BMES 2013

BMES

BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2013 ANNUAL MEETING

September 25–28, 2013

Washington State
Convention Center
Seattle, Washington

BMES

BIOMEDICAL ENGINEERING SOCIETY

Advancing Human Health and Well Being

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BIOE DEPARTMENT OF BIOENGINEERING
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Gilda A. Barabino, PhD

BMES President

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WELCOME TO THE 2013 ANNUAL MEETING of the Biomedical Engineering Society! Our Annual Meeting is the premier event for the Society and the field to share the latest advances in biomedical engineering, generate new ideas, recognize achievements, promote career development, network among colleagues and help shape the future. This year's theme, "Advancing Human Health and Well Being" encompasses the breadth of research and education biomedical engineers are involved in toward advancing human health and well being. I urge you to take full advantage of the excellent technical program, plenaries, special events and myriad opportunities for professional development and networking.

2013 marks the continuation of long-standing traditions and newly established programs to illuminate innovations, recognize achievements, celebrate diversity and develop future biomedical engineers. Coulter College, a training program focused on the translation of biomedical innovations, is in its second year of partnering with BMES. This year it will focus on preparing students for translational work, and teams selected from a national competition will participate in a two-day workshop. Following on the last year's success of the first session dedicated to health disparities, this year, the session, "Health Disparities: Innovative Approaches to Improved Health," includes speakers representing academia, professional organizations, industry and government. We are in our second year of partnering with NIH NIBIB to deliver the NIBIB Lecture and the DEBUT Awards and our first year of partnering with NSF to deliver a session on promoting and sustaining innovative research.

Promoting the field through awards and other forms of recognition is one of the primary functions of a professional society. Our Awards and Town Hall Ceremony will take place Thursday evening and will include the induction of new BMES Fellows. The Pritzker Distinguished Lecture, Distinguished Achievement, Diversity and Rita Schaffer Young Investigator Lecture Awards will be presented during their respective plenary lectures. These plenaries offer attendees a deeper understanding of the research and activities on which the awards are based. The 2013 Diversity Award, for the first time will be given to an institution, Cornell University, in recognition of its efforts to recruit and retain a diverse student body in BME.

BMES has a strong record of inclusion and is committed to developing the careers of all of its members. Formal and informal career development opportunities are abundant throughout the meeting starting with a slate of student and early career sessions on career pathways offered on Thursday. The annual Career Fair on Friday afternoon is a major draw for those seeking job opportunities. Networking is an important vehicle for professional development and I encourage you to attend the Welcome Reception on Wednesday, University Receptions on Thursday, and the BMES Bash on Friday and to interact with colleagues throughout the meeting.

We are now over 6,700 members strong and the involvement of our members at the meeting and throughout the year will enable us to continue our unprecedented growth and development. Special thanks are due to Conference Chair, William Wagner, Program Chair, Gordana Vunjak-Novakovic, Vice Program Chair Suzie Pun, BMES Staff, NSF, NIH, our sponsors and our meeting attendees.

My very best wishes to you for an enjoyable and productive meeting!

Gilda Barabino, PhD
BMES President

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William R. Wagner, PhD

Annual Meeting Chair, BMES 2013 Annual Meeting

Director, McGowan Institute
for Regenerative Medicine
Professor of Surgery, Chemical Engineering
and Bioengineering
University of Pittsburgh

WELCOME TO SEATTLE and the 2013 Annual Meeting of the Biomedical Engineering Society. We are fortunate to host the conference this year in a vibrant city matching the vibrancy of our membership and the Society. For those of you who have attended recent BMES meetings, I hope you will find this year's version builds on the momentum of previous years' gatherings and captures the breadth and depth of our rapidly advancing field.

For their tireless efforts in assembling a world-class program, I would like to personally thank Gordana Vunjak-Novakovic and Suzie Pun, who serve as Program Chair and Vice Program Chair, respectively. For each of the tracks, too numerous to mention here, the track chairs deserve our gratitude for successfully guiding the peer review process and making the tough decisions needed to fit many excellent abstract submissions into the time and space constraints necessary for our meeting. Finally, I would like to express my personal thanks to the 2013 annual meeting team and the terrific support provided by the BMES staff, particularly the efforts of Debby Tucker and Ed Schilling. This is the first year for BMES where the meeting has been organized by a team not specifically linked to an institution in the host city, and with the professional support of the BMES staff, the organizational efforts have progressed smoothly and efficiently.

While attending the meeting I hope you will take full advantage of all the program has to offer in terms of scientific presentations, both oral and in poster format. With our society having grown to its current size, we are removed from the days I recall when the meeting was held on a host university campus and getting to the right session did not involve making such tough choices between so many relevant concurrent tracks. Please do find time to visit the exhibitors where you will find many of the leading biomedical engineering academic programs represented, along with publishers, suppliers for your research efforts, potential employers, and a variety of biomedically related non-profit organizations. The annual meeting also provides a wonderful opportunity for catching up with colleagues and networking. In addition to the opportunities between the sessions and at the receptions, many of the universities are holding evening receptions by invitation, but I believe you will find most are happy to offer an invitation if asked. Of course, the BMES Bash at the EMP museum is not to be missed.

Speaking of the EMP museum, the structure is a destination in itself. Designed by Frank O. Gehry with his trademark use of unexpected organic forms and scaled metallic skins, biomedical engineers might find here the work of a kindred spirit. Gehry is said to have sought his inspiration for the design in rock and roll, listening to Jimmy Hendrix, and visiting a local music shop to purchase electric guitars. He cut the electric guitars into pieces and reassembled them as building blocks in exploring novel forms to stimulate and advance his design. The result is a space interacting with the visitor in a unique fashion depending upon both their perspective and ambient conditions. Maybe Jimmy Hendrix isn't a universal muse for biomedical engineering creativity, but in Frank Gehry's approach one can see elements of our own approaches to understand fundamental elements in the body and to re-assemble, to create and to engineer with these building blocks new designs meeting our society's objective: to "advance human health and well-being".

Enjoy the BMES experience in Seattle!

William R. Wagner, PhD
BMES 2013 Annual Meeting Chair

Gordana Vunjak-Novakovic, PhD

Program Chair

Mikati Foundation Professor of Biomedical Engineering and Medical Sciences
Director, Laboratory for Stem Cells and Tissue Engineering
Department of Biomedical Engineering
Columbia University

WELCOME TO THE 2013 BMES! This year's meeting of the Biomedical Engineering Society is being held in Seattle Washington on September 25-28, 2013, with the overall theme "Advancing human health and well being." It has been my privilege to serve as a program chair of this largest national meeting for our field that is now experiencing an exciting time of rapid growth. The city of Seattle, a home of one of the nation's finest universities and a dynamic hub for biotechnology and entrepreneurship is a perfect location for this year's meeting. With a world-class team of track chairs, session chairs and presenters, we have assembled an outstanding program featuring three and a half days of platform and poster presentations, special sessions and social events.

The main program has nineteen tracks, many of which represent our traditional areas of strength and interest: Bioinformatics, computational and systems biology; Biomaterials; Biomedical engineering education; Biomedical imaging and optics; Cancer technologies; Cardiovascular engineering; Cellular and molecular bioengineering; Nano and micro technologies; Neural engineering; New frontiers and special topics; Orthopaedic and rehabilitation engineering; Stem cell engineering; Tissue engineering; Translational biomedical engineering; Undergraduate research. Four main additions to this year's program are, by popular demand: Biomechanics; Device technologies and biomedical robotics; Drug delivery; and Respiratory bioengineering. These important areas of work have grown considerably in recent years and we felt each of them needs to be a separate track. We are also introducing an opening presentation for each track, by a leader in the field.

This year's plenary lectures will be given by Dr Ashutosh Chilkoti from Duke University receiving the Pritzker Award, Sue Van from The Wallace H. Coulter Foundation receiving the BMES Distinguished Achievement Award, the Faculty, Department of Biomedical Engineering, Cornell University receiving the BMES Diversity Award, W. Mark Saltzman from Yale University giving the NIH NIBIB lecture, and Susan Thomas receiving the Rita Schaffer Young Investigator Lecture Awards. A special plenary lecture will be delivered by Dr. Donald Pettit, a chemical engineer and astronaut, a veteran of long missions in space and on Antarctica.

The Undergraduate research track continues to offer some of the most innovative research. This year, with the generous support of Medtronic, we will be presenting two $2,500 awards for undergraduate research: Medtronic's Excellence in Modeling Award (MEMA) and Medtronic's Excellence in Biomaterials Award (MEBA).

The BMES will again partner with the Wallace H. Coulter Foundation to convene the Coulter College, a training program focused on translation of biomedical innovations. We also continue to offer the ABET and NSF workshops, and special sessions on diversity and ethics. To further support the growing participation of our international partners, we offer this year, for the first time, the Korea-US (KOSOMBE-BMES) Joint Biomedical Engineering Workshop with invited speakers from both countries.

The annual meeting of the BMES has always been a "student meeting". To serve the needs of our students, postdocs and trainees, we are offering a number of "Student and early career" sessions, covering a broad spectrum of topics of interest, from how to choose a career path in academia, industry or government, to one-on-one career counseling, preparing a CV, and mock-up interviews. Our traditional and very popular "Meet the faculty" sessions will again convene on the first day of the meeting.

This is the second largest BMES meeting in history with the number of abstracts exceeding 2,200. In addition, we have received 172 extended abstracts for Student Research & Design Awards and 300 Undergraduate Research Abstracts. The program includes 831 oral presentations in 178 platform sessions, and 1,544 poster presentations with poster viewing with the authors at designated times.

This year's meeting is a result of collective effort of many people. The program has been developed in close collaboration with two most wonderful colleagues: the conference chair William Wagner and program vice-chair Suzie Pun. Throughout the process, we have had unparalleled expert support of Debby Tucker and Ed Schilling, and invaluable advice from the BMES leadership, the program committee and many of our colleagues. My special thanks go to the track chairs, who have invested a lot of creative effort into building a remarkably strong and interesting program. I also thank our reviewers for maintaining the standards of excellence in selecting the abstracts and posters, and all session chairs and presenters for making this year's meeting a very special event.

Gordana Vunjak-Novakovic, PhD
Program Chair, BMES 2013 Annual Meeting

Suzie Hwang Pun, PhD

Vice Program Chair

Robert J Rushmer Associate Professor of Bioengineering
University of Washington

I AM EXCITED TO WELCOME you to Seattle, Washington, for the 2013 Annual BMES meeting.

This year's conference, like past years, has something for everyone. In addition to the outstanding programming prepared by our Program Chair, Gordana Vunjak-Novakovic, we will have special sessions for all career stages: undergraduate poster sessions, career workshops, the Meet the Faculty Candidate Forum, and an ABET workshop, to name a few. With our close proximity to Asia-Pacific, we have also initiated a Korea-US Joint Workshop on BME. This year, we are also especially enthusiastic about including a "kick-off" invited speaker in each of our 18 research tracks.

I hope you have a chance to get to know Seattle during your visit here. Pike Place Market, Seattle Center, the first Starbucks, the Art Museum, and the Seattle Central Public Library, with its award-winning architecture, are all in close proximity to the conference center. If you venture out a little further, you can enjoy the eccentric Seattle Underground Tour, the Hiram M. Chittenden Locks and Salmon Ladder, and you might even stumble upon a giant troll living under a bridge in Fremont.

Seattle is not only a special place but also a wonderful fit for the Biomedical Engineering Society meeting with both its history and ongoing contributions to the biomedical field. The Fred Hutchinson team led by Dr. E. Donnall Thomas developed the bone marrow transplantation procedure for treating cancer. In true biomedical engineering spirit, the Scribner Shunt, a breakthrough device used in kidney dialysis, was invented through collaboration between Dr. Belding Scribner, a University of Washington renal specialist, and Wayne Quinton, a UW engineer. In the pharmaceutical field, biologic drugs Enbrel (by Immunex, now Amgen) and Adcetris (by Seattle Genetics) were developed in Seattle.

In addition to the University of Washington, Seattle is home to three research hospitals, the Bill and Melinda Gates Foundation and over a dozen renowned research institutes, including the Fred Hutchinson Cancer Research Center, Institute for Systems Biology (ISB), Allen Brain Institute, the Program for Appropriate Technologies for Health (PATH), the Infectious Disease Research Institute (IDRI) and Seattle Biomedical Research Institute (SBRI).

If you'd like to know more about Seattle or biomedical research in this area, just ask one of the University of Washington representatives attending the conference in their purple shirts. It would be our pleasure to talk with you.

It has been a true pleasure working with the great leadership duo, Bill Wagner and Gordana Vunjak-Novakovic, in planning this conference. The BMES Staff has been instrumental in planning and promoting this meeting. I am especially grateful to Meetings Director Debby Tucker for her tireless work and her can-do attitude that has been critical in preparing for this meeting. Also, I am much indebted to the Track Chairs, Session Chairs and reviewers who provided their expertise and generous service to make this meeting a reality.

See you at the meeting!

Suzie Hwang Pun, PhD
Vice Program Chair, BMES 2013 Annual Meeting

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BMES ROBERT A. PRITZKER DISTINGUISHED LECTURE

Pritzker Distinguished Lecturer:

Ashutosh Chilkoti, PhD

Center for Biologically Inspired Materials and Materials Systems
and Department of Biomedical Engineering
Duke University

THURSDAY, SEPTEMBER 26, 2013
10:30AM
BALLROOM 6E
WASHINGTON STATE CONVENTION CENTER

Solving Drug Delivery Problems by Genetically Engineered Polypeptides

THIS TALK WILL FOCUS ON the power and versatility of genetic engineering to develop molecularly engineered drug delivery systems. This talk will highlight two orthogonal designs of genetically encoded peptide polymers—nanoparticles and gels—for drug delivery in two different therapeutic arenas—cancer and type-2 diabetes. In the first example, I will discuss a general method, attachment-triggered self-assembly of recombinant peptide polymers that packages small hydrophobic molecules into soluble polymer nanoparticles. Because many cancer chemotherapeutics are insoluble small molecules with poor bioavailability, this approach has great utility to increase the solubility, plasma half-life and tumor accumulation of many cancer chemotherapeutics. The second half of the presentation will focus on the delivery of peptide drugs, as they are an exciting class of pharmaceuticals currently in development for the treatment of a variety of diseases; however, their main drawback is a short half-life, which dictates multiple and frequent injections. In the second example, I will discuss a range of injectable delivery systems based on thermally sensitive polypeptides for the sustained and tunable release of peptide and protein drugs from a subcutaneous injection site, one of which –Protease Operated Depot (POD)—provides the first molecularly engineered alternative to polymer microsphere technology for peptide delivery.

Ashutosh Chilkoti is the Theo Pilkington Professor of Biomedical Engineering at Duke University and has secondary appointments in Mechanical Engineering and Materials Science and Chemistry. He is currently the Director of the Center for Biologically Inspired Materials and Materials Systems at Duke University. Chilkoti received his degrees in Chemical Engineering (B. Tech, Indian Institute of Technology, Delhi, 1985 and Ph.D., University of Washington, Seattle, 1991) and has been a faculty member at Duke University since January, 1996.

Chilkoti's Bioengineering research explores the interaction between biological and synthetic polymers with biology at the molecular level, with the goal of developing molecular tools and devices for medicine and biotechnology. His work in Biomolecular Engineering focuses on genetically engineered stimulus responsive biopolymers as tools for protein separation, bioconjugation and drug delivery. In a complementary area of research in Biointerface Science, he focuses on the development of clinical diagnostics and plasmonic biosensors. He has co-authored over 250 publications and has more than 70 patents and patent applications. He is the founder of two start-up companies; PhaseBio Pharmaceuticals that has raised $65 million in venture capital funding and has taken the drug delivery technology that he developed into a Phase 2b clinical trial for sustained delivery of a peptide drug and Phase 1 clinical trials for two other drugs. A second, more recent venture, Sentilus Inc., is commercializing a point-of-care diagnostic based on a polymer brush technology developed in his laboratory.

He received the CAREER award from the National Science Foundation in 1998, the 3M non-tenured faculty award in 2002, and the Distinguished Research Award from the Pratt School of Engineering at Duke University in 2003 and in 2005. He was the recipient of a senior researcher award from the Alexander Von Humboldt Foundation in 2010, and the Clemson Award for Contributions to the Literature from the Society for Biomaterials in 2011. He was elected fellow of the Controlled Release Society and the Biomedical Engineering Society in 2013. He serves on the Editorial Board of five journals.

DISTINGUISHED ACHIEVEMENT LECTURE

Sue Van

President and CEO
Wallace H. Coulter Foundation

FRIDAY, SEPTEMBER 27, 2013
10:30AM
BALLROOM 6E
WASHINGTON STATE CONVENTION CENTER

THE WALLACE H. COULTER Foundation was established in 1998 by its benefactor, Wallace Coulter, founder and Chairman of Coulter Corporation. The Foundation continues Wallace's practice of providing risk capital for innovative initiatives through its grant programs. The largest of these promotes academic translational research based in biomedical engineering. By implementing industry best practices, this process accelerates the translation of promising technologies into practical advances improving patient care. The Foundation's second largest program collaborates with leading medical societies to bring the latest education and standards of care to resource-limited countries. The third program of the Foundation focuses on building a consortium amongst Asian American organizations to establish one cohesive community to promote collaboration and partnership. Finally, the Foundation supports educational and humanitarian initiatives related to the legacy and values of Mr. Coulter.

As Trustee, Ms. Van has fiduciary responsibility for the vision, strategic plan and operations of the Foundation. She is integrally involved in every aspect of its programs, from creation to implementation and establishing the metrics for success.

Sue Van, CEO and President of the Wallace H. Coulter Foundation, brings an industry perspective to the value biomedical engineering programs and their graduates bring to the medical device and life science industries.

Her perspective comes from more than 30 years as a board member and the chief financial officer of the diagnostics company, the Coulter Corporation. At Coulter she participated in hundreds of funding decisions for R&D projects.

Prior to establishing the Foundation, Sue was the Executive Vice President, Chief Financial Officer and Treasurer of Coulter Corporation, a leading global diagnostics company. In this capacity, she was responsible for the company's long-term strategy, as well as its financial and legal affairs. Working for a privately held company posed both opportunities and challenges. Sue converted leasing from a domestic financing tool to a global marketing strategy insuring market dominance. She negotiated the purchase of Japan Scientific (JSI) in the first ever leveraged buyout of a Japanese company by a foreign entity. In 1991, Sue managed the purchase and consolidation of the company from over 30 buildings across south Florida to its new corporate headquarters.

During her years in the medical technologies industry, Ms. Van witnessed a disconnect in the communication between engineers, researchers, marketers, manufacturers and services professionals, costing precious time and millions of dollars. The different and narrow backgrounds of these professionals often led to miscommunications and delays in developing important medical technologies.

Ms. Van believes biomedical engineers are best positioned to solve these communication problems. She believes biomedical engineers are best suited to assume a multitude of positions in medical technology companies, and are poised to lead teams–and the whole industry–in improving the lives of patients.

Sue was born in Shanghai, China, and immigrated to the United States at the age of five. She is the eldest of seven siblings. Her pursuit of lifelong learning was instilled by her parents, neither of whom had the opportunity for a formal education. Sue earned a B.A. in Political Science from American University, an M.A. in International Affairs from George Washington University, and is a CPA.

NIH National Institute of Biomedical Imaging and Bioengineering Lecture:

W. Mark Saltzman, PhD

Goizueta Foundation Professor of Biomedical Engineering
Chemical & Environmental Engineering & Physiology
Yale University

FRIDAY, SEPTEMBER 27 2013
11:15AM
BALLROOM 6E
WASHINGTON STATE CONVENTION CENTER

Drug Delivery: Engineering to Overcome Obstacles

THE FIELD OF DRUG DELIVERY is important to the future of public health. Biomedical engineers are uniquely qualified to contribute to this effort: progress depends, for example, on the synthesis of biomaterials with tailored properties and the design of controlled release and targeted delivery vehicles. I received my first NIH grant to study drug delivery in 1990: following good advice from mentors, the budget was low and the ambition was high. For that work, we proposed to engineer delivery systems that would release antibodies topically in the female reproductive tract, providing long-term protection against STDs and unwanted pregnancy. Our work led us in some directions that we anticipated: we described our first system for long-term protection against HSV-2 genital infections in 1996. But our instincts as biomedical engineers also led us to explore approaches that we could not have anticipated at the time, including vehicles that carry drugs past tissue barriers and nanoparticles for intracellular delivery of potent agents. The skills that we teach in biomedical engineering classrooms and laboratories are powerful tools in the effort to improve drug delivery.

W. Mark Saltzman is an engineer and educator. Dr. Saltzman's research in the fields of drug delivery, biomaterials, nanobiotechnology, and tissue engineering is described in over 200 research papers and 15 patents. He is the author of three textbooks: *Biomedical Engineering* (2009), *Tissue Engineering* (2004), and *Drug Delivery* (2001).

The grandson of Iowa farmers, Mark Saltzman earned degrees in chemical engineering (B.S. Iowa State University 1981 and M.S. MIT 1984) and medical engineering (Ph.D. MIT 1987). He served on the faculty at Johns Hopkins (1987-1996), Cornell (1996-2002), where he was the first BP Amoco/H. Laurance Fuller Chair, and Yale, where he has been the Goizueta Foundation Professor since 2002. He became the founding chair of the Yale's Department of Biomedical Engineering in 2003.

Dr. Saltzman has been recognized for his excellence in research and teaching. He received the Camille and Henry Dreyfus Foundation Teacher-Scholar Award (1990); the Allan C. Davis Medal (1995); the Controlled Release Society Young Investigator Award (1996); and the Professional Progress in Engineering Award from Iowa State University (2000). He has been elected a Fellow of the American Institute for Medical and Biological Engineering (1997); a Fellow of the Biomedical Engineering Society (2010); and a Member of the Connecticut Academy of Science & Engineering (2012). He has delivered over 200 invited lectures including the Britton Chance Distinguished Lecture at the University of Pennsylvania (2000) and the Distinguished Lecture of the Biomedical Engineering Society (2004).

Dr. Saltzman has taught dozens of college courses including Heat & Mass Transfer, Material & Energy Balances, Introduction to Biomedical Engineering, Drug Delivery & Tissue Engineering, Physiological Systems, and Molecular Transport & Intervention in the Brain. His course Frontiers of Biomedical Engineering is available to everyone through Open Yale Courses (http://oyc.yale.edu).

Donald R. Pettit, Ph.D.

NASA Astronaut

FRIDAY, SEPTEMBER 27, 2013
4:45PM - 6:00PM
BALLROOM 6E
WASHINGTON STATE CONVENTION CENTER

Techno-Stories from Space

FRONTIERS ARE INTERESTING PLACES; they offer possibilities to make observations outside our normal range of experience. The International Space Station is such a frontier offering a reduction in acceleration forces by nearly a factor of a million. This allows the observation of subtle phenomena that are typically masked on Earth. This orbital vantage also allows observation of Earth phenomena on the length scale of half a continent. A smattering of my observations will be presented. There will be many questions and few answers, which of course is a characteristic of being on a frontier and why we venture there.

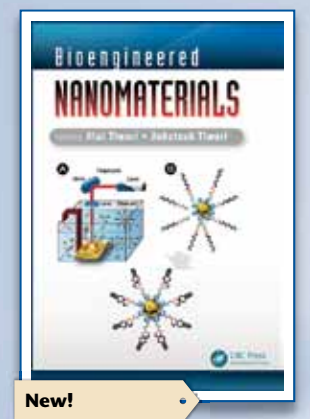
Dr. Pettit received a Bachelor of Science in Chemical Engineering from Oregon State University in 1978 and a Doctorate in Chemical Engineering from the University of Arizona in 1983.

Pettit was a staff scientist at Los Alamos National Laboratory from 1984 to 1996. Projects included reduced gravity fluid flow and materials processing experiments onboard the NASA KC-135 airplane, atmospheric spectroscopy on noctilucent clouds seeded from sounding rockets, fumarole gas sampling from volcanoes and problems in detonation physics.

He was a member of the Synthesis Group, slated with assembling the technology to return to the moon and explore Mars and the Space Station Freedom Redesign Team.

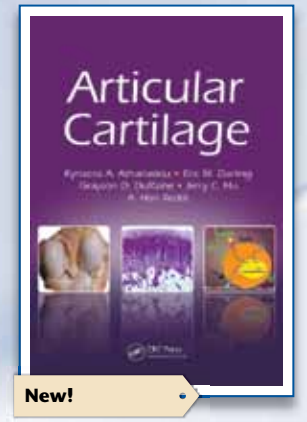
A veteran of three spaceflights, Dr. Pettit has logged more than 370 days in space and over 13 EVA (spacewalk) hours. He lived aboard the International Space Station for 5-1/2 months during Expedition 6, was a member of the STS-126 crew, and again lived aboard the station for 6-1/2 months as part of the Expedition 30/31 crew.

Dr. Pettit completed his first spaceflight as a NASA International Space Station Science Officer aboard the station, logging more than 161 days in space, including over 13 EVA hours. During their 5-1/2 months aboard the ISS, the crew worked with numerous U.S. and Russian science experiments. Dr. Pettit and Mission Commander Ken Bowersox performed two EVAs to continue the external outfitting of the orbital outpost.



New!

ISBN: 978-1-4665-8595-9



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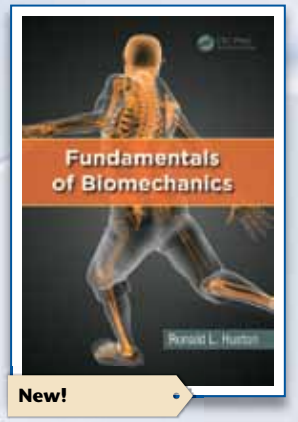

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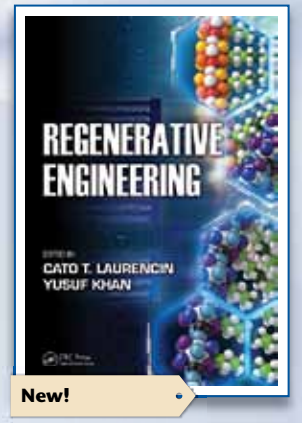

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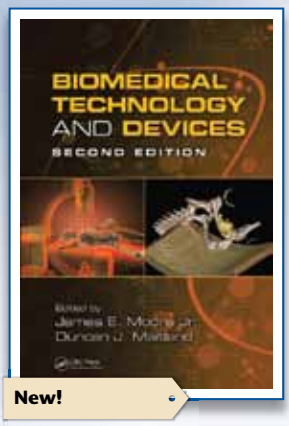

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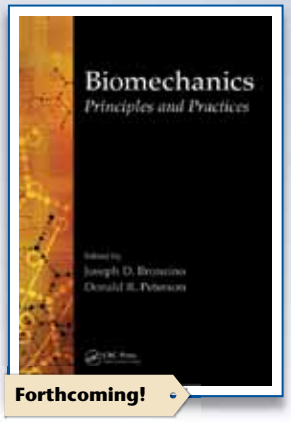

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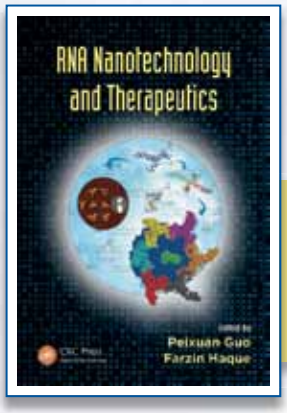

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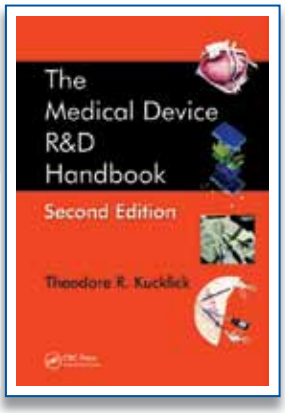

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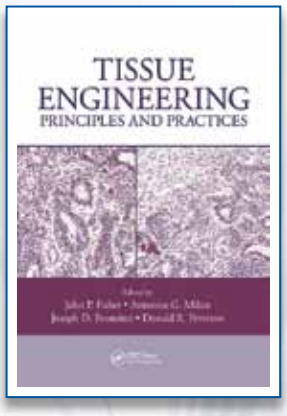

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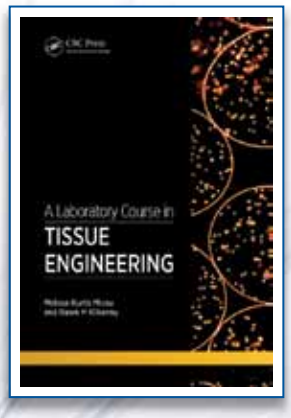

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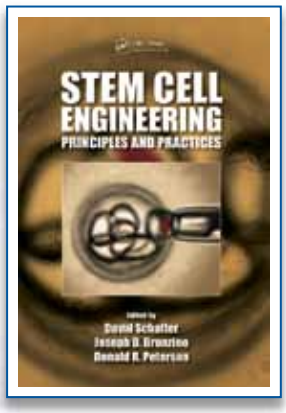

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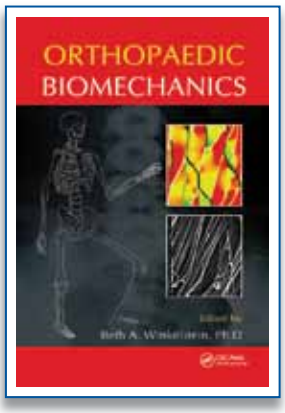

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BMES 2013 Rita Schaffer Memorial - Young Investigator Lecturer:

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Assistant Professor
George W. Woodruff School of Mechanical Engineering
Georgia Institute of Technology

SATURDAY, SEPTEMBER 28, 2013
10:30AM
BALLROOM 6E
WASHINGTON STATE CONVENTION CENTER

Fluid Biotransport in Immunity and Immunotherapeutic Design

IMMUNE DYSFUNCTION UNDERLIES the pathogenesis of a multitude of human diseases. Immunoengineering, or the application of engineering principles to the characterization of immune physiology and development of immunomodulatory therapeutics, is therefore of emerging interest. Tissue fluid imbalance commonly accompanies disease-associated inflammation, implicating an underlying vascular involvement. While the lymphatic vasculature is historically overlooked as a passive conduit system, fluid drainage mediated by lymphatics facilitates the transport of cells and biomolecules from peripheral tissues to draining lymph nodes and into the systemic circulation. We have demonstrated a crucial role for lymphatic-mediated transport in the fine-tuning of humoral immunity and immune tolerance, providing insight into how fluid homeostasis regulates local tissue immune status. This suggests that lymphatic-mediated fluid, molecular and cellular transport processes might be exploited in immunotherapy applications, such as in sentinel lymph node-targeted cancer therapy, as one example.

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.

SUSAN N. THOMAS is an Assistant Professor in the George W. Woodruff School of Mechanical Engineering at the Georgia Institute of Technology. She is also program faculty in the Wallace H. Coulter School of Biomedical Engineering at Georgia Tech and Emory University and a member of the Winship Cancer Institute of Emory University. Dr. Thomas received her B.S. cum laude in Chemical Engineering with an emphasis in Bioengineering from the University of California Los Angeles in 2003. She received her Ph.D. in 2008 from The Johns Hopkins University while working as a National Science Foundation Graduate Research Fellow in the Chemical & Biomolecular Engineering Department under the supervision of Konstantinos Konstantopoulos where she studied the influence of fluid flow on blood-borne metastasis. Subsequently, she was a Whitaker Postdoctoral Scholar at École Polytechnique Fédérale de Lausanne (one of the Swiss Federal Institutes of Technology) in the laboratories of Melody Swartz and Jeffrey Hubbell developing nanomaterials for cancer immunotherapy and studying the role of lymphatic transport in immunity. At Georgia Tech she continues to investigate the role of biotransport processes in regulating immune-regulated pathologies, in particular cancer, and the development of biomaterial-based strategies for immunomodulation.

Diversity Lecture:

The Faculty, Department of Biomedical Engineering, Cornell University

SATURDAY, SEPTEMBER 28, 2013
11:15AM
BALLROOM 6E
WASHINGTON STATE CONVENTION CENTER

Michael L. Shuler, PhD
James M. and Marsha McCormick Chair of Biomedical Engineering
Cornell University

Larry Bonassar, PhD
Associate Professor, Associate Chair
Department of Biomedical Engineering
Cornell University

Increasing Opportunities Throughout the STEM Pipeline Through Coordinated Efforts in an Academic Department

TO REMAIN COMPETITIVE in an increasingly technology-oriented global economy, it is essential for the United States to increase the gender and racial diversity of individuals entering science, technology, engineering, and mathematics (STEM) careers. The current demographics of the STEM workforce represent an unfortunate waste of human potential and are the result of barriers and discouragement at all levels of the educational system. While breaking down these barriers requires the work of individual teachers and mentors, the impact of these efforts can be dramatically multiplied if there is a broader commitment across an organization. The Biomedical Engineering department at Cornell University has involved all faculty members in efforts to increase opportunities for diverse students in STEM fields, generally, and biomedical engineering, specifically. These efforts target students throughout the educational system, including middle and high school, undergraduate, graduate, and early professional levels. Through this work, the department has created a culture of diversity that sustains and amplifies itself, enabling the training of future STEM professionals who are not only diverse themselves, but who also value diversity and can succeed in promoting it.

THE DEPARTMENT OF BIOMEDICAL ENGINEERING AT CORNELL UNIVERSITY was founded in 2004 with the vision that a quantitative understanding of the human body can be used as a foundation for the rational design of therapies, devices, and diagnostic procedures to improve human health. The department currently has 15 faculty; its extensive graduate field includes 42 additional faculty in other departments who participate in training graduate students. Its primary research focus is in five areas: Biomaterials and Drug Delivery; Biomedical Imaging; Biomedical Mechanics; Micro- and Manobiotechnology; and Molecular, Cell, and Tissue Engineering. The department has strong relationships with clinical collaborators in the College of Veterinary Medicine in Ithaca, NY, and Weill Cornell Medical College in New York City. Its faculty are leaders in the Center for the Microenvironment and Metastasis, a trans-campus U54 center supported by the National Cancer Institute. Its graduate program currently enrolls 104 PhD students and 108 Masters of Engineering students. A plan for an undergraduate program is currently under development, with the goal of offering the Bachelor of Science degree in the near future.

Shivaun D. Archer, PhD
John & Janet Swanson Senior Lecturer
Department of Biomedical Engineering
Cornell University

Chris B. Schaffer, PhD
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Department of Biomedical Engineering
Cornell University

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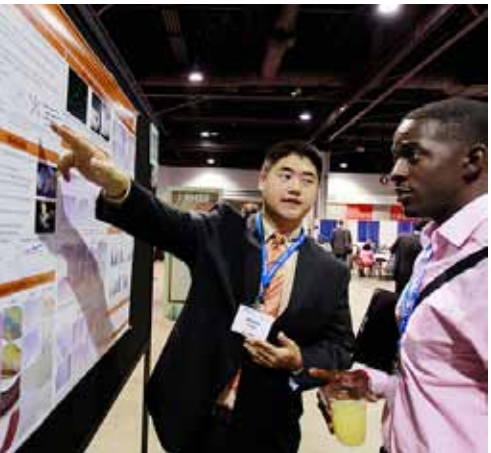

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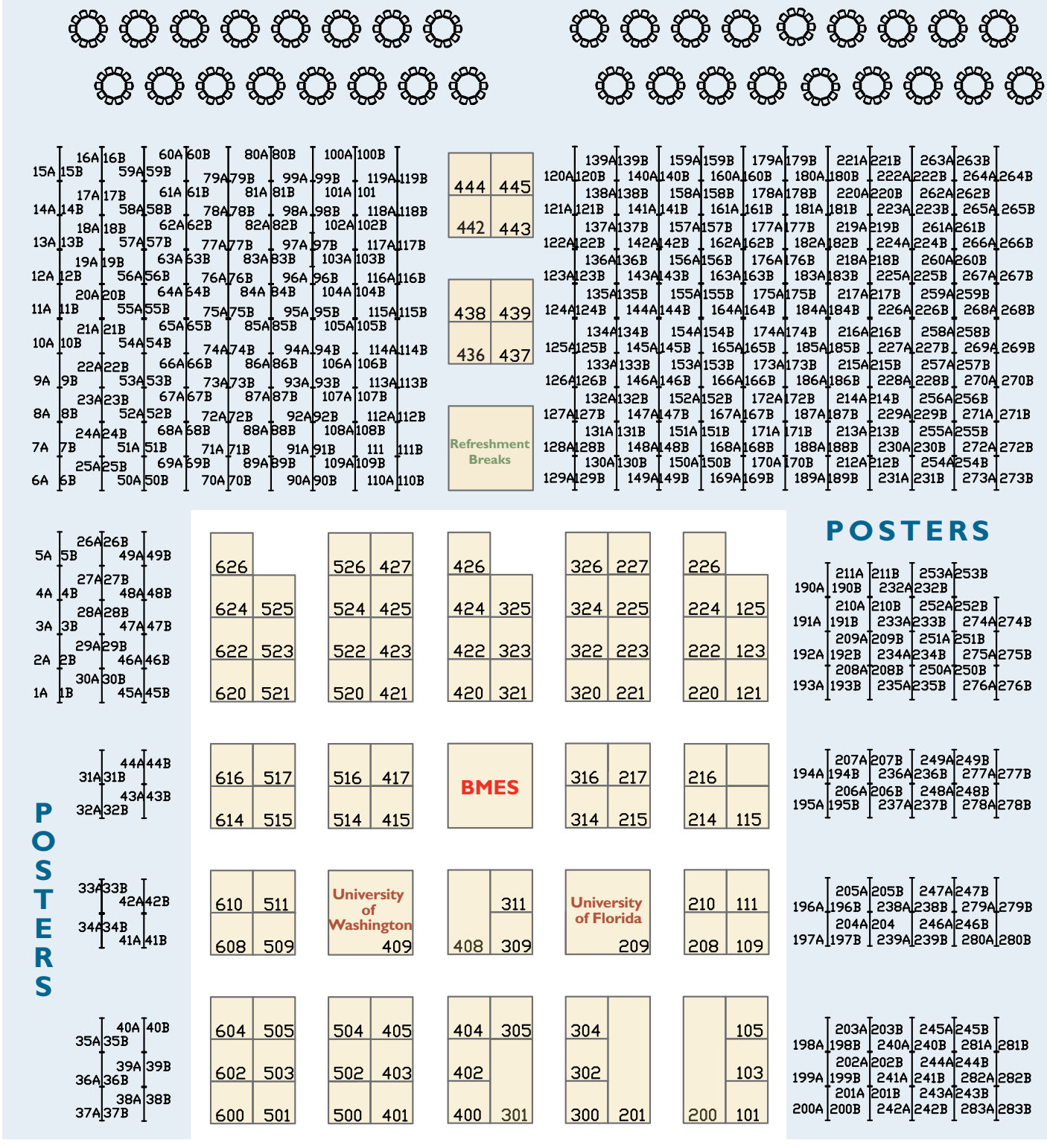

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The mission of the School of Biological and Health Systems Engineering at ASU is to create novel solutions to improve human health through research, education, and service to the community. The faculty in SBHSE has a wide range of research expertise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

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

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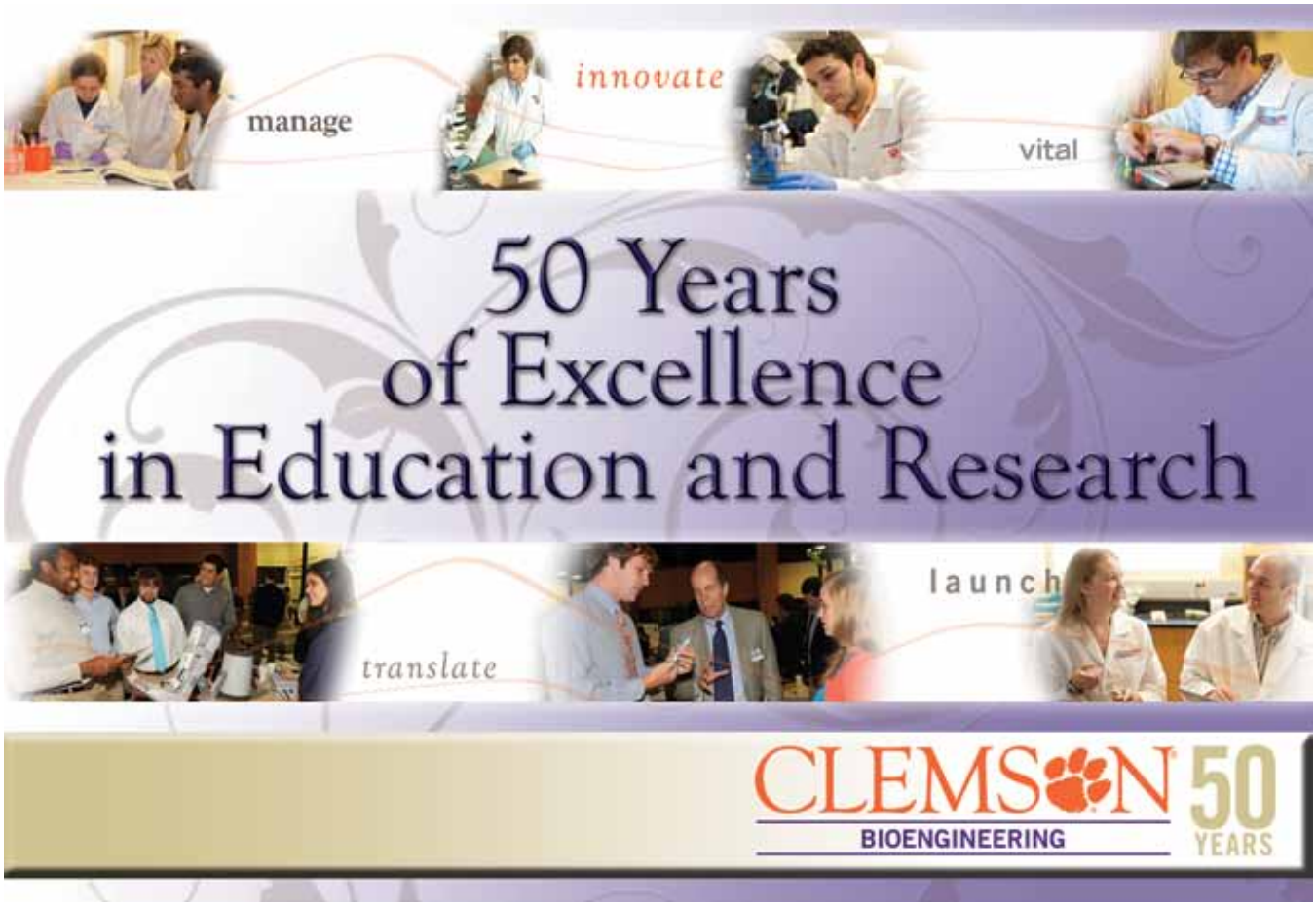
The Department of Biomedical Engineering at Carnegie Mellon is built upon a long tradition of interdisciplinary research across departmental borders. Its decades-old research program emphasizes a collaborative network that balances four synergistic areas: basic engineering principles of living cells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



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DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

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Columbia University Department of Biomedical Engineering offers biomedical engineering education and research through undergraduate B.S. to Ph.D. and M.D./Ph.D. degree programs. We are proud that Columbia offers a surprising mix of intellectual Ivy League atmosphere and a small college sense of community enriched by the diversity of New York City.

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

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DEPARTMENT OF BIOMEDICAL ENGINEERING

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

BOOTH # 423

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SCHOOL OF ENGINEERING & APPLIED SCIENCES
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The graduate program in biomedical engineering at the George Washington University offers a unique combination of small class sizes, engaged faculty, and cutting edge research. Areas of research include medical imaging instrumentation, therapeutic ultrasound, image analysis, microfluidics, biosensors, and electrophysiology. Available degrees include an M.S. in Biomedical Engineering and a Ph.D. in Electrical Engineering with a focus in Biomedical Engineering. In addition, our location in the heart of the nation's capital affords our students and faculty unparalleled access to world class research facilities in a number of government laboratories including the National Institutes of Health and the Food and Drug Administration.

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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 and provides access to the people, practices, information, ideas and opinions shaping one of the fastest growing fields focusing on the development and application of engineering concepts and methods to provide new solutions to biological, medical and healthcare problems.

BOOTH # 622

Illinois Institute of Technology

3265 S. Dearborn Street
Wishnick Hall 314
Chicago, IL 60616
Phone: 312-567-5324
Email: damico@iit.edu
Web: www.iit.edu/-bme

As a leader in biomedical engineering research and education, the Illinois Institute of Technology prepares students for leadership positions in some of today's most promising and challenging careers in industry, medicine and research. IIT offers the Bachelor of Science, Master of Science, Professional Master, and Doctor of Philosophy degrees in Biomedical Engineering.

BOOTH # 526

Institute of Biomaterials & Biomedical Engineering

UNIVERSITY OF TORONTO

164 College Street, Rm 407
Toronto, Ontario M5S 3G9 Canada
Phone: 416-946-8019
Email: comm.ibbme@utoronto.ca
Web: www.ibbme.utoronto.ca

IBBME is a unique interdisciplinary graduate program at the University of Toronto. With MHSc, MASc and PhD degrees in Clinical and Biomedical Engineering, research is pursued through four themes: neural, sensory systems and rehabilitation engineering; biomaterials, tissue engineering and regenerative medicine; molecular imaging and biomedical nanotechnology; and medical devices and clinical technologies.

BOOTH # 300

Interactive Flow Studies

P.O. Box 784
Waterloo, IA 50704
Phone: 612-810-2727
Email: okcay@interactiveflows.com
Web: www.interactiveflows.com

Interactive Flow Visualization & Analysis Systems for studying Hemodynamics, including concepts of blood flow and heart valves, which allow for direct visualization of concepts through realistic flow models utilizing state of the art technology. More information at www.interactiveflows.com.

BOOTH # 103

iWorx Systems Inc.

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Dover, NH 03820
Phone: 603-742-2492
Email: billm@iworx.com
Web: www.iworx.com

The NEW iWorx Bioinstrumentation Breadboard for the National Instruments Educational Laboratory Virtual Instrumentation Suite (NI ELVIS) enables biomedical engineering instructors to teach the theory, design, and prototyping of circuits and signal conditioning using iWorx amplifiers, signal conditioners and transducers for physiological analysis.

BOOTHS # 301 / 303

Johns Hopkins University

DEPARTMENT OF BIOMEDICAL ENGINEERING

720 Rutland Avenue
Traylor 406
Baltimore, MD 21205
Phone: 410-614-4280
Email: hlan1@jhmi.edu
Web: www.bme.jhu.edu

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 # 614

Korea Institute of Science and Technology (KIST)

Hwarangno 14-gil 5, Seongbuk-gu
Seoul 136-791 Republic of Korea
Phone: +82-2-958-6087
Email: choi@kist.re.kr
Web: kist.re.kr

The Biomedical Research Institute at KIST is Korea's leading medical research agency. Making important discoveries that improve health and save lives, we invite you to learn more about our institute and research accomplishments. We will also be providing interviewing opportunities to prospective students, postdocs, and scientists through our research staff.

BOOTH # 517

Louisiana Tech University

BIOMEDICAL ENGINEERING

818 Nelson Avenue / 10157 BMEB103
Ruston, LA 71270
Phone 318-257-4420
Email: tmurray@latech.edu
Web: www.latech.edu

Are you looking for a graduate program in a research university with small classes and friendly faculty? Please talk to us! Our research areas include neural engineering/neuroscience; nanotechnology/applied biotechnology; biosensors; advanced optical imaging; and cell, molecular and tissue engineering. Plus we have clinical partners in epilepsy, TBI and cancer treatment.

BOOTH # 227

Marquette University

HEALTHCARE TECHNOLOGIES MANAGEMENT PROGRAM

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

Unique graduate 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. The graduate program in biomedical engineering at Marquette University offers 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 Shriner's Hospital (Chicago).

BOOTH # 224

Mayo Graduate School

PHYSIOLOGY & BIOMEDICAL ENGINEERING

Mayo Clinic Rochester200 First Street, SW, SMH J04-184
Rochester, MN 55905
Phone: 507-255-8544
Email: sieck.gary@mayo.edu
Web: www.mayo.edu/,gs/programs/phd/biomedical-engineering

The Mayo Graduate School, part of the Mayo Clinic, offers a graduate program leading to the Ph.D. and M.D./Ph.D. with an educational background and laboratory experience that prepares them for careers as independent research investigators. The Graduate Program in Physiology & Biomedical Engineering has a long, rich history at Mayo with a tradition of translational research that spans interdisciplinary boundaries and routinely connects the engineering and physical sciences to the biological sciences and clinical practice. The Graduate Program in Physiology & Biomedical Engineering offers a wide range of research opportunities from basic discovery science to clinical research. Students are provided the necessary quantitative tools to become leaders in diverse fields of biomedical sciences.

BOOTH # 123

McGill University

DEPARTMENT OF BIOENGINEERING

817 Sherbrooke Street West, Room 378
Montreal, Quebec H3A 0C3 Canada
Phone: 514-398-7138
Email: adminoffice.bioeng@mcgill.ca
Web: www.mcgill.ca/bioengineering

McGill University is a leading research-intensive academic institution in Canada. The Department of Bioengineering within the Faculty of Engineering aims to maintain McGill's international reputation of excellence in research and teaching. The department is developing its undergraduate curriculum with an expected first enrollment in Fall 2015.

BOOTH # 504

Medtronic, Inc.

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

At Medtronic, we're committed to Innovating for life by pushing the boundaries of medical technology and changing the way the world treats chronic disease. To do that, we're thinking beyond products and beyond the status quo - to continually find more ways to help people live better, longer. Visit us online at www.medtronic.com

BOOTH # 520

The Methodist Hospital Research Institute

6670 Bertner Street, M.S. R2-216
Houston, TX 77030
Phone: 713-441-7267
Email: aswright@tmhs.org
Web: www.tmhri.org

The Methodist Hospital Research Institute's Methodist Academy develops educational and research partnerships that foster medical innovation. In conjunction with partner institutions, the Academy facilitates training for all trainees to be leaders of medicine by identifying clinically relevant challenges, and developing research programs that translate into technological advances in the clinic.

BOOTH # 223

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BOOTH # 125

NanoSight

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Worthington, OH 43085
Phone: 614-888-0023
Email: admin@nanosight.com
Web: www.nanosight.com

NanoSight manufactures instruments for Counting, Sizing and Visualizing Nanoparticles from 10 nm to 2.0 µm. Measuring , Protein Aggregates and Virus particles and Fluorescently labeled nanoparticles. Size & Concentration measurements are made along with ability to visualize the nanoparticles in real time and a video of the sample being analyzed.

BOOTH # 216

National Institute of Biomedical Imaging and Bioengineering

31 Center Drive, Room 1C14
Bethesda, MD 20892
Phone: 301-496-9208
Email: info@nibib.nih.gov
Web: http://www.nibib.nih.gov

The mission of the National Institute of Biomedical Imaging and Bioengineering is to improve human 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 research and medical care. More information at www.nibib.nih.gov.

BOOTH # 602

Northeastern University

313A Snell Engineering Center
360 Huntington Avenue
Boston, MA 02115
Phone: 617-373-6585
Email: th.webster@neu.edu
Web: www.webster-nano.com

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 # 404

Northwestern University

2145 Sheridan Road
Evanston, IL 60026
Phone: 847-467-2369
Email: s-olds@northwestern.edu
Web: www.bme.northwestern.edu

With cutting-edge research in Cell and Molecular Engineering, Biomaterials and Biointerfaces, Imaging and Biophotonics, Neural Engineering and Rehabilitation, 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.edu
Web: 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 Wexner Medical Center.

BOOTH # 425

Peking University

DEPARMENT OF BIOMEDICAL ENGINEERING

No.5 Yi Heyuan Road, Hai Dian district
Beijing 100871 China
Phone: +86 62767113
Email: pku_bme@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 # 417

Pennsylvania State University

DEPARTMENT OF BIOENGINEERING

206 Hallowell Building
University Park, PA 16802
Phone: 814-865-1407
Email: mjs436@engr.psu.edu
Web: www.bioe.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!

BOOTHS # 408 / 410

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

The Weldon School of Biomedical Engineering is undergoing significant programmatic and faculty growth to meet the rising demands of the medical device and biotechnology industries. Opportunities abound in our expanding graduate programs, signature areas of research, and entrepreneurial partnerships. Ask us about our unique specialty programs in Regulatory Affairs for Medical Devices and Biomedical Entrepreneurship. We offer seven major tracks to a Weldon graduate degree, including a new Professional MS Program. All qualified graduate students are fully funded.

BOOTH # 515

Rensselaer Polytechnic Institute

110 8th Street
Troy, NY 12180
Phone: 518-276-6548
Email: fotim@rpi.edu
Web: www.bme.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, Biomedical Imaging, Musculoskeletal Engineering, Neural Engineering, Systems Biology and Biocomputation, and Vascular Engineering (bme.rpi.edu).

BOOTH # 511.

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.

ENGINEERING AT ILLINOIS

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ENDOWED CHAIRS AND PROFESSORSHIPS IN BIOENGINEERING

Bioengineering is revolutionizing 21st century healthcare worldwide. But to have the greatest impact, the best minds have to work together across a variety of fields. At the University of Illinois, that interdisciplinary attitude and the desire to deliver safe, effective, affordable medical technologies drive us. They've led to breakaway work in imaging, biosensing, cellular mechanics, and biophysics. Now we're expanding our team. Thanks to the $100 million Grainger Engineering Breakthroughs Initiative, we're creating more than 35 new endowed professorships and chairs in Bioengineering and other fields. If you're ready to drive the future of Bioengineering, Illinois is the place for you.

GraingerInitiative.engineering.illinois.edu

ILLINOIS

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Email: amy@pacific-research.com
Web: www.sawbones.com

SAWBONES WORLDWIDE is the leader in orthopaedic and medical education models. Our models are widely used in classrooms and laboratories as hands-on teaching aids. They also offer a range of biomechanical test materials designed to simulate the physical properties of human bone without the variability or special handling requirements.

BOOTH #522

Scientific Computing & Imaging (SCI) Institute and the Department of Bioengineering at the University of Utah

72 South Central Campus Drive
Salt Lake City, UT 84112
Phone: 801-585-1867
Email: sci-info@sci.utah.edu
Web: http://www.sci.utah.edu
http://www.bioen.utah.edu/

The Scientific Computing and Imaging (SCI) Institute has established itself as an internationally recognized leader in visualization, scientific computing, and image analysis. The SCI Institute's overarching research objective is to create new scientific computing techniques, tools, and systems that enable solutions to problems affecting various aspects of human life. Visit us at our booth and join us for our BMES 2013 Track on Bioinformatics, Computational and Systems Biology. The theme of this year's track is discovery from mathematical modeling of large-scale biomedical data, and it features a record eleven platform sessions and more than a hundred posters by researchers from sixteen countries.

BOOTH # 437

Springer

233 Spring Street
New York, NY 10013
Phone: 212-460-1500
Email: exhibits-ny@springer.com
Web: www.springer.com

Springer is the proud publishing partner of the BMES and a leading publisher in biomedical engineering. Please stop by our booth to browse our books and journals. Publishing editors will be on hand to answer any questions you might have about publishing with Springer.

BOOTH # 624

Temple University

BIOENGINEERING DEPARTMENT

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

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

BOOTH # 309

Texas A & M University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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 # 115 / 117

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 # 325

Tulane University

BIOMEDICAL ENGINEERING

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 # 321

The University of Akron

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

Biomedical Engineering began as a research institute at The University of Akron in 1980 and became an academic department in 1984. We offer two graduate degree programs: a masters degree in engineering with the biomedical specialization and 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 18 full-time and joint faculty, including 8 recent hires, 3 endowed chairs, and 2 CAREER award recipients.

BOOTH # 220

The University of Alabama at Birmingham

DEPARTMENT BIOMEDICAL ENGINEERING

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

The Biomedical Engineering (BME) Graduate Program at The University of Alabama at Birmingham offers Master's, PhD, and M.S.B.M.E. with Certificate in Life Sciences Entrepreneurship in collaboration with the School of Business. The BME Department has a strong record of interdisciplinary research with emphasis in the areas of biomaterials, biomechanics, biomedical imaging, cardiac electrophysiology, computational biology, drug delivery, tissue engineering and regenerative medicine. The BME Graduate Program has over 60 primary and secondary faculty training students to develop the next generation of technologies. BME graduates find employment in universities, health care, medical devices, pharmaceuticals, regulatory agencies, or computer application groups.

BOOTH # 516

The University of Arizona

BIOMEDICAL ENGINEERING

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

The University of Arizona's Biomedical Engineering Graduate Interdisciplinary Program offers opportunities to integrate engineering, mathematics, biology, and medicine in a collaborative multi-disciplinary environment, with over 60 faculty mentors. Proximity to Medicine and Health Sciences colleges facilitates cutting-edge translational research in specialties such as cardiovascular engineering, imaging, nanotechnology, computational modeling, and entrepreneurship

BOOTH # 208

University of Arkansas

COLLEGE OF ENGINEERING

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

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

BOOTH # 311

University of California at Davis

BIOMEDICAL ENGINEERING

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

With 33 primary faculty and a graduate group of ~70 faculty, BME at UC Davis combines exceptional teaching with state-of-the-art research to prepare students for careers in academics and industry. Come learn about our programs in bioinformatics, biomechanics, cellular and molecular systems, imaging, synthetic biology, and tissue engineering and regenerative medicine.

BOOTH # 403

University of California, Irvine

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

BME program at UCIrvine offers three technology focus areas (biophotonics, biomedical nano/microsystems, biomedical computation/modeling) and four clinical areas (cardiovascular, cancer, neurorehabilitation, ophthalmic). BME faculty lead six major research centers spanning from basic research to clinical translation. UCI is located in Orange County, home to more than 300 medical device companies.

BOOTH # 421

University of California at Riverside

DEPARTMENT OF BIOENGINEERING

MSE 217
3401 Watkins Drive
Riverside, CA 92521
Phone: 951-827-4303
Email: jennifer@engr.ucr.edu
Web: www.bioeng.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 # 616

University of Connecticut

BIOMEDICAL ENGINEERING

260 Glenbrook Road, Unit 3247
Storrs, CT 06269
Phone: 860-486-0163
Email: lisae@engr.uconn.edu
Web: www.bme.uconn.edu

The ABET-accredited Undergraduate program and the long-standing MS/PhD Program in Biomedical Engineering at the University of Connecticut are now under the auspices of the Biomedical Engineering Department, which spans the School of Engineering (Storrs) and the Schools of Medicine and Dental Medicine (Farmington), offering our students ready access to cutting-edge research and outstanding faculty members/practitioners on both campuses. We also offer one of the few Clinical Engineering Internship programs (MS) in the country.

BOOTH # 209

University of Florida

J. CRAYTON PRUITT FAMILY DEPARTMENT OF BIOMEDICAL ENGINEERING

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

UF BME is made possible by the vision and generosity of Dr. J. Crayton Pruitt and his family. Since its inception in 2002, the Department continues to excel in interdisciplinary research that merges engineering with biology and medicine. The Department offers both a graduate program and an undergraduate program (2012 inaugural class), with particular strengths in Neural Engineering, Imaging and Medical Physics, Biomaterials and Tissue Engineering, and Biomechanics and Modeling. In the past year, the Department has grown to 18 faculty and will continue that growth up to 25-27. UF BME is one of only a few departments in the nation to be co-localized with a top-ranked medical school, veterinary school, and dental school. The Department is also uniquely positioned to contribute to clinical translation of biomedical technologies because of the outstanding resources for entrepreneurship and commercialization in the Gainesville area.

BOOTH # 217

University of Illinois at Chicago

DEPARTMENT OF BIOENGINEERING

851 S. Morgan Street, Room 218
218 Science and Engineering Offices
Chicago, IL 60607
Phone: 312-996-2335
Email: bioe@uic.edu
Web: www.bioe.uic.edu

One of the first degree granting and accredited Bioengineering programs in the nation, since 1965 UIC Bioengineering offers B.S, M.S, Ph.D, and M.D./Ph.D programs that emphasize translational research and training, led by a core faculty that collaborates with leading faculty in five major academic medical centers in Chicago - including UIC, itself, home of the largest medical school in the country - and through innovative industry-linked education programs like Interdisciplinary Medical Product Development.

BOOTH # 314

University of Illinois at Urbana-Champaign

DEPARTMENT OF BIOENGINEERING

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

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

BOOTH # 424

University of Iowa

DEPARTMENT OF BIOMEDICAL ENGINEERING

1402 Seamans Center
Iowa City, IA 52242
Phone: 319-335-5632
E-mail: bme.engineering@uiowa.edu
Web: www.engineering.uiowa.edu/bme

The University of Iowa Department of Biomedical Engineering offers graduate research programs in the following research areas: Biomedical Imaging, Biomaterials, Cardiovascular Biomechanics, Bioinformatics, Musculoskeletal Biomechanics, Tissue Engineering and Cellular Analysis. The Department is located close to a tertiary-care teaching hospital, and near the Colleges of Dentistry, Medicine, Nursing, Pharmacy and Public Health. Iowa City is ranked number 4 in the Top 10 College Destinations (AIER), is a UNESCO City of Literature, and is a Top 100 Adventure City (NatGeo Adventure). Stop by our booth for more information.

BOOTH # 626

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

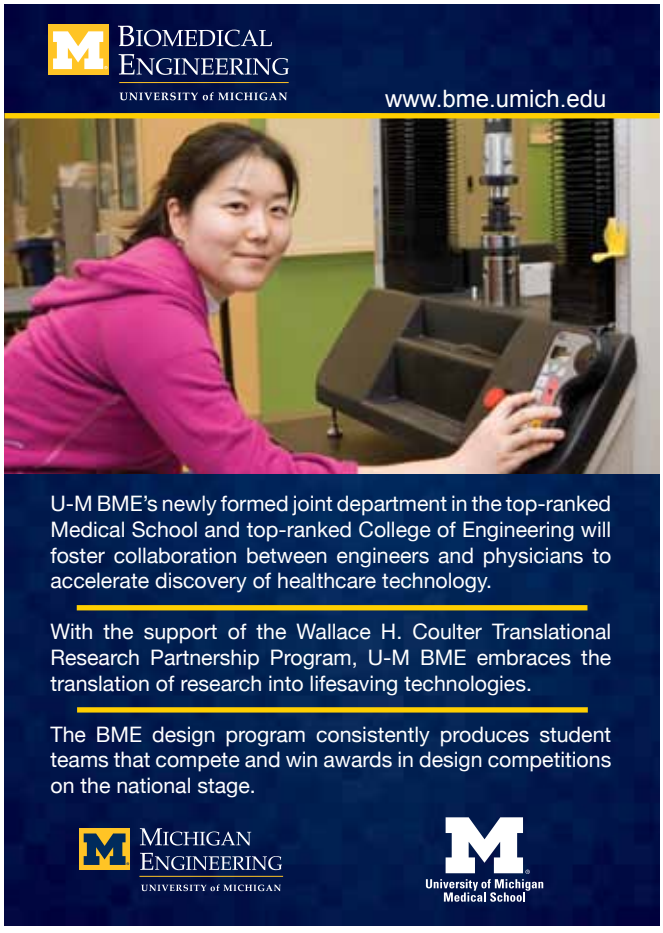
KU Bioengineering is an exciting and dynamic place. Our curriculum is broad and flexible, embracing the interdisciplinary nature of the field. With six tracks; Bioimaging, Bioinformatics, Biomolecular, Biomedical Product Design & Development, Biomechanics & Neural, and Biomaterials & Tissue; and a collaboration with the University of Kansas Medical Center, students customize their education and create a niche of research before they enter the job market.

BOOTH # 323

University of Maryland

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

Faculty and students in the Fischell Department of Bioengineering at UMD are committed to making a difference in human health care through education, research, and invention. We have exciting collaborations with the NIH-NCI, UMB Pharmacy and Medicine, and the FDA and offer programs leading to the BS, M.Eng., MS/MD, MD/PhD and PhD degrees.



BOOTH #109

University of Memphis

UNIVERSITY OF TENNESSEE HEALTH SCIENCES CENTER

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

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

BOOTH # 225

University of Miami

BIOMEDICAL ENGINEERING DEPARTMENT

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

Our undergraduate and graduate programs leading to the B.S., 5 year B.S./M.S, M.S and Ph.D. degrees provide graduates with the analytical and design skills required to solve problems at the interface of engineering and life sciences. Special features of our program include small class size, very strong ties with the University of Miami Miller School of Medicine, high level of student-faculty interaction, and a high percentage of undergraduate student participation in research and professional activities. The research areas of our Faculty include biomedical imaging, optics and lasers; neural engineering, biosignals and instrumentation; and biomechanics, biomaterials and tissue engineering.

BOOTH # 501

University of Michigan

DEPARTMENT OF BIOMEDICAL ENGINEERING

1111 Carl A. Gerstacker Building
2200 Bonisteel Blvd.
Ann Arbor, MI 48109-2099
Phone: 734-763-5290
E-mail: sbitzer@umich.edu
Web: www.bme.umich.edu

The University of Michigan Department of Biomedical Engineering provides an outstanding educational experience 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 # 509

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 # 503

University of Pittsburgh

DEPARTMENT OF BIOENGINEERING

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 # 210

University of Rochester

DEPARTMENT OF BIOMEDICAL ENGINEERING

Robert E. Georgen Hall
Rochester, NY 14627
Phone: 585-275-3891
Email: donna.porcelli@rochester.edu
Web: www.urmc.rochester.edu/bme

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 # 500

University of Southern California (USC)

VITERBI SCHOOL OF ENGINEERING

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

The USC Viterbi School of Engineering's top 10 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 Technology at viterbi.usc.edu/gapp.

BOOTH # 524

University of South Carolina

BIOMEDICAL ENGINEERING

301 Main Street
Columbia, SC 29028
Phone: 803-777-5604
Email: mossme@cec.sc.edu
Web: www.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 # 608

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. We now also have an Undergraduate Program in Biomedical Engineering. 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 # 415

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

107 W. Dean Keeton, C0800
Austin, TX 78712
Phone: 512-475-8623
Email: sbixby@mail.utexas.edu
Web: www.bme.utexas.edu

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

BOOTH # 525

University of Virginia

DEPARTMENT OF BIOMEDICAL ENGINEERING

P.O. Box 800759
Charlottesville, VA 22908
Phone: 434-924-5101
Email: bme-dept@virginia.edu
Web: http://bme.virginia.edu

Experience Thomas Jefferson's iconic university. Our vibrant department, a rare blend of the Schools of Medicine and Engineering, offers a unique training environment for translational research and the basic sciences. Work with our faculty and our clinicians to solve cutting edge biological and medical problems. UVa – Explore, discover, and invent.

BOOTH # 409

University of Washington

DEPARTMENT OF BIOENGINEERING

William H. Foege, Bldg. N107
Box 355061
3720 15th Avenue NE
Seattle, WA 98195-5061
Phone: 206-685-3494
Email: bioeng@uw.ed
http://depts.washington.edu/bioe/index.html

The University of Washington Department of Bioengineering welcomes you to Seattle. Please visit booth 409 or join us on a campus fieldtrip to discover how we are inventing the future of medicine. Our faculty and students are eager to talk to you!

BOOTH # 305

Valtronic

29200 Fountain Pkwy
Solon, OH 44139
Phone: 440-349-1239 x118
Email: pklavora@valtronic.com
Web: www.valtronic.com

Valtronic offers full service electronic and mechatronic design, development and manufacturing services for medical devices. With over 30 years experience we have worked on products for the diabetes, cardio, hearing and neurostimulation markets and much more. We offer supply chain management, complete testing, and quality management. We are Iso 13485 certified and FDA registered.

BOOTH # 214

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

5824 Stevenson Center
Nashville, TN 37235
Phone: 615-343-1099
Email: tina.shaw@vanderbilt.edu
Web: http://engineering.vanderbilt.edu/BiomedicalEngineering.aspx

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

BOOTHS # 200 / 202 / 204 / 201 / 203 / 205

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

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

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

BOOTH # 101

Washington University in St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

In partnership with our world-class medical school, our department emphasizes interdisciplinary, multi-scale training with a medical focus 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 in Whitaker Hall for Biomedical Engineering and the just completed Brauer Hall. We offer BS, MS, MS/MBA, PhD and MD/PhD degrees

BOOTH # 221

Wayne State University

BIOMEDICAL ENGINEERING

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

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

BOOTH # 610

Whitaker International Program

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

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

BOOTH # 316

Worcester Polytechnic Institute

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

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

BOOTH # 326

Yale University

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

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

GENERAL INFORMATION & PRESENTER INFORMATION

Meeting Location

Washington State Convention Center
800 Convention Place
Seattle, WA 98101-2350
206-694-5000

Sheraton Seattle
1400 Sixth Avenue
Seattle, WA 98101
206-621-9000

Registration

Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the BMES BASH at the EMP Museum—Music + Sci Fi + Pop Culture. 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, and the Women in BME Luncheon are separate and above BMES meeting registration.

On-Site Registration Hours

Wednesday, September 25	11:00am – 7:00pm
Thursday, September 26	7:00am – 6:00pm
Friday, September 27	7:00am – 6:00pm
Saturday, September 28	7:00am – 2:00pm

Exhibits

Exhibit Hall , Washington State Convention Center

Exhibits are located in the Exhibit Hall 4AB in the Washington State Convention Center. Exhibits will be open:

Thursday, September 26
9:30am – 5:00pm
Friday, September 27
9:30am – 5:00pm
Saturday, September 28
9:30am – 1:30pm

Poster Sessions

Exhibit Hall, Washington State Convention Center

Posters are located in the Exhibit Hall 4AB in the Washington State Convention 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 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 4AB in the Washington State Convention Center. Posters are numbered with a card corresponding to the number assigned in the program.

Speaker Ready Room

Suite A, Suite C (level 6)

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

Wednesday, September 25	11:00am – 5:00pm
Thursday, September 26	7:00am – 5:00pm
Friday, September 27	7:00am – 5:00pm
Saturday, September 28	7:00am – 2:30pm

Program Highlights

Don't Miss These Events

WEDNESDAY, September 25

Meet the Faculty Candidate Forum

3:30pm - 5:30pm

The "Meet-the-Faculty Candidate" poster session provides a great opportunity for faculty, recruiters, and Department Chairs to speak directly with current graduate students and postdoctoral researchers who are seeking faculty positions.

The BMES 2013 Annual Meeting MEET THE FACULTY CANDIDATE FORUM was only open to those who are actively on the market for the 2013-2014 recruiting cycle. Candidates submitted for consideration in July. The accepted candidates' CVs can be viewed at www.bmes.org.

Sponsored by Bioengineering AT ILLINOIS

WEDNESDAY, September 25

Welcome Reception

5:30pm - 7:00pm

Washington State Convention Center, Skybridge

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

THURSDAY, September 26

BMES State of the Society Address, Town Hall, Fellows Induction & Awards Ceremony

5:45pm – 7:15pm

Washington State Convention Center, Ballroom 6E

Please join us for a dialogue with BMES President Gilda Barabino and other leaders of the Society. The BMES Awards will also be presented. See page 58-59 for the award winners.

Refreshment Breaks

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

Thursday afternoon refreshment break sponsored by

WHITAKER International Program

Friday afternoon refreshment break sponsored by

Northeastern University
College of Engineering

FRIDAY, September 27

BMES Bash at EMP Museum —Music + Sci Fi + Pop Culture

7:00pm - 10:00pm

325 Fifth Avenue N Seattle, WA 98109

Enjoy interesting and unique exhibits along with great food. EMP is a leading-edge, nonprofit museum, dedicated to the ideas and risk-taking that fuel contemporary popular culture. With its roots in rock 'n' roll, EMP serves as a gateway museum, reaching multigenerational audiences through their collections, exhibitions, and educational programs, using interactive technologies to engage and empower our visitors. At EMP, artists, audiences and ideas converge, bringing understanding, interpretation, and scholarship to the popular culture of our time. Set amid the backdrop of the Space Needle, and easily accessible from Seattle's downtown core, the museum's one-of-a-kind architecture designed by internationally acclaimed architect Frank O. Gehry, EMP is a spectacular venue for this year's BMES BASH.

Shuttle buses will run continuously from 6:30pm -10:00pm between the Sheraton Seattle and the EMP Museum. Buses will be staged at the Union Street exit of the hotel.

THURSDAY, September 26

Celebration of Minorities in BME Luncheon*

12:00pm - 1:15pm

Washington State Convention Center, Ballroom 6A

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

This is the fourth year of this event hosted 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. The luncheon complements the Diversity Award lecture on Saturday and the Women in BME Luncheon on Friday.

This year's lead speaker is Dr. Aida Habtezion, an Assistant Professor of Medicine at Stanford University in the division of Gastroenterology and Hepatology and a faculty member at Stanford Immunology. Born in Eretria, she moved to Canada to obtain her medical degree from McMaster University, completed a gastroenterology fellowship at the University of Toronto, and a postdoctoral research fellowship at Stanford University. Her research is funded by the Robert Wood Johnson Foundation and the National Institutes of Health and involves the study of the inflammatory process and leukocyte recruitment in acute and chronic pancreatitis.

Beyond her incredible research program, Dr. Habtezion brings a message of triumph through ever-changing, unforeseen circumstances and opportunities, while continuing to advance her career in academic medicine and improve the health of underserved populations. Throughout her career, she has made decisions based on family first, core values with which many underrepresented minorities relate and struggle to balance. Please come and hear her message to learn key insights that may help you navigate your own career.

Celebration of Minorities in BME Luncheon Sponsored by

Virginia Tech
Wake Forest University
School of Biomedical Engineering and Sciences

FRIDAY, September 27

Women in BME Luncheon*

12:15pm - 1:15pm

Washington State Convention Center, Ballroom 6A

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

Your Personal Brand: Your Most Powerful Professional Asset

If you don't know what makes you unique, how will the world know? Learn what a personal brand is and why it matters, the #1 key to building a brand that stands out from every other, and tips and tricks to build your expert status to impact the world. A lively, interactive discussion will be led by **Maren Finzer,** personal brand strategist and contributor to Personal Branding for Dummies. Combining her contagious enthusiasm and passion for people, Maren helps aspiring professional women coax out their brilliance to build their irresistible personal brands to achieve the happiness and success they imagine. Discover more at www.marenfinzer.com/personal-branding.

Woman in BMES Luncheon Sponsored by CLEMSON BIOENGINEERING 50 YEARS

Additional Meetings

Wednesday, September 25

BME – IDEA Alliance Meeting
8:30am – 5:30pm
Washington State Convention Center, Room 2A2B
Organizer: Patricia Boynton

BMES Board of Directors Meeting
9:00am – 4:30pm
Washington State Convention Center, Room 211
Organizer: Gilda Barabino

AIMBE Board of Directors Meeting
1:00pm – 5:00pm
Washington State Convention Center, Room 203
Organizer: Milan Yager

Annals of Biomedical Engineering - Editorial Board
7:00pm - 10:00pm
Sheraton Seattle, Greenwood Room
Organizer: Aleta Kalkstein

Thursday, September 26

BMES National Meetings Committee Meeting
8:30am - 10:00am
Washington State Convention Center, Room 601
Organizer: Christine Schmidt

BMES International Affairs Committee Meeting
8:00am - 9:00am
Washington State Convention Center, Room 214
Organizer: Jennifer Edwards

Cellular and Molecular Bioengineering - Editorial Board
12noon – 1:30pm
Sheraton Seattle, Greenwood Room
Organizer: Aleta Kalkstein

BMES Membership Committee Meeting
1:00pm - 2:00pm
Washington State Convention Center, Room 214
Organizer: Jennifer Edwards

AIMBE Council Meeting
3:00pm – 4:00pm
Washington State Convention Center, Room 203
Organizer: Milan Yager

Friday, September 27

2014 BMES Annual Meeting Committee Meeting
8:30am - 10:00am
Washington State Convention Center, Room 601
Organizer: John White

Cardiovascular Engineering and Technology - Editorial Board
12noon - 1:30pm
Sheraton Seattle, Capital Hill Room
Organizer: Aleta Kalkstein

BMES Diversity Committee Meeting
3:45pm - 4:45pm
Washington State Convention Center, Room 214
Organizer: Michele Surrichio

Saturday, September 28

BMES Education Committee
9:30am – 10:30am
Washington State Convention Center, Room 601
Organizer: Michele Surrichio

BMES Student Affairs Committee Meeting
9:30am - 10:30am
Washington State Convention Center, Room 214
Organizer: Jennifer Edwards

BMES Board of Directors Meeting & New Board Orientation
12:30pm - 3:00pm
Washington State Convention Center, Room 211
Organizer: Gilda Barabino

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.

Monday, September 23– Wednesday, September 25

Coulter College*

Hilton Seattle

**By invitation only (pre-registration & pre-qualification required)*

BMES partnered with the Wallace H. Coulter Foundation and program instructors John D. DesJardins, Ph.D., from Clemson University Department of Bioengineering and Andrew J. DiMeo, Sr., Ph.D., from UNC/NCSU Joint Department of Biomedical Engineering, to bring Coulter College to the BMES Annual Meeting for a second year. Coulter College is a training program focused on translation of biomedical innovations. Design teams will be guided by faculty and clinical experts 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 identified problems into novel solutions. The program is supported through a grant funded by the Wallace H. Coulter Foundation.

Thursday, September 26

An Introduction to BME Career Pathways; Choosing a Career Pathway in BME That's Right for You

9:00am – 10:15am

Washington State Convention Center, Room 2AB

At this session you will learn about the main career pathways available to BME professionals: academia, industry and government careers, and why each one may or may not be the right choice for you. This session will allow you to inventory your own values, interests, strengths, and weaknesses so you may select which career pathway you'd like to explore in more detail. Next, attend the three sessions focusing on academic, government, and industry career pathways to continue developing your personal career pathway plan.

Speed Coaching/ One-on-One Career Consulting

Pre-registration is required for these services.

Meet with career development professionals to address your specific job and career concerns.Meet with career development professionals to address your specific job and career concerns. (Provided complimentary to BMES members). (Provided complimentary to BMES members).

Thursday, September 26
1:30pm – 5:30pm

Friday, September 27
1:30pm – 5:30pm
Washington State Convention Center, Room 212 & 213

BME Careers in Industry

1:30pm – 2:45pm

Washington State Convention Center, Room 2AB

Explore the many and varied career options in industry for BME professionals. You'll discover the best ways to find jobs in industry, and the recruitment process.

You will also hear examples of good and bad resumes to help you create your own winning resume for industry. Finally, this session will offer some valuable tips for making your first year on the job in industry a great one.

BME Careers in Government

3:15 – 4:30pm

Washington State Convention Center, Room 2AB

Find out if a career in government is right for you. This session will begin with an overview of a typical career path in government, including the advantages and disadvantages of working for the government. You'll learn about the different types of federal, state and local government agencies as well as the

Resume Review and Critique

Have your resume reviewed and critiqued by career professionals and take away writing tips.

Thursday, September 26
1:30pm – 3:30pm & 4:00pm – 6:00pm

Friday, September 27
1:30pm – 2:45pm
Washington State Convention Center, Room 307 & 308

types of jobs for BME's within these agencies. You will also discover what government recruiters are looking for and how to position yourself to grab their attention. Panelists will describe the often complex ins and outs of the government hiring process, helping you cut through all the red tape. You will also hear examples of good and bad resumes to help you create your winning resume for government.

BME Careers in Academia

5:00pm – 6:15pm
Washington State Convention Center, Room 2AB

Discover the pros and cons of a career in academia. You'll learn about typical career pathways and job opportunities. You will learn what recruiters are looking for and how you can better position yourself for a faculty position. You'll explore what you can expect during your first year in academia and what you can do to lay the foundation for a successful career in academia. You will also hear examples of good and bad resumes, to help you create your winning resume for academia.

Mock Interview Demonstration

1:45pm – 3:15pm
& 4:00pm – 5:30pm
Washington State Convention Center, Room 310

See and hear what happens in a great interview. You'll discover firsthand what makes a candidate stand out from the crowd and what can instantly sink your chances. You'll learn how to skillfully respond to tough questions as well as pose questions to impress the recruiter. You'll not only learn what to do, but most importantly what not to do, to maximize your chances of making an outstanding first impression and getting the job offer.

Friday, September 27

BMES Student Chapter Outstanding Chapter Best Practices

8:30am – 9:30am
Washington State Convention Center, Room 2AB

This workshop will feature the BMES Student Chapter at the University of California, Davis awarded the BMES Outstanding Student Chapter Award, along with BMES Student Chapter at Johns Hopkins University, awarded the Commendable Achievement Award. The workshop will provide information on chapter best-practices allowing students to ask questions, exchange ideas and implement goals for the upcoming year.

Career Fair

Friday, September 27
1:00pm – 5:00pm
Washington State Convention Center, South Lobby

Employers and job seekers 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.

BMES Student Chapter—Outreach and Mentoring Best Practices

9:30am – 10:30am
Washington State Convention Center, Room 2AB

This workshop will feature the BMES Student Chapter at Ohio State University awarded the BMES Outstanding Mentoring Award and the BMES Student Chapter at Stony Brook University awarded the BMES Outstanding Outreach Award. The workshop will provide information on chapter best-practices allowing students to ask questions, exchange ideas and implement goals for the upcoming year.

Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Convention

Thursday, September 26
4:00pm - 5:00pm
Washington State Convention Center, Room 303

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. (Attendance is mandatory for all AEMB members). If you would like to learn more about AEMB or start a new chapter at your school, please consider attending this session and speaking to any of the national officers..

Alpha Eta Mu Beta Reception *(Invitation Only)*

Thursday, September 26
5:30pm - 7:00pm
The Annual AEMB reception will be held at Daily Grill Restaurant, 629 Pike Street, Seattle, WA 98101

Session Chairs: Rupak Dua, MS, Rafeed Chaudhury, BS, Stephanie Naufel, MS, Rachel Hanks, BS and Dominic E. Nathan, PhD

This session is an networking opportunity to meet with other fellow members from AEMB chapters, representatives from industry and academia. This session is open to all AEMB student and faculty members. For tickets, please contact aemb@alphaetamubeta.org.

The Importance of Reproducibility in Research Publishing (Annual Alpha Eta Mu Beta Ethics Session)

Friday, September 27
9:00am - 10:00am
Washington State Convention Center, Room 303

Session Chairs: James B. Bassingthwaighte, PhD and Rupak Dua, MS

Publishing is an important bridge bringing cutting edge research from the lab to the outside world. The ability to fully reproduce research results and implement methods is of the utmost importance. In this talk, we explore the current guidelines in place, the importance of access to experiment data, methods on how to validate and obtain reproducible results, and explore the technology available to facilitate this process in an efficient manner.

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. James B. Bassingthwaighte. Dr. Bassingthwaighte is a Professor of Bioengineering with joint appointments in the departments of Biomathematics and Radiology at the University of Washington. He is an active teacher and internationally known researcher focused on bioengineering and quantitative and integrative approaches to cardiovascular physiology. He received his MD in from the University of Toronto, and completed a residency in Medicine and Cardiology at the Mayo Graduate School of Medicine and Mayo Clinic in Rochester, Minnesota, where he also earned a Ph.D. in Physiology. Dr. Bassingthwaighte is the originator of the Human Physiome Project, a large-scale international program for developing data basing and biological systems modeling for understanding genomic and pharmaceutic effects on human physiology. His program is highly collaborative, involving co-investigators at a dozen U.S. universities, several in Europe, and in 14 departments at the University of Washington..

Sequestration: The Impact on Education, Biomedical Jobs, and Public Health (AIMBE-AEMB Student Public Policy Session).

Friday, September 27

2:00pm – 3:00pm

Washington State Convention Center, Room 303

Session Chair: Teresa Murray, PhD

How will sequestration budget cuts impact the biomedical engineering field including your education, jobs in research, and medical discovery? Moreover, how can the simple actions of a single student influence Congress and potentially change the course of history. Hyperbole? Maybe not…. 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). Find out first hand from a Washington insider, lobbyist and former Administration official, the details behind how the sausage is really made and how you can influence the outcome of public policy. During this session, you will discover the real impact of sequestration on biomedical engineering and public health. The decisions they are making directly impact your education, job prospects and maybe even your health.

AIMBE represents the top 2% of medical and biological engineers from industry, government, universities and clinical practice. AIMBE is the leading voice for public policy supporting medical and biological engineering innovation to improve public health. AIMBE staff and fellows regularly meet with key administration officials, Congress, and monitor trends in public policy that may impact the field. 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. Last year, we initiated the first student public policy session at BMES with our co-sponsor, AIMBE.

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

Friday, September 27
8:00am - 9:30am
Washington State Convention Center, Room 603

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, and public policy work—are intended to enhance both the recipient's public 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. **Sabeen Altaf (Chair of Session)**
   Senior Program Manager, Science and Technology Programs, Institute of International Education
2. **Jaclyn Brennan and Elaine Su**
   Whitaker International Fellows, 2012-13
   Host Institution: Ecole Polytechnique, France
   Title: The Influence of Hemodynamic Forces and Substrate Selection on Endothelial Cell Migration
3. **Ryan Chowdhury**
   Whitaker International Fellow, 2012-13
   Host Institution: International Centre for Disease Research, Bangladesh
   Title: Validation of Relatively Inexpensive Portable Microfluidic Technologies Compared to Gold-Standard Techniques for Enumerating CD4+ T-cells and Measuring Viral Load in Bangladeshi HIV Patients
4. **G. Ross Malik**
   Whitaker International Fellow, 2012-13
   Host Institution: Universidad Carlos III de Madrid, Spain
   Title: Mesenchymal Stem Cells in the Development of an Autologous Engineered Skin
5. **Jeffrey Rice**
   Whitaker International Scholar, 2009-10
   Host Institution: Ecole Poyltechniqeu Federale de Lausanne (EPFL), Switzerland
   Title: Engineering of Protein Based Bio-matrices for Improved Tissue Repair
6. **Holly Weiss**
   Whitaker International Fellow, 2010-11
   Host Institution: Katholieke Universiteit Leuven, Belgium
   Title: Developmental Engineering of Tissue Intermediates

STUDENT CHAPTER TABLES

Stop by the Student Chapter Booths inside the Exhibit Hall 4AB to see what's going on "on campus"!

Boston University
Table 8

Cornell University
Table 12

Johns Hopkins University
Table 2

San Jose State University
Table 7

Stony Brook University
Table 9

University of California, Davis
Table 1

University of Colorado Boulder
Table 4

University of Illinois
Table 11

University of Texas, Austin
Table 6

University of Wisconsin
Table 3

Virginia Commonwealth University
Table 5

Virginia Tech/Wake Forest
Table 10

University of Washington Campus Tour

Join us for exclusive UW Bioengineering research lab tours at their newest facilties

Transportation Provided
The bus pick up location will be:

WA State Convention Center
One Convention Place
Level 1 South

Thursday, Sept. 26
1:30-3:30 p.m.
Choose from these concurrent tours:

1) UW Campus (Foege BioE Building and MolES)
2) South Lake Union

Friday, Sept. 27
2:30-4:30 p.m.
Choose from these concurrent tours:

1) UW Campus (Foege BioE Building and MolES)
2) South Lake Union

About the Facilities

William H. Foege Building: Home to the UW Bioengineering Department and UW Genome Sciences, this 265,000 square-foot facility features a design that encourages collaboration, including coffee lounges and lobbies with whiteboards, and highly advanced lab spaces.

Molecular Engineering & Sciences Institute (MolES): Opened in fall 2012, the state-of-the-art MolES building was specially sited to minimize vibration and electromagnetic interference to permit usage of sensitive instrumentation. It features an open layout for shared research space and a dedicated molecular and nanotechnology instrumentation lab.

South Lake Union (SLU): UW Medicine's biomedical research hub houses more than 600 scientists from across UW disciplines. The four-building lab complex features an eco-friendly, award-winning design and high-end imaging and analysis facilities.

Please note space is limited.

To register or learn more about the labs included on the tours, contact Charles McLien at cwmclien@uw.edu.
Transportation provided

2013 Awards Recipients

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

Robert A. Pritkzer Distinguished Award Lecture

Ashutosh Chilkoti, PhD
Duke University

Distinguished Achievement Lecture

Sue Van
Wallace H. Coulter Foundation

NIBIB Lecture

W. Mark Saltzman, PhD
Yale University

Rita Schaffer Young Investigator Award Lecture

Susan N. Thomas, PhD
Georgia Institute of Technology

Diversity Award Lecture

Cornell University

Distinguished Service Award

Richard Waugh, PhD
University of Rochester

Annals of Biomedical Engineering (ABME) Awards

Most Downloaded and Most Cited Article

June 2012, Volume 40, Issue 6, pp 1339-1355

Patterning Methods for Polymers in Cell and Tissue Engineering
Hong Nam Kim[1], Do-Hyun Kang[1], Min Sung Kim[1], Alex Jiao[2], Deok-Ho Kim[2] and Kahp-Yang Suh[1]
(1)School of Mechanical and Aerospace Engineering, Seoul National University, Seoul, 151-742, Korea(2)Department of Bioengineering, University of Washington, Seattle, WA 98195, USA

Editor's Choice Award

March 2012, Volume 40, Issue 3, pp 750-761

Mitral Valve Annuloplasty--A Quantitative Clinical and Mechanical Comparison of Different Annuloplasty Devices
Manuel K. Rausch[1], Wolfgang Bothe[2], John-Peder Escobar Kvitting[2], Julia C. Swanson[2], D. Craig Miller[2] and Ellen Kuhl[1, 2, 3]
(1)Department of Mechanical Engineering, Stanford University, 496 Lomita Mall, Stanford, CA 94305, USA(2)Department of Cardiothoracic Surgery, Stanford University, 300 Pasteur Drive, Stanford, CA 94305, USA(3)Department of Bioengineering, Stanford University, 496 Lomita Mall, Stanford, CA 94305, USA?.

Medtronic

Medtronic's Excellence in Modeling Award (MEMA)

Douglas White
Georgia Institute of Technology

Medtronic's Excellence in Biomaterials Award (MEBA)

Jonathan Lam
University of California, Los Angeles

BMES Extended Abstract: Design and Research Awards:

Graduate Students

Tom Bongiorno
Georgia Institute of Technology

Jaideep Dudani
University of California, Los Angeles

Jinsung Hong
Georgia Institute of Technology

Gaurav Kaushik
University of California, San Diego

Michael Mitchell
Cornell University

Colin Paul
Johns Hopkins University

Undergraduate Students

Jared Barfknecht
Milwaukee School of Engineering

Rebecca Byler
Georgia Institute of Technology

Zhannetta Gugel
University of Pittsburgh

Cameron Nemeth
University of Washington

George Sun
University of California, Berkeley

Ariel Yang
State University of New York at Stony Brook

NIBIB Design by Biomedical Undergraduate Teams (DEBUT) Challenge Award Winners

Category: Diagnostic Devices/Methods, First Prize: $10,000

Personalized Monitoring of Enzyme Dynamics (P-MED)
University of California Los Angeles
Jaideep Dudani, Derek Go, Ankit Gupta, Gayane Kocharyan, Roxanne Loo, and Nova Wang

Category: Therapeutic Devices/Methods, First Prize: $10,000

Microflora Refinement System
Dartmouth College
Alison Stace-Naughton, Pauline Schmit, Laura Taylor Gray, and Jen Freise

Category: Technology to Aid Underserved Populations and Individuals with Disabilities, First Prize: $10,000

IV DRIP: Accurate, Low-cost, Mechanical Device to Regulate Intravenous (IV) Fluid Delivery for Children in the Developing World
Rice University
Bailey Flynn, Matthew Nojoomi, Michael Pan, Kamal Shah, and Erica Skerrett

More information can be found at http://www.nibib.nih.gov/training-careers/undergraduate-graduate/design-biomedical-undergraduate-teams-debut-challenge/2013-design-biomedical-undergraduate-teams-debut-challenge-winners#overlay-context=training-careers/undergraduate-graduate/design-biomedical-undergraduate-teams-debut-challenge/2013-design-biomedical-undergraduate-teams-debut-challenge-winners.

BMES Student Chapter Awards

2013 Outstanding Achievement Awards
BMES Student Chapter at University of California at Davis

2013 Commendable Achievement Awards
BMES Student Chapter at Johns Hopkins University

2013 Outreach Program Awards
BMES Student Chapter at Stony Brook University

2013 Outstanding Mentoring Award
BMES Student Chapter at Ohio State University

2012 Fleetest Feet Award
BMES Student Chapter - Virginia Tech/Wake Forest University
69 Students – 28,128 Miles

CONGRATULATIONS TO THE BMES FELLOWS CLASS OF 2013!

ASHUTOSH CHILKOTI, PHD
Duke University

JANE GRANDE-ALLEN, PHD
Rice University

MELISSA KNOTHE TATE, PHD
University of New South Wales, Sydney

SHELLY SAKIYAMA-ELBERT, PHD
Washington University – St. Louis

THOMAS WEBSTER, PHD
Northeastern University

BRUCE WHEELER, PHD
University of Florida

JOYCE WONG, PHD
Boston University

BMES Fellow status is awarded to members who demonstrate exceptional achievements and experience in the field of biomedical engineering, and a consistent record of membership and participation in the Society.

HOSTED RECEPTIONS

Hosted Receptions

Sheraton Seattle

Thursday, September 26

Individual organizations have set their own times for their private receptions. Please consult your invitation for the specific time. Generally receptions are from 8:00-9:30pm.

Arizona State University
Boren (4th floor)

Cornell University*
Grand Ballroom A (2nd floor)

Georgia Tech University/Emory University*
Grand Ballroom B (2nd floor)

Johns Hopkins University*
Willow A (2nd floor)

Marquette University
Greenwood (3rd floor)

Northeastern University
Ravenna (3rd floor)

Peking University
Kirkland Room (3rd floor)

Rennselaer Polytechnic Institute*
Metropolitan A (3rd floor)

Rice University
Aspen (2nd floor)

University of California Berkeley Bioengineering
Redwood (2nd floor)

University of California, Irvine *
Madrona Room (2nd floor)

University of California Los Angeles*
Ballard (3rd floor)

University of California San Diego
Leschi (3rd floor)

University of Colorado Boulder
University (4th floor)

University of Florida
J. Craydon Pruitt Family Department of Biomedical Engineering Issaquah (3rd floor)

University of Illinois at Urbana-Champaign
Metropolitan B (3rd Floor)

Peking University
Kirkland (3rd Floor)

University of Pennsylvania
Jefferson (4th Floor)

University of Pittsburgh
Cedar (2nd floor)

University of Rochester*
Columbia (4th floor)

University of Southern California
Juniper (2nd floor)

University of Texas Austin
Willow B (2nd floor)

University of Washington
Citrrus Ballroom (35th floor)

Vanderbilt University*
Diamond (1st floor)

Whitaker International Program
Capitol Hill (3rd Floor)

*Unless otherwise noted by * these receptions are open to alumni, supporters & friends of the university/ organization. Attendees are invited to stop by.*

2013 TRACK CHAIRS

Bioinformatics and Systems Biology

Orly Alter
University of Utah

Biomaterials

Jason Burdick
University of Pennsylvania

Helen Lu
Columbia University

Biomechanics

Ed Guo
Columbia University

Robert Tranquillo
University of Minnesota

Biomedical Engineering Education

Angelique Louie
University of California, Davis

Conrad Zapanta
Carnegie Mellon University

Biomedical Imaging and Optics

Andreas Hielscher
Columbia University

Elisa Konofagou
Columbia University

Cancer Technologies

Jennifer Cochran
Stanford University

Denis Wirtz
Johns Hopkins University

Cardiovascular Engineering

Milica Radisic
University of Toronto

George Truskey
Duke University

Cellular and Molecular Bioengineering

Tejal Desai
University of California San Francisco

David Schaffer
University of California Berkeley

Device Technologies and Biomedical Robotics

David Kaplan
Tufts University

Keefe Manning
Pennsylvania State University

Drug Delivery

Guillermo Ameer
Northwestern University

Debra Auguste
City College of New York

Nano to Micro Technologies

Kevin Healey
University of California Berkeley

Luke Lee
University of California Berkeley

Neural Engineering

Shelly Sakiyama
Washington University - St. Louis

Deborah Leckband
University of Illinois

New Frontiers and Special Topics

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Georgia Institute of Technology

David Putnam
Cornell University

Respiratory Bioengineering

Susan Margulies
University of Pennsylvania

Dan Weiss
University of Vermont

Orthopedic and Rehabilitation Engineering

Clark Hung
Columbia University

Johnna Temenoff
Georgia Institute of Technology

Stem Cell Engineering

Sharon Gerecht
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Adam Engler
University of California San Diego

Tissue Engineering

Warren Grayson
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Yadong Wang
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Translational Biomedical Engineering

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Undergraduate Research (REU)

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Thank you to our reviewers for their time and effort:

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Shelly Sakiyama-Elbert
Sarah Stabenfeldt
Qi Wang
Stephanie Willerth
Justin Williams

NEW FRONTIERS AND SPECIAL TOPICS

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Nassir Mokarram
David Putnam
Tarun Saxena

ORTHOPEDIC AND REHABILITATION ENGINEERING

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Nadeen Chahine
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John Fisher
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Kurt Kasper
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Danial Shahmirzadi
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Siddhartha Sikdar
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Sonya Sonnenberg
Sarah Stabenfeldt
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Yun Wang
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Hui (Sunny) Zhang
Noel Ziebarth

PROGRAM

THURSDAY, September 26

TODAY'S HIGHLIGHTS

PLATFORM SESSIONS Thurs-1 8:00am - 9:30am
See pages 66-71, WSCC

EXHIBIT HALL OPEN 9:30am - 5:00pm
WSCC, Exhibit Hall 4AB

POSTER SESSION Thurs A 9:30am - 1:00pm
WSCC, Exhibit Hall 4AB

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

PLENARY SESSION
10:30am - 12noon
WSCC, Ballroom 6E
Robert A. Pritzker Distinguished Lecture
SOLVING DRUG DELIVERY PROBLEMS BY GENETICALLY ENGINEERED POLYPEPTIDES
Ashutosh Chilkoti, PhD

Celebration of Minorities in BME Luncheon 12noon - 1:15pm
Additional ticket purchase required
WSCC, Ballroom 6A

PLATFORM SESSIONS Thurs-2 1:30pm - 3:00pm
See pages 102-108, WSCC

POSTER SESSION Thurs B 1:30pm - 5:00pm
WSCC, Exhibit Hall 4AB

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

PLATFORM SESSIONS Thurs-3 4:00pm - 5:30pm
See pages 109-114, WSCC

BMES State of the Society, Town Hall & Award Ceremony 5:45pm - 7:15pm
WSCC, Ballroom 6E

Hosted Receptions–Sheraton Seattle
See page 60 for list

Thursday, September 26, 2013

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

Track: Tissue Engineering
OP - Thurs - 1 – 1 - Room 6B

Bio-Inspired Materials for the Treatment of Arterial Disease

Chairs: Donald Freytes, Keith Gooch

8:00AM
Bio-Inspired Materials for the Treatment of Arterial Disease *(Invited)*
E. L. CHAIKOF[1]
[1]Harvard Medical School, Boston, MA

8:30AM
One-Year Follow-up of Host Remodeling of Rapidly Degradable Synthetic Arterial Grafts
R. A. ALLEN[1], W. WU[1,2], M. YAO[1], D. DUTTA[1,3], X. DUAN[1], T. N. BACHMAN[1], H. C. CHAMPION[1,3], D. B. STOLZ[1], A. M. ROBERTSON[1,4], K. KIM[1,3], J. S. ISENBERG[1], AND Y. WANG[1,4]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Yale University, New Haven, CT, [3]UPMC, Pittsburgh, PA, [4]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

8:45AM
Engineered Heart Tissue Using Polyethylene Glycol Hydrogel
J-L. RUAN[1], N. L. TULLOCH[1], S. BHANDARI[1], P. D. MARINER[2], K. S. ANSETH[2], AND C. E. MURRY[1]
[1]University of Washington, Seattle, WA, [2]University of Colorado, Boulder, CO

9:00AM
Cell-Derived Protein Delivery: Paracrine Delivery of Molecular Signals in Dual-Cell 3D Protein Gels
J. W. ANDREJECSK[1], W. G. CHANG[1], J. S. POBER[1], AND W. M. SALTZMAN[1]
[1]Yale University, New Haven, CT

9:15AM
CXCR4-overexpressing ADSCs Enhanced Angiogenesis and Tissue Salvage in a Murine Model of Hindlimb Ischemia
L. DEVEZA[1], J. CHOI[1], J. LEE[1], N. HUANG[1], J. COOKE[1], AND F. YANG[1]
[1]Stanford University, Stanford, CA

Track: Biomaterials
OP - Thurs - 1 – 2 - Room 6C

Micro and Nanostructured Materials I

Chairs: Gary Bowlin, Helen Lu

8:00AM
Implantable and Degradable Optical and Electronic Medical Devices
D. KAPLAN[1]
[1]Tufts University, Medford, MA

8:30AM
Bioactive Silicate Nanoplatelets for Osteogenic Differentiation of Human Mesenchymal Stem Cells
A. K. GAHARWAR[1,2], S. M. MIHAILA[2,3], A. SWAMI[1], A. PATEL[2], S. SANT[2], R. L. REIS[3], A. MARQUES[3], M. GOMES[3], AND A. KHADEMHOSSEINI[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Harvard University, Cambridge, MA, [3]University of Minho, Guimarães, Portugal

P = Poster Session
OP = Oral Presentation

8:45AM
Substrate Topography Shapes The Functional Neurons Obtained by Direct Reprogramming of Fibroblasts
K. Kulangara[1], A. F. Adler[1], H. Wang[1], M. Chellappan[1], E. Hammett[1], R. Yasuda[1,2], and K. W. Leong[1]
[1]*Duke University, Durham, NC,* [2]*Max Planck Institute Florida, Jupiter, FL*

9:00AM
Nanocomposite Gold-Silk Nanofibers
T. Cohen-Karni[1,2], K. Jeong[1,2], G. Reznor[2], M. Mustata[3], M. Wanunu[3], R. Langer[1], and D. S. Kohane[2]
[1]*MIT, Cambridge, MA,* [2]*Boston Children's Hospital, Boston, MA,* [3]*Northeastern University, Boston, MA*

9:15AM
Direct Laser Writing of Three Dimensional Microscale Features in Silk Fibroin Hydrogels
M. Applegate[1], A. Mitropoulos[1], B. Marelli[1], and F. Omenetto[1]
[1]*Tufts University, Medford, MA*

Track: Biomaterials
OP - Thurs - 1 – 3 - Room 606
Biomaterials for Immunoengineering I

Chairs: Chris Jewell, Ben Keselowsky

8:00AM
Biomaterial-Based Immunoengineering *(Invited)*
J. Babensee[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

8:30AM
Gene-Releasing Scaffolds for Immunomodulation
R. M. Gower[1], S. M. Azarin[1], C. F. Ricci[1], X. Zhang[1], and L. D. Shea[1]
[1]*Northwestern University, Chicago, IL*

8:45AM
Amphiphile-Based Programming of Immunity by Molecular Self-Delivering Vaccines
H. Liu[1] and D. Irvine[1,2]
[1]*MIT, Cambridge, MA,* [2]*Howard Hughes Medical Institute, Chevy Chase, MD*

9:00AM
Particulate Delivery of Small-Molecule Immunomodulators to Enhance a Liposomal HIV Epitope Vaccine
M. Hanson[1], W. Abraham[1], and D. J. Irvine[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Howard Hughes Medical Institute, Chevy Chase, MD*

9:15AM
A Microparticle-Based Vaccine for Prevention of Type 1 Diabetes
J. S. Lewis[1], M. Carstens[1], N. Dolgova[1], C-Q. Xia[1], M. Clare-Salzer[1], and B. Keselowsky[1]
[1]*University of Florida, Gainesville, FL*

Track: Biomechanics
OP - Thurs - 1 – 4 - Room 607
Cellular and Molecular Biomechanics I

Chairs: Dino Di Carlo, Susan Margulies

8:00AM
HER3-mediated Permeability of Alveolar Epithelial Cells in Stretch Induced Lung Injury
M. J. Song[1], N. Davidovich[1], N. Yehya[1], G. G. Lawrence[1], and S. S. Margulies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:15AM
Quantifying Structural and Functional Changes in Cardiac Cells in an *In Vitro* Model of Diabetic Cardiomyopathy
J. Michaelson[1] and H. Huang[1]
[1]*Columbia University, New York, NY*

8:30AM
In Vitro Estimation of Compressive Damage Threshold of Muscle Cells for Deep Tissue Injuries
Y. Yao[1], S. Wong[1], L. Bian[1], and A. Mak[1]
[1]*The Chinese University of Hong Kong, Hong Kong, China, People's Republic of*

8:45AM
Shaping the Vertebrate Eye: Mechanics of Optic Cup Formation
A. Oltean[1], D. C. Beebe[2], and L. A. Taber[1]
[1]*Washington University in St. Louis, St Louis, MO,* [2]*Washington University School of Medicine, St. Louis, MO*

9:00AM
AKAPs Mediate Sickle Cell Disease Erythrocyte Adhesion via BCAM/Lu
J. L. Maciaszek[1], B. Andemariam[2], and G. Lykotrafitis[1]
[1]*University of Connecticut, Storrs, CT,* [2]*University of Connecticut Health Center, Farmington, CT*

9:15AM
Effect of Pseudopodial Extensions on Neutrophil Hydrodynamics and Adhesion Binding
A. Rocheleau[1], W. Wang[1], and M. King[1]
[1]*Cornell University, Ithaca, NY*

Track: Biomechanics
OP - Thurs - 1 – 5 - Room 608
Orthopaedic and Dental Biomechanics I

Chairs: Ed Guo, David Kohn

8:00AM
Theoretical and Computational Modeling of Tissue Growth Mechanics with Applications to Quantitative Cartilage Tissue Engineering *(Invited)*
G. Ateshian[1]
[1]*Columbia University, New York, NY*

8:30AM
Investigation of Trachea Cartilage Viscoelasticity
S. Biechler[1], B. Kornis[1], J. Lusk[1], and S. Williams[1]
[1]*Bose Corporation, Eden Prairie, MN*

8:45AM
A Magnesium-Based Ring for Repair of an Injured Anterior Cruciate Ligament – *In Vitro* Cyclic Testing
H. Eason[1], K. Farraro[1], N. Sasaki[1], and S. Woo[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

9:00AM
Glenoid Loading and Stability of the Inlay versus Onlay Shoulder Implant Systems
B. T. Przestrzelski[1], N. Njinimbam[1], R. Hawkins[2], G. Colbath[2], J. Gagliano[2], and J. DesJardins[1]
[1]*Clemson University, Clemson, SC,* [2]*Steadman Hawkins Clinic of the Carolinas, Greenville, SC*

9:15AM
Effect of Intrafibrilar Mineralization on the Mechanical Behavior of Bone
J. Samuel[1], C. Shome[1], and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

Track: Cancer Technologies
OP - Thurs - 1 – 6 - Room 609
Bioengineering of Cancer I

Chairs: Jennifer Cochran, Matthew Lazzara

8:00AM
AXL Overexpression as a Mechanism for Resistance Against ErbB-Targeted Therapeutics in Triple Negative Breast Cancer *(Invited)*
D. A. Lauffenburger[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

8:30AM
Imbalanced Oncogenic Signaling Initiated by Structurally Distinct Mutants of EGFR in Lung and Brain Cancers
M. J. Lazzara[1], C. Furcht[1], J. Buonato[1], and A. Walsh[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:45AM
Genetic Pathway Analysis for Mechanics-induced Colon Cancer Metastasis
X. Tang[1], T. Kuhlenschmidt[1], Q. Li[1], H. Chen[1], M. Kuhlenschmidt[1], and T. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

9:00AM
Interstitial Fluid Flow Stimulates Invasion of both ErbB2-overexpressing Breast Cancer Cells and Acini
A. M. Tchafa[1], M. J. Reginato[2], and A. C. Shieh[1]
[1]*Drexel University, Philadelphia, PA,* [2]*Drexel University College of Medicine, Philadelphia, PA*

9:15AM
Loss of Lamin B2 Expression Enhances 3D Migration in HT180 Fibrosarcoma
U. S. Jonnalagadda[1], C. M. Denias[1], M. Krause[2], K. Wolf[2], and J. Lammerding[1]
[1]*Cornell University, Ithaca, NY,* [2]*Radboud University Nijmegen Medical Center, Nijmegen, Netherlands*

Track: Cardiovascular Engineering
OP - Thurs - 1 – 7 - Room 612
Cardiac Electrophysiology and Mechanics

Chairs: Nenad Bursac, Naomi Chesler

8:00AM
Engineered Somatic Cells for Enhancement and Studies of Cardiac Electrophysiology *(Invited)*
N. Bursac[1]
[1]*Duke University, Durham, NC*

8:15AM
Elucidating the Mechanical Role of the Intercalated Disc in Age-Associated Heart Failure
G. Kaushik[1], A. Sessions[1], A. Spenlehauer[2], M. Nishimura[3], K. Ocorr[3], R. Bodmer[3], A. Cammarato[4], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Imperial College London, London, United Kingdom,* [3]*Sanford-Burnham Medical Research Institute, La Jolla, CA,* [4]*Johns Hopkins University, Baltimore, MD*

8:30AM
Right Ventricular Adaptation to Pulmonary Hypertension in a Rat Model
M. R. Hill[1], D. Valdez-Jasso[2], M. A. Simon[2], H. C. Champion[2], and M. S. Sacks[1]
[1]*University of Texas, Austin, TX,* [2]*University of Pittsburgh, Pittsburgh, PA*

8:45AM
Can the Single-Beat Method be Used to Assess Right Ventricular Contractility in Different Species?
A. Bellofiore[1], F. Omid[1], D. Schreier[1], T. A. Hacker[1], G. Song[1], M. L. Bates[1], H. B. Kellihan[1], D. W. Consigny[1], C. J. Francois[1], and N. C. Chesler[1]
[1]*University of Wisconsin-Madison, Madison, WI*

9:00AM
Optimizing Ultrasound Properties for Ultrasound Current Source Density Imaging of the Heart
Q. Li[1], Y. Qin[1], P. Ingram[1], and R. Witte[1]
[1]*University of Arizona, Tucson, AZ*

9:15AM
Identifying Dynamic Entrapment in a High-Dimensional Complex Nonlinear System via Coarse-Grain Graph Reduction: Implications for Cardiac Arrhythmia
O. R. Bates[1], J. H. Bates[2], B. Suki[1], and P. S. Spector[2]
[1]*Boston University, Boston, MA,* [2]*University of Vermont, Burlington, VT*

track sponsored by Edwards

Track: Cellular and Molecular Bioengineering
OP - Thurs - 1 – 8 - Room 604
Mechanotransduction I

Chairs: Sanjay Kumar, Cynthia Reinhart-King

8:00AM
OVERVIEW TALK - Cellular and Molecular Bioengineering
D. Schaffer[1], T. Desai[2]
[1]*University of California, Berkeley, CA,* [2]*University of California, San Francisco, CA*

8:15AM
Cytoskeletal Connectivity to the Nucleus Regulates MSC Nuclear Strain Transfer and Mechanotransduction
T. P. Driscoll[1], S. Heo[1], Z. E. Shurden[1], and R. L. Mauck[1]
[1]*University of Pennsylvania, Philadelphia, P*

8:30AM
Getting the (Mechanical) Message Across Cell-Cell Junctions
D. Leckband[1], I. Muhamed[1], A. Barry[1], J. Wu[1], H. Tabdili[1], C. Gottardi[2], J. deRooij[3], and N. Wang[1]
[1]*University of Illinois, Urbana, IL,* [2]*Northwestern University College of Medicine, Chicago, IL,* [3]*Hubrecht Institute, Utrecht, Netherlands*

8:45AM
Glycocalyx Core Protein-Dependent Endothelial Mechanotransduction
E. E. Ebong[1,2], D. C. Spray[1], and J. M. Tarbell[2]
[1]*Albert Einstein College of Medicine, New York, NY,* [2]*City College of New York, New York, NY*

9:00AM
Vasculogenesis Dynamics and Integrity are Altered in Response to 3D Matrix Stiffening
B. N. Mason[1], J. Huynh[1], L. J. Bonassar[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

9:15AM
Migration-Dependent Regulation of Cellular Mechanical Output Through a FAK- and Phosphopaxillin-Dependent Mechanism
S. Chang[1], A. Rape[1], W-H. Guo[1], and Y-L. Wang[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P = Poster Session
OP = Oral Presentation

Track: Cellular and Molecular Bioengineering
OP - Thurs - 1 – 9 - Room 611

Cell Motility I

Chairs: Manu Platt, Ankur Singh

8:00AM
Role of Ion Channels and Aquaporins in Cell Migration in Confined Microenvironments
K. M. Stroka[1], H. Jiang[1], S. X. Sun[1], and K. Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD*

8:15AM
3D Matrix Microstructure Directs Cell Migration and MT1-MMP Utility via Protrusion Dynamics
S. I. Fraley[1], P-H. Wu[2], L. He[2], Y. Feng[3], G. Longmore[3], and D. Wirtz[2]
[1]*The Johns Hopkins School of Medicine, Baltimore, MD,* [2]*The Johns Hopkins University, Baltimore, MD,* [3]*Washington University School of Medicine, St. Louis, MO*

8:30AM
T Cells Sense Biophysical Cues Using Lamellipodia and Filopodia to Optimize Intraluminal Path Finding
K. Song[1] and J. Doh[1]
[1]*POSTECH, Pohang, Korea, Republic o*

8:45AM
Fibronectin on PDMS Elicits a Well-Spread Morphology in Migrating hNeutrophils via ß2 Integrin
S. J. Henry[1], J. C. Crocker[1], and D. A. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

9:00AM
The Critical Role of EB1 and Dynein in Three-Dimensional Cell Migration
A. Giri[1,2], H. Jayatilaka[1], N. Trenton[1], and D. Wirtz[1,2]
[1]*Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins Engineering in Oncology Center, Johns Hopkins University, Baltimore, MD*

9:15AM
Characterization and Modeling Cancer Cell Motility in 2D and 3D
P-H. Wu[1], A. Giri[1], G. Lang[2], and D. Wirtz[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*The George Washington University, Washington, DC*

Track: Device Technologies and Biomedical Robotics
OP - Thurs - 1 – 10 - Room 602

Biosensors I

Chairs: Alexander Revzin, John Framptona

8:00AM
Enrichment and Detection of Blood Biomarkers with Microdevices *(Invited)*
S. Zheng[1]
[1]*Pennsylvania State University, University Park, PA*

8:30AM
Electroporation-Delivered Protein Biosensors for Study of Molecular Activity
C. Sun[1], Y. Wang[2], Y. Wang[2], and C. Lu[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of California, San Diego, La Jolla, CA*

8:45AM
Optical-microfluidic Platform for Real-time Monitoring of Live Cell Secretory Activities Using Fano Resonance in Gold Nanoslits
S-H. Wu[1], K-L. Lee[2], A. Chiou[1], P-K. Wei[2], and X. Cheng[3]
[1]*Institute of Biophotonics, National Yang-Ming University, Taipei, Taiwan,* [2]*Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan,* [3]*Bioengineering Program, Lehigh University, Bethlehem, PA*

9:00AM
Implantable Optical Continuous Lactate Sensor in Cyanide Poisoning Model
J. Weidling[1] and E. Botvinick[2]
[1]*University of California Irvine, Irvine, CA,* [2]*University of Califonia Irvine, Irvine, CA*

9:15AM
A Low-Power CMOS pH Monitoring System
R. Croce Jr.[1], S. Vaddiraju[1], A. Legassey[1], F. Papadimitrakopoulos[2], and F. Jain[3]
[1]*Biorasis, Inc., Storrs, CT,* [2]*The University of Connecticut, Storrs, CT,* [3]*University of Connecticut, Storrs, CT*

track sponsored by Medtronic

Track: Bioinformatics, Computational and Systems Biology
OP - Thurs - 1 – 11 - Room 615

Genomics, Transcriptomics and Proteomics I

Chairs: Orly Alter, Phil Green, Matteo Pellegrini

8:00AM
Discovery of Mechanisms and Prognosis of Cancers from Matrix and Tensor Modeling of Large-Scale Molecular Biological Data *(Invited)*
O. Alter[1]
[1]*University of Utah, Salt Lake City, UT*

8:30AM
How Much of the Human Genome is Functional? *(Invited)*
P. Green[1]
[1]*University of Washington, Seattle, WA*

9:00AM
Transgenerational Inheritance of DNA Methylation *(Invited)*
M. Pellegrini[1]
[1]*University of California, Los Angeles, CA*

Track: Orthopaedic and Rehabilitation Engineering
OP - Thurs - 1 – 12 - Room 616

Animal Models in Musculoskeletal Diseases

Chairs: Kyle Allen, Catherine Kuo

8:00AM
Structure-Property Relationships of Tendon During Embryonic Development *(Invited)*
C. K. Kuo[1,2]
[1]*Tufts University, Medford, MA,* [2]*Tufts University School of Medicine, Boston, MA*

8:30AM
The Skeleton As A Complex System: Emergent Bone Loss Signatures Following Neuromuscular Injury In Zebrafish
P. Huber[1], B. J. Ausk[1], E. M. Gardiner[1], S. D. Bain[1], S. Srinivasan[1], T. S. Gross[1], and R. Y. Kwon[1]
[1]*University of Washington, Seattle, WA*

8:45AM
Intra-Articular Nerve Growth Factor is Both Necessary and Sufficient for the Development of Joint Pain and Contributes to Central Sensitization
J. KRAS[1] AND B. A. WINKELSTEIN[1]
[1]*University of Pennsylvania, Philadelphia, PA*

9:00AM
Associating Gait Abnormalities to Histological Features of Joint Destruction in a Rat Model of Knee Osteoarthritis
H. KLOEFKORN[1], B. JACOBS[1], A. LOYE[1], AND K. ALLEN[1]
[1]*University of Florida, Gainesville, FL*

9:15AM
Bioactive Coatings to Improve Allograft Incorporation Evaluated in eGFP Chimeric Rats
A. DAS[1], Y. LIN[1], Q. CUI[1], AND E. BOTCHWEY[2]
[1]*UVA, Charlottesville, VA,* [2]*Georgia Institute of Technology, Atlanta, GA*

Track: Biomedical Imaging and Optics
OP - Thurs - 1 – 13 - Room 618
Fluorescence Imaging

Chairs: Yu Chen

8:00AM
Angled Fluorescence Laminar Optical Tomography for Imaging of Engineered Bone Constructs
C-W. CHEN[1], B-N. NGUYEN[1], J. P. FISHER[1], AND Y. CHEN[1]
[1]*University of Maryland, College Park, MD*

8:15AM
Optimization of Time Gate Selection for Bi-exponential Fluorescence Lifetime Imaging
T. OMER[1], N. SINSUEBPHON[1], L. ZHAO[1], X. INTES[1], AND J. HAHN[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

8:30AM
Concurrent Wide-field Multi-Color Fluorescence Imaging Using a Scanning Fiber Endoscope
C. YANG[1], V. HOU[1], L. Y. NELSON[1], AND E. J. SEIBEL[1]
[1]*University of Washington, Seattle, WA*

8:45AM
Detecting Metabolic Changes Associated with Oncoprotein Expression Using Endogenous Fluorescence
J. XYLAS[1], K. P. QUINN[1], A. VARONE[1], M. E. MCLAUGHLIN-DRUBIN[2], G. V. SRIDHARAN[1], K. LEE[1], K. MÜNGER[2], AND I. GEORGAKOUDI[1]
[1]*Tufts University, Medford, MA,* [2]*Harvard Medical School, Boston, MA*

9:00AM
A Compact Live Cell Imaging System with a Silo-Filter Fluorescence Image Sensor
S. LEE[1], X. OU[1], J. E. LEE[2], AND C. YANG[1]
[1]*California Institute of Technology, Pasadena, CA,* [2]*Korea Research Institute of Standards and Science, Daejeon, Korea, Republic of*

9:15AM
Synthesis and Characterization of Photoswitchable Fluorophores for Super Resolution Microscopy
A. M. BITTEL[1], A. NICKERSON[1], L-J. LIN[1], X. NAN[1], AND S. L. GIBBS[1]
[1]*Oregon Health and Science University, Portland, OR*

Track: Nano to Micro Technologies
OP - Thurs - 1 – 14 - Room 619
BioMEMS I

Chairs: David Gracias, Elliot Hui

8:00AM
Using Microfabrication to Construct a "Body-on-a-Chip" *(Invited)*
M. SHULER[1]
[1]*Cornell University, Ithaca, NY*

8:30AM
Capturing and Manipulating Single Cells in 3D with Thermo-Responsive Microgrippers
K. E. MALACHOWSKI[1], M. JAMAL[1], AND D. GRACIAS[1]
[1]*Johns Hopkins University, Baltimore, MD*

8:45AM
Juxtacrine-Permeable Membranes for Separable Co-Culture
M. Y. KIM[1], D. J. LI[1], AND E. E. HUI[1]
[1]*University of California, Irvine, Irvine, CA*

9:00AM
Focal Microfluidic Delivery of Soluble Signals to the Basal Side of Micropatterned Cells
J. CHENG[1], C. G. SIP[1], P. R. LINDSTEDT[1], AND A. FOLCH[1]
[1]*University of Washington, Seattle, WA*

9:15AM
Polystyrene Microposts for the Study of Cellular Traction Forces
K. BIELAWSKI[1] AND N. SNIADECKI[1]
[1]*University of Washington, Seattle, WA*

Track: Drug Delivery
OP - Thurs - 1 – 15 - Room 620
Novel Materials and Self Assembly

Chairs: Guillermo Ameer, Rebecca Carrier

8:00AM
Nanonets: A New Platform for Nano to Micro-scale Delivert of Therapeutics *(Invited)*
J. YANG[1], G. AMEER[1], AND R. VAN LITH[1]
[1]*Northwestern University, Evanston, IL*

8:30AM
Depots of Glucagon-Like Peptide-1 Fused to a Thermosensitive Polypeptide Can Be Stabilized By Lowering the Transition Temperature
K. LUGINBUHL[1], X. LI[1], AND A. CHILKOTI[1]
[1]*Duke University, Durham, NC*

8:45AM
Enhanced Delivery of Chemotherapeutics Using Targeted Block Copolypeptide Vesicles
K. M. MAYLE[1], U-J. CHOE[1], A. R. RODRIGUEZ[1], B. S. LEE[1], A. T. YIP[1], T. J. DEMING[1], AND D. T. KAMEI[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

9:00AM
Coacervate-based Co-delivery of VEGF and HGF Displays Synergistic Angiogenic Effects
H. AWADA[1], N. JOHNSON[1], AND Y. WANG[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P = Poster Session
OP = Oral Presentation

9:15AM

Inhibition of Pathogenic Angiogenesis Using a Hyaluronic Acid Based Multivalent VEGF Antagonist

E. Altiok[1], A. Jha[1], J. Santiago[1], W. Jackson[1], D. Schaffer[1], and K. Healy[1]

[1]University of California Berkeley, Berkeley, CA

Track: Neural Engineering
OP - Thurs - 1 – 16 - Room 613
Engineering the Neural Environment

Chairs: Sarah Stabenfeldt, Deanna M Thompson

8:00AM

Development of a Combinatorial, Biomaterial-Mediated Gene Therapy for Spinal Cord Regeneration

S. K. Seidlits[1], D. Margul[1], R. Boehler[1], A. Thomas[1], A. Goodman[1], T. He[1], T. Kukushliev[1], H. Tuinstra[1], B. Cummings[2], A. Anderson[2], and L. Shea[1]

[1]Northwestern University, Evanston, IL, [2]University of California Irvine, Irvine, CA

8:15AM

Conductive Single Walled Carbon Nanotube-Composite Hydrogels For Neural Engineering Applications

A. Koppes[1], K. Keating[1], A. McGregor[1], R. Koppes[1], C. McKay[1], J. Zuidema[1], C. Rivet[1], R. Gilbert[1], and D. Thompson[1]

[1]Rensselaer Polytechnic Institute, Troy, NY

8:30AM

A Tube-formed *in vitro* Blood-Brain-Barrier Model in Planar Microfluidics

H. Cho[1], J. Seo[1], K. Wong[1], K. Bong[1], K. Arai[1], E. H. Lo[1], and D. Irimia[1]

[1]Harvard Medical University/MGH, Charlestown, MA

8:45AM

SDF-1 -ECM Crosstalk and its Effect on Neural Stem Cell Fate

C. P. Addington[1], C. Pauken[1], M. Caplan[1], and S. Stabenfeldt[1]

[1]Arizona State University, Tempe, AZ

9:00AM

Generation of Enriched Human Neuronal Cells in 3D Fibrous Microenvironments By Direct Conversion of Induced Pluripotent Stem Cells

A. L. Carlson[1], N. K. Bennett[1], J. C. Moore[1], R. P. Hart[1], and P. V. Moghe[1]

[1]Rutgers, The State University of New Jersey, Piscataway, NJ

9:15AM

Molecular Mediators of Neurodegeneration at the Cortical-Tissue Device Interface

M. Ravikumar[1], S. Sunil[1], D. Hageman[1], W. Tomaszewski[1], and J. Capadona[1]

[1]Case Western Reserve University, Cleveland, OH

Track: New Frontiers and Special Topics
OP - Thurs - 1 – 17 - Room 614
Global Health

Chairs: David Putnam

8:00AM

Mobile Device for Disease Diagnosis and Data Tracking in Resource-Limited Settings

T. Laksanasopin[1], C. D. Chin[1], Y. Cheung[1], D. Steinmiller[2], V. Linder[2], E. Karita[3], J. van de Wijgert[4], R. Sahabo[5], J. E. Justman[5], W. El-Sadr[5], and S. K. Sia[1]

[1]Columbia University, New York, NY, [2]OPKO Diagnostics, Boston, MA, [3]Rwanda Zambia HIV Research Group, Project San Francisco, Kigali, Rwanda, [4]Project Ubuzima, Kigali, Rwanda, [5]Mailman School of Public Health, ICAP, Columbia University, New York, NY

8:15AM

Diagnosing Infectious Diseases Using Mobile Microscopy Systems: A Case Study Involving TB

N. A. Switz[1], C. D. Reber[1], A. Tapley[1,2], M. V. D'Ambrosio[1], J. L. Davis[2], A. Cattamachi[2], and D. A. Fletcher[1]

[1]University of California Berkeley, Berkeley, CA, [2]University of California San Francisco, San Francisco, CA

8:30AM

Neonatal Resuscitation in the Developing World

M. K. Hemani[1], A. Pigula[1], M. Lamberti[1], H. Jang[1], Y. Kim[1], A. Herrera[1], B. Gu[1], and B. Kim[1]

[1]Johns Hopkins University, Baltimore, MD

8:45AM

Paper-Based Detection of Synthetic Urinary Biomarkers for Low-Cost, Point-of-Care Diagnostics

G. A. Kwong[1], A. D. Warren[1], D. K. Wood[1,2], and S. N. Bhatia[1,3]

[1]MIT, Cambridge, MA, [2]University of Minnesota, Minneapolis, MN, [3]Howard Hughes Medical Institute, Chevy Chase, MD

9:00AM

Improving a Point-of-care Assay for Viruses Using an Aqueous Two-phase Polymer System

R. Y. Chiu[1], E. Jue[1], C. D. Yamanishi[1], B. M. Wu[1], and D. T. Kamei[1]

[1]University of California, Los Angeles, Los Angeles, CA

9:15AM

Microfluidic Mechanical Separation of Red Blood Cells for Early Malaria Diagnosis

R. Byler[1], G. Wang[1], A. Alexeev[1], J. Barnwell[2], and T. Sulchek[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Centers for Disease Control and Prevention, Atlanta, GA

Track: Biomedical Engineering Education
OP - Thurs - 1 – 18 - Room 603
New Approaches to BME Education

Chairs: Angelique Louie, Conrad Zapanta

8:00AM

1st International Biomedical Engineering – Innovation, Design & Entrepreneurship Alliance Workshop

J. H. Linehan[1,2], M. Bruzzi[3], J. B. Pietzsch[4], and P. G. Yock[2]

[1]Northwestern University, Evanston, IL, [2]Stanford University, Palo Alto, CA, [3]National University of Ireland Galway, Galway, Ireland, [4]Wing Tech, Inc., Freemont, CA

8:15AM

A Unique Dual Major Approach for Undergraduate Biomedical Engineering Education at Carnegie Mellon University

T. M. Przybycien[1], R. D. Tilton[1], Y-L. Wang[1], and C. M. Zapanta[1]

[1]Carnegie Mellon University, Pittsburgh, PA

8:30AM

Biodesign for First Year Students

P. Crago[1] and C. K. Drummond[2]

[1]Case Western Reserve Engineering, Cleveland, OH, [2]Case Western Reserve University, Cleveland, OH

8:45AM

Achievement Motivation Differences Between Bioengineering and Mechanical Engineering Students

A. N. Kirn[1] and L. C. Benson[1]

[1]Clemson University, Clemson, SC

9:00AM

The T-Shaped Biomedical Engineer: Connecting the TOP to the STEM

J. Tranquillo[1]

[1]Bucknell University, Lewisburg, PA

POSTER SESSION **ThA**

Thursday, September 26, 2013

9:30AM – 1:00PM

POSTER SESSION – THURS – A

Track: Biomaterials

Biomaterial Scaffolds

P – Th - A - 1

Macroporous Acroporous Cell-Laden Hydrogels Fabricated with Photocrosslinked Alginate for Tissue Engineering

O. Jeon[1], P. N. Dang[1], and E. Alsberg[1]

[1]Case Western Reserve University, Cleveland, OH

P – Th - A - 2

A 3D Alginate Scaffold to Promote Early Osteogenic Differentiation of Mouse Mesenchymal Stem Cells

B. H. McGowan[1] and J. Nagatomi[1]

[1]Clemson University, Clemson, SC

P – Th - A - 3

The Manipulation of Hydrogel Lumen Architecture for Potential Biomedical Applications

R. C. Thomas[1], P. Chung[1], and C. E. Schmidt[2]

[1]University of Texas at Austin, Austin, TX, [2]University of Florida, Gainesville, FL

P – Th - A - 4

Scaffold Stiffening and Vascular Stability

K. L. Chan[1], A. H. Khankhel[1], R. L. Thompson[1], K. H. Wong[1], J. G. Truslow[1], B. J. Coisman[1], and J. Tien[1]

[1]Boston University, Boston, MA

P – Th - A - 5

Collagen-Matrigel Scaffolds for Enhanced Pancreatic Differentiation from Human Embryonic Stem Cells

W. Wang[1], S. Jin[1], and K. Ye[1]

[1]University of Arkansas, Fayetteville, AR

P – Th - A - 6

A Novel Scaffold for Vascular Tissue Engineering

K. J. McHugh[1,2], S. L. Tao[3,4], and M. Saint-Geniez[2,5]

[1]Boston University, Boston, MA, [2]Schepens Eye Research Institute, Boston, MA, [3]Charles Stark Draper Laboratory, Inc., Cambridge, MA, [4]Current Affiliation: CooperVision, Inc., Pleasanton, CA, [5]Harvard Medical School, Boston, MA

P – Th - A - 7

Porous Poly (lactic-co-glycolic acid) Microspheres For *In Vitro* Drug Screening and Tissue Engineering Applications

J. U. Menon[1,2], A. E. Kuriakose[1,2], V. Sundaresan[1,2], and K. T. Nguyen[1,2]

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

P – Th - A - 8

Optimization of 2D Biological Scaffolds for Investigations on Ultrasound Mediated Drug Delivery

A. Aleid[1], A. Alassaf[1], O. C. Wilson, Jr.[1], P. Mehl[1], and V. Frenkel[1]

[1]Catholic University of America, Washington, DC

P – Th - A - 9

Response of Chitosan/PCL Naonofibers with Airway Epithelial Cells

N. Bhattarai[1], C. Mahoney[1], K. Xu[1], and J. Waterman[1]

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

P – Th - A - 10

Cellular Response of Chitosan Based Scaffolds with Mesangial Cells

S. Jones[1], M. McCullugh[1], E. Ongeri[1], and N. Bhattarai[1]

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

P – Th - A - 11

Dendritic Cells Response to Biomaterial Porous Scaffold

R. Chen[1] and J. D. Bryers[1]

[1]University of Washington, Seattle, WA

P – Th - A - 12

Electrospinning Extracellular Matrix Proteins

L. W. Place[1], V. Leszczak[1], K. Smith[1], N. S. Franz[1], B. Atkinson[2], K. C. Popat[1], and M. J. Kipper[1]

[1]Colorado State University, Fort Collins, CO, [2]AlloSource, Centennial, CO

P – Th - A - 13

Novel Decellularized Cartilage Nanocomposite Hydrogel for Injectable Tissue Engineering Scaffolds

E. Beck[1] and M. Detamore[1]

[1]University of Kansas, Lawrence, KS

P – Th - A - 14

An *In Vitro* Model for High-throughput Screening of Antifungals Against Invasive Candida albicans Biofilms

A. Srinivasan[1], C. M. Gupta[1], M. Agrawal[1], J. L. Lopez-Ribot[1], and A. K. Ramasubramanian[1]

[1]The University of Texas at San Antonio, San Antonio, TX

P – Th - A - 15

Inkjet Bioprinting of Solid Peroxide for Oxygen Releasing Scaffolds Construction

D. Reyna[1], J. Rodriguez-Devora[1], and T. Boland[1]

[1]University of Texas at El Paso, El Paso, TX

P – Th - A - 16

Insertion of PLA Film on Scaffold HA/TCP: *In Vitro* Test

L. R. Rodrigues[1,2], C. A. Zavaglia[2,3], and C. B. Lombello[1]

[1]UFABC, Santo André, Brazil, [2]INCT-BIOFABRIS, Campinas, Brazil, [3]FEM-UNICAMP, Campinas, Brazil

P – Th - A - 17

Biofabrication of 3D Collagen Scaffold Mimicking the *In Vivo* Tissue Architecture

V. Rodriguez-Rivera[1], R. Goodwin[2], J. W. Weidner[1], and M. J. Yost[3]

[1]University of South Carolina, Columbia, SC, [2]University of South Carolina-School of Medicine, Columbia, SC, [3]Medical University of South Carolina, Charleston, SC

P – Th - A - 18

An *In Vitro* and *In Vivo* Study of AuNP-Collagen Scaffolds

S. Grant[1], J. Zhu[1], R. Rone[1], L. Jimenez[1], and D. Grant[1]

[1]University of Missouri, Columbia, MO

P – Th - A - 19

Poly(lactic acid) Microbubbles as Stable Porogens for Tissue Engineered Scaffolds

P. A. Mountford[1], S. R. Sirsi[1], I. M. Baus[1], E. J. Kinzie[1], S. A. Etezazian[1], E. G. Lima[2], C. T. Hung[2], and M. A. Borden[1]

[1]University of Colorado Boulder, Boulder, CO, [2]Columbia University, New York, NY

P – Th - A - 20

Three Dimensional Hyaluronic Acid and Gelatin Hydrogels as an *In Vitro* Platform for Long-Term Monitoring of Glioblastoma Invasion

J. M. Heffernan[1,2], D. J. Overstreet[1], B. L. Vernon[1,2], and R. W. Sirianni[1,2]

[1]Barrow Neurological Institute, Phoenix, AZ, [2]Arizona State University, Tempe, AZ

P – Th - A - 21

Evaluating 3D Porous Geopolymers As Cancellous Bone Filling Biomaterials

P. M. Mehl[1], W. Gong[1], and I. L. Pegg[1]

[1]Catholic University of America, Washington, DC

P = Poster Session
OP = Oral Presentation

P – Th - A - 22
Nanopatterning Wrinkles into Biodegradable Materials for Aligning Heart Cells
S. Van[1], W. Turner[2], and K. McCloskey[2]
[1]*School of Natural Sciences, University of California, Merced, Merced, CA,* [2]*School of Engineering, University of California, Merced, Merced, CA*

P – Th - A - 23
CANCELLED BY AUTHOR

P – Th - A - 24
Tubular Esophageal Tissue Construct Bioengineered from Isolated Esophageal Smooth Muscle Cells
E. Zakhem[1,2] and K. N. Bitar[1,2]
[1]*Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC,* [2]*Wake Forest Institute for Regenerative Medicine, Winston Salem, NC*

P – Th - A - 25
Correlation Between Ultrasound Attenuation and Structural Properties of Porous Scaffolds Depends on the Porosity Level
L. Lin[1], L. Wu[1], and Y-X. Qin[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Th - A - 26
Scaffold Permeability Estimated Using Average Pore Characteristics is Useful in Pressure drop Predictions
J. T. Podichetty [1], A. Khalf[1], and S. V. Madihally[1]
[1]*Oklahoma State University, Stillwater, OK*

P – Th - A - 27
Aligned Polymer Nanofibers Modified with Extracellular Matrix Protein Binding Domains Enhance Motor Neuron Growth
J. E. Goodman[1,2], Y. I. Naim[1,2], E. W. Franz[1,2], M. K. Leach[1,3], A. Rastogi[1,2], S. J. Tuck[1,2], S. Ferris[1,2], and J. M. Corey*[1,2]
[1]*Geriatrics Research, Education, and Clinical Center, Veterans Affairs, Ann Arbor, MI,* [2]*Department of Neurology, Ann Arbor, MI,* [3]*Department of Biomedical Engineering, Ann Arbor, MI*

P – Th - A - 28
Development of a Novel Device for the Perfusion Driven Decellularization of Skeletal Muscle
B. Kasukonis[1] and J. Wolchok[1]
[1]*University of Arkansas, Fayetteville, AR*

P – Th - A - 29
Shear-Induced Prevention of Shunt Occlusion in a 3D Astrocyte Culture Model
C. Harris[1], K. Pearson[1], W. Shain[1,2], K. Trett[1], S. Browd[3,4], T. Clement[4], B. Lutz[2,4], and J. Relethford[4]
[1]*Seattle Children's Research Institute, Seattle, WA,* [2]*University of Washington, Seattle, WA,* [3]*Seattle Children's Hospital, Seattle, WA,* [4]*Aqueduct Neurosciences, Seattle, WA*

P – Th - A - 30
Development and Implementation of Artificial Ovary Using Multi-arm Poly-(ethylene glycol) Hydrogels
J. Kim[1] and A. Shikanov[1]
[1]*University of Michigan, Ann Arbor, MI*

Track: Biomaterials

Micro and Nano Structured Materials

P – Th - A - 31
Regenerative Integration of Percutaneous Devices Using Macrophage Modulating Elastomers
P. Pholpabu[1], P. Campbell[1], and C. J. Bettinger[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P – Th - A - 32
Multiscale Composite Alginate Hydrogels: A Platform Technology for Multifunctional Injectable Biomaterials
J. R. Roberts[1], D. Ritter[1], and M. McShane[1]
[1]*Texas A&M University, College Station, TX*

P – Th - A - 33
Endothelial Signaling on Micro- & Nano-Patterned Titanium
P. Vandrangi[1], R. Kozaka[1], S. Gott[1], M. P. Rao[1], and V. G. Rodgers[1]
[1]*University of California Riverside, Riverside, CA*

P – Th - A - 34
Molecular Level Control of Microengineered Matrices for Studying and Directing Cell Fate
K. A. Kilian[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P – Th - A - 35
Cytocompatibility of Three-Dimensional Macroporous Multiwalled Carbon Nanotube Scaffolds
G. Lalwani[1], Y. Talukdar[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Th - A - 36
In Vitro Cytotoxicity of Molybdenum Disulfide Nanoplatelets or Tungsten Disulfide Nanotubes
J. T. Rashkow[1], Y. Talukdar[1], G. Lalwani[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Th - A - 37
In situ Blow Spun PLGA Nanofibers as a Surgical Hemostatic
A. M. Behrens[1], M. J. Sikorski[1], W. Tutak[2], and P. Kofinas[1]
[1]*University of Maryland, College Park, MD,* [2]*American Dental Association Foundation, Gaithersburg, MD*

P – Th - A - 38
Blood Compatibility Study of Dysprosium Aerogels
D. Kolasinac[1], D. A. Rubenstein[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

P – Th - A - 39
Effect of Decreasing Nanoparticle Size on the Adherence of Staphylococcus aureus to ZnO/PVC Nanocomposites
B. M. Geilich[1] and T. Webster[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 40
Micropatterned Sensing Hydrogels for Detecting Protease Release from Cells
K. Son[1], D-S. Shin[1], T. Kwa[1], and A. Revzin[1]
[1]*UC Davis, Davis, CA*

P – Th - A - 41
Surface-Engineered Microfluidic Substrates for Screening of Exopolysaccharide Production and Composition in Microbial Systems
R. R. Hansen[1], J. P. Hinestrosa[1], J. L. Morrell-Falvey[2], B. S. Lokitz[1], J. M. Messman[1], and S. T. Retterer[1,2]
[1]*Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN,* [2]*Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, TN*

POSTER SESSION **ThA**

See page 21 for Poster floor plan

P – Th - A - 42
Transfer of Loads between Mineral and Fiber Phases in Bone
M. Ghali[1], D. Woodard[2], and K. Mitra[1]
[1]*Florida Institute of Technology, Melbourne, FL,* [2]*Kennedy Space Center, Melbourne, FL*

P – Th - A - 43
Implant Surface Modification with Titania Nanotubes for Enhanced Cell-Substrate Interlock
T. Shokuhfar[1]
[1]*Michigan Technological University/ University of Illinois at Chicago, Houghton, MI*

P – Th - A - 44
Preparation of a Nanotubular Polymer Replica for Reduced Catheter Infection
L. Liu[1], T. J. Webster[1], and B. Ercan[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 45
Novel and Inexpensive EPD Coating of Nano-HAP on Titanium-6,4 Leads to Increased Osteoblast Adhesion
G. Bhardwaj[1], D. Mathew[1], L. Sun[2], T. J. Webster[2], and G. Manivasagam[1]
[1]*VIT University, Vellore, India,* [2]*Northeastern University, Boston, MA*

P – Th - A - 46
Micropatterning of Polyvinyl Alcohol to Enhance Adhesion of Vascular Endothelial Cells
S. Goh[1,2], G. Pohan[2], M. F. Cutiongco[2], C. Le Visage[3], H. Low[1,4], and E. K. Yim[2,5]
[1]*Institute of Materials Research and Engineering, Singapore, Singapore,* [2]*National University of Singapore, Singapore, Singapore,* [3]*INSERM U698, Paris, France,* [4]*Singapore University of Technology and Design, Singapore, Singapore,* [5]*Mechanobiology Institute Singapore, Singapore, Singapore*

P – Th - A - 47
Living Vaccine Factories: Alginate Microcapsules for a Cell-Based HIV-1 Vaccine
H. R. Bennett[1], J. Phan[1], and K. A. Woodrow[1]
[1]*University of Washington, Seattle, WA*

P – Th - A - 48
Controllable Pore Growth in Degradable Orthopedic Fixation Device mMaterial
S. M. Devlin[1] and P. I. Lelkes[1]
[1]*Temple University, Philadelphia, PA*

P – Th - A - 49
Effective Myogenic Commitment of Stem Cells on Graphene Oxide Immobilized Micro-Patterned Substrates
A. Lee[1], S-Y. Kwak[1], Y-S. Lee[1], J-H. Kim[2], and N. Hwang[1]
[1]*Seoul National University, Seoul, Korea, Republic of,* [2]*Hanyang University, Ansan, Korea, Republic of*

P – Th - A - 50
Mouse Myoblast Alignment on 2D Wavy Patterns: Dependence on Feature Size and Cell-Cell Interaction
M. Grigola[1] and J. Hsia[2]
[1]*University of Illinois, Urbana,* [2]*University of Illinois, Urbana, IL*

Track: Cancer Technologies

Bioengineering Models of Cancer

P – Th - A - 51
Influence of ECM Structure on the Shear Stress Experienced by Cancer Cells during Interstitial Flow
R. Zielinski[1], V. Shukla[1], and S. N. Ghadiali[1]
[1]*The Ohio State University, Columbus, OH*

P – Th - A - 52
SynVivo-Tumor: Microfluidic Assay For Screening Drug Delivery Systems
A. Smith[1], C. Garson[1], I. Mills[1], J. Fewell[2], M. Matar[2], B. Prabhakarpandian[1], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*EGEN Inc., Huntsville, AL*

P – Th - A - 53
Engineered *In Vitro* Microtumors of Controlled Sizes as Models for Breast Cancer
S. Mukundan[1], V. Sant[1], and S. Sant[2,3]
[1]*University of Pittsburgh, Department of Pharmaceutical Sciences, Pittsburgh, PA,* [2]*University of Pittsburgh, Department of Pharmaceutical Sciences/ Bioengineering, Pittsburgh, PA,* [3]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P – Th - A - 54
Bioengineered Microenvironments for the Study of Human Tumor Metastasis
J. Lee[1,2], F. Bersani[3], M. Yu[3], D. Haber[3], and B. Parekkadan[1,2]
[1]*Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [2]*Shriners Hospital for Children, Boston, MA,* [3]*Massachusetts General Hospital, Harvard Medical School, Charlestown, MA*

P – Th - A - 55
3D Multicellular Cancer Spheroids using Antibiotics –derived hydrogels: Formation, Drug screening, and Nanoparticle Delivery
T. Potta[1], T. S. Grandhi[1], J. Ramos[1], and K. Rege[1]
[1]*Arizona State University, Tempe, AZ*

P – Th - A - 56
Matrix Remodeling by Breast Cancer Adipose Stromal Cells Modulates Tumor Vascularization
Y. Song[1], S. Shon[1], B. Seo[1], A. D. Stroock[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

P – Th - A - 57
Migration of Metastatic Triple Negative Breast Cancer Cells is Strongly Inhibited by Novel Natural Compounds
S. Nasrolahi[1] and H. Tavana[1]
[1]*University of Akron, Akron, OH*

P – Th - A - 58
Three Dimensional Model of the Ovarian Cancer Microenvironment
G. V. Orsinger[1], J. D. Williams[1], and M. Romanowski[1]
[1]*University of Arizona, Tucson, AZ*

P – Th - A - 59
Biomaterials-Based Prostate Cancer Xenografts to Study Tumorigenesis and Dormancy Escape
T. J. Long[1], C. C. Sprenger[1], S. R. Plymate[1,2], and B. D. Ratner[1]
[1]*University of Washington, Seattle, WA,* [2]*Veterans Affairs Puget Sound Health Care System, Seattle, WA*

P – Th - A - 60
Multiscale Simulation of the Transport and Adhesion of Tumor Cell Aggregates in the Circulation
K. J. Anderson[1], A. de Guillebon[1], Y. Geng[1], A. D. Hughes[1], W. Wang[1], and M. R. King[1]
[1]*Cornell University, Ithaca, NY*

P – Th - A - 61
Study of Angiogenic Sprouting in a Multicellular 3D Tumor Model
M. Gadde[1], C. S. Szot[1], and M. N. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P – Th - A - 62
A Novel Engineered Platform to Evaluate Cancer Metastasis
C. Zhang[1], E. Shenk[1], L. Blaha[1], B. Ryu[2], R. Alani[2], M. Cabodi[1], and J. Wong[1]
[1]*Boston University College of Engineering, Boston, MA,* [2]*Boston University School of Medicine, Boston, MA*

P = Poster Session
OP = Oral Presentation

P – Th - A - 63
Quantitative Analysis of Contact Inhibition of Locomotion During Fibrillar-like Migration
A. R. Asthagiri[1] and D. F. Milano[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 64
Interstitial Fluid Pressure Modulates Gene Expression in Engineered Breast Tumors
A. S. Piotrowski[1], J. Tien[2], and C. M. Nelson[1,3]
[1]*Chemical and Biological Engineering, Princeton University, Princeton, NJ,* [2]*Biomedical Engineering, Boston University, Boston, MA,* [3]*Molecular Biology, Princeton University, Princeton, NJ*

P – Th - A - 65
Microfluidic Devices for Studying Intermittent Hypoxia Response in Cancer
M. Acosta[1], X. Jiang[1], P-K. Huang[2], C. Grant[1], G. Walker[1], and M. Gamcsik[3]
[1]*North Carolina State University, Raleigh, NC,* [2]*National Taiwan University of Science & Technology, Taipei City, Taiwan,* [3]*North Carolina State University, Raleigh, NC*

P – Th - A - 66
Tissue Macrophages Enhance Vessel Network Formation in 3D Collagen Scaffold
M. Cox[1] and S. Verbridge[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Th - A - 67
A Microfluidic Approach to Breast Cancer Metastasis under Variable pO2 Levels
X. Jiang[1], M. Acosta[1], P-K. Huang[2], C. Grant[1], G. Walker[1], and M. Gamcsik[1]
[1]*North Carolina State University, RALEIGH, NC,* [2]*National Taiwan University of Science and Technology, Taipei, Taiwan*

P – Th - A - 68
Glioma Metabolic Evolution In An Engineered Physiological Model
J. Ivey[1], C. Fischbach[2], and S. Verbridge[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Cornell University, Ithaca, NY*

P – Th - A - 69
The Interaction of Breast Cancer and Dendritic Cells on the Lymphatic Endothelium
G. Calderon[1] and D. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

P – Th - A - 70
Drug Response of Cancer Cell Spheroids in 3D Collagen Gels
B. Fallica[1], J. Maffei[1], and M. Zaman[1]
[1]*Boston University, Boston, MA*

P – Th - A - 71
Engineering a Three-dimensional Microfluidic Cell Culture Platform for Cancer Research
A. Bruce[1], B. Hindman[1], R. Wysolmerski[1], and Y. Yang[1]
[1]*West Virginia University, Morgantown, WV*

P – Th - A - 72
Nanoparticle Transport and Tumor Cell Migration Simulation using a Multi-Scale Approach
S. J. Boukhris[1], R. A. Valencia[1], and Y. Feng[1]
[1]*The University of Texas at San Antonio, San Antonio, TX*

P – Th - A - 73
Roles of Endogenous Electric Field on the Invasion of Glioblastoma Cells
Y-J. Huang[1] and P. Searson[1]
[1]*Johns Hopkins University, Baltimore, MD*

P – Th - A - 74
Polymeric Aqueous Biphasic Engineering of High Throughput Cancer Cell Spheroid Microtechnology for Drug Screening
E. Atefi[1] and H. Tavana[1]
[1]*University of Akron, Akron, OH*

Track: Cancer Technologies

Bioengineering of Cancer

P – Th - A - 75
Computational Modeling of Cancer Cell Migration through the Extracellular Matrix
R. Zielinski[1] and S. Ghadiali[1]
[1]*The Ohio State University, Columbus, OH*

P – Th - A - 76
Elevated Endothelial Nitric Oxide Production Correlates with the Tumor Cell Adhesion in the Microvessel
L. Zhang[1], J. Yang[1], M. Zeng[1], and B. M. Fu[1]
[1]*The City College of New York, New York, NY*

P – Th - A - 77
Interstitial Fluid Flow Increases Hepatocellular Carcinoma Cell Invasion Through CXCR4/CXCL12 Chemokine Signaling
A. Shah[1] and A. Shieh[1]
[1]*Drexel University, Philadelphia, PA*

P – Th - A - 78
Impact of Lung Biomechanics on Tumor Metastasis
V. C. Shukla[1], N. Higuita-Castro[1], P. Nana-Sinkam[2], and S. Ghadiali[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*Wexner Medical Center at Ohio State University, Columbus, OH*

P – Th - A - 79
Development and Evaluation of Enzyme Prodrug Therapies Targeted to Breast Cancer Vasculature
J. J. Krais[1] and R. Harrison[1]
[1]*University of Oklahoma, Norman, OK*

P – Th - A - 80
Microfluidic Inserts to Study Cancer Growth and Division Under Confinement
H. M. Kittur[1], W. M. Weaver[1], and D. Di Carlo[1]
[1]*UCLA, Los Angeles, CA*

P – Th - A - 81
Determining the Effect of Fluid Shear Stress on the Elastic Properties of Cancer Cells using a Micropipette Aspiration Technique
V. Chivukula[1], J. T. Nauseef[1], M. Henry[1], K. B. Chandran[1], and S. C. Vigmostad[1]
[1]*The University of Iowa, Iowa City, IA*

P – Th - A - 82
High-Affinity Multiepitopic Antibodies Block Tumor Growth by Inhibiting EGFR-Dependent Signaling
M. S. Santos[1] and K. D. Wittrup[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

P – Th - A - 83
Cold Non-thermal Atomospheric Plasma: A Novel Metastatic Breast Cancer Therapy
M. Wang[1], B. Holmes[1], X. Cheng[1], M. Keidar[1], and L. G. Zhang[1]
[1]*The George Washington University, Washington, DC*

P – Th - A - 84
Ablation of Aggressive Thyroid Cancer Cells with HIFU and Ethanol
S. Ratnayaka[1], N. Hoang[1], K. Tsumagari[2], E. Kandil[2], and D. Khismatullin[1]
[1]*Tulane University, New Orleans, LA,* [2]*Tulane University School of Medicine, New Orleans, LA*

P – Th - A - 85
2- and 3- Dimensional Electrotaxic Migration of Human Brain Cancer Cell Line Population *In Vitro*
J. G. Lyon[1], A. Vakharia[1], and R. V. Bellamkonda[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P – Th - A - 86
Imaged-Based Analyses Identify Angiogenic Cell Phenotypes
D. T. Ryan[1], B. L. Long[1], R. J. Zaunbrecher[1], and A. A. Qutub[1]
[1]*Rice University, Houston, TX*

P – Th - A - 87
The Interplay of Growth and Migration of Cancer Cells in Tumor Growth Dynamics and Invasion
A. M. Jimenez[1], O. M. Yogurtcu[1], M-H. Lee[1], P-H. Wu[1], S. X. Sun[1], and D. Wirtz[1]
[1]*Johns Hopkins University, Baltimore, MD*

Track: Cardiovascular Engineering

Cardiac Electrophysiology

P – Th - A - 88
Deconvolving Electrograms of Atrial Fibrillation from Intra-cardiac Electrode Arrays
K. B. Palmer[1], N. C. Thompson[1], P. S. Spector[1], and J. H. Bates[1]
[1]*University of Vermont, Burlington, VT*

P – Th - A - 89
Reduced-Order Finite Element Bidomain Modeling of Cardiac Propagation
D. H. Vu[1] and K. T. Ng[1]
[1]*New Mexico State University, Las Cruces, NM*

P – Th - A - 90
Semi-implicit Adaptive Mesh Refinement for Realistic Bidomain Modeling of Cardiac Propagation
M. A. Funk[1] and K. T. Ng[1]
[1]*New Mexico State University, Las Cruces, NM*

P – Th - A - 91
Preconditioning and Ionic Current Modeling for Element Free Simulation of Cardiac Propagation
I. Sturdevant[1] and K. T. Ng[1]
[1]*New Mexico State University, Las Cruces, NM*

P – Th - A - 92
Abrupt Expansion Induced Reentry Observed with Multielectrode Arrays
Z. Wang[1], H. Yang[1], N. Erdman[1], T. K. Borg[2], and B. Z. Gao[1]
[1]*Clemson university, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P – Th - A - 93
Memory in Restitution of Action Potential Duration in Mouse Ventricles
Y. Zhao[1], K. Brownson[1], and A. Patwardhan[1]
[1]*University of Kentucky, Lexington, KY*

P – Th - A - 94
The Latency-Spontaneous Beat Relationship: Two mechanisms at Play?
A. Greer-Short[1], M. Heidinger[2], and S. Poelzing[1]
[1]*Virginia Tech Carilion Research Institute, Roanoke, VA,* [2]*University of Utah, Salt Lake City, UT*

P – Th - A - 95
Improving Shock Delivery in Cardioversion and Defibrillation
P. Poddar[1], M. Chen[1], A. Chang[1], S. Subramanian[1], P. Malamas[1], J. Eoh[1], K. George[1], and R. Malpani[1]
[1]*Johns Hopkins University, Baltimore, MD*

Track: Cardiovascular Engineering

Cardiac Regeneration

P – Th - A - 96
An Implantable Mea to Elucidate Heart Regeneration in Zebrafish
H. Cao[1], F. Yu[1], Y. Zhao[2], Y-C. Tai[2], and T. Hsiai[1]
[1]*USC, Los Angeles, CA,* [2]*Caltech, Pasadena, CA*

P – Th - A - 97
Fetal Cardiac Extracellular Matrix Promotes Adhesion and Expansion of Neonatal Cardiomyocytes
C. Williams[1] and L. D. Black[1]
[1]*Tufts University, Medford, MA*

P – Th - A - 98
A Cardiac Patch for Delivering Therapeutic Stem Cells to the Heart Following Myocardial Infarction
M. Melhem[1], T. Jensen[1], J. Jeong[1], V. Chan[1], L. Knapp[1], R. Bashir[1], H. Kong[1], and L. Schook[1]
[1]*University of Illinois, Urbana, IL*

Track: Device Technologies and Biomedical Robotics

Cardiac Stem Cells

P – Th - A - 99
Enhanced Structural Maturation of Human Pluripotent Stem Cell-Derived Cardiomyocytes Induced by Nanogrooved Culture Substrata
H. J. Lee[1], J. R. Macadangdang[1], L. M. Pabon[1], J. A. Fugate[1], C. E. Murry[1], and D-H. Kim[1]
[1]*University of Washington, Seattle, WA*

P – Th - A - 100
A Perivascular Stem Cell Network Within Human Adult Thoracic Aorta
B. R. Green[1], V. S. Donnenberg[2], M. A. Eskay[2], A. D. Donnenberg[2], M. E. Pfeifer[2], T. G. Gleason[2], and J. A. Phillippi[2]
[1]*University of Pittsburgh Medical Center, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA*

Track: Cardiovascular Engineering

Cardiovascular Assist Devices

P – Th - A - 101
Flow Dynamics in the Aortic Root of the LVAD-assisted Heart
I. Ling[1], Z. Moyedi[1], Y. K. Wong[1], W. Dembitsky[2], R. Adamson[2], and K. May-Newman[1]
[1]*San Diego State University, San Diego, CA,* [2]*Sharp Memorial Hospital, San Diego, CA*

P – Th - A - 102
Degree of Radial Expansion Dictates Resorbable Vascular Scaffold Performance
J. Ferdous[1], N. Fatematuzzahan[1], and T. Shazly[1]
[1]*University of South Carolina, Columbia, SC*

P – Th - A - 103
The Effects of Hematocrit and Rotation Time on Platelet Adhesion to a Polyurethane Urea Surface
L. Grunenwald[1], J. Taylor[1], M. Slattery[1], S. Deutsch[1], C. A. Siedlecki[1,2], and K. B. Manning[1,2]
[1]*The Pennsylvania State University, University Park, PA,* [2]*Penn State Hershey Medical Center, Hershey, PA*

P = Poster Session
OP = Oral Presentation

P – Th - A - 104

LVAD-Integrated Ex Vivo Arterial Perfusion System

M. J. Buller[1], G. A. Giridharan[1], M. A. Sobieski[1], M. S. Slaughter[1], S. C. Koenig[1], and K. G. Soucy[1]

[1]University of Louisville, Louisville, KY

P – Th - A - 105

Cardiac Pacing Using Low Intensity Focused Pulsed Ultrasound: Preliminary Findings

G. Saavedra[1], L. Rodr¬iguez[1], and E. Juan[1]

[1]University of Puerto Rico at Mayagüez, Mayagüez, PR, Puerto Rico

Track: Cardiovascular Engineering

Microvascular Flow

P – Th - A - 106

Selective Vascular Blockage by Multiphoton Laser Ablation Causes Flow-Induced Remodeling in Tumor Blood Vessels

G. Gruionu[1], L. Gruionu[2], D. Bazou[3], and L. Munn[3]

[1]Massachusetts General Hospital and Harvard Medical School, Charlestown, MA, [2]University of Craiova, Craiova, Romania, [3]Massachusetss General Hospital and Harvard Medical School, Charlestown, MA

P – Th - A - 107

Endothelial Surface Glycocalyx Can Regulate Flow-induced Endothelial NO Production in the Microvessel

W-Y. Yen[1], J. Yang[1], M. Zeng[1], J. M. Tarbell[1], and B. M. Fu[1]

[1]Department of Biomedical Engineering, The City College of New York, New York, NY

P – Th - A - 108

Two- & Three-Dimensional Human Microvascular Models for Immunoregulation Research

H. M. Lauridsen[1], B. J. Walker[1], S. P. Galarza[1], and A. L. Gonzalez[1]

[1]Yale University, New Haven, CT

Track: Cardiovascular Engineering

Vascular Mechanics

P – Th - A - 109

Stochastic Regulation of the Contractile Phenotype of Primary Bovine Vascular Smooth Muscle Cells

E. Bartolak-Suki[1], J. Imsirovic[1], and B. Suki[1]

[1]Boston University, Boston, MA

P – Th - A - 110

Syndecan-1 Regulates Mechanotransduction Pathways in Endothelial Cells in Response to Shear Stress

P. L. Voyvodic[1], D. Min[1], R. Liu[1], E. Williams[1], and A. B. Baker[1]

[1]The University of Texas at Austin, Austin, TX

P – Th - A - 111

A Novel Rat Carotid Artery Grafting Model for Studying Artery Buckling In Vivo

Q. Liu[1], J. Zhang[1,2], and H-C. Han[1]

[1]University of Texas, San Antonio, TX, [2]Xijing Hospital, Fourth Military Medical University, Xi'an, China, People's Republic of

P – Th - A - 112

Characterization of Bioeffects of Acoustic Droplet Vaporization at 3.5MHz on Endothelial Cells

R. Seda[1], J. B. Fowlkes[1], and J. L. Bull[1]

[1]University of Michigan, Ann Arbor, MI

P – Th - A - 113

Smooth Muscle Cell Biomechanics and Matrix Remodeling in Bicuspid Aortic Valve-Associated Aortopathy

J. A. Phillippi[1], B. R. Green[2], M. A. Eskay[1], F. Lanni[3], C. Ng[4], A. S. Nain[4], and T. G. Gleason[1]

[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh Medical Center, Pittsburgh, PA, [3]Carnegie Mellon University, Pittsburgh, PA, [4]Virginia Tech, Blacksburg, VA

P – Th - A - 114

A Flexible System for Studying Mechanical Stretch Waveform-Mediated Signaling in Vascular Cells

J. Lee[1], M. Wong[1], Q. Smith[1], and A. Baker[1]

[1]University of Texas at Austin, Austin, TX

P – Th - A - 115

Identification of Novel Mechanosensitive, Inflammatory Genes in Endothelium By Combined Mouse Gene Array and Functional Drosophila siRNA Screening

I. Jang[1,2], C. Kim[1,2], D. Son[1,2], S. Kumar[1], and H. Jo[1,2]

[1]Emory University & Georgia Institute of Technology, Atlanta, GA, [2]Ewha Womans University, Seoul, Korea, Republic of

P – Th - A - 116

Transmural Flow Controls the Location and Direction of Angiogenic Sprouts

P. Galie[1] and C. Chen[1]

[1]University of Pennsylvania, Philadelphia, PA

Track: Cardiovascular Engineering

Cardiovascular Flow Modeling

P – Th - A - 117

Numerical Simulation of Hemodynamics in a Compliant Helical-type Artery Bypass Graft

J. Wen[1], Y. Fan[2], and T. Zheng[1]

[1]Sichuan Unviersity, CHENGDU, China, People's Republic of, [2]beihang university, beijing, China, People's Republic of

P – Th - A - 118

A Mathematical Model of the Influence of Intra-abdominal Pressure on the Cardiovascular System

J. H. van Oostrom[1], M. Boers[2], and A. Gabrielli[1]

[1]University of Florida, Gainesville, FL, [2]Twente University, Enschede, Netherlands

P – Th - A - 119

Effect of the Superior Vena Cava Placement in the Y-graft Fontan for Single Ventricle Congenital Heart Defects

A. C. Crouch[1], M. C. Restrepo[1], C. M. Haggerty[1], K. R. Kanter[2], T. C. Slesnick[2], J. Rossignac[1], T. L. Spray[3], M. A. Fogel[3], and A. P. Yoganathan[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University School of Medicine and Children's Healthcare of Atlanta, Atlanta, GA, [3]Children's Hospital of Philadelphia, Philadelphia, PA

P – Th - A - 120

Prestressed Fluid-Structure Interaction Model of the Aortic Root

V. Flamini[1] and B. E. Griffith[2]

[1]Polytechnic Institute of New York University, Brooklyn, NY, [2]New York University School of Medicine, New York, NY

P – Th - A - 121

Fluid-Structure Interaction Model of Aortic Dissection Driven by Fluid Forcing

V. Flamini[1], G. Holzapfel[2,3], A. DeAnda[4], and B. Griffith[4]

[1]Polytechnic Institute of New York University, Brooklyn, NY, [2]Graz University of Technology, Graz, Austria, [3]Royal Institute of Technology, Stockholm, Sweden, [4]New York University School of Medicine, New York, NY

P – Th - A - 122

Hemodynamic Impact of the Anatomical Differences between the Lateral Tunnel and Extra-Cardiac Fontan Connections

M. S. Mundkur[1], M. Restrepo[1], E. Tang[1], C. M. Haggerty[1], M. A. Fogel[2], A. M. Valente[3], D. B. McElhinney[3], and A. P. Yoganathan[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Hospital of Philadelphia, Philadelphia, PA, [3]Children's Hospital Boston, Boston, MA

P – Th - A - 123

Distortions of Pressure Drop Measurement Using Fluid-Filled Double-Lumen Catheter

O. Rotman[1], U. Zaretsky[1], A. Shitzer[2], and S. Einav[1]

[1]Tel-Aviv University, Tel-Aviv, Israel, [2]Technion, Haifa, Israel

P – Th - A - 124

Intraventricular Vortex Flow in Non-Ischemic Dilated Cardiomyopathy

J. Bermejo[1], Y. Benito[1], M. Alhama[1], R. Yotti[1], P. Martinez-Legazpi[2], C. Perez del Villar[1], E. Pérez-David[1], A. Gonzalez-Mansilla[1], C. Santa-Marta[3], A. Barrio[1], F. Fernandez-Aviles[1], and J. del Alamo[2]

[1]Hospital General Universitario Gregorio Marañón, Madrid, Spain, [2]University of California San Diego, San Diego, CA, [3]Universidad Nacional de Educacion a Distancia, Madrid, Spain

Track: Device Technologies and Biomedical Robotics

Cardiovascular Flow Modeling

P – Th - A - 125

Impact of Stent Mis-sizing and Mis-positioning on Coronary Endothelial Shear and Intramural Stress

H. Y. Chen[1], B-K. Koo[2], D. L. Bhatt[3], and G. S. Kassab[1]

[1]Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN, [2]Seoul National University Hospital, Seoul, Korea, Republic of, [3]Harvard Medical School, Boston, MA

Track: Device Technologies and Biomedical Robotics

Biomedical Robotics

P – Th - A - 126

Design and Development of Robotic Surgical Unit To Provide Force Feedback to the Surgeon

J. M. Desai[1], D. Cappelleri[1], A. Valdevit[1], and A. Ritter[1]

[1]Stevens Institute of Technology, Hoboken, NJ

Track: Device Technologies and Biomedical Robotics

Biosensors

P – Th - A - 127

Fabrication of Sol-gel-based Miniature pH Sensors within Microfluidic Devices

C. M. Nguyen[1], I. Gurung[1], S. Rao[1], and J-C. Chiao[1,2]

[1]UT Arlington, Arlington, TX, [2]UTSW Medical Center of Dallas, Dallas, TX

P – Th - A - 128

Injectable/Moldable Optical Biosensors: Microporous Alginate Hydrogels as a Platform for Glucose Sensing

J. R. Roberts[1] and M. McShane[1]

[1]Texas A&M University, College Station, TX

P – Th - A - 129

Layer-By-Layer Assembly of Linear Polyethylenimine Redox Polymer Films

J. L. Deluca[1] and D. W. Schmidtke[1]

[1]University of Oklahoma, Norman, OK

P – Th - A - 130

Reducing the Power Consumption of Biochemical Measurements for Wireless Applications

A. N. Amos[1,2], J. G. Roberts[1], L. Qi[1], L. A. Sombers[1], and G. S. McCarty[1,2]

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

P – Th - A - 131

A Novel Microfluidic Aptasensor using 3-D printing for Thrombin Detection

S. Jahanian[1], A. K. Ramasubramanian[1], and L. Tang[1]

[1]UTSA, San Antonio, TX

P – Th - A - 132

Towards the Development of a Multimarker Point of Care Technology

J. T. La Belle[1]

[1]Arizona State University, Tempe, AZ

P – Th - A - 133

Hybrid Conducting Polymer-Hydrogel Nanofibers for Highly Sensitive Detection of Glucose

M. Abidian[1] and G. B. Kim[1]

[1]Pennsylvania State University, University Park, PA

P – Th - A - 134

Activity Tracking With Smartphones: Phone Location Matters

S. A. Antos[1,2], M. V. Albert[1,2], and K. P. Kording[1,2]

[1]Northwestern University, Chicago, IL, [2]Rehabilitation Institute of Chicago, Chicago, IL

P – Th - A - 135

Dielectric Impedimetric Detection Method for Bacterial Biofilm Cultures under Different Growth Conditions.

J. Paredes[1,2], S. Becerro[1,2], and S. Arana[1,2]

[1]CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain, [2]CIC microGUNE, Arrasate-Mondragon, Spain

P – Th - A - 136

SNP Detection by Modulating the Fluorescence of DNA-templated Silver Nanoclusters

J. Lee[1] and W. J. Kim[1]

[1]POSTECH, Pohang, Korea, Republic of

P – Th - A - 137

Development of Oxygen-sensing Films and Their Application in Biometry

A. Miyayama[1], H. Uchida[1], A. Sato[1], and K. Tsukada[1,2]

[1]Graduate School of Fundamental Science and Technology, Keio University, Kanagawa, Japan, [2]Department of Applied Physics and Physico-Informatics, Faculty of Science and Technology, Kanagawa, Japan

P – Th - A - 138

Nanoengineered Calcium Sensors for Monitoring Milk Fever in Dairy Cattle

R. Ramachandran[1]

[1]Indian Institute of Technology Bombay, Mumbai, India

P – Th - A - 139

Separation of Live and Dead E. Coli using Embedded Passivated-electrode Insulator-based Bielctrophoresis (EϖDEP)

P. A. Zellner[1], T. Shake[1], A. Sahari[1], B. Behkam[1], and M. Agah[1]

[1]Virginia Tech, Blacksburg, VA

P – Th - A - 140

Distance-Mediated Plasmonic Dimers for Reusable Colorimetric Switches

D. R. Kim[1]

[1]Nanyang Technological University, Singapore, Singapore

P = Poster Session
OP = Oral Presentation

P – Th - A - 141
Simultaneous Measurement of pH and Bacterial Markers in a Single Sensor
H. J. Sismaet[1] and T. A. Webster[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 142
Anti-Inflammatory Drug Releasing Conducting Polymer/Graphene Oxide Nanocomposite For Improved Dopamine Sensing
C. L. Weaver[1], L. Zhang[1], J. M. LaRosa[1], and X. T. Cui[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P – Th - A - 143
In Vivo Biosensor Applications for Polymeric Nanosensors
K. J. Cash[1] and H. A. Clark[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 144
Aggregation Studies of Concanavalin A in Free Solution with Dextran Glycoconjugates
A. Locke[1], B. Cummins[1], and G. Coté[1]
[1]*Texas A&M University, College Station, TX*

P – Th - A - 145
Slices for Devices: Organotypic Slice Cultures for *In Vitro* Sensor Analyses
S. Tobet[1], C. Eitel[1], D. Dandy[1], R. Bartels[1], M. Reynolds[1], T. Chen[1], and C. Henry[1]
[1]*Colorado State University, Fort Collins, CO*

P – Th - A - 146
Rapid Detection of Adiponectin Using a Lateral Flow Assay
K. Duffy[1], P. Sarkaria[1], C. Zhang[1], F. Hassan[1], J. Thompson[1], M. Shuler[1], and M. Ariza-Nieto[1]
[1]*Cornell University, Ithaca, NY*

P – Th - A - 147
Distance Dependent Electromagnetic Enhancement of Localized Surface Plasmon Resonance Biosensing Based on Magnetic and Gold Nanoparticles
Y. Wang[1] and L. Tang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Th - A - 148
Wearable Biochemical Sensor to Monitor Sweat pH Change
J. Dean[1], F. Zambrano[1], N. Serafino[1], and M. H. Loew[1]
[1]*The George Washington University, Washington, DC*

P – Th - A - 149
Evaluation of Boron Doped Ultra Nanocrystalline Diamond-based Impedance Biosensor
W. Zhang[1], A. Radadia[1], P. Arumugam[2], H. Zeng[2], and J. Carlisle[2]
[1]*Louisiana Tech University, Ruston, LA,* [2]*Advanced Diamond Technologies Inc., Romeoville, IL*

P – Th - A - 150
Real-Time Detection of Bacterial Movement, Growth and Biofilm Formation with Surface Plasmon Resonance Imaging
P. N. Abadian[1] and E. D. Goluch[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 151
Selective Detection of P.Aeruginosa in Bacterial Cultures
T. A. Webster[1] and E. D. Goluch[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 152
A Mathematical Framework for Extracting Cell Secretion Rates from Affinity-Based Biosensors Continuously Monitoring Cell Activity
Y. Gao[1], Z. Matharu[1], Y. Liu[1], Q. Zhou[1], T. Kwa[1], and A. Revzin[1]
[1]*University of California, Davis, Davis, CA*

P – Th - A - 153
Quantification of DNA Hybridization by Fluorescence Axial Localization and Label-free Biosensing
X. Zhang[1], G. G. Daaboul[1], P. S. Spuhler[1], D. S. Freedman[1], and M. S. Ünlü[1]
[1]*Boston University, Boston, MA*

P – Th - A - 154
Improving Back-scattering Interferometry for Viral Detection
J. Evans[1], I. Olmsted[1], A. Kussrow[1], D. Dugmore[2], D. Bornhop[1], and R. Haselton[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Rose-Hulman Institute of Technology, Terre Haute, IN*

Track: Nano to Micro Technologies

BioMEMS

P – Th - A - 155
A Microfluidic D-Subminiature Connector
A. K. Au[1], A. Scott[1], E. Vinckenbosch[1,2], and A. Folch[1]
[1]*University of Washington, Seattle, WA,* [2]*École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

P – Th - A - 156
Development of a Cell-Chip for Real Time Evaluation of Nanotoxicity on a Single Cell
P. Shah[1] and C. Li[1]
[1]*Florida International University, Miami, FL*

P – Th - A - 157
Phase-shifted Slot Waveguide Bragg Grating Biosensors
S. Schmidt[1], X. Wang[2], J. Flueckiger[2], S. Grist[2], J. Kirk[1], K. Cheung[2], L. Chrostowski[2], and D. M. Ratner[1]
[1]*University of Washington, Seattle, WA,* [2]*University of British Columbia, Vancouver, BC, Canada*

P – Th - A - 158
Operational Factors Affecting Performance of MEMS-Based Ultrahigh Throughput Mechanoporation Devices
H. G. Dixit[1], D. Nampe[1], Y. Zhang[1], C. B. Ballas[2], H. Tsutsui[1], and M. P. Rao[1]
[1]*University of California, Riverside, Riverside, CA,* [2]*Indiana University, Indianapolis, IN*

P – Th - A - 159
Multiplex Immunoassay System Based on Suspension Array Incorporated into Microfluidic Devices
S. Han[1], H. Lee[1], U. Chung[1], and W-G. Koh[1]
[1]*Yonsei University, Seoul, Korea, Republic of*

P – Th - A - 160
Microfabrication of a Dielectrophoretic Device for High Through-Put Analysis of Single Cell Stiffness
R. Lownes Urbano[1] and A. Morss Clyne[1]
[1]*Drexel University, Philadelphia, PA*

P – Th - A - 161
Electronic Detection of Magnetic Post Deflection
N. Taparia[1], K. Bielawski[1], and N. Sniadecki[1]
[1]*University of Washington, Seattle, WA*

P – Th - A - 162
Size Selection of *C. elegans* Through a Microfabricated Filter
M. A. Corrado[1], D. J. Li[1], O. Cinquin[1], and E. E. Hui[1]
[1]*University of California, Irvine, Irvine, CA*

Track: Nano to Micro Technologies

Human on a Chip Systems

P – Th - A - 163
Prediction of *In Vivo*-Relevant Drug Disposition in a Micro-Engineered Model of the Human Liver
S. Khetani1, D. Berger1, and B. Ware1
1Colorado State University, Fort Collins, CO

P – Th - A - 164
Development of Multi-Branching and Multi-Depth Endothelialized Microchannels-on-a-Chip
X. Li[1], S. M. Mearns[1], M. Martins-Green[2], and Y. Liu[1]
[1]*West Virginia University, Morgantown, WV,* [2]*University of California at Riverside, Riverside, CA*

P – Th - A - 165
Microfluidic Device and Assay for Mimicking the Leukocyte-Endothelium Interactions *In Vivo*
G. Lamberti[1], B. Prabhakarpandian[2], A. Smith[2], K. Pant[2], B. Wang[3], and M. F. Kiani[1]
[1]*Temple University, Philadelphia, PA,* [2]*CFD Research Corporation, Huntsville, AL,* [3]*Widener University, Philadelphia, PA*

P – Th - A - 166
Development of a Microfluidic Device to Model Human Kidney Function
C. Sakolish[1], M. Reiss[1], and G. Mahler[1]
[1]*Binghamton University, Binghamton, NY*

Track: Nano to Micro Technologies

Microphysiology Systems for Testing Drug Toxicity and Efficacy

P – Th - A - 167
Screening Combinatorial Drug Interactions on Primary Colon Cancer Stem Cells using Novel Drug-eluting Microarrays
M. Carstens[1], E. Huang[1], and B. Keselowsky[1]
[1]*University of Florida, Gainesville, FL*

P – Th - A - 168
SYN-TOX: A Microfluidic Platform For Drug Toxicity Studies
A. Smith[1], C. Garson[1], I. Mills[1], R. Vallabhajosyula[1], B. Prabhakarpandian[1], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL*

P – Th - A - 169
Drug Particle Adhesion Depends on Bifurcation Angle
G. Lamberti[1], A. Smith[2], M. F. Kiani[1], B. Prabhakarpandian[2], and K. Pant[2]
[1]*Temple University, Philadelphia, PA,* [2]*CFD Research Corporation, Huntsville, AL*

P – Th - A - 170
Human Umbilical Vein Endothelial Cell Tube Formation Under Fluid Perfusion
C. Y. Chan[1], V. N. Goral[2], P. K. Yuen[2], and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA,* [2]*Corning Incorporated, Corning, NY*

P – Th - A - 171
A Universal 3D Biochip for Interrogation of Neuro-circuitry at Single Cell Resolution
W. Li[1], Z. Xu[1], and P. Shi[1]
[1]*City University of Hong Kong, Kowloon, Hong Kong*

P – Th - A - 172
Integration of Molecular Imaging with Microwell Arrays for Rapid Assessment of Drug Response in Cancer Response in Cancer Cells
M. S. Wang[1], Z. Luo[1], and N. Nitin[1]
[1]*University of California Davis, Davis, CA*

P – Th - A - 173
Characterization of Flow Profiles and Reaction Rates in a 3d Microfluidic Cell Culture Array via Simulation
A. R. Ahmed[1], Z. Dereli[1], H. D. Akaydin[2], and S. Wang[1]
[1]*The City College of the City University of New York, New York, NY,* [2]*Stanford University, Stanford, CA*

P – Th - A - 174
Design, Fabrication and Characterization of a Microphysiological System to Study Drug Toxicity in Cardiac Tissue
A. Mathur[1], P. Loskill[1], B. Berg-Johansen[1], N. Marks[1], S. Hong[1], L. Lee[1], and K. Healy[1]
[1]*University of California, Berkeley, CA*

Track: Nano to Micro Technologies

Microprinting and Patterning of Cells and Molecules

P – Th - A - 175
Effect of Shear Rate on P-selectin Adsorption During Microfluidic Patterning
E. A. Shimp[1] and D. W. Schmidtke[1]
[1]*University of Oklahoma, Norman, OK*

P – Th - A - 176
Controlled Toxicity Studies Using Micropatterned Cells and Nanomaterials
S. Woosley[1], K. Garde[1], S. Crawford[1], and S. Aravamudhan[1]
[1]*North Carolina A&T State University, Greensboro, NC*

P – Th - A - 177
Macromolecular Imprinted Silica Particles in the Presence of Carbon Black
J. E. Rincon[1], P. Almada[1], F. Diaz[1], and T. Boland[1]
[1]*The University of Texas at El Paso, El Paso, TX*

P – Th - A - 178
Hydrogel Microwell Arrays for In Situ Culture and Analysis of Single Cells
D. E. Heath[1], A. R. Mohamed Sharif[1], C. P. Ng[1], P. T. Hammond[2], L. G. Griffith[2], and M. B. Chan-Park[3]
[1]*Singapore-MIT Alliance for Research and Technology, Singapore, Singapore,* [2]*Massachusetts Institute of Technology, Cambridge, MA,* [3]*Nanyang Technological University, Singapore, Singapore*

P – Th - A - 179
Laser-Based Fabrication and Patterning of Chitosan Microcapsules and Microstrands
D. M. Kingsley[1], A. D. Dias[1], and D. T. Corr[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P – Th - A - 180
Fabrication of Protein Dots Pattern via Template Assisted Particle Lithography
R. Li[1]
[1]*University of Oklahoma, Norman, OK*

P – Th - A - 181
Dielectrophoretic Cell Aggregation in Biocompatible Hydrogels
E. A. Henslee[1], H. O. Fatoyinbo[1], M. P. Hughes[1], and F. H. Labeed[1]
[1]*University of Surrey, Guildford, United Kingdom*

P = Poster Session
OP = Oral Presentation

P – Th - A - 182
Shape Alone Can Induce Biochemical Changes Associated with Differentiated Podocyte Morphology
E. U. Azeloglu[1], A. Ron[2], M. Hu[2], Y. Chen[1], P. Y. Chuang[1], J. C. He[1], J. Hone[2], and R. Iyengar[1]
[1]Mount Sinai School of Medicine, New York, NY, [2]Columbia University, New York, NY

P – Th - A - 183
Large Area Ultrathin Transparent Silicon Membranes for High Content Cellular Imaging
T. Gaborski[1], K. Busse[1], and J. Miller[1]
[1]Rochester Institute of Technology, Rochester, NY

P – Th - A - 184
Cellular Micropatterns on Nanogrooved PDMS Substrates for Single-cell Based Guided Migration Studies
K-H. Nam[1,2], P. Kim[1], S. Kwon[2], and D-H. Kim[1]
[1]University of Washington, Seattle, WA, [2]Seoul National University, Seoul, Korea, Republic of

P – Th - A - 185
A Projection Stereolithography System for High Resolution Patterning of Cells in 3D
R. Raman[1], V. Chan[1], M. Mir[1], B. Bhaduri[1], C. Cvetkovic[1], G. Popescu[1], and R. Bashir[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL

P – Th - A - 186
Chitosan Surface Enhances the Mobility, Cytoplasm Spreading and Phagocytosis of Macrophages
Y. Gu[1], W. Zhang[1], H. Wang[1], and W. Y. Lee[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P – Th - A - 187
Giant Lipid Vesicles for Studying Enzymatic Activity of Phospholipase D
Y. Kang[1] and S. Majd[2]
[1]Pennsylvania State University, State College, PA, [2]Pennsylvania University, State College, PA

P – Th - A - 188
Spatially Controlling Differentiation of Human Pluripotent Stem Cells to Generate Nascent Cardiac Microtissues
Z. Ma[1], J. Wang[1], M. Finnegan[1], N. C. Marks[1], and K. E. Healy[1]
[1]University of California, Berkeley, Berkeley, CA

Track: Nano to Micro Technologies

Nanobiointerfaces

P – Th - A - 189
Inhibition of *Candida albicans* Biofilm Formation using Nanofibrous Surface Topography
A. Kim[1], M. Kargar[1], A. Nain[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

P – Th - A - 190
Study of Platelet Adhesion using the Novel Dynamic Layer-By-Layer Biointerface Construction
P. Lammert[1], A. Genet[1], Z. Steege[1], A. Rhyner[1], J. Malinaric[1], L. Galey[1], and M. G. Watson[1]
[1]LeTourneau University, Longview, TX

P – Th - A - 191
Role of Nanometer and Sub-Micron Surface Features on Dermal Fibroblast Adhesion to Titanium
B-W. Park[1], J. Rankenberg[1], T. Sousa[1], H. Yokoyama[1], C. Lambert[2], W. McGimpsey[1], and C. Malcuit[1]
[1]Kent State University, Kent, OH, [2]Worcester Polytechnic Institute, Worcester, MA

P – Th - A - 192
Layer-by-Layer Surface Modification of Colloidal Quantum Dots for Biosensor Applications
A. Nagaraja[1], A. Sooresh[1], K. Meissner[1], and M. McShane[1]
[1]Texas A&M University, College Station, TX

P – Th - A - 193
Nanotextured Biomaterials for Stem Cell Engineering
G. Jin[1], J. Kim[1], and W. H. Suh[1]
[1]Temple University, Philadelphia, PA

P – Th - A - 194
Carbon Nanotube Thin Film via Interfacial Film-Climbing: A Potential Platform for Cell Growth
M. Patil[1], R. Gottardi[1], S. S. Velankar[1], and S. R. Little[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Th - A - 195
Interaction Between Adeno-associated Virus Gene Delivery Vectors and Extracellular Matrix Proteins
E. J. Gomez[1] and J. Suh[1]
[1]Rice University, Houston, TX

Track: Nano to Micro Technologies

Nano to Micro Technologies

P – Th - A - 196
Splenic Immune Cell Distribution of Gold Nanoparticles
J. Mattos Almeida[1], A. Lin[1], R. Langsner[1], P. Eckels[2], A. Foster[2], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

P – Th - A - 197
Enhancing Magnetic Nanoparticle Based DNA Transfection: Intracellular-Active Cassette Features
M. M. Vernon[1], D. Dean[2], and J. Dobson[1,3]
[1]University of Florida, Gainesville, FL, [2]University of Rochester Medical Center, Rochester, NY, [3]University of Florida, Gainesville

P – Th - A - 198
Electrophoretic Alignment of Multi-Walled Carbon Nanotubes in Poly Vinyl Alcohol Gel
D. Gondi[1], B. V. Dharmadhikari[1], P. K. Patra[1], and A. Santiago[1]
[1]University of Bridgeport, Bridgeport, CT

P – Th - A - 199
Time Resolved, High-throughput Microscopy in Nanotoxicological Assessment
M. J. Ware[1,2], N. Singh[2], K. Meissner[3], P. Rees[2], B. Godin[1], and H. Summers[2]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]Swansea Univrsity, Swansea, United Kingdom, [3]Texas A&M University, Houston, TX

P – Th - A - 200
Transfection of Polyethylenimine and Its Coated Magnetic Nanoparticles by Different Pathways in Cytoplasm
S. Ota[1], A. Tomitaka[2], T. Yamada[1], D. Kami[3], M. Watanabe[1], and Y. Takemura[1]
[1]Yokohama National University, Yokohama, Japan, [2]University of Washington, Seattle, WA, [3]Kyoto Prefectural University of Medicine, Kyoto, Japan

P – Th - A - 201
Degradation of Oxidized and Reduced Graphene Nanoribbons by Lignin Peroxidase
W. Xing[1], G. Lalwani[2], and B. Sitharaman[2]
[1]Stony Brook University, Stony brook, NY, [2]Stony Brook University, Stony Brok, NY

P – Th - A - 202
Energy Harvesting Using Nano Scale Dual Layers PVDF Film for Blood Artery
N. A. Fadhil[1], D. S. Saber[1], and P. K. Patra[1]
[1]University of Bridgeport, Bridgeport, CT

Track: New Frontiers and Special Topics

Diagnostics

P – Th - A - 203
Middle Ear Energy Absorbance of a Chinchilla Acute Otitis Media Model
X. Guan[1] and R. Z. Gan[1]
[1]University of Oklahoma, Norman, OK

P – Th - A - 204
Subtyping Clinical Isolates of Influenza A Virus using a Simple Method to Amplify RNA Targets (SMART)
J. Wang[1], W. Tai[1], S. Angione[1], A. R. John[2], S. M. Opal[1,2], A. W. Artenstein[1,2], and A. Tripathi[1]
[1]Brown University, Providence, RI, [2]Memorial Hospital of RI, Providence, RI

P – Th - A - 205
A Paper-based Test for Sickle Cell Disease Diagnosis in Resource-Limited Settings
X. Yang[1], S. M. Vignes[1], N. Z. Piety[1], M. S. Benton[2], J. Kanter[2,3], and S. S. Shevkoplyas[1]
[1]Tulane University, New Orleans, LA, [2]Sickle Cell Center of Southern Louisiana, New Orleans, LA, [3]Tulane University School of Medicine, New Orleans, LA

P – Th - A - 206
On-Paper Purification of Nucleic Acids for Point-of-Care Applications
S. Byrnes[1], B. Lutz[1], L. Lafleur[1], and P. Yager[1]
[1]University of Washington, Seattle, Seattle, WA

P – Th - A - 207
A Comparison of Gold Detection Labels in Paper Based Point-of-Care Assays
S. Rangarajan[1], N. Scarr[2], C. A. Holstein[1], E. A. Lukhtanov[2], B. Li[3], C. E. Olsen[3], B. Lutz[1], and P. Yager[1]
[1]University of Washington, Seattle, WA, [2]Elitechgroup (Epoch Biosciences), Bothell, WA, [3]GE Global Research Center, Niskayuna, NY

P – Th - A - 208
Oscillating Pressure Driven Microfluidic Bridge Networks for Point-of-Care Diagnostics
R. Jain[1] and B. Lutz[1]
[1]University of Washington, Seattle, WA

P – Th - A - 209
Methods for Background Subtraction in High-Resolution Melting Analysis
L. N. Sanford[1] and C. T. Wittwer[1]
[1]University of Utah, Salt Lake City, UT

P – Th - A - 210
The Effect of FVIII Deficiency on the Dynamics of Thrombin and Fibrin Generation under Flow in a Cohort of Hemophilia Patients
A. Onasoga[1], K. Neeves[1], J. Di Paola[2], M. Manco-Johnson[2], M. Wang[2], K. Leiderman[3], and A. Fogelson[4]
[1]Colorado School of Mines, Golden, CO, [2]University of Colorado, Aurora, CO, [3]University of California, Merced, Merced, CA, [4]University of Utah, Salt Lake city, UT

P – Th - A - 211
Point-of-Treatment HIV Drug Resistance Test
N. Panpradist[1], I. A. Beck[2], L. M. Frenkel[1,2], J. J. Lai[1], and B. R. Lutz[1]
[1]University of Washington, Seattle, WA, [2]Seattle Children's Research Institute, Seattle, WA

P – Th - A - 212
Optical Coherence Tomography Enabled Tracking of Particle Motion in Evaporating Drops for Diagnostic Test Development
J. Trantum[1], M. Baglia[1], Z. Eagleton[1], and F. Haselton[1]
[1]Vanderbilt University, Nashville, TN

Track: New Frontiers and Special Topics

Emerging Technologies

P – Th - A - 213
Design and Validation of Organic Electrochemical Transistor for EEG Application
P. Leleux[1], C. Bénar[2], J-M. Badier[2], T. Hervé[3], P. Chauvel[2], and G. G. Malliaras[1]
[1]Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan, [2]INSERM, Marseille cedex [05], France, Metropolitan, [3]Microvitae Technologies, Gardanne, France, Metropolitan

P – Th - A - 214
Nonhermetic Micropackage For Implant MEMS Systems
W. H. Ko[1]
[1]Case western reserve university, Cleveland, OH

P – Th - A - 215
A Transparent Conducting Polymer Device for Electronic and Optical Monitoring of Barrier Tissue
R. M. Owens[1]
[1]Ecole Nationale Supérieure des Mines de St. Etienne, Gardanne, France

P – Th - A - 216
Mechanism of Electrochemical Biofilm Control and Its Applications
H. Beyenal[1], S. Sultana[1], and J. Babauta[1]
[1]Washington State University, Pullman, WA

P – Th - A - 217
Raman Scattering Microspectroscopic Examination of Intracellular Water and Trehalose in Desiccated Mammalian Cells
A. Abazari[1,2], N. Chakraborty[3], S. C. Hand[4], and M. Toner[1,2]
[1]Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Center for Engineering in Medicine, Charlestown, MA, [3]University of Michigan-Dearborn, Dearborn, MI, [4]Louisiana State University, Baton Rouge, LA

Track: New Frontiers and Special Topics

Global Health Technologies

P – Th - A - 218
Design of Low Cost Glucometer and InkJet Printed Test Strips
K. Gainey[1], P. T. Ovington[1], J. Desjardins[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P – Th - A - 219
Developing a Woven Grass Neck Brace for Low Resource Implementation
T. Youngman[1], M. Kofoed[1], D. Martin[1], A. Metzger[1], D. Dean[1], and J. Desjardins[1]
[1]Clemson University, Clemson, SC

P – Th - A - 220
A Simple, Low-cost Paper-based Assay for Measuring Blood Hemoglobin Concentration in Resource-limited Settings
X. Yang[1], N. Z. Piety[1], S. M. Vignes[1], M. S. Benton[2], J. Kanter[3], and S. S. Shevkoplyas[1]
[1]Tulane University, New Orleans, LA, [2]Sickle Cell Center of Southern Louisiana, New Orleans, LA, [3]Tulane University School of Medicine, New Orleans, LA

P = Poster Session
OP = Oral Presentation

P – Th - A - 221

Development of a Point-of-Care High-throughput Platform for Inhibition of CA-MRSA Biofilms

A. Srinivasan[1], J. L. Lopez-Ribot[1], C. Frei[2], and A. K. Ramasubramanian[1]

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

P – Th - A - 222

Isoelectric Focusing as a Pre-Conditioning System of Paper-Based Analytical Device

K. Abe[1] and P. Yager[1]

[1]University of Washington, Seattle, WA

P – Th - A - 223

Battery-Powered Incubator for Water Quality Testing in Remote Areas

J. Barfknecht[1], A. Kollman[1], J. Harvestine[1], J. Tracey[1], W. Gonwa[1], and D. Stahl[1]

[1]Milwaukee School of Engineering, Milwaukee, WI

P – Th - A - 224

Total Adiponectin in Clinical and *In Vitro* for the Evaluation of Metabolic Dysregulations

P. I. Sarkaria[1], J-M. Prot[1], M. L. Shuler[1], M. Ariza-Nieto[1], J. B. Alley[2], and S. A. Samy[3]

[1]Cornell University, Ithaca, NY, [2]Guthrie Weight Loss Center, Sayre, PA, [3]Guthrie Clinic, Sayre, PA

P – Th - A - 225

New Medical Equipment Donations are No More Likely to be Fully Functional Than Used Donations: An Assessment Study in Rwanda, Honduras and Cambodia

A. Dahinten[1], C. Whittle[1], and R. Malkin[1]

[1]Robert Malkin's Developing World Healthcare Technology (DHT) Laboratory, Duke University, Durham, NC

P – Th - A - 226

Comparison of Two Isothermal Amplification Methods for Point-of-Care Diagnostics

A. Creecy[1], S. Pickerill[2], Q. You[2], D. Wright[1], and R. Haselton[1]

[1]Vanderbilt University, Nashville, TN, [2]Ustar Biotechnologies Ltd., Hangzhou, China, People's Republic of

Track: New Frontiers and Special Topics

New Frontiers and Special Topics

P – Th - A - 227

A Microstructural Investigation of Lyopreserved Mammalian Cells Using Atomic Force Microscopy

J. Li[1], D. Renard[1], K. N. Bandyopadhyay[1], and N. Chakraborty[1]

[1]University of Michigan Dearborn, Dearborn, MI

Track: New Frontiers and Special Topics

Personalized Medicine

P – Th - A - 228

Human Omental Adipose Derived Mesenchymal Stem Cell microRNA Characterized to be used with Physiologically Based Microfluidic Devices

C. Zhang[1], M. Shuler[1], and M. Ariza[1]

[1]Cornell University, Ithaca, NY

Track: New Frontiers and Special Topics

Smart Materials and Devices

P – Th - A - 229

ECG Monitoring Brassiere Sensor System using Native Wires as Electrodes for Pervasive Healthcare

S. Kwon[1], J. Kim[1], and K. Park[1]

[1]Seoul National University, Seoul, Korea, Republic of

P – Th - A - 230

Mechanics of Smart Needle within Tissue

N. V. Datla[1], T. K. Podder[2], Y. Yu[3], A. Dicker[3], and P. Hutapea[1]

[1]Temple University, Philadelphia, PA, [2]Case Western Reserve University, Cleveland, OH, [3]Thomas Jefferson University, Philadelphia, PA

P – Th - A - 231

Development of Motion Artifact Free Pulse Oximeter Based on Camera

J. Lee[1], Y. Nam[2], C. Jeong[3], S-C. Joo[3], and K. Yoon[3]

[1]Wonkwang University School of Medicine, Iksan, Korea, Republic of, [2]Worcester Polytechnic Institute, Worcester, MA, [3]Wonkwang University, Iksan, Korea, Republic of

Track: Orthopaedic and Rehabilitation Engineering

Orthopaedic Bioengineering: Bone and Cartilage

P – Th - A - 232

In Vitro Generated Bone-like Tissue Using Wharton's Jelly Morsels

B. Engebretson[1] and V. I. Sikavitsas[1]

[1]University of Oklahoma, Norman, OK

P – Th - A - 233

Mechanical Stimulation of a Healing Fracture Using a Mouse Model

J. A. Currey[1], E. Miller[2], S. Day[1], and M. Mancuso[1]

[1]Union College, Schenectady, NY, [2]Rensselaer Polytechnic Institute, Troy, NY

P – Th - A - 234

Perfusion Bioreactor Enhances Cryoprotective Agent Permeation into Intact Porcine Articular Cartilage

O. M. Ismail[1], W. Dahl[1,2], K. G. Brockbank[3], E. D. Greene[3], and T. M. Wick[1]

[1]University of Alabama at Birmingham, Birmingham, AL, [2]Washington University in St. Louis, St. Louis, MO, [3]Cell and Tissue Systems, Inc., North Charleston, SC

P – Th - A - 235

Finite Element Modeling of Bone Cutting Processes Using Arbitrary Lagrangian Eulerian Adaptive Meshing

E. MacDonald[1] and S. R. Schmid[1]

[1]University of Notre Dame, Notre Dame, IN

P – Th - A - 236

The Anabolic Effects of Electrical Stimulation on Endochondral Bone Formation

S. Lababidi[1], R. Willits[2], K. Novak[1], R. Razmpour[3], R. Fitzgerald[4], W. Landis[2], D. Weiner[5], and F. Safadi[1]

[1]NEOMED, Rootstown, OH, [2]University Of Akron, Akron, OH, [3]Temple University, Philadelphia, PA, [4]Summa Hospital, Akron, OH, [5]Akron Children's Hospital, Akron, OH

Track: Orthopaedic and Rehabilitation Engineering

Orthopaedic Bioengineering: Tissue Interfaces and Ligaments

P – Th - A - 237
Stress Concentration and Fracture Risk Depends on Fiber Orientation Relative to a Defect in Fiber-Reinforced Tissue
J. M. Peloquin[1] and D. M. Elliott[1,2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Delaware, Newark, DE*

Track: Orthopaedic and Rehabilitation Engineering

Orthopaedic Bioengineering: Spine and Vertebrae

P – Th - A - 238
Height Restoration Therapy in Enzymatically Degraded Young Bovine Lumbar Intervertebral Discs
E. A. Growney Kalaf[1] and J. G. Bledsoe[1]
[1]*Parks College of Engineering, Aviation and Technology, St Louis, MO*

P – Th - A - 239
Injectable Riboflavin-Crosslinked Collagen Gels for Annulus Fibrosus Repair
B. H. Borde[1], P. Grunert[2], M. Macielak[2], R. Härtl[2], and L. Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

P – Th - A - 240
Age Dependent Thoracic Vertebral Morphology in the Adolescent Population
J. R. Peters[1], C. Chandrasekaran[1], L. Waltz[1], and S. Balasubramanian[1]
[1]*Drexel University, Philadelphia, PA*

P – Th - A - 241
Effect of Pro-Inflammatory Cytokines on the Axonal Outgrowth from Adult Rat Dorsal Root Ganglia *In Vitro*
H. Kim[1], T. W. Caspar[1], S. B. Shah[2], and A. H. Hsieh[1,3]
[1]*University of Maryland, College Park, MD,* [2]*University of California, San Diego, CA,* [3]*University of Maryland, Baltimore, MD*

P – Th - A - 242
MRI Compatible Rat-Tail Distraction Device
J. Booren[1] and K. N. Bachus[1]
[1]*University of Utah, Salt Lake City, UT*

Track: Orthopaedic and Rehabilitation Engineering

Osteoarthritis

P – Th - A - 243
Relating Osteoarthritis Biomarkers Collected Via Magnetic Harvesting to the Initial Concentration of the Biomarker Within Synovial Fluid
E. Yarmola[1], Z. Kaufman[1], B. Kozissnik[1], D. Arnold[1], J. Dobson[1], and K. D. Allen[1]
[1]*University of Florida, Gainesville, FL*

P – Th - A - 244
Extraction of Biomarkers from Synovial Fluid Using Magnetic Nanoparticle Harvesting - Practical Validation of a Theoretical Model
B. Kozissnik[1], Z. A. Kaufman[1], E. Yarmola[1], D. P. Arnold[1], K. D. Allen[1], and J. Dobson[1]
[1]*University of Florida, Gainesville, FL*

Track: Orthopaedic and Rehabilitation Engineering

Orthopaedic and Rehabilitation Engineering

P – Th - A - 245
Synergistic Effects of Lactoferrin and Xylitol on Osteoblast Maturation
L. Actis[1], A. Srinivasan[1], A. Ramasubramanian[1], and J. Ong[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

Track: Orthopaedic and Rehabilitation Engineering

Rehabilitation Engineering

P – Th - A - 246
Mechanical and Cytotoxicity Testing of Acrylic Bone Cement Embedded with Microencapsulated 2-octyl Cyanoacrylate
A. Brochu[1], O. Matthys[1], G. Evans[1], and W. Reichert[1]
[1]*Duke University, Durham, NC*

P – Th - A - 247
Impact of Healthcare Services and Rehabilitation Technologies on Life Quality of Children with Motor Disabilities in Secluded Areas in Mexico
D. Comaduran[1], J. M. De Santiago[1], E. A. Bravo[1], and K. D. Bustamante[1,2]
[1]*ITESM, Chihuahua, Mexico,* [2]*Marquette University, Milwaukee, WI*

P – Th - A - 248
High Intensity Pressure Wave Transmission in Human Ear: A Three Dimensional Nonlinear Finite Element Simulation Study
T. Hawa[1] and R. Z. Gan[1]
[1]*The University of Oklahoma, Norman, OK*

P – Th - A - 249
MotionTalk: Kinect-based Rehabilitation System for Patients with Traumatic Brain Injury
J. Venugopalan[1,2], C. Cheng[1], T. H. Stokes[1,2], C. Kaddi[1], and M. D. Wang[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P – Th - A - 250
Evaluation of Joint Angle Coordination Pattern in a New Moving System with Gait Rehabilitative Training Assistance
D. Lim[1], B. Lee[1], L. Song[1], K. Chun[2], H. Jung[1], K. Jang[3], and K-Y. Lee[1]
[1]*Sejong University, Seoul, Korea, Republic of,* [2]*Korea Institute of Industrial Technology, Cheonan, Korea, Republic of,* [3]*Korea National Rehabilitation Center, Seoul, Korea, Republic of*

P – Th - A - 251
Development of Controlled Electromagnetic Stimulation System for Patients with Vocal Fold Paralysis
W. G. Burks[1], M. Tran[1], P. Jaramillo[1], and A. Leonessa[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Th - A - 252
Fabricating Prosthetic Sockets with Rapid Prototyping Technology<I>
B. Robillard[1], O. Komolafe[1], R. Caldwell[1], and S. Fatone[1]
[1]*Northwestern University, Chicago, IL*

P – Th - A - 253
Prosthetics for the Developing World
K. P. Keenahan[1]
[1]*Johns Hopkins University, Baltimore, MD*

P – Th - A - 254
Development of a Control System for a Power Wheelchair Trainer
S. J. Hildebrand[1], L. K. Kenyon[1], and J. P. Farris[1]
[1]*Grand Valley State University, Grand Rapids, MI*

P = Poster Session
OP = Oral Presentation

Track: Orthopaedic and Rehabilitation Engineering

Tissue Response to Mechanical Loading

P – Th - A - 255
The Alterations of Gene Expressions of Osteogenic Growth Factors and Transcription Factors in Response to Dynamic Hydraulic Stimulation
M. Hu[1] and Y-X. Qin[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Th - A - 256
A First Study of the Mechanical Behavior of the Swine Sacrospinous Ligament
W. Becker[1], K. Comer[1], K. Hales[1], and R. De Vita[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Th - A - 257
Effects of -aminopropionitrile and Exercise on Type I Collagen Morphology in Murine Bone
M. A. Hammond[1] and J. M. Wallace[1,2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University - Purdue University Indianapolis, Indianapolis, IN*

P – Th - A - 258
Mechanical Damage of Tympanic Membrane in Relation to Impulse Pressure Waveform in Chinchilla
R. Gan[1], D. Nakmali[1], Z. Yokell[1], and X. Guan[1]
[1]*University of Oklahoma, Norman, OK*

P – Th - A - 259
Mechanical Fluid Pressure Regulated Muscle Fiber in a Rat Disuse Model
M. Lien[1], M. Teeratananon[1], M. Hu[1], and Y-X. Qin[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Th - A - 260
Receptor Activator of Nuclear Factor Kappa-B Ligand Produced by Ultrasonic Stimulation Enhances Osteogenesis of Mesenchymal Stem Cells
C-Y. Chiu[1,2], T-L. Tsai[2], R. J. Vanderby[2], G. Bradica[3], S-L. Lou[1], and W-J. Li[2]
[1]*Chung Yuan Christian University, Chung Li, Taiwan,* [2]*University of Wisconsin-Madison, Madison, WI,* [3]*Kensey Nash Corporation, Exton, PA*

P – Th - A - 261
Dynamic Compression Bioreactor System Demonstrates Convection Enhanced Transport of TNF into Large Animal Intervertebral Discs
B. Walter[1,2], M. Likhitpanichkul[1], Y. Borisov[1], P. Nasser[1], and J. Iatridis[1]
[1]*Icahn School of Medicine at Mount Sinai, New York, NY,* [2]*The City College of New York, New York, NY*

P – Th - A - 262
Mechanotransduction in Mouse Models - The Effect of Mechanical Loading on the Ulna
A. Vander Moren[1], H. Hotaling[2], B. Williams[3], B. Ashby[1], and T. Burgers[3]
[1]*Grand Valley State University, Grand Rapids, MI,* [2]*Loyola University, Chicago, IL,* [3]*Van Andel Institute, Grand Rapids, MI*

P – Th - A - 263
Location-Dependent Tensile Properties of the Swine Uterosacral-Cardinal Ligament Complex
T. Tan[1], F. M. Davis[1], S. Nicewonder[1], J. C. Massengill[2], D. D. Gruber[2], and R. De Vita[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Walter Reed National Military Medical Center, Bethesda, MD*

Track: Stem Cell Engineering

Cell Delivery Technologies

P – Th - A - 264
Hydrogel Delivery Improves Distribution of Transplanted Retinal Stem Cells
V. Nguyen Huu[1], J. Luo[1], J. Zhao[1], A. Almutairi[1], and K. Zhang[1]
[1]*University of California, San Diego, La Jolla, CA*

P – Th - A - 265
Surface Immobilization of P-Selectin Glycoprotein Ligand-1 on Mesenchymal Stem Cells Enables Selectin Mediated Cell Tethering and Rolling
C. Y. Lo[1], A. Antonopoulos[2], A. Dell[2], S. Haslam[2], T. Lee[1], and S. Neelamegham[1]
[1]*The State University of New York at Buffalo, Buffalo, NY,* [2]*Imperial College, London, United Kingdom*

P – Th - A - 266
Development of an Engineered Nanoparticle System to Increase Adipose Stem Cell Survival
D. Y. Santiesteban[1], E. Chung[1], A. S. Hannah[1], L. J. Suggs[1], and S. Emelianov[1]
[1]*The University of Texas at Austin, Austin, TX*

Track: Stem Cell Engineering

Directing Stem Cell Differentiation

P – Th - A - 267
Primary Cilia on the Differentiating Adipose Derived Stem Cell: Investigating Regenerative Mechanisms on the Cell Level
J. C. Bodle[1,2], R. B. Williams[3], I. R. Veland[2], S. T. Christensen[2], and E. G. Loboa[1,3]
[1]*North Carolina State University/University of North Carolina - Chapel Hill, Raleigh, NC,* [2]*University of Copenhagen, Copenhagen, Denmark,* [3]*North Carolina State University, Raleigh, NC*

P – Th - A - 268
Cell Culture Environments with High Cell-Cell Contact Enhance Neural Stem Cell Viability
M. E. Boutin[1] and D. Hoffman-Kim[1]
[1]*Brown University, Providence, RI*

P – Th - A - 269
Integration of Predictive Computational Modeling and Biomechanical Microengineering of Stem Cells to Elucidate and Enhance Lineage Specific Differentiation
A. Paul[1], D. Franz[1], S. Yahya[1], S. Sun[1], and M. Cho[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P – Th - A - 270
Role of FAK in BMP4 Induction of Mesenchymal Stem Cell Adipogenesis
J. Lee[1], L. Ha[1], and J. Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

P – Th - A - 271
Signaling Pathway Modulation for Directed Cardiogenic Differentiation of Human Pluripotent Stem Cells
A. Parikh[1] and E. S. Tzanakakis[1]
[1]*SUNY-Buffalo, Buffalo, NY*

P – Th - A - 272
Investigation of GSK-3 Inhibitor BIO in Endothelial Differentiation of Murine Embryonic Stem Cells
D. Y. Kim[1] and G. Dai[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P – Th - A - 273
Using a Design of Experiments Approach to Investigate Dopamine Neuron Subtypes Generated from Mouse Embryonic Stem Cells
Y-T. L. Dingle[1], R. Sookram[1], D. Hoffman-Kim[1], and M. Zervas[1]
[1]*Brown University, Providence, RI*

P – Th - A - 274
Alginate Encapsulated Human Embryonic Stem Cell Derived Islet Cells For Type 1 Diabetes Treatment
T. C. Richardson[1], P. N. Kumta[1], and I. Banerjee[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P – Th - A - 275
Enhancement of Guided Human Induced Pluripotent Stem Cell Differentiation to Mesendodermal and Ectodermal Lineages Using Polycaprolactone Nanofibrous Scaffolds
M. Maldonado[1], T. Fujimoto[1], L. Wong[1], K. Low[1], and J. Nam[1]
[1]*University of California, Riverside, CA*

P – Th - A - 276
Suspension Shear Stimulation Accelerates Differentiation of Human Mesenchymal Stem Cells Towards Adipogenic Lineage
A. Adeniran-Catlett[1] and S. Murthy[1]
[1]*Northeastern University, Boston, MA*

P – Th - A - 277
Nanog Enhances the Proliferation and Reverses the Effect of Senescence on Myogenic Differentiation of Human Mesenchymal Stem Cells
P. Mistriotis[1], M. Liang[1], and S. Andreadis[1,2]
[1]*University at Buffalo, Amherst, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

P – Th - A - 278
Cell Adhesion Density in Three Dimensional Hyaluronic Acid Based Hydrogels Control Human Adipose Derived Mesenchymal Stem Cell Differentiation Via Focal Adhesion Kinase
B. Duan[1], L. A. Hockaday[1], E. Kapetanovic[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

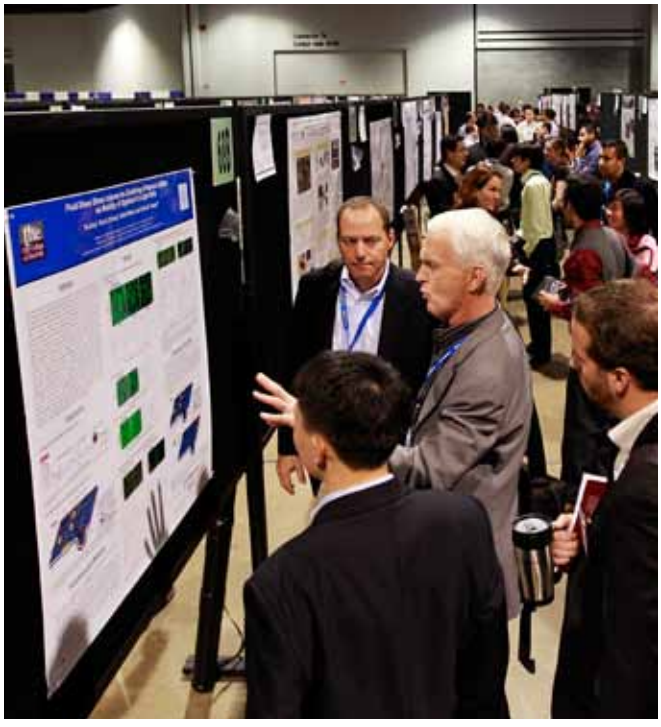
P – Th - A - 279
MicroRNA Screen of Human Embryonic Stem Cell Differentiation Reveals miR-105 as an Enhancer of Megakaryocyte Production from Adult CD34+ Cells
V. Kamat[1] and S. L. Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P – Th - A - 280
HMSC Commitment: A Matter of Stiffness
A. Membrino[1], C. Doherty[1], D. Kilinc[1], D. Vandamme[1], K. Ivanov[1], G. U. Lee[1], W. Kolch[1], and D. Matallanas[1]
[1]*University College Dublin, Dublin, Ireland*

P – Th - A - 281
Chondrogenic Differentiation of Adipose Derived Stem Cells on Polymeric Nanowire Surfaces
N. A. Trujillo[1] and K. C. Popat[1]
[1]*Colorado State University, Fort Collins, CO*

P – Th - A - 282
Heterogeneous Traction Force Distributions in MSC Clonal Populations
B. D. Cosgrove[1], C. M. McLeod[1], M. J. Farrell[1], M. Guvendiren[1], J. A. Burdick[1], and R. L. Mauck[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P – Th - A - 283
Hematopoietic Stem and Progenitor Cells Locally Produce Neutrophils Necessary to Resolve Infected Wounds
P. Falahee[1]
[1]*UC Davis, Davis, CA*



P = Poster Session
OP = Oral Presentation

Thursday, September 26, 2013

1:30PM – 5:00PM

POSTER SESSION – THURS – B

Track: Biomaterials

Biomaterials for Controlling Cell Environment

P – Th - B - 1

ROCK Regulation in Cell Alignment on Nanofibers

M. N. Andalib[1], J. Lee[1], L. Ha[1], Y. Dzenis[1], and J. Lim[1]

[1]*University of Nebraska-Lincoln, Lincoln, NE*

P – Th - B - 2

Spatial and Temporal Modulation of 3D Hydrogel Physical Properties

R. Stowers[1], C. L. Davis[1], and L. J. Suggs[1]

[1]*The University of Texas at Austin, Austin, TX*

P – Th - B - 3

Absorption, Degradation, and Cell Adhesion on Polyelectrolyte-Compelx Films

S. A. Mistry[1], S. Puri[1], D. Verma[1], R. Schloss[1], and N. A. Langrana[1]

[1]*Rutgers University, Piscataway, NJ*

P – Th - B - 4

Immobilization of EphrinB2 in an Orientation-regulated Manner on the Surface of Poly(acrylamide) Hydrogels with Different Elasticities

H. Toda[1], M. Yamamoto[1], and Y. Tabata[1]

[1]*Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan*

P – Th - B - 5

Engineering a Heart-On-Chip Platform

N. Annabi[1,2], S. Selimovic[1], J. Cox[3], J. Ribas[1], M. Afshar Bakooshli[1], D. Heintze[1], A. S. Weiss[4], D. Cropek[5], and A. Khademhosseini[1,2]

[1]*Harvard Medical School, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Cambridge,* [3]*Faculty of Medicine, Santiago, Chile,* [4]*The University of Sydney, Sydney, Australia,* [5]*US Army Corps of Engineers Construction Engineering Research Laboratory, Champaign, IL*

P – Th - B - 6

Enzymatically Cross-linked Injectable Chitosan Hydrogel as Cell Delivery Vehicles

S. B. Brittain[1] and L. S. Nair[2]

[1]*University of Connecticut, Storrs, CT,* [2]*University of Connecticut, Farmington, CT*

P – Th - B - 7

Oligodendrogenesis and Myelination of Endogenous Progenitors Recruited after Spinal Cord Injury using Sonic Hedgehog- and Neurotrophin 3-delivering Poly(lactide-co-glycolide) Bridges

A. Thomas[1], S. Seidlits[1], A. Goodman[1], T. Kukushliev[1], D. Hassani[1], A. Anderson[2], B. Cummings[2], and L. Shea[1]

[1]*Northwestern University, Evanston, IL,* [2]*University of California at Irvine, Irvine, CA*

P – Th - B - 8

Endothelial Cell Function on Polyurethane Matrix for Tissue Vascularization

Y. Yuan[1], C. Cheah[1], and D. Sarkar[1]

[1]*University at Buffalo, SUNY, Buffalo, NY*

P – Th - B - 9

A Haptotaxis Neutral Biomaterial to Examine Motility of CNS-Derived Tumor Cells

T. Singh[1], C. Kothapalli[2], D. Varma[1], M. Vazquez[1], and S. B. Nicoll[1]

[1]*CCNY-CUNY, New York, NY,* [2]*Cleveland State University, Cleveland, OH*

P – Th - B - 10

Macrophage Polarizing Peptides Grafted onto Hydrogel Substrates for Contact Lens Applications

A. Chen[1], V. Agrawal[2], B. Ratner[1], and S. Badylak[2]

[1]*University of Washington, Seattle, WA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P – Th - B - 11

Ionically- and Photo-crosslinked Alginate Hydrogels for Spatial Control of Cell Behavior

J. E. Samorezov[1], C. M. Morlock[1], and E. Alsberg[1]

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

P – Th - B - 12

Titanium Oxide Cristallinity Nanomodification Affects Stem Cell Attachment and Differentiation on Microstructured Surfaces

R. Olivares-Navarrete[1], S. L. Hyzy[1], C. A. Cundiff[2], S. E. Rodil[3], A. Almaguer-Flores[3], B. D. Boyan[1], and Z. Schwartz[1]

[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Georgia Institute of Technology, Atlanta, GA,* [3]*UNAM, Mexico City, Mexico*

P – Th - B - 13

Superhydrophilic Microstructured Surfaces Decrease Proinflammatory Interleukin Production on Stem Cells

S. L. Hyzy[1], R. Olivares-Navarrete[1], K. O. Marchand[2], D. A. Haithcock[3], Z. Schwartz[1], and B. D. Boyan[1]

[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Georgia Institute of Technology, Atlanta, GA,* [3]*Georgia Institute of Technology, Atlanta, VA*

P – Th - B - 14

Utilizing Microfiber-Enabled Lithography to Engineer Spatially Diverse Tissue Microenvironments

M. R. Anderson[1] and W. C. Ruder[1]

[1]*Virginia Tech, Blacksburg, VA*

P – Th - B - 15

Single Cell Response to Changes in Nanofiber Structural Stiffness

S. Meehan[1] and A. S. Nain[1]

[1]*Virginia Tech, Blacksburg, VA*

Track: Biomaterials

Biomaterials for Immunoengineering

P – Th - B - 16

High Fc Density Particles Result in Binary Complement Activation but Tunable Macrophage Phagocytosis

P. M. Pacheco[1], B. Le[1], D. White[2], and T. Sulchek[1]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*United States Department of Agriculture, Ames, IA*

P – Th - B - 17

Immunomodulation of the Foreign Body Reaction by MSCs Declines with Differentiation

M. D. Swartzlander[1], A. K. Blakney[1], K. D. Hankenson[2], T. R. Kyriakides[3], and S. J. Bryant[1]

[1]*University of Colorado, Boulder, CO,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*Yale University, New Haven, CT*

P – Th - B - 18

Peptide Self-assemblies Composed of D-amino Acids Elicit Inverse B and T Cell Responses Compared to their Enantiomeric Counterparts

C. B. Chesson[1], R. Appavu[1], and J. S. Rudra[1]

[1]*University of Texas Medical Branch, Department of Pharmacology and Toxicology, Galveston, TX*

P – Th - B - 19

Antigen-Decorated Liposomes as Reagents for Detecting and Isolating Antigen-Specific B Cells

C. Ke[1] and D. J. Irvine[1,2]

[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Howard Hughes Medical Institute, Chevy Chase, MD*

P – Th - B - 20

Functional Characterization of Chitosan and its Influence on Immune Response

S. Ravindranathan[1] and D. Zaharoff[1]

[1]*University of Arkansas, Fayetteville, AR*

POSTER SESSION **ThB**

See page 21 for Poster floor plan

P – Th - B - 21
Comparing the Impact of Nanomaterial Platform on Therapeutic Immunosuppression of Systemic Lupus Erythematosus
M. Look[1], E. Stern[1], Q. A. Wang[1], L. DiPlacido[1], M. Kashgarian[1], W. Saltzman[1], J. Craft[1], and T. M. Fahmy[1]
[1]Yale University, New Haven, CT

P – Th - B - 22
Time Course Study of the Antigen-Specific Immune Response of a PLGA Microparticle Vaccine Formulation
Q. Wang[1], B. Keegan[1], and M. J. Heffernan[1]
[1]Baylor College of Medicine, Houston, TX

P – Th - B - 23
Delivery of Acetylsalicylic Acid to Dendritic Cells Using Degradable Microparticles
E. Bracho-Sanchez[1], J. S. Lewis[1], and B. G. Keselowsky[1]
[1]University of Florida, Gainesville, FL

P – Th - B - 24
Developing Elastomer Beads for T Cell Activation and Expansion
S. E. De Leo[1], D. Dutta[1], G. Hickey[1], and L. Kam[1]
[1]Columbia University, New York, NY

P – Th - B - 25
Biodegradable Nanoparticles for Tolerance in Type 1 Diabetes
M. McHugh[1] and T. Fahmy[1]
[1]Yale University, New Haven, CT

Track: Biomaterials

Therapeutic Biomaterials

P – Th - B - 26
Tea Nanoparticles for Immunostimulation and Chemo-drug Delivery in Cancer Treatment
S. Yi[1], Y. Wang[1], Y. Huang[1], L. Xia[1], L. Sun[1], S. C. Lenaghan[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

P – Th - B - 27
A Novel Composite Graft for Cleft Palate Repair
B. Wang[1], W. Li[2], B. Weed[1], S. S. Patnaik[1], J. Xiao[2], R. Butler[1], and J. Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]Dalian Medical University, Liaoning, China, People's Republic of

P – Th - B - 28
Controlled Release of Minocycline from Injectable Hydrogels for Customized Local Treatment of Neurotrauma
Z. Wang[1], Z. Zhang[1], J. Nong[1], and Y. Zhong[1]
[1]Drexel University, Philadelphia, PA

P – Th - B - 29
Assembling Biomaterials Layer-by-Layer for Bone Tissue Engineering
N. J. Shah[1,2], M. Hyder[1,2], J. Moskowitz[1], M. Quadir[1,2], S. Morton[1,2], H. J. Seeherman[3], R. F. Padera[1,4], M. Spector[1,4], and P. T. Hammond[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Koch Institute for Integrative Cancer Research, Cambridge, MA, [3]Restituo LLC., Cambridge, MA, [4]Brigham and Women's Hospital, Boston, MA

P – Th - B - 30
Non-Viral Oral Gene Delivery for Treatment of Hemophilia B
J. M. Gamboa[1] and K. W. Leong[1]
[1]Duke University, Durham, NC

P – Th - B - 31
Biological Effects of Therapeutic Polymers for Diabetic Wound Healing Applications
K. A. Wold[1], V. B. Damodaran[1], and M. M. Reynolds[1]
[1]Colorado State University, Fort Collins, CO

P = Poster Session
OP = Oral Presentation

P – Th - B - 32
Rare Earth Nanoparticle Tb4O7 Induced Autophagy and Toxicity in Cancer Cells
R. Ruan[1], S. Sun[2], and W. Ding[1]
[1]University of Science and Technology of China, Hefei, China, People's Republic of, [2]University of Washington, Seattle, WA

P – Th - B - 33
Suppression of Fibrosis Formation Around Silicone Implant by Local, Sustained Exposure of Tranilast
S. Park[1], M. Park[1], J. Lee[1], C. Park[1], S. Lee[1], H. Park[2], C. Heo[2], and Y. Choy[1]
[1]Seoul National University, Seoul, Korea, Republic of, [2]Seoul National University Bundang Hospital, Seongnam, Korea, Republic of

P – Th - B - 34
Novel Smart Peptide Polymers Composed of Peptide Drugs that Inhibit Estrogen-Dependent Tumor Growth
S. Roberts[1], F. Garcia Quiroz[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

P – Th - B - 35
Clinical Applicability of Binding Bone Morphogenetic Protein-2 to Polycaprolactone
J. J. Patel[1] and S. J. Hollister[1]
[1]University of Michigan, Ann Arbor, MI

P – Th - B - 36
Recombinant Functional Biomaterials for Neuronal Regeneration
T. Johnson[1] and P. Koria[2]
[1]University of South Florida, Tampa, FL, [2]Universtiy of South Florida, Tampa, FL

P – Th - B - 37
Lubricin Mimic: Synthetic Peptidoglycan Lowers Friction Levels in Articular Cartilage Surfaces
N. M. Vázquez-Portalatín[1] and A. Panitch[1]
[1]Purdue University, West Lafayette, IN

P – Th - B - 38
Tuning Keratin Hydrogels to Achieve Controlled Rates of Degradation and Bioactive Agent Release
T. Ham[1], R. Lee[1], L. Burnett[2], S. Tomblyn[2], and J. M. Saul[1]
[1]Miami University, Oxford, OH, [2]KeraNetics, LLC, Winston-Salem, NC

P – Th - B - 39
Endotoxin Binding by the Cationic Amphiphilic Peptide WLBU2 in Relation to Polymixin B
M. P. Ryder[1], X. Wu[1], K. Schilke[1], and J. McGuire[1]
[1]Oregon State University, Corvallis, OR

P – Th - B - 40
Effect of Nanophase Topography on the Adhesion of Staphylococcus aureus onto Biomaterial Surfaces
B. Ercan[1] and T. Webster[1]
[1]Northeastern University, Boston, MA

P – Th - B - 41
Antimicrobial Coatings on Poly Ether Ether Ketone (PEEK)
N. Tran[1,2], M. Kelley[1,2], J. D. Jarrell[1,3], and C. Born[1,2]
[1]Brown University, Providence, RI, [2]Rhode Island Hospital, Providence, RI, [3]Biointraface Inc., North Kingston, RI

P – Th - B - 42
Fibrinogen/Fibronectin Complex Forms Strong Fibrin Polymer and is Chemotactic to Fibroblasts and Endothelial Cells *In Vitro*
J. Calcaterra[1], A. Ismail[1], M. A. Carlson[2,3], T. R. Pena[1], W. H. Burgess[1], and W. H. Velander[1]
[1]University of Nebraska, Lincoln, NE, [2]University of Nebraska Medical Center, Omaha, NE, [3]Omaha VA Medical Center, Omaha, NE

P – Th - B - 43

Inducible Nitric Oxide Releasing PEG-Fibrinogen Adhesive Hydrogels for Tissue Regeneration

M. A. Brunette[1], H. R. Holmes[1], M. G. Lancina[1], W. He[1], B. P. Lee[1], M. C. Frost[1], and R. M. Rajachar[1]

[1]Michigan Technological University, Houghton, MI

Track: Cancer Technologies

Biomarkers

P – Th - B - 44

Dynamic Biochemical Tissue Analysis: A Novel Method for *In Situ* Antigen Detection

V. S. Shirure[1], G. E. Carlson[1], E. W. Martin[1], R. Malgor[1], V. A. Resto[2], D. J. Goetz[1], and M. M. Burdick[1]

[1]Ohio University, Athens, OH, [2]University of Texas-Medical Branch, Galveston, TX

P – Th - B - 45

Novel Microfluidic Platforms for the Interrogation of Patient-Derived CTCs and Tumor-Derived Microvesicles

C. C. Huang[1], S. M. Santana[1], M. A. Antonyak[1], C. Fischbach-Teschl[1], R. A. Cerione[1], and B. J. Kirby[1]

[1]Cornell University, Ithaca, NY

P – Th - B - 46

Mechanical Properties of Cancer Cells: A Possible Biomarker for Stemness

A. Mohammadalipour[1], F. Benencia[1], M. Burdick[1], and D. Tees[1]

[1]Ohio University, Athens, OH

P – Th - B - 47

Dynamic Biochemical Tissue Analysis detects functional L-selectin Ligands on Colon Cancer Tissues

G. E. Carlson[1], V. S. Shirure[1], V. A. Resto[2], R. Malgor[1], D. J. Goetz[1], and M. M. Burdick[1]

[1]Ohio University, Athens, OH, [2]University of Texas-Medical Branch, Galveston, TX

P – Th - B - 48

Lossless Immobilization of Purified Rare Cells using Spintrap

M. Karabacak[1], N. Kojic[1], V. Pai[1], E. Ozkumur[1], A. M. Shah[1], J. Ciciliano[1], E. Brachtel[1], S. Stott[1], S. Maheswaran[1], D. A. Haber[1], and M. Toner[1]

[1]Massachusetts General Hospital, Charlestown, MA

P – Th - B - 49

Time of Flight Secondary Ion Mass Spectrometry Analysis of Breast Cancer Cell Lines

L. Gamble[1], M. Robinson[1], F. Morrish[2], and D. Hockenbery[2]

[1]University of Washington, Seattle, WA, [2]Fred Hutchinson Cancer Research Center, Seattle, WA

P – Th - B - 50

Conjugation of Biomolecules (Folic Acid, RGD Peptide, and PSMA Inhibitor) to Luminescent NPs for Breast and Prostate Cancer Targeting

L. Hossein Rashidi[1], H. Homayoni[1], L. Ma[2], X. Zou[2], and W. Chen[2]

[1]Joint Biomedical Engineering Program, UT Arlington, UT Southwestern Medical Center, Arlington, Dallas, TX, [2]UT Arlington, Physics, Arlington, TX

P – Th - B - 51

Machine Learning Outperforms Manual Counting for Classifying Circulating Tumor Cells from Cancer Patients

T. B. Lannin[1], M. S. Sung[2], F. I. Thege[3], Y. A. Syed[1], G. I. Galletti[2], A. D. Rhim[4], P. A. Giannakakou[2], and B. J. Kirby[1,5]

[1]Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY, [3]Department of Biomedical Engineering, Cornell University, Ithaca, NY, [4]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, [5]Weill Cornell Medical College, New York

Track: Cancer Technologies

Biomedical Engineering Modalities for Personalized Cancer Therapy

P – Th - B - 52

Miniaturized Cellomic Screening Platform via Bioprinting for Anticancer Drugs

J. I. Rodriguez-Devora[1], D. Reyna[1], M. K. Bhuyan[1], and T. Boland[1]

[1]University of Texas at El Paso, El Paso, TX

P – Th - B - 53

Biophysical Effects of Pulsed Electric Fields in the Brain

P. A. Garcia[1], C. B. Arena[1], J. H. Rossmeisl, Jr.[2], and R. V. Davalos[1]

[1]Virginia Tech - Wake Forest University, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

P – Th - B - 54

Sensitive Quantification of Vascular Endothelial Growth Factor (VEGF) using Porosity Induced Hydrogel Microspheres

M. Al Ameen[1] and G. Ghosh[1]

[1]University of Michigan, Dearborn, Dearborn, MI

P – Th - B - 55

High-Intensity Focused Ultrasound (HIFU) Ablation of Porcine Liver Tissue and Human Liver Cancer Cells

N. H. Hoang[1], S. H. Ratnayaka[1], C. Chen[1], and D. B. Khismatullin[1]

[1]Tulane University, New Orleans, LA

P – Th - B - 56

Patient-Specific Drug Efficacy Analysis on Circulating Tumor Cells Captured from Peripheral Blood

J. Marshall[1], A. Hughes[1], E. Keller[2,3], J. Powderly[2,3], B. Greene[2,3], and M. King[1]

[1]Cornell University, Ithaca, NY, [2]Biocytics, Inc., Huntersville, NC, [3]Carolina BioOncology Institute, Huntersville, NC

P – Th - B - 57

Advancing Quantum Dot Nanosensors and Calibration Beads for Quantitative Cellular Profiling

F. T. Lee-Montiel[1] and P. Imoukhuede[1]

[1]University of Illinois Urbana-Champaign, Urbana, IL

P – Th - B - 58

A Microfluidic Device to Dissociate Tumor Tissue into Single Cells

J. De Jesus[1], E. Hui[1], and J. Haun[1]

[1]University of California, Irvine, Irvine, CA

Track: Cancer Technologies

Engineering Anti-tumor Immunity

P – Th - B - 59

A Targeted Endosomalytic Nanoparticle for Engineering Tumor Immunity in Macrophages

R. A. Ortega[1,2], W. Barham[2], O. Tikhomirov[2], B. Kumar[1], F. Yull[2], and T. D. Giorgio[1,2]

[1]Vanderbilt University Department of Biomedical Engineering, Nashville, TN, [2]Vanderbilt University Department of Cancer Biology, Nashville, TN

P – Th - B - 60
Activation of the Tumor Endothelium for Increased Infiltration of Lymphocytes
B. H. Kwan[1], J. R. Cochran[2], and K. D. Wittrup[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Stanford University, Stanford, CA

P – Th - B - 61
Study of Anti-tumor Immunity Induced by Local Thermal Stimulation Using Animal Breast Cancer Model
J. Liu[1], P. Liu[1], and L. Xu[2]
[1]Med-X Research Institute, Shanghai, China, People's Republic of, [2]School of Biomedical Engineering, Shanghai, China, People's Republic of

Track: Cancer Technologies

Imaging Strategies for Cancer Detection and Treatment

P – Th - B - 62
Identification of a Family of Peptides for Binding High Grade Dysplasia in Barrett's Esophagus Using *In vitro* Phage Display
L. W-G. Chan[1], J. Hwang[1], W. M. Grady[1,2], and S. H. Pun[1]
[1]University of Washington, Seattle, WA, [2]Fred Hutchinson Cancer Research Center, Seattle, WA

P – Th - B - 63
Compton Imaging for Heavy Ion Radiation Therapy
J. P. Miller[1]
[1]Cornell University, New York, NY

P – Th - B - 64
Folate Receptor Targeted Nanocomposites for Bimodal Imaging of Prostate Cancer
A. Shanavas[1], D. Bahadur[1], and R. Srivastava[1]
[1]Indian Institute of Technology Bombay, Mumbai, India

P – Th - B - 65
Functional Interplay Between Cell Cycle and Cell Phenotypes
W-C. Chen[1,2], P-H. Wu[1,2], J. M. Phillip[1,2], S. B. Khatau[1,2], J. Choi[1], M. R. Dallas[1], K. Konstantopoulos[1,2], S. X. Sun[1,2], J. S. Lee[3], D. Hodzic[4], and D. Wirtz[1,2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins Physical Sciences - Oncology Center, Baltimore, MD, [3]National Cancer Institute, Bethesda, MD, [4]Washington University, St. Louis, MO

P – Th - B - 66
Co-registration of Optical Coherence Tomography Volumes for 3D Bladder Mosaicing
K. L. Lurie[1], T. Marvdashti[1], and A. K. Ellerbee[1]
[1]Stanford University, Stanford, CA

P – Th - B - 67
A Single-cell Method to Determine the Role of the LINC Complex in Epigenetic Regulation
A. B. Chambliss[1], P-H. Wu[1], A. Chisenhall[1], and D. Wirtz[1]
[1]Johns Hopkins University, Baltimore, MD

P – Th - B - 68
Quantitative Analysis of Mammary Cancer Cell-substrate Contacts using Interference Reflection Microscopy to Elucidate Drug Modulated Bioimpedance Mechanisms
V. Srinivasaraghavan[1], J. Strobl[1], and M. Agah[1]
[1]Virginia Tech, Blacksburg, VA

P – Th - B - 69
Characterization of Leukemic Stem Cells by Assessing DNA Damage
J. Park[1], R. Jones[1], and N. Singh[1]
[1]University of Washington, Seattle, WA

Track: Cancer Technologies

Nanotechnologies for Cancer Detection and Treatment

P – Th - B - 70
Silver Nanoparticles for Photothermal Ablation of Breast Cancer
N. H. Levi-Polyachenko[1], E. A. Thompson[1], C. MacNeill[1], G. Donati[2], E. Wailes[1], and B. T. Jones[2]
[1]Wake Forest University Health Sciences, Winston-Salem, NC, [2]Wake Forest University, Winston-Salem, NC

P – Th - B - 71
Fungal Nanoparticles as a Multifunctional Anti-tumor Therapeutics for Cancer Therapy
Y. Wang[1], S. Yi[1], L. Sun[1], Y. Huang[1], and M. Zhang[1]
[1]The University of Tennessee, Knoxville, TN

P – Th - B - 72
Effect of Multi-Walled Carbon Nanotubes on Breast Cancer Adhesion
E. G. Graham[1,2] and N. H. Levi-Polyachenko[1]
[1]Wake Forest Baptist Medical Center, Winston-Salem, NC, [2]Virginia Tech-Wake Forest, Winston-Salem, NC

P – Th - B - 73
Polymer Nanoparticles for NIR-mediated Photothermal Ablation of Colorectal Cancer
C. M. MacNeill[1], R. C. Coffin[2], D. L. Carroll[2], and N. H. Levi-Polyachenko[1]
[1]Wake Forest University Health Sciences, Winston Salem, NC, [2]Center for Nanotechnology and Molecular Materials, Wake Forest University, Winston Salem, NC

P – Th - B - 74
Using the A11 Minibody for Targeting Prostate Cancer
K. M. Mayle[1], R. Y. Chiu[1], R. J. Lamm[1], S. Knowles[1], A. M. Wu[1], and D. T. Kamei[1]
[1]University of California, Los Angeles, Los Angeles, CA

P – Th - B - 75
Enzymatically Degradable Nano-films for Capture and Release of Circulating Tumor Cells
W. Li[1], E. Reategui[2], M-H. Park[1], S. Castleberry[1], S. Mayner[1], A. Jensen[2], S. L. Stott[2], M. Toner[2], and P. T. Hammond[1]
[1]MIT, Cambridge, MA, [2]Massachusetts General Hospital and Harvard Medical School, Boston, MA

P – Th - B - 76
Effects of Hyperthermia on the Transport and Efficacy of Photothermal Therapies With Cisplatin loaded SWNHs
M. R. DeWitt[1], A. Pekkanen[1], J. Robertson[1], and M. N. Rylander[1,2]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

P – Th - B - 77
Platelet-inspired Nanovehicles for Targeted Delivery of Doxorubicin to Metastatic Breast Cancer
V. Pan[1], C. L. Modery-Pawlowski[1], A. Master[1], P. Siva[1], G. Howard[2], and A. Sen Gupta[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Akron, Akron, OH

P – Th - B - 78
A Novel Method of Early detection for Oral Cancer
M. Dhar[1], Y-A. Chen[1], J. Yu[1], W. J. Melvin[1], A. Dakos[1], J. Zheng[1], and T. Wu[1]
[1]Johns Hopkins University, Baltimore, MD

P – Th - B - 79
In Vivo Microwave Dielectric Spectroscopy of Breast Tumor Xenografts with SWCNT Injections
S. X. Xie[1], F. Gao[2], J. H. Booske[2], S. C. Hagness[2], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Wisconsin-Madison, Madison, WI

P = Poster Session
OP = Oral Presentation

P – Th - B - 80
Engineering Polymer Linkers to Improve Quantum Dot Signal Obtained by Chemical Amplification
M. K. Rahim[1], R. Kota[1], and J. B. Haun[1]
[1]University of California Irvine, Irvine, CA

P – Th - B - 81
Thermally Responsive Nanocapsule-Encapsulated Curcumin and Its Combination with Mild Hyperthermia for Cancer Cell Destruction
W. Rao[1], I. P. Fuentes[2], and X. He[1]
[1]The Ohio State University, Columbus, OH, [2]University of Puerto Rico, Mayaguez, PR

P – Th - B - 82
Assessing Pancreatic Cancer Cell Uptake Of Gold-Based Nanoparticles Using Confocal Raman Microscopy
L. M. Reese[1], W. Leng[1], P. J. Vikesland[1], and L. R. Bickford[1]
[1]Virginia Tech, Blacksburg, VA

P – Th - B - 83
Targeted Single-Walled Carbon Nanotubes for Radiofrequency Induced Thermal Ablation of Metastatic Breast Cancer
E. Huggins[1], K. Passlack[1], and R. Harrison[1]
[1]University of Oklahoma, Norman, OK

P – Th - B - 84
Gold Nanoparticles Enable Targeted Labeling and Enhanced Contrast for Radiographic Imaging of Breast Microcalcifications
L. E. Cole[1], T. C. Vargo-Gogola[2], and R. K. Roeder[1]
[1]University of Notre Dame, Notre Dame, IN, [2]Indiana University School of Medicine - South Bend, South Bend, IN

P – Th - B - 85
Elastin Based Multifunctional Nanoparticles for Targeted Therapy of Lung Adenocarcinomas
R. Iglesias[1] and P. Kora[1]
[1]University of South Florida, Tampa, FL

P – Th - B - 86
Lysosome Disruption by Targeted Magnetic Nanoparticles
M. Domenech[1], I. Marrero-Berrios[1], M. Torres-Lugo[1], and C. Rinaldi[2]
[1]University of Puerto Rico, Mayagüez, Mayagüez, PR, [2]University of Florida, Gainesville, FL

P – Th - B - 87
Nanopore Single-molecule Detection of Cancer-derived microRNA Biomarkers
Y. Wang[1] and L-Q. Gu[1]
[1]University of Missouri, Columbia, MO

P – Th - B - 88
NanoDoctor: Crowdsourcing the Design of Swarming Nanoparticles
S. Hauert[1], J. Lo[1], O. Nachum[1], and S. N. Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P – Th - B - 89
Multifunctional Prussian Blue Nanoparticles for Theranostics of Pediatric Brainstem Gliomas
M. F. Dumont[1], S. Yadavilli[1], R. W. Sze[1,2], J. Nazarian[1,2], and R. Fernandes[1,2]
[1]Children's National Medical Center, Washington, DC, [2]George Washington University, Washington, DC

P – Th - B - 90
Temperature Responsive Coating for Enrichment and isolation of Circulating Tumor Cells from Whole Blood
E. Reategui[1,2], A. Jensen[1,2], J. Sullivan[3], N. Aceto[3], S. Maheswaran[3], D. Haber[3,4], M. Toner[1,2], and S. Stott[1,3]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, [2]Department of Surgery, Massachusetts General Hospital, Harvar Medical School, Charlestown, MA, [3]Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA, [4]Howard Hughes Medical Institute, Chevy Chase, MD

P – Th - B - 91
Correlation of Cavitation Activity with Enhanced Focused Ultrasound-mediated Heating and Ablation using Vaporized Phase-shift Nanoemulsions
J. A. Kopechek[1], E-J. Park[2], C-S. Mei[2], Y-Z. Zhang[2], N. J. McDannold[2], and T. M. Porter[1]
[1]Boston University, Boston, MA, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

POSTER SESSION **ThB**

Track: Cardiovascular Engineering

Cardiac Mechanics

P – Th - B - 92
Cardiac MRI Based *In-silico* Quantitative Comparison of Morphology and Mechanics After Surgical Ventricular Restoration by the Dor Procedure vs. Linear Endoventricular Patch-plasty
P. G. Menon[1] and S. M. Adhyapak[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]St.John's Medical College Hospital, Bangalore, India

P – Th - B - 93
Decellularized Myocardial Thin Sections as Scaffolds for Engineered Heart Tissue
A. H. Morris[1], J. Schwan[1], A. Kwaczala[1], M. B. Ayers[1], and S. G. Campbell[1]
[1]Yale University, New Haven, CT

P – Th - B - 94
Structual Assessment of Pre-Powerstroke Myosin Elucidates How dADP Binding Increases Contractile Function
S. G. Nowakowski[1], M. Regnier[1], and V. Daggett[1]
[1]University of Washington, Seattle, WA

P – Th - B - 95
Evaluation of the Dobutamine Stress Effect on the Physiology of the Right Ventricle Using Multiple-Beat Method
O. Forouzan[1], A. Bellofiore[1], M. Bates[1], H. Kellihan[1], D. Consigny[1], C. François[1], and N. Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI

Track: Cardiovascular Engineering

Heart Valves

P – Th - B - 96
An Index for Assessing the Crimping Damage of Pericardial Leaflets in Transcatheter Heart Valves
S. Alavi[1] and A. Kheradvar[1]
[1]University of California Irvine, Irvine, CA

P – Th - B - 97
Study of the Effects of Mitral Valve Leaflet on Symmetry of Transmitral Vortex Ring
A. Falahatpisheh[1,2], N. Pahlevan[3], B. Dueitt[1], and A. Kheradvar[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA, [3]California Institute of Technology, Pasadena, CA

P – Th - B - 98
Association between the Axial Position of the Transcatheter Aortic Valve and the Hemodynamics of Valsalva Sinus
A. Falahatpisheh[1,2], E. Groves[1,2], J. Su[1,2], and A. Kheradvar[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

P – Th - B - 99
Development of a Laboratory Protocol for the Fabrication and Assessment of a Realistic Calcified Aortic Valve Model
C. Seaman[1], S. Biddle[1], and P. Sucosky[1]
[1]University of Notre Dame, Notre Dame, IN

P – Th - B - 100
Hemodynamic Comparison of Normal and Calcified Aortic Valve Anatomies Under Physiologic Flow Conditions
C. Seaman[1] and P. Sucosky[1]
[1]*University of Notre Dame, Notre Dame, IN*

P – Th - B - 101
Effect of Anomalous Papillary Muscles on Mitral Valve Function
Y. Rim[1], D. D. McPherson[1], and H. Kim[1]
[1]*The University of Texas Health Science Center at Houston, Houston, TX*

P – Th - B - 102
Effect of Leaflet-to-Chordae Contact Interaction on Computational Mitral Valve Evaluation
Y. Rim[1], D. D. McPherson[1], K. B. Chandran[2], and H. Kim[1,2]
[1]*The University of Texas Health Science Center at Houston, Houston, TX,* [2]*The University of Iowa, Iowa City, IA*

P – Th - B - 103
Calcification by Valve Interstitial Cells Cultured on Stiff Substrates is Caused by Anoikis
R. Zhao[1], Z. Mirzaei[1], C. Y. Yip[1], and C. A. Simmons[1]
[1]*University of Toronto, Toronto, ON, Canada*

P – Th - B - 104
Doppler Evaluation of Functional Patient Specific 3D Printed Models of Severe Aortic Valve Stenosis
M. S. Jackson[1], S. R. Igo[1], D. Maragiannis[1], and S. H. Little[1]
[1]*The Methodist DeBakey Heart & Vascular Center, Houston, TX*

P – Th - B - 105
Three Dimensional Cell Culture Construct for the Study of Calcific Aortic Valve Disease
M. Sapp[1], H. Fares[1], and K. J. Grande-Allen[1]
[1]*Rice University, Houston, TX*

P – Th - B - 106
Altered Extracellular Matrix Induces Mesenchymal Transformation in Adult Valve Endothelial Cells
S. Dahal[1] and G. Mahler[1]
[1]*Binghamton University, Binghamton, NY*

P – Th - B - 107
Detecting Differences in Calcification among the Aortic Valve Cusps
S. Masjedi[1], A. Amarnath[1], K. M. Bailey[1], and Z. Ferdous[1]
[1]*University of Tennessee Knoxville, Knoxville, TN*

P – Th - B - 108
Elucidating Sex-Related Differences in Calcification Using Rat Aortic Valve Cells
S. Masjedi[1] and Z. Ferdous[1]
[1]*University of Tennessee Knoxville, Knoxville, TN*

P – Th - B - 109
Pregnancy-Induced Collagen and Cellular Remodeling in Heart Valves
C. M. Pierlot[1], M. Turchin[1], J. J. Bak[1], L. G. Johnston[1], J. F. Prado[1], C. N. Cleversey[1], J. M. Lee[1], and S. M. Wells[1]
[1]*Dalhousie University, Halifax, NS, Canada*

Track: Cardiovascular Engineering

Hemodynamics

P – Th - B - 110
An Investigation of Relationship between Blood Pressure Waveform and Pulsatile Peripheral Blood Oxygenation in Simulated Sleep Apnea
R. Madappallath[1], R. M. Alex[2], and K. Behbehani[1]
[1]*University of Texas Arlington, Arlington, TX,* [2]*UT Arlington, Arlington, TX*

P – Th - B - 111
Artery Buckling Stimulates MMP-2 Expression in Arterial Wall
Y. Xiao[1], J. K. Chesnutt[1], and H-C. Han[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Th - B - 112
Left Ventricular Diastolic Function During Head Up Tilt and Hypovolemia
Q. Zhang[1], M. B. Stenger[2], T. P. Matz[3], C. F. Knapp[1], A. R. Patwardhan[1], and J. M. Evans[1]
[1]*University of Kentucky, Lexington, KY,* [2]*Wyle Science, Technology and Engineering Group, Houston, TX,* [3]*MEI Technologies, Houston, TX*

P – Th - B - 113
The Effects of Shear Stress and Secondhand Smoke on Platelet Activation and Aggregation
M. Sultana[1], D. A. Rubenstein[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

P – Th - B - 114
Moving Domain Computational Fluid Dynamics to Interface with An Embryonic Model of Cardiac Morphogenesis
J. Lee[1], M. Esmaily-Moghadam[2], E. Kung[2], A. L. Marsden[2], and T. K. Hsiai[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*University of California, San Diego, La Jolla, CA*

P – Th - B - 115
Dynamic Nonlinear Modeling of EEG data for Diagnosis of Alzheimer 's Disease
Y. Kang[1], D. Shin[1], J. Escudero[2], E. Ifeachor[2], and V. Marmarelis[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*Plymouth University, Plymouth, United Kingdom*

P – Th - B - 116
In Vitro Investigation on Morphological Changes of the Human Carotid Sinus using Phase Contrast Magnetic Resonance Imaging
J. Seong[1], W. Jeong[2], N. Smith[3], and R. Towner[3]
[1]*California State Polytechnic University, Pomona, CA,* [2]*University of Central Oklahoma, Edmond, OK,* [3]*Oklahoma Medical Research Foundation, Oklahoma City, OK*

P – Th - B - 117
Nested-Loop Modeling of Cerebral Hemodynamics
V. Marmarelis[1], D. C. Shin[1], M. E. Orme[2], and R. Zhang[3]
[1]*University of Southern California, Los Angeles, CA,* [2]*Sonovation Inc., Palos Verdes Estates, CA,* [3]*University of Texas Southwestern Medical Center, Dallas, TX*

P – Th - B - 118
Model-Based Estimation of Cerebrovascular Resistance
V. Marmarelis[1], D. Shin[1], M. Orme[2], and R. Zhang[3]
[1]*University of Southern California, Los Angeles, CA,* [2]*Sonovation Inc., Palos Verdes Estates, CA,* [3]*University of Texas, Southwestern Medical Center, Dallas, TX*

P – Th - B - 119
Effect of Calcium Chloride in Platelet-Rich-Plasma on Platelet Aggregation via Biointerfaces
A. Rhyner[1], J. Malinaric[1], L. Galey[1], P. Lammert[1], A. Genet[1], Z. Steege[1], J. M. Lopez[2], and M. G. Watson[1]
[1]*LeTourneau University, Longview, TX,* [2]*UPAEP, Puebla, Mexico*

P = Poster Session
OP = Oral Presentation

P – Th - B - 120
Mechanical Factors Influencing Initial Platelet Adhesion to Collagen
B. AU[1], L. YANG[1], S. FATIMA[1], AND V. T. TURITTO[1]
[1]*Illinois Institute of Technology, Chicago, IL*

P – Th - B - 121
Hydraulic Permeability and Macromolecule Diffusivity in Fibrin Gels and Platelet Rich Thrombi
A. R. WUFSUS[1] AND K. B. NEEVES[1]
[1]*Colorado School of Mines, Golden, CO*

Track: Cardiovascular Engineering

Lymphatic System

P – Th - B - 122
Effects of Interstitial and Luminal Flow on Dendritic Cell Transmigration into Initial Lymphatic Vessels
M. PISANO[1] AND M. SWARTZ[1]
[1]*École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*

P – Th - B - 123
Multiple Modes of Lymphatic Vessel Pumping Predicted by One Simple Mechanism
C. KUNERT[1], S. LIAO[1], D. JONES[1], J. W. SONG[1], T. P. PADERA[1], AND L. L. MUNN[1]
[1]*Mass General Hospital/Harvard Medical School, Boston, MA*

Track: Cardiovascular Engineering

Cardiovascular Engineering

P – Th - B - 124
Spatial Variation of Protein and Elastic Lamellae along Aortic Media
R. CHEHELTANI[1], A. HEMMASIZADEH[1], S. ASSARI[1], N. PLESHKO[1], M. F. KIANI[1], AND K. DARVISH[1]
[1]*Temple University, Philadelphia, PA*

P – Th - B - 125
Alleviation of Disrupted Growth Factor Signaling in a Diabetic Mouse Model
S. DAS[1], G. SINGH[1], AND A. B. BAKER[1]
[1]*UT Austin, Austin, TX*

P – Th - B - 126
Using MRI and CFD to Investigate Thrombosis Growth and the Correlations to Wall Shear Stress Distribution
J. TAYLOR[1], K. WITMER[1], T. NEUBERGER[1], B. CRAVEN[1], R. MEYER[1], S. DEUTSCH[1], AND K. B. MANNING[1]
[1]*The Pennsylvania State University, University Park, PA*

P – Th - B - 127
Shear Stress-Induced Protein Kinase C Epsilon Modulates Endothelial Tube Formation
T. BEEBE[1], F. YU[1], M. HARRISON[2], R. LI[1], AND T. HSIAI[1,3]
[1]*University of Southern California, Los Angeles, CA,* [2]*Children's Hospital Los Angeles, Los Angeles, CA,* [3]*University of California Los Angeles School of Medicine, Los Angeles, CA*

P – Th - B - 128
A Comparative Study of The Effects of Different Biotinylation Reagents on The Membrane Fluidity of Red Blood Cells
S. G. PANDYA[1,2], E. K. ABDELAZIZ[1], AND C. M. AGRAWAL[1]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

P – Th - B - 129
TNF-α; Stimulated Endothelial Cells Become Elongated When Exposed to Statin Drugs and Laminar Wall Shear Stress
M. DICK[1] AND R. L. LEASK[1]
[1]*McGill University, Montreal, QC, Canada*

P – Th - B - 130
Antiretroviral Drugs and Their Effects On Arterial Remodeling and Protease Activity
L. M. ROBERTS [1], I. PARKER[2], AND M. PLATT[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology/Emory University, Atlanta, GA*

P – Th - B - 131
Effect of Intraluminal Thrombus in Abdominal Aortic Aneurysm Expansion: A Longitudinal Patient Study
B. A. ZAMBRANO[1], J. CHOI[1], AND S. BAEK[1]
[1]*Michigan state University, East Lansing, MI*

Track: Device Technologies and Biomedical Robotics

Stents

P – Th - B - 132
Vascular Stents With Rationally-Designed Surface Nanopatterning
S. C. GOTT[1], B. A. JABOLA[2], G. XU[1], AND M. P. RAO[1]
[1]*University of California-Riverside, Riverside, CA,* [2]*Saratech Inc., Lake Forest, CA*

Track: Device Technologies and Biomedical Robotics

Implantable Devices

P – Th - B - 133
Miniaturized Implantable Wireless Gastrostimulator
G. RAVI[1], P. G. MCCORKLE[1], Y-S. SEO[1], S. RAO[1], AND J-C. CHIAO[1,2]
[1]*UT Arlington, Arlington, TX,* [2]*UTSW Medical Center of Dallas, Dallas, TX*

P – Th - B - 134
A Novel Implantable Glaucoma Valve Using Ferrofluid
E. PASCHALIS[1], J. CHODOSH[2], R. SPERLING[3], B. SALVADOR[4], AND C. DOHLMAN[4]
[1]*Mass. Eye and Ear Infirmary - Harvard Medical School, Boston,* [2]*Mass Eye and Ear Infirmary - Harvard Medical School, Boston, MA,* [3]*School of Engineering and Applied Sciences - Harvard University, Cambridge, MA,* [4]*Mass. Eye and Ear Infirmary - Harvard Medical School, Boston, MA*

P – Th - B - 135
Implantable Pressure Telemetry Device With Thin Film Micropackage
P. WANG[1], D. SUN[1], S. MAJERUS[1,2], S. LACHHMAN[1], S. LI[1], D. MARGOT[2,3], C. ZORMAN[1,2], AND W. H. KO[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*APT Center, Louis Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH,* [3]*Rehabilitation Research Service of the U.S. Department of Veterans Affairs, Cleveland, OH*

P – Th - B - 136
Improved Bending Strength Through Surface Engineering
E. CIPA[1], A. MAHAJAN[1], G. DOLL[1], AND T. P. CHU[2]
[1]*The University of Akron, AKRON, OH,* [2]*Southern Illinois University at Carbondale, Carbondale, IL*

P – Th - B - 137
Closed-Loop Recharging System for a Fetal Pacemaker
A. NICHOLSON[1], K. ZHENG[1], M. LU[1], R. CHMAIT[2], Y. BAR-COHEN[2,3], AND G. E. LOEB[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*Keck School of Medicine, University of Southern California, Los Angeles, CA,* [3]*Children's Hospital Los Angeles, Los Angeles*

P – Th - B - 138
Package Design and Life Testing of a Percutaneously Implanted Cardiac Pacemaker for Fetuses
L. Zhou[1], R. Chmait[1], B-C. Yaniv[2], R. A. Peck[1], M. Lu[1], and G. E. Loeb[1]
[1]University of Southern California, Los Angeles, CA, [2]Children's Hospital Los Angeles, Los Angeles, CA

P – Th - B - 139
Performance of Temporal and Spectral Speech Coding in Noisy Background for Cochlear Implant
M. G. Bingabr[1], B. Espinoza-Varas[2], S. Bingabr[3], and A. Moussa[1]
[1]University of Central Oklahoma, Edmond, OK, [2]Oklahoma University Health Science Center, Oklahoma City, OK, [3]Oklahoma University, Norman, OK

P – Th - B - 140
Three-dimensional Slot Filter for Viable Capture of Circulating Tumor Cells
M. Zhou[1], J. Wang[1], J. Chang[2], W. Khan[1], and S. Zheng[1]
[1]Pennsylvania State University, University Park, PA, [2]Harvard University, Cambridge, MA

P – Th - B - 141
Drug-Loaded PLGA Microsphere/PVA Hydrogel Composite to Improve Performance of Implantable Biosensors
S. Vaddiraju[1,2], Y. Wang[2], D. J. Burgess[2], and F. Papadimitrakopoulos[2]
[1]Biorasis Inc., Storrs, CT, [2]University of Connecticut, Storrs, CT

P – Th - B - 142
Electric Field-Assisted Delivery is an Effective Modality to Locally Deliver Cytotoxic Therapy to Pancreatic Cancer
J. Byrne[1], M. Jajja[1], A. O'Neill[1], M. Napier[1], J. C. Luft[1], J. Yeh[1], and J. DeSimone[1,2]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]North Carolina State Univeristy, Raleigh, NC

Track: Device Technologies and Biomedical Robotics

Implantable Electronics

P – Th - B - 143
Mapping Wireless Power Transfer for Implantable Stimulator Applications
Z. Hughes[1], Y-S. Seo[1], P. Woods[1], M. Nguyen[1], P. G. Mccorkle[1], S. Rao[1], and J-C. Chiao[1,2]
[1]UT Arlington, Arlington, TX, [2]UTSW Medical Center at Dallas, Dallas, TX

P – Th - B - 144
Fabrication and Characterization of Enzymatic Biofuel Cells in Series
S. J. Stephenson[1] and D. W. Schmidtke[1]
[1]University of Oklahoma, Norman, OK

P – Th - B - 145
In-vitro Experimental Results using the FREE-D System to Wirelessly Power Ventricular Assist Devices
B. H. Waters[1], S. Asgari[2], B. Mahoney[1], P. Bonde[2], and J. R. Smith[3]
[1]University of Washington, Seattle, WA, [2]Yale University, New Haven, CT, [3]Univ, Seattle, WA

P – Th - B - 146
Impact of *In Vivo* Conditions on Power Transfer to Transmitters and Methods for Reliable Function
J. A. Szivek[1], J. L. Ouellette[1], A. C. Arellano[1], and J. T. Ruth[1]
[1]University of Arizona, Tucson, AZ

P – Th - B - 147
Wirelessly Powered Implantable Physiological Controller (WPIC) for Ventricular Assist Devices
S. S. Asgari[1] and P. Bonde[1]
[1]Bonde Artificial Heart Lab, Yale School of Medicine, New Haven, CT

Track: Device Technologies and Biomedical Robotics

Nanobiointerfaces

P – Th - B - 148
Nanotopography Regulated Cell Sensing Nanomaterials
X. Yu[1], A. Bruce[1], L. Wang[2], P. P. Fulay[1], Y. Rojanasakul[1], and Y. Yang[1]
[1]West Virginia University, Morgantown, WV, [2]National Institute for Occupational Safety and Health, Morgantown, WV

P – Th - B - 149
Evaluation of Nanocrystalline Diamond Seeding Process to Develop a Bacterial Biosensor
W. Zhang[1], A. Radadia[1], S. Banu[1], and A. Schexnider[2]
[1]Louisiana Tech University, Ruston, LA, [2]University of Louisiana at Lafayette, Lafayette, LA

Track: Device Technologies and Biomedical Robotics

Physically Assistive Technologies

P – Th - B - 150
Control of Assistive Forces Using Poststroke Residual Arm Movement
N. S. Makowski[1], J. S. Knutson[1,2], J. Chae[1,2], and P. E. Crago[1]
[1]Case Western Reserve University, Cleveland, OH, [2]MetroHealth Medical Center, Cleveland, OH

P – Th - B - 151
Effects of Using Wrist-hand Orthosis together with Functional Electrical Stimulation on Hand Opening in Chronic Stroke
J. Yao[1], N. van Klink[2], J. Sullivan[1], and J. Dewald[1]
[1]Northwestern University, Chicago, IL, [2]University of Twente, Enschede, Netherlands

Track: Device Technologies and Biomedical Robotics

Device Technologies and Biomedical Robotics

P – Th - B - 152
Biomechanical Benefits of Energy Harvesting During Walking Using Dielectric Elastomers
H. Lai[1] and C. Tan[1]
[1]Wayne State University, Detroit, MI

P – Th - B - 153
Importance of Discharge Energy and Uniformity of Nanosecond and Microsecond Pulsed Dielectric Barrier Discharges on Intracellular Generation of Reactive Oxygen Species in Mesenchymal Stem Cells
A. Lin[1]
[1]Drexel Plasma Institute, Camden, NJ

P – Th - B - 154
A Novel Approach in Detecting Normal and Shear Forces at the Fingertips with Minimal Hysteresis
X. Zheng[1] and P. Troyk[1,2]
[1]Illinois Institute of Technology, Chicago, IL, [2]Pritzker Institute of Biomedical Science and Engineering, Chicago, IL

P – Th - B - 155
Development and Application of Biomuscles in Prosthetics
K. M. Conrad[1], C. Noe[1], and J. La Belle[1]
[1]Arizona State University, Tempe, AZ

P = Poster Session
OP = Oral Presentation

P – Th - B - 156

Preliminary Study to Optimize the LED Operation of the Unconstrained Photoplethysmography System

S. Hong[1], J. Lee[2], H. Baek[3], and K. Park[4]

[1]Seoul National University, Seoul, Korea, Republic of, [2]Texas Instruments, Seoul, Korea, Republic of, [3]Samsung, Seoul, Korea, Republic of, [4]College of Medicine, Seoul National University, Seoul, Korea, Republic of

Track: Nano to Micro Technologies

Microfludic Platforms

P – Th - B - 157

Simultaneous Perfusion Apparatus (SPA) for Oocyte Manipulation and Tracking

S. Angione[1], L. Brayboy[2,3], N. Oulhen[4], G. Wessel[4], and A. Tripathi[1]

[1]School of Engineering, Center for Biomedical Engineering, Brown University, Providence, RI, [2]Division of Reproductive Endocrinology and Infertility, Women and Infants Hospital, Providence, RI, [3]Warren Alpert Medical School, Brown University, Providence, RI, [4]Department of Molecular Biology, Cell Biology and Biochemistry, Brown University, Providence, RI

P – Th - B - 158

A Self-Contained, Programmable Multiwell Cell Stimulation Platform

A. K. Au[1], S. Gibbs[1], A. Scott[1], L. F. Horowitz[1], E. Vinckenbosch[1,2], B. Otis[1], and A. Folch[1]

[1]University of Washington, Seattle, WA, [2]École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

P – Th - B - 159

Simulation Tools for Design Optimization of Microchannels Using Antibody-Analyte Transport-Reaction

K. L. Hamlington[1], R. Cortez[1], H. Fujioka[1], and D. P. Gaver[1]

[1]Tulane University, New Orleans, LA

P – Th - B - 160

Simultaneous O2 and CO2 Measurements Localized in an Open Top Microfluidic Cell Culture

Z. Li[1], Z. Zhao[1], R. Liu[1], and J. F-J. Lo[1]

[1]University of Michigan at Dearborn, Dearborn, MI

P – Th - B - 161

Preferential Cell Migration to Rat Organ Lysates for the Study of Chemotactic Factors in Cancer Metastases

S. Rao[1], U. Tata[2], P. Garigipati[3], C. Hernandez[4], A. Sharma[1], V. K. Lin[1], and J-C. Chiao[1,5]

[1]UT Arlington, Arlington, TX, [2]UCLA, Los Angeles, CA, [3]Plano High East, Plano, TX, [4]Arlington High School, Arlington, TX, [5]UTSW Medical Center of Dallas, Dallas, TX

P – Th - B - 162

Sphingolipid Metabolites Affect Dielectrophoretic Signature of Syngeneic Murine Ovarian Cancer Cells

A. Salmanzadeh[1], E. S. Elvington[1], M. Bonakdar[1], P. C. Roberts[1], E. M. Schmelz[1], and R. V. Davalos[1]

[1]Virginia Tech, Blacksburg, VA

P – Th - B - 163

High Efficiency Magnetic Sieving Device for Rare T Cell Population

J-H. Lee[1], R. Kerslake[2], and L. C. Kam[1]

[1]Columbia University, New York, NY, [2]City College of New York, New York, NY

P – Th - B - 164

Characterizing Bacterial Adhesion in Flow without Transport Artifacts

W. E. Thomas[1]

[1]University of Washington, Seattle, WA

P – Th - B - 165

Effective Microfluidic Mixing by Paramagnetic Microbeads Rotation: MEMS and Numerical Analysis

S. Kim[1], D. P. Giddens[1], D. Owen[1], and P. J. Hesketh[1]

[1]Georgia Institute of Technology, Atlanta, GA

P – Th - B - 166

Hypoxia Tolerance of the Mammalian Nervous System Under Spatially Controlled Oxygen Conditions

G. Mauleon[1], J. Larson[1], and D. T. Eddington[1]

[1]University of Illinois at Chicago, Chicago, IL

P – Th - B - 167

Development of a SERS-based System for the Detection of Bisphenol A in Blood

H. Marks[1], M. Pishko[1], G. W. Jackson[2], J. Kameoka[1], and G. Coté[1]

[1]Texas A&M, College Station, TX, [2]Base Pair Biotechnologies, Inc., Houston, TX

P – Th - B - 168

EGF as a Novel Therapeutic Target for Medulloblastoma Metastasis

J. Rico[1] and M. Vazquez[1]

[1]The City College of New York, New York, NY

P – Th - B - 169

Fast Microfluidic Mixing Via Acoustically Oscillated Sharp Edges

P-H. Huang[1], D. Ahmed[1], L. Wang[2], and T. J. Huang[1]

[1]The Pennsylvania State University, State College, PA, [2]Ascent Bio-Nano Technologies Inc., State College, PA

P – Th - B - 170

An On-chip, Multichannel Droplet Sorter Using Standing Surface Acoustic Waves (SSAW)

S. Li[1], X. Ding[1], F. Guo[1], Y. Chen[1], M. I. Lapsley[1], S-C. Lin[1], and T. Huang[1]

[1]Pennsylvania State University, University Park, PA

P – Th - B - 171

Improving the Post-thaw Wash Process for Cryopreserved Red Blood Cells Using Microfluidics

R. E. Lusianti[1] and A. Z. Higgins[1]

[1]Oregon State University, Corvallis, OR

P – Th - B - 172

Ciliated Micropillar Based Microfluidic Isolation of Cancer Derived Exosomes

Z. Wang[1], H-J. Wu[2], Y. Hu[2], B. Godin[2], J. X. Zhang[1], and X. Liu[2]

[1]University of Texas at Austin, Austin, TX, [2]The Methodist Hospital Research Institute, Houston, TX

P – Th - B - 173

Deformability Dependent Separation of Cells in a Microfluidic Device

G. Wang[1], W. Mao[1], R. Byler[1], K. Patel[1], C. Henegar[1], A. Alexeev[1], and T. Sulchek[1]

[1]Georgia Tech, Atlanta, GA

P – Th - B - 174

Post-Assembly PEGylation of a PDMS Microchannel for Enhancing Hemocompatibility

K. M. Kovach[1], J. R. Capadona[1,2], A. Sen Gupta[2], and J. A. Potkay[2,3]

[1]Advanced Platform Technology (APT) Center, Louis Stokes Cleveland VA Medical Center, Cleveland, OH, [2]Case Western Reserve University, Cleveland, OH, [3]VA Ann Arbor Healthcare System, Ann Arbor, MI

P – Th - B - 175

Delayed Drosophila Embryogenesis under Oxygen Deprivation in Microfluidic Device

Z. Wang[1], S. Oppegard[1], D. Eddington[1], and J. Cheng[1]

[1]University of Illinois at Chicago, Chicago, IL

P – Th - B - 176
Tension Induced Neurite Growth in Microfluidic Channels
T. D. Nguyen[1] and M. C. McAlpine[1]
[1]*Princeton University, Princeton, NJ*

P – Th - B - 177
Microfluidic Synthesis of Composite Microgels Converting Light into Mechanical Force
C-H. Chen[1]
[1]*National University of Singapore, Singapore, Singapore*

P – Th - B - 178
Preparation and Characterization of PEO Coating for Microchannel Hemodialyzer Application
M. Coblyn[1], K. Heintz[2], K. Schilke[1], J. Snider[1], M. Truong[1], G. Jovanovic[1], J. McGuire[1], and W-K. Lee[3]
[1]*Oregon State University, Corvallis, OR,* [2]*Lehigh University, Bethlehem, PA,* [3]*Dankook University, Yongin-si, Korea, Republic of*

P – Th - B - 179
Enhanced Control of Cell Motion Using Cytotactic Surfaces and Electric Fields
C. Edington[1,2], H. Murata[2], R. Koepsel[2], J. Andersen[2], T. Kanade[2], A. C. Balazs[1], Z. Liron[3], and A. J. Russell[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA,* [3]*Israel Institute for Biological Research, Ness-Ziona, Israel*

P – Th - B - 180
A Chip for Hydrodynamic Microvortical Rotation of Live Single Cells
R. M. Shetty[1], J. Myers[1], W. Teller[1], A. Shabilla[1], H. Wang[1], S-H. Chao[1], D. Smith[1], J. Houkal[1], J. Vela[1], L. Kelbauskas[1], R. H. Johnson[1], and D. R. Meldrum[1]
[1]*Arizona State University, Tempe, AZ*

P – Th - B - 181
The Integration Of Tailorable Membranes Within Microchannels To Electrophoretically Fractionate DNA
M. Zheng[1], B. Kalaria[1], and J. D. Zahn[1]
[1]*Rutgers, The State University of New Jersey, Piscataway, NJ*

P – Th - B - 182
Simple Microfluidic Assay For The Measurement Of Neutrophil Oxidative Burst
S. Moussavi-Harami[1], E. K. Sackmann[1], A. Huttenlocher[1], and D. J. Beebe[1]
[1]*University of Wisconsin, Madison, WI*

P – Th - B - 183
Developing and Characterizing Microfluidic Devices to Study the Role of Mechanobiology on Endothelial-to-Mesenchymal Transformation
S. Mina[1], W. Wang[1], Q. Cao[1], B. Murray[1], P. Huang[1], and G. Mahler[1]
[1]*Binghamton University, Binghamton, NY*

P – Th - B - 185
Guided Cell Migration by Topographical Guidance and Biomolecular Gradients Within an Open Access Microfluidic Chamber array
P. Kim[1], K. Nam[1], N. Bhattacharjee[1], A. Folch[1], S. Kwon[2], and D-H. Kim[1]
[1]*University of Washington, Seattle, WA,* [2]*Seoul National Univeristy, Seoul, Korea, Republic of*

P – Th - B - 185
Development of Sealing Methods for a Microchannel Hemodialyser
P. S. McNeff[1], S. Porter[1], D. Ward[1], and B. Paul[1]
[1]*Oregon State University, Corvallis, OR*

P – Th - B - 156
A Micropore-based Impedance Flow Cytometer for Identifying Differentiation State of Stem Cells
H. Song[1], Y. Wang[1], J. Rosano[1], B. Prabhakarpandian[1], C. Garson[1], K. Pant[1], and E. Lai[2,3]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*U.S. Army Medical Research and Materie, Fort Detrick, MD,* [3]*Johns Hopkins University, Baltimore, MD*

P – Th - B - 186
A Micropatterned Microfluidic Platform for Probing Physicochemical Effects on Cell Behavior
R. Natividad[1] and A. Asthagiri[1]
[1]*Northeastern University, Boston, MA*

P – Th - B - 187
Cell Communication in Three Dimensional Microenvironments
M. Byrne[1], L. Trump[1], A. Desai[1], L. A. Rund[1], L. A. Schook[1], and P. J. Kenis[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P – Th - B - 188
Reconfigurable Microfluidics Combined with Antibody Microarrays for Enhanced Detection of T-cell Secreted Cytokines
T. M. Vu[1], A. Chen[1], T. Pan[1], and A. Revzin[1]
[1]*UC Davis, Davis, CA*

P – Th - B - 189
Standing Surface Acoustic Wave (SSAW) Based Rare Cell Enrichment
Y. Chen[1] and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA*

P – Th - B - 190
High-throughput Cell Screening in an Open Microfluidic Platform
L. F. Horowitz[1], A. K. Au[1], A. Scott[1], D. R. Storm[1], and A. Folch[1]
[1]*University of Washington, Seattle, WA*

P – Th - B - 191
Design and Fabrication of Engineered Platforms to Control Multiple-cue Directional Migration
L. M. Lara[1] I. C. Schneider[1] and S. Willett[2]
[1]*Iowa State University, Ames, IA,* [2]*Arkansas Tech University, Russellville, AR*

P – Th - B - 192
Point-of-Care CD Immunoassay for Characterization of Age-Related Macular Degeneration
D. I. Walsh[1] and S. K. Murthy[1]
[1]*Northeastern University, Boston, MA*

P – Th - B - 193
Magnetically Coated Track-Etched Membranes for Highly Efficient Sorting of Biological Targets
M. Muluneh[1] and D. Issadore[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P – Th - B - 194
Electrotaxis-on-Disc: A High Throughput Screening Platform for Electrotaxis-Related Genes
S. Zhao[1], R. Gao[2], M. Zhao[2], T. Pan[1], and P. Devreotes[3]
[1]*University of California, Davis, Davis, CA,* [2]*University of California, Davis, Sacramento, CA,* [3]*Johns Hopkins University School of Medicine, Baltimore, MD*

P – Th - B - 195
Self-Sorting Bacteria from Hetrogeneous Samples Using Microfluidic Devices
N. Tandogan[1] and E. D. Goluch[1]
[1]*Northeastern University, Boston, MA*

P – Th - B - 196
Integrated In-Film Bioprocessing in Microfluidics Enabled Membranes and Cell-Gel Composites
X. Luo[1], J. Terrell[2], H-C. Wu[2], C-Y. Tsao[2], and W. Bentley[2]
[1]*Catholic University of America, Washington, DC,* [2]*University of Maryland, College Park, MD*

P – Th - B - 197
Leukocyte Isolation and Sorting Using Microdiaphragm Pumping and Registered Microfiltration
T. Gaborski[1] and J. Wilcox[1]
[1]*Rochester Institute of Technology, Rochester, NY*

P = Poster Session
OP = Oral Presentation

P – Th - B - 198
Quality Control of Milk Sample Using MEMS-based Purge & Trap Technique
M. Akbar[1], M. Restaino[1], and M. Agah[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Th - B - 199
Large Capacity Electrode Arrays for High Throughput Cell Sorting using Positive Dielectrophoresis
M. G. Simon[1], A. Akil[1], J. L. Nourse[1], A. P. Lee[1], and L. A. Flanagan[1]
[1]*University of California, Irvine, Irvine, CA*

P – Th - B - 200
Microfluidic Serial Dilution Ladder
M. Hwang[1], S. Ahrar[1], P. N. Duncan[1], and E. E. Hui[1]
[1]*University of California, Irvine, Irvine, CA*

P – Th - B - 201
Application of Ultra Dielectrophoresis (uDEP) for Multiplexed Proteomics
S. Emaminejad[1,2], M. Javanmard[2], R. W. Dutton[1], and R. W. Davis[2]
[1]*Stanford University, Stanford, CA,* [2]*Stanford Genome Technology Center, Palo Alto, CA*

P – Th - B - 202
Full Length Linearization of Yeast Chromosome in Tuneable Nanochannels
B. Kim[1], T. Matusoka[1], and S. Takayama[1]
[1]*University of Michigan, Ann Arbor, MI*

Track: Respiratory Bioengineering

Lung Micromechanics

P – Th - B - 203
Effect of Variable Stretch on the Organization of Mitochondrial Networks Assessed Using Live Cell Imaging
J. Imsirovic[1], H. Parameswaran[1], E. Bartolak-Suki[1], and B. Suki[1]
[1]*Boston University, Boston, MA*

P – Th - B - 204
Collagen Remodeling by Pulmonary Fibroblasts: Role of ETS-2, TFß and Biomechanical Forces
M. Schickel[1], C. Baran[2], J. Lannutti[3], H. Powell[1,3], S. Ghadiali[1,2], and C. Marsh[2]
[1]*Biomedical Engineering Department, The Ohio State University, Columbus, OH,* [2]*Internal Medicine: Pulmonary, Allergy, Critical Care, and Sleep Medicine, The Ohio State University, Columbus, OH,* [3]*Material Science and Engineering, The Ohio State University, Columbus, OH*

P – Th - B - 205
Matrix Stiffness Drives Fibroblast Activation Through Transcriptional Co-activators YAP and TAZ
F. Liu[1] and D. Tschumperlin[1]
[1]*Harvard School of Public Health, Boston, MA*

P – Th - B - 206
Ventilation Effects On Surfactant Secretion And Spreading In Acute Lung Injury
A. B. Kharge[1] and C. E. Perlman[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

Track: Respiratory Bioengineering

Lung Stem Cells

P – Th - B - 207
An Agent-Based Model of Mesenchymal Stem Cell Dynamics of Lung Scaffolds
J. J. Pothen[1], D. E. Wagner[1], D. J. Weiss[1], and J. H. T. Bates[1]
[1]*University of Vermont College of Medicine, Burlington, VT*

Track: Respiratory Bioengineering

Lung Tissue Engineering

P – Th - B - 208
Lung Derived Extra Cellular Matrix Hydrogels Conduct Mesenchymal Cell Attachment, Growth and Differentiation
R. Pouliot[1], M. Malik[1], and R. L. Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P – Th - B - 209
The Role of Mechanical Stresses in Regulation of FGF10 Signaling in Embryonic Mouse Lung Development
A. E. Stanton[1], J. P. Gleghorn[1], and C. M. Nelson[1]
[1]*Princeton University, Princeton, NJ*

P – Th - B - 210
Human Respiratory Lung Bronchioles: *In Vitro* Bio-assessment Platform
J-H. Huang[1], A. M. Goumas[1], A. A. Crawley[1], A. Arefin[2], J. Gao[1], and R. S. Iyer[1]
[1]*Los Alamos National Laboratory, Los Alamos, NM,* [2]*University of New Mexico, Albuquerque, NM*

P – Th - B - 211
Decellularization and Recellularization of Pig Lungs: A Model for *Ex Vivo* Xenogeneic Lung Bioengineering and Transplantation
N. R. Bonenfant[1], D. E. Wagner[1], C. Parsons[1], D. Sokocevic[1], Z. D. Borg[1], E. Brooks[1], M. Lathrop[1], Y. W. Lam[1], B. Deng[1], M. DeSarno[1], T. Ashikaga[1], R. Loi[2], A. M. Hoffman[3], and D. J. Weiss[1]
[1]*University of Vermont, Burlington, VT,* [2]*University of Cagliari, Cagliari, Italy,* [3]*Tufts Veterinary College, Grafton, MA*

Track: Respiratory Bioengineering

Modeling of Lung Injury

P – Th - B - 212
Modeling the Dynamics of Recruitment and Over-distension in the Injured Lung
J. H. Bates[1] and B. J. Smith[1]
[1]*University of Vermont, Burlington, VT*

P – Th - B - 213
Endothelial Barrier Disruption and Recovery is Controlled by Substrate Stiffness
K. Birukov[1], X. Tian[1], I. Cokic[1], A. A. Birukova[1], and M. Gardel[1]
[1]*University of Chicago, Chicago, IL*

P – Th - B - 214
Bulk Modulus and the Distribution of Mechanical Forces in a Model of Pulmonary Fibrosis
B. Suki[1], C. L. Oliveira[1], and J. H. Bates[2]
[1]*Boston University, Boston, MA,* [2]*University of Vermont, Burlington, VT*

P – Th - B - 215
Simultaneous Application of Mechanical Forces on Lung Epithelial Cells Alters miRNA Expression and Pro-Inflammatory Cytokine Secretion *In Vitro*
K. Nelson[1] and S. Ghadiali[1]
[1]*Ohio State University, Columbus, OH*

P – Th - B - 216
Fibrotic Microenvironment Sensitization of Endothelial Cells and Pericytes Induces Leukocyte Recruitment
P. Sava[1] and A. L. Gonzalez[1]
[1]*Yale University, New Haven, CT*

P – Th - B - 217

Multi-Level Disease Models from Gene Expression Data

J. E. SHOEMAKER[1], S. FUKUYAMA[1], H. KITANO[1,2], AND Y. KAWAOKA[1,3]

[1]Japan Science and Technology Agency, Minato-ku, Japan, [2]The Systems Biology Institute, Tokyo, Tokyo, Japan, [3]The University of Wisconsin, Madison, Madison, WI

P – Th - B - 218

MicroRNA miR-15b Modulates *In Vitro* Cyclic Stretch-induced Increases in Permeability and Regulates Neuregulin 1 (Nrg1)

N. YEHYA[1,2], M. J. SONG[1], G. G. LAWRENCE[1], N. DAVIDOVICH[1], AND S. S. MARGULIES[1]

[1]University of Pennsylvania, Philadelphia, PA, [2]Children's Hospital of Philadelphia, Philadelphia, PA

Track: Respiratory Bioengineering

Modeling of Lung Physiology

P – Th - B - 219

A Computational Model of Inter-airway Interactions Mediated by the Parenchyma

B. MA[1] AND J. H. BATES[1]

[1]University of Vermont, Burlington, VT

P – Th - B - 220

Interaction Between Cortical Actin and Extracellular Matrix Contributes to Airway Smooth Muscle Reactivity

H. PARAMESWARAN[1], E. CANOVIC[1], B. HARVEY[1], M. SMITH[1], D. STAMENOVIC[1], B. SUKI[1], AND K. R. LUTCHEN[1]

[1]Boston University, Boston, MA

P – Th - B - 221

Modeling the Pulmonary Distribution of Surfactant Administered into an Asymmetric Airway Tree

M. FILOCHE[1], C-F. TAI[2], M. FLORENS[1], AND J. B. GROTBERG[2]

[1]Ecole Polytechnique, CNRS, Palaiseau, France, [2]University of Michigan, Ann Arbor, MI

P – Th - B - 222

Modeling and Experimental Validation of Sound Transmission in Human Torso

Y. PENG[1], Z. DAI[2], H. MANSY[3], B. HENRY[4], R. SANDLER[5], AND T. ROYSTON[4]

[1]University of Illinois at Chicago, Chicago, IL, [2]Univ. of Illinois at Chicago, Chicago, IL, [3]Rush Univ., Chicago, IL, [4]University of Illinois at Chicago, CHICAGO, IL, [5]Rush Univ., Chicago

P – Th - B - 223

A Five Layer Finite Element Model for Simulation of Passive and Active Airway Wall Mechanics

B. J. BREEN[1] AND M. H. TAWHAI[1]

[1]Auckland Bioengineering Institute, Auckland, New Zealand

P – Th - B - 224

Numerical Model of Oxygen Trapping in the Healthy and Diseased Lung

M-Y. KANG[1], M. FILOCHE[1,2], I. KATZ[3,4], AND B. SAPOVAL[1,2]

[1]CNRS - Ecole Polytechnique, Palaiseau Cedex, France, [2]UniverSud, Cachan, France, [3]Air Liquide Santé International, Jouy-en-Josas, France, [4]Lafayette College, Easton, PA

P – Th - B - 225

What Triggers the Emergence of Ventilation Defects in Asthma?

T. WINKLER[1], A. GROS[2], Y. BAR-YAM[2], J. G. VENEGAS[1], AND M. A. DE AGUIAR[3]

[1]Harvard Medical School & Massachusetts General Hospital, Boston, MA, [2]New England Complex Systems Institute, Boston, MA, [3]Universidade Estadual de Campinas, Instituto de Fisica, Campinas, SP, Brazil

P – Th - B - 226

Proteoglycans Protect the Lung from Mechanical Failure During the Progression of Emphysema

A. TAKAHASHI[1], A. MAJUMDAR[1], E. BARTOLÁK-SUKI[1], AND B. SUKI[1]

[1]Boston University, Boston, MA

P – Th - B - 227

Characterization of *In Vivo* Pulmonary Elastance: Comparison of Forced Oscillation and Image Registration Techniques

C. OLSON[1], A. TAKAHASHI[1], B. SUKI[1], AND B. SNYDER[2,3]

[1]Boston University, Boston, MA, [2]Beth Israel Deaconess Medical Center, Boston, MA, [3]Childrens Hospital, Boston, MA

Track: Respiratory Bioengineering

Modeling of Respiratory Flow

P – Th - B - 228

Effect of Wall Topography on the Wall Mechanical Stresses During Airway Reopening

H. FUJIOKA[1] AND D. P. GAVER III[1]

[1]Tulane University, New Orleans, LA

P – Th - B - 229

A Geometrical Model for Searching an Optimal Villi Density in the Inter-villous Cross-sections of the Human Placenta

A. SEROV[1], M. FILOCHE[1], C. M. SALAFIA[2], AND D. S. GREBENKOV[1]

[1]Ecole Polytechnique, CNRS, Palaiseau, France, [2]Placental Analytics LLC, Larchmont, NY

P – Th - B - 230

Dynamic Multiscale Model of the Human Respiratory System

S. KABILAN[1], A. KUPRAT[1], D. EINSTEIN[1], J. CARSON[1], R. JACOB[1], K. MINARD[1], AND R. CORLEY[1]

[1]Pacific Northwest National Laboratory, Richland, WA

P – Th - B - 231

Theoretical Considerations when using Midexpiratory Flow (EF50 to Estimate Changes in Total Lung Resistance, RL

W. T. GOLDSMITH[1,2], J. REYNOLDS[1], W. MCKINNEY[1], AND D. FRAZER[1]

[1]NIOSH, Morgantown, WV, [2]WVU School of Public Health, Morgantown, WV

Track: Respiratory Bioengineering

Respiratory Biomechanics

P – Th - B - 232

Respiratory Resistance Prior, and After Cessation of Exercise are the Same

J. VOSSOUGHI[1] AND A. JOHNSON[2]

[1]UMD/ESRA, Brookeville, MD, [2]University of Maryland, College Park, MD

P – Th - B - 233

A Vertical Clearance Model to Define the Mechanisms Behind Mucociliary Clearance and Interactions

S. LYNCH[1], J. CARPENTER[1], J. CRIBB[1], AND R. SUPERFINE[1]

[1]University of North Carolina at Chapel Hill, Chapel Hill, NC

P – Th - B - 234

A Comprehensive Lung Model for Studying the Effects of Different Ventilation Regimes on Lunch Mechanics and Gas Exchange

M. ISMAIL[1], L. YOSHIHARA[1], C. ROTH[1], AND W. A. WALL[1]

[1]Technische Universitaet Muenchen, Garching, Germany

P – Th - B - 235

Evidence of the Recruitment-Derecruitment of Lung Units Derived from Previous Surface Tension ( ), and Pressure-Volume (PL – VL) Measurements

D. FRAZER[1], J. REYNOLDS[1], W. MCKINNEY[1], AND W. T. GOLDSMITH[1,2]

[1]NIOSH, Morgantown, WV, [2]WVU School of Public Health, Morgantown, WV

P = Poster Session
OP = Oral Presentation

Track: Respiratory Bioengineering

Respiratory Bioengineering

P – Th - B - 236

Quantification of Concomitant Oscillations in Cerebral Blood Flow Velocity and Arterial Blood Pressure during Obstructive Sleep Apnea

R. M. Alex[1], G. Bhave[1], A. Bashaboyina[1], M. Al-Abed[2], S. Iyer[1], D. E. Watenpaugh[3], R. Zhang[4], and K. Behbehani[1]

[1]University of Texas Arlington, Arlington, TX, [2]Hashemite University, Amman, Jordan, [3]Sleep Consultants Inc., Fort Worth, TX, [4]Univnersity of Texas Southwestern Medical Center, Dallas, TX

P – Th - B - 237

Physiologic Airway Models to Explore Surfactant Delivery to Infants

P. Bach[1], M. Filoche[2], J. B. Grotberg[3], and H. Tavana[1]

[1]University of Akron, Akron, OH, [2]Ecole Polytechnique, Palaiseau Cedex, France, [3]University of Michigan, Ann Arbor, MI

P – Th - B - 238

Microfluidic Models of Surfactant and Liquid Plug Delivery in Small Airways

J. B. Grotberg[1], M. K. Mulligan[2], J. K. Sznitman[2], and D. K. Waisman[3,4]

[1]University of Michigan, Ann Arbor, MI, [2]Technion - Israel Technical University, Haifa, Israel, [3]Technion-Israel Institute of Technology, Haifa, Israel, [4]Carmel Medical Center, Haifa, Israel

Track: Stem Cell Engineering

Bioprocessing of Human Cells

P – Th - B - 239

Derivation of Umbilical Cord Blood-Derived Mesenchymal Stem Cells through TGF-Beta induced Endothelial-to-Mesenchymal Transition

E. Brown Peters[1], B. Liu[1], J. West[1], and G. Truskey[1]

[1]Duke University, Durham, NC

P – Th - B - 240

Mechanical Stiffness as an Indicator of Osteoblastic Human Mesenchymal Stem Cell Differentiation

T. Bongiorno[1], J. Kazlow[1,2], R. Mezencev[1], S. Griffiths[1], R. Olivares-Navarrete[3], J. McDonald[1], Z. Schwartz[3], B. D. Boyan[3], T. C. McDevitt[1,2], and T. Sulchek[1,2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Virginia Commonwealth University, Richmond, VA

P – Th - B - 241

Alginate Composition Impacts Differentiation Trajectories of Microencapsulated Embryonic Stem Cell Aggregates

J. L. Wilson[1], M. Najia[1], R. Saeed[1], and T. C. McDevitt[1,2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]The Parker H. Petit Institute for Bioengineering and Bioscience, Atlanta, GA

P – Th - B - 242

Bioprocessing of Adipose-Derived Stem Cells for Removal of Contaminating Cell Types and Improved Quality of Tissue-Engineered Cartilage Constructs

K. Okarski[1], W. Ellis[1], L. Powers[1], and J. Szivek[1]

[1]University of Arizona, Tucson, AZ

P – Th - B - 243

3D Expansion of MSC-Like Cells for Clinical Use - Bioprocessing Solutions and Biological Implications

E. Abraham[1], M. Wadmany[1], A. Gilert[1], O. Makler[1], L. Pinzur[1], E. Zahavi[1], and A. Chajut[1]

[1]Pluristem Therapeutics, Haifa, Israel

Track: Stem Cell Engineering

Engineering Stem Cell Niche

P – Th - B - 244

Modulating Stem Cell Behaviors via the Synergy of Mechanical and Biochemical Signaling

Z. Tong[1] and X. Jia[1]

[1]University of Delaware, Newark, DE

P – Th - B - 245

Enrichment of Prostate Cancer Stem Cells by Cell Microencapsulation for Miniaturized 3D Culture

W. Rao[1], S. Zhao[1], and X. He[1]

[1]The Ohio State University, Columbus, OH

P – Th - B - 246

Time-lapse Imaging Reveals the Role of Spectrosome and Centrosome in Asymmetric Stem Cell Division

C. Bang[1] and J. Cheng[1]

[1]University of Illinois at Chicago, Chicago, IL

P – Th - B - 247

Heterotypic Cell Interactions Enhance Liver Functions of iPSC-Derived Human Hepatocytes *In Vitro*

D. Berger[1], M. Davidson[1], B. Ware[1], A. Bailey[1], and S. Khetani[1]

[1]Colorado State University, Fort Collins, CO

P – Th - B - 248

Engineering a Bone Marrow Niche for Thrombopoiesis

S. Sun[1,2], X. Chen[1,3], D. Gao[1], J-A. Reems[4], B. Torok-Storb[3], J. Lopez[1,2], and Y. Zheng[1]

[1]University of Washington, Seattle, WA, [2]Puget Sound Blood Center, Seattle, WA, [3]Fred Hutchinson Cancer Research Center, Seattle, WA, [4]University of Utah, Salt Lake City, UT

Track: Stem Cell Engineering

iPS Models of Human Disease

P – Th - B - 249

Engineering Cardiac Micro-tissues and Human Induced Pluripotent Stem Cells to Model Desmosome-associated Disease *In Vitro*

N. Huebsch[1], Z. Ma[2], Y. Miyaoka[1], J. Wang[2], M. J. Spindler[1], C. R. Russell[1], P. Lizarraga[1], T. Nguyen[1], J. Yoo[1], A. Chan[1], P-L. So[1], K. E. Healy[2], and B. R. Conklin[1]

[1]Gladstone Institute of Cardiovascular Disease, San Francisco, CA, [2]University of California, Berkeley, Berkeley, CA

Track: Stem Cell Engineering

Matrix Control of Stem Cells

P – Th - B - 250

Multiplex Synthetic Matrix Cues Reinstate the Therapeutic Potential of Aging Adult Stem Cells

S. W. Crowder[1,2], H. N. Lewis[1], C. M. Ambrose[1], P. A. Short[1], B. W. Schmidt[1], S. Murthy[3], and H-J. Sung[1,2]

[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, TN, [3]Rutgers University, Piscataway, NJ

P – Th - B - 251

Neural Differentiation of Induced Pluripotent Stem Cells in 3D Matrices

A. Montgomery[1], A. Wong[1], L. Sun[1], and S. M. Willerth[1]

[1]University of Victoria, Victoria, BC, Canada

P – Th - B - 252
Perfusion-decellularized Matrix as a Natural Acaffold for Human Embryonic Stem Cells Differentiation and Maturation
S. Goh[1], S. Bertera[2], and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Children's Hospital of Pittsburgh, Pittsburgh, PA

P – Th - B - 253
Neuroglial Differentiation of Adult Mammalian Enteric Neuronal Progenitor Cells as a Function of Extracellular Matrix Composition
S. Raghavan[1,2] and K. N. Bitar[1,2]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering & Sciences, Winston-Salem, NC, [2]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC

P – Th - B - 254
Assessment of Induced Pluripotent Stem Cell Derived Cardiomyocyte Contractility using Micropost Arrays
M. L. Rodriguez[1], C. E. Murry[1], and N. J. Sniadecki[1]
[1]University of Washington, Seattle, WA

Track: Stem Cell Engineering

Mechanical Control of Stem Cells

P – Th - B - 255
Automated Assessment of Focal Adhesion-Based Mechanotransduction Candidates
A. W. Holle[1] and A. Engler[1]
[1]UC San Diego, La Jolla, CA

P – Th - B - 256
FAK Control of Fluid Flow-induced ERK Activation in Mesenchymal Stem Cells
A. Gogos[1], D. E. Menter[2], J. Lee[2], L. Ha[2], and J. Lim[2]
[1]Grinnell College, Grinnell, IA, [2]University of Nebraska-Lincoln, Lincoln, NE

P – Th - B - 257
Nanotopography Modulates Mechanotransduction of Stem Cell and Induces Differentiation Through Focal Adhesion Kinase
B. K. Teo[1,2], S. Wong[3], C. Lim[2], T. Kung[2], L. H. Romer[4], and E. K. Yim[1,2]
*[1]National University of Singapore, Singapore, Singapore, [2]Mechanobiology Institute Singapore, Singapore, Singapore, [3]Institute of High Performance Computing, A*STAR, Singapore, Singapore, [4]The Johns Hopkins University School of Medicine, Baltimore, MD*

P – Th - B - 258
Epigenetic Modifications During Mechanically Induced Osteogenesis of Mesenchymal Stem Cells
J. C. Chen[1], M. C. Chua[2], R. B. Bellon[1], and C. R. Jacobs[1]
[1]Columbia University, New York, NY, [2]University of British Columbia, Vancouver, BC, Canada

Track: Stem Cell Engineering

Stem Cell Engineering

P – Th - B - 259
Stem Cells Catalyze Cartilage Formation by Neonatal Articular Chondrocytes
J. H. Lai[1], G. Kajiyama[2], R. L. Smith[2], W. Maloney[2], and F. Yang[1,2]
[1]Stanford University, Stanford, CA, [2]Stanford School of Medicine, Stanford, CA

Track: Tissue Engineering

Musculoskeletal and Orthopaedic Tissue Engineering

P – Th - B - 260
Tendon Tissue Engineering Using Decellularized Human Umbilical Veins and Adult Stem Cells
B. Engebretson[1] and V. I. Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

P – Th - B - 261
Fatigue Characteristics of PCL Dual Modulus Scaffolds for Bone Regeneration
B. Godsell[1], R. Chung[1], C. Maglaras[1], A. Ritter[1], D. Kalyon[2], and A. Valdevit
[1][1]Stevens Institute of Technology, Dept. of Chemistry, Chemical Biology, and Biomedical Engineering, Hoboken, NJ, [2]Stevens Institute of Technology, Dept. of Chemistry, Chemical Biology, and Biomedical Engineering, Hoboken, NJ

P – Th - B - 262
A Composite Mesh for Ligament Tissue Engineering
P. Thayer[1], A. Dimling[1], D. Plessl[1], M. Hahn[2], S. Guelcher[3], and A. Goldstein[1]
[1]Virginia Tech, Blacksburg, VA, [2]Rensselaer Polytechnic Institute, Troy, NY, [3]Vanderbilt University, Nashville, TN

P – Th - B - 263
Novel Seeding Technique to Incorporate Uniform Cell Density Through the Thickness of Lyophilized Laser Micro-Patterned Ex Vivo Derived Cartilage Scaffold
C. M. Juran[1] and P. S. McFetridge[1]
[1]University of Florida, Gainesville, FL

P – Th - B - 264
Hydrogels to Enhance New Matrix Assembly
J. Roberts[1], M. D. Swartzlander[1], and S. J. Bryant[1,2]
[1]University of Colorado, Boulder, CO, [2]BioFrontiers Institute, Boulder, CO

P – Th - B - 265
Development of a Novel Tissue Engineered Muscle Repair Construct with Potential for Enhanced Motor End Plate Formation and Function
J. B. Scott[1,2], B. T. Corona[3], C. L. Ward[3], B. S. Harrison[1,2], J. M. Saul[4], and G. J. Christ[1,2]
[1]Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [3]US Army Institute of Surgical Research, Fort Sam Houston, TX, [4]Miami University School of Engineering and Applied Science, Oxford, OH

P – Th - B - 266
Effect of Chondrocyte Dedifferentiation on 3D Co-cultures with Mesenchymal Stem Cells
V. V. Meretoja[1], R. L. Dahlin[1], S. Wright[1], M. Ni[1], F. K. Kasper[1], and A. G. Mikos[1], M. Santoro[1]
[1]Rice University, Houston, TX

P – Th - B - 267
Anatomical Location Affects Adipose-Derived Stem Cell Myogenesis
G. A. Meyer[1], E. Sato[1], M. McCarthy[1], S. Ward[1], and A. J. Engler[1]
[1]UCSD, La Jolla, CA

P – Th - B - 268
CANCELLED BY AUTHOR

P – Th - B - 269
Engineering Fibrous Tissue Constructs Containing Amorphous Proteoglycan-rich μ--Domains
S. Heo[1], T. P. Driscoll[1], D. M. Elliott[2], and R. L. Mauck[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Delaware, Newark, DE

P = Poster Session
OP = Oral Presentation

P – Th - B - 270
Novel (Poly)caprolactone (PCL) Scaffold Architecture for Tendon Tissue Engineering Applications
B. L. Banik[1] and J. L. Brown[1]
[1]*The Pennsylvania State University, State College, PA*

P – Th - B - 271
Development of Biomimetic 3D Bioprinted Scaffolds for Osteochondral Rengeneration
B. Holmes[1], J. Li[1], J. D. Lee[1], and L. G. Zhang[1]
[1]*The George Washington University, Washington, DC*

P – Th - B - 272
Enhanced Osteogenic Differentiation of Stem Cells in Novel Bioactive Cold Plasma Treated Nanostructured Bone Scaffolds
M. Wang[1], X. Cheng[1], B. Holmes[1], M. Keidar[1], and L. G. Zhang[1]
[1]*The George Washington University, Washington, DC*

P – Th - B - 273
Sphingosine 1-Phosphate Functionalized Nanopatterned Scaffolds for Engineering Vascularized Skeletal Muscle Tissue
J. H. Tsui[1], H. S. Yang[1], N. Ieronimakis[1], D. Lih[1], M. Reyes[1], and D-H. Kim[1]
[1]*University of Washington, Seattle, WA*

P – Th - B - 274
Design of a Tendon Graft for Rotator Cuff Injury Repair
M. C. Mouchiroud[1], J. H. Arrizabalaga[1], K. P. Kiester[1], A. R. Pascoe[1], and M. U. Nollert[1]
[1]*University of Oklahoma, Norman, OK*

P – Th - B - 275
Healing Cascade Design for Cartilage Regeneration by Endogenous Synovial Stem Cell Recruitment
W. S. Vanden Berg-Foels[1,2]
[1]*Clemson Univeristy, Charleston, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P – Th - B - 276
A Magnesium-Based Ring for Healing of an Injured Anterior Cruciate Ligament - Design and *In Vitro* Robotic Testing
K. F. Farraro[1], N. Sasaki[1], H. S. Eason[1], K. E. Kim[1], and S. L-Y. Woo[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P – Th - B - 277
A Mesenchymal Stem Cell Derived Extracellular Matrix Approach for Cartilage Repair
N. Farhang[1], M. Polei[1], M. B. Christensen[1], and P. A. Tresco[1]
[1]*University of Utah, Salt Lake City, UT*

P – Th - B - 278
Synthesis of a Novel Polycaprolactone Based Elastomer for Bone and Cartilage Tissue Regeneration.
M. D. Harmon[1], C. Badalucco[2], R. James[3], and S. G. Kumbar[3]
[1]*University of Connecticut, Storrs-Mansfield, CT,* [2]*University of Connecticut Medical School, Farmington, CT,* [3]*University of Connecticut Health Center, Farmington, CT*

P – Th - B - 279
In Vitro Characterization of Organic-Inorganic Composite Lypolized Gelatin Sponges for Bone Regeneration
[I.] A. Rodriguez[1], S. A. Sell[2], J. M. McCool[1], G. Saxena[1], A. J. Spence[1], D. Abebayehu[1], and G. L. Bowlin[1]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Saint Louis University, Saint Louis, MO II.*

P – Th - B - 280
Polycaprolactone-graphene Nanocomposite Scaffolds for Tissue Engineering
S. Mukundan[1], V. Sant[1], and S. Sant[2,3]
[1]*University of Pittsburgh, Department of Pharmaceutical Sciences, Pittsburgh, PA,* [2]*University of Pittsburgh, Department of Pharmaceutical Sciences & Bioengineering, Pittsburgh, PA,* [3]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P – Th - B - 281
Bone Matrix Formation on Oxidized Carbon Based Nanomaterial Films
S. C. Patel[1], J. Rashkow[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Th - B - 282
Chondrogenic and Osteogenic Pre-differentiation of Mesenchymal Stem Cells for Osteochondral Tissue Engineering using Bilayered Hydrogels
J. Lam[1], S. Lu[1], A. G. Mikos[1], and F. K. Kasper[1], M. Santoro[1]
[1]*Rice University, Houston, TX*

Thursday, September 26, 2013

1:30PM – 3:00PM

PLATFORM SESSION –THURS – 2

PLATFORM SESSIONS **Th-2**

Track: Tissue Engineering
OP - Thurs - 2 – 1 - Room 6B
Cardiovascular Tissue Engineering I

Chairs: Warren Grayson, Jianjun Guan

1:30hPM
Electrospun Biodegradable Elastic Polyurethane Fibers with Dipyridamole Release for Vascular Engineering
P. Punnakitikashem[1], K. T. Nguyen[1], and Y. Hong[1]
[1]*University of Texas at Arlington, Arlington, TX*

1:45PM
3D *In Vitro* Cardiac Microtissues with Perfused Human Capillaries
M. L. Moya[1], L. Alonzo[1], J. Wang[2], K. Christman[2], and S. C. George[1],[3]
[1]*University of California, Irvine, Irvine, CA,* [2]*University of California, San Diego, San Diego, CA,* [3]*The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA*

2:00PM
The Tale of Two Types: The Role of Sphingosine 1-Phosphate Receptor Three in the Angiocrine Recruitment of Anti-Inflammatory Macrophages
A. O. Awojoodu[1], M. E. Ogle[1], K. Martin[2], S. Peirce-Cottler[2], and E. A. Botchwey[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Virginia, Charlottesville, VA*

2:15PM
The Role of Cyclic Flexure and Oscillatory Shear Stress on Mesenchymal Stem Cell Proliferation and Extracellular Matrix Production in Engineered Heart Valve Tissue Formation
J. S. Soares[1], T. B. Le[2], F. Sotiropoulos[2], and M. S. Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Minnesota, Minneapolis, MN*

2:30PM
"Vasculogenic Mimicry" as a Model for Understanding Endothelial-like Stem Cell Behavior
J. A. Rytlewski[1], A. Aldon[1], E. Lewis[1], N. Hasegawa[1], and L. Suggs[1]
[1]*The University of Texas at Austin, Austin, TX*

2:45PM
Time-course of Healing and Maturation of Implantable Vascular Grafts in the Arterial System of an Ovine Model: Do We Need Cells in the Vascular Wall?
S. Row[1], H. Peng[1], E. M. Schlaich[1], D. D. Swartz[1,2], and S. T. Andreadis[1,2]
[1]*University at Buffalo, Buffalo, NY,* [2]*New York State Center of Excellence, Buffalo, NY*

Track: Biomaterials
OP - Thurs - 2 – 2 - Room 6C
Micro and Nanostructured Materials II

Chairs: Jeff Jacot, Harini Sundararaghavan

1:30PM
Photolabile Hydrogel Micropatterning for Cell Capture on Individually Addressable Microbeads
C. Siltanen[1], D-S. Shin[1], and A. Revzin[1]
[1]*University of California, Davis, CA*

1:45PM
Projection Micro-StereoLithography (PμSL) Printed PDMS Substrates for the Study of Flap Revascularization in an Ischemic Mouse Model
E. L. Hedberg-Dirk[1], T. R. Howdieshell[2], K. N. Cicotte[1], and P. McGuire[2]
[1]*University of New Mexico, Albuquerque, NM,* [2]*University of New Mexico School of Medicine, Albuquerque, NM*

2:00PM
Building 3-D μMuscle *In Vitro* from Patterned Extracellular Matrix Stiffness and Adipose-derived Stem Cells
Y. Choi[1], M. Ondeck[1], L. Vincent[1], A. Lee[1], M. Dobke[1], and A. Engler[1]
[1]*University of California, San Diego, La Jolla, CA*

2:15PM
Engineering Laminin Micropatterned Surfaces to Maximize the Alignment and Contractility of Skeletal Muscle Tissue
R. Duffy[1] and A. W. Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

2:30PM
Hydrogel-Based Microcontact Printing of Conducting Polymers for Cell Studies
S. Park[1] and S. Majd[1]
[1]*Penn State University, University Park, PA*

2:45PM
Cell Behavior on Chemically Patterned and Physically Modified PDMS Surfaces
M. M. Stanton[1], C. Malcuit[2], W. G. McGimpsey[2], and C. R. Lambert[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Kent State University, Kent, OH*

Track: Biomaterials
OP - Thurs - 2 – 3 - Room 606
Biomaterials for Immunoengineering II

Chairs: Julia Babensee, Jai Rudra

1:30PM
Controlled Release of Microshell-Encapsulated Outer Membrane Vesicle Vaccines Results in Self-Adjuvanting, Self-Boosting TH1-Biased Immunity
J. A. Rosenthal[1], K. Abstiens[1], C. Leifer[1], and D. Putnam[1]
[1]*Cornell University, Ithaca, NY*

1:45PM
Pollen Grains: Novel Materials for Oral Vaccination
S. Atwe[1], H. Gill[1], and Y. Ma[1]
[1]*Texas Tech University, Lubbock, TX*

2:00PM
Intravaginal Recruitment of Dendritic Cells for Nanoparticle Transport Using DC Chemokines
R. Ramanathan[1], W. Lykins[1], H. Bennett[1], J. Park[1], and K. A. Woodrow[1]
[1]*University of Washington, Seattle, WA*

2:15PM
An Immunomodulatory Protein Coating that Mitigates the Host Response to Implanted Biomaterials
Y. Kim[1], R. Que[1], S-W. Wang[1], and W. Liu[1]
[1]*Univ of California, Irvine, Irvine, CA*

2:30PM
A Multifunctional Immunomodulatory Scaffold to Engineer the Dendritic Cell Environment For Allograft Acceptance
S. Srinivasan[1], G. Patel[1], U. Goh[1], and J. E. Babensee[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P = Poster Session
OP = Oral Presentation

2:45PM
Stabilization of Vaccines in Silk
J. Zhang[1], X. Hu[1], B. Panilaitis[1], and D. Kaplan[1]
[1]*Tufts University, Medford, MA*

Track: Biomechanics
OP - Thurs - 2 – 4 - Room 607
Cellular and Molecular Biomechanics II

Chairs: Delphine Dean, Jeffrey Weiss

1:30PM
One Cell as a Mixture: Simulations of the Micropipette Aspiration Responses of Valvular Interstitial Cells
Y. Sakamoto[1], S. Prudhomme[2], and M. Sacks[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*Ecole Polytechnique de Montréal, Montréal, QC, Canada*

1:45PM
Impact of the Actin Cytoskeleton on the Mechanical Properties of Cells
I. Jalilian[1], G. Schevzov[1], T. Fath[1], L. Bischof[2], H. Vindin[1], J. Stehn[3], and P. Gunning[1]
[1]*The University of New South Wales, Sydney, Australia,* [2]*CSIRO, Sydney, Australia,* [3]*The University Of New South Wales, Sydney, Australia*

2:00PM
Stiffness-Prestress Relationship at the Subcellular Level
E. P. Canovic[1], D. T. Seidl[1], P. E. Barbone[1], M. L. Smith[1], and D. Stamenovic[1]
[1]*Boston University, Boston, MA*

2:15PM
Shear Induced Activation Leads To Platelet Contractile Forces
L. Ting[1], S. Feghhi[1], and N. Sniadecki[1]
[1]*University of Washington, Seattle, WA*

2:30PM
Mechanotransduction of Interstitial Fluid Stresses Induces Upstream Protrusion Formation and Cell Migration
W. J. Polacheck[1] and R. D. Kamm[1]
[1]*MIT, Cambridge, MA*

2:45PM
Analysis of the Pathophysiology of Ischemia and Reperfusion Injury using a Novel Confocal/Nanoindentation Imaging Platform
B. Reese[1], S. Lenaghan[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, Knoxville, TN*

Track: Biomechanics
OP - Thurs - 2 – 5 - Room 608
Ortho and Dental Biomechanics II

Chairs: Stefanie Biechler, John DesJardins

1:30PM
Biomechanical Evaluation of Optimal Screw Angle Orientation for Oblique Fractures of the Metatarsal Bone – An *In Vitro* Cadaver Study
Q. V. Luong[1], D. Baptiste[1], H. V. Vo[1], and D. V. Hagan[1]
[1]*Mercer University, Macon, GA*

1:45PM
Effect of Matrix Ages (Advanced Glycation Endproducts) on Bone Formation
J. Mostafa[1], B. Giri[1], J. Saenz[1], M. Appleford[1], and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

2:00PM
Multi-scale Analysis of Composition and Structure of Osteogenesis Imperfecta Murine Bone
Z. R. Bart[1], M. A. Hammond[2], and J. M. Wallace[1,2]
[1]*Indiana University - Purdue University Indianapolis, Indianapolis, IN,* [2]*Purdue University, West Lafayette, IN*

2:15PM
Biomechanical Testing of Salter-Harris Fractures Type I and II in the Distal Femur and Proximal Tibia
M. M. Rogers[1], A. Bertram[1], J. D. DesJardins[1], C. Hydorn[2], M. Kanwisher[3], and K. Nathe[3]
[1]*Clemson University, Clemson, SC,* [2]*Moore Orthopaedic Clinic, Columbia, SC,* [3]*University of South Carolina School of Medicine, Columbia, SC*

2:30PM
Timed Administration of Cyclosporin A Supplements Reveals Multiple Routes to Rescuing Loading Induced Bone Formation at Senescence
R. Y. Kwon[1], D. Threet[1], E. M. Gardiner[1], L. E. Worton[1], T. S. Gross[1], and S. Srinivasan[1]
[1]*University of Washington, Seattle, WA*

2:45PM
Trabecular Bone Adaptation in Response to Exercise is Regulated by Systemic PTH Release
J. Gardinier[1], F. Mohamed[1], and D. Kohn[1]
[1]*University of Michigan, Ann Arbor, MI*

Track: Cancer Technologies
OP - Thurs - 2 – 6 - Room 609
Bioengineering of Cancer II

Chairs: Kevin Janes, Matthew Lazzara

1:30PM
Epithelial Cells Enhance the Invasion of Carcinoma Cells via Promoting Protrusion Formation
M. Lee[1], I. Aifuwa[1], P-H. Wu[1], and D. Wirtz[1]
[1]*Johns Hopkins University-Physical Sciences- Oncology Center, Baltimore, MD*

1:45PM
Loss of Giant Obscurins Promotes a Metastatic Phenotype in Breast Epithelium
K. M. Stroka[1], M. Shriver[2], K. Konstantopoulos[1], and A. Kontrogianni-Konstantopoulos[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Maryland School of Medicine, Baltimore, MD*

2:00PM
Biomaterial Scaffolds for Early Detection of Breast Cancer Metastasis
S. M. Azarin[1], R. M. Gower[1], B. A. Aguado[1], J. Yi[1], J. S. Jeruss[1], V. Backman[1], and L. D. Shea[1]
[1]*Northwestern University, Evanston, IL*

2:15PM
Stromal-like Cation Concentrations Induce Adhesive Heterogeneity in Metastatic Cancer Cells
A. Fuhrmann[1], T. D. Tlsty[2], and A. J. Engler[1]
[1]*University of California San Diego, La Jolla, CA,* [2]*University of California San Francisco, San Francisco, CA*

2:30PM
Lamins Modulate Nuclear Deformability and Transit Through Narrow Constrictions of Cancer Cells
C. Denais[1], U. Jonnalagadda[1], M. Zwerger[2], M. Krause[3], K. Wolf[3], L. Vahdat[4], and J. Lammerding[1]
[1]*Cornell University, Ithaca, NY,* [2]*University of Zürich, Zürich, Switzerland,* [3]*Radboud University Nijmegen Medical Center, Nijmegen, Netherlands,* [4]*Weill Cornell Medical College, New York, NY*

2:45PM
Fibronectin Domains Targeting Individual Murine Fc gamma Receptors Modulate Tumor Control
T. F. CHEN[1], K. LI[1], AND K. D. WITTRUP[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Cardiovascular Engineering
OP - Thurs - 2 – 7 - Room 612
Thrombosis and Hemostasis

PLATFORM SESSIONS Th-2

Chairs: Eno Ebong, Joyce Wong

1:30PM
Combined Effects of Shear Rates and Platelet Therapy Dosage on Thrombosis in a Microfluidic System
M. LI[1], N. A. HOTALING[1], AND C. R. FOREST[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

1:45PM
Microfluidic Assay of Platelet Deposition on Collagen Using Perfusion of Whole Blood From Healthy Subjects Taking Aspirin
R. LI[1], S. FRIES[2], X. LI[2], T. GROSSER[2], AND S. DIAMOND[1]
[1]*Institute for Medicine and Engineering, University of Pennsylvania, Philadelphia, PA,* [2]*Institute for Translational Medicine and Therapeutics, University of Pennsylvania, Philadelphia, PA*

2:00PM
Perturbations in Local Clot Hemodynamics Triggers Intraluminal Thrombus Contraction
R. W. MUTHARD[1] AND S. L. DIAMOND[1]
[1]*University of Pennsylvania, Philadelphia, PA*

2:15PM
Exploring the Impact of Fluid Shear Stress Level and Flow Pattern on VWF Degradation
S. YANG[1], V. TURITTO[1], AND Z. N. DEMOU[1]
[1]*Illinois institute of Technology, Chicago, IL*

2:30PM
Thrombin Generation and Fibrin Formation Under Flow on Biomimetic Tissue Factor Rich Surfaces
A. ONASOGA[1] AND K. NEEVES[1]
[1]*Colorado School of Mines, Golden, CO*

2:45PM
Platelet Size and Stiffness,Vessel Size and Shear Rate Govern Platelet Transport to Growing Thrombi
M. MEHRABADI[1], C. AIDUN[1], AND D. KU[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Cellular and Molecular Bioengineering
OP - Thurs - 2 – 8 - Room 604
Mechanotransduction II

Chairs: Wilbur Lam, Jordan Miller

1:30PM
Biophysical Regulation of Epigenetic State and Cell Reprogramming
T. L. DOWNING[1,2], J. SOTO[1,2], C. MOREZ[1,3], T. HOUSSIN[1,4], F. YUAN[1], J. CHU[1], A. FRITZ[1], S. PATEL[1], D. SCHAFFER[1], AND S. LI[1]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*UC Berkeley & UCSF Joint Graduate Program in Bioengineering, Berkeley/San Francisco, CA,* [3]*Ecole Polytechnique, 91128 Palaiseau, France,* [4]*University Lille Nord de France, F-59000 Lille, France*

1:45PM
Mechanosensitive Kinases Regulate Stiffness-Induced Cardiomyogenesis
J. L. YOUNG[1], K. KRETCHMER[1], A. ZAMBON[1], AND A. J. ENGLER[1]
[1]*University of California, San Diego, La Jolla, CA*

2:00PM
Fibronectin and Type I Collagen Synergy in Tumor Progression
K. WANG[1], R. ANDRESEN-EGUILUZ[1], B. SEO[1], S. HU[1], V. BENSON[1], C. FISCHBACH[1], AND D. GOURDON[1]
[1]*Cornell University, Ithaca, NY*

2:15PM
Tissue Elasticity Provokes a Pro-Inflammatory Reaction in Innate Immune Cells
M. L. PREVITERA[1], A. SENGUPTA[1], AND T. M. MIRZA[1]
[1]*New Jersey Neuroscience Institute, Edison, NJ*

2:30PM
Actin Architecture and Contractile Force Regulate the Anisotropy of Endothelial Cell Mechanosensitivity to Directional Substrate Stretch
Y. SHAO[1], J. MANN[1], AND J. FU[1]
[1]*University of Michigan, Ann Arbor, Ann Arbor, MI*

2:45PM
Reversal of Flow-Direction is A Critical Mechanical Stimulus for Full Activation of Endothelial Arteriogenesis Signaling Pathways
J. K. MEISNER[1], J. L. HEUSLEIN[1], B. R. BLACKMAN[1], AND R. J. PRICE[1]
[1]*University of Virginia, Charlottesville, VA*

Track: Cellular and Molecular Bioengineering
OP - Thurs - 2 – 9 - Room 611
Cell Motility II

Chairs: Michael Cho, Omolola Eniola-Adefeso

1:30PM
Distinct Signaling Mechanisms for 4 Integrin-Mediated Migration in Unconfined Versus Confined Spaces
W-C. HUNG[1,2], S-H. CHEN[1], C. PAUL[1], K. STROKA[1], J. YANG[1], AND K. KONSTANTOPOULOS[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Center for Cancer Nanotechnology Excellence, Baltimore, MD*

1:45PM
Migratory Patterns of Cells in the Presence of Opposing Chemical and Mechanical Cues
G. JAIN[1] AND P. RAJAGOPALAN[1]
[1]*Virginia Tech, Blacksburg, VA*

2:00PM
The Highly Predictive Functional Relationship Between Focal Adhesion Morphology and Cell Migration
D-H. KIM[1,2] AND D. WIRTZ[1,2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Institute for NanoBio Technology, Baltimore, MD*

2:15PM
Single-Cell Dynamics of Collective Cell Migration in Microfluidic Chemokine Gradients
S. TAY[1], T. FRANK[1], AND M. MEHLING[1]
[1]*ETH ZURICH, Basel, Switzerland*

2:30PM
Bioactive Chemokine-Conjugated Surfaces for Studying Haptotactic Immune Cell Migration
V. VERNEKAR[1], C. WALLACE[1], M. WU[1], J. CHAO[1], A. RALEIGH[1], X. LIU[2], J. HAUGH[2], AND W. REICHERT[1]
[1]*Duke University, Durham, NC,* [2]*North Carolina State University, Raleigh, NC*

P = Poster Session
OP = Oral Presentation

2:45PM
Microfluidic Platform for On-Demand, Competitive, Large-Scale Chemotaxis Assays of Neutrophils
H. Cho[1], B. Hamza[1], E. A. Wong[1], and D. Irimia[1]
[1]*Harvard Medical University/MGH, Charlestown, MA*

Track: Device Technologies and Biomedical Robotics
OP - Thurs - 2 – 10 - Room 602
Biosensors II

Chairs: Padma Rajagopalan, Siyang Zheng

1:30PM
Point of Care Diagnostics for Inborn Errors of Metabolism
O. Ayyub[1], A. Behrens[1], M. Natoli[1], J. Ayoub[1], J. Cabrera-Luque[2], G. Cunningham[2], M. Summar[2], J. Marugan[3], A. Simeonov[3], and P. Kofinas[1]
[1]*University of Maryland, College Park, MD,* [2]*Children's National Medical Center, Washington, DC,* [3]*NCATS NIH, Rockville, MD*

1:45PM
Serologic and Phenotypic Analysis of Blood via Silicon Photonics
J. Kirk[1], N. Stender[1], G. Hansen[1], K. Lannert[2], J. Johnsen[2], and D. M. Ratner[1]
[1]*University of Washington, Seattle, WA,* [2]*Puget Sound Blood Center, Seattle, WA*

2:00PM
Telemetry Monitoring of Liver Perfusion and Oxygenation *In Vivo*
T. J. Akl[1], M. A. Wilson[2,3], M. N. Ericson[4], E. Farquhar[4], and G. L. Coté[1]
[1]*Texas A&M University, College Station, TX,* [2]*Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, PA,* [3]*University of Pittsburgh, Pittsburgh, PA,* [4]*Oak Ridge National Laboratory, Oak Ridge, TN*

2:15PM
Photonic Crystal Based Biosensor for Label-free Detection of Cardiac Biomakers
B. Zhang[1], R. Peterson[1], J. M. Vela[1], L. Tang[1], and J. Ye[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

2:30PM
A Liposome-based Impedance Sensing Device for Biological Detection
G. L. Damhorst[1], C. E. Smith[1], E. M. Salm[1], M. M. Sobieraj[1], H. Ni[1], H. Kong[1], and R. Bashir[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

2:45PM
A Point-of-Care Cell Counter for HIV/AIDS Diagnostics
U. Hassan[1,2], N. N. Watkins[1,2], G. Damhorst[2,3], W. Rodriguez[4], and R. Bashir[1,2]
[1]*Deaprtment of Electrical and Computer Engineering, University of Illinois Urbana Champaign, Urbana, IL,* [2]*Micro and Nanotechnology Laboratory, University of Illinois Urbana Champaign, Urbana, IL,* [3]*Deaprtment of Bioengineering, University of Illinois Urbana Champaign, Urbana, IL,* [4]*Daktari Diagnostics, Inc., Cambridge, MA*

track sponsored by Medtronic

Track: Bioinformatics, Computational and Systems Biology
OP - Thurs - 2 – 11 - Room 615
Modeling of Regulatory Networks

Chairs: Douglas A. Lauffenburger, Jason A. Papin, Nathan D. Price

1:30PM
Integrative Network Model for Cell Kinase Signaling Pathways with Proteolytic Ligand/Receptor Shedding Feedback: Application to Invasive Cell Migration in Endometriosis *(Invited)*
D. A. Lauffenburger[1], M. A. Miller[1], A. S. Meyer[1], M. Beste[1], K. Isaacson[2], and L. G. Griffith[1]
[1]*MIT, Cambridge, MA,* [2]*Newton-Wellesley Hospital, Newton, MA*

2:00PM
Synergistic Drug Targets of Human Pathogens Identified with Analysis of Integrated Transcriptional Regulatory and Metabolic Networks *(Invited)*
J. Papin[1]
[1]*University of Virginia, Charlottesville, VA*

2:30PM
Systems Approaches to Multi-Parameter Disease Diagnostics *(Invited)*
N. D. Price[1]
[1]*Institute for Systems Biology, Seattle, WA*

Track: Orthopaedic and Rehabilitation Engineering
OP - Thurs - 2 – 12 - Room 616
Musculoskeletal Tissue Engineering I - Biomechanics and Tissue Repair

Chairs: Eric Darling, Grace O'Connell

1:30PM
New Frontiers in the Mechanics of the Articular Cartilage Surface *(Invited)*
L. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

2:00PM
Strain Transfer From Tissue to Cells Is Reduced in Proteoglycan-rich Regions Compared to Fibrous Regions of the Meniscus
W. Han[1,2], L. Smith[1], R. Mauck[1], and D. Elliott[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Delaware, Newark, DE*

2:15PM
Metabolic Association between IGF1, Glycation and Bone Quality
G. E. Sroga[1], P-C. Wu[2], and D. Vashishth[3]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Oregon Health and Science University, Portland, OR,* [3]*Rensselaer Polytechnic Institute, Troy, NY*

2:30PM
Mechano-Modulation of Burn Wound Scarring
J. Kim[1], J. J. Williard[1], J. Hahn[2], K. McFarland[3], D. M. Supp[3], C. Sen[1], and H. M. Powell[1]
[1]*The Ohio State University, Columbus, OH,* [2]*Shriners Hospital for Children, Cincinnati, OH,* [3]*Shriners Hospitals for Children, Cincinnati, OH*

2:45PM
Electrical Stimulation for Meniscus Cell Migration and Tissue Repair
X. Yuan[1], S. P. Halligan[1], and G. Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

Track: Biomedical Imaging and Optics
OP - Thurs - 2 – 13 - Room 618
Optical Imaging and Microscopy

Chairs: Andreas Hielscher

1:30PM
Computational Imaging and High-throughput 3D Tracking of Human Sperms
T-W. Su[1], L. Xue[1], and A. Ozcan[1]
[1]*University of California, Los Angeles, CA*

1:45PM
Using the Parallelized High-Throughput Microscope to Greatly Accelerate Microrheology Experiments
J. A. Cribb[1], L. Osborne[1], P. Heenan[1], J. Hsiao[1], L. Vicci[1], R. Taylor, II[1], and R. Superfine[1]
[1]*University of North Carolina - Chapel Hill, Chapel Hill, NC*

2:00PM
High-Throughput Partial Wave Spectroscopic Microscopy for Early Cancer Detection
J. E. Chandler[1], H. Subramanian[1], C. D. Maneval[1], C. A. White[1], and V. Backman[1]
[1]*Northwestern University, Evanston, IL*

2:15PM
Computational Field-Portable Microscope for On-Chip Imaging of Confluent Samples
A. Greenbaum[1], N. Akbari[1], and A. Ozcan[1,2]
[1]*Electrical Engineering Department, University of California, Los Angeles, CA,* [2]*Bioengineering Department, University of California, Los Angeles, CA*

2:30PM
The Optics Of Low-Cost Microscopy
N. A. Switz[1], C. D. Reber[1], M. Bakalar[1], M. V. D'Ambrosio[1], A. Skandarajah[1], R. N. Maamari[2], and D. A. Fletcher[1]
[1]*University of California Berkeley, Berkeley, CA,* [2]*University of California Irvine, Irvine, CA*

2:45PM
Can Capillaries Grown in 3D Culture be Imaged without the Use of an Optical Lens System?
J. Weidling[1], S. Isikman[2], A. Greenbaum[2], A. Ozcan[2], and E. Botvinick[3]
[1]*University of California Irvine, Irvine, CA,* [2]*University of California Los Angeles, Los Angeles, CA,* [3]*University of Califonia Irvine, Irvine, CA*

Track: Nano to Micro Technologies
OP - Thurs - 2 – 14 - Room 619
BioMEMS II

Chairs: Arum Han, Tony Jun Huang

1:30PM
Sophisticated Point-of-care Diagnostic Devices Based on 2D Paper Networks *(Invited)*
P. Yager
University of Washington

2:00PM
A Milliseconds Microfluidic Chaotic Bubble Mixer for Polymer-DNA Nanocomplex Synthesis
M. Lu[1], Y-P. Ho[2,3], C. Grigsby[2], D. Ahmed[1], K. Leong[2], and T. Huang[1]
[1]*Pennsylvania State University, University Park, PA,* [2]*Duke University, Durham, NC,* [3]*Aarhus University, Aarhus, Denmark*

2:15PM
Kinetic Polyacrylamide Gel Electrophoresis (KPAGE): Microfluidic Binding Assay Enables Measurements of Kinetic Rates for Immunoreagent Quality Assessment
M. A. Kapil[1], K. Apori[1], and A. E. Herr[1]
[1]*University of California, Berkeley, Berkeley, CA*

2:30PM
Using Actuating Surface Attached Posts (ASAPs) to Measure Clotting Time for Point of Care Diagnostics
R. Judith[1], J. Fisher[2], T. A. Mangaldas[2], R. C. Spero[2], B. J. Oberhard[1,3], B. Fiser[4], M. Falvo[1], R. M. Taylor[1,2], and R. Superfine[1,2]
[1]*University of North Carolina, Chapel Hill, NC,* [2]*Rheomics Inc., Chapel Hill, NC,* [3]*North Carolina State University, Raleigh, NC,* [4]*High Point University, High Point, NC*

2:45PM
Improved Microarray Readout By Fluorescence Micro-Confinement
D. V. Nicolau[1] and S. V. Dobroiu[1]
[1]*McGill University, Montreal, QC, Canada*

Track: Drug Delivery
OP - Thurs - 2 – 15 - Room 620
Nano to Micro Devices in Delivery

Chairs: Fan Yang, Qun Wang

1:30PM
Stimuli Responsive All Polymeric Untethered Grippers
J. Breger[1], C. Yoon[1], K. Malachowski[1], M. Wang[2], J. Fisher[2], and D. Gracias[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Maryland, College Park, College Park, MD*

1:45PM
Rapid Synthesis of Monodisperse Biodegradable PEG Microspheres for Controlled Protein Release
L. Deveza[1], M. Keeney[1], and F. Yang[1]
[1]*Stanford University, Stanford, CA*

2:00PM
Phospholipid-PEG Coated Superparamagnetic Irox Oxide Nanoparticles for Drug Delivery and Hyperthermia
C. Quinto[1,2] and G. Bao[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

2:15PM
Planar Bioadhesive Microdevices for Enhanced Oral Drug Delivery
T. A. Desai[1], H. D. Chirra[1], L. C. Shao[1], and N. C. Ciaccio[1]
[1]*University of California at San Francisco, San Francisco, CA*

2:30PM
Quantum Dot Conjugated Magnetic Nanoparticles for Targeted Drug Delivery and Imaging in the CNS
I. Venugopal[1] and A. Linninger[1]
[1]*University of Illinois at Chicago, Chicago, IL*

2:45PM
Rapidly-Dissolvable Micro-needle Patches via a Highly Scalable and Reproducible Soft Lithography Approach
A. R. Johnson[1], C. F. Archuleta[1], K. A. Moga[1], L. R. Bickford[1], J. Xu[1], R. D. Geil[1], G. Owens[2], P. Berglund[2], C. Luft[1], and J. M. DeSimone[1,2]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*Liquidia Technologies, Morrisville, NC*

Track: Neural Engineering
OP - Thurs - 2 – 16 - Room 613
Brain Injury

Chairs: David Shreiber, Pam VandeVord

1:30PM
A Porcine Model of Primary Blast-Induced Traumatic Brain Injury
D. K. Cullen[1], M. Skotak[2], C. J. Mietus[1], J. Frasca[1], F. Wang[2], K. D. Browne[1], D. H. Smith[1], and N. Chandra[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Nebraska-Lincoln, Lincoln, NE*

1:45PM
A Novel Mouse Model of Blast Brain Injury: Blast Conditions Seen in Theater
A. W. Yu[1], H. Wang[1], K. A. Matthews[1], D. Laskowitz[1], and C. R. Bass[1]
[1]*Duke University, Durham, NC*

2:00PM
Alginate Microencapsulation of Mesenchymal Stem Cells Enhances Modulation of the Inflammatory Response in Astrocyte and Organotypic Hippocampal Slice Cultures
E. Stucky[1], R. Schloss[1], M. L. Yarmush[1], and D. I. Shreiber[1]
[1]*Rutgers University, Piscataway, NJ*

P = Poster Session
OP = Oral Presentation

2:15PM
Pro-Oxidative and Pro-Inflammatory Environments Contribute to Blast-Induced Neurotrauma
H. J. Cho[1], S. Sajja[1], P. J. VandeVord[1,2], and Y. W. Lee[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA, [2]Veterans Affairs Medical Center, Salem, VA

2:30PM
Effects of Shoulder Torque on Hand Function in Stroke: Implications for Control of Assistive Devices
L. Miller[1] and J. Dewald[1]
[1]Northwestern University, Chicago, IL

2:45PM
Spontaneous Extension-Adduction Coupling in the Post-Stroke Lower Extremity
N. Sanchez[1], R. Lopez-Rosado[1], and J. P. Dewald[1]
[1]Northwestern University, Chicago, IL

Track: New Frontiers and Special Topics
OP - Thurs - 2 – 17 - Room 614
Diagnostics

Chairs: Anubhav Tripathi, Jung Suh

1:30PM
Microfluidics-Based Diagnosis-On-A-Chip By Enzyme Activity Detection
S. Juul[1], J. Obliosca[2], Y-P. Ho[3], B. Knudsen[3], H-C. Yeh[2], and K. Leong[1]
[1]Duke University, Durham, NC, [2]University of Texas at Austin, Austin, TX, [3]Aarhus University, Aarhus, Denmark

1:45PM
Digital High Resolution Melt Analysis: A Novel Approach to Broad-Based Profiling of Heterogeneous Biological Samples
S. I. Fraley[1,2], S. Yang[2], and T-H. Wang[1]
[1]The Johns Hopkins School of Medicine, Baltimore, MD, [2]The Johns Hopkins University, Baltimore, MD

2:00PM
Paper-Based Sample Preparation for Disposable Molecular Diagnostics at the Point-of-Care
J. C. Linnes[1] and C. M. Klapperich[1]
[1]Boston University, Boston, MA

2:15PM
A Rapid, Real-Time Multiplex PCR for Detecting and Sub-Typing Clostridium difficile Using a Novel Droplet Sandwich Platform
S. Angione[1], A. Sarma[2], L. Mermel[3,4], and A. Tripathi[1]
[1]School of Engineering, Center for Biomedical Engineering, Brown University, Providence, RI, [2]Harvard Medical School, Boston, MA, [3]Division of Infectious Diseases, Rhode Island Hospital, Providence, RI, [4]Warren Alpert Medical School, Brown University, Providence, RI

2:30PM
Paper-Based Assay for Influenza Hemagglutinin Using Computationally Designed Affinity Protein
C. A. Holstein[1], S. Bennett[1], A. Chevalier[1], D. Baker[1], E. Fu[1], and P. Yager[1]
[1]University of Washington, Seattle, WA

2:45PM
Microfluidic System For Automated, Quantitative Flow Cytology
J. S. Dudani[1], A. P. Tan[1], A. Arshi[1], R. J. Lee[1], H. T. Tse[1], D. R. Gossett[1], and D. Di Carlo[1]
[1]University of California, Los Angeles, Los Angeles, CA

Track: Biomaterials
OP - Thurs - 2 – 18 - Room 6E
Biomaterial Scaffolds I

Chairs: Gulden Camci-Unal, Mariah Hahn

1:30PM
Winged Fiber Scaffolds Enhance hASC Proliferation, Osteogenesis, and Mechanosensitivity
S. A. Tuin[1], S. M. Miller[1], D. J. Cunningham[1], W. T. Pfeiler[1], S. H. Bernacki[1], B. Pourdeyhimi[2], and E. G. Loboa[1,2]
[1]North Carolina State University and University of North Carolina, Raleigh, NC, [2]North Carolina State University, Raleigh, NC

1:45PM
Photopolymerization Mechanism Impacts Cartilage Development in Poly(ethylene glycol) Hydrogels
J. Roberts[1] and S. J. Bryant[1,2]
[1]University of Colorado, Boulder, CO, [2]BioFrontiers Institute, Boulder, CO

2:00PM
Nano-grafts for ACL Reconstruction: *In Vitro* and *In Vivo* Characterization
S. E. Smith[1], S. Grant[1], and R. White[1]
[1]University of Missouri, Columbia, MO

2:15PM
Alkylation of Keratin for a Tunable Biomaterial Platform in Bone Regeneration
S. Han[1], T. Ham[1], and J. M. Saul[1]
[1]Miami University, Oxford, OH

2:30PM
Engineering a Muscle Mimetic ECM Biomaterial
S. Hurd[1], B. Kasukonis[1], K. Cherry[1], S. Ahmadi[2], and J. Wolchok[1]
[1]University of Arkansas, Fayetteville, AR, [2]University of Arkansas for Medical Sciences, Little Rock, AR

2:45PM
Osteochondral Differentiation Of Rat Bone Marrow Stem Cells In Raw Material Encapsulated Microsphere Based Gradient Scaffolds
V. Gupta[1] and M. S. Detamore[1]
[1]University of Kansas, Lawrence, KS

ABET Workshop
1:30pm - 5:00pm
Room 603

The BMES Accreditation Activities Committee and BMES Education Committee present a workshop for the 2013 BMES Annual Meeting addressing the ABET assessment process and program specific criteria from a faculty perspective. Speakers include: John Gassert, Dan Cavanaugh, John Enderle and Jim Sweeney. The workshop will also convene a faculty panel to discuss preparing for the ABET site visit with tips from the trenches. Panelists include: Ann Saterbak, Jameel Ahmad, John Desjardins, Dan Cavanaugh, and Angie Louie.

BMES-NSF Special Session: Promoting and Sustaining Innovative Research
1:30PM - 5:00PM
Room 204

BMES and the National Science Foundation (NSF) will convene a special session focused on promoting and sustaining innovative research in biomedical engineering. The session will bring together NSF Bioengineering and Engineering Healthcare grantees, junior faculty, post-doctoral fellows and graduate students for idea exchange and networking related to conducting and funding cutting-edge research in BME. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1343145. The session will highlight NSF funded research, inform participants on how to develop winning grant proposals and provide ample opportunity for networking and community building for those directing independent research and those aspiring to do so. It is expected participants at all levels will gain an increased awareness of NSF research, gain a better understanding of NSF funding opportunities and prepare successful grant applications and potentially establish new relationships that may lead to collaborations in the future.

Korea-US Joint Workshop in Biomedical Engineering
4:00PM – 5:30PM
Room 201

The goal of the Joint Workshop between the Korean Society of Medical and Biological Engineering (KOSOMBE) and BMES is to promote cooperation, collaboration and networking between the two societies and their members.

Invited speakers:
Robert Nerem (Georgia Tech)
Luke Lee (University of California, Berkeley)
Hanjoong Jo, (Emory University and Georgia Tech)
Sanghoon Lee (Korea University)
Jungwook Shin (Inje University)
Yoonkey Nam (KAIST)

P = Poster Session
OP = Oral Presentation

Thursday, September 26, 2013

4:00PM – 5:30PM

PLATFORM SESSION –THURS – 3

Track: Tissue Engineering
OP - Thurs - 3 – 1 - Room 6B
Cardiovascular Tissue Engineering II

Chairs: Jeff Holmes, Shelly Peyton

4:00PM

FLIM Phasor Analysis Characterizes Cardiomyocyte Metabolic Maturation by Cardiac-derived Matrix

D. D. Tran[1], M. L. Moya[1], R. Datta[1], M. A. Digman[1], J. J. Wang[2], K. L. Christman[2], E. Gratton[1], and S. C. George[1,3]

[1]University of California, Irvine, Irvine, CA, [2]University of California, San Diego, San Diego, CA, [3]The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

4:15PM

Sustained Oxygenation Stimulated Cardiac Differentiation of Cardiosphere Derived Cells Under Hypoxic Condition

J. Guan[1] and Z. Li[1]

[1]Ohio State University, Columbus, OH

4:30PM

Engineered Cardiac Micro-Tissue Particles Electrically Integrate and Maintain Heart Function After Infarction

K. A. Beres[1], K. L. Kreutziger[1], S. Dupras[1], X. Yang[1], V. Muskheli[1], and C. E. Murry[1]

[1]University of Washington, Seattle, WA

4:45PM

Stepwise, Solubilization-Based Antigen Removal Maintains Xenogeneic Scaffold Recellularization Capacity

M. L. Wong[1], C. Sondergaard[2], J. L. Wong[1], and L. G. Griffiths[1]

[1]University of California, Davis, Davis, CA, [2]University of California, Davis, Sacramento, CA

5:00PM

Generation of Dynamically-Perfused Functional Vascular Network System within Hydrogel using 3D Bio-Printing Technology

V. K. Lee[1], S-S. Yoo[2], P. A. Vincent[3], and G. Dai[1]

[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [3]Albany Medical College, Albany, NY

5:15PM

Aligned Engineered Microvessels with High Lumen Density via Cell-Induced Fibrin Gel Compaction and Interstital Flow

K. T. Morin[1], J. L. Dries-Devlin[1], and R. T. Tranquillo[1]

[1]University of Minnesota, Minneapolis, MN

Track: Biomaterials
OP - Thurs - 3 – 2 - Room 6C
Micro and Nanostructured Materials III

Chairs: Akhilesh Gaharwar, Justin Saul

4:00PM

Microfluidic Core-Shell Beads for Tumor Spheroid Culture

C. L. Bayly[1], L. Yu[1], and K. Cheung[1]

[1]University of British Columbia, Vancouver, BC, Canada

4:15PM

Albuminated Glycoenzymes: A New Class of "All-Natural" Single Enzyme Nanoparticles

D. W. Ritter[1], J. R. Roberts[1], J. M. Newton[1], B. B. Collier[1], and M. J. McShane[1]

[1]Texas A&M University, College Station, TX

4:30PM

Solid Lipid Nanoparticles (SLNs) made of Free Fatty Acids (FFAs) in the Fight Against Nosocomial Infections

E. N. Taylor[1], K. M. Kummer[2], D. Dyondi[2], R. Banerjee[2], and T. J. Webster[1]

[1]Northeastern University, Boston, MA, [2]Indian Institute of Technology, Mumbai, India

4:45PM

Cytotoxicity of 1-D & 2-D Carbon Nanostructure Reinforced Poly(propylene fumarate) Nanocomposites

B. Farshid[1,2], G. Lalwani[1], and B. Sitharaman[1]

[1]Department of Bioengineering, Stony Brook University, Stony Brook, NY, Stony Brook, NY, [2]Department of Materials Science and Engineering, Stony Brook University, Stony Brook

5:00PM

Isolating Circulating Fetal Cells from Maternal Blood Using Naturally Occurring Nanotubes

Y. Geng[1], A. D. Hughes[1], J. C. Mattison[1], M. Provençal[2], P. Miron[2], and M. R. King[1]

[1]Cornell University, Ithaca, NY, [2]Centre de procréation FERTILYS/Prenagen Inc, Terrebonne, QC, Canada

5:15PM

A Paradigm for Quantifying the Elution of Biomaterials in Tissue

T. W. Lancon[1] and F. J. Clubb[1]

[1]Texas A&M University, College Station, TX

Track: Biomaterials
OP - Thurs - 3 – 3 - Room 606
Therapeutic Biomaterials I

Chairs: Craig Duvall, John Wilson

4:00PM

Controlled/Living Radical Polymerization: The Impact of Near-Precision Polymer Synthesis on the Field of Biomaterials *(Invited)*

S. Pun[1]

[1]University of Washington, Seattle, WA

4:30PM

Hydrogels for Transplantation of iPS-NPC After Stroke

J. Lam[1], W. Lowry[1], S. Carmichael[1], and T. Segura[1]

[1]University of California, Los Angeles, CA

4:45PM

Amnion Hydrogel Accelerates Skin Wound Healing

S. V. Murphy[1], A. Skardal[1], R. Haug[1], L. Song[1,2], D. Mack[1,3], J. D. Jackson[1], J. Yoo[1], S. Soker[1], and A. Atala[1]

[1]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [2]Shanghai Jiao Tong University, Shanghai, China, People's Republic of, [3]Institute for Stem Cell and Regenerative Medicine, Seattle, WA

5:00PM

Sortase-Mediated Initiator Attachment Enables High Yield *In Situ* Growth of a PEG-Based Polymer from the C Terminus of Proteins and Peptides

Y. Qi[1], M. Amiram[2], W. Gao[3], D. McCafferty[1], and A. Chilkoti[1]

[1]Duke University, Durham, NC, [2]Yale University, West Haven, CT, [3]Tsinghua University, Beijing, China, People's Republic of

5:15PM

Encapsulation of an Imidazoquinoline TLR8 Agonist within Polymersomes Enhances Human Neonatal Dendritic Cell Activation

E. A. Scott[1], D. Dowling[2], A. Scheid[2], I. Bergelson[2], J. Ninkovic[2], G. Sanchez-Schmitz[2], O. Levy[2], and J. Hubbell[1]

[1]Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland, [2]Boston Children's Hospital & Harvard Medical School, Boston, MA

PLATFORM SESSIONS Th-3

Track: Biomechanics
OP - Thurs - 3 – 4 - Room 607
Cellular and Molecular Biomechanics III

Chairs: Hayden Huang, Michael King

4:00PM
Active Nanoscale Fluctuations in Cellular Mechanosensing
S. Knoll[1], W. Ahmed[2], and T. Saif[3]
[1]University of Illinois, Urbana, IL, [2]Curie Institute, Paris, France, [3]University of Illinois, Champaign, IL

4:15PM
The Nanoscale Organization of Focal Adhesion Signaling Complexes Can Reflect Changes in Cellular Contractility and Motility
M. G. Rubashkin[1], C. Dufort[1], P. Oakes[2], M. Paszek[3], M. Davidson[4], M. Gardel[2], and V. Weaver[1]
[1]University of California, San Francisco, San Francisco, CA, [2]University of Chicago, Chicago, IL, [3]Cornell University, Ithaca, NY, [4]Florida State University, Tallahassee, FL

4:30PM
Knockout of Nesprin 1 and Desmin Causes Aberrant Nuclear Mechanics and Fibrosis in Skeletal Muscle
M. A. Chapman[1], J. Zhang[1], J. Chen[1], and R. L. Lieber[1]
[1]University of California - San Diego, La Jolla, CA

4:45PM
Role of Chromatin Structure in Large Strain High-Throughput Cell Deformability Measurements
M. Masaeli[1], H. Tse[1], D. Gossett[1], and D. Di Carlo[1]
[1]University of California, Los Angeles, CA

5:00PM
Elucidating Strain-Dependent Changes in FN Molecular Conformation Using Monodisperse Nanofibers
J. M. Szymanski[1] and A. W. Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA

5:15PM
Changes in Hydrogen Bonding of Hydration Water Induced By Contraction of Skeletal Muscle Myofibrils
H. Yoo[1], E. Nagornyak[1], and G. Pollack[1]
[1]University of Washington, Seattle, WA

Track: Biomechanics
OP - Thurs - 3 – 5 - Room 608
Cardiovascular Biomechanics

Chairs: Patrick Alford, Michael Sacks

4:00PM
Cardiac Mechanics in Matrix Metalloproteinase-9 Null Mice Post-Myocardial Infarction
A. P. Voorhees[1,2], K. Y. DeLeon[2,3], Y. Ma[2,3], G. V. Halade[2,4], A. Yabluchanskiy[2,3], M. L. Lindsey[2,3], and H-C. Han[2,5]
[1]UTSA/UTHSCSA Joint Program in Biomedical Engineering, San Antonio, TX, [2]San Antonio Cardiovascular Proteomics Center, San Antonio, TX, [3]Jackson Center for Heart Research, University of Mississippi Medical Center, Jackson, MS, [4]The University of Texas Health Science Center at San Antonio, San Antonio, TX, [5]The University of Texas at San Antonio, San Antonio, TX

4:15PM
Micromechanics of the Aortic Valve Leaflet Layers: Do They Slide or Not?
R. M. Buchanan[1] and M. S. Sacks[1]
[1]The University of Texas at Austin, Austin, TX

4:30PM
Platelet Contractile Forces Can Be Transmitted Through a Non-Integrin Receptor, GPIb-IX-V Complex as Revealed by E-beam Fabricated Nanoposts
S. Feghhi[1], A. D. Munday[2], W. W. Tooley[1], J. A. Lopez[1,2], and N. J. Sniadecki[1]
[1]University of Washington, Seattle, WA, [2]Puget Sound Blood Center, Seattle, WA

4:45PM
Flow Reversal Elicits a Pro-Arteriogenic ICAM-1hi/KLF2hi Phenotype
J. Heuslein[1], J. Meisner[1], H. Vincentelli[1], B. Blackman[1], and R. Price[1]
[1]University of Virginia, Charlottesville, VA

5:00PM
Effect of Blast Wave on Cerebral Blood Pressure during Blast Exposure in a Rat Injury Model
S. Assari[1], K. Laksari[1], M. F. Barbe[1], E. T. Choi[1], and K. Darvish[1]
[1]Temple University, Philadelphia, PA

5:15PM
Hemodynamic Forces Control Ventricular and Valvular Growth Independent of Sidedness During Embryonic Development
H. C. Yalcin[1], R. Gould[2], and J. Butcher[2]
[1]Dogus University, Istanbul, Turkey, [2]Cornell University, Ithaca, NY

Track: Cancer Technologies
OP - Thurs - 3 – 6 - Room 609
Imaging Strategies for Cancer Detection and Treatment

Chairs: Jennifer Cochran, Joseph Matt Kinsella

4:00PM
Colonic Tissue Topography as a Key Player of Metastasis – A Diagnostic Model
S. Bharadwaj[1], R. Tran-Son-Tay[1], and S. Glover[1]
[1]University of Florida, Gainesville, FL

4:15PM
Development of a Mechanically-Sensitive Antibody Against Fibronectin for Imaging of Fibrosis
L. Cao[1], A. Suresh[1], S. Lees[1], and T. Barker[1]
[1]Georgia Institute of Technology, Atlanta, GA

P = Poster Session
OP = Oral Presentation

4:30PM
Multiplexed Molecular Detection Using FLIM and Lifetime Probes
R. KOTA[1], M. RAHIM[1], C-L. CHIU[1], S. LEE[1], E. GRATTON[1], AND J. B. HAUN[1]
[1]*University of California, Irvine, CA*

4:45PM
An Engineered Peptide for Non-Invasive Optical Imaging of Brain Tumors
S. J. MOORE[1], M. HAYDEN-GEPHART[1], J. M. BERGEN[1], Y. S. SU[1], H. RAYBURN[1], M. P. SCOTT[1], AND J. R. COCHRAN[1]
[1]*Stanford University, Stanford, CA*

5:00PM
Dual Transcript and Protein Quantification in a Massive Single Cell Array Toward Effective Cancer Therapy
S-M. PARK[1], J. LEE[1], S. HONG[1], I. K. DIMOV[1,2], S. LEE[1], Q. PAN[1], K. LI[3], A. W. WU[3], S. MUMENTHALER[4], P. MALLICK[2], AND L. P. LEE[1]
[1]*UC Berkeley, Berkeley, CA,* [2]*Stanford University, Stanford, CA,* [3]*David Geffen School of Medicine at UCLA, Los Angeles, CA,*
[4]*University of Southern California, Los Angeles, CA*[5:15]*PM*

5:15PM
Profiling of Human Cells with a Portable Holographic Imaging System
H. IM[1], J. SONG[1], M. LIONG[1], L. FEXON[1], M. PIVOVAROV[1], R. WEISSLEDER[1,2], AND H. LEE[1]
[1]*Massachusetts General Hospital, Boston, MA,* [2]*Harvard Medical School, Boston, MA*

Track: Cardiovascular Engineering
OP - Thurs - 3 – 7 - Room 612
Hemodynamics and Cardiovascular Flow Modeling

Chairs: Alison Marsden, Michael Sacks

4:00PM
Impact of Blood Viscosity on Right Ventricular Afterload during Hypoxic Pulmonary Hypertension
D. A. SCHREIER[1], T. HACKER[1], G. SONG[1], AND N. CHESLER[1]
[1]*University of Wisconsin-Madison, Madison, WI*

4:15PM
Contribution of Intraventricular Vortices to Left Ventricular Filling
P. MARTINEZ-LEGAZPI[1], J. BERMEJO[2], Y. BENITO[2], M. ALHAMA[2], R. YOTTI[2], C. PEREZ DEL VILLAR[2], E. PÉREZ-DAVID[2], A. GONZALEZ-MANSILLA[2], C. SANTA-MARTA[3], A. BARRIO[2], F. FERNANDEZ-AVILES[2], AND J. DEL ALAMO[1]
[1]*University of California San Diego, San Diego, CA,* [2]*Hospital General Universitario Gregorio Marañón, Madrid, Spain,* [3]*Universidad Nacional de Educacion a Distancia, Madrid, Spain*

4:30PM
Relative Area Change Is Inversely Related to Elastic Modulus of Proximal Pulmonary Arteries
L. TIAN[1], A. BELLOFIORE[1], H. B. KELLIHAN[1], A. ROLDAN-ALZATE[1], D. W. CONSIGNY[1], C. J. FRANCOIS[1], AND N. C. CHESLER[1]
[1]*University of Wisconsin-Madison, Madison, WI*

4:45PM
HIV-1 Proteins Induce Cathepsin Upregulation Under Physiological Shear Stress: Insights From HIV-transgenic Mice and Human Endothelial Cells
I. K. PARKER[1], R. GLEASON[1,2], R. SUTLIFF[2], AND M. PLATT[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

5:00PM
Rotational Seeding and Flow Pre-conditioning for Improved Endothelialization of Vascular Allografts
J. S. UZARSKI[1] AND P. S. MCFETRIDGE[1]
[1]*University of Florida, Gainesville, FL*

5:15PM
Multiscale Modeling of Coronary Artery Hemodynamics in Kawasaki Disease
A. L. MARSDEN[1], D. SENGUPTA[1], A. KAHN[1], AND J. BURNS[1]
[1]*University of California San Diego, La Jolla, CA*

Track: Cellular and Molecular Bioengineering
OP - Thurs - 3 – 8 - Room 604
Mechanotransduction III

Chairs: Julie Ji, Michael Smith

4:00PM
Observing Force-Regulated Conformational Changes and Ligand Dissociation From a Single Integrin on Cells
W. CHEN[1], J. LOU[2], E. EVANS[3], AND C. ZHU[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Institute of Biophysics of Chinese Academy of Sciences, Beijing, China, People's Republic of,* [3]*Boston University, Boston, MA*

4:15PM
Visualization of Chondrocyte Mechanotransduction in 3D
Q. WAN[1,2], E. CHO[2], S. PARK[1], B. HAN[1], H. YOKOTA[2], AND S. NA[2]
[1]PURDUE UNIVERSITY, WEST LAFAYETTE, IN, [2]INDIANA UNIVERSITY-PURDUE UNIVERSITY INDIANAPOLIS, INDIANAPOLIS, IN

4:30PM
Shear Stress Modulates VCAM-1 Expression in Response to TNF and Dietary Lipids via IRF-1
J. S. DEVERSE[1], A. S. SANDHU[1], N. MENDOZA[1], C. M. EDWARDS[1], C. SUN[1], S. I. SIMON[1], AND A. G. PASSERINI[1]
[1]*University of California, Davis, Davis, CA*

4:45PM
Substrate Stiffness Modulates Cell Volume in 2D, But Not in 3D
M. ALI[1], S. PEDRON[1], C. NEMEH[1], B. A. HARLEY[1], AND T. A. SAIF[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

5:00PM
Parallel Magnetic Tweezers for Pulling CNS Axons towards a Source of Repellent Factors
D. KILINC[1], A. BLASIAK[1], J. J. O'MAHONY[1], AND G. U. LEE[1]
[1]*University College Dublin, Dublin, Ireland*

5:15PM
Rho GTPases Control Nuclear Localization of Beta-Catenin and TCF/LEF Activity in Osteoblasts Under Flow
Q. WAN[1,2], E. CHO[2], H. YOKOTA[2], AND S. NA[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University-Purdue University Indianapolis, Indianapolis, IN*

Track: Cellular and Molecular Bioengineering
OP - Thurs - 3 - 9 - Room 611
Cell Motility III

Chairs: Brenton Hoffman, Soichiro Yamada

4:00PM
Actin Cytoskeleton and Focal Adhesion Dynamics Regulate MMP-Independent Cancer Cell Migration in 3D Microtracks
C. M. KRANING-RUSH[1], O. M. TORRE[1], AND C. A. REINHART-KING[1]
[1]*Cornell University, Ithaca, NY*

4:15PM
A Microfluidic Device to Measure Traction Forces During Confined Chemotactic Migration
C. D. Paul[1], P. S. Raman[1], K. M. Stroka[1], and K. Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD

4:30PM
Dorsal Adhesion Slows Glioblastoma Migration in Perivascular Mimics
A. D. Rape[1] and S. Kumar[1]
[1]University of California - Berkeley, Berkeley, CA

4:45PM
Maintenance of Neuronal Polarity By a Microtubule Steering Mechanism Involving Kinesin and EB1
W. O. Hancock[1] and Y. Chen[1,2]
[1]Penn State University, University Park, PA, [2]Huck Institutes for Life Sciences, University Park, PA

5:00PM
Large Scale Analysis of Mammalian Axon Growth and Guidance in Microfludic Gradient Arrays
N. Bhattacharjee[1] and A. Folch[1]
[1]University of Washington, Seattle, WA

5:15PM
Macrophage Chemokinesis and Force Generation on Microcontact Printed Surfaces
L. Hind[1], D. Cox[2], and D. Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Albert Einstein University, Bronx, NY

Track: Device Technologies and Biomedical Robotics
OP - Thurs - 3 – 10 - Room 602
Biomedical Robotics

Chairs: Evin Gultepe, David Kaplan

4:00PM
Metabolic Strategies for Long-Term Survival of *In Vitro* Cultured Manduca Sexta Muscle
A. Baryshyan[1], L. Domigan[1], E. Pitcairn[1], B. Trimmer[1], and D. Kaplan[2]
[1]Tufts University, Medford, MA, [2]Department of Biomedical Engineering, Medford, MA

4:15PM
Statistical Approach to Biopsy: Screening Large Area Organs with Untethered Surgical Tools
E. Gultepe[1], M. Khashab[1], A. N. Kalloo[1], F. M. Selaru[1], and D. H. Gracias[1]
[1]The Johns Hopkins University, Baltimore, MD

4:30PM
Development of a 3-D Skeletal Muscle Biological Actuator
C. Cvetkovic[1], V. Chan[1], R. Raman[1], and R. Bashir[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

4:45PM
Functional Three-Dimensional Insect Muscle Tissue for Bioactuation Applications
A. Baryshyan[1], L. Domigan[1], B. Trimmer[1], and D. Kaplan[1]
[1]Tufts University, Medford, MA

5:00PM
Portable Robotic Device for Autonomous Peripheral Venous Access using Near Infrared Image Guidance
A. Chen[1]
[1]Rutgers University, Holmdel, NJ

5:15PM
Open Surgery Simulation with Multi-Level Force Feedback
S. Li[1], G. Saunders[1], T. Halic[2], A. Galea[3], K. LeRoy[3], G. Hirschman[3], and J. Wen[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]University of Central Arkansas, Conway, AR, [3]Vivonics Inc., Waltham, MA

track sponsored by Medtronic

Track: Bioinformatics, Computational and Systems Biology
OP - Thurs - 3 – 11 - Room 615
Analysis and Control of Cell Signaling I

Chairs: Adam P. Arkin, Kevin A. Janes, H. Steven Wiley

4:00PM
Quantitative Understanding of Gene Expression for Systems and Synthetic Biology *(Invited)*
A. P. Arkin[1,2]
[1]University of California Berkeley, Berkeley, CA, [2]Lawrence Berkeley National Laboratory, Berkeley, CA

4:30PM
Linking Signal-Transduction and Gene-Expression Networks By Statistical Modeling *(Invited)*
Z. Chitforoushzadeh[1], S. I. LaRue[1], M. B. Yaffe[2], D. A. Lauffenburger[2], P. K. Sorger[3], R. C. Fry[4], and K. A. Janes[1]
[1]University of Virginia, Charlottesville, VA, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]Harvard Medical School, Boston, MA, [4]University of North Carolina at Chapel Hill, Chapel Hill, NC

5:00PM
Differential EGFR Signaling From Autocrine Versus Paracrine Mode of Ligand Presentation *(Invited)*
B. E. Linggi[1], W-J. Qian[1], W. Chrisler[1], and H. S. Wiley[1]
[1]Pacific Northwest National Laboratory, Richland, WA

Track: Orthopaedic and Rehabilitation Engineering
OP - Thurs - 3 – 12 - Room 616
Musculoskeletal Tissue Engineering II - Scaffolds and ECM

Chairs: Johnna Temenoff, Lijie Grace Zhang

4:00PM
Engineering Dense Connective Tissues: Material, Mechanical, and Mechanobiologic Considerations *(Invited)*
R. L. Mauck[1]
[1]University of Pennsylvania, Philadelphia, PA

4:30PM
Engineering Collagen Maturity and Density for the Knee Meniscus
P. Hadidi[1], M. M. Higashioka[1], E. A. Makris[1], J. C. Hu[1], and K. A. Athanasiou[1]
[1]University of California, Davis, CA

4:45PM
Decellularized Cartilage as a Chondroinductive Material for Cartilage Tissue Engineering
A. N. Renth[1], G. L. Converse[2], R. J. Hopkins[2], and M. S. Detamore[1]
[1]University of Kansas, Lawrence, KS, [2]Children's Mercy Hospital, Kansas City, MO

5:00PM
Multi-Compartment Collagen-GAG Scaffolds to Guide MSC Differentiation for Osteotendinous Junction Repair
S. Caliari[1], D. Weisgerber[1], W. Grier[1], Z. Mahmassani[1], M. Boppart[1], and B. Harley[1]
[1]University of Illinois Urbana Champaign, Urbana, IL

P = Poster Session
OP = Oral Presentation

5:15PM
Deletion of Scleraxis Impairs Supraspinatus Enthesis Development
M. L. KILLIAN[1] AND S. THOMOPOULOS[1]
[1]*Washington University School of Medicine, St Louis, MO*

Track: Biomedical Imaging and Optics
OP - Thurs - 3 – 13 - Room 618
Optical Coherence Tomography

Chairs: Christine P. Fleming

4:00PM
Study of Early Events in Murine Model of Colon Cancer Using Surface Magnifying Chromoendoscopy and Optical Coherence Tomography
M. R. KEENAN[1], S. LEUNG[1], P. S. RICE[1], R. A. WALL[1], AND J. K. BARTON[1]
[1]*The University of Arizona, Tucson, AZ*

4:15PM
Quantitative Identification of Bright Spots in Intravascular Optical Coherence Tomography (IVOCT) Images of Human Coronary Arteries
J. E. PHIPPS[1], D. VELA[2], T. HOYT[1], D. HALANEY[1], J. J. MANCUSO[1], T. E. MILNER[3], AND M. D. FELDMAN[1]
[1]*University of Texas Health Science Center San Antonio, San Antonio, TX,* [2]*Texas Heart Institute, Houston, TX,* [3]*University of Texas at Austin, Austin, TX*

4:30PM
Swept Source Optical Coherence Tomography Imaging of Temporal Bone for Use in a Robot Assisted Surgical Guidance System for Cochlear Implant Surgery
S. GURBANI[1], M. ZHAO[1], P. WILKENING[1], B. GONENC[1], G. CHEON[1], I. IORDACHITA[1], W. CHIEN[1], R. TAYLOR[1], J. NIPARKO[2], AND J. U. KANG[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Southern California, Los Angeles, CA*

4:45PM
Cross-sectional Cornea Mechanical Properties Measurement by Dynamically Imaging Acoustic Waves with Phase Sensitive Optical Coherence Tomography
S. SONG[1,2], E. WONG[1], T-M. NGUYEN[1], B. ARNAL[1], M. O'DONNELL[1], Z. HUANG[2], AND R. WANG[1]
[1]*University of Washington, Seattle, WA,* [2]*University of Dundee, Dundee, United Kingdom*

5:00PM
Quantification of 3D Fiber Orientation for Myocardial Tissues Using Optical Coherence Tomography
Y. GAN[1] AND C. P. FLEMING[1]
[1]*Columbia University, New York, NY*

5:15PM
Optical Imaging and Spectroscopy of Tumor Bioenergetics In Vivo to Interpret Response to Therapy
N. RAJARAM[1], J. ZHONG[1], A. E. FREES[1], N. RAMANUJAM[1], AND M. W. DEWHIRST[1]
[1]*Duke University, Durham, NC*

Track: Nano to Micro Technologies
OP - Thurs - 3 – 14 - Room 619
Human on Chip

Chairs: Brendan A. Harley, James Hickman

4:00PM
Engineered Human Hepatocyte-Encapsulated Microtissues for Predictive On-Chip Drug Metabolism
C. Y. LI[1], A. G. SCHEPERS[1], R. E. SCHWARTZ[1], B. S. ALEJANDRO[1], AND S. N. BHATIA[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Brigham and Women's Hospital, Boston, MA*

4:15PM
Glioma-On-A-Chip: Gradient Hydrogel Platform to Explore Extracellular Effects on Glioblastoma Malignancy
S. PEDRON[1], E. BECKA[1], B. MAHADIK[1], L. SKERTICH[1], E. J. ROY[1], AND B. HARLEY[1]
[1]*University of Illinois Urbana Champaign, Urbana, IL*

4:30PM
Probing the Migratory Behavior of Patient-Derived Glioma Stem Cells on a Micro-Engineered Platform – A Single Cell Analysis
D. GALLEGO-PEREZ[1], J. MA[1], P. MAO[1], K. J. KWAK[1], D. J. HANSFORD[1], I. NAKANO[1], AND L. J. LEE[1]
[1]*The Ohio State University, Columbus, OH*

4:45PM
Low Cost Microphysiological Systems with Analytics
J. J. HICKMAN[1] AND M. L. SHULER[2]
[1]*University of Central Florida, Orlando, FL,* [2]*Cornell University, Ithaca, NY*

5:00PM
Disease-Specific Cardiac Tissue Models for Drug Discovery and Toxicology
A. MATHUR[1], P. LOSKILL[1], B. BERG-JOHANSEN[1], N. MARKS[1], S. HONG[1], L. LEE[1], AND K. HEALY[1]
[1]*University of California, Berkeley, CA*

5:15PM
Blood-Brain Barrier on Chip, Drug Delivery Enhancement By Electroporation
M. BONAKDAR[1], P. A. GARCIA[1], AND R. V. DAVALOS[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Drug Delivery
OP - Thurs - 3 – 15 - Room 620
Cancer Drug Delivery I

Chairs: Debra Auguste, Jordan Green

4:00PM
Selective Targeting and Treatment of Metastatic Pancreatic Cancer via Three Fusion Protein/Prodrug Systems
K. PASSLACK[1], A. RESTUCCIA[1], C. KURKJIAN[2], AND R. HARRISON[1]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Oklahoma Health Sciences Center, Oklahoma City, OK*

4:15PM
In Vivo Non-viral Gene Delivery to Brain Tumor Stem Cells for Treatment of Glioblastoma
S. Y. TZENG[1], H. GUERRERO-CAZARES[1], N. P. YOUNG[2], A. QUINONES-HINOJOSA[1], AND J. J. GREEN[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Stanford University, Stanford, CA*

4:30PM
Unnatural Killer Cells: TRAIL-coated Leukocytes that Kill Cancer Cells in the Circulation
M. J. MITCHELL[1], E. C. WAYNE[1], K. RANA[1], C. SCHAFFER[1], AND M. R. KING[1]
[1]*Cornell University, Ithaca, NY*

4:45PM
Combination Delivery of Doxorubicin and siRNA Using LbL Nanoparticles for Triple Negative Breast Cancer Treatment
J. DENG[1], S. MORTON[1], AND P. HAMMOND[1]
[1]*MIT, Cambridge, MA*

5:00PM
Sensitization of Circulating Tumor Cells to TRAIL-induced Apoptosis by Targeting ROS Signaling
J. LI[1], C. SHARKEY[1], AND M. KING[1]
[1]*Cornell University, Ithaca, NY*

5:15PM
Brain-Penetrating Nanoparticles Improve Efficacy Against Gliosarcomas
E. Nance[1], C. Zhang[1], T-Y. Shih[2], and J. Hanes[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Harvard University, Cambridge, MA

Track: Neural Engineering
OP - Thurs - 3 – 16 - Room 613
Neural Control and Modeling

Chairs: Dustin Tyler, Bruce Wheeler

4:00PM
Feed-Forward Information Propagation in Neuronal Assemblies From Defined *In Vitro* Cortical Networks
B. C. Wheeler[1], S. Alagapan[1], L. Pan[1], E. Franca[1], G. J. Brewer[2], and T. B. DeMarse[1]
[1]University of Florida, Gainesville, FL, [2]University of California Irvine, Irvine, CA

4:15PM
Transcranial Ultrasound for Noninvasive Targeted Modulation of Cortical Brain Circuits in Humans
J. Mueller[1], W. Legon[2], T. Sato[2], A. Opitz[2,3], A. Barbour[2], A. Williams[2], and W. Tyler[1,2]
[1]Virginia Tech School of Biomedical Engineering and Sciences, Blacksburg, VA, [2]Virginia Tech Carilion Research Institute, Roanoke, VA, [3]Georg-August-University, Göttingen, Germany

4:30PM
Restoring Sensation in Amputees with Nerve Cuff Electrodes
M. A. Schiefer[1,2], D. Tan[1,2], J. R. Anderson[1,3], M. Keith[2,4], and D. Tyler[1,2]
[1]Louis Stokes Cleveland Dept of Veterans Affairs Medical Center, Cleveland, OH, [2]Case Western Reserve University, Cleveland, OH, [3]University Hospitals, Cleveland, OH, [4]MetroHealth Medical Center, Cleveland, OH

4:45PM
In Vivo and *In Vitro* Peripheral Nerve Stimulation via Electromagnetic Induction
Z. Kagan[1], A. RamRakhyani[1], F. Khan[1], G. Lazzi[1], D. Warren[1], and R. Normann[1]
[1]University of Utah, Salt Lake City, UT

5:00PM
A Probabilistic Model Predicting Retinal Ganglion Cells Responses to Natural Images
N. Ivzan[1] and N. M. Grzywacz[1]
[1]University of Southern California, Los Angeles, CA

5:15PM
Autonomic Function Assessment in Chronic Fatigue Syndrome Patients Using Kernel Method
A. K. Kamal[1,2]
[1]Tennessee Tech University, Cookeville, TN, [2]TTU, Cookeville, TN

Track: New Frontiers and Special Topics
OP - Thurs - 3 – 17 - Room 614
Smart Materials & Tissue Engineering

Chairs: Bahareh Behkam, Pat Stayton

4:00PM
Chemotactic Control of Live Autonomous Drug Delivery Agents (DrugBots) in a Hydrogel-Based Microfluidic Device
A. Sahari[1], M. A. Traore[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

4:15PM
TRAIL Mediated Apoptosis in the Third Dimension
S. Chandrasekaran[1], J. R. Marshall[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

4:30PM
Biomimetic Stem Cell Modified Tissue Engineered Nanostructured *In Vitro* Bone Model for Breast Cancer Bone Metastasis Study
M. Wang[1], S. Fu[1], and L. Zhang[1]
[1]The George Washington University, Washington, DC

4:45PM
Stimuli-Responsive Binary Reagent Systems for Enabling Rapid and Effective Immunoaffinity Separation
J. J. Lai[1], B. J. Nehilla[2], T. H. Schulte[2], and P. S. Stayton[1]
[1]University of Washington, Seattle, WA, [2]Nexgenia, Inc., Seattle, WA

5:00PM
Red Blood Cell Manipulation Using Ultrasound Microbeam
K. Lam[1], Y. Li[1], Q. Zhou[1], and K. Shung[1]
[1]University of Southern California, Los Angeles, CA

5:15PM
Toxin Detection Using Organic Electrochemical Transistors Integrated with Living Cells
S. A. Tria[1], M. Ramuz[1], L. H. Jimison[2], P. Leleux[1], A. Hama[1], G. G. Malliaras[1], and R. M. Owens[1]
[1]Ecole des Mines supérieure de Saint Etienne, Centre de Microéléctronique de Provence, Gardanne, France, [2]NIST, Gaithersburg, MD

Track: Translational Biomedical Engineering
OP - Thurs - 3 – 18 - Room 6A
Therapeutic and Diagnostic Biomedical Devices

Chairs: Rafael Davalos, Buddy Ratner

4:00PM
Microwell Arrays: From Genetic Analysis to Ultra-high Sensitivity Analysis
D. R. Walt[1]
[1]Tufts University, Medford, MA

4:30PM
A Dielectrophoretic Filter To Isolate Bacteria From Large Volumes At High Processing Rates
L. D'Amico[1,2], J. A. Adachi[2], and P. R. Gascoyne[2]
[1]University of Texas at Austin, Austin, TX, [2]University of Texas MD Anderson Cancer Center, Houston, TX

4:45PM
Stabilization and Delivery of Vaccines with Silk Microneedles
W. Raja[1], B. Panilaitis[1], I. Diwan[1], and D. Kaplan[1]
[1]Tufts University, Medford, MA

5:00PM
Nano-BaSO4 in Pellethane Creates Radiopaque Thermoplastics That Are Less Prone To Bio-fouling
G. E. Aninwene II[1], D. Stout[2], Z. Yan[2], Z. Yan[2], and T. J. Webster[1]
[1]Northeastern University, Boston, MA, [2]Brown University, Providence, RI

5:15PM
Development of a Simple and Self-Contained mRNA Biomarker Extraction and Detection Assay
N. M. Adams[1], A. Wang[1], D. Gvarjaladze[2], L. Lomidze[2], B. I. Kankia[2], D. W. Wright[1], and F. R. Haselton[1]
[1]Vanderbilt University, Nashville, TN, [2]Ohio State University, Columbus, OH

P = Poster Session
OP = Oral Presentation

FRIDAY, September 27

TODAY'S HIGHLIGHT

PLATFORM SESSIONS Fri-1 8:00am - 9:30am
See pages 115-121, WSCC

EXHIBIT HALL OPEN 9:30am - 5:00pm
WSCC, Exhibit Hall 4AB

POSTER SESSION Fri A 9:30am - 1:00pm
WSCC, Exhibit Hall 4AB

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


PLENARY SESSION
10:30am - 12:00noon
WSCC, Ballroom 6E

Distinguished Achievement
Sue Van

NIH NIBIB Lecture
W. Mark Saltzman, PhD

WOMEN IN BME Luncheon 12:15pm - 1:15pm
WSCC, Ballroom 6A

CAREER FAIR 1:00pm - 5:00pm
WSCC, South Lobby

PLATFORM SESSIONS Fri-2 1:30pm - 2:30pm
See pages 152-156, WSCC

POSTER SESSION Fri A 9:30am - 1:00pm
Exhibit Hall 4AB

Poster Viewing with Authors & Refreshment Break 3:45pm - 4:45pm

PLATFORM SESSION Fri-3 2:45pm - 3:45pm
See pages 157-160, WSCC

PLENARY SESSION
4:45pm - 6:00pm

TECHNO-STORIES FROM SPACE
Donald Pettit, PhD

BMES BASH 7:00pm - 10:00pm
EMP Museum

Friday, September 27, 2013

8:00AM – 9:30AM
PLATFORM SESSIONS –FRI –1

Track: Tissue Engineering
OP - Fri - 1 – 1 - Room 6B
Tissue Engineered Models for Study of Disease and Drug Discovery I

Chairs: Kara McCloskey, Abby R. Whittington

8:00AM
Bioengineered Human Trabecular Meshwork Mimicking In Vivo-like Outflow Response
K. Y. Torrejon[1], M. Bergkvist[1], J. Danias[2], S. Sharfstein[1], and Y. Xie[1]
[1]SUNY at Albany-College of Nanoscale Science and Engineering, Albany, NY, [2]SUNY Downstate Medical Center, Brooklyn, NY

8:15AM
3D *In Vitro* Model of Vascularized Cardiac Tissue for Cardiac Drug Screening
D. D. Tran[1], M. L. Moya[1], L. F. Alonzo[1], and S. C. George[1,2]
[1]University of California, Irvine, Irvine, CA, [2]The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

8:30AM
Mechanical Loading Inhibits Metastasis-mediated Osteolysis via Effects on Osteoclasts
M. E. Lynch[1], M. J. Lee[1], P. V. Polamraju[1], L. Bonassar[1], and C. Fischbach[1]
[1]Cornell University, Ithaca, NY

8:45AM
Effects of TGF-beta stimulation on *In Vitro* vasculogenesis models
L. F. Alonzo[1,2], A. L. Crampton[1,2], M. L. Moya[1,2], and S. C. George[1,2]
[1]University of California Irvine, Irvine, CA, [2]The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

9:00AM
Hypoxia Promotes Liver-Stage Malaria Infection in Primary Human Hepatocytes *In Vitro*
S. Ng[1], S. March[1], A. Galstian[1], M. M. Mota[2], and S. Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Instituto de Medicina Molecular, Universidade de Lisboa, Lisbon, Portugal

9:15AM
3D Adipose Tissue Model for Type 2 Diabetes Mellitus
K. A. Burke[1], R. D. Abbott[1], and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

Track: Biomaterials
OP - Fri - 1 – 2 - Room 6C
Micro and Nanostructured Materials IV

Chairs: Jordan Green, Mehdi Nikkah

8:00AM
Tunable Peptoid Microsphere Coatings
S. Servoss[1], M. Hebert[1], D. Shah[1], P. Blake[1], and J. P. Turner[1]
[1]University of Arkansas, Fayetteville, AR

8:15AM
Nanocomposites Improved Magnesium Degradation Properties for Biomedical Implants
I. Johnson[1] and H. Liu[1]
[1]University of California at Riverside, Riverside, CA

8:30AM
Biomimetic Peptide Coating on Bioresorbable Magnesium Metal
A. J. Patil[1], E. Beniash[1], and C. Sfeir[1]
[1]University of Pittsburgh, Pittsburgh, PA

8:45AM
Bifunctional Janus Microparticles with Spatially Segregated Proteins
T. Sulchek[1], J. Tang[1], K. Schoenwald[1], D. Potter[1], and D. White[2]
[1]Georgia Tech, Atlanta, GA, [2]USDA, Ames, IA

9:00AM
Forming of Janus Particle Surfance By Adsorption
D. Gai[1], H. Tan[1], S. Zhang[2], Y. Lu[1], and J. K. Hsia[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Pennsylvania State University, University Park, PA

9:15AM
Spatially Defined Reconfigurable Topography for Tracking Filopodia Dynamics
P. Pholpabu[1], H. Wu[1], and C. A. Bettinger[1]
[1]Carnegie Mellon University, Pittsburgh, PA

PLATFORM SESSIONS
Fri-1

Track: Biomaterials
OP - Fri - 1 – 3 - Room 606
Therapeutic Biomaterials II

Chairs: Daniel Benoit, Jason Burdick

8:00AM
Modulation of Macrophage Sphingolipid Metabolites via Intracellular Drug Delivery for Inflammatory Regulation
C. E. Segar[1] and E. Botchwey[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

8:15AM
Dynamic Biomaterials for Healing Chronic Wounds
B. D. Almquist[1] and P. T. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

8:30AM
pH-Responsive Micelles for the Targeted Delivery of Chemotherapeutic Drugs
A. J. Convertine[1], P. Stayton[1], G. Y. Berguig[1], M. J. Manganiello[1], B. Ghosn[1], and J. T. Wilson[1]
[1]University of Washington, Seattle, WA

8:45AM
Non-Viral Gene Carriers for Retinal Therapies
S. Merritt[1] and H. von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

9:00AM
Peptide-functionalized Scaffolds Regulating Angiogenesis and Inflammation in Peripheral Artery Disease
A. L. Zachman[1], J. Tucker-Schwartz[1], F-W. Shen[1], S. T. Fitzpatrick[1], M. Skala[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

9:15AM
Polypeptide-Gold Nanorod Solders for Laser Tissue Welding
J. Ramos[1], H-C. Huang[2], K. Pushpavanam[1], J. Faust[1], and K. Rege[1]
[1]Arizona State University, Tempe, AZ, [2]Massachusetts General Hospital and Harvard Medical School, Boston, MA

Track: Biomechanics
OP - Fri - 1 – 4 - Room 607
Cellular and Molecular Biomechanics IV

Chairs: Adam Feinberg, Shyni Varghese

8:00AM
Traction Stress as a Modulator for Protease Dependent Invasion of Cancer Cells
A. Aung[1], Y. N. Seo[1], C. Jamora[1], J. del Alamo[1], and S. Varghese[1]
[1]University of California, San Diego, La Jolla, CA

8:15AM
Dynamic Regulation of Cellular Mechanics During Lung Cancer Metastasis
L. I. Volakis[1], N. Higuita-Castro[1], and S. N. Ghadiali[1,2]
[1]The Ohio State University, Columbus, OH, [2]The Wexner Medical Center at the Ohio State University, Columbus, OH

8:30AM
ECM Alignment Polarizes Focal Adhesions and Directs Cell Migration
B. M. Baker[1] and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA

8:45AM
Physical Mechanism for Lung Branching Morphogenesis Revealed by 3D Traction Force Microscopy
V. D. Varner[1], J. P. Gleghorn[1], and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ

9:00AM
Vascular Alignment is Determined by the Deformation of the ECM in Response to Active Forces Generated by Neovessel Sprouts
L. T. Edgar[1], S. A. Maas[1], J. E. Guilkey[1], and J. A. Weiss[1]
[1]University of Utah, Salt Lake City, UT

9:15AM
Microfabricated Substrates Co-encoding Large Spatial Stiffness Gradients and Cell Patterns for Investigating Cell and Tissue Polarity
P. Tseng[1] and D. Di Carlo[1]
[1]University of California, Los Angeles, Los Angeles, CA

Track: Tissue Engineering
OP - Fri - 1 – 5 - Room 608
Musculoskeletal and Orthopaedic Tissue Engineering I

Chairs: Michael Detamore, Mariah Hahn

8:00AM
The Vulnerability and Protection of Human MSC Against Apoptosis is Dependent on Differentiation State
B. Y. Binder[1], D. C. Genetos[1], and J. K. Leach[1]
[1]University of California Davis, Davis, CA

8:15AM
Polycaprolactone Fumarate as a Novel Biomaterial for Soft Tissue Engineering
S. C. Chase[1], E. Wagner[1], D. Bravo[1], M. Dadsetan[1], S. Kakar[1], and wM. Yaszemski[1]
[1]Mayo Clinic, Rochester, MN

P = Poster Session
OP = Oral Presentation

8:30AM
Critical Seeding Density Enhances Scaffold-Free Engineered Meniscus
P. HADIDI[1], T. C. YEH[1], D. J. HUEY[1], J. C. HU[1], AND K. A. ATHANASIOU[1]
[1]*University of California, Davis, CA*

8:45AM
Gene Expression-Based Enrichment of Human Adipose-Derived Stem Cells for Enhanced Osteogenic Differentiation
H. V. DESAI[1] AND E. M. DARLING[1]
[1]*Brown University, Providence, RI*

9:00AM
Biomechanical Evaluation of Suture Holding Properties of Native and Engineered Articular Cartilage
G. DURAINE[1], B. ARZI[1], J. LEE[1], C. LEE[2], D. RESPONTE[1], J. HU[1], AND K. ATHANASIOU[1]
[1]*University of California Davis, Davis, CA,* [2]*University of California Davis Medical Center, Sacramento, CA*

9:15AM
Mechanical Control of Collagen Organization and Anisotropy in Tissue Engineered Menisci
J. L. PUETZER[1] AND L. BONASSAR[1]
[1]*Cornell University, Ithaca, NY*

Track: Cancer Technologies
OP - Fri - 1 – 6 - Room 609
Bioengineering Models of Cancer I

Chairs: Shelley Peyton, Cynthia Reinhart-King

8:00AM
In Vitro Model for Tumor Cell Extravasation to Bone
J. JEON[1], S. BERSINI[2], C. ARRIGONI[3], S. CHUNG[4], J. CHAREST[5], M. MORETTI[2], AND R. D. KAMM[1]
[1]*MIT, Cambridge, MA,* [2]*Politecnico di Milano, Milan, Italy,* [3]*Gruppo Ospedaliero San Donato Foundation, Milan, Italy,* [4]*Korea University, Seoul, Korea, Republic of,* [5]*Draper Laboratory, Cambridge, MA*

8:15AM
Recapitulating Ewing's Sarcoma Signature in Tumor Cell Lines By An Engineered Bone Microenvironment
A. VILLASANTE[1], A. MARTURANO[1,2], F. Y. LEE[1], AND G. VUNJAK-NOVAKOVIC[1]
[1]*Columbia University, New York, NY,* [2]*Politecnico di Milano, Milan, Italy*

8:30AM
Receptor Tyrosine Kinase Inhibitor Efficacy in Carcinoma is Stiffness Dependent
T. NGUYEN[1], W. HERRICK[1], M. SLEIMAN[1], T. MORIARTY[1], AND S. PEYTON[1]
[1]*University of Massachusetts, Amherst, Amherst, MA*

8:45AM
Micropatterned Tumor-Stromal Assay for Cancer Drug Discovery
K. SHEN[1], D. HICKS[2], J. S. ELMAN[1], S. BOHR[1], K. PENA[3], E. SEKER[1], F. WANG[1], M. L. YARMUSH[1], D. SGROI[2], M. TONER[1], AND B. PAREKKADAN[1]
[1]*Center for Engineering in Medicine, MGH/HMS, Boston, MA,* [2]*Center for Cancer Research, MGH, Boston, MA,* [3]*Massachusetts Institute of Technology, Cambridge, MA*

9:00AM
Characterization of Tumor Heterogeneity Using Bioimage Informatics and 3D Computational Modeling
S. K. STAMATELOS[1], A. CARLIER[2], E. KIM[1], A. P. PATHAK[1], AND A. S. POPEL[1]
[1]*Johns Hopkins University, School of Medicine, Baltimore, MD,* [2]*Katholieke Universiteit Leuven, Heverlee, Belgium*

9:15AM
Tumor-Microenvironment-On-Chip: Simulation of Complex Transport Around Tumor
B. KWAK[1], C. SHIN[1], K. PARK[1], AND B. HAN[1]
[1]*Purdue Univesity, West Lafayette, IN*

Track: Cardiovascular Engineering
OP - Fri - 1 – 7 - Room 612
Heart Valves

Chairs: Michael Sacks, Craig Simmons

8:00AM
Non-Glutaraldehyde Extracellular Matrix Stabilization in Porcine Aortic Heart Valves
H. TAM[1], W. ZHANG[2], M. SACKS[2], AND N. VYAVAHARE[1]
[1]*Clemson University, Clemson, SC,* [2]*The University of Texas at Austin, Austin, TX*

8:15AM
The Spatiotemporal Evolution of Mineral Deposition and Maturation During Aortic Valve Leaflet Calcification
J. RICHARDS[1], L. MILLER[1], L. ESTROFF[1], A. BOSKEY[1], AND J. BUTCHER[1]
[1]*Cornell University, Ithaca, NY*

8:30AM
Isolated Effect of Geometry on Mitral Valve Function for In-Silico Model Development
S. A. TOUCHTON, JR.[1], A. W. SIEFERT[1], T. A. HERRMANN[1], J-P. M. RABBAH[1], N. SAIKRISHNAN[1], K. S. KUNZELMAN[2], AND A. P. YOGANATHAN[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Maine, Orono, ME*

8:45AM
A Micro-Anatomically Accurate Finite Element Model for Investigation of Functioning Mitral Valve and Its Relationship to Interstitial Cell Deformations
C-H. LEE[1], J. H. GORMAN, III[2], R. C. GORMAN[2], R. AMINI[3], AND M. SACKS[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*University of Pittsburgh, Pittsburgh, PA*

9:00AM
Fluid-Structure Interaction with Adaptive Fluid Mesh for Large Deflections in a Trileaflet Valve
T. E. CLAIBORNE[1], M. HORNER[2], S. PRABHAKAR[3], G. VERMA[3], M. SLEPIAN[4], AND D. BLUESTEIN[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Ansys, Inc., Evanston, IL,* [3]*Ansys Fluent India Pvt. Ltd., Pune, India,* [4]*University of Arizona, Tuscon, AZ*

9:15AM
The Effects of Transcatheter Aortic Valve Placement and Sizing on Geometric Orifice Area and Leaflet Curvature
G. M. STEARNS[1], N. SAIKRISHNAN[1], A. W. SIEFERT[1], AND A. YOGANATHAN[1]
[1]*Georgia Institute of Technology & Emory University, Atlanta, GA*

track sponsored by Edwards

Track: Cellular and Molecular Bioengineering
OP - Fri - 1 – 8 - Room 604
Cell Adhesion I

Chairs: Allen Liu, Fan Yang

8:00AM
Visualizing Mechanical Tension Changes By Alpha-Catenin at Cadherin Adhesions
T-J. KIM[1], S. ZHENG[2], J. SUN[2], Y. ZHUO[2], H. CAI[2], D. E. LECKBAND[1,3], AND Y. WANG[1,2]
[1]*Neuroscience Program, University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Department of Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL,* [3]*Department of Chemistry and Chemical Engineering, University of Illinois at Urbana-Champaign, Urbana, IL*

8:15AM
Phenotypic Analysis of Inflammatory Monocytes for Predicting the Onset of Atherosclerosis Using a Microfluidic Chip
G. A. Foster[1], R. M. Gower[2], E. J. Armstrong[1], and S. I. Simon[1]
[1]University of California Davis, Davis, CA, [2]Northwestern University, Chicago, IL

8:30AM
Evaluation of the Endothelial Glycocalyx as a Barrier to Leukocyte Adhesion
G. Marsh[1] and R. E. Waugh[1]
[1]University of Rochester, Rochester, NY

8:45AM
Cell-Matrix Interactions Dominate the Self-Organization of Human Mammary Epithelial Cells
A. Cerchiari[1], J. Garbe[2], M. Thomson[3], M. Todhunter[3], N. Jee[3], M. LaBarge[2], T. Desai[3], and Z. Gartner[3]
[1]UC Berkeley - UCSF, San Francisco, CA, [2]Lawrence Berkeley National Laboratory, Berkeley, CA, [3]UCSF, San Francisco, CA

9:00AM
Oxidized Low-Density Lipoprotein Increases a Risk of Atherogenesis via Coactivation of Macrophages and Mast Cells
C. Chen[1] and D. Khismatullin[1]
[1]Tulane University, New Orleans, LA

9:15AM
Terminal Sterilization of a Decellularized Cartilage Scaffold Affects Cell Viability and Adhesion
A. Matuska[1] and P. McFetridge[1]
[1]University of Florida, Gainesville, FL

PLATFORM SESSIONS
Fri-1

Track: Stem Cell Engineering
OP - Fri - 1 – 9 - Room 611
Engineering Stem Cell Niche

Chairs: Guohao Dai, Warren Grayson

8:00AM
Directing Stem Cell Fate in 3D Through Cell Interface Engineering *(Invited)*
P. Viswanathan[1], S. Chirasatitsin[2], G. Battaglia[1], and A. J. Engler[2]
[1]University College London, London, United Kingdom, [2]UC San Diego, La Jolla, CA

8:15AM
Directing Mesenchymal Stem Cell Fate Decisions By Engineering Cell-Cell Adhesion Pathways
S. Alimperti[1], S. Row[1], S. Agarwal[2], and S. Andreadis[1]
[1]SUNY at Buffalo, Buffalo, NY, [2]Baylor College of Medicine, Houston, TX

8:30AM
Paracrine Interactions Between Normoxic and Hypoxic Stem Cells in a Microfluidic Oxygen Landscape Alter VEGF Transcription
M. L. Rexius[1], J. Rehman[1], A. B. Malik[1], and D. T. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL

8:45AM
Engineering 3D Cardiospheres from Human Pluripotent Stem Cells
T. Hookway[1], D. Nguyen[2], C. Xu[2], and T. McDevitt[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

9:00AM
Stem Cell-Derived Microvascular Networks in a Synthetic Matrix
S. Kusuma[1], Y-I. Shen[1], D. Hanjaya-Putra[1], P. Mali[1], L. Cheng[1], and S. Gerecht[1]
[1]Johns Hopkins University, Baltimore, MD

9:15AM
Combinatorial Fibronectin and Laminin Signaling Promotes Highly Efficient Cardiac Differentiation of Human Embryonic Stem Cells through Integrin/FAK/ERK Signaling
S. Sa[1] and K. E. McCloskey[1]
[1]University of California, Merced, Merced, CA

Track: Device Technologies and Biomedical Robotics
OP - Fri - 1 – 10 - Room 602
Stents

Chairs: Rita Alevriadou, Robert Peattie

8:00AM
Point-of-Care Seeding of Nitinol Stents with Blood-Derived Endothelial Cells
A. E. Jantzen[1], H. E. Achneck[2], and G. A. Truskey[1]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

8:15AM
A Novel Bioresorbable Stent Coating for Drug Release in Congenital Heart Disease Applications
A. C. Goodfriend[1], G. Barker[1], T. R. Welch[1], R. Ginther[1], M. Reagel[1], S. Reddy[1], J. Wang[1], A. Nugent[1], and J. Forbess[1]
[1]University of Texas Southwestern Medical Center, Dallas, TX

8:30AM
Mitigation of Flow Separation Improves Procoagulant Milieu in an *In Vitro* Stent Model
J. M. Jiménez[1], C. Kampmeyer[1], M. Yu[1], I. H. Johnston[1], and P. F. Davies[1]
[1]University of Pennsylvania, Philadelphia, PA

8:45AM
Design of a Flexible Balloon-Expandable Peripheral Stent Using Finite Element Analysis
K. Shanmugam[1], R. Ramanathan[1], J. Rajan[1], G. Joseph[2], and M. Thanikachalam[3]
[1]Agada Medical Technologies, Chennai, India, [2]Christian Medical College, Vellore, India, [3]OSU, Columbus, OH

9:00AM
Magnetic Capture of Endothelial Cells to Vascular Stents
B. J. Tefft[1], S. Uthamaraj[1], J. J. Harburn[2], M. Klabusay[3], O. Hlinomaz[3], D. R. Holmes[1], R. D. Simari[1], D. Dragomir-Daescu[1], and G. S. Sandhu[1]
[1]Mayo Clinic, Rochester, MN, [2]Durham University, Stockton, United Kingdom, [3]St. Anne's University Hospital, Brno, Czech Republic

9:15AM
Titania Nanotube Formation on Cardiovascular Stents
H. Nuhn[1]
[1]UCSF Mission Bay Campus, San Francisco, CA

track sponsored by Medtronic

Track: Bioinformatics, Computational and Systems Biology
OP - Fri - 1 – 11 - Room 615
Modeling in Personalized Medicine

Chairs: Andrea H. Bild, Mark R. Chance, Adam A. Margolin

8:00AM
Genomics-based discovery of novel drug regimens effective in RAS-driven tumors *(Invited)*
A. Bild[1]
[1]University of Utah, Salt lake city, UT

P = Poster Session
OP = Oral Presentation

8:30AM
Network Biology and Personalized Medicine in Multiple Sclerosis *(Invited)*
R. Nibbe[1], Y. Liu[2], M. Koyuturk[2], and M. Chance[1,2]
[1]*NeoProteomics, Inc., Cleveland, OH,* [2]*Case Western Reserve U, Cleveland, OH*

9:00AM
Computational Models and Crowd-Sourcing Initiatives for Inferring Genetic Predictors of Cancer Phenotypes. *(Invited)*
A. A. Margolin[1]
[1]*Sage Bionetworks, Seattle, WA*

Track: Respiratory Bioengineering
OP - Fri - 1 – 12 - Room 616
Lung Development and Regeneration:Bioengineering and Mechanotransduction

Chairs: Deborah Leckband, Dan Tschumperlin

8:00AM
Overview Talk - Respiratory Bioengineering
S. S. Margulies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:15AM
Mechanotransduction in Lung Endothelium
D. Leckband[1], A. Barry[1], S. Dudek[2], J. G. Garcia[2], and N. Wang[1]
[1]*University of Illinois, Urbana, IL,* [2]*University of Illinois College of Medicine, Chicago, IL*

8:30AM
Evaluation of *In Vitro* Tissue Models of Upper and Lower Airway
A. Mahmood[1], J. Dye[2], E. Mishkin[1], and W. Warren[1]
[1]*Sanofi Pasteur, Orlando, FL,* [2]*US Army Medical Institute for Infectious Diseases, Fort Detrick, Frederick, MD*

8:45AM
Decellularization and Recellularization of Human Lungs: A Model for Ex Vivo Lung Bioengineering and Transplantation
D. E. Wagner[1], N. R. Bonenfant[1], C. Parsons[1], Z. D. Borg[1], E. Brooks[1], M. Lathrop[1], Y. W. Lam[1], B. Deng[1], M. DeSarno[1], T. Ashikaga[1], R. Loi[2], and D. J. Weiss[1]
[1]*University of Vermont, Burlington, VT,* [2]*University of Cagliari, Cagliari, Italy*

9:00AM
Design and Synthesis of an Adherent Artificial Pulmonary Pleura
D. E. Wagner[1], S. L. Fenn[1], N. R. Bonenfant[1], R. Oldinski[1], and D. J. Weiss[1]
[1]*University of Vermont, Burlington, VT*

8:5AM
Shaping The Airway Epithelium During Branching Morphogenesis Of The Lung: A Role For Stereotyped Smooth Muscle Differentiation
H. Y. Kim[1], E. Miller[2], D. C. Radisky[2], and C. M. Nelson[1]
[1]*Princeton University, Princeton, NJ,* [2]*Mayo Clinic Cancer Center, Jacksonville*

Track: Biomedical Imaging and Optics
OP - Fri - 1 – 13 - Room 618
Ultrasound

Chairs: Elisa Konofagou

8:00AM
Integrated Optical/Ultrasound Multimodality Intravascular Imaging for Assessing Vulnerable Plaques
Q. Zhou[1], T. Ma[1], X. Li[1], K. Shung[1], J. Li[2], J. Jing[2], J. Zhang[2], and Z. Chen[2]
[1]*University of Southern California, Los Angeles, CA,* [2]*University of California Irvine, Irvine, CA*

8:15AM
Noninvasive, Quantitative Monitoring of *In Vitro* Osteoblastic Differentiation in 3D Engineered Tissues using Spectral Ultrasound Imaging
M. Gudur[1], R. R. Rao[1], A. W. Peterson[1], D. J. Caldwell[1], C. X. Deng[1], and J. P. Stegemann[1]
[1]*University of Michigan, Ann Arbor, MI*

8:30AM
Controlling Nanoparticle Delivery Across the Blood-Brain Barrier Using MR Guided Focused Ultrasound
K. Timbie[1], G. W. Miller[1], E. Nance[2], J. Song[1], C. Zhang[2], J. Hanes[2], and R. J. Price[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Johns Hopkins University, Baltimore, MD*

8:45AM
Delivery of Oxygen-Sensitive Two-Photon Contrast Agent to the Mouse Brain via Blood Brain Barrier Disruption Using Ultrasound and Microbubbles.
R. Hartman[1], S. Kazmi[1], A. Salvaggio[1], C. Schrandt[1], C. Sullender[1], C. Sullender[1], S. Emelianov[1], and A. Dunn[1]
[1]*University of Texas at Austin, Austin, TX*

9:00AM
Nucleation Site Formation During Acoustic Droplet Vaporization
D. S. Li[1], J. B. Folkes[1], and J. L. Bull[1]
[1]*University of Michigan, Ann Arbor, MI*

9:15AM
Characterization of Optically Induced Microbubble Oscillations
J. Dove[1], M. Borden[1], and T. Murray[1]
[1]*University of Colorado at Boulder, Boulder, CO*

Track: Nano to Micro Technologies
OP - Fri - 1 – 14 - Room 619
Nanobiointerfaces I

Chairs: Andrew Tsourkas, Deok-Ho Kim

8:00AM
Microscale Tissue Engineering and Biomarker Analysis Using Aqueous Two-Phase System Droplet Microfluidic Systems
J. Frampton[1] and S. Takayama[1]
[1]*University of Michigan, Ann Arbor, MI*

8:15AM
Site-Specific and Covalent Conjugation of IgG using a Recombinantly Expressed Protein A Domain Incorporating a Photoactive Amino Acid
J. Hui[1] and A. Tsourkas[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:30AM
Local Thermal Effects on the Surface of Magnetic Nanoparticles
L. Polo-Corrales[1] and C. Rinaldi[2]
[1]University of Puerto Rico, Mayagüez, Mayagüez, PR, [2]University of Florida, Gainesville, FL

8:45AM
Controlled Rupture of Drug-Encapsulated Ultrasound Contrast Agents in Blood Vessels on a Chip
Y. Park[1], T. Pham[1], S. Kim[2], J. Kim[2], W. Park[2], R. O. Cleveland[3], N. Jeon[2], J. O. Nagy[4], and J. Y. Wong[1]
[1]Boston University, Boston, MA, [2]Seoul National University, Seoul, Korea, Republic of, [3]University of Oxford, Oxford, United Kingdom, [4]Nanovalent Pharmaceuticals, Bozeman, MT

9:00AM
Alpha-Helical Peptide-Induced Vesicle Fusion to Form Complex Supported Lipid Bilayers for Biosensing Applications
G. Hardy[1], R. Nayak[1], and S. Zauscher[1]
[1]Duke University, Durham, NC

9:15AM
Universal Platform for On-Demand Preparation of Antibody-Functionalized Quantum Dots
P. Zrazhevskiy[1] and X. Gao[1]
[1]University of Washington, Seattle, WA

PLATFORM SESSIONS
Fri-1

Track: Drug Delivery
OP - Fri - 1 – 15 - Room 620
Cancer Drug Delivery II

Chairs: Angela Pannier, Tatiana Segura

8:00AM
Drug Eluting Stent for the Treatment of Pancreatic Cancer
L. Indolfi[1], M. Ligorio[2], D. Ting[2], C. Ferrone[2], J. Clark[2], R. Langer[1], and E. Edelman[1]
[1]MIT, Cambridge, MA, [2]MGH, Cambridge, MA

8:15AM
Engineered Probiotics for Urinary Detection of Cancer Metastases
T. Danino[1], A. Prindle[2], G. Kwong[1], M. Skalak[1], J. Hasty[2], and S. Bhatia[1]
[1]MIT, Cambridge, MA, [2]UCSD, La Jolla, CA

8:30AM
Intratumoral Depot of TNF-alpha-ELP Fusion Protein for Local Cancer Therapy
J. Park[1], W. Liu[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

8:45AM
Polymer Nanoparticles for Delivery of Multiple Therapeutic Agents and Their Effect on Cancer Cell Growth
A. Ediriwickrema[1], J. Zhou[1], and M. Saltzman[1]
[1]Yale University, New Haven, CT

9:00AM
Genetically Encoded Polypeptide Nano-Micelle for Paclitaxel Delivery to Triple Negative Breast Tumor
J. Bhattacharyya[1], J. R. McDaniel[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

9:15AM
Mesothelin-targeted Nanoparticles for the Effective Use of Gemcitabine against Pancreatic Cancer
J. Pollet[1], E. Poteet[1], Z. Liu[1], B. Zhan[1], Q. C. Yao[1], and M. Heffernan[1]
[1]Baylor College of Medicine, Houston, TX

Track: Neural Engineering
OP - Fri - 1 – 16 - Room 613
Brain Computer Interface

Chairs: Jaimie Dougherty, Patrick A. Tresco

8:00AM
Correlation of Microglia Distribution and Complex Impedance Spectra Around Implanted Neuroprostheses
K. Trett[1], C. A. Harris[1], W. Shain[1,2], D. R. Kipke[3], C. Stoetzner[3], B. Roysam[4], Y. Xu[4], R. Padmanabhan[4,5], D. Carlson[5], and L. Carin[5]
[1]Seattle Children's Research Institute, Seattle, WA, [2]University of Washington, Seattle, WA, [3]University of Michigan, Ann Arbor, MI, [4]University of Houston, Houston, TX, [5]Duke University, Durham, NC

8:15AM
The Chronic Neuroinflammatory Response to Mechanically-Adaptive Polymer Implants
J. K. Nguyen[1,2], K. A. Potter[1,2], J. L. Skousen[2], A. E. Hess[2], D. Tyler[1,2], S. Rowan[1], C. Weder[3], and J. R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH, [3]University of Fribourg, Fribourg, Switzerland

8:30AM
A CAD-Based Modeling Approach that Predicts the Foreign Body Response to Chronic CNS Implants
N. F. Nolta[1], M. B. Christensen[1], P. D. Crane[1], and P. A. Tresco[1]
[1]University of Utah, Salt Lake City, UT

8:45AM
Multielectrode Arrays Implanted in the Feline Spinal Nerve Elicit a Characteristic Tissue Response
C. L. Kolarcik[1], C. A. Castro[2], T. M. Bruns[1], R. A. Gaunt[1], D. J. Weber[1], and X. T. Cui[1,3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Magee Women's Research Institute, Pittsburgh, PA, [3]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

9:00AM
Identifying Motor Objectives in a Brain-Computer Interface Task by Inverse Optimal Control
A. Haddock[1], C. Matlack[1], and H. J. Chizeck[1]
[1]University of Washington, Seattle, WA

9:15AM
Effect of Transection on Decoding Postural Responses in the Rat
J. B. Dougherty[1] and K. A. Moxon[1]
[1]Drexel University, Philadelphia, PA

Track: New Frontiers and Special Topics
OP - Fri - 1 – 17 - Room 614
Emerging Technology I

Chairs: Elliot Botvinick

8:00AM
Single Cell Proteomics Using Commercial Elisa Kits and Plate Readers
A. P. Acharya[1], K. Kundu[2], A. Gardner[1], J. Mackay[1], S. Kumar[1], and N. Murthy[1]
[1]University of California, Berkeley, CA, [2]Li-Cor Inc., Omaha, NE

8:15AM
nBioChip- A Nano-Biofilm Chip for Ultra High-Throughput Drug Discovery of Antibiotics Against Polymicrobial Biofilms
A. Srinivasan[1], K. P. Leung[2], J. L. Lopez-Ribot[1], and A. K. Ramasubramanian[1]
[1]The University of Texas at San Antonio, San Antonio, TX, [2]US Army Institute of Surgical Research, San Antonio, TX

P = Poster Session
OP = Oral Presentation

8:30AM
Electrical Dosimetry for Potential Driven Electromechanical Reshaping of Cartilage
D. Protsenko[1] and B. Wong[2]
[1]University of California Irvine, Irvine, CA, [2]Beckman Laser Institute, Irvine, CA

8:45AM
Multicycle Quantum Dot Staining for Comprehensive Single-Cell Molecular Characterization
P. Zrazhevskiy[1] and X. Gao[1]
[1]University of Washington, Seattle, WA

9:00AM
Co-Regulation of Follow-The-Leader Invasion by Proteolysis and Extracellular Matrix Microarchitecture
S. P. Carey[1], A. Starchenko[1], A. L. McGregor[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

9:15AM
Automatic Optical Tweezers Based Active Microrheology (AMR)
M. Keating[1], M. B. Alvarez-Elizondo[1], A. Kurup[1], and E. Botvinick[1]
[1]University of at Irvine, Irvine, CA

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

Friday, September 27
8:00am - 9:30am
Washington Seattle Convention Center, Room 603

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.

Track: Translational Biomedical Engineering
OP - Fri - 1 – 18 - Room 6A
Biomaterials for Regenerative Medicine

Chairs: Karen Christman, Buddy Ratner

8:00AM
Safety and Efficacy of a Cardiac Extracellular Matrix Hydrogel for Treating Myocardial Infarction in Pre-Clinical Cmall- and Large-Animal Studies
K. Christman[1]
[1]UC San Diego, La Jolla, CA

8:15AM
Therapeutic Microstructures for the Attenuation of Fibrosis after Myocardial Infarction
J. R. Pinney[1], K. T. Du[1], Q. Fang[1], P. Ayala[2], R. Sievers[1], L. Delrosario[1], R. J. Lee[1], and T. A. Desai[1]
[1]University of California, San Francisco, CA, [2]Beth Israel Deaconess Medical Center, Boston, MA

8:30AM
A Customizable Biological Extracellular Matrix As An Arterial Substitute In A Rabbit Model
L. Goldberg[1], S. Amensag[1], S. Berceli[1], and P. McFetridge[1]
[1]University of Florida, Gainesville, FL

8:45AM
Nerve-Specific Extracellular Matrix Hydrogel for Peripheral Nerve Reconstruction
B. N. Brown[1], T. A. Prest[1], S. T. LoPresti[1], M. J. Martin[2], and J. Cheetham[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Cornell University, Ithaca, NY

9:00AM
Duraplasty with a Novel Synthetic Microfibrous Dural Graft In a Canine Craniotomy Model.
V. Umesh[1], L. Wilensky[1], J. Eng[1], G. Casadiego Cubides[1], J. Ma[1], D. Carlin[1], S. Li[1], and S. Patel[1,2]
[1]University of California, Berkeley, Berkeley, CA, [2]NanoNerve, Inc., Berkeley, CA

9:15AM
An Engineered Liver Graft with Enhanced Blood Compatibility and Prolonged Survival
Y. Kim[1], T. A. Berendsen[1], S. Ozer[1], K. Uygun[1], M. L. Yarmush[1], and B. E. Uygun[1]
[1]Harvard Medical School, Boston, MA

Friday, September 27, 2013

9:30AM – 1:00PM

POSTER SESSION – FRI – A

Track: Bioinformatics, Computational and Systems Biology

Computational Bioengineering

P – Fri - A - 1

Development of Auditory Test Modeling System (ATMS) Software Based on 3D Finite Element Model of Human Ear

X. Ji[1], X. Zhang[1], and R. Gan[1]

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

P – Fri - A - 2

Towards a Computational Framework for Simulating Coupled Arterial Cells in a Realistic Vascular Geometry

M. A. Shaikh[1], C. Bacon[2], S. Moore[3], and T. David[1]

[1]*University of Canterbury, Christchurch, New Zealand,* [2]*Argonne National Laboratory, Chirstchurch, New Zealand,* [3]*University of Melbourne, Melbourne, Australia*

POSTER SESSION FriA

P – Fri - A - 3

Graph-Models to Lead Genetic Signaling Path Discovery: Preliminary Ideas and Results

Y. E. Cruz-Rivera[1], E. L. Lorenzo[1], N. J. Ortiz[1], C. E. Isaza[2], and M. Cabrera-Ríos[1]

[1]*University of Puerto Rico - Mayagüez, Mayaguez, PR,* [2]*Bio IE Lab, Mayagüez, PR*

P – Fri - A - 4

Tensor GSVD for Comparison of Two Column-Matched and Row-Independent Large-Scale Biomedical Datasets

T. E. Schomay[1], P. Sankaranarayanan[1], and O. Alter[1]

[1]*Department of Bioengineering and Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT*

P – Fri - A - 5

Mapping Atrial Fibrillation: High Resolution Electrograms Identify Circuit Density

B. E. Benson[1], R. T. Carrick[1], N. Habel[1], P. Bielau[1], O. Bates[2], and P. S. Spector[1]

[1]*University of Vermont, Burlington, VT,* [2]*Boston University, Boston, MA*

P – Fri - A - 6

Velocity and Curvatures of 3-D Wave Front in Cardiac Simulation

N. Mazeh[1], D. Haines[1], and B. Roth[2]

[1]*Beaumont Health System, Royal Oak, MI,* [2]*Oakland University, Rochester, MI*

P – Fri - A - 7

Modeling Platelet Aggregation on a Circulating Tumor Cell in a Microchannel

Y. Lu[1], S. Lynch[1], and D. Khismatullin[1]

[1]*Tulane University, New Orleans, LA*

P – Fri - A - 8

Ablation of Multi-Wavelet Reentry Guided by Circuit Density

R. T. Carrick[1,2], B. Benson[2], O. Bates[3], N. Habel[1], J. Bates[2], and P. Spector[1]

[1]*University of Vermont College of Medicine, Burlington, VT,* [2]*University of Vermont College of Engineering and Mathematical Sciences, Burlington, VT,* [3]*Boston University College of Engineering, Boston, MA*

P – Fri - A - 9

Towards Elicitation of Expert Beliefs and Decision-Maker Preferences About Breast Reconstruction: A Probability Wheel Application

K. Fan[1], C. S. Sun[1], G. P. Reece[2], and M. K. Markey[1]

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

P – Fri - A - 10

Structured Penalties for Regression Models--The GSVD and Partially Empirical Eigenvectors

T. W. Randolph[1]

[1]*Fred Hutchinson Cancer Research Center, Seattle, WA*

P – Fri - A - 11

A Reweighted L1-minimization Based Compressed Sensing Method with the Applications into Heart Rate Variability Spectral Estimation of Unevenly Sampled Data

S-W. Chen[1], S-C. Chao[1], and H-Y. Teng[1]

[1]*Chang Gung University, Tao-yuan, Taiwan*

P – Fri - A - 12

Positive Inotropy is a More Likely Mechanism for Lipid Reversal of Local Anesthetic Toxicity

B. S. Akpa[1]

[1]*University of Illinois at Chicago, Chicago, IL*

P – Fri - A - 13

Effect of Spinal Micro-anatomy on CSF Flow Patterns

K. Tangen[1], T. Marrinan[1], Y. Hsu[1], and A. Linninger[1]

[1]*University of Illinois at Chicago, Chicago, IL*

P – Fri - A - 14

Pathogenic Mutations Affecting Native Salt Bridges in the Human Prion Protein Induce Conformational Changes

B. Mo[1] and V. Daggett[1]

[1]*University of Washington, Seattle, WA*

P – Fri - A - 15

A Multi-phase CFD Model for the Simulation of Blood Flow in Microfluidic Devices

E. B. Durant[1], K. V. Sharp[1], and A. Z. Higgins[1]

[1]*Oregon State University, Corvallis, OR*

P – Fri - A - 16

Modeling RNA Devices for Applications in Synthetic Biology

J. T. Stevens[1], W. Voje, Jr.[1], R. Correa[1], and J. M. Carothers[1]

[1]*University of Washington, Seattle, WA*

P – Fri - A - 17

Low-Cost EEG-Based Assistive Technology for People with Motor Disabilities

R. Begosso[1], L. P. dos Santos[1], K. R. Cotosck[1], and J. S. Ide[1]

[1]*UNIFESP, São José dos Campos, Brazil*

P – Fri - A - 18

Vector Length Selection in a Fixed Point Digital Quadratic Integrate and Fire Neuron

E. Basham[1] and D. Parent[1]

[1]*SJSU, San Jose, CA*

Track: Bioinformatics, Computational and Systems Biology

Dynamics of Biological Systems

P – Fri - A - 19

Generation and Loss Mechanisms for the Endothelial Glycocalyx Layer

K. Giantsos-Adams[1], G. Garcia-Cardena[2], and C. Dewey Jr[3]

[1]*University of Illinois - Chicago, Chicago, IL,* [2]*Harvard Medical School, Boston, MA,* [3]*Massachusetts Institute of Technology, Cambridge, MA*

P – Fri - A - 20

The Affinity Gradient in the Nuclear Pore Complex is Optimized to Maximize Transport Rate

M. Azimi[1] and M. Mofrad[1]

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

P = Poster Session
OP = Oral Presentation

P – Fri - A - 21
Models of the Nuclear Pore Complex: Structure, Mechanochemistry, and Function
M. R. Mofrad[1]
[1]*University of California, Berkeley, Berkeley, CA*

P – Fri - A - 22
Exploring Network Dynamics of the Working Brain During Upper Extremity Movements
D. E. Nathan[1], R. W. Prost[2], S. J. Guastello[1], and D. C. Jeutter[1]
[1]*Marquette University, Milwaukee, WI,* [2]*Medical College of Wisconsin, Milwaukee, WI*

P – Fri - A - 23
The Effect of Heart Rate Variability on Alternans Formation in the Heart
S. D. McIntyre[1], V. Kakade[1], Y. Mori[1], and E. Tolkacheva[1]
[1]*University of Minnesota, Minneapolis, MN*

P – Fri - A - 24
Multiscale Population Balance Equation Model for Heterogeneous Human Pluripotent Stem Cell Populations: Determination of Single-cell Physiological State Functions
M. R. Rostami[1], J. Wu[1], and E. S. Tzanakakis[1]
[1]*SUNY-Buffalo, Buffalo, NY*

P – Fri - A - 25
Parametric and Non-parametric Mathematical Modeling of Experimental Endotoxemia
S. E. Eikenberry[1] and V. Z. Marmarelis[1]
[1]*University of Southern California, Los Angeles, CA*

P – Fri - A - 26
Network Models of Biomolecular Dynamics to Probe Mechanisms of Drug Resistance
P. Kasson[1,2]
[1]*University of Virginia, Charlottesville, VA,* [2]*Google, Inc, Mountain View, CA*

P – Fri - A - 27
A Three-Enzyme Cascade During N-Glycan Branching: The Minimal Model for Ultrasensitivity
G. Liu[1] and S. Neelamegham[1]
[1]*State University of New York, Buffalo, NY*

P – Fri - A - 28
Switch-Like Systems From Non-Cooperative Biological Parts: A Theoretical Basis for Engineering Illusory Cooperativity
M. Bindschadler[1] and J. B. Bassingthwaighte[2]
[1]*U. Washington, Seattle, WA,* [2]*University of Washington, Seattle, WA*

P – Fri - A - 29
Immune Cell Mediated Transcription Factor Activity in Metastatic Breast Cancer Cells
B. A. Aguado[1], S. M. Azarin[1], R. M. Gower[1], J. S. Jeruss[2], and L. D. Shea[1]
[1]*Northwestern University, Chicago, IL,* [2]*Northwestern University Feinberg School of Medicine, Chicago, IL*

P – Fri - A - 30
Monitoring and Supervision of Machine Perfusion Resuscitation of Rat Livers
S. Perk[1], M-L. Izamis[1], H. Tolboom[2], B. Uygun[1], M. Yarmush[1,3], and K. Uygun[1]
[1]*Massachusetts General Hospital, Harvard Medical School, Shriners Hospitals for Children, Boston, MA,* [2]*University Hospital Zurich, Zurich, Switzerland,* [3]*Rutgers University, Piscataway, NJ*

P – Fri - A - 31
Input-Output and Compartmental Modeling of Cerebral Hemodynamics
B. C. Henley[1]
[1]*University of Southern California, Los Angeles, CA*

P – Fri - A - 32
A New Way to Look at Trajectory Data in Biology
G. Picasso[1], D. Malaspina[1], T. Hope[1], J. I. Sznajder[1], and I. Szleifer[1]
[1]*Northwestern University, Evanston, IL*

P – Fri - A - 33
Modeling the Cardiovascular and Endocrinologic Adaptations of Pregnancy
V. L. Wolf[1,2], W. A. Pruett[1], and R. L. Hester[1]
[1]*University of Mississippi Medical Center, Jackson, MS,* [2]*Mississippi State University, Mississippi State, MS*

P – Fri - A - 34
Effects of Propofol on Neocortical Signals and Information Processing in Humans and Felines
S. J. Hanrahan[1], Z. Kagan[1], R. A. Parker[2], T. Ogura[3], S. Obara[4], T. D. Egan[1], P. A. House[1], and B. Greger[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*National Defense Medical College, Tokorozawa, Japan,* [4]*Fukushima Medical University, Fukushima, Japan*

P – Fri - A - 35
A Novel Stochastic Model of Cardiac CaMKII Activation
P. T. Foteinou[1], J. L. Greenstein[1,2], and R. L. Winslow[1,2]
[1]*Institute for Computational Medicine, The Johns Hopkins University, Baltimore, MD,* [2]*Whitaker Biomedical Engineering Institute, The Johns Hopkins University, Baltimore, MD*

P – Fri - A - 36
The Spatio-temporal Dynamics of Spontaneous Activity in the Developing Retina
B. J. Lansdell[1] and J. N. Kutz[1]
[1]*University of Washington, Seattle, WA*

P – Fri - A - 37
Investigating Dynamical Properties of the *C. elegans* Connectome through Full-Network Simulations
J. M. Kunert[1], E. Shlizerman[1], and J. Kutz[1]
[1]*University of Washington, Seattle, WA*

P – Fri - A - 38
Fluctuations in Calcium Concentration Influence Calcium Spark Dynamics in Cardiac Myocytes
S. H. Weinberg[1] and G. D. Smith[1]
[1]*College of William and Mary, Williamsburg, VA*

P – Fri - A - 39
The Role of Oxidative Stress in eNOS Catalyzed NO Production
S. Kar[1], K. C. Das[2], and M. Kavdia[1]
[1]*Wayne State University, Detroit, MI,* [2]*Texas Tech University Health Sciences Center, Lubbock, TX*

P – Fri - A - 40
Consequences of Axonal Injuries to Neural Propagation Dynamics: A Computational Study
P. D. Maia[1] and N. Kutz[1]
[1]*University of Washington, Seattle, WA*

P – Fri - A - 41
Bifurcating Response to Hemorrhage in a Population of Mathematical Models of Human Circulation
W. A. Pruett[1], G. Husband[2], K. Bellamy[3], M. Dakhlalla[3], T. Coleman[1], and R. L. Hester[1]
[1]*University of Mississippi Medical Center, Jackson, MS,* [2]*Vanderbilt University, Nashville, TN,* [3]*Mississippi State University, Starkville, MS*

P – Fri - A - 42
Sparse Sensing in Mechanosensory Systems
S. L. Brunton[1], B. W. Brunton[1], A. Eberle[1], and J. N. Kutz[1]
[1]*University of Washington, Seattle, WA*

See page 21 for Poster floor plan

P – Fri - A - 43
An Adaptive Sparse Sampling Approach to Sensory Decision-making
B. W. Brunton[1], S. L. Brunton[1], J. L. Proctor[2], and J. N. Kutz[1]
[1]University of Washington, Seattle, WA, [2]Intellectual Ventures, Bellevue, WA

Track: Bioinformatics, Computational and Systems Biology

Modeling of Regulatory Networks

P – Fri - A - 44
Computer Simulations of Mutations and In Silico Development of Therapies in the TGF-ß Signal Transduction Pathway
D. Nicklas[1] and L. Saiz[1]
[1]University of California, Davis, CA

P – Fri - A - 45
Nonlinear Signal Processing via Noise Propagation
K. H. Kim[1], H. Qian[1], and H. M. Sauro[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 46
Myofilament Acetylation-Induced Regulation of Cross-Bridge Dynamics in Cardiac Muscle
K. Relwani[1], S. H. Smith[1], and S. G. Shroff[1]
[1]University of Pittsburgh, Pittsburgh, PA

POSTER SESSION FriA

P – Fri - A - 47
Gene Regulation Network on Megakaryocytic/Erythroid Differentiation of K562 Cells by PMA/Hemin
L. Wang[1], D. Zhou[2], and Z. Lu[1,3]
[1]Southeast University, Nanjing, China, People's Republic of, [2]Lanzhou University, Lanzhou, China, People's Republic of, [3]Peking University, Beijing, China, People's Republic of

P – Fri - A - 48
Dealing with ROS in Mitochondrial-Related Diseases: A Model of Cellular Defense Against Excessive ROS Generation
A. Kolodkin[1,2], A. Ignatenko[3], E. Simeonidis[1,2], V. Sangar[2], C. Choe[4], B. Peters[3], N. D. Price[2], R. Balling[1], and N. Brady[4]
[1]Luxembourg Centre for Systems Biomedicine, Esch-sur-Alzette, Luxembourg, [2]Institute for Systems Biology, Seattle, WA, [3]University of Luxembourg, Luxembourg, Luxembourg, [4]German Cancer Research Center and Bioquant, Heidelberg, Germany

P – Fri - A - 49
A Computational Model of Bcl-2 Regulated Apoptosis: Bistability Revisited
B. J. Lansdell[1], R. Kluck[2,3], E. Lee[2,3], D. Fairlie[2,3], F. Frascoli[3], M. O'Hely[2], K. Landman[3], and T. Speed[2]
[1]University of Washington, Seattle, WA, [2]Walter and Eliza Hall Institute, Melbourne, VIC, Australia, [3]University of Melbourne, Melbourne, VIC, Australia

P – Fri - A - 50
Gene Regulatory Network Modeling via Rank Constrained Optimization
R. Arastoo[1], V. V. Kulkarni[2], N. Motee[3], and M. V. Kothare[3]
[1]Lehigh University, Bethelehm, PA, [2]University of Minnesota, Minneapolis, MN, [3]Lehigh University, Bethlehem, PA

Track: Biomaterials

Bioinspired Materials

P – Fri - A - 51
Redox-Responsive Complexes Derived from Tannin-Like Polymers
O. Z. Fisher[1] and H. A. Cheng[1]
[1]Temple University, Philadelphia, PA

P – Fri - A - 52
Engineering Cholesterol-based Hybridized Fibers for Enhanced Surface Functionalization
C. M. Cohn[1], S. L. Leung[1], and X. Wu[1]
[1]University of Arizona, Tucson, AZ

P – Fri - A - 53
Injectable Resilin-based Elastomeric Hydrogels for Vocal Fold Therapies
L. Li[1], Z. Tong[1], X. Jia[1,2], and K. L. Kiick[1,2]
[1]University of Delaware, Newark, DE, [2]Delaware Biotechnology Institute, Newark, DE

P – Fri - A - 54
Biodegradable Photo-crosslinked Polycarbonates from the Natural Product Quinic Acid
L. A. Link[1], A. T. Lonnecker[1], K. Hearon[1], J. E. Raymond[1], and K. L. Wooley[1]
[1]Texas A&M University, College Station, TX

P – Fri - A - 55
A Novel Biomimetic Collagen-Apatite Scaffold for Bone Tissue Engineering Applications
Z. Xia[1], M. Wei[1], and D. Rowe[2]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

P – Fri - A - 56
Self-healable and injectable PEG hydrogels via selective metal-ligand interaction
T. Sato[1,2], M. Ebara[2], S. Tanaka[3], T-A. Asoh[1], A. Kikuchi[1], and T. Aoyagi[2,4]
[1]Tokyo University of Science, Katsushika, Japan, [2]NIMS, Tsukuba, Japan, [3]NOF.co., Tsukuba, Japan, [4]University of Tukuba, Tsukuba, Japan

P – Fri - A - 57
Low-Cost Simulated Human Tissues for a Wide Range of Tissue Types and Training Applications
S. S. Newman[1], L. White[1], V. Hou[1], and B. Hannaford[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 58
Snapping Surfaces of the Venus flytrap's Fast Motion and Bio-mimetic flytrap-robots
Z. Chen[1], Q. Guo[2,3], H. Zheng[4], S. Xie[5], G. Su[3], J. Lin[3], Y. Liu[6], Y. Ding[7], W. Chen[3], and L. Taber[5]
[1]Washington University in Saint Louis, Saint Louis, MO, [2]Fuzhou University, Fuzhou, China, People's Republic of, [3]Fujian Institute of Technology, Fuzhou, China, People's Republic of, [4]Fujian Radio and Television University, Fuzhou, China, People's Republic of, [5]Washington University in St. Louis, Saint Louis, MO, [6]Wuhan Foreign Languages School, Wuhan, China, People's Republic of, [7]Tsinghua University, Beijing, China, People's Republic of

P – Fri - A - 59
Communicating With Cells by Incorporating Functional Intercellular Junctions in Therapeutic Vesicles
A. M. Gadok[1], D. J. Busch[1], J. T. Jose[1], and J. C. Stachowiak[1]
[1]University of Texas at Austin, Austin, TX

P – Fri - A - 60
Smart Cortical Bone Allografts for Critical Sized Defects: Engineering a Biomimetic Periosteum
R. Romero[1], L. Chubb[1], N. Ehrhart[1], and M. J. Kipper[1]
[1]Colorado State University, Fort Collins, CO

P = Poster Session
OP = Oral Presentation

Track: Biomaterials

Biomaterial Design

P – Fri - A - 61
Percolation Phenomena of Alginate and Hyaluronic Acid Blended Films
S. Mayes[1], J. Davis[1], and C. E. Schmidt[2]
[1]UT Austin, Austin, TX, [2]The University of Florida, Gainesville, FL

P – Fri - A - 62
Poly(propylene) Fumarate as Reinforcement for Cardiovascular Applications
L. G. Bracaglia[1], P. Sharma[1], N. Hibino[2], and J. P. Fisher[1]
[1]University of Maryland, College Park, MD, [2]Children's National Medical Center, Washington, DC

P – Fri - A - 63
Molecular Distribution of Bioreactive Groups in Dextran-chitosan Sealants Confers Tissue-specific Adhesion
J. Ferdous[1], E. Juarez-Perez[1], and T. Shazly[1]
[1]University of South Carolina, Columbia, SC

P – Fri - A - 64
Synthesis of PCL/Keratin Composite Nanofibers for Nerve Repair
A. Edwards[1], T. Hopkins[2], S. Pixley[2], and N. Bhattarai[1]
[1]North Carolina A&T State University, Greensboro, NC, [2]University of Cincinnati, Cincinnati, OH

P – Fri - A - 65
PEDOT:Gelatin Composites Mediate Brain Endothelial Cell Adhesion
M. Bongo[1], O. Winther-Jensen[2], S. Himmelberger[3], X. Strakosas[1], M. Ramuz[1], A. Hama[1], E. Stavrinidou[1], G. Malliaras[1], A. Salleo[3], B. Winther-Jensen[2], and R. Owens[1]
[1]Department of Bioelectronics, Ecole Nationale Superieure des Mines, CMP-EMSE, MOC, Gardanne, France, [2]Materials Engineering, Monash University Clayton, Victoria, Australia, [3]Department of Materials Science and Engineering, Stanford University, Stanford, CA

P – Fri - A - 66
Two Dimensional Carbon and Inorganic Nanostructures Reinforced Biodegradable Polymeric Nanocomposites for Bone Tissue Engineering
G. Lalwani[1], A. M. Henslee[2], B. Farshid[1], L. Lin[1], F. K. Kasper[2], Y-X. Qin[1], A. G. Mikos[2], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY, [2]Rice University, Houston, TX

P – Fri - A - 67
Protein Resistance of Surface-grafted PEG-Silane Amphiphiles with Variable PEG Segment Lengths on a Model Substrate
M. A. Rufin[1], J. A. Gruetzner[1], M. J. Hurley[1], M. L. Hawkins[1], and M. A. Grunlan[1]
[1]Texas A&M University, College Station, TX

P – Fri - A - 68
Nanopatterned Polymers Have Antibacterial Properties
E. Liang[1], N. Ing[1], and A. Yee[1]
[1]University of California, Irvine, Irvine, CA

P – Fri - A - 69
Development of Sugar-responsive Hydrogel Rods as a Aacrificial Template to Create Vessel-like Structures in Collagen Gels
M. Yamamoto[1], K. Arimoto[1], and Y. Tabata[1]
[1]Kyoto University, Kyoto, Japan

P – Fri - A - 70
Iron Substituted Hydroxyapatite an Intrinsically Magnetic Biomaterial
M. Zilm[1], M. Jain[1], and M. Wei[1]
[1]University of Connecticut, Storrs, CT

P – Fri - A - 71
Fabrication and Characterization of Novel Polymer-Contrast Agent Composites for Near-Infrared *In Situ* Imaging
A. Stevenson[1], L. Reese[1], R. Shekhar[2], L. Bickford[1], and A. Whittington[1]
[1]Virginia Tech, Blacksburg, VA, [2]Children's National Medical Center, Washington, DC

P – Fri - A - 72
On Demand Reversible Degradation of Dendrimer-Dextran Based Bioadhesives Triggered by UV Irradiation
M. Mier Cervantes[1,2], R. Kelmansky[1,3], E. Edelman[1,4], and N. Artzi[1,4]
[1]Harvard-MIT Division for Health Sciences and Technology, Cambridge, MA, [2]Institut Químic de Sarrià, Barcelona, Spain, [3]Ort Braude College, Karmiel, Israel, [4]Harvard Medical School, Boston, MA

P – Fri - A - 73
Development of a Synthetic Thermosensitive Hydrogel for Drug Delivery after Spinal Cord Injury
P. Z. Elias[1], H. Wei[1], P. J. Horner[1], and S. Pun[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 74
Metal-directed Assembly of Stimuli-responsive Hydrogels Comprised of Polypeptide Micelles
A. Ghoorchian[1], J. Simon[1], A. Chilkoti[1], and G. López[1]
[1]Duke University, Durham, NC

P – Fri - A - 75
A Cross-linking Technique for Rapid Prototyping of 3D Micropatterned Cell-Laden Hydrogels
A. L. Rutz[1] and R. N. Shah[1]
[1]Northwestern University, Evanston, IL

P – Fri - A - 76
Autologous Materials for Promoting a Perfused Vasculature
B. S. Shergill[1] and E. B. Botvinick[1]
[1]University of California Irvine, Irvine, CA

Track: Biomaterials

Intelligent Biomaterials

P – Fri - A - 77

P – Fri - A - 78
A Smart Hyperthermia Nanofiber with Switchable Drug Release for Cancer Therapy
M. Ebara[1]
[1]National Institute for Materials Science, Tsukuba, Japan

P – Fri - A - 79
Stimuli-Responsive Polypeptide Microparticles
J. Simon[1], A. Ghoorchian[1], A. Chilkoti[1], and G. Lopez[1]
[1]Duke University, Durham, NC

P – Fri - A - 80
Self-Cleaning Membranes for Implanted Glucose Biosensors
A. K. Means[1], R. Fei[1], and M. A. Grunlan[1]
[1]Texas A&M University, College Station, TX

Track: Biomaterials

Self-assembling Biomaterials

P – Fri - A - 81
Elastin Based Nano-particles for Treatment of Chronic Wounds
Y. YUAN[1] AND P. KORIA[1]
[1]University of South Florida, Tampa, FL

P – Fri - A - 82
Influence of Aspect Ratios in Cellular Uptake, Phagocytosis and Tumor Homing of Tobacco Mosaic Virus (TMV) Viral Nanoparticles
S. SHUKLA[1], F. EBER[2], S. EIBEN[2], C. WEGE[2], AND N. F. STEINMETZ[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Stuttgart, Germany, Stuttgart, Germany

P – Fri - A - 83
Temperature Dependent Characterization of Collagen and Methacrylated Collagen
K. DRZEWIECKI[1], I. GAUDET[1], J. KHAN[2], D. PIKE[2], V. NANDA[2], AND D. SHREIBER[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ, [2]Robert Wood Johnson Medical School, Rutgers, The State University of New Jersey, Piscataway, NJ

P – Fri - A - 84
DNA Circuit Boards for Molecular Computation
G. CHATTERJEE[1], R. MUSCAT[1], K. STRAUSS[1,2], L. CEZE[1], AND G. SEELIG[1]
[1]University of Washington Seattle, Seattle, WA, [2]Microsoft Research, Redmond, WA

P – Fri - A - 85
Design of New Modular Repeat Proteins for Assembly of Large Structures
F. PARMEGGIANI[1], P. HUANG[1], AND D. BAKER[1]
[1]University of Washington, Seattle, WA

Track: Biomaterials

Spatio-temporal Control of Biomolecules

P – Fri - A - 86
Analysis of Sensory Neuron Axon Growth on Two-dimensional Photolithographic Gradients of Covalently Immobilized Chemotropic Factors
B. JODDAR[1], A. T. GUY[2], H. KAMIGUCHI[2], AND Y. ITO[1]
[1]RIKEN Advanced Science Institute, Wako, Japan, [2]RIKEN Brain Science Institute, Wako, Japan

P – Fri - A - 87
Gradients of Stiffness and/or Matrix-Bound Growth Factor on Biopolymeric Films Influence Cell Reponse
J. ALMODOVAR[1], F. DALONNEAU[1], T. BOUDOU[1], Š. SELIMOVIC[2,3], H. LORTAT-JACOB[4], A. KHADEMHOSSEINI[2,5], AND C. PICART[1]
[1]Grenoble Institute of Technology, Grenoble, France, [2]Harvard Medical School, Cambridge, MA, [3]Massachusetts Institute of Technology, Cambridge, MA, [4]Institut de Biologie Structurale, Grenoble, France, [5]Harvard University, Cambridge, MA

P – Fri - A - 88
Guided Neurite Outgrowth of Cultured Neurons on a Polylysine-on-polylysine Micropattern
S. JOO[1] AND Y. NAM[1]
[1]KAIST, Daejeon, Korea, Republic of

P – Fri - A - 89
Spatiotemporal Detection of Localized Reactive Oxygen Species in Cell Signaling and Homeostasis
M. A. GRAN[1], K. G. REDDIE[1], N. MURTHY[2], AND M. L. KEMP[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]University of California Berkeley, Berkeley, CA

P – Fri - A - 90
Fabrication of Hydrogel-incorporated Nanofiber Scaffold Capable of Independent Release of Multiple Growth Factors and Its Application to Bone Regeneration
H. LEE[1], S. HAN[1], U. CHUNG[1], AND W-G. KOH[1]
[1]Yonsei University, Seoul, Korea, Republic of

P – Fri - A - 91
Effect of Encapsulated Species on the Transport of Small Molecules through Hydrogels
R. M. UNRUH[1] AND M. J. MCSHANE[1]
[1]Texas A&M University, College Station, TX

P – Fri - A - 92
A Novel System for the Encapsulation and Release of Pro-angiogenic Proteins using Light-triggered Liposomes
J. PARK[1], R. S. STOWERS[1], AND L. J. SUGGS[1]
[1]University of Texas, Austin, TX

Track: Biomaterials

Biomaterials

P – Fri - A - 93
In Vitro and *In Vivo* Characterization of Porous Dexamethasone Releasing Coatings for Glucose Biosensors
S. G. VALLEJO-HELIGON[1] AND W. M. REICHERT[1]
[1]Duke University, Durham, NC

P – Fri - A - 94
Aptamer-Carrying Hydrogels for Detection of Cell Secreted Interferon Gamma
Q. ZHOU[1], D-S. SHIN[1], K. SON[1], AND A. REVZIN[1]
[1]UC Davis, Davis, CA

P – Fri - A - 95
Role of Microenvironmental Stiffness on the Response of Human Neural Cells to Environmental Toxins
K. RAMAMOORTHI[1], C. ITO[1], AND P. ASURI[1]
[1]Santa Clara University, Santa Clara, CA

P – Fri - A - 96
Effect of Variable Tissue ECMs on Cell Function/Behavior
V. BEACHLEY[1], M. GIBSON[1], C. PAPADIMITRIOU[1], AND J. ELISSEEFF[1]
[1]Johns Hopkins University, Baltimore, MD

P – Fri - A - 97
A Comparison of the Water Uptake and Eggshell Mechanical Properties of Two Lizard Species: Sceloporus occidentalis and Sceloporus graciosus
F. Y. SU[1], A. SCHUBAUER[1], E. J. ORWIN[1], AND S. C. ADOLPH[1]
[1]Harvey Mudd College, Claremont, CA

P – Fri - A - 98
Creep Behavior of Solder Joints Under Combined Tension and Shear Stresses
M. ALLAMI[1], G. SELVADURAY[1], S. VUKAZICH[1], AND M. ABTEW[2]
[1]San Jose State University, San Jose, CA, [2]Sanmina-SCI, San Jose, CA

P – Fri - A - 99
Characterization of a Silver Nanoparticle Infused High Strength Tissue Adhesive for Ophthalmic Use
W. YEE[1], G. SELVADURAY[1], AND B. G. HAWKINS[1]
[1]San José State University, San José, CA

P – Fri - A - 100
The Effect of Surface Treatment on Nickel Leaching from Nitinol
D. MADAMBA[1] AND G. SELVADURAY[1]
[1]San Jose State University, San Jose, CA

POSTER SESSION FriA

P = Poster Session
OP = Oral Presentation

Track: Biomedical Engineering Education

Best Practices for Interactions with Industry

P – Fri - A - 101
Master of Engineering Design Projects with External Sponsors- Critical Issues and Factors for Successfully Educating Students in Biomedical Development
D. Lipson[1], R. Newman[1], and J. Thompson[1]
[1]*Cornell University, Ithaca, NY*

P – Fri - A - 102
Engineering, Education and Inclusion: Center for Development and Transfer of Assistive Technology
F. V. Carvalho[1] and C. C. Garcez[1]
[1]*INATEL, S. Rita Do Sapucai, Brazil*

Track: Biomedical Engineering Education

Biomedical Education for the New World

P – Fri - A - 103
Graduate Level Course in Biomedical Engineering for Global Health
L. R. Bickford[1] and C. Gabler[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Fri - A - 104
Discovering Congenital Defects in the Classroom: an Inquiry-based Approach to Study Embryonic Growth Using Ex-ovo Chicken Culture
J. Richards[1], S. Archer[1], and J. Butcher[1]
[1]*Cornell University, Ithaca, NY*

P – Fri - A - 105
The Temperature of Biomedical Entrepreneurship
J. Tranquillo[1]
[1]*Bucknell University, Lewisburg, PA*

P – Fri - A - 106
Evolution of ASU's Bioengineering Product Design and Global Health Technology Center: Building Capacity Toward a Community & Global Partnership, Pathway and Pipeline[K]
V. Pizziconi[1], J. LaBelle[1], D. Frakes[1], M. Caplan[1], and C. Triplett[1]
[1]*Arizona State University, Tempe, AZ*

P – Fri - A - 107
A Problem Based Learning Introductory Course to Biomedical Engineering
D. M. Gaitan-Leon[1] and J. C. Briceno[1]
[1]*Universidad de los Andes, Bogota, Colombia*

Track: Biomedical Engineering Education

Fostering Collaborations

P – Fri - A - 108
Becoming a Resident Scientist in a High School Classroom: Fostering Collaborations with High School Educators and Creating Meaningful Curriculum Materials
B. N. Mason[1], L. Austen[2], S. D. Archer[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY,* [2]*Elmira City Schools, Elmira, NY*

P – Fri - A - 109
Developing Interdisciplinary Research Partners: The Xxxxx by Yyyyy Neuro Collaboration Research URE
B. B. Fasse[1] and J. Schwoebel[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Biomedical Engineering Education

Laboratory Modules and Instructional Materials

P – Fri - A - 110
Novel Central Venous Catheterization Simulation for Medical Training
A. Barrett[1], E. Burghardt[1], J. Hodge[1], N. Luedicke[1], R. Thomas[1], D. Dean[1], and J. Nagatomi[1]
[1]*Clemson University, Clemson, SC*

P – Fri - A - 111
Interdisciplinary Laboratory Course in Biosignal Measurement
K. May-Newman[1], R. Banerjee[1], and Y. K. Wong[1]
[1]*San Diego State University, San Diego, CA*

P – Fri - A - 112
A Novel Bioengineering Laboratory Course: Integrating Experimentation with Computational Simulation and Analysis
A. Taylor[1]
[1]*University of Washington, Seattle, WA*

P – Fri - A - 113
Building Experimental Design Skills Using Learning Modules
A. L. Sieving[1], M. A. Pool[1], A. T. Davidson[1], K. A. Stuart[2], and A. E. Rundell[1]
[1]*Purdue University, West Lafayette, IN,* [2]*Symic Biomedical, San Francisco, CA*

Track: Biomedical Engineering Education

New Approaches to Biomedical Engineering Design

P – Fri - A - 114
Integrating Information Literacy into a Situated Learning Preliminary Design Course
M. A. Pool[1], A. O. Brightman[1], C. W. Peak[1], A. L. Sieving[1], and A. E. Rundell[1]
[1]*Purdue University, West Lafayette, IN*

P – Fri - A - 115
The Design and Implementation of a Four Year Medical Device Product Design Spine
J. T. La Belle[1], D. Frakes[1], J. Kleim[1], M. Caplan[1], K. Haynes[1], A. Garcia[1], S. Helms-Tillery[1], and V. Pizziconi[1]
[1]*Arizona State University, Tempe, AZ*

Track: Biomedical Engineering Education

New Models for Undergraduate/Graduate/ Postdoctoral Education

P – Fri - A - 116
Innovation and Translation Training Modules for PhD Students
K. L. Billiar[1], G. Gaudette[1], F. Hoy[1], and T. A. Camesano[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P – Fri - A - 117
Clinical Training for BME Graduate Students
W. Olbricht[1], P. Doerschuk[1], Y. Wang[1,2], W. Frayer[2], C. Schaffer[1], and S. Archer[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

P – Fri - A - 118
CANCELLED BY AUTHOR

P – Fri - A - 119
Integrating Grant Proposal Development into an Interdisciplinary Graduate Course
E. Seker[1]
[1]University of California, Davis, Davis, CA

Track: Biomedical Engineering Education

Biomedical Engineering Education

P – Fri - A - 120
Role Playing in HPL-Based Examinations of Challenges in Bioengineering and Food Science
J. Collins[1], E. Cebert[1], E. Heitman[2], L. Kassama[1], and M. Verghese[1]
[1]Alabama A & M University, Normal, AL, [2]Vanderbilt University, Nashville, TN

POSTER SESSION **FriA**

Track: Biomedical Imaging and Optics

Computer Tomography

P – Fri - A - 121
Numerical Observer Based Quantitative Evaluation Method for CT Reconstruction
M. Wang[1,2], C. Miao[1], B. Liu[1], and H. Yu[1]
[1]VT-WFU School of Biomedical Engineering and Sciences, Wake Forest University Health Sciences, Winston Salem, NC, [2]North University of China, Taiyuan, China, People's Republic of

P – Fri - A - 122
Cardiac CT Architecture with Lower Radiation Dose and Higher Temporal Resolution
H. Gong[1], B. Liu[2], O. Ghazemalizadeh[1], H. Yu[2], G. Wang[3], and G. Cao[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA, [2]Wake Forest University, Winston Salem, NC, [3]rensselaer polytechnic institute, Troy, NY

P – Fri - A - 123
GPU-based Fast Implementation for Interior Tomography
R. Liu[1] and H. Yu[1]
[1]Wake Forest University Health Sciences, Winston-Salem, NC

P – Fri - A - 124
Tractography of Rat Brain in Phase-contrast X-ray CT
S. Kokubo[1], L. Thet-Thet[2], A. Yoneyama[3], H. Maruyama[2], and T. Takeda[1]
[1]Kitasato University, Sagamihara, Kanagawa, Japan, [2]KItasato University, Sagamihara, Kanagawa, Japan, [3]Hitachi Ltd, Hatoyama, Saitamma, Japan

P – Fri - A - 125
An Electrocage Chip to Rotate Live Cells for Computerized Tomographic Imaging
M. Stanley[1], I. S. Elango[1], A. Shabilla[1], D. Smith[1], P. Limsirichai[1], H. Zhu[1], H. Wang[1], S-H. Chao[1], L. Kelbauskas[1], R. H. Johnson[1], and D. R. Meldrum[1]
[1]Biodesign Institute-Arizona State University, Tempe, AZ

P – Fri - A - 126
Assessment of Thoracic Deformity in the Transverse Plane Relative to Space Available for the Lung & Cobb Angle in Adolescent Idiopathic Scoliosis
J. A. Harris[1], R. M. Campbell Jr.[2], and S. Balasubramanian[1]
[1]Drexel University, Philadelphia, PA, [2]Children's Hospital of Philadelphia, Philadelphia, PA

Track: Biomedical Imaging and Optics

Functional Imaging

P – Fri - A - 127
Comparison of Oxygen Kinetics in the Upper Trapezius in Patients with Chronic Neck Pain and Myofascial Trigger Points Before and After Treatment
M. M. Zaazhoa[1], A. Eranki[1], L. Gerber[1], and S. Sikdar[1]
[1]George Mason University, Fairfax, VA

P – Fri - A - 128
Molecular Breast Imaging Using a Variable Angle Slant Hole Collimator
O. Gopan[1] and D. Gilland[1]
[1]University of Florida, Gainesville, FL

P – Fri - A - 129
Non-iterative EIT Reconstructions of Ventilation from a Pairwise Current Injection System
M. F. Montoya[1], J. Mueller[1], and R. Gonzalez Lima[2]
[1]Colorado State University, Fort Collins, CO, [2]University of São Paulo, São Paulo, Brazil

P – Fri - A - 130
Quantitative Assessment of Response to Breast Cancer Therapy using a Combined PET/X-ray Scanner
C. Zeng[1], L. Pierce[1], K. Kanal[1], L. MacDonald[1], and P. Kinahan[1]
[1]University of Washington, Seattle, WA

Track: Biomedical Imaging and Optics

Image-guided Therapy and Drug Delivery

P – Fri - A - 131
The Use of Twinkling Artifact of Doppler Imaging to Monitor Cavitation in Tissue During High Intensity Focused Ultrasound Therapy
T. Li[1], O. A. Sapozhnikov[1,2], T. Khokhlova[1], and J. H. Hwang[1]
[1]University of Washington, Seattle, WA, [2]Moscow State University, Moscow, Russian Federation

P – Fri - A - 132
Creation and Validation of a Tissue Phantom for the Improvement of Ultrasound Thermometry
C-Y. Lai[1], D. E. Kruse[1], K. W. Ferrara[1], and C. F. Caskey[1]
[1]University of California at Davis, Davis, CA

P – Fri - A - 133
Non-invasive Determination of Bioheat Transfer Parameters for Improved MRgHIFU Treatment Planning
C. R. Dillon[1], D. Christensen[1], and R. Roemer[1]
[1]University of Utah, Salt Lake City, UT

P – Fri - A - 134
Blurred Edge Detection using a Gradient-based, Modified Fuzzy K-means Clustering Method
Y. Feng[1] and Y. Hu[1]
[1]Washington University, Saint Louis, MO

P = Poster Session
OP = Oral Presentation

Track: Biomedical Imaging and Optics

Molecular Probes

P – Fri - A - 135

Iron Oxide Based Polymer Nanocomplex for Functional Detection of Atherosclerosis

A. L. Doiron[1] and O. Z. Fisher[2]

[1]Binghamton University, Vestal, NY, [2]Temple University, Philadelphia, PA

P – Fri - A - 136

NanoCluster Beacons as Reporters for Rolling Circle Enhanced Enzyme Activity Detection

J. M. Obliosca[1], S. Juul[2,3], C. Liu[1], R. A. Batson[1], B. R. Knudsen[3], Y-P. Ho[3], K. W. Leong[2], and H-C. Yeh[1]

[1]University of Texas at Austin, Austin, TX, [2]Duke University, Durham, NC, [3]Aarhus University, Aarhus, Denmark

P – Fri - A - 137

Targeting Fibrin for *In Vivo* Imaging of Cardiovascular Disease

A. C. Brown[1], S. Stabenfeldt[2], V. Stefanelli[1], L. Tucker[1], and T. Barker[1,3]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Arizona State University, Tempe, AZ, [3]Emory University, Atlanta, GA

P – Fri - A - 138

Size-tunable RGD Peptide Functionlized, 125I Labeled, Au Nanoparticles for Theronostics of Cancer

L. Zhang[1], Y. Yang[1], C. Zhang[1], and L. X. Xu[1]

[1]Shanghai Jiao Tong University, Shanghai, China, People's Republic of

Track: Biomedical Imaging and Optics

MRI

P – Fri - A - 139

Ferumoxytol Iron Oxide Nanoparticle Trafficking from Brain to Lymph Nodes

G. L. Pishko[1], R. L. Woltjer[1], J. A. Robertson[1], M. N. Nasseri[1], L. L. Muldoon[1], and E. A. Neuwelt[1,2]

[1]Oregon Health & Science University, Portland, OR, [2]Portland VA Medical Center, Portland, OR

P – Fri - A - 140

Transition Metal-containing Polyoxometalates: A New Type of Molecular MRI Agents for Cancer Diagnosis

J. Song[1], X. Zhang[1], J. Mi[2], C. Hill[1], X. Hu[3], and S. Nie[3]

[1]Emory University, Atlanta, GA, [2]Gerogia State University, Atlanta, GA, [3]Emory Univeristy and Georgia Institute of Technology, Atlanta, GA

P – Fri - A - 141

Quantitative MRI Volumetry in Detection of Hippocampal Atrophy and Pathologies

P. Ni[1], Z. Chen[1], C. Chen[2], Z. Wang[1], P. Yang[1], Y. Yu[1], and J. M. Cavanaugh[2]

[1]Fuzhou General Hospital of Nanjing Military Area Command of Chinese PLA, Fuzhou, China, People's Republic of, [2]Wayne State University, Detroit, MI

P – Fri - A - 142

Thermal and Electromagnetic Modelling of a Superconducting RF Coil for Magnetic Resonance Imaging

B. Proniewski[1,2] and H. Figiel[1]

[1]AGH University of Science and Technology, Kraków, Poland, [2]Jagiellonian Centre for Experimental Therapeutics (JCET), Kraków, Poland

P – Fri - A - 143

MR Imaging of Tumor Permeability in Brain Metastases at 7T

B. Z. Fite[1], F. Thorsen[2], L. M. Mahakian[1], J. W. Seo[1], S. Qin[1], V. Harrison[3], S. Johnson[1], E. Ingham[1], C. F. Caskey[1], T. Sundstrøm[2], T. Meade[3], P. N. Harter[4], K. O. Skaftnesmo[2], and K. W. Ferrara[1]

[1]University of California, Davis, CA, [2]University of Bergen, Bergen, Norway, [3]Northwestern University, Evanston, IL, [4]Goethe-University Medical School, Frankfurt am Main, Germany

P – Fri - A - 144

MRI Detection of Osteoporosis

A. Ravikumar[1], E. G. Randou[1], M. Zaghloul[2], R. W. Newcomb[3], and V. N. Ikonomidou[1]

[1]George Mason University, Fairfax, VA, [2]George Washington University, Washington, DC, [3]University of Maryland, College Park, MD

P – Fri - A - 145

Fast Directional Interpolation for MR Velocimetry Data

A. Pradeep[1], C. Zwart[1], D. Soerensen[2], H. Babiker[1], K. Sundareswaran[3], A. Yoganathan[2], and D. Frakes[1]

[1]Arizona State University, Tempe, AZ, [2]Georgia Institute of Technology, Atlanta, GA, [3]Thoratec Corporation, Pleasanton, CA

P – Fri - A - 146

Synthesis, Optimization of Mn2+ Loading and *In-vitro* toxicity assessment of Dextran coated Graphene Nanoplatelets

J. M. Fang[1], S. M. Chowdhury[1], S. Kanakia[1], S. Lee[1], and B. Sitharaman[1]

[1]SUNY Stony Brook University, Stony Brook, NY

Track: Biomedical Imaging and Optics

Ultrasound Imaging

P – Fri - A - 147

Ultrasound Imaging and Therapy via Flow-Focusing Microfluidic Device Generated Albumin-stabilized Microbubbles

A. J. Dixon[1], J. L. Chen[1], A. H. Dhanaliwala[1], A. L. Klibanov[1], and J. A. Hossack[1]

[1]University of Virginia, Charlottesville, VA

P – Fri - A - 148

Longitudinal Evaluation of Mouse Colon Tumors by Endoluminal Ultrasonic Biomicroscopy

R. C. Soletti[1], K. Z. Alves[1], M. A. Britto[1], D. G. de Matos[1], M. Soldan[1], H. L. Borges[1], and J. C. Machado[1]

[1]Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

P – Fri - A - 149

Evaluation of Circumferential and Longitudinal Strain in a Rabbit Fetal Heart Model Using 4D Echocardiography

V. V. Apte[1], A. Han[1], L. Tam[1], M. Zhu[1], M. Ashraf[1], D. Sahn[1], and Z. Zhang[2]

[1]Oregon Health & Science University, Portland, OR, [2]OHSU - Oregon Graduate Institute, Portland, OR

P – Fri - A - 150

The Use of Ultrasound Imaging to Detect the Multi-Function of Muscle Compartments for Upper Extremity Prosthetic Control

H. Zafar[1], N. Akhlaghi[1], K. McDonald[1], H. Rangwala[1], and S. Sikdar[1]

[1]George Mason University, Fairfax, VA

P – Fri - A - 151

Quantitative Measurement of Cerebrospinal Fluid Flow Rate in Ventriculoperitoneal Shunts using Ultrasound Imaging and Contrast Agents

R. Hartman[1], S. Aglyamov[2], D. Fox[3], and S. Emelianov[2]

[1]University of Texas at Austin, Austin, TX, [2]University of Texas at Austin, Austin, TX, [3]NeuroTexas Institute at St. David's, Austin, TX

P – Fri - A - 152

Development of Shaped Solid Ultrasound Contrast Agents

R. Condie[1], H. Saffari[1], A. Kennedy[1], K. Peterson[1], G. Gleich[1], and L. Pease III[1]

[1]University of Utah, Salt Lake City, UT

Track: Cellular and Molecular Bioengineering

Cell Motility

P – Fri - A - 153
Engineered Tissues to Quantify the Biology of Tumor Spread
L. Barney[1], E. Dandley[1], and S. Peyton[1]
[1]University of Massachusetts, Amherst, Amherst, MA

P – Fri - A - 154
Alteration of Migration Pattern for Mechanics-Induced Colon Cancer Metastasis
X. Tang[1], V. Jung[1], J. Hsu[1], L. Guan[1], and T. Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P – Fri - A - 155
Bi-Directional Microfluidic Devices for Leukocyte Migration Study
J. Yan[1,2], L. Boneschansker[2,3], E. Wong[1,2], D. M. Briscoe[2,3], and D. Irimia[1,2]
[1]Massachusetts General Hospital, Boston, MA, [2]Harvard Medical School, Boston, [3]Boston Children's Hospital, Boston, MA

P – Fri - A - 156
Three-dimensional Computational Model for the Active Deformation and Migration of Circulating Cells
H. Lan[1] and D. B. Khismatullin[1]
[1]Tulane University, New Orleans, LA

P – Fri - A - 157
Incorporating Filopodia Dynamics, Focal Adhesion Dynamics, Cytoskeleton Remodeling, and Degradation of Extracellular Matrix for Predicting Tip Cell Migration in Angiogenesis
M-C. Kim[1], P. Chen[1,2], R. Kamm[1,3], and H. Asada[1,3]
[1]Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, [2]National University of Singapore, Singapore, Singapore, [3]Massachusetts Institute of Technology, Cambridge, MA

P – Fri - A - 158
Directional Motility of Cell Migration on Tubular Conduits: Experiment and Simulation
M-C. Kim[1], Y-H. Kim[2], D. Neal[2], R. Kamm[1,2], and H. Asada[1,2]
[1]Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, [2]Massachusetts Institute of Technology, Cambridge, MA

P – Fri - A - 159
Study of Axon-Guidance Interactions in Controlled Microfluidic Environments
S. Moorjani[1], N. Bhattacharjee[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 160
Physical Role of Cell-Cell Contact in Collective Cell Migration
J. Marchand[1], P-H. Wu[1], M-H. Lee[1], and D. Wirtz[1]
[1]Johns Hopkins University, Baltimore, MD

P – Fri - A - 161
Collective Migration of a Complex Tissue Studied with "3D Tissue Etching"
M. Hazar[1], Y. Kim[2], W. C. Messner[3], P. R. LeDuc[1], and L. A. Davidson[4]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]Tufts University, Medford, MA, [4]University of Pittsburgh, Pittsburgh, PA

P – Fri - A - 162
A Simple and Rapid Method for Neutrophil Enrichment and Chemotaxis Analysis
J. Wu[1] and F. Lin[1]
[1]University of Manitoba, Winnipeg, MB, Canada

P – Fri - A - 163
Elucidating Mechanisms Behind Cell Migration at Polystyrene-hydrogel Interfaces
M-P. Pebworth[1], J. Carlisle[1], and P. Asuri[1]
[1]Santa Clara University, Santa Clara, CA

P – Fri - A - 164
Quantum Dots for the Targeting of HGF Binding Sites and Downstream Targets in Cancer Chemotaxis
S. McCutcheon[1] and M. Vazquez[1]
[1]The City College of New York, New York, NY

P – Fri - A - 165
The Arp2/3 Complex Mediates Multi-generation Dendritic Protrusions for Efficient Three-dimensional Cancer Cell Migration
A. Giri[1,2], S. Bajpai[1,2], N. Trenton[1], H. Jayatilaka[1], G. D. Longmore[2,3], and D. Wirtz[1,2]
[1]Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins Physical Sciences - Oncology Center, Baltimore, MD, [3]Departments of Medicine and Cell Biology and Physiology and BRIGHT Institute, Washington University, St. Louis, MO

P – Fri - A - 166
Oscillatory Behavior of Neutrophils in Opposing Chemoattractant Gradients
M. Byrne[1], Y. Kimura[1], A. Kapoor[1], F. Wang[1], P. J. Kenis[1], and C. V. Rao[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P – Fri - A - 167
The Interplay of Duro- and Hapto-taxis in Regulating Stem Cell State
J. H. Wen[1], J. Karpiak[1], A. Almutairi[1], and A. J. Engler[1]
[1]UC San Diego, La Jolla, CA

P – Fri - A - 168
Integrin 1 and MT1-MMP Govern Cell Migration in 3D Matrices via ROCK Mediated ERK Activation
J. S. Maffei[1], J. Srivastava[2], B. Fallica[1], and M. Zaman[1]
[1]Boston University, Boston, MA, [2]University of Texas, Austin, TX

P – Fri - A - 169
A User-friendly Microfluidic Device for Examining Growth Cone Dynamics
A. M. Taylor[1,2], N. Desouza[2], A. Khan[1], and S. Gupton[1]
[1]UNC-Chapel Hill, Chapel Hill, NC, [2]NCSU, Raleigh, NC

P – Fri - A - 170
The Influence of Alignment and Suspended Fiber Structural Stiffness on Cancer Cell Migration
P. Sharma[1], S. Bhatia[1], C. Hughes[1], and A. S. Nain[1]
[1]Virginia Tech, Blacksburg, VA

P – Fri - A - 171
Controlling Bacterial Motility by Quorum Sensing Signal Generation and Transduction
H-C. Wu[1], C-Y. Tsao[1], D. N. Quan[1], K. Carter[1], J. Terrell[1], and W. Bentley[1]
[1]Institute for Bioscience and Biotechnology Research, University of Maryland, College Park, MD

Track: Cellular and Molecular Bioengineering

Cellular Bioengineering

P – Fri - A - 172
Cell-Surface Affinity - a Metric to Characterize Cell Surface Preference – Adjusted for Cell Specific Response to Protein Patterns
S. G. Ricoult[1], G. H. Thompson-Steckel[1], J. P. Correia[1], T. E. Kennedy[1], and D. Juncker[1]
[1]McGill University, Montreal, QC, Canada

P = Poster Session
OP = Oral Presentation

P – Fri - A - 173
Fibroblast Growth Factor-2 Binding to Cell Surface Heparan Sulfate Proteoglycans Increases in Flow Adapted Endothelial Cells
N. Patel[1], T. Cai[1], and A. M. Clyne[1]
[1]*Drexel University, Philadelphia, PA*

P – Fri - A - 174
Oil Biosynthesis in Microalgae *Chlamydomonas reinhardtii*
A. Clavel[1], C. Xu[2], and C. Yan[2]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Brookhaven National Laboratory, Upton, NY*

P – Fri - A - 175
Shear Mediated Monocyte Pro-inflammatory Response to Chlamydia pneumoniae Infection
S. J. Evani[1], S. F. Dallo[1], and A. K. Ramasubramanian[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Fri - A - 176
Anchoring on an Erythroblastic Island
J. Jang[1,2], T. Ulyanova[2], K. Gupta[2], R. Lucero[2], K. Nam[2], D-W. Cho[1,2], T. Papayannopoulou[2], and D-H. Kim[2]
[1]*POSTECH, Pohang, Korea, Democratic People's Republic of,* [2]*University of Washington, Seattle, WA*

P – Fri - A - 177
CANCELLED BY AUTHOR

P – Fri - A - 178
Analysis of CRISPR-Cas Nuclease Specificity, Off-target Cleavage and Mutagenesis
T. J. Cradick[1], E. J. Fine[1], and G. Bao[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA*

P – Fri - A - 179
PKU Enzyme Replacement Through MSC Based Therapy
S. A. Knupp[1] and Q. Xu[1]
[1]*Tufts University, Medford, MA*

P – Fri - A - 180
Engineering Robust Control Over Two-component System Phosphotransfer Using Synthetic Protein Scaffolds and an Engineered Allosteric Histidine Kinase Switch
W. R. Whitaker[1], S. A. Davis[1], A. P. Arkin[1,2], and J. E. Dueber[1],
[21]*U.C. Berkeley, Berkeley, CA,* [2]*Lawrence Berkeley National Laboratory, Berkeley, CA*

Track: Drug Delivery

Drug Delivery in Tissue Engineering

P – Fri - A - 181
Experimental Release and Analytical Modeling of Release from Degradable Poly(ethylene glycol) Microgels
J. Stukel[1], S. Thompson[1], L. Simon[2], and R. K. Willits[1]
[1]*The University of Akron, Akron, OH,* [2]*New Jersey Institute of Technology, Newark, NJ*

P – Fri - A - 182
Microscopic Transport of Bile Salt Micelles in Gastrointestinal Mucus
H. M. Yildiz[1], D. Rannetsberger Brunschwig[1], and R. L. Carrier[1]
[1]*Northeastern University, Boston, MA*

P – Fri - A - 183
Sustained Release of Novel Anti-biofilm Agents from a Poly (2-hydroxyethyl methacrylate) Porous Scaffold for Implantable Surgery
H. Ma[1], L. Zhang[1], and J. D. Bryers[1]
[1]*University of Washington, Seattle, WA*

P – Fri - A - 184
Shell-type Multilayered Hydrogel Scaffolds with Heterogeneous Porosity
G. Ahn[1], J-Y. Moon[1], Y. Kim[1], and D. Lee[1]
[1]*Chung-Ang University, Seoul, Korea, Republic of*

P – Fri - A - 185
Preliminary Study of PLGA Drug-delivery Nerve Conduits for Potential Applications in Nerve Regeneration
K-M. Lin[1], B. Gale[1], H. Sant[1], J. Shea[1], W. Sanders[1], C. M. Terry[1], and J. Agarwal[1]
[1]*University of Utah, Salt Lake City, UT*

P – Fri - A - 186
Antibacterial Nanofibrous Mesh- A Wound Healing Device for Complex Wound Treatment
Z. Xie [1,2], C. B. Paras[1], P. Punnakitikashem[1], H. Weng[1], L-C. Su[1], K. Vu[1], L. Tang[1,3], J. Yang[2], and K. T. Nguyen[1,3]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*Pennsylvania State University, University Park, PA,* [3]*University of Texas Southwestern Medical Center, Dallas, TX*

P – Fri - A - 187
Long Term Local Release of CCL7 for the Treatment of Urinary Incontinence
E. Rivera-Delgado[1], N. X. Wang[1], Z. Sadeghi[1], M. Kavran[1], A. Hijaz[1], and H. A. von Recum[1]
[1]*Case Western Reserve University, Cleveland, OH*

P – Fri - A - 188
Novel Bioreactor for 3D Series Perfusion Culture and Drug Testing Studies
N. L. Bayhi[1], D. Kaplan[1], and Q. Xu[1]
[1]*Tufts University, Medford, MA*

P – Fri - A - 189
The Effects of PEG Hydrogel Crosslinking Mechanism and Crosslinking Density on Protein Release
S. Lee[1], X. Tong[1], and F. Yang[1]
[1]*Stanford University, Stanford, CA*

P – Fri - A - 190
Investigation of the Protecting Effect of a Polymeric Carrier on Protein Activity in Electrospun Meshes
A. R. Whittington[1], S. Samavedi[1], C. J. Fleming[1], S. Inkrote[1], and A. S. Goldstein[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Drug Delivery

Nano to Micro Devices in Delivery

P – Fri - A - 191
Biodegradable Polymeric Particles Deliver Peptides for Long-Term Inhibition of Angiogenesis in a Neovascular Age Related Macular Degeneration Mouse Model
R. B. Shmueli[1], M. Ohnaka[1], A. Miki[1], N. B. Pandey[1], R. Formica[1], J. E. Koskimaki[1], J. Kim[1], A. S. Popel[1], P. A. Campochiaro[1], and J. J. Green[1]
[1]*Johns Hopkins School of Medicine, Baltimore, MD*

P – Fri - A - 192
Controlled Release of Glial Cell-Derived Neurotrophic Factor From Biodegradable Poly (Æ -caprolactone) Microspheres
A. Aagby[1], N. Khadem Mohtaram[1], and S. M. Willerth[1]
[1]*University of Victoria, Victoria, BC, Canada*

P – Fri - A - 193
Quantification of the Transport of Live Autonomous Drug Particles (DrugBots) in Tumor Spheroids
M. A. Traore[1], A. Sahari[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Fri - A - 194
Optimal Assembly of Permanent Magnets to Obtain Maximum Magnetic Force for Magnetic Drug Targeting *In Vivo*
J. Suo[1], N. Landazuri[2], S. Tong[1], H. Jo[3], G. Bao[1], R. Taylor[3], and D. Giddens[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory university, Atlanta, GA,* [3]*Emory University, Atlanta, GA*

POSTER SESSION **FriA**

P – Fri - A - 195
Electrospun Solid Dispersions of the Antiretroviral Drug Maraviroc for Rapid Prevention of HIV
C. Ball[1] and K. A. Woodrow[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 196
Implant-Assisted Intrathecal Magnetic Drug Targeting: A New Approach for Treatment of CNS Diseases
E. Lueshen[1], I. Venugopal[1], and A. A. Linninger[1]
[1]University of Illinois at Chicago, Chicago, IL

P – Fri - A - 197
Characterization of Fenestrated Titanium Microneedles for Passive Ocular Drug Delivery
O. Khandan[1], A. Famili[2], M. Y. Kahook[2], and M. P. Rao[1]
[1]University of California, Riverside, CA, [2]University of Colorado School of Medicine, Denver, CO

P – Fri - A - 198
Levonorgestrel and Tenofovir Composite Fibers for Dual Prevention of HIV-1 and Pregnancy
A. K. Blakney[1], E. A. Krogstad[1], and K. A. Woodrow[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 199
Nanostructured Mucoadhesive Microparticles for Enhanced Bioavailability of Brimonidine
C. Park[1], S. Choi[1], M. Park[1], S. Lee[1], Y. Chung[1], Y. Jung[1], and Y. Choy[1]
[1]Seoul National University, Seoul, Korea, Republic of

P – Fri - A - 200
Developing Nanoparticle-based Combination ARVs as an Effective Strategy for HIV Prevention
E. Do[1], E. Krogstad[1], D. Bright[2], I. T. Suydam[2], and K. A. Woodrow[1]
[1]University of Washington, Seattle, WA, [2]Seattle University, Seattle, WA

P – Fri - A - 201
Creation of Novel Flow Systems Inspired by Insects Utilizing Microfabrication Techniques
Y. Hosseini[1] and M. Agah[1]
[1]Virginia Tech, Blacksburg, VA

P – Fri - A - 202
Empirical Model to Predict Drug Release Rate from Sustained-Release Polymer Thin Film Devices Based on MW and LogP
E. Schlesinger[1]
[1]UCSF/UC-Berkeley, San Francisco, CA

P – Fri - A - 203
Optimization of Novel Multifunctional Nanoscaffolds for Re-endothelialization *In Situ*
M. Holden[1], V. Sundaresan[1], P. Punnakitikashem[1], L-C. Su[1], B. Prabhakarpandian[2], and K. T. Nguyen[1,3]
[1]University of Texas at Arlington, Arlington, TX, [2]CFD Research Corporation, Huntsville, AL, [3]University of Texas Southwestern Medical Center, Dallas, TX

P – Fri - A - 204
A Novel Arborizing Fiberoptic Microneedle Device (FMD) Catheter for CED in the Brain
R. T. Andriani[1], R. L. Hood[1], J. Rossmeisl[2], and C. G. Rylander[1]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA

P – Fri - A - 205
DNA-based Transcription Factor Nrf2 Delivery for Acetaminophen Induced Liver Failure
K. Lee[1], X. Feng[1], M. Rafi[1], R. E. Alei[1], R. Tang[1], N. Lingampalli[1], and N. Murthy[1]
[1]University of California, Berkeley, Berkeley, CA

P – Fri - A - 206
Delivery of Antitumor Agent Lucanthone into U251 Glioblastoma Multiforme Cells Using Oxidized Graphene Nanoribbons
C. A. Suhrland[1], S. M. Chowdhury[1], M. Naidu[1], and B. Sitharaman[1]
[1]SUNY Stony Brook, Stony Brook, NY

P – Fri - A - 207
Fiberoptic Microneedle Device for Co-Delivery of Single-Walled Carbon Nanohorns and Laser Energy for Targeted Photothermal Heating of Ex Vivo Porcine Bladder
C. Rylander[1], E. Brandon[1], J. Whitney[1], and J. Roberston[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

Track: Drug Delivery

Novel Materials and Self Assembly

P – Fri - A - 208
Tunable Fatty Acid Based Biomaterials Enable Local and Controlled Drug Delivery
N. Artzi[1,2], M. Mier[1,3], A. Freiman[4,5], K. Faucher[6], S. Conroy[7], A. Dale[5,6], E. Edelman[4], and P. Martakus[6]
[1]MIT, HST, Cambridge, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [3]Institut Quiimic de Sarria`, Universitat Ramon Llull, Brcelona, Spain, [4]MIT, HST, Cambridge, MA, [5]Ort Braude College, Karmiel, Israel, [6]Atrium Medical, Hudson, NH, [7]Atrium Medical, Hudson

P – Fri - A - 209
Modular Synthetic Glycopolymers for Cell Targeting and Drug Delivery
M. Manganiello[1], E-H. Song[1], A. Convertine[1], P. Stayton[1], and D. M. Ratner[1]
[1]University of Washington, Seattle, WA

P – Fri - A - 210
Dendrimers Built of DNA, Nucleodendrimers, Provide Intracellular Delivery and Effects of siRNA
V. Mane[1] and S. Muro[1]
[1]University of Maryland College Park, College Park, MD

P – Fri - A - 211
Biopolymer-mediated Drug/Gene Delivery
W. Kim[1]
[1]POSTECH, Pohang, Korea, Republic of

P – Fri - A - 212
Hyperbranched Polyglycerols Coated Polylactic Acid Nanoparticles for Drug Delivery
Y. Deng[1], J. Saucier-Sawyer[1], J. Andrejecsk[1], C. Hoimes[1], Y-E. Seo[1], J. Zhang[1], N. Duong[1], and M. Saltzman[1]
[1]Yale University, New Haven, CT

P – Fri - A - 213
Detoxification of Gold Nanorods for Improved Cytocompatibility and Biofunctionalization
A. P. Dhanale[1]
[1]University of Texas at San Antonio, San Antonio, TX

P – Fri - A - 214
A Novel Encapsulation Method for Ferritin Nanocage
A. E. Lorenz[1]
[1]MIT, Cambridge, MA

POSTER SESSION FriA

P = Poster Session
OP = Oral Presentation

Track: Drug Delivery

Targeted Delivery

P – Fri - A - 215

A Systems Approach to Engineering Tf-Conjugated Drug-Encapsulated Nanoparticles

R. Y. Chiu[1], T. Tsuji[2], S. J. Wang[1], J. Wang[1], A. B. Mason[3], and D. T. Kamei[1]

[1]University of California, Los Angeles, Los Angeles, CA, [2]University of Nagoya, Nagoya, Japan, [3]University of Vermont, Burlington, VT

P – Fri - A - 216

Inhibiting Metastatic Breast Cancer Cell Migration via Targeted pH-triggered siRNA Delivery and Chemokine Axis Blockade

P. Guo[1], D. Auguste[2], and J-O. You[3]

[1]Children Hospital Boston, Boston, MA, [2]City College of New York, New York, NY, [3]Chungbuk National University, Cheongju, Korea, Republic of

P – Fri - A - 217

Synthesis and Characterization of pH-sensitive Hydrogel Carriers for Oral Vaccine Delivery

L. A. Sharpe[1], M. Duran-Lobato[2], and N. A. Peppas[1]

[1]University of Texas at Austin, Austin, TX, [2]University of Sevilla, Seville, Spain

P – Fri - A - 218

Delivery Vectors for Oral Protein Therapeutics: Characterization and Cellular Transport

A. M. Daily[1] and N. Peppas[1]

[1]University of Texas at Austin, Austin, TX

P – Fri - A - 219

An Anti-obesity, Apoptosis-inducing ScFv Fusion Protein Targeting Mature Adipocytes

Y. Royet[1], H. Harper[1], N. Rivalain[2], and W. Farin[2]

[1]University of Oklahoma, Norman, OK, [2]University of Oklahoma, Norman

P – Fri - A - 220

Targeted Inhalable Pegylated Lipidic Nanomicelles Containing Fasudil: Formulation and Characterization

N. Gupta[1], B. Patel[1], A. Absar[1], and F. Ahsan[1],

[1]Texas Tech University Health Sciences Center, Amarillo, TX

P – Fri - A - 221

Drug Delivery via MR-Guided Focused Ultrasound Induced Hyperthermia in a Pancreatic Cancer Mouse Model

N. Farr[1], Y-N. Wang[1], S. D'Andrea[1], F. Starr[1], D. Lee[1], and J. Hwang[1]

[1]University of Washington, Seattle, WA

P – Fri - A - 222

Interaction and Transport of ICAM-1-Targeted Nanocarriers with Components of the BBB and the Brain

J. Hsu[1], J. Rappaport[1], and S. Muro[1,2]

[1]University of Maryland, College Park, College Park, MD, [2]Institute for Biosciences and Biotechnology Research, College Park, MD

P – Fri - A - 223

Targeting of Polymer Therapeutics to Sites of Bone Resorption via Incorporation of Homing Peptide

C. Schmitt[1] and D. S. Benoit[1]

[1]University of Rochester, Rochester, NY

P – Fri - A - 224

Evaluation of Pressure Dependent Oxygen Diffusion in an Ex-vivo Tissue Model

A. B. Allawala[1], P. Rao[1], G. Selvaduray[1], and J. Mandrusov[1]

[1]San Jose State University, San Jose, CA

P – Fri - A - 225

PDT Drug Delivery in Brain Tumors using Biocompatible Micelle/Liposome Based Carriers

S. K. Dixit[1], K. J. Miller[1], P. Zhang[2], M. Kenney[2], and A-M. Broome[1]

[1]Medical University of South Carolina, Charleston, SC, [2]Case Western Reserve University, Cleveland, OH

P – Fri - A - 226

Assessment of Toxic Properties of Carbon Nanotubes using ADMET Predictor and Effects of MWNT'S on Bacterial Cells

P. Narla[1] and P. Patra[1]

[1]University of Bridgeport, Bridgeport, CT

P – Fri - A - 227

A Novel Graphene Nanoribbon Based Targeted Drug Delivery System For Human Pappiloma Virus Mediated Cancers

S. Mullick Chowdhury[1] and B. Sitharaman[1]

[1]Stony Brook University, Stony Brook, NY

P – Fri - A - 228

Lipid-Coated Biodegradable Nanoparticles for Delivery of Curcumin to Brain

S. Majd[1] and C-F. Kuo[1]

[1]Penn State University, University Park, PA

Track: Drug Delivery

Drug Delivery

P – Fri - A - 229

Sustained Release of Retinylamine for the Treatment of Age-related Macular Degeneration

A. A. Puntel[1] and Z-R. Lu[1]

[1]Case Western Reserve University, Cleveland, OH

P – Fri - A - 230

Modeling pH-induced Release of Polyanions From Weak Polyelectrolyte Multilayer Films

J. Min[1], P. Hammond[1], and R. Braatz[1]

[1]MIT, Cambridge, MA

P – Fri - A - 231

Improving Sonoporative Drug-delivery Through the Use of Size-isolated Microbubbles

K-H. Song[1], J. Feshitan[1], A. Fan[1], R. Yang[1], S. Sirsi[1], and M. Borden[1]

[1]CU Boulder, Boulder, CO

P – Fri - A - 232

Synthetic Biocomposites for Staged Multi-Drug Delivery

L. Gaviria[1], T. Guda[1], and J. L. Ong[1]

[1]University of Texas at San Antonio, San Antonio, TX

P – Fri - A - 233

Structure-function Relationships for Proteins and Protein-Poly(ethylene glycol) Conjugates at Oil/Water Interfaces Relevant to Poly(lactide-co-glycolide) Microsphere Encapsulation

A. L. Canady[1], R. D. Tilton[1], and T. M. Przybycien[1]

[1]Carnegie Mellon University, Pittsburgh, PA

P – Fri - A - 234

Noninvasive Imaging of PLGA Nanoparticle Delivery to Cerebrospinal Fluid

K. T. Householder[1,2] and R. W. Sirianni[1,2]

[1]Barrow Neurological Institute, Phoenix, AZ, [2]Arizona State University, Tempe, AZ

POSTER SESSION **FriA**

Track: Neural Engineering

Brain Injury

P – Fri - A - 235
Identifying the Shear Material Properties of Brain using Analytical and Finite Element Approaches
C. D. Untaroiu[1]
[1]Virginia Tech, Blacksburg, VA

P – Fri - A - 236
Glial Activation is Associated with Chronic Behavioral Deficits Following Blast Neurotrauma
S. Sajja[1], W. Hubbard[1], C. Hall[1], and P. VandeVord[1,2]
[1]Virginia Polytechnic and State University, Blacksburg, VA, [2]Veterans Affairs Medical Center, Salem, VA

P – Fri - A - 237
Oxidative Stress and Glial Response Could Lead to Anxiety Following Varied Levels of Blast Overpressure
W. B. Hubbard[1], S. Sajja[1], E. Ereifej[1], and P. VandeVord[1,2]
[1]Virginia Tech, Blacksburg, VA, [2]Veterans Affairs Medical Center, Salem, VA

P – Fri - A - 238
Antibacterial Properties of Collagen Scaffolds with Tunable Mechanical Properties
C. Keeler[1], K. Crawford[1], M. Jimenez[1], and E. Orwin[1]
[1]Harvey Mudd College, Claremont, CA

P – Fri - A - 239
Startling Stimuli Elicit Fast Hand Flexion and Extension in Stroke Survivors: Implications for Neural Control and Therapy
C. Honeycutt[1], U. A. Tresch[2], and E. J. Perreault[1,3]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Institute of Biomechanics, ETH Zurich, Zurich, Switzerland, [3]Northwestern University, Chicago, IL

P – Fri - A - 240
The Impact of Shoulder Abduction Loading on the Ability to Grasp and Release Following Stroke
Y. Lan[1], J. Yao[1], and J. Dewald[1]
[1]Northwestern University, Chicago, IL

P – Fri - A - 241
Development of a Traumatic Brain Injury Bioreactor
Z. Heller[1], J. Wyatt[1], and J. Wolchok[1]
[1]University of Arkansas, Fayetteville, AR

P – Fri - A - 242
Do Primary Blast-shock Waves Cause Mild TBI? Biomechanical Response of Rats Under a Wide Range of Blast Overpressures
N. Chandra[1], M. Skotak[1], and F. Wang[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

P – Fri - A - 243
Cellular Mechanisms of Shock Wave Generated Blast Neurotrauma
E. S. Ereifej[1], C. E. Hampton[1], C. N. Thorpe[2], B. A. Rzigalinski[2], and P. J. VandeVord[1]
[1]Virginia Tech, Blacksburg, VA, [2]Edward Via College of Osteopathic Medicine, Blacksburg, VA

Track: Neural Engineering

Brain-computer Interfaces

P – Fri - A - 244
Behavioral Parametric Experiments of Waveform Duration, Direction, Asymmetry and Phase Delay in Sensory Intracortical Microstimulation
A. Koivuniemi[1] and K. Otto[2]
[1]Purdue University, Indianapolis, IN, [2]Purdue University, West Lafayette, IN

P – Fri - A - 245
Conducting Polymer Electrodes for EEG Application
P. Leleux[1,2], C. Bénar[2], J-M. Badier[2], T. Hervé[3], P. Chauvel[2], and G. G. Malliaras[1]
[1]Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan, [2]INSERM, Marseille cedex [05], France, Metropolitan, [3]Microvitae Technologies, Gardanne, France, Metropolitan

P – Fri - A - 246
Biohybrid Neural Tissue Engineered Constructs for Electrical Interface with Peripheral Nerve
L. Struzyna[1], J. Wolf[1], and D. K. Cullen[1]
[1]University of Pennsylvania, Philadelphia, PA

P – Fri - A - 247
Histological Correlates to Functionality in 4x4 Utah Electrode Arrays in Rat Cortex
M. B. Christensen[1], N. F. Nolta[1], J. L. Skousen[1], and P. A. Tresco[1]
[1]University of Utah, Salt Lake City, UT

P – Fri - A - 248
Flexible Microprobes Coated with a Fast Degrading Polymer for Chronic Neuronal Signal Acquisition
M-C. Lo[1], S. Singh[1], S. Wang[1], J. D. Zahn[1], D. I. Shreiber[1], and J. Kohn[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

P – Fri - A - 249
Self-regulation of Anterior Insula Cortex in Chronic Smokers Using Real-time fMRI
M. Rana[1], S. Ruiz[2], A. Muehleck[3], K. Buyukturkoglu[4], J. Dalboni da Rocha[5], S. Eck[3], A. Batra[3], N. Birbaumer[6], and R. Sitaram[4,7]
[1]Institute of Med. Psychology & Behavioral Neurobiology, University of Tuebingen, Tuebingen, Germany, [2]Pontificia Universidad Catolica de Chile, Santiago, Chile, [3]Department of Psychiatry and Psychotherapy, University of Tuebingen, Tuebingen, Germany, [4]Institute of Med. Psychology & Behavioral Neurobiology, University of Tuebingen, Tuebingen, Germany, [5]Department of Biomedical Engineering, University of Florida, Gainesville, FL, [6]Institute of medical psychology and Behavioural neurobiology, Tuebingen Univeristy, Tuebingen, Germany, [7]Department of Biomedical Engineering, University of Florida, Gainesville, FL

P – Fri - A - 250
EEG Helmet for Measuring Evoked Potential of Visual Area Based on Dry Capacitively-coupled Electrodes
J. Kim[1], H. Baek[1], H. Lee[1], Y. Lim[2], and K. Park[1]
[1]Seoul National University, Seoul, Korea, Republic of, [2]Sangji University, Won-ju, Korea, Republic of

Track: Neural Engineering

Neural Engineering

P – Fri - A - 251
Carbon Nanotube Fibers Microelectrodes for Neural Recording and Stimulation
F. Vitale[1], C. Kemere[1], and M. Pasquali[1]
[1]Rice University, Houston, TX

P – Fri - A - 252
Aligned RGD-MeHA Nanofibers: Adhesive and Topographical Cues for Improving Neural Regeneration
M. Wrobel[1] and H. Sundararaghavan[1]
[1]Wayne State University, Detroit, MI

P = Poster Session
OP = Oral Presentation

P – Fri - A - 253
The Effect of Peptoids on Aß Aggregation and NF- κB Activation in Alzheimer's Disease
K. Moore[1], L. M. Wolf[1], and M. Moss[1]
[1]University of South Carolina, Columbia, SC

P – Fri - A - 254
Classification of Hand and Finger Motions using EMG from the Extrinsic and Intrinsic Hand Muscles
A. Adewuyi[1], L. Hargrove[1,2], and T. Kuiken[1,2]
[1]Northwestern University, Chicago, IL, [2]Rehabilitation Institute of Chicago, Chicago, IL

Track: Tissue Engineering

Biomimetics for Tissue Engineering

P – Fri - A - 255
Synergistically Providing Cyclic Mechanical Stimulation and Local TGF-&[beta]1 Delivery Enhances Mechanical Properties and Uniformity of the Fibrin Vascular Constructs
M-S. Liang[1], M. Koobatian[1], D. D. Swartz[1], and S. T. Andreadis[1]
[1]State University of New York at Buffalo, Buffalo, NY

P – Fri - A - 256
Cyclic Chemogradients Mimicking the Evolution of Chemogradients in Living Tissues
C. A. Reinhart-King[1] and S. Bajpai[1]
[1]Cornell University, Ithaca, NY

P – Fri - A - 257
Characterization of Localized Antithrombotics for the Treatment of Restenosis
R. A. Scott[1] and A. Panitch[1]
[1]Purdue University, West Lafayette, IN

P – Fri - A - 258
Effects of Mechanical Stimuli on Proliferation, Senescence and Suppression of Osteogenesis in hMSCs
Y. Kang[1], S. Park[1], J-S. Hyun[1], M-J. Oh[1], and J-W. Shin[1,2]
[1]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [2]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Inje University, Gimhae, Korea, Republic of

P – Fri - A - 259
In Vitro Citotoxicity Evaluation of PCL Fibers Produced by Forcespinning
G. R. Perea[1], A. A. Rodrigues[1], N. A. Batista[1], W. D. Belangero[1], C. C. Zavaglia[1], and M. A. d' Avila[1]
[1]UNICAMP, Campinas, Brazil

P – Fri - A - 260
Functional Analysis of Cell Aggregation Induction Proline Containing Periodic Peptides
Y. Hirano[1] and Y. Futaki[1]
[1]Kansai University, Suita, Japan

P – Fri - A - 261
How Curvature is Perceived by a Cell as a Three Dimensional Cue?
J. Kim[1], C. Yang[1], and J. Wong[1]
[1]Boston University, Boston, MA

P – Fri - A - 262
Biomimetic Polyurea for Substantial Nerve Regeneration
D. Yun[1], A. Famili[1], P. Jenkins[1], and D. Park[1]
[1]UC Denver/AMC, Aurora, CO

P – Fri - A - 263
The Effects of Mechanical Stimulation and Neighboring Cells to Mesenchymal Stem Cell Migration
M. V. Garcia[1], S. Kim[2], S. Park[3], Y. Kang[3], J-S. Hyun[3], M-J. Oh[3], and J-W. Shin[4]
[1]Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, [2]Engineering Ceramic Research Group, Functional Materials Division, KIMS, Changwon, Korea, Republic of, [3]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [4]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Inje University, Gimhae, Korea, Republic of

P – Fri - A - 264
Layer by Layer Assembly of Uniaxially Aligned Biodegradable Nanofibers for Submillimeter Thick Scaffold Towards Guided Tissue Engineering
P-F. Jao[1], S-P. Fang[1], W. U. Hasanat[1], and Y-K. Yoon[1]
[1]University of Florida, Gainesville, FL

P – Fri - A - 265
Elucidating the Effects of Cytokine Signaling on Hepatic Function in *in vitro* Tissue Mimics
L. Vu[1] and P. Rajagopalan[1,2]
[1]Department of Chemical Engineering Virginia Tech, Blacksburg, VA, [2]School of Biomedical Engineering and Sciences Virginia Tech, Blacksburg, VA

P – Fri - A - 266
Cartilage Regeneration using Chitosan-based Anisotropic Hydrogels
K. J. Walker[1] and S. Madihally[1]
[1]Oklahoma State University, Stillwater, OK

P – Fri - A - 267
Biomimetic Hydrogel Promotes Mesenchymal Stem Cell Osteogenesis for Cartilage Engineering
Y. Yuan[1] and F. Chi[1]
[1]Eye Ear Nose and Throat Hospital, Fudan University, Shanghai, China, People's Republic of

P – Fri - A - 268
Hybrid Photoactive-enzymatic Platform for Heterogeneous Hydrogel Patterning
D. R. Griffin[1], G. Acosta[1], J. Mack[1], A. Soon[1], J. Borrajo[1], V. Oshita[1], and T. Segura[1]
[1]UC Los Angeles, Los Angeles, CA

Track: Tissue Engineering

Directing Stem Cell Differentiation

P – Fri - A - 269
Osteogenic Differentiation of hMSCs with PEG-Melanin Like Gels
C. T. Drinnan[1], A. Mehta[1], and O. Z. Fisher[1]
[1]Temple University, Philadelphia, PA

P – Fri - A - 270
The Effect of Two Dimensional Carbon Nanoparticles on the Viability and Differentiation of Adipose Derived Stem Cells
Y. Talukdar[1], J. T. Rashkow[1], G. Lalwani[1], and B. Sitharaman[1]
[1]State University of New York at Stony Brook, Stony Brook, NY

P – Fri - A - 271
Non-Viral Gene Delivery To Drive Nerve Cell-Like Differentiation Of Umbilical Cord Cells For Inner Ear Hair Cell Regeneration
A. J. Mellott[1], H. Shinogle[1], D. Moore[1], H. Staecker[2], and M. Detamore[1]
[1]University of Kansas, Lawrence, KS, [2]University of Kansas Medical Center, Kansas City, KS

P – Fri - A - 272
Optimization of Adipocyte Differentiation Culture Media and Development of an *In Vitro* Type II Diabetic Environment
D. M. Minteer[1], K. G. Marra[1], and J. P. Rubin[1]
[1]University of Pittsburgh, Pittsburgh, PA

POSTER SESSION Fri A 9:30AM – 1:00PM

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

P – Fri - A - 273
Arthritic Periosteal Tissue from Joint Replacement Surgery as an Autologous Source of Stem Cells
H. Chang[1], D. Docheva[2], U. Knothe[3], and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Ludwig Maximilians University, Munich, Germany, [3]Cleveland Clinic, Cleveland, OH

P – Fri - A - 274
Examining the Effect of Stiffness on Vascular Differentiation
L. Wong[1], D. Glaser[1], and K. McCloskey[1]
[1]University of California, Merced, Merced, CA

P – Fri - A - 275
A 3D Microfluidic Gel System for Stem Cell Derived Endothelial Cells
N. Haq-Siddiqi[1] and E. Lee[1]
[1]New Jersey Institute of Technology, Newark, NJ

P – Fri - A - 276
Synergistic Influences of Mechanical and Bioactive Factors on Chondrogenesis in a Novel Centrifugal Bioreactor
A. Nazempour[1], C. R. Quisenberry[1], H. Kim[2], N. Abu-Lail[1], V. Idone[2], and B. Van Wie[1]
[1]Washington State University, Pullman, WA, [2]Regeneron Pharmaceutical Corporation, Tarrytown, NY

P – Fri - A - 277
Collagen-Based Hydrogels Direct Spinal Progenitor Cell Differentiation Toward Oligodendrocytes
S. A. Geissler[1], Z. Z. Khaing[2], and C. E. Schmidt[1,2]
[1]The University of Texas, Austin, Austin, TX, [2]University of Florida, Gainesville, FL

P – Fri - A - 278
3D Expansion of Mesenchymal Stromal Cells Preserves Progenitor Properties Independent of Scaffold
A. I. Hoch[1,2], D. J. Wendt[2], J. K. Leach[1,3], and I. Martin[2]
[1]University of California, Davis, Davis, CA, [2]University Hospital Basel, Basel, Switzerland, [3]UCDMC, Sacramento, CA

P – Fri - A - 279
Nanopatterned Hyaluronan Hydrogels Enhance Chondrogenic Differentiation in Dental Pulp Stem Cells
C. Nemeth[1], K. Janebodin[1,2], A. Yuan[1], M. Reyes[1], and D-H. Kim[1]
[1]University of Washington, Seattle, WA, [2]Mahidol University, Bangkok, Thailand

P – Fri - A - 280
Modulation of RHAMM Protein Function Alters Mesenchymal Tissue Differentiation
B. Bahrami[1], C. Toelg[2], M. J. Bissell[1], and E. A. Turley[2]
[1]Lawrence Berkeley National Laboratory, Berkeley, CA, [2]London Health Sciences Centre and Western University, London, ON, Canada

P – Fri - A - 281
Effect of Expansion Conditions on Stem Cell Marker Expression and Multipotency of Amniotic Fluid-derived Stem Cells
J. Petsche Connell[1], E. D. Augustini[1], S. K. Cheng[1], R. Ruano[2,3], and J. G. Jacot[1,3]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Children's Hospital, Houston, TX

P – Fri - A - 282
Stage- and Cell Line-Specific Optimizations for Efficient Derivation of Human and Mouse Endothelial Cells
D. E. Glaser[1], W. S. Turner[1], A. B. Burns[1], and K. E. McCloskey[1]
[1]University of California, Merced, Merced, CA

P – Fri - A - 283
Enhancing hMSC Attachment to Fibrin Microthreads
A. E. Cunha[1], K. J. Hansen[2], I. Cich[2], and G. R. Gaudette[2]
[1]Quinsigamond Community College, Worcester, MA, [2]Worcester Polytechnic Institute, Worcester, MA

POSTER SESSION FriA

P = Poster Session
OP = Oral Presentation

Friday, September 27, 2013

1:30PM – 5:00PM

POSTER SESSION –FRI – B

Track: Bioinformatics, Computational and Systems Biology

Analysis of Cell Signaling

P – Fri - B - 1

A Systems Pharmacology Approach to Understanding Differential Responsiveness of Melanoma Cancer Cells to BRAF Inhibition

M. Fallahi-Sichani[1], N. J. Moerke[1], A. Dastur[2], C. H. Bens[2], and P. K. Sorger[1]

[1]Harvard Medical School, Boston, MA, [2]Massacheusetts General Hospital Cancer Center, Charlestown, MA

P – Fri - B - 2

Computational Model of IGF1R Signaling Dynamics in Ovarian Cancer Cells

D. Tian[1] and P. K. Kreeger[1]

[1]University of Wisconsin Madison, Madison, WI

Track: Bioinformatics, Computational and Systems Biology

Genomics, Transcriptomics and Proteomics

P – Fri - B - 3

Single Cell Gene Expression Study of Human Peripheral CD8+ T Cells Recognizing Self and Foreign Antigens

N. Jiang[1,2], Y. Wong[2], B. Kidd[2], S. Quake[2], and M. Davis[2]

[1]University of Texas at Austin, AUSTIN, TX, [2]Stanford University, Stanford, CA

P – Fri - B - 4

Similarity Measures for Analyzing Head and Neck Cancer Gene Expression Data

C. D. Kaddi[1] and M. D. Wang[1]

[1]Georgia Institute of Technology, Atlanta, GA

P – Fri - B - 5

The Effect of Genome Annotation Complexity on RNA-Seq Gene Expression Estimation

P-Y. Wu[1], J. H. Phan[1], and M. D. Wang[1]

[1]Georgia Institute of Technology, Atlanta, GA

P – Fri - B - 6

Identifying Mechanisms of Drug Resistance in Pancreatic Cancer Using Gene Expression Analyses in a Multi-factor Design

E. M. Blais[1], S. J. Adair[1], J. M. Lindberg[1], T. E. Newhook[1], T. W. Bauer[1], J. T. Parsons[1], and J. A. Papin[1]

[1]University of Virginia, Charlottesville, VA

P – Fri - B - 7

Intricate Interplay Between TLR4 and Purinergic Receptor Signaling in Activated Macrophages

S. Gupta[1], A. R. Dinasarapu[2], M. R. Maurya[2], E. Fahy[2], J. Min[2], M. Sud[2], M. J. Gersten[2], C. K. Glass[2], and S. Subramaniam[2]

[1]University of California, San Diego, La Jolla, CA, [2]University of California, San Diego, La, Jolla, CA

P – Fri - B - 8

Reconstruction of Glycosylation Reaction Networks: Integration of Glycomics and Enzyme Data with Computer Models

G. Liu[1] and S. Neelamegham[1]

[1]State University of New York, Buffalo, NY

P – Fri - B - 9

SVD of Transcript Length Distributions Reveals Evolutionary Forces Globally Affecting GBM Metabolism

N. M. Bertagnolli[1], J. A. Drake[1], J. M. Tennessen[1], and O. Alter[1]

[1]Scientific Computing and Imaging (SCI) Institute, University of Utah, Salt Lake City, UT

P – Fri - B - 10

Network Optimization for Pathway Discovery in RNAi Screening

J. Wilson[1], S. Gosline[1], E. Fraenkel[1], and D. Lauffenburger[1]

[1]Massachusetts Institute of Technology, Cambridge, MA

P – Fri - B - 11

A Comparative Genomics Platform for Efficient Analysis of Genomic Context and Determining its Role in Genotype-to-Phenotype Associations

P. Seitzer[1,2], D. Miller[3], and M. Facciotti[1,2]

[1]UC Davis, Davis, CA, [2]Genome Center, Davis, CA, [3]New York University, New York, NY

P – Fri - B - 12

Comparation of Two Types of Barcodes Used for Multiple miRNAs Sequencing in the Ligation Sequencing Platform

J. Tu[1], L. Wang[1], S. Wang[1], and Z. Lu[1,2]

[1]Southeast University, Nanjing, China, People's Republic of, [2]Peking University, Beijing, China, People's Republic of

P – Fri - B - 13

Protein Identification in Macrophages

P. M. Varman[1] and N. Haverland[2]

[1]Duchesne Academy, Omaha, NE, [2]University of Nebraska Medical Center, Omaha, NE

P – Fri - B - 14

Assessing Inter-study Variability and Resulting Effects on Robust Transcriptome-based Molecular Signatures

S. Ma[1,2], J. Sung[3], A. Magis[1,2], Y. Wang[1,2], D. Geman[4], and N. Price[1,2]

[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Institute for Systems Biology, Seattle, WA, [3]Pohang University of Science and Technology, Pohang, Korea, Republic of, [4]Johns Hopkins University, Baltimore, MD

P – Fri - B - 15

Investigation of k-means Clustering for the Analysis of Mass Spectrometry Imaging Data

S. Sarkari[1], C. D. Kaddi[1], and M. D. Wang[1]

[1]Georgia Institute of Technology, Atlanta, GA

P – Fri - B - 16

Identifying Signaling Networks and Therapeutic Targets in Glioblastoma Cancer Stem Cells

N. Camp[1], P. Hothi[2], G. Foltz[2], and A. Wolf-Yadlin[1]

[1]University of Washington, Seattle, WA, [2]The Ben and Catherine Ivy Center for Advanced Brain Tumor Treatment, Swedish Neuroscience Institute, Seattle, WA

P – Fri - B - 17

Transcriptome Analysis of Multi-cellular Signaling in an Organotypic 3D Liver Model

R. R. Rodrigues[1], A. L. Larkin[1], L. T. Vu[1], A. N. Tegge[1], T. M. Murali[1], and P. Rajagopalan[1]

[1]Virginia Tech, Blacksburg, VA

P – Fri - B - 18

Discovery of Common Sequences Absent in the Human Reference Genome Using Pooled Samples from Next Generation Sequencing

Y. Liu[1], M. Koyuturk[1], S. Maxwell[1], M. Xiang[1], M. Veigl[1], R. Cooper[2], B. Tayo[2], L. Li[1], T. LaFramboise[1], Z. Wang[1], X. Zhu[1], and M. Chance[1]

[1]Case Western Reserve University, Cleveland, OH, [2]loyola university, Chicago, IL

P – Fri - B - 19

What Do We Learn from Network-based Analyses of GWAS data?

M. Ayati[1], Y. Liu[1], M. R. Chance[1], and M. Koyuturk[1]

[1]Case Western Reserve University, Cleveland, OH

POSTER SESSION **FriB**

See page 21 for Poster floor plan

P – Fri - B - 20
The Biological Roles of Inconsistently-Expressed Genes
J. B. SHEPPARD[1]
[1]University of Memphis, Memphis, TN

P – Fri - B - 21
An Integrated Transcriptomic and Lipidomic Study of Oxidized Lipid Activated RAW 264.7 Macrophages
M. R. MAURYA[1], A. R. DINASARAPU[1], S. GUPTA[1], E. FAHY[1], M. SUD[1], AND S. SUBRAMANIAM[1]
[1]University of California, San Diego, La Jolla, CA

P – Fri - B - 22
A Selected Reaction Monitoring Framework to Quantify Kinase Expression and Phosphorylation Stoichiometry
K. BECK[1], M. BEREMAN[1], M. MACCOSS[1], AND A. WOLF-YADLIN[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 23
Gene Expression Analysis Highlights the Emergence of Substructures in the Developing Mouse Brain
V. MENON[1], C. THOMPSON[1], J. HOHMANN[1], AND M. HAWRYLYCZ[1]
[1]Allen Institute for Brain Science, Seattle, WA

P – Fri - B - 24
Discovery of Biologically Meaningful Modules Based on the Co-Expression Network from Multiple RNA-SEQ Datasets
W. LIU[1,2], I. K. BLABY[2], C. E. BLABY-HAAS[2], X. F. WANG[1], S. MERCHANT[2], AND M. PELLEGRINI[2]
[1]ShangHai Jiao Tong University, ShangHai, China, People's Republic of, [2]University of California Los Angeles, Los Angeles, CA

POSTER SESSION **FriB**

Track: Bioinformatics, Computational and Systems Biology

Image-based Models

P – Fri - B - 25
Histological Image Classification Using Biologically Interpretable Shape-Based Features
S. KOTHARI[1], J. H. PHAN[2], AND M. D. WANG[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology and Emory University, Atlanta, GA

P – Fri - B - 26
Using the Sparse Matrix Transformation for the Estimation and Channelization of the Hotelling Model Observer
G. WEN[1,2] AND M. K. MARKEY[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas MD Anderson Cancer Center, Houston, TX

P – Fri - B - 27
A Hierarchical Geodesic Model for Diffeomorphic Longitudinal Shape Analysis
N. SINGH[1], J. HINKLE[1], S. JOSHI[1], AND P. T. FLETCHER[1]
[1]Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT

P – Fri - B - 28
Comparison of Symmetry and Shape of the Normal and AIS Pediatric Human Ribcage Through Geometric Morphometrics
S. REDDY[1], L. ROBINSON[1], R. M. CAMPBELL[2], AND S. BALASUBRAMANIAN[1]
[1]Drexel University, Philadelphia, PA, [2]The Children's Hospital of Philadelphia, Philadelphia, PA

P – Fri - B - 29
Three-Dimensional Reconstruction of Protein P62IMP2
J. LI[1], M. ZHANG[1], L. ZHANG[2], W. SUN[1], G. REN[2], W. QIAN[1], AND J. ZHANG[1]
[1]University of Texas at El Paso, El Paso, TX, [2]Lawrence Berkeley National Laboratory, Berkeley, CA

P – Fri - B - 30
Autocalibrating CT Reconstruction from C-Arm Fluoroscopy Data
J. D. HINKLE[1], A. CHERYAUKA[2], R. WHITAKER[1], AND S. JOSHI[1]
[1]University of Utah, Salt Lake City, UT, [2]GE Healthcare, Salt Lake City, UT

P – Fri - B - 31
Cerebral Blood Flow Measurement by Inversion of Slow DSA Data
C-Y. HSU[1], S. KIM[1], AND A. LINNINGER[1]
[1]University of Illinois at Chicago, Chicago, IL

P – Fri - B - 32
Modeling Temporal Progression of Alzheimer's Disease
N. VERMA[1] AND M. K. MARKEY[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]UT MD Anderson Cancer Center, Houston, TX

P – Fri - B - 33
Efficient Detection of Macromolecular Complexes in Electron Tomograms Based on Reduced Representation Templates
X-P. XU[1], C. PAGE[1], AND N. VOLKMANN[1]
[1]Sanford-Burnham Medical Research Institute, La Jolla, CA

P – Fri - B - 34
Automated High-throughput 3D Neuron Reconstruction Using All-Path-Pruning
H. PENG[1]
[1]Allen Institute for Brain Sciences, Seattle, WA

Track: Bioinformatics, Computational and Systems Biology

Modeling in Personalized Medicine

P – Fri - B - 35
Integration of Transcriptomic, Proteomic and Metabolomics Data to Reconstruct Genome Scale Metabolic Models of Commonly Used Breast Cancer Cell Lines
Y. WANG[1,2], D. MARGINEANTU[3], D. HOCKENBERY[3], AND N. PRICE[2]
[1]University of Illinois, Urbana-Champaign, Urbana, IL, [2]Institute for Systems Biology, Seattle, WA, [3]Fred Hutchinson Cancer Research Center, Seattle, WA

P – Fri - B - 36
Relative Gene Expression Levels of Two Interacting and Functionally Related Proteins are Consistent Disease Transcriptomic Signatures
Y. WANG[1,2], D. GEMAN[3], AND N. PRICE[1,2]
[1]University of Illinois, Urbana-Champaign, Urbana, IL, [2]Institute for Systems Biology, Seattle, WA, [3]The Johns Hopkins University, Baltimore, MD

P – Fri - B - 37
Design of Surveillance Intervals for Abdominal Aortic Aneurysms
E. SHERER[1]
[1]Louisiana Tech University, Ruston, LA

P – Fri - B - 38
Cross-Platform Validation of a Genomic Pattern for the Prognosis and Assessment of GBM Brain Cancer
K. A. AIELLO[1] AND O. ALTER[1]
[1]Department of Bioengineering and Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT

P – Fri - B - 39
Mathematical Comparisons of Cancer Patient-Matched Genomic Profiles Predict Survival and Drug Targets
P. SANKARANARAYANAN[1], T. E. SCHOMAY[1], K. A. AIELLO[1], AND O. ALTER[1]
[1]Department of Bioengineering and Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT

P = Poster Session
OP = Oral Presentation

P – Fri - B - 40
Entropy of Acceleration Measurements During Swallowing
N. P. Reddy[1] and J. T. Paxitzis Jr[2]
[1]University of Akron, Akron, OH, [2]Philips Medical Systems, Cleveland, OH

P – Fri - B - 41
Evidence-driven Reconstruction of a Glioblastoma Metabolic Network: A Platform for Data Integration and *In Silico* Investigation
J. A. Eddy[1] and N. D. Price[1]
[1]Institute for Systems Biology, Seattle, WA

P – Fri - B - 42
An *In Silico* Diagnostic for HIV Coreceptor Selection and Disease Progression
D. Morikis[1], G. González-Rivera[1], C. A. Kieslich[1], A. López de Victoria[1], and D. Shin[1]
[1]University of California, Riverside, Riverside, CA

Track: Bioinformatics, Computational and Systems Biology

Multiscale Modeling - Cells to the Whole Body

P – Fri - B - 43
A Chemical and Mechanical Model of Vascular Smooth Muscle Tissue
A. Grujicic[1], R. Yavari[1], J. Snipes[1], R. Subrahmanian[1], M. Grujicic[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P – Fri - B - 44
Interpreting the Effect of Heterogeneity and Hmodynamics on Tumor Angiogenesis Using a Multi-scale Model of Anti-angiogenic Therapy
J. Weddell[1], J. Kwack[1], A. Masud[1], and P. Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P – Fri - B - 45
Multi-resolution Network Modeling of Inhomogeneous Nerve Bundle for Magnetic Stimulation
A. K. RamRakhyani[1], F. Khan[1], D. J. Warren[1], Z. B. Kagan[1], R. A. Normann[1], and G. Lazzi[1]
[1]University of Utah, Salt Lake City, UT

P – Fri - B - 46
Extreme Pathways and In Silico Determined Steroidogenic Robustness
D. Hala[1] and D. Huggett[1]
[1]University of North Texas, Denton, TX

P – Fri - B - 47
Agent Based Modeling of Stretched Induced Lung Inflammation
A. Reynolds[1], J. Herbert[1], R. Heise[1], and R. Pidaparti[1]
[1]Virginia Commonwealth University, Richmond, VA

P – Fri - B - 48
An Agent-Based Model of Cancer Stem Cell Seeding
K-A. Norton[1] and A. S. Popel[1]
[1]Johns Hopkins University, Baltimore, MD

P – Fri - B - 49
Osmotic Pressure of Bovine Serum Albumin in the Presence of Calcium Chloride with Low Ionic Strength
D. Ornelas[1], N. U. Ozaki[1], and V. G. Rodgers[1]
[1]University of California, Riverside, Riverside, CA

P – Fri - B - 50
Linking Ciliary Metachronicity to Dynein Motion - A Multiscale Computational Model
S. Mitran[1]
[1]University of North Carolina, Chapel Hill, NC

P – Fri - B - 51
Multi-Scale Modeling of Electrical Stimulation of the Retina
K. Loizos[1], V. Bhola[1], and G. Lazzi[1]
[1]University of Utah, Salt Lake City, UT

Track: Bioinformatics, Computational and Systems Biology

Bioinformatics, Computational and Systems Biology

P – Fri - B - 52
Mining Association Rules for Neurobehavioral and Motor Disorders in Pediatric Cerebral Palsy
C. Cheng[1], C. D. Kaddi[1], T. G. Burns[2,3], and M. D. Wang[1,4]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Healthcare of Atlanta, Atlanta, GA, [3]Emory School of Medicine, Atlanta, GA, [4]Emory niversity, Atlanta, GA

P – Fri - B - 53
Physiological and Transcriptional Profiling of the *In Vivo* Response to Clostridium difficile Toxins Reveals Novel Toxin Effects and Markers of Disease
K. M. D'Auria[1], G. L. Kolling[1], G. M. Donato[1], C. A. Warren[1], M. C. Gray[1], E. L. Hewlett[1], and J. A. Papin[1]
[1]University of Virginia, Charlottesville, VA

P – Fri - B - 54
Database for Aerobic Capacity: Age, Gender, and Activity Level
T. J. Malkinson[1]
[1]SAIT Polytechnic, Calgary, AB, Canada

Track: Biomechanics

Balance, Gait and Locomotion

P – Fri - B - 55
Frequency Domain-Based Method for Diagnosis of Lower Extremity Dystonia
S. A. Go[1], K. Coleman-Wood[1], and K. R. Kaufman[1]
[1]Mayo Clinic, Rochester, MN

P – Fri - B - 56
CANCELLED BY AUTHOR

P – Fri - B - 57
Influence of Sex on the Knee Adduction Moment Impulse in Medial Compartment Knee Osteoarthritis
L. Q. Evertz[1], K. R. Kaufman[1], and M. M. Morrow[1]
[1]Mayo Clinic, Rochester, MN

P – Fri - B - 58
3-D Analysis of Metatarsophalangeal Joint in Normal Walking Using 4-segment Foot Model
B. Jeong[1], S. Kim[1], J. Son[1], and Y. Kim[1]
[1]Yonsei University, Wonju, Korea, Republic of

P – Fri - B - 59
Neuromuscular Control of Lumbar Spine in People with Chronic Low Back Pain
K. M. Sanchez[1]
[1]The University of Kansas, Lawrence, KS

POSTER SESSION **FriB**

Track: Biomechanics

Biomaterials and Devices

P – Fri - B - 60
Effects of Hydrogel Layer on Adsorption of Proteins and Lubrication Properties of Articular Cartilage
A. Takai[1], Y. Morita[1], and E. Nakamachi[1]
[1]Doshisha University, Kyotanabe, Japan

P – Fri - B - 61
Developing a Magnetic Tweezer Method for High-Resolution Multiplexed Single Molecule Protein Stretching Measurements
H. J. Mahmoud[1], K. Johnson[1], E. Clemmens[1], T. Olmstead[1], R. Kirkpatrick[2], and W. Thomas[1]
[1]University of Washington, Seattle, WA, [2]Harvard University, Cambridge, MA

P – Fri - B - 62
Quantitative Evaluation of Cell Adhesion Toward RAD16RGDS Peptide Coated Substrate
Y. Tagawa[1], Y. Morita[1], Y. Hirano[2], and E. Nakamachi[1]
[1]Doshisha University, Kyotanabe, Japan, [2]Kansai University, Suita, Japan

P – Fri - B - 63
Evaluation of Electrical Impedance Related to Matrix Composition of Articular Cartilage Using the Two-electrodes Impedance Measurement
Y. Sato[1], Y. Morita[1], and E. Nakamachi[1]
[1]Doshisha University, Kyotanabe, Japan

P – Fri - B - 64
Evaluation of Chondrocyte Damage Caused by Impact Hydrostatic Pressure
T. Yamaguchi[1], Y. Morita[1], and E. Nakamachi[1]
[1]Doshisha University, Kyotanabe, Japan

POSTER SESSION FriB

Track: Biomechanics

Cardiovascular Biomechanics

P – Fri - B - 65
Hemodynamics-Induced Autophagy Modulates Mitochondrial Redox Status in Vascular Endothelium
N. Jen[1], K. Fang[1], R. Li[1], D. Ann[2], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA, [2]City of Hope, Duarte, CA

P – Fri - B - 66
Human AAA Tissue in Strain Controlled Biaxial Loading: Histology and Anisotropic Mechanical Response
F. Pancheri[1], W. Lin[1], M. D. Iafrati[2], L. Dorfmann[1], and R. A. Peattie[2]
[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

P – Fri - B - 67
Direction-dependent Failure of the Porcine Ascending Thoracic Aorta in Peel and Lap Testing
H. P. Wagner[1], C. Witzenburg[1], S. B. Shah[1], J. M. Goodrich[1], and V. Barocas[1]
[1]University of Minnesota, Minneapolis, MN

P – Fri - B - 68
Numerical Study Using Cohesive Elements to Understand the Contribution of Strain Energy during Arterial Dissection
B. N. Merei[1], M. Sutton[1], S. Lessner[1], S. Avril[2], and P. Badel[2]
[1]University of South Carolina, Columbia, SC, [2]Ecole Nationale Superieure Des Mines De Saint Etienne, Saint Etienne, France

P – Fri - B - 69
Simulation of Atherosclerotic Plaque Delamination Using the Cohesive Zone Model
X. Leng[1], X. Chen[1], X. Deng[1], M. A. Sutton[1], and S. M. Lessner[2]
[1]University of South Carolina, Columbia, SC, [2]University of South Carolina School of Medicine, Columbia, SC

P – Fri - B - 70
VE-cadherin, ß-*cateninand* F-actin Expression in Endothelial Cells Exposed to Shear *In Vitro*
P. Tremblay[1] and L. Rouleau[1,2]
[1]Université de Sherbrooke, Sherbrooke, QC, Canada, [2]Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, QC, Canada

P – Fri - B - 71
Spline Based Microstructural Mapping for Soft Biological Tissues: Application to Aortic Valves
A. Aggarwal[1], V. Aguilar[1], G. Ferarri[2], J. Gorman[2], R. Gorman[2], and M. Sacks[1]
[1]UT Austin, Austin, TX, [2]UPenn, Philadelphia, PA

P – Fri - B - 72
Endothelial Cell Collective Migration is Enhanced on Soft Substrates
A. C. Canver[1] and A. Morss Clyne[1]
[1]Drexel University, Philadelphia, PA

P – Fri - B - 73
Measurement of Endothelial Permeability Under Chronic Applied Shear Stress in a Bioreactor
S. Gray[1] and P. Weinberg[1]
[1]Imperial College London, London, United Kingdom

P – Fri - B - 74
Cellular and Extracellular Mechanisms of Arterial Stiffness with Aging
Y. Z. Gao[1], R. J. Saphirstein[1], R. A. Cohen[2], B. Suki[1], and K. G. Morgan[1]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA

P – Fri - B - 75
Differential Response of Mesenchymal Stem Cells from Different Anatomic Locations to Long-term Culture and Mechanical Stimulation
M. Koobatian[1], M-S. Liang[1], D. Swartz[1], and S. Andreadis[1]
[1]State University of New York at Buffalo, Amherst, NY

P – Fri - B - 76
Reproducing the Mechanical Environment Associated with Vascular Disease in Endothelial Cell Studies
S. Zambrano[1], R. S. Thompson[1], and M. Moreno[1]
[1]Texas A&M University, College Station, TX

P – Fri - B - 77
Effect of Strain Rate and Cryopreservation Conditions on Elastic Modulus of Veins
S. A. Pasquesi[1] and S. S. Margulies[1]
[1]University of Pennsylvania, Philadelphia, PA

P – Fri - B - 78
A Method for Quantifying Fiber Orientation in Valvular Tissues with Polarized Spatial Frequency Domain Imaging
B. Yang[1], M. Sharma[1], M. R. Hill[1], J. Tunnell[1], and M. S. Sacks[1]
[1]University of Texas, Austin, TX

P – Fri - B - 79
Simulation of Endovascular Treatments for Cerebral Aneurysms
H. Babiker[1], B. Chong[2], J. Ryan[1], F. Gonzalez[3], and D. H. Frakes[1]
[1]Arizona State University, Tempe, AZ, [2]Mayo Clinic College of Medicine, Phoenix, AZ, [3]Thomas Jefferson Medical College, Philadelphia, PA

P = Poster Session
OP = Oral Presentation

P – Fri - B - 80
High-Resolution Characterization of Deformation and Material Parameters In Vein Specimens
A. D. Gomez[1], B. R. Watson[1], H. Li[1], I. S. Zhuplatov[1], Y-T. E. Shiu[1], and E. W. Hsu[1]
[1]University of Utah, Salt Lake City, UT

P – Fri - B - 81
Studying Atherosclerotic Plaque Formation Using In Vivo Imaging and Computational Fluid Dynamics
V. Mehta[1], S. M. Bovens[1], J. L. Tremoleda[1], M. Wylezinska-Arridge[1], W. Gsell[1], R. Pedrigi[1], and R. Krams[1]
[1]Imperial College London, London, United Kingdom

Track: Biomechanics

Clinical Biomechanics

P – Fri - B - 82
Support Vector Machines are Successful at Classifying Lower Extremity Muscle Fatigue during Walking Using Inertial Sensors
T. E. Lockhart[1], R. Soangra[1], and J. Zhang[1]
[1]Virginia Tech, Blacksburg, VA

P – Fri - B - 83
A Numerical Investigation on Thoracolumbar Vertebral Fractures Related to Falls
H. Zhao[1], H. Mao[2], Z. Yin[1], R. Chen[1], P. Begeman[2], X. Jin[2], F. Zhu[2], Z. Wang[1], and K. Yang[2]
[1]Institute of Surgery, Chongqing, China, People's Republic of, [2]Bioengineering Center, Detroit, MI

P – Fri - B - 84
Comparing Human Cadaveric Anterior Cruciate Ligament Biomechanical Properties During Knee Flexion Using Mechanical Testing System
V. D. Nguyen[1] and H. V. Vo[1]
[1]Mercer University, Macon, GA

Track: Biomechanics

Multiscale Modeling of Biomechanical Processes

P – Fri - B - 85
The Implementation of a Simplified Thorax Model to Further the Development of a Full Body Finite Element Model
N. A. Vavalle[1,2], D. P. Moreno[1,2], J. D. Stitzel[1,2], and F. S. Gayzik[1,2]
[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

P – Fri - B - 86
3-D Characterization of Axon Micro-kinematic Behavior in Tissue-Scale Trauma
S. Singh[1], V. Patel[1], A. Pelegri[1], and D. I. Shreiber[1]
[1]Rutgers University, Piscataway, NJ

P – Fri - B - 87
Multi-Scale Modeling of the Endothelial Glycocalyx Layer
M. Pikoula[1], C. F. Dewey,Jr[2], and Y. Ventikos[1]
[1]University of Oxford, Oxford, United Kingdom, [2]Massachusetts Institute of Technology, Cambridge, MA

P – Fri - B - 88
In Silico Osteocyte Network Demonstrates Cell's Ability to Control the Entire Remodeling Cycle
M. P. Duffy[1,2], D. Parkot[2], and H. Fischer[2]
[1]Massachusetts General Hospital, Boston, MA, [2]RWTH Aachen University Hospital, Aachen, Germany

P – Fri - B - 89
Pattern Recognition of Adipose Tissue in the Lumbar Para-Spinal Muscles Predicts Gender
N. V. Battaglia[1], M. R. Mahfouz[1,2], and R. D. Komistek[1]
[1]University of Tennessee, Knoxville, TN, [2]Institute of Biomedical Engineering, Knoxville, TN

Track: Biomechanics

Sports Biomechanics

P – Fri - B - 90
Characterization and Experimental Analysis of Concussive Impacts Experienced by Major League Baseball Catchers and Umpires
S. Rowson[1], J. A. Beyer[1], and S. M. Duma[1]
[1]Virginia Tech, Blacksburg, VA

P – Fri - B - 91
A Mechanical Evaluation of Ice Hockey Glove Performance
C. Maglaras[1], M. Posner[2], and A. Valdevit[3]
[1]Stevens Institute of Technology, Hoboken, NY, [2]NYU Langone Medical Center, New York, NY, [3]The Stevens Institute of Technology, Hoboken, NJ

P – Fri - B - 92
Biomechanical Simulation to Estimate the Load on the Ulnar Collateral Ligament during Pitching
J. Buffi[1] and W. Murray[1,2]
[1]Northwestern University, Chicago, IL, [2]Rehabilitation Institute of Chicago, Chicago

P – Fri - B - 93
Prediction of Vertical Ground Reaction Forces during Golf Swing of Professional Golfers
A. Choi[1], H. Kim[1], and J. H. Mun[2]
[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]Sungkyunkwan University, Suwon, Korea, Republic of

P – Fri - B - 94
A 3D Finite Element Model of Activated Muscle Tissue Explains Achilles Tendon Sliding During Eccentric Contraction of the Plantarflexors
G. G. Handsfield[1], L. A. Chernak[2], D. G. Thelen[2], and S. S. Blemker[1]
[1]University of Virginia, Charlottesville, VA, [2]University of Wisconsin, Madison, WI

Track: Biomechanics

Biomechanics

P – Fri - B - 95
Kinetics of Relaxed Volunteers, Braced Volunteers, and Hybrid III ATD in Low-Speed Frontal Sled Tests
S. M. Beeman[1], A. R. Kemper[1], M. L. Madigan[2], and S. M. Duma[1]
[1]Virginia Tech - Wake Forest University, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

P – Fri - B - 96
Response of Isolated Whole Human Spleens in Compression: Effect of Perfusion and Loading Rate
A. R. Kemper[1], A. C. Santago[2], J. D. Stitzel[3], J. L. Sparks[3], and S. M. Duma[1]
[1]Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA, [2]Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Winston-Salem, NC, [3]Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Winston-Salem, NC

P – Fri - B - 97
Torsion-Induced Traumatic Optic Neuropathy
M. A. Reilly[1], W. E. Sponsel[1,2], and R. D. Glickman[1,3]
[1]University of Texas at San Antonio, San Antonio, TX, [2]WESPA, San Antonio, TX, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX

P – Fri - B - 98
The Role of Fetal Offset in Removal Force During Human Delivery
A. Lehn[1] and M. C. Leftwich[1]
[1]The George Washington University, Washington, DC

P – Fri - B - 99
A Pre- and Post- Dilution Method with Filtration for Removing Cryoprotective Agents
L. Gong[1], W. Ding[1], X. Hu[1], S. Sun[2], and D. Gao[2]
[1]University of Science and Technology of China, Hefei, China, People's Republic of, [2]University of Washington, Seattle, WA

P – Fri - B - 100
A Non-Segmental Rabbit Mandible Model for Bone Regeneration
T. Guda[1], D. T. Silliman[2], A. Mongia[1], and P. BrownBaer[2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]US Army Institute of Surgical Research, Fort Sam Houston, TX

P – Fri - B - 101
On Mechanical Origins of Embryonic Brain Torsion
Z. Chen[1], Q. Guo[1,2], N. Forsch[1], and L. Taber[1]
[1]Washington University in St. Louis, Saint Louis, MO, [2]Fuzhou University, Fuzhou, China, People's Republic of

P – Fri - B - 102
Method for Estimation of Skull Table Thickness from Clinical CT
E. M. Lillie[1], J. E. Urban[1], A. A. Weaver[1], and J. D. Stitzel[1]
[1]Wake Forest University, Winston Salem, NC

P – Fri - B - 103
Finite Element Modeling of *In Vitro* Acupuncture Needling
H. Wagner[1], J. R. Hogate[2], D. Shreiber[2], and V. Barocas[1]
[1]University of Minnesota, Minneapolis, MN, [2]Rutgers University, Piscataway, NJ

P – Fri - B - 104
FEA Simulation Comparison for Crash Test Modeling of Frontal Impacts Using Hybrid-III ATD
C. M. Weaver[1], K. A. Danelson[1], A. J. Golman[1], and J. D. Stitzel[1]
[1]Wake Forest University, Winston-Salem, NC

Track: Biomedical Imaging and Optics

Imaging Applications (Cardiovascular, Neural, Orthopaedics, Cancer)

P – Fri - B - 105
Distribution and Compatibility of VCAM-1 Targeted Rod-Shaped Viral Nanoparticles in an Atherosclerosis Mouse Model
M. A. Bruckman[1], L. N. Randolph[1], K. Jiang[1], E. J. Simpson[2], L. G. Luyt[2], X. Yu[1], and N. F. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Western Ontario, London, ON, Canada

P – Fri - B - 106
Identification of Optical Changes Preceding Seizure Activation Using Optical Coherence Tomography
M. R. Haque[1], M. C. Oliveira[1], M. S. Islam[1], G. N. Filatov[1], M. S. Hsu[1], D. K. Binder[1], M. Bazhenov[1], and B. H. Park[1]
[1]University of California Riverside, Riverside, CA

P – Fri - B - 107
An Evaluation of Age-specific Atlas-based MRI Brain Segmentation in Premature Neonates
M. Liu[1], J. Scott[1], V. Chau[2], K. J. Poskitt[2], S. Miller[2], and C. Studholme[1]
[1]University of Washington, Seattle, WA, [2]University of British Columbia, Vancouver, BC, Canada

P – Fri - B - 108
Investigating *In Vivo* Fluorescence Imaging of Microdialysis Sampling
J. Haynie[1], C. Sides[1], T. Poseno[1], J. Havens[1], and J. A. Stenken[1]
[1]University of Arkansas, Fayetteville, AR

P – Fri - B - 109
Developing a Physical Model for Multi-Modal Mammographic Image Registration in the Temporal Domain
J. T. MacDonald[1] and S. Sharma[1]
[1]DeVry University Chicago, Chicago, IL

Track: Biomedical Imaging and Optics

Imaging Diagnostics and Sensing

P – Fri - B - 110
Octree-enhanced Variogram Analysis of Heterogeneity in Rat Lung CT Images of Health and Disease
R. Jacob[1], S. Kabilan[1], and J. Carson[1]
[1]Pacific Northwest National Lab, Richland, WA

P – Fri - B - 111
Glucose Detection in the Clinically Relevant Range by Raman Spectroscopy with Low Laser Power and Short Acquisition Time
K. Ma[1], J. T. Walsh[1], R. P. Van Duyne[1], and M. R. Glucksberg[1]
[1]Northwestern University, Evanston, IL

P – Fri - B - 112
Polymer-Free Optode Nanosensors for Dynamic, Reversible, and Ratiometric Physiological Sodium Imaging
T. Ruckh[1], A. Mehta[1], and H. Clark[1]
[1]Northeastern University, Boston, MA

P – Fri - B - 113
Optical Redox Imaging of Metabolic Dysfunction in Polycystic Ovary Syndrome
Z. Ghanian[1], S. Maleki[1], M. MasoudiMotlagh[1], Z. Bolandnazar[2], F. Assadi Porter[2], and M. Ranji[1]
[1]University of Wisconsin Milwaukee, Milwaukee, WI, [2]University of Wisconsin Madison, Madison, WI

P – Fri - B - 114
Blood Analysis on a Cellphone
H. Zhu[1], I. Sencan[1], J. Wong[1], S. Dimitrov[1], D. Tseng[1], and A. Ozcan[1]
[1]University of California Los Angeles, Los Angeles, CA

P – Fri - B - 115
Optical Coherence Tomography Imaged Ischemic Insult During Kidney Transplant
H-W. Wang[1], P. Andrews[2], A. Chen[2], and Y. Chen[1]
[1]University of Maryland, College Park, MD, [2]Georgetown University, Washington, DC

P – Fri - B - 116
Structural Imaging Biomarkers for Early Detection of Alzheimer's Disease
B. P. Printy[1], N. Verma[1], and M. K. Markey[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas MD Anderson Cancer Center, Houston, TX

POSTER SESSION FriB

P = Poster Session
OP = Oral Presentation

P – Fri - B - 117
An In-Depth Study of How Engineered Nanoparticles affect Cells, the True Effects of PEG and Variations with Synthesis Method
D. T. Stark[1], G. K. Das[1], and I. M. Kennedy[1]
[1]*University of California, Davis, CA*

P – Fri - B - 118
PAS/TIRPAS Refractometry: Refractive Index Measurement of Highly Absorbing Materials
B. S. Goldschmidt[1], S. Mehta[1], J. Mosley[1], C. Walter[1], P. J. Whiteside[1], H. Hunt[1], and J. Viator[1]
[1]*University of Missouri-Columbia, Columbia, MO*

P – Fri - B - 119
Development of a Novel Imaging Probe for Early Detection of Foreign Body Reactions
Y-T. Tsai[1], J. Zhou[1], H. Weng[1], E. N. Tang[1], D. Baker[1], and L. Tang[1]
[1]*University of Texas at Arlington, Arlington, TX*

P – Fri - B - 120
"Microfluidic Drifting" Based Sub-micron-precision, Three-dimensional (3D) Hydrodynamic Focusing via Single-layered pPlaner Microfluidic Device
A. A. Nawaz[1], X. Mao[1], J. Rufo[1], L. Wang[2], and T. J. Huang[1]
[1]*Pennsylvania State University, State College, PA,* [2]*Ascent Bionano, State College, PA*

P – Fri - B - 121
Testing and Calibration of a Novel Portable Multi-channel Near Infrared Spectroscopy System
M. N. Kostic[1], J. Garritano[1], T. Vartanian[1], and W. S. Grundfest, M.D., FACS[1]
[1]*University of California, Los Angeles, CA*

Track: Biomedical Imaging and Optics

Novel Approaches to Biomedical Imaging

P – Fri - B - 122
New Phantoms for Evaluating micro-Magnetic Resonance Elastography
B. L. Schwartz[1], S. Kerwell[1], V. Sandoval[1], K. M. Shah[1], K. Yasar[1], and R. L. Magin[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P – Fri - B - 123
Towards the Identification of Shape Biomarker(s) for Alzheimer's Disease (AD) based on a Spectral Shape Analysis Framework
H. Xu[1], P. Zhang[1], and J. Liu[1]
[1]*Ohio University, Athens, OH*

P – Fri - B - 124
An Identification Aystem for Unstained Cells Using Mie Scattering
K. Tomita[1] and K. Tsukada[1,2]
[1]*Graduate School of Fundamental Science and Technology, Keio University, Yokohama, Japan,* [2]*Department of Applied Physics and Physical-Informatics, Faculty of Science and Technology, Keio Uni, Yokohama, Japan*

P – Fri - B - 125
Development and Modeling of a Wedge Phantom for Label-free Quantification of Hemoglobin Using Hyperspectral Microscopy
D. Stark[1], J. Lee[2], and J. Hwang[1]
[1]*National Institute of Standards and Technology, Boulder, CO,* [2]*Korea Research Institute of Standards and Science, Daejeon, Korea, Republic of*

P – Fri - B - 126
Development of Ultrasound-switchable Fluorescence Imaging Contrast Agents with Polarity-sensitive Dyes and Thermo-sensitive Polymers
B. Cheng[1,2], M. Wei[1,2], Y. Liu[1,2], H. Pitta[1,2], K. T. Nguyen[1,2], Y. Hong[1,2], and B. Yuan[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center at Dallas, Dallas, TX*

P – Fri - B - 127
Open Cavity Based Optoacoustic Sensor Enhanced with High-Compressibility Coupling Media
R. Peterson[1], S. Solis[1], B. Zhang[1], H. Huang[1], and J. Ye[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Fri - B - 128
Novel Use of Ultrasound to Characterize Strain Rates in Mock Heart Ventricles
S. K. Metzger[1], B. A. Schmitt[1], K. T. Carnahan[1], D. E. Carver[1], D. B. Reynolds[1], and M. P. Anstadt[1]
[1]*Wright State University, Dayton, OH*

P – Fri - B - 129
Acoustic Radiation Force Optical Coherence Elastography For Assessing Tissue Biomechanical Properties
R. Li[1], W. Qi[1], T. Ma[2], Q. Zhou[2], K. Shung[2], and Z. Chen[1]
[1]*University of California, Irvine, Irvine, CA,* [2]*University of Southern California, Los Angeles, CA*

Track: Biomedical Imaging and Optics

Optical Imaging and Microscopy

POSTER SESSION **FriB**

P – Fri - B - 130
Widefield Imaging of Changes in Glucose Metabolism and Extracellular pH in Head and Neck Cancer
Z. Luo[1], M. Loja[1], G. Farwell[1], R. Gandour-Edwards[1], and N. Nitin[1]
[1]*UC Davis, Davis, CA*

P – Fri - B - 131
3D Characterization of the Fibronectin Matrix in the Embryonic Heart Using Whole-Mount Confocal Microscopy
Q. Jallerat[1] and A. W. Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P – Fri - B - 132
Raman Micro-Spectroscopy Combined with Advanced Data Mining Methods for Improved Pre-Clinical Anti-Cancer Agent Development and Screening
M. B. Fenn[1,2], M. Guarracino[2,3], S. Calhoun[2], J. Pi[2], M. Ferraro[3], and P. M. Pardalos[2]
[1]*Florida Institute of Technology, Melbourne, FL,* [2]*University of Florida, Gainesville, FL,* [3]*National Research Council, Naples, Italy*

P – Fri - B - 133
Characterizing Collagen Fiber Angles in Mouse Aortas Using Second-Harmonic Generation Microscopy
S. R. Watson[1], M. A. Sutton[1], and S. M. Lessner[1]
[1]*University of South Carolina, Columbia, SC*

P – Fri - B - 134
Image Correlation Spectroscopy of Multiphoton Images Predicts Mechanics During Decellularization of Cardiac Tissue
N. J. Merna[1], C. Robertson[1], A. La[1], and S. C. George[1]
[1]*University of California, Irvine, Irvine, CA*

P – Fri - B - 135
High Speed Dual-wavelength Photoacoustic Microscopy with an Acousto-optic Tunable Filter
J. P. Dumas[1], A. K. Loya[1], and T. Buma[1]
[1]Union College, Schenectady, NY

P – Fri - B - 136
Dual-wavelength Photoacoustic Microscopy at 532 and 1064 nm with a Cost-effective Microchip Laser
A. K. Loya[1], J. P. Dumas[1], and T. Buma[1]
[1]Union College, Schenectady, NY

P – Fri - B - 137
A Large Field-of-View Nonlinear Microscope for Biological Imaging
J. J. Field[1], M. D. Young[2], C. Eitel[1], S. Tobet[1], J. A. Squier[2], and R. A. Bartels[1]
[1]Colorado State University, Fort Collins, CO, [2]Colorado School of Mines, Golden, CO

P – Fri - B - 138
Interferometric Scattering Measurements of Organelle Sizes in Single Cells
R. Qian[1], D. W. Shipp[1], and A. J. Berger[1]
[1]University of Rochester, Rochester, NY

P – Fri - B - 139
Modular Automated Optical Tweezers
B. Reed[1], B. Jassemnejad[1], and G. Xu[1]
[1]University of Central Oklahoma, Edmond, OK

P – Fri - B - 140
Optical Measurement of Muscle Oxygenation Identifies Oxygen Insufficiency in Hemorrhage and Hypoxia
L. S. Arakaki[1], W. A. Ciesielski[1], D. M. McMullan[1], and K. A. Schenkman[1]
[1]University of Washington, Seattle, WA

POSTER SESSION FriB

P – Fri - B - 141
In Vivo Imaging of Cerebral Edema with Optical Coherence Tomography
C. Reynolds[1], M. M. Eberle[1], J. I. Szu[1], M. S. Hsu[1], D. K. Binder[1], and B. Park[1]
[1]University of California Riverside, Riverside, CA

P – Fri - B - 142
Development of a Color-Matched Esophagus Phantom featuring Autofluorescence
V. Hou[1], C. Yang[1], L. Nelson[1], and E. Seibel[1]
[1]University of Washington, Seattle, WA

Track: Biomedical Imaging and Optics

Biomedical Imaging and Optics

P – Fri - B - 143
Automated Segmentation of Nose using Bayesian Filter
J. Lee[1,2], H. Vikalo[1], and M. K. Markey[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas MD Anderson Cancer Center, Houston, TX

P – Fri - B - 144
Development of a Whole-body-mouse Statistical Shape Atlas for Obesity Research
B. Shi[1], J. Liu[1], D. Berryman[1], E. List[1], B. Kelder[1], and J. Kopchick[1]
[1]Ohio University, Athens, OH

P – Fri - B - 145
Development and Application of an Ultrafast Laser Microsurgery Platform to Precisely Remove Cilia
A. E. Felder[1], L. Soetedjo[1], H. Jin[1], and J. Cheng[1]
[1]University of Illinois at Chicago, Chicago, IL

P – Fri - B - 146
Optical and Mechanical Characterization of Collagen Hydrogels
E. Y. Elenes[1], M. N. Rylander[1], and C. G. Rylander[1]
[1]Virginia Polytechnic Institue and State University, Blacksburg, VA

Track: Device Technologies and Biomedical Robotics

Cell Adhesion

P – Fri - B - 147
Adhesion Proteins in Confined Geometries: Does Dimensionality Matter?
D. Leckband[1], N. Shashikanth[2], and J. Newhall[2]
[1]University of Illinois, Champaign, IL, [2]University of Illinois, Urbana, IL

P – Fri - B - 148
On the Activation of Integrin IIb 3: "Inside-Out" and "Outside-In" Perspectives
M. Mehrbod[1] and M. R. Mofrad[1]
[1]University of California, Berkeley, Berkeley, CA

P – Fri - B - 149
Matrix Adhesiveness and Force Generation in Microvascular Network Formation
A. Garrett[1], K. Gooch[2], and A. Sarang-Sieminski[1]
[1]Olin College, Needham, MA, [2]Ohio State University, Columbus, OH

P – Fri - B - 150
OB-cadherin is a Master Regulator of Mesenchymal Stem Cell Differentiation into Smooth Muscle Cells and Development of Contractile Function *In Vivo*
S. Alimperti[1], H. You[2], T. A. George[3], S. Agarwal[3], and S. Andreadis[2]
[1]SUNY at Buffalo, Buffalo, NY, [2]SUNY at Buffalo, Amherst, NY, [3]Baylor College of Medicine, Houston, TX

P – Fri - B - 151
Micro/Nanoscale Spatial Regulation of Platelet -Granule Secretion and Platelet Adhesion
Y. Sakurai[1,2], Y. Qiu[2], J. L. Fitch-Tewfik[3], B. Ahn[1,2], L. Ding[1], P. W. Spearman[1], R. Flaumenhaft[3], and W. A. Lam[1,2]
[1]Children's Healthcare of Atlanta/Emory University School of Medicine, Atlanta, GA, [2]Georgia Tech and Emory University, Atlanta, GA, [3]Beth Israel Deaconess Medical Center, Boston, MA

P – Fri - B - 152
Simluations Relate Cellular Adhesion to Molecular Properties
W. E. Thomas[1], M. Whitfield[1,2], and O. Yakovenko[1]
[1]University of Washington, Seattle, WA, [2]MIT, Boston, MA

P – Fri - B - 153
Integrated Cell Migration Model incorporating Spatiotemporal Kinetics of Focal Adhesion Assembly and Disassembly
M-C. Kim[1], C. Tan[1,2], J. Chan[1,3], L. Griffith[1,4], R. Kamm[1,4], and H. Asada[1,4]
[1]Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, [2]National University of Singapore, Singapore, Singapore, [3]Duke-NUS - Graduate Medical School Singapore, Singapore, Singapore, [4]Massachusetts Institute of Technology, Cambridge, MA

P – Fri - B - 154
Efficient Self-contact Induced Membrane Fusion Depends on E-cadherin
G. Sumida[1] and S. Yamada[1]
[1]University of California, Davis, Davis, CA

P – Fri - B - 155
Comparative Endothelial Cell Response on Micro- & Nanopatterned Titanium & Silicon
P. Vandrangi[1], S. C. Gott[1], V. G. Rodgers[1], and M. P. Rao[1]
[1]University of California-Riverside, Riverside, CA

P = Poster Session
OP = Oral Presentation

P – Fri - B - 156
Cell Adhesion on Micropatterned Surfaces
Y. Liu[1] and J. Hu[1]
[1]*Lehigh University, Bethlehem, PA*

P – Fri - B - 157
Cells Sense and Respond to Substrate Viscoelasticity
A. Kourouklis[1], R. Lerum[1], and H. Bermudez[1]
[1]*University of Massachusetts, Amherst, MA*

P – Fri - B - 158
Stem Cell Enrichment with Selectin Receptors: Mimicking the pH Environment of Trauma
T. M. Cao[1], M. J. Mitchell[1], J. L. Liesveld[2], and M. R. King[1]
[1]*Cornell University, Ithaca, NY,* [2]*University of Rochester, Rochester, NY*

Track: Cellular and Molecular Bioengineering

Mechanotransduction

P – Fri - B - 159
Mouse and Human CD4+ T Cells Exhibit Opposite Responses to Substrate Rigidity
E. Judokusumo[1], R. O'Connor[2], M. Milone[2], and L. C. Kam[1]
[1]*Columbia University, New York, NY,* [2]*University of Pennsylvania, Philadelphia, PA*

P – Fri - B - 160
Submillisecond Pulses of Fluid Shear Stress Suppress Chemoattractant-Induced Neutrophil Activation
M. J. Mitchell[1] and M. R. King[1]
[1]*Cornell University, Ithaca, NY*

P – Fri - B - 161
Role of the Nuclear Lamina on Endothelial Glucocorticoid Receptor Translocation and Transcription
A. Nayebosadri[1] and J. Y. Ji[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University Purdue University Indianapolis, Indianapolis, IN*

P – Fri - B - 162
Shear Stress Attenuates Multiple Apoptosis Pathways by Modulating Endothelial DAPK Expression
K. Rennier[1] and J. Y. Ji[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University - Purdue University Indianapolis, Indianapolis, IN*

P – Fri - B - 163
Modulation of Nuclear Shape by Substrate Rigidity
D. Lovett[1], N. Shekhar[1], J. A. Nickerson[2], K. J. Roux[3], and T. P. Lele[1]
[1]*University of Florida, Gainesville, FL,* [2]*University of Massachusetts Medical School, Worcester, MA,* [3]*Sanford Children's Health Research Center, University of South Dakota, Sioux Falls, SD*

P – Fri - B - 164
Force Induced Longer Lifetime of TCR-pMHC Engagement Determines Thymic Selection
J. Hong[1], B. Evavold[2], and C. Zhu[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P – Fri - B - 165
Endogenous Nitric Oxide Regulates Calcium Homeostasis in Sheared Vascular Endothelial Cells
C. G. Scheitlin[1], C. J. Lloyd[1], M. Ziolo[1], and B. R. Alevriadou[1]
[1]*The Ohio State University, Columbus, OH*

P – Fri - B - 166
CANCELLED BY AUTHOR

P – Fri - B - 167
Characterizing the Cooperation Between ErbB2 Signaling and ECM Stiffness in Driving Breast Tumor Progression
A. Kurup[1], T. Tlsty[2], C. Yu[1], and E. Botvinick[1]
[1]*University of California, Irvine, Irvine, CA,* [2]*University of California, San Francisco, San Francisco, CA*

P – Fri - B - 168
Effect of Shear Stress and Substrate on Endothelial Wound Recovery, Migration Speed and Direction
M. F. Mavi[1] and J. Y. Ji[2]
[1]*Indiana University Purdue University Indianapolis, Indianapolis, IN,* [2]*Indiana University Purdue University Indianapolis, Indianapolis, IN, Indianapolis, IN*

P – Fri - B - 169
The Effects of Dynamic Shear Stress and Platelets on Endothelial Cell ERK1/2 and NF-kB Activation
F. Rouf[1], D. A. Rubenstein[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

P – Fri - B - 170
Spatially-segregated Engagement of Multiple Integrin Types Alters Mechanotransduction
S. R. Polio[1], D. Stamenovic[1], and M. L. Smith[1]
[1]*Boston University, Boston, MA*

P – Fri - B - 171
The Untapped Effects of Tunable Low Intensity Pulsed Ultrasound on Human Bone Marrow Mesenchymal Stem Cell Functions
C. M. O'Brien[1], M. Aliabouzar[1], W. Zhu[1], K. Sarkar[1], and L. G. Zhang[1]
[1]*The George Washington University, Washington, DC*

P – Fri - B - 172
Non-Affine Fiber Network Model Predicts Long-Range Stress Propagation Through Fibrous Gels
M. Aghvami[1], M. S. Rudnicki[2], H. A. Cirka[2], H. Zarkoob[1], K. L. Billiar[2], and E. A. Sander[1]
[1]*University of Iowa, Iowa City, IA,* [2]*WPI, Worcester, MA*

P – Fri - B - 173
Combinatorial Effects of Matrix Stiffness and Soluble Epidermal Growth Factor (EGF) on Keratinocyte Behavior
Y. Fu[1], P. K. Kreeger[1], and K. Masters[1]
[1]*University of Wisconsin-Madison, Madison, WI*

P – Fri - B - 174
ECM Stiffness Regulates the TGF Pathway to Induce Chondrocyte Lineage Selection of hMSCs
J. Rys[1,2], C. DuFort[2], J. Allen[2], and T. Alliston[2]
[1]*UC Berkeley - UCSF, Berkeley, CA,* [2]*UCSF, San Francisco, CA*

P – Fri - B - 175
The Role of Fibronectin Signaling in Epithelial to Mesenchymal Transition
L. A. Griggs[1], D. Berrie[1], and C. Lemmon[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P – Fri - B - 176
Endothelial Dynamics During Sprouting Morphogenesis
D. Bazou[1], J. Song[1], and L. Munn[1]
[1]*MGH, Harvard Medical School, Boston, MA*

P – Fri - B - 177
Adaptation of ERK Signaling Relative to Collagen Transcription in Response to Continuous Versus Intermittent Cyclic Stretching
J. B. Schmidt[1], K. Chen[1], and R. T. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

P – Fri - B - 178
Simulations Involving Three-Dimensional Cell Monolayers in a Parallel Plate Flow Channel Yields Non-Uniform Shear Stress Distributions over Cell Surfaces
D. R. Peterson[1], S. S. Nidadavolu[1], and S. Kudernatsch[1]
[1]University of Connecticut Health Center, Farmington, CT

P – Fri - B - 179
Fractal Dimension of Microtubules: Effects of Stretch Pattern
C. L. Oliveira[1], H. Parameswaran[1], E. Bartolak-Suki [1], and B. Suki[1]
[1]Boston University, Boston, MA

P – Fri - B - 180
Deletion of Primary Cilia Ift88 Gene from Osteocytes Reduces Loading-Induced Bone Formation
A. M. Nguyen[1] and C. R. Jacobs[1]
[1]Columbia University, New York, NY

P – Fri - B - 181
Cell Shape Regulates Epithelial-Myofibroblast Transition
J. W. O'Connor[1] and E. W. Gomez[1]
[1]The Pennsylvania State University, University Park, PA

P – Fri - B - 182
Effect of Complex Substrate Composition on the Ability of Mesenchymal Stem Cells to Sense Stiffness
J. R. Gershlak[1] and L. D. Black[1]
[1]Tufts University, Medford, MA

P – Fri - B - 183
Tensile Forces Drive Collective Cell Migration Through Three-Dimensional Extracellular Matrices
M. J. Siedlik[1], N. Gjorevski[1], A. Piotrowski[1], V. D. Varner[1], and C. M. Nelson[1,2]
[1]Department of Chemical and Biological Engineering, Princeton University, Princeton, NJ, [2]Department of Molecular Biology, Princeton University, Princeton, NJ

P – Fri - B - 184
Enhanced Contractility with DeoxyATP and EMD 57033 Leads to Reduced Myofibril Structure and Twitch Power in Neonatal Cardiomyocytes
M. L. Rodriguez[1], M. Regnier[1], and N. J. Sniadecki[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 185
ColVI and Dcn's Control Over Cytoskeletal Reorganization To Load in Differentiating hMSCs
J. D. Twomey[1] and A. H. Hsieh[1,2]
[1]University of Maryland, College Park, MD, [2]University of Maryland, Baltimore, MD

P – Fri - B - 186
Analysis of Cellular Rigidity Sensing Using a Cell-on-a-Chip Assay
S. Wong[1], W-H. Guo[1], and Y-L. Wang[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P – Fri - B - 187
A Quantitative Analysis of Superoxide Dismutase and Catalase Augmented Oxidative Stress in Hyperglycemic Environment
J. Chen[1], H. Patel[1], K. C. Das[2], and M. Kavdia[1]
[1]Wayne State University, Detroit, MI, [2]Texas Tech University Health Sciences Center, Lubbock, TX

P – Fri - B - 188
Changes in Breast Epithelial Cell Morphology in Three-Dimensional *in vitro* Cell Culture Due to Mechanical Environmental Cues
D. N. Joaquin[1], M. Grigola[1], A. Tippur[2], C. Dyck[1], A. M. Nardulli[1], Y. S. Ziegler[1], S. Clare[3], and K. Hsia[1]
[1]University of Illinois Urbana-Champaign, Urbana, IL, [2]Georgia Institute of Technology, Atlanta, GA, [3]Indiana University School of Medicine, Indianapolis, IN

P – Fri - B - 189
Novel Method to Generate Surrogate Three-dimensional Cell Monolayer Surfaces for Use in Computational Fluid Dynamic Simulations
C. A. Tokarz[1], S. Kudernatsch[1], S. S. Nidadavolu[1], and D. R. Peterson[1]
[1]University of Connecticut Health Center, Farmington, CT

Track: Drug Delivery

Cancer Drug Delivery

P – Fri - B - 190
Designing Nanoparticles to cross the Blood Brain Barrier
S. V. Lopez[1], M. Navati[1], P. Nacharaju[1], M. Silva[1], J. Friedman[1], and D. Spray[1]
[1]Albert Einstein College of Medicine, Bronx, NY

P – Fri - B - 191
Thermo-sensitive Fluorescent Theranostic Nanoparticles For Cancer Therapy
P. Jadeja[1,2], Z. Xie[3], J. U. Menon[1,2], J. Yang[3], and K. T. Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]UT Southwestern Medical Center, Dallas, TX, [3]Pennsylvania State University, University Park, PA

P – Fri - B - 192
Development of Microneedles for Treatment of Oral Cancers
Y. Ma[1], Z. Luo[2], W. Liu[3], N. Nitin[2], and H. S. Gill[1]
[1]Texas Tech University, lubbock, TX, [2]University of California at Davis, Davis, CA, [3]Davis Senior High School, Davis, CA

P – Fri - B - 193
Comparison of Tobacco Mosaic Virus Rods and Cowpea Mosaic Virus Icosahedrons in a Spheroid Model
K. L. Lee[1], L. Hubbard[1], S. Hern[1], M. Gratzl[1], and N. F. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

P – Fri - B - 194
Attachment and Uptake of Pendant-Chain Delivery System for Cancer Under Physiological Flow
K. Shah[1], D. Crowder[1], R. Calderon[1], and Y. Yun[1]
[1]The University of Akron, Akron, OH

P – Fri - B - 195
Drug Encapsulated Polymeric Microspheres in a Temperature Responsive Aerosolized Spray for a Localized, Sequential Brain Tumor Therapy
J. A. Floyd[1], A. Galperin[1], R. Ramakrishna[1], R. Rostomily[1], and B. Ratner[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 196
Self-assembled Micelles of RAFT-synthesized Polymers: *In Vitro* Characterization of Hydrophobic Drug Delivery
M. P. Baranello[1], E. M. Bux[1], and D. Benoit[1]
[1]University of Rochester, Rochester, NY

P – Fri - B - 197
Folic Acid-Conjugated Lipid-Polymer Hybrid Nanoparticles for Targeted Delivery of Chemotherapy
E. Palmer[1] and T. Porter[1]
[1]Boston University, Boston, MA

P – Fri - B - 198
Preparation and Characterization of PCL-PEG-PCL Nanoparticles for Paclitaxel Delivery
L. Zhang[1], H. Sun[1], C. Song[1], and D. Kong[1]
[1]Institute of Biomedical Engineering, CAMS and PUMC, Tianjin, China, People's Republic of

P – Fri - B - 199
Delivery of Therapeutics to Treat Angiogenesis in Disease
E. Rivera-Delgado[1] and H. A. von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

POSTER SESSION FriB

P = Poster Session
OP = Oral Presentation

P – Fri - B - 200
A Multi-targeted Drug Delivery Vehicle Approach that Targets, Triggers and Thermally Ablates HER2+ Breast Cancer Cells
J-O. You[1,2], P. Guo[1,3], and D. T. Auguste[1,3]
[1]Harvard University, Cambridge, MA, [2]Chungbuk National University, Cheongju, Korea, Republic of, [3]The City College of New York, New York, NY

P – Fri - B - 201
Tumor Brachytherapy by an Injectable, Radioactive Polypeptide Conjugate that Coacervates at Body Temperature
J. L. Schaal[1], X. Li[1], J. Bhattacharyya[1], M. Zalutsky[1], A. Chilkoti[1], and W. Liu[1]
[1]Duke University, Durham, NC

P – Fri - B - 202
Improving PhotoDynamic Efficiency by Synthesis of Folic Acid and Protoporphyrin IX Conjugated Persistent Luminescence Nanoparticles as a New Drug Carrier
H. Homayoni[1], M. Hossu[2], X. Zou[2], K. Jiang[2], and W. Chen[2]
[1]Joint Biomedical Engineering Program, UT Arlington, UT Southwestern Medical Center, Arlington, Dallas, TX, [2]UT Arlington, Physics, Arlington, TX

Track: Drug Delivery

Nucleic Acid Delivery

P – Fri - B - 203
Insight into the Cellular Uptake and Endosmal Release of Lipid Nanoparticle Based Delivery of siRNA/miRNA Using Novel Probes
X. Wang[1], B. Yu[1], C. Zhou[1], Z. Yang[1], R. J. Lee[1], and J. L. Lee[1]
[1]The Ohio State University, Columbus, OH

P – Fri - B - 204
Development of a Novel Multifunctional Nanocarrier for siRNA Delivery
M. Gujrati[1], A. Malamas[1], T. Shin[1], and Z-R. Lu[1]
[1]Case Western Reserve University, Cleveland, OH

P – Fri - B - 205
Reducible Star Polymers for Gene Delivery
J-K. Y. Tan[1], H. Wei[1], J. G. Schellinger[1], and S. H. Pun[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 206
Identification of Adenovirus-Binding Peptides for Use in Self-Assembling Polymer Shields
C. E. Wang[1], A. Lieber[1], D. Shayakhmetov[1], and S. H. Pun[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 207
Ballon Perfusion Novel Bi-layer Nanoparticles to Inhibition Restenosis in Animal Models
J. Yang[1], H. Xie[2], Z. Yang[1], Y. Chen[1], C. Wang[1], Y. Zeng[2], Q. Fang[2], X. Leng[1], D. Kong[1], H. Sun[1], and C. Song[1]
[1]Institute of Biomedical Engineering, Chinese Academy of Medical Science & PUMC, Tianjin, China, People's Republic of, [2]Department of Cardiology, Peking Union Medical College Hospital, Beijing, China, People's Republic of

P – Fri - B - 208
The Dendritic Cell Response to mRNA Transfection
K. Loomis[1], S. Pai[1], and R. Bellamkonda[1]
[1]Georgia Institute of Technology, Atlanta, GA

P – Fri - B - 209
Chitosan Gene Nanoparticles Coated Endovascular Stents: A New Approach for Local Gene Delivery of Restenosis
D. Zhu[1], C. Song[1], D. Kong[1], and X. Leng[1]
[1]Institute of Biomedical Engineering, Chinese Academy of Medical Sciences & Peking Union Medical College, Tianjin, China, People's Republic of

P – Fri - B - 210
Self-Assembled Nanoparticles of Enzymatically Generated Polymeric siRNA
K. E. Shopsowitz[1], J. Deng[1], S. W. Morton[1], and P. T. Hammond[1]
[1]Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA

P – Fri - B - 211
Preparation and Optimization of Dendrimer Functionalized Gold Nanoparticles for Gene Delivery
E. R. Figueroa[1], A. Y. Lin[1], S. J. Yan[1], and R. Drezek[1]
[1]Rice University, Houston, TX

P – Fri - B - 212
Influence of Polyplex Morphology on Cellular Uptake, Intracellular Trafficking, and Transgene Expression
J. Shi[1], J. L. Choi[1], B. Chou[1], R. N. Johnson[1], J. G. Schellinger[1], and S. H. Pun[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 213
Multifunctional DNAzyme Delivery Based on Graphene Oxide for Simultaneous Detection and Knockdown of Hepatitis C Virus NS3 Gene
S. Kim[1], S-R. Ryoo[1], and D-H. Min[1]
[1]Seoul National University, Gwanak-gu, Seoul, Korea, Republic of

P – Fri - B - 214
An Improved Strategy for the Loading, Characterization, and Controlled Delivery of Peptide Nucleic Acid Therapeutics
K. R. Beavers[1], J. W. Mares[1], B. C. Evans[1], S. M. Weiss[1], and C. L. Duvall[1]
[1]Vanderbilt University, Nashville, TN

Track: Drug Delivery

Responsive Delivery Systems

P – Fri - B - 215
Release of Anti-inflammatory Therapeutics from Thermosensitive Nanoparticles Encapsulated in Water-Soluble Polymer Films
A. Lawrence[1], R. A. Scott[1], and A. Panitch[1]
[1]Purdue University, West Lafayette, IN

P – Fri - B - 216
Development and Characterization of Biodegradable Multi-functional Nanoparticles for Breast Cancer Treatment
D. Kaur[1,2], J. U. Menon[1,2], and K. T. Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]UT Southwestern Medical Center, Dallas, TX

P – Fri - B - 217
Development and Optimization of a pH-responsive Hydrogel System for the Oral Delivery of High Molecular Weight Protein Therapeutics
S. D. Steichen[1], E. J. Fischer[1], and N. A. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

P – Fri - B - 218
Injectable Nanocomposite Hydrogel System for Skin Cancer Treatment
T. N. Hill[1], P. Tambe[1], J. Menon[1], J. Yang[1], and K. Nguyen[1]
[1]University of Texas at Arlington, Arlington, TX

P – Fri - B - 219
Vascular Smooth Muscle Responses Under Influence of Stretch and Biological Factors
T. N. Hill[1], P. Tambe[1], P. Jadeja[1], T. Kadapure[1], J-C. Chiao[1], C-J. Chuong[1], and K. Nguyen[1]
[1]University of Texas at Arlington, Arlington, TX

P – Fri - B - 220
Photothermally Controlled Gene/Drug Delivery Using a Functionalized Graphene Oxide
H. Kim[1] and W. J. Kim[1]
[1]POSTECH, Pohang, Korea, Republic of

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

P – Fri - B - 221
Long-Wavelength Light Responsive Mesoporous Silica Nanoparticle Driven by Activated Photosensitizer
J. Lee[1], K. Singha[1], and W. Kim[1]
[1]*POSTECH, Pohang, Korea, Republic of*

P – Fri - B - 222
Structural Attributes Affecting Peptide Entrapment in PEO Brush Layers
X. Wu[1], M. P. Ryder[1], M. C. Lampi[1], K. F. Schilke[1], and J. McGuire[1]
[1]*Oregon State University, Corvallis, OR*

P – Fri - B - 223
Coating Polymeric Nanoparticles with Chitosan-Alginate as an Enteric Coating for Colon Specific Drug Delivery
G. L. Mosley[1], S. K. Cheng[1], D. S. Quinlan[1], C. T. Liu[1], P. M. Nafisi[1], D. Das[1], G. Fang[1], and D. T. Kamei[1]
[1]*UCLA, Los Angeles, CA*

P – Fri - B - 224
Controlled Release of Antineoplastic Agents to Brain Tumors Using Conducting Polymer Microcavities
P. Fattahi[1,2], A. Borhan[1], and M. R. Abidian[1,2]
[1]*Chemical Engineering, University Park, PA,* [2]*Bioengineering, University Park, PA*

Track: Neural Engineering

Deep Brain Stimulation

POSTER SESSION FriB

P – Fri - B - 225
Charge Steering DBS Accommodates Non-optimal Targeting
A. Willsie[1] and A. D. Dorval[1]
[1]*University of Utah, Salt Lake City, UT*

P – Fri - B - 226
AC Stimulated Schwann Cells Increase NGF Secretion and Promote Greater Neurite Outgrowth
L. Zhang[1], A. N. Koppes[1], and D. M. Thompson[1]
[1]*RPI, Troy, NY*

P – Fri - B - 227
Exploring the Mechanisms of Response Time and Action Suppression Deficits Correlated With Parkinson's Disease and Deep Brain Stimulation
C. J. Anderson[1] and A. D. Dorval, II[1]
[1]*University of Utah, Salt Lake City, UT*

Track: Neural Engineering

Engineering the Neural Environment

P – Fri - B - 228
Elucidation of Fast Axonal Transport in Neurons by Using a Novel Axon Isolation Cell Culture Chamber
H. H. Caicedo[1], G. Pigino[1], and S. Brady[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P – Fri - B - 229
The Effect of Surface Roughness of Flexible Neural Implants On Glia and Neuron Viability
M. L. Khraiche[1,2], S. Damle[1], P. Nguyen[1], S. Reiss[1], G. A. Silva[1,2], and G. Cauwenberghs[1,2]
[1]*UCSD, La Jolla, CA,* [2]*Institute of Engineering in Medicine, La Jolla, CA*

P – Fri - B - 230
Isolated Treatment of CNS Axons and Somata Reveals a Complex Elongation Response to Netrin-1
A. Blasiak[1], D. Kilinc[1], and G. U. Lee[1]
[1]*University College Dublin, Dublin, Ireland*

P = Poster Session
OP = Oral Presentation

P – Fri - B - 231
Neuronal Distribution Around a Biodissolvable Delivery Vehicle for the Insertion of an Ultra-compliant Neural Probe
Z. Gugel[1], T. D. Kozai[1], P. J. Gilgunn[2], R. Khilwani[2], O. B. Ozdoganlar[2], G. K. Fedder[2], D. J. Weber[1], X. Li[1], and X. T. Cui[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA*

P – Fri - B - 232
Directed Neuronal Growth Using Magnetic Gradients and Nanoparticles
A. Kunze[1], P. Tseng[1], and D. DiCarlo[1]
[1]*UCLA, Los Angeles, CA*

P – Fri - B - 233
In Vitro Modeling for Central Nervous System Migratory Disorders
A. R. Short[1], C. Czeisler[1], T. Nelson[1], J. Lannutti[1], J. Winter[1], and J. Otero[1]
[1]*The Ohio State University, Columbus, OH*

P – Fri - B - 234
Development of Multi-taxis Environment in a Microfluidic Platform to Investigate the Activation and Migration Pattern of Microglia
S. Ahn[1], J-S. Park[1], S. Song[1], and J. H. Shin[1]
[1]*KAIST, Daejeon, Korea, Republic of*

Track: Neural Engineering

Motor Neuron Injury

P – Fri - B - 235
Low-Intensity Infrared Stimulation of Xenopus Sciatic Nerve Activates Fast Fibers
D. M. Page[1], M. D. Keller[2], and G. A. Clark[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*Lockheed Martin Aculight, Bothell, WA*

Track: Neural Engineering

Neural Control and Modeling

P – Fri - B - 236
Visual Evoked Potential Characterization of Rabbit Animal Model For Retinal Prosthesis Research
M. L. Khraiche[1], A. Akinin[1], G. Cauwenberghs[1], and G. A. Silva[1]
[1]*UCSD, La Jolla, CA*

P – Fri - B - 237
Detection of Epileptic Seizures from ECoGs: Time-Frequency Analysis and Artificial Neural Networks
J. Pace[1], R. Bossemeyer[1], P. Fishback[2], K. Elisevich[3], and S. Rhodes[1]
[1]*Grand Valley State University, Grand Rapids, MI,* [2]*Grand Valley State University, Allendale, MI,* [3]*Spectrum Health Medical Group, Grand Rapids, MI*

P – Fri - B - 238
Evaluating Supervision Methods for Lower-Limb Prosthesis Adaptation
J. Spanias[1], L. Hargrove[1], and E. Perreault[1]
[1]*Northwestern University, Chicago, IL*

P – Fri - B - 239
Side-by-side Experiments and Simulations of Neuronal Circuitry and Responses to Stimuli
K. M. Fitzgerald[1], T. Shinbrot[1], and B. L. Firestein[1]
[1]*Rutgers University, Piscataway, NJ*

P – Fri - B - 240
Neural Recoding System with a 24 bit High-resolution Analog-to-digital Converter for Fast Neural Spike Recovery After Electrical Stimulations
H. Jung[1] and Y. Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

P – Fri - B - 241
Mechanisms of Force Enhancement During Mixed Voluntary and Stimulation Induced Muscle Contractions
P. E. Crago[1], N. M. Cole[1], and N. S. Makowski[1]
[1]Case Western Reserve University, Cleveland, OH

P – Fri - B - 242
Effect of Surface Chemistry on Primary Motor Neuron and Schwann Cell Behavior Using Binary Self-Assembled Monolayers
B-W. Park[1], T. Sousa[1], M. Stanton[2], J. Rankenberg[1], K. Welshhans[1], C. Lambert[2], W. McGimpsey[1], and C. Malcuit[1]
[1]Kent State University, Kent, OH, [2]Worcester Polytechnic Institute, Worcester, MA

P – Fri - B - 243
Decoding Neural Spike-trains to Answer Yes-No Questions :A Novel Geometric Approach
A. Iyer[1] and N. Grzywacz[1]
[1]University of Southern California, Los Angeles, CA

P – Fri - B - 244
Investigating the Role of Chronic Stimulation in Dissociated Cortical Neuron Development
A. Napoli[1] and I. Obeid[1]
[1]Temple University, Philadelphia, PA

Track: Neural Engineering

Neural Engineering: From Basic Studies to Translation

P – Fri - B - 245
Epidural Stimulation and/or Pharmacological Neuromodulation Facilitate Standing in Spinal Rats
M. Rath[1,2], P. Gad[1], J. Cho[1], V. Edgerton[1], R. R. Roy[1], H. Zhong[1], and Y. Gerasimenko[1,3]
[1]UCLA, Los Angeles, CA, [2]UCLA, Los Angeles, [3]Pavlov Institute of Physiology, St. Petersburg, Russian Federation

P – Fri - B - 246
Electrical Stimulation Induces Enhanced Myelination in a Novel Microfluidic Platform
H. Lee[1], N. Thakor[1,2], and I. Yang[1,2]
[1]National University of Singapore, Singapore, Singapore, [2]Johns Hopkins University, School of Medicine, Baltimore, MD

P – Fri - B - 247
Component based EEG Indices for the Time-on-Task Effect and Workload in Realistic Simulated ATC Tasks
D. Dasari [1], G. Shou[1], and L. Ding[1,2]
[1]School of Electrical and Computer Engineering, University of Oklahoma, Norman, OK, [2]Center for Biomedical Engineering, University of Oklahoma, Norman

P – Fri - B - 248
Selective Activation of Wrist and Hand Muscles by Nerve Cuff Stimulation in Chronically Implanted Non-human Primates
N. Brill[1], S. Naufel[2], C. Ethier[2], L. Miller[2], and D. Tyler[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Northwestern University, Chicago, IL

P – Fri - B - 249
Electromagnetic Neural Stimulation for a Biohybrid Water Quality System
A. Camino[1], E. Basham[2], D. W. Parent[2], and D. Tauck[1]
[1]Santa Clara University, Santa Clara, CA, [2]San Jose State University, San Jose, CA

Track: Neural Engineering

Neural Imaging

P – Fri - B - 250
A New Versatile Cre-dependent GCaMP5 Reporter Mouse
J. M. Gee[1], M. N. Economo[1], M. Rothermel[1], S. C. Morris[1], M. Wachowiak[1], M. R. Capecchi[1], K. S. Wilcox[1], J. A. White[1], and P. Tvrdik[1]
[1]University of Utah, Salt Lake City, UT

Track: Tissue Engineering

Cardiovascular Tissue Engineering

P – Fri - B - 251
Injectabale Matrix Embedded Endothelial Cells (MEEC) for Vascular Therapy
A. Freiman[1,2], M. St. Pierre[1], E. Edelman[3,4], and N. Artzi[1]
[1]MIT, HST, Cambridge, MA, [2]Ort Braude College, Karmiel, Israel, [3]MIT, Cambridge, MA, [4]Harvard Medical School, Boston, MA

P – Fri - B - 252
Photocrosslinking Kinetics and Matrix Stiffness/Adhesion Differentially Regulate Human Mesenchymal Stem Cell Phenotype within 3D Printed Heart Valves
L. A. Hockaday[1], B. Duan[1], E. Kapetanovic[1], K. H. Kang[1], P. Armstrong[1], L. Lee[1], and J. T. Butcher[1]
[1]Cornell University, Ithaca, NY

P – Fri - B - 253
Enhanced Action Potential Phase 2 Produced in Novel Anisotropic Model of Adult Guinea Pig Cardiomyocyte Monolayer Using Nanopatterned Substrata
R. Joshi-Mukherjee[1], J. Macadangdang[2], G. Kostecki[1], N. Trosper[2], D. Yue[1], D-H. Kim[2], and L. Tung[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Washington, Seattle, WA

P – Fri - B - 254
Impact of Pericytes on Vessel Formation and Anastomosis in Prevascularized Tissues
L. Tian[1], A. Aledia[1], C. Hughes[1], and S. George[1]
[1]University of California, Irvine, Irvine, CA

P – Fri - B - 250
Vascularization of Fibrin/Poly(Ethylene Glycol)-based Hydrogels using Amniotic Fluid-Derived Stem Cells
O. M. Benavides[1], J. Quinn[1], J. P. Connell[1], R. Ruano[2,3], and J. G. Jacot[1,3]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Children's Hospital, Houston, TX

P – Fri - B - 256
Fatigue Properties of Electrospun Tri-Layered Vascular Graft Scaffolds
C. H. Lee[1], B. N. Blackstone[1], M. T. Nelson[1], J. J. Lannutti[1], and H. M. Powell[1]
[1]The Ohio State University, Columbus, OH

POSTER SESSION **FriB**

POSTER SESSION Fri B 1:30PM – 5:00PM

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

P – Fri - B - 257
Induction of Mesenchymal Stem Cell Antithrombogenicty with Laminar Flow
L. A. Meier[1], M. H. Chen[1], and R. T. Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

P – Fri - B - 258
Mechanical Characterization of Cellularized and Decellularized Tissue Constructs
B. Zhou[1], M. G. Gabr[1], S. Klatt[2], W. Twal[2], T. Shazly[1], S. M. Lessner[1], and W. S. Argraves[2]
[1]University of South Carolina, Columbia, SC, [2]Medical University of South Carolina, Charleston, SC

P – Fri - B - 259
Controlled Nutrient Gradients Enhance Smooth Muscle Cell Repopulation of an Acellular Vascular Scaffold
A. B. Van de Walle[1] and P. S. McFetridge[1]
[1]University of Florida, Gainesville, FL

P – Fri - B - 260
Development of a Small Diameter Vascular Graft Using Adipose-Derived Stem Cells
J. H. Arrizabalaga[1] and M. U. Nollert[1]
[1]University of Oklahoma, Norman, OK

P – Fri - B - 261
Effect of Glycidyl Methacrylate Conjugation and Crosslinking on Chitosan Material Properties
A. M. Jacob[1] and H. W. Matthew[1]
[1]Wayne State University, Detroit, MI

POSTER SESSION **FriB**

P – Fri - B - 262
The Effect of Cell Shape on Foam Cell Formation
T. D. Smith[1], T. Wang[1], J. Suhalim[1], A. Alfonso García[1], E. O. Potma[1], and W. F. Liu[1]
[1]University of California, Irvine, Irvine, CA

P – Fri - B - 263
Towards Large-scale Micro-vessel Networks Via Microfluidic Tissue Engineering
M. Xu[1], Y. Xiao[1], G. Zheng[2], R. Fan[1], and J. Zhou[1]
[1]Yale University, New Haven, CT, [2]Fudan University, Shanghai, China, People's Republic of

P – Fri - B - 264
Development of a Hydrogel System to Present EphrinB2 and EphB4 Signals for Controlling Arterial Venous Differentiation of Stem Cells
T. B. Dorsey[1] and G. Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P – Fri - B - 265
Evaluating Pericyte-like Behaviors of Stem Cells on Excised Microvessels
E. L. Nyberg[1], S. Seaman[1], and S. M. Peirce[1]
[1]University of Virginia, Charlottesville, VA

P – Fri - B - 266
Collagen Immobilized Nanowire Surfaces for Cardiovascular Applications
V. Leszczak[1] and K. C. Popat[1]
[1]Colorado State University, Fort Collins, CO

P – Fri - B - 267
Coculture with Cardiac Cells Demonstrated Cardiogenic Potential in Amniotic Fluid-Derived Stem Cells
Y. Gao[1], R. Ruano[2,3], and J. G. Jacot[1,2]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX, [3]Baylor College of Medicine, Houston, TX

P – Fri - B - 268
Utilizing IPS Derived Endothelial Cells on Bioprosthetic Venous Valves
C. M. Jones[1], K. L. Mirza[1], A. M. Dillier[1], D. Pavcnik[1], and M. T. Hinds[1]
[1]Oregon Health & Science University, Portland, OR

P – Fri - B - 269
Functional Consequences of a Tissue-Engineered Myocardial Patch for Cardiac Repair in a Rat Infarct Model
J. S. Wendel[1], L. Ye[1], P. Zhang[1], R. T. Tranquillo[1], and J. Zhang[1]
[1]University of Minnesota, Minneapolis, MN

P – Fri - B - 270
Cardiac Tissue Constructs with Perfusable Hierarchical Vasculature
M. Roberts[1], C. Murry[1], and Y. Zheng[1]
[1]University of Washington, Seattle, WA

P – Fri - B - 271
Antigen Removal for the Production of Immunoacceptable Xenogeneic Scaffolds for Myocardial Patch Tissue Engineering
A. Papalamprou[1] and L. Griffiths[1]
[1]University of California Davis, Davis, CA

P – Fri - B - 272
Characterization of Diabetic and Aged Adipose-Derived Stem Cells For Tissue Engineered Blood Vessels
J. T. Krawiec[1], J. A. Phillippi[1], B. J. Philips[1], C. M. St. Croix[1], S. C. Watkins[1], T. G. Gleason[1], J. P. Rubin[1], and D. A. Vorp[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Fri - B - 273
In Vitro Self-assembly of Tissue Constructs Containing Capillary-like Vascular Networks
C. A. Czajka[1] and C. J. Drake[1]
[1]Medical University of South Carolina, Charleston, SC

P – Fri - B - 274
Carbon Nanotube-Embedded PGS:Gelatin Fibrous Scaffolds for Cardiac Tissue Engineering
M. Kharaziha[1,2], S. Shin[1,2], M. Nikkhah[1,2], S. N. Topkaya[1,2], N. Masoumi[1,2], M. R. Dokmeci[1,2], and A. Khademhosseini[1,2]
[1]Harvard Medical School, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA

P – Fri - B - 275
Estimating Effective Conductivities Of Engineered Cardiac Monolayers
T. Gokhale[1] and C. Henriquez[1]
[1]Duke University, Durham, NC

Track: Tissue Engineering

Dental Tissue Engineering

P – Fri - B - 276
Microenvironment Effects on Self-renewal and Differentiation of Dental Epithelial Stem Cells
M. G. Chavez[1], T. Vo[1], O. D. Klein[1], and T. A. Desai[1]
[1]University of California, San Francisco, San Francisco, CA

P – Fri - B - 277
Effects of Hydrogel Photoencapsulation on the Viability of Primary Salivary Gland Cells
A. D. Shubin[1], T. Felong[1], C. E. Ovitt[1], and D. S. Benoit[1]
[1]University of Rochester, Rochester, NY

P = Poster Session
OP = Oral Presentation

Track: Tissue Engineering

Skin and Adipose Tissue Engineering

P – Fri - B - 278

In Vitro and *In Vivo* Investigations of Poly (L-lactic Acid)/Ibuprofen Nanofibers for Skin Wound Healing Applications

M. Mohiti-Asli[1], S. V. Murphy[2], S. Saha[3], B. Pourdeyhimi[1], A. Atala[2], and E. G. Loboa[1,3]

[1]North Carolina State University, Raleigh, NC, [2]Wake Forest Institute of Regenerative Medicine, Winston-Salem, NC, [3]North Carolina State University & University of North Carolina at Chapel Hill, Raleigh, NC

P – Fri - B - 279

Leveraging Anti-Cancer Properties of Tannic Acid Cross-Linked Scaffolds

B. Inskeep[1] and K. Burg[1]

[1]Clemson University, Clemson, SC

P – Fri - B - 280

Printable Skin Graft in Athymic Nude Mouse Model

M. G. Yanez[1], J. Rincon[1], A. Dones[1], R. Gonzales[1], and T. Boland[1]

[1]The University of Texas at El Paso, EL Paso, TX

Friday, September 27, 2013

1:30PM – 2:30PM

PLATFORM SESSION –FRI – 2

Track: Tissue Engineering
OP - Fri - 2 -1 - Room 6B
Cardiovascular Tissue Engineering III

Chairs: Marsha Rolle

1:30PM
Cardiac Fibroblasts Alter The Structure and Function of 3D Engineered Cardiac Tissues In An Age-dependent Manner
Y. Li[1], B. Liau[1], R. Kirkton[1], and N. Bursac[1]
[1]Duke University, Durham, NC

1:45PM
Asynchronous Dual Electrical and Mechanical Stimulation Improves the Calcium Handling Dynamics in Engineered Cardiac Tissue
K. Y. Morgan[1] and L. D. Black[1]
[1]Tufts University, Medford, MA

2:00PM
Plug & Play Bioreactor with Electrical Stimulation and Perfusion for Cardiac Tissue Engineering
N. Tandon[1,2], E. Cimetta[1], E. de Bernardinis[1,3], and G. Vunjak-Novakovic[1]
[1]Columbia University, New York, NY, [2]Cooper Union, New York, NY, [3]Politecnico di Milano, Milano, Italy

2:15PM
Dynamic Contrast-Enhanced MRI Measures Increasing Vascularity Over Time in Implanted Tissue Matrix
P. Antkowiak[1], A. Bruce[1], N. Palacio[1], H. Ansorge[2], A. Barere[2], S. Peirce-Cottler[1], and F. Epstein[1]
[1]University of Virginia, Charlottesville, VA, [2]Lifecell Corporation, Branchburg, NJ

Track: Biomaterials
OP - Fri - 2 – 2 - Room 6C
Biomaterial Scaffolds II

Chairs: Lakshmi Nair, Yun Wang

1:30PM
Biodegradable Citric-Acid Based Polymers Have Intrinsic Antioxidant and Metal Chelating Properties
R. van Lith[1], E. Gregory[1], M. Kibbe[1], and G. Ameer[1]
[1]Northwestern University, Evanston, IL

1:45PM
Designing Safe Long-Circulating Tracers for the New Magnetic Particle Imaging (MPI) Modality
A. P. Khandhar[1], H. Arami[1], R. M. Ferguson[1], and K. M. Krishnan[1]
[1]University of Washington, Seattle, WA

2:00PM
Biodegradable Magnesium Vascular Stent with Low Inflammatory Response and Reduced In-Stent Restenosis
L. Mao[1], M. Kwak[2], L. Shen[3], R. Fan[2], and G. Yuan[1]
[1]Shanghai Jiaotong University, Shanghai, China, People's Republic of, [2]Yale University, New Haven, CT, [3]Fudan University, Shanghai, China, People's Republic of

2:15PM
Decellularized Porcine Heart Myocardium Hydrogel for Reconstruction of Full-Thickness Right Ventricular Outflow Track Defect
S. Pok[1], O. Benavides[2], and J. G. Jacot[2,3]
[1]Rice university, Houston, TX, [2]Rice University, Houston, TX, [3]Texas Children's Hospital, Houston, TX

Track: Translational Biomedical Engineering
OP - Fri - 2 – 3 - Room 606
Cell-based Products for Regenerative Medicine

Chairs: Adam Engler, Jeffrey Jacot

1:30PM
Thin-Film Cell Encapsulating Devices for Type 1 Diabetes
C. Nyitray[1], G. Faleo[1], Q. Tang[1], and T. Desai[1]
[1]University of California, San Francisco, San Francisco, CA

1:45PM
Enhancing Immunomodulatory Secretion of Mesenchymal Stem Cells by Pre-Conditioning through Environmental Conditions
J. A. Zimmermann[1] and T. C. McDevitt[1,2]
[1]Georgia Institute of Technology & Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlant, GA

2:00PM
Innovative Strategy for the Recruitment of Progenitor Cells Using Tissue-Engineered 3D-Endothelial Cells
L. Indolfi[1], C. Iaconetti[2], C. Indolfi[2], and E. R. Edelman[1]
[1]MIT, Cambridge, MA, [2]Magna Graecia University, Catanzaro, Italy

2:15PM
Harnessing Native Signaling Pathways to Improve the Function and Survival of ß-cells for a Bioartificial Pancreas
S. Duncanson[1] and A. Sambanis[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Biomechanics
OP - Fri - 2 – 4 - Room 607
Biomaterials and Devices

Chairs: David Vorp, Leo Wan

1:30PM
Design and Implementation of Vacuum Assisted Anchorage for Uniaxial Tensile Testing of Soft Tissues
K. Blose[1,2], J. Pichamuthu[1,2], and D. Vorp[1,3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Center for Vascular Remodeling & Regeneration, Pittsburgh, PA, [3]McGowan Institute of Regenerative Medicine, Pittsburgh, PA

1:45PM
Capturing the Local Mechanical Environment and Single Fiber Response in PCL Scaffolds
D. Gutschick[1], H. Paranjape[1], A. M. De Jesus[2], E. Sander[3], H. M. Powell[1], and P. M. Anderson[1]
[1]The Ohio State University, Columbus, OH, [2]The University of Iowa, Columbus, OH, [3]The University of Iowa, Iowa City, IA

2:00PM
Novel Silk-Based Fabrication Techniques to Prepare High Strength, Complex Geometry Calcium Phosphate Ceramic Scaffolds via Machining or Injection Molding
S. L. McNamara[1], T. J. Lo[1], and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

P = Poster Session
OP = Oral Presentation

2:15PM
Using Microcantilevers to Study Interactions Between Tissue Mechanics and Cell Function During Remodeling of 3D Microtissues
R. Zhao[1], T. Boudou[2], W-G. Wang[1], C. S. Chen[2], and D. H. Reich[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Pennsylvania, Philadelphia, PA

Track: Tissue Engineering
OP - Fri - 2 – 5 - Room 608
Cell Delivery and Cell Homing Technologies

Chairs: Laura Suggs

1:30PM
Tissue Growth and Cellular Organization are Influenced by Flow Rate and Pressure in Decellularized Liver Perfusion Bioreactors
E. C. Moran[1], P. M. Baptista[2], J. L. Sparks[3], and S. Soker[2]
[1]Wake Forest University, Winston-Salem, NC, [2]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, [3]Miami University, Oxford, OH

1:45PM
Progenitor Cell Recruitment via SDF-1 Coacervate-absorbed in Vascular Grafts
K-W. Lee[1], N. Johnson[1], J. Gao[1], and Y. Wang[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

2:00PM
A Cell-friendly Process to Fabricate Hydrogels with Microchannel-like Porosity for Tissue Engineering
L-H. Han[1], J. Hammer[2], X. Tong[1], and F. Yang[1]
[1]Stanford University, Stanford, CA, [2]Arizona State University, Phoenix, AZ

2:15PM
Human Integration-free iPSC-derived Neural Crest Stem Cells for Peripheral Nerve Regeneration
C-W. Huang[1], W-C. Huang[1,2], X. Qiu[1,3], F. Yuan[1], J. Wang[1], R. Chen[1], D. Israni[1], S. Patel[1], M-M. Poo[1], and S. Li[1,2]
[1]UC Berkeley, Berkeley, CA, [2]UC Berkeley-UCSF, Berkeley, CA, [3]Huazhong University of Science and Technology, Wuhan, China, People's Republic of

Track: Cancer Technologies
OP - Fri - 2 – 6 - Room 609
Bioengineering Models of Cancer II

Chairs: Pamela Kreeger, Shilpa Sant

1:30PM
3D *In Vitro* Tumor Models for The Evaluation of Nanoparticle-Based Cancer Therapeutics
X. Xu[1] and X. Jia[1,2]
[1]Department of Materials Science & Engineering, University of Delaware, Newark, DE, [2]Biomedical Engineering Program, University of Delaware, Newark, DE

1:45PM
Interfacial Mechanics in an Electrospun Fiber Mat-Hydrogel Composite Brain Cancer Model
M. Calhoun[1], A. Short[1], T. Nelson[1], A. Sarkar[2], J. Lannutti[1], and J. Winter[1]
[1]The Ohio State University, Columbus, OH, [2]Geisinger Medical Center, Danville, PA

2:00PM
"Prevascularized Tumors": Tissue Engineering a Multicellular Model of Solid Human Tumor Spheroids Perfused By Microvessels
S. M. Ehsan[1], L. F. Alonzo[1], M. L. Waterman[1], C. C. Hughes[1], and S. C. George[1]
[1]University of California, Irvine, Irvine, CA

2:15PM
Tissue-Engineered Models of the Tumor Microenvironment to Study Inflammation, Hypoxia, and Angiogenesis
P. DelNero[1], B. Kwee[1], S. Verbridge[2], M. Lane[3], B. Hempstead[3], and C. Fischbach[1]
[1]Cornell University, Ithaca, NY, [2]Virginia Tech-Wake Forest, Blacksburg, VA, [3]Weill Cornell Medical School, New York, NY

Track: Cardiovascular Engineering
OP - Fri - 2 – 7 - Room 612
Microvascular and Lymphatic System

Chairs: Scott Diamond, Sara Nunes

1:30PM
An Engineered Model to Evaluate Natural Killer Cell Mediated Therapeutic Intervention of Lymph Node Micrometastases
S. Chandrasekaran[1], M. J. McGuire[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

1:45PM
Design and Fabrication of a Microfluidic Platform to Replicate Low Shear Stress Recirculation Seen in Atherosclerosis Lesion Susceptible Regions
P. K. Patibandla[1], R. Estrada[1], M. Kannan[1], C. Bhikha[1], Y. Lian[1], and P. Sethu[1]
[1]University of Louisville, Louisville, KY

2:00PM
Caged Fluorescein Linked Albumin Reveals Regional Heterogeneity During Thrombus Formation in Mice
J. D. Welsh[1], T. J. Stalker[1], R. Voronov[1], R. Muthard[1], S. L. Diamond[1], and L. F. Brass[1]
[1]University of Pennsylvania, Philadelphia, PA

2:15PM
The Contributory Role of Impaired Neutrophil Fluid Shear Mechanotransduction in Hypercholesterolemia-Related Dysregulation of Microvascular Blood Flow
X. Zhang[1], R. Cheng[1], D. Rowe[2], P. Sethu[3], G. Yu[1], A. Daugherty[1], and H. Y. Shin[1]
[1]University of Kentucky, Lexington, KY, [2]Paul L. Dunbar High School, Lexington, KY, [3]University of Louisville, Louisville, KY

Track: Cellular and Molecular Bioengineering
OP - Fri - 2 -8 - Room 604
Cell Adhesion II

Chairs: Mohammad Mofrad, Todd Sulchek

1:30PM
Direct Evidence of Simultaneous Conformational Change Between the Closing of the Hinge Interdomain Angle and the Opening of the Binding Pocket in L-selectin
P. Cardenas Lizana[1], J. Lou[2], and C. Zhu[3]
[1]Georgia Institute of Technology / Emory University, Atlanta, GA, [2]Chinese Academy of Science, Beijing, China, People's Republic of, [3]Georgia Institute of Technology, Atlanta, GA

1:45PM
Dynamics of Cell-ECM Interactions Under Acute Shear Stress By Modulation of Integrin Affinity
A. Fuhrmann[1] and A. J. Engler[1]
[1]University of California San Diego, La Jolla, CA

2:00PM
The Shear Rate Dependence of Nitric Oxide Inhibition of Platelet Aggregation
J. L. Sylman[1], S. M. Lantvit[2], M. M. Reynolds[2], and K. B. Neeves[1,3]
[1]Colorado School of Mines, Golden, CO, [2]Colorado State University, Fort Collins, CO, [3]University of Colorado, Denver, Denver, CO

2:15PM
Myoferlin Depletion Increases Adhesion and Alters Adhesion Proteins in Breast Cancer Cells
B. N. Blackstone[1], R. Li[1], M. Bechel[1], J. J. Willard[1], W. E. Ackerman[1], S. N. Ghadiali[1], H. M. Powell[1], and D. A. Kniss[1]
[1]The Ohio State University, Columbus, OH

Track: Stem Cell Engineering
OP - Fri - 2 – 9 - Room 611
Bioprocessing of Human Cells

Chairs: Sharon Gerecht, Raj R Rao

1:30PM
Engineering Stable Bone Tissue Substitutes From Human Pluripotent Stem Cells *(Invited)*
G. M. de Peppo[1], I. Marcos Campos[2], D. Kahler[1], D. Alsalman[1], L. Shang[1], G. Vunjak Novakovic[2], and D. Marolt[1]
[1]The New York Stem Cell Foundation, New York, NY, [2]Columbia University, New York, NY

1:45PM
A Defined, Scalable 3D Culture System for Producing Human Pluripotent Stem Cells and Their Progenies
Y. Lei[1] and D. Schaffer[1]
[1]University of California, Berkeley, Berkeley, CA

2:00PM
Rapid and Scalable Expansion of Human IPS Cells in Chemically Defined and Xeno-Free Suspension Culture System
Y. Wang[1], B-K. Chou[2], S. Dowey[2], S. Gerecht[1], and L. Cheng[2]
[1]The Johns Hopkins University, Baltimore, MD, [2]The Johns Hopkins University School of Medicine, Baltimore, MD

2:15PM
Xeno-Free Expansion and Directed Differentiation of Human Pluripotent Stem Cells in Scalable Microcarrier Bioreactors
Y. Fan[1], M. Hsiung[1], C. Cheng[1], and E. S. Tzanakakis[1]
[1]SUNY-Buffalo, Buffalo, NY

Track: Device Technologies and Biomedical Robotics
OP - Fri - 2 -10 - Room 602
Implantable Devices

Chairs: Keefe Manning, Sarah Vigmostad

1:30PM
Computational Simulations of IVC Filter Implantation in Patient-Specific Geometries
K. I. Aycock[1], E. M. Fox[1], S. M. Sastry[2], J. Kim[1], S. M. Shontz[3], F. C. Lynch[4], B. A. Craven[1], and K. B. Manning[1,4]
[1]The Pennsylvania State University, University Park, PA, [2]University of Utah, Salt Lake City, UT, [3]Mississippi State University, Starkville, MS, [4]Penn State Hershey Medical Center, Hershey, PA

1:45PM
An Implantable Vascular Coupling Device for End-to-End Anastomosis
H. Li[1], C. Gehrke[1], H. Sant[1], B. Gale[1], and J. Agarwal[1]
[1]University of Utah, Salt Lake City, UT

2:00PM
Micromachined Multielectrode Microprobes for Sensing of Glutamate and Dopamine *In Vivo*
T. T-C. Tseng[1], V. Tolosa[2], K. Wassum[3], N. Maidment[3], and H. Monbouquette[3]
[1]National Taiwan University of Science and Technology, Taipei, Taiwan, [2]Lawrence Livermore National Laboratory, Livermore, CA, [3]UCLA, Los Angeles, CA

2:15PM
Early Detection of Biofilm-Related Infections by Impedance Monitoring in Central Venous Port Prototypes.
J. Paredes[1,2], A. Aguinaga[3], J. L. del Pozo[3], and S. Arana[1,2]
[1]CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain, [2]CIC microGUNE, Arrasate-Mondragon, Spain, [3]Clinica University of Navarra, Pamplona, Spain

Track: Bioinformatics, Computational and Systems Biology
OP - Fri - 2 -11 - Room 615
Multiscale Spatiotemporal Modeling and Simulation

Chairs: Michael R. King, J. Nathan Kutz

1:30PM
Simulation of Platelet, Thrombus and Erythrocyte Hydrodynamic Interactions in a 3D Arteriole with *In Vivo* Comparison *(Invited)*
W. Wang[1], T. G. Diacovo[2], J. Chen[2], J. B. Freund[3], and M. R. King[1]
[1]Cornell University, Ithaca, NY, [2]Columbia University, New York, NY, [3]University of Illinois at Urbana-Champaign, Urbana, IL

2:00PM
Motifs for Encoding/Decoding of Neuro-Sensory Information *(Invited)*
J. Kutz[1]
[1]University of Washington, Seattle, WA

Track: Biomedical Engineering Education
OP - Fri - 2 -12 - Room 616
Teaching Outside the (Classroom) Box

Chairs: John Desjardins

1:30PM
Development of Trouble-Shooting Workshop for Clinically Relevant Equipment in Low-Resource Settings
Z. Crannell[1], B. Grant[1], A. Ordonez[2], E. Pickett[2], E. Alemayehu[3], G. Alemu[4], S. Jacques[2], R. Richards-Kortum[1], and A. Saterbak[1]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX, [3]Jimma University, Jimma, Ethiopia, [4]Tegbare-id Polytechnic College, Addis Ababa, Ethiopia

1:45PM
A BME Outreach Experience: Development of an Inquiry-based Optics Module for Middle School Students
K. Wang[1], R. Doran[2], S. Shaked[3], S. Archer[1], C. Fischbach[1], and D. Gourdon[1]
[1]Cornell University, Ithaca, NY, [2]Newfield Central School, Newfield, NY, [3]Ithaca College, Ithaca, NY

2:00PM
Virtual Engineering Internships: Increasing the Participation of Women and Minorities through Epistemic Games
D. E. Tetrick[1], G. Arastoopour[1], A. Ruis[1], D. W. Shaffer[1], and N. C. Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI

PLATFORM SESSIONS
Fri-2

P = Poster Session
OP = Oral Presentation

2:15PM
Teaching Pre-College Students to Solve 'Wicked' Design Problems
C. Moraes[1], S. Blain-Moraes[1], S. Morell-Tomassoni[1], and R. Gorbet[2]
[1]University of Michigan, Ann Arbor, MI, [2]University of Waterloo, Waterloo, ON, Canada

Track: Biomedical Imaging and Optics
OP - Fri - 2 -13 - Room 618
Positron Emission Tomography

Chairs: Anthony J. McGoron

1:30PM
Methylphenidate and [18F]-fallypride Striatal Binding in Mice Using Positron Emission Tomography
X. Nie[1,2], K. Patrick[3], M. Cdebaca[4], C. Riley III[4], D. Wilson[4], and A-M. Broome[1,2]
[1]Radiology and Radiological Science, Medical University of South Carolina, Charleston, SC, [2]Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, [3]Department of Drug Discovery and Biomedical Sciences, Medical University of South Carolina, Charleston, SC, [4]Triad Isotopes Inc., Charleston, SC

1:45PM
Collecting Depth of Interaction Information Using Phosphor Coated Crystals for High Resolution Positron Emission Tomography
V. Viswanath[1], E. Roncali[1], and S. R. Cherry[1]
[1]University of California, Davis, Davis, CA

2:00PM
Measurement of Regional Pulmonary Perfusion from Early 18F-FDG Kinetics Imaged with PET
T. J. Wellman[1], T. Winkler[1], N. de Prost[1], and M. Vidal Melo[1]
[1]Massachusetts General Hospital, Boston, MA

2:15PM
Improving Breast Cancer Lesion Detectability in 18F-FDG PET Imaging
K. Wangerin[1,2], M. Muzi[2], B. Elston[2], R. Harrison[2], and P. Kinahan[1,2]
[1]Bioengineering, University of Washington, Seattle, WA, [2]Radiology, University of Washington, Seattle, WA

Track: Nano to Micro Technologies
OP - Fri - 2 -14 - Room 619
Nanobiointerfaces II

Chairs: Carlos Rinaldi, Marissa Rylander

1:30PM
Utilizing an Imidazole Ring Polymer for Stabilization of Quantum Dots on Single Walled Nanohorns
A. M. Pekkanen[1], D. Inglefield[1], M. R. DeWitt[1], T. E. Long[1], and M. N. Rylander[1]
[1]Virginia Tech, Blacksburg, VA

1:45PM
Magnetic Intracellular Manipulation with Customizable Bioactive Superparamagnetic Nanoparticles
J. Kong[1], C. Murray[1], P. Tseng[1], and D. Di Carlo[1]
[1]University of California Los Angeles, Los Angeles, CA

2:00PM
Photopatterned SU-8 Derived Carbon Nanofibers for Neural Engineering Applications
P-F. Jao[1], E. Franca[1], G. J. Kim[1], B. Wheeler[1], and Y-K. Yoon[1]
[1]University of Florida, Gainesville, FL

2:15PM
Chemically-Functionalized Single-Walled Carbon Nanotube Conductive Films Modulate the Morpho-Functional and Proliferative Characteristics of Astrocytes
M. K. Gottipati[1], I. Kalinina[2], E. Bekyarova[2], R. C. Haddon[2], and V. Parpura[1]
[1]University of Alabama, Birmingham, AL, [2]University of California, Riverside, CA

Track: Drug Delivery
OP - Fri - 2 -15 - Room 620
Responsive Delivery Systems

Chairs: Yi Hong, Antonio Webb

1:30PM
Development of Multi-functional Core-shell Nanoparticles for Dual Lung Cancer Therapy
J. U. Menon[1,2], A. E. Kuriakose[1,2], D. Saha[2], and K. T. Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]UT Southwestern Medical Center, Dallas, TX

1:45PM
Protease-Sensitive Virus Vectors for Targeted Gene Delivery
J. Judd[1], M. Ho[1], M. Lam[1], O. Dao[1], and J. Suh[1]
[1]Rice University, Houston, TX

2:00PM
A pH-Responsive Polymeric Antigen Carrier for Enhancing Antigen-Specific CD8 T Cell Responses
S. Keller[1], J. T. Wilson[1], H. B. Kern[1], A. J. Convertine[1], and P. S. Stayton[2]
[1]University of Washington, Seattle, WA, [2]University of Washington, Seattle

2:15PM
MMP-9 Sensitive Polymers for Environmentally-Responsive Bivalirudin Release and Thrombin Inhibition
D. S-H. Chu[1], M. J. Bocek[1], D. L. Sellers[1], P. J. Horner[1], and S. H. Pun[1]
[1]University of Washington, Seattle, WA

Track: Neural Engineering
OP - Fri - 2 -16 - Room 613
Neural Imaging

Chairs: X. Tracy Cui, Vivek Srinivasan

1:30PM
Computational Discovery of Morphological Alterations to Microglia Arbors in Response to Implanted Neuroprosthetic Devices
Y. Xu[1], N. Rey-Villamizar[1], M. Megjhani[1], A. Cheong[1], K. Trett[2], P. Qui[3], W. Shain[2,4], and B. Roysam[1]
[1]University of Houston, Houston, TX, [2]Seattle Children's Research Institute, Seattle, WA, [3]MD Anderson Cancer Center, Houston, TX, [4]University of Washington, Seattle, WA

1:45PM
Volumetric Microscopy of Cytoarchitecture and Myeloarchitecture with Intrinsic Scattering Contrast
V. J. Srinivasan[1] and H. Radhakrishnan[1]
[1]UC Davis, Davis, CA

2:00PM
Relative Spectral Power Based Clustering of Dense-Array Event Related Potentials
S. Kota[1], C. Cortessa[1], and D. L. Molfese[1]
[1]University of Nebraska - Lincoln, Lincoln, NE

2:15PM
L1 Coating Improves Neural Electrode Integration as Revealed by Multi-photon Microscopy
T. D. Kozai[1], N. Snyder[1], A. L. Vazquez[1], C. F. Lagenaur[1], S-G. Kim[1], and X. Cui[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

Track: New Frontiers and Special Topics
OP - Fri - 2 -17 - Room 614
Emerging Technology II

Chairs: Elain Fu, Chris Jewell

1:30PM
Photoactivation of Micropatterned Antibodies for T-cell Activation
W. Jin[1], D. Dutta[1], S. Sil[1], and L. Kam[1]
[1]*Columbia University, New York, NY*

1:45PM
Lymph Node Delivery as a Platform for Studying the Interactions Between Biomaterials and Lymph Nodes
L. H. Tostanoski[1], J. I. Andorko[1], and C. M. Jewell[1]
[1]*University of Maryland, College Park, MD*

2:00PM
Tunable Time-delays for Paper Microfluidic Devices
B. Toley[1], B. McKenzie[1], and E. Fu[1]
[1]*University of Washington, Seattle, WA*

2:15PM
Detection and Measurement of Micronutrients in Blood Based Samples
E. Lo[1], M. J. Stein[1], D. G. Castner[1], and B. D. Ratner[1]
[1]*University of Washington, Seattle, WA*

OP - Fri - 2 -18 - Room 6E
Health Disparities: Innovative Approaches to Improved Health

Chairs: Gilda Barabino, Cato Laurencin

This session will define concepts and issues surrounding racial and ethnic Health Disparities in healthcare. New concepts and views on diversity in the context of creating solutions in science and technology and in healthcare in particular will be presented. A discussion of efforts to address workforce diversity as a means for insuring innovation and excellence in science will be explored. The session is designed to help participants gain a broader understanding of the complexities and implications of health disparities and inequities and the role that biomedical engineers can play in combating them.

Moderator: Gilda Barabino, City College of New York

Speakers:

Cato Laurencin
University of Connecticut

Jean Bonhomme
Morehouse School of Medicine

Randall Morgan
W Montague Cobb/National Medical Association Health Institute

Angelika Domshke
Technology Consultant

Roderic Pettigrew
National Institutes of Health

P = Poster Session
OP = Oral Presentation

Friday, September 27, 2013

2:45PM – 3:45PM

PLATFORM SESSION –FRI – 3

Track: Tissue Engineering
OP - Fri - 3 – 1 - Room 6B
Cardiovascular Tissue Engineering IV

Chairs: Hak-Joon Sung

2:45PM

Tubular Heart Valves Fabricated From Decellularized Engineered Tissue

L. A. Meier[1], Z. H. Syedain[1], and R. T. Tranquillo[1]

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

3:00PM

Elastomeric Cellularized Constructs for Ventricular Outflow Tract Reconstruction: Fate and Function of Integrated Cells *In Vivo*

N. J. Amoroso[1], T. Yoshizume[1], H. Jian[1], K. Takanari[1], Y. Hong[1], K. Tobita[1], and W. R. Wagner[1]

[1]*University of Pittsburgh, Pittsburgh, PA*

3:15PM

Peripheral Blood EPCs from Coronary Artery Disease Patients as an Endothelial Source for Small Caliber Tissue Engineered Human Blood Vessels

C. E. Fernandez[1], G. A. Truskey[1], and W. M. Reichert[1]

[1]*Duke University, Durham, NC*

3:30PM

Hypertrophic Stimulation of Engineered Cardiac Muscle from Human Pluripotent Stem Cells

K. L. Kreutziger[1], K. Dao[1], M. Razumova[1], M. Regnier[1], and C. E. Murry[1]

[1]*University of Washington, Seattle, WA*

Track: Biomaterials
OP - Fri - 3 – 2 - Room 6C
Bioinspired Materials

Chairs: Tracy Hookway, Hyun Joon Kong

2:45PM

Bio-inspired Design of Potent and Selective siRNA Nanomaterials in Rodents and Nonhuman Primates

Y. Dong[1], R. Langer[1], and D. Anderson[1]

[1]*Massachusetts Institute of Technology, Cambridge, MA*

3:00PM

Biologically Inspired Engineering of Underwater Adhesives with Synthetic Biology

C. Zhong[1,2], A. Cheng[1], and T. Lu[1,2]

[1]*MIT Synthetic Biology Center, Cambridge, MA,* [2]*Research Laboratory of Electronics, MIT, Cambridge, MA*

3:15PM

Mechano-Responsive Hydrogels for Tissue Repair and Regeneration

L. Xiao[1] and X. Jia[1]

[1]*University of Delaware, Newark, DE*

3:30PM

Nanoparticle-Templated Phospholipid Layers Facilitate Understanding of Protein Recognition

S. Reed[1]

[1]*University of Colorado Denver, Denver, CO*

Track: Translational Biomedical Engineering
OP - Fri - 3 – 3 - Room 606
Translation in Regenerative Medicine

Chairs: Karen Christman, Shyni Varghese

2:45PM

Engineering Articular Neocartilage Using Costochondral Cells: A Combinatorial Stimuli Approach

M. K. Murphy[1] and K. A. Athanasiou[1]

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

3:00PM

Magnetic Resonance Characterization of ECM Integrated Scaffolds for Bone and Cartilage Tissue Engineering

P. Pothirajan[1], S. Ravindran[1], and M. Kotecha[1]

[1]*University of Illinois at Chicago, Chicago, IL*

3:15PM

In Vitro Maturation and Integration of Engineered Fibrocartilage Through Collagen Enhancement and Crosslinking

E. A. Makris[1,2], R. F. MacBarb[1], J. Hu[1], and K. A. Athanasiou[1]

[1]*University of California, Davis, Davis, CA,* [2]*University of Thessaly, Larisa, Greece*

3:30PM

Preclinical Assessment of a Regenerative Medicine Approach to Temporomandibular Joint Meniscus Reconstruction In a Porcine Model

B. N. Brown[1], W. L. Chung[1], J. Cheetham[2], and S. F. Badylak[1]

[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Cornell University, Ithaca, NY*

Track: Biomechanics
OP - Fri - 3 – 4 - Room 607
Sports Biomechanics

Chairs: Aditya Belawdi, Andrew Kemper

2:45PM

Head Impact Exposure in Youth Football: Elementary School Ages 7 to 8 Years and the Effect of Returning Players

T. J. Young[1], R. W. Daniel[1], S. Rowson[1], and S. M. Duma[1]

[1]*Virginia Tech – Wake Forest University, Blacksburg, VA*

3:00PM

Head Impact Exposure in Youth Football: Elementary School Ages 9 to 12 Years and the Effect of Practice Structure

B. R. Cobb[1], J. E. Urban[2,3], E. M. Davenport[2,3], S. Rowson[1], S. M. Duma[1], J. A. Maldjian[2,3], C. T. Whitlow[3], A. K. Powers[3], and J. D. Stitzel[2,3]

[1]*School of Biomedical Engineering & Sciences, Viginia Tech-Wake Forest University, Blacksburg, VA,* [2]*School of Biomedical Engineering & Sciences, Virginia Tech-Wake Forest University, Winston-Salem, NC,* [3]*Wake Forest University School of Medicine, Winston-Salem, NC*

3:15PM

Head Impact Exposure in Middle School Football

R. W. Daniel II[1], S. Rowson[1], and S. Duma[1]

[1]*Virginia Tech - Wake Forest University, Blacksburg, VA*

3:30PM

Head Impact Exposure Measurements in Pediatric Populations

J. Urban[1], E. M. Davenport[2], A. K. Powers[3,4], J. A. Maldjian[2,3], C. T. Whitlow[2,3], and J. D. Stitzel[1]

[1]*Virginia Tech- Wake Forest University Center for Injury Biomechanics, Winston Salem, NC,* [2]*Advanced Neuroscience Imaging Research Laboratory, Winston Salem, NC,* [3]*Wake Forest University School of Medicine, Winston Salem, NC,* [4]*Department of Neurosurgery, Winston Salem, NC*

Track: Tissue Engineering
OP - Fri - 3 – 5 - Room 608

Neural Tissue Engineering: Brain, Motor Neurons, Eye

Chairs: X. Tracy Cui

2:45PM
Neurotrophic Factor Gradient Delivery for Migration Guidance of Schwann Cells
K. Krick[1], Y-J. Huang[2], R. Martin[2], P. Searson[2], A. Khademhosseini[3], A. Hoke[1], and H-Q. Mao[2]
[1]Johns Hopkins School of Medicine, Baltimore, MD, [2]Johns Hopkins University, Baltimore, MD, [3]Massachusetts Institute of Technology, Cambridge, MA

3:00PM
Direct Conversion of Fibroblast to Neurons via Nanochannel Electroporation
D. Gallego-Perez[1], J. Ma[1], C. Czeisler[1], P. Gygli[1], T. W. Sherwood[1], X. Wang[1], A. Adler[2], Y. Wu[1], K. Leong[2], C. Askwith[1], J. Otero[1], and L. J. Lee[1]
[1]The Ohio State University, Columbus, OH, [2]Duke University, Durham, NC

3:15PM
Tissue Engineered Grafts with Stretch-Grown Axons Accelerate Peripheral Nerve Regeneration Based on Direct Axon-Induced Axon Regeneration
L. Struzyna[1], J. Morand[1], N. Kameswaran[1], J. Wolf[1], H. Ledebur[2], D. Smith[1], and D. K. Cullen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Axonia Medical, Inc., Kalamazoo, MI

3:30PM
Characterization of Optically Transparent Silk Hydrogels for Biomedical Applications
A. N. Mitropoulos[1], M. Applegate[1], B. Marelli[1], F. Omenetto[1], and D. Kaplan[1]
[1]Tufts University, Medford, MA

Track: Cancer Technologies
OP - Fri - 3 – 6 - Room 609

Biomedical Engineering Modalities for Personalized Cancer Therapy

Chairs: Parijat Bhatnagar, Michael Heller

2:45PM
A 96-well, Plate-based Microfluidic Device for Multiplexed Chemosensitivity Testing on Intact Tissues
C. Chang[1], A. M. Mikheev[1], R. J. Monnat, Jr.[1], R. C. Rostomily[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

3:00PM
Microfluidic 3D Cancer-Type Specific Platform for EMT Blocking Agents Screening
J. Bai[1], T-Y. Tu[1], J-P. Thiery[2], and R. D. Kamm[1],[3]
*[1]Singapore-MIT Alliance for Research and Technology, Singapore, Singapore, [2]Institute of Molecular and Cell Biology (IMCB), A*STAR, Singapore, Singapore, [3]Massachusetts Institute of Technology, Cambridge, MA*

3:15PM
Isolation of Adherent Tumor-Derived Cells: Probing the Biophysical Properties of Human Malignant Cells
T. A. Alcoser[1], S. Varma[2], C. M. Kraning-Rush[1], S. J. Shin[2], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

3:30PM
Scalable Manufacture of Built-to-Order Nanomedicine: Spray-LbL on PRINT®
S. Morton[1], K. Herlihy[2], K. Shopsowitz[1], J. Deng[1], K. Chu[2], C. Bowerman[2], J. DeSimone[2], and P. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]UNC-Chapel Hill, Chapel Hill, NC

Track: Cardiovascular Engineering
OP - Fri - 3 – 7 - Room 612

Vascular Mechanics I

Chairs: Michael Davis, Anthony Passerini

2:45pm
The Combined Effect of Matrix Stiffness and Nanotopography on the Regulation of Vascular Smooth Muscle Cell Function
S. Chaterji[1], P. Kim[2], H. J. Lee[2], K. Gupta[2], J. Lee[2], A. B. Baker[1], and D-H. Kim[2]
[1]The University of Texas at Austin, Austin, TX, [2]University of Washington at Seattle, Seattle, WA

3:00PM
The Interaction Between Fluid Wall Shear Stress and Solid Circumferential Strain Affects Endothelial Gene Expression
R. A. Amaya[1] and J. M. Tarbell[1]
[1]The City College of The City University of New York, New York, NY

3:15PM
Aging Endothelial Cells Exhibit Decreased Response to Steady Shear Stress
T. Cheung[1], J. Fu[1], L. Cao[1], and G. Truskey[1]
[1]Duke University, Durham, NC

3:30PM
An *Ex Vivo* Bio-Assay Chamber for Studying Inflammatory Response in the Mouse Femoral Artery
A. K. Baldwin[1], R. P. Gersch[1], B. M. Douglass[1], A. Nasser[1], T. K. Rosengart[2], and M. D. Frame[1]
[1]Stony Brook University, Stony Brook, NY, [2]Baylor University, Houston, TX

track sponsored by Edwards

Track: Cellular and Molecular Bioengineering
OP - Fri - 3 – 8 - Room 604

Translational Cellular and Molecular Biongineering

Chairs: Charles Gersbach, Krishanu Saha

2:45PM
Endothelial Glycocalyx and Apoptosis in the Brachiocephalic Artery of a High Fat Fed ApoE-/- Mouse
L. M. Cancel[1], E. E. Ebong[1],[2], and J. M. Tarbell[1]
[1]The City College of New York, New York, NY, [2]Albert Einstein College of Medicine, New York, NY

3:00PM
Matrix Elasticity Controls Bone Formation by Stem Cells Deployed from Void-Forming Hydrogels
N. Huebsch[1],[2], E. Lippens[1], K. Lee[1], M. Mehta[1], C. M. Madl[1], M. M. Xu[1], X. Zhao[1],[3], O. Chaudhuri[1], W. Kim[1],[4], K. Alim[1], A. Mammoto[5], D. E. Ingber[1],[5], G. Duda[6], and D. J. Mooney[1]
[1]Harvard University, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, [3]Duke University, Durham, NC, [4]Chung-Ang University, Seoul, Korea, Republic of, [5]Children's Hospital, Boston, MA, [6]Julius Wolff Institute, Charite, Berlin, Germany

PLATFORM SESSIONS
Fri-3

P = Poster Session
OP = Oral Presentation

3:15PM
A Comparison of Gene Targeting and Off-Target Cleavage Between the ZFN, TALEN, and CRISPR Platforms
E. J. Fine[1], T. J. Cradick[1], and G. Bao[1]
[1]*Georgia Tech/Emory University, Atlanta, GA*

3:30PM
Developing Models of Ectopic Calcification for Testing an Osteoclast Cell Therapy
C. W. Rementer[1], M. Wu[1], B. J. Ausk[1], T. S. Gross[1], and C. M. Giachelli[1]
[1]*University of Washington, Seattle, WA*

Track: Orthopaedic and Rehabilitation Engineering
OP - Fri - 3 – 9 - Room 611
Rehabilitation and Human Applications

Chairs: David Corr, Spencer Lake

2:45PM
Contact Mechanics in Normal, Dysplastic and Retroverted Human Hips
C. R. Henak[1], A. E. Anderson[1], M. D. Harris[1,2], E. D. Carruth[1,3], B. J. Ellis[1], C. L. Peters[1], and J. A. Weiss[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*University of Denver, Denver, CO,* [3]*University of California, San Diego, La Jolla, CA*

3:00PM
Thoracic Pedicle Dimensions: Variation in Normal and AIS Pediatric Subjects
J. R. Peters[1], C. Chandrasekaran[1], L. Waltz[1], and S. Balasubramanian[1]
[1]*Drexel University, Philadelphia, PA*

3:15PM
Design of a 16-bit Custom Waveform Spinal Stimulator
T. Martin[1], S. Upchurch[1], R. Keynton[1], S. Harkema[1], R. Edgerton[2], J. Burdick[3], and J. Naber[1]
[1]*University of Louisville, Louisville, KY,* [2]*University of California, Los Angeles, Los Angeles, CA,* [3]*California Institute of Technology, Pasadena, CA*

3:30PM
Dynamic Gait Training on Body Weight Support and Weight Training for People with Spinal Cord Injury
C. C. Garcez[1], A. C. Gruiter[1], F. V. Carvalho[1], and R. A. de Souza[1]
[1]*INATEL, S. Rita Do Sapucai, Brazil*

Track: Device Technologies and Biomedical Robotics
OP - Fri - 3 – 10 - Room 602
Implantable Orthopedic Devices and Assistive Technologies

Chairs: David Kaplan, Tingrui Pan

2:45PM
Controlling Stand-to-Sit Maneuver after Spinal Cord Injury Using a Hybrid Neuroprosthesis
S. R. Chang[1,2], R. Kobetic[2], and R. J. Triolo[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Louis Stokes Cleveland VA Medical Center, Cleveland, OH*

3:00PM
Droplet-Based Pressure Sensor Array for Artificial Skin Application
B. Nie[1], R. Li[1], J. D. Brandt[2], and T. Pan[1]
[1]*University of California, Davis, Davis, CA,* [2]*University of California, Davis, Sacramento, CA*

3:15PM
Soft Exo-Skeletal Arm for C4-C5 Trauma Induced Spinal Cord Injuries
M. Brauckmann[1], E. Calamari[1], S. Lipkind[1], B. Leone[1], C. Molica[1], A. Piscopiello[1], W. Terry[1], M. A. Delph[1], E. Torres-Jara[1], M. B. Popovic[1], E. A. Clancy[1], and G. S. Fischer[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

3:30PM
R-ARM: Robotic Assistive Reaching Mechanism
M. Nojoomi[1], S. Gonzalez[1], N. Mittal[1], and A. Saterbak[1]
[1]*Rice University, Houston, TX*

track sponsored by Edwards

Track: Bioinformatics, Computational and Systems Biology
OP - Fri - 3 – 11 - Room 615
Image-Based Modeling

Chairs: Michael Hawrylycz, Christopher R. Johnson

2:45PM
A High Resolution Spatiotemporal Atlas of Gene Expression of the C57Gl/6J Developing Mouse Brain *(Invited)*
M. Hawrylycz[1], L. Ng[1], and C. Thompson[1]
[1]*Allen Institute for Brain Science, Seattle, WA*

3:15PM
Image-Based Biomedical Modeling, Simulation, and Visualization *(Invited)*
C. R. Johnson[1]
[1]*University of Utah, Salt Lake City, UT*

Track: Biomedical Engineering Education
OP - Fri - 3 – 12 - Room 616
Innovative Hands on Approaches

Chairs: Damir Khismatullen, Alyssa Taylor

2:45PM
Integrating 3D Additive Manufacturing Technologies into a Tissue Engineering Lab Course
A. W. Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

3:00PM
An Active Learning Approach to Developing Manufacturing Literacy in Biomedical Engineering Students
J. R. Goldberg[1]
[1]*Marquette University, Milwaukee, WI*

3:15PM
Integrating Practical Instrumentation Control Skills Into a Laboratory Module Teaching the Fundamentals of Ultrasound Imaging
T. E. Allen[1]
[1]*University of Virginia, Charlottesville, VA*

3:30PM
Implementation of Flipped Classroom Model in Medical Electronics Course
J-M. Maarek[1]
[1]*University of Southern California, Los Angeles, CA*

Track: Biomedical Imaging and Optics
OP - Fri - 3 – 13 - Room 618
MRI Methods and Applications

Chairs: Walter O'Dell

2:45PM
A Hybrid Method for Automatic Reconstruction of 3D Tissue Displacement Fields from MRI
A. D. Gomez[1], S. S. Merchant[1], and E. W. Hsu[1]
[1]*University of Utah, Salt Lake City, UT*

3:00PM
Optimizing MRI Pulse Parameters for T1 Estimation to Minimize the Cramer-Rao Lower Bound
Y. Liu[1], J. R. Buck[1], and V. N. Ikonomidou[2]
[1]*University of Massachusetts Dartmouth, North Dartmouth, MA,* [2]*George Mason University, Fairfax, VA*

3:15PM
Genetically Engineered Molecular Sensors for Non-Invasive Imaging of Glutamate in MRI
G. L. Sun[1], D. V. Schaffer[1], and M. G. Shapiro[1]
[1]*University of California, Berkeley, Berkeley, CA*

3:30PM
In Vivo Monitoring of Chondrogenic Differentiation in a Biomimetic ECM-Incorporated Scaffold via MRI
A. Ye[1], Z. Yin[1], T. K. Yasar[1], A. Khan[1], and R. Magin[1]
[1]*University of Illinois at Chicago, Chicago, IL*

Track: Nano to Micro Technologies
OP - Fri - 3 – 14 - Room 619
Nanobiointerfaces III

Chairs: Edward Botchwey, Dal-Hee Min

2:45PM
Engineered Microscale Flagellar Motion Powered by Cardiomyocytes
B. J. Williams[1], S. V. Anand[1], and T. Saif[11]
University of Illinois at Urbana-Champaign, Urbana, IL

3:00PM
Using Microfluidics to Evaluate the Differential Effect of S1P Receptor Targeting Drugs on Endothelial Cell Sprouting
A. Das[1], S. Lenz[1], and E. Botchwey[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*Georgia Institute of Technology, Atlanta, GA*

3:15PM
Development of Graphene Oxide Based Multiplexed Helicase Activity Assay Platform for Anti-viral Drug Screening
H. Jang[1], S-R. Ryoo[1], and D-H. Min[1]
[1]*Seoul National University, Seoul, Korea, Republic of*

3:30PM
Controlling Cell Shape in Three imensions with Microfabricated Protein Matrices
C. Moraes[1], B. Kim[1], X. Zhu[1], K. Mills[1], A. R. Dixon[1], M. D. Thouless[1], and S. Takayama[1]
[1]*University of Michigan, Ann Arbor, MI*

Track: Respiratory Bioengineering
OP - Fri - 3 – 15 - Room 620
Surfactants and Mucus

Chairs: Donald Gaver, Carrie Perlman

2:45PM
The Unusual Symmetric Reopening Effect Induced by Pulmonary Surfactant
E. Yamaguchi[1], M. J. Giannetti[1], M. J. Van Houten[1], O. Forouzan[1], S. S. Shevkoplyas[1], and D. P. Gaver[1]
[1]*Tulane University, New Orleans, LA*

3:00PM
Fluid Dynamics of Mucus Plug Rupture
Y. Hu[1], S. Bian[1], S. Takayama[1], and J. B. Grotberg[1]
[1]*University of Michigan, Ann Arbor, MI*

3:15PM
Simulations Identify Optimal Mechanical Ventilation Parameters for Surfactant Uptake in Occluded Pulmonary Airways
J. E. Pillert[1], H. Fujioka[1], D. Halpern[2], and D. P. Gaver[1]
[1]*Tulane University, New Orleans, LA,* [2]*University of Alabama, Tuscaloosa, AL*

3:30PM
Direct Surfactant Application in Edematous Alveoli Lowers Ventilation Injury
Y. Wu[1] and C. E. Perlman[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

Track: Neural Engineering
OP - Fri - 3 – 16 - Room 613
Deep Brain Stimulation

Chairs: Chuck Alan Dorval, Matthew Johnson

2:45PM
Computational Modeling of an Intracranial Transvascular Approach to Neural Stimulation
B. A. Teplitzky[1], A. T. Connolly[1], J. A. Bajwa[2], and M. D. Johnson[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*National Neuroscience Institute, King Fahad Medical City, Saudi Arabia*

3:00PM
Neuroglial Circuit Dynamics in Simulated Deep Brain Stimulation
V. Tiruvadi[1,2]
[1]*Emory University School of Medicine, Atlanta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

3:15PM
Cost Efficient Animal Tracking System Used for the Study of Beta and Gamma Waves from Primary Motor Cortex During Movement in Parkinsonian Rats
C. Polar[1] and A. D. Dorval[1]
[1]*University of Utah, Salt Lake City, UT*

3:30PM
Neural Information in Globus Pallidus Degrades with Increasing Parkinsonian Severity
A. D. Dorval[1], A. L. Jensen[2], K. B. Baker[2], and J. L. Vitek[2]
[1]*University of Utah, Salt Lake City, UT,* [2]*University of Minnesota, Minneapolis, MN*

P = Poster Session
OP = Oral Presentation

SATIRDAY, September 28

TODAY'S HIGHLIGHT

PLATFORM SESSION Sat 1 8:00am - 9:30am
See pages 161-167, WSCC

EXHIBIT HALL OPEN 9:30am - 1:30pm
WSCC, Exhibit Hall 4AB

POSTER SESSION SAT A 9:30pm -1:00pm
WSCC, Exhibit Hall 4AB

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

PLENARY SESSION
10:30am - 12noon
WSCC, Ballroom 6E

BME 2013 Rita Schaffer Memorial Young Invesigator Lecture

FLUID BIOTRANSPORT IN IMMUNITY AND IMMUNOTHERAPEUTIC DESIGN

Susan N. Thomas, PhD

Diversity Lecture
CORNELL UNIVERSITY FACULTY

PLATFORM SESSION Sat 2 1:30pm - 3:00pm
See pages 189-194, WSCC

PLATFORM SESSION Sat 3 3:15pm - 4:15pm
See pages 195-200, WSCC

Saturday, September 28, 2013

8:00AM – 9:30AM

PLATFORM SESSION – SAT – 1

Track: Tissue Engineering
OP - Sat - 1 – 1 - Room 6B

Musculoskeletal and Orthopedic Tissue Engineering II

Chairs: Alejandro Jose Almarza, Robert Mauck

8:00AM
Bioactive Microsphere-Incorporated Cartilage Sheets for Treatment of Rabbit Osteochondral Defects
L. D. Solorio[1], C. W. Cheng[1], D. Correa[1], L. M. Phillips[1], and E. Alsberg[1]
[1]*Case Western Reserve University, Cleveland, OH*

8:15AM
Preclinical Assessment of Mesenchymal Stromal Cell (MSC) Transplantation to Treat Type II (age-related) Osteoporosis
J. J. Kiernan[1], J. E. Davies[1], and W. L. Stanford[1,2]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*Ottawa Hospital Research Institute, Ottawa, ON, Canada*

8:30AM
Tissue-Engineering of Functional Human Skeletal Muscle
L. R. Madden[1], M. Juhas[1], C. Cheng[1], W. E. Kraus[1], G. A. Truskey[1], and N. Bursac[1]
[1]*Duke University, Durham, NC*

8:45AM
MicroRNA-133a and MicroRNA-696 Joint Inhibition Increases Specific Force Output of Tissue-Engineered 3D Human Skeletal Muscle Constructs
C. S. Cheng[1], L. Madden[1], W. E. Kraus[2], N. Bursac[1], and G. A. Truskey[1]
[1]*Duke University Biomedical Engineering, Durham, NC,* [2]*Duke University Medical Center, Durham, NC*

9:00AM
Effects of Mild Heating on the Osteogenesis of Mesenchymal Stem Cells During Inflammation
K. Sunderic[1], D. Dawkins[1], and S. Wang[1]
[1]*City College of New York, New York, NY*

9:15AM
Tissue Engineering Cartilage Using Naturally Derived Multi-Layer ECM Scaffolds
A. Callanan[1,2], S. McCullen[1], J. Steele[1], R. Nair[1], and M. M. Stevens[1]
[1]*Departments of Materials and Bioengineering, Institute of Biomedical Eng, Imperial College London, London, United Kingdom,* [2]*Institute for Materials and Processes, School of Engineering, University of Edinburgh, Edinburgh, United Kingdom*

Track: Tissue Engineering
OP - Sat - 1 – 2 - Room 6C

Tissue Engineered Models for Study of Disease and Drug Discovery II

Chairs: Darja Marolt, Walter L. Murfee

8:00AM
Co-culture Model of Tumor Metastasis Reveals Short-Range Paracrine Interactions
K. H. Spencer[1] and E. E. Hui[1]
[1]*University of California-Irvine, Irvine, CA*

8:15AM
Development of Hydrogel Scaffolds for Studying Glioblastoma Multiforme Invasion in 3D
R. W. Sirianni[1,2], J. M. Heffernan[1,2], and D. J. Overstreet[1]
[1]Barrow Neurological Institute, Phoenix, AZ, [2]Arizona State University, Tempe, AZ

8:30AM
The Use of Wicking Fibers to Distinguish Cell Types
S. Tabbaa[1] and K. J. Burg[1]
[1]Clemson University, Clemson, SC

8:45AM
In Vitro Fabrication of Scaffold-Free Skeletal Muscle Tissue with Defined 3D Structure Using a Thermoresponsive, Nanotopographically-Defined Platform
A. Jiao[1], N. E. Trosper[1], J. H. Tsui[1], D-H. Kim[1], and C. E. Murry[1]
[1]University of Washington, Seattle, WA

9:00AM
Computational Modeling and Mechanical Stimulation for Enhanced Bioengineered Skin Mechanics
B. N. Blackstone[1], F. Sheer[1], S. N. Ghadiali[1], and H. M. Powell[1]
[1]The Ohio State University, Columbus, OH

9:15AM
In Vitro Tumor Model Generated Using a Flow Perfusion Bioreactor
M. Santoro[1], S-E. Lamhamedi Cherradi[2], F. K. Kasper[1], J. A. Ludwig[2], and A. G. Mikos[1]
[1]Rice University, Houston, TX, [2]University of Texas MD Anderson Cancer Center, Houston, TX

Track: Biomaterials
OP - Sat - 1 – 3 - Room 606
Biomaterials for Controlling Cell Environment I

Chairs: Jason Burdick, Alisha Sarang-Sieminski

8:00AM
Biomaterials for Intelligently Manipulating Cells *(Invited)*
B. Ratner[1]
[1]University of Washington, Seattle, WA

8:30AM
Engineered 3D Hybrid Hydrogels Simulate Early Calcific Aortic Valve Disease
J. Hjortnaes[1,2], G. Camci-Unal[3,4], C. Goettsch[5], K. Scherer[1], L. Lax[1], F. J. Schoen[6], J. Kluin[2], E. Aikawa[1,5], and A. Khademhosseini[3,4]
[1]Center of Excellence in Vascular Biology, Department of Medicine, Brigham and Women's Hospital, Boston, MA, [2]Department of Cardiothoracic Surgery, University Medical Center Utrecht, Utrecht, Netherlands, [3]Division of Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [4]Harvard-MIT Division of Health Sciences and Technology, MIT, Cambridge, MA, [5]Center for Interdisciplinary Cardiovascular Sciences, Brigham and Women's Hospital, Boston, MA, [6]Department of Pathology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA

8:45AM
Tuning PEG Hydrogel Mechanics Independent of Density to Control Tubulogenesis
R. M. Schweller[1] and J. L. West[1]
[1]Duke University, Durham, NC

9:00AM
Dynamic and Reversible Surface Topography Influences Cell Morphology
J. D. Kiang[1], J. H. Wen[1], J. C. del Alamo[1], and A. J. Engler[1,2]
[1]UC San Diego, La Jolla, CA, [2]Sanford Consortium for Regenerative Medicine, La Jolla, CA

9:15AM
PEG-based, Crosslinkable Microribbons for Forming Macroporous Scaffolds with Decoupled Biochemical and Mechanical Properties
L-H. Han[1], X. Tong[1], and F. Yang[1]
[1]Stanford University, Stanford, CA

Track: Biomechanics
OP - Sat - 1 – 4 - Room 607
Computer-Aided Biomechanical Analysis

Chairs: Danny Bluestein, Bela Suki

8:00AM
Finite Element Fluid-Solid Interaction Simulation of Pulse Wave Propagation on Human Abdominal Aortic Aneurysm
D. Shahmirzadi[1], I. Jourard[1], and E. E. Konofagou[1]
[1]Columbia University, New York, NY

8:15AM
Finite Element Analysis of the Lower Extremity Due to Anti-Vehicle Blasts
R. Bertucci[1], R. Prabhu[1], M. F. Horstemeyer[1], J. Sheng[2], J. Liao[1], and L. N. Williams[1]
[1]Mississippi State University, Mississippi State, MS, [2]U.S. Army Tank Automotive, Research, Development and Engineering Center, Warren, MI

8:30AM
Measurement of Skin Deformation of the Breast associated with Position Change through 3D Digital Image Correlation
H. Khatam[1], M. C. Fingeret[2], G. P. Reece[2], M. K. Markey[1], and K. Ravi-Chandar[1]
[1]University of Texas at Austin, Austin, TX, [2]MD Anderson Cancer Center, Houston, TX

8:45AM
Inverse Finite Element Modeling for Viscoelastic Biomechanical Properties of Spinal Cord
M. B. Panzer[1], B. R. Bigler[1], A. W. Yu[1], N. M. Kloppenborg[1], C. R. Bass[1], G. R. Paskoff[2], and B. S. Shender[2]
[1]Duke University, Durham, NC, [2]NAVAIR, Patuxent River, MD

9:00AM
Primary Blast-Induced Ocular Trauma
M. A. Reilly[1], D. Sherwood[1], R. Watson[1,2], B. J. Lund[3], W. E. Sponsel[1,4], K. Thoe[4], R. D. Glickman[1,5], and W. Gray[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]Biodynamic Research Corporation, San Antonio, TX, [3]US Army Institute of Surgical Research, San Antonio, TX, [4]WESPA, San Antonio, TX, [5]University of Texas Health Science Center at San Antonio, San Antonio, TX

9:15AM
Multiscale Model of Shear Induced Platelet Activation and Pseudopod Formation
S. Pothapragada[1], P. Zhang[1], M. Livelli[1], J. Sheriff[1], Y. Deng[1], and D. Bluestein[1]
[1]Stony Book University, Stony Brook, NY

Track: Stem Cell Engineering
OP - Sat - 1 – 5 - Room 608
Directing Stem Cell Differentiation

Chairs: Eben Alsberg, Stephanie Willerth

8:00AM
Mesenchymal Morphogenesis of Embryonic Stem Cells Modulates the Dynamics of 3D Multicellular Mechanics *(Invited)*
M. Kinney[1], R. Saeed[1], and T. C. McDevitt[1]
[1]Georgia Institute of Technology, Atlanta, GA

PLATFORM SESSIONS **Sat-1**

P = Poster Session
OP = Oral Presentation

8:30AM
Novel and Scalable Derivation of Neuroepithelium and Ventral Progenitors of Defined Spinal Cord Position
E. S. Lippmann[1], M. Estevez-Silva[1], and R. S. Ashton[1]
[1]*University of Wisconsin, Madison, WI*

8:45AM
Defined Extracellular Matrix Components are Necessary for -cell Precursor Induction
H. Taylor-Weiner[1], J. E. Schwarzbauer[2], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Princeton University, Princeton, NJ*

9:00AM
Intrafusal Myofibers from Human Stem Cells and Their Innervations by Human Sensory Neurons
X. Guo[1], S. Spradling[1], A. Mazza[1], S. Lambert[1], and J. J. Hickman[1]
[1]*University of Central Florida, Orlando, FL*

9:15AM
Directed *In Vitro* Myogenesis of Human Embryonic Stem Cells and Their *In Vivo* Engraftment *(Invited)*
Y. Hwang[1]
[1]*University of California San Diego, La Jolla, CA*

Track: Cancer Technologies
OP - Sat - 1 – 6 - Room 609
Engineering Anti-tumor Immunity

Chairs: Matthias Stephan, Susan Thomas

8:00AM
Lower Dose Chitosan IL-12 Immunotherapy for Intravesical Bladder Cancer Induces Tumor-Specific Systemic Immunity
S. G. Smith[1], L. Yang[1], and D. Zaharoff[1]
[1]*University of Arkansas, Fayetteville, AR*

8:15AM
High Efficiency MHC Class I Antigen Presentation By Microfluidic Delivery of Target Proteins
A. Sharei[1], S. Mao[1], P. Basto[1], G. Szeto[1], G. Hartoularos[1], R. Langer[1], D. Irvine[1], and K. Jensen[1]
[1]*MIT, Cambridge, MA*

8:30AM
Preventing Cancer Relapse with Biomaterial-Supported Immune Cell Implants
A. G. Fitzsimons[1], M. Mecwan[2], and M. T. Stephan[1,2]
[1]*Fred Hutchinson Cancer Research Center, Seattle, WA,* [2]*University of Washington, Seattle, WA*

8:45AM
Shape Matters: Particle Shape Affects Artificial Antigen Presenting Cell Activity
J. C. Sunshine[1], K. Perica[1], J. P. Schneck[1], and J. J. Green[1]
[1]*Johns Hopkins University, Baltimore, MD*

9:00AM
Pathogen Mimicking Particles in an Injectable Synthetic-Immune-Priming Center (sIPC) Provide Efficient Immune Cell Activation and Protection in Nurine Tumor Models
J. Leleux[1], P. Pradhan[1], E. Dawson[1], I. Sakamaki[2], H. Qin[2], L. W. Kwak[2], and K. Roy[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*UT MD Anderson Cancer Center, Houston, TX*

9:15AM
Targeted Delivery of Pro-Apoptotic Peptides to Tumor-associated Macrophages Delays Tumor Growth
M. Cieslewicz[1], J. Tang[1], J. Yu[1], M. Zavaljevski[1], E. Raines[1], and S. Pun[1]
[1]*University of Washington, Seattle, WA*

Track: Cardiovascular Engineering
OP - Sat - 1 – 7 - Room 612
Vascular Mechanics II

Chairs: Jane Grande-Allen, Elisa Konofagou

8:00AM
Phenotypic Diversity of Cells within the Intraluminal Thrombus and Vascular Wall of Abdominal Aortic Aneurysm
B. N. Brown[1], J. Rao[1], E. L. Ofstun[1], J. D. Humphries[2], and D. A. Vorp[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Yale University, New Haven, CT*

8:15AM
Aortic Valve Morphology Predicts Spatially-Distinct Fiber Architecture in Ascending Aortic Aneurysm
A. Tsamis[1], J. A. Phillippi[1], R. G. Koch[1], J. T. Krawiec[1], A. D'Amore[1,2], S. C. Watkins[1], W. R. Wagner[1], D. A. Vorp[1], and T. G. Gleason[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Fondazione Ri.MED, Palermo, Italy*

8:30AM
Multi-Modality Imaging of Type-B Aortic Dissection Using a Novel Hemodynamic Model
A. P. Patel[1], S. R. Igo[1], D. Maragiannis[1], M. S. Jackson[1], D. J. Shah[1], A. B. Lumsden[1], S. H. Little[1], and J. Bismuth[1]
[1]*Methodist DeBakey Heart & Vascular Center, Houston, TX*

8:45AM
Mechanistic Model on Role of "Radially-Running" Collagen in Dissection Properties of Ascending Aorta
S. Pal[1], A. Tsamis[1], S. Pasta[2], A. D'Amore[1,2], T. G. Gleason[1], D. A. Vorp[1], and S. Maiti[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Fondazione Ri.MED, Palermo, Italy*

9:00AM
Prediction of Stretch and Wall-Shear Stress Abnormalities in the Bicuspid Aortic Valve Ascending Aorta
K. Cao[1] and P. Sucosky[1]
[1]*University of Notre Dame, Notre Dame, IN*

9:15AM
The Role of Bicuspid Aortic Valve Hemodynamics in the Development of Acute Aortic Dilation
S. Ratley[1], K. Cao[1], L. Sun[1], and P. Sucosky[1]
[1]*University of Notre Dame, Notre Dame, IN*

track sponsored by Edwards

Track: Cellular and Molecular Bioengineering
OP - Sat - 1 – 8 - Room 604
Cell Biomechanics I

Chairs: Adam Engler, Jeffrey Jacot

8:00AM
Single Cell Traction Microscopy within 3D Collagen Matrices
M. S. Hall[1], X. Feng[1], Y. Huang[1], R. Long[2], C-Y. Hui[1], and M. Wu[1]
[1]*Cornell University, Ithaca, NY,* [2]*University of Alberta, Edmonton, AB, Canada*

8:15AM
TGF-β1 Induced Stiffening of Mesenchymal Stem Cells Depends on PDGF-BB Signaling
D. Ghosh[1], L. Lilli[1], D. McGrail[1], L. V. Matyunina[1], J. McDonald[1], and M. R. Dawson[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

8:30AM
Focal Adhesion Dynamics Coupled with Cytoskeletal Stresses and Reorganization Under Flow
D. Verma[1], F. Meng[1], and S. Z. Hua[1]
[1]*State University of New York at Buffalo, Buffalo, NY*

8:45AM
Cellular Force Modulation Through Zyxin Rearrangement in a Fused-fiber Nanonet Environment
C. Ng[1], B. Koons[1], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA*

9:00AM
A Multiscale Framework for Modeling and Investigating Cell Mechanics in 3D Extracellular Matrix Environments
V. Rajagopal[1,2], Q. Zhang[3], and R. D. Kamm[1,4]
[1]*Singapore-MIT Alliance for Research and Technology Center, Singapore, Singapore,* [2]*Auckland Bioengineering Institute, Auckland, New Zealand,* [3]*National University of Singapore, Singapore, Singapore,* [4]*Massachusetts Institute of Technology, Cambridge, MA*

9:15AM
Live-Cell Subcellular Study of Force-Mediated Focal Adhesion Morphogenesis Using Elastomeric Micropost Force Sensors
S. Weng[1] and J. Fu[1]
[1]*University of Michigan, Ann Arbor, MITrack: Nano to Micro Technologies*

OP - Sat - 1 – 9 - Room 611

Microfluidic Platform I

Chairs: Dino Di Carlo, Joel Voldman

8:00AM
Microfluidic Reconstitution of Multimodal High-Density Lipoprotein-Derived Nanomaterials
Y. Kim[1], F. Fay[2], D. P. Cormode[3], B. L. Sanchez[2], J. Tang[2], E. A. Fisher[4], Z. A. Fayad[2], W. J. Mulder[2], O. C. Farokhzad[5], and R. Langer[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Icahn School of Medicine at Mount Sinai, New York, NY,* [3]*University of Pennsylvania, Philadelphia, PA,* [4]*NYU School of Medicine, New York, NY,* [5]*Brigham and Women¡¯s Hospital, Boston, MA*

8:15AM
Highly Efficient Isolation of Pathogens From Whole Blood for Clinical Whole Blood for Clinical Diagnostics
H. W. Hou[1], R. P. Bhattacharyya[2], D. T. Hung[2], and J. Han[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*The Broad Institute, Cambridge, MA*

8:30AM
Imaging-Visible Microencapsulation of Human Mesenchymal Stem Cells Using Droplet Microfluidics for Microcatheter-Based Site-Specific Cell Delivery
C. Hu[1], C. W. Beh[1], J. Park[1], C. R. Weiss[1], D. L. Kraitchman[1], J. T-H. Wang[1], and H-Q. Mao[1]
[1]*Johns Hopkins University, Baltimore, MD*

8:45AM
Programmed Flows for Precise Solution Transfer Around Particles and Cells
D. E. Go[1], E. Sollier[1], H. Amini[1], P. Sandoz[1], and D. Di Carlo[1]
[1]*UCLA, Los Angeles, CA*

9:00AM
Colorimetric Microfluidic Biosensing Platform with Integrated nanoLCA Plasmonic Device
A. Y. Hsiao[1], M. R. Gartia[1], P. Khumwan[1], and G. L. Liu[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

9:15AM
High-Throughput Microfluidic Cell Pairing for Measurement of Immune Cell Activation Kinetics
B. Dura[1], S. K. Dougan[1], M. Barisa[1], H. L. Ploegh[1], and J. Voldman[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Nano to Micro Technologies
OP - Sat - 1 – 10 - Room 602

Microphysiology Systems

Chairs: Thomas Gaborski, Lance Kam

8:00AM
Low-Voltage Electroosmotic Flow and DNA Shearing Using Ultrathin Nanoporous Silicon Membranes
T. Gaborski[1], R. Carter[1], J. Snyder[2], and J. McGrath[2]
[1]*Rochester Institute of Technology, Rochester, NY,* [2]*University of Rochester, Rochester, NY*

8:15AM
Hormone and Drug-Mediated Modulation of Glucose Metabolism in a Microscale Model of the Human Liver
M. Davidson[1], M. Lehrer[1], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO*

8:30AM
Multiple Myeloma Cancer Niche Reconstructed by 3D Microfluidic Tissue Culture
W. Zhang[1], J. Zilberberg[2], D. Siegel[2], H. Wang[1], and W. Lee[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*Hackensack University Medical Center, Hackensack, NJ*

8:45AM
Generating Physiological Microfluidic Flow Patterns with Magnetoactive Sponges
S. Hong[1], R. Yen[1], G. A. Truskey[1], and X. Zhao[1]
[1]*Duke University, Durham, NC*

9:00AM
Geometric Control of Hepatic and Vascular Engineered Tissue Architecture *In Vivo*
K. R. Stevens[1], R. R. Chaturvedi[2], J. D. Baranski[2], R. E. Schwartz[1], M. D. Ungrin[3], J. S. Miller[4], C. S. Chen[2], and S. N. Bhatia[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*University of Calgary, Calgary, AB, Canada,* [4]*University of Pennsylvania, University of Pennsylvania, PA*

9:15AM
Exclusion of CD45 from Vicinity of T Cell Receptor
J-H. Lee[1], M. L. Dustin[2], and L. C. Kam[1]
[1]*Columbia University, New York, NY,* [2]*Skirball Institute of Biomolecular Medicine, New York, NY*

PLATFORM SESSIONS Sat-1

P = Poster Session
OP = Oral Presentation

Track: Bioinformatics, Computational and Systems Biology
OP - Sat - 1 – 11 - Room 615
Computational Bioengineering I

Chairs: Evrim Acar, Michael A. Saunders, Lawrence Sirovich

8:00AM
Structure-Revealing Data Fusion Model with Applications in Metabolomics *(Invited)*
E. Acar[1], A. J. Lawaetz[1], M. A. Rasmussen[1], and R. Bro[1]
[1]*University of Copenhagen, Frederiksberg C, Denmark*

8:30AM
Numerical Linear Algebra and Optimization Tools for Bioinformatics *(Invited)*
M. A. Saunders[1], S. Akle[1], D. Ma[1], Y. Sun[1], R. M. Fleming[2], and I. Thiele[2]
[1]*Stanford University, Stanford, CA,* [2]*University of Luxembourg, Esch-sur-Alzette, Luxembourg*

9:00AM
Reduction and Analysis of Large Scale Systems *(Invited)*
L. Sirovich[1]
[1]*Rockefeller University, New York, NY*

Track: Biomedical Imaging and Optics
OP - Sat - 1 – 12 - Room 616
Vascular and Pulmonary Imaging

Chairs: Qifa Zhou

8:00AM
Permittivity Reconstructions of Perfusion in a Human Chest from EIT Data
C. N. Lara Herrera[1], J. Mueller[1], and R. Gonzalez[2]
[1]*Colorado State University, Fort Collins, CO,* [2]*University of Sao Paulo, Sao Paulo, Brazil*

8:15AM
Quantification of 3D Pulmonary Vascular Morphology in Pediatric Patients with Pulmonary Vascular Disease
W. O'Dell[1], S. Prabhakaran[1], and S. Hegde[1]
[1]*University of Florida, Gainesville, FL*

8:30AM
In Vivo Detection of Hyperoxia-Induced Pulmonary Endothelial Cell Death Using 99mTc-Duramycin
S. H. Audi[1], E. R. Jacobs[2], M. Zhao[3], S. T. Haworth[4], D. L. Roerig[2], and A. V. Clough[1]
[1]*Marquette University, Milwaukee, WI,* [2]*Zablocki VA Medical Center, Milwaukee, WI,* [3]*Northwestern University, Chicago, IL,* [4]*Medical College of Wisconsin, Milwaukee, WI*

8:45AM
Quantitative Measure of Remotely Detected Human Pulse in Visible Spectrum
B. Kaur[1], V. A. Hodgkin[1], J. A. Hutchinson[1], J. K. Nelson[2], and V. N. Ikonomidou[2]
[1]*US Army Night Vision and Electronic Sensors Directorate, Fort Belvoir, VA,* [2]*George Mason University, Fairfax, VA*

9:00AM
Infrared Spectroscopy with PLS Regression Predicts Elastin Content in Aorta Samples
R. Cheheltani[1], J. Rao[2], D. A. Vorp[2], M. Kiani[1], and N. Pleshko[1]
[1]*Temple University, Philadelphia, PA,* [2]*University of Pittsburgh, Pittsburgh, PA*

9:15AM
Detection of Spinal Cord Ischemia Using a Novel Optical Monitor
A. D'souza[1], R. Mesquita[2], T. Bilfinger[1], R. Galler[1], A. Yodh[2], and T. Floyd[1]
[1]*SUNY Stony Brook, Stony Brook, NY,* [2]*University of Pennsylvania, Philadelphia, PA*

Track: Biomedical Imaging and Optics
OP - Sat - 1 – 13 - Room 618
Novel Approaches

Chairs: Richard Price

8:00AM
Tissue Fractionation by Ultrasonic Atomization
J. C. Simon[1], O. A. Sapozhnikov[1,2], V. A. Khokhlova[1,2], Y-N. Wang[1], L. A. Crum[1], and M. R. Bailey[1]
[1]*University of Washington, Seattle, WA,* [2]*Moscow State University, Moscow, Russian Federation*

8:15AM
Flow Cytometry as Dual Sizing and Shell Characterization Tool for Targeted and Non Targeted Microbubbles.
C. Perez[1,2], J. Swalwell[2], J. Tu[3], A. Brayman[2], and T. J. Matula[2]
[1]*Department of Bioengineering, University of Washington, Seattle, WA,* [2]*Center for Industrial and Medical Ultrasound- Applied Physics Laboratory, University of Washington, Seattle, WA,* [3]*Nanjing University, Nanjing, China, People's Republic of*

8:30AM
Nanocrystal Loaded Polymeric Microbubbles for Multimodal Imaging
N. Teraphongphom[1], P. Chhour[2], P. C. Naha[2], W. Witschey[2], D. P. Cormode[2], and M. A. Wheatley[1]
[1]*Drexel University, Philadelphia, PA,* [2]*University of Pennsylvania, Philadelphia, PA*

8:45AM
Estimating Pedicle Screw Fastening Strength via a Virtual Modeling and Templating Technique for Spine Surgery Planning
C. A. Linte[1], J. Camp[1], K. Augustine[1], D. Holmes[1], and R. Robb[1]
[1]*Mayo Clinic, Rochester, MN*

9:00AM
Chemical Imaging of Human Breast Cancer Tissue Using ToF-SIMS
B. Bluestein[1], M. Robinson[1], F. Morrish[2], D. Hockenbery[2], P. Porter[2], and L. J. Gamble[1]
[1]*University of Washington, Seattle, WA,* [2]*Fred Hutchinson Cancer Research Center, Seattle, WA*

9:15AM
BioGames – A Crowd-Sourced Gaming Platform for Distributed Tele-pathology and Training of Experts
S. Mavandadi[1], S. Feng[1], F. Yu[1], S. Dimitrov[1], R. Yu[1], and A. Ozcan[1]
[1]*University of California, Los Angeles, CA*

Track: Drug Delivery
OP - Sat - 1 – 14 - Room 619
Targeted Delivery I

Chairs: Guillermo Ameer, Jian Yang

8:00AM
Hemodynamic Targeting of Atheroprone Vasculature for Diagnostic Imaging and Prophylactic Drug Delivery *(Invited)*
L. H. Hofmeister[1], S. Lee[1], W. Chen[1], T. Giorgio[1], D. Harrison[1], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN*

8:30AM
Periadventitial Delivery of a Retinoid via Biodegradable Nanonets for the Inhibition of Neointimal Hyperplasia in Prosthetic Vascular Grafts
J. YANG[1], K. BALER[1], J. J. WANG[2], J. ZHANG[2], AND G. A. AMEER[1,3]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL, [3]Northwestern University, Chicago

8:45AM
Matrix Rigidity Controls Nanoparticle Uptake By Endothelial Cells via Alterations in Apical Membrane Mechanics
C. HUANG[1], P. J. BUTLER[1], S. TONG[2], H. S. MUDDANA[3], G. BAO[2], AND S. ZHANG[1]
[1]The Pennsylvania State University, University Park, PA, [2]Georgia Institute of Technology and Emory University, Atlanta, GA, [3]University of California San Diego, La Jolla, CA

9:00AM
Bio-Inspired Approach to Avoid Mononuclear Phagocytic System Clearance in Systemic Treatments
A. PARODI[1] AND E. TASCIOTTI[1]
[1]The Methodist Hospital Research Institute, Houston, TX

9:15AM
Elongated Viral Nanoparticles for Enhanced Thrombus Targeting
A. M. WEN[1], Y. WANG[1,2], A. C. YANG[1], H. GAO[1,2], D. I. SIMON[1,2], AND N. F. STEINMETZ[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University Hospitals Case Medical Center, Cleveland, OH

Track: Respiratory Bioengineering
OP - Sat - 1 – 15 - Room 620
Ventilation and Ventilation-Induced Injury

Chairs: Kostantin Birokov, Rebecca Heise

8:00AM
Mechanical Induction of Group V Phospholipase A2 Causes Lung Inflammation and Acute Lung Injury
A. A. BIRUKOVA[1], A. Y. MELITON[1], N. M. MUNOZ[1], A. R. LEFF[1], AND K. G. BIRUKOV[1]
[1]University of Chicago, Chicago, IL

8:15AM
Inhibiting the Rho Kinase Pathway to Reduce Cell Injury and Inflammation During Cyclic Airway Reopening
N. HIGUITA-CASTRO[1], K. NELSON[1], D. J. HANSFORD[1], AND S. N. GHADIALI[2]
[1]The Ohio State University, Columbus, OH, [2]The Wexner Medical Center at The Ohio State University, Columbus, OH

8:30AM
Computational Analysis of Dynamic Pressure-Volume Observations to Assess Lung Injury Status
B. J. SMITH[1] AND J. H. BATES[1]
[1]University of Vermont, Burlington, VT

8:45AM
Quantifying Stress-Induced Pulmonary Epithelial Damage During Airway Reopening
J. RYANS[1], H. W. GLINDMEYER IV[1], J. PILLERT[1], B. SMITH[2], AND D. P. GAVER III[1]
[1]Tulane University, New Orleans, LA, [2]University of Vermont, Burlington, VT

9:00AM
Model-Based Estimation of Ventilatory Control Dynamics during Sleep in Pediatric Obesity
L. NAVA-GUERRA[1], P. CHALACHEVA[1], W. TRAN[1], S. WARD[2], T. KEENS[2], AND M. KHOO[1]
[1]University of Southern California, Los Angeles, CA, [2]Children's Hospital Los Angeles, Los Angeles, CA

9:15AM
The Effect of Age on the Severity of Ventilator Induced Lung Injury in an Aging Mouse Model
J. HERBERT[1], A. VENKATASUBRAMANIAN[1], R. PIDAPARTI[1], A. REYNOLDS[1], AND R. L. HEISE[1]
[1]Virginia Commonwealth University, Richmond, VA

Track: Neural Engineering
OP - Sat - 1 – 16 - Room 613
Neural Engineering: From Basic Studies to Translation

Chairs: Christopher Passaglia, Sarah Pixley

8:00AM
Magnesium Metal as a Scaffold for Peripheral Nerve Regeneration
T. HOPKINS[1], J. VENNEMEYER[1], D. MINTEER[2], K. LITTLE[3], M. HERSHCOVITCH[1], D. HOM[1,3], K. MARRA[2], AND S. K. PIXLEY[1]
[1]University of Cincinnati, Cincinnati, OH, [2]University of Pittsburgh, Pittsburgh, PA, [3]Cincinnati Children's Hospital, Cincinnati, OH

8:15AM
Development and Characterization of a System for High-Content Screening of Functional NMJs *In Vitro*
A. S. SMITH[1], C. J. LONG[1], K. PIROZZI[1], AND J. J. HICKMAN[1]
[1]UNIVERSITY OF CENTRAL FLORIDA, ORLANDO, FL

8:30AM
Microparticles and Hydrogels for Delivery of Biomolecules into the Spinal Cord after Injury
Z. Z. KHAING[1,2], G. PLUMTON[1], P. ALLEN[1], A. ELLINGTON[1], AND C. E. SCHMIDT[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]University of Florida, Gainesville, FL

8:45AM
Ability of Polyphenols to Attenuate Alzheimer's Disease by Reducing Nuclear Factor-kB Activation
K. M. PATE[1], M. ROGERS[1], J. CLEGG[1], AND M. A. MOSS[1]
[1]University of South Carolina, Columbia, SC

9:00AM
Towards a System for Intraocular Pressure Regulation
C. PASSAGLIA[1], S. BELLO[1], R. TZEKOV[1,2], AND S. MALAVADE[1]
[1]University of South Florida, Tampa, FL, [2]Roskamp Institute, Sarasota, FL

9:15AM
Thermal Mechanisms of Millimeter Wave Neural Stimulation
M. G. SHAPIRO[1], M. F. PRIEST[2], P. H. SIEGEL[3], AND F. BEZANILLA[2]
[1]University of California at Berkeley, Berkeley, CA, [2]University of Chicago, Chicago, IL, [3]California Institute of Technology, Pasadena, CA

P = Poster Session
OP = Oral Presentation

Track: Translational Biomedical Engineering
OP - Sat - 1 – 17 - Room 6A
Translational Therapeutics and Imaging

Chairs: Harvinder Gill, Kent Leach

8:00AM
Blockade of Placental Growth Factor/Neuropilin 1 Pathway Inhibits Growth and Spread of Medulloblastoma
T. Peterson[1,2], M. Snuderl[1,2], A. Batista[1,2], N. Kirkpatrick[1,2], C. Ruiz de Almodovar[3], L. Riedemann[1,2], P. Carmeliet[3], and R. Jain[1,2]
[1]Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital, Boston, MA, [3]VIB-KU Leuven, Leuven, Belgium

8:15AM
Engineering Gene Targeting and Editing Molecules to Treat Monogenic Thalassemia Diseases
F. Reza[1] and P. M. Glazer[1]
[1]Yale University, New Haven, CT

8:30AM
Living without Breathing: Intraperitoneal Administration of Oxygen Microbubbles Significantly Extends Life in Hypoxemic Rodents
J. Feshitan[1], N. Legband[2], B. Terry[2], and M. Borden[1]
[1]University of Colorado, Boulder, CO, [2]University of Nebraska, Lincoln, NE

8:45AM
Interactions of Peptide Triazoles and Gold Nanoparticle Conjugates with gp120 Induce Irreversible Inactivation of HIV-1 Virions
A. Rosemary Bastian[1], M. Contarino[1], K. Kimene[1], K. Freedman[1], C. Duffy[1], and I. Chaiken[1]
[1]Drexel University, Philadelphia, PA

9:00AM
Gold Nanoparticle-M2e Conjugate as a Platform for Universal Influenza Vaccine
W. Tao[1], K. Ziemer[2], and H. S. Gill[1]
[1]Texas Tech University, Lubbock, TX, [2]Northeastern University, Boston, MA

9:15AM
Morphological Characterization to Inform Complex Surgical Decisions in Chronic Tetralogy of Fallot
A. S. Rao[1] and P. G. Menon[2]
[1]University of Buffalo, State University of New York, Buffalo, NY, [2]Carnegie Mellon University, Pittsburgh, PA

Track: Cellular and Molecular Bioengineering
OP - Sat - 1 – 18 - Room 6E
Molecular Bioengineering

Chairs: Matthew J. Lazzara, Casim Sarkar

8:00AM
Light Activated Protein Clustering and Signaling Activation in Mammalian Cells
L. Bugaj[1], A. Choksi[1], C. Mesuda[1], R. Kane[2], and D. Schaffer[1]
[1]University of California Berkeley, Berkeley, CA, [2]Rensselaer Polytechnic Institute, Troy, NY

8:15AM
Engineering Transcriptional Factor Runx2 to Target Vascular Calcification
T. M. Chen[1], N. B. Nguyen[1], K. V. Eaton[1], C. M. Giachelli[1], and M. Y. Speer[1]
[1]University of Washington, Seattle, WA

8:30AM
Developing And Screening A Library Of Activatable Recognition Proteins
S. K. Gupta[1], R. Nguyen[1], J. Gleixner[1], L. Wentland[1], A-Y. Tu[1], and W. E. Thomas[1]
[1]University of Washington, Seattle, WA

8:45AM
Multivalent Ligands to Control Stem Cell Fate
A. Conway[1] and D. V. Schaffer[1]
[1]University of California, Berkeley, Berkeley, CA

9:00AM
Modulating CSPG Biosynthesis in Reactive Astrocytes to Enhance Neuronal Regeneration
V. P. Swarup[1,2], V. M. Tran[1], M. Kalita[1], M. V. Quintero[1], V. Hlady[1], and K. Balagurunathan[1]
[1]University of Utah, Salt Lake City, UT, [2]University of Utah, Salt Lake City

9:15AM
Selective Dihydropyridines Inhibit Amyloid- Aggregation and Alter the Morphology of Amyloid- Aggregates Associated with Alzheimer's Disease
J-H. Tseng[1], J. Chapman[1], and M. Moss[1]
[1]University of South Carolina, Columbia, SC

Saturday, September 28, 2013

9:30AM – 1:00PM

POSTER SESSION –SAT – A

Track: Biomechanics

Cellular and Molecular Biomechanics

P – Sat - A - 1

Biomechanical Modulation of Hepatocyte Dysfunction in Overly Produced ECM Microenvironment

S. Sun[1], Z. Song[1], and M. Cho[1]

[1]University of Illinois at Chicago, Chicago, IL

P – Sat - A - 2

Effects of Blocking Cell-Cell and Cell-Matrix Interactions on Mechanical Properties of Cardiomyocytes

A. Desai[1], S. Deitch[1], and D. Dean[1]

[1]Clemson University, Clemson, SC

P – Sat - A - 3

Mechanical Properties of Bone Marrow and Adipose Stem Cells during Vascular Smooth Muscle Cell Differentiation

R. Chen[1] and D. Dean[1]

[1]Clemson University, Clemson, SC

P – Sat - A - 4

The Effects of Different Size Nanoparticles on the Mechanical Properties of Vascular Smooth Muscle Cells

T. Kieu[1], W. McAllister[1], C. Kitchen[1], and D. Dean[1]

[1]Clemson University, Clemson, SC

P – Sat - A - 5

Schwann Cell Dynamics on Substrates of Varying Stiffness

C. Lopez-Fagundo[1], E. Bar-Kochba[1], C. Oh[1], L. Livi[1], D. Hoffman-Kim[1], and C. Franck[1]

[1]Brown University, Providence, RI

P – Sat - A - 6

Localized Lipid Packing of Transmembrane Domains Impedes Integrin Clustering

M. Mehrbod[1] and M. R. Mofrad[1]

[1]University of California, Berkeley, Berkeley, CA

P – Sat - A - 7

Effect of Mounting Technique for Tissue Mechanics Measurements Using Atomic Force Microscopy

J. T. Morgan[1], V. K. Raghunathan[1], C. J. Murphy[1], and P. Russell[1]

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

P – Sat - A - 8

Course-grained Molecular Dynamics Simulation of Diffusion and Vesiculation in Defective Erythrocyte Membrane

H. Li[1] and G. Lykotrafitis[1]

[1]University of Connecticut, Storrs, CT

P – Sat - A - 9

Modeling the Hydrodynamic Interaction and Lateral Migration of Circulating Cells in a Microchannel

H. Lan[1] and D. B. Khismatullin[1]

[1]Tulane University, New Orleans, LA

P – Sat - A - 10

Development of Mechanical Stability of Primitive Erythroblasts During Mammalian Erythropoiesis

L. F. Delgadillo[1], Y-S. Huang[2], R. E. Waugh[1], and J. Palis[2]

[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

P – Sat - A - 11

Inhibition of Shear-sensitive MicroRNA, miR-712, Atypical MicroRNA Derived from Pre-ribosomal RNA, Decreases Endothelial Dysfunction and Atherosclerosis

D. J. Son[1,2], S. Kumar[1], W. Takabe[1], C. Kim[1,2], N. Alberts-Grill[1], J. W. Seo[3], K. W. Ferrara[3], and H. Jo[1,2]

[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Ewha Womans University, Seoul, Korea, Republic of, [3]University of California, Davis, Davis, CA

P – Sat - A - 12

In Vitro Model of Blunt Impact Injury

R. McCulloch[1] and T. O'Shaughnessy[1]

[1]Naval Research Laboratory, Washington, DC

P – Sat - A - 13

Altered Stiffness and Mechanical Response to Force on Integrins is a Consequence of TGF- Induced Epithelial to Mesenchymal Transition

L. D. Osborne[1], G. Li[2], M. Karthikeyan[2], E. O'Brien[1], G. Blobe[2], and R. Superfine[1]

[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]Duke University, Durham, NC

P – Sat - A - 14

Mechanical Factors Affect Fiber Alignment and Fibroblast Remodeling of Collagen and Fibrin Gels

A. M. De Jesus[1], Z. C. Seikel[1], and E. A. Sander[1]

[1]University of Iowa, Iowa City, IA

P – Sat - A - 15

Optimized Compliant *In Vitro* Models for Endothelial Mechanobiological Studies

P. Tremblay[1], D. Dube[1], and L. Rouleau[1,2]

[1]Université de Sherbrooke, Sherbrooke, QC, Canada, [2]Centre hospitalier universitaire de Sherbrooke, Sherbrooke, QC, Canada

P – Sat - A - 16

Clathrin-coated Pit Dynamics in Response to the Geometry of the Adhesive Microenvironment

X. Tan[1] and A. Liu[1]

[1]University of Michigan, Ann Arbor, MI

P – Sat - A - 17

Nanomechanics of Engineered, Native and Pellet Cartilage Tissues

C. R. Quisenberry[1], A. Nazempour[1], B. Van Wie[1], and N. Abu-Lail[1]

[1]Washington State University, Pullman, WA

P – Sat - A - 18

Modeling the Structural Mechanics of Cilia and Flagella

M. Guy[1] and G. Xu[1]

[1]University of Central Oklahoma, Edmond, OK

P – Sat - A - 19

Influence of Mechanical Environment on Vascular Smooth Muscle Functional Contractility

K. E. Steucke[1], P. A. Voigt[1], E. S. Hald[1], and P. W. Alford[1]

[1]University of Minnesota, Minneapolis, MN

P – Sat - A - 20

The Contribution of Platelets to Clot Stiffness Through the Formation of Fibrin "Macro-Fibers"

M. J. Perez[1], C. Wang[1], B. Helmke[1], F. Viola[1], and M. Lawrence[1]

[1]University of Virginia, Charlottesville, VA

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

P – Sat - A - 21
Identifying Key Paratope Residues and Their Partners in the Interface Between GPVI and 10B12 Through Molecular Dynamics Simulation
Y. FANG[1], W. LIU[1], AND J. WU[1]
[1]*South China University of Technology, Guangzhou, China, People's Republic of*

P – Sat - A - 22
Platelet Control of Clot Stiffness Assessed by Microrheological Approaches
C. W. WANG[1], M. PEREZ[1], B. HELMKE[1], AND M. LAWRENCE[1]
[1]*University of Virginia, Charlottesville, VA*

P – Sat - A - 23
Flexibility Serves as a Mechanical Regulator of Antimicrobial Activity for Amphipathic Cationic -Helical Antimicrobial Peptides
L. LIU[1], Y. FANG[1], AND J. WU[1]
[1]*South China University of Technology, Guangzhou, China, People's Republic of*

P – Sat - A - 24
In Vitro Atomic Force Microscopy-based Analysis of Fibroblast-produced Type I Collagen
T. D. RICHARDSON[1], J. HOLMAN[1], AND J. M. WALLACE[1,2]
[1]*Indianapolis University Purdue University Indianapolis, Indianapolis, IN,* [2]*Purdue University, West Lafayette, IN*

P – Sat - A - 25
Photokinesis in Algae and Unanimated Microspheres. Do They Follow Different Mechanisms?
R. STAHLBERG[1]
[1]*University of Washington, Seattle, WA*

P – Sat - A - 26
Advanced Cell Culture Well for Mechanobiology
K. L. BILLIAR[1], J. M. PRUDEN[1], J. M. MANN[1], D. GARCIA[1], AND J. S. KELLEY[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

Track: Biomechanics

Neuromuscular Biomechanics and Physiology

P – Sat - A - 27
Development of an Involuntary Eccentric Contraction Training System
J. SON[1], D. LEE[1], AND Y. KIM[1]
[1]*Yonsei University, Wonju, Korea, Republic of*

P – Sat - A - 28
Neck Muscle Mechanical Demand During Tablet PC Use
A. N. VASAVADA[1], D. D. NEVINS[1], S. MONDA[1], AND D. C. LIN[1]
[1]*Washington State University, Pullman, WA*

Track: Biomechanics

Orthopaedic and Dental Biomechanics

P – Sat - A - 29
Facet Joint Response to Loading at High Frequencies
E. NOONAN[1], H. SIDOTI[1], A. RITTER[1], T. ERRICO[2], AND A. VALDEVIT[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*NYU Langone Medical Center, New York, NY*

P – Sat - A - 30
Facet Joint Strain at Elevated Frequencies May be a Predisposition for Low-back Pain
H. SIDOTI[1], E. NOONAN[1], A. RITTER[1], T. ERRICO[2], AND A. VALDEVIT[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*NYU Langone Medical Center, New York, NY*

P – Sat - A - 31
Facet Joint Stiffness Response to Loading Frequencies
R. CHUNG[1], E. NOONAN[1], H. SIDOTI[1], A. RITTER[1], T. ERRICO[2], AND A. VALDEVIT[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*NYU Langone Medical Center, New York, NY*

P – Sat - A - 32
Porcine Eye Response to Blast Ovepressure
V. D. ALPHONSE[1], A. R. KEMPER[1], C. MCNALLY[1], I. P. HERRING[1], P. J. BROWN[2], J. D. STITZEL[2], AND S. M. DUMA[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Wake Forest University, Winston-Salem, NC*

P – Sat - A - 33
Cadaveric Thumb-tip Forces Produced by Extrinsic and Intrinsic Thumb Muscles are More Sensitive to Joint Angles than Muscle Moment Arms and Bone Lengths
J. TOWLES[1] AND V. HENTZ[2]
[1]*University of Wisconsin-Madison, Madison, WI,* [2]*Stanford University, Palo Alto, CA*

P – Sat - A - 34
Influence of Age and Gender on Lumbar Impact Response and Injury Tolerance
S. D. SHIMADA[1] AND N. MERRIER[1]
[1]*Biomechanical Consultants of CA, Davis, CA*

P – Sat - A - 35
Impact Response and Injury Tolerance Corridors of the Lumbar Spine
S. D. SHIMADA[1] AND N. MERRIER[1]
[1]*Biomechanical Consultants of CA, Davis, CA*

P – Sat - A - 36
Comparison of One-Piece Metacarpophalangeal/Phalangeal-Phalangeal Total Joint Replacements: A Computational and Numerical Study
A. C. WEEMS[1] AND H. VO[1]
[1]*Mercer University, Macon, GA*

P – Sat - A - 37
Comparison of Surface Arthoplasty Metacarpophalangeal/Phalangeal-Phalangeal Total Joint Replacements: A Computational and Numerical Study
A. C. WEEMS[1] AND H. VO[1]
[1]*Mercer University, Macon, GA*

P – Sat - A - 38
The Biomechanical Effect of Different Screw Angle Configurations with Locking Compression Plates on Stability of Femoral Shaft Fracture Fixation
B. N. NGUYEN[1], V. NGUYEN[1], D. BAPTISTE[1], AND H. V. VO[1]
[1]*Mercer University, Macon, GA*

P – Sat - A - 39
The Risk of Thoracic Injury in Direct Steering Wheel Impacts in Vehicles Equipped with Advanced Airbags
R. CHEN[1] AND H. C. GABLER[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Sat - A - 40
Structural and Morphologic Properties of the Mouse Femur are Rapidly Compromised by High Fat Diet
A. H. YANG[1], B. NGUYEN[1], B. ADLER[1], E. M. CHAN[1], AND C. RUBIN[1]
[1]*State University of New York at Stony Brook, Stony Brook, NY*

P – Sat - A - 41
Contact Pressure/Area and Strain Distribution of Total Knee Arthroplasty Developed Newly for Reduction of a Risk of Failure
D. LIM[1], Y. JANG[1], P. HAN[1], O. YOO[2], K-Y. LEE[1], H. JUNG[1], AND J. KIM[2]
[1]*Sejong University, Seoul, Korea, Republic of,* [2]*Corentec Co.,Ltd., Seoul, Korea, Republic of*

See page 21 for Poster floor plan

P – Sat - A - 42
Evaluatin Bending Stiffness Sensitivity through Parametric Models of the Human Ulna
B. Garven[1], E. Ellerbrock[1], L. Bowman[1], A. B. Loucks[1], and J. R. Cotton[1]
[1]*Ohio University, Athens, OH*

P – Sat - A - 43
Effect of Coring Conditions on Temperature Rise in Bone
M. M. Islam[1], R. Hansberger[1], J. James[1], and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Sat - A - 44
Low Intensity Vibrations Improve the Compromised Bone Mechanical Property of Obese Mice, Potentially by Altering the Spatial Distribution of Bone Mineral Density
B. Nguyen[1], D. Nguyen[1], M. E. Chan[1], and C. Rubin[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Sat - A - 45
Evaluating Veterinary Orthopedic Implants: A Comparative Study of LC-DCP/rod and CRIF/rod Fixation
C. A. Davis[1], S. T. Baker[1], G. A. Bonin[1], A. A. Hildebrandt[1], D. A. Hulse[1], S. C. Kerwin[1], W. B. Saunders[1], and M. R. Moreno[1]
[1]*Texas A&M University, College Station, TX*

P – Sat - A - 46
Development of Age and Gender-Specific Thorax Finite Element Models
S. L. Schoell[1], A. A. Weaver[1], and J. D. Stitzel[1]
[1]*Virginia Tech- Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC*

P – Sat - A - 47
Investigating the Effects of a Hyperbolic Expansion Section on Shock Tube Blast Testing
C. Rzeznik[1], K. Matthews[1], J. Shridharani[1], G. Wood[1], B. Bigler[1], C. Rich[1], M. B. Panzer[2], and C. R. Bass[1]
[1]*Duke University Injury Biomechanics Laboratory, Durham, NC,* [2]*University of Virginia, Charlottesville, VA*

Track: Cellular and Molecular Bioengineering

Cell Biomechanics

P – Sat - A - 48
Active Transport of Vesicles in Neurons is Modulated by Mechanical Tension
W. Ahmed[1] and T. Saif[1]
[1]*Univ of IL, Urbana, IL*

P – Sat - A - 49
Elastic Stiffness of Glioblastoma Cells Migrating in Confined Microfluidic Channels
J. Wright[1], T. Blesener[1], S. Bhattarai[1], R. Bachoo[2], D. Dave[1], Y-T. Kim[1], S. Mohanty[1], and C-J. Chuong[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

P – Sat - A - 50
Numeric Reconstruction Of Actin Networks From Substrate Displacements With A Topology Optimization Method
W. S. Nishitani[1], R. C. Carbonari[2], and A. M. Alencar[1]
[1]*Universidade de Sao Paulo, Sao Paulo, SP, Brazil,* [2]*Universidade Federal do ABC, Santo Andre, SP, Brazil*

P – Sat - A - 51
Nuclear Stiffening Inhibits Invasive Melanoma Cells
A. J. Ribeiro[1], P. Khanna[2], A. Sukumar[1], K. N. Dahl[1], and C. Dong[2]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*The Pennsylvania State University, University Park, PA*

P – Sat - A - 52
How Cytoskeletal Forces Determine Nuclear Shape
D. B. Lovett[1], R. B. Dickinson[1], and T. P. Lele[1]
[1]*University of Florida, Gainesville, FL*

P – Sat - A - 53
CANCELLED BY AUTHOR

P – Sat - A - 54
Characterization of Molecular and Mechanical Phenotypes of Freshly Isolated Lipoaspirate Cells
M. Kanthilal[1] and E. M. Darling[1,2]
[1]*Brown University, Providence, RI,* [2]*Brown University, Providence*

P – Sat - A - 55
Spatial Control of Cell Seeding in 2-D Engineered Tissues
Z. Win[1], G. D. Vrla[1], E. N. Sevcik[1], and P. W. Alford[1]
[1]*University of Minnesota, Minneapolis, MN*

P – Sat - A - 56
Responses of C2C12 Cells on Asymmetric Nanostructured Surfaces
Q. Liu[1,2], J. Jiang[2], X. Li[2], X. S. Wei[2], B. Xi[2,3], M. Grigola[2], C. Dyck[2], P. Wang[1], G. L. Liu[2], and K. J. Hsia[2]
[1]*Zhejiang University, Hangzhou, China, People's Republic of,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL,* [3]*Tsinghua University, Beijing, China, People's Republic of*

P – Sat - A - 57
Oxidative Stress Comprised the Cytoskeleton Structure of Muscles Cells *In Vitro*
S. Wong[1], K. K. Lee[1], and A. F. Mak[1]
[1]*The Chinese University of Hong Kong, Hong Kong, Hong Kong*

P – Sat - A - 58
Fibroblast Growth Factor-2 Did Not Restore Endothelial Cell Plasminogen System Activity or Capillary-like Tube Formation on Glycated Collagen
J. G. Mathew[1] and A. Morss Clyne[1]
[1]*Drexel University, Philadelphia, PA*

P – Sat - A - 59
Calcium Regulates Intracellular and Extracellular Cleavage of VWF by ADAMTS13
S. Gogia[1], K. M. Dayananda[1], and S. Neelamegham[1]
[1]*State University of New York at Buffalo, Buffalo, NY*

P – Sat - A - 60
The Role of Chlamydia pneumonia Infection in Monocyte Biomechanics
A. K. Saha[1], S. J. Evani[1], T. Guda[1], and A. K. Ramasubramanian[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Sat - A - 61
The Role of Furin Processing in Notch Signal Transduction Mechanics
S. Ravindranath[1], A. A. Musse[2], G. Weinmaster[2], and E. Botvinick[1]
[1]*University of California, Irvine, Irvine, CA,* [2]*University of California, Los Angeles, Los Angeles, CA*

P – Sat - A - 62
Venous Phlebitis: The Effect of Pressure Contact on Endothelial Cells Activation
D. Weiss[1] and S. Einav[1,2]
[1]*Tel Aviv University, Tel Aviv, Israel,* [2]*Stony Brook University, Stony Brook, NY*

P – Sat - A - 63
Using Microneedle Manipulation to Study Nuclear Envelopathies
G. R. Fedorchak[1], M. Ketema[2], and J. Lammerding[1]
[1]*Cornell University, Ithaca, NY,* [2]*The Netherlands Cancer Institute, Amsterdam, Netherlands*

P – Sat - A - 64
Substratum Stiffness Regulates Neurite Outgrowth: The Potential Involvement of Brain Zinc Finger pProtein 179
Y-T. Hsieh[1], Y-C. Lee[1], S-Y. Chou[1], and Y-K. Wang[1]
[1]*Taipei Medical University, Taipei City, Taiwan*

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

P – Sat - A - 65
Orienting the Division Axis of Mammalian Cells in 3D Matrix by Interphase Protrusion
L. He[1], W-T. Chen[1], P-H. Wu[1], and D. Wirtz[1]
[1]*Johns Hopkins University, Baltimore, MD*

P – Sat - A - 66
Actin Filaments Regulate Migration Time of Cells Through a Microfluidic Constriction Channel
V. Srinivasaraghavan[1], H. Babahosseini[1], E. M. Schmelz[1], P. C. Roberts[1], and M. Agah[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Cellular and Molecular Bioengineering

Molecular Bioengineering

P – Sat - A - 67
Elevated Sphingosine 1-phosphate Contributes to the Pathophysiology of Sickle Cell Disease
A. O. Awojoodu[1], P. Keegan[1], F. Ahmed[1], M. O. Platt[1], and E. A. Botchwey[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P – Sat - A - 68
Confirmation-Dependent Inhibitory Binding of Green Tea Catechins to Amyloid-ß in Alzheimer's Disease
S. E. Chastain[1], K. Pate[1], and M. Moss[1]
[1]*University of South Carolina, Columbia, SC*

P – Sat - A - 69
Simplicity of Design Principles underlying Tunable cis-Interactions within Shp2 Revealed
Y. Wang[1] and J. Sun[2]
[1]*UCSD, La Jolla, CA,* [2]*UIUC, Urbana, IL*

P – Sat - A - 70
Concatameric Nicotinic Acetylcholine Receptors to Study Receptor Mediated Internalization of Amyloid Beta Peptide
T. A. Murray[1]
[1]*Louisiana Tech University, Ruston, LA*

P – Sat - A - 71
Improved TALEN Performance with Changes in non-RVD, Repeat Amino Acids
Y. Lin[1,2], T. J. Cradick[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P – Sat - A - 72
Inactivation of the FokI Catalytic Domain of TALEN Monomer Can Reduce Nuclease Off-target Activity
C. J. Antico[1], T. J. Cradick[1], H. Deshmukh[1], E. J. Fine[1], E. Kildebeck[2], M. H. Porteus[2], D. B. Roth[3], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Stanford University, Palo Alto, CA,* [3]*University of Pennsylvania, Philadelphia, PA*

P – Sat - A - 73
Developing Rationally Designed FRET-based Molecular Tension Sensors
B. D. Hoffman[1], A. LaCroix[1], and M. A. Schwartz[2]
[1]*Duke University, Durham, NC,* [2]*Yale University, New Haven, CT*

P – Sat - A - 74
Ultraspecific DNA and RNA Hybridization Probes and Primers
D. Y. Zhang[1] and P. Yin[2]
[1]*Rice University, Houston, TX,* [2]*Harvard University, Boston, MA*

P – Sat - A - 75
Electrical Potential Measurements of the Interfacial-bulk Water Complex Using a Hydrophilic Nafion Surface
R. Das[1]
[1]*University of Washington, Seattle, WA*

P – Sat - A - 76
Increasing Sensitivity in Identifying TALEN Off-target Cleavage by Co-expression of Exonucleases
C. J. Krueger[1], C. J. Antico[1], E. J. Fine[1], Y. Lin[1], T. J. Cradick[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P – Sat - A - 77
In Situ Site-specific Labeling and Bioconjugation of Recombinant Proteins Using N-myristoyl Transferase and "Click" Chemistry
C. Kulkarni[1,2], D. A. Tirrell[1], and T. L. Kinzer-Ursem[1,3]
[1]*California Institute of Technology, Pasadena, CA,* [2]*Pfizer, Inc., Groton, CT,* [3]*Purdue University, West Lafayette, IN*

P – Sat - A - 78
Engineering Robust Control Over Two-component System Phosphotransfer Using Synthetic Protein Scaffolds and an Engineered Allosteric Histidine Kinase Switch
W. R. Whitaker[1], S. A. Davis[1], A. P. Arkin[1,2], and J. E. Dueber[1,2]
[1]*U.C. Berkeley, Berkeley, CA,* [2]*Lawrence Berkeley National Laboratory, Berkeley, CA*

P – Sat - A - 79
Specific Interactions Underlie the Auto-inhibitory Mechanism of von Willebrand Factor A1 Domain
G. Interlandi[1], O. Yakovenko[1], A. Tu[1], and W. Thomas[1]
[1]*University of Washington, Seattle, WA*

Track: Cellular and Molecular Bioengineering

Translational Cellular and Molecular Bioengineering

P – Sat - A - 80
Disrupted Levels of miR-103 during Obesity-induced Type II Diabetes in Parallel to Increased Glucose Intolerance and Low Intensity Vibration as a Potential Treatment
V. S. Patel[1], M. E. Chan[1], and C. T. Rubin[1]
[1]*Stony Brook University, Stony Brook, NY*

P – Sat - A - 81
cAMP Diminishes Vascular Endothelial Growth Factor-induced Microvessel Hyperpermeability and Tumor Cell Adhesion via Reinforcing Endothelial Junction Strands
B. M. Fu[1], J. Yang[1], S. Shen[2], B. Cai[1], W. Yen[1], L. Zhang[1], and M. Zeng[1]
[1]*The City College of the City Univeristy of New York, New York, NY,* [2]*University of Nevada, Las Vegas, Las Vegas, NV*

P – Sat - A - 82
Development of FRET Technologies for Quantitative Systems Biology Research of SUMOylation Pathway
J. Liao[1], Y. Song[1,2], Y. Liu[1,3], H. M. Kaur[1], A. N. Saavedra[1], and H. Wiryawan[1]
[1]*University of California at Riverside, Riverside, CA,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*California Institute of Biomedical Research, La Jolla, CA*

P – Sat - A - 83
Microinjection-based delivery of ß-globin-targeting TALENs into K562 cells for gene modification
R. N. Cottle[1], D. Archer[2], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory School of Medicine, Atlanta, GA*

P – Sat - A - 84
Engineering PiT-1 in Vascular Smooth Muscle Cells: Role of Phosphate Uptake in Matrix Calcification
N. W. Chavkin[1], M. H. Crouthamel[1], and C. M. Giachelli[1]
[1]*University of Washington, Seattle, WA*

P – Sat - A - 85
ATP Release by Connexin43 Hemichannels Mediates Inflammation and Scarring Around Implants
J. M. Rhett[1], S. A. Fann[1], and M. J. Yost[1]
[1]*Medical University of South Carolina, Charleston, SC*

Track: Cellular and Molecular Bioengineering

Cellular and Molecular Bioengineering

P – Sat - A - 86
Computational and Experimental Models of Microparticle Transport and Deposition
C. L. Hall[1], Y-H. Lee[2], and V. T. Turitto[2]
[1]*The College of New Jersey, Ewing, NJ,* [2]*Illinois Institute of Technology, Chicago, IL*

P – Sat - A - 87
Investigation of Novel Thalidomide-based Pro-angiogenic Small Molecules Through Gene Network Analysis
A. Das[1], P. Merrill[1], M. Brown[2], and E. Botchwey[3]
[1]*UVA, Charlottesville, VA,* [2]*Georgetown, Washington DC, DC,* [3]*Georgia Institute of Technology, Atlanta, GA*

P – Sat - A - 88
Immunization of Subunit Vaccine rAapG5 Protected Mice Against Staphylococcus epidermidis Implant Infections
L. Yan[1] and J. Bryers[1]
[1]*University of Washington, Seattle, WA*

P – Sat - A - 89
Rhamnan Sulfate Decreases the LDL Permeability of Human Coronary Artery Endothelial Cells *In Vitro*
L. M. Cancel[1] and J. M. Tarbell[1]
[1]*The City College of New York, New York, NY*

P – Sat - A - 90
Reconfiguration of Microtubule-array During Axonal Retraction Induced by Semaphorin 3A is Similar to Volume Phase Transition in Gels
N. P. Kulkarni[1,2] and G. Pollack[2]
[1]*Drexel University, Philadelphia, PA,* [2]*University of Washington, Seattle, WA*

POSTER SESSION **SatA**

Track: Tissue Engineering

Advanced Cell-Scaffold-Bioreactor Systems for Tissue Engineering

P – Sat - A - 91
Incorporating Microchannels to Promote Cell Migration through Stacked Electrospun Scaffolds
C. M. Cohn[1], R. Norrix[2], K. Rundel[1], S. L. Leung[1], and X. Wu[1]
[1]*University of Arizona, Tucson, AZ,* [2]*Tucson Magnet High School, Tucson, AZ*

P – Sat - A - 92
Compressive Bioreactor Based Engineering of *Ex Vivo* Derived TMJ Disc Graft: Comparison of Three Defined Stimulation Profiles Efficacy to Modulate Cellular Integration and Functionalization
C. M. Juran[1] and P. S. McFetridge[1]
[1]*University of Florida, Gainesville, FL*

P – Sat - A - 93
Fortified Nanofibrous Tubular Scaffold Made by Combination of Electrospinning and Rapid Prototyping
M-J. Oh[1], S. Park[2], S. Park[1], Y. Kang[1], J-S. Hyun[1], J-W. Shin[1], and J-W. Shin[1,3]
[1]*Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of,* [2]*Korea Institute of Machinery and Materials (KIMM), Daejon, Korea, Republic of,* [3]*First Research Team/Inst. of Aged Life Redesign/Cardiovascular and Metabolic Disease Center/UHRC, Inje University, Gimhae, Korea, Republic of*

P – Sat - A - 94
Engineering Bone Tissue Constructs using Hydroxyapatite-doped, hMSC Encapsulated, Alginate Beads
M. O. Wang[1], J. A. Thompson[1], and J. P. Fisher[1]
[1]*University of Maryland College Park, College Park, MD*

P – Sat - A - 95
Porous Scaffold Designs for Perfusion Culture and Liver Tissue Engineering: Evaluation of Cell-Loading Efficiency and Seeding Time.
D. Alzebdeh[1] and H. Matthew[1]
[1]*Wayne State University, Detroit, MI*

P – Sat - A - 96
Tetra-PEG Cartridges for Cell Encapsulation
Y. Heo[1], S. Iwanaga[1], and S. Takeuchi[1]
[1]*The University of Tokyo, Tokyo, Japan*

Track: Tissue Engineering

Cell Delivery and Cell Homing Technologies

P – Sat - A - 97
Light Stimulated Control Release of Therapeutic Cells as Regenerative medicine
M. K. Bhuyan[1], T. Boland[2], and T-L. Tseng[3]
[1]*Deartment of Mechanical Engineering, University of Texas at El Paso, El Paso, TX,* [2]*Material Science and Biomedical Program, University of Texas, El Paso, El Paso, TX,* [3]*Industrial, Manufacturing and System Engineering, University of Texas, El Paso, EL Paso, TX*

P – Sat - A - 98
Investigation of Hyaluronan-Methylcellulose Hydrogel as a Muscle Stem Cell Delivery Vehicle
S. Davoudi[1] and P. M. Gilbert[1]
[1]*University of Toronto, Toronto, ON, Canada*

Track: Tissue Engineering

Neural Tissue Engineering (Brain, Motor Neurons, eye)

P – Sat - A - 99
Bioactive Borate Glass for Nerve Regeneration
L. M. Marquardt[1], D. Day[2], S. E. Sakiyama-Elbert[1], and A. B. Harkins[3]
[1]*Washington University in St. Louis, St. Louis, MO,* [2]*Missouri University of Science and Technology, St. Louis, MO,* [3]*Saint Louis University, St. Louis, MO*

P – Sat - A - 100
Restoring Brain Circuitry Using Micro-Tissue Engineered Neural Networks
L. Struzyna[1], J. Wolf[1], C. Mietus[1], J. Morand[1], and D. K. Cullen[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P – Sat - A - 101
Extended Protein Release from Microspheres Incorporated in Electrospun HA to Support Nerve Repair
T. Whitehead[1] and H. Sundararaghavan[1]
[1]*Wayne State University, Detroit, MI*

P = Poster Session
OP = Oral Presentation

P – Sat - A - 102

3D Tissue-engineered Model of the Neurovascular Unit for Study of Neurological Disease and Drug Treatments

A. M. Hopkins[1], E. DeSimone[1], D. Sood[1], W. Wong[1], L. Wray[1], L. Tien[1], J. White[1], J. Rnjak[1], M. Tang-Schomer[1], and D. L. Kaplan[1]

[1]Tufts University, Medford, MA

P – Sat - A - 103

Highly Aligned Conducting Polymer Nanotubes Improves Axonal Regeneration

G. Yang[1], A. Greever[1], and M. R. Abidian[1]

[1]Pennsylvania State University, State College, PA

P – Sat - A - 104

Co-axial Electrospun Aligned Microfibrous Scaffold With Rosette Nanotubes for Nerve Regeneration

W. Zhu[1], D. Frauchiger[1], H. Fenniri[2], and L. Zhang[1]

[1]The George Washington University, Washington, DC, [2]University of Alberta, Edmonton, AB, Canada

P – Sat - A - 105

An Aligned Electrospun Fiber Matrix with Local Release of Paclitaxel for Spinal Cord Injury Repair

J. A. Roman[1], A. Hurtado[2], and H-Q. Mao[1]

[1]Johns Hopkins University, Baltimore, MD, [2]Kennedy Krieger Institute, Baltimore, MD

P – Sat - A - 106

Synergistic Effects of Substrate Morphology and Shear Stress on Neuronal Differentiation of hMSCs

J. C. Marquez[1], K-J. Jeon[2], S. Park[3], Y. Kang[3], J-S. Hyun[3], M-J. Oh[3], and J-W. Shin[3,4]

[1]Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, [2]Cell & Gene Biotechnology (CG Bio), Seongnam, Kyunggi-do, Korea, Republic of, [3]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [4]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Inje University, Gimhae, Korea, Republic of

Track: Tissue Engineering

Tissue Engineered Models for Study of Disease and Drug Discovery

P – Sat - A - 107

Hydroxyapatite Nanoparticles Enhance Apoptosis and Myofibroblastic Differentiation of Valvular Interstitial Cells in 3D Culture: Modulation by Endothelial Co-culture

J. Richards[1], D. D. Lin[1], L. Estroff[1], and J. Butcher[1]

[1]Cornell University, Ithaca, NY

P – Sat - A - 108

Implanted Prevascularized Spheroids Develop Functional Vasculature that Supports Normoxic pO2 Following Thrombosis

S. M. White[1], C. Pittman[1], R. Arora[2], R. Hingorani[3], T. Esipova[4], C. C. Hughes[1], B. Choi[1], and S. C. George[1]

[1]University of California, Irvine, Irvine, CA, [2]The George Washington University, Washington DC, DC, [3]St. George's University, Grenada, Grenada, [4]University of Pennsylvania, Philadelphia, PA

P – Sat - A - 109

Photonic Crystal Fractal Structure for Lung Tissue – Irradiation Interaction Modeling

E. G. Aznakayev[1], A. V. Vishnevsky[1], and D. E. Aznakayeva[1]

[1]National Aviation University, Kiev, Ukraine

P – Sat - A - 110

In Vitro Bone Marrow Niche Model Lends Insight into S1P Receptor Signaling in the Mobilization and Homing of Hematopoietic Stem Cells

M. E. Ogle[1], A. Awojoodu[1], A. Das[2], and E. A. Botchwey[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Virginia, Charlottesville, VA

P – Sat - A - 111

Generating 3D Microtumor Beads for Anti-Cancer Drug Screening

M. E. Ziegler[1] and C. C. Hughes[1]

[1]University of California, Irvine, Irvine, CA

P – Sat - A - 112

Engineering and Evaluation of Scaffold-Hydrogel Systems to Engineer the Trabecular Meshwork *In Vitro*

C. N. Dautriche[1], K. Torrejon[1], Y. Xie[1], M. Bergkvist[1], S. Sharfstein[1], and J. Danias[2]

[1]College of Nanoscale Science SUNY Albany, Albany, NY, [2]Downstate Medical Center, Brooklyn, NY

P – Sat - A - 113

Collagen Coating Enhances MSC-mediated Chondrogenesis on Chitosan-Calcium Phosphate Scaffolds

A. Gottipati[1] and S. H. Elder[1]

[1]Mississippi State University, Starkville, MS

P – Sat - A - 114

Characterization of SPIONs Permeability by an *In Vitro* Blood-Brain Barrier Model

D. Shi[1], D. Hoff[2], S. Nayar[3], and T. J. Webster[1]

[1]Northeastern University, Boston, MA, [2]Brown University, Providence, RI, [3]CSIR-National Metallurgical Laboratory, Jamshedpur, India

P – Sat - A - 115

Design of a High-Throughput Report System of Follicle Health

H. Zhou[1] and A. Shikanov[1]

[1]University of Michigan, Ann Arbor, MI

P – Sat - A - 116

A Microfluidic *In Vitro* Liver Model for Malaria Drug Discovery

S. P. Maher[1], R. Crouse[2], A. J. Conway[2], E. Bannister[2], A. K. Achyuta[2], N. Singh[3], S. Xu[3], N. Yimamnuaychok[4], J. Prachumsri[5], J. D. Cuiffi[2], J. H. Adams[6], W. Saadi[2], and D. E. Kyle[3]

[1]Draper Laboratory, Tampa, [2]Draper Laboratory, Tampa, FL, [3]University of South Florida, Tampa, FL, [4]Mahidol Vivax Research Center, Bangkok, Thailand, [5]Mahidol University, Bangkok, Thailand, [6]University of South Florida, Tampa

Track: Tissue Engineering

Tissue Engineering

P – Sat - A - 117

Application of Elastomeric Polymers for Bladder Regeneration

S. Sivaraman[1], J. Myers[1], N. Amoroso[2], W. Wagner[2], and J. Nagatomi[1]

[1]Clemson university, Clemson, SC, [2]University of Pittsburgh, Pittsburgh, PA

P – Sat - A - 118

Bottom-up Strategy to Build Up Functional 3D Dermis Equivalent *In Vitro* by Tuning Microscaffold Degradation Rate

G. Imparato[1,2], F. Urciuolo[1], C. Casale[1], and P. Netti[1]

[1]Center for Advanced Biomaterials for Health Care@CRIB, Istituto Italiano di Tecnologia, Naples, Italy, [2]Iterdipartimental Research Center on Biomaterials-University of Naples Federico II, Naples, Italy

P – Sat - A - 119

Cytoskeletal Changes During the Differentiation of hMSCs into Osteoblasts in Early Phase

H. An[1], S. Park[1], Y. Kang[1], J-S. Hyun[1], M-J. Oh[1], and J-W. Shin[1,2]

[1]Department of biomedical engineering, Inje university, Gimhae, Korea, Republic of, [2]First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Inje university, Gimhae, Korea, Republic of

P – Sat - A - 120

Morphological Changes of Mitochondria during Endothelial Differentiation of hMSCs

S. JEONG[1], J. SHIN[2], S. PARK[3], Y. KANG[3], J-S. HYUN[3], M-J. OH[3], AND J-W. SHIN[3,4]

[1]Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, [2]Cardiovascular and Metabolic Disease Center, Inje University, Gimhae, Korea, Republic of, [3]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [4]First Research Team/Inst. of Aged Life Redesign/Cardiovascular and Metabolic Disease Center/ UHRC, Inje University, Gimhae, Korea, Republic of

P – Sat - A - 121

Decellularization of Porcine Heart Matrix with Dense-Phase Carbon Dioxide

D. M. Casali[1] and M. A. Matthews[1]

[1]University of South Carolina, Columbia, SC

P – Sat - A - 122

Bioprinting of Controlled Thickness and Microvascularization Using Biodegradable Polymers

K. SINGARAPU[1], K. SINGARAPU[1], AND S. V. MADIHALLY[1]

[1]Oklahoma State University, Stillwater, OK

P – Sat - A - 123

Effect of Combined Shear and Thermal Stress on Pre-osteoblasts for Bone Regeneration

A. C. SAMPSON[1] AND N. RYLANDER[1]

[1]Virginia Tech, Blacksburg, VA

P – Sat - A - 124

Fabrication of Woven Tissue Engineering Scaffolds with Variable Porosity Using a Novel Bio-loom

J. GILMORE[1]

[1]Clemson University, Clemson, SC

Track: Translational Biomedical Engineering

Biomaterials for Regenerative Medicine

P – Sat - A - 125

Decellularized Retina as Cell Delivery Vehicle for Treatment of Retinal Diseases

J. KUNDU[1], A. MICHAELSON[1], K. TALBOT[1], P. BARANOV[2], M. J. YOUNG[2], AND R. L. CARRIER[1]

[1]Northeastern University, Boston, MA, [2]Schepens Eye Research Institute, an affiliate of Harvard Medical School, Boston, MA

P – Sat - A - 126

Increasing Enthesis Cell Functions Using Magnesium Nanoparticles in Polymer Composites

D. J. HICKEY[1] AND T. J. WEBSTER[1]

[1]Northeastern University, Boston, MA

P – Sat - A - 127

Evaluation of Immune Response to Subcutaneously Implanted Decellularized Liver Matrix

D. C. SULLIVAN[1], S-H. MIRMALEK-SANI[2], C. ZIMMERMAN[2], T. SHUPE[2], AND B. E. PETERSEN[1]

[1]University of Florida, Gainesville, FL, [2]Wake Forest University, Winston Salem, NC

Track: Translational Biomedical Engineering

Cell-based Products for Regenerative Medicine

P – Sat - A - 128

Scalable Production of Dopaminergic Neuron Progenitors for Treating Parkinson's Disease

Y. Lei[1] and D. Schaffer[1]

[1]University of California, Berkeley, Berkeley, CA

Track: Translational Biomedical Engineering

Biomedical Products and Devices

P – Sat - A - 129

Quantification of Pressure and Flow Characteristics of Intrauterine Fetal Blood Transfusion

K. MACHIRAJU[1], V. MONTAZERI[2], I. M. PANAHI[2], AND K. BEHBEHANI[3]

[1]University of Texas Arlington, Arlington, TX, [2]University of Texas Dallas, Richardson, TX, [3]The University of Texas Arlington, Arlington, TX

P – Sat - A - 130

Design of a Portable Fast Scan Cyclic Voltammetry System for Measuring Neurotransmitter Levels

J. FOSTER[1], E. RAMSSON[2], AND S. RHODES[1]

[1]Grand Valley State University, Grand Rapids, MI, [2]Grand Valley State University, Allendale, MI

P – Sat - A - 131

Training System to Improve the Skills of Medical Residents Necessary to Perform Laparoscopic Surgery

W. RYTLEWSKI[1], S. RHODES[1], AND J. FARRIS[1]

[1]Grand Valley State University, Grand Rapids, MI

P – Sat - A - 132

In Silico Mechanical Analysis and Feasibility Study on the InSitu-Lok – A Flexible External Tubing Connector for Extracorporeal Circuitry

P. G. ALBAL[1] AND P. G. MENON[1]

[1]Carnegie Mellon University, Pittsburgh, PA

P – Sat - A - 133

Automated Quantification of Morphological Deterioration of Red Blood Cells During Hypothermic Storage Using a Simple Microfluidic Device

N. Z. PIETY[1], X. YANG[1], AND S. S. SHEVKOPLYAS[1]

[1]Tulane University, New Orleans, LA

P – Sat - A - 134

CANCELLED BY AUTHOR

P – Sat - A - 135

Injectable and Self-assembling Sponge as a Protective Layer at Device-tissue Interfaces in Wound Repair

R. WANG[1,2], L. C. ARGENTA[2], M. J. MORYKWAS[1,2], AND W. WAGNER[1,2]

[1]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

P – Sat - A - 136

Intravascular Multi-Layered Glucose Sensor for An Artificial Pancreas

D. S. Saber[1], N. A. Fadhil[1], P. Patra[1], and M. Faezipour[1]

[1]University of Bridgeport, Bridgeport, CT

P – Sat - A - 137

Biomaterial Evaluation in Clinically Relevant Disease Microenvironments Promotes Device Translational Capacity

N. OLIVA-JORGE[1], M. CARCOLE[1,2], M. BECKERMAN[1,3], E. R. EDELMAN[1,4], AND N. ARTZI[1,4]

[1]MIT, Cambridge, MA, [2]IQS, Barcelona, Spain, [3]Ort Braude College, Karmiel, Israel, [4]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

P – Sat - A - 138

Additive Manufacture of Minimally-Invasive Medical Devices for Pancreatic Cancer Treatment

L. M. Reese[1], P. Garcia[1], R. Davalos[1], P. Shen[2], G. Mishra[2], C. Williams[1], and L. R. Bickford[1]

[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest Medical Center, Winston Salem, NC

P – Sat - A - 139

Microfluidic Device Development and Analysis to Prepare Bulk Pancreas Tissue for 3D Imaging

C. Burfeind[1], R. Das[1], and E. Seibel[1]

[1]University of Washington, Seattle, WA

P – Sat - A - 140

A Standardized Procedure for Generating Fibrin Clots *In Vitro* on Rotating Mechanical Surfaces

S. L. Jessen[1], B. R. Weeks[1], and F. J. Clubb, Jr.[1]

[1]Texas A&M University, College Station, TX

P – Sat - A - 141

AnemoCheck: a Point-of-care, Patient-operated, Standalone, Inexpensive, and Disposable Diagnostic Test for Anemia

E. A. Tyburski[1,2], A. F. Siu[1], and W. A. Lam[1,2]

[1]Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, [2]Aflac Cancer and Blood Disorders Center, Department of Pediatrics, Children's Healthcare of Atlanta, Atlanta, GA

P – Sat - A - 142

Using Hearing Aids Improves Music Perception for Cochlear Implant Users

J. Crew[1,2], J. Galvin III[2], and Q-J. Fu[1,2]

[1]University of Southern California, Los Angeles, CA, [2]House Research Institute, Los Angeles, CA

Track: Translational Biomedical Engineering

Clinical Trials

P – Sat - A - 143

Chronic Stability of Implanted Cuff Electrodes in Amputees

D. Tan[1,2], M. Schiefer[1,2], M. Keith[2,3], and R. Anderson[2,4]

[1]Case Western Reserve University, Cleveland, OH, [2]Louis-Stokes Department of Veterans Affairs Medical Center (LSDVAMC), Cleveland, OH, [3]MetroHealth, Cleveland, OH, [4]UH Rainbow Babies & Children's Hospital, Cleveland, OH

Track: Translational Biomedical Engineering

Large Animal Studies

P – Sat - A - 144

Ex Vivo and *In Vivo* Evaluation of Endothelialized Vascular Grafts after Fluid Shear Stress Stimulation

D. E. Anderson[1], J. J. Glynn[1], and M. T. Hinds[1]

[1]Oregon Health & Science University, Portland, OR

Track: Translational Biomedical Engineering

Translational Biomedical Imaging

P – Sat - A - 145

Magnetic Resonance Imaging of *Ex Vivo* Oral Human Biopsies to Characterize Changes in Redox Status with Development of Oral Neoplasia

Z. Luo[1], M. Loja[1], G. Farwell[1], R. Gandour-Edwards[1], and N. Nitin[1]

[1]UC Davis, Davis, CA

P – Sat - A - 146

Gastrointestinal Absorption of 99MTC-Heparin: A Radiocontrast Agent for Eosinophilic Inflammation

H. Saffari[1], R. Condie[1], J. J. Krstyen[1], P. Jenkins[1], K. A. Peterson[1], G. J. Gleich[1], and L. F. Pease III[1]

[1]University of Utah, salt lake city, UT

P – Sat - A - 147

Impact of Phone Choice on Mobile Phone Microscopy

A. Skandarajah[1,2], C. D. Reber[1,2], N. A. Switz[1], L. M. Nilsson[1], and D. A. Fletcher[1]

[1]University of California, Berkeley, Berkeley, CA, [2]University of California, San Francisco, San Francisco, CA

P – Sat - A - 148

Optical Clearing and Registration of Thick Pancreas Specimens: A First Step to 3D Imaging of Tissue Biopsy

R. Das[1], J. R. LaPointe[2], S. Shimer[3], B. Hawthorne[3], M. P. Upton[1], and E. J. Seibel[1]

[1]University of Washington, Seattle, WA, [2]University of Washington Medical Center, Seattle, WA, [3]Vision Gate, Inc., Seattle, WA

P – Sat - A - 149

Cardiac Architecture Assessed *in Vivo* using Speckle Tracking Echocardiography

N. Mazeh[1], D. Haines[1], G. Raff[1], A. Abass[2], and B. Roth[3]

[1]Beaumont Health System, Royal Oak, MI, [2]Beaumont Health System, Royal oak, MI, [3]Oakland University, Rochester, MI

Track: Translational Biomedical Engineering

Translational Therapeutics

P – Sat - A - 150

Clinical Investigation of High Frequency Irreversible Electroporation for Skin Cancers

M. B. Sano[1], C. B. Arena[1], P. A. Garcia[1], J. M. Cissell[2], J. L. Robertson[1], and R. V. Davalos[1]

[1]Virginia Tech, Blacksburg, VA, [2]Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA

P – Sat - A - 151

Combined Strategies to Improve Adipose-derived Stem Cells-mediated Tissue Regeneration

E. Chung[1], S. Nam[1], D. Y. Santiesteban[1], L. M. Ricles[1], R. S. Stowers[1], S. Emelianov[1], and L. J. Suggs[1]

[1]The University of Texas at Austin, Austin, TX

P – Sat - A - 152

Platelet Storage: A Chilling Story

K. Reddoch[1], P. Nair[1], R. Montgomery[2], C. Fedyk[2], H. Pidcoke[2], A. Ramasubramanian[1], and A. Cap[2]

[1]The University of Texas at San Antonio, San Antonio, TX, [2]US Army Institute of Surgical Research, San Antonio, TX

Track: Translational Biomedical Engineering

Translational Biomedical Engineering

P – Sat - A - 153

Impaired Platelet Deposition and Fibrin Accumulation in a Microfluidic Model of Hemostasis Using Whole Blood from Hemophiliac Patients

T. V. Colace[1], K. A. Panckeri[2], P. F. Fogarty[2], and S. L. Diamond[1]

[1]University of Pennsylvania, Philadelphia, PA, [2]Hospital of the University of Pennsylvania, Philadelphia, PA

P – Sat - A - 154

Dose Dependent Acute toxicity, Biodistribution, Hematological Effects, and Elimination of Dextran Functionalized Graphene Nanoplatelets

S. kanakia[1], J. Toussaint[1], S. Mullick Chowdhury[1], T. Tembulkar[1], S. Lee[1], Y. Jiang[1], R. Z. Lin[1], K. Shroyer[1], W. Moore[1], and B. Sitharaman[1]

[1]Stony Brook University, Stony Brook, NY

Track: Undergraduate Research

Bioinformatics, Computational and Systems Biology - Undergraduate Research

P – Sat - A - 155

Setation: An Implicit and Graph Search Engine for Large Biomedical Term Sets

N. Roberson[1] and H. Garner[2]

[1]Virginia Tech School of Biomedical Engineering and Sciences, Blacksburg, VA, [2]Virginia Bioinformatics Institute, Blacksburg, VA

P – Sat - A - 156

Improving Cancer Detection Performance of Quantitative Phase Microscopy through Image Registration

S. Kita[1], S. Uttam[1], and Y. Liu[1]

[1]University of Pittsburgh, Pittsburgh, PA

P – Sat - A - 157

LC-MS/MS Identification of the Aquaporin-2 Interactome

D. J. Hageman[1,2], C-L. Chou[2], and M. Knepper[2]

[1]Case Western Reserve University, Cleveland, OH, [2]National Institutes of Health, Bethesda, MD

P – Sat - A - 158

Quantitative Flow Cytometry Analysis of Angiogenic Growth Factor Receptors

P. K. Gupta[1], G. Conard[1], J. Parkin[1], F. L. Montiel[1], and P. Imoukhuede[1]

[1]University of Illinois Urbana-Champaign, Urbana, IL

P – Sat - A - 159

A Kinetic Model for Subcellular Distribution of Myocardin-related Transcription Factor A and Actin

B. Spar[1], Q. Chen[1], and C. Nelson[1]

[1]Princeton University, Princeton, NJ

Track: Undergraduate Research

Biomaterials - Undergraduate Research

P – Sat - A - 160

Material Interaction with Touchscreens for Artificial Fingertip Research

A. B. Deines[1], E. N. Mazar[1], J. R. Wissinger[2], and B. R. Campbell[1]

[1]Robert Morris University, Moon Township, PA, [2]Robert Morris Universtiy, Moon Township, PA

P – Sat - A - 161

Biocompatibility of Oxime Crosslinked Hydrogels

M. R. Zanotelli[1], G. N. Grover[2], and K. L. Christman[2]

[1]University of Wisconsin-Madison, Madison, WI, [2]University of California, San Diego, La Jolla, CA

P – Sat - A - 162

Nanoscale Physicochemical Properties of Chain- and Step-Growth Polymerized PEG Hydrogels

K. Harding[1], I. Zampetakis[1], G. Marsh[1], K. Vats[1], R. E. Waugh[1], and D. S. Benoit[1,2]

[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

P – Sat - A - 163

Characterization of the Thermal Response and Microstructure of Structurally Controlled Poly(N-Isopropylacrylamide) Hydrogels

B. J. Laccetti[1], K. Chang[1], and L. Taite[1]

[1]Georgia Institute of Technology, Atlanta, GA

P – Sat - A - 164

Engineering Potato Virus X as a Platform for Targeted Cancer Therapy

P. L. Chariou[1], K. L. Lee[1], and N. F. Steinmetz[1]

[1]Case Western Reserve University, Cleveland, OH

P – Sat - A - 165

Divalent Ion Removal Improves Stability and Mechanical Properties of Gelatin Hydrogel

K. Yates[1], Q. Xing[1], C. Vogt[1], F. Zhao[1], and M. Frost[1]

[1]Michigan Technological University, Houghton, MI

P – Sat - A - 166

Examining RGD Concentration of Poly(Ethylene Glycol)-Diacrylate Hydrogels for Cell Adhesion

E. J. English[1], D. A. Young[1], J. Larson[1], and G. Papavasiliou[1]

[1]Illinois Institute of Technology, Chicago, IL

P – Sat - A - 167

Electrically Responsive Tough Hydrogels

F. Y. Su[1], M. Darnell[2,3], S. Kennedy[2,3], and D. J. Mooney[2,3]

[1]Harvey Mudd College, CA - California, CA, [2]Harvard University, Cambridge, MA, [3]Wyss Institute for Biologically Inspired Engineering, Cambridge, MA

P – Sat - A - 168

Small Molecule Eluting Nanofiber Based Bioactive Bandages for Expedited Chronic Wound Healing

E. Guadalupe[1], D. Ramos[1,2], and S. Kumbar[1,2]

[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

P – Sat - A - 169

Engineering pH- and Thermo-Responsive Nanogels by Pseudo Initiator-Free Graft Polymerization

S. Srinivasan[1], L. Lin[1], R. E. Marchant[1], and J. Zhu[1]

[1]Case Western Reserve University, Cleveland, OH

P – Sat - A - 170

Guided Axonal Growth for Nerve Repair Using Novel Fibrous Collagen Conduit with GAG Mimetic

D. R. Mathews[1,2], D. I. Meshoyrer[1], R. D. Menezes[1], T. L. Arinzeh[1], and B. J. Pfister[1]

[1]New Jersey Institute of Technology (NJIT), Newark, NJ, [2]The College of New Jersey (TCNJ), Ewing Township, NJ

P – Sat - A - 171

In–Vitro Hemato-Compatibility of Dextran Functionalized Graphene Nanoparticles

J. M. Fang[1], S. Chowdhury[1], S. Kanakia[1], and B. Sitharaman[1]

[1]SUNY Stony Brook University, Stony Brook, NY

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

P – Sat - A - 172
Effects of Detergents on the Biological Properties of Pig Liver Extract for Liver Regeneration Study
J. P. Repper[1], D. C. Sullivan[1], and B. E. Petersen[1]
[1]*University of Florida, Gainesville, FL*

P – Sat - A - 173
Oral Delivery of siRNA Using pH-Responsive Hydrogel Nanoparticles
H. Frizzell[1], D. Forbes[1], and N. A. Peppas[1]
[1]*University of Texas at Austin, Austin, TX*

P – Sat - A - 174
Aptamer-Functionalized Hydrogel-Based Fluidic System for Dynamic Cell-Type-Specific Capture and Release
M. A. Stellon[1], S. Li[2], and Y. Wang[2]
[1]*University of Connecticut, Storrs, CT,* [2]*Pennsylvania State University, University Park, PA*

P – Sat - A - 175
Solubility and Gelation Behavior of Keratin Biomaterials
S. M. Tsuda[1], R. De Guzman[1], and M. Van Dyke[1]
[1]*Virginia Tech – Wake Forest, School of Biomedical Engineering and Sciences, Blacksburg, VA*

P – Sat - A - 176
Development of a Model for Nanomechanical Characterization of Viscoelastic Biomaterials
L. P. Klein[1]
[1]*Bucknell University, Lewisburg, PA*

P – Sat - A - 177
Evaluation of the Immunogenic Properties and Phagocytotic Uptake of PEGylated Potato Virus X
M. Wu[1], K. L. Lee[1], S. Shukla[1], N. R. Ayat[1], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

P – Sat - A - 178
Biocompatibility of Mg-Rare Earth Element Alloys as Biodegradable Bone Implant Materials
D. Albert[1] and F. Witte[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Charité - Universitätsmedizin Berlin, Berlin, Germany*

P – Sat - A - 179
Growth Factor Integration to Electrochemically Aligned Collagen Sutures for Tendon Repair
S. Panit[1], V. Kishore[1], and O. Akkus[1]
[1]*Case Western Reserve University, Cleveland, OH*

P – Sat - A - 180
Fabrication and Characterization of Shape Coded Hydrogel Microparticles for Biomolecule Detection
M. Al-Ameen[1] and G. Ghosh[1]
[1]*University of Michigan, Dearborn, Dearborn, MI*

P – Sat - A - 181
Improved Mechanical Properties in Hyaluronic Acid Hydrogels from Exogenous Horseradish Peroxidase
S. Kamal[1], A. Abu-Hakmeh[2], and L. Q. Wan[2]
[1]*Cornell University, Ithaca, NY,* [2]*Rensselaer Polytechnic Institute, Troy, NY*

P – Sat - A - 182
Histomorphometric Analysis of Inflammation Around Stable and Failed Alginate Encapsulation Materials
V. Ibarra[1], V. Gupta[2], A. Appel[1], and E. M. Brey[1]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Georgia Tech, Atlanta, GA*

P – Sat - A - 183
Modular Tissue Engineering: Chitosan-GAG Fibers Formed From an Ionic Complex
A. Gagliardi[1]
[1]*Wayne State University, Harrison Township, MI*

P – Sat - A - 184
Swelling and Degradation of Decellularized Cartilage and Hyaluronic Acid Nanocomposite Hydrogels
B. Lohman[1], E. Beck[1], and M. Detamore[1]
[1]*University of Kansas, Lawrence, KS*

P – Sat - A - 185
Compressive Mechanical Properties of PRP-eluting Candidate Materials for a Tissue-engineered Nucleus Pulposus
C. M. Luetkemeyer[1], E. A. Kalaf[1], J. G. Bledsoe[1], and S. A. Sell[1]
[1]*Saint Louis University, St. Louis, MO*

P – Sat - A - 186
RAW264.7 Macrophage as a Model of Foreign Body Inflammatory Response to Electrospun Biomaterials
C. E. Saxon[1], A. Holian[1], and K. L. Trout[1]
[1]*University of Montana, Missoula, MT*

P – Sat - A - 187
Effects of Stretching with and without an Intermediate Dry Step on the Structural and Mechanical Properties of Fibrin Microthreads
L. M. Pumphrey[1], J. M. Grasman[1], and G. D. Pins[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P – Sat - A - 188
Quantitative Study of Bacterial Detachment from Nanopatterned Thermo-Responsive Polymer Brushes
O. Padilla[1], P. Shivapooja[2], and G. Lopez[2]
[1]*University of Puerto Rico-Cayey, Cayey, PR, Puerto Rico,* [2]*Duke University, Durham, NC*

P – Sat - A - 189
Characterization of PEO-PETA-PEDOT:PSS Conductive Hydrogel as a Metal Bioelectrode Alternative
R. E. Johns Jr.[1], G. B. Kim[1], P. Fattahi[1], and M. R. Abidian[1]
[1]*Pennsylvania State University, State College, PA*

P – Sat - A - 190
Bioactive Modification of Venous Valve Biomaterial to Enable Protein C Activation
E. Polsin[1], J. Glynn[2], and M. T. Hinds[2]
[1]*University of Portland, Portland, OR,* [2]*Oregon Health & Science University, Portland, OR*

P – Sat - A - 191
Additive Manufacturing of Silicate Bioactive Glass (13-93) Porous Constructs for Bone Repair
T. L. Comte[1], K. Kolan[2], M. Leu[2], and P. Madria[2]
[1]*University of North Carolina, Chapel Hill, NC,* [2]*Missouri University of Science and Technology, Rolla, MO*

POSTER SESSION **SatA**

Track: Undergraduate Research

Biomechanics - Undergraduate Research

P – Sat - A - 192
A Quantitative Assessment of Neuromuscular Activation of the Hip During a Single Limb Squat
R. M. Yusufbekov[1], K. M. Curtis[1], S. Felton[1], T. Bevins[1], and K. Csavina[1]
[1]*Florida Gulf Coast University, Fort Myers, FL*

P – Sat - A - 193
Aging Weakens Lumbar Vertebrae but Strengthens Coccygeal Vertebrae in C57Bl/6 Mice
B. A. Bomar[1], N. Holguin[1], and M. J. Silva[1]
[1]*Washington University, Saint Louis, MO*

P – Sat - A - 194
Differing Modes of Lubrication for TMJ Condylar Cartilage and Articular Disc
B. K. Zimmerman[1], D. L. Burris[1], and X. L. Lu[1]
[1]University of Delaware, Newark, DE

P – Sat - A - 195
Intrinsic Healing of Mouse Flexor Tendons *In Vitro*
M. A. Winkelman[1] and M. R. Buckley[2]
[1]University of Rochester Department of Biomedical Engineering, Rochester, NY, [2]University of Rochester Center for Musculoskeletal Research, Rochester, NY

P – Sat - A - 196
A Murine Model of Mechanically Induced Ca2+ Signaling in Chondrocytes *In Situ*
A. Lee[1] and M. Buckley[1]
[1]University of Rochester, Rochester, NY

P – Sat - A - 197
Contribution of Age and Gender on Running Mechanics of the Hip at Different Running Speeds
A. Hua[1], E. Sheedy[1], A. Seay[1], C. Montero[1], L. Barnes[1], H. Vincent[1], and B. Conrad[1,2]
[1]University of Florida, Gainesville, FL, [2]Nike Sports Research Lab, Beaverton, OR

P – Sat - A - 198
Arterial Buckling: A New Constitutive Model-based Equation and the Effects of Elastin and Fibulin-5
C. M. Luetkemeyer[1], R. James[1], Z. Schwartz[1], S. V. Devarakonda[1], and J. E. Wagenseil[1]
[1]Saint Louis University, Saint Louis, MO

P – Sat - A - 199
Quantifying the Effects of Anti-hypertensive Medications on the Mechanical Compliance and RNA Expression Profiles of Bioreactor Cultured Rat Carotid Arteries
S. V. Devarakonda[1], S. Bhayani[1], C. M. Luetkemeyer[1], J. Procknow[1], and J. E. Wagenseil[1]
[1]Saint Louis University, Saint Louis, MO

P – Sat - A - 200
A Swimming Regimen Reduces Arterial Compliance in Elastin-deficient Mice, But Does Not Reduce Blood Pressure
W. Gardner[1], J. Howenstein[1], B. Sather[1], S. Bhayani[1], L. Bennett[1], and J. Wagenseil[1]
[1]Saint Louis University, St. Louis, MO

P – Sat - A - 201
Effects of Western Diet on Arterial Mechanics of ApoE-/- Mice
S. Bhayani[1], J. Maedeker[1], W. Gardner[1], L. Bennett[1], and J. Wagenseil[1]
[1]Saint Louis University, Saint Louis, MO

P – Sat - A - 202
Dynamic Fluid Loading on Turkey Trabecular Bone Marrow Morphology
Q. Eng[1], M. Hu[1], and Y-X. Qin[1]
[1]SUNY Stony Brook, Stony Brook, NY

P – Sat - A - 203
Likelihood of Head Injury During Moderate to Severe Rear End Collisions
A. Guiang[1] and S. Rundell[2]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Armstrong Forensic Engineers, Milford, MI

P – Sat - A - 204
Cell Viscoelasticity as a Function of Substrate Stiffness Quantified by Atomic Force Microscopy
R. Brunetti[1], G. Thomas[2], and Q. Wen[2]
[1]Scripps College, Claremont, CA, [2]Worcester Polytechnic Institute, Worcester, MA

P – Sat - A - 205
Design and Implementation of a Loading System to Assess the Ex Vivo Mechanobiology of Articular Cartilage for the Mouse Distal Femur
S. T. Day[1], J. P. Caffrey[2], F. H. Hsu[2], A. C. Chen[2], and R. L. Sah[2]
[1]Union College, Schenectady, NY, [2]University of California, San Diego, La Jolla, CA

P – Sat - A - 206
Shoulder Mechanics Associated with Bilateral Cane Use in Service Members with Hip Disarticulation and Transfemoral Amputation
C. B. Wilkison[1], E. M. Nottingham[2], A. A. Linberg[2], N. Cortes[1], and E. J. Wolf[2]
[1]George Mason University, Fairfax, VA, [2]Walter Reed National Military Medical Center, Bethesda, MD

P – Sat - A - 207
Characterization of Cartilage Mechanics and Wear After Trauma
J. G. Jimenez[1], E. D. Bonnevie[2], and L. J. Bonassar[2]
[1]Inter American University of Puerto Rico, Bayamon Campus, Mayaguez, PR, Puerto Rico, [2]Cornell University, Ithaca, NY

P – Sat - A - 208
Pull-off Stress Assessment on Commercially Available Polymers Intended for Wound Treatment
R. Thornton[1], V. Kheyfets[1], and E. Finol[1]
[1]University of Texas at San Antonio, San Antonio, TX

P – Sat - A - 209
Rapid Manufacturing of Custom Foot Orthoses for Treatment of Diabetic Foot Ulcers and Other Foot Conditions
N. B. Njinimbam[1], J. DesJardins[1], B. Kaluf[2], N. Hooks[2], D. Ballard[3], S. Hoeffner[4], and T. Pruett[5]
[1]Clemson University, Clemson, SC, [2]Ability Prosthetics and Orthotics, Inc., Greenville, SC, [3]Upstate Pedorthic Services, Greer, SC, [44]Clemson Environmental Technologies Laboratory, Anderson, SC, [5]Clemson Environmental Technologies Laboratory, Anderson, SC

P – Sat - A - 210
Dynamic Hydraulic Fluid Loading on Tibial Articular Cartilage
S. Moy[1], M. Hu[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

P – Sat - A - 211
Impact Force Testing on NFL Thigh Pads
N. Pracht[1], C. Williamson[1], and D. Frakes[1]
[1]Arizona State University, Tempe, AZ

P – Sat - A - 212
Novel Electrodes for Blast Experimentation
A. A. Alshareef[1], M. Reinsvold[1], G. W. Wood[1], B. R. Bigler[1], J. K. Shridharani[1], K. Dzirasa[1], and C. R. Bass[1]
[1]Duke University, Durham, NC

P-Sat-A-213
Three-Dimensional Endothelial Cell Invasion and Migration are Modulated by a Collagen Gel Stiffness
S. Somasegar[1], B. N. Mason[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

POSTER SESSION **SatA**

P = Poster Session
OP = Oral Presentation

Track: Undergraduate Research

Biomedical Engineering Education - Undergraduate Research

P – Sat - B - 1
Understanding Gold Nanoparticles Peptide Triazole mediated HIV-1 Virolysis

A. Nangarlia[1], A. Rosemary Bastian[1], C. Duffy[1], L. Bailey[1], R. Kalyan Sundaram[1], A. Elfman[1], C. Ang[1], and I. Chaiken[1]

[1]Drexel University, Philadelphia, PA

P – Sat - B - 2
Characterization of Parthenolide Delivery Using Micelles: Treatment of Leukemia Cells

L. J. Bauer[1], M. P. Baranello[2], and D. S. Benoit[3]

[1]Department of Biomedical Engineering at University of Rochester, Rochester, NY, [2]Department of Chemical Engineering at University of Rochester, Rochester, NY, [3]Deparment of Biomedical Engineering, Center for Musculoskeletal Research at University of Rochester, Rochester, NY

P – Sat - B - 3
Coronary Stent-induced Flow Perturbations and Their Application to In-stent Thrombosis

M. D. Yu[1], J. Jimenez[1], and P. Davies[1]

[1]University of Pennsylvania, Philadelphia, PA

P – Sat - B - 4
Creation of a Wristwatch Sensor to Enhance Diabetic Footwear Adherence

R. Gapp[1]

[1]University of Arizona, Tucson, AZ

P – Sat - B - 5
Case Study on the Educational Efficacy of an Intensive Research Based Science Summer Program

S. M. Robb[1], B. R. Campbell[1], M. Mutunga[1], and S. Abbott[1]

[1]Robert Morris University, Moon Township, PA

P – Sat - B - 6
Tunable Collagen Polymers for Improved Design and Control of Collagen-Drug Delivery Systems

R. L. Nkulu[1], R. V. Joshi[2], and S. L. Voytik-Harbin[2,3]

[1]Franklin College of Indiana, Franklin, IN, [2]Purdue University Weldon School of Biomedical Engineering, West Lafayette, IN, [3]Purdue University Department of Basic Medical Sciences, West Lafayette, IN

P – Sat - B - 7
Design and Development of a Stream Steerable Microfluidic Device

A. Houston[1]

[1]Vanderbilt, Nashville, TN

Track: Undergraduate Research

Biomedical Imaging and Optics - Undergraduate Research

P – Sat - B - 8
Modeling Countertransport: To Equilibrate or Not To Equilibrate

Y. Abdullah[1]

[1]Seattle Central Community College/Univesity of Washington, Seattle, WA

P – Sat - B - 9
Observation of Diffusion of Liposomal Drug Carriers in Collagen

S. Thanikachalam[1], G. Orsinger[1], S. Leung[1], and M. Romanowski[1]

[1]University of Arizona, Tucson, AZ

P – Sat - B - 10
High Resolution, Depth-Resolved Imaging of Mouse Heart Microvasculature using Optical Histology

P. Lo[1,2], A. Moy[1], and B. Choi[1]

[1]Beckman Laser Institute and Medical Clinic, Irvine, CA, [2]University of California, Irvine, Irvine

P – Sat - B - 11
Finding Medial Points Using Homogeneity Ascent Graphs in High-Frequency Ultrasound

C. Wong[1], V. Shivaprabhu[1], S. Horvath[2], J. Galeotti[2], J. Wang[1], A. Zhang[2], V. Gorantla[1], and G. Stetten[1]

[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon University, Pittsburgh, PA

P – Sat - B - 12
How Biofilm Inhibitors Affect Biofilm Structure

M. Kiamco[1], M. Khan[1], H. Beyenal[1], N. Abu-Lail[1], and D. Call[1]

[1]Washington State University, Pullman, WA

P – Sat - B - 13
Manual Realignment of Short Axis 2DE Images Provides Stable Reference Point for Wall Motion Analysis

A. P. Clark[1], K. M. Parker[1], and J. W. Holmes[1]

[1]University of Virginia, Charlottesville, VA

P – Sat - B - 14
Towards Monitoring Bone Graft Healing with Diffuse Correlation Spectroscopy

H. Kim[1], K. Jung[1], M. D. Hoffman[1], D. S. Benoit[1], and R. Choe[1]

[1]University of Rochester, Rochester, NY

P – Sat - B - 15
Functional Imaging of Vigilance Decrement By Characterizing Brain Tissue Pulsatility Using Ultrasound

V. F. Botteicher[1], R. G. Ramirez[1], T. H. Shaw[1], and S. Sikdar[1]

[1]George Mason University, Fairfax, VA

P – Sat - B - 16
Simulation of Refraction Artifacts in Shear Wave Velocity Estimation with Curvilinear Transducers

V. Sayseng[1], J. Langdon[1], and S. McAleavey[1]

[1]University of Rochester, Rochester, NY

P – Sat - B - 17
Monitoring Cardiac Development in Drosophila Melanogaster using Optical Coherence Microscopy

N. M. Pirozzi[1], A. Alex[1], A. Li[2], R. E. Tanzi[2], and C. Zhou[1]

[1]Lehigh University, Bethlehem, PA, [2]Massachusetts General Hospital and Harvard Medical School, Boston, MA

P – Sat - B - 18
Comparison of X-Ray Phase Contrast and Histology for Evaluation of Islets Encapsulated in Alginate Microbeads

V. Gupta[1], A. A. Appel[2,3], J. C. Larson[2,3], M. A. Anastasio[4], and E. M. Brey[2,3]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Illinois Institute of Technology, Chicago, IL, [3]Edward Hines Jr. VA Hospital, Hines, IL, [4]Washington University in St. Louis, St. Louis, MT

P – Sat - B - 19
Oblique Illumination Interferometric Reflectance Imaging Sensor for Small Molecule Detection

A. Gokoglu[1], A. P. Reddington[1], and M. S. Unlu[1]

[1]Boston University, Boston, MA

P – Sat - B - 20
AFM Adhesion Analysis of Pseudomonas fluorescens

M. E. Schwartz[1], I. Ivanov[2], C. D. Boyd[3], G. A. O'Toole[3], and T. A. Camesano[1]

[1]Worcester Polytechnic Institure, Worcester, MA, [2]Stanford, Stanford, CA, [3]Dartmouth College, Dartmouth, NH

P – Sat - B - 21
Creation of a Handheld NIRS Imaging Device for Infants
D. C. Pelkey[1]
[1]*University of Pittsburgh, Richmond, VA*

P – Sat - B - 22
Patient Motion Tracking for Medical Imaging Using 3D Sensing
N-C. H. Ly[1], J. T. Eagle[2], J. Meyer[1], and A. M. Alessio[1]
[1]*University of Washington, Seattle, WA,* [2]*University of Canterbury, New Zealand, ChristChurch, New Zealand*

P – Sat - B - 23
Initial Evaluation of Novel Dimeric-cRGD Peptide for Multimodal Imaging of Angiogenesis
S. L. Slania[1], I. T. Dobrucki[2], A. Czerwinski[3], F. Valenzuela[3], and L. W. Dobrucki[1,2]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Beckman Institute, Urbana, IL,* [3]*Peptides International Inc., Louisville, KY*

P – Sat - B - 24
Calculating Field Expansion and Apical Scotoma Size in Optical Correction for Homonymous Hemianopia
M. Dupuis[1,2], J-H. Jung[2], and E. Peli[2]
[1]*University of Rochester, Rochester, NY,* [2]*Schepens Eye Research Institute, Massachusetts Eye and Ear, Harvard Medical School, Boston, MA*

P – Sat - B - 25
Correlation Between Individual, ICA Generated, Resting State fMRI Networks Predicts Variability in Reaction Time on PVT
M. Merritt[1], S. Spratt[1], J. Grooms[2], G. Thompson[2], W. Pan[2], E. Schumacher[1], and S. Keilholz[2]
[1]*Georgia Tech, Atlanta, GA,* [2]*Georgia Tech and Emory University, Atlanta, GA*

P – Sat - B - 26
Micro-PIV of Bubble Splitting in a Bifurcation
S. L. Stephenson1, F. Hellmeier1, J. J. Pitre1, D. S. Li1, and J. L. Bull1
1University of Michigan, Ann Arbor, MI

P – Sat - B - 31
Development of a Screening Assay to Identify Inhibitors of the ROR2 Receptor
A. A. Valiga[1], M. P. O'Connell[1], D. Schultz[1], K. Marchbank[1], M. Webster[1], A. Kaur[1], and A. T. Weeraratna[1]
[1]*The Wistar Institute, Philadelphia, PA*

P – Sat - B - 32
The Use of Electrokinetic Phenomena to Characterize Malignant Cells
P. Kyle[1], L. Anders[1], J. Cemazar[1], C. Roberts[1], E. Schmelz[1], and R. Davalos[1]
[1]*Virginia Tech, Blacksburg, VA*

P – Sat - B - 33
The Effect of Primary Cilia on Non-Small Cell Lung Cancer
K. M. Mobarakeh[1], M. Radhika[1], E. Xu[1], and R. L. Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P – Sat - B - 34
Development of a Deterministic Antibody Array Display Technology using a Plant Virus-based Molecular Scaffold
K. Chen[1], M. Glidden[1], M. McBurney[1], D. A. Thompson[2], P. Dawson[2], and N. F. Steinmetz[3]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*The Scripps Research Institute, La Jolla, CA,* [3]*Case Western Reserve University, Cleveland, CA*

P – Sat - B - 35
The Effect of miRNA Secondary Structure and Drosha Expression on miRNA Biosynthesis
R. D. Jones[1], H. Sperber[1], A. Beem[1], A. Kukreja[2], and H. Ruohola-Baker[1]
[1]*University of Washington, Seattle, WA,* [2]*Carnegie Mellon University, Pittsburgh, PA*

P – Sat - B - 36
Simulating Delivery, Binding, and Clearance of a Novel Hypoxia-Binding Contrast Agent
J. M. Martin[1], P. K. Gulaka[2], and V. D. Kodibagkar[1,2]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

Track: Undergraduate Research

Cancer Technologies - Undergraduate Research

P – Sat - B - 27
Altering the Tetramerization Domain of p53 for use in Cancer Gene Therapy
T. C. Wallace[1], A. Okal[1], and C. S. Lim[1]
[1]*University of Utah, Salt Lake City, UT*

P – Sat - B - 28
Subcellular Localization of HER2 Receptor Signaling Pathway Proteins Using Quantum Dot-Compatible Fluorescent Markers
R. Lucero[1], T. Jacob[2], W. Lam[2], and T. Vu[2]
[1]*University of Washington, Seattle, WA,* [2]*Oregon Health and Sciences University, Portland, OR*

P – Sat - B - 29
Collagen Fibrillar Structure and its Role in the Pro-angiogenic Capability of Stromal Cells
A. N. Kolberg[1], B. Seo[1], J. Gonzalez[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

P – Sat - B - 30
Engineering Lipid-Polymer Hybrid Nucleic Acid Delivery Vehicles for Gene Therapy
K. M. Karrobi[1], M. T. Burgess[1], T. Ta[1], and T. M. Porter[1]
[1]*Boston University, Boston, MA*

Track: Undergraduate Research

Cardiovascular Engineering - Undergraduate Research

P – Sat - B - 37
Tunable Alginate Hydrogel as a Matrix for Cell-Based Therapies for Vascular Growth
S. Snyder[1], S. Logan[1], S. Taokaew[2], B-M. Zhang Newby[2], and W. Chilian[1]
[1]*Northeast Ohio Medical University, Rootstown, OH,* [2]*University of Akron, Akron, OH*

P – Sat - B - 38
The Role of Flow Patterns and Apoptosis on Atherosclerosis Plaque Formation
S. mensah[1], E. Ebong[2], and J. Tarbell[3]
[1]*City College of New york, New York, NY,* [2]*Albert Einstein School of Medicine, Bronx, NY,* [3]*City College of New York, New York, NY*

P – Sat - B - 39
Quantification of Cardiac Function by 4D Shape Analysis Objectively Characterizes Ventricular Remodeling
A. Mehra[1], S. M. Adhyapak[2], S. Tully[3], and P. G. Menon[4]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*St. John's Medical College Hospital, Bangalore, India,* [3]*QuantMD, LLC, Pittsburgh, PA,* [4]*Sun Yat-sen University - Carnegie Mellon University Joint Institute of Engineering, Pittsburgh, PA*

P – Sat - B - 40
Transformed Aortic Valve Endothelial Cells are Mechanically Active in Disease-Like Conditions
C. Mosher[1,2], E. Farrar[2], and J. Butcher[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cornell University, Ithaca, NY*

POSTER SESSION **SatB**

P = Poster Session
OP = Oral Presentation

P – Sat - B - 41
Fibrin Deposition: a Reductionist Model for Clot Formation on Streamlined vs. Non-streamlined Stents
C. Kampmeyer[1], J. M. Jiménez[1], and P. F. Davies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P – Sat - B - 42
Calcific Aortic Valve Disease Cell Culture: Three Dimensional Methods for Cellular Characterization of Calcified Valves
H. Fares[1], M. Sapp[1], and K. Grande-Allen[1]
[1]*Rice, Houston, TX*

P – Sat - B - 43
Drying of Collagen Gels to Increase Stiffness and Strength
D. J. Shaver[1], J. Raykin[2], and R. Gleason[3]
[1]*Georgia Institute of Technology, Sharpsburg, GA,* [2]*Georgia Institute of Technology, Marietta, GA,* [3]*Georgia Institute of Technology, Atlanta, GA*

Track: Undergraduate Research

Cellular and Molecular Bioengineering - Undergraduate Research

P – Sat - B - 44
Quantitative Analysis of Thin Filament Length During Postnatal Skeletal Muscle Development in Mice
E. A. Dubuc1, V. M. Fowler2, and D. S. Gokhin2
[1]Western New England University, Springfield, MA, [2]The Scripps Research Institute, La Jolla, CA

P – Sat - B - 45
Sex and Seasonal Differences in Immunocompetence in the Malaysian Fruit Bat (Pteropus vampyrus).
M. H. Schwartz[1], M. E. Vodzak[1], K. A. Field[1], and D. M. Reeder[1]
[1]*Bucknell University, Lewisburg, PA*

P – Sat - B - 46
In Vitro Analysis of Reamer-Irrigator-Aspirator Wastewater as an Osteogenic Supplement
D. C. Crowder[1,2], D. Klaus[3], J. Junko[3], E. Miller[3], and F. Safadi[2,4]
[1]*The University of Akron, Akron, OH,* [2]*Northeast Ohio Medical University, Rootstown, OH,* [3]*Summa Health Systems, Akron, OH,* [4]*Kent State University, Kent, OH*

P – Sat - B - 47
Validation of Detection Antibodies for a Microfluidic Platform to Measure Multiple Intracellular Proteins in Single Cells
I. A. Aworanti[1], E. Sulistijo[2], Y. Wu[2], R. Fan[2], and K. Miller-Jensen[2]
[1]*University of Maryland Baltimore County, Baltimore, MD,* [2]*Yale University, New Haven, CT*

P – Sat - B - 48
A Novel Peptide That Preferentially Binds Tumor-Associated Macrophages in Solid Tumors
J. Yu[1], M. Cieslewicz[1], and S. Pun[1]
[1]*University of Washington, Seattle, WA*

P – Sat - B - 49
Automating the Transformation of Tobacco Mosaic Virus to Spherical Viruses for Biomedical Applications
A. L. VanMeter[1], M. A. Bruckman[1], and N. F. Steinmetz[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Case Western Reserve University School of Medicine, Cleveland*

P – Sat - B - 50
Transfection Optimization for Precise Control of Insulin Expression
L. Crudup[1]
[1]*University of California, San Diego, Ontario, CA*

P – Sat - B - 51
High-throughput Quantitative Assays to Characterize ProteinInteraction Systems
S. Kishta[1], R. McNally[1], and T. Kinzer-Ursem[1]
[1]*Purdue University, West Lafayette, IN*

P – Sat - B - 52
In Vitro Suppression of Fibroblast Density by Lubricin Coating
Z. Yang[1], G. Aninwene II[2], and T. Webster[2]
[1]*Brown University, Providence, RI,* [2]*Northeastern University, Boston, MA*

P – Sat - B - 53
Engineering a Cellular Model with Inducible Expression of Fluorescent Hemoglobins to Optimize Sickle Cell Gene Therapy Strategies
D. W. Clough[1] and M. O. Platt[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Undergraduate Research

Device Technologies and Biomedical Robotics - Undergraduate Research

P – Sat - B - 54
Computational Modeling and Force Simulation of Shoulder Pads
C. D. Workman[1], C. Cirjan[1], L. H. Snyder[1], A. Quach[1], and D. H. Frakes[1]
[1]*Arizona State University, Tempe, AZ*

P – Sat - B - 55
Applying Microfluidic Technology to Zebrafish Handling and Orientation
C. R. Bulow[1], D. Schaffer[1], R. Reiserer[1], Q. Guan[1], J. Gamse[1], and K. Seale[1]
[1]*Vanderbilt University, Nashville, TN*

P – Sat - B - 56
Model-Based Conformance Testing for Implantable Pacemakers
G. M. Chen[1], Z. Jiang[2], and R. Mangharam[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Pennsylvania, Philadelphia, PA*

Track: Undergraduate Research

Drug Delivery - Undergraduate Research

P – Sat - B - 57
Delayed Drug Release by Chitosan-Alginate Beads
D. Zhang[1], L. Actis[1], and J. L. Ong[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P – Sat - B - 58
Effects of Chitosan Modifications on Protein Release
S. Kumar[1], B. Koppolu[1], C. W. Wallace[1], and D. Zaharoff[1]
[1]*University of Arkansas, Fayetteville, AR*

P – Sat - B - 59
Release of Amphotericin B From Cyclodextrin Polymer Delivery System
C. A. Gormley[1], S. Zuckerman[1], J. Korley[1], and H. von Recum[1]
[1]*Case Western Reserve University, Cleveland, OH*

P – Sat - B - 60
The Impact of PEG-DA Molecular Weight on the Release Characteristics and Gel-Sol Transition Temperature of Thermoresponsive Hydrogels
K. Amaral[1,2], E. Dosmar[1], and J. J. Kang-Mieler[1]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Western New England University, Springfield, MA*

P – Sat - B - 61
Medifuze: Mobile Medical Injections
A. Bukhta[1], B. Hird[2], and J. Lee[2]
[1]*Harvard University, Brooklyn, NY,* [2]*Harvard University, Cambridge, MA*

POSTER SESSION **SatB**

P – Sat - B - 62
Modeling of Drug Release from Polyurethane Matrix
Y. Yuan[1] and D. Sarkar[1]
[1]*University at Buffalo, SUNY, Buffalo, NY*

Track: Undergraduate Research

Nano to Micro Technologies - Undergraduate Research

P – Sat - B - 63
Nano-architectural Multilayers of Polyelectrolytes and Immunoglobulin for Encapsulation (QCM study)
K. Dilai[1,2], G. Parekh[2], and Y. M. Lvov[2]
[1]*Clarkson University, Potsdam, NY,* [2]*Louisiana Tech University, Ruston, LA*

P – Sat - B - 64
Characterizing and Optimizing a Lateral Flow Assay for the Quantitative Detection of Amplified HIV DNA
K. Shah[1], B. Rohrman[1], and R. Richards-Kortum[1]
[1]*Rice University, Houston, TX*

P – Sat - B - 65
Fabrication of a 3D Microflow Cytometer
A. J. Dy[1,2], R. A. Erickson[2], and R. Jimenez[2]
[1]*Indiana University, Bloomington, IN,* [2]*University of Colorado/JILA, Boulder, CO*

P – Sat - B - 66
Dissolvable Bridges for Manipulating Fluid Volumes in Paper Networks
J. S. Houghtaling[1] and E. Fu[1]
[1]*University of Washington, Seattle, WA*

P – Sat - B - 67
Increased Adhesion of Fibroblasts to ZnO/PVC Nanocomposites
P. M. Maschhoff[1], B. M. Geilich[1], and T. J. Webster[1]
[1]*Northeastern University, Boston, MA*

P – Sat - B - 68
The Advancement of an Automated Extruder to Aid Nanoparticle Synthesis
T. Tanner[1] and A. Ostafin[1]
[1]*University of Utah, Salt Lake City, UT*

P – Sat - B - 69
Extraction of Neisseria gonorrheae DNA in a Microfluidic Chip for Point-of-Care Molecular Diagnostics
A. Lai[1], C. Ellenson[1], J. Linnes[1], and C. Klapperich[1]
[1]*Boston University, Boston, MA*

P – Sat - B - 70
Gold Nanoparticles Enhanced Electroporation for Gene Delivery in Mammalian Cells
A. Pun[1], Y. Zu[2], Y. Lu[2], S. Huang[2], and S. Wang[2]
[1]*Duke University, Durham, NC,* [2]*Louisiana Tech University, Ruston, LA*

POSTER SESSION **SatB**

P – Sat - B - 71
Modeling DNA Strand Displacement Reactions for Use in Nano-Machinery
A. Herur-Raman[1], P. B. Landon[2], and R. Lal[2]
[1]*Northwestern University, Chicago, IL,* [2]*University of California, San Diego, La Jolla, CA*

P – Sat - B - 72
Targeting Atherosclerotic Plaques In Vivo using Rod-shaped Tobacco Mosaic Virus
L. N. Randolph[1], M. A. Bruckman[1], E. J. Simpson[2], L. G. Luyt[2], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*The University of Western Ontario, London, ON, Canada*

P – Sat - B - 73
Supramolecular Sulfamethazine Nanobelts for Antimicrobial Hydrogel Formation
C. Macias[1,2], Y-A. Lin[2], and H. Cui[2]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*Johns Hopkins University, Baltimore, MD*

P – Sat - B - 74
Glycan Array Chamber for Multiplexed Measurement of Bacterial Adhesion
A. C. Bleem[1] and W. E. Thomas[2]
[1]*Montana State University, Bozeman, MT,* [2]*University of Washington, Seattle, WA*

P – Sat - B - 75
Development of Polymersome Nanocarriers for the Targeted Delivery of Therapeutic Compounds
G. Singleton[1], B. Geilich[1], and T. Webster[1]
[1]*Northeastern University, Boston, MA*

P – Sat - B - 76
Cross-linking of PEGylated Enzymes: Effects on Aggregation Potential and Enzymatic Longevity
J. M. Newton[1], D. W. Ritter[1], and M. J. McShane[1]
[1]*Texas A&M University, College Station, TX*

P – Sat - B - 77
Open-Sourced Optical Test Setup for Rapid and Affordable Silicon Photonic Biosensor Development
W. Wu[1], P. Kulik[1], S. Schmidt[1], J. Flueckiger[2], L. Chrostowski[2], and D. M. Ratner[1]
[1]*University of Washington, Seattle, WA,* [2]*University of British Columbia, Vancouver, BC, Canada*

P – Sat - B - 78
Stability and Cytotoxicity of One Step Synthesis Cationic Gold Nanoparticles
S. R. Cole[1], D. Dean[1], and C. Kitchens[1]
[1]*Clemson University, Clemson, SC*

Track: Undergraduate Research

Neural Engineering - Undergraduate Research

P – Sat - B - 79
Effects of Stereoscopic Vision Training on the Vergence System of Binocularly Normal Subjects
S. R. Cole[1,2], J. I. Mason[1,3], S. J. Lestrange[1], and T. L. Alvarez[1]
[1]*New Jersey Institute of Technology (NJIT), Newark, NJ,* [2]*Clemson University, Clemson, SC,* [3]*Hampton University, Hampton, VA*

P – Sat - B - 80
Strategies to Direct and Characterize the Tissue Response at the Electrode-Tissue Interface
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of Pittsburgh School of Medicine, Pittsburgh, PA,* [3]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P – Sat - B - 81
Contributions of the Medial and Lateral Entorhinal Cortices to Context-Specific Learning and Memory
A. Sengupta[1], C. S. Keene[1], J. H. Bladon[1], and H. Eichenbaum[1]
[1]*Boston University, Boston, MA*

P – Sat - B - 82
Comparing Tremor Detection Algorithms Using Acceleration Data from an ez430 Chronos Watch
L. A. Hylton[1], T. Sanders[2], and M. Clements[2]
[1]*Georgia Institute of Technology, Falls Church, VA,* [2]*Georgia Institute of Technology, Atlanta, GA*

P = Poster Session
OP = Oral Presentation

P – Sat - B - 83

Development of an Actuated Thumb Exoskeleton with Adjustable Axes of Rotation for Stroke Rehabilitation

D. Charles[1], D. Kamper[1,2], K. Qian[1,3], and I. Ochir[1]

[1]Illinois Institute of Technology, Chicago, IL, [2]Northwestern University, Chicago, IL, [3]University of Chicago, Chicago, IL

P – Sat - B - 84

Implantable System for Bi-directional Wireless Stimulation and Data Logging

D. Rubenstein[1], P. Gamble[2], K. Triplett[2], M. Stephen[2], W. Z. Ray[2], and M. R. MacEwan[2]

[1]George Washington University, Washington, DC, [2]Washington University School of Medicine, Saint Louis, MO

P – Sat - B - 85

PEDOT/GO Carbon Fiber Microelectrodes for Dopamine Detection

L. Zhang[1,2], C. Weaver[1,2], and T. Cui[1,2]

[1]University of Pittsburgh, Pittsburgh, PA, [2]Neural Tissue/Electrode Interface & Neural Tissue Engineering Lab, Pittsburgh, PA

P – Sat - B - 86

Tunable Hyaluronic Acid Hydrogel for Neural Engineering

A. Sadraei[1] and A. Jain[1]

[1]Worcester Polytechnic Institute, Worcester, MA

P – Sat - B - 87

Assessment of Neurite Growth in Methacrylated Collagen Gels with Patterned Stiffness

S. M. Knowlton[1], K. E. Drzewiecki[2], and D. I. Shreiber[2]

[1]University of Connecticut, Storrs, CT, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

P – Sat - B - 88

Functionalization of DNA Nanostructures for Molecular Transport across the Blood-Brain Barrier

P. Iyer[1], H. Vallabhaneni[1], A. Sengupta[1], R. E. Kohman[1], and X. Han[1]

[1]Boston University, Boston, MA

P – Sat - B - 89

Beta Sensorimotor Rhythms in a Brain-Computer Interface Model

R. De La Rosa[1], K. Balasubramanian[2], M. Vaidya[2], and N. Hatsopoulos[2]

[1]Brown University, Providence, RI, [2]University of Chicago, Chicago, IL

P – Sat - B - 90

Development of an Automated Operant Conditioning Chamber Designed to Teach Rodents a Forelimb Reach-and-Grasp Task

K. Day[1,2], V. Caggiano[2,3], V. C. Cheung[2,3], and E. Bizzi[2,3]

[1]University of Pittsburgh, Pittsburgh, PA, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]McGovern Insitute for Brain Research, Cambridge, MA

P – Sat - B - 91

Characterization of Blood Brain Barrier Disruption at the Tissue-Electrode Interface

S. Sunil[1], M. Ravikumar[1], and J. Capadona[1]

[1]Case Western Reserve University, Cleveland, OH

P – Sat - B - 92

Disruption of Cluster of Differentiation 14 Signaling to Improve Intracortical Microelectrode Integration

W. Tomaszewski[1], M. Ravikumar[1], S. Sunil[1], and J. Capadona[1]

[1]Case Western Reserve University, Cleveland, OH

Track: Undergraduate Research

New Frontiers and Special Topics - Undergraduate Research

P – Sat - B - 93

Drug-Resistant Tuberculosis Isothermal DNA Assay for Point-of-Care Diagnostics

J. W. Lau[1,2], S. B. Hall[2], C. Torres[2], J. C. Barrozo[3], M. Kato-Maeda[3], A. Cattamanchi[3], D. A. Fletcher[4], and B. R. Baker[2]

[1]Clemson University, Clemson, SC, [2]Lawrence Livermore National Laboratory, Livermore, CA, [3]University of California, San Francisco, San Francisco, CA, [4]University of California, Berkeley, Berkeley, CA

P – Sat - B - 94

A Quantitative Assay for Optimizing DNA Polymerase Activity on a Real-time PCR Platform

N. Rejali[1], J. L. Montgomery[1], and C. T. Wittwer[1]

[1]University of Utah, Salt Lake City, UT

Track: Undergraduate Research

Orthopaedic and Rehabilitation Engineering - Undergraduate Research

P – Sat - B - 95

Evaluation of Visual and Haptic Feedback Combinations for Manual Control of Virtual Ambulation

E. Apgar[1,2], I. J. DuPree[1,3], L. F. Morales[1,4], K. K. Karunakaran[1], K. M. Abbruzzese[1], and R. A. Foulds[1]

1New Jersey Institute of Technology (NJIT), Newark, NJ, 2Harding University, Searcy, AZ, 3University of Illinois, Urbana-Champaign, IL, 4Middlesex County College, Edison, NJ

P – Sat - B - 96

Effect of Humeral Positioning on Glenohumeral and Subacromial Forces in a Cadaveric Model of Simulated Pitching

K. C. Walley[1,2], E. R. Harlow[1,2], O. S. Manoukian[1,3], A. Masoudi[1,4], M. Wexler[1,2], N. Patel[1], B. Hertz[1,2], A. J. Ramappa[1], J. P. DeAngelis[1], and A. Nazarian[1]

[1]Department of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, [2]Department of Biomedical Engineering, Boston University, Boston, MA, [3]Department of Biomedical Engineering, University of Connecticut, Storrs, CT, [4]Harvard Medical School, Boston, MA

P – Sat - B - 97

A Biomechanical Evaluation of An All Inside Radial Meniscal Tear Repair Device with Matched Inside-Out Suture Repair

E. R. Harlow[1,2], K. C. Walley[1,2], O. S. Manoukian[1,3], B. S. Beamer[1], A. Masoudi[1,4], N. Patel[1], J. J. Olson[5], B. Hertz[1,2], A. Nazarian[1], and A. J. Ramappa[1]

[1]Department of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, [2]Department of Biomedical Engineering, Boston University, Boston, MA, [3]Department of Biomedical Engineering, University of Connecticut, Storrs, [4]Harvard Medical School, Boston, MA, [5]Case Western Reserve University School of Medicine, Cleveland, OH

P – Sat - B - 98

Effect of X-Ray Dose on Porcine Articular Cartilage

J. Williams[1], J. Wilson[1], K. Nugent[2], and D. Dean[1]

[1]Clemson University, Clemson, SC, [2]SC Governor's School for Science and Math, Hartsville, SC

P – Sat - B - 99

Investigation of Effects of Bacteria and Antibiotics on Wear in Pin-On-Disk Testing

J. Fredericks[1,2], E. Hippensteel[2], and M. Dressler[2]

[1]University of Toledo, Toledo, OH, [2]DePuy Synthes Joint Reconstruction, Warsaw, IN

POSTER SESSION **SatB**

P – Sat - B - 100
Force Sensor Ultrasound Probe Design for Better Rotator Cuff Injury Diagnosis
H. Scruggs[1], C. Corbett[1], A. Cusick[1], K. Perry[1], B. Sudduth[1], H. Cash[1], K. Showers[1], M. Hanschke[1], D. Dean[1], and D. Kwartowitz[1]
[1]Clemson University, Clemson, SC

P – Sat - B - 101
Sclerostin Antibody Effect on Bone Mass in an Ovariectomized and Hindlimb-Suspended Rat Model
T. Chu[1], D. Zhang[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

Track: Undergraduate Research

Respiratory Bioengineering - Undergraduate Research

P – Sat - B - 102
Temporal Analysis of a Stochastic and Integrative Model of the Cardiorespiratory System
B. Busha[1] and G. E. Banis[1]
[1]The College of New Jersey, Ewing, NJ

P – Sat - B - 103
Decellularized Extracellular Matrix Therapy for Treatment of Diseased Human Bronchial Epithelial Cells with COPD
R. Takahashi[1], R. Pouliot[1], and R. L. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

P – Sat - B - 104
In Vitro Intersubject Comparison of Inhaled Aerosol Deposition in Realistic Human Upper Respiratory Models
D. D. Yoon[1], B. Hudson[1], A. Ramosvieira[1], S. Moon[1], T. F. Hannah[1], L. N. Reagin[1], M. Z. Nve-nsi[1], and S. Hyun[1]
[1]Merer University, Macon, GA

Track: Undergraduate Research

Stem Cell Engineering - Undergraduate Research

P – Sat - B - 105
Micropattern Control of Differentiation of hiPSCs to the Cardiac Lineage
J. Wang[1], Z. Ma[1], M. Finnegan[1], B. Conklin[2], and K. Healy[1]
[1]University of California Berkeley, Berkeley, CA, [2]University of California San Francisco, San Francisco, CA

P – Sat - B - 106
Adipose-Derived Stem Cell Potential for Tissue Engineering the Temporomandibular Joint Disc
J. Gorski[1], C. Hagandora[1], A. Almarza[1], K. Marra[1], J. Gao[1], and Y. Wang[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Sat - B - 107
Decapsulation of Alginate-Poly-L-Lysine Microcapsules via Sodium Carbonate
M. T. Najia[1], J. L. Wilson[1], and T. C. McDevitt[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Institute for Bioengineering & Bioscience, Atlanta, GA

P – Sat - B - 108
The *In Vitro* Effects of Embryonic Stem Cell Paracrine Signaling on Macrophage Phenotype
M. Maurer[1], L. Fitzpatrick[2], and T. McDevitt[2]
[1]University of Texas at Dallas, Richardson, TX, [2]Georgia Institute of Technology, Atlanta, GA

P – Sat - B - 109
Traction Forces on Fibrillar Matrices Regulate Embryonic Stem Cell Fate Decisions
N. Ravi[1], H. Taylor-Weiner[1], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA

P – Sat - B - 110
CANCELLED BY AUTHOR

P – Sat - B - 111
Reduced Numbers of Muscle Progenitor Cells are Associated with Decreased Regeneration in the Muscles of the Rotator Cuff
A. L. Farris[1], G. A. Meyer[2], E. Sato[2], S. R. Ward[2], and A. J. Engler[2]
[1]University of Kansas, Lawrence, KS, [2]University of California, San Diego, La Jolla, CA

P – Sat - B - 112
A High-Throughput Cell Screening Assay Using PDMS Microbubble Technology for Skin Cancer Research
Q. Pu[1] and L. A. DeLouise[1,2]
[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

P – Sat - B - 113
In Vivo Imaging of Stem Cells during Soft Tissue Reconstruction
J. Day[1], J. Bliley[2], M. McLaughlin[1,2], R. Kling[1,2], L. Kokai[1,2], L. Satish[1,2], K. Marra[1,2], and J. P. Rubin[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]UPMC, Pittsburgh, PA

P – Sat - B - 114
The Effects of Hydroxyapatite and Fluorapatite on Dental Cell Differentiation
A. Farley[1], K. Shores[1], M. Kennedy[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

Track: Undergraduate Research

Tissue Engineering - Undergraduate Research

P – Sat - B - 115
Use of Electrical Stimulation on Human Dermal Fibroblasts to Enhance Wound Healing
S. Snyder[1] and R. Willits[1]
[1]University of Akron, Akron, OH

P – Sat - B - 116
Degradation Products of Biologic Scaffolds Promote a Constructive Macrophage Phenotype
J. L. Dziki[1], B. M. Sicari[1], C. L. Dearth[1], and S. F. Badylak[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Sat - B - 117
Response of Human Periodontal Ligament Stem Cells (PDLSCs) on Mineral-containing Nanofiber Scaffolds
N. L. Black[1], N. M. Lee[1], and H. H. Lu[1]
[1]Columbia University, New York, NY

P – Sat - B - 118
Nanoengineered PNIPAAm Platform Combined with Microstencil-Assisted Cell Patterning towards Cell Sheet Origami
N. E. Trosper[1], A. Jiao[1], and D-H. Kim[1]
[1]University of Washington, Seattle, WA

P – Sat - B - 119
Development of Nanofabricated Scleral Patch for Use Following Trabeculotomy
C. Hardy[1] and M. R. MacEwan[2]
[1]Lehigh University, Park Ridge, NJ, [2]Washington University School of Medicine, Saint Louis, MO

POSTER SESSION **SatB**

P = Poster Session
OP = Oral Presentation

P – Sat - B - 120

A Brachyury Responsive Transactivation Assay for Quantifying the Molecular Phenotype of Human Nucleus Pulposus Cells *In Vitro*

K. L. Yang[1], D. T. Bridgen[1], D. A. Alcorta[1], L. Jing[1], R. E. Isaacs[1], C. A. Bagley[1], J. Chen[1], and L. A. Setton[1]

[1]*Duke University, Durham, NC*

P – Sat - B - 121

Trehalose Incubation Improves Cryopreservation of Hepatoma Cell Monolayers

B. R. Stokich[1], B. Schryver[2], Q. Osgood[3], N. Chakraborty[3], M. Thompson[2], and M. A. Menze[1]

[1]*Eastern Illinois University, Charleston, IL,* [2]*BioCision, LLC, Larkspur, CA,* [3]*University of Michigan - Dearborn, Dearborn, MI*

P – Sat - B - 122

Quantification of Spatiotemporal Cell-Matrix Signaling for Predicting Matrix-Guided Vasculogenesis Outcomes through Mathematical Modeling

S. N. Thiede[1], N. Bajaj[1], C. Whittington[1], A. Rundell[1], and S. Voytik-Harbin[1]

[1]*Purdue University, West Lafayette, IN*

P – Sat - B - 123

Cell-Cell Contact Enhances Wnt-Notch Crosstalk for Subsequent Proliferation and Chondrogenesis

A. Chen[1], M. D. Hoffman[1,2], C. S. Chen[1], D. S. Reynolds[1], and D. S. Benoit[1,2]

[1]*University of Rochester, Rochester, NY,* [2]*Center for Musculoskeletal Research, Rochester, NY*

P – Sat - B - 124

Polymeric Coated Microparticle Scaffolds Engineered for Future Use in Musculoskeletal Tissue Regeneration

G. Samandi[1], M. Detamore[1], C. Berkland[1], J. Haslam[1], and V. Gupta[1]

[1]*University of Kansas, Lawrence, KS*

P – Sat - B - 125

Investigation of Gold Nanoparticles as Contrast Agents for Cellular Tracking

E. A. Trevino[1], L. M. Ricles[1], and L. J. Suggs[1]

[1]*The University of Texas, Austin, TX*

P – Sat - B - 126

The Role of Dimensionality on Cancer Cell Response to Cytotoxic Drugs

K. L. Kalinowski[1] and S. P. Zustiak[1]

[1]*Saint Louis University, Saint Louis, MO*

P – Sat - B - 127

Nonviral Gene Delivery within a 3D Fiber-Templated Hydrogel for Cardiac Tissue Engineering

Z. L. Paulson[1], T. Kasputis[2], C. N. Sargus[2], and A. K. Pannier[2]

[1]*Texas A&M University, College Station, TX,* [2]*University of Nebraska - Lincoln, Lincoln, NE*

P – Sat - B - 128

Fabrication and Characterization of a Manuka Honey Eluting Electrospun Scaffold for Dermal Repair

B. A. Minden-Birkenmaier[1], J. T. LaMaster[1], B. E. Janowiak[1], and S. A. Sell[2]

[1]*Saint Louis University, St Louis, MO,* [2]*Saint Louis University, St. Louis, MO*

P – Sat - B - 129

A Novel *In Vitro* Model to Quantify the Dynamic Interaction of Lymphatic Endothelial Cells and T Cells

C. Gutierrez[1,2], V. Triacca[2], M. Pisano[2], and M. A. Swartz[2]

[1]*Drexel University, Philadelphia, PA,* [2]*Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland*

P – Sat - B - 130

The Induction of Myogenesis Through Electrical Stimulation

M. B. Elliott[1], E. Antoniadou[2], and H. Kong[2]

[1]*Saint Louis University, St. Louis, MO,* [2]*University of Illinois at Urbana-Champaign, Champaign, IL*

P – Sat - B - 131

Development of a Mechanical Actuation System to Enhance Skeletal Muscle Maturation *In Vitro*

A. N. Rindone[1], A. R. Vannasse[2], J. M. Forte[2], and R. L. Page[2]

[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P – Sat - B - 132

In Vitro Assay of Reaction Torque During Collagen Fiber Acupuncture Needle Rotation

J. Hogate[1] and D. Shreiber[1]

[1]*Rutgers University, Piscataway, NJ*

P – Sat - B - 133

Comparison of Degradation of PEG-PLLA-DA hydrogels: PMMA sphere templating vs. Salt Leaching

M. Parulekar[1], B. Akar[1], E. M. Brey[1], and S. Somo[1]

[1]*Illinois Institute of Technology, Chicago, IL*

P – Sat - B - 134

An *In Vitro* Model of Adipose Expansion Regulated by Hydrogel Stiffness

J. A. Rios[1], M. K. Vaicik[1], and E. M. Brey[1]

[1]*Illinois Institute of Technology, Chicago, IL*

P – Sat - B - 135

TGF-ß1 vs. Dynamic Mechanical Stimulation of Tissue-Engineered Cartilage

C. Bautista[1], A. Mei[2,3], M. Kelley[2,3], R. Stefani[2,3], and B. Bilgen[2,3]

[1]*Brown University, Providence, RI,* [2]*Providence VA Medical Center, Providence, RI,* [3]*Alpert Medical School of Brown University and Rhode Island Hospital, Providence, RI*

P – Sat - B - 136

Analyzing Nuclear Orientation in MATLAB Compared to ImageJ

A. Swei[1], J. L. Cooper[1], and M. W. Rolle[1]

[1]*Worcester Polytechnic Institute, Worcester, MA*

P – Sat - B - 137

A Practical Decellularization Method used to Engineer a Novel Detergent-free, Acellular Graft that Promotes Optimal Nerve Regeneration in a Rat Model

K. E. Maddy[1,2], R. Mora[2], T-H. Chuang[2], J. R. Papreck[2], and S. Shah[2]

[1]*University of Arizona, Tucson, AZ,* [2]*University of California San Diego, San Diego, CA*

P – Sat - B - 138

Nanofeatured Silk Fibroin Membranes for Orthopedic Applications

Z. Karahaliloðlu[1], B. Ercan[2], E. B. Denkbaþ[3], and T. J. Webster[2]

[1]*Hacettepe University, Boston, MA,* [2]*Northeastern University, Boston, MA,* [3]*Hacettepe University, Ankara, Turkey*

P – Sat - B - 139

Modeling Flow Characteristics Within a Perfusion Bioreactor Using Computational Fluid Dynamics

M. J. Robeson[1], J. Gandhi[2], E. Berson[1], and E. M. Brey[2]

[1]*University of Louisville, Louisville, KY,* [2]*Illinois Institute of Technology, Chicago, IL*

P – Sat - B - 140

Synthesis of Hydrogels for 3-D Cell Culture via Copper Free Click Chemistry

K. Beaven[1], R. Navarro[2], and T. Betancourt[2]

[1]*University of Kentucky, Lexington, KY,* [2]*Texas State University, San Macros, TX*

P – Sat - B - 141

Pittsburgh Tissue Engineering Summer Camps: Seeding Young Minds with TE

H. M. Smith[1] and A. P. Maxey[2]

[1]*University of Pittsburgh, Glenshaw, PA,* [2]*University of Pittsburgh, Los Angeles, CA*

Track: Undergraduate Research

Translational Biomedical Engineering - Undergraduate Research

P – Sat - B - 142
On-Chip Detection of HIV Using Loop-Mediated Isothermal Amplification
A. Nandyala[1], E. Salm[1], C. Duarte[1], G. Damhorst[1], and R. Bashir[1,2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Illinois at Urbana-Champaign, Champaign, IL

P – Sat - B - 143
Designing Neonatal Monitoring Devices for Resource-Poor Settings
A. Devon[1], K. Gainey[1], H. Adams[1], J. Desjardins[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P – Sat - B - 144
Mechanical, Low-cost, and Accurate IV Volume Regulator for Developing Countries
E. Skerrett[1], K. Shah[1], M. Nojoomi[1], M. Pan[1], B. Flynn[1], T. Walker[1], M. Oden[1], and R. Richards-Kortum[1]
[1]Rice University, Houston, TX

Track: Undergraduate Research

Undergraduate Research

P – Sat - B - 145
Three-Dimensional Printed Sucrose Preforms for Aqueous-Polymer Scaffold Fabrication
S. Wongvibulsin[1], S. Reed[1], and B. Wu[1]
[1]University of California, Los Angeles, Los Angeles, CA

P – Sat - B - 146
Exploring the Middle Ear Function in the Parakeet
Y. Lee[1], E. S. Olson[1], and W. Dong[1]
[1]Columbia University, New York, NY

P – Sat - B - 147
Sample Purification and Concentration for Bacterial Identification for Rapid Point-of-Care Sepsis Diagnosis
T. Mon[1], J. Saffie[1], W. Wong[1], C. Klapperich[1], and A. Sauer-Budge[1,2]
[1]Boston University, Boston, MA, [2]Fraunhofer CMI, Boston, MA

P – Sat - B - 148
Hsp90 Inhibitor Ganetespib Radiosensitizes Liver Cancer Cells
A. Annadanam[1], S. Thiruganasambandam[1], N. Gandhi[1], A. Wild[1], J. Herman[1], and P. T. Tran[1]
[1]Johns Hopkins University, Baltimore, MD

P – Sat - B - 149
A Microwell Array for Culturing Hepatocytes
M. E. Wechsler[1], E. I. Qendro[1], M. Akbari[1], and A. Khademhosseini[1]
[1]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA

P – Sat - B - 150
Automated Behavioral Interface for Optogenetic Manipulation
M. P. Elam[1], X. Han[1], M. Bucklin[1], J. Zhuo[1], and T. Gunnels[1]
[1]Boston University, Boston, MA

P – Sat - B - 151
Automated Quantification of Cardiac Fibrosis in the mRen2(27) Transgenic Rat
C. E. Rayburg[1], J. Haney[1], and S. G. Shroff[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Sat - B - 152
Glucose-Dependent GIP Receptor Expression in MIN6 Cells
Q. Wang[1], S. Rajan[2], and L. Philipson[2]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Chicago, Chicago, IL

P – Sat - B - 153
A Flexibly Configured Surgical Simulator
A. K. Rollando[1], P. A. Osei[1], D. Cavanagh[1], J. Baish[1], M. Shabahang[2], and N. Woll[2]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Medical Center, Danville, PA

P – Sat - B - 154
Poly (N-isopropyl Acrylamide)-coated Surfaces: Investigation of Cytotoxicity of CpNIPAM
L. M. Stapleton[1], M. A. Cooperstein[1], and H. E. Canavan[1]
[1]University of New Mexico, Albuquerque, NM

P – Sat - B - 155
Cell Senescence Alters Proliferation and Markers of Inflammation in Human Cord Blood-Derived Endothelial Cells
J. Fu[1], T. Cheung[1], and G. Truskey[1]
[1]Duke University, Durham, NC

P – Sat - B - 156
Neuronal Regulation of Fin Regeneration in Zebrafish
A. M. Recidoro[1], A. C. Roof[1], and R. Y. Kwon[1]
[1]University of Washington Medical Center, Seattle, WA

P – Sat - B - 157
Investigation of Molecular Delivery Enhancement Through Microscale Electroporation Pulse Manipulation
D. G. Tekverk[1], J. Zheng[2], D. I. Shreiber[2], and J. D. Zahn[2]
[1]Marist College, Poughkeepsie, NY, [2]Rutgers University, Piscataway, NJ

P – Sat - B - 158
Effect of a Novel Lateral Extension Ankle-Brace Component on Foot Kinematics
M. Bucklin [1], F. Lemley[2], N. Ordway[3], and C. Neville[3]
[1]University of Rochester, Rochester, NY, [2]Syracuse Orthopedic Specialists, Syracuse, NY, [3]SUNY Upstate Medical University, Syracuse, NY

P – Sat - B - 159
Guanidinylation of Cationic Copolymers for Nonviral Gene Delivery
J. Choi[1], J. Shi[1], H. Wei[1], D. Chu[1], and S. Pun[1]
[1]University of Washington, Seattle, WA

P – Sat - B - 160
Development of a Controlled Electromagnetic Stimulation System to Simulate Muscle Contraction
J. Nagode[1,2] and A. Leonessa[1]
[1]Virginia Tech, Blacksburg, VA, [2]University of Hartford, West Hartford, CT

P – Sat - B - 161
Characterization of the In Vivo Degradation Mechanisms of PEGDA Hydrogels
S. N. Cereceres[1], M. B. Browning[1], P. T. Luong[1], and E. M. Cosgriff-Hernandez[1]
[1]Texas A&M University, College Station, TX

P – Sat - B - 162
Performance of a Thermo-modulating Container for Protecting Point-of-Care Devices During Disasters
K. R. Vasseur[1], C. A. Gamache[1], G. J. Kost[2], and M. J. Rust[1]
[1]Western New England University, Springfield, MA, [2]University of California, Davis, Davis, CA

P – Sat - B - 163
Design of a Motorized Computer Monitor Arm for Client with Quadraplegia
G. M. Waters[1], J. D. Bumgardner[1], L. P. Claybon[1], and T. E. Wyatt[1]
[1]The University of Memphis, Memphis, TN

POSTER SESSION **SatB**

P = Poster Session
OP = Oral Presentation

P – Sat - B - 164
Characterization of a Human Kidney Cell Line for Physiologically Realistic *In Vitro* Models
M. Reiss[1], C. Sakolish[1], and G. Mahler[1]
[1]*Binghamton University, Vestal, NY*

P – Sat - B - 165
The Effect of Surface Variation on the Risk of Head Injury on a Playground
G. P. Danchik[1], C. D. DiDomenico[1], and E. A. Kennedy[1]
[1]*Bucknell University, Lewisburg, PA*

P – Sat - B - 166
Relation of Hemorheological Parameters and ADMA in Ethnic Groups of African Descent
C. J. Deanes[1], R. S. Madhurapantula[1], K. Gerald[1], A. Singh[1], and P. Dhar[1]
[1]*Illinois Institute of Technology, Chicago, IL*

P – Sat - B - 167
The Effect of Inflammation on Muscle Sensory Function in Adult Mice
A. B. allawala[1] and K. Wilkinson[1]
[1]*San Jose State University, San Jose, CA*

P – Sat - B - 168
Nanochain Particles Prevent Metastatic Growth Using Radiofrequency-Triggered Release of Chemotherapy
S. T. Tucci[1], P. Pieris[1], M. Tam[1], A. Abramowski[1], R. Toy[1], P. Vicente[1], L. Bauer[1], A. Mayer[1], J. Pansky[1], E. Doolittle[1], E. Schmidt[1], R. Gopalakrishnan[1], R. Keri[1], J. Basilion[1], M. Griswold[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

P – Sat - B - 169
Correlation of Micro-indentation to Other Factors Indicative of Bone Quality
A. Dincer[1], S. Denning[1], R. Pisano[1], E. A. Kennedy[1], and D. M. Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA*

P – Sat - B - 170
Computational Modeling and Prediction of G-quadruplex Formation
J. S. Calvert[1], A. Kreig[1], S. Sinha[1], and S. Myong[1]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL*

P – Sat - B - 171
Corneal Mechanical Properties After Crosslinking Treatments for Keratoconus and Post-LASIK Ectasia
F. R. Gonzalez[1], M. Lorenzo[1], J. Dias[1], and N. Ziebarth[1]
[1]*University of Miami, Coral Gables, FL*

P – Sat - B - 172
Use of Telecentric Lenses to Improve Optical Strain Analysis Techniques for Soft Tissue Applications
C. O. Simmonds[1], J. Favreau[2], and G. Gaudette[2]
[1]*Rutgers University, Plainfield, NJ,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P – Sat - B - 173
Investigation of the efficacy of genipin solution as a possible treatment for keratoconus
M. A. Lorenzo[1], F. Gonzalez[1], J. Dias[1], and N. Ziebarth[1]
[1]*University of Miami, Coral Gables, FL*

P – Sat - B - 174
Correlation of Pullout Force of Kirschner (K-) Wire to Other Factors Indicative of Bone Quality
S. C. Denning[1], R. C. Pisano III[1], A. Dincer[1], D. M. Ebenstein[1], and E. A. Kennedy[1]
[1]*Bucknell University, Lewisburg, PA*

P – Sat - B - 175
Soft Substrate Does Not Inhibit Stretch Avoidance in U2OS Cells
N. Diamantides[1], M. Monterosso[2], M. Kural[3], H. Cirka[3], and K. Billiar[3]
[1]*Bucknell University, Lewisburg, PA,* [2]*Sweet Briar College, Sweet Briar, VA,* [3]*Worcester Polytechnic Institute, Worcester, MA*

P – Sat - B - 176
Development of a Low-Cost Pericardiocentesis Simulator
F. Ruppe[1], A. Rollando[1], A. Becker[1], L. Duffy[1], D. Stern[1], J. Baish[1], D. Cavanagh[1], and S. Steinhubl[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Medical Center, Danville, PA*

P – Sat - B - 177
Feasibility and Optimization Study for 3D Digital Reconstruction Procedure for Embryonic Chick and Mouse Hearts
M. J. Hedgeland[1], C. M. Buffinton[1], A. M. Martens[2], and A. M. Moon[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

P – Sat - B - 178
Co-culture Conditions for Human Endothelial Cells and Skeletal Myoblasts
L. Ran[1], C. S. Cheng[1], and G. A. Truskey[1]
[1]*Duke University, Durham, NC*

P – Sat - B - 179
Characterization of Bioactive Components in Human Blood Clot
E. Kahn[1], A. Doodlesack[1], A. Kondo[1], D. Ciombor[1], and A. Zega[1]
[1]*Brown University, Providence, RI*

P – Sat - B - 180
Role of Mechanical Loading in Modulating Breast Cancer Metastasis-Associated Osteoclastogenesis
P. Polamraju[1], M. Lynch[1], M. Lee[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

P – Sat - B - 181
Investigating RNA-DNA Difference (RDD) and Allelic Specific Expression (ASE) using Next-Generation Sequencing and Bioinformatics
D. Doherty[1]
[1]*Case Western Reserve University, Cleveland, OH*

P – Sat - B - 182
Competitive Displacement Reaction for DNA Sequence Biosensors Using a Stem-loop Hybridization Scheme
K. L. Giles[1], S. H. Yazdi[1], and I. M. White[1]
[1]*University of Maryland, College Park, MD*

P – Sat - B - 183
Mechanically Stimulated Osteoblasts Regulate the Proliferation and Differentiation of Mesenchymal Stem Cells without Direct Contact
N. Gupta[1], A. Yang[2], E. Chan[2], and C. Rubin[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Stony Brook University, Stony Brook, NY*

P – Sat - B - 184
1000-Fold Macrofluidic Concentrator
G. R. Stueber[1], S. Wong[1], D. Ranti[1], M. Cabodi[1], and C. Klapperich[1]
[1]*Boston University, Boston, MA*

P – Sat - B - 185
Differential Cell Response to Alternating Axis and Equibiaxial Stretch
M. Monterosso[1], N. Diamantides[2], M. Kural[3], H. Cirka[3], and K. Billiar[3]
[1]*Sweet Briar College, Sweet Briar, VA,* [2]*Bucknell University, Lewisburg, PA,* [3]*Worcester Polytechnic Institute, Worcester, MA*

P – Sat - B - 186
Studying Depth Perception to Aid Microsurgery: Developing a Novel Visual Stimulus that Lacks Pictorial Depth Cues but Contains Sufficient Information to Allow Stereopsis
K. Macdonald[1], J. Galeotti[1,2], J. Wang[1], S. Horvath[2], A. Zhang[2], B. Wu[3], and R. Klatzky[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA,* [3]*Arizona State University, Mesa, AZ*

P – Sat - B - 187
Assessment of Design Gate Methods for Biomedical Senior Design Course
S. G. Stafford[1] and J. D. Desjardins[2]
[1]Clemson University, Simpsonville, SC, [2]Clemson University, Clemson, SC

P – Sat - B - 188
Effectiveness of a Surface-Bound Antimicrobial Peptide as a Function of Tether Length for Combating Infections
A. Davey[1,2], L. Lozeau[2], T. Alexander[2], and T. Camesano[2]
[1]Case Western Reserve University, Cleveland, OH, [2]Worcester Polytechnic Institute, Worcester, MA

P – Sat - B - 189
Effects of Shear Stress on RNA Levels of Inflammatory and Fibrotic Mediators in Kidney Epithelial Cells
S. Miao[1,2], P. R. Brakeman[3], W. H. Fissell[4], and N. Ferrell[4]
[1]Searle Systems Biology and Bioengineering Undergraduate Research Experience, Nashville, TN, [2]Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, [3]University of California San Francisco, San Francisco, CA, [4]Vanderbilt University School of Medicine, Nashville, TN

P – Sat - B - 190
Intercellular Adhesion Molecule 5 (ICAM-5) Metabolism and Neuroinflammation
Y. Wu[1], N. Tong[2], and H. Gelbard[2]
[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

P – Sat - B - 191
The Role of Interferon Regulatory Factor 6 in Skin Homeostasis
K. Hixon[1] and M. Dunnwald[1]
[1]The University of Iowa, Iowa City, IA

P – Sat - B - 192
The Interactions of Gold Nanoparticles with Model Cell Membranes
C. M. Bailey[1], K. L. Waterman[1], J. B. Macedonio[1], and T. A. Camesano[1]
[1]Worcester Polytechnic Institute, Worcester, MA

P – Sat - B - 193
Novel Protein Acts as Cryoprotectant for Human Embryonic Kidney Cell Monolayers
Q. Osgood[1], N. Chakraborty[1], B. Stokich[2], and M. Menze[2]
[1]University of Michigan-Dearborn, Dearborn, MI, [2]Eastern Illinois University, Charleston, IL

P – Sat - B - 194
Switchable Gene Expression for Behavioral Studies in C. Elegans
C. E. Zieminski[1], B. Altshuler[2], and D. Albrecht[2]
[1]Western New England University, Springfield, MA, [2]Worcester Polytechnic Institute, Worcester, MA

P – Sat - B - 195
Quantifying the Effect of Different Colonoscope Techniques on a Simulated Colon Model
J. Shui[1], K. Bieryla[1], E. Geist[1], and D. Diehl[2]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Health System, Danville, PA

POSTER SESSION **SatB**

P – Sat - B - 196
Enhanced Secondary Metabolite Production in Streptomyces coelicolor through Mixed Fermentation
J. Phillips[1], C. Goodwin[1], and J. McLean[2]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University, Nasville, TN

P – Sat - B - 197
Assessment of Mitigation on Mechanical Integrity Loss in Concurrent Disuse Osteopenia and OVX by Drug Therapy
K. N. Agarwal[1], D. Zhang[1], M. Hu[1], L. Lin[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

P = Poster Session
OP = Oral Presentation

P – Sat - B - 198
Biomimetic Channels for In Vivo Blood Vessel Modeling and Nanoparticle Drug Delivery Applications
C. Orr[1], Y. Liu[1], and A. Thomas[1]
[1]Lehigh University, Bethlehem, PA

P – Sat - B - 199
A Microfluidic Platform for Revealing Mechanoregulation of Endothelial Migration
J. M. Valdez[1], N. Jamilpour[1], and P. K. Wong[1]
[1]University of Arizona, Tucson, AZ

P – Sat - B - 200
Developing "Nanogels" for Molecularly Triggered Drug Delivery
K. Abdelrahman[1,2], R. Danso[2], and T. Betancourt[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Texas State University, San Marcos, TX

P – Sat - B - 201
Enhancing the Durability of a Deposited Silver Nanoparticle Layer for Inhibiting Biofilm Growth
K. Abdelrahman[1], C. Larimer[1], and I. Nettleship[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Sat - B - 202
A Study of Drug Delivery Technology in Nerve Repair: Optimization of Encapsulation Strategies for Enhanced Nerve Repair
C. Tompkins-Rhoades[1], J. Bliley[1], and K. Marra[1]
[1]University of Pittsburgh, Pittsburgh, PA

P – Sat - B - 203
Method to Control Fluid Flow Rate Profile in Multi-Step Lateral Flow Assays
J. Yang[1], J. Buser[1], and E. Fu[1]
[1]University of Washington, Seattle, WA

P – Sat - B - 204
Observing the Uptake of HDL miRNAs by Placing Shear Stress on Human Aortic Endothelial Cells
J. Higgins[1]
[1]Vanderbilt University, Nashville, TN

P – Sat - B - 205
Creating Surface Chemistries That Control Fibronectin Presentation to Promote Keratinocyte Function
G. A. Nortey[1,2], A. L. Clement[2,3], M. M. Stanton[2,3], K. F. Wang[2], M. E. Schwartz[2], K. C. Volk[2,4], C. R. Lambert[2,3], T. A. Camesano[2], and G. D. Pins[2,3]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Worcester Polytechnic Institute, Worcester, MA, [3]Bioengineering Institute, Worcester, MA, [4]Drexel University, Philadelphia, PA

P – Sat - B - 206
Electron Transfer Mediator Increases Production Of 1,3-Propanediol In Bioelectrochemical Reactors
V. N. Tran[1], T. D. Harrington[1], A. Mohamed[1], and H. Beyenal[1]
[1]Washington State University, Pullman, WA

P – Sat - B - 207
Optimization of Heterodyne Chemistry for Complex Biochemical Reactions
M. Durkee[1], R. Planchard[1], H. Tidwell[2], K. Huang[1], A. Kole[1], C. Marasco[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN, [2]Rice University, Houston, TX

P – Sat - B - 208
Sodium Salicylate Enhances Cytotoxic Effect of Artemisinin on Human Leukemia Molt-4 Cells
M. J. Wickerath[1] and N. Singh[1]
[1]University of Washington, Seattle, WA

P-Sat-B-209
Engineering of a Hybrid IgG-IgA Fc Domain to Introduce New Effector Function to IgG
N. Mehta[1], W. Kelton[1], and G. Georgiou[1]
[1]University of Texas at Austin, Austin, TX

Saturday, September 28, 2013

1:30PM – 3:00PM

PLATFORM SESSION – SAT – 2

Track: Tissue Engineering
OP - Sat - 2 – 1 - Room 6B
Musculoskeletal and Orthopedic Tissue Engineering III

Chairs: Karen Burg, Leo Q. Wan

1:30PM
Polydopamine-Coated PCL Shape Memory Polymer Foams for Bone Regeneration
D. J. Munoz-Pinto[1], A. C. Jimenez-Vergara[1], D. Zhang[2], M. Grunlan[2], and M. Hahn[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Texas A&M University, College Station, TX*

1:45PM
Osteoinduction with Hydroxyapatite Nanoparticles for Enhanced Integration of Tissue Engineered Cartilage Constructs to Diseased Cartilage Mimics
R. Dua[1] and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

2:00PM
Improvement of the Enthesis in Engineered Ligaments Through Localized Growth Factor Release
A. Lee[1] and K. Baar[1]
[1]*University of California, Davis, Davis, CA*

2:15PM
Guiding Chondrogenesis and Osteogenesis with Hydroxyapatite and BMP-2 Incorporated within High-Density hMSC Cultures for Bone and Cartilage Regeneration
P. N. Dang[1], X. Yu[2], C. Bowerman[1], W. L. Murphy[2], and E. Alsberg[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*University of Wisconsin, Madison, WI*

2:30PM
Autologous Stem Cell Recruitment for Articular Cartilage Regeneration
R. Gottardi[1,2], M. Hwang[1], M. Simson[1], P. A. Manner[3], J. Tan[1], P. G. Alexander[1], S. R. Little[1], and R. S. Tuan[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*RiMED Foundation, Palermo, Italy,* [3]*University of Washington, Seattle, WA*

2:45PM
Functional Maturation of a Cell-Seeded Hyaluronic Acid Hydrogel-Based Engineered Nucleus Pulposus
D. Kim[1], L. J. Smith[1], M. Kim[1], D. M. Elliott[2], and R. L. Mauck[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Delaware, Newark, DE*

Track: Biomaterials
OP - Sat - 2 – 2 - Room 6C
Biomaterial Design I

Chairs: Brendon Baker, Xinqiao Jia

1:30PM
Elucidation of the Influence that Presentation Modality of Glycoconjugates has on Dendritic Cell Phenotype
N. A. Hotaling[1], D. F. Smith[2], D. M. Ratner[3], R. D. Cummings[2], and J. E. Babensee[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA,* [3]*University of Washington, Seattle, WA*

1:45PM
Label-Free Fluorescent Biodegradable Polylactones
Z. Xie[1], L. Liu[2], H. Weng[3], R. P. Mason[2], L. Tang[3], K. T. Nguyen[3], and J. Yang[1]
[1]*Pennsylvania State University, University Park, PA,* [2]*University of Texas Southwestern Medical Center, Dallas, TX,* [3]*University of Texas at Arlington, Arlington, TX*

2:00PM
Antibacterial Properties of Biodegradable Magnesium Alloys for Ureteral Stent Applications
J. Y. Lock[1], E. Wyatt[1], S. Upadhyayula[1], A. Whall[1], V. Nunez[1], V. I. Vullev[1], and H. Liu[1]
[1]*University of California, Riverside, Riverside, CA*

2:15PM
The Effects of PEG Hydrogel Crosslinking Density and Network Homogeneity on Protein Diffusion
S. Lee[1], X. Tong[1], and F. Yang[1]
[1]*Stanford University, Stanford, CA*

2:30PM
Tetrazine Click Chemistry: The Right "Click" for Biomaterials?
D. L. Alge[1], D. F. Donohue[1], and K. S. Anseth[1]
[1]*University of Colorado, Boulder, CO*

2:45PM
Dual-Crosslinked Oxidized, Methacrylated Alginate/PEG Hydrogels for Bioadhesive Applications
O. Jeon[1], J. E. Samorezov[1], and E. Alsberg[1]
[1]Case Western Reserve University, Cleveland, OH

Track: Biomaterials
OP - Sat - 2 – 3 - Room 606
Biomaterials for Controlling Cell Environment II

Chairs: Eben Alsberg, Shilpa Sant

1:30PM
3D Tumor Cell Migration in Response to Matrix Heterogeneities
F. Bordeleau[1], L. N. Tang[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

1:45PM
Mineral Particle Incorporation within Embryonic Stem Cell Aggregates Induces Osteochondral Differentiation
Y. Wang[1], X. Yu[2], C. Baker[1], W. Murphy[2], and T. McDevitt[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Wisconsin, Madison, WI*

2:00PM
Tailoring Biophysical Properties of Fibrin Gels for Bone Formation with Co-Cultured Progenitor Cells
K. C. Murphy[1] and J. K. Leach[1]
[1]*University of California Davis, Davis, CA*

2:15PM
Gene Activated Collagen-GAG Scaffolds for Tendon Repair
R. A. Hortensius[1], J. R. Becraft[1], D. W. Pack[2], and B. A. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Kentucky, Lexington, KY

2:30PM
Direct Measurement of MMP Activity in 3D Cellular Microenvironments Using Fluorigenic Peptide Substrates
J. L. Leight[1,2], D. L. Alge[1,2], and K. S. Anseth[1,2]
[1]University of Colorado Boulder, Boulder, CO, [2]Howard Hughes Medical Institute, Boulder, CO

2:45PM
Matrix-Integrin-Cytoskeleton Signaling Guides Force-Dependent Modulation of 3D Vessel Morphogenesis within Collagen Matrices
C. F. Whittington[1], P. J. Critser[1,2], R. V. Joshi[1], M. C. Yoder[2,3], and S. L. Voytik-Harbin[1,4]
[1]Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, [2]Herman B. Wells Center for Pediatric Research, Indiana University School of Medicine, Indianapolis, [3]Department of Pediatrics, Indiana University School of Medicine, Indianapolis, IN, [4]Department of Basic Medical Sciences, School of Veterinary Medicine, Purdue University, West Lafayette, IN

Track: Biomechanics
OP - Sat - 2 – 4 - Room 607
Multiscale Modeling

Chairs: Melissa Knothe Tate, Xiaodu Wang

1:00PM
Multiscale Modeling of Fine-Grained Platelet Suspension in Coarse-Grained Shear Flow Using Molecular Dynamics and Dissipative Particle Dynamics
C. Gao[1], P. Zhang[1], M. Livelli[1], J. Sheriff[1], J. S. Soares[1], S. Pothapragada[1], N. Zhang[1], Y. Deng[1], and D. Bluestein[1]
[1]Stony Brook University, Stony Brook, NY

1:15PM
The Effect of Freezing Preservation on the Tensile Material Properties of Liver Parenchyma
Y-C. Lu[1] and C. D. Untaroiu[1]
[1]Virginia Tech, Blacksburg, VA

1:30PM
Multiscale Computational Modeling of the Dynamic Compressive Behavior of Porcine Liver Tissue
S. S. Patnaik[1,2], J. Chen[1,3], R. Prabhu[1,2], M. F. Horstemeyer[2], L. Williams[1,2], and J. Liao[1,2]
[1]Mississippi State University, Mississippi State, MS, [2]Center For Advanced Vehicular Systems, Mississippi State, MS, [3]Vanderbilt University, Nashville, TN

1:45PM
Assessing the Biomechanical Role of the Linea Aspera Using Finite Element Analysis
S. R. Moore[1], S. Milz[2], and M. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Ludwig Maximilians University, Munich, Germany

2:00PM
Development of 10-Year-Old Child Pelvis and Lower Extremities Finite Element Model
M. Shen[1], H. Mao[1], H. Fan[1], S. Lakshmanan[1], and K. H. Yang[1]
[1]Wayne State University, Detroit, MI

PLATFORM SESSIONS **Sat-2**

P = Poster Session
OP = Oral Presentation

2:15PM
Necking and Failure of Constrained Contractile 3D Microtissues: Role of Geometry and Stiffness
V. B. Shenoy[1], H. Wang[1], A. A. Svoronos[2], T. Boudou[3], J. R. Morgan[2], and C. S. Chen[3]
[1]University of Pennsylvania, Philadelphia, MA, [2]Brown University, Providence, RI, [3]University of Pennsylvania, Philadelphia, PA

Track: Stem Cell Engineering
OP - Sat - 2 – 5 - Room 608
Mechanical Control of Stem Cells

Chairs: Adam J Engler, Sanjay Kumar

1:30PM
Substrate Stiffness and Ligand Presentation Regulate the Lineage Commitment of Hematopoietic Stem and Progenitor Cells via Myosin II-mediated Integrin Binding
J. S. Choi[1] and B. A. Harley[1,2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Institute for Genomic Biology, Urbana, IL

1:45PM
Combined Biophysical and Biochemical Cues Enhance the Function of an Aged Muscle Stem Cell Population
B. D. Cosgrove[1], P. M. Gilbert[1], E. Porpiglia[1], S. P. Lee[1], S. Y. Corbel[1], and H. M. Blau[1]
[1]Stanford University School of Medicine, Stanford, CA

2:00PM
Engineering Interpenetrating Network Hydrogel as Stem Cell Niche with Independently Tunable Biochemical and Mechanical Properties *(Invited)*
X. Tong[1] and F. Yang[1]
[1]Stanford University, Stanford, CA

2:15PM
Elongated Stem Cell Morphology and Matrix Stiffness Influences Lineage by Modulating Contractility
L. G. Vincent[1], C. Tay[2], Y. Choi[1], J. del Alamo[1], L. Tan[3], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA, [2]National University of Singapore, Singapore, Singapore, [3]Nanyang Technological University, Singapore, Singapore

2:30PM
Mesenchymal Stem Cell Mechanobiology Is Clone Dependent
C. M. McLeod[1], T. P. Driscoll[1], B. D. Cosgrove[1], S. Heo[1], and R. L. Mauck[1,2]
[1]University of Pennsylvania, Philadelphia, PA, [2]Department of Veterans Affairs Medical Center, Philadelphia, PA

2:45PM
Cyclic Stretch Enhances Myogenic Differentiation of ASCs
P. Y. Huri[1], C. A. Cook[1], D. L. Hutton[1], B. C. Goh[2], D. J. DiGirolamo[2], and W. L. Grayson[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University, Baltimore

Track: Cancer Technologies
OP - Sat - 2 – 6 - Room 609
Nanotechnologies for Cancer Detection and Treatment I

Chairs: Harry Bermudez, Erik Dreaden

1:30PM
A Suite of Antibodies for Targeting Cancer-Associated Fibroblasts
J. A. Van Deventer[1], S. Rajan[2], S. S. Sidhu[2], and K. D. Wittrup[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]University of Toronto, Toronto, ON, Canada

1:45PM

Multi-Modal Imaging of Genetically-Engineered Human T Cells for Targeting Tumor

P. Bhatnagar[1,2], M. Alauddin[3], P. Seifi[4], J. A. Bankson[3], D. K. Kirui[5], H. Huls[3], D. A. Lee[3], A. Babakhani[4], K. C. Li[6], and L. J. Cooper[3]

[1]Baylor College of Medicine, Houston, TX, [2]Texas Children's Hospital, Houston, TX, [3]The University of Texas MD Anderson Cancer Center, Houston, TX, [4]Rice University, Houston, TX, [5]The Methodist Hospital Research Institute, Houston, TX, [6]Wake Forest School of Medicine, Houston, TX

2:00PM

Fluorescence Imaging of Tumors in the Second Near-infrared Optical Window Using a New Class of Hybrid Bio-nanomaterial Probes

D. Ghosh[1,2], A. F. Bagley[1,2], S. N. Bhatia[1,2], and A. M. Belcher[1,2]

[1]MIT, Cambridge, MA, [2]Koch Institute for Integrative Cancer Research, Cambridge, MA

2:15PM

Breast Cancer Targeted Bismuth Sulfide Nanoparticles for CT Imaging

J. Kinsella[1], R. Jimenez[2], P. Karmali[3], N. Gianneschi[2], E. Ruoslahti[3], D. Stupack[2], and M. Sailor[2]

[1]McGill University, Montreal, QC, Canada, [2]University of California, San Diego, San Diego, CA, [3]Sanford Burnham Medical Research Institute, San Diego, CA

2:30PM

Theranostic Polymeric Nanoparticles for Cancer Diagnosis and Therapy and Cellular Response after Laser/NPs Heating

T. Lei[1], A. Fernandez-Fernandez[1,2], R. Manchanda[1,3], Y-C. Huang[1], and A. J. McGoron[1]

[1]Florida International University, Miami, FL, [2]Nova Southeastern University, Fort Lauderdale, FL, [3]Galgotias University, Utter Pradesh, India

2:45PM

Nanoscale Roughness and Surface Charge Control Selectin-Mediated Adhesion of Malignant and Non-Malignant Cells Under Flow

M. J. Mitchell[1], C. A. Castellanos[1], and M. R. King[1]

[1]Cornell University, Ithaca, NY

Track: Cardiovascular Engineering
OP - Sat - 2 – 7 - Room 612

Cardiac Regeneration and Stem Cells I

Chairs: Lauren Black, Steve George

1:30PM

Electrical Maturation and Integration of Human Pluripotent Stem Cell-Derived Cardiomyocytes *(Invited)*

M. Laflamme[1]

[1]University of Washington, Seattle, WA

2:00PM

Biological Wire: A New Platform for Maturation of Human Pluripotent Stem Cell Derived Cardiomyocytes *In Vitro*

S. S. Nunes[1,2], J. W. Miklas[2], J. Liu[2], R. Aschar-Sobbif[2], Y. Xiao[2], B. Zhang[2], J. Jiang[3], S. Masse[1], K. Nanthakumar[1], G. Gross[3], P. Backx[2], G. Keller[1], and M. Radisic[2]

[1]University Health Network, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, Canada, [3]Hospital for sick children, Toronto, ON, Canada

2:15PM

Functional Maturation of Early Stage Cardiomyocytes via Mechanical Conditioning

M-D. T. Nguyen[1], J. P. Tinney[1], F. Yuan[1], B. B. Keller[1], G. Giridharan[1], and P. Sethu[1]

[1]The University of Louisville, Louisville, KY

2:30PM

Interactions Between Human Pluripotent Stem Cell Derived Cardiomyocytes and Polarized Macrophages

D. O. Freytes[1], E. Wrona[1], R. Anfang[2], A. Marturano[2], and G. Vunjak-Novakovic[2]

[1]The New York Stem Cell Foundation, New York, NY, [2]Columbia University, New York, NY

2:45PM

Cardiac Progenitor Cells Release Pro-Survival microRNA-Loaded Exosomes that Enhance Angiogenesis and Mitigate Hypoxic Death

W. Gray[1], N. Finn[2], C. Searles[2], and M. Davis[1]

[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Atlanta VA Hospital, Atlanta, GA

Track: Cellular and Molecular Bioengineering
OP - Sat - 2 – 8 - Room 604

Cell Biomechanics II

Chairs: Rita Alevriadou, Wei Tan

1:30PM

The Role of Cell Shape in Macrophage Polarization

F. Y. McWhorter[1], T. Wang[1], and W. F. Liu[1]

[1]University of California, Irvine, Irvine, CA

1:45PM

White Cell Mechanics Mediate Both Margination and Demargination During an Inflammatory Response

M. E. Fay[1], D. R. Myers[1,2], A. Kumar[3], M. D. Graham[3], and W. A. Lam[1,2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University School of Medicine, Atlanta, GA, [3]University of Wisconsin-Madison, Madison, WI

2:00PM

The Mechanical Implications of Cell Size on Tissue Stiffness

J. H. Shawky[1] and L. A. Davidson[1]

[1]University of Pittsburgh, Pittsburgh, PA

2:15PM

Novel Method to Apply Controlled Forces to the Nucleus

S. Neelam[1], A. Mendonca[1], T. Chancellor[1], R. Dickinson[1], and T. Lele[1]

[1]University of Florida, Gainesville, FL

2:30PM

Lamin and Titin Mutations Causing Cardiomyopathy Disturb Nuclear Mechanics and Cytoskeletal Coupling

P. Davidson[1], E. Di Pasquale[2,3], H. Nakahama[2], G. Condorelli[2,4], and J. Lammerding[1]

[1]Cornell University, Ithaca, NY, [2]Humanitas Clinical and Research Center, Milan, Italy, [3]National Research Council, Milan, Italy, [4]University of Milan, Milan, Italy

2:45PM

Multicellularity is Required for Tensional Homeostasis

E. P. Canovic[1], S. R. Polio[1], M. L. Smith[1], and D. Stamenovic[1]

[1]Boston University, Boston, MA

Track: Nano to Micro Technologies
OP - Sat - 2 – 9 - Room 611
Microfluidic Platform II

Chairs: Savas Tay

1:30PM
A High Throughput Functional Screen of Adhesive and Biofilm Bacterial Pathogenicity Landscapes
W. M. Weaver[1], V. Milisavljevic[1], and D. Di Carlo[1,2]
[1]University of California Los Angeles, Los Angeles, CA, [2]California NanoSystems Institute, Los Angeles, CA

1:45PM
A micro-Hall Chip for Sensitive Detection of Bacteria
D. Issadore[1], R. Weissleder[2], and H. Lee[2]
[1]University of Pennsylvania, Philadelphia, PA, [2]Massachusetts General Hospital - Center for Systems Biology, Boston, MA

2:00PM
Microfluidic Quantification of Single-Cell Cytokine Secretion Dynamics Under Time-Varying Inflammatory Inputs
S. Tay[1] and M. Junkin[1]
[1]ETH Zurich, Basel, Switzerland

2:15PM
A Versatile Valving Toolkit Based on Expanding Elements for Automating Paper Fluidic Devices
B. J. Toley[1], J. Wang[1], M. Gupta[1], J. Buser[1], L. LaFleur[1], E. Fu[1], and P. Yager[1]
[1]University of Washington, Seattle, WA

2:30PM
Cryogenic Photo-Chemical DNA Synthesis with Increased Yielf ina Microfluidic Platform
S. S. Pandey[1], R. E. Fernandez[1], and C. Mastrangelo[1]
[1]University of Utah, Salt Lake City, UT

2:45PM
SynVivo-BBB: Microfluidic Assay For Modeling The Blood Brain Barrier
A. Smith[1], C. Garson[1], I. Mills[1], K. Bhatt[1], M. Aschner[2], B. Prabhakarpandian[1], and K. Pant[1]
[1]CFD Research Corporation, Huntsville, AL, [2]Vanderbilt University Medical Center, Nashville, TN

Track: Bioinformatics, Computational and Systems Biology
OP - Sat - 2 – 10 - Room 602
Analysis and Control of Cell Signaling II

Chairs: Jeffery J. Saucerman, Alejandro Wolf-Yadlin

1:30PM
Using Phosphoproteomics and Gene Expression Profiling to Reveal Systems-wide Changes in Response to EGF Receptor Activation
A. Wolf-Yadlin[1], K. Beck[1], A. Hu[1], A. McKenna[1], and J. Shendure[1]
[1]University of Washington, Seattle, WA

1:45PM
Oncogenic Phospho-tyrosine Signaling in the Absence of Mutated or Amplified tyrosine Kinases
N. A. Graham[1], J. M. Drake[1], M. Tahmasian[1], K. J. Pienta[2], O. N. Witte[1,3], and T. G. Graeber[1]
[1]University of California, Los Angeles, Los Angeles, CA, [2]University of Michigan, Ann Arbor, MI, [3]Howard Hughes Medical Institute, Los Angeles, CA

2:00PM
A Microfluidic Platform for Visualizing Single-Cell Regulatory Dynamics in Mycobacteria
J. P. Keller[1], W-H. Yu[1], J. E. Galagan[1], and C. M. Klapperich[1]
[1]Boston University, Boston, MA

2:15PM
Gene Expression from the Gq Transgenic Mouse is Sufficient to Mechanistically Predict Altered Cardiac EC Coupling
F. Wu[1], J. Wadden[1], J. Lach[1], K. Skadron[1], and J. J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

2:30PM
Comparative Metabolic Capacities of Bacterial Pathogens Using Reconciled Genome-Scale Metabolic Reconstructions
P. Yen[1], J. A. Bartell[1], J. J. Varga[2], J. B. Goldberg[2], and J. A. Papin[1]
[1]University of Virginia, Charlottesville, VA, [2]Emory University, Atlanta, GA

2:45PM
Entrainment of a Population of NF- B Oscillators Under Periodic Inputs
S. Tay[1] and R. Kellogg[1]
[1]ETH Zurich, Basel, Switzerland

Track: Bioinformatics, Computational and Systems Biology
OP - Sat - 2 – 11 - Room 615
Computational Bioengineering II

Chairs: Kristen M. Naegle, Matthew A. Oberhardt

1:30PM
Maximization of Rate of Entropy Production Reveals Growth Principles of Respiring Microorganisms
M. A. Oberhardt[1], R. Zarecki[1], K. Yizhak[1], R. Pugatch[2], A. Wagner[1], E. Shtifman Segal[1], S. Freilich[3], C. S. Henry[4], U. Gophna[1], and E. Ruppin[1]
[1]Tel Aviv University, Tel Aviv, Israel, [2]Princeton, NJ, Princeton, NJ, [3]Agricultural Research Organization, Volcani Center, Newe Ya'ar, Israel, [4]Argonne National Laboratory, Argonne, IL

1:45PM
A Higher-Order Generalized Singular Value Decomposition for Comparison of Global mRNA Expression from Multiple Organisms
S. P. Ponnapalli[1], M. A. Saunders[2], C. F. Van Loan[3], and O. Alter[4]
[1]Bloomberg LP, New York, NY, [2]Stanford University, Stanford, CA, [3]Cornell University, Ithaca, NY, [4]University of Utah, Salt Lake City, UT

2:00PM
Multi-Layer Motion Estimation for Fluoroscopic Imaging
C. Rottman[1], J. S. Preston[1], A. Cheryauka[2], L. Anderton[2], R. Whitaker[1], and S. Joshi[1]
[1]University of Utah, Salt Lake City, UT, [2]GE Healthcare, Salt Lake City, UT

2:15PM
Multiscale Modeling of Nanog Heterogeneity in Pluripotent Stem Cell Populations
J. Wu[1] and E. S. Tzanakakis[1,2]
[1]Chemical and Biological Engineering, SUNY-Buffalo, Buffalo, NY, [2]Biomedical Engineering, SUNY-Buffalo, Buffalo

2:30PM
Quantifying Spatial Patterns of Mouse Embryonic Stem Cell Differentiation within Embryoid Bodies
D. White[1], T. McDevitt[1], and M. Kemp[1]
[1]Georgia Institue of Technology, Atlanta, GA

2:45PM
PTMScout: Understanding Protein Post-Translational Modifications
M. Matlock[1], A. Holehouse[1], C. Zhang[1], and K. Naegle[1]
[1]Washington University in St Louis, St Louis, MO

P = Poster Session
OP = Oral Presentation

Track: Drug Delivery
OP - Sat - 2 – 12 - Room 616
Nucleic Acid Delivery I

Chairs: Eben Alsberg, Katherine Whitehead

1:30PM
Degradable Lipid-like Materials with Predictable *In Vivo* siRNA Delivery Activity *(Invited)*
K. A. Whitehead[1], R. Dorkin[2], R. Langer[2], and D. G. Anderson[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Massachsetts Institute of Technology, Cambridge, MA

2:00PM
Identifying Key Parameters for Controlling the Shape of Polymer/DNA Nanoparticles
J-M. Williford[1], Y. Ren[1], K. Huang[1], D. Pan[1], and H-Q. Mao[1]
[1]Johns Hopkins University, Baltimore, MD

2:15PM
Magnetic Core-Shell Nanoparticle-Based microRNA and Hyperthermia Therapy to Enhance the Treatment of Brain Tumors
P. T. Yin[1], B. P. Shah[1], and K-B. Lee[1]
[1]Rutgers University, Piscataway, NJ

2:30PM
Topically Applied Spherical Nucleic Acids to Increase the Rate of Wound Healing in Subjects with Non-Insulin Dependent-Dependent Diabetes Mellitus
P. S. Randeria[1], D. Shipp[2], X. Wang[2], A. Paller[2], and C. Mirkin[1]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL

2:45PM
Functional Delivery of siRNA and DNA based on Mesoporous Silica Nanoparticles with Large Pores
D-H. Min[1]
[1]Seoul National University, Seoul, Korea, Republic of

Track: Biomedical Imaging and Optics
OP - Sat - 2 – 13 - Room 618
Molecular Imaging I

Chairs: Andrew Tsourkas

1:30PM
Dual-mode Prussian Blue Nanoprobes for Molecular Imaging of Eosinophilic Esophagitis
M. F. Dumont[1], L. S. Conklin[1,2], R. W. Sze[1,2], and R. Fernandes[1,2]
[1]Children's National Medical Center, Washington, DC, [2]George Washington University, Washington, DC

1:45PM
Polymeric Vesicles as Novel Nanoplatforms for Tumor-targeted Molecular Imaging
Z. Cheng[1] and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

2:00PM
Au/Fe3O4 Nanocluster Probes for MRI/SPECT/CT Molecular Imaging of Cancer
S. Xue[1], Y. Liu[1], L. Zhang[1], Y. Yang[1], P. Liu[1], C. Zhang[1], and L. X. Xu[1]
[1]Shanghai Jiao Tong University, Shanghai, China, People's Republic of

2:15PM
Safe Iron Oxide Nanoparticles Tailored for Magnetic Particle Imaging
R. M. Ferguson[1], A. P. Khandhar[1], H. Arami[1], L. Hua[1], J. Rahmer[2], and K. M. Krishnan[1]
[1]University of Washington, Seattle, WA, [2]Philips, Hamburg, Germany

2:30PM
Polarity-Sensitive NIR Fluorophore-Encapsulated Nanoparticles as Thermo-responsive and Lifetime Contrast Agent for Ultrasound-Switchable Fluorescence Imaging
M. Wei[1,2], H. Pitta[1,2], Y. Liu[1,2], Z. Xie[1,2], J. U. Menon[1,2], B. Cheng[1,2], K. T. Nguyen[1,2], and B. Yuan[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]The University of Texas Southwestern Medical Center at Dallas, dallas, TX

2:45PM
Nanoparticle Based Exogenous Soft Tissue Contrast for Live In Vivo Embryonic Imaging
C. L. Gregg[1], T. Derrien[1], H. Zhao[1], and J. Butcher[1]
[1]Cornell University, Ithaca, NY

Track: Drug Delivery
OP - Sat - 2 – 14 - Room 619
Targeted Delivery II

Chairs: Justin Saul, Fan Yang

1:30PM
Quantitative Control of Tumor Drug Uptake In Vivo Using Microbubble Contrast Agents
S. R. Sirsi[1], J. J. Kandel[2], D. J. Yamashiro[2], and M. A. Borden[1]
[1]University of Colorado at Boulder, Boulder, CO, [2]Columbia University Medical Center, New York City, NY

1:45PM
Image-Guided Magneto-Acoustic Gene Targeting to Tumors Prolongs Survival in Tumor-Bearing Mice
B. Chertok[1], R. S. Langer[1], and D. G. Anderson[1]
[1]MIT, Cambridge, MA

2:00PM
PLGA Nanoparticles Modified with Rabies Virus Glycoprotein (RVG) for Improved Brain Tumor Delivery
R. L. McCall[1] and R. W. Sirianni[1]
1Barrow Neurological Institute, Phoenix, AZ

2:15PM
Enhanced Delivery and Imaging of Neurotherapeutics via US, MRI, SPECT
M. Valdez[1], E. Yoshimaru[1], P. Ingram[1], J. Totenhagen[1], A. Forbes[2], S. Moore[1], P. Helquist[2], T. Matsunaga[1], R. Witte[1], L. Furenlid[1], Z. Liu[1], R. Erickson[1], and T. Trouard[1]
[1]University of Arizona, Tucson, AZ, [2]Notre Dame, Notre Dame, IN

2:30PM
Ultrasound-Assisted Convection Enhanced Drug Delivery to the Brain
M. Sistla[1], G. Lewis[2], A. Sarvazyan[3], and W. Olbricht[1]
[1]Cornell University, Ithaca, NY, [2]Zetroz, Inc., Ithaca, NY, [3]Artann Laboratories, West Trenton, NJ

2:45PM
Convection-Enhanced Delivery of Brain-Penetrating Nanoparticles n Glioma
J. Saucier-Sawyer[1], Y-E. Seo[1], J. Zhou[1], A. Sawyer[1], and W. Saltzman[1]
[1]Yale University, New Haven, CT

Track: Respiratory Bioengineering
OP - Sat - 2 – 15 - Room 620
Modeling Airway Physiology and Disease

Chairs: Samir Ghadiali, Marcel Filoche

1:30PM
Pulmonary Airway Reopening Utilizing Pulsatile Flow Waveforms
H. W. Glindmeyer IV[1] and D. Gaver[1]
[1]Tulane University, New Orleans, LA

1:45PM
Can Less Frequent Deep Breaths Be Protective in Asthma?
A. H. Golnabi[1,2], R. S. Harris[1,2], J. G. Venegas[1,2], and T. Winkler[1,2]
[1]Massachusetts General Hospital, Boston, MA, [2]Harvard Medical School, Boston, MA

2:00PM
Developing a Piezo-Actuated Airwave Oscillometry Device on Resonance for Measurement of Respiratory System Mechanics.
H. Hanafi[1], L. Posada[1], and G. N. Maksym[1]
[1]Dalhousie University, Halifax, NS, Canada

2:15PM
Strain as a Primary Determinant for Reversal of Airway Bronchoconstriction
B. C. Harvey[1], H. Parameswaran[1], and K. R. Lutchen[1]
[1]Boston University, Boston, MA

2:30PM
Patient Specific Simulations of Forced Expiration Flow Volume Loops
A. Pradel[1,2], K. Blanc[2], C. Straus[1,2], T. Similowski[1,2], and M. Filoche[3,4]
[1]Université Pierre et Marie Curie, Paris, France, [2]Assistance Publique - Hôpitaux de Paris, Groupe Hospitalier Pitié-Salpêtrière, Paris, France, [3]Ecole Polytechnique, Palaiseau, France, [4]ENS Cachan, Cachan, France

2:45PM
A Novel Graph Theoretical Transformation: Application for Pendelluft in the Airways
S. D. Amin[1] and B. Suki[1]
[1]Boston University, Boston, MA

Track: Undergraduate Research
OP - Sat - 2 – 16 - Room 613
Undergraduate Research I

Chairs: Stephanie Bryant, Kacey Marra

1:30PM
Quantifying Spinal Cord Cross-Sectional Area in Inflammatory Neurological Diseases
W. Liu[1,2], R. Massoud[1], G. Brunetto[1], D. Reich[1], G. Nair[1], and S. Jacobson[1]
[1]National Institute of Neurological Disorders and Stroke, Bethesda, MD, [2]University of Maryland, College Park, MD

1:39PM
A Comparison of Intracardiac ARFI and SWI for Imaging Radiofrequency Ablation Lesions
P. Hollender[1], L. Kuo[1], V. Chen[1], S. Eyerly[1], G. Trahey[1], and P. Wolf[1]
[1]Duke University, Durham, NC

1:48PM
3D Ultrasound Analysis of Angiotensin II-Induced Dissecting Murine Abdominal Aortic Aneurysms
H. D. Schroeder[1], A. A. Yrineo[1], A. E. Bogucki[1], and C. J. Goergen[1]
[1]Purdue University, West Lafayette, IN

1:57PM
4D Shape Analysis Applied to Post-operative Wall Motion Function Assessment of Extracardiac Total Cavopulmonary Connections
M. Eckman[1] and P. G. Menon[2]
[1]Penn State University, State College, PA, [2]Sun Yat-sen University - Carnegie Mellon University Joint Institute of Engineering, Pittsburgh, PA

2:06PM
Optimum Lead Placement for Sudden Cardiac Risk Stratification in Cardiomyopathy Patients
A. M. Zeller[1] and B. Ghoraani[1]
[1]Rochester Institute of Technology, Rochester, NY

2:15PM
Effects of Enterprise Stent Treatment on Basilar Tip Aneurysm Hemodynamics
J. Lindsay[1], P. Nair[1], J. Ryan[1], and D. Frakes[1]
[1]Arizona State University, Tempe, AZ

2:24PM
Adaptation to Shear Stress Explains the Spontaneous Regression of the Ductus Arteriosus
S. Munawar[1], U. Muhammad[1], M. Albaba[1], R. Jameson[1], H. Ahmed[1], A. Minzenneyer[1], and C. Quick[1]
[1]Texas A&M, College Station, TX

2:33PM
In Vitro Cardiac Electrogram Monitoring System for Langendorff-perfused Guinea Pig Hearts
K. Shah[1], R. Zhu[2], D. Hunter[2], and L. Tung[2]
[1]Rice University, Houston, TX, [2]Johns Hopkins University, Baltimore, MD

2:42PM
Modulating the Neuro-inflammatory Response *In Vitro* by Treatment with Encapsualted hMSCs
J. A. Hawayek[1,2], E. Stucky[2], D. I. Shreiber[2], and M. L. Yarmush[2]
[1]UPRM, Rio Grande, PR, Puerto Rico, [2]Rutgers, Piscataway, NJ

2:51PM
An Electrochemical Method for Detecting Autoinducer-2 Mediated Quorum Sensing
X. Y. Zhou[1], T. Gordonov[1], and W. E. Bentley[1]
[1]University of Maryland - College Park, College Park, MD

PLATFORM SESSIONS Sat-2

P = Poster Session
OP = Oral Presentation

Saturday, September 28, 2013

3 – 3:15PM – 4:45PM

PLATFORM SESSION – SAT – 3

Track: Tissue Engineering
OP - Sat - 3 – 1 - Room 6B
Biomimetics for Tissue Engineering

Chairs: Deanna M Thompson

3:15PM

Engineering Functional Anisotropy in Scaffold-Free Fibrocartilage

R. F. MacBarb[1], A. L. Chen[1], J. C. Hu[1], and K. A. Athanasiou[1]

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

3:30PM

Engineered Basement Membranes for Regeneration of the Corneal Endothelium

R. N. Palchesko[1,2], O. Creasey[2], J. L. Funderburgh[2], and A. W. Feinberg[1]

[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA*

3:45PM

Perfusion-decellularized Pancreas as a Natural Scaffold for Pancreatic Tissue and Organ Engineering

S. Goh[1], S. Bertera[2], P. Olsen[1], J. Candiello[1], B. Sicari[1], S. Johnson[3], G. Uechi[1], M. Balasubramani[1], S. F. Badylak[1,3], and I. Banerjee[1,3]

[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Children's Hospital of Pittsburgh, Pittsburgh, PA,* [3]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

4:00PM

Discovering the Hepatoprotective Effect of Human Cathelicidins using Organotypic Liver Models

L. Vu[1], A. Barron[2], and P. Rajagopalan[1,3]

[1]*Department of Chemical Engineering Virginia Tech, Blacksburg, VA,* [2]*Department of Bioengineering Standford University, Stanford CA, Stanford, CA,* [3]*School of Biomedical Engineering and Sciences Virginia Tech, Blacksburg, VA*

4:15PM

Binding and Lubricating Properties of Biomimetic Boundary Lubricants for Articular Cartilage

K. Samaroo[1], M. Tan[1], D. Putnam[1], and L. Bonassar[1]

[1]*Cornell University, Ithaca, NY*

4:30PM

Differing Response of Disc Cell to Variations in 3D and Mechanical Culture Conditions

D. Kim[1], S. Heo[1], L. J. Smith[1], D. M. Elliott[2], and R. L. Mauck[1]

[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Delaware, Newark, PA*

Track: Biomaterials
OP - Sat - 3 – 2 - Room 6C
Biomaterial Design II

Chairs: Helen Lu, Harini Sundararaghavan

3:15PM

Specific Microstructural Cues Correlate with Endoderm Differentiation of Mouse Embryonic Stem Cells on Fibrin Gels as Revealed by a Systems Level Approach

K. Task[1], A. D'Amore[1], S. Singh[1], J. Candiello[1], M. Jaramillo[1], W. R. Wagner[1], P. N. Kumta[1], and I. Banerjee[1]

[1]*University of Pittsburgh, Pittsburgh, PA*

3:30PM

Cavitation Microrheology: New Tool to Quantify Mechanical Properties within 3D Biomaterials

W. L. Stoppel[1], S. B. Hutchens[1], A. J. Crosby[1], and S. C. Roberts[1]

[1]*University of Massachusetts Amherst, Amherst, MA*

3:45PM

Selenium Nanoparticles Coated Paper Towels Inhibiting the Growth of Staphylococcus aureus and Pseudomonas aeruginosa

Q. Wang[1] and T. J. Webster[1]

[1]*Northeastern University, Boston, MA*

4:00PM

Particulate Oxygen Generating Substances (POGS) as Oxygen Source for Islet Isolation and Processing

J. P. McQuilling[1,2], S. Sittadjody[1], S. Balaji[1], B. S. Harrison[1,2], A. C. Farney[1], and E. C. Opara[1,2]

[1]*Wake Forest University School of Medicine, Winston-Salem, NC,* [2]*Virginia Tech - Wake Forest University, Winston-Salem, NC*

4:15PM

On-Demand Drug Delivery Using Ultrasound-Triggered Disruption of Reversibly-Crosslinked Hydrogels

C. J. Kearney[1,2], N. Huebsch[1,2], X. Zhao[3], J. Kim[1,2], C. Cezar[1], Z. Suo[1], and D. J. Mooney[1,2]

[1]*Harvard University, Cambridge, MA,* [2]*Wyss Institute, Cambridge, MA,* [3]*Duke University, Durham, NC*

4:30PM

Mineralized Biomaterials Induces Osteogenic Differentiation of Stem Cells through Adenosine Signaling

Y-R. V. Shih[1], Y. Hwang[1], H. Kang[1], A. Phadke[1], and S. Varghese[1]

[1]*UC San Diego, La Jolla, CA*

Track: Biomaterials
OP - Sat - 3 -3 - Room 606
Intelligent Biomaterials

Chairs: Todd McDevitt, Robert Mauck

3:15PM

Tunable Shape Memory Properties for a Minimally Invasive Vascular Patch

T. C. Boire[1], M. K. Gupta[1], S. H. Lee[1], and H-J. Sung[1]

[1]*Vanderbilt University, Nashville, TN*

3:30PM

Crosslinked and Bioreducible Poly(Beta-Amino Ester)-Based Nanoparticles for Enhanced siRNA Delivery

K. L. Kozielski[1], S. Y. Tzeng[1], and J. J. Green[1]

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

3:45PM

Strand Displacement Based Intracellular Computation Devices

B. B. Groves[1], Y-J. Chen[1], S. Pochekailov[1], and G. Seelig[1]

[1]*University of Washington, Seattle, WA*

4:00PM

A Thermoresponsive Magnetic Nanoparticle System Using an Antiviral Lectin for HIV Capture and Concentration

J. C. Phan[1], J. J. Lai[1], and K. A. Woodrow[1]

[1]*University of Washington, Seattle, WA*

4:15PM

Synergistically Enhanced Functions of Endograft by Integrating Thin Layers of Nitinol and Silk

M. Shayan[1], S. Yang[2], W. Ryu[2], and Y. Chun[1]

[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Yonsei University, Seoul, Korea, Republic of*

4:30PM
Design of Surface Imprinted Nanoparticles for Enhanced Recognition of Biomacromolecules
H. R. Culver[1] and N. A. Peppas[1]
[1]University of Texas at Austin, Austin, TX

Track: Biomechanics
OP - Sat - 3 – 4 - Room 607
Clinical Biomechanics

Chairs: Barclay Morrison, Joel Stitzel

3:15PM
Myofascial Contributions to the Human Quadriceps During Passive Hip Flexion and Knee Extension
D. B. Lipps[1,2], E. Baillargeon[2], T. G. Sandercock[2], and E. J. Perreault[1,2]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Northwestern University, Chicago, IL

3:30PM
Changes in Musculotendon Length with AFO Tuning after Stroke: A Musculoskeletal Modeling Case Study
H. Choi[1], K. Bjornson[1,2], S. Fatone[3], and K. M. Steele[4]
[1]University of Washington, Seattle, WA, [2]Seattle Children's Research Institute, Seattle, WA, [3]Northwestern University Feinberg School of Medicine, Chicago, IL, [4]University of Washington, Chicago, IL

3:45PM
Muscle Synergy Complexity Decreases with Severity of Cerebral Palsy
K. M. Steele[1], A. Rozumalski[2,3], and M. H. Schwartz[2,3]
[1]University of Washington, Chicago, IL, [2]Gillette Children's Specialty Healthcare, St. Paul, MN, [3]University of Minnesota, Minneapolis, MN

4:00PM
Increased Rotational Loading During Stabilization Task 1 Year After ACL Injury
A. Lanier[1,2], K. Manal[2], and T. Buchanan[2]
[1]University of Delaware, Newark, DE, [2]Delaware Rehabilitation Institute, Newark, DE

4:15PM
The Development of Volumetric Organs from a Multi-Modality Image Dataset for Use in a Small Female Full Body Finite Element Model
M. Davis[1], A. Hayes[1], D. Moreno[1], F. S. Gayzik[1], and J. Stitzel[1]
[1]Virginia Tech-Wake Forest University, Winston Salem, NC

4:30PM
Kinetics Changes in Distal Arthrogryposis Skeletal Muscle with MYH3 R672C Mutation
A. W. Racca[1], A. E. Beck[1,2], V. S. Rao[1], M. J. Bamshad[1,2], and M. Regnier[1]
[1]University of Washington, Seattle, WA, [2]Seattle Children's Hospital, Seattle, WA

Track: Biomaterials
OP - Sat - 3 – 5 - Room 608
Self Assembling Biomaterials

Chairs: Lauren Black, Greg Hudalla

3:15PM
Self-assembling Polypeptide Nanoparticles That Display Thermally-triggered Shape Memory or Disassembly
F. Garcia Quiroz[1] and A. Chilkoti[1]
[1]Duke University, Durham, NC

3:30PM
Self-Assembled Rosette Nanotube Composites Improve Skin Cell Functions
L. Sun[1], H. Fenniri[2], and T. J. Webster[1]
[1]Northeastern University, Boston, MA, [2]University of Alberta, Edmonton, AB, Canada

3:45PM
Highly Asymmetric Genetically Encoded Amphiphiles Spontaneously Assemble into Unexpected Morphologies
J. R. McDaniel[1], K. B. Vargo[2], I. Weitzhandler[1], D. A. Hammer[2], and A. Chilkoti[1]
[1]Duke University, Durham, NC, [2]University of Pennsylvania, Philadelphia, PA

4:00PM
3D Self-assembling Peptide Gel Stiffness and Adhesiveness Affect hMSC Morphology and Gene Expression
N. Hogrebe[1] and K. Gooch[1]
[1]The Ohio State University, Columbus, OH

4:15PM
Electrostatically Triggered Hydrophobic Self-Assembly of Protein Hydrogels
K. Baler[1], M. Carignano[1], G. Ameer[1], and I. Szleifer[1]
[1]Northwestern University, Evanston, IL

4:30PM
Spontaneous Solution and Interfacial Self-Assembly of Protein Surfactants
K. B. Vargo[1], M. Cavallaro Jr.[1], K. J. Stebe[1], and D. A. Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA

Track: Cancer Technologies
OP - Sat - 3 – 6 - Room 609
Nanotechnologies for Cancer Detection and Treatment II

Chairs: Michael King, Aaron Mohs

3:15PM
Vortex Technology for CTC Extraction From Blood Samples
D. E. Go[1], E. Sollier[2], J. Che[1], R. Kulkarni[1], and D. Di Carlo[1]
[1]UCLA, Los Angeles, CA, [2]Vortex Biosciences, Palo Alto, CA

3:30PM
LbL Nanoparticles for Combination Cancer Therapies: Receptor Targeting and Microenvironment Response
E. Dreaden[1], S. Morton[1], J. Deng[1], and P. Hammond[1]
[1]Koch Institute for Integrative Cancer Research, Cambridge, MA

3:45PM
A Multifunctional Nanoplatform for the Enhancement and Prediction of Therapeutic Response to External Beam Radiation Therapy
A. Al Zaki[1], C. McQuade[1], Y. Desai[1], M. Vido[1], T. Sakhuja[1], R. Hickey[1], D. Joh[1], S-J. Park[1], G. Kao[1], J. Dorsey[1], and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

P = Poster Session
OP = Oral Presentation

4:00PM
DNA Nanostructures as Targeted and Therapeutic Delivery Vehicles for Cancer
P. Charoenphol[1] and H. Bermudez[1]
[1]*University of Massachusetts, Amherst, MA*

4:15PM
Tethered Cationic Lipoplex Nanoparticles Detect Extracellular RNAs in Liver Cancer Mouse Models and Patients
X. Wang[1], Y. Wu[1], K. J. Kwak[1], H. Kutay[1], R. Sullivan[1], C. Schmidt[1], K. Ghoshal[1], and J. L. Lee[1]
[1]*The Ohio State University, Columbus, OH*

4:30PM
Quantitative Sensing of microRNA inside Living Cells Based on Nanomaterial
S-R. Ryoo[1] and D-H. Min[1]
[1]*Seoul National University, Seoul, Korea, Republic of*

Track: Cardiovascular Engineering
OP - Sat - 3 – 7 - Room 612
Cardiac Regeneration and Stem Cells II

Chairs: Gulden Camci-Unal, Michael Davis

3:15PM
Tracking Fusion of Human Mesenchymal Stem Cells (MSCs) Following Transplantation
B. Freeman[1] and B. Ogle[1]
[1]*University of Wisconsin-Madison, Madison, WI*

3:30PM
Endocrine Protection of Ischemic Myocardium by FGF21 from the Liver and Adipose Tissue
S. Q. Liu[1], D. Roberts[1], A. Kharitonenkov[2], Y. C. Li[3], L-Q. Zhang[4], and Y. Wu[1]
[1]*Northwestern University, Evanston, IL,* [2]*Lilly Research Laboratories, Indianapolis, IN,* [3]*The University of Chicago, Chicago, IL,* [4]*Rehabilitation Institute of Chicago, Chicago, IL*

3:45PM
In Vivo Application of Dynamic Hyaluronic Acid Hydrogels
J. L. Young[1], J. Tuler[1], R. Braden[1], P. Schup-Magoffin[1], J. Schaefer[1], K. Kretchmer[1], K. L. Christman[1], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA*

4:00PM
Controlled Delivery of Sonic Hedgehog for Cardiac Regeneration
N. Johnson[1] and Y. Wang[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

4:15PM
Glypican-1 Proteoliposomes Enhance Angiogenic Activity of Delivered Growth Factors
A. J. Monteforte[1] and A. B. Baker[1]
[1]*University of Texas at Austin, Austin, TX*

4:30PM
Comparative Studies of Ventricular Assist Devices and the Effect of Inflow and Outflow Cannulations
W-C. Chiu[1], Y. Alemu[1], C. Gao[1], B. Lynch[2], S. Einav[1], M. Slepian[1,3], and D. Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*MicroMed Cardiovascular Inc., Houston, TX,* [3]*The University of Arizona, Tucson, AZ*

Track: Cellular and Molecular Bioengineering
OP - Sat - 3 – 8 - Room 604
Cellular Bioengineering

Chairs: Randolph Ashton, Stephanie Willerth

3:15PM
Valve Interstitial Cells Act in a Pericyte Manner Promoting Angiogensis and Transdifferentiation by Valve Endothelial Cells
C. A. Arevalos[1], A. Walborn[1], and K. J. Grande-Allen[1]
[1]*Rice University, Houston, TX*

3:30PM
Engineering Biological State Machines with Synthetic Biology
T. K. Lu[1], P. Siuti[1], and J. Yazbek[1]
[1]*MIT, Cambridge, MA*

3:45PM
Augmentation of Chondrocyte Gene Therapy Using Customized Biomaterials
I. N. Aguilar [1], S. Trippel[2], and L. J. Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Indiana University, Indianapolis, IN*

4:00PM
Induction of Prostate Cancer Bone Metastasis in an Immunocompetent Mouse Model
J. Li[1], A. de Guillebon[2], and M. King[2]
[1]Cornell University, Ithaca, [2]Cornell University, Ithaca, NY

4:15PM
The Role of Cellular Morphology on Muscle Stem Cell Self-Renewal
N. Gupta[1] and P. M. Gilbert[1]
[1]*University of Toronto, Toronto, ON, Canada*

4:30PM
The Temperature Stress Associated with Heat Stroke Causes Profound Changes in Cell Signal Transduction Pathways
D. C. Clarke[1], C. J. Barker[1], D. Zhou[2], S. W. Inman[1], D. A. Lauffenburger[1], and L. R. Leon[3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Cornell University, Ithaca, NY,* [3]*United States Army Research Institute for Environmental Medicine, Natick, MA*

Track: Nano to Micro Technologies
OP - Sat - 3 – 9 - Room 611
Microfluidic Platform III

Chairs: Brian Kirby

3:15PM
A Hybrid Dielectrophoresis and Immunocapture System for Enhanced Capture of Circulating Tumor Cells
C. Huang[1], J. P. Smith[1], H. Liu[2], N. H. Bander[2], and B. J. Kirby[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

3:30PM
Sheathless, On-Chip Flow Cytometer Enabled by Standing Surface Acoustic Waves (SSAW)
Y. Chen[1], L. Wang[2], and T. J. Huang[1]
[1]*The Pennsylvania State University, University Park, PA,* [2]*Ascent Bio-Nano Technologies, Inc., State College, PA*

3:45PM
Optoacoustic Tweezers: A Versatile Tool for Concentrating, Patterning, and Manipulating Cells/Particles
Y. Xie[1] and T. J. Huang[1]
[1]*Pennsylvania State University, State College, PA*

4:00PM
Polymer-DNA Nanocomplex Synthesis by "Microfluidic Drifting" Based Three-Dimensional Hydrodynamic Focusing Method
M. Lu[1], Y-P. Ho[2,3], C. Grigsby[2], D. Ahmed[1], A. A. Nawaz[1], K. Leong[4], and T. Huang[1]
[1]Pennsylvania State University, University Park, PA, [2]Duke University, Durham, NC, [3]Aarhus University, Aarhus, Denmark, [4]Duke University, Durham

4:15PM
Quantitative Electrophoretic Mobility Shift Assays Enabled by Microsystems
Y. Pan[1], T. A. Duncombe[1], and A. E. Herr[1]
[1]University of California, Berkeley, Berkeley, CA

4:30PM
Measuring Neutrophil Speed and Directionality During Chemotaxis, Directly from a Droplet of Whole Blood
C. N. Jones[1,2], A. Hoang[1], L. Dimisko[1], B. Hamza[1], and D. Irimia[1,2]
[1]Harvard Medical School, Charlestown, MA, [2]Shriners Hospital for Children, Boston, MA

Track: Bioinformatics, Computational and Systems Biology
OP - Sat - 3 – 10 - Room 602
Dynamics of Biological Systems

Chairs: Fernando R. Fernandez, Eli Shlizerman

3:15PM
Dynamics of Olfactory Neural Codes
E. Shlizerman[1], J. Riffell[1], and J. Kutz[1]
[1]University of Washington, Seattle, WA

3:30PM
Understanding Signal Transduction at the Neuroelectronic Interface
V. Thakore[1], P. Molnar[1,2], A. Behal[1], and J. J. Hickman[1]
[1]University of Central Florida, Orlando, FL, [2]University of West Hungary, Szombathely, Hungary

3:45PM
Length and Sequence Dependence in the Association of HTT Protein with Model Membranes
A. Nagarajan[1], S. Jawahery[1], and S. Matysiak[1]
[1]University of Maryland, College Park, MD

4:00PM
Analysis of Cell Cycle Transition in Embryonic Stem Cells During Self-Renewal and Differentiation Through an Integrated Experimental and Computational Approach
K. Task[1], O. Koubaa[1], and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA

4:15PM
What is the Optimal Amount of Somatic Repair?
D. C. Vural[1], G. Morrison[2,3], and L. Mahadevan[1]
[1]Harvard University, Cambridge, MA, [2]Laboratory for the Analysis of Complex Economic Systems, IMT Institute for Advanced Studies, Lucca, Italy, [3]Harvard School of Engineering and Applied Sciences, Cambridge, MA

4:30PM
Supra-threshold Membrane Properties Control Response Magnitude to Noisy Input Fluctuations in Neurons
F. R. Fernandez[1], P. Malerba[1], and J. A. White[1]
[1]University of Utah, Salt Lake City, UT

Track: Bioinformatics, Computational and Systems Biology
OP - Sat - 3 – 11 - Room 615
Genomics, Transcriptomics and Proteomics II

Chairs: Valerie Daggett, Kimmen Sjölander

3:15PM
The PhyloFacts FAT-CAT Web Server: Functional Annotation and Ortholog Identification for Sequences Across the Tree of Life
K. Sjolander[1]
[1]University of California, Berkeley, Berkeley, CA

3:30PM
Inferring Single-Cell Gene Expression Frequencies From Stochastic Transcriptional Profiles
S. S. Bajikar[1], C. Fuchs[2], A. Roller[2], F. J. Theis[2], and K. A. Janes[1]
[1]University of Virginia, Charlottesville, VA, [2]Helmholtz Center Munich, Munich, Germany

3:45PM
Misfolded Conformations of the Bovine Prion Protein at Acidic pH
C. Cheng[1] and V. Daggett[1]
[1]University of Washington, Seattle, WA

4:00PM
Genome-wide Epigenetic Regulation in Endothelial Cells by Disturbed Flow and its Role in Atherosclerosis
J. Dunn[1,2], S. Kim[1,2], C. Qiu[1,2], C. Kim[1,2], R. Hoffman[1], I. Jang[1,2], and H. Jo[1,2]
[1]Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, [2]Division of Cardiology, Department of Medicine, Emory University, Atlanta, GA

4:15PM
A Profile of RNA Editing in the Human Brain and Gliomas
A. T. Magis[1,2], C. C. Funk[2], and N. D. Price[2]
[1]University of Illinois, Urbana-Champaign, Urbana, IL, [2]Institute for Systems Biology, Seattle, WA

4:30PM
Family Genomics Reveals Disease Genetics
A. Stittrich[1], H. Cox[1], H. Li[1], S. Ament[1], P. May[1,2], D. Mauldin[1], S. Montsaroff[1], R. Hubley[1], R. Gelinas[1], M. Brunkow[1], L. Rowen[1], A. Smit[1], G. Glusman[1], J. Roach[1], and L. Hood[1]
[1]Institute for Systems Biology, Seattle, WA, [2]Luxembourg Centre for Systems Biomedicine, University Luxembourg, Esch-sur-Alzette, Luxembourg

Track: Drug Delivery
OP - Sat - 3 – 12 - Room 616
Nucleic Acid Delivery II

Chairs: Angelica Gonzalez, Katherine Whitehead

3:15PM
Directed Evolution of Adeno-Associated Virus for Enhanced Evasion of Human Neutralizing Antibodies
M. A. Kotterman[1], B-Y. Hwang[1], D. Stone[1], J. T. Koerber[1], L. Couto[2], F. Mingozzi[2], K. High[2,3], and D. V. Schaffer[1,4]
[1]University of California, Berkeley, Berkeley, CA, [2]The Children's Hospital of Philadelphia, Philadelphia, PA, [3]The Children's Hospital of Philadelphia, Philadelphia, [4]University of California, Berkeley, Berkeley

3:30PM
Local and Sustained Silencing of Proline Hydroxylase 2 Increases Blood Vessel Production in Mice
C. E. Nelson[1], A. Hanna[1], F. Yu[1], J. M. Davidson[1], S. A. Guelcher[1], and C. L. Duvall[1]
[1]Vanderbilt University, Nashville, TN

P = Poster Session
OP = Oral Presentation

3:45PM
Layer-by-Layer for the Localized Delivery of siRNA
S. Castleberry[1] and P. Hammond[1]
[1]*MIT, Cambridge, MA*

4:00PM
Enhancing Nonviral Gene Delivery to Human Mesenchymal Stem Cells through Upregulation of the Glucocorticoid Receptor
A.M. Kelly[1], Z. Han[1], J. Zempleni[1], and A. K. Pannier[1], Irene Georgakoudi
[1]*University of Nebraska-Lincoln, Lincoln, NE*

4:15PM
Non-viral DNA Delivery Approach for High-Efficiency Nanog Transient Overexpression in Mesenchymal Stem Cells to Reverse the Effects of Organismal Aging
S. Son[1], M-S. Liang[1], P. Lei[1], and S. T. Andreadis[1,2]
[1]*State University of New York at Buffalo, Amherst, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo*

4:30PM
Responsive, Targeted, and Therapeutic: Delivery Vehicles Entirely from DNA
J-W. Keum[1], P. Charoenphol[1], and H. Bermudez[1]
[1]*University of Massachusetts, Amherst, MA*

Track: Biomedical Imaging and Optics
OP - Sat - 3 – 13 - Room 618
Molecular Imaging II

Chairs: Irene Georgakoudi

3:15PM
Functionalized Magnetic Particle Imaging (MPI) Tracers as Multimodal Magneto/Optical Contrast Agents
H. Arami[1], A. P. Khandhar[1], R. Ferguson[1], A. Tamitaka-Kami[1], and K. M. Krishnan[1]
[1]*University of Washington, Seattle, WA*

3:30PM
Protein Beacon Targeting of Inactive Heterotrimeric Guanine-Nucleotide Binding Protein in Live HeLa Cells
R. N. Cottle[1], A. Sundararaghavan[1], J. Hepler[2], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

3:45PM
Imaging Cell Metabolism in Diabetic Wounds Using Endogenous Sources of Contrast
K. P. Quinn[1], E. C. Leal[2], M. E. Auster[2], A. Veves[2], and I. Georgakoudi[1]
[1]*Tufts University, Medford, MA,* [2]*Beth Israel Deaconess Medical Center, Boston, MA*

4:00PM
In Vivo Imaging of Inflammation in Carotid Ligation Mouse Model Using VCAM-Targeted Nanoparticles
N. Masoodzadehgan[1], W. Seo[2], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

4:15PM
Deep, Non-Invasive Imaging for Surgical Guidance of Sub-Millimeter Ovarian Tumor Resection Using Targeted Single-Walled Carbon Nanotubes
A. F. Bagley[1,2], D. Ghosh[1,3], Y. Na[4], M. Birrer[4], A. M. Belcher[1,3], and S. N. Bhatia[1,5]
[1]*Koch Institute for Integrative Cancer Research/MIT, Cambridge, MA,* [2]*Harvard Biophysics Program, Boston, MA,* [3]*Department of Materials Science and Engineering/MIT, Cambridge, MA,* [4]*Department of Medicine, Massachusetts General Hospital, Boston, MA,* [5]*Howard Hughes Medical Institute, Chevy Chase, MD*

4:30PM
Genetically Encoded Gas Nanostructures as Ultrasonic Molecular Reporters
M. G. Shapiro[1], P. W. Goodwill[1], A. Neogy[1], D. V. Schaffer[1], and S. M. Conolly[1]
[1]*University of California at Berkeley, Berkeley, CA*

Track: Drug Delivery
OP - Sat - 3 – 14 - Room 619
Targeted Delivery III

Chairs: Princess Imoukheude, Carlos Rinaldi

3:15PM
Cytosolic Delivery of Therapeutic Proteins Enabled by Engineered Pore-forming Proteins
N. Yang[1] and D. Wittrup[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

3:30PM
Development of Neuron-Targeted Polymers for Nucleic Acid Delivery to Brain
H. Wei[1], J. Schellinger[1], J. Shi[1], D. Chu[1], D. Sellers[1], D. Maris[1], P. Carlson[1], J. Pahang[1], P. Horner[1], and S. H. Pun[1,2]
[1]*University of Washington, Seattle, WA,* [2]*Institute of Molecular Engineering and Science, Seattle, WA*

3:45PM
A Reservoir Intravaginal Ring Protects Macaques from Vaginal SHIV Infection
R. Teller[1], R. Rastogi[1], P. Mesquita[2], B. Herold[2], and P. Kiser[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*Albert Einstein College of Medicine, Bronx, NY*

4:00PM
Enhanced Vaginal Drug Delivery Using Hypotonic Vehicles
L. M. Ensign[1], T. Hoen[1], K. Maisel[1], R. Cone[1], and J. Hanes[1]
[1]*Johns Hopkins University, Baltimore, MD*

4:15PM
Hyperthermia-Triggered Nanoparticle Assembly Controls Toxicity of Pro-Apoptotic Peptide Drug Cargo
S. MacEwan[1] and A. Chilkoti[1]
[1]*Duke University, Durham, NC*

4:30PM
Seeking Hyperthermia Directed Therapeutics: Identification and Development of Thermally Sensitive Genetically-Encoded Polypeptide Nanoparticles
J. R. McDaniel[1], X. Li[1], and A. Chilkoti[1]
[1]*Duke University, Durham, NC*

Track: Cancer Technologies
OP - Sat - 3 – 15 - Room 620
Biomarkers

Chairs: Utkan Demirci, Eduardo Reategui

3:15PM
Dynamic Biochemical Tissue Analysis of Colon Cancer Tissue Reveals Functional P-selectin Ligands Undetectable via Static Biochemical Tissue Analysis
E. W. Martin[1], V. S. Shirure[1], V. A. Resto[2], R. Malgor[1], D. J. Goetz[1], and M. M. Burdick[1]
[1]*Ohio University, Athens, OH,* [2]*University of Texas-Medical Branch, Galveston, TX*

3:30PM
Detection and Identification of cfc-DNA Biomarkers Directly from CLL Cancer Patient Blood
M. J. HELLER[1], A. SONNENBERG[1], J. MARCINIAK[2], AND R. KRISHNAN[3]
[1]University of California San Diego, La Jolla, CA, [2]University of California San Diego, La Jolla, [3]Biological Dynamics, La Jolla

3:45PM
Uncovering Aggressive Cancer Cell Heterogeneity by Tumor Microenvironmental Glyco-conjugates
M. VEISEH[1], E. A. TURLEY[2,3], AND M. J. BISSELL[1]
[1]Lawrence Berkeley National Laboratory, Berkeley, CA, [2]London Health Sciences Centre, London, ON, Canada, [3]University of Western Ontario, London, ON, Canada

4:00PM
Coordinated PSA Biosensor Diagnostic and Prognostic Device
J. I. YEH[1] AND H. SHI[1]
[1]Univ of Pittsburgh SOM, Pittsburgh, PA

4:15PM
Multiplexed Microfluidic Immunocapture of Circulating Pancreas Cells for the Early Detection of Pancreatic Carcinogenesis
F. I. THEGE[1], S. M. SANTANA[1], A. D. RHIM[2], AND B. J. KIRBY[1,3]
[1]Cornell University, Ithaca, NY, [2]University of Pennsylvania, Philadelphia, PA, [3]Weill Cornell Medical College, New York, NY

4:30PM
Circulating Tumor Cell Capture Amplification
A. N. HOANG[1,2], A. SHAH[1,2], T. BARBER[1,2], M. PHILLIPS[1,2], D. WINOKUR[1,3], S. MAHESWARAN[3], D. A. HABER[1,3], S. L. STOTT[1,3], AND M. TONER[1,2]
[1]Harvard Medical School, Boston, MA, [2]Surgical Services and BioMEMS Resource Center, Massachusetts General Hospital, Charlestown, MA, [3]Massachusetts General Hospital Cancer Center, Charlestown, MA

Track: Undergraduate Research
OP - Sat - 3 – 16 - Room 613
Undergraduate Research II

Chairs: Stephanie Bryant, Kacey Marra

3:15PM
Optimizing a Drug-Loading Method for the Zero-Order Release of Rapamycin from Polycaprolactone Devices
L. A. ESTES[1,2]
[1]UCSF, San Francisco, CA, [2]Pomona College, Claremont, CA

3:24PM
Polymeric Nanoparticles for Modulated Clot Lysis in Abdominal Aortic Aneurysms (AAAs)
A. SYLVESTER[1,2], B. SIVARAMAN[1], AND A. RAMAMURTHI[1]
[1]Cleveland Clinic, Cleveland, OH, [2]Case Western Reserve University, Cleveland, OH

3:33PM
Resveratrol Reduces Neurodegeneration and BBB Instability Around Intracortical Microelectrodes
A. BUCK[1,2], K. POTTER[1,2], W. SELF[1,2], M. CALLANAN[1], S. SUNIL[1,2], AND J. CAPADONA[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Advanced Platform Technology Center, L Stokes Cleveland VA Medical Center, Cleveland, OH

3:42PM
Charge Reversing, Endosomolytic Nanoparticles to Enhance Intracellular Bioavailability of siRNA
C. N. SWAIN[1], C. E. NELSON[2], AND C. L. DUVALL[2]
[1]Washington University in St. Louis, St. Louis, MO, [2]Vanderbilt University, Nashville, TN

3:51PM
Multifunctional Hybrid Nanoparticles as a Co-delivery System for RNAs and Chemotherapeutics
G. P. HOWARD[1], K. Y. CHOI[2], O. R. FERREIRA SILVESTRE[2], AND X. CHEN[2]
[1]The University of Akron, Akron, OH, [2]National Institutes of Health, Bethesda, MD

4:00PM
Conformal Conducting Polymer Electrodes Used with an Ionic Liquid Gel for Electroencephalography
C. L. JOHNSON[1,2], P. LELEUX[2], AND G. MALLIARAS[2]
[1]Louisiana State University, Baton Rouge, LA, [2]CMP-EMSE, Gardanne, France

4:09PM
Quantification of Chronic Cortical Functionality Using Local Field Potential Recorded From the Mouse Visual Cortex
Z. GUGEL[1], T. D. KOZAI[1], AND X. T. CUI[1]
[1]University of Pittsburgh, Pittsburgh, PA

4:18PM
Mapping Somatosensory Cortex after Chronic Paralysis with Sensory- and Motor-Based Tasks for BCI Applications
M. RANDAZZO[1,2], J. COLLINGER[1,3], D. WEBER[1,2], AND S. FOLDES[1,3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Center for Neural Basis of Cognition, Pittsburgh, PA, [3]VA Pittsburgh Healthcare System, Pittsburgh, PA

4:27PM
Computational Optimization of Electroactive Femoral Implants
A. DOUGLAS[1], E. ZELLMER[1], AND M. MACEWAN[2]
[1]Washington University in St. Louis, Saint Louis, MO, [2]Washington University School of Medicine, Saint Louis, MO

4:36PM
Telomere Overhang Accessibility to Telomerase and ALT Proteins Depends on Telomeric Repeat Number
J. S. CALVERT[1], H. HWANG[1], A. KREIG[1], AND S. MYONG[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL

PLATFORM SESSIONS Sat-3

P = Poster Session
OP = Oral Presentation

Cellular and Molecular Bioengineering

Introducing the 2014 Young Innovators Issue

Edited by David Mooney, Cynthia Reinhart-King and David Schaffer

Self nominations due November 1, 2013

- **Special Issue will feature 15 – 20 original research papers from outstanding young faculty in cellular and molecular bioengineering.**
- **Accepted authors will be invited to present their work in a special platform session at the 2014 BMES Annual Meeting.**
- **To be eligible, candidates must be BMES members and hold a position at the Assistant Professor level or equivalent.**
- **Self nominations should include manuscript title with 200-word abstract, and a 2-page NIH-style biosketch, emailed to mike.king@cornell.edu.**

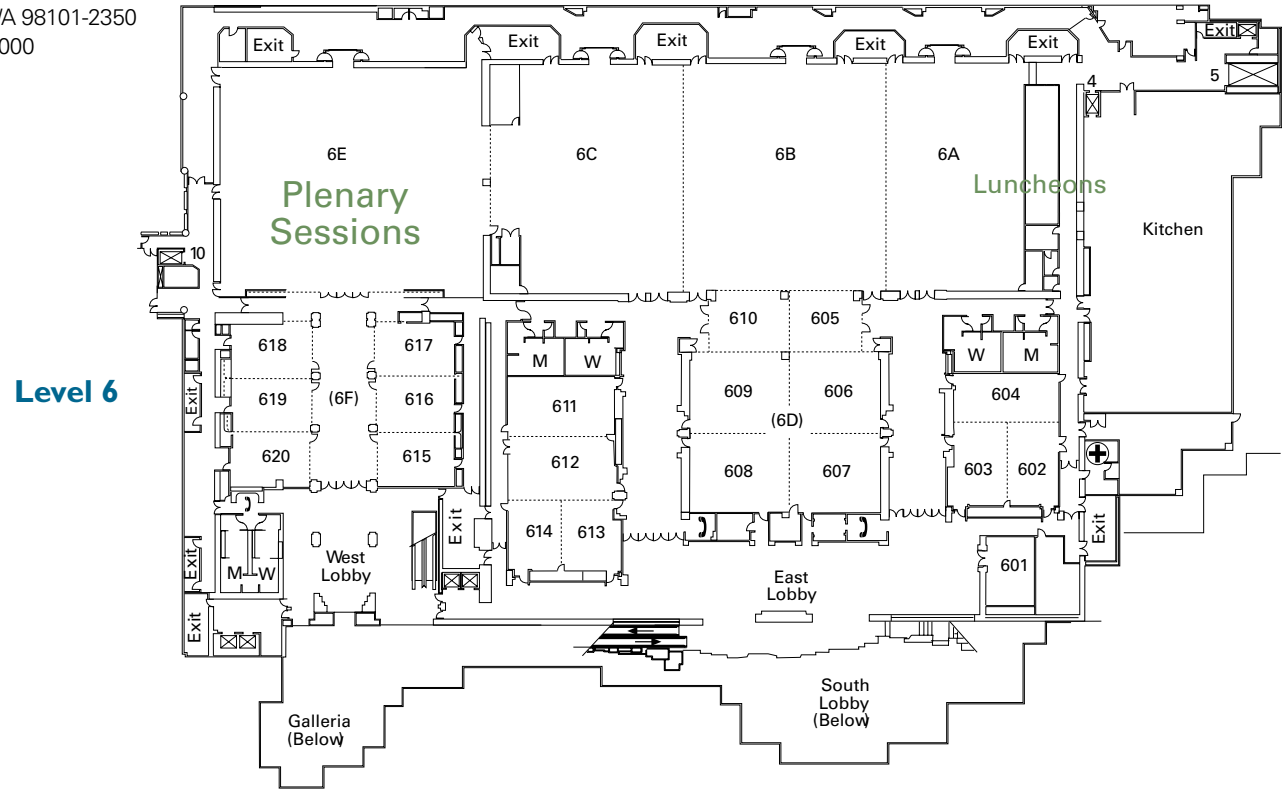
BMES
BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well-Being™

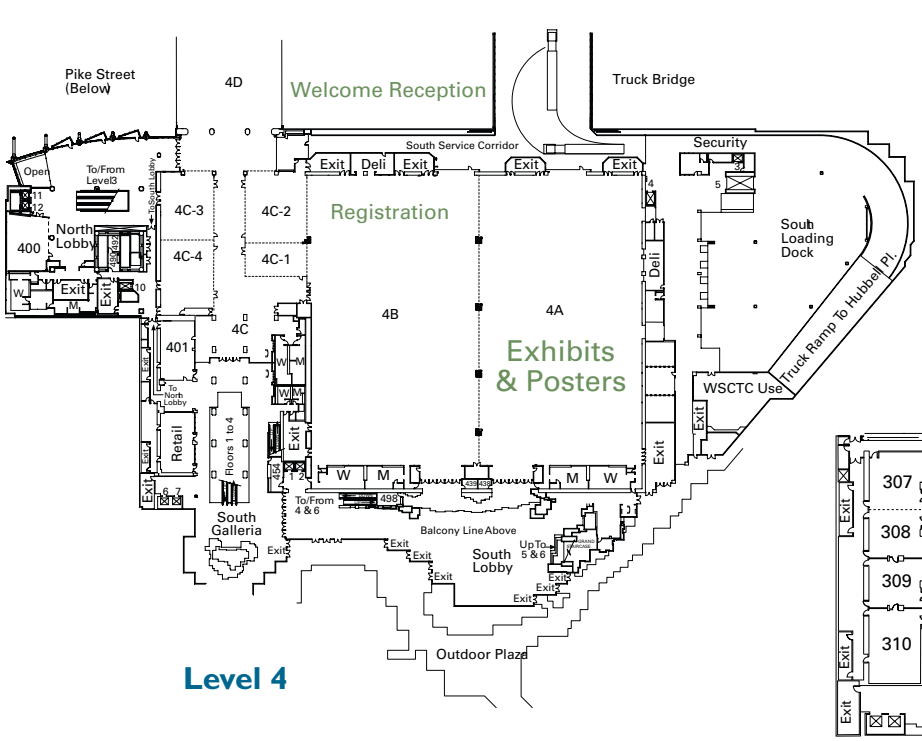
Key Dates:
Nomination Deadline: November 1, 2013
Abstract Acceptance: December 1, 2013
Manuscript Submission: February 1, 2014
Print Publication: September 2014

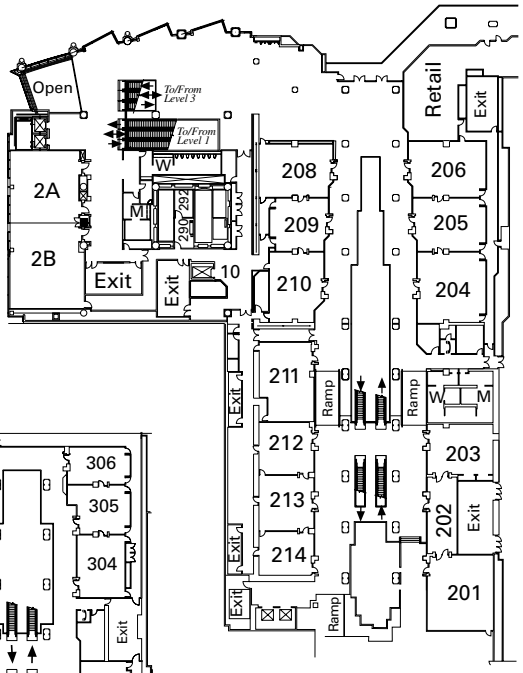
WASHINGTON STATE CONVENTION CENTER

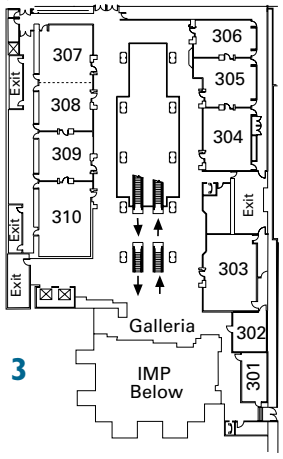
Washington State Convention Center

800 Convention Place
Seattle, WA 98101-2350
206-694-5000





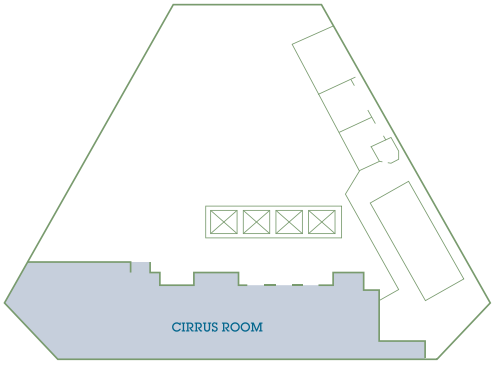




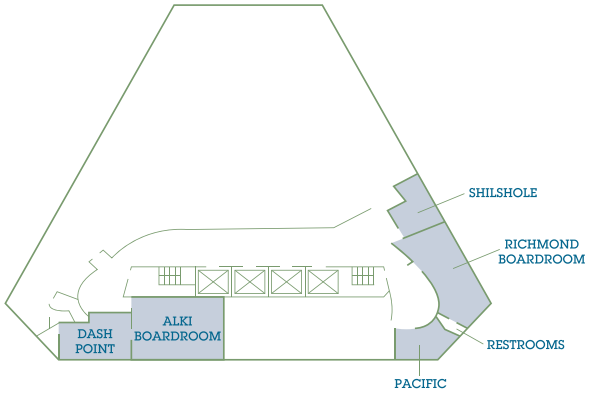
Sheraton Seattle

1400 Sixth Avenue
Seattle, WA 98101
206-621-9000

35TH FLOOR PIKE STREET TOWER



FOURTH FLOOR - PIKE STREET TOWER



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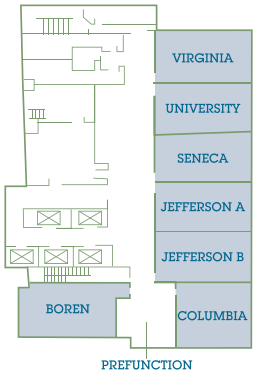

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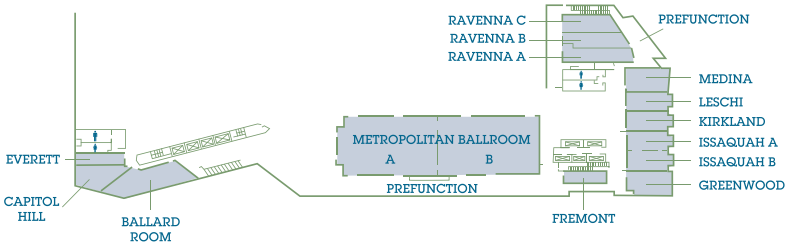

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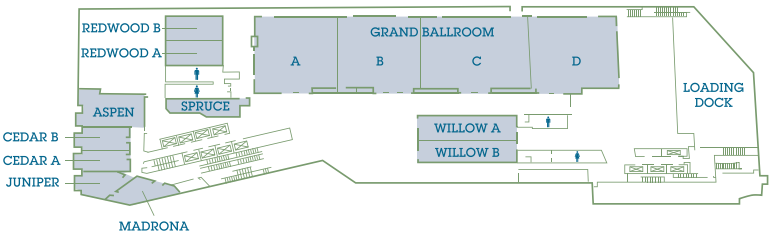

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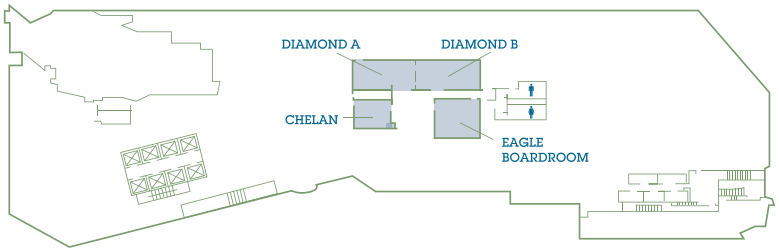

PROGRAM AT-A-GLANCE

Track	8:00am – 9:30am	1:30pm -3:00pm	4:00pm – 5:30pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	**Genomics, Transcriptomics and Proteomics I** Room 615	**Modeling of Regulatory Networks** Room 615	**Analysis and Control of Cell Signaling I** Room 615
BIOMATERIALS	**Micro and Nanostructured Materials I** Room 6C **Biomaterials for Immunoengineering I** Room 606	**Micro and Nanostructured Materials II** Room 6C **Biomaterials for Immunoengineering II** Room 606 **Biomaterial Scaffolds I** Room 6E	**Micro and Nanostructured Materials III** Room 6C **Therapeutic Biomaterials I** Room 606
BIOMECHANICS	**Cellular and Molecular Biomechanics I** Room 607 **Orthopaedic and Dental Biomechanics I** Room 608	**Cellular and Molecular Biomechanics II** Room 607 **Orthopaedic and Dental Biomechanics I** Room 608	**Cellular and Molecular Biomechanics III** Room 607 **Cardiovascular Biomechanics** Room 608
BIOMEDICAL ENGINEERING EDUCATION	**New Approaches to BME Education** Room 603		
BIOMEDICAL IMAGING & OPTICS	**Fluorescence Imaging** Room 618	**Optical Imaging and Microscopy** Room 618	**Optical Coherence Tomography** Room 618 **Imaging Strategies for Cancer Detection and Treatment** Room 609
CARDIOVASCULAR ENGINEERING *Track sponsored by* Edwards	**Cardiac Electrophysiology and Mechanics** Room 612 **Bio-Inspired Materials for the Treatment of Arterial Disease** Room 6B	**Thrombosis and Hemostasis** Room 612 **Cardiovascular Tissue Engineering I** Room 6B	**Hemodynamics and Cardiovascular Flow Modeling** Room 612 **Cardiovascular Tissue Engineering II** Room 6B **Cardiovascular Biomechanics** Room 608
CANCER TECHNOLOGIES	**Bioengineering of Cancer I** Room 609	**Bioengineering of Cancer II** Room 609	**Imaging Strategies for Cancer Detection and Treatment** Room 609 **Cancer Drug Delivery I** Room 620
CELLULAR & MOLECULAR BIOENGINEERING	**Mechanotransduction I** Room 604 **Cell Motility I** Room 611 **Cellular and Molecular Biomechanics I** Room 607	**Mechanotransduction II** Room 604 **Cell Motility II** Room 611 **Cellular and Molecular Biomechanics II** Room 607	**Mechanotransduction III** Room 604 **Cell Motility III** Room 611 **Cellular and Molecular Biomechanics III** Room 607
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS *Track sponsored by* Medtronic	**Biosensors I** Room 602	**Biosensors II** Room 602	**Biomedical Robotics** Room 602
DRUG DELIVERY	**Novel Materials and Self Assembly** Room 620	**Nano to Micro Devices in Delivery** Room 620	**Cancer Drug Delivery I** Room 620

Track	8:00am – 9:30am	1:30pm -3:00pm	4:00pm – 5:30pm
NANO AND MICRO TECHNOLOGIES	**BioMEMS I** Room 619	**BioMEMS II** Room 619	**Human on Chip** Room 619
NEURAL ENGINEERING	**Engineering the Neural Environment** Room 613	**Brain Injury** Room 613	**Neural Control and Modeling** Room 613
NEW FRONTIERS & SPECIAL TOPICS	**Global Health** Room 614	**Diagnostics** Room 614	**Smart Materials & Tissue Engineering** Room 614
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Animal Models in Musculoskeletal Diseases** Room 616 **Orthopaedic and Dental Biomechanics I** Room 608	**Musculoskeletal Tissue Engineering I – Biomechanics and Tissue Repair** Room 616 **Orthopaedic and Dental Biomechanics I** Room 608	**Musculoskeletal Tissue Engineering II – Scaffolds and ECM** Room 616
TISSUE ENGINEERING	**Bio-Inspired Materials for the Treatment of Arterial Disease** Room 6B	**Cardiovascular Tissue Engineering I** Room 6B **Musculoskeletal Tissue Engineering I – Biomechanics and Tissue Repair** Room 616	**Cardiovascular Tissue Engineering II** Room 6B **Smart Materials & Tissue Engineering** Room 614 **Musculoskeletal Tissue Engineering II – Scaffolds and ECM** Room 616
TRANSLATIONAL BIOMEDICAL ENGINEERING			**Therapeutic and Diagnostic Biomedical Devices** Room 6A
OTHER		**1:30-5:00PM** **ABET Workshop** Room 603 **1:30-5:00PM** **BMES-NSF Special Session: Promoting and Sustaining Innovative Research** Room 204	**4:00PM – 5:30PM** **Korea – US Joint Workshop in Biomedical Engineering** Room 201

PROGRAM AT-A-GLANCE

Track	8:00am – 9:30am	1:30pm -2:30pm	2:45pm – 3:45pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	**Modeling in Personalized Medicine** Room 615	**Modeling & Simulation in Multiscale Spatiotemporal Modeling and Simulation** Room 615	**Image-Based Modeling** Room 615
BIOMATERIALS	**Micro and Nanostructured Materials IV** Room 6C **Therapeutic Biomaterials II** Room 606	**Biomaterial Scaffolds II** Room 6C **Biomaterials and Devices** Room 607	**Bioinspired Materials** Room 6C
BIOMECHANICS	**Cellular and Molecular Biomechanics IV** Room 607	**Biomaterials and Devices** Room 607	**Translational Cellular and Molecular Bioengineering** Room 604
BIOMEDICAL ENGINEERING EDUCATION		**Teaching Outside the (Classroom) Box** Room 616	**Innovative Hands on Approaches** Room 616
BIOMEDICAL IMAGING & OPTICS	**Ultrasound** Room 618	**Positron Emission Tomography** Room 618 **Neural Imaging** Room 613	**MRI Methods and Applications** Room 618
CANCER TECHNOLOGIES	**Bioengineering Models of Cancer I** Room 609 **Cancer Drug Delivery II** Room 620	**Bioengineering Models of Cancer II** Room 609	
CARDIOVASCULAR ENGINEERING *Track sponsored by* Edwards	**Heart Valves** Room 612 **Stents** Room 602	**Microvascular and Lymphatic System** Room 612 **Cardiovascular Tissue Engineering III** Room 6B	**Vascular Mechanics I** Room 612 **Cardiovascular Tissue Engineering IV** Room 6B
CELLULAR & MOLECULAR BIOENGINEERING	**Cell Adhesion I** Room 604 **Cellular and Molecular Biomechanics IV** Room 607	**Cell Adhesion II** Room 604	
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS *Track sponsored by* Medtronic	**Stents** Room 602	**Implantable Devices** Room 602 **Biomaterials and Devices** Room 607	**Implantable Orthopedic Devices and Assistive Technologies** Room 602
DRUG DELIVERY	**Cancer Drug Delivery II** Room 620 **Tissue Engineered Models for Study of Disease and Drug Discovery I** Room 6B	**Responsive Delivery Systems** Room 620	**Biomedical Engineering Modalities for Personalized Cancer Therapy** Room 609
NANO AND MICRO TECHNOLOGIES	**Nanobiointerfaces I** Room 619	**Nanobiointerfaces II** Room 619	**Nanobiointerfaces III** Room 619

Track	8:00am – 9:30am	1:30pm -2:30pm	2:45pm – 3:45pm
NEURAL ENGINEERING	**Brain Computer Interface** Room 613	**Neural Imaging** Room 613	**Deep Brain Stimulation** Room 613 **Neural Tissue Engineering: Brain, Motor Neurons, Eye** Room 608
NEW FRONTIERS & SPECIAL TOPICS	**Emerging Technology I** Room 614	**Emerging Technology II** Room 614	
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Musculoskeletal and Orthopaedic Tissue Engineering I** Room 608	**Neural Tissue Engineering** Room A313	**Sports Biomechanics** Room 607 **Rehabilitation and Human Applications** Room 611
RESPIRATORY BIOENGINEERING	**Lung Development and Regeneration:Bioengineering and Mechanotransduction** Room 616		**Surfactants and Mucus** Room 620
STEM CELL ENGINEERING	**Engineering Stem Cell Niche** Room 611	**Bioprocessing of Human Cells** Room 611	
TISSUE ENGINEERING	**Tissue Engineered Models for Study of Disease and Drug discovery I** Room 6B **Musculoskeletal and orthopaedic Tissue Engineering I** Room 608	**Cardiovascular Tissue Engineering III** Room 6B **Cell Delivery and Cell Homing Technologies** Room 608	**Cardiovascular Tissue Engineering IV** Room 6B **Neural Tissue Engineering: Brain, Motor Neurons, Eye** Room 608
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Biomaterials for Regenerative Medicine** Room 606	**Cell-based Products for Regenerative Medicine** Room 606	**Translation in Regenerative Medicine** Room 606
OTHER	**Whitaker Session** Room 603	**Health Disparities: Innovative Approaches to Improved Health** Room 6E	

PROGRAM AT-A-GLANCE

Track	10:30am – 12noon	1:30pm - 3:00pm	3:15pm – 4:45pm
BIOINFORMATICS & SYSTEMS BIOLOGY	**Computational Bioengineering I** Room 615	**Computational Bioengineering II** Room 615 **Analysis and Control of Cell Signaling II** Room 602	**Genomics, Transcriptomics and Proteomics II** Room 615 **Dynamics of Biological Systems** Room 602
BIOMATERIALS	**Biomaterials for Controlling Cell Environment I** Room 606	**Biomaterial Design I** Room 6C **Biomaterials for Controlling Cell Environment II** Room 606	**Biomaterial Design II** Room 6C **Intelligent Biomaterials** Room 606 **Self Assembling Biomaterials** Room 608
BIOMECHANICS	**Computer-Aided Biomechanical Analysis** Room 607	**Multiscale Modeling** Room 607	**Clinical Biomechanics** Room 607
BIOMEDICAL IMAGING & OPTICS	**Vascular and Pulmonary Imaging** Room 616 **Novel Approaches** Room 618	**Molecular Imaging I** Room 618	**Molecular Imaging II** Room 618
CANCER TECHNOLOGIES	**Engineering Anti-tumor Immunity** Room 609	**Nanotechnologies for Cancer Detection and Treatment I** Room 609	**Nanotechnologies for Cancer Detection and Treatment II** Room 609 **Biomarkers** Room 620
CARDIOVASCULAR ENGINEERING *Track sponsored by* Edwards	**Vascular Mechanics II** Room 612 **Vascular and Pulmonary Imaging** Room 616	**Cardiac Regeneration and Stem Cells I** Room 612	**Cardiac Regeneration and Stem Cells II** Room 612
CELLULAR & MOLECULAR BIOENGINEERING	**Cell Biomechanics I** Room 604 **Molecular Bioengineering** Room 6E	**Cell Biomechanics II** Room 604	**Cellular Bioengineering** Room 604
DRUG DELIVERY	**Targeted Delivery I** Room 619	**Targeted Delivery II** **Room 619** **Nucleic Acid Delivery I** Room 616	**Targeted Delivery III** Room 619 **Nucleic Acid Delivery II** Room 616
NANO AND MICRO TECHNOLOGIES	**Microfluidic Platform I** Room 611 **Microphysiology Systems** Room 602	**Microfluidic Platform II Analysis and Control of Cell Signaling II** Room 611	**Microfluidic Platform III** Room 611
NEURAL ENGINEERING	**Neural Engineering: From Basic Studies to Translation** Room 613		
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Musculoskeletal and Orthopedic Tissue Engineering II** Room 6B	**Musculoskeletal and Orthopedic Tissue Engineering III** Room 6	

Track	8:00am – 9:30am	1:30pm -3:00pm	3:15pm – 4:45pm
RESPIRATORY BIOENGINEERING	**Ventilation and Ventilation-Induced Injury** Room 620 **Vascular and Pulmonary Imaging** Room 616	**Modeling Airway Physiology and Disease** Room 620	
STEM CELL ENGINEERING	**Directing Stem Cell Differentiation** Room 608	**Mechanical Control of Stem Cells** Room 608	
TISSUE ENGINEERING	**Musculoskeletal and Orthopedic Tissue Engineering II** Room 6B **Tissue Engineered Models for Study of Disease and Drug Discovery II** Room 6C	**Musculoskeletal and Orthopedic Tissue Engineering III** Room 6B	**Biomimetics for Tissue Engineering** Room 6B
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Translational Therapeutics and Imaging** Room 6A		
UNDERGRADUATE RESEARCH		**Undergraduate Research I** Room 613	**Undergraduate Research II** Room 613

WEDNESDAY, September 25, 2013

11:00am – 7:00pm	Registration	WSCC, 4C
8:30am – 4:30pm	BMES Board of Directors Meeting	WSCC, 211
3:30pm – 5:30pm	Meet the Faculty Candidates	WSCC, Exhibit Hall 4AB
5:30pm – 7:00pm	Welcome Reception	WSCC, Skybridge

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

AFFILIATE EVENTS:

8:30am – 5:30pm
BME – IDEA Alliance Meeting
Washington State Convention Center, Room 2A2B

1:00pm – 5:00pm
AIMBE Board of Directors Meeting
Washington State Convention Center, Room 203

7:00pm - 10:00pm
Annals of Biomedical Engineering - Editorial Board
Sheraton Seattle, Greenwood Room

THURSDAY, September 26, 2013

7:00am – 6:00pm	Registration	WSCC, 4C
8:00am – 9:30am	**Platform Sessions - Thurs- I**	WSCC - 18 *concurrent rooms*
8:00am - 9:00am	International Affairs Committee Meeting	WSSC, Room 214
8:30am – 10:00am	National Meetings Committee Meeting	WSCC, 601
9:00am - 10:00am	Choosing a Career Pathway in BME That's Right for You	WSCC, 2AB
9:30am – 5:00pm	Exhibit Hall Open	WSCC, Exhibit Hall 4AB
9:30am – 1:00pm	**Poster Session – Thurs - A**	WSCC, Exhibit Hall 4AB
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	WSCC, Exhibit Hall 4AB
10:30am – 11:45	**Plenary Session** Pritzker Distinguished Lecturer	WSCC, 6E
12:00noon – 1:15pm	Celebration of Minorities in BME Luncheon	WSCC, 6A
12noon – 1:30pm	Lunch on Your Own	
1:00pm - 2:00pm	Membership Committee Meeting	WSCC, 214
1:30pm – 2:45pm	BME Careers in Industry	WSCC, 2AB
1:30pm – 5:30pm	One on One Career Consulting	WSCC, 212, 213
1:30pm – 3:30pm	Resume Review & Critique	WSCC, 307, 308
1:45pm - 3:15pm	Mock Interview Demonstration	WSCC, 310
1:30pm – 5:00pm	**Poster Session – Thurs - B** *See pages ?-?*	WSCC, Exhibit Hall 4AB
1:30pm – 3:00pm	**Platform Session – Thurs - 2**	WSCC - 18 *concurrent rooms*
1:30pm - 5:00pm	ABET Workshop	WSSC, Room 603
1:30pm - 5:00pm	BMES-NSF Special Session	WSSC, Room 204
3:00pm – 4:00pm	Poster Viewing with Authors & Refreshment Break	WSCC, Exhibit Hall 4AB
3:15pm – 4:30pm	BME Careers in Government	WSCC, 2AB
4:00pm – 5:30pm	**Platform Session – Thurs - 3**	WSCC - 18 *concurrent rooms*
4:00pm - 5:30pm	Korea-US Joint Workshop in Biomedical Engineering	WSSC, Room 201
4:00pm – 6:00pm	Resume Review & Critique, *repeated*	WSCC, 307, 308
4:00pm – 5:30pm	Mock Interview Demonstration, *repeated*	WSCC, 310
5:00pm – 6:15pm	BME Careers in Academia	WSCC, 6E
5:45pm – 7:15pm	BME State of the Society Town Hall & Award Ceremony	WSCC, 6E
8:00pm – 9:00pm	University Receptions	Sheraton

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

AFFILIATE EVENTS:

12noon – 1:30pm
Cellular and Molecular Bio-engineering - Editorial Board
Sheraton Seattle, Greenwood Room

3:00pm – 4:00pm
AIMBE Council Meeting
Washington State Convention Center, Room 203

4:00pm – 5:00pm
AEMB Annual Grand Meeting
Washington State Convention Center, Room 303

5:30pm – 7:00pm
AEMB Reception
Sheraton Seattle, Daily Grill Restaurant

PROGRAM AT-A-GLANCE

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

FRIDAY, September 27, 2013

7:00am – 6:00pm	Registration	WSCC, 4C
8:00am – 9:30am	**Platform Sessions - Fri-1-1**	WSCC - 18 *concurrent rooms*
8:30am – 10:00am	2014 Annual Meeting Planning Committee Meeting	WSCC, 601
8:30am - 9:30am	BMES Student Chapter—Outstanding Chapter Best Practicest	WSCC, 2A2B
9:30am - 10:30am	BMES Student Chapter - Outreach and Mentoring Best Practices	WSCC, 2A2B
9:30am – 5:00pm	Exhibit Hall Open	WSCC, Exhibit Hall 4AB
9:30am – 1:00pm	**Poster Session – Fri - A**	WSCC, Exhibit Hall 4AB
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	WSCC, Exhibit Hall 4AB
10:30am – 12noon	**Plenary Session** Distinguished Achievement & NIBIB Lecture/DEBUT Awards Ceremony	WSCC, 6E
12noon – 1:30pm	Lunch on Your Own	
12:15pm - 1:15pm	Woman in BME Luncheon	WSCC, 6A
1:00pm – 5:00pm	Career Fair	WSCC, South Lobby
1:30pm – 5:00pm	**Poster Session – Fri - B** *See pages ?-?*	WSCC, Exhibit Hall 4AB
1:30pm – 5:30pm	One on One Career Consulting, *repeated*	WSCC, 212, 213
1:30pm – 3:30pm	Resume Review & Critique, *repeated*	WSCC, 307, 308
1:30pm – 2:30pm	**Platform Session – Fri - 2**	WSCC - 18 *concurrent rooms*
2:45pm – 3:45pm	**Platform Session – Fri - 3**	WSCC - 17 *concurrent rooms*
3:45pm – 4:45pm	Diversity Committee Meeting	WSCC, 214
3:45pm – 4:45pm	Poster Viewing with Authors & Refreshment Break	WSCC, Exhibit Hall 4AB
4:45pm – 6:00pm	Plenary Session	WSCC, 6E
7:00pm – 10:00pm	BMES BASH	Experience Music Project

AFFILIATE EVENTS:

12noon – 1:30pm
Cardiovascular Engineering and Technology
Sheraton Seattle, Capitol Hill Room Room

9:00am – 10:00am
AEMB Ethics Session
Washington State Convention Center, Room 303

2:00pm – 3:00pm
AIMBE-AEMB Student Public Policy Session
Washington State Convention Center Room 303

SATURDAY, September 28, 2013

7:00am – 2:00pm	Registration	WSCC, 4C
8:00am – 9:30am	**Platform Sessions - Sat-1**	WSCC - 17 *concurrent rooms*
9:30am – 1:30pm	Exhibit Hall Open	WSCC, Exhibit Hall 4AB
9:30am - 10:30am	Education Committee Meeting	WSSC, 601
9:30am – 10:30am	Student Affairs Committee Meeting	WSCC, 214
9:30am – 1:00pm	**Poster Session – Sat - A&B**	WSCC, Exhibit Hall 4AB
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	WSCC, Exhibit Hall 4AB
10:30am – 12noon	**Plenary Session** Rita Schaffer Young Investigator Lecture & Diversity Award Winner	WSCC, 6E
12:30pm – 3:00pm	BMES Board of Directors Meeting	WSCC, 211
12noon – 1:30pm	Lunch on Your Own	
1:30pm – 3:00pm	**Platform Session – Sat - 2**	WSCC - 17 *concurrent rooms*
3:15pm – 4:15pm	**Platform Session – Sat - 3**	WSCC - 17 *concurrent rooms*

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NOTES

NOTES

2013 BMES Annual Meeting

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