPSLEY¹, AND T. J. HUANG¹¹The Pennsylvania State University, University Park, PA**P-Fri-B-107****Shear-free Microfluidic System for the Chemotaxis and Labeling of Cells**H. H. CHUNG¹, C. K. CHAN^{1,2}, T. S. KHIRE¹, N. NATARAJ², T. R. GABORSKI², R. E. WAUGH¹, AND J. L. MCGRATH¹¹University of Rochester, Rochester, NY, ²SiMPore Inc., West Henrietta, NY**P-Fri-B-108****A Microfluidic Device for the Automated Delivery of Chemicals to Brain Slices and Other Tissues**E. SINKALA¹ AND D. T. EDDINGTON¹¹University of Illinois at Chicago, Chicago, IL**P-Fri-B-109****Magnetic Cell Separation by Inkjet Printing for Disease Monitoring**S. L. NATIVIDAD¹, M. AREVALO², J. RINCON¹, M. YANEZ¹, M. ZENG², AND T. BOLAND¹¹The University of Texas at El Paso, El Paso, TX, ²Texas 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 KHONDABI¹, H. J. MULHALL¹, H. O. FATOYINBO¹, M. P. HUGHES¹, AND F. H. LABEED¹¹University 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. COTTLE², R. G. MANNINO², H. KIM², G. BAO^{1,2}, AND W. A. LAM^{1,2}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**P-Fri-B-112****Fabrication of Silk Fibroin Microspheres Using a Microfluidic Flow-Focusing Device**A. N. MITROPOULOS¹, G. PEROTTO¹, D. KAPLAN¹, AND F. OMENETTO¹¹Tufts 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. CHEN¹, A. H. DHANALIWALA^{1,2}, S. WANG¹, AND J. A. HOSSACK^{1,2}¹University of Virginia, Charlottesville, VA, ²R.M. Berne Cardiovascular Research Center, Charlottesville, VA**P-Fri-B-114****Lateral Dielectrophoretic Deflection Using Liquid Vertical Electrodes**J. LUO¹, E. NELSON¹, G-P. LI¹, AND M. BACHMAN¹¹University 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. KIM¹, H. LEE¹, P. MUGNO², M. HILLIARD², AND H. LU¹¹Georgia Institute of Technology, Atlanta, GA, ²The University of Queensland, Brisbane, Australia**P-Fri-B-116****Nanocomposites Synthesis by Three-Dimensional (3D) Hydrodynamic Focusing**M. LU¹, Q. HAO¹, A. A. NAWAZ¹, AND T. J. HUANG¹¹Pennsylvania State University, University Park, PA**P-Fri-B-117****Separation of Cells by Stiffness Using Microfluidic Technology**G. WANG¹, W. MAO¹, C. HENEGAR¹, A. ALEXEEV¹, AND T. SULCHEK¹¹Georgia Tech, Atlanta, GA**P-Fri-B-118****Self-Assembly and Characterization of Microfluidic Channels Made with Phase-Separation Approach**W. T. KAHSAI¹ AND S. M. IQBAL¹¹University of Texas Arlington, Arlington, TX**P-Fri-B-119****Alginate Microgel Encapsulation of Microbes Using a 3D Microfluidic Droplet Generator**M. LIAN¹, C. P. COLLIER¹, M. J. DOKTYCZ¹, AND S. T. RETTERER¹¹Oak Ridge National Laboratory, Oak Ridge, TN**P-Fri-B-120****Characterization of Enzyme Reaction Constant Via Acoustic Bubble Mixer**Y. XIE¹, D. AHMED¹, M. I. LAPSLEY¹, S-C. S. LIN¹, A. A. NAWAZ¹, AND T. J. HUANG¹¹Pennsylvania State University, State College, PA**P-Fri-B-121****Progress in Microfluidic Digital Logic Towards an Autonomous Microcontroller**P. N. DUNCAN¹, T. V. NGUYEN¹, S. AHRAR¹, AND E. E. HUI¹¹University of California, Irvine, Irvine, CA**P-Fri-B-122****Microfluidic Nuclei Extraction from Circulating Tumor Cells for Genetic Analyses**E. PRATT¹, M. BLATTNER², A. STEPANSKY³, H. LIU², N. BANDER², J. HICKS³, M. RUBIN², AND B. KIRBY¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York City, NY, ³Cold Spring Harbor, Cold Spring Harbor, NYP = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-B-123**Chemical Waveform and Switch Using Acoustically Activated Bubbles**D. AHMED¹, H. S. MUDDANA¹, M. LU¹, B. KIRALY¹, A. MANZ², S. J. BENKOVIC¹, AND T. J. HUANG¹¹Penn State University, University Park, PA, ²Korea Institute of Science and Technology (KIST), Saarbruecken, Germany**P-Fri-B-124****Pulsatile and High Precision Chemical Interface for Studying Cellular Dynamics**D. AHMED¹, C. CHAN¹, S. YAZDI¹, AND T. J. HUANG¹¹The Pennsylvania State University, University Park, PA**P-Fri-B-125****Passive Microfluidic Technique For Rotational Orientation of *C. elegans***M. ZHAN¹ AND H. LU¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-B-126****A PEG-DA Microfluidic Device for Cellular Chemotaxis Studies**A. TRAORE¹ AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**P-Fri-B-127****A Multi-Orientation Mmicrofluidic Device for Imaging of *C. elegans***M. CASAS¹, J. STIRMAN¹, M. ZHAN¹, AND H. LU¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-B-128****Self-assembling Microfluidics for 3D Chemical Delivery**M. JAMAL¹, Y. KALININ², A. ZARAFSHAR², L. ROMER², AND D. GRACIAS²¹Johns Hopkins University, Baltimore, ²Johns Hopkins University, Baltimore, MD**P-Fri-B-129****Patternable, High Surface Area Electrodes for Integrated Microfluidic Systems**J. D. PEGAN¹, M. BACHMAN¹, AND M. KHINE¹¹University 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. PARK¹ AND J-S. YEO¹¹Yonsei 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. MCCONNELL¹, S. FERRATI¹, AND R. E. SERDA¹¹The 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. RASHKOW¹, Y. TALUKDAR¹, G. LALWANI¹, H. LIU¹, I. COHEN¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Fri-B-134****Ivy Nanoparticle, Suitable Candidate to Be Applied in Sunscreen Products**Y. HUANG¹, S. C. LENAGHAN¹, L. XIA¹, AND M. ZHANG¹¹University 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. GOTTIPATI¹, E. BEKYAROVA², R. HADDON², AND V. PAPPAS¹¹University of Alabama, Birmingham, AL, ²University 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. PARODI¹, M. V. FRAZIER^{1,3}, M. G. KOLONIN², M. FERRARI¹, AND E. TASCIOTTI¹¹The Methodist Hospital Research Institute, Houston, TX, ²The University of Texas Health Science Center, Houston, TX, ³University of Houston, Houston, TX**P-Fri-B-137****Protein Corona Composition and Role in the Toxicity of Silica Nanoparticles**N. P. MORTENSEN¹, G. B. HURST¹, W. WANG¹, C. M. FOSTER¹, P. D. NALLAMTHAMBY², AND S. T. RETTERER¹¹Oak Ridge National Laboratory, Oak Ridge, TN, ²Battelle Memorial Institute, Columbus, OH**P-Fri-B-138****Recovery of Cell Functions After the Disruption of the Endo-lysosomal Compartment**A. PARODI¹, S. Z. KHALED¹, B. S. BROWN¹, L. ISENHEART¹, AND E. TASCIOTTI¹¹The Methodist Hospital Research Institute, Houston, TX**P-Fri-B-139****Testing the Toxicity of Nanoparticles with Micro Cell Culture Analogs**M. B. ESCH¹ AND M. SHULER¹¹Cornell University, Ithaca, NY**P-Fri-B-140****In Silico Simulation of Carbon Nanotube and Pulmonary Surfactant Protein Binding**B. V. DHARMADHIKARI¹, L. V. HMURCIK¹, P. K. PATRA¹, N. A. MOHAMMED¹, AND D. GONDI¹¹University of Bridgeport, Bridgeport, CT**Track: Neural Engineering****Neural Electrode Tissue Interface****P-Fri-B-141****Neural Toxicity and Adhesion Strength on Layer-by-Layer Carbon Nanotube Depositions**E. FRANCA¹, E. KEEFER², L. PAN¹, S. ALAGAPAN¹, AND B. WHEELER¹¹University of Florida, Gainesville, FL, ²Plexon, Inc., Dallas, TX**P-Fri-B-142****Fabrication of a Neural Electrode with Gold Nanograin Structures Using Electrochemical Deposition**R. KIM¹ AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**P-Fri-B-143****Conducting Polymer Electrodes for Human Electrophysiological Recordings**P. LELEUX^{1,2}, C. BENAR², J-M. BADIÉ², T. HERVÉ³, P. CHAUVEL², AND G. G. MALLIARAS¹¹Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan, ²Université de la Méditerranée, Marseille Cedex 09, France, Metropolitan, ³Microvitae Technologies, Gardanne, France, Metropolitan**P-Fri-B-144****Assessing the State of the Blood-Brain Barrier in Rats Implanted with Cortical Electrodes**T. SAXENA¹, L. KARUMBIAH¹, E. GAUPP¹, R. PATKAR¹, M. BETANCUR¹, AND R. BELLAMKONDA¹¹Georgia Institute of Technology, Atlanta, GA

P-Fri-B-145**Biodissolvable Delivery Vehicle for Ultra-Small, Ultra-Compliant, Ultra-Structured Neural Probes**T. D. KOZAI¹, P. J. GILGUNN², R. KHLIWANI², X. LI³, O. OZDOGANLAR², G. K. FEDDER², D. J. WEBER³, AND X. CUI³¹University of Pittsburgh, Pittsburgh, PA, ²Carnegie Mellon University, Pittsburgh, PA, ³University of Pittsburgh, Pittsburgh, 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. ZHANG¹, C. A. NIX¹, J. A. GERSTENHABER¹, AND Y. ZHONG¹¹Drexel University, Philadelphia, PA**P-Fri-B-147****In vivo Imaging of the Intracortical Microelectrode Interface Through a Thinned-Skull Window**A. J. WOOLLEY¹, H. A. DESAI¹, AND K. J. OTTO¹¹Purdue University, West Lafayette, IN**P-Fri-B-148****A Novel Device for Securing Chronic Cortically Implanted Microelectrode Arrays in Rats**N. F. NOLTA¹, J. L. SKOUSEN¹, M. B. CHRISTENSEN¹, S. A. HUDSON¹, R. S. OAKES¹, AND P. A. TRESKO¹¹University 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. SUGG¹, M. G. URBANCHEK¹, Y. BABA², E. K. KIM³, E. A. LUMPKIN², G. J. GERLING³, P. S. CEDERNA¹, AND N. B. LANGHALS¹¹University of Michigan, Ann Arbor, MI, ²Columbia University College of Physicians & Surgeons, New York, NY, ³University 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. ALBA¹, K. A. CATT¹, Z. DU¹, T. D. KOZAI¹, AND X. T. CUI¹¹University of Pittsburgh, Pittsburgh, PA**Track: Neural Engineering****Neural Engineering Technology****P-Fri-B-151****Recording of Rabbit Sciatic Nerve Activity Using Interfascicular Electrodes**I. KOLB¹ AND D. J. TYLER¹¹Case Western Reserve University, Cleveland, OH**P-Fri-B-152****Artifact Selection in EEG Using Spatial Distribution of Signal Energy**A. M. SKUPCH¹, M. HARTMANN¹, H. PERKO¹, F. FÜRBASS¹, G. GRITSCH¹, T. KLUGE¹, AND C. BAUMGARTNER²¹AIT, Vienna, Austria, ²General Hospital Hietzing, Vienna, Austria**P-Fri-B-153****Development of Real-time Feedback System for the Study of Neural Plasticity**S. JOO¹, S. LEE¹, AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**P-Fri-B-154****A Novel High-Contact Deep Brain Stimulating Electrode for Charge Steering**A. WILLSIE¹ AND A. D. DORVAL¹¹University 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. POWELL¹, M-F. FONG^{1,2}, AND S. M. POTTER¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-B-156****Determination of Electrode Current in Microwave Powered Neurostimulators**B. TOWE¹ AND D. GULICK¹¹Arizona 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. MAO¹, B. JIANG^{1,2}, V. GENTHIKATTI¹, AND K. YANG¹¹Wayne State University, Detroit, MI, ²Hunan University, Changsha, China, People's Republic of**P-Fri-B-158****Neurochemical Changes in Motor Cortex, Cerebellum and Brain Stem Following Overpressure Exposure**S. SAJJA¹, F. GHODDOUSSI², M. GALLOWAY², AND P. VANDEVORD^{1,3}¹Virginia Polytechnic and State University, Blacksburg, VA, ²Wayne State University, Detroit, MI, ³Veteran's Administration Medical Center, Salem, VA**P-Fri-B-159****Intracranial Pressures in Mice Subject to Shockwaves**Y. CHEN¹, D. M. GULLOTTI¹, AND D. F. MEANEY¹¹University of Pennsylvania, Philadelphia, PA**P-Fri-B-160****A Model of Blast Induced Traumatic Brain Injury in Mice**D. GULLOTTI¹, Y. CHEN¹, T. PATEL¹, T. MERDIUSHEV¹, N. JAUMARD¹, B. WINKELSTIEN¹, B. MORRISON², D. BASS³, M. PANZER³, AND D. MEANEY¹¹University of Pennsylvania, Philadelphia, PA, ²Columbia University, New York, NY, ³Duke 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}¹Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Wake 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. CHENNURI¹, K. KRICK², L. RAJBHANDARI², R. SIDDIQUE², S. HOSMANE², A. FOURNIER¹, I. YANG², A. VENKATESAN², H-Q. MAO¹, AND N. THAKOR²¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins University School of Medicine, Baltimore, MD**P-Fri-B-163****Blast Wave Effects on Neural Cell Cultures**R. MCCULLOCH¹, A. BAGCHI¹, K. SIMMONDS², AND T. O'SHAUGHNESSY¹¹U.S. Naval Research Laboratory, Washington, DC, ²Science Applications International Corporation, Washington, DC**P-Fri-B-164****Novel Simulation-Based Analysis of the Biomechanics of Blast-Related Traumatic Brain Injury**R. PRABHU¹, M. F. HORSTEMEYER², Y. MAO², E. B. MARIN², L. N. WILLIAMS¹, AND J. LIAO¹¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MSP = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-B-165**Investigation of Traumatic Brain Injury Mechanisms with Magnetic Resonance Spectroscopy and Immunohistochemistry**E. M. FIEVISOHN¹, B. M. VAUGHN¹, AND W. N. HARDY¹¹Virginia 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. HAMPTON¹, B. A. MATHIE², AND P. J. VANDEVORD¹¹Virginia Tech, Blacksburg, VA, ²Wayne 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}¹Case Western Reserve University, Cleveland, OH, ²L. Stokes Cleveland VA Medical Center, Cleveland, OH**P-Fri-B-168****Head Impact Exposure in Youth Football**R. W. DANIEL III¹, S. ROWSON¹, AND S. M. DUMA¹¹Virginia 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. SKELTON¹, X. JIN¹, AND K. YANG¹¹Wayne State University, Detroit, MI**P-Fri-B-170****Molecular Response of Peripheral Nerve to Chronic Electrode Implants**T. MUSA¹, M. ROMERO-ORTEGA², AND E. KEEFER¹¹Plexon Inc, Dallas, TX, ²University of Texas at Arlington, Arlington, TX**P-Fri-B-171****Balance Impairment After Closed Head Mild Traumatic Brain Injury in the Rat**P. KWON¹, M. PARK², AND M. LAPLACA²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**P-Fri-B-172****Mechanical Injury-Induced Neuroinflammation in a 3-D Neural Cell Culture Model**J. T. SHOEMAKER^{1,2}, S. SELVAM¹, A. J. GARCIA¹, AND M. C. LAPLACA^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-B-173****The Effect of High Frequency AC Electrical Stimulation on Neurite Growth**P. J. KUMAR¹, E. D. ENGBERG¹, AND R. K. WILLITS¹¹The University of Akron, Akron, OH**P-Fri-B-174****3-Dimensional Characterization of Axon Tortuosity in White Matter**S. SINGH¹, V. PATEL¹, D. I. SHREIBER¹, AND A. PELEGRI¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**P-Fri-B-175****Predicting Brain Injury: The Combined Probability of Concussion**S. ROWSON¹ AND S. M. DUMA¹¹Virginia 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. CHAN¹, M. COLLENS¹, T. SAIF¹, H. KONG¹, AND R. BASHIR¹¹University 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. WEN¹, N. G. GIANNOUKAKIS³, AND E. S. GAWALT^{1,4}¹Duquesne University, Pittsburgh, PA, ²CMU Molecular Biosensor and Imaging Center, Pittsburgh, PA, ³University of Pittsburgh, Pittsburgh, PA, ⁴McGowan Institute of Regenerative Medicine, Pittsburgh, PA**P-Fri-B-178****Optical Manipulation of T-lymphocyte Activation**H. CHEN¹, K. BASHOUR¹, M. HUSE², AND L. KAM¹¹Columbia University, NEW YORK, NY, ²Memorial Sloan-Kettering Cancer Center, New York, NY**P-Fri-B-179****Microfluidic Devices for Investigation of Rare T cell Population**J.-H. LEE¹ AND L. C. KAM¹¹Columbia University, New York, NY**P-Fri-B-180****Engineering Therapeutic Proteins for Immune Modulation**T. F. CHEN¹, K. LI¹, AND K. D. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Fri-B-181****Topography and Nuclei of Endothelial Cells Guided Intraluminal Crawling Direction of T Cells under Flow**K. SONG¹, K. KWON², K.-Y. SUH³, AND J. DOH¹¹POSTECH, Pohang-si, Korea, Republic of, ²Cornell University, Ithaca, NY, ³Seoul National University, Seoul, Korea, Republic of**P-Fri-B-182****Nanotopography-guided Migration of T Cells**K. KWON¹, H.-J. PARK², K.-Y. SUH³, AND J. DOH²¹Seoul National University, Seoul, Korea, Republic of, ²POSTECH, Pohang, Korea, Republic of**P-Fri-B-183****Oxidation of Protein Tyrosine Phosphatases in T Cell Receptor Signaling**M. A. PHILLIPS¹ AND M. L. KEMP^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-B-184****Pharmacological Manipulation of Human T-cell Expansion**G. K. HICKEY¹, R. O'CONNOR², M. C. MILONE², AND L. C. KAM¹¹Columbia University, New York, NY, ²University of Pennsylvania, Philadelphia, PA

P-Fri-B-185**Photoactivation of Micropatterned Antibodies**D. DUTTA¹, M. AKEJU¹, AND L. KAM¹¹Columbia 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. GUPTA¹, K. L. MATTA^{2,3}, W. F. VANN⁴, AND S. NEELAMEGHAM¹¹Chemical and Biological Engineering, State University of New York, Buffalo, NY, ²TumorEnd, LLC, Louisiana Emerging Technology Center, Baton Rouge, LA, ³Dept. of Biological Sciences, Louisiana State University, Baton Rouge, LA, ⁴Laboratory of Bacterial Polysaccharides, DBPAP, OVR, CBER, FDA, Bethesda, MD**P-Fri-B-187****Fc Functionalized Microparticles for Macrophage and Complement System Modulation**P. M. PACHECO¹, D. WHITE², AND T. SULCHEK¹¹Georgia Institute of Technology, Atlanta, GA, ²Centers 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. PARK¹ AND J. D. BRYERS¹¹University 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. PRADHAN¹, J. LELEUX¹, E. DAWSON¹, I. SAKAMAKI², H. QIN², L. W. KWAK², AND K. ROY¹¹University of Texas at Austin, Austin, TX, ²UT MD Anderson Cancer Center, Houston, TX**P-Fri-B-190****Directed Evolution of a Scaffold Protein for Targeted Delivery of Antigens**L. XIAO¹, K-C. HUNG², R. ROBERTS³, AND P. WANG²¹University of Southern California, Los Angeles, CA, ²University of Southern California, LOS ANGELES, CA, ³University 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. ZIMAK¹, R. M. SCHWELLER¹, D. Y. DUOSE¹, W. M. HITTELMAN², AND M. R. DIEHL¹¹Rice University, Houston, TX, ²MD 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. ACHARYA¹, X. FENG¹, K. KUNDU², B. KLINE¹, S. MILLER³, D. PORTNOY¹, J. RENGARAJAN⁴, AND N. MURTHY¹¹University of California, Berkeley, CA, ²Li-Cor Biosciences, Lincoln, NE, ³University of California, San Francisco, CA, ⁴Emory 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. SHEN¹, P. SPEARMAN², AND G. BAO¹¹Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, ²Department 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. COTTLE¹, G. BAO¹, AND J. HEPLER²¹Georgia Tech, Atlanta, GA, ²Emory 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. MA¹, W-Y. TSENG¹, M. EDDINGS¹, AND R. M. VAN DAM¹¹University 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. MA¹, I. SAAEM¹, AND J. TIAN¹¹Duke University, Durham, NC**P-Fri-B-197****A Tissue-Engineered Jellyfish with Biomimetic Propulsion and Feeding Currents**J. C. NAWROTH¹, H. LEE², A. W. FEINBERG², C. M. RIPPLINGER², M. L. MCCAIN², A. GROSBERG², J. O. DABIRI¹, AND K. K. PARKER²¹Caltech, Pasadena, CA, ²Harvard University, Cambridge, MA**P-Fri-B-198****Using Noncanonical Amino Acids to Study Cell-cell Interactions: Identifying Secreted Proteins**A. MAHDAVI¹ AND D. A. TIRRELL¹¹Caltech, Pasadena, CA**P-Fri-B-199****Molecular Crowding Shaping of Gene Expression Dynamics**C. TAN¹, S. SAURABH¹, M. P. BRUCHEZ¹, R. S. SCHWARTZ¹, AND P. R. LEDUC¹¹Carnegie Mellon University, Pittsburgh, PA**P-Fri-B-200****Metabolic Channeling in Enzyme Cascades**O. IDAN¹ AND H. HESS¹¹Columbia 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. STEWART¹, N. MITROVIC², N. BELTRAN^{2,3}, M. HAMMES⁴, AND P. DHAR²¹Florida International University, Miami, FL, ²Illinois Institute of Technology, Chicago, IL, ³St. Ignatius College Prep, Chicago, ⁴University of Chicago, Chicago, IL**P-Fri-B-202****Needle Steering via Duty-Cycled Rotation with Different Bevel Angles**A. SUTANTO¹¹Carnegie Mellon University, Pittsburgh, PA**P-Fri-B-203****A Computer-Controlled System to Simulate Heat Stroke *In Vitro***D. W. ZHOU¹, D. C. CLARKE¹, W. INMAN¹, L. R. LEON², AND D. A. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Thermal and Mountain Medicine Division, U.S. Army Research Institute for Environmental Medicine, Natick, MAP = Poster Session
OP = Oral Presentation

P-Fri-B-204**Quantifying the Forces and Position of an Endoscope**J. SHUI¹, K. BIERYLA¹, E. GEIST¹, AND D. DIEHL²¹Bucknell University, Lewisburg, PA, ²Geisinger Health System, Danville, PA**P-Fri-B-205****Integrated Punch Biopsy Kit**N. GANESH KUMAR¹, K. CHENG¹, A. GUDURU¹, S. KWON¹, M. TANIGAWA¹, T. GAIGALAS¹, AND B. ZHANG¹¹Johns Hopkins University, Baltimore, MD**P-Fri-B-206****Quantifying Galpha-I Subunit Protein Beacon Delivery into Live Cells Permeabilized with Streptolysin-O**A. SUNDARARAGHAVAN¹, R. COTTLE², AND G. BAO²¹Georgia Institute of Technology, Alpharetta, GA, ²Georgia Institute of Technology, Atlanta, GA**P-Fri-B-207****Construction of an a Translucent Upper GI Model for Endoscopic Testing**S. TALBOT¹, K. BIERYLA¹, E. GEIST¹, AND D. DIEHL²¹Bucknell University, Lewisburg, PA, ²Geisinger Health System, Danville, PA**P-Fri-B-201****A Complete Methodology for Determining Head Impacts**K. MCNAMARA¹, R. BAR-KOCHBA², L. LITICHEVSKIY¹, C. FRANCK¹, AND J. BLUME¹¹Brown University, Providence, RI, ²University at Buffalo, Buffalo, NY**P-Fri-B-202****Investigating the Microfibrillar Structure of Cellulose from a Macroalgae using High Resolution Imaging**M. MALLESWARAN¹, P. J. O'DELL², AND T. JEOH²¹University of California San Diego, La Jolla, CA, ²University 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. BELOOZEROVA², AND T. J. RIVERS²¹Bucknell University, Lewisburg, PA, ²Barrow 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. PEELER¹ AND S. MATYSIAK¹¹University of Maryland, College Park, MD**P-Fri-B-205****Effect of Curcumin on Glioma Single Cell Force Generation**S. BHATIA¹, P. SHARMA², AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Blacksburg**P-Fri-B-206****Toward a Biophysical Model for the Gilding Motility of Infectious Bacteria Clostridium perfringens**J. MASON¹, S. MELVILLE¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**P-Fri-B-207****Evaluation of Design Gate Methods Applied to Clinical and Industry Sponsors**A. KAISER¹ AND J. D. DESJARDINS²¹Clemson University, Clemson, ²Clemson 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. LENNON¹, D. GREEN², M. E. CHAN², AND C. T. RUBIN²¹Stony Brook University, West Babylon, NY, ²Stony Brook University, Stony Brook, NY**P-Fri-B-209****Vertebral Endplate Subsidence Mapping Under Fatigue Loading**A. VALDEVIT¹, T. ERRICO², AND A. RITTER¹¹The Stevens Institute of Technology, Hoboken, NJ, ²NYU Langone Medical Center, New York, NY**P-Fri-B-210****Preliminary Results for Determining the Duration of Slip Induced Gait Alterations**D. BERINGER¹, M. MADIGAN¹, AND S. MATRANGOLA¹¹Virginia Tech, Blacksburg, VA**P-Fri-B-211****Biomechanical Model of the Knee Joint to Understand the Role of the Anterior Cruciate Ligament**J. M. JASLOVE¹ AND N. A. LANGRANA¹¹Rutgers University, Piscataway, NJ**P-Fri-B-212****Effects of Dynamic Hydraulic Stimulation in a Rat Hind-Limb Disuse Model**M. TEERATANANON¹, M. HU¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**P-Fri-B-213****Finite Element Model Predicting the Initiation of Superior Labrum Anterior-Posterior Lesion**E. HWANG¹, J. CARPENTER¹, AND M. PALMER^{1,2}¹University of Michigan, Ann Arbor, MI, ²Reveal 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. KUSANO¹ AND H. C. GABLER¹¹Virginia Tech, Blacksburg, VA**P-Fri-B-215****Estimate of Endurance Capacity of Biceps Brachii Muscle Using Alternative Spectral Ratio**S. LEE¹ AND K. LEE¹¹Kwandong 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. CAMISA¹, H. PATEL¹, A. ARIANJAM², J. LEASURE¹, AND W. MONTGOMERY³¹The Taylor Collaboration, San Francisco, CA, ²St. Mary's Medical Center, San Francisco, CA, ³San 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. SHERROD¹¹University of Alabama at Birmingham, Birmingham, AL

P-Fri-B-218**Mechanical Performance of Matrix-Assisted Chondrocyte Implantation (MACI) Grafts**D. J. GRIFFIN¹, D. LACHOWSKY¹, E. BONNEVIE¹, J. HART¹, H. SPARKS¹, I. COHEN¹, A. NIXON¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY**P-Fri-B-219****Kinetics of Relaxed and Braced Human Volunteers in Low-Speed Frontal Sled Tests**S. M. BEEMAN¹, A. R. KEMPER¹, M. L. MADIGAN², AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P-Fri-B-220****Mechanical Characterization of an External Fixator For Use in a Mouse Model**J. A. CURREY¹ AND T. ALBANO¹¹Union College, Schenectady, NY**P-Fri-B-221****Age-related Degenerative Morphological Changes in Lumbar Discs: A CT Scan Study in Mid-sagittal Plane**M. HUSSAIN¹, C. DE GEER¹, AND K. P. STORM¹¹Logan University, Chesterfield, MO**P-Fri-B-222****Elasticity of Normal and Degraded Bovine Caudal Intervertebral Discs**G. NIJSURE¹, E. GROWNEY¹, G. ESPINOSA¹, AND J. G. BLEDSOE¹¹Saint Louis University, St Louis, MO**P-Fri-B-223****Characteristics of Child Fatalities in US Motor Vehicle Crashes from 1995-2009**L. M. SANDBERG¹ AND H. C. GABLER¹¹Virginia 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. SANDBERG¹ AND H. C. GABLER¹¹Virginia 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. DANIELLO¹ AND H. C. GABLER¹¹Virginia 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. KEMPER¹, S. M. BEEMAN¹, M. L. MADIGAN², AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P-Fri-B-227****Evaluation of Angular Velocity Data from Inertial Measurement Units for Use in Clinical Settings**C. EX-LUBESKIE¹, R. HUTCHINSON², AND L. BENSON¹¹Clemson University, Clemson, SC, ²Furman University, Greenville, SC**P-Fri-B-228****Design of a New Transducer for Measuring Shear Stresses at the Foot-Shoe Interface**E. C. MACASLAN¹, B. ROUX¹, K. N. LEWIS¹, AND G. A. LIVESAY¹¹Rose-Hulman Institute of Technology, Terre Haute, IN**P-Fri-B-229****Finite Element Analysis and Validation of a Clavicle under Transient Loading**R. RUSOVICI¹ AND M. PENDERGAST^{1,2}¹Florida Institute of Technology, Melbourne, FL, ²Harris Corporation, Melbourne, FL**P-Fri-B-230****The Effects of Cortical Thickness, Bone Strength, and Screw Length on Rigid Sternal Fixation Stability**N. B. PRICE¹, N. H. KIM¹, B. WILCOX², AND B. HATCHER²¹University of Florida, Gainesville, FL, ²Biomet, Jacksonville, FL**P-Fri-B-231****Modeling the Action of Multiarticular Muscles: Importance of Tendon, Anatomic Pulley and Joint Contact Forces**J. TOWLES¹ AND V. HENTZ²¹University of Wisconsin-Madison, Madison, WI, ²Stanford 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. KENNEDY¹, K. E. DESHARNAIS¹, AND T. R. BOWEN²¹Bucknell University, Lewisburg, PA, ²Geisinger 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. SALAS¹, M. REDA TAHA¹, T. A. DECOSTER¹, AND D. HOOPE¹¹University 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-MODESTE¹¹University 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. WARE¹¹Clemson University, Seneca, SC**Track: Orthopedic and Rehabilitation Engineering****Prostheses****P-Fri-B-236****Kinematic Asymmetries While Using a Common Ankle Foot Orthosis**A. B. WANAMAKER¹, B. S. DAVIDSON^{1,2}, AND C. L. CHRISTIANSEN², D. SAINT-PHARD¹¹University of Denver, Denver, CO, ²University 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. FREED¹, E. ALVAREZ¹, C. ELJACH¹, AND J. D. DESJARDINS¹¹Clemson University, Clemson, SC**P-Fri-B-238****Mechanical Disassembly and Damage Assessment of Retrieved Femoral Stems with Modular Necks**R. CSERNICA¹, M. HARMAN^{1,2}, M. BALEANI², G. TOZZI², P. ERANI², S. STEA², AND A. TONI²¹Clemson University, Clemson, SC, ²Rizzoli Orthopaedic Institute, Bologna, Italy**P-Fri-B-239****Characterizing Metal-Polymer Bearing Couples of Knee Replacement Prostheses Retrieved After *In Vivo* Function**N. DURIG¹, E. ALVAREZ¹, AND M. HARMAN¹¹Clemson University, Clemson, SC

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-B-240**Surface Roughness of Dislocated Metal Hip Heads Retrieved After Total Hip Replacement**K. KEITH¹, A. HODGE², AND M. HARMAN¹¹Clemson University, Clemson, SC, ²University of Maine, Bangor, ME**P-Fri-B-241****Comparison of Zero-Order and First-Order Control in Noisy Prosthesis Control Systems**R. E. VAN AARTSEN¹ AND J. W. SENSINGER¹¹Northwestern University, Chicago, IL**P-Fri-B-242****The Effect of Press-Fit on the Seating of an Endoprosthesis: An Idealized Model**G. J. NOBLE¹, M. J. ALLEN¹, N. FITZPATRICK², AND R. T. HART¹¹The Ohio State University, Columbus, OH, ²Fitzpatrick Referrals, Godalming, Surrey, United Kingdom**P-Fri-B-243****Failure Analysis of a UHMWPE Articular Tibial Component from a TKR**N. CAMACHO¹ AND S. W. STAFFORD¹¹University of Texas at El Paso, El Paso, TX**P-Fri-B-244****Baseball Swing Performance of a Transradial Amputee**S. L. CAREY¹, M. WERNKE¹, D. LURA¹, AND R. DUBEY¹¹University of South Florida, Tampa, FL**P-Fri-B-245****Real-time Myoelectric Control of a Virtual Arm**C. PULLIAM¹, J. LAMBRECHT¹, AND R. KIRSCH^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH**P-Fri-B-246****Prosthetic Socket Interface Motion: A Case Study**M. WERNKE¹, D. LURA¹, S. CAREY¹, AND R. DUBEY¹¹University of South Florida, Tampa, FL**P-Fri-B-247****Hydroxyapatite Coating On Titanium Alloy (Ti6Al4V) Substrate By Sol-gel Based Dip Coating**G. BHATT¹, C. TINAJERO¹, G. SELVADURAY¹, AND M. MOBED-MIREMADI¹¹San Jose State University, San Jose, CA**P-Fri-B-248****Novel Design of Finger and Toe Total Joint Replacement**A. C. WEEMS¹ AND H. V. VO¹¹Mercer University, Macon, GA**P-Fri-B-249****Novel Design of Total Elbow Replacement Joint**A. C. WEEMS¹ AND H. V. VO¹¹Mercer University, Macon, GA**P-Fri-B-250****Conditions of Lower Limb Amputees in the State of Chihuahua Mexico.**D. COMADURAN¹, K. BUSTAMANTE¹, F. MENDOZA², AND M. MADRIGAL²¹ITESM Campus Chihuahua, Chihuahua, Mexico, ²Centro 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. TONG¹ AND X. JIA^{1,2}¹University of Delaware, Newark, DE, ²University of Delaware, Newark, DE**P-Fri-B-252****Coculture-Driven MSC-Differentiated Cells Resemble Articular Chondrocytes with Reduced Hypertrophy**Y-H. YANG¹ AND G. A. BARABINO¹¹Georgia 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. ORMEROD¹, C. L. STEPHENS¹, AND T. B. DEMARSE¹¹University of Florida, Gainesville, FL**P-Fri-B-254****Modulating Cell Cycle Inhibitors to Control Progenitor Cell Fate Decisions**P. THAKORE¹ AND C. A. GERSBACH¹¹Duke University, Durham, NC**P-Fri-B-255****Role of Membrane Cholesterol in Adipogenesis: Involvement of ERM Linker Proteins**S. SUN¹, D. ADYSHEV¹, B. LUTZ², E. SMITH², S. DUDEK¹, AND M. CHO¹¹University of Illinois, Chicago, IL, ²Baxter Healthcare, Deerfield, IL, ³West Aurora High School, West Aurora, IL**P-Fri-B-256****Adipose-derived Stem Cell Differentiation to Uroepithelial-like Cells *In Vitro***J. P. TURNER¹ AND J. NAGATOMI²¹Clemson University, Central, SC, ²Clemson 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. LEE¹, S. KIM¹, J. BYUN¹, J. HAN¹, AND Y-S. YOON¹¹EMORY 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. KIM¹, E. LYNCH¹, AND G. DAI¹¹Rensselaer 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. MOHARIL¹, P. MISTRIOTIS¹, H. YOU¹, P. LEI¹, J. TIAN¹, AND S. ANDREADIS^{1,2}¹University at Buffalo-SUNY, Amherst, NY, ²Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY**P-Fri-B-260****Chondrotuning of hESCs for Hyaline Cartilage Regeneration**J. K. LEE¹, V. P. WILLARD², J. SANCHEZ-ADAMS², AND K. A. ATHANASIOU¹¹University of California, Davis, Davis, CA, ²Duke University, Durham, NC**P-Fri-B-261****Human Embryonic Stem Cell-Derived Villous Cytotrophoblast Model for Studying Human Placental Development**P. SARKAR¹, S. RANDALL¹, T. COLLIER¹, A. NERO¹, T. RUSSELL¹, D. MUDDIMAN¹, AND B. RAO¹¹North Carolina State University, Raleigh, NC

P-Fri-B-262**Inhibiting Non-Stem Cell Proliferation by Etoposide**O. S. BEANE¹ AND E. M. DARLING¹¹Brown University, Providence, RI**P-Fri-B-263****Elucidation of Stem Cell Adipogenic Differentiation in Response to Mechano-Topographical Cues**H. NAIMIPOUR¹, S. SUN², AND M. CHO²¹University of Illinois, Chicago, IL, ²University 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. BASS¹, E. TASCIOTTI², AND B. WEINER¹¹The Methodist Hospital, Houston, TX, ²The 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. CHEN¹ AND D. DEAN¹¹Clemson University, Clemson, SC**P-Fri-B-266****Quantifying the Effects of Nuclease Delivery on the Functionality of Hematopoietic Stem Cells**R. N. COTTLE¹, G. BAO¹, D. ARCHER², W. A. LAM^{1,2}, AND D. R. MYERS¹¹Georgia Tech, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA**P-Fri-B-267****SMAD and PI3K Signaling Pathways Involved in Shear Stress-Induced Pluripotency Gene Expression in Embryonic Stem Cells**K. D. RINKER¹, R. D. SHEPHERD¹, G. LARA¹, D. RANCOURT¹, AND M. KALLOS¹¹University of Calgary, Calgary, AB, Canada**P-Fri-B-268****Influence of Extracellular Matrix Alignment on Mesenchymal Stem Cell Invasion**N. K. WEIDENHAMER¹, F. LOBO¹, AND R. T. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**P-Fri-B-269****Lipid Metabolism During Adipogenesis of Stem Cells Increases With Reduced Cytoskeletal Tension**Z. A. SCHILLER¹ AND C. K. KUO¹¹Tufts University, Medford, MA**P-Fri-B-270****The Alignment of Smooth Muscle Cell and Shear Stress Affect Differentiation of Mesenchymal Stem Cell**J. SHIN¹, S. PARK¹, Y. KANG¹, S. KIM¹, K. JEON¹, J-S. HYEON¹, M-J. OH¹, AND J-W. SHIN^{1,2}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ²First 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. HYUN¹, J. SHIN¹, S. PARK¹, Y. KANG¹, K. JEON¹, S. KIM¹, AND J-W. SHIN^{1,2}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ²First 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. KIM¹, J. SHIN¹, S. PARK¹, Y. KANG¹, K. JEON¹, J-S. HYUN¹, AND J-W. SHIN^{1,2}¹Department of Biomedical engineering, Gimhae, Korea, Republic of, ²First 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. JEON¹, S. PARK¹, J. SHIN¹, Y. KANG¹, S. KIM¹, J-S. HYUN¹, AND J-W. SHIN^{1,2}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ²First 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. PETSCHKE¹, E. AUGUSTINI¹, S. HAERI^{2,3}, AND J. G. JACOT^{1,3}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas 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. NASS¹, I. COPLAND², J. GALIPEAU², R. NEREM¹, AND S. GRIFFITHS¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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. BAJPAI¹ AND S. ANDREADIS¹¹State 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. SUNDERIC¹, D. DAWKINS¹, AND S. WANG¹¹City 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. WANG¹, J. SHA¹, AND Y. KAIMING¹¹University 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. JARAMILLO¹, S. K. GOH¹, AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA**P-Fri-B-280****Effect of Early Endoderm Induction in Late Pancreatic Commitment During Differentiation of Human Embryonic Stem Cells (hESC)**M. JARAMILLO¹, S. MATHEW², AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh**P-Fri-B-281****Comparing Bone Marrow- and Periosteum- Derived Cells Morphologies and Differentiation Capacities**H. CHANG¹ AND M. L. KNOTHE TATE¹¹Case 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. GOH¹, S. BERTERA¹, P. OLSON¹, L. YANG¹, AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA, ²Children's Hospital of Pittsburgh, Pittsburgh, PA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Fri-B-283**Genetically Autologous Stromal Vascular Fraction Cells Form a Functional Vasculature in a Disease Model**N. L. BOYD¹, J. R. DALE¹, A. R. BUGG¹, J. B. HOYING¹, AND S. K. WILLIAMS¹¹University of Louisville, Louisville, KY**P-Fri-B-284****Effect of Cell-Cell Interaction and Cell Area on MSC Differentiation**A. S. MAO¹ AND D. J. MOONEY^{1,2}¹School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, ²Wyss 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. MEYER¹, Y. CHOI¹, AND A. ENGLER¹¹University 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. DION¹, J. MERCURI¹, D. SIMIONESCU¹, AND R. HAWKINS^{1,2}¹Clemson University, Clemson, SC, ²Steadman 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. BUTTS¹, C. BROWN¹, D. MCCREEDY¹, AND S. SAKIYAMA-ELBERT¹¹Washington University in St. Louis, St. Louis, MO**P-Fri-B-288****Pulsed IR Stimulation of Human and Stem Cell-Derived Cardiomyocytes**N. U. ECKER¹, J. M. GREENBERG¹, S. RAJGURU¹, D. PELAEZ², AND H. CHEUNG^{1,2}¹University of Miami, Coral Gables, FL, ²Miami VA Medical Center, Miami, FL**P-Fri-B-289****IGF-I Characterization of Periodontal Ligament Stem Cells and their Connexin 43+ Counterparts**M. IZQUIERDO¹, D. PAWLEY¹, V. FORTINO¹, D. PELAEZ², AND H. CHEUNG^{1,2}¹University of Miami, Coral Gables, FL, ²Miami 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. ZUCKERMAN¹, K. APPIAH-NKANSAH², M. E. CHAN², AND C. T. RUBIN²¹Harvard University, Cambridge, MA, ²Stony Brook University, Stony Brook, NY**P-Fri-B-291****Fibronectin Matrix Mimetics Support Mesenchymal Stem Cell Proliferation and Differentiation**J. M. NICOSIA¹, S. Z. CHILD¹, D. DALECKI¹, AND D. C. HOCKING^{1,2}¹Department of Biomedical Engineering, University of Rochester, Rochester, NY,²Department 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. KLATTENHOFF², AND L. A. BOYER²¹Columbia University, New York, NY, ²Massachusetts 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. CONWAY², AND D. V. SCHAFER²¹Massachusetts Institute of Technology, Cambridge, MA, ²University of California, Berkeley, Berkeley, CA**P-Fri-B-294****Neurogenesis of a Novel Pluripotent Stem Cell Population from Adult Periodontal Ligament**D. PAWLEY¹, M. IZQUIERDO¹, V. FORTINO¹, D. PELAEZ², AND H. CHEUNG^{1,2}¹University of Miami, Coral Gables, FL, ²Miami VA Medical Center, Miami, FL**P-Fri-B-295****Characterization and Recellularization of Extracellular Matrix Secreted by Embryoid Bodies**P. OLSEN¹, S. K. GOH¹, AND I. BANERJEE¹¹University 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-MARINO¹, E. STUCKY², AND D. I. SHREIBER²¹The College of New Jersey, Ewing, NJ, ²Rutgers University, New Brunswick, NJ**P-Fri-B-297****Shear Pre-Conditioning Enhances the Pericyte Function of Mesenchymal Stem Cells *In Vitro***R. MELTZER¹, L. MCGINLEY¹, AND R. NEREM¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-B-298****Adipose Stem Cell Differentiation towards Vascular Smooth Muscle Cells**S. OLANG¹, R. CHEN¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Fri-B-299****Characterization of Integrin Expression in Differentiating Stem Cells**E. G. NEAL¹, K. F. PEUCKER¹, AND T. AHSAN¹¹Tulane University, New Orleans, LA**P-Fri-B-300****The Effect of Hydroxyapatite and Fluoroapatite on Dental Cell Differentiation**A. FARLEY¹, A. CUSIK¹, M. S. KENNEDY¹, AND D. DEAN¹¹CLEMSON UNIVERSITY, CLEMSON, SC**P-Fri-B-301****Effect of Fluid Flow on Dental Pulp Stem Cells in 2D and 3D Culture**W. SENN¹, S. SHUFORD¹, J. WOOD¹, M. S. KENNEDY¹, AND D. DEAN¹¹Clemson 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. MAKRIS¹, AND J. C. HU¹¹University of California, Davis, Davis, CA, ²Davis 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. JURAN¹ AND P. S. MCFETRIDGE¹¹University of Florida, Gainesville, FL

P-Fri-B-304**Integrated Bioprocess for Production of Tissue Engineered Cartilage**C. A. CARMONA-MORAN¹ AND T. M. WICK¹¹University of Alabama at Birmingham, Birmingham, AL**P-Fri-B-305****Inverse-preference Corrosion Phenomena between Mg₂Ca(Zn) and Primary Mg Phase of Mg-Ca-Zn Ternary Alloy for Use of Biodegradable Orthopedic Devices**J. JUNG¹, H. HAN¹, Y. KIM¹, H. SEOK¹, S. CHO², AND J. AHN¹¹Korea Institute of Science and Technology, Seoul, Korea, Republic of, ²U&I Corporation, Uijeongbu, Korea, Republic of**P-Fri-B-306****Effects of Mechanical Stimulation on Differentiation of Adipose-Derived Stem Cells**K. MEGERLE¹, W. COLE², I. MAHAFFEY², J. CHANG^{1,2}, AND A. B. CASTILLO^{1,2}¹Stanford University School of Medicine, Stanford, CA, ²VA Palo Alto Medical Center, Palo Alto, CA**P-Fri-B-307****Network Structure Impacts Chondrocyte Tissue Deposition In Mechanically-Stimulated PEG Hydrogels**J. ROBERTS¹ AND S. BRYANT¹¹University of Colorado, Boulder, CO**P-Fri-B-308****A Polymer/Hydrogel Scaffold for Ligament Tissue Engineering**P. THAYER¹ AND A. GOLDSTEIN¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Fri-B-309****3D Culture Models for Investigating the Role of Mechanical Loading in Bone Metastasis**M. E. LYNCH¹, D. J. BROOKS¹, M. J. LEE¹, A. B. MADANS¹, S. R. RAMSHANKAR¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**P-Fri-B-310****Influence of Thermal Stress to Induce Osteogenic Protein Expression for Bone Regeneration**A. C. SAMPSON¹, E. CHUNG², AND M. N. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²University 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. MOWER², A. BANERJEE², A. K. SARKAR², N. P. EHRHART², AND M. J. KIPPER²¹Grenoble Institute of Technology, Grenoble, France, ²Colorado State University, Fort Collins, CO**P-Fri-B-312****Cyclic Mechanical Stretch and microRNA Therapies to Enhance Human Skeletal Muscle Differentiation**C. S. CHENG¹, W. E. KRAUS², AND G. A. TRUSKEY¹¹Duke University Department of Biomedical Engineering, Durham, NC, ²Duke University Medical Center, Durham, NC**P-Fri-B-313****Enhancing Osteoconductivity of Fibrin Gels with Apatite-Coated Polymer Microspheres**H. DAVIS¹, B. BINDER¹, P. SCHAECHER¹, D. YAKOUBINSKY¹, A. BHAT¹, AND K. LEACH¹¹UC Davis, Davis, CA**P-Fri-B-314****Differential Regulation of Axial vs. Limb Tendon Progenitors by Mechanical Loading**J. P. BROWN¹ AND C. K. KUO¹¹Tufts University, Medford, MA**P-Fri-B-315****Enhanced Regeneration of Rabbit Mandibular Defects through Combined Treatment of Electrical Stimulation and rhBMP-2 application**J. KIM¹, T. CHO², S. LEE¹, H. YANG^{2,3}, I. KIM², S. HWANG^{2,3}, AND S. KIM¹¹Seoul National University, Seoul, Korea, Republic of, ²Brain Korea 21 2nd Program for Craniomaxillofacial Life Science, Seoul National University, Seoul, Korea, Republic of, ³School of Dentistry, BrainKorea 21 2nd Program for Craniomaxillofacial Life Science, Seoul National University, Seoul, Korea, Republic of**P-Fri-B-316****Correlating Inflammation to Scar Tissue Formation in Healing Skeletal Muscle Tissue**G. L. KOONS¹, M. MORALES², K. CARNEVALE², E. YOST¹, R. G. GOURDIE³, AND M. J. YOST²¹University of South Carolina, Columbia, SC, ²University of South Carolina School of Medicine, Columbia, SC, ³Medical University of South Carolina, Charleston, SC**P-Fri-B-317****Poly (glycerol sebacate):A Novel Scaffold Material for Temporomandibular Joint Disc Engineering**C. HAGANDORA¹, J. GAO¹, Y. WANG¹, AND A. ALMARZA¹¹University of Pittsburgh, Pittsburgh, PA**P-Fri-B-318****Analysis of Magnesium Screws in the Craniofacial Region of a Rabbit**S. E. HENDERSON¹, W. L. CHUNG¹, D-T. CHOU¹, P. N. KUMTA¹, AND A. J. ALMARZA¹¹University of Pittsburgh, Pittsburgh, PA**P-Fri-B-319****Comparison of Collagen- and Alginate- Based Injection Molding for Whole Meniscus Tissue Engineering**J. L. PUETZER¹ AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY**P-Fri-B-320****Tetrapod Bone Chip with Hydroxyapatite as a Hybrid Bone Substitute for Bone Tissue Engineering**S. PARK¹, J. SHIN¹, Y. KANG¹, S. KIM¹, K. JEON¹, J-S. HYUN¹, M-J. OH¹, AND J-W. SHIN^{1,2}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ²First 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. MAKRIS¹, B. J. HUANG¹, AND K. A. ATHANASIOU¹¹UC 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. HEYLMAN¹, T. CARALLA¹, C. BOEHM¹, T. PATTERSON¹, AND G. MUSCHLER¹¹Cleveland Clinic, Cleveland, OH**P-Fri-B-323****Acellular Approach to Meniscus Repair Through Application of Chondroitin Sulfate-Bone Marrow Adhesive**J. A. SIMSON¹ AND J. H. ELISSEFF¹¹Johns Hopkins University, Baltimore, MD

P-Fri-B-324**The Effect of Offset of Solid Freeform Fabricated PCL/beta-TCP Scaffold With the Same Porosity and Pore Shape on Cellular Activities of MG63**

M. YEO¹, Y. KIM¹, G. JIN¹, H. JEON¹, M-S. KIM¹, H. LEE¹, C. G. SIMON², AND G. KIM¹
¹Chosun University, Gwangju, Korea, Republic of, ²NIST, 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. SAUL³, AND G. J. CHRIST^{1,2}

¹Wake Forest University Institute for Regenerative Medicine, Winston-Salem, NC, ²Virginia Tech - Wake Forest University School for Biomedical Engineering and Sciences, Winston-Salem, NC, ³Miami 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. WEISGERBER¹, S. CALIARI¹, Y. WANG¹, D. KELKHOFF¹, M. INSANA¹, AND B. HARLEY¹

¹University 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. RUTLEDGE¹, Q. CHENG¹, M. PRYZHKOVA¹, AND E. JABBARZADEH¹

¹University 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. SIMPSON², J. RYAN², G. BOWLIN², AND J. ERICKSEN¹

¹Hunter Holmes McGuire Veterans Affairs Hospital, Richmond, VA, ²Virginia Commonwealth University, Richmond, VA

P-Fri-B-329**TMJ Tissue Engineering with Bioactive Hydrogels**

D. MILLS¹ AND S. KARNIK²

¹Louisiana Tech University, Ruston, ²Louisiana Tech University, Ruston, LA

P-Fri-B-330**Tissue Engineered Composite Matrix for Bone Allograft Incorporation**

S. DUKLESKA¹, S. SUBRAMANIAN², A. BAKHTINA¹, S. S. LIN², AND T. L. ARINZEH¹

¹New Jersey Institute of Technology, Newark, NJ, ²University 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. MARZILLIER², T. J. KOWAL², H. JAIN², AND M. M. FALK²

¹Central Glass and Ceramic Research Institute, Kolkata-700032, India, ²Lehigh 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. CONSTANTINIDES¹, F. KOSSIVAS¹, P. EPAMEINONDA¹, K. SOFOCLEOUS¹, C. KERAVALOU¹, C. KARIPI¹, C. SOCRATOUS¹, M. HADJIZORZIS¹, AND C. REBHOLZ¹

¹University of Cyprus, Nicosia, Cyprus

P-Fri-B-333**Cylindrical Microfluidic Channel Network for Microvascular Research**

X. LI¹ AND Y. LIU¹

¹West Virginia University, Morgantown, WV

P-Fri-B-334**A Novel Approach to Tune Poisson's Ratio of Biological Scaffolds**

P. SOMAN¹, J. LEE¹, A. PHADKE¹, D. FOZDAR¹, S. VARGHESE¹, AND S. CHEN¹

¹University of California, San Diego, La Jolla, CA

P-Fri-B-335**Microfluidic Agarose Hydrogels Support Development of Tissue Engineered Articular Cartilage**

S. M. GOLDMAN¹ AND G. A. BARABINO¹

¹Georgia 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. CHAUREY¹, F. BLOCK¹, P-C. CHIANG², E. BOTCHWEY¹, C-F. CHOU², AND N. S. SWAMI¹

¹University of Virginia, Charlottesville, VA, ²Academia 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. SCHWARTZ¹, L. ANSARI¹, H. CHOKSHI¹, L. GJONI¹, AND R. L. MAGIN¹

¹University of Illinois at Chicago, Chicago, IL

P-Fri-B-338**In Vitro Evaluation of HA/TCP Scaffold**

L. R. RODRIGUES¹, A. A. RODRIGUES², N. A. BATISTA², F. J. MONTEIRO³, W. D. BELANGERO², AND C. A. ZAVAGLIA⁴

¹FEM-UNICAMP-BR, Maua, Brazil, ²FCM-UNICAMP-BR, Campinas, Brazil, ³DEM-UNICAMP-BR, Porto, Portugal, ⁴FEM-UNICAMP-BR, Campinas, Brazil

P-Fri-B-339**Cell-laden Microporous Hydrogels Using Carboxymethylcellulose as a Porogen for Cartilage Regeneration**

L. WANG¹, K. F. KASPER¹, AND A. G. MIKOS¹

¹Rice University, Houston, TX

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. LEELAWATTANACHAI¹ AND M. M. JIN¹¹Cornell University, Ithaca, NY**1:45PM****Controlling Cellular Adhesion with Tunable Thermosensitive PEG Analogues**F. GAMBINOSSI¹, L. S. ANDERSON¹, AND J. K. FERRI¹¹Lafayette College, Easton, PA**2:00PM****Biocompatibility and Mechanical Properties of Self-healing Poly(methyl methacrylate) Bone Cement Embedded with Microencapsulated Tissue Adhesive**A. BROCHU¹, G. EVANS¹, AND W. REICHERT¹¹Duke University, Durham, NC**2:15PM****Ultra Low Density Shape Memory Polymer Foams for Embolic Medical Devices**P. SINGHAL^{1,2}, W. SMALL², D. J. MAITLAND^{1,2}, AND T. S. WILSON²¹Texas A&M University, College Station, TX, ²Lawrence Livermore National Laboratory, Livermore, CA**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. KAMM¹¹Massachusetts Institute of Technology, Cambridge, MA**1:45PM****3-D Biofabrication for Development of Cellular Systems**R. BASHIR¹¹University of Illinois at Urbana-Champaign, Urbana, IL**2:00PM****A Swimming Biot From Emergent Synchrony Among Cardiac Cells Due to Long-Range Force Interaction**T. SAIF¹, B. WILLIAMS¹, AND E. DESOUSA¹¹University of Illinois at Urbana-Champaign, Urbana, IL**2:15PM****Improving Directionality of Bio-Hybrid Micro-Robots Using Non-Spherical Geometries**A. SAHARI¹ AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**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. HOANG¹, A. M. SHAH¹, E. REATEGUI¹, T. BARBER¹, D. C. WINOKUR², M. PHILLIPS¹, S. MAHESWARAN², D. A. HABER², S. L. STOTT¹, AND M. TONER¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, ²Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA**1:45PM****Single Cell Manipulation via Standing Surface Acoustic Wave Based Tunable Acoustophoresis**X. DING¹, S-C. LIN¹, S. LI¹, AND T. HUANG¹¹The Pennsylvania State University, State college, PA**2:00PM****Dielectrophoretic Separation of Activated Neutrophils for the Treatment of Sepsis**J. L. PRIETO¹ AND J. VOLDMAN¹¹Massachusetts Institute of Technology, Cambridge, MA**2:15PM****Microfluidic Chambers for Monitoring Leukocyte Trafficking: Modulation by Humanized Nano Pro-Resolving Medicines**C. N. JONES¹, J. DALLI², L. DIMISKO¹, C. N. SERHAN², AND D. IRIMIA¹¹Harvard Medical School, Charlestown, MA, ²Harvard 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. MCKINDLES¹ AND B. D. SCHMIT¹¹Marquette University, Milwaukee, WI**1:45PM****Stability Radius as a Method to Identify Neural Feedback Parameters Necessary to Stabilize Changes in Biomechanics**J. T. BINGHAM¹ AND L. H. TING^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**2:00PM****Absence of Postural Muscle Synergies for Balance Following Spinal Cord Transection in Cats**S. A. CHVATAL¹, J. M. MACPHERSON², G. TORRES-OVIEDO³, C. F. HONEYCUTT⁴, AND L. H. TING¹¹Georgia Institute of Technology/Emory University, Atlanta, GA, ²Oregon Health and Sciences University, Portland, OR, ³University of Pittsburgh, Pittsburgh, PA, ⁴Northwestern University and Rehabilitation Institute of Chicago, Chicago, IL**2:15PM****Optimization and Validation of Fractional QLV for Brain Material Property Characterization**C. URBANCZYK¹, M. PANZER¹, AND C. BASS¹¹Duke University, Durham, NCPLATFORM
SESSIONS

Fri-2

P = Poster Session
OP = Oral Presentation

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. CHRISTENSEN¹, B. D. WINSLOW¹, A. E. HIGGINS¹, AND P. A. TRESKO¹¹University 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. VRANA¹, A. DUPRET-BORIES^{1,2}, P. SCHULTZ^{1,2}, C. DEBRY^{1,2}, D. VAUTIER^{1,3}, AND P. LAVALLE^{1,3}¹INSERM, Strasbourg, France, ²Hautepierre Hospital, Strasbourg, France, ³Université de Strasbourg, Strasbourg, France**2:00PM****Immunohistological Analysis of Endotoxin Removal at Cortical Tissue Device Interface**M. RAVIKUMAR¹, D. J. HAGEMAN¹, AND J. R. CAPADONA¹¹Case Western Reserve University, Cleveland, OH**2:15PM****Topographical Modulation of Macrophage Phenotype by Shrink-film Multi-scale Wrinkles**T. WANG¹, A. CHEN¹, M. KHINE¹, AND W. F. LIU¹¹University 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}¹C²B, Clemson University, Anderson, SC, ²ABTECH Scientific, Inc., Anderson, SC**1:45PM INVITED****Photo-defined Protein Gradients for Studying Immune Cell Migration**S. WALLACE¹, V. HLADY², AND W. M. REICHERT¹¹Duke University, Durham, ²University of Utah, Salt Lake City, UT**2:15PM****Ultrahigh Enrichment of Neutrophils from Whole Blood Using Biomimetic Adhesive Surfaces**S. BOSE¹, R. SINGH¹, M. H. HOLLATZ¹, C. H. LEE¹, J. M. KARP², AND R. KARNIK¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Brigham 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. SARKAR¹, C. PAYNE¹, AND M. KEMP¹¹Georgia Institute of Technology, Atlanta, GA**1:45PM****Use of Late Embryogenesis Proteins to Engineer Desiccation Tolerance in Mammalian Cells**N. CHAKRABORTY¹, S. C. LI², A. BORCAR², S. C. HAND², AND M. TONER¹¹Center for Engineering in Medicine, Harvard Medical School, Charlestown, MA, ²Louisiana State University, Baton Rouge, LA**2:00PM****Controlling Local Hepatic Phenotype Expression with Growth Factor-Encoded Surfaces**D. G. PATEL¹, C. JONES¹, N. TULEUOVA¹, E. FOSTER¹, T. VU¹, AND A. REVZIN¹¹University of California, Davis, Davis, CA**2:15PM****Effects Of Membrane Potential On Mechanical Properties Of Plasma Cell Membrane**P. MAHMOUDIAN¹, N. KHATIBZADEH¹, B. FARRELL², W. E. BROWNELL², AND B. ANVARI¹¹University of California Riverside, Riverside, CA, ²Baylor 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 Integrin α IIb β 3 Activation in Platelets Using Microcontact Printing**Y. QIU¹, Y. SAKURAI¹, B. AHN¹, D. R. MYERS¹, G. BAO¹, AND W. A. LAM^{1,2}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA**1:45PM****Physical Regulation of Binding Kinetics of Platelet Glycoprotein Ib α with von Willebrand Factor**L. JU^{1,2}, C. ZHU¹, J-F. DONG³, AND M. CRUZ⁴¹Georgia Institution of Technology, Atlanta, GA, ²Emory University, Decatur, GA, ³Puget Sound Blood Research Institute, Seattle, WA, ⁴Baylor 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. MADABHUSHI¹, K. M. DAYANANADA¹, C. SHANG¹, J. QU¹, AND S. NEELAMEGHAM¹¹State University of New York at Buffalo, Buffalo, NY**2:15PM****The Role of Catch Bonds and Nonlinear Elasticity in Cell Adhesion**W. E. THOMAS¹, M. WHITFIELD^{1,2}, AND O. YAKOVENKO¹¹University of Washington, Seattle, WA, ²MIT, Boston, MAPLATFORM
SESSIONS

Fri-2

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. NAIR¹, J. SHEN¹, Y-T. TSAI¹, X. SUN², R. SAXENA², AND L. TANG¹¹The University of Texas at Arlington, Arlington, TX, ²The 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. LI³, S. GAO^{1,2}, J. MILWID^{1,2}, R. WEISSELEDER⁴, M. YARMUSH^{1,2}, AND B. PAREKKADAN^{1,2}¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Shriners Hospital for Children, Boston, MA, ³Beijing Jishuitan Hospital, Beijing University, Beijing, China, People's Republic of, ⁴Center for Systems Biology, Massachusetts General Hospital, Harvard Medical School, Boston, MA**2:00PM****SIP3 Receptor Antagonism Results in the Mobilization of Hematopoietic Stem and Progenitor Cells from the Bone Marrow**A. DAS¹, A. AWOJODU², AND E. BOTCHWEY²¹University of Virginia, Charlottesville, VA, ²Georgia Institute of Technology, Atlanta, GA**2:15PM****Hetero-Assembling Protein-Engineered Physical Hydrogels to Improve Injectable Therapy**W. MULYASAMITA¹, A. PARISI-AMON¹, R. E. DEWI¹, C. CHUNG¹, AND S. C. HEILSHORN¹¹Stanford University, Stanford, CA**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. BARTLETT¹, L. TING^{1,2}, AND J. BINGHAM¹¹Georgia Tech, Atlanta, GA, ²Emory University, Atlanta, GA**1:40PM****Optimizing Regenerative Electrode Design and Stability**A. WATT¹, M. R. MACEWAN², AND D. MORAN²¹University of Denver, Denver, CO, ²Washington University, Saint Louis, MO**1:50PM****Design of Glucose Testing Strips Using Inkjet Printing**K. GAINEY¹, K. BYRD¹, J. WILSON², L. WILES¹, J. DESJARDINS¹, AND D. DEAN¹¹Clemson University, Clemson, SC, ²SC Governor's School for Science and Mathematics, Hartsville, SC**2:00PM****Development of a Leukocyte Programming Device**E. M. HERBERT¹, E. NICHOLS¹, W. J. FEDERSPIEL¹, J. A. KELLUM¹ AND K SINGBARTL¹University 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. LI², B. YOUSEFI^{1,2}, AND X. HU^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**2:20PM****The Impact of Chronic Pulmonary Hypertension on Pulmonary Vascular Impedance in a Mouse Model**D. A. SCHREIER¹, D. TABIMA², T. HACKER¹, AND N. C. CHESLER¹¹University of Wisconsin - Madison, Madison, WI, ²University of Los Andes, Bogota, ColombiaPLATFORM
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. LARKIN¹, E. JAIN¹, R. RODRIGUES¹, T. MURALI¹, AND P. RAJAGOPALAN¹¹Virginia Tech, Blacksburg, VA**2:00PM****In Vivo Splenocyte Distribution of Gold Nanoparticles**J. MATTOS ALMEIDA¹, A. LIN¹, P. ECKELS^{2,3}, N. LIU¹, A. FOSTER^{2,3}, AND R. DREZEK¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas Children's Hospital, Houston, TX**2:15PM****Nanoparticle Diffusion in Normal Human Respiratory Mucus**B. S. SCHUSTER¹, J. SUK¹, G. F. WOODWORTH¹, AND J. HANES¹¹Johns Hopkins University, Baltimore, MD**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. FINLEY¹ AND A. S. POPEL¹¹Johns Hopkins University, Baltimore, MD**1:45PM****Brain Dynamics at Seizure Onsets in Drug-Resistant Epilepsy: A Multivariate Bayesian Model**S. SANTANIELLO¹, S. P. BURNS¹, AND S. V. SARMA¹¹Johns Hopkins University, Baltimore, MD**2:00PM****VEGF and Semaphorin Expression in Breast Cancer: Harnessing High-Throughput Data for Improved Targeting of Angiogenesis**R. J. BENDER¹ AND F. MAC GABHANN¹¹Johns Hopkins University, Baltimore, MDP = Poster Session
OP = Oral Presentation

2:15PM**Integrating fMRI Imaging with Genome-wide Association Studies for the Diagnosis of Complex Diseases**H. CAO¹, D. LIN¹, V. CALHOUN², AND Y-P. WANG¹¹Tulane University, New Orleans, LA, ²University 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. BROWN¹, N. M. XU², G. GLUCK², Z. J. LI², AND J. D. STITZEL¹¹Virginia Tech – Wake Forest University, Winston Salem, NC, ²Wake 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. CRAWFORD¹, C. HAAS¹, Q. WANG¹, Y. ZHAO¹, AND T. M. BEST¹¹The Ohio State University, Columbus, OH**2:00PM****Tissue Deformation in the Seated Buttocks Model**S. E. SONENBLUM¹, J. CATHCART², J. WINDER², AND S. SPRIGLE¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Ulster, Belfast, United Kingdom**2:15PM****Kinematics of the Thoracoabdominal Contents Under Various Loading Scenarios**M. K. HOWES¹, T. S. GREGORY¹, AND W. N. HARDY¹¹Virginia 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- κ B Activity in a Mouse Model of Knee Joint Osteoarthritis**R. D. BOWLES¹, B. A. MATA², T. K. MWANGI¹, AND L. A. SETTON^{1,2}¹Duke University, Durham, NC, ²Duke University School of Medicine, Durham, NC**1:45PM****Raloxifene Does Not Affect the Raman Spectroscopic Signature of Canine Bone**M. HAMMOND¹, M. A. GALLANT², D. B. BURR^{2,3}, AND J. M. WALLACE^{1,3}¹Purdue University, West Lafayette, IN, ²Indiana University School of Medicine, Indianapolis, IN, ³Indiana University-Purdue University at Indianapolis, Indianapolis, IN**2:00PM****Measuring Three-Dimensional Bone Strain by Digital Volume Correlation of Second Harmonic Images**S. A. WENTZELL¹, R. S. NESBITT¹, S. GARRABRANT¹, J. MACIONE¹, AND S. P. KOTHA¹¹Rensselaer Polytechnic Institute, Troy, NY**2:15PM****Measurement of Musculoskeletal Kinematics in Real Time using Ultrasound Imaging**A. ERANKI¹, N. CORTES¹, AND S. SIKDAR¹¹George 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. KUNERT¹, T. P. PADERA¹, AND L. M. MUNN¹¹Mass. General Hospital/ Harvard Medical School, Boston, MA**1:45PM****Exploring the Role of Biomechanics in Lymphatic Endothelial Function**M. E. NIPPER¹, J. A. KORNUA¹, AND J. B. DIXON¹¹Georgia Institute of Technology, Atlanta, GA**2:00PM****Mathematical Modeling of Lymphatic Vessels Using Lumped Parameter Approach**S. JAMALIAN¹, J. E. MOORE JR.¹, C. D. BERTRAM², AND W. RICHARDSON¹¹Texas A&M University, College Station, TX, ²University of Sydney, New South Wales, Australia**2:15PM*****In Situ* Quantification of Lipid Concentration Effects on Lymphatic Pump Function**T. KASSIS^{1,2}, R. CORNELIUS¹, AND J. B. DIXON^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Parker 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. AHMED¹, K. C. DEE¹, AND G. A. LIVESAY¹¹Rose-Hulman Institute of Technology, Terre Haute, IN*Track sponsored by  WHITAKER
International Fellows and Scholars
Program

Track: New Frontiers and Special Topics***OP - Fri - 2 - 17 - Room A408****Molecular Imaging Probes I****Chairs:** Xiaoqing Hu**1:30PM INVITED****Overview Sub-track Talk: Bridging Levels of Biology with Molecular Imaging**A. JASANOFF¹¹Massachusetts Institute of Technology, Cambridge, MA**1:45PM****Size-Minimized Quantum Dot-HaloTag Conjugates for Dynamic Cellular Imaging**M. M. WEN¹, A. M. SMITH¹, AND S. NIE¹¹Georgia Institute of Technology and Emory University, Atlanta, GA**2:00PM****Evaluating the Accuracy of Tractography-Derived Brain Networks Using Tracer Connections in Monkeys**L. LI¹, J. K. RILLING², T. M. PREUSS³, M. GLASSER⁴, F. DAMEN¹, AND X. HU¹¹Emory University/Georgia Tech, Atlanta, GA, ²Emory University, Atlanta, GA, ³Yerkes National Primate Research Center, Atlanta, GA, ⁴Washington University, St Louis, MO**2:15PM****PLGA Encapsulated Magnetite Nano- and Microparticles are Clinically Viable Magnetic Labels for MRI-based Cell Tracking**D. GRANOT¹, M. K. NKANSAH², M. F. BENNEWITZ², K. S. TANG², E. A. MARKAKIS¹, AND E. M. SHAPIRO^{1,2}¹Yale University School of Medicine, New Haven, CT, ²Yale 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. ADLER¹, C. L. GRIGSBY¹, K. KULANGARA¹, H. WANG¹, R. YASUDA¹, AND K. W. LEONG¹¹Duke University, Durham, NC**1:45PM****Single-cell Dynamics of Induced Lineage Commitment**T. M. GIBSON¹ AND C. A. GERSBACH¹¹Duke University, Durham, NC**2:00PM****Embryonic Wound Healing Mechanisms Investigated by Experiment and Computer Modeling**M. A. WYCZALKOWSKI¹ AND L. A. TABER¹¹Washington University in St. Louis, St. Louis, MO**2:15PM****Hepatic Cell-Mediated Protection of Ischemic Myocardium**S. Q. LIU¹, D. ROBERTS¹, D. ZHANG¹, AND Y. H. WU¹¹Northwestern 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. MARQUARDT¹ AND S. SAKIYAMA-ELBERT¹¹Washington 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. STRUZYNIA¹, J. A. WOLF¹, C. J. MIETUS¹, D. H. SMITH¹, AND D. K. CULLEN¹¹University of Pennsylvania, Philadelphia, PA**2:00PM****Release of Nerve Growth Factor by a Poly(ethylene glycol) Scaffold**M. PEREZ¹, B. K. MANN², AND R. WICKER¹¹University of Texas at El Paso, El Paso, TX, ²SentrX Animal Care, Salt Lake City, UT**2:15PM****Microdevice Development to Study the Effect of Toxins on Axonal Transport**X. LU¹, S. SAKIYAMA-ELBERT¹, J. S. KIM-HAN¹, AND K. O'MALLEY¹¹Washington 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



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-BAYONA¹, D. MUNOZ-PINTO¹, J. RIVERA², B. RUSSELL², M. HOOK², AND M. HAHN¹¹Texas A&M University, College Station, TX, ²Texas A&M Health Science Center, Houston, TX**3:00PM****Gene Releasing Scaffolds for Local Immunomodulation and Enhanced Cell Transplant**R. M. GOWER¹, J. G. GRAHAM¹, R. M. BOEHLER¹, S. M. AZARIN¹, AND L. D. SHEA¹¹Northwestern University, Chicago, IL**3:15PM****Matrix Stiffness Affects Vasculogenesis, Network Arrangement, and Lumen Formation Independently of Matrix Density**B. N. MASON¹, R. M. WILLIAMS¹, L. J. BONASSAR¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**3:30PM****Differential Phase Structure of Polyurethane Matrix Regulates Stem Cell Migration**M. J. HILL¹, W. M. FOX¹, G. KRISHNAN¹, AND D. SARKAR¹¹University 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. MANIVANNAN¹, J. P. GLEGHORN¹, J. M. NESTOR¹, AND C. M. NELSON¹¹Princeton University, Princeton, NJ**3:00PM****Tissue-Forming Processes of Morphogenesis: Lessons from Biological Machines in the Embryo.**L. DAVIDSON¹¹University of Pittsburgh, Pittsburgh, PA**3:15PM****Mechanochemical Control of Epithelial Contractility in a Xenopus Embryonic Tissue**Y. KIM¹, P. R. LEDUC², L. A. DAVIDSON³, AND W. C. MESSNER²¹Massachusetts Institute of Technology, Cambridge, MA, ²Carnegie Mellon University, Pittsburgh, PA, ³University of Pittsburgh, Pittsburgh, PA**3:30PM****Models of the Nuclear Pore Complex Nanomachinery**M. R. MOFRAD¹¹University 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. SCHROEDER¹, G. TELIAN¹, B. PERRONE¹, AND J. RITT¹¹Boston 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. CHUONG², M. OGAWA², N. KLAPOETKE², M. BARATTA^{2,3}, L. C. ACKER², P. E. MONAHAN², F. YOSHIDA², E. S. BOYDEN², AND C. R. FOREST¹¹Georgia Institute of Technology, Atlanta, GA, ²Massachusetts Institute of Technology, Cambridge, MA, ³University of Colorado, Boulder, Boulder, CO**3:15PM****Optopatch: All-Optical Electrophysiology**D. HOCHBAUM¹, N. KLAPOETKE², E. BOYDEN², AND A. COHEN¹¹Harvard University, Cambridge, MA, ²Massachusetts Institute of Technology, Cambridge, MA**3:30PM****Topography and Neuromodulation of Native SK Channels in Living Neurons**K. ABIRAMAN¹, J. MACIASZEK¹, A. TZINGOUNIS¹, AND G. LYKOTRAFITIS¹¹University 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. LUONG¹, K. NGO¹, H. V. VO¹, AND L. WEBB²¹Mercer University, Macon, GA, ²Medical Center Central of Georgia, Macon, GA**3:00PM****In Vitro Biocompatibility of Suprachoroidal Shunts**H. TSENG¹, Z. ZHANG¹, J. T. OATTS¹, AND N. A. LOEWEN¹¹Yale University, New Haven, CT**3:15PM****Lubricin as a Means to Reduce and Prevent Surface Post-operative Biofouling and Infection**G. E. ANINWENE II¹, D. HALL², A. MEI², G. D. JAY³, AND T. J. WEBSTER²¹Brown University, Providence, RI, ²Brown University, Providence, RI, ³Brown University, School of Medicine, Providence, RI**3:30PM****Cornea Tissue Engineering using Porous Poly(2-hydroxyethyl methacrylate) (PHEMA) – Poly(methyl methacrylate) (PMMA)**A. ZELLANDER¹, M. MAKHSOUS², B. MILANI³, A. DJALILIAN¹, AND M. CHO¹¹University of Illinois, Chicago, IL, ²Northwestern University, Chicago, IL, ³University 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. SHANG¹, V. PISKAREV², X. JIANG³, D. S. NEWBURG⁴, AND D. M. RATNER¹¹University of Washington, Seattle, WA, ²Nesmeyanov Institute of Organoelement Compounds, Moscow, Russian Federation, ³Cincinnati Children's Hospital Medical Center, Cincinnati, OH, ⁴Boston College, Boston, MA**3:00PM****The Design of TOUCH Tears Glucose Sensor for Diabetes Management**K. LAN¹, S. SANTHANARAMAN¹, J. T. LA BELLE¹, T. ADAMSON¹, E. ENGELSCHALL¹, P. SHAH¹, M. ABOU-EID¹, S. MAXWELL¹, N. SAEZ¹, C. B. COOK², AND D. R. PATEL²¹Arizona State University, Tempe, AZ, ²Mayo Clinic Arizona, Scottsdale, AZ**3:15PM****Rapid Prototyping of Silicon Photonic Devices for Label-Free Biosensing**S. SCHMIDT¹, W. SHI², J. FLUECKIGER², O. Y. WANG³, S. GRIST³, J. T. KIRK¹, M. HOCHBERG³, R. J. BOJKO¹, L. CHROSTOWSKI², AND D. M. RATNER¹¹University of Washington, Seattle, WA, ²University of British Columbia, Vancouver, BC, Canada, ³University of Delaware, Newark, DE**3:30PM****Fiber Based Biosensors for mRNA Detection in Cell Lysates**V. MAXIMOV¹, Y. XIANG¹, C-C. TSAI¹, K. KORNEV¹, AND A. VERTEGEL¹¹Clemson 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. FINE¹, C. L. ZHAO¹, T. J. CRADICK¹, Y. LIN¹, C. J. ANTICO¹, AND G. BAO¹¹Georgia Tech/Emory University, Atlanta, GA**3:00PM****Cyclic Mechanical Reinforcement of Actin Depolymerization**H. LEE¹, C. ZHU¹, S. G. ESKIN¹, AND L. V. MCINTIRE¹¹Georgia Institute of Technology, Atlanta, GA**3:15PM****Predicting and Quantifying the Activities of Transcription Activator-Like (TAL) Effector Nucleases for Genome Editing**Y. LIN¹, T. J. CRADICK¹, E. J. FINE¹, C. J. ANTICO¹, R. VOIT^{2,3}, M. H. PORTEUS³, AND G. BAO¹¹Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA, ²The University of Texas Southwestern Medical School, Dallas, TX, ³Stanford University, Palo Alto, CA**3:30PM****Developing Rationally Designed FRET-based Molecular Tension Sensors**B. D. HOFFMAN¹ AND M. A. SCHWARTZ²¹Duke University, Durham, NC, ²Yale 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 JR¹, N. MONDAL¹, AND S. NEELAMEGHAM¹¹State 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. TEES¹, Y. CHOI¹, A. J. BURDETTE¹, AND P. SUNDD²¹Ohio University, Athens, OH, ²La Jolla Institute of Allergy and Immunology, La Jolla, CA**3:15PM****Effect of Shear Stress on Contact Area During Neutrophil Rolling**P. COGHILL¹ AND D. W. SCHMIDTKE¹¹University of Oklahoma, Norman, OK**3:30PM****Dissecting the Mechanisms of LFA-1 Activation**C. T. LEFORT¹ AND K. LEY¹¹La 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. CHOI¹, L. G. VINCENT¹, A. R. LEE¹, M. K. DOBKE¹, AND A. J. ENGLER¹¹University 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. LIPPENS¹, C. M. MADL¹, M. XU¹, X. ZHAO^{1,5}, O. CHAUDHURI^{1,3}, A. MAMMATO³, D. INGBER³, G. DUDA⁴, AND D. J. MOONEY^{1,3}¹Harvard University School of Engineering and Applied Sciences, Cambridge, MA, ²Harvard-MIT Division of Health Sciences and Technology, Cambridge, ³Wyss Institute for Biologically Inspired Engineering, Boston, MA, ⁴Julius Wolff Institute, Charite - Universitätsmedizin Berlin, Berlin, Germany, ⁵Duke University, Durham, NC**3:15PM****High Cell Aspect Ratio Alters Stem Cell Traction Stresses and Lineage**L. G. VINCENT¹, T. YONG², J. DEL ALAMO¹, L. TAN², AND A. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²Nanyang Technical University, Singapore, Singapore**3:30PM****Dissecting Mechanobiology of Human Embryonic Stem Cells Using Micromechanical Elastomeric Devices**Y. SUN¹, L. G. VILLA-DIAZ¹, R. H. LAM¹, W. CHEN¹, P. H. KREBSBACH¹, AND J. FU¹¹University of Michigan, Ann Arbor, MI

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. ALBANESE¹, A. K. LAM¹, J. V. ROCHELEAU¹, AND W. C. CHAN¹¹University of Toronto, Toronto, ON, Canada**3:00PM****Au NP based Colorimetric Assay for microRNA Detection**H-I. PENG¹, M. BAKER², AND G. BAO¹¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Emory University, Atlanta, GA**3:15PM****Multilayer Stacks of Porous Silicon Disks for Cancer Therapy**X. LIU¹, C. CHIAPPINI¹, H-J. WU¹, H. SHEN¹, AND M. FERRARI¹¹The 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. BANISADR¹, A. RAY^{1,2}, AND H. GHANDEHARI^{1,2}¹University of Utah, Salt Lake City, UT, ²Nano 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. FEROZE¹ AND L. DAVIDSON¹¹University of Pittsburgh, Pittsburgh, PA**2:55PM****Migratory Single Cell Force Measurement using STEP Nanonets**E. MARQUEZ¹, J. WANG¹, P. SHARMA¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**3:05PM****SMC Traction Force Generation is Modulated by Substrate Stiffness and Ligand Presentation**A. PURWADA¹, B. C. ISENBERG¹, O. V. SAZONOVA¹, M. A. NUGENT^{1,2}, AND J. Y. WONG¹¹Boston University, Boston, MA, ²Boston 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. VAITKUS¹, K. M. STROKA¹, AND H. ARANDA-ESPINOZA¹¹University of Maryland, College Park, College Park, MD**3:25PM****A Novel 3D Mineralized Model to Study the Effects of Loading on Bone Metastasis**M. LEE¹, M. E. LYNCH¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**3:35PM****Mechanical Trauma to Neural Tissue Decreases Spinal GLT1 Expression**T. GILLILAND¹, K. NICHOLSON¹, Y-W. CHANG¹, AND B. A. WINKELSTEIN¹¹University 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. BASSINGTHWAIGHT¹ AND M. BINDSCHADLER¹¹University of Washington, Seattle, WA**3:00PM INVITED****Genome-Scale, Model-Driven Prediction and Validation of Antimicrobial Drug Targets**J. PAPIN¹¹University of Virginia, Charlottesville, VA**3:15PM INVITED****Asymptotic Estimates of Asymptomatic Malaria Persistence in Low Endemicity Areas of Latin America**J. B. GUTIERREZ¹¹University of Georgia, Athens, GA**3:30PM INVITED****Multi-level Multi-scale Modeling of the Heat Stress Response in *Saccharomyces cerevisiae***L. L. FONSECA¹, P-W. CHEN¹, AND E. O. VOIT¹¹Georgia 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. DAVIS¹ AND R. DE VITA¹¹Virginia Tech, Blacksburg, VA**3:00PM****Engineering the Next-Generation Prosthetic Anterior Cruciate Ligament**J. BACH¹, L. CORTÉZ², AND D. N. KU¹¹Georgia Institute of Technology, Atlanta, GA, ²Mines Paris, Paristech, Evry, France**3:15PM****Cathepsin Activity Increases Only at Bony Insertion During Tendon Overuse Injuries**S. P. SETO¹, Y. QIU¹, J. LEI¹, L. J. SOSLOWSKY², M. O. PLATT¹, AND J. S. TEMENOFF¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Pennsylvania, Philadelphia, PA**3:30PM****A Hydrogel-Mineral Composite Scaffold to Improve the Interfacial Shear Stress Between Engineered Cartilage and Bone**R. DUA¹, P. GILL¹, N. MUNROE¹, AND S. RAMASWAMY¹¹Florida 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. PELOQUIN¹, J. H. YODER¹, N. T. JACOBS¹, S. M. MOON¹, A. C. WRIGHT¹, E. J. VRESILOVIC², AND D. M. ELLIOTT^{1,3}

¹University of Pennsylvania, Philadelphia, PA, ²Penn State Hershey Medical Center, Hershey, PA, ³University of Delaware, Newark, DE

3:00PM

Influence of Artificial Degeneration Methods on Stress Distribution in Intervertebral Disc

M. NIKKHOO^{1,2}, Y-W. KUO², I-T. CHUANG², Y-C. HSU², M. HAGHPANAHI¹, M. PARNIANPOUR³, AND J-L. WANG²

¹Iran University of Science and Technology, Tehran, Iran, ²National Taiwan University, Taipei, Taiwan, ³Sharif 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. INZANA¹, M. H. KUNG¹, H. A. AWAD¹, M. J. ZUSCIK¹, AND R. A. MOONEY¹

¹University of Rochester, Rochester, NY

3:30PM

Spinal Fusion through a Non-Invasive Injectable Cell-Based Gene Therapy Method

C. L. SIMPSON¹, Z. LAZARD², R. OLABISI¹, A. DAVIS², E. OLMSTED-DAVIS², AND J. WEST¹

¹Rice University, Houston, TX, ²Baylor 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-SANDER¹, J. S. POBER¹, AND A. L. GONZALEZ¹

¹Yale University, New Haven, CT

3:00PM

Engineering Functional Capillary Networks via Cell Therapy

S. J. GRAINGER¹, M. VIGEN¹, AND A. J. PUTNAM¹

¹University of Michigan, Ann Arbor, MI

3:15PM

Involvement of Fluid Flow in Vessel Guidance and Morphogenesis

J. W. SONG¹, D. BAZOU¹, AND L. L. MUNN¹

¹Massachusetts General Hospital/Harvard Medical School, Charlestown, MA

3:30PM

Interstitial Flow Improves Lumen Formation and Mural Cell Recruitment in Engineered Microvasculature

K. T. MORIN¹ AND R. T. TRANQUILLO¹

¹University of Minnesota, Minneapolis, MN

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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. BEHRAVESH¹

¹Georgia Institute of Technology, ATLANTA, GA

3:00PM

A Failure Analysis Learning Module for an Undergraduate Bioinstrumentation Course

M. RUST¹

¹Western 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. FLEISHMAN¹

¹Engineering World Health, Durham, NC

3:30PM

Biology-on-a-Chip Internship Program (BioChIP): Hands-on Technology Development and Biological Discovery at UC Berkeley

F. MYERS¹, B. TURNER¹, M. DUECK², AND L. LEE¹

¹University of California Berkeley, Berkeley, CA, ²University of California San Diego, San Diego, CA

*Track sponsored by 

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. HARRIS¹ AND X. P. HU¹

¹Emory University/Georgia Institute of Technology, Atlanta, GA

3:00PM

Bioengineering Novel Reporter Proteins

B. B. BARTELLE¹, C. A. BERRIOS-OTERO², K. U. SZULC¹, AND D. H. TURNBULL¹

¹Skirball Institute for Biomolecular Medicine, New York, NY, ²Mount Sinai Medical Center, New York, NY

3:15PM

New Platform for Imaging Gene Expression in Cancer

A. A. GIALD¹

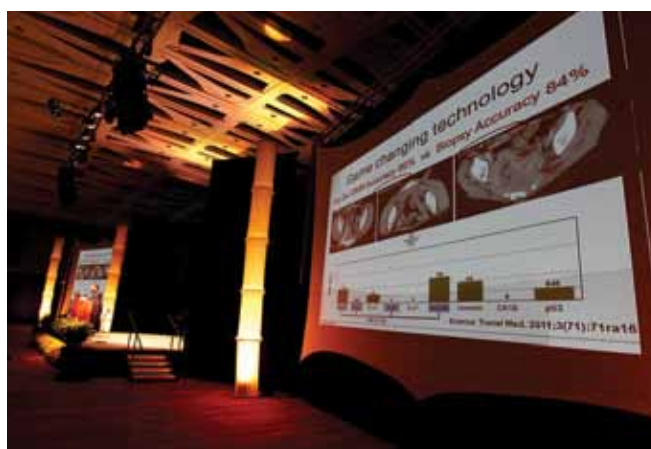
¹Johns Hopkins University, Baltimore, MD

3:30PM


Genetically Encoded Reporters for Multiplexed MRI Imaging with Picomolar Molecular Sensitivity

M. G. SHAPIRO¹, R. M. RAMIREZ¹, L. J. SPERLING^{1,2}, G. SUN¹, A. PINES^{1,2}, D. V. SCHAFFER¹, AND V. S. BAJAJ^{1,2}

¹University of California Berkeley, Berkeley, CA, ²Lawrence 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 Primary and Progenitor Endothelial Cells**R. HOSHI¹ AND G. A. AMEER¹¹Northwestern University, Evanston, IL**3:00PM****SIP3 Regulates Implant Arteriogenesis by Recruitment and Localization of Anti-Inflammatory Monocytes to Surrounding Microvessels**A. O. AWOJODU¹, K. MARTIN², L. S. ANDERSON³, S. M. PEIRCE-COTTLER², AND E. A. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Virginia, Charlottesville, VA, ³Lafayette 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. YU¹, Z. TANG¹, J. HENRY¹, B. LEE¹, Y. ZHU¹, F. YUAN¹, AND S. LI¹¹UC Berkeley, Berkeley, CA, ²UC Davis, Sacramento, CA**3:30PM****MSC Recellularization of a Tissue Engineered Heart Valve Leaf**Z. SYEDAIN¹, A. BRADEE¹, D. TAYLOR¹, R. TRANQUILLO¹¹University 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

PLATFORM
SESSIONS**Fri-3**

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

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. SCHEFF¹, S. E. CALVANO², AND I. P. ANDROULAKIS¹¹Rutgers University, Piscataway, NJ, ²UMDNJ-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. BEAUMONT¹, A. RABA¹, J. CORDEIRO², M. EPSTEIN¹, AND C. ANTZELEVITCH²¹Binghamton University, Binghamton, NY, ²Masonic 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}¹Antioquia School of Engineering, Envigado, Colombia, ²CES University, Medellin, Colombia

P-Sat-A-4

The Investigation of the Effects of Shear Loading on Erythrocytes *In Silico*N. BETHEL¹¹Stony 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}¹Indiana University, Indianapolis, IN, ²Roudebush 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. KALGHATGI¹, J. COSTELLO¹, C. SPINA², A. MOLINA³, AND J. J. COLLINS^{1,4}¹Boston University, Boston, MA, ²Boston University School of Medicine, Boston, MA, ³Wake Forest University School of Medicine, Winston-Salem, NC, ⁴Harvard University, Boston, MA

P-Sat-A-7

Modeling and Experimental Correlation of the Glutathione Metabolic Network

R. E. JEFFRIES¹, K. XU², S. GOMEZ², J. MACDONALD², AND M. GAMCSIK¹¹North Carolina State University, Raleigh, NC, ²University of North Carolina, Chapel Hill, NC

P-Sat-A-8

Computational Systems Analysis of the Glycolytic Pathway in *Lactococcus lactis*S. DOLATSHAHI¹ AND E. O. VOIT¹¹Georgia 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. GUZZARDI¹, N. HABIB¹, D. KITSBERG¹, B. E. UYGUN², K. UYGUN², M. TRIPPLER³, J. F. SCHLAAK³, J. TIMM³, N. FRIEDMAN¹, AND Y. NAHMIAS^{1,2}¹The Hebrew University of Jerusalem, Jerusalem, Israel, ²Harvard Medical School, Boston, MA, ³University Hospital Essen, Essen, Germany

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-10**Kinetic Analysis and Design of Experiments to Identify a Catalytic Mechanism for Cardiac Mitochondrial Malate Dehydrogenase**S. K. DASIKA¹, K. C. VINNAKOTA¹, AND D. A. BEARD¹¹Medical 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. ZHANG¹, V. KOSTAS¹, S. WANG¹, M. B. STENGER², C. F. KNAPP¹, AND J. M. EVANS¹¹University of Kentucky, Lexington, KY, ²Wyle Science, Technology and Engineering Group, Houston, TX**P-Sat-A-13****Computational Modeling of Glutathione/Glutathione Peroxidase in Oxidative Stress**J. CHEN¹ AND M. KAVDIA¹¹Wayne State University, Detroit, MI**P-Sat-A-14****Regulation of Oxidative and Reductive Metabolism in Tumor Cells**C. METALLO¹, G. STEPHANOPOULOS², AND S. PARKER¹¹University of California, San Diego, La Jolla, CA, ²Massachusetts 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. HLAIVATY¹, R. GIBLY¹, X. ZHANG¹, L. SHEA¹, W. LOWE¹, AND X. LUO¹¹Northwestern University, Chicago, IL**P-Sat-A-16****Microloading of Polydimethylsiloxane Membranes for Applications in Mechanotransduction Research**K. SHAH¹, S. YORK¹, A. R. ARIDA¹, P. SETHU², AND M. M. SAUNDERS¹¹The University of Akron, Akron, OH, ²University of Louisville, Louisville, KY**P-Sat-A-17****Effect of Silica Gel Properties on the Viability of Encapsulated Mammalian Cells**A. AKSAN¹, E. REATEGUI², AND L. L. KASINKAS¹¹University of Minnesota, Minneapolis, MN, ²Center 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. NI¹, P. ZIMMERMANN¹, K. KANDASAMY¹, E. LAI¹, Y. LI¹, M. LEONG¹, A. WAN¹, AND D. ZINK¹¹Institute 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}¹University of Texas at Arlington, Arlington, TX, ²University 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. DOSHI¹, S. R. KIRKPATRICK¹, L. B. TARRANT¹, R. C. SVRLUGA¹, AND J. KHOURY¹¹Exogenesis Corp, Billerica, MA**P-Sat-A-21****Modular Design of Multifunctional Hydrogels From Nanobeads**A. SINGH¹, J. ZHAN¹, AND J. ELISSEEFF¹¹Johns Hopkins University, Baltimore, MD**P-Sat-A-22****Preparation of Enzyme-Responsible Hydrogels to Change the Stiffness Associated With Mesenchymal Stem Cells Differentiation**H. TODA¹, M. YAMAMOTO¹, AND Y. TABATA¹¹Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan**P-Sat-A-23****Polydopamine-Assisted Bio-modification for Probing and Modulating Cell-Material Interactions**K. WANG¹, S. NI¹, AND Y. LUO¹¹Peking 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. KANG¹, J. SHIN¹, S. PARK¹, K. JEON¹, S. KIM¹, J-S. HYUN¹, M-J. OH¹, AND J-W. SHIN^{1,2}¹Department of Biomedical Engineering, Inje University, Gimhae, Gyeongnam, Korea, Republic of, ²First 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-LOFTIN¹, D. M. DELAUGHTER¹, J. V. BARNETT¹, AND W. D. MERRYMAN¹¹Vanderbilt University, Nashville, TN**P-Sat-A-26****Effect of Network Composition on Cellular Remodeling of PEG Diacrylate / Hyaluronic Acid Semi-IPNs**H. LEE¹, A. SEN¹, J. LEE¹, AND K. WEBB¹¹Clemson University, Clemson, SC**P-Sat-A-27****Engineering Patterned Co-Cultures Using Dynamically Adhesive Substrates to Study Cell-Cell Interactions**N. M. RODRIGUEZ¹, R. A. DESAI^{1,2}, AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²Max 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. LI¹, S. LEE², S. KIM², R. T. LEE², AND P. T. HAMMOND¹¹MIT, Cambridge, MA, ²Brigham 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 Via Biopolymeric Films Containing the Bone Morphogenetic Protein 2**L. FOUREL^{1,2}, J. ALMODOVAR¹, R. GUILLOT¹, C. ALBIGES-RIZO², AND C. PICART¹¹Grenoble Institute of Technology, Grenoble, France, ²Institut 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. DUAN¹, L. A. HOCKADAY¹, K. H. KANG¹, E. KAPETANOVIC¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NYPOSTER
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 RIBEIRO¹, E. DE SOUSA¹, C. A. BERTRAN², AND M. MOTISUKE^{1,3}¹Federal University of São Paulo, São José dos Campos, Brazil, ²State University of Campinas, Campinas, Brazil, ³INCT-Biofabris, Campinas, Brazil**P-Sat-A-32****Novel Citrate-Enabled One-Step Syntheses of Strong Wet Tissue Adhesives for Sutureless Wound Closure**M. MEHDIZADEH¹, J. YANG¹, L. TANG¹, H. WENG¹, AND M. MEHDIZADEH²¹University of Texas at Arlington, Arlington, TX, ²University of Texas Arlington, Arlington, TX**P-Sat-A-33****In-vitro Evaluation of the Antibacterial Properties of Two-Solution Bone Cement (T-TSBC) Containing Strontium Substituted Hydroxyapatite Microspheres**S. H. JARIWALA¹, S. F. SMITH¹, D. REN¹, AND J. HASENWINDEL¹¹Syracuse University, Syracuse, NY**P-Sat-A-34****In Vitro Biocompatibility of EAA/PCL/PEG/PEO Electrospun Scaffolds Towards Endothelial Cells**N. NOSOUDI¹, W. YIN¹, AND D. A. RUBENSTEIN¹¹Oklahoma state University, Stillwater, OK**P-Sat-A-35****Electrospun Porous Polymer Fibers With Incorporated Nanomaterial for cartilage Tissue Regeneration**B. B. HOLMES¹, N. J. CASTRO¹, AND L. G. ZHANG¹¹The 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. PICHERT¹, A. A. XU¹, B. J. ELIASON¹, E. G. BUETTMMANN¹, M. R. MACEWAN¹, M. M. FRISSELLA¹, B. D. MATTHEWS¹, AND C. R. DEEKEN¹¹Washington University in St. Louis, St. Louis, MO**P-Sat-A-37****In Vitro Degradation Characteristics of Novel, Electrospun Polycaprolactone Scaffolds**A. A. XU¹, B. J. ELIASON¹, E. G. BUETTMMANN¹, M. R. MACEWAN¹, M. M. FRISSELLA¹, B. D. MATTHEWS¹, AND C. R. DEEKEN¹¹Washington 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. BUI¹, P. M. MEHL², R. DE SILVA³, AND O. C. WILSON¹¹The Catholic University of America, Washington, DC, ²The Catholic University of America, Washington, DC, ³The Catholic University 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. APHALE¹, S. BHOSALE¹, I. MACWAN¹, K. MAHAKALKAR¹, J. ZHANG¹, K. VATTIPALLI², S. PRASAD², AND P. PATRA¹¹University of Bridgeport, Bridgeport, CT, ²University of Texas, Dallas, Richardson, TX**P-Sat-A-40****Material and Cytocompatibility Characteristics of Carbon Nanofibers for Cardiovascular Applications**D. A. STOUT¹, J. YOO¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**P-Sat-A-41****Enhancing Mechanical Strength in Aginate/Pluronic® Composite Hydrogels**J. WHITE¹ AND S. BHATIA¹¹University of Massachusetts Amherst, Amherst, MA**P-Sat-A-42****Evaluation of Newly Developed Ternary Biodegradable Magnesium Alloy in Rabbit Models**H-S. HAN¹, Y-Y. KIM², Y-C. KIM¹, H-K. SEOK¹, AND S-J. YANG³¹Korea Institute of Science and Technology, Seoul, Korea, Republic of, ²The Catholic University, Daejeon, Korea, Republic of, ³Chungnam National University, 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}¹Clemson University, Clemson, SC, ²Institute for Biological Interfaces of Engineering, Clemson**P-Sat-A-44****Mechanical Analysis and Computational Modeling of Bacterial Nanocellulose as a Surgical Mesh**J. SCHWERTZ¹ AND A. EBERHARDT¹¹University 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. WU¹, J. YU¹, P-L. LAI², AND C-M. CHENG³¹National Taiwan University, Taipei, Taiwan, ²Chang Gung Memorial Hospital, Taipei, Taiwan, ³National 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. OLIVA², A. HAYWARD², N. M. PARRY², AND E. EDELMAN^{1,2}¹Brigham and Women's Hospital, Boston, MA, ²MIT, Cambridge, MA, ³IQS, Barcelona, Spain**P-Sat-A-47****Biological Characterization of TAMP Scaffolds for Hard Tissue Regeneration**T. J. KOWAL¹, S. WANG¹, J. Y. MARZILLIER¹, P. Y. KRZYSZCZYK¹, H. JAIN¹, AND M. M. FALK¹¹Lehigh University, Bethlehem, PA**P-Sat-A-48****A Photopolymerizable PEG-Protein Hydrogel that Supports Capillary Morphogenesis in 3D**R. K. SINGH¹, D. SELIKTAR², AND A. J. PUTNAM¹¹University of Michigan, Ann Arbor, MI, ²Technion - Israel Institute of Technology, Haifa, Israel**P-Sat-A-49****Fabrication of Coaxial Electrospun Silk Fibroin Mats**E. FANTI¹ AND D. KAPLAN¹¹Tufts 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}¹Virginia Tech - Wake Forest University School of Biomedical Engineering, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC**P-Sat-A-51****Mechanically Controlled Nitric Oxide Releasing Natural Polymers for Tissue Engineering**A. LEBOVSKY¹, M. LANCINA¹, K. SNYDER¹, B. PERELES¹, K. ONG¹, M. FROST¹, AND R. RAJACHAR¹¹Michigan Technological University, Houghton, MIP = Poster Session
OP = Oral Presentation

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-52**Keratin Based Composite Fibers for Neural Tissue Engineering Application**A. M. EDWARDS¹, C. MAHONEY¹, AND N. BHATTARAI¹¹North Carolina A&T State University, Greensboro, NC**P-Sat-A-53****A Novel Three-Dimensional Cotton Ball-like Electrospun Nanofibrous Scaffold**P. HWANG¹, B. BLAKENEY¹, A. TAMBRALLI¹, J. ANDERSON¹, A. ANDUKURI¹, D-J. LIM¹, D. DEAN¹, AND H-W. JUN¹¹University of Alabama at Birmingham, Birmingham, AL**P-Sat-A-54****Polycaprolactone/Hydroxyapatite Whiskers Composite Porous Scaffold with Dense Core**G. B. CARDOSO¹, A. S. DUARTE¹, P. BORDEAX- REGO¹, S. T. SAAD¹, C. A. ZAVAGLIA¹, AND A. F. ARRUDA¹¹Unicamp, 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}¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**P-Sat-A-56****Electrospun Fibers of Poly (glycerol dodecanoate co-fumarate) for Neural Tissue Engineering**X. DAI¹ AND Y-C. HUANG¹¹Florida 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. YAMAMOTO¹, K. INOO¹, T. KODO¹, AND Y. TABATA¹¹Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan**P-Sat-A-58****Swelling Behavior of PVA-PEG Hydrogels for Biomedical Application**D. FELICIANO¹, C. DIAS², AND C. ZAVAGLIA¹¹UNICAMP, Campinas, Brazil, ²UFPA, Belem, Brazil**P-Sat-A-59****Study of Swelling for the Repair of Articular Cartilage Mandibular**F-H. SANTOS¹ AND C. ZAVAGLIA¹¹Unicamp, Campinas, Brazil**P-Sat-A-60****Lung Derived Extra cellular Matrix Hydrogels Conduct Pulmonary Epithelial Cell Growth**R. A. POULIOT¹ AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P-Sat-A-61****Effects of Multi-Walled Carbon Nano Tubes on the Mechanical Properties of Monetic Cement**N. MANSOURI¹, H. ZHOU¹, AND S. B. BHADURI¹¹The University of Toledo, Toledo, OH**P-Sat-A-62****Injectable Hydrogels for Biomedical Applications**T. POTTA¹, T. GRANDHI¹, AND K. REGE¹¹Arizona State University, Tempe, AZ**P-Sat-A-63****Enhancing the Stiffness of Electrospun Nanofiber Scaffolds with a Controlled Surface Coating and Mineralization**W. LIU¹, Y-C. YEH^{2,3}, J. LIPNER², J. XIE², H-W. SUNG³, S. THOMOPOULOS², AND Y. XIA¹¹Georgia Institute of Technology, Atlanta, GA, ²Washington University in St. Louis, Saint Louis, MO, ³National Tsing Hua University, Hsin Chu, Taiwan**P-Sat-A-64****Characterizing Collagen Biopolymer Microthreads with Microscale Surface Topographies**J. M. FORTE¹, J. M. GRASMAN¹, AND G. D. PINS¹¹Worcester Polytechnic Institute, Worcester, MA**P-Sat-A-65****3D Biological Scaffolds for Evaluating Therapeutic Ultrasound Exposures**B. NGUYEN¹, L. BUI¹, R. SILVA¹, O. C. WILSON¹, P. M. MEHL¹, AND V. FRENKEL¹¹Catholic University of America, Washington, DC**P-Sat-A-66****Fabrication of Highly Elastic Cell-laden Methacrylated Tropeolastin Hydrogels**N. ANNABI^{1,2}, P. ZORLUTUNA^{1,2}, S. MITHIEUX³, A. WEISS³, AND A. KHADEMHOSEINI^{1,2}¹Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, ²Center for Biomedical Engineering, Department of Medicine, Brigham and Women's Hospital, Cambridge, MA, ³The University of Sydney, Sydney, Australia**P-Sat-A-67****Developing an Enzymatically-Trigged, Rapidly Degradable Polyurethane Hollow Fiber Membrane**Y. HONG¹, S. R. LITTLE¹, AND W. R. WAGNER¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-A-68****Synthesis and Characterization of Nanostructured Hydrolytically Degradable Polyethylene Glycol Gels with Short Dioxanone Segments**D. BARATI¹, S. MOEINZADEH¹, AND E. JABBARI¹¹University 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. WANG¹, J. LI¹, M. KEIDAR¹, AND L. ZHANG¹¹George Washington University, Washington, DC, DC**P-Sat-A-70****Hydrogel Microparticles for Hemostatic Application**A. M. BEHRENS¹, Z. J. WU², B. P. GRIFFITH², AND P. KOFINAS¹¹University of Maryland, College Park, MD, ²University of Maryland School of Medicine, Baltimore, MD**P-Sat-A-71****Inkjet Bioprinting of Oxygen-Generating Microcomposites Scaffolds**D. REYNA-SORIANO¹, J. I. RODRIGUEZ-DEVORA², AND T. XU²¹University of Texas at El Paso, El Paso, TX, ²University 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 III¹, A. LEBOVSKY¹, H. R. HOLMES¹, R. RAJACHAR¹, M. FROST¹, AND K. SNYDER¹¹Michigan Technological University, Houghton, MI**P-Sat-A-73****Injectable Alginate Hydrogels for Stem Cell Delivery in Bone Regeneration Applications**S. LESLIE¹, B. BOYAN¹, AND Z. SCHWARTZ¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-A-74****Synthesis of a Cell Derived Vocal Biomaterial**J. EVANS¹ AND J. C. WOLCHOK²¹University of Utah, Salt Lake City, ²University of Arkansas, Fayetteville, AR**P-Sat-A-75****Synthesis and Characterization of Biodegradable Elastomers Based on Poly(glycerol dodecanoate) for Soft Tissue Engineering**S. RATH¹ AND Y. C. HUANG¹¹Florida International University, Miami, FL

P-Sat-A-76**Synthesis of a Novel Injectable, ROS-degradable Tissue-Engineering Scaffold**J. R. MARTIN¹, M. GUPTA¹, J. PAGE¹, E. ADOLPH¹, S. GUELCHER¹, AND C. DUVAL¹¹Vanderbilt University, Nashville, TN**P-Sat-A-77****Production and Characterization of B-TCP Scaffolds for Bone Tissue Engineering**J. A. MAGALHÃES¹, C. G. DE PAULA¹, M. MOTISUKE¹, C. A. BERTRAN², AND E. DE SOUSA¹¹Federal University of São Paulo, São José dos Campos, Brazil, ²State University of Campinas, Campinas, Brazil**P-Sat-A-78****Ex vivo Laser Tissue Welding using Polypeptide-Gold Nanorod Nanocomposite Solders**H.-C. HUANG¹, C. WALKER¹, A. NANDA¹, M. CHRISTENSEN¹, AND K. REGE¹¹Arizona State University, Tempe, AZ**P-Sat-A-79****Multifunctional Polysaccharide Hydrogels for Bone and Vascular Tissue Engineering**V. PANDIT¹, J. M. ZUIDEMA¹, G. DAI¹, R. J. GILBERT¹, AND S. P. KOTHA¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Sat-A-80****Characterization of an Oxygen-Monitoring, Nanofiber Scaffold Electrospun from BF₂dbm(l)PLA for the Assessment of Cells in Tissue Engineering Constructs**M. L. TANES¹, N. A. KEANE¹, Y. LIN¹, D. T. BOWERS¹, A. DAS¹, E. A. BOTCHWEY^{1,2}, AND C. L. FRASER¹¹University of Virginia, Charlottesville, VA, ²Georgia Institute of Technology, Atlanta**P-Sat-A-81****Swelling and Mechanical Behavior of Novel Thermally and Chemically Gelling Injectable Hydrogels**A. K. EKENSEAIR¹, K. W. BOERE¹, T. N. VO¹, F. K. KASPER¹, AND A. G. MIKOS¹¹Rice University, Houston, TX**P-Sat-A-82****Biocompatibility and Mechanical Properties of Magneto-electropolished Nitinol Alloys**N. MUNROE¹, P. GILL¹, R. DUA¹, W. HAIDER², A. DATYE³, R. ROKICKI⁴, AND S. RAMASWAMY¹¹Florida International University, Miami, FL, ²University of Texas Pan American, Edinburg, TX,³The University of Tennessee, Knoxville, TN, ⁴Electrobright, Macungie, PA**P-Sat-A-83****Graded Biomimetic Scaffold for Osteochondral Repair**S. MINARDI¹, S. Z. KHALED¹, A. PARODI¹, J. O. MARTINEZ^{1,2}, B. BROWN^{1,2}, I. YAZDI¹, J. S. FERNANDEZ-MOURE¹, M. SANDRI³, M. FERRARI¹, A. TAMPIERI³, AND E. TASCIOTTI¹¹The Methodist Hospital Research Institute, Houston, TX, ²The University of Texas-Graduate School Of Biomedical Sciences At Houston, Houston, TX, ³Institute 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. NG¹ AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**P-Sat-A-85****Engineering ECM-Based Modular Scaffolds for Perfusion and Functional Vascularization**R. T. ANNAMALAI¹, D. R. ARMANT¹, AND H. W. MATTHEW¹¹Wayne State University, Detroit, MI**Track: Biomaterials****Biomaterials - Undergraduate****P-Sat-A-86****Investigation of a Dynamic Biomimetic Apatite Nanoparticle Delivery System for Gene Transfection**D. DAS¹, E. J. TSANG¹, P. A. ZUK², AND B. M. WU^{1,3}¹Henry Samueli School of Engineering and Applied Science, University of California at Los Angeles, Los Angeles, CA, ²David Geffen School of Medicine, University of California at Los Angeles, Los Angeles, CA, ³School of Dentistry, University of California at Los Angeles, Los Angeles**P-Sat-A-87****Conductive Hydrogel Nanofibers for Highly Sensitive Detection of Glucose**S. AHMED¹, G. KIM¹, AND M. ABIDIAN¹¹Pennsylvania 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. MOTOWSKI¹, S. G. VALLEJO-HELIGON², AND W. M. REICHERT²¹University of Illinois Urbana-Champaign, Champaign, IL, ²Duke University, Durham, NC**P-Sat-A-89****Modified PEGDA Hydrogels for Adhesion of MSCs**M. E. PRENDERGAST¹, K. M. FERLIN¹, AND J. P. FISHER¹¹University 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. WILLIAMS¹, P. POOYAN², R. TANNENBAUM³, AND H. GARMESTANI²¹University of South Carolina, Columbia, SC, ²Georgia Institute of Technology, Atlanta, GA, ³Boston University, Boston, MA**P-Sat-A-91****Mechanistic Inhibition of Amyloid-beta Aggregation in Alzheimer's Disease by Green Tea Catechin**S. E. CHASTAIN¹ AND M. MOSS²¹University of South Carolina, Columbia, SC, ²University of South Carolina, Columbia, SC**P-Sat-A-92****Cancer Cell Adhesion on Non-Biological Substrates**Z. FELICIANO-MUÑIZ¹ AND P. SUNDARAM¹¹University of Puerto Rico at Mayaguez, Mayaguez, PR, Puerto Rico**P-Sat-A-93****Composite Silicone-Acrylamide Substrate Transfers Strain to Adherent Cells**M. K. TAYLOR¹, C. SIMMONS¹, A. RIBEIRO¹, AND B. PRUITT¹¹Stanford 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. STEFFEN¹, S. K. KUMPATY¹, S. KAMARA¹, AND K. BALASUBRAMANIAN²¹Milwaukee School of Engineering, Milwaukee, WI, ²Non-Ferrous Materials Technology Development Centre, Hyderabad, India**P-Sat-A-95****Analysis of Grain Structure and Surface Roughness in Heat Treated EOS GPI Stainless Steel Parts**B. TOMLIN¹, S. K. KUMPATY¹, S. KAMARA¹, D. ANDERSON², AND K. BALASUBRAMANIAN³¹Milwaukee School of Engineering, Milwaukee, WI, ²Greatbatch Medical, Warsaw, IN, ³Non-Ferrous Materials Technology Development Centre, Hyderabad, India**P-Sat-A-96****Comparative Study of EOS Stainless Steel GPI: Analysis of Mechanical Properties**J. YOO¹, S. K. KUMPATY², S. KAMARA², D. ANDERSON³, AND K. BALASUBRAMANIAN⁴¹Marquette University, Milwaukee, WI, ²Milwaukee School of Engineering, Milwaukee, WI, ³Greatbatch Medical, Warsaw, IN, ⁴Non-Ferrous Materials Technology Development Centre, Hyderabad, India

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-97**Analysis of the Surface Finish of Additively Manufactured Titanium-64 for Biomedical Implants**J. ANDERSON¹, S. K. KUMPATY¹, S. KAMARA¹, AND K. BALASUBRAMANIAN²¹Milwaukee School of Engineering, Milwaukee, WI, ²Non-Ferrous Materials Technology Development Centre, Hyderabad, India**P-Sat-A-98****Rheological Characterization of Hydrogel Composites Containing Carbon Nanobrushes for Tissue Scaffolding**W. H. MARKS¹, S. C. YANG², G. W. DOMBI², AND S. K. BHATIA¹¹Harvard University, Cambridge, MA, ²University 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 HOVE¹, AND D. S. W. BENOIT^{1,3}¹University of Rochester, Rochester, NY, ²Rensselaer Polytechnic Institute, Troy, NY,³University of Rochester Medical Center, Rochester, NY**P-Sat-A-100****Investigation of Material Properties of Red-Eared Slider Turtle Shell Bone Using Microindentation**N. DIAMANTIDES¹, A. DINCER¹, C. STAYTON¹, AND D. EBENSTEIN¹¹Bucknell University, Lewisburg, PA**P-Sat-A-101****Development of Porous Hydrogel Microparticles for Sensitive Analysis of Cancer Markers**M. AL AMEEN¹ AND G. GHOSH¹¹University of Michigan, Dearborn, Dearborn, MI**P-Sat-A-102****Testing LCST Shrinking Kinetics and Mechanical Properties of Three Classes of pNIPAAm Hydrogel**B. J. LACCETTI¹, K. CHANG¹, AND L. J. TAITE¹¹Georgia 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. LU¹, AND C. D. UNTAROIU¹¹Virginia Tech, Blacksburg, VA, ²University of Virginia, Charlottesville, VA**P-Sat-A-105****Conjugation of Dermis-derived Protein with Polyethylene Glycol Diacrylate**T. WALLER¹, M. SOROKINA², M. VAICIK³, J. GANDHI³, AND E. BREY³¹Illinois Institute of Technology, Tinley Park, IL, ²Harold Washington College, Chicago, IL, ³Illinois Institute of Technology, Chicago, IL**P-Sat-A-106****The Effect of Proton-Source Radiation on the Wear Properties of UHMWPE**J. O'DONNELL¹, K. NORASAKI¹, J. BALL¹, E. LUCAS¹, AND J. D. DESJARDINS¹¹Clemson University, Clemson, SC**P-Sat-A-107****Optimization of Design and Processing of Polydimethylsiloxane Stamps**E. S. GARGUS¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Sat-A-108****Fabrication of PEG-fibrinogen Hydrogels for Controlled Release of Nitric Oxide**M. A. BRUNETTE¹, H. R. HOLMES¹, M. G. LANCINA¹, W. HE¹, B. P. LEE¹, M. C. FROST¹, AND R. M. RAJACHAR¹¹Michigan Technological University, Houghton, MI**P-Sat-A-109****Creating a Variable-Stiffness Modular Scaffold for Tissue Regeneration**S. A. SCHOEMER¹ AND R. K. WILLITS¹¹The University of Akron, Akron, OH**P-Sat-A-110****Hypoxia-Mimicking Composite Scaffolds for Wound Healing**E. KREIENKAMP¹ AND D. HENTHORN¹¹Saint 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. GORMLEY¹, J. M. HALPERN¹, AND H. A. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**P-Sat-A-112****Transformation of Tobacco Mosaic Virus to Spherical Viruses with Potential for Chemical Conjugation**M. A. BRUCKMAN¹, A. L. VANMETER², S. HERN¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²Case Western Reserve University, Columbus, OH**P-Sat-A-113****Extraction and Synthesis of Keratin based Nanofibers by Electrospinning for Wound Healing Applications**D. D. JARVIS¹, A. M. EDWARDS¹, G. GOINS¹, AND N. BHATTARAI¹¹North Carolina A&T State University, Greensboro, NC**P-Sat-A-114****Biodistribution Studies of Plant Viral Nanoparticle - Potato Virus X**S. SHUKLA¹, N. AYAT¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P-Sat-A-115****Using Immobilized Chemistries and Magnetic Nanoparticles to Target Antibiotic Resistance for Bacterial Infections**K. LEUBA¹, G. DURMUS¹, E. HANDY¹, K. TOTARO¹, J. SELLO¹, AND T. WEBSTER¹¹Brown 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}¹Case Western Reserve University, Cleveland, OH, ²Veterans 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. STOKES¹, X. WANG¹, A. ZACHMAN¹, J. ZELTINGER², AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN, ²REVA Medical, Inc., San Diego, CA**P-Sat-A-118****Mouse Derived Extracellular Matrix Hydrogels Improve Mesenchymal Stem Cell Attachment**M. S. MALIK¹, R. POULIOT¹, AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P-Sat-A-119****Design of Dynamic Flow Test Bench for Evaluating Corrosion**J. BONTRAGER¹ AND A. MAHAPATRO¹¹Wichita 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. STEVENSON³, K. J. GOOCH³, AND A. L. SARANG-SIEMINSKI²¹Wellesley College, Wellesley, MA, ²Franklin W. Olin College of Engineering, Needham, MA, ³Ohio State University, Columbus, OH

P-Sat-A-121**Nitric Oxide-Releasing Gelatin Nanofibrous Matrix for Antibacterial Wound Dressing**C. D. VOGT¹, Q. XING¹, M. FROST¹, AND F. ZHAO¹¹Michigan Technological University, Houghton, MI**P-Sat-A-122****Mg-Y Alloy Development for Orthopedic Trauma Applications**J. T. FERRERO¹, D. HONG¹, D-T. CHOU¹, P. SAHA¹, AND P. KUMTA¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-A-123****Mechanical Characterization of Electrospun Microfiber Scaffolds for Use in Anterior Cruciate Ligament (ACL) Tissue Engineering**J. SETA¹, M. SALISBURY^{1,2}, K. CHOV¹, T. MAERZ², K. BAKER², S. TUCK³, Y. NAIM³, J. COREY³, AND Y. LI¹¹Lawrence Technological University, Southfield, MI, ²William Beaumont Hospital, Royal Oak, MI, ³University of Michigan, Ann Arbor, MI**P-Sat-A-124****Alginate Hydrogels as Molecularly Imprinted Polymers for Virus Capture and Release**M. CHU¹, C. MULTARI¹, AND X. CHENG¹¹Lehigh University, Bethlehem, PA**P-Sat-A-125****Effects of Blending on the Crystallization Rate of Random Propylene I-Hexene Copolymers**G. TRUJILLO¹, H. JANANI¹, J. M. LOPEZ-MAJADA¹, AND R. G. ALAMO¹¹FAMU/FSU College of Engineering, Tallahassee, FL**P-Sat-A-126****Pegylation Of Dermal Extract Hydrogels**L. V. SOROKINA¹, E. M. BREY¹, M. VAICIK¹, J. GANDHI¹, AND T. WALLER¹¹Illinois Institute of Technology, Chicago, IL**P-Sat-A-127****Concerted Effect of BSA and Dil on Drug Release from *In Situ* Forming Polymer Implants**D. SUNDARAPANDIYAN¹, L. SOLORIO¹, AND A. A. EXNER¹¹Case Western Reserve University, Cleveland, OH**P-Sat-A-128****Hydrogels for Optimizing Localized Delivery of Non-steroidal Anti-inflammatory Drugs**K. A. WILLIAMSON¹, S. MIRZA¹, W. H. MARKS¹, AND S. K. BHATIA¹¹Harvard University, Cambridge, MA**P-Sat-A-129****Increased Binding Affinity of DNA in the Presence of Calcium Aluminosilicate Nanoparticles**T. D. DENMAN¹, A. WATSON¹, V. PANDIT¹, AND L. REN¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Sat-A-130****Fabrication of Porous Poly(L-lactic Acid) Fiber as Cell-scaffold from a Novel Process**J. ELKIN¹, L. REN¹, V. PANDIT¹, S. KROM¹, T. DENMAN¹, AND J. SMITH¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Sat-A-131****Investigating the Mechanical Properties of Fibronectin and Laminin Nanofibers**M. ANTENSTEINER¹, R. WELLS², J. SZYMANSKI², AND A. W. FEINBERG²¹Pennsylvania State University, State College, PA, ²Carnegie Mellon University, Pittsburgh, PA**P-Sat-A-132****Development of Biodegradable, Biocompatible Shape Memory Polymers for Vascular Patch Applications**T. BOIRE¹, M. GUPTA¹, J. STEWART¹, J. TAYLOR², AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN, ²University of Maryland Baltimore County, Baltimore, MD**P-Sat-A-133****One Step Acrylation of Hyaluronic Acid Hydrogels for Neural Tissue Engineering**A. M. DEDE¹, C. M. VALMIKINATHAN², AND A. JAIN¹¹Worcester Polytechnic Institute, Worcester, MA, ²Johnson and Johnson, Summerville, NJ**P-Sat-A-134****Voltage-Triggered Drug Delivery from Porous Cryogels**L. WEINSTOCK^{1,2}, S. KENNEDY¹, S. BENCHERIF¹, AND D. MOONEY¹¹Harvard University, Cambridge, MA, ²Northeastern University, Boston, MA**P-Sat-A-135****Fracture Resistant Nanocomposite Hydrogel Enhanced by Adhesive Moeity**M. BOSTWICK¹, K. O'CONNOR^{1,2}, S. SKELTON¹, S. KONST¹, AND B. LEE¹¹Michigan Technological University, Houghton, MI, ²Grand Rapids Community College, Grand Rapids, MI**P-Sat-A-136****3D printed Iron-Manganese for Degradable Metallic Medical Implants**D. M. WELLS¹, D-T. CHOU², D. HONG², H. KUHN², AND P. KUMTA²¹Robert Morris University, Coraopolis, PA, ²University 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}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes VA Medical Center, Cleveland, OH**P-Sat-A-138****Conducting Polymer Surfaces Alter Progenitor Cell Adhesion and Secretion**M. MADHAVAN¹, A. WAN², E. CHANDLER², D. GOURDON², C. OBER², G. MALLIARAS², AND C. FISCHBACH²¹Cornell University, Broadview Heights, OH, ²Cornell University, Ithaca, NY**P-Sat-A-139****Effect of Thermal Processing on the Mechanical Stability of Nanofiber Substrates**P. MENDEZ¹, M. R. MACEWAN¹, AND Z. RAY²¹Washington University in St. Louis, Saint Louis, MO, ²Washington University School of Medicine, Saint Louis, MO**P-Sat-A-140****Response of Dental Pulp Stem Cells to Surface Micropatterning**T. HAFNER¹, M. S. KENNEDY¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Sat-A-141****Biological and Mechanical Characterization of Bamboo for Tissue Engineering Applications**S. J. YIM¹ AND S. K. BHATIA¹¹Harvard University, Cambridge, MA**P-Sat-A-142****Vesicle Trafficking as a Mechanism to Sense and Respond to Nanofiber Architecture**A. HIGGINS¹ AND J. BROWN¹¹The Pennsylvania State University, University Park, PA**P-Sat-A-143****Degradation of Oxidized Alginate for Applications in Islet Encapsulation**R. RUBIN¹, J. LARSON², AND E. BREY²¹University of Maryland, College Park, MD, ²Illinois Institute of Technology, Chicago, IL

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-144

Electrically Conductive Nanostructures: Analysis of Polydimethylsiloxane and Polycaprolactone

J. L. PORTER¹, E. LIPKE¹, AND X. ZHANG¹¹Auburn 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. BRUCKMAN¹ AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P-Sat-A-146**

An Efficient Method to Achieve Fc-Region Specific IgG Conjugation onto Nanoparticle

J. Z. HUI¹ AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA**P-Sat-A-147**

Adeno-Associated Virus Nanoparticles as Scaffolds For Gold Contrast Agent Nucleation

C. J. DEMPSEY¹, R. DREZEK¹, D. EVANS², AND J. SUH¹¹Rice University, Houston, TX, ²The 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. SOTTO¹, J. LIN¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-A-149**

Gadolinium-Based Porous Polymersomes as a T1 Magnetic Resonance Imaging Contrast Agent

Z. CHENG¹ AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA**P-Sat-A-150**

Single Cell Cytometry Using Fluorescence and Surface Enhanced Raman Scattering (SERS)-based Multiplexing

E. LIU¹, E. DUGGAN¹, AND J. P. NOLAN¹¹La Jolla Bioengineering Institute, San Diego, CA**P-Sat-A-151**

Mid-infrared Photothermal Spectroscopy Enhanced by Plasmonic Metamaterial using Quantum Cascade Laser

A. MERTIRI¹, R. ADATO¹, M. HONG¹, H. ALTUG¹, AND S. ERRAMILI¹¹Boston University, Boston, MA**P-Sat-A-152**

Novel Ultrasound Contrast Agent for Noninvasive Diagnosis of Eosinophil Esophagitis

H. SAFFARI¹, A. KENNEDY², K. A. PETERSON³, G. J. GLEICH^{3,4}, AND L. F. PEASE III^{1,3}¹Department of Chemical Engineering, University of Utah, Salt Lake City, UT, ²Department of Clinical Radiology, University of Utah, Salt Lake City, UT, ³Department of Internal Medicine, Division of Gastroenterology, University of Utah, Salt Lake City, UT, ⁴Department of Dermatology, University of Utah, Salt Lake City, UT**P-Sat-A-153**

Quantum Dots Hydrodynamic Size Minimization With Hydroxyl Cross-Linked Thioglucose

H. WANG¹, A. M. SMITH¹, AND S. NIE¹¹Georgia 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. MASOODZADEHGAN¹, W. SEO², S. TONG¹, M. GOODMAN², AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA**P-Sat-A-155**

Nanoparticle Targeting to Aortic Aneurysms for Imaging and Therapy

A. SINHA¹, A. SHAPOREV¹, A. VERTEGEL¹, AND N. VYVAHARE¹¹Clemson 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. MUTYAL¹, A. RADOSEVICH¹, J. D. ROGERS¹, H. K. ROY², AND V. BACKMAN¹¹Northwestern University, Evanston, IL, ²Northshore University Healthsystems, Evanston, IL**P-Sat-A-157**

Parallel Monte Carlo-based Inverse Model for Determining Optical Properties in Multilayer Tissues

R. HENNESSY¹, M. K. MARKEY¹, AND J. W. TUNNELL¹¹The University of Texas, Austin, TX**P-Sat-A-158**

An Optofluidic Approach for Characterization of Phytoplankton

N. HASHEMI¹, P. ASRAR¹, AND D. LIM¹¹Iowa State University, Ames, IA**P-Sat-A-159**

Eye Injuries from Fireworks are Caused by Projectiles and Not Blast Overpressure

V. D. ALPHONSE¹, A. R. KEMPER¹, B. T. STROM III¹, S. M. BEEMAN¹, AND S. M. DUMA¹¹Virginia Tech - Wake Forest Center for Injury Biomechanics, Blacksburg, VA**P-Sat-A-160**

Optical Imaging of Oxidative Stress in Diabetic Retinopathy

Z. GHANIAN¹, S. MALEKI¹, R. SEPEHR¹, C. SORENSON², N. SHEIBANI³, AND M. RANJI¹¹Biophotonics lab, Department of Electrical Engineering, University of Wisconsin Milwaukee, Milwaukee, WI, ²Department of Pediatrics, School of Medicine, University of Wisconsin, Madison, WI, ³Departments 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. MARKS¹, M. BENFORD¹, P-H. TSOU¹, J. KAMEOKA¹, AND G. COTÉ¹¹Texas 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. OSAKI¹, Y. TAMANO¹, AND K. TSUKADA¹¹Keio university, Yokohama, Japan

P-Sat-A-163**Development of a Phosphorescence-Based Oxygen Sensor Using Organic Electroluminescence**R. YOSHIDA¹, Y. YANAGISAWA¹, AND K. TSUKADA¹¹Keio University, Yokohama, Japan**P-Sat-A-164****In the Right Light: Broadband Optical Mammography With Quantitative Oximetry and Clinical Measurements**P. G. ANDERSON¹, R. CANTOR-BALAN¹, G. WELIWITIGODA¹, J. M. KAINERSTORFER¹, A. SASSAROLI¹, F. LARUSSON¹, E. L. MILLER¹, M. E. KILMER¹, M. J. HOMER², R. A. GRAHAM², AND S. FANTINI¹¹Tufts University, Medford, MA, ²Tufts Medical Center, Boston, MA**P-Sat-A-165****Droplet Optofluidic Chip for High Throughput Fluorescence Detection**F. GUO¹, M. I. LAPSLEY¹, AND T. J. HUANG¹¹Department 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. AKL¹, M. A. WILSON^{2,3}, M. N. ERICSON⁴, AND G. L. COTÉ¹¹Texas A&M University, College Station, TX, ²University of Pittsburgh, Pittsburgh, PA,³Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, PA, ⁴Oak Ridge National Laboratory, Oak Ridge, TN**P-Sat-A-167****Designing a Sustainable IR Blood Loss Monitor for the Developing World**T. YOUNGMAN¹, M. B. KOFOED¹, C. T. BURNS-HEFFNER¹, A. DICKS¹, J. DESJARDINS¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Sat-A-168****Tuning the Equilibrium Association Constant to Improve Sensitivity of a Competitive Binding Glucose Sensor**B. M. CUMMINS¹, J. T. GARZA¹, J. LIM², E. E. SIMANEK², M. V. PISHKO¹, AND G. L. COTE¹¹Texas A&M University, College Station, TX, ²Texas Christian University, Fort Worth, TX**P-Sat-A-169****Monitoring of Cell Motility by Intracellular Delivery of Anti-tubulin Antibodies into Live Cells**L. XIA¹, S. TANG¹, B. A. GRAHAM¹, S. C. LENAGHAN¹, Y. CAO¹, W. HE¹, AND M. ZHANG¹¹University of Tennessee, Knoxville, TN**P-Sat-A-170****Dynamic Mechanical Optical Clearing Effects are Predicted by Coupled Mechanical and Optical Simulation of Tissue Poroviscoelastic Stress Relaxation**W. C. VOGT¹ AND C. G. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Sat-A-171****Label-free Detection of Cardiac Biomarkers with an Open-cavity Optical Biosensor**B. ZHANG¹, R. PETERSON¹, J. M. VELA¹, L. TANG¹, AND J. YE¹¹University 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. SRINIVASAN¹, V. BHARDWAJ¹, J. F. JOHN¹, AND A. J. MCGORON¹¹Florida 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. KAIRDOLF¹ AND S. NIE¹¹Georgia 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. ERICKSON¹ AND K. L. LEAR¹¹Colorado State University, Fort Collins, CO**P-Sat-A-175****Performance Characteristics of a Pulse Photoplethysmograph Employed in Conjunction with Gold Nanoparticle-assisted Photo-thermal Cancer Therapy**P. ADHIKARI¹, I. B. MAGANA¹, G. P. GOODRICH², J. A. SCHWARTZ², AND D. P. O'NEAL¹¹Louisiana Tech University, Ruston, LA, ²Nanospectra 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. HUANG¹¹Georgia 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. SHERIF¹¹CHRISTIANA HOSPITAL, NEWARK, DE**P-Sat-A-178****A Bioinspired Multifunctional Nanomatrix Coating for Stents**A. ANDUKURI¹, C. ANAKWENZE¹, Y-D. SOHN², Y-S. YOON², B. BROTT¹, AND H-W. JUN¹¹University of Alabama at Birmingham, Birmingham, AL, ²Emory University, Atlanta, GA**P-Sat-A-179****A New Strategy for Engineering Thromboresistant and Cell Compatible Vascular Grafts**R. HOSHI¹ AND G. A. AMEER¹¹Northwestern University, Evanston, IL**P-Sat-A-180****Mechanical Properties and In-Vivo Results of a Novel Bioresorbable Stent for Congenital Heart Disease**T. WELCH¹, S. V. REDDY¹, J. WANG¹, R. EBERHART¹, F. BERSTEIN¹, J. RICHARDSON¹, J. FORBESS¹, AND A. NUGENT¹¹UT Southwestern Medical Center, Dallas, TX**P-Sat-A-181****Corrosion Effects of Nitinol Stents Under Flow Conditions**E. TRILLO¹ AND J. DANTE¹¹Southwest Research Institute, San Antonio, TX**P-Sat-A-182****Controlled, Perivascular Delivery of Resveratrol to Mitigate Intimal Hyperplasia After Bypass Graft Surgery**K. A. LAPIDOS¹, S. J. PATEL¹, J-J. WANG², Z. ZHANG², AND G. A. AMEER¹¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL**P-Sat-A-183****Hydrodynamic Evaluation of a Novel Tri-Leaflet Silicone Heart Valve Prosthesis**K. K. PIERRE¹, M. SALINAS¹, R. CARROLL², K. LANDABUJO¹, H. YAMAGUCHI², C. DEGROFF³, F. AL-MOUSILY^{3,4}, M. BLEIWEIS³, AND S. RAMASWAMY¹¹Florida International University, Miami, FL, ²Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL, ³College of Medicine, University of Florida, Gainesville, FL, ⁴King Faisal Specialty Hospital and Research Center (KFSH&RC), Jeddah, Saudi Arabia

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-A-184**Ambulatory Wi-Fi TM Pulse Oximeter for Group Measurements**H. DAMODARAN^{1,2} AND M. BERGEN³¹Stress and Motivated Behavioural Institute, East Orange, NJ, ²Department of Veterans Affairs, New Jersey Health Care System, East Orange, NJ, ³Stress and Motivated Behavioural Institute, East orange, NJ**P-Sat-A-185****The Effect of Nitric Oxide on Endothelial Progenitor Cell Proliferation**P. KERSCHER¹, W. SEETO¹, A. HODGE¹, AND E. LIPKE¹¹Auburn 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}¹University of California, Irvine, Irvine, CA, ²Edwards 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. SOUCY¹, C. J. BENZINGER¹, A. C. ANSERT¹, K. P. HOLLEY¹, T. C. SPALDING¹, G. A. GIRIDHARAN¹, M. A. SOBIESKI¹, M. S. SLAUGHTER¹, AND S. C. KOENIG¹¹University of Louisville, Louisville, KY**P-Sat-A-188****Development of a TAVI Catheter System for Percutaneous Repositioning and Retrieval of the Valve**J. L. SU¹, A. FALAHATPISHEH¹, AND A. KHERADVAR¹¹University of California at Irvine, Irvine, CA**P-Sat-A-189****A Method to Quantify Tension Force in Percutaneous Transvenous Mitral Annuloplasty**T. PHAM¹, S. BHATTACHARYA¹, AND W. SUN¹¹University 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. ZHANG¹, J. FAN¹, P. GUO¹, AND B. FU¹¹The 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. BELL¹ AND K. MONSON¹¹University 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. TOUCHTON¹, A. W. SIEFERT¹, K. J. KOOMALSINGH², J. RABBAH¹, L. STROHSNITTER¹, N. SAIKRISHNAN¹, R. C. GORMAN², J. H. GORMAN, III², AND A. P. YOGANATHAN¹¹Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, ²Gorman 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. HERRMANN¹, H. R. GOLLIN¹, A. W. SIEFERT², C. M. HAGGERTY¹, K. TELLING¹, G. PRESSMAN³, AND A. P. YOGANATHAN¹¹Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA, ³Einstein 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. CHANDRA¹ AND P. SUCOSKY¹¹University 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. BUCHANAN¹ AND M. S. SACKS¹¹The University of Texas at Austin, Austin, TX**P-Sat-A-196****Biaxial Properties of Decellularized and ECM Conditioned Pulmonary Artery and Sinus Tissue**G. CONVERSE¹, M. ARMSTRONG¹, E. BUSE¹, R. QUINN¹, S. HILBERT¹, G. LOFLAND¹, AND R. HOPKINS¹¹Children's Mercy Hospital and Clinics, Kansas City, MO**P-Sat-A-197****Hydrodynamic and Viscoelastic Properties of Decellularized and Conditioned Ovine Pulmonary Valves**E. BUSE¹, G. CONVERSE¹, S. HILBERT¹, G. LOFLAND¹, AND R. HOPKINS¹¹Children's Mercy Hospitals and Clinics, Kansas City, MO**P-Sat-A-198****Quantitative Evaluation of Leaflet Coaptation for Patient-Specific Mitral Regurgitation**Y. RIM¹, S. T. LAING¹, P. KEE¹, D. D. MCPHERSON¹, K. B. CHANDRAN², AND H. KIM¹¹The University of Texas Health Science Center at Houston, Houston, TX, ²The 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. HE¹ AND D. SMITH¹¹Texas Tech University, Lubbock, TX**P-Sat-A-200****In-plane Tricuspid Valve Force Measurements: Development of Strain Gauge Instrumented Annuloplasty Ring**E. KRAGSNAES¹, J. HONGE^{1,2}, J. ASKOV^{1,2}, S. NIELSEN^{1,2}, H. NYGAARD^{1,2}, AND M. JENSEN^{1,2}¹University of Aarhus, Aarhus, Denmark, ²Aarhus University Hospital, Aarhus, Denmark**P-Sat-A-201****Dynamic Finite Element Evaluation of Mitral Valve Function Following Rupture of Chordae Tendineae**Y. RIM¹, S. T. LAING¹, D. D. MCPHERSON¹, K. B. CHANDRAN², AND H. KIM¹¹The University of Texas Health Science Center at Houston, Houston, TX, ²The 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. RAUSCH¹, N. FAMAEEY², T. O. SHULTZ¹, C. MILLER¹, AND E. KUH¹¹Stanford University, Stanford, CA, ²University of Leuven, Leuven, Belgium**P-Sat-A-203****TGF- β 1-Induced Changes in Cadherin Expression Lead to Calcific Nodule Morphogenesis**J. CHEN¹, J. D. HUTCHESON¹, L. M. RYZHOVA¹, AND W. D. MERRYMAN¹¹Vanderbilt University, Nashville, TN

P-Sat-A-204The Role of the Wall Shear Stress in Valvulogenesis in Zebrafish *In Vivo*H. KANG¹ AND M. GHARIB¹¹California Institute of Technology, Pasadena, CA**P-Sat-A-205**

Age-Related Changes in Cardiac Valve Endothelial Cell Hemostatic Behavior

L. R. BALAOING¹, A. D. POST¹, J. L. MOAKE¹, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX**P-Sat-A-206**

Bicuspid Aortic Valve Hemodynamic Abnormalities Stimulate Early Leaflet Calcification

L. SUN¹, S. CHANDRA¹, AND P. SUCOSKY¹¹University 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. FARRAR¹ AND J. BUTCHER¹¹Cornell University, Ithaca, NY**P-Sat-A-208**

Effect of Resveratrol on Aging Cord-Blood Derived Endothelial Cells

T. M. CHEUNG¹ AND G. A. TRUSKEY¹¹Duke University, Durham, NC**P-Sat-A-209**

Evaluation of the Effect of Disturbed Flow on SIP Signaling and Endothelial Cell Inflammation

R. ESTRADA¹, G. GIRIDHARAN¹, V. PARICHEHREH¹, J. AN², M.-J. LEE², AND P. SETHU¹¹University of Louisville, Louisville, KY, ²Wayne State University, Detroit, MI**P-Sat-A-210**

Cholesterol Impairs Shear Stress-Induced Nitric Oxide Production by Inhibiting Capacitative Calcium Entry

A. M. ANDREWS¹ AND K. A. BARBEE¹¹Drexel University, Philadelphia, PA**P-Sat-A-211**

Leukocyte-Endothelial Cell Interactions in Endothelial Dysfunction Affects Distribution of Free Radicals in Arteriolar Microcirculation

S. KAR¹ AND M. KAVDIA¹¹Wayne State University, Detroit, MI**P-Sat-A-212**An Integrated Platform for the *In Vitro* Characterization and Modeling of Cardiovascular DiseaseB. E. REESE¹, S. C. LENAGHAN¹, Z. XU¹, AND M. ZHANG¹¹University of Tennessee, Knoxville, TN**P-Sat-A-213**

Effect of Endothelial Kir Channel Mutants in Agonist Induced Vasoactivity

M. STEVENSON¹, I. LEVITAN², AND K. GOOCH¹¹Ohio State University, Columbus, OH, ²University 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. SAPP¹, A. C. ESTRADA¹, AND K. J. GRANDE-ALLEN¹¹Rice 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 LoopC. E. TAYLOR¹, G. S. KELLY¹, N. S. PANWAR¹, S. J. WARREN¹, AND G. E. MILLER¹¹Virginia Commonwealth University, Richmond, VA**P-Sat-A-216**

Role of Side-Specific and Shear-Dependent eNOS Expression in Aortic Valve Calcification

J. M. RICHARDS¹, I. EL-HAMAMSY², Z. SARANG², P. SARATHCHANDRA², A. H. CHESTER², AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY, ²Imperial College London, Middlesex, United Kingdom**P-Sat-A-217**

Measures Derived from Photoplethysmography for Enhanced Detection of Obstructive Sleep Apnea

R. M. ALEX¹, S. IYER¹, A. BASHABOYINA², G. BHAVE², M. A. AL-ABED³, D. E. WATENPAUGH⁴, R. ZHANG⁵, J. BURK⁶, AND K. BEHBEHANI⁷¹University of Texas Arlington, Arlington, TX, ²University of Texas, Arlington, TX, ³Hashemite University, Amman, Jordan, ⁴Sleep Consultants Inc., Fort Worth, TX, ⁵Institute for Exercise and Environmental Medicine, Dallas, TX, ⁶Sleep Consultants Inc., Fort Worth, TX, ⁷University 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. REED¹, S. A. ROWSON¹, AND J. B. DIXON¹¹Georgia 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. KORNUTA¹, E. SALAZAR¹, Z. DANIELAK¹, AND J. B. DIXON¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-A-220**

Advances in Near-Infrared Lymphatic Imaging and Long-Term Effects of Indocyanine Green (ICG)

M. WEILER¹ AND J. B. DIXON¹¹Georgia Tech, Atlanta, GA**P-Sat-A-221**

Non-Invasive Quantification of Lymphatic Vessel Pumping Pressure in a Rat Tail

R. E. AKIN¹, M. WEILER¹, AND J. B. DIXON¹¹Georgia 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. DONGAONKAR¹, T. L. NGUYEN¹, R. H. STEWART¹, G. A. LAINE¹, AND C. M. QUICK¹¹Michael 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. NGUYEN¹, R. M. DONGAONKAR¹, R. H. STEWART¹, G. A. LAINE¹, AND C. M. QUICK¹¹Texas A&M University, College Station, TX

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 HOUTEN¹, M. GIANNETTI¹, E. YAMAGUCHI¹, AND D. GAVER¹¹Tulane University, New Orleans, LA**P-Sat-A-225****Stability Analysis of the Reopening of a Microfluidic Model of a Pulmonary Bifurcation**M. J. GIANNETTI¹, M. J. VAN HOUTEN¹, E. YAMAGUCHI¹, AND D. P. GAVER¹¹Tulane University, New Orleans, LA**P-Sat-A-226****A Microfluidics Model of Mucus Plug Rupture Dynamics**Y. HU¹, M. FILOCHE^{1,2}, J. C. GROTBORG³, S. BIAN¹, Y-C. CHEN^{1,4}, S. TAKAYAMA¹, AND J. B. GROTBORG¹¹University of Michigan, Ann Arbor, MI, ²Ecole Polytechnique, CNRS, Palaiseau, France, ³Johns Hopkins University School of Medicine, Baltimore, MD, ⁴National Cheng Kung University, Tainan City, Taiwan**P-Sat-A-227****A Multifluidic Platform for Studying Pulmonary Epithelial Barrier Injury**D. D. NALAYANDA¹, W. B. FULTON², T-H. WANG³, AND F. ABDULLAH²¹Johns Hopkins University School of Medicine, Baltimore, MD, ²Johns Hopkins School of Medicine, Baltimore, MD, ³Johns Hopkins University, Baltimore, MD**P-Sat-A-228****Epithelialization of Artificial Lung Airways**R. A. HUYNH¹, H. W. GLINDMEYER¹, O. FOROUZAN¹, D. P. GAVER¹, AND S. S. SHEVKOPLYAS¹¹Tulane 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. WONG¹, A. A. BLANCAS¹, D. E. GLASER¹, AND K. E. MCCLOSKEY¹¹University of California, Merced, Merced, CA**P-Sat-A-230****Mechanical Stretch-Induced Damage in Human Bronchial Epithelial Cells**P. A. PATEL¹ AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P-Sat-A-231****Mechanical Characterization of a PGLA/P(LA/CL) Vascular Graft**Z. BRANDES¹, A. MELCHIORRI¹, N. HIBINO², AND J. P. FISHER¹¹University of Maryland, College Park, MD, ²Children's National Medical Center, Washington, DC**P-Sat-A-232****The Role of Extracellular Matrix Proteins on Angiogenic Processes**A. QUINN¹, K. DUXSTAD¹, C. MCCOY¹, AND K. MASTERS¹¹University 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. TARBELL³, L. M. CANCEL³, AND E. E. EBONG^{1,3}¹Albert Einstein College of Medicine, New York, NY, ²Emory University, Atlanta, GA, ³The 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. GRIGORYAN¹, L. R. BALAOING², H. TSENG², R. M. RAPHAEL^{2,3}, T. C. KILLIAN^{3,4}, G. R. SOUZA³, AND K. GRANDE-ALLEN²¹Texas A&M University, College Station, TX, ²Rice University, Houston, TX, ³Nano²D Biosciences, Houston, TX, ⁴Rice University, Houston**P-Sat-A-235****Pilot Study on the Effects of Pharmaceuticals on Arterial Compliance**C. M. LUETKEMEYER¹ AND J. E. WAGENSEIL¹¹Saint 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. WINGATE¹, D. MIX², J. FEATHERALL¹, D. PHILLIPS¹, S. W. DAY¹, K. Q. SCHWARZ², AND A. CHANDRA²¹Rochester Institute of Technology, Rochester, NY, ²University of Rochester School of Medicine and Dentistry, Rochester, NY**P-Sat-A-237****Characterizing the Anisotropic Mechanical Properties of Reactive Bovine Airways**A. RAJSHEKAR¹, H. PARAMESWARAN¹, B. HARVEY¹, J. IMSIROVIC¹, AND K. R. LUTCHEN¹¹Boston University, Boston, MA**P-Sat-A-238****Comparing *In Vivo* and *Ex Vivo* Pulse Wave Velocity Measurements in Eln +/- and +/- Mice**W. GARDNER¹, J. KIM¹, AND J. WAGENSEIL¹¹Saint Louis University, St. Louis, MO**P-Sat-A-239****Mapping the Regional Distribution of Proteins in the Rat Heart**S. M. VANDERHEIDEN¹ AND J. H. OMENS²¹University of Minnesota, Minneapolis, MN, ²University 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. YU¹, B. A. LIN¹, K. PURUSHOTHAMAN¹, L. W. DOBRUCKI², D. P. DIONE¹, J. S. DUNCAN¹, AND A. J. SINUSAS¹¹Yale University, New Haven, CT, ²University 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. ULRICH¹, J. A. BRENNAN¹, J. H. ARRIZABALAGA¹, AND M. U. NOLLERT¹¹University of Oklahoma, Norman, OK**P-Sat-A-242****Mechanical Properties of Carpentier-Edwards Magna Pericardial Aortic Bioprosthesis**H. KUANG¹, A. MOOKHOEK^{2,3}, M. LU⁴, A. WISNESKI³, AND E. E. TSENG³¹Johns Hopkins University, Baltimore, MD, ²Erasmus University Medical Center, Rotterdam, Netherlands, ³University of California San Francisco, San Francisco, CA, ⁴Massachusetts 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. CURTIN¹ AND L. ZHOU¹¹University of Pittsburgh, Pittsburgh, PA

P-Sat-A-244**Atmospheric Ultrafine Particles Promote Vascular Calcification via NF- κ B Signaling**D. MITTELSTEIN¹, R. LI¹, W. KAM¹, C. SIOUTAS¹, AND T. HSIAI¹¹University of Southern California, Los Angeles, CA**P-Sat-A-245****Mechanisms by Which Oscillatory Shear Stress Causes Mitochondrial DNA Damage**K. L. FANG¹, K. QUIGLEY¹, N. JEN¹, AND T. HSIAI¹¹University of Southern California, Los Angeles, CA**P-Sat-A-246****Cardiac Specific CaMKII δ Overexpression Increases Susceptibility to Spontaneous Sarcoplasmic Reticulum Ca²⁺ Release Prior to Heart Failure**S. PATEL¹, A. G. EDWARDS¹, AND A. D. MCCULLOCH¹¹University 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. ROWSON¹, A. L. REED¹, AND J. B. DIXON¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-A-248****Mechanical Stretch-Induced Inflammation: Human Bronchial Epithelial and Murine Type II Alveolar Cells**A. VENKATASUBRAMANIAN¹, J. A. HERBERT¹, AND R. L. HEISE¹¹Virginia 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. HOLLOWAY¹, C. J. ANKENY², AND H. JO^{2,3}¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology & Emory University, Atlanta, GA, ³Ewha Womans University School of Medicine, Seoul, Korea, Republic of**P-Sat-A-250****Sex-Related Differences in the Regulation of Valvular Angiogenesis**K. DUXSTAD¹, A. QUINN¹, C. MCCOY¹, AND K. MASTERS¹¹University of Wisconsin-Madison, Madison, WI**P-Sat-A-251****Relation of Plasma Viscosity and ADMA in Control and Diabetics With ESRD.**N. N. MITROVIC¹, D. STEWART², R. SASHANK³, N. BELTRAN⁴, J. HINES⁵, M. HAMMES⁵, AND P. DHAR³¹Illinois Institute of Technology, Chicago, IL, ²Florida International University, Miami, FL, ³Illinois Institute of Technology, Chicago, IL, ⁴St. Ignatius College Prep, Chicago, IL, ⁵University of Chicago, Chicago, IL**P-Sat-A-252****Isolation and Characterization of Mural Cells From Abdominal Aortic Aneurysms**E. OFSTUN¹, H. TRAN¹, J. RAO¹, AND D. VORP^{1,2}¹University of Pittsburgh Vascular Bioengineering Laboratory, Pittsburgh, PA, ²McGowan 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. KAPLAN¹ AND D. P. GAVER¹¹Tulane University, New Orleans, LA**P-Sat-A-254****Vascular Islands Increase during Regression in Adult Rat Mesenteric Microvascular Networks**M. R. KELLY-GOSS¹, R. S. SWEAT¹, AND W. L. MURFEE¹¹Tulane 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. YOON¹, Y-E. HYUN², S. HYUN¹, AND C. S. KIM³¹Mercer University, Macon, GA, ²Yale University, New Haven, CT, ³U.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. FRATINO¹, D. D. YOON¹, S. HYUN¹, AND C. S. KIM²¹Mercer University, Macon, GA, ²U.S. Environmental Protection Agency, Chapel Hill, NC**P-Sat-A-257****Determining the Effects of Aneurysm on Artery Stability**R. H. SHADFAN¹, Y. XIAO¹, AND H-C. HAN¹¹University 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. ESTRADA¹, M. SAPP¹, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX**P-Sat-A-259****Analytical Solution for the Minimal Closed-Loop Cardiovascular Model**E. R. CARLSON¹ AND C. M. QUICK¹¹Texas 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. HATANO¹, J. LUNA¹, K. MERCURIO¹, D. E. GLASER¹, V. LEPPERT¹, AND K. E. MCCLOSKEY¹¹University 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-MANCHESTER¹ AND N. MAHESHRI¹¹Massachusetts 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 Micro-Yield Events**J. H. BATES¹¹University of Vermont, Burlington, VT**P-Sat-A-263****Computational Model of Mechanically Induced Morphogenesis in Embryonic Heart Valves**P. R. BUSKOHLE¹, J. T. JENKINS¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY

Track: Cellular and Molecular Bioengineering**Molecular Engineering and Protein Design****P-Sat-A-264****Naphthalimide Analogs Inhibit Amyloid- Aggregation and Acetylcholinesterase Activity Associated with Alzheimer's Disease**J-H. TSENG¹, C. SUO¹, J. GAO¹, A. TERRY², J. CHAPMAN¹, AND M. A. MOSS¹¹University of South Carolina, Columbia, SC, ²Georgia 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. ZHOU², Z. NIE², S. YAO², AND Y. LI¹¹Zhejiang University, Hangzhou, China, People's Republic of, ²Hunan 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. HO¹, M. TORRE¹, B. ADLER¹, J. CHEN¹, A. KHAN¹, J. SILBERG¹, AND J. SUH¹¹William Marsh Rice University, Houston, TX**P-Sat-A-267****Production of Influenza H5H1 Hemagglutinin in Pichia pastoris for Development of Subunit Flu Vaccines**L. ZHANG¹, H. LEI¹, Q. LIANG¹, S. JIN¹, AND K. YE¹¹University of Arkansas, Fayetteville, AR**P-Sat-A-268****Increased Potency of Transcription Factor Activity by Protein Engineering**A. M. KABADI¹ AND C. A. GERSBACH¹¹Duke University, Durham, NC**P-Sat-A-269****The Development of an Shp2 Activator in Live Cells**P. WANG¹ AND Y. WANG^{2,3}¹Neuroscience program, University of Illinois, Urbana-Champaign, Urbana, IL, ²Department of Bioengineering, University of Illinois, Urbana-Champaign, Urbana, IL, ³Beckman Institute for Advanced Science and Technology, Urbana, IL**P-Sat-A-270****Functional Evaluation of Periodic Peptide that Induces Formation of Spheroid**Y. HIRANO¹, M. TANAKA¹, AND Y. TABATA²¹Kansai University, Suita, Japan, ²Kyoto 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-I**C. LO¹, A. ANTONOPOULOS², S. HASLAM², A. DELL², AND S. NEELAMEGHAM¹¹SUNY at Buffalo, Amherst, NY, ²Imperial College, London, United Kingdom**P-Sat-A-272****Implicit Solvent Methods for Protein-Protein Interactions**M. H. PETERS¹¹VCU, Richmond, VA**P-Sat-A-273****Novel Quantitative FRET Analysis for Full SUMOylation Pathway Kinetics**J. LIAO¹, Y. SONG², Y. LIU¹, V. MADAHAR¹, AND L. JIANG¹¹University of California at Riverside, Riverside, CA, ²University of California at Riverside, Riverside, CA**P-Sat-A-274****Immune Responses of PEI-Mediated Staphylococcus epidermidis DNA/mRNA Vaccination in Mice**L. YAN¹ AND J. BRYERS¹¹University 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 BASTIAN¹, M. CONTARINO¹, K. KANTHARAJU¹, D. R. MOREIRA², K. FREEDMAN¹, K. MCFADDEN³, AND C. DUFFY¹¹Drexel University, Philadelphia, PA, ²Federal University of Pernambuco, Recife-PE, Brazil, ³Duke University, Durham, NC**P-Sat-A-276****Hydroxyl-dependent Effects of Isoflavones on Amyloid-β Aggregation**B. L. BUNGART¹, J. C-M. LEE², AND M. MOSS³¹University of Missouri, Columbia, MO, ²University of Missouri, Columbia, MO, ³University of South Carolina, Columbia, SC**P-Sat-A-277****Designing Zinc Finger Nucleases for Increased Activity and Specificity in Genome Editing**T. J. CRADICK¹, C. J. ANTICO¹, AND G. BAO¹¹Georgia Institute of Technology and Emory University, Atlanta, GA**P-Sat-A-278****Multivalent Protein Kinetics and Robust Antibody Targeting Vehicles**D. POTTER¹¹Georgia 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. PATEL¹, M. CHEUNG¹, M. E. CHAN¹, AND C. T. RUBIN¹¹Stony Brook University, Stony Brook, NY**P-Sat-A-280****Stiletto: A Safe Laser-based Mammalian Cell Culture Manipulation System**M. MASERATI¹ AND D. DOUGLAS-HAMILTON²¹UMASS Amherst/ Hamilton Thorne, Amherst, MA, ²Hamilton Thorne, Beverly, MA**P-Sat-A-281****Characterizing a Human PCD-Related Mutation by Kinematic Analysis of Chlamydomonas Swimming**K. WILSON¹, P. BAYLY¹, R. OKAMOTO¹, S. DUTCHER¹, AND T. FERKOL¹¹Washington University in St. Louis, Saint Louis, MO**P-Sat-A-282****Role Of Cell Morphology In Epithelial-Mesenchymal Transition**V. C. SHUKLA¹, N. HIGUITA-CASTRO¹, M. CRAWFORD², P. NANA-SINKAM², D. HANSFORD¹, D. A. KNISS^{1,2}, AND S. N. GHADIALI^{1,2}¹Ohio State University, Columbus, OH, ²Wexner 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. CARVAJAL¹, P. VANDRANGI¹, D. LO¹, AND V. RODGERS¹¹University of California, Riverside, Riverside, CA**P-Sat-A-284****Fluid Shear Stress Modulates Chlamydia pneumoniae-mediated Inflammatory Response**S. J. EVANI¹, S. F. DALLO¹, AND A. K. RAMASUBRAMANIAN¹¹University of Texas San Antonio, San Antonio, TX

P-Sat-A-285**Effect of Secondhand Smoke on Endothelial Cell Functions Under Dynamic Shear Stress**

W. YIN¹, E. NGWE¹, AND D. A. RUBENSTEIN¹
¹Oklahoma State University, Stillwater, OK

P-Sat-A-286**Electric Field Modeling in a 3D Tissue Engineered Tumor Treated with Irreversible Electroporation**

P. A. GARCIA¹, C. B. ARENA¹, C. S. SZOT¹, AND R. V. DAVALOS¹
¹Virginia Tech - Wake Forest University, Blacksburg, VA

P-Sat-A-287**Probing SCFA-Hexosamine Esterase Hydrolysis by Computational Docking Studies**

F. A. ESPINOZA¹, J. WANG¹, M. CHOW¹, R. SRINIVAS¹, R. BHATTACHARYA¹, AND K. J. YAREMA¹
¹Johns 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. SIDELL¹, M. M. MEHTA², AND J. J. SILBERG²
¹West Houston Center for Science and Engineering, Houston Community College, Houston, TX, ²Rice University, Houston, TX

P-Sat-A-289**Electrically Induced Contractility of Intact Embryonic Tissues on a Microelectrode Array**

E. B. WESTON¹, D. S. VIJAYRAGHAVAN¹, C. L. WEAVER¹, S. M. TRIER¹, X. T. CUI¹, AND L. A. DAVIDSON¹
¹University of Pittsburgh, Pittsburgh, PA

P-Sat-A-290**Cell Decision Between Cell Cycle Arrest and Apoptosis**

Y. SHI¹
¹Carnegie Mellon University/Imperial College London(occasional), Pittsburgh, PA

P-Sat-A-291**The Effects of Biomechanical Properties on Spinal Cord Regeneration**

K. SHORES¹, C. LUNA², H. ARANDA-ESPINOZA², AND A. COHEN²
¹Clemson University, Clemson, SC, ²University 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. CHARIOU¹, K. L. LEE¹, AND N. F. STEINMETZ¹
¹Case Western Reserve University, Cleveland, OH

P-Sat-A-293**Fluid Shear Stress Sensitizes Neutrophil Activation to Platelet Activating Factor**

K. S. LIN¹
¹Cornell University, Ithaca, NY

P-Sat-A-294**Effectiveness of Phenolic Acid Derived from Coconut Oil on Amyloid- β Inhibition**

S. Z. VANCE¹, J-H. TSENG², S. CHASTAIN², K. PATE², W. REED², AND M. MOSS²
¹University of Kentucky, Lexington, KY, ²University of South Carolina, Columbia, SC

P-Sat-A-295**Understanding the Role of Reductive Metabolism and Lipid Uptake**

C. R. GREEN¹, S. J. PARKER¹, AND C. M. METALLO¹
¹University of California, San Diego, La Jolla, CA

P-Sat-A-296**Phenolic Acids Alter Amyloid- β Oligomerization and Consequent Cellular Responses**

J. R. CLEGG¹, K. M. PATE¹, S. Z. VANCE², J. W. REED¹, AND M. A. MOSS¹
¹University of South Carolina, Columbia, SC, ²University of Kentucky, Lexington, KY

P-Sat-A-297**Myosin IIA Deficient Cells Migrate With Minimal Traction Forces**

M. H. JORRISCH¹, W. SHIH¹, AND S. YAMADA¹
¹University of California, Davis, Davis, CA

P-Sat-A-298**Study of Intrinsic Temporal Mechanical Oscillations of Cells**

N. RAY^{1,2} AND E. DIMITRIADIS²
¹University of California, Berkeley, Berkeley, CA, ²National Institutes of Health, Bethesda, MD

P-Sat-A-299**Characterization and Comparison of SDF-1 Mediated Cell Migration Across Various Cell Lines**

S. STEIB¹, C. S. WALLACE², M. WU², AND W. REICHERT²
¹Louisiana State University, Baton Rouge, LA, ²Duke University, Durham, NC

P-Sat-A-300**Using Recombinant DNA to Alter the Mechanical Domain of Kinesin Motor Proteins**

N. SURESH¹, S. SHASTRY¹, AND W. O. HANCOCK¹
¹Pennsylvania 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. MUNCIE¹ AND A. LIU²
¹University of Michigan, Novi, MI, ²University of Michigan, Ann Arbor, MI

P-Sat-A-302**Engineering Synthetic Transcription Factors for Myogenic Differentiation**

C. M. KIM¹, T. M. GIBSON¹, L. R. POLSTEIN¹, AND C. A. GERSBACH¹
¹Duke University, Durham, NC

P-Sat-A-303**A Computational Model of Dynamic Surface Tension of Pulmonary Surfactant Using the Langmuir Trough/Wilhelmy Plate**

S. CHEN¹, B. FOWLER¹, E. YAMAGUCHI¹, AND D. GAVER¹
¹Tulane University, New Orleans, LA

P-Sat-A-304**Novel Computational and Analytical Tools for Modeling Kinesin Motor Protein Biochemistry**

N. C. DEFFENBAUGH¹
¹Penn State University, State College, PA

P-Sat-A-305**A Computational Model of Fibroblast Growth Factor-2 Binding to Endothelial Cells**

T. CAI¹, N. PETAL¹, AND A. M. CLYNE¹
¹Drexel University, Philadelphia, PA

P-Sat-A-306**Force Threshold Relationship With Applied Force Rate For Membrane Tether Development Independent Of Biotin Linkage**

P. Y. BORDEN¹, D. J. STARK¹, T. KILLIAN¹, AND R. RAPHAEL¹
¹Rice University, Houston, TX

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. CHIC¹, C. L. WILDER², AND M. O. PLATT²

¹Georgia Institute of Technology, Atlanta, GA, ²The 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. EDICK¹

¹Rensselaer Polytechnic Institute, Troy, NY, ²Cornell University, Ithaca, NY

P-Sat-A-309

Effects of Shock Wave Pressures on Astrocyte Reactivity Over Time

L. M. LEMIEUX¹, E. EREIFEJ¹, C. E. HAMPTON¹, A. LEONARDI¹, AND P. J. VANDEVORD¹

¹Virginia 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. BROWN¹, D. G. OUSTEROUT¹, P. PEREZ-PINERA¹, AND C. A. GERSBACH¹

¹Duke 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 ACUNA¹, C. CHOPKO², AND L. GRIFFITH²

¹University of Puerto Rico, Mayaguez Campus, Mayaguez, PR, Puerto Rico, ²Massachusetts Institute of Technology, Cambridge, MA

P-Sat-A-312

Strain and Stiffness Dependent Effects on Intracellular Calcium Levels in Fibroblasts

S. PRESTON¹, J. HUTCHESON¹, M. SEWELL-LOFTIN¹, AND D. MERRYMAN¹

¹Vanderbilt University, Nashville, TN

P-Sat-A-313

Analyzing the Behavior of Normoxic and Hypoxic Cells Through the Use of Microfluidic Devices

M. REXIUS¹, K. CHEN², AND D. T. EDDINGTON¹

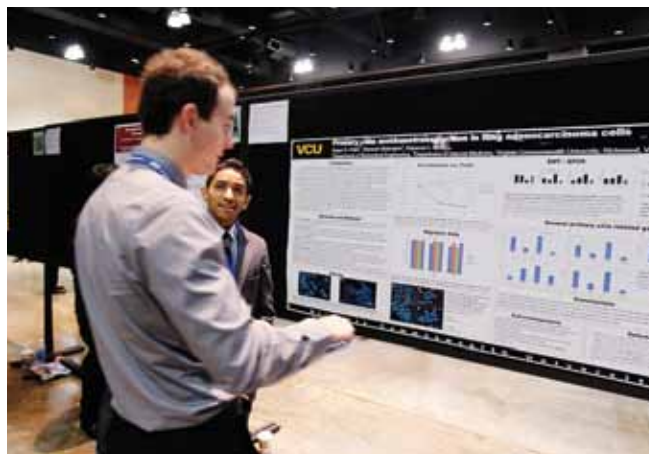
¹University of Illinois at Chicago, Chicago, IL, ²University of California, Berkeley, Berkeley, CA

P-Sat-A-314

Single Cell Whole Genome Amplification and SNP Analysis using Microarrays and qPCR

S. GOSWAMI¹, S. TITUS¹, AND S. ROY¹

¹Yeshiva University, New York, NY



POSTER
SESSION
SatA

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. SUNWOO¹, G. A. TSIANOS¹, J. GOODNER¹, AND G. E. LOEB¹

¹University 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. MEHTA¹ AND B. I. PRILUTSKY¹

¹Georgia Institute of Technology, Atlanta, GA

P-Sat-B-3

Biomechanics Constrains Variability in Spatial Structure of Muscle Coordination for Endpoint Force Generation

M. SOHN¹, J. MCKAY^{1,2}, AND L. H. TING^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Sat-B-4

The Potential of Aligned, Electrospun Fibers Chemisorbed With Laminin Bbinding Domains in Peripheral Nerve Regeneration

M. K. LEACH¹, E. W. FRANZ¹, J. GOODMAN¹, S. J. TUCK¹, Y. I. NAIM¹, B. KULICK¹, T. REGAN¹, A. RASTOGI¹, J. T. PENDY¹, M. KIRSCH¹, N. PATEL¹, S. FERRIS¹, AND J. M. COREY¹

¹The University of Michigan, Ann Arbor, MI

P-Sat-B-5

Nano-Neurotechnology: Controlling Neural Network Activity by Gold Nanorods

S. YOO¹, J. PARK¹, AND Y. NAM¹

¹KAIST, Daejeon, Korea, Republic of

P-Sat-B-6

Nonlinear Dynamical Modeling of the Cortical Response to Thalamic Microstimulation

D. C. MILLARD¹, Q. WANG¹, AND G. B. STANLEY¹

¹Georgia Institute of Technology, Atlanta, GA

P-Sat-B-7

An On-Chip Neuron Guidance Model for Studying Pioneer Axonal Pathfinding

N. R. ERDMAN¹, L. WEI¹, Y. KUANG¹, M. KINDY², AND B. Z. GAO¹

¹Clemson University, Clemson, SC, ²Peking University, Beijing, China, People's Republic of, ³Medical University of South Carolina, Charleston, SC

P-Sat-B-8

Active Feedback System to Record and Stimulate Simultaneously from a Single Electrode during Deep Brain Stimulation

C. POLAR¹ AND A. D. DORVAL¹

¹University 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. KUYKENDAL¹, G. S. GUVANASEN², M. A. GROVER², S. M. POTTER², AND S. P. DEWEERTH²

¹Georgia Inst of Tech, Atlanta, GA, ²Georgia inst of tech, Atlanta, GA

P-Sat-B-10

Integration of Tactile Feedback into Control of a Telerobotic Gripper

C-H. LIN¹

¹University 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. VARMAN¹, M. E. MAGNUSON², AND S. KEILHOLZ²

¹Emory University, Atlanta, GA, ²Georgia Institute of Technology / Emory University, Atlanta, GA

P-Sat-B-12

Is Granger Causality a Viable Method for Analyzing fMRI Ddata?

X. WEN¹, G. RANGARAJAN², AND M. DING¹

¹University of Florida, Gainesville, FL, ²Indian Institute of Science, Bangalore, India

P-Sat-B-13

Method for Magnetic Susceptibility Adjustment of Metal Alloys and Characterization with MRI

G. W. ASTARY¹, M. K. PEPRAH², C. R. FISHER³, P. R. CARNEY⁴, M. SARNTINORANONT⁵, M. W. MEISEL², M. V. MANUEL³, AND T. H. MARECI¹

¹Biochemistry and Molecular Biology, University of Florida, Gainesville, FL, ²Physics, University of Florida, Gainesville, FL, ³Materials Science and Engineering, University of Florida, Gainesville, FL, ⁴Biomedical Engineering, University of Florida, Gainesville, FL, ⁵Mechanical 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. KOTA¹, K. M. KELSEY¹, J. B. RIGONI¹, AND D. L. MOLFESE¹

¹University of Nebraska Lincoln, Lincoln, NE

P-Sat-B-15

Low Frequency EEG Correlates of fMRI in the Resting State

J. K. GROOMS¹, G. J. THOMPSON¹, H. D. SCHWARB¹, E. H. SCHUMACHER¹, R. M. SCHMIDT², C. M. EPSTEIN³, AND S. D. KEILHOLZ¹

¹Georgia Institute of Technology, Atlanta, GA, ²Air Force Research Laboratory, Atlanta, GA, ³Emory 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. MERRITT¹, G. THOMPSON¹, M. MAGNUSON¹, S. HILLARY², W.-J. PAN¹, L. TRIPP³, A. MCKINLEY³, E. SCHUMACHER², AND S. KEILHOLZ¹

¹Emory University and Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA, ³AFRL, WPAFB, OH

P-Sat-B-17

Constructing a Channelome Atlas for the P14 Rat Brain

V. SHCHERBATYY¹, J. CARSON², K. JÄCKLE¹, F. GRABBE¹, M. BROCKMEYER¹, E. GOMEZ², T. JU³, AND G. EICHELE¹

¹Max Plank Institute for Biophysical Chemistry, Gottingen, Germany, ²Pacific Northwest National Laboratory, Richland, WA, ³Washington 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. SHIN¹, X. LI², AND W. Z. RYMER^{1,2}

¹Northwestern University, Evanston, IL, ²Rehabilitation Institute of Chicago, Chicago, IL

P-Sat-B-19

Influencing Ankle Flexor Activity with Neuromuscular Electrical Stimulation Timed to Treadmill Stepping

A. AGARWAL¹, P. KAMGAR¹, T. CHAO¹, P. SANCHEZ¹, F. ARROYO¹, AND D. WON¹

¹California State University, Los Angeles, Los Angeles, CA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-B-20**Enhancing Volitional Control at the Hand in High Tetraplegia Using a Vertical Assist Device**S. SOLANKI¹ AND R. F. KIRSCH^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis 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 DESAI¹, J. D. ROLSTON², A. D. PAREKH¹, S. M. POTTER¹, AND R. E. GROSS^{1,3}¹Georgia Institute of Technology, Atlanta, GA, ²University of California, San Francisco, CA, ³Emory University, Atlanta, GA**P-Sat-B-22****A Multiplex Approach for Designing a Biomarker Assay for Age-related Cognitive Decline**R. B. SPEISMAN¹, A. KUMAR¹, A. RANI¹, A. ASOKAN¹, T. C. FOSTER¹, AND B. K. ORMEROD¹¹University of Florida, Gainesville, FL**P-Sat-B-23****Neuroinflammation-Induced Vascular Remodeling May Compromise Neuronal Differentiation**V. V. MUNIKOTI¹, J. FONTS¹, AND B. K. ORMEROD¹¹University of Florida, Gainesville, FL**P-Sat-B-24****Network-Based Analysis of Stereotaxic EEG to Identify Seizure Foci**R. YAFFE¹, S. BURNS¹, J. GALE², J. BULACIO², J. GONZALEZ-MARTINEZ², H.-J. PARK², AND S. SARMA¹¹Johns Hopkins University, Baltimore, MD, ²Cleveland Clinic, Cleveland, OH**P-Sat-B-25****Hyaluronic Acid-Based Hydrogels as Scaffolds for Ocular Stem Cells to Differentiate Into Neuronal Cells**K. COMPTON¹, L. WU¹, AND T. LOWE¹¹University 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. FORST¹, D. C. BLOK¹, J. P. SLOPSEMA¹, AND K. H. POLASEK¹¹Hope College, Holland, MI**P-Sat-B-27****Exploration of the Nonlinear Behavior of the steady state PERG as Function of Contrast Using Deconvolution**J. ILES¹, J. BOHÓRQUEZ¹, J. TOFT-NIELSEN¹, AND Ö. ÖZDAMAR¹¹University of Miami, Coral Gables, FL**P-Sat-B-28****Fluid Flow Stimulation of SH-SY5Y Cell Neurogenesis**K. THORSON¹, D. E. MENTER¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**P-Sat-B-29****Trap Closure of Venus Flytrap via Mid-IR Stimulation**D. EISEN¹, D. JANSSEN², X. CHEN¹, F.-S. CHOA¹, D. KOSTOV¹, AND J. FAN³¹University of Maryland Baltimore County, Baltimore, MD, ²Greater Grace Christian Academy, Baltimore, MD, ³Adtech Optics Inc., City of Industry, CA**P-Sat-B-30****Development of Detergent Free Acellular Grafts for Peripheral Nerve Regeneration**U. MENDEZ¹, T.-H. CHUANG², AND S. SHAH²¹Michigan Technological University, Houghton, MI, ²University 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. HOUSEHOLDER¹, S. SUNIL¹, J. SIMON¹, AND J. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²L 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. DUONG², AND M. HAN²¹California Polytechnic State University, San Luis Obispo, CA, ²Neural Engineering Program, Huntington Medical Research Institutes, Pasadena, CA**P-Sat-B-33****Cerebral Binaural Beats: Investigating the Effects of Beat Duration**E. M. BELLO¹, J. BOHORQUEZ¹, AND O. ÖZDAMAR¹¹University of Miami, Coral Gables, FL**P-Sat-B-34****Biocompatible Dry Adhesives Mimicking Gecko Spatulae for EEG Electrodes**J. GILBERTSON¹, P. LELEUX², AND G. MALLIARAS²¹Beloit College, Beloit, WI, ²Ecole Nationale Supérieure 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. SAHIN²¹Tulane University, New Orleans, LA, ²New Jersey Institute of Technology, Newark, NJ, ³George Fox University, Newberg, OR**P-Sat-B-36****Validation of a Method to Measure ERP Responses**B. ALMEIDA^{1,2}, P. TENDOLKAR², B. MANTILLA², M. BERGEN^{2,3}, AND R. SERVATIUS³¹Worcester Polytechnic Institute, Worcester, MA, ²New Jersey Institute of Technology, Newark, NJ, ³University 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. CARDENAS², AND G. COLLINS²¹University of Rochester, Rochester, NY, ²New Jersey Institute of Technology, Newark, NJ, ³Rose Hulman Institute of Technology, Terre Haute, IN, ⁴The College of New Jersey, Ewing, NJ**P-Sat-B-38****The Role of CASK in Neurodevelopment**B. ALLEN^{1,2}, V. CHAVAN², L. LECONTE², AND K. MUKHERJEE²¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Virginia Tech-Carillon Research Institute, Roanoke, VA**P-Sat-B-39****Recording and Analyzing Speech Communication in Typical Everyday Listening Situations**K. THOMAS¹, H. S. COLBURN¹, AND S. T. GOVERTS²¹Boston University, Boston, MA, ²VUmc Amsterdam, Amsterdam, Netherlands**P-Sat-B-40****Cochlear-Implant Speech-Coding Strategy Based on the Time Waveform Zero-Crossing Behavior**C. TINANG SIME¹, M. G. BINGABR¹, AND B. ESPINOZA-VARAS²¹University Of Central Oklahoma, Edmond, OK, ²Oklahoma University Health Science Center, Oklahoma City, OK

P-Sat-B-41

A Novel In Vitro Laser-induced Blast Trauma Model Using 3D Cell Cultures
J. C. SMITH III¹, J. SHOEMAKER¹, G. KENNEDY¹, J. BREIDENICH¹, N. THADHANI¹, AND M. LAPLACA¹

¹Georgia Institute of Technology, Atlanta, GA

P-Sat-B-42

Vascular and Cellular Characterization of Brain Tissue Around Implanted Electrodes

Z. GUGEL¹, T. D. KOZAI¹, AND X. T. CUI¹

¹University 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. DUONG², AND M. HAN²

¹Biomedical Engineering Department, University of Southern California, Los Angeles, CA,

²Neural Engineering Program, Huntington Medical Research Institutes, Pasadena, CA,

³California Polytechnic State University, San Luis Obispo, CA

P-Sat-B-44

Electrophoretic Approach to Immunostaining Neural Tissues

H. HO^{1,2}, M. HAN², AND H. DUONG²

¹Louisiana Tech University, Ruston, LA, ²Neural Engineering Program, Huntington Medical Research Institute, Pasadena, CA

P-Sat-B-45

Characterization of Implantable, Thin-Film Wireless Receivers for Functional Electrical Stimulation

D. SKRAINKA¹, M. R. MACEWAN², AND D. MORAN²

¹George Washington University, Washington, DC, ²Washington 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. MAHAFFEY¹, W. COLE¹, AND A. B. CASTILLO^{1,2}

¹VA Palo Alto Medical Center, Palo Alto, CA, ²Stanford 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. HEO¹, T. P. DRISCOLL¹, R. L. MAUCK¹, AND D. M. ELLIOTT^{1,2}

¹University of Pennsylvania, Philadelphia, PA, ²University of Delaware, Newark, DE

P-Sat-B-48

A 3-D Culture Construct to Promote Mouse Mesenchymal Stem Cell Survival

B. H. MCGOWAN¹, B. GOLZ¹, AND J. NAGATOMI¹

¹Clemson 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. LURA¹, M. WERNKE¹, S. CAREY¹, AND R. DUBEY¹

¹University of South Florida, Tampa, FL

P-Sat-B-50

Validation and Calibration of the Wii Balance Board as an Inexpensive Force Plate

H. L. BARTLETT¹, L. H. TING^{1,2}, AND J. T. BINGHAM¹

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Sat-B-51

Sit-to-stand Evaluation in Young and Older Adults Using Body Worn Sensors

R. SOANGRA¹ AND T. E. LOCKHART¹

¹Virginia Tech, Blacksburg, VA

P-Sat-B-52

Biomechanical Injury Analysis of Treadmill Accidents

D. STRICKLAND¹ AND S. KUMAR¹

¹Safety 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 Robotic Treadmill Training

M. WU¹, J. MACDONALD¹, S-C. YEN¹, D. CHEN¹, AND J. KIM¹

¹Rehabilitation Institute of Chicago, Chicago, IL

P-Sat-B-54

Development of a Cable Driven Flexible Robotic Rehabilitation Glove

M. A. DELPH II¹, S. A. FISCHER¹, P. W. GAUTHIER¹, C. H. MARTINEZ LUNA¹, E. A. CLANCY¹, AND G. S. FISCHER¹

¹Worcester 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. MAO², L. CAO¹, AND K. YANG²

¹Hunan University, Changsha, China, People's Republic of, ²Wayne State University, Detroit, MI

P-Sat-B-56

Effect of Using Hand-Weights on Performance in the Standing Long Jump

A. J. FILUSH¹ AND B. M. ASHBY¹

¹Grand Valley State University, Grand Rapids, MI

P-Sat-B-57

The Effect of Synthetic Collagen Crosslinking on Ligament Damage

C. HERMAN¹, R. DE VITA¹, A. KWANSA¹, AND Z. GUO¹

¹Virginia 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}

¹University of Toronto, Toronto, ON, Canada, ²Mount 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}

¹Mount Sinai Hospital, Toronto, ON, Canada, ²University of Toronto, Toronto, ON, Canada

P-Sat-B-60**Biomechanical Changes During Various Cross-Legged Sitting Postures**S. AHN¹, S. KIM¹, S. KANG², AND Y. KIM¹¹Department of Biomedical Engineering and Institute of Medical Engineering, Yonsei University, Wonju, Korea, Republic of, ²Department of Rehabilitation Therapy, Yonsei University, Wonju, Korea, Republic of**P-Sat-B-61****Pressure Patterns of the Professional Circular Friction Massage**J. RYU¹, J. SON¹, AND Y. KIM¹¹Yonsei 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. SCHNEIDER¹, J. LIAO^{1,2}, AND L. WILLIAMS^{1,2}¹Mississippi State University, Mississippi State, MS, ²Center 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. CURREY¹ AND M. GRAVELEY¹¹Union College, Schenectady, NY**P-Sat-B-64****Upper Extremity Kinematics in Sonographers During Kidney Scanning**J. EDWARDS¹ AND B. ASHBY²¹Grand Valley State University, Pittsburgh, PA, ²Grand 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. FLOWERS¹ AND M. B. MCCULLOUGH¹¹North Carolina A&T State University, Greensboro, NC**P-Sat-B-66****A Novel Approach to Muscle Modeling Using Fractional Quasilinear Viscoelasticity**C. A. COX¹ AND C. R. BASS¹¹Duke University, Durham, NC**P-Sat-B-67****Thoracic Spine Morphology Characterization of a Novel Animal Model**J. R. PETERS¹, L. ROBINSON¹, R. W. KENT², AND S. BALASUBRAMANIAN¹¹Drexel University, Philadelphia, PA, ²University 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. DONALDSON¹, J. D. DESJARDINS¹, K. VERNON¹, AND R. BLOB¹¹Clemson University, Clemson, SC**P-Sat-B-69****Suppressed Trabecular Bone Growth Rate in Obesity Compensated by Relative Increase in Cortical Bone**D. NGUYEN¹, M. CHAN¹, AND C. RUBIN¹¹Stony 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 POST¹, A. T. COLLINS¹, AND J. S. HIGGINSON¹¹University of Delaware, Newark, DE**P-Sat-B-71****Assessing Changes in Ground Reaction Forces in a Rat Model of Knee Osteoarthritis**B. L. JACOBS¹, H. E. KLOEFKORN¹, AND K. D. ALLEN¹¹University of Florida, Gainesville, FL**P-Sat-B-72****Does Touch Sensitivity Correlate to Gait Abnormalities in a Rodent Model of Knee Osteoarthritis?**A. Y. LOYE¹, H. E. KLOEFKORN¹, AND K. D. ALLEN¹¹University of Florida, Gainesville, FL**P-Sat-B-73****Functional Electromagnetic Stimulation to Aid Patients with Unilateral Vocal Fold Paralysis**W. G. BURKS¹, K. A. HARRING¹, M. T. PREIB¹, P. JARAMILLO¹, AND A. LEONESSA¹¹Virginia Tech, Blacksburg, VA**P-Sat-B-74****Development of a Biomechanical Model for Sacroiliac Range of Motion**B. CONDEZ¹, E. REDELSHEIMER¹, J. LEASURE¹, J. BUCKLEY¹, D. KONDRASHOV^{2,3}, AND C. AMES⁴¹The Taylor Collaborations, San Francisco, CA, ²St. Mary's Spine Center, San Francisco, CA, ³San Francisco ORP, San Francisco, CA, ⁴UCSF 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. DEANGELIS², L. GRIMALDI BOURNISSAINT², A. NAZARIAN², AND A. RAMAPPA²¹Boston University, Boston, MA, ²Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, ³Harvard Medical School, Boston, MA**P-Sat-B-76****Biomechanical Evaluation of Different Screw Angle Fixations for Oblique Fractures of Long Bone**B. N. NGUYEN¹¹Mercer University, Macon, GA**P-Sat-B-77****Femoral Flexion Axis Alignment For Improved Implant Wear Testing Simulation**K. FRITCHMAN¹, C. ELJACH¹, J. O'DONNELL¹, J. LAKE¹, T. WARRICK¹, AND J. D. DESJARDINS¹¹Clemson University, Clemson, SC**P-Sat-B-78****Design and Evaluation of a Magnesium-based Ring for Repair of a Torn Anterior Cruciate Ligament**H. EASON¹, K. FARRARO¹, A. SPEZIALI¹, AND S. L-Y. WOO¹¹University 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. SUAREZ¹, A. POPOVICH¹, M. VENGLAR¹, A. VAN DUJIN¹, T. BEVINS¹, AND K. CSAVINA¹¹Florida Gulf Coast University, Fort Myers, FL, ²University of Applied Science Technikum Wien, Vienna, Austria**P-Sat-B-80****Development of a Biomechanical Model Producing Proximal Pedicle Pullout of Long Fusion Spinal Constructs**A. MARTIN¹, P. WANBERG¹, J. LEASURE^{1,2}, J. BUCKLEY¹, D. KONDRASHOV^{2,3}, AND C. AMES⁴¹The Taylor Collaboration Laboratories, San Francisco, CA, ²San Francisco Orthopaedic Residency Program, San Francisco, CA, ³St. Mary's Spine Center, San Francisco, CA, ⁴UCSF Department of Nerosurgery, San Francisco, CA**P-Sat-B-81****Effect of Electrical Stimulation in the Supine Position of Spinal Cord Injury Patients**A. MUKHERJEE¹, P. BARRANCE², AND G. F. FORREST²¹Duke University, Durham, NC, ²Kessler Foundation, West Orange, NJ**P-Sat-B-82****Semi-Automatic Self Feeding Device**S. H. MAHMOUD¹, H. SONG¹, AND N. PEIXOTO¹¹George Mason University, Fairfax, VA**P-Sat-B-83****Demands on Posterior Fusion Hardware During Lordosis Restoration Procedures**A. MARTIN¹, C. TELLES², J. LEASURE^{1,3}, J. TANG¹, C. AMES⁴, AND D. KONDRASHOV^{2,3}¹The Taylor Collaboration Laboratories, San Francisco, CA, ²St. Mary's Spine Center, San Francisco, CA, ³San Francisco Orthopaedic Residency Program, San Francisco, CA, ⁴UCSF Department of Nerosurgery, San Francisco, CA**P-Sat-B-84****Comparative Muscle Activation Patterns for Transtibial Amputees and Controls at Higher than Comfortable Walking Speeds**T. K. EVANS¹, T. NORMAN¹, AND Y-H. CHANG¹¹Georgia 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. BOROTIKAR², AND F. T. SHEEHAN²¹The College of New Jersey, Medford Lakes, NJ, ²National 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. POPOVICH¹, V. SUAREZ¹, M. VENGLAR¹, A. VAN DUJIN¹, T. BEVINS¹, AND K. R. CSAVINA¹¹Florida Gulf Coast University, Fort Myers, FL**P-Sat-B-87****A Simple, Cost Effective Shoulder Dislocation Task Trainer**A. CAO¹ AND M. H. MEHDI¹¹East Carolina University, Greenville, NC**P-Sat-B-88****Comparison of Frontal Plane Compensatory Strategies Between Ambulation Categories in Individuals Post-Stroke**V. A. STANHOPE¹, B. A. KNARR¹ AND J. S. HIGGINSON¹¹University of Delaware, Newark, DE**P-Sat-B-89****Time-Zero Evaluation of Magnesium-Based Screws**A. N. PICKERING¹, K. E. KIM¹, A. SPEZIALI¹, AND S. L-Y. WOO¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-B-90****Comparing Upper Body Motion Using Kinect and Vicon Systems**S. TUDOR¹, J. CATHELL¹, AND S. CAREY¹¹University of South Florida, Tampa, FL**P-Sat-B-91****Force Senson Ultrasound Probe Design for Better Rotator Cuff Injury Diagnosis**H. SCRUGGS¹, A. CUSIK¹, K. GROVE¹, Q. GUO¹, K. PERRY¹, M. ROGERS¹, D. KWARTOWITZ¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Sat-B-92****The Effect of Vision Loss on the Time to Complete Upper Extremity Peg Tasks**A. CHAMBERS¹, J. HANEY¹, AND J. LOPEZ²¹University of Pittsburgh, Pittsburgh, PA, ²UMBC, Baltimore, MD**P-Sat-B-93****Potting Alignment Accuracy of Implanted Glenspheres in a Reverse Shoulder Arthroplasty Micromotion Study**A. DEVON¹, A. MARIONNEAUX¹, A. SEDLER¹, W. SIMPSON¹, S. J. TOLAN², A. D. BRIES², R. J. HAWKINS², AND J. D. DESJARDINS¹¹Clemson University, Clemson, SC, ²Steadman 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. YUSUFBEKOV¹, H. KAINZ¹, M. VENGLAR², A. VAN DUJIN², T. BEVINS², AND K. CSAVINA¹¹U.A. Whitaker College of Engineering, Florida Gulf Coast University, FL, USA, Fort Myers, FL, ²Department 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. GILLETTE¹, B. C. HANSEN², W. J. MCCARTY², E. CORY², E. F. CHAN², T. YAMAGUCHI², K. MASUDA², AND R. L. SAH²¹University of Utah, Salt Lake City, UT, ²University 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. KOPPEL^{1,2}, K. W. KEATING^{1,2}, G. R. PAOLILLO^{1,2}, H. M. DARWISH^{1,2}, N. M. GOODSSELL^{1,2}, L. A. WILLIAMS^{1,2}, AND D. M. THOMPSON^{1,2}¹Rensselaer Polytechnic Institute, Troy, NY, ²Center 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. LAMPE¹ AND S. C. HEILSHORN¹¹Stanford 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. GILMONT², E. A. MIYASAKA³, D. H. TEITELBAUM³, AND K. N. BITAR^{1,2}¹Virginia Tech-Wake Forest School of Biomedical Engineering & Sciences, Winston-Salem, NC, ²Wake Forest School of Medicine, Winston-Salem, NC, ³University of Michigan Medical School, Ann Arbor, MI

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-B-100**In Vitro Models of Spinal Cord Injury: Probing the Role of Multicellular Interactions in 3D Microenvironments**S. BALASUBRAMANIAN¹ AND J. B. LEACH¹¹University 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. GAIFEM¹ AND J. B. LEACH¹¹UMBC, Baltimore, MD**P-Sat-B-102****In vitro Study of the Effects of Nanogel Incorporation into Agarose on Neural Cell Growth**E. MORIN¹, S. TANG¹, AND W. HE¹¹The 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. MATTIX¹, T. POOLE¹, M. CASCO¹, R. VISCONTI², D. SIMIONESCU¹, A. SIMIONESCU¹, AND F. ALEXIS¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**P-Sat-B-104****Density Gradient Multilayer Polymerization to Create Complex Tissue**J. V. KARPIAK¹, Y. NER¹, AND A. ALMUTAIRI¹¹University of California, San Diego, La Jolla, CA**P-Sat-B-105****Patterned Hydrogels with Complementary Biomechanical Properties for Vascularized Osteogenesis**E. JABBARI¹ AND A. KHADEMHOSEINI²¹University of South Carolina, Columbia, SC, ²Harvard, Boston, MA**P-Sat-B-106****Decoupling the Role of Topographical, Mechanical, and Chemical Cues in Regulation of Cell Spreading**G. HARRIS¹ AND E. JABBARZADEH¹¹University of South Carolina, Columbia, SC**P-Sat-B-107****Cell-dispensing Process for Fabricating Alginate Scaffold Embedded With Preosteoblasts**S. AHN¹, H. LEE¹, J. PUETZER², L. J. BONASSAR², AND G. KIM¹¹Chosun University, Gwangju, Korea, Republic of, ²Cornell University, Ithaca, NY**P-Sat-B-108****Inkjet Bioprinting of Oxygen-Generating Microcomposites Scaffolds**D. REYNA-SORIANO¹, J. RODRIGUEZ-DEVORA¹, AND T. XU¹¹University of Texas, El Paso, TX**P-Sat-B-109****Sculpting Three Dimensional Cell-Laden Hydrogel Scaffolds by Controlled Release**Y. V. KALININ¹, A. MURALI¹, AND D. H. GRACIAS¹¹Johns Hopkins University, Baltimore, MD**P-Sat-B-110****Flexible Platforms for Micron Scale Protein and Cell Printing via Laser Direct-Write**B. R. MINTZ¹, T. PHAMDUY¹, D. B. CHRISEY¹, AND J. A. COOPER JR.¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Sat-B-111****Aqueous Two-phase Printing of Contractile Collagen Hydrogel Droplets**C. MORAES¹, A. SIMON¹, AND S. TAKAYAMA¹¹University of Michigan, Ann Arbor, MI**P-Sat-B-112****Biomems Substrates for Endothelial Cell Network Formation**S. DAS¹, W. ZAGOZDZON-WOSIK¹, AND F. MERCHANT¹¹University 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. MINTEER¹, Y. C. LIN^{1,2}, M. YOUNG², P. OVER², J. C. GERLACH^{1,2}, J. P. RUBIN^{1,2}, AND K. G. MARRA^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²The McGowan Institute for Regenerative Medicine, Pittsburgh, PA**P-Sat-B-114****Novel Printable Skin Graft to Treat Chronic Wounds**M. G. YANEZ¹, J. RINCON¹, S. NATIVIDAD¹, AND T. BOLAND¹¹University 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. FELDMAN¹ AND J. MCCAULEY^{1,2}¹UAB, Birmingham, AL, ²University 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. WEIDENHAMER¹ AND R. T. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**P-Sat-B-117****Epicardial Elasticity Measurements of the Ex-Vivo Murine Heart using Atomic Force Microscopy**F. KOSSIVAS¹, M. MICHAELIDES¹, L. CAO², A. KYPRIANOU¹, G. TRUSKEY², AND C. CONSTANTINIDES¹¹University of Cyprus, Nicosia, Cyprus, ²Duke University, Durham, NC**P-Sat-B-118****Boundary Layers in the Mechanical Bidomain Model**B. J. ROTH¹¹Oakland University, Rochester, MI**P-Sat-B-119****Experimental and Theoretical Analysis of the Bending Component of Cardiac Looping**Y. SHI¹, G. XU¹, AND L. A. TABER¹¹Washington University in St Louis, Saint Louis, MO

P-Sat-B-120**The Mechanosensitive Role of Kindlin-2 in Cardiac Fibroblasts**S. M. HUME¹, E. ZIMINA¹, AND B. HINZ¹¹University 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 BO¹, K. HYEONG SEOK¹, K. GILSON¹, AND N. M. ROBERT^{1,2}¹Chonbuk National University, Jeonju, Korea, Republic of, ²Georgia Institute of Technology, Atlanta, GA**P-Sat-B-122****Fibroblast-Matrix Interactions Observed and Quantified Using Time-Lapse Microscopy**A. M. DE JESUS¹, D. AHRAM¹, AND E. SANDER¹¹University of Iowa, Iowa City, IA**P-Sat-B-123****A Distensibility System for Mechanotransduction of Polycaprolactone/Elastin Scaffolds**S. J. BONFIG¹ AND C. MILLER¹¹Saint Louis University, Saint Louis, MO**P-Sat-B-124****Complementary Effect of Mechanical and Chemical Stimuli on Mesenchymal Stem Cell Differentiation**C. LIU¹, S. BAEK², AND C. CHAN¹¹Michigan State University, East Lansing, MI, ²Michigan 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 KOTAIAH¹, Y. WANG¹, M. SUTTON¹, T. SHAZLY¹, AND S. M. LESSNER¹¹University of South Carolina, Columbia, SC**P-Sat-B-126****Actomyosin-mediated Contraction and Failure in Self-Constrained 3D Microtissues**H. WANG¹ AND V. B. SHENOY¹¹Brown University, Providence, RI**P-Sat-B-127****Characterization of Microstructural Alignment in Prestressed Collagen Gels**C. ROBERTSON^{1,2}, K. IKEMURA^{1,2}, T. KRASIEVA³, AND S. C. GEORGE^{1,2}¹Biomedical Engineering, University of California Irvine, Irvine, CA, ²Edwards Lifesciences Center for Advanced Cardiovascular Technology, University of California Irvine, Irvine, ³Beckman Laser Institute, University of California Irvine, Irvine, CA**P-Sat-B-128****Hybrid Hydrogel Based Scaffolds for Urinary Bladder Tissue Engineering**S. SIVARAMAN¹, J. HYDE¹, AND J. NAGATOMI¹¹Clemson University, Clemson, SC**P-Sat-B-129****Biomechanical Response of Isolated Whole Human Livers in Compression: Effect of Perfusion and Loading Rate**A. R. KEMPER¹, A. C. SANTAGO², J. L. SPARKS², J. D. STITZEL³, AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA, ²Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Winston-Salem, NC, ³Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Winston-Salem, NC**P-Sat-B-130****Material Properties of the Post-Mortem Gastrointestinal Tract in High-Rate Equibiaxial Elongation**M. K. HOWES¹ AND W. N. HARDY¹¹Virginia 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. SONG¹, D. DEAN¹, AND M. L. KNOTHE TATE¹¹Case 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. DITTO¹, M. HARRIS¹, AND E. D. YILDIRIM¹¹The 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. ATWI¹, C. LEE¹, C. RHEE¹, A. ZHANG¹, AND E. ORWIN¹¹Harvey Mudd College, Claremont, CA**P-Sat-B-134****Preliminary Investigation of Airway Remodeling in Magnetically Levitated Tissue**R. M. RAPHAEL¹, C. MOONEY¹, AND R. MOORE²¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**P-Sat-B-135****A Forward Incremental Approach for Determining the Unloaded Configuration of the Growing Pulmonary Artery**H. QI¹, B. FATAR², AND M. SACKS³¹University of Colorado, Boulder, CO, ²University of Pittsburg, Pittsburg, PA, ³University 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 III¹, L. L. SATTERWHITE¹, G. A. TRUSKEY¹, AND W. M. REICHERT¹¹Duke University, Durham, NC**P-Sat-B-137****Biologically Inspired Rosette Nanotube Treated PLLA Scaffolds for Cartilage Tissue Engineering**A. S. CHILDS¹, N. J. CASTRO², R. L. BEINGESSNER³, H. FENNIRI³, AND L. ZHANG²¹George Mason University, Fairfax, VA, ²The George Washington University, Washington, DC, ³University of Alberta, Edmonton, AB, Canada**P-Sat-B-138****Programmable Electrospinning Setup and Unified Control Interface**K. FUJII¹ AND E. ORWIN¹¹Harvey Mudd College, Claremont, CA**P-Sat-B-139****Whole Organ Engineering: The Effect of Decellularization Methods on Endothelial Cell-ECM Interactions**H. J. WARNER¹, D. FAULK^{2,3}, AND S. F. BADYLAK^{2,3}¹Clemson University, Clemson, SC, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA, ³University of Pittsburgh, Pittsburgh, PA**P-Sat-B-140****Breast Cancer Cell Patterning and Encapsulation in Alginate-Gelatin Hydrogel**D. M. KINGSLEY¹, T. B. PHAMDUY¹, D. B. CHRISSEY¹, AND N. ABDUL RAOUF²¹Rensselaer Polytechnic Institute, Troy, NY, ²University Albany, Albany, NY

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

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. REIT¹, D. BRITAIN², N. BHATTACHARJEE², A. FOLCH², AND D-H. KIM²
¹Georgia Institute of Technology, Atlanta, GA, ²University of Washington, Seattle, WA

P-Sat-B-142

Biomaterial-based Ligand Presentation to Stimulate Notch Signaling in Vitro

N. MEHTA¹, M. H. KIM¹, AND K. ROY¹
¹University of Texas at Austin, Austin, TX

P-Sat-B-143

Hyaluronan Oligomer-delivering Nanoparticles for Localized In Vivo Elastic Matrix Regenerative Therapies

A. D. SYLVESTER¹, B. SIVARAMAN², AND A. RAMAMURTHI²
¹Case Western Reserve University, Cleveland, OH, ²Cleveland Clinic, Cleveland, OH

P-Sat-B-144

Use of Electrical Stimulation on Human Dermal Fibroblasts to Enhance Wound Healing

S. SNYDER¹ AND R. K. WILLITS¹
¹The 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-MCALPIN¹ AND D. NEAL²
¹Morehouse College, Atlanta, GA, ²Massachusetts Institute of Technology, Cambridge, MA

P-Sat-B-146

Effects of Nerve Growth Factor on Schwann Cell Viability and Proliferation

J. A. KWASA¹, N. J. JESURAJ¹, AND S. SAKIYAMA-ELBERT¹
¹Washington University in St. Louis, St. Louis, MO

P-Sat-B-147

Synthesis of MMP-sensitive Porous PEGDA Hydrogels for Tissue Engineering Applications

M. CHRISTENSON¹, S. SOKIC¹, AND G. PAPAVALIOU¹
¹Illinois 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-FRANCO¹, C. B. RAUB², D. J. GRISAFE¹, N. T. BALCOM¹, A. C. CHEN², S. J. HAZELWOOD¹, R. L. SAH², AND S. M. KLISCH¹

¹California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA, ²University of California, San Diego, La Jolla, CA

P-Sat-B-149

Ultrasound Mediated Enhancement of Nanoparticle Delivery to Cancer Cells

P. BALDWIN¹, A. THOMAS¹, AND Y. LIU¹
¹Lehigh 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'BRIEN¹, N. CASTRO¹, AND L. G. ZHANG¹
¹The George Washington University, Washington, DC

P-Sat-B-151

IL-8 Signaling Promotes Glioblastoma Stem Cell Migration to the Brain Perivascular Niche

Y. CHO¹, D. INFANGER¹, AND C. FISCHBACH¹
¹Cornell University, Ithaca, NY

P-Sat-B-152

Assessment of Anterior Spinal Artery Blood Flow following Spinal Cord Injury

A. ALSHAREEF¹
¹Duke University, Durham, NC

P-Sat-B-153

Contractile and Mechanical Properties of Engineered Intervertebral Discs Composed of MSCs

B. CAMERON¹, B. BORDE¹, K. HUDSON¹, J. PUETZER¹, AND L. BONASSAR¹
¹Cornell University, Ithaca, NY

P-Sat-B-154

Education Through Tissue Engineering

M. C. FINN¹, H. SMITH¹, D. PELKEY¹, J. YEAGER¹, E. FLINCHBAUGH¹, A. MCCREARY², AND G. NELSON²
¹University of Pittsburgh, Pittsburgh, PA, ²North 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. DUMAS², AND M. PLATT²
¹University of Missouri-Columbia, Columbia, MO, ²Georgia Institute of Technology, Atlanta, GA

P-Sat-B-156

Chitosan-based Electrospun Nanofibers and Their Interaction With Airway Epithelial Cells

E. SLATTERY¹, C. MAHONEY², J. WATERMAN², AND N. BHATTARAI²
¹MiraCosta College, Oceanside, CA, ²North Carolina A&T State University, Greensboro, NC

P-Sat-B-157

Characterizing Amniotic Membrane as a Scaffold in Wound Healing Applications

C. M. MCKIERNAN¹, J. L. WEHMEYER², S. NATESAN^{1,2}, AND R. J. CHRISTY²
¹Pittsburgh Tissue Engineering Initiative, Pittsburgh, PA, ²United 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. YONEZAWA¹, X. ZHANG², AND K. J. GRANDE-ALLEN²
¹University of Florida, Boca Raton, FL, ²Rice University, Houston, TX

P-Sat-B-159

Force Analysis of Recombinant Bovine Fibrinogen & [alpha]C domain by Molecular Dynamics Simulation

B. MENN¹, R. AVERETT¹, AND T. BARKER¹
¹Georgia Institute of Technology, Atlanta, GA

P-Sat-B-160

Effect of Controlled Delivery of Glial-Derived Neurotrophic Factor on Schwann Cell Phenotype

C. G. WELKER¹, L. MARQUARDT², AND S. SAKIYAMA-ELBERT²
¹Vanderbilt University, Nashville, TN, ²Washington University of Saint Louis, St. Louis, MO

P-Sat-B-161

Polycaprolactone Nanofibers Interspersed-Collagen Scaffold (P-NCOL) for Injectable Bone Tissue Scaffold

N. BAYLAN¹, S. BHAT¹, AND E. YILDIRIM-AYAN^{1,2}
¹University of Toledo, Toledo, OH, ²University of Toledo Medical Campus, Toledo

P-Sat-B-162

Re-Engineering Mosaics of Cone Photoreceptors in Retinas Affected by Retinitis Pigmentosa

D. NAIR¹, S. GRZYWACZ², Y. JI³, E. LEE³, AND N. GRZYWACZ³
¹University of Southern California, Los Angeles, ²Palos Verdes Peninsula High School, Los Angeles, CA, ³University of Southern California, Los Angeles, CA

P-Sat-B-163

Designing Naturally Derived Hydrogels for Neuronal Tissue

G. O. ABIOLA¹, S. C. YANG², G. W. DOMBI², W. H. MARKS¹, AND S. K. BHATIA¹
¹Harvard University, Cambridge, MA, ²University 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. BRITT¹, L. E. PERRY¹, AND R. A. MALKIN¹¹Duke University, Durham, NC**P-Sat-B-165****The Impact of Obesity on the Accuracy of Predicting Body Fat Percentage in Older Women**E. D. PARISE¹, A. J. CHAMBERS¹, J. L. MCCRORY^{1,2}, AND R. CHAM¹¹University of Pittsburgh, Pittsburgh, PA, ²West Virginia University, Morgantown, WV**P-Sat-B-166****Speech-distortionless Beamformer with an Integral Method for Two-microphone Digital Hearing Aids**J. HAN¹, K. CHO², I. KIM², S. HONG³, AND D. KIM¹¹Samsung Electronics Co., LTD, Yongin, Korea, Republic of, ²Hanyang University, Seoul, Korea, Republic of, ³Samsung Medical Center, Seoul, Korea, Republic of**P-Sat-B-167****Altering and Synergizing Mass Transport Using Mild Hyperthermia**D. KIRUI¹, E. J. KOAY¹, H. SHEN¹, AND M. FERRARI¹¹Methodist Hospital Research Institute, Houston, TX**P-Sat-B-168****A Remote Tactile Feedback System for Telesurgery and Telementoring**C. R. WOTTAWA¹, C. LIM¹, R. E. FAN¹, M. O. CULJAT¹, E. P. DUTSON¹, T. C. TSAO¹, AND W. S. GRUNDFEST¹¹University 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. RAMAPRASAD¹, A. NAVARRO², Z. TAYLOR¹, S. PATEL¹, A. MATOLEK³, S. HUANG¹, D. BEENHOUWER¹, V. GUPTA¹, AND W. GRUNDFEST¹¹University of California Los Angeles, Los Angeles, CA, ²University of California Los Angeles, Carson, CA, ³VA 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. RAMAPRASAD¹, A. NAVARRO¹, Z. TAYLOR¹, S. PATEL¹, V. PATEL¹, G. AROM¹, V. GUPTA¹, AND W. GRUNDFEST^{1,2}¹University of California Los Angeles, Los Angeles, CA, ²University of California Los Angeles, Los Angeles**P-Sat-B-171****Quantifying the Mechanical Characteristics of Pelvic Adhesions**K. SHAH¹, M. CHAPMAN², B. FENTON², AND M. M. SAUNDERS¹¹The University of Akron, Akron, OH, ²Summa 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. BROWN³, C. CHENG¹, T. STOKES^{1,2}, AND M. D. WANG^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³Children's Healthcare of Atlanta, Atlanta, GA**P-Sat-B-173****Advanced Algorithms for Telemetry-Based Triage of Crash Injuries**A. H. TSOI¹, K. D. KUSANO¹, AND H. C. GABLER¹¹Virginia Tech, Blacksburg, VA**P-Sat-B-174****Deposition of Electrolyte Films Via Ultrasonic Nebulization for Extended Release**R. GRIMES¹ AND D. MILLS¹¹Louisiana 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. GUAN¹, Y. CHEN¹, AND R. Z. GAN¹¹University 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. VONK¹, S. E. SONENBLUM¹, S. SPRIGLE¹, R. SCHOFIELD², M. STINSON², AND A. PORTER-ARMSTRONG²¹Georgia Institute of Technology, Atlanta, GA, ²University of Ulster, Jordanstown, United Kingdom**P-Sat-B-177****Analysis of Wheel Rotation Tracking Methods to Monitor Wheelchair Usage**T. DAO¹, S. SPRIGLE¹, AND J. CASPALL¹¹Georgia 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. CHENG¹, C. BROWN^{2,3}, T. STOKES^{1,4}, J. VENUGOPALAN¹, AND M. D. WANG^{1,4}¹Georgia Institute of Technology, Atlanta, GA, ²Children's Healthcare of Atlanta, Atlanta, GA, ³Emory University School of Medicine, Atlanta, GA, ⁴Emory 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}¹University of Connecticut, Storrs, CT, ²Baystate Health, Springfield, MA**P-Sat-B-180****Robotic Endoscope: A Stacked Segment Puppet**J. K. EDWARDS¹ AND R. DENNIS¹¹UNC, Chapel Hill, NC**P-Sat-B-181****Effect of Severity of Rod Contour on Posterior Rod Failure in Setting of Lumbar Pedicle Osteotomy (PSO): A Biomechanical Study**J. A. TANG¹, J. LEASURE¹, J. BUCKLEY¹, D. KONDRASHOV², AND C. AMES³¹The Taylor Collaboration, San Francisco, CA, ²San Francisco Orthopaedic Residency Program, San Francisco, CA, ³University of California San Francisco, San Francisco, CA**P-Sat-B-182****Translational Research of Solar-Powered Backpack-Size Portable Laboratory**J. I. RODRIGUEZ-DEVORA¹, E. RIOS¹, R. ESPINOZA¹, D. TERREROS², AND T. XU^{1,2}¹University of Texas at El Paso, El Paso, TX, ²Paul L. Forest School of Medicine, Texas Tech University Health Sciences Center, El Paso, TX

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-B-183**A Novel Electronic Laparoscopic Training Device**P. SHIELDS¹, J. FARRIS¹, G. JEWELL², AND S. RHODES¹¹Grand Valley State University, Grand Rapids, MI, ²Grand Rapids Medical Education Partners, Grand Rapids, MI**P-Sat-B-184****A System and Framework for Evaluating Color Calibration Kits**H. E. CACERES¹, W. TANNOUS¹, A. NASRALLAH¹, AND M. H. LOEW¹¹George Washington University, Washington, DC**P-Sat-B-185****Umbrella Valve Design for Intravenous Fluid Delivery System**A. R. JONES¹, D. F. MIRANDA¹, Y. CHOO¹, J. A. GUERRA¹, J. F. CHAPMAN¹, Y. CHOI¹, AND C. R. FOREST¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-B-186****Particle Size Measurements of the Human Powered Nebulizer**L. E. OLSON¹, C. E. ZMUDKA², C. J. HALLBERG¹, W. K. KOPESKY², AND M. T. LYSAGHT¹¹Marquette University, Milwaukee, WI, ²Particle 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. BOUTROS¹, C. X. LEE¹, S. J. MATHEWS¹, P. J. WILKENS¹, D. PETERSON¹, AND J. H. MCISAAC^{1,2}¹University of Connecticut, Storrs, CT, ²Hartford Hospital, Hartford, CT**P-Sat-B-188****High Performance Nanoconstructs for Tumor Visualization Using Contrast Enhanced MRI**R. SETHI¹, J. S. ANANTA², X. LIU², L. J. WILSON¹, AND P. DECUZZI²¹Rice University, Houston, TX, ²The 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. MATTESON¹, A. MOATS¹, K. SHUTE¹, M. SHABAHANG², N. WOLL², J. W. BAISH¹, K. BIERLYA¹, AND D. CAVANAGH¹¹Bucknell University, Lewisburg, PA, ²Geisinger Health System, Danville, PA**P-Sat-B-190****Characterization of the Immune Response to Tobacco Mosaic Virus for HIV Vaccine Platform Applications**P. RAMBHIA¹, S. SHUKLA¹, C. DEBAZ¹, N. GREENSPAN¹, AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P-Sat-B-191****Development of a Novel Gold Nanoparticle-Collagen Scaffold for Soft Tissue Applications**C. SPRADLING¹, A. ROSS¹, D. GRANT¹, D. GRANT¹, AND S. GRANT¹¹University of Missouri, Columbia, MO**P-Sat-B-192****Integrative Analysis of Genomic, Proteomic, and Histopathological Ovarian Cancer Data**A. PORUTHOOR¹, S. KOTHARI¹, S. J. ROSENTHAL¹, J. H. PHAN², AND M. D. WANG²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Tech and Emory University, Atlanta, GA**P-Sat-B-193****Development of a Sensor Board System for a Multi-Modality Seizure Detection Platform**D. WANG¹, S. R. GOURAVAJHALA¹, AND L. KHUON¹¹Villanova University, Villanova, PA**P-Sat-B-194****A Fascial Closure Device That Reduces Postoperative Risks After Open Abdominal Surgery**A. A. TU¹, S. VAN KOOTEN¹, S. ZAHID¹, D. PENG¹, L. MYINT¹, H. HUANG¹, A. ANNADANAM¹, AND L. HERRERA¹¹Johns 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. ILES¹ AND P. CABRALES²¹University of Miami, Coral Gables, FL, ²University of California San Diego, La Jolla, CA**P-Sat-B-196****Pediatric Electronic Device for Emergency Resuscitation, PED-ER**H. C. BARBER¹, A. MUELENAER², A. WICKS¹, O. PYON¹, AND S. HITCHCOCK¹¹Virginia Polytechnic and State University, Blacksburg, VA, ²Virginia Tech Carilion School of Medicine and Research Institute, Roanoke, VA**P-Sat-B-197****Electrooculography-Based Human Computer Interface Using MyDAQ and LabVIEW**J. TRIPICIANO¹, L. KHUON¹, K. ZURN², AND J. B. ZURN^{2,3}¹Villanova University, Villanova, PA, ²Florida Research Instruments, Cocoa Beach, FL, ³Virginia 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. PRAVESHCHOTINUNT¹, J. BHATTACHARYYA¹, AND A. CHILKOTI¹¹Duke University, Durham, NC**P-Sat-B-199****A Microfluidic Platform for Protein Biomarker Based Diagnosis of Thyroid Cancer**L. LIU¹, S. HUANG¹, S. SHARMA², J. ROSEN², AND C. KLAPPERICH¹¹Boston University, Boston, MA, ²Boston University School of Medicine, Boston, MA**P-Sat-B-200****Cytotoxic Evaluation of Novel Triphenylmethane Compounds on Cancer Cells**M. CRUZ-ACUÑA¹, S. KHALEK², K. MCNEELEY², J. ARBISER³, AND R. BELLAMKONDA²¹University of Puerto Rico at Mayaguez, Mayaguez, PR, ²Georgia Institute of Technology, Atlanta, GA, ³Emory University, Atlanta, GA**P-Sat-B-201****Design and Manufacture of Optical Calibration Plates for a Cell Counting Metrology System**S. M. ROBB¹, B. G. OPP¹, J. DILORETO¹, AND B. CAMPBELL¹¹Robert 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. MEHANDRU¹, A. CHALAH¹, AND S. K. BHATIA¹¹Harvard 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. BOYLAN³, A. SKUBITZ^{2,4}, AND A. AKSAN^{1,4}¹Biostabilization Laboratory, Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, ²Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, ³Department of Laboratory Medicine and Pathology, University of Minnesota, Minneapolis, MN, ⁴Institute 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. CHEN¹, K. L. LEE¹, I. YILDIZ¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P-Sat-B-205****Mimicking Platelet-Cancer Cell Interactions for Targeted Drug Delivery in Metastatic Breast Cancer**V. PAN¹, G. HOWARD², C. MODERY¹, A. MASTER¹, AND A. SEN GUPTA¹¹Case Western Reserve University, Cleveland, OH, ²The University of Akron, Akron, OH**P-Sat-B-206****Spatial Resolution Increase of Tumor Permeability Maps via Mixed-Resolution DCE-MRI**E. T. MULDOON¹, G. L. PISHKO¹, AND E. A. NEUWELT¹¹Oregon Health and Science University, Portland, OR**P-Sat-B-207****Development of Self-Heating Microparticles for Transarterial Embolization and Tumor Ablation Therapy**A. BEISWENGER¹, C. KAKISH¹, L. SOLORIO¹, A. ABRAMSON¹, AND A. EXNER¹¹Case Western Reserve University, Cleveland, OH**P-Sat-B-208****Electrosprayed Poly(Lactic-co-Glycolic Acid) Microspheres for Controlled Release of Anticancer Agent**J. BRIELEDEN¹, P. FATTAHI¹, AND M. ABIDIAN¹¹Pennsylvania State University, University Park, PA**P-Sat-B-209****Modification of a Viral Nanoparticle with C60 for Applications in Photodynamic Therapy**A. YANG¹, A. WEN¹, AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P-Sat-B-210****Melanoma Migration and Chemotaxis in a 3-Dimensional Microfluidic Device**M. SCOTT^{1,2}, H. ONISHKO¹, J. EHRMAN¹, AND E. RERICH¹¹Vanderbilt University, Nashville, TN, ²Systems 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. HUGHES¹, P. SHARMA¹, AND A. NAIN¹¹Virginia 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. TEMBULKAR¹, S. KANAKIA¹, S. M. CHOWDHARY¹, J. TOUSSAINT¹, B. ADEWALE¹, K. SHROYER¹, W. MOORE¹, AND B. SITHARAMAN¹¹Stony 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. WATSON¹, V. PANDIT¹, AND M. O'NEIL¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Sat-B-214****Enzyme-Degradable Microgel Carriers for Pulmonary Disease-Triggered Release of Biologics**P. WANAKULE¹, G. LIU¹, A. FLEURY¹, AND K. ROY¹¹The University of Texas at Austin, Austin, TX**P-Sat-B-215****Design, Fabrication, and Characterization of a Continuous Microfluidic Formulator**W. J. MATLOFF¹, K. T. SEALE¹, AND J. WIKSWO¹¹Vanderbilt University, Nashville, TN**P-Sat-B-216****Leukocyte-medical Stainless Steel Adhesion Revealed by Single-cell Force Spectroscopy**A. SGARLATO¹, Y. GUO¹, K. VOJIR¹, AND X. ZHANG¹¹Lehigh University, Bethlehem, PA**P-Sat-B-217****Increasing Curcumin Solubility Via Spray Dried Albumin Particles**I. JAIN¹, P. SOUCY¹, M. O'TOOLE¹, B. TOTTEN¹, P. HOBLITZEL¹, R. KEYNTON¹, W. EHRINGER¹, AND A. GOBIN¹¹University of Louisville, Louisville, KY**P-Sat-B-218****Optimization of Virus Sample Enrichment in a Microfluidic Chip**R. LACROIX¹, N. T. HO¹, M. WONG¹, J. CONNOR¹, C. KLAPPERICH¹, AND M. CABODI¹¹Boston University, Boston, MA**P-Sat-B-219****Electrokinetic Isolation of Free Circulating DNA from Physiological Samples**A. LAMANDA¹, Y. LU¹, T. LIU¹, AND P. K. WONG^{1,2}¹University of Arizona, Tucson, AZ, ²BIO² Institute, Tucson, AZ**P-Sat-B-220****Design and Mechanical Properties of Poly(propylene fumarate) Sleeve Scaffolds**C. E. VORWALD¹, M. O. WANG¹, D. DEAN², AND J. P. FISHER¹¹University of Maryland, College Park, MD, ²Case Western Reserve University, Cleveland, OH**P-Sat-B-221****A Simulation Study of Geometry Induced Directional-dependant Flow Resistance Pumping Mechanism**X. GAO¹, Y-T. YEH¹, AND S. ZHENG¹¹The Pennsylvania State University, University Park, PA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM

P-Sat-B-222**Improving Electric Contact of CuO Nanowires for Glucose Sensor**M. W. KANG¹, A. HAGHDOOST¹, AND R. PITCHUMANI¹¹Virginia Tech, Blacksburg, VA**P-Sat-B-223****Biodistribution of Tobacco Mosaic Virus Rods and Spheres**M. A. BRUCKMAN¹, L. N. RANDOLPH¹, S. HERN¹, A. VANMETER¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P-Sat-B-224****Development of Paper-based LIPS Assay for Rapid Serum Antibody Detection**M. DHAR¹¹Johns Hopkins University, Baltimore, MD**P-Sat-B-225****Optimizing Lysis of Neisseria gonorrhoea for Point-of-Care Diagnostics**C. ELLENSON¹, A. LAI¹, J. C. LINNES¹, AND C. M. KLAPPERICH¹¹Boston University, Boston, MA**P-Sat-B-226****A Microfluidic Device for Long-term Visualization of Motile Cells**C. T. POLING¹ AND S. HALPERIN²¹Arizona State University, Phoenix, AZ, ²University 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. MEYERS¹, B. TURNER¹, M. VAHEY¹, AND D. FLETCHER¹¹UC Berkeley, Berkeley, CA, ²University of Pittsburgh, Pittsburgh, PA, ³Johns Hopkins University, Baltimore, MD**P-Sat-B-228****IgG-DOTA Conjugation to Improve Blood Circulation Half-life**N. VIRANI¹ AND N. MASOODZADEHGAN¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-B-229****Fibroblasts Solving Mazes in Response to Growth Factor Concentration**A. NGUYEN¹, E. MAPPUS¹, T. HARVEY¹, B. PETERSON¹, M. O'KELLY¹, E. HAMMES¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Sat-B-230****Flow Control in Darkling Beetles: Testing the Compartmentalization Hypothesis**J. AVILES¹, H. PENDAR¹, AND J. SOCHA¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Sat-B-231****Surface Micro-topography Enhances Human Cardiomyocytes Functions on PLGA Scaffolds**A. N. SANTIAGO-MIRANDA¹, D. A. STOUT², AND T. J. WEBSTER²¹University of Puerto Rico-Mayaguez, Mayaguez, PR, ²Brown University, Providence, RI**P-Sat-B-232****Analysis of Hydrogen Peroxide Production by Peristaltic Micropumps Using Spectrophotometry**O. S. HOILETT¹, D. A. MARKOV¹, J. P. WIKSWO¹, AND P. C. SAMSON¹¹Vanderbilt University, Nashville, TN**P-Sat-B-233****Lipid-Polymer Hybrid Nanoparticles for Sustained Delivery of Doxorubicin**E. STERANKA¹¹Boston 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. PARK¹, F. MYERS¹, B. TURNER¹, AND L. LEE¹¹UC Berkeley, Berkeley, CA, ²University of Maryland, College Park, ³University 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. CANTER¹, A. SAHARI¹, B. SCHARF¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**P-Sat-B-236****The Application of Inverse Mathematics and Beam Theory to Determine Migratory Single Cell Forces**T. O'BRIEN¹, K. SHEETS¹, P. SHARMA¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**P-Sat-B-237****A Microfluidic Platform for Chemotaxis based sorting of Micro-particles**L. STEINBERGER¹, M. A. TRAORE¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA

Saturday, October 27, 2012

10:30AM – 12:00NOON

PLATFORM SESSION – SAT – I

Track: Biomaterials

OP - Sat - I - I - 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-HARBIN¹¹Purdue University, West Lafayette, IN

10:45AM

Dynamic Photo-Tuning of Matrix Stiffness in 3D Hydrogels

R. S. STOWERS¹, B. HAN¹, AND L. J. SUGGS¹¹University 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. HAMILTON¹, N. C. BLOODWORTH^{1,2}, T. M. HAMMOUDI^{1,2}, C. S. MASSAD^{1,2}, H. LU¹, AND J. S. TEMENOFF^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

11:15AM

Dynamic Tissue Engineering Scaffolds with Stimuli-Responsive Macroporosity Formation

L-H. HAN¹, J. LAI¹, S. YU¹, AND F. YANG¹¹Stanford University, Palo Alto, CA

11:30AM

Bioinspired Alteration of Collagen-GAG Scaffold Glycosaminoglycan Content to Regulate Cell Activity

R. A. HORTENSUS¹ AND B. A. HARLEY¹¹University 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}¹University of Colorado, Boulder, CO, ²Howard Hughes Medical Institute, Boulder, CO

Track: Biomaterials

OP - Sat - I - 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. HAN¹, S. YU¹, T. WANG¹, A. W. BEHN¹, AND F. YANG¹¹Stanford University, Stanford, CA

10:45AM

Extracellular Matrix Protein-Coated Scaffolds Enhance Islet Survival and Function

W. T. YAP¹, D. M. SALVAY², M. A. SILLIMAN¹, X. ZHANG¹, Z. G. BANNON¹, D. B. KAUFMAN³, W. L. LOWE¹, AND L. D. SHEA¹¹Northwestern University, Chicago, IL, ²Evanston Hospital, NorthShore University Health System, The University of Chicago Medical Center, Evanston, IL, ³University of Wisconsin, Madison, WI

11:00AM

Injectable Laminin-Functionalized PEG Hydrogels for Cell Delivery

R. J. MANCINO¹, A. T. FRANCISCO¹, S. L. CRAIG¹, AND L. A. SETTON^{1,2}¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC

11:15AM

Inverse Opal Scaffolds for Tissue Engineering and Regenerative Medicine

Y. Zhang^{1,2}, S-W. Choi², X. Ca², L. V. Wang², and Y. Xia^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Washington University in St. Louis, St. Louis, MO

11:30AM

Injectable Methylcellulose Hydrogels for Soft Tissue Filler Applications

G. T. GOLD¹, D. M. VARMA¹, D. HARBOTTLE², A. RAHMAN¹, AND S. B. NICOLL¹¹The City College of New York, New York, NY, ²University of Alberta, Alberta, Canada

11:45AM

Fabrication of Collagen Films Suspended Over Micropost Arrays and Their Viability for Cell Culture

M. J. ROBERTS¹, N. BHATT¹, C. M. VOGEL¹, E. R. MESHOT¹, J. STEGEMANN¹, AND A. J. HART¹¹University of Michigan, Ann Arbor, MI

OP - Sat - I - 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. BROBST¹, A. LONG¹, J. UNGERLEIDER¹, AND S. PEIRCE¹¹University of Virginia, Charlottesville, VA

10:40AM

Hypoxic Conditioning Alters Encapsulated Stem Cell Factor Secretion

M. T. NAJIA¹, J. L. WILSON¹, AND T. C. MCDEVITT^{1,2}¹Georgia Institute of Technology & Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta

10:50AM

Role of Paracrine Signaling in Mesenchymal Stem Cell-Mediated Enhancement of Engineered Cardiac Tissue Function

J. MAYOURIAN¹, T. J. CASHMAN¹, AND K. D. COSTA¹¹Mount Sinai School of Medicine, New York, NY

11:00AM

Induced Osseous and Odontous Differentiation in Dental Pulp Stem Cells through Static Compression

M. MONTEROSSO¹, M. CUPELLI², M. S. KENNEDY², AND D. DEAN²¹Sweet Briar College, Sweet Briar, VA, ²Clemson University, Clemson, SC

11:10AM

Monocyte Polarization in Response to Central Nervous System Derived Extracellular Matrix

E. STAHL¹, C. J. MEDBERRY¹, J. KELLY¹, T. J. KEANE¹, AND S. F. BADYLAK¹¹McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA

11:20AM**Derivatization of a Microfiber Matrix with Type III Neuregulin Peptides and Application to Schwann Cell Culture**J. MEYER¹, D. SCHREIER¹, C. KRUEGER¹, N. SHILEY¹, B. LINDEVIG¹, AND J. SVAREN¹¹University 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. JORFI³, C. WEDER³, AND J. R. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²L. Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH, ³University of Fribourg, Marly, Switzerland**11:40AM****Dually Responsive Carboxylated N-vinyl Caprolactam Copolymers: Synthesis and Characterization**S. GODDARD¹, Y. CAO¹, S. TANG¹, AND W. HE¹¹University of Tennessee, Knoxville, TN**11:50AM****Evaluating the Cytotoxicity of Poly(propylene fumarate) per ISO Standard 10993-5**J. M. ETHERIDGE¹, M. O. WANG¹, D. DEAN², AND J. P. FISHER¹¹University of Maryland, College Park, MD, ²Case 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. PREVITERA¹, A. SHAHIN¹, M. GIDWANI¹, R. KLEIMAN¹, D. VERMA¹, R. SCHLOSS¹, AND N. LANGRANA¹¹Rutgers University, Piscataway, NJ**10:45AM****Optoelectronics for Neural Recording and Stimulation**P. ANIKEEVA¹¹Massachusetts 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}¹Rensselaer Polytechnic Institute, Troy, NY, ²Center for Biotechnology and Interdisciplinary Studies, Troy, NY**11:15AM****Lentiviral-Mediated Growth Factor Delivery from Multichannel Bridges for Spinal Cord Injury Repair**S. K. SEIDLITS¹, A. THOMAS¹, T. KUKUSHLIEV¹, D. HASSANI¹, A. GOODMAN¹, B. CUMMINGS², A. ANDERSEN², AND L. D. SHEA¹¹Northwestern University, Evanston, IL, ²University 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. HASHIMOTO², E. WONG², B. T. HYMAN^{1,2}, AND D. IRIMIA^{1,2}¹Harvard Medical School, Charlestown, MA, ²Massachusetts General Hospital, Charlestown, MA**11:45AM****Formation of Neuromuscular Junction in a Microfluidic Device**H. PARK¹, S. LIU², J. W. McDONALD^{1,2}, N. THAKOR^{1,3}, AND I. H. YANG^{1,3}¹The Johns Hopkins University School of Medicine, Baltimore, MD, ²ICSCI at The Kennedy Krieger Institute, Baltimore, MD, ³SINAPSE at National University 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. CHAN¹, Y-N. W. WANG¹, M. W. UPTON¹, L. W. LIN¹, J. W. HWANG¹, AND S. H. PUN¹¹University of Washington, Seattle, WA**10:45AM****Imaging Metastasis Using Targeted Iron Oxide Nanochains**P. M. PEIRIS¹, R. TOY¹, J. PANSKY¹, E. DOOLITTLE¹, A. ABRAMOWSKI¹, M. TAM¹, E. SCHMIDT¹, E. TRAN¹, E. HAYDEN¹, A. CAMANN¹, C. FLASK¹, R. A. KERI¹, AND E. KARATHANASIS¹¹Case 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. SHAHMIRZADI¹, G. Y. HOU¹, AND E. E. KONOFAGOU¹¹Columbia 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. MARINI¹, AND A. M. MOHS^{1,2}¹Wake Forest University, Winston Salem, NC, ²Virginia Polytechnic Institute and State University, Blacksburg, VA**11:30AM****Multifunctional Gold Nanoshelled Nanomicelles for Potential MRI Imaging and Photothermal Therapy**Y. MA¹ AND Z. DAI¹¹Peking University, Beijing, China, People's Republic of**11:45AM****Engineering Coupled Viral Nanoparticles for Cancer Imaging and Therapy**A. M. WEN¹ AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH*Track sponsored by **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. FLOYD¹, A. GALPERIN¹, R. RAMAKRISHNA¹, R. ROSTOMILY¹, AND B. D. RATNER¹¹University of Washington, Seattle, WA

10:45AM**Induction of Chemosensitivity in Glioma Cells to BCNU and TMZ Using a Targeted Nitric Oxide Donor**S. SAFDAR¹, C. A. PAYNE², AND L. J. TAITE¹¹Georgia Institute of Technology, Atlanta, GA, ²Spelman College, Atlanta, GA**11:00AM****Optimization of a Nanomedicine Strategy for Cell-Targeted Photodynamic Therapy of Head-&-Neck Cancers**A. M. MASTER¹, N. L. OLEINICK¹, AND A. SEN GUPTA¹¹Case Western Reserve University, Cleveland, OH**11:15AM****MicroRNA-29b Delivery via EpCAM Targeted Cationic Lipoplexes in Lung Cancer Treatment**Y. WU¹, M. CRAWFORD¹, Y. MAO¹, L. LEE^{1,2}, AND S. P. NANA-SINKAM¹¹The Ohio State University, Columbus, OH, ²The Ohio State University, columbus, OH**11:30AM****Molecular Farming in Plants to Produce Nanomedicines for Breast Cancer Treatment**K. L. LEE¹ AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**11:45AM****A Novel Intravesical Therapy in an Orthotopic Bladder Cancer Model**J-W. HSU¹, J. MESSING¹, AND M. KING¹¹Cornell University, Ithaca, NY*Track sponsored by **Track: Cellular and Molecular Bioengineering
OP - Sat - I - 7 - Room A301****Cell - Cell, Homotypic and Heterotypic Interactions****Chairs:** Volkmar Heinrich, Elliott Hui**10:30AM****Distinct Roles of TCR and LFA-I Adhesions in Immune Synapse Dual Structural Dynamics**E. TABDANOV¹, A. GONDARENKO¹, J. HONE¹, AND L. C. KAM¹¹Columbia University, New York, NY**10:45AM****Rapid Formation of Hybrid Cells via Fusion of Human Mesenchymal Stem Cells with Cardiomyocytes**I. SHADRIN¹, W. YOON¹, L. LI¹, AND N. BURSAC¹¹Duke University, Durham, NC**11:00AM****Probing the Lateral Interactions Among Members of the TCR Complex**C. GE¹, M. BIRNBAUM², C. GARCIA², AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA, ²Stanford University School of Medicine, Stanford, CA**11:15AM****Tunneling Nanotube Formation between Single Neonatal Cardiomyocyte and Mesenchymal Stem Cell on a Biochip**H. YANG¹, M. ZHEN², L. SCHMIDT¹, Z. WANG¹, T. K. BORG³, AND B. Z. GAO¹¹Clemson University, Clemson, SC, ²University of California, Berkeley, Berkeley, CA, ³Medical University of South Carolina, Charleston, SC**11:30AM****A Screening Platform for Short-Range Paracrine Signaling**K. M. SPENCER¹, N. G. THOMPSON¹, L. F. LOCK¹, AND E. E. HUI¹¹University of California-Irvine, Irvine, CA**11:45AM****Fibronectin Matrix Assembly on a Recombinant Protein Substrate Stimulates 3D Cellular Self-Assembly**J. R. BRENNAN¹ AND D. C. HOCKING¹¹University of Rochester, Rochester, NY**Track: Cellular and Molecular Bioengineering - OP -
Sat - I - 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. SHIH¹ AND S. YAMADA¹¹University of California, Davis, Davis, CA**10:45AM****The Role of Fiber Beam Stiffness (N/m) in Migration Dynamics of Mouse C2C12 Myoblasts**S. MEEHAN¹ AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**11:00AM****Stetch Activation: Mechanoregulation of Troponin-Actin Bonds in Cardiac Muscle**S. M. Mijailovich¹, B. Stojanovic², D. Nedic², M. Svicevic², R. Gilbert¹, and T. Irving³
¹Tufts University School of Medicine, Boston, MA, ²Faculty of Science, University of Kragujevac, Kragujevac, Serbia, ³Illinois Institute of Technology, Chicago, IL**11:15AM****Chemoattractant Hierarchy Dictates Differential Regulation of Persistent Immune Cell Chemotaxis**C. E. PETRIE ARONIN¹, J. YOON², M. MEIER-SCHELLERSHIEM¹, N. Y. MORGAN², AND R. N. GERMAIN¹¹NIH, NIAID, Bethesda, MD, ²NIH, NIBIB, Bethesda, MD**11:30AM****Cell Migration and Volume Regulation by Osmolarity in Confined Microenvironments**K. M. STROKA¹, H. JIANG¹, Z. TONG¹, S. X. SUN¹, AND K. KONSTANTOPOULOS¹¹Johns Hopkins University, Baltimore, MD**11:45AM****Development of a Novel Axon Pathfinding Assay for Neurotoxicity Screening**A. J. SWEENEY¹ AND Z. GAO¹¹Clemson University, Clemson, SC**Track: Stem Cell Engineering
OP - Sat - I - 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. UNGRIN¹, G. CLARKE², T. YIN², S. NIEBRUGGE², C. WOODFORD², C. NOSTRO³, F. SARANGI³, G. WOOD⁴, G. KELLER³, AND P. W. ZANDSTRA²¹University of Calgary, Calgary, AB, Canada, ²University of Toronto, Toronto, ON, Canada, ³University Health Network, Toronto, ON, Canada, ⁴University of Guelph, Guelph, ON, Canada

11:00AM**Alginate poly-L-lysine Microencapsulation of Single and Aggregated Embryonic Stem Cells**J. WILSON¹, J. ZIMMERMANN¹, D. VILLA MORENO², AND T. MCDEVITT^{1,3}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²La Escuela de Ingeniería de Antioquia and CES Universities, Medellín, Colombia, ³The 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. WOLFE¹ AND T. AHSAN¹¹Tulane University, New Orleans, LA**11:30AM****Pluripotent Stem Cell Differentiation Using a Scalable Hydrogel Microsphere Encapsulation System**S. S. CHANG¹, B. A. WILLIAMS¹, AND E. A. LIPKE¹¹Auburn 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. SIMÕES¹, J. S. BOURA¹, F. DOS SANTOS¹, P. Z. ANDRADE¹, C. CARDOSO², C. L. DA SILVA¹, AND J. M. CABRAL¹¹Institute for Biotechnology and Bioengineering – Instituto Superior Técnico, Lisboa, Portugal, ²Criostaminal, Saúde e Tecnologia S.A., Cantanhede, Portugal**Track: Nano and Micro Technologies****OP - Sat - I - 10 - Room A401****Nanotherapeutics I****Chairs:** Xiaohu Gao, Andrew Tsourkas**10:30AM** INVITED**Multifunctional Nanoparticles for Molecular Imaging and Therapy**X. GAO¹¹University of Washington, Seattle, WA**10:45AM****Gold Polymeric Micelles as Theranostic Agents**A. AL ZAKI¹, D. JOH^{1,2}, Z. CHENG¹, G. KAO¹, J. DORSEY¹, AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA, ²Georgetown, Washington, DC**11:00AM****Evaluation of Active and Passive Nanoparticles Designs on the Targeting of Solid Tumours**E. A. SYKES¹ AND W. C. CHAN¹¹University of Toronto, Toronto, ON, Canada**11:15AM****Hemostatic Nanoparticles Increase Survival in Rat Liver Injury Model**A. SHOFFSTALL¹, J. USTIN^{1,2}, K. ATKINS¹, B. MARTYN-DOW¹, R. GROYNOM¹, L. EVERHART¹, M. SULLIVAN¹, AND E. LAVIK¹¹Case Western Reserve University, Cleveland, OH, ²Cleveland Clinic, Cleveland, OH**11:30AM****Magnetically Guided Delivery of Human Mesenchymal Stem Cells**S. TONG¹, N. LANDÁZURI², J. SUO¹, W. R. TAYLOR^{1,2}, D. GIDDENS¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**Track: Cancer Technology*****OP - Sat - I - 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. ZHENG¹, B. KWONG¹, AND D. IRVINE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Howard 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. COUGHLIN¹, J. S. ANANTA², P. DECUZZI², AND J. L. WEST^{1,3}¹Rice University, Houston, TX, ²The Methodist Hospital Research Institute, Houston, TX, ³Duke University, Durham, NC**11:00AM****Nanotechnology for Spectroscopic and Image-Guided Tumor Resection**A. M. MOHSI², Y. WANG³, X. QIAN³, M. C. MANCINI⁴, J. M. PROVENZALE^{3,5}, AND S. NIE³¹Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, ³Emory University, Atlanta, GA, ⁴Spectropath, Inc., Atlanta, GA, ⁵Duke University, Durham, NC**11:15AM****Real-time Measurement of the Bioavailability Curve of Experimental Gold Nanorods towards Dose Optimization**I. B. MAGANA¹, P. ADHIKARI¹, S. S. BRACEY¹, R. YENDLURI¹, G. P. GOODRICH², J. A. SCHWARTZ², K. A. EVANS¹, AND D. P. O'NEAL¹¹Louisiana Tech University, Ruston, LA, ²Nanospectra Biosciences, Houston, TX**11:30AM****3D Spatial Measurement of Viability in Tissue Phantoms in response to Photothermal Therapy and Single Walled Carbon Nanohorns**J. WHITNEY¹, W. CARSWELL¹, M. DEWITT¹, J. ROBERTSON², C. RYLANDER¹, AND M. N. RYLANDER¹¹Virginia Tech, Blacksburg, VA, ²Virginia Maryland regional college of Veterinary Medicine, Blacksburg, VA**11:45AM****Polymeric Nanoparticles for Photothermal Ablation of Colorectal Cancer**N. H. LEVI-POLYACHENKO¹ AND C. MACNEILL¹¹Wake Forest University Health Sciences, Winston-Salem, NC*Track sponsored by **Track: Orthopedic and Rehabilitation Engineering****OP - Sat - I - 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}¹University of California, Los Angeles (UCLA), Los Angeles, CA, ²Center 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. FRIEDMAN¹, V. CHAN¹, A. REINKENSMAYER¹, D. J. REINKENSMAYER¹, AND M. BACHMAN¹¹University of California, Irvine, Irvine, CA**11:00AM****Robots for Humanity: Developing Assistive Mobile Manipulation**P. M. GRICE¹, T. L. CHEN¹, M. CIOCARLIE², S. COUSINS², K. HAWKINS¹, K. HSIAO², C-H. KING¹, D. LAZEWATSKY³, A. LEEPER², H. NGUYEN¹, A. PAEPCKE², C. PANTOFARU², W. D. SMART³, L. TAKAYAMA², AND C. C. KEMP¹¹Georgia Institute of Technology, Atlanta, GA, ²Willow Garage, Inc, Menlo Park, CA,³Washington University in St. Louis, St. Louis, MO**11:15AM****Use of Tactile Feedback to Control Robotic Palpation to Characterize Object Hardness**Z. SU¹, J. A. FISHEL^{1,2}, T. YAMAMOTO², AND G. E. LOEB^{1,2}¹University of Southern California, Los Angeles, CA, ²Syntouch, Los Angeles, CA**11:30AM****Gaze-Contingent Human-Robot Interaction for Promoting Independent Living**X. ZHANG¹, S. LI¹, AND J. ZHANG²¹Wilkes University, Wilkes-Barre, PA, ²A²³ System Inc., Livonia, MI**11:45AM****Partnered Human-Robot Stepping Based on Interactive Forces at the Hand**T. L. CHEN¹, J. L. MCKAY^{1,2}, T. BHATTACHARJEE¹, M. E. HACKNEY^{2,3}, C. C. KEMP¹, AND L. H. TING^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³Atlanta VA Medical Center Rehabilitation R&D Center of Excellence, Atlanta, GA**Track: Cardiovascular and Respiratory Engineering*
OP - Sat - I - 13 Room A404****Circulatory Assist & Blood Damage****Chairs:** David Ku, Amy Throckmorton**10:30AM****Comparative: Thrombogenic Potential of Ventricular Assist Devices: The Impact of Device Thrombogenicity Emulation Methodology**W-C. CHIU¹, M. XENOS¹, G. GIRDHAR¹, J. S. SOARES¹, Y. ALEMU¹, B. LYNCH², J. JESTY¹, S. EINAV¹, M. SLEPIAN³, AND D. BLUESTEIN¹¹Dept. of Biomedical Engineering, Stony Brook University, Stony Brook, NY, ²MicroMed Cardiovascular Inc., Houston, TX, ³Sarver Heart Center, University of Arizona, Tucson, AZ**10:45AM****A Multiscale, Biophysical Model for Flow-Induced Hemolysis**F. VITALE^{1,2}, J. NAM^{1,3}, L. TURCHETTI⁴, R. M. RAPHAEL¹, M. C. ANNESINI², AND M. PASQUALI¹¹Rice University, Houston, TX, ²University of Rome "La Sapienza", Rome, Italy, ³Sungkyunkwan University, Suwon, Korea, Republic of, ⁴Università Campus Bio-Medico di Roma, Rome, Italy**11:00AM****Thrombus Formation in Extracorporeal Membrane Oxygenation (ECMO) Circuits**S. M. HASTINGS¹, K. O. MAHER², L. A. LYON¹, S. F. WAGONER², AND D. N. KU¹¹Georgia Institute of Technology, Atlanta, GA, ²Children'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. MENON¹, A. UNDA², AND K. PEKAN¹¹Carnegie Mellon University, Pittsburgh, PA, ²Pennsylvania 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. WONG¹, I. REVELES¹, G. SAMAROO¹, F. OLEA¹, W. DEMBITSKY², AND K. MAY-NEWMAN¹¹San Diego State University, San Diego, CA, ²Sharp Memorial Hospital, San Diego, CA**11:45AM****CFD Study of Different Design Options of LVAD Implantation**T. PASSERINI¹, M. PICCINELLI¹, AND A. VENEZIANI¹¹Emory University, Atlanta, GA*Track sponsored by  ST. JUDE MEDICAL
MORE CONTROL. LESS RISK.**Track: Orthopedic and Rehabilitation Engineering
OP - Sat - I - 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. TRAN¹, J. D. JARRELL³, R. A. HAYDA^{1,2}, AND C. T. BORN^{1,2}¹Rhode Island Hospital, Providence, RI, ²Alpert Medical School, Brown University, Providence, RI, ³Bioltraface inc, Providence, RI**10:45AM****Dynamic Fluid Flow Stimulation on Interaction of Trabecular Mineralization and Muscle Fiber Growth**M. HU¹, R. YEH¹, M. TEERATANANON¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**11:00AM****Mechano-Stimulation Amplifies Bone Growth in Obese Young Mice**M. CHEUNG¹, B. ANANTHABHOTLA², V. PATEL², M. E. CHAN², AND C. T. RUBIN²¹Stony Brook University, New York City, NY, ²Stony Brook University, Stony Brook, NY**11:15AM****Enhanced Integration of Orthopedic Implants by Gas Cluster Ion Beam Surface Modification**J. KHOURY¹, M. MAXWELL¹, R. E. CHERIAN¹, S. R. KIRKPATRICK¹, AND R. C. SVRLUGA¹¹Exogenesis Corp, Billerica, MA**11:30AM****Joint Trauma Effects on Tissue Adjacent to the Loading Site in Articular Cartilage**R. MCCULLOCH¹, M. ASHWELL², A. O'NAN², AND P. MENTE¹¹NCSU / UNC, Raleigh, NC, ²NCSU, Raleigh, NC**11:45AM****Mechanical Properties of Cartilage after Electro-Mechanical Reshaping with Micro Electrodes**D. PROTSENKO¹ AND B. WONG¹¹University of California Irvine, Irvine, CA

Track: Cardiovascular and Respiratory Engineering**OP - Sat - I - 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. KABILAN¹, A. KUPRAT¹, R. JACOB¹, J. CARSON¹, K. MINARD¹, R. CORLEY¹, AND D. EINSTEIN¹¹Pacific Northwest National Laboratory, Richland, WA**10:45AM****Targeting Aerosol Deposition in the Tracheobronchial Airways Using an Excipient Enhanced Growth Approach**P. W. LONGEST¹, G. TIAN¹, Y.-J. SON¹, AND M. HINDLE¹¹Virginia Commonwealth University, Richmond, VA**11:00AM****Deconstructing the Mucociliary Apparatus: A Microfluidics Based Approach to Probing Mucociliary Dynamics**J. CARPENTER¹, S. LYNCH¹, E. KAZURA¹, J. CRIBB¹, AND R. SUPERFINE¹¹UNC 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-CASTRO¹, M. T. NELSON¹, J. J. LANNUTTI¹, D. J. HANSFORD¹, AND S. N. GHADIALI²¹The Ohio State University, Columbus, OH, ²The 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. DAVIDOVICH¹, G. G. LAWRENCE¹, B. C. DIPAOLO¹, N. YEHA¹, AND S. MARGULIES¹¹University 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. WELLMAN¹, E. L. COSTA², T. WINKLER², G. MUSCH², R. S. HARRIS², J. G. VENEGAS², AND M. F. VIDAL MELO²¹Boston University, Boston, MA, ²Massachusetts General Hospital, Boston, MA**Track: Biomedical Imaging and Optics****OP - Sat - I - 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. PASZEK¹, C. C. DUFORT¹, M. G. RUBASHKIN¹, K. S. THORN¹, J. T. LIPHARDT², AND V. M. WEAVER¹¹University of California, San Francisco, San Francisco, CA, ²University of California, Berkeley, Berkeley, CA**11:00AM****Surpassing the Diffraction Limited Resolution by Laser Scanning Structured Illumination Microscopy**J. YI¹, Q. WEI¹, H. F. ZHANG¹, AND V. BACKMAN¹¹Northwestern University, Evanston, IL**11:15AM****Uncrimping and Reorganization of Collagen Fibers in the Adventitia Using Digital Image Correlation**R. WANG¹, R. GLEASON¹, AND L. BREWSTER²¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA**11:30AM****Inverse Spectroscopic Optical Coherence Tomography: Quantifying Tissue Refractive Index Correlation Function with nanoscale sensitivity**J. YI¹ AND V. BACKMAN¹¹Northwestern University, Evanston, IL**11:45AM****Recovering Optically Modulated Fluorescence Signals in Tissue Phantoms with Two Laser Illuminated Molecular Imaging**S. SARKAR¹ AND R. M. DICKSON¹¹Georgia Institute of Technology, Atlanta, GA**Track: Bioinformatics and Systems Biology****OP - Sat - I - 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. JENSEN¹, F. GARMAROUDI², J. LIN¹, B. MCMANUS², AND K. JANES¹¹University of Virginia, Charlottesville, VA, ²University of British Columbia, Vancouver, BC, Canada**11:00AM INVITED****Reconstructing Signaling Dynamics Among Heterogeneous Immune Cell Populations During Chronic Inflammation**M. T. BESTE¹, N. PFAEFFLE-DOYLE¹, E. A. PRENTICE¹, K. B. ISAACSON^{2,3}, D. A. LAUFFENBURGER¹, AND L. G. GRIFFITH¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Harvard University, Newton, MA, ³Newton-Wellesley Hospital, Newton, MA**11:30AM****Analysis of Core Architecture Regulating TGF β Induced EMT Reveals Phenotypic Switches through NFATc1 Expression and Phospho-Sp1**R. A. GOULD¹, A. CHAKRABARTI¹, J. VARNER¹, AND J. BUTCHER¹¹Cornell University, Ithaca, NY**11:45AM****Glucose Deprivation Activates a Metabolic and Signaling Amplification Loop Leading to Cell Death**N. A. GRAHAM¹, M. TAHMASIAN¹, B. KOHLI¹, E. KOMISOPOULOU¹, M. ZHU¹, I. VIVANCO², A. RIBAS¹, R. S. LO¹, I. K. MELLINGHOFF², P. S. MISCHL¹, AND T. G. GRAEBER¹¹University of California, Los Angeles, Los Angeles, CA, ²Memorial Sloan-Kettering Cancer Center, New York, NY

Track:Tissue Engineering**OP - Sat - I - 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. WILLETT¹, A. LI¹, B. UHRIG¹, J. BOERCKEL¹, G. WARREN², AND R. GULDBERG¹
¹Georgia Institute Of Technology, Atlanta, GA, ²Georgia State University, Atlanta, GA**10:45AM****SIP3 Dependent Mobilization of Mesenchymal Stem Cells From the Bone Marrow Enhances Bone Defect Repair**A. DAS¹, A. KAUSHIK¹, A. AWOJODOU², AND E. BOTCHWEY²
¹UVA, Charlottesville, VA, ²GaTech, Atlanta, GA**11:00AM****Accelerated Osteogenesis of Human Mesenchymal Stem Cells in Co-Culture with Endothelial Cells in 3D-scaffolds**J. G. GERSHOVICH¹, F. K. KASPER¹, AND A. G. MIKOS¹
¹Rice University, Houston, TX**11:15AM****3D Co-cultures of Chondrocytes and MSCs are Resistant to Hypertrophy in Normoxia and Hypoxia**V. V. MERETOJA¹, R. L. DAHLIN¹, F. K. KASPER¹, AND A. G. MIKOS¹
¹Rice University, Houston, TX**11:30AM****Oxygen Tension Controlled Matrices For Enhanced Bone Tissue Engineering**A. R. AMINI¹, C. T. LAURENCIN¹, AND S. P. NUKAVARAPU¹
¹University of Connecticut, Farmington, CT**11:45AM****Role of Hypoxia Inducible Factor-1 in Osteogenic Differentiation of Adipose-Derived Stem Cells**S. SAHAI¹, A. WILLIAMS¹, B. W. HANNA¹, AND J. O. BLANCHETTE¹
¹University of South Carolina, Columbia, SC**Track:Tissue Engineering****OP - Sat - I - 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. WONG¹, J. G. TRUSLOW¹, A. H. KHANKHEL¹, K. L. CHAN¹, AND J. TIEN¹
¹Boston University, Boston, MA**10:45AM****Therapeutic Scaffolds for Peripheral Artery Disease: Pro-angiogenic and Anti-inflammatory Regulation**A. L. ZACHMAN¹, K. M. POOLE¹, A. R. BOONE¹, C. L. DUVALL¹, M. C. SKALA¹, D. G. HARRISON¹, AND H.-J. SUNG¹
¹Vanderbilt University, Nashville, TN**11:00AM****Increased Vascularization in Heparan Sulfate Coated Electrospun PCL Scaffolds**C. M. WALTHERS¹
¹University of California, Los Angeles, Los Angeles, CA**11:15AM****Macrophages Promote Stable Microvascularization of Engineered Tissue Constructs**C.-W. HSU¹, R. A. POCHÉ¹, J. E. SAIK², S. ALI², T. J. VADAKKAN¹, J. L. WEST², AND M. E. DICKINSON¹
¹Baylor College of Medicine, Houston, TX, ²Rice University, Houston, TX**11:30AM****Autogenic or Allogeneic Extracellular Matrix Scaffolds and Novel Device Coatings**J. L. SKOUSEN¹, R. S. OAKES¹, F.-W. MENG¹, M. B. CHRISTENSEN¹, J. C. WOLCHOK¹, AND P. A. TRESKO¹
¹University of Utah, Salt Lake City, UT**11:45AM****Interactions between Inflammatory Cells and Stem Cell Cardiac Constructs**D. O. FREYTES¹, C. FENIOUX¹, R. ANFANG¹, D. GE¹, J. W. KANG¹, S. CANNIZZO², L. SANTAMBROGIO², AND G. VUNJAK-NOVAKOVIC¹
¹Columbia University, New York, NY, ²Albert Einstein College of Medicine, Bronx, NY**Track:Tissue Engineering****OP - Sat - I - 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. SANCHEZ³, C. LANDEROS⁴, K. DUBBIN⁵, T. TSNIMAN⁴, B. J. JONES⁵, R. S. LANGER^{*3}, AND A. KHADEMHOSEINI^{*2,6}¹Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, ²Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ³Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, ⁴Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, ⁵Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, ⁶Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA**10:45AM****The Development of *In Vitro* Perfused Human Capillaries Under Fluid Forces**M. L. MOYA¹, Y.-H. HSU¹, C. C. HUGHES¹, A. P. LEE¹, AND S. C. GEORGE¹
¹University of California, Irvine, Irvine, CA**11:00AM****Radially Align, Electrospun Nanofibers as Dural Substitute for Wound Closure and Tissue Regeneration Applications**W. LIU¹, J. XIE², M. MACÉWAN², W. RAY², D. SIEWE², AND Y. XIA¹
¹Georgia Institute of Technology, Atlanta, GA, ²Washington University in St. Louis, Saint Louis, MO**11:15AM****Double-Emulsion Based Droplet Microfluidics as Bioreactor for Tissue Engineering Applications**H. CHAN¹, Y. ZHANG¹, Y.-L. CHIU¹, Y. HO¹, AND K. LEONG¹
¹Duke University, Durham, NCPLATFORM
SESSIONS

Sat-1

P = Poster Session
OP = Oral Presentation

11:30AM**3D Microfluidic Vascular Networks Fabricated in a Hydrogel Using Sacrificial Microfibers**L. M. BELLAN¹, D. M. CROPEK², AND R. LANGER¹¹MIT, Cambridge, MA, ²ERDC-CERL, Champaign, IL**11:45AM****Elastomeric Hydrogel Adhesives for Tissue Engineering**C-J. WU¹, B. CHAN¹, J. J. WILKER¹, AND G. SCHMIDT¹¹Purdue 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. DRUMMOND¹, A. HDEIB², J. JANKOWSKI¹, AND W. D. HAWTHORNE¹¹Case Western Reserve University, Cleveland, OH, ²University Hospitals, Cleveland, OH**11:00AM****Northwestern Global Health Foundation: model for medical devices in the developing world**M. GLUCKSBERG¹, K. PALAMOUNTAIN¹, AND D. KELSO¹¹Northwestern University, Evanston, IL**11:30AM****The BMES Boston Industry Chapter: Bridging the Gap Among Clinicians, Industry and Academia**G. GRUIONU¹, M. LUEDTKE², L. HUESER³, A. KRUISE⁴, R. COLEMAN⁵, AND S. PITTMAN⁶¹Massachusetts General Hospital and Harvard Medical School, Charlestown, MA, ²Codman & Shurtleff, a Johnson & Johnson company, Raynham, MA, ³Philips Healthcare, Boston, MA, ⁴Atrium Medical, Hudson, MA, ⁵landiorio 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. LAVIK¹¹Case Western University, Cleveland, OH

2:00PM

Antioxidant and Anti-Inflammatory Polyoxalate Nanoparticles as Novel Therapeutics for Airway Inflammatory Diseases

D. LEE¹, K. GUK¹, I. LEE¹, M. PARK¹, B. KIM¹, AND G. KHANG¹¹Chonbuk National University, Jeonju, Korea, Republic of

2:15PM

Sustained *In Vivo* and *In Vitro* Drug Release from Imprinted Therapeutic Contact LensesA. TIEPPO¹ AND M. E. BYRNE¹¹Biomimetic & 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. CLARK¹, T. J. JOHNSON¹, N. B. SHELKE¹, J. S. NEBEKER¹, M. R. CLARK², G. F. DONCEL², D. R. FRIEND², AND P. F. KISER¹¹University of Utah, Salt Lake City, UT, ²CONRAD, Arlington, VA

2:45PM

Dynamic Biomaterials for Chronic Wound Healing Applications

B. D. ALMQUIST¹, S. CASTLEBERRY¹, AND P. T. HAMMOND¹¹Massachusetts 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. CORONEL¹, E. PEDRAZA¹, AND C. L. STABLER¹¹University 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. KHADEMHOSEINI^{2,3}¹B's Research Group- Biomaterials, Biodegradables and Biomimetics; University of Minho, Guimarães, Portugal, ²Center for Biomedical Engineering, Department of Medicine, Brigham and Women's Hospital, Boston, MA, ³HST Harvard MIT Center for Biomedical Engineering, Department of Medicine, Boston, MA, ⁴Wyss Institute for Biologically Inspired Engineering, Boston, MA, ⁵ICVS/B's - PT Government Associate Laboratory, Braga/Guimaraes, Portugal

2:00PM

"Smart" Multifunctional Polymers Built from Bioactive Peptide Repeats

F. GARCIA QUIROZ¹ AND A. CHILKOTI¹¹Duke University, Durham, NC

2:15PM

Aptamer Functionalized Hydrogel Coating for Reversible Cell Capture and Release

S. LI¹, N. CHEN¹, Z. ZHANG², AND Y. WANG²¹Program of Biomedical Engineering, University of Connecticut, Storrs, CT, ²Department of chemical, Materials, & Biomolecular Engineering, University of Connecticut, Storrs, CT

2:30PM

Wound Healing Bilayer Polysaccharide-based Hydrogel Film

S. MAYES¹, J. SCOTT¹, J. DAVIS¹, D. PETERSON², S. ZAWKO¹, AND C. SCHMIDT¹¹The University of Texas at Austin, Austin, TX, ²Seton Family of Doctors, Austin, TX

2:45PM

PEG and PEG/PDMS Hydrogels with Novel Network Structures

E. M. SAFFER¹, M. A. LACKEY¹, J. CUI¹, D. M. GRIFFIN¹, G. N. TEW¹, A. J. CROSBY¹, AND S. R. BHATIA¹¹University 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. CHEN¹, S. KALLAKURI¹, J. YALDO¹, G. VIRK¹, K. TANIMOTO¹, AND J. CAVANAUGH¹¹Wayne 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. SULLIVAN¹, AND S. S. MARGULIES¹¹The University of Pennsylvania, Philadelphia, PA, ²The 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. MIETUS¹, K. BROWNE¹, L. STRUZYNA¹, J. WOLF¹, D. H. SMITH¹, AND D. K. CULLEN¹¹University 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. HAMILTON¹, X. HU¹, AND M. BERGSNEIDER¹¹University 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}¹Case Western Reserve University, Cleveland, OH, ²Veterans Affairs Medical Center, Cleveland, OHPLATFORM
SESSIONS

Sat-2

P = Poster Session
OP = Oral Presentation

2:45PM

Microstructural and Biomechanical Response of Mouse Sciatic Nerve
M. J. ALEXANDER¹, U. UTZINGER¹, J. BARKMEIER-KRAEMER², AND J. P. VANDE GEEST¹

¹University of Arizona, Tucson, AZ, ²University 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. CHUNG¹, S. KIM¹, K. A. ZALOCUSKY¹, J. H. MATTIS¹, V. GRADINARU¹, S. KALYANASUNDARAM¹, S. M. PAK¹, J. J. MIRZABEKOV¹, AND K. DEISSEROTH¹

¹Stanford University, Palo Alto, CA

1:45PM

Automated Microscopy for High-Throughput Interrogation of Neural Activity in Freely-Behaving Nematodes

D. R. ALBRECHT¹, J. LARSCH¹, AND C. BARGMANN¹

¹The Rockefeller University, New York, NY

2:00PM

Tools for Targeting GCaMP3 to Cytosol, Membrane and Mitochondria With in Utero Electroporation.

J. M. GEE¹, K. P. FLOOD¹, S. C. MORRIS¹, R. M. SMEAL¹, M. N. ECONOMO¹, M. R. CAPECCHI¹, P. TVRDIK¹, K. S. WILCOX¹, AND J. A. WHITE¹

¹University of Utah, Salt Lake City, UT

2:15PM

Boosting Steady State Visual Evoked Potentials (SSVEP) Using Phase Shifted Stimulus Segments

M. I. VANEGAS¹, A. BLANGERO¹, AND S. P. KELLY¹

¹The 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. VYAS¹, K. POURREZAEI¹, Z. BARATI¹ AND D. OMIRE-MAYOR¹

¹Drexel University, Philadelphia, PA

2:45PM

Severity of a Contusion Injury Assessed in Distal Portions of the Spinal Cord

M. JIRJIS¹, S. KURPAD², AND B. SCHMIT¹

¹Marquette University, Milwaukee, WI, ²Medical 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. TOY¹, P. VICENTE¹, E. TRAN¹, D. LIN¹, J. EINSTEIN¹, E. HAYDEN¹, A. CAMANN¹, Z. BERMAN¹, P. WUTTISARNWATTANA¹, J. MEYERS¹, H. WU¹, A. EXNER¹, J. BASILION¹, D. WILSON¹, AND E. KARATHANASIS¹

¹Case 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. BAI³, AND Y. XIA^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory, Atlanta, GA, ³National Taiwan University of Science and Technology, Taipei, Taiwan

2:15PM

An Improved Ultrasound Contrast Agent using Microbubble-loaded Red Blood Cells

A. H. DHANALIWALA¹, A. L. KLIBANOV¹, AND J. A. HOSSACK¹

¹University of Virginia, Charlottesville, VA

2:30PM

Phase-Change Perfluorocarbon Droplets for Ultrasound Imaging and Therapy: Methods of Customizing Sensitivity and Stability

P. S. SHEERAN¹, S. LUIOS², L. MULLIN¹, T. O. MATSUNAGA², AND P. A. DAYTON¹

¹University of North Carolina and North Carolina State University, Chapel Hill, NC, ²University of Arizona, Tucson, AZ

2:45PM

Preliminary Imaging Solution for Assessing Molecular Delivery via Ultrasound Therapy

A. SORACE¹, R. SAINI¹, J. WARRAM¹, E. ROSENTHAL¹, K. ZINN¹, AND K. HOYT¹

¹University 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. DUVAL¹, C. E. NELSON¹, H. LI¹, S. S. YU¹, J. M. DAVIDSON^{1,2}, S. A. GUELCHER¹, AND T. D. GIORGIO¹

¹Vanderbilt University, Nashville, TN, ²VA Hospital, Nashville, TN

1:45PM

Drug Delivering Cellular Microarrays for Investigation of Signaling Pathway Regulators

M. CARSTENS¹, E. HUANG¹, AND B. KESELOWSKY¹

¹University of Florida, Gainesville, FL

2:00PM

Spatially-defined Systemic Gene Delivery to Tumors Via a Magneto-Acoustically Actuated Microplatform

B. CHERTOK¹, R. LANGER¹, AND D. G. ANDERSON¹

¹Massachusetts Institute of Technology, Cambridge, MA

2:15PM

Cytosolic Delivery of Macromolecules by Rapid Mechanical Deformation

A. SHAREI¹, J. ZOLDAN¹, A. ADAMO¹, W. SIM¹, N. CHO¹, E. JACKSON¹, S. MAO¹, S. SCHNEIDER¹, A. LYTTON-JEAN¹, J. LEE¹, D. ANDERSON¹, R. LANGER¹, AND K. JENSEN¹

¹MIT, Cambridge, MA

2:30PM

Lentiviral Vectors Nano-engineered with 'Marker of Self' CD47 to Avoid Immune Surveillance

N. SOSALE¹, I. IVANOVSKA¹, R. TSAI¹, P. RODRIGUEZ¹, Y. GOLDMAN², P. ZOLTICK³, AND D. DISCHER¹

¹University of Pennsylvania, Philadelphia, PA, ²University of Pennsylvania, Philadelphia, PA, ³Harvard University, Boston, MA

2:45PM

Biodegradable, Immunoprotective, Dual Nanoporous Devices for Cell-based Therapies

H. HE¹, X. ZHANG¹, B. YU¹, AND L. J. LEE¹

¹The 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. OUSTEROUT¹, P. PEREZ-PINERA¹, M. T. BROWN¹, AND C. A. GERSBACH¹¹Duke University, Durham, NC**1:45PM****Independently-Controlled Surface Topography and FSS Enhance Kidney Tissue Structure Formation *In Vitro***E. FROHLICH^{1,2}, X. ZHANG², AND J. CHAREST¹¹Charles Stark Draper Laboratory, Cambridge, MA, ²Boston University, Boston, MA**2:00PM****Conformational and Mechanical Characterization of Tumor-Associated Extracellular Matrices *In Vitro***K. WANG¹, R. C. ANDRESEN¹, S. HU¹, B. SEO², C. FISCHBACH², AND D. GOURDON^{1,2}¹Dept of Materials Science & Engineering, Cornell University, Ithaca, NY, ²Dept of Biomedical Engineering, Cornell University, Ithaca, NY**2:15PM****Engineering Stem Cell Membranes to Target Inflamed Tissues**H. CHENG^{1,2}, M. BYRSKA-BISHOP¹, C. J. KASTRUP¹, N. S. HWANG¹, R. LANGER¹, AND D. ANDERSON¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Drexel University, Philadelphia, PA**2:30PM****Cell Stiffness is a Biomarker of the Metastatic Potential of Ovarian Cancer Cells**W. XU¹, R. MEZENCEV¹, B. KIM¹, L. WANG¹, J. McDONALD¹, AND T. SULCHEK²¹Georgia Tech, Atlanta, ²Georgia Tech, Atlanta, GA**2:45PM****Expression of Load-Inducible Genes under Ultrasound Stimulation: A Frequency Dependent Hypotheses**G. BUDHIRAJA¹, T. LOUW¹, H. VILJOEN¹, AND A. SUBRAMANIAN¹¹University 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. HAZAR¹, Y. KIM², J. SONG¹, L. A. DAVIDSON³, W. C. MESSNER¹, AND P. R. LEDUC¹¹Carnegie Mellon University, Pittsburgh, PA, ²Massachusetts Institute of Technology, Cambridge, MA, ³University of Pittsburgh, Pittsburgh, PA**1:45PM****Structural Reorganization of Active Actin Networks via Competition between Force Generation and Dissipation**T. KIM¹, E. MUNRO¹, AND M. L. GARDEL¹¹University of Chicago, Chicago, IL**2:00PM****Introduction of Integrated Cell Migration Model: Comparisons with Cell Migration Experiments**M-C. KIM¹, R. KAMM^{1,2}, AND H. ASADA^{1,2}¹Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, ²Massachusetts Institute of Technology, Cambridge, MA**2:15PM****Chlamydomonas Axonemal Dynein Prefers Chlamydomonas tubulin to Porcine Tubulin**J. D. ALPER¹, M. TOVAR¹, AND J. HOWARD¹¹Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany**2:30PM****Modeling of Adhesion, Protrusion, and Contraction Coordination for Cell Migration Simulations**Y. SAKAMOTO¹, S. PRUDHOMME¹, AND M. H. ZAMAN²¹The University of Texas at Austin, Austin, TX, ²Boston University, Boston, MA**2:45PM****Mapping Protein Structure Changes with Cysteine Labeling Kinetics by Mass Spectrometry**B. CHASE¹, J. D. PAJEROWSKI², J. SWIFT¹, H-Y. TANG³, D. SPEICHER³, AND D. DISCHER¹¹UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA, ²MERCK, WHITEHOUSE STATION, NJ, ³WISTAR INSTITUTE, PHILADELPHIA, 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. SHIN¹, A. BUXBOIM¹, J. SWIFT¹, K. R. SPINLER¹, AND D. E. DISCHER¹¹University of Pennsylvania, Philadelphia, PA**1:45PM****Scaffold Immobilized Jagged I Enhances Cardiac Progenitor Cell Differentiation**A. V. BOOPATHY^{1,2}, Y. NARUI², K. SALAITA², AND M. E. DAVIS^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**2:00PM****Mesenchymal Stem Cells Enhance Endothelial-like Behavior of a Partially Differentiated Population of Embryonic Stem Cells**L. M. MCGINLEY¹ AND R. M. NEREM¹¹Georgia Institute of Technology, Atlanta, GA**2:15PM****Electrical Stimulation to Enhance Neurite Outgrowth and Differentiation in Neural Stem Cells**L. J. KOBELT¹, A. E. WILKINSON¹, AND N. D. LEIPZIG¹¹The University of Akron, Akron, OH**2:30PM****Incorporation of Chondroitin Sulfate-Based Microparticles in MSC Spheroids Promotes Expression of Chondrogenic Markers**M. C. GOUDE¹, P. R. BARANIAK¹, J. J. LIM¹, J. A. ZIMMERMAN¹, T. C. MCDEVITT¹, AND J. S. TEMENOFF¹¹Georgia Institute of Technology, Atlanta, GA

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. AMIN¹, M. A. BRADY¹, J. TIAN¹, S. MCCULLEN¹, M. M. STEVENS¹, D. R. OVERBY¹, AND C. R. ETHIER¹¹Imperial 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-I peptide Enhances PET Imaging of Atherosclerosis**J. SEO¹, H. BAEK¹, L. M. MAHAKIAN¹, J. HAMZAH², E. RUOSLAHTI², AND K. W. FERRARA¹¹University of California Davis, Davis, CA, ²University of California Santa Barbara, Santa Barbara, CA**2:00PM****Radio-frequency Triggered Release of Chemotherapy From a Multicomponent Nanochain**P. M. PEIRIS¹, L. BAUER¹, R. TOY¹, E. TRAN¹, J. PANSKY¹, E. DOOLITTLE¹, E. SCHMIDT¹, E. HAYDEN¹, A. MAYER¹, R. A. KERI¹, M. A. GRISWOLD¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**2:15PM****siRNA-Gold Nanoparticle Conjugates for Treatment of Malignant Glioma**E. S. DAY¹, J. P. LUCIANO², C. H. KO-DAUK¹, S. A. JENSEN², A. H. STEGH², AND C. A. MIRKIN¹¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL**2:30PM****Nanoparticulate Antigen Carriers for the Treatment of Autoimmune Diseases and Allergies**W. YAP¹, D. P. MCCARTHY¹, C. B. SMARR¹, C. T. HARP¹, Z. HUNTER¹, S. D. MILLER¹, AND L. D. SHEA¹¹Northwestern University, Chicago, IL**2:45PM****Biodegradable Brain-Tissue Penetrating Nanoparticles**E. NANCE¹, T-Y. SHIH¹, C. ZHANG¹, Q. XU¹, G. WOODWORTH¹, AND J. HANES¹¹Johns 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. OZKUMUR¹, J. CICILIANO¹, T. BARBER¹, M. YU¹, R. KAPUR¹, S. MAHESWARAN¹, D. HABER¹, AND M. TONER¹¹MGH, Charlestown, MA, ²MIT, Cambridge, MA**1:45PM****Label-Free Biomechanical Single Cell Microfluidic Analysis Of Cancer Stem Cells Derived From Patient Brain Tumors**M. MASTERMAN-SMITH¹, H. TSE¹, D. GOSSETT¹, AND D. DI CARLO¹¹UCLA, Los Angeles, CA**2:00PM****Structural Adaptation of Tumor Vasculature Induced by Micro-Laser Ablation**G. GRUIONU¹, L. G. GRUIONU², AND L. L. MUNN¹¹Massachusetts General Hospital and Harvard Medical School, Charlestown, MA, ²University of Craiova, Craiova, Romania**2:15PM****The Impact of Fucosylation In Bone Metastasis of Prostate Cancer**J. LI¹, A. GUILLEBON¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**2:30PM****Tissue Engineered Tumor-Microenvironments to Assess Stromal Regulation of Anti-Tumor Immunity**A. W. LUND¹, V. E. KENNEDY¹, L. NGUYEN¹, I. OIKONOMIDI¹, AND M. A. SWARTZ¹¹Swiss Federal Institute of Technology, Lausanne, Switzerland**2:45PM****Interstitial Flow Stimulates Invasion of ErbB2-overexpressing Breast Cancer Cells via PI3K Activation**A. M. TCHAFI¹, M. J. REGINATO², AND A. C. SHIEH¹¹Drexel University, Philadelphia, PA, ²Drexel University College of Medicine, Philadelphia, PA*Track sponsored by **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. HAWA¹ AND R. GAN¹¹The University of Oklahoma, Norman, OK**1:45PM****Auditory Injury Induced by Blast Exposure – Changes of Middle Ear Structure and Transfer Function**R. GAN¹, D. NAKMALI¹, X. GUAN¹, AND Y. CHEN¹¹University of Oklahoma, Norman, OK**2:00PM****Mouse Lethality Risk and Intracranial Pressure During Exposure to Blast**A. W. YU¹, H. WANG², K. MATTHEWS¹, K. A. RAFAELS³, D. T. LASKOWITZ², D. GULLOTTI⁴, D. F. MEANEY⁴, B. MORRISON III⁵, AND C. R. BASS¹¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC, ³University of Virginia, Charlottesville, VA, ⁴University of Pennsylvania, Philadelphia, PA, ⁵Columbia University, New York, NY**2:15PM****Interspecies Scaling of Blast-Induced Apnea**G. WOOD¹, K. RAFAELS², A. YU¹, J. SHRIDHARAN¹, M. PANZER¹, D. MEANEY³, B. MORRISON⁴, D. LASKOWITZ⁵, H. WANG⁶, AND C. BASS¹¹Duke University, Durham, NC, ²United States Army Research Laboratory, Adelphi, MD, ³University of Pennsylvania, Philadelphia, PA, ⁴Columbia University, New York, NY, ⁵Duke University Medical Center, Durham, NC

2:30PM**Finite Element Analysis of Lower Extremity at Blast Conditions**R. BERTUCCI¹, Y. MAO¹, R. GILBRECH¹, R. PRABHU¹, J. SHENG², M. F. HORSTEMEYER¹, J. LIAO¹, AND L. WILLIAMS¹¹Mississippi State University, Starkville, MS, ²U.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. SOHN¹, J. CHOI¹, D. KIM¹, K. LEE², AND J. LEE²¹Samsung Advanced Institute of Technology, Yongin-si, Korea, Republic of, ²Hallym 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. HEIDARI³, Z. CHEN^{1,2}, AND S. C. GEORGE^{1,2}¹Biomedical Engineering, University of California Irvine, Irvine, CA, ²Edwards Lifesciences Center for Advanced Cardiovascular Technology, University of California Irvine, Irvine, CA, ³OCT 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. HOSSAIN¹, S. HOSSAIN², AND T. HUGHES¹¹The University of Texas at Austin, Austin, TX, ²Abbott Vascular Inc., Santa Clara, CA**2:00PM****Feasibility of Cryo-Anchoring for Increased Catheter Stability in Percutaneous RF Ablation Treatment**S. M. BORONYAK¹ AND W. D. MERRYMAN¹¹Vanderbilt University, Nashville, TN**2:15PM****Vascular Response to Treatment with a Paclitaxel Coated Balloon in a preclinical Femoral Artery Model**S. K. YAZDANI¹, F. D. KOLODZIE¹, AND R. VIRMANI¹¹CVPPath Institute, Gaithersburg, MD**2:30PM****Impact of Stent Mis-positioning and Mis-sizing on Coronary Endothelial Shear and Intramural Stress**H. Y. CHEN¹, B-K. KOO², D. L. BHATT³, AND G. S. KASSAB¹¹Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN, ²Seoul National University Hospital, Seoul, Korea, Republic of, ³Harvard Medical School, Boston, MA**2:45PM****Optimal Drug-Eluting Stents Require Markedly Different Release Strategies for Paclitaxel and Sirolimus**F. BOZSAK¹, D. GONZALEZ-RODRIGUEZ¹, P. BELITZ², T. BEWLEY², P. SCHMID¹, J-M. CHOMAZ¹, AND A. I. BARAKAT^{1,3}¹Ecole Polytechnique - LadHyX, Palaiseau, France, ²University of California at San Diego, San Diego, CA, ³University 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. TSAMIS¹, J. A. PHILLIPPI¹, S. PASTA^{1,2}, A. D'AMORE^{1,2}, S. C. WATKINS¹, W. WAGNER¹, T. G. GLEASON¹, AND D. A. VORP¹¹University of Pittsburgh, Pittsburgh, PA, ²Fondazione 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. MEREL¹, S. AVRIL¹, P. BADEL¹, M. A. SUTTON², AND S. M. LESSNER²¹Ecole Nationale Supérieure des Mines, St.-Etienne, France, ²University of South Carolina, Columbia, SC**2:00PM****Infrared Spectroscopy to Map Extracellular Components in Abdominal Aortic Aneurysm Wall**R. CHEHELTANI¹, R. JAYASHREE², D. A. VORP², M. F. KIANI¹, AND N. PLESHKO¹¹Temple University, Philadelphia, PA, ²University of Pittsburgh, Pittsburgh, PA**2:15PM****On the Fluid-Structure Coupling in FSI Modeling of Patient Specific Abdominal Aortic Aneurysms**S. CHANDRA¹, S. RAUT², A. JANA³, S. MULUK⁴, AND E. A. FINOL⁵¹University of Notre Dame, Notre Dame, IN, ²Carnegie Mellon University, Pittsburgh, PA, ³Pittsburgh Supercomputing Center, Pittsburgh, PA, ⁴Western Pennsylvania Allegheny Health Systems, Pittsburgh, PA, ⁵The 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. QI¹, B. FATA², AND M. SACKS³¹University of Colorado, Denver, CO, ²University of Pittsburgh, Pittsburgh, PA, ³University of Texas, Austin, TX**2:45PM****Arterial Wall Stiffness Variations Along the Canine Aorta using Pulse Wave Imaging with Validation *in vitro***D. SHAHMIRZADI¹, R. X. LI¹, W. W. QAQISH¹, AND E. E. KONOFAGOU¹¹Columbia University, New York, NY***Track sponsored by**  **ST. JUDE MEDICAL**
MORE CONTROL. LESS RISK.

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. PARAMESWARAN¹, B. C. HARVEY¹, B. SUKI¹, AND K. R. LUTCHEN¹

¹Boston University, Boston, MA

1:45PM

The Biostructural and Biomechanical Effects of Ets-2 Phosphorylation in Pulmonary Fibrosis

M. WEBER¹, S. N. FISCHER^{2,3}, C. P. BARAN³, J. J. LANNUTTI⁴, H. M. POWELL^{1,4}, S. N. GHADIALI^{1,3}, AND C. B. MARSH³

¹Department of Biomedical Engineering, The Ohio State University, Columbus, OH, ²Integrated Biomedical Science Graduate Program, The Ohio State University, Columbus, OH, ³Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH, ⁴Department 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. FUJIOKA¹ AND D. P. GAVER III¹

¹Tulane University, New Orleans, LA

2:15PM

Model of Surfactant Delivery Into an Asymmetric Airway Tree

M. FILOCHE^{1,2}, M. FLORENS³, C-F. TAI², AND J. B. GROTEBERG²

¹Ecole Polytechnique, Palaiseau, France, ²University of Michigan, Ann Arbor, MI, ³ENS 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}

¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA

2:45PM

Lung Development on a Chip: Luminal Fluid Flows Regulate Airway Architecture

J. P. GLEGHORN¹, V. D. VARNER¹, H. A. STONE¹, AND C. M. NELSON¹

¹Princeton 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. QUINN¹, R. S. HAYDEN¹, G. V. SRIDHARAN¹, K. LEE¹, D. L. KAPLAN¹, AND I. GEORGAKOUDI¹

¹Tufts University, Medford, MA

1:45PM

Dynamic, Nondestructive Imaging of Bioengineered Vascular Grafts

B. M. WHITED¹, M. HOFMANN¹, Y. XU¹, G. WANG¹, S. SOKER², AND M. N. RYLANDER¹

¹Virginia Tech, Blacksburg, VA, ²Wake 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. CAI², Y. WANG², C. ZHANG², L. LI², S-W. CHOI², C. KIM², L. V. WANG², AND Y. XIA^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Washington University in St. Louis, St. Louis, MO

2:15PM

An Integrated Imaging-Bioreactor System for Blood Vessel Engineering

M. C. HOFMANN¹, B. WHITED², P. LU¹, T. CRISWELL³, S. SOKER³, M. N. RYLANDER², AND Y. XU¹

¹Virginia Tech, Blacksburg, VA, ²Virginia Tech - Wake Forest University, Blacksburg, VA, ³Wake 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. NESBITT¹, J. MACIONE¹, S. WENTZELL¹, AND S. P. KOTHA¹

¹Rensselaer Polytechnic Institute, Troy, NY

2:45PM

Optical Angiography and OCT Reveal Novel Microfluidic-Scale Embryonic Cardiovascular Physiology

B. K. HUANG¹, T. TONG¹, S. JONAS^{1,2}, AND M. A. CHOMA¹

¹Yale University, New Haven, CT, ²RWTH 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. CHEN¹, F. L. LUIS¹, AND E. O. VOIT¹

¹Georgia Tech, Atlanta, GA

1:45PM

Transcription Factor Dynamics Control Germ Layer Commitment of Single Mouse ES Cells

A. M. DOYLE¹, L-N. ZOU¹, AND S. RAMANATHAN¹

¹Harvard University, Cambridge, MA

2:00PM

Bayesian Approach to Classifying Biomolecular and Cellular Dynamics

M. BATHE¹, N. MONNIER^{1,2}, S-M. GUO¹, S. XIE¹, J. BIGNESS¹, AND A. MARTIN¹

¹Massachusetts Institute of Technology, Cambridge, MA, ²Harvard, Cambridge, MA

2:15PM

A Systems-Level Analysis of HIV Nef-induced Proinflammatory Responses in Primary Human Macrophages

Q. XUE¹, Y. LU¹, J. GLUCK², D. WILLBOLD², R. FAN¹, AND K. MILLER-JENSEN¹

¹Yale University, New Haven, CT, ²Institute 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. LOMNITZ¹, A. MARTINEZ-ANTONIO², AND M. A. SAVAGEAU¹


¹University of California, Davis, CA, ²Cinvestav, Irapuato, Mexico

2:45PM

Analysis of the Swimming Motion of *Tritrichomonas foetus*: Key Insight for Bioinspiration

S. O. NWANDU-VINCENT¹, S. C. LENAGHAN¹, J. CHEN¹, AND M. ZHANG¹

¹University 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. HUANG¹, E. L. NYBERG², R. C. OGLE³, AND E. A. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Virginia, Charlottesville, VA, ³LifeNet Health Institute of Regenerative Medicine, Norfolk, VA**1:45PM****Poly(caprolactone) Shape Memory Scaffold for Bone Tissue Engineering**R. M. BAKER¹, J. H. HENDERSON¹, AND P. T. MATHER¹¹Syracuse University, Syracuse, NY**2:00PM****Directed Assembly of Biomaterials for Bone Tissue Regeneration**N. J. SHAH¹ AND P. T. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA**2:15PM****Development of Novel Silk-Calcium Phosphate Ceramic Composites for Healing Critical-Size Bone Defects**S. L. MCNAMARA¹ AND D. L. KAPLAN¹¹Tufts University, Medford, MA**2:30PM****Stimulation Effects on a Novel Engineered Tendon Construct**B. ENGBRETSON¹ AND V. I. SIKAVITSAS¹¹University of Oklahoma, Norman, OK**2:45PM****Engineered Skeletal Muscle Tissues Replicating Structure and Function of Native Muscle**M. JUHAS¹ AND N. BURSAC¹¹Duke 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. CHUNG¹, P. SOMAN¹, AND S. CHEN¹¹University of California, San Diego, La Jolla, CA**1:45PM****Multiscale Vascularization of Engineered 3D Tissues: From Patterned Channels to Capillaries**J. S. MILLER¹, K. R. STEVENS², M. T. YANG¹, B. M. BAKER¹, D-H. T. NGUYEN¹, D. M. COHEN¹, E. TORO¹, A. A. CHEN², P. A. GALIE¹, X. YU¹, R. CHATURVEDI¹, S. N. BHATIA², AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²Massachusetts Institute of Technology, Cambridge, MA**2:00PM****Micro patterning of Proteins in Hydrogels Via Two Photon Laser Scanning Photolithography for Guided Vessel Growth**S. ALI^{1,2} AND J. WEST^{1,2}¹Rice University, Houston, TX, ²Duke University, Durham, NC**2:15PM****Patterning Branched Tissues: Molecular Insights From Engineered Tissue Models**W. ZHU¹ AND C. M. NELSON¹¹Princeton University, Princeton, NJ**2:30PM****A 'Microvascular Stamp' for Guiding New Blood Vessel Growth in Physiologically-Relevant Patterns**V. CHAN¹, J. JEONG¹, C. CVETKOVIC¹, H. KONG¹, AND R. BASHIR¹¹University 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. LEE¹, S-S. YOO², AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Brigham 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. SOSA¹, S. M. VIGNES¹, T. G. CHEN¹, N. D. NIELSEN², AND S. S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA, ²Tulane University School of Medicine, New Orleans, LA**1:45PM****Separation of Plasma from Whole Blood in Paper-Fluidic Format**X. YANG¹, O. FOROUZAN¹, T. BROWN¹, AND S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA**2:00PM****Simultaneous Amplification of Multiple DNA Targets with Optimized Annealing Temperatures**N. PAK¹, C. R. PHANEUF¹, D. C. SAUNDERS¹, AND C. R. FOREST¹¹Georgia Institute of Technology, Atlanta, GA**2:15PM****Effect of Geometry on Wall Stresses in a Computational Model of the Heineke-Mikulicz Strictureplasty**A. TSAMIS¹, L. POCIVAVSEK¹, AND D. A. VORP¹¹University of Pittsburgh, Pittsburgh, PA**2:30PM****Ultrasound-enhanced Delivery of Antibiotics and Anti-inflammatory Drugs into the Eye**M. NABILI¹, H. PATEL¹, S. MAHESH¹, J. LIU¹, C. GEIST¹, AND V. ZDERIC¹¹The George Washington University, Washington, DC**2:45PM****Automated Mobile Phone Telemicroscopy for Sickle Cell Disease Screening**R. G. MANNINO¹, D. R. MYERS^{1,2}, E. T. HARDY^{1,2}, S. JAIN², M. FRANCO², C. REBER³, D. ARCHER², D. A. FLETCHER³, AND W. A. LAM^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³University of California at Berkeley, Berkeley, CA*Track sponsored by  FISH & RICHARDSONPLATFORM
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 - I - 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. REILLY¹, J. D. LARSEN², AND M. O. SULLIVAN³¹University of Delaware, Newark, DE, ²ABS Global, DeForest, WI**3:30PM**

Microfluidic Manufacturing of Nanocomplexes Improves Nonviral Gene Delivery

C. L. GRIGSBY¹, Y. P. HO¹, A. F. ADLER¹, AND K. W. LEONG¹¹Duke University, Durham, NC**3:45PM**

Intelligent Nanoscale Hydrogels for the Oral Delivery of Chemotherapeutics

A. S. PURANIK¹ AND N. A. PEPPAS¹¹The University of Texas at Austin, Austin, TX**4:00PM**

Evidence of Oral Translocation of Dendritic Polymers in Mice

G. THIAGARAJAN¹, A. RAY¹, S. SADEKAR¹, K. GRIESH^{1,2}, AND H. GHANDEHARI¹¹University of Utah, Salt Lake City, UT, ²University 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. DAVIS¹, AND Y. LUO^{1,2}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Peking University, Beijing, China, People's Republic of**4:30PM**

TNF Specific DNAzyme Functionalized Gold Particles as Anti-Inflammatory Therapeutic for Cardiac Preservation Following Myocardial Infarction

K. YEHL¹, I. SOMASUNTHARAM^{1,2}, M. DAVIS^{1,2}, AND K. SALAITA¹¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**Track: Biomaterials**

OP - Sat - 3 - 2 - Room A312

Novel Biomaterials & Scaffolds III

Chairs: Felipe Garcia-Quiroz, Jessica Weaver

3:15PMAn Integrated Bi-Layered Scaffold for Osteochondral Tissue Engineering: Fabrication and *In Vitro* StudyA. GALPERIN¹, R. A. OLDINSKI¹, S. J. FLORCZYK¹, J. D. BRYERS¹, M. ZHANG¹, AND B. D. RATNER¹¹University of Washington, Seattle, WA**3:30PM***In Situ* Reendothelialization via Multifunctional Nano-scaffoldsL-C. SU¹, H. XU², Y-T. TSAI¹, R. T. TRAN¹, L. TANG¹, J. YANG¹, AND K. T. NGUYEN¹¹UT Arlington, Arlington, TX, ²UT 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. SUN¹¹LifeCell Corporation, Branchburg, NJ**4:00PM**

Designer Collagen Hydrogels to Regulate Satellite Cell Phenotype

V. RODRIGUEZ-RIVERA¹, R. L. GOODWIN², M. MORALES², N. MOHSEN¹, L. TERRACIO³, J. W. WEIDNER¹, AND M. J. YOST⁴¹University of South Carolina, Columbia, SC, ²University of South Carolina-School of Medicine, Columbia, SC, ³New York University, New York, NY, ⁴Medical University of South Carolina, Charleston, SC**4:15PM**

Osteogenic Potential of 3-Dimensional Porous Titanium Scaffolds on Osteoblast Maturation

X. WANG^{1,2}, R. GITTENS², Z. SCHWARTZ², H. CHEN¹, AND B. D. BOYAN²¹Peking University, Beijing, China, People's Republic of, ²Georgia Institute of Technology, Atlanta, GA**4:30PM**

Characterization of Calcium Polyphosphate Scaffolds with Embedded Micro-Channels for Osteochondral Tissue Replacement or Augmentation

M. VLASEA¹, Y. SHANJANI¹, E. TOYSERKANI¹, AND R. KANDEL²¹University of Waterloo, Waterloo, ON, Canada, ²Mount 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-ASLI¹, B. M. POURDEYHIMI¹, AND E. G. LOBOA^{1,2}¹North Carolina State University, Raleigh, NC, ²University of North Carolina, Chapel Hill, NC**3:30PM**

Effect of Matrix Topography on Keloid Fibroblast Proliferation and Wound Healing

L. MUTHUSUBRAMANIAM¹, T. ZAITSEVA², M. PAUKSHTO², G. MARTIN³, AND T. DESAI¹¹UCSF, San Francisco, CA, ²Fibralign Corporation, Sunnyvale, CA, ³National Institute of Health, Bethesda, MD**3:45PM**

Elastin Based Nano-particles for Treatment of Chronic Wounds

Y. YUAN¹ AND P. KORJA¹¹University of South Florida, Tampa, FL**4:00PM**

Modified Skin Scaffolds to Improve Closure in Diabetic Wounds

M. PRZYBOROWSKI¹, R. FAULKNER¹, A. BANDEKAR¹, S. SOFOU¹, A. SCHMIDT², AND F. BERTHIAUME¹¹Rutgers University, Piscataway, NJ, ²New York University, New York, NY**4:15PM**

Designing Electrospun Scaffolds for Skin Regeneration

P. P. BONVALLET¹ AND S. L. BELLIS¹¹University 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. WOLFE², A. J. SPENCE², I. A. RODRIGUEZ², J. M. MCCOOL², K. GARG², J. J. ERICKSEN^{1,2}, AND G. L. BOWLIN²¹Hunter Holmes McGuire VA Medical Center, Richmond, VA, ²Virginia 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. SHAPIRO¹, K. HOMMA², S. VILLARREAL³, C-P. RICHTER², AND F. BEZANILLA³¹University of California Berkeley, Berkeley, CA, ²Northwestern University, Chicago, IL, ³University of Chicago, Chicago, IL**3:30PM****Transgene Induction in Arbitrary Single Cells via Pulsed Infrared Laser Illumination**M. A. CHURGIN¹ AND C. FANG-YEN¹¹University of Pennsylvania, Philadelphia, PA**3:45PM****Pulsed Infrared Excitability of Intracellular Ca²⁺ Stores and Presynaptic Vesicular Release**R. D. RABBITI^{1,2}, Q. LIU¹, H. H. HOLMAN¹, M. J. FRERCK¹, AND E. M. JORGENSEN¹¹University of Utah, Salt Lake City, UT, ²Marine Biological Laboratory, Woods Hole, MA**4:00PM****Pulse Duration-Dependent Recruitment in Peripheral Nerves Using Infrared Neural Stimulation**E. PETERSON¹ AND D. TYLER^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis-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 ¹H and ²³Na MRI at 21.1T**J. ROSENBERG^{1,2}, K. SELLGREN², F. CALIXTO-BEJARANO¹, M. W. DAVIDSON¹, M. A. BAIRD¹, T. MA², AND S. C. GRANT^{1,2}¹The National High Magnetic Field Laboratory, Tallahassee, FL, ²Chemical & 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. KANAKIA¹, J. TOUSSAINT¹, S. CHOWDHURY¹, B. ADEWALE¹, T. TEMBULKAR¹, K. SHROYER², W. MOORE², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²Stony Brook University Medical Center, Stony Brook, NY**3:45PM****Biodegradable Polydisulfide Dendrimer Nanocusters as MRI Contrast Agents**C-H. HUANG¹, K. NWE², A. AL-ZAKI¹, M. BRECHBIEL², AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA, ²National Cancer Institute, Bethesda, MD**4:00PM****MR Relaxivity of Gd-DTPA-HSA in Brain Tissue: Towards Quantification of Tissue Concentration *In Vivo***G. W. ASTARY¹, S. KANTOROVICH², J. W. MUNSON³, S. J. LEE⁴, P. R. CARNEY⁵, M. SARNTINORANONT⁴, AND T. H. MARECI¹¹Biochemistry and Molecular Biology, University of Florida, Gainesville, FL, ²Neuroscience, University of Florida, Gainesville, FL, ³Center for Environmental and Human Toxicology, University of Florida, Gainesville, FL, ⁴Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL, ⁵Biomedical 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. DOIRON¹, R. D. SHEPHERD¹, K. D. RINKER¹, R. FRAYNE¹, AND L. B. ANDERSEN¹¹University of Calgary, Calgary, AB, Canada**4:30PM****Biological and MR Impacts of Long Term SPIO Exposure on hMSCs Under Hypoxic-Ischemic Conditions**J. ROSENBERG¹, K. SELLGREN², M. W. DAVIDSON¹, M. A. BAIRD¹, T. MA², AND S. C. GRANT¹¹The National High Magnetic Field Laboratory, Tallahassee, FL, ²Chemical & 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. MARES¹, J. RYCKMAN¹, K. R. BEAVERS¹, C. L. DUVAL¹, AND S. M. WEISS¹¹Vanderbilt University, Nashville, TN**3:30PM****Implantable Microneedles for Rapid Transcutaneous Delivery and Controlled Release of Therapeutics**P. C. DEMUTH¹, W. GARCIA¹, M. LIM AI-LING², P. T. HAMMOND¹, AND D. J. IRVINE^{1,3}¹Massachusetts Institute of Technology, Cambridge, MA, ²Oxford University, Oxford, United Kingdom, ³Howard Hughes Medical Institute, Chevy Chase**3:45PM****New Cationic Lipid Nanoparticles for Hepatic Delivery of MIR-26A**X. WANG¹ AND J. L. LEE¹¹The 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. HANES²¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins University School of Medicine, Baltimore, MD**4:15PM****Drug-encapsulated Tunable Polymerized Shell Ultrasound Contrast Agents**Y. PARK¹, A. C. LUCE¹, T. A. PHAM¹, R. D. WHITAKER^{1,2}, B. AMIN¹, C. BEIGIE¹, M. CABODI¹, R. NAP³, I. SZLEIFER³, R. CLEVELAND^{1,4}, J. O. NAGY⁵, AND J. Y. WONG¹¹Boston University, Boston, MA, ²University of Tromsø, Tromsø, Norway, ³Northwestern University, Evanston, IL, ⁴University of Oxford, Oxford, United Kingdom, ⁵NanoValent Pharmaceuticals, Inc., Bozeman, MT**4:30PM****Gold Nanostructures for Fluorescence Enhancement**H. SHARMA¹, S. LIN¹, A. GUPTA¹, AND M. KHINE¹¹University of California-Irvine, Irvine, CA

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. CHO², AND R. PEREZ-CASTILLEJOS⁵¹Johns Hopkins University, Baltimore, MD, ²New Jersey Institute of Technology, Newark, NJ, ³University of Florida, Gainesville, FL, ⁴Arkansas Tech University, Russellville, AR, ⁵NUJIT, Newark, NJ**3:25PM****Microfluidic Encapsulation for Control of Stem Cell Fate**C. HIGHLEY¹, D. GUO¹, AND S. ZAPPE¹¹Carnegie Mellon University, Pittsburgh, PA**3:35PM****Cellular Uptake of Liposomes Containing a Boron Lipid**A. CHEN¹, M. BARTOK², D. AWAD², AND D. GABEL²¹University of Rochester, Rochester, NY, ²Jacobs University Bremen, Bremen, Germany**3:45PM****Testing of a Novel RAFT-Synthesized Polymer Library for Efficient, Hemocompatible siRNA Delivery**J. KINTZING¹, C. NELSON², J. SHANNON², M. GUPTA², AND C. DUVAL²¹Grove City College, Grove City, PA, ²Vanderbilt University, Nashville, TN**3:55PM****Characterization of Nanografted DNA Motors For Drug Delivery Applications**K. A. HUJSAK¹, J. LEE¹, P. LANDON¹, A. MO¹, AND R. LAL¹¹University of California San Diego, San Diego, CA**4:05PM****Optimizing the storage stability of drug-loaded polymeric micelles**M. BUX¹, M. BARANELLO¹, AND D. S. BENOIT¹¹University of Rochester, Rochester, NY**4:15PM****Increasing Local Oxygen Tension Through a Nanomagnets Based Targeted Drug Delivery System in a Whole Animal Model**C. LIONG¹ AND P. CABRALES¹¹University of California, San Diego, La Jolla, CA**4:25PM****Nanofiber Texturing for Prevention of Biofilm Formation on Medical Implants**A. KIM¹, M. KARGAR¹, A. NAIN¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**4:35PM****High Resolution Imaging of Non-Crystalline Connexin 26 Hemichannels**H. BARNARD¹, B. MECKES², C. AMBROSIO², G. SOSINSKY², AND R. LAL²¹University of California, Santa Barbara, Santa Barbara, CA, ²University 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. LIU¹, J. MCDANIEL¹, X. LI¹, D. ASAI¹, F. G. QUIROZ¹, J. SCHAAL¹, J. PARK¹, M. ZALUTSKY¹, AND A. CHILKOTI¹¹Duke University, Durham, NC**3:30PM****Characterizing and Functionalizing Double-Emulsion Templated Polymersomes**N. P. KAMAT¹, M. LEE¹, D. LEE¹, AND D. A. HAMMER¹¹University of Pennsylvania, Philadelphia, PA**3:45PM****Chemoenzymatic Synthesis of Lectin-Binding Peptide Nanofibers**G. A. HUDALLA¹, Y. F. TIAN², AND J. H. COLLIER¹¹University of Chicago, Chicago, IL, ²Illinois Institute of Technology, Chicago, IL**4:00PM****Three-dimensional PEG-based Scaffolds by Self-Folding**M. JAMAL¹, S. KADAM¹, R. XIAO¹, F. JIVAN¹, T. ONN¹, R. FERNANDES¹, T. NGUYEN¹, AND D. GRACIAS¹¹Johns Hopkins University, Baltimore, MD**4:15PM****Investigation of Cancer-Targeted Block Copolypeptide Vesicles**U-J. CHOE¹, A. R. RODRIGUEZ¹, B. S. LEE¹, T. J. DEMING¹, AND D. T. KAMEI¹¹University of California, Los Angeles, Los Angeles, CA**4:30PM****Sustainable Green Synthesis of Gold Nanoparticle for Biomedical Applications**S. YI¹, L. XIA¹, S. C. LENAGHAN¹, L. SUN¹, AND M. ZHANG¹¹University 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. TIEN¹, J. G. TRUSLOW¹, AND C. M. NELSON²¹Boston University, Boston, MA, ²Princeton University, Princeton, NJ**3:30PM****Phenotypic Switch of Metastatic Breast Cancer Cells Via Pro-Inflammatory Cytokines Found in Blood**Y. GENG¹, S. CHANDRASEKARAN¹, J-W. HSU¹, A. D. HUGUES¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**3:45PM****Adhesive Heterogeneity as an Indicator of Metastatic State**A. FUHRMANN¹, T. D. TLSTY², AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²University of California, San Francisco, San Francisco, CA

4:00PM**Cross Talk Between M2 Macrophages and Glioma Cancer Stem Cells**L. M. NUSBLAT¹, M. J. CARROLL¹, AND C. M. ROTH¹¹Rutgers University, Piscataway, NJ**4:15PM****Microfluidic Sample Preparation of Pleural Effusions for Cytodiagnos-
tics**J. CHE¹, A. J. MACH¹, D. E. GO¹, I. TALATI¹, Y. YING¹, R. KULKARNI¹, J. RAO¹, AND D. DI CARLO¹¹University 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. CHAKRABARTI², P. DELNERO², J. D. VARNER², A. D. STROOCK², AND C. FISCHBACH²¹Virginia Tech, Blacksburg, VA, ²Cornell University, Ithaca, NY*Track sponsored by **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. COLACE¹ AND S. L. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA**3:30PM****Fibrin Formation on Microparticle Deposited Glass Surfaces
under Flow**Y-H. LEE¹, A. FOGELSON², AND V. TURITTO¹¹Illinois Institute of Technology, Chicago, IL, ²University of Utah, Salt Lake City, UT**3:45PM****Multiscale Modeling of Shear Induced Platelet Activation Using
Dissipative Particle Dynamics and Molecular Dynamics**J. S. SOARES¹, C. GAO¹, J. SHERIFF¹, Y. ALEMU¹, P. ZHANG², S. POTHAPRAGADA², G. YU², Y. DENG², AND D. BLUESTEIN¹¹Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY,²Department 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. MUTHARD¹ AND S. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA**4:15PM****Analysis of the Uniaxial and Biaxial Mechanical Behavior of Intraluminal
Thrombus**S. O'LEARY¹, E. KAVANAGH², P. GRACE², B. DOYLE¹, AND T. MCGLOUGHLIN¹¹University of Limerick, Limerick, Ireland, ²Mid Western Regional Hospital, Limerick, Ireland**4:30PM****Experimental Measurement of Spectral Transmission of Platelet
Thrombus in Comparison to Whole Blood**M. LI¹, N. SONDEJ¹, AND C. R. FOREST¹¹Georgia 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 Nicoletta, Lena Ting**3:15PM****Knee Movement Patterns for Identifying Biomarkers for Sit
to Stand Task**T. BEJARANO¹, D. BHATIA¹, M. MUNOZ¹, M. NOVO¹, D. BRUNT¹, AND R. JUNG¹¹Florida International University, Miami, FL**3:30PM****Human Arm Posture Prediction – Numerical and Experimental Models**B. KASHI^{1,2}, J. ROSEN³, Z. LI³, I. AVRAHAM², AND M. BRAND²¹Tel-Aviv University, Tel Aviv, Israel, ²Ariel University Center of Samaria, Ariel, Israel,³University 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. MAO², G. LI¹, AND K. YANG³¹Hunan University, Changsha, China, People's Republic of, ²Wayne State University,Detroit, MI, ³Wayne 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. SEACRIST², M. R. MALTESE², R. STERNER³, K. B. ARBOGAST², AND S. BALASUBRAMANIAN¹¹Drexel University, Philadelphia, PA, ²Children's Hospital of Philadelphia, Philadelphia, PA,³Rowan University, Glassboro, NJ**4:15PM****Influence of Age and Gender on Current Hybrid III ATD Impact
Response and Injury Tolerance Corridors**S. D. SHIMADA¹ AND N. MERRIER¹¹Biomechanical 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. WANG¹, B. ZHOU¹, X. LIU², E. STEIN³, E. SHANE³, AND X. GUO¹¹Columbia University, New York, NY, ²University of Pennsylvania, Philadelphia, PA, ³Columbia

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. SMITH¹, G. ALLEN¹, AND J. H. BATES¹¹University of Vermont, Burlington, VT**3:30PM****Spatial Heterogeneity of Deformation Within An Airway Wall During
Bronchoconstriction**B. C. HARVEY¹, P. E. BARBONE¹, T. L. SZABO¹, H. PARAMESWARAN¹, AND K. R. LUTCHEN¹¹Boston University, Boston, MA

3:45PM**Uptake Of Soluble Gases In The Entire Respiratory Systems Of Rats And Humans Using Transient CFD/PBPK Models**S. KABILAN¹, A. KUPRAT¹, D. EINSTEIN¹, J. CARSON¹, R. JACOB¹, K. MINARD¹, AND R. CORLEY¹¹Pacific 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. HU¹, C.-F. TAI¹, P. ZAMANKHAN¹, S.-Y. LIN², M. FILOCHE^{1,3}, AND J. B. GROTEBERG¹¹University of Michigan, Ann Arbor, MI, ²National Cheng Kung University, Tainan City, Taiwan, ³Ecole Polytechnique, CNRS, Palaiseau, France**4:15PM****Comparison of Two Exogenous Surfactants Using a Langmuir Film Balance**D. M. MARTINEZ¹, J. M. VALENCIA RIVAS¹, H. T. MORIYA¹, C. M. REBELLO¹, AND A. M. ALENCAR¹¹University 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. LYNCH¹, J. CARPENTER¹, E. KAZURA¹, J. CRIBB¹, AND R. SUPERFINE¹¹University 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. BARTON¹, S. LEGENDRE-MCGHEE¹, P. RICE¹, A. LUTTMANN¹, AND E. GERNER¹¹The University of Arizona, Tucson, AZ**3:45PM****Multi-Spectral Fluorescence Lifetime Contrast Imaging for Brain Cancer Detection**A. PAPOUR¹, Z. TAYLOR¹, M. A. ST. JOHN¹, W. H. YONG¹, O. STAFSUDD¹, AND W. GRUNDFEST¹¹University of California Los Angeles, Los Angeles, CA**4:00PM****Noninvasive Quantification of Hemoglobin Oxygen Saturation in a Model of Peripheral Arterial Disease**K. M. POOLE¹, W. W. SIT¹, A. J. WALSH¹, M. C. SKALA¹, AND C. L. DUVALL¹¹Vanderbilt University, Nashville, TN**4:15PM****Infrared Spectroscopy to Map Collagen Distribution in Post MI Cardiac Tissue**R. CHEHELTANI¹, B. WANG^{1,2}, A. SABRI¹, N. PLESHKO¹, AND M. F. KIANI¹¹Temple University, Philadelphia, PA, ²Widener University, Chester, PA**4:30PM****Optical Coherence Tractography of Murine Cardiac Tissue Using Intrinsic Contrast**C. J. GOERGEN¹, S. SAKADZIC¹, H. RADHAKRISHNAN^{1,2}, D. E. SOSNOVIK¹, AND V. J. SRINIVASAN¹¹Massachusetts General Hospital, Boston, MA, ²Pennsylvania 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. KELLY¹, B. L. ROACH¹, Z. D. WEIDNER², C. R. MACKENZIE-SMITH¹, G. A. ATESHIAN¹, AND C. T. HUNG¹¹Columbia University, New York, NY, ²St. Lukes-Roosevelt Hospital Center, New York**3:30PM****Feasibility of Using M-mode Ultrasound Imaging for Cartilage Tissue Engineering Quality Control**J. F. WELTER¹, S. ABDALIAN², AND J. M. MANSOUR¹¹Case Western Reserve University, Cleveland, OH, ²Gilmour Academy, Gates Mills, OH**3:45PM****Effects of Dynamic Compression Stimulation on Tissue Engineered Intervertebral Discs**K. D. HUDSON¹, R. I. MOZIA¹, AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY**4:00PM****Effect of Platelet-Rich Plasma on Chondrogenic Differentiation in Three-Dimensional Culture**S. ELDER¹ AND J. THOMASON¹¹Mississippi State University, Mississippi State, MS**4:15PM****In Vivo Repair of Annulus Fibrosus Defects Using Injectable High Density Collagen Gels**B. BORDE¹, P. GRUNERT², M. MACIELAK², R. HÄRTL², AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York City, NY**4:30PM****A Novel Extracellular Matrix-Derived Hydrogel for Stem Cell-Based Meniscus Tissue Engineering**X. YUAN¹, D. E. ARKONAC¹, A. B. TAUBMAN¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia 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. HATANO¹, J. LUNA¹, D. E. GLASER¹, K. MERCURIO¹, AND K. E. MCCLOSKEY¹¹UC, Merced, Merced, CA**3:30PM****Controlling Stem Cell Fate with Spatially Varying Extracellular Matrix Stiffness**Y. CHOI¹, L. G. VINCENT¹, A. R. LEE¹, K. C. KRETCHMER¹, S. CHIRASATITSIN¹, M. K. DOBKE¹, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA

3:45PM**Patterning the Activation of Heat- and Ligand-Inducible Gene Switches with Focused Ultrasound**C. G. WILSON¹, F. MARTIN-SAAVEDRA^{1,2}, F. PADILLA³, M. FABIILLI⁴, O. KRIPFGANS⁴, N. VILABOA-DIAZ², J. B. FOWLKES⁴, AND R. T. FRANCESCHI^{1,4}¹University of Michigan School of Dentistry, Ann Arbor, MI, ²Hospital Universitario La Paz-IdiPAZ & CIBER-BBN, Madrid, Spain, ³INSERM U⁶⁵⁶, Lyon, France, ⁴University of Michigan Medical School, Ann Arbor, MI**4:00PM****InVERT Molding for Versatile and Scalable Control of Complex Tissue Micro-architecture**K. R. STEVENS¹, M. D. UNGRIN², B. CARVALHO¹, R. CHATURVEDI³, P. W. ZANDSTRA², C. S. CHEN³, AND S. N. BHATIA¹¹Massachusetts Institute of Technology, Cambridge, MA, ²University of Toronto, Toronto, ON, Canada, ³University of Pennsylvania, Philadelphia, PA**4:15PM****Engineered Skeletal Muscle Sheets: Optimizing Structure and Contractility**Y. SUN^{1,2}, R. DUFFY¹, A. LEE¹, AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA, ²Beihang University, Beijing, China, People's Republic of**4:30PM****Combinatorial Effects of Aligned Substrate Pattern and Electrical Simulation on Myoblasts Differentiation**U. KO¹, M. KIM¹, H. BANG¹, S. PARK², H. SHIN¹, AND J. H. SHIN¹¹KAIST, Daejeon, Korea, Republic of, ²KIST, 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. SYEDAIN¹, L. MEIER¹, M. LAHTI¹, J. BERRY¹, S. JOHNSON¹, R. BIANCO¹, AND R. TRANQUILLO¹¹University 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. ROW¹, E. SCHLAICH¹, H. PENG¹, D. SWARTZ^{1,2}, AND S. ANDREADIS^{1,3}¹SUNY Buffalo, Buffalo, NY, ²Women and Children's Hospital of Buffalo, Buffalo, NY, ³Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY**3:45PM****Intermittent Hypoxia Conditioning of *in Vitro* Vascularized Fibrin Gels**S. M. EHSAN¹ AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA

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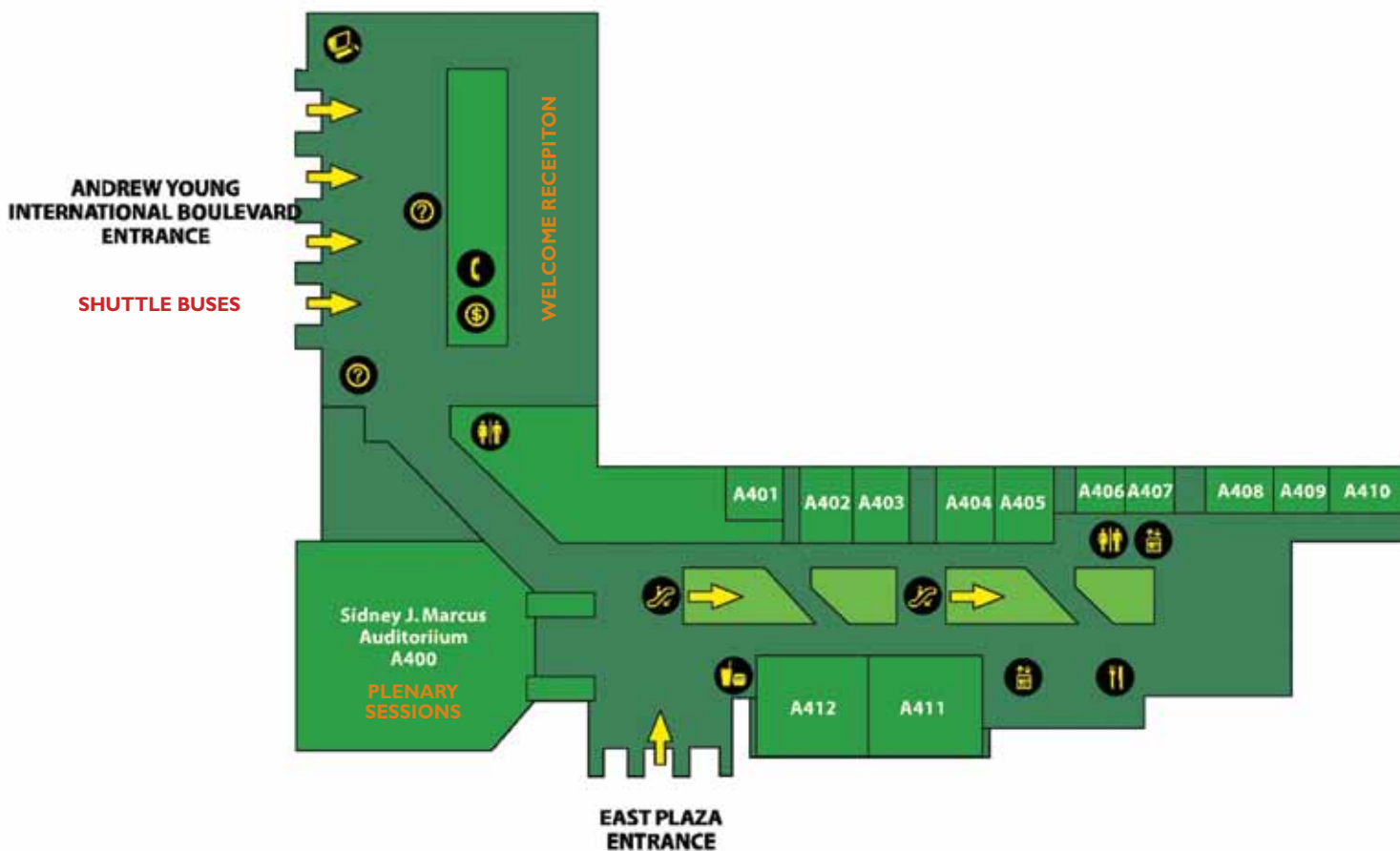
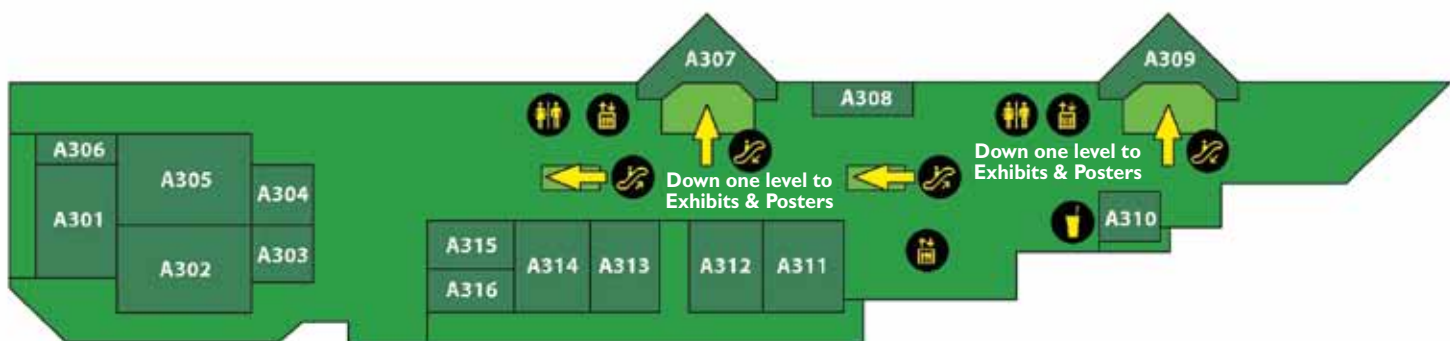
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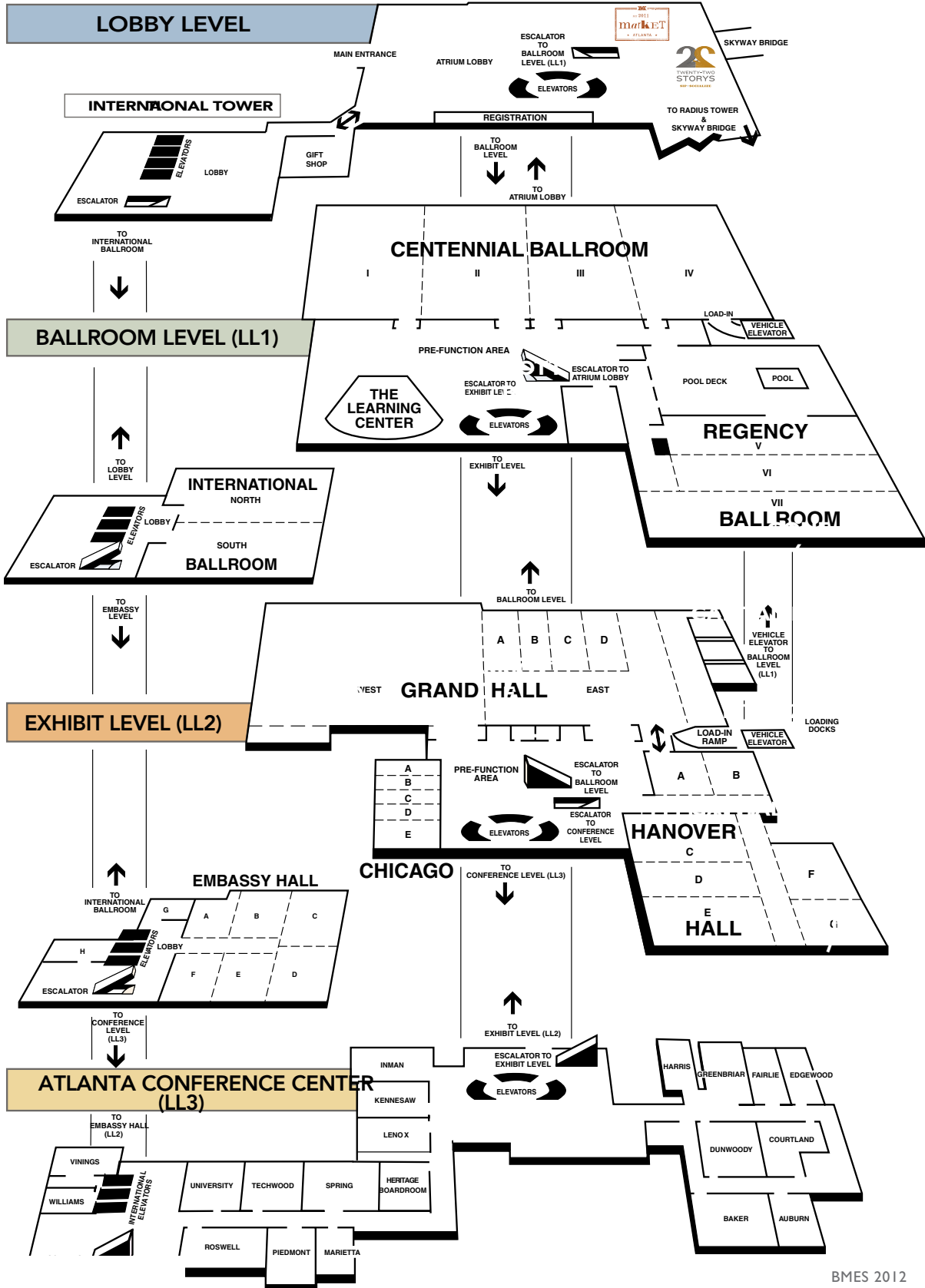
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Registration, Exhibits & Posters




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<i>*Track sponsored by</i>  FISH & RICHARDSON			
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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 <i>Track sponsored by</i>  ST. JUDE MEDICAL <small>MORE CONTROL. LESS RISK.</small>	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

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	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
Track sponsored by 			
CARDIOVASCULAR & RESPIRATORY ENGINEERING	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
Track sponsored by  ST. JUDE MEDICAL MORE CONTROL. LESS RISK.			
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	<p>Musculoskeletal & Orthopedic Tissue Engineering I <i>(Tissue Engineering Track)</i> Room A407</p> <p>Orthopedic Biomechanics: Bone & Cartilage Room A405</p> <p>Assistive Technology and Robotics in Rehabilitation Engineering Room A403</p>	<p>Musculoskeletal & Orthopedic Tissue Engineering II <i>(Tissue Engineering Track)</i> Room A407</p> <p>Rehabilitation Engineering - Blast Effects & Acoustics Room A403</p>	<p>Musculoskeletal & Orthopedic Tissue Engineering III <i>(Tissue Engineering Track)</i> Room A407</p> <p>Skeletal Biomechanics Room A405</p>
STEM CELL ENGINEERING	<p>Stem Cell Bio Processing Room A305</p>	<p>Engineering Stem Cell Differentiation Room A305</p>	
TISSUE ENGINEERING	<p>Musculoskeletal & Orthopedic Tissue Engineering I Room A407</p> <p>Host Response to Tissue Engineered Constructs Room A411</p> <p>Nano & Micro Systems in Tissue Engineering Sidney Marcus Auditorium</p>	<p>Musculoskeletal & Orthopedic Tissue Engineering II Room A407</p> <p>Printing & Patterning in Tissue Engineering I Room A411</p>	<p>Musculoskeletal & Orthopedic Tissue Engineering III Room A407</p> <p>Printing & Patterning in Tissue Engineering II Room A411</p> <p>Skin & Adipose Tissue Engineering Room A410</p> <p>Cardiovascular Tissue Engineering IV Room A305</p>
TRANSLATIONAL BIOMEDICAL ENGINEERING	<p>Translational Triad: Clinical, Industrial, & Academic Collaboration Room A412</p>	<p>Clinical & Translational Research & Science in Biomedical Engineering II Room A412</p> <p>Translational Cellular & Molecular Bioengineering (Cellular and Molecular Track) Room A301</p>	
<p>*Track sponsored by</p>  <p>FISH & RICHARDSON</p>			
UNDERGRADUATE RESEARCH (REU)	<p>Undergraduate Research III - Tissue Engineering and Biomaterials Room A410</p>		<p>Undergraduate Research IV – Nano and Micro Technologies Room A410</p>

WEDNESDAY, October 24, 2012

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

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 <i>GWCC, Room A301</i>	12noon - 4:00pm AIMBE Board of Directors Meeting <i>GWCC, Room A304</i>
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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-I <i>See pages 49-55</i>	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 <i>See pages 56-70</i>	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 <i>See pages 71-85</i>	GWCC, Exhibit Hall A2
1:30pm – 3:00pm	Platform Session – Thurs - 2 <i>See pages 86-92</i>	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 <i>See pages 93-99</i>	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 <i>Invitation Only</i>	Hyatt

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

AFFILIATE EVENTS:

<p>9:30am - 10:30am AEMB Annual Grand Meeting <i>GWCC, Room A310</i></p>	<p>8:00pm - 9:30pm University Receptions <i>Hyatt</i> <i>See page 42</i></p>
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FRIDAY, October 26, 2012

Plenary Sessions
Platform Sessions
Posters
Workshops
Student & Early Career
Exhibits
Special Events
General

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-I-I <i>See pages 100-107</i>	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 <i>see pages 108-124</i>	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 <i>See pages 125-144</i>	GWCC, Exhibit Hall A2
1:30pm – 2:30pm	Platform Sessions – Fri - 2 <i>See pages 142-146</i>	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 <i>See pages 147-151</i>	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 <i>See pages 152-179</i>	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 <i>See Pages 180-187</i>	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 <i>See Pages 188-194</i>	GWCC
3:15pm – 4:15pm	Platform Session - Sat-3 <i>See Pages 195-200</i>	GWCC

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

