

2013
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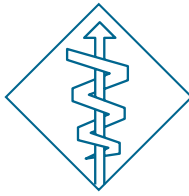
BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

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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Available on the Mobile App
 Available at <http://submissions.miracd.com/bmes2013/itinerary>
 Copies also available at the registration desk.

2013 BMES ANNUAL MEETING

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Grants have been provided by the National Institute of Biomedical Imaging and Bioengineering and the National Science Foundation for the BMES 2013 Annual Meeting.





Gilda A. Barabino, PhD

BMES President

*Dean, Grove School of Engineering
City College of New York*

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*

WELCOMETO 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

WELCOMETO 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*

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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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.



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 fi-

nancial 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.

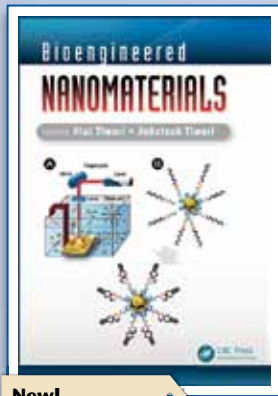
Dr. Pettit received a Bachelor of Science in Chemical Engineering from Oregon State University in 1978 and a Doctorate in Chemical Engineering from the University of Arizona in 1983.

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.

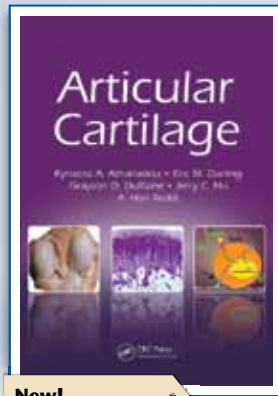
A veteran of three spaceflights, Dr. Pettit has logged more than 370 days in space and over 13 EVA (spacewalk) hours. He lived aboard the International Space Station for 5-1/2 months during Expedition 6, was a member of the STS-126 crew, and again lived aboard the station for 6-1/2 months as part of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



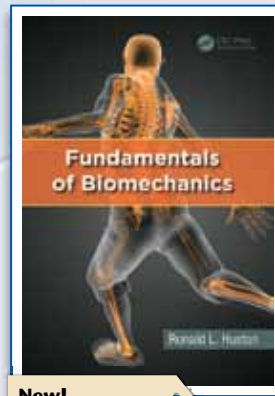
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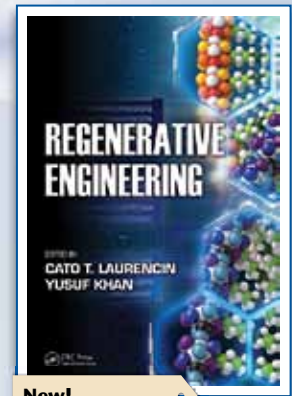
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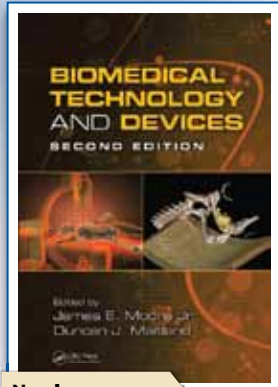
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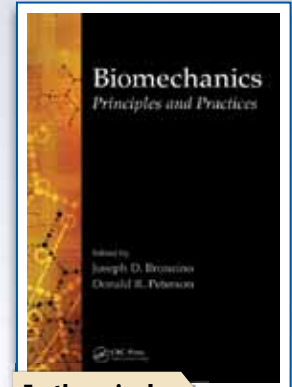
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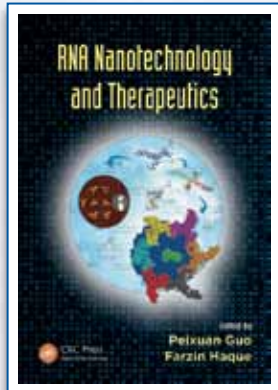
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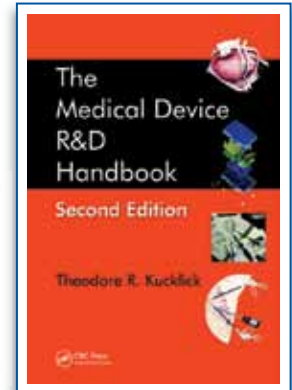
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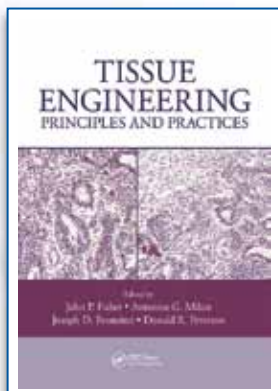
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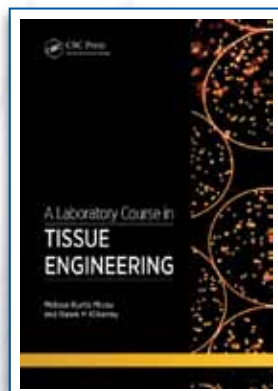
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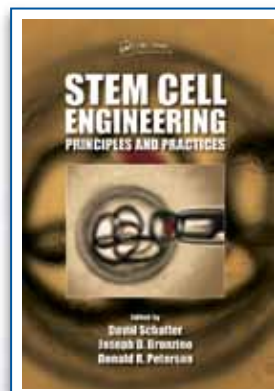
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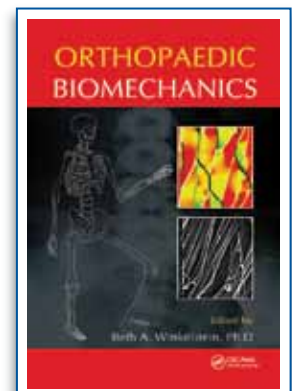
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BMES 2013 Rita Schaffer Memorial - Young Investigator Lecturer:

Susan N. Thomas, PhD

Assistant Professor

George W. Woodruff School of Mechanical Engineering

Georgia Institute of Technology

SATURDAY, SEPTEMBER 28, 2013

10:30AM

BALLROOM 6E

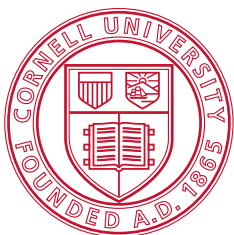
WASHINGTON STATE CONVENTION CENTER

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

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.



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*



Shivaun D. Archer, PhD

*John & Janet Swanson
Senior Lecturer
Department of Biomedical Engineering
Cornell University*



Chris B. Schaffer, PhD

*Associate Professor
Department of Biomedical Engineering
Cornell University*



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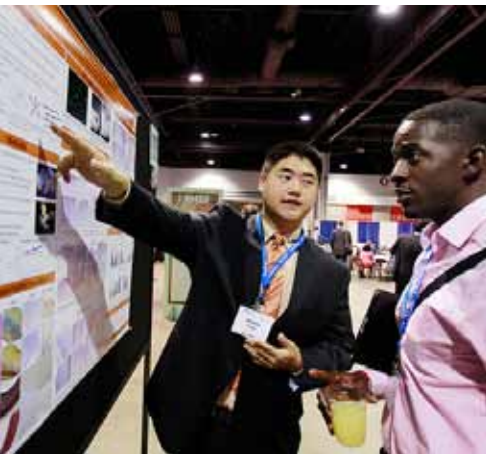
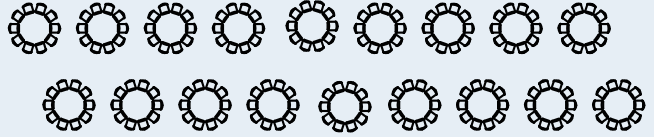
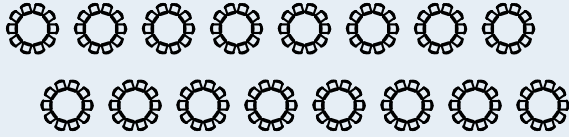


EXHIBIT HALL FLOOR PLAN



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| 15A | 16A | 16B | 59A | 59B | 60A | 60B | 79A | 79B | 80A | 80B | 99A | 99B | 100A | 100B | 119A | 119B |
| 14A | 17A | 17B | 58A | 58B | 61A | 61B | 78A | 78B | 81A | 81B | 98A | 98B | 101A | 101B | 118A | 118B |
| 13A | 18A | 18B | 57A | 57B | 62A | 62B | 77A | 77B | 82A | 82B | 97A | 97B | 102A | 102B | 117A | 117B |
| 12A | 19A | 19B | 56A | 56B | 63A | 63B | 76A | 76B | 83A | 83B | 96A | 96B | 103A | 103B | 116A | 116B |
| 11A | 20A | 20B | 55A | 55B | 64A | 64B | 75A | 75B | 84A | 84B | 95A | 95B | 104A | 104B | 115A | 115B |
| 10A | 21A | 21B | 54A | 54B | 65A | 65B | 74A | 74B | 85A | 85B | 94A | 94B | 105A | 105B | 114A | 114B |
| 9A | 22A | 22B | 53A | 53B | 66A | 66B | 73A | 73B | 86A | 86B | 93A | 93B | 106A | 106B | 113A | 113B |
| 8A | 23A | 23B | 52A | 52B | 67A | 67B | 72A | 72B | 87A | 87B | 92A | 92B | 107A | 107B | 112A | 112B |
| 7A | 24A | 24B | 51A | 51B | 68A | 68B | 71A | 71B | 88A | 88B | 91A | 91B | 108A | 108B | 111A | 111B |
| 6A | 25A | 25B | 50A | 50B | 69A | 69B | 70A | 70B | 89A | 89B | 90A | 90B | 109A | 109B | 110A | 110B |

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Refreshment Breaks

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| 120A | 120B | 139A | 139B | 140A | 140B | 159A | 159B | 160A | 160B | 179A | 179B | 180A | 180B | 222A | 222B | 263A | 263B |
| 121A | 121B | 138A | 138B | 141A | 141B | 158A | 158B | 161A | 161B | 178A | 178B | 181A | 181B | 223A | 223B | 264A | 264B |
| 122A | 122B | 137A | 137B | 142A | 142B | 157A | 157B | 162A | 162B | 177A | 177B | 182A | 182B | 224A | 224B | 265A | 265B |
| 123A | 123B | 136A | 136B | 143A | 143B | 156A | 156B | 163A | 163B | 176A | 176B | 183A | 183B | 225A | 225B | 266A | 266B |
| 124A | 124B | 135A | 135B | 144A | 144B | 155A | 155B | 164A | 164B | 175A | 175B | 184A | 184B | 226A | 226B | 267A | 267B |
| 125A | 125B | 134A | 134B | 145A | 145B | 154A | 154B | 165A | 165B | 174A | 174B | 185A | 185B | 227A | 227B | 268A | 268B |
| 126A | 126B | 133A | 133B | 146A | 146B | 153A | 153B | 166A | 166B | 173A | 173B | 186A | 186B | 228A | 228B | 269A | 269B |
| 127A | 127B | 132A | 132B | 147A | 147B | 152A | 152B | 167A | 167B | 172A | 172B | 187A | 187B | 229A | 229B | 270A | 270B |
| 128A | 128B | 131A | 131B | 148A | 148B | 151A | 151B | 168A | 168B | 171A | 171B | 188A | 188B | 230A | 230B | 271A | 271B |
| 129A | 129B | 130A | 130B | 149A | 149B | 150A | 150B | 169A | 169B | 170A | 170B | 189A | 189B | 231A | 231B | 272A | 272B |
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| 5A | 26A | 26B | 49A | 49B |
| 4A | 27A | 27B | 48A | 48B |
| 3A | 28A | 28B | 47A | 47B |
| 2A | 29A | 29B | 46A | 46B |
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| 34A | 34B | 41A | 41B |

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University of Florida

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| 210 | 111 |
| 208 | 109 |

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| 35A | 40A | 40B |
| 36A | 39A | 39B |
| 37A | 38A | 38B |

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POSTERS

POSTERS

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| 190A | 211A | 211B | 253A | 253B |
| 191A | 210A | 210B | 232A | 232B |
| 192A | 209A | 209B | 252A | 252B |
| 193A | 208A | 208B | 233A | 233B |
| | 207A | 207B | 274A | 274B |
| | 206A | 206B | 251A | 251B |
| | 205A | 205B | 234A | 234B |
| | 204A | 204B | 275A | 275B |
| | 203A | 203B | 250A | 250B |
| | 202A | 202B | 235A | 235B |
| | 201A | 201B | 276A | 276B |

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|------|------|------|------|------|
| 194A | 207A | 207B | 249A | 249B |
| 195A | 206A | 206B | 236A | 236B |
| | 205A | 205B | 277A | 277B |
| | 204A | 204B | 256A | 256B |
| | 203A | 203B | 278A | 278B |

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|------|------|------|------|------|
| 196A | 205A | 205B | 247A | 247B |
| 197A | 204A | 204B | 238A | 238B |
| | 203A | 203B | 279A | 279B |
| | 202A | 202B | 257A | 257B |
| | 201A | 201B | 280A | 280B |

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| 198A | 203A | 203B | 245A | 245B |
| 199A | 202A | 202B | 240A | 240B |
| 200A | 201A | 201B | 281A | 281B |
| | 200A | 200B | 244A | 244B |
| | 199A | 199B | 241A | 241B |
| | 198A | 198B | 282A | 282B |
| | 197A | 197B | 243A | 243B |
| | 196A | 196B | 283A | 283B |

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ENTRANCE

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EXHIBITS

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

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

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

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

BOOTH # 502

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The City College of New York

BIOMEDICAL ENGINEERING

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Email: snicoll@ccny.cuny.edu
Web: bme.ccny.cuny.edu

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

BOOTH # 427

Clemson University

DEPARTMENT OF BIOENGINEERING

301 Rhodes Research Center
Clemson, SC 29634-0905
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Columbia University

351 Engineering Terrace
1210 Amsterdam Avenue
New York, NY 10027
Phone: 212-854-6196
Email: bme@columbia.edu
Web: www.bme.columbia.edu

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.

BOOTH # 401

Cornell University

DEPARTMENT OF BIOMEDICAL ENGINEERING

101 Weill Hall
Ithaca, NY 14853
Phone: 607-255-2573
Email: bh42@cornell.edu
Web: www.bme.cornell.edu

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

EXHIBITS

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Web: www.dal.ca/bme

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

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BOOTH # 620

Florida Institute of Technology

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Florida Tech presents its cutting-edge online certificate program in Biomedical Engineering. Overseen by esteemed BME scientist Larry Hench, our program provides a comprehensive educational background for undergraduate, master's, and doctoral-level learners. Course content includes: biomaterials, devices, tissue engineering, socio-economic issues, best practices, and the ethics of reconstructive and regenerative medicine.

BOOTH # 420

Florida International University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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

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

BOOTH # 423

George Washington University**SCHOOL OF ENGINEERING & APPLIED SCIENCES
ELECTRICAL & COMPUTER ENGINEERING DEPARTMENT**

801 – 22nd Street, NW, Room 608
Washington, DC 20052
Phone: 202-994-5934
Email: dghoover@gwu.edu
Web: <http://www.seas.gwu.edu>

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.

BOOTHS # 322 / 324

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

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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

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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.

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Institute of Biomaterials & Biomedical Engineering

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IBBME is a unique interdisciplinary graduate program at the University of Toronto. With MHS, 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.

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Johns Hopkins University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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Traylor 406
Baltimore, MD 21205
Phone: 410-614-4280
Email: hlanl@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
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BOOTH # 517

Louisiana Tech University

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HEALTHCARE TECHNOLOGIES MANAGEMENT PROGRAM

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Unique graduate curriculum combines business, technology, and health-care 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 Shri-ner's Hospital (Chicago).

BOOTH # 224

Mayo Graduate School

PHYSIOLOGY & BIOMEDICAL ENGINEERING

Mayo Clinic Rochester 200 First Street, SW, SMH J04-184
 Rochester, MN 55905
 Phone: 507-255-8544
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 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.

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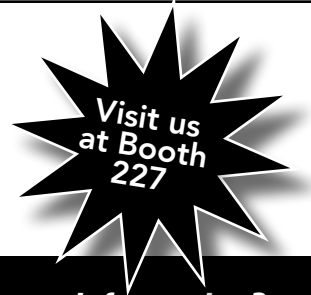
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Thursday, Sept. 26, 2013
8:00 – 10:00 pm

Sheraton Seattle
Greenwood Room

BOOTH # 520

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

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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

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BOOTH # 111

The Ohio State University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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BOOTH # 425

Peking University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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Beijing 100871 China
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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
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Rensselaer Polytechnic Institute

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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.



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BOOTH # 624

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 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 its first class of graduate students for Masters and PhD studies. The undergraduate curriculum will commence in the fall of 2013. Matriculating doctoral students receive financial support that includes a stipend, tuition remission and health insurance. Matriculating master's degree students on the thesis option may be eligible for financial support. Current faculty expertise is focused on cell and regenerative tissue engineering, biomaterials and spectroscopy. Future faculty hires will focus on related areas such as Imaging, Neuroengineering, Bioinformatics and Medical Device Technologies, with a strong emphasis on interdisciplinary collaborations and translational research, leveraging strategic initiatives and institutional strengths in Medicine, Pharmacy, and Oncology.

BOOTH # 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.

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- ◆ M.D./Ph.D.
- ◆ D.M.D./Ph.D.



A strong record of extramurally funded interdisciplinary research with emphasis in the areas of biomaterials, biomechanics, biomedical imaging, biomedical implants, cardiac electrophysiology, computational biology, tissue engineering and regenerative medicine. 13 Primary faculty and more than 40 faculty from Medicine, Dentistry, Engineering, Arts & Sciences and Optometry hold secondary appointments in BME and mentor our 40 graduate students.

www.eng.uab.edu/bme

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: uabmegrad@uab.eduWeb: 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.eduWeb: 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.eduWeb: www.bmeg.uark.edu

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

BOOTH # 311

University of California at Davis

BIOMEDICAL ENGINEERING

One Shields Avenue

Davis, CA 95616

Phone: 530-752-1033

Email: bme@ucdavis.eduWeb: www.bme.ucdavis.edu

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, CA 92697-2715

Phone: 949-824-9196

Email: nimondi@uci.eduWeb: 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.eduWeb: 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@enr.uconn.eduWeb: 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.eduWeb: 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.eduWeb: 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.eduWeb: www.bioengineering.illinois.edu

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

EXHIBITS

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

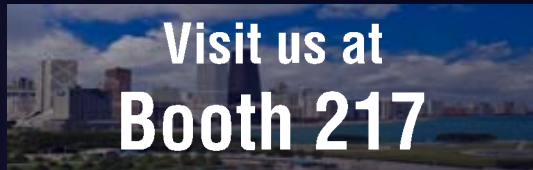
KU Bioengineering is an exciting and dynamic place. Our curriculum is broad and flexible, embracing the interdisciplinary nature of the field. With six tracks; Bioimaging, Bioinformatics, Biomolecular, Biomedical Product Design & Development, Biomechanics & Neural, and Biomaterials & Tissue; and a collaboration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

Choose Bioengineering at UIC

One of the first degree-granting and accredited bioengineering programs in the nation, since 1965 UIC Bioengineering offers BS, MS, PhD, and MD/PhD programs that emphasize translational research and training.

UIC Bioengineering is led by core faculty who collaborate with leading faculty in five major academic medical centers in Chicago - including UIC, home of the largest medical school in the country - and with innovative industry-linked education programs like IMPD - Interdisciplinary Medical Product Development.

All in a world-class city.



UIC Department of
UNIVERSITY OF ILLINOIS
AT CHICAGO Bioengineering
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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 musculoskeletal), 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.



BIOMEDICAL ENGINEERING
UNIVERSITY OF MICHIGAN
www.bme.umich.edu

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

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

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

MICHIGAN ENGINEERING
UNIVERSITY OF MICHIGAN

M
University of Michigan
Medical School

EXHIBITS

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.

Biomedical Engineering at University of Memphis & University of Tennessee Health Science Center



Degrees:

UM/UT Joint Graduate Program

M.S. & Ph.D.

University of Memphis

B.S.

Emphasis Areas:

- Biomechanics
- Biosensors & Electrophysiology
- Biomaterials & Regenerative Medicine

www.uthsc.edu/bme or www.memphis.edu/bme

BOOTH # 210

University of Rochester**DEPARTMENT OF BIOMEDICAL ENGINEERING**

Robert E. Georgen Hall

Rochester, NY 14627

Phone: 585-275-3891

Email: donna.porcelli@rochester.eduWeb: 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.eduWeb: <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.

PITT GRADUATE PROGRAM**IN BIOENGINEERING**

One of our distinctive strengths in interdisciplinary research is our relationship with Pitt's School of Medicine and Schools of the Health Sciences, as well as with the McGowan Institute for Regenerative Medicine. Bioengineering is also deeply embedded within clinical research at University of Pittsburgh Medical Center, one of the top ranked hospital networks in the country. Faculty have laboratories within clinical departments, which allow graduate students to apply engineering principles directly to patient care in bench-to-bedside settings.

Most importantly for our graduate students, Pitt is an urban campus in one of the most livable cities in the world. Its world-class research institutions, corporate headquarters, public amenities, healthcare, low cost of living and relative safety have earned Pittsburgh accolades from *Forbes*, *Kiplingers*, *National Geographic*, *The Economist*, and *US News & World Report*. Both the University and the City provide the perfect match for an outstanding graduate school environment.

UNIVERSITY OF PITTSBURGH

SWANSON school of

engineering

PLEASE VISIT

engineering.pitt.edu/bioengineering

for a full explanation of graduate program requirements and admissions information.

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.

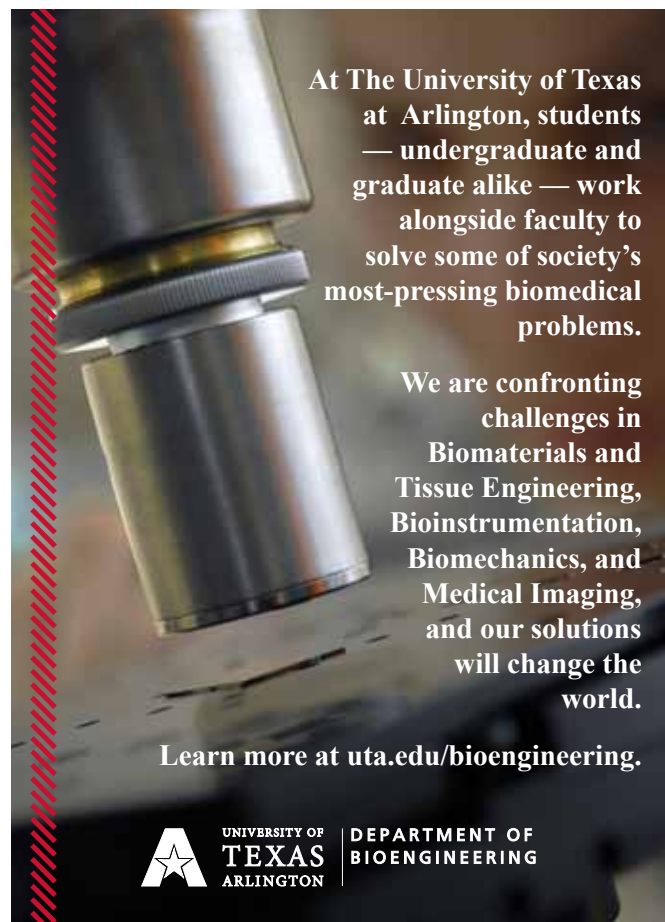
BOOTH # 525

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.



At The University of Texas at Arlington, students — undergraduate and graduate alike — work alongside faculty to solve some of society's most-pressing biomedical problems.

We are confronting challenges in Biomaterials and Tissue Engineering, Bioinstrumentation, Biomechanics, and Medical Imaging, and our solutions will change the world.

Learn more at uta.edu/bioengineering.

 UNIVERSITY OF TEXAS ARLINGTON | DEPARTMENT OF BIOENGINEERING

BOOTH # 409

University of Washington**DEPARTMENT OF BIOENGINEERING**

William H. Foegen, Bldg. N107

Box 355061

3720 15th Avenue NE

Seattle, WA 98195-5061

Phone: 206-685-3494

Email: bioeng@uw.edu<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.comWeb: 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.

**Virginia Tech****Wake Forest University***School of* **Biomedical Engineering and Sciences**

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Available!**

BOOTH # 214

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

5824 Stevenson Center

Nashville, TN 37235

Phone: 615-343-1099

Email: tina.shaw@vanderbilt.eduWeb: <http://engineering.vanderbilt.edu/BiomedicalEngineering.aspx>

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

BOOTHS # 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.eduWeb: www.sbes.vt.edu

The Virginia Tech – Wake Forest University, School for Biomedical Engineering and Sciences offers MS, PhD, MD/PhD, and DVM/PhD degrees. We have 76 biomedical engineering faculty with active research programs in tissue engineering, imaging, biomechanics, medical physics, nano-medicine, & 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.eduWeb: <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.eduWeb: www.bme.wayne.edu

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

BOOTH # 610

Whitaker International Program

809 United Nations Plaza

New York, NY 10017

Phone: 212-984-5442

Email: saltaf@iie.orgWeb: www.whitaker.org

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

BOOTH # 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.

DISCOVER. INNOVATE. ACHIEVE.

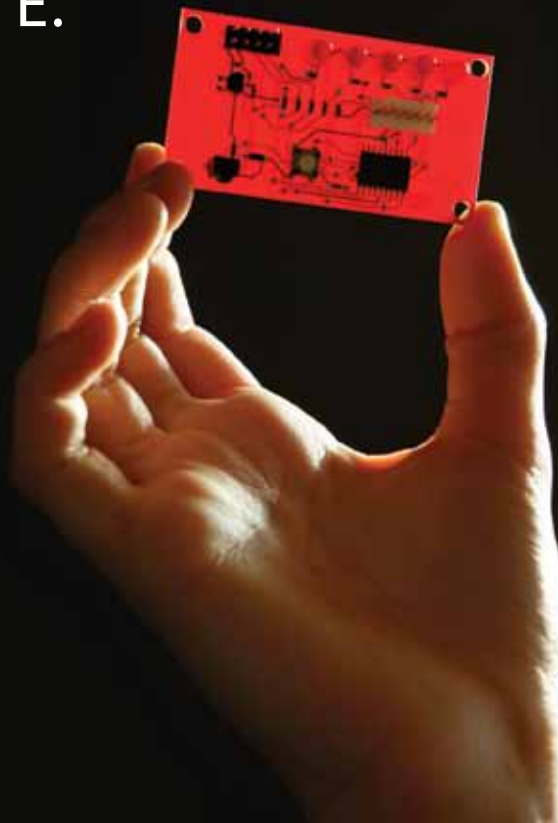
At Worcester Polytechnic Institute, graduate students work in teams with faculty who challenge them to conduct research that matters in the real world. We invite you to discover WPI—a premier university for graduate studies in science, engineering, and business.

Visit WPI's table at the graduate fair.

➔ grad.wpi.edu/+science



WPI



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



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



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 



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. Bassingthwaighe, 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. Bassingthwaighe. Dr. Bassingthwaighe 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. Bassingthwaighe 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 pharmaceutical 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 Wash-

ington 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.



The Department of Chemical and Petroleum Engineering

at the University of Kansas (KU) is seeking an outstanding candidate with expertise in regenerative medicine and tissue engineering at the Assistant Professor rank, although exceptional candidates at a higher rank will be considered. This faculty position is among those released as part of the School of Engineering Building on Excellence Initiative. Special consideration will be given to applicants committed to excellence who can contribute to the University's innovative, collaborative, and multidisciplinary initiatives to educate leaders, build healthy communities, and make discoveries that will change the world. See <http://www.provost.ku.edu/planning/>.

The outstanding environment at KU includes two nearby medical centers, two new engineering buildings, the Bioengineering Research Center, and the Institute for Advancing Medical Innovation. The Department of Chemical and Petroleum Engineering has a proud tradition of commitment to both education and research. The department has 19 faculty members, with over 500 undergraduate students and 50 graduate students.

The outstanding environment at KU includes two nearby medical centers, two new engineering buildings, the Bioengineering Research Center, and the Institute for Advancing Medical Innovation. The Department of Chemical and Petroleum Engineering has a proud tradition of commitment to both education and research. The department has 19 faculty members, with over 500 undergraduate students and 50 graduate students.

Applications must include a cover letter, CV, and names of at least three references. For additional information and submission of applications, visit <http://employment.ku.edu>: Select "Search Faculty Jobs" and search with keyword "regenerative". The position is available beginning August 18, 2014 (January 2014 start date is negotiable). Salary and benefits are competitive and commensurate with qualifications and experience. Questions should be sent to Professor Michael Detamore at detamore@ku.edu. Review of applications will begin on October 18, 2013 and will continue until selections are made. Equal Opportunity Employer M/F/D/V.

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 Polytechnique 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 facilities

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 (Foegen BioE Building and MoIES)
- 2) South Lake Union

Friday, Sept. 27

2:30-4:30 p.m.

Choose from these concurrent tours:

- 1) UW Campus (Foegen BioE Building and MoIES)
- 2) South Lake Union

About the Facilities

William H. Foegen 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 (MoIES): Opened in fall 2012, the state-of-the-art MoIES 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. Pritzker 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 Vaughn, 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 Kim¹, Do-Hyun Kang¹, Min Sung Kim¹, Alex Jiao², Deok-Ho Kim²
and Kahp-Yang Suh¹

(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. Rausch¹, Wolfgang Bothe², John-Peder Escobar Kvitting²,
Julia C. Swanson², D. Craig Miller² 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'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

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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)

Rensselaer 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

Citrus 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.

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University of Pennsylvania
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Columbia University

Biomechanics

Ed Guo
Columbia University
Robert Tranquillo
University of Minnesota

Biomedical Engineering Education

Angelique Louie
University of California, Davis
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Carnegie Mellon University

Biomedical Imaging and Optics

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Columbia University

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Cardiovascular Engineering

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Cellular and Molecular Bioengineering

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University of California San Francisco
David Schaffer
University of California Berkeley

Device Technologies and Biomedical Robotics

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Tufts University
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Drug Delivery

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City College of New York

Nano to Micro Technologies

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University of California Berkeley

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PROGRAM



THURSDAY, September 26

TODAY'S HIGHLIGHTS

PLATFORM SESSIONS Thurs-I 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 – I

Track: Tissue Engineering
OP - Thurs - I – I - 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. CHAIKOF¹

¹Harvard Medical School, Boston, MA

8:30AM

One-Year Follow-up of Host Remodeling of Rapidly Degradable Synthetic Arterial Grafts

R. A. ALLEN¹, W. WU^{1,2}, M. YAO¹, D. DUTTA^{1,3}, X. DUAN¹, T. N. BACHMAN¹, H. C. CHAMPION^{1,3}, D. B. STOLZ¹, A. M. ROBERTSON^{1,4}, K. KIM^{1,3}, J. S. ISENBERG¹, AND Y. WANG^{1,4}

¹University of Pittsburgh, Pittsburgh, PA, ²Yale University, New Haven, CT, ³UPMC, Pittsburgh, PA, ⁴McGowan Institute for Regenerative Medicine, Pittsburgh, PA

8:45AM

Engineered Heart Tissue Using Polyethylene Glycol Hydrogel

J.-L. RUAN¹, N. L. TULLOCH¹, S. BHANDARI¹, P. D. MARINER², K. S. ANSETH², AND C. E. MURRY¹

¹University of Washington, Seattle, WA, ²University of Colorado, Boulder, CO

9:00AM

Cell-Derived Protein Delivery: Paracrine Delivery of Molecular Signals in Dual-Cell 3D Protein Gels

J. W. ANDREJECSK¹, W. G. CHANG¹, J. S. POBER¹, AND W. M. SALTZMAN¹

¹Yale University, New Haven, CT

9:15AM

CXCR4-overexpressing ADSCs Enhanced Angiogenesis and Tissue Salvage in a Murine Model of Hindlimb Ischemia

L. DEVEZA¹, J. CHOI¹, J. LEE¹, N. HUANG¹, J. COOKE¹, AND F. YANG¹

¹Stanford University, Stanford, CA

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

Micro and Nanostructured Materials I

Chairs: Gary Bowlin, Helen Lu

8:00AM

Implantable and Degradable Optical and Electronic Medical Devices

D. KAPLAN¹

¹Tufts 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. SWAMI¹, A. PATEL², S. SANT², R. L. REIS³, A. MARQUES³, M. GOMES³, AND A. KHADEMHOSEINI^{1,2}

¹Massachusetts Institute of Technology, Cambridge, MA, ²Harvard University, Cambridge, MA, ³University of Minho, Guimarães, Portugal

8:45AM**Substrate Topography Shapes The Functional Neurons Obtained by Direct Reprogramming of Fibroblasts**K. KULANGARA¹, A. F. ADLER¹, H. WANG¹, M. CHELLAPPAN¹, E. HAMMETT¹, R. YASUDA^{1,2}, AND K. W. LEONG¹¹Duke University, Durham, NC, ²Max Planck Institute Florida, Jupiter, FL**9:00AM****Nanocomposite Gold-Silk Nanofibers**T. COHEN-KARNI^{1,2}, K. JEONG^{1,2}, G. REZNOR², M. MUSTATA³, M. WANUNU³, R. LANGER¹, AND D. S. KOHANE²¹MIT, Cambridge, MA, ²Boston Children's Hospital, Boston, MA, ³Northeastern University, Boston, MA**9:15AM****Direct Laser Writing of Three Dimensional Microscale Features in Silk Fibroin Hydrogels**M. APPLGATE¹, A. MITROPOULOS¹, B. MARELLI¹, AND F. OMENETTO¹¹Tufts University, Medford, MA**Track: Biomaterials****OP - Thurs - I - 3 - Room 606****Biomaterials for Immunoengineering I****Chairs:** Chris Jewell, Ben Keselowsky**8:00AM****Biomaterial-Based Immunoengineering (Invited)**J. BABENSEE¹¹Georgia Institute of Technology, Atlanta, GA**8:30AM****Gene-Releasing Scaffolds for Immunomodulation**R. M. GOWER¹, S. M. AZARIN¹, C. F. RICCI¹, X. ZHANG¹, AND L. D. SHEA¹¹Northwestern University, Chicago, IL**8:45AM****Amphiphile-Based Programming of Immunity by Molecular Self-Delivering Vaccines**H. LIU¹ AND D. IRVINE^{1,2}¹MIT, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD**9:00AM****Particulate Delivery of Small-Molecule Immunomodulators to Enhance a Liposomal HIV Epitope Vaccine**M. HANSON¹, W. ABRAHAM¹, AND D. J. IRVINE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD**9:15AM****A Microparticle-Based Vaccine for Prevention of Type I Diabetes**J. S. LEWIS¹, M. CARSTENS¹, N. DOLGOVA¹, C-Q. XIA¹, M. CLARE-SALZER¹, AND B. KESELOWSKY¹¹University of Florida, Gainesville, FL**Track: Biomechanics****OP - Thurs - I - 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. SONG¹, N. DAVIDOVICH¹, N. YEHA¹, G. G. LAWRENCE¹, AND S. S. MARGULIES¹¹University of Pennsylvania, Philadelphia, PA**8:15AM****Quantifying Structural and Functional Changes in Cardiac Cells in an *In Vitro* Model of Diabetic Cardiomyopathy**J. MICHAELSON¹ AND H. HUANG¹¹Columbia University, New York, NY**8:30AM*****In Vitro* Estimation of Compressive Damage Threshold of Muscle Cells for Deep Tissue Injuries**Y. YAO¹, S. WONG¹, L. BIAN¹, AND A. MAK¹¹The Chinese University of Hong Kong, Hong Kong, China, People's Republic of**8:45AM****Shaping the Vertebrate Eye: Mechanics of Optic Cup Formation**A. OLTEAN¹, D. C. BEEBE², AND L. A. TABER¹¹Washington University in St. Louis, St. Louis, MO, ²Washington University School of Medicine, St. Louis, MO**9:00AM****AKAPs Mediate Sickle Cell Disease Erythrocyte Adhesion via BCAM/Lu**J. L. MACIASZEK¹, B. ANDEMARIAM², AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT, ²University of Connecticut Health Center, Farmington, CT**9:15AM****Effect of Pseudopodial Extensions on Neutrophil Hydrodynamics and Adhesion Binding**A. ROCHELEAU¹, W. WANG¹, AND M. KING¹¹Cornell University, Ithaca, NY**Track: Biomechanics****OP - Thurs - I - 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. ATESHIAN¹¹Columbia University, New York, NY**8:30AM****Investigation of Trachea Cartilage Viscoelasticity**S. BIECHLER¹, B. KORNIS¹, J. LUSK¹, AND S. WILLIAMS¹¹Bose Corporation, Eden Prairie, MN**8:45AM****A Magnesium-Based Ring for Repair of an Injured Anterior Cruciate Ligament – *In Vitro* Cyclic Testing**H. EASON¹, K. FARRARO¹, N. SASAKI¹, AND S. WOO¹¹University of Pittsburgh, Pittsburgh, PA**9:00AM****Glennoid Loading and Stability of the Inlay versus Onlay Shoulder Implant Systems**B. T. PRZESTRZELSKI¹, N. NJINIBAM¹, R. HAWKINS², G. COLBATH², J. GAGLIANO², AND J. DESJARDINS¹¹Clemson University, Clemson, SC, ²Steadman Hawkins Clinic of the Carolinas, Greenville, SC**9:15AM****Effect of Intrafibrillar Mineralization on the Mechanical Behavior of Bone**J. SAMUEL¹, C. SHOME¹, AND X. WANG¹¹University of Texas at San Antonio, San Antonio, TX

Track: Cancer Technologies**OP - Thurs - I - 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. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA**8:30AM****Imbalanced Oncogenic Signaling Initiated by Structurally Distinct Mutants of EGFR in Lung and Brain Cancers**M. J. LAZZARA¹, C. FURCHT¹, J. BUONATO¹, AND A. WALSH¹¹University of Pennsylvania, Philadelphia, PA**8:45AM****Genetic Pathway Analysis for Mechanics-induced Colon Cancer Metastasis**X. TANG¹, T. KUHNLSCHMIDT¹, Q. LI¹, H. CHEN¹, M. KUHNLSCHMIDT¹, AND T. SAIF¹¹University 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. TCHAFI¹, M. J. REGINATO², AND A. C. SHIEH¹¹Drexel University, Philadelphia, PA, ²Drexel University College of Medicine, Philadelphia, PA**9:15AM****Loss of Lamin B2 Expression Enhances 3D Migration in HT180 Fibrosarcoma**U. S. JONNALAGADDA¹, C. M. DENIAS¹, M. KRAUSE², K. WOLF², AND J. LAMMERDING¹¹Cornell University, Ithaca, NY, ²Radboud University Nijmegen Medical Center, Nijmegen, Netherlands**Track: Cardiovascular Engineering****OP - Thurs - I - 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. BURSAC¹¹Duke University, Durham, NC**8:15AM****Elucidating the Mechanical Role of the Intercalated Disc in Age-Associated Heart Failure**G. KAUSHIK¹, A. SESSIONS¹, A. SPENLEHAUER², M. NISHIMURA³, K. OCORR³, R. BODMER³, A. CAMMARATO⁴, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²Imperial College London, London, United Kingdom, ³Sanford-Burnham Medical Research Institute, La Jolla, CA, ⁴Johns Hopkins University, Baltimore, MD**8:30AM****Right Ventricular Adaptation to Pulmonary Hypertension in a Rat Model**M. R. HILL¹, D. VALDEZ-JASSO², M. A. SIMON², H. C. CHAMPION², AND M. S. SACKS¹¹University of Texas, Austin, TX, ²University of Pittsburgh, Pittsburgh, PA**8:45AM****Can the Single-Beat Method be Used to Assess Right Ventricular Contractility in Different Species?**A. BELLOFIORE¹, F. OMID¹, D. SCHREIER¹, T. A. HACKER¹, G. SONG¹, M. L. BATES¹, H. B. KELLIHAN¹, D. W. CONSIGNY¹, C. J. FRANCOIS¹, AND N. C. CHESLER¹¹University of Wisconsin-Madison, Madison, WI**9:00AM****Optimizing Ultrasound Properties for Ultrasound Current Source Density Imaging of the Heart**Q. LI¹, Y. QIN¹, P. INGRAM¹, AND R. WITTE¹¹University 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. BATES¹, J. H. BATES², B. SUKI¹, AND P. S. SPECTOR²¹Boston University, Boston, MA, ²University of Vermont, Burlington, VTtrack sponsored by  Edwards**Track: Cellular and Molecular Bioengineering****OP - Thurs - I - 8 - Room 604****Mechanotransduction I****Chairs:** Sanjay Kumar, Cynthia Reinhart-King**8:00AM****OVERVIEW TALK - Cellular and Molecular Bioengineering**D. SCHAFFER¹, T. DESAI²¹University of California, Berkeley, CA, ²University of California, San Francisco, CA**8:15AM****Cytoskeletal Connectivity to the Nucleus Regulates MSC Nuclear Strain Transfer and Mechanotransduction**T. P. DRISCOLL¹, S. HEO¹, Z. E. SHURDEN¹, AND R. L. MAUCK¹¹University of Pennsylvania, Philadelphia, PA**8:30AM****Getting the (Mechanical) Message Across Cell-Cell Junctions**D. LECKBAND¹, I. MUHAMED¹, A. BARRY¹, J. WU¹, H. TABDILI¹, C. GOTTARDI², J. DEROOIJ³, AND N. WANG¹¹University of Illinois, Urbana, IL, ²Northwestern University College of Medicine, Chicago, IL, ³Hubrecht Institute, Utrecht, Netherlands**8:45AM****Glycocalyx Core Protein-Dependent Endothelial Mechanotransduction**E. E. EBONG^{1,2}, D. C. SPRAY¹, AND J. M. TARBELL²¹Albert Einstein College of Medicine, New York, NY, ²City College of New York, New York, NY**9:00AM****Vasculogenesis Dynamics and Integrity are Altered in Response to 3D Matrix Stiffening**B. N. MASON¹, J. HUYNH¹, L. J. BONASSAR¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**9:15AM****Migration-Dependent Regulation of Cellular Mechanical Output Through a FAK- and Phosphopaxillin-Dependent Mechanism**S. CHANG¹, A. RAPE¹, W-H. GUO¹, AND Y-L. WANG¹¹Carnegie Mellon University, Pittsburgh, PA

Track: Cellular and Molecular Bioengineering
OP - Thurs - I - 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. STROKA¹, H. JIANG¹, S. X. SUN¹, AND K. KONSTANTOPOULOS¹¹Johns Hopkins University, Baltimore, MD**8:15AM****3D Matrix Microstructure Directs Cell Migration and MTI-MMP Utility via Protrusion Dynamics**S. I. FRALEY¹, P-H. WU², L. HE², Y. FENG³, G. LONGMORE³, AND D. WIRTZ²¹The Johns Hopkins School of Medicine, Baltimore, MD, ²The Johns Hopkins University, Baltimore, MD, ³Washington University School of Medicine, St. Louis, MO**8:30AM****T Cells Sense Biophysical Cues Using Lamellipodia and Filopodia to Optimize Intraluminal Path Finding**K. SONG¹ AND J. DOH¹¹POSTECH, Pohang, Korea, Republic of**8:45AM****Fibronectin on PDMS Elicits a Well-Spread Morphology in Migrating hNeutrophils via β 2 Integrin**S. J. HENRY¹, J. C. CROCKER¹, AND D. A. HAMMER¹¹University of Pennsylvania, Philadelphia, PA**9:00AM****The Critical Role of EB1 and Dynein in Three-Dimensional Cell Migration**A. GIRI^{1,2}, H. JAYATILAKA¹, N. TRENTON¹, AND D. WIRTZ^{1,2}¹Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, ²Johns Hopkins Engineering in Oncology Center, Johns Hopkins University, Baltimore, MD**9:15AM****Characterization and Modeling Cancer Cell Motility in 2D and 3D**P-H. WU¹, A. GIRI¹, G. LANG², AND D. WIRTZ¹¹Johns Hopkins University, Baltimore, MD, ²The George Washington University, Washington, DC**Track: Device Technologies and Biomedical Robotics**
OP - Thurs - I - 10 - Room 602**Biosensors I****Chairs:** Alexander Revzin, John Frampton**8:00AM****Enrichment and Detection of Blood Biomarkers with Microdevices***(Invited)*S. ZHENG¹¹Pennsylvania State University, University Park, PA**8:30AM****Electroporation-Delivered Protein Biosensors for Study of Molecular Activity**C. SUN¹, Y. WANG², Y. WANG², AND C. LU¹¹Virginia Tech, Blacksburg, VA, ²University 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. WU¹, K-L. LEE², A. CHIOU¹, P-K. WEI², AND X. CHENG³¹Institute of Biophotonics, National Yang-Ming University, Taipei, Taiwan, ²Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan, ³Bioengineering Program, Lehigh University, Bethlehem, PA**9:00AM****Implantable Optical Continuous Lactate Sensor in Cyanide Poisoning Model**J. WEIDLING¹ AND E. BOTVINICK²¹University of California Irvine, Irvine, CA, ²University of California Irvine, Irvine, CA**9:15AM****A Low-Power CMOS pH Monitoring System**R. CROCE JR.¹, S. VADDIRAJU¹, A. LEGASSEY¹, F. PAPADIMITRAKOPOULOS², AND F. JAIN³¹Biorasis, Inc., Storrs, CT, ²The University of Connecticut, Storrs, CT, ³University of Connecticut, Storrs, CTtrack sponsored by  Medtronic**Track: Bioinformatics, Computational and Systems Biology OP - Thurs - I - 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. ALTER¹¹University of Utah, Salt Lake City, UT**8:30AM****How Much of the Human Genome is Functional? *(Invited)***P. GREEN¹¹University of Washington, Seattle, WA**9:00AM****Transgenerational Inheritance of DNA Methylation *(Invited)***M. PELLEGRINI¹¹University of California, Los Angeles, CA**Track: Orthopaedic and Rehabilitation Engineering**
OP - Thurs - I - 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}¹Tufts University, Medford, MA, ²Tufts University School of Medicine, Boston, MA**8:30AM****The Skeleton As A Complex System: Emergent Bone Loss Signatures Following Neuromuscular Injury In Zebrafish**P. HUBER¹, B. J. AUSK¹, E. M. GARDINER¹, S. D. BAIN¹, S. SRINIVASAN¹, T. S. GROSS¹, AND R. Y. KWON¹¹University 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. KRAS¹ AND B. A. WINKELSTEIN¹

¹University of Pennsylvania, Philadelphia, PA

9:00AM

Associating Gait Abnormalities to Histological Features of Joint Destruction in a Rat Model of Knee Osteoarthritis

H. KLOEFKORN¹, B. JACOBS¹, A. LOYE¹, AND K. ALLEN¹

¹University of Florida, Gainesville, FL

9:15AM

Bioactive Coatings to Improve Allograft Incorporation Evaluated in eGFP Chimeric Rats

A. DAS¹, Y. LIN¹, Q. CUI¹, AND E. BOTCHWEY²

¹UVA, Charlottesville, VA, ²Georgia Institute of Technology, Atlanta, GA

Track: Biomedical Imaging and Optics

OP - Thurs - I - 13 - Room 618

Fluorescence Imaging

Chairs: Yu Chen

8:00AM

Angled Fluorescence Laminar Optical Tomography for Imaging of Engineered Bone Constructs

C-W. CHEN¹, B-N. NGUYEN¹, J. P. FISHER¹, AND Y. CHEN¹

¹University of Maryland, College Park, MD

8:15AM

Optimization of Time Gate Selection for Bi-exponential Fluorescence Lifetime Imaging

T. OMER¹, N. SINSUEBPHON¹, L. ZHAO¹, X. INTES¹, AND J. HAHN¹

¹Rensselaer Polytechnic Institute, Troy, NY

8:30AM

Concurrent Wide-field Multi-Color Fluorescence Imaging Using a Scanning Fiber Endoscope

C. YANG¹, V. HOU¹, L. Y. NELSON¹, AND E. J. SEIBEL¹

¹University of Washington, Seattle, WA

8:45AM

Detecting Metabolic Changes Associated with Oncoprotein Expression Using Endogenous Fluorescence

J. XYLAS¹, K. P. QUINN¹, A. VARONE¹, M. E. MCLAUGHLIN-DRUBIN², G. V. SRIDHARAN¹, K. LEE¹, K. MÜNGER², AND I. GEORGAKOUDI¹

¹Tufts University, Medford, MA, ²Harvard Medical School, Boston, MA

9:00AM

A Compact Live Cell Imaging System with a Silo-Filter Fluorescence Image Sensor

S. LEE¹, X. OU¹, J. E. LEE², AND C. YANG¹

¹California Institute of Technology, Pasadena, CA, ²Korea Research Institute of Standards and Science, Daejeon, Korea, Republic of

9:15AM

Synthesis and Characterization of Photoswitchable Fluorophores for Super Resolution Microscopy

A. M. BITTEL¹, A. NICKERSON¹, L-J. LIN¹, X. NAN¹, AND S. L. GIBBS¹

¹Oregon Health and Science University, Portland, OR

Track: Nano to Micro Technologies

OP - Thurs - I - 14 - Room 619

BioMEMS I

Chairs: David Gracias, Elliot Hui

8:00AM

Using Microfabrication to Construct a "Body-on-a-Chip" (Invited)

M. SHULER¹

¹Cornell University, Ithaca, NY

8:30AM

Capturing and Manipulating Single Cells in 3D with Thermo-Responsive Microgrippers

K. E. MALACHOWSKI¹, M. JAMAL¹, AND D. GRACIAS¹

¹Johns Hopkins University, Baltimore, MD

8:45AM

Juxtacrine-Permeable Membranes for Separable Co-Culture

M. Y. KIM¹, D. J. LI¹, AND E. E. HUI¹

¹University of California, Irvine, Irvine, CA

9:00AM

Focal Microfluidic Delivery of Soluble Signals to the Basal Side of Micropatterned Cells

J. CHENG¹, C. G. SIP¹, P. R. LINDSTEDT¹, AND A. FOLCH¹

¹University of Washington, Seattle, WA

9:15AM

Polystyrene Microposts for the Study of Cellular Traction Forces

K. BIELAWSKI¹ AND N. SNIADOCKI¹

¹University of Washington, Seattle, WA

Track: Drug Delivery

OP - Thurs - I - 15 - Room 620

Novel Materials and Self Assembly

Chairs: Guillermo Ameer, Rebecca Carrier

8:00AM

Nanonets: A New Platform for Nano to Micro-scale Delivery of Therapeutics (Invited)

J. YANG¹, G. AMEER¹, AND R. VAN LITH¹

¹Northwestern University, Evanston, IL

8:30AM

Depots of Glucagon-Like Peptide-I Fused to a Thermosensitive Polypeptide Can Be Stabilized By Lowering the Transition Temperature

K. LUGINBUHL¹, X. LI¹, AND A. CHILKOTI¹

¹Duke University, Durham, NC

8:45AM

Enhanced Delivery of Chemotherapeutics Using Targeted Block Copolyptide Vesicles

K. M. MAYLE¹, U-J. CHOE¹, A. R. RODRIGUEZ¹, B. S. LEE¹, A. T. YIP¹, T. J. DEMING¹, AND D. T. KAMEI¹

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

9:00AM

Coacervate-based Co-delivery of VEGF and HGF Displays Synergistic Angiogenic Effects

H. AWADA¹, N. JOHNSON¹, AND Y. WANG^{1,2}

¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA

9:15AM**Inhibition of Pathogenic Angiogenesis Using a Hyaluronic Acid Based Multivalent VEGF Antagonist**E. ALTIOK¹, A. JHA¹, J. SANTIAGO¹, W. JACKSON¹, D. SCHAFFER¹, AND K. HEALY¹
¹University of California Berkeley, Berkeley, CA**Track: Neural Engineering****OP - Thurs - I - 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. SEIDLITS¹, D. MARGUL¹, R. BOEHLER¹, A. THOMAS¹, A. GOODMAN¹, T. HE¹, T. KUKUSHLIEV¹, H. TUINSTRAL¹, B. CUMMINGS², A. ANDERSON², AND L. SHEA¹
¹Northwestern University, Evanston, IL, ²University of California Irvine, Irvine, CA**8:15AM****Conductive Single Walled Carbon Nanotube-Composite Hydrogels For Neural Engineering Applications**A. KOPPEL¹, K. KEATING¹, A. MCGREGOR¹, R. KOPPEL¹, C. MCKAY¹, J. ZUIDEMA¹, C. RIVET¹, R. GILBERT¹, AND D. THOMPSON¹
¹Rensselaer Polytechnic Institute, Troy, NY**8:30AM****A Tube-formed *in vitro* Blood-Brain-Barrier Model in Planar Microfluidics**H. CHO¹, J. SEO¹, K. WONG¹, K. BONG¹, K. ARAI¹, E. H. LO¹, AND D. IRIMIA¹
¹Harvard Medical University/IMGH, Charlestown, MA**8:45AM****SDF-1 -ECM Crosstalk and its Effect on Neural Stem Cell Fate**C. P. ADDINGTON¹, C. PAUKEN¹, M. CAPLAN¹, AND S. STABENFELDT¹
¹Arizona 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. CARLSON¹, N. K. BENNETT¹, J. C. MOORE¹, R. P. HART¹, AND P. V. MOGHE¹
¹Rutgers, The State University of New Jersey, Piscataway, NJ**9:15AM****Molecular Mediators of Neurodegeneration at the Cortical-Tissue Device Interface**M. RAVIKUMAR¹, S. SUNIL¹, D. HAGEMAN¹, W. TOMASZEWSKI¹, AND J. CAPADONA¹
¹Case Western Reserve University, Cleveland, OH**Track: New Frontiers and Special Topics****OP - Thurs - I - 17 - Room 614****Global Health****Chairs:** David Putnam**8:00AM****Mobile Device for Disease Diagnosis and Data Tracking in Resource-Limited Settings**T. LAKSANASOPIN¹, C. D. CHIN¹, Y. CHEUNG¹, D. STEINMILLER², V. LINDER², E. KARITA³, J. VAN DE WIJGERT⁴, R. SAHABO⁵, J. E. JUSTMAN⁵, W. EL-SADR⁵, AND S. K. SIA¹
¹Columbia University, New York, NY, ²OPKO Diagnostics, Boston, MA, ³Rwanda Zambia HIV Research Group, Project San Francisco, Kigali, Rwanda, ⁴Project Ubuzima, Kigali, Rwanda, ⁵Mailman 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. SWITZ¹, C. D. REBER¹, A. TAPLEY^{1,2}, M. V. D'AMBROSIO¹, J. L. DAVIS², A. CATTAMACHI², AND D. A. FLETCHER¹¹University of California Berkeley, Berkeley, CA, ²University of California San Francisco, San Francisco, CA**8:30AM****Neonatal Resuscitation in the Developing World**M. K. HEMANI¹, A. PIGULA¹, M. LAMBERTI¹, H. JANG¹, Y. KIM¹, A. HERRERA¹, B. GU¹, AND B. KIM¹¹Johns Hopkins University, Baltimore, MD**8:45AM****Paper-Based Detection of Synthetic Urinary Biomarkers for Low-Cost, Point-of-Care Diagnostics**G. A. KWONG¹, A. D. WARREN¹, D. K. WOOD^{1,2}, AND S. N. BHATIA^{1,3}¹MIT, Cambridge, MA, ²University of Minnesota, Minneapolis, MN, ³Howard 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. CHIU¹, E. JUE¹, C. D. YAMANISHI¹, B. M. WU¹, AND D. T. KAMEI¹¹University of California, Los Angeles, Los Angeles, CA**9:15AM****Microfluidic Mechanical Separation of Red Blood Cells for Early Malaria Diagnosis**R. BYLER¹, G. WANG¹, A. ALEXEEV¹, J. BARNWELL², AND T. SULCHEK¹¹Georgia Institute of Technology, Atlanta, GA, ²Centers for Disease Control and Prevention, Atlanta, GA**Track: Biomedical Engineering Education****OP - Thurs - I - 18 - Room 603****New Approaches to BME Education****Chairs:** Angeliqe Louie, Conrad Zapanta**8:00AM****1st International Biomedical Engineering – Innovation, Design & Entrepreneurship Alliance Workshop**J. H. LINEHAN^{1,2}, M. BRUZZI³, J. B. PIETZSCH⁴, AND P. G. YOCK²¹Northwestern University, Evanston, IL, ²Stanford University, Palo Alto, CA, ³National University of Ireland Galway, Galway, Ireland, ⁴Wing Tech, Inc., Fremont, CA**8:15AM****A Unique Dual Major Approach for Undergraduate Biomedical Engineering Education at Carnegie Mellon University**T. M. PRZYBYCIEN¹, R. D. TILTON¹, Y-L. WANG¹, AND C. M. ZAPANTA¹¹Carnegie Mellon University, Pittsburgh, PA**8:30AM****Biodesign for First Year Students**P. CRAGO¹ AND C. K. DRUMMOND²¹Case Western Reserve Engineering, Cleveland, OH, ²Case Western Reserve University, Cleveland, OH**8:45AM****Achievement Motivation Differences Between Bioengineering and Mechanical Engineering Students**A. N. KIRN¹ AND L. C. BENSON¹¹Clemson University, Clemson, SC**9:00AM****The T-Shaped Biomedical Engineer: Connecting the TOP to the STEM**J. TRANQUILLO¹¹Bucknell University, Lewisburg, PA

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. JEON¹, P. N. DANG¹, AND E. ALSBERG¹¹Case 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. MCGOWAN¹ AND J. NAGATOMI¹¹Clemson University, Clemson, SC

P-Th-A-3

The Manipulation of Hydrogel Lumen Architecture for Potential Biomedical Applications

R. C. THOMAS¹, P. CHUNG¹, AND C. E. SCHMIDT²¹University of Texas at Austin, Austin, TX, ²University of Florida, Gainesville, FL

P-Th-A-4

Scaffold Stiffening and Vascular Stability

K. L. CHAN¹, A. H. KHANKHEL¹, R. L. THOMPSON¹, K. H. WONG¹, J. G. TRUSLOW¹, B. J. COISMAN¹, AND J. TIEN¹¹Boston University, Boston, MA

P-Th-A-5

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

W. WANG¹, S. JIN¹, AND K. YE¹¹University 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}¹Boston University, Boston, MA, ²Schepens Eye Research Institute, Boston, MA, ³Charles Stark Draper Laboratory, Inc., Cambridge, MA, ⁴Current Affiliation: CooperVision, Inc., Pleasanton, CA, ⁵Harvard Medical School, Boston, MA

P-Th-A-7

Porous Poly (lactic-co-glycolic acid) Microspheres For *In Vitro* Drug Screening and Tissue Engineering ApplicationsJ. U. MENON^{1,2}, A. E. KURIAKOSE^{1,2}, V. SUNDARESAN^{1,2}, AND K. T. NGUYEN^{1,2}¹University of Texas at Arlington, Arlington, TX, ²UT Southwestern Medical Center, Dallas, TX

P-Th-A-8

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

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P-Th-A-9

Response of Chitosan/PCL Nanofibers with Airway Epithelial Cells

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P-Th-A-10

Cellular Response of Chitosan Based Scaffolds with Mesangial Cells

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P-Th-A-11

Dendritic Cells Response to Biomaterial Porous Scaffold

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P-Th-A-12

Electrospinning Extracellular Matrix Proteins

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P-Th-A-13

Novel Decellularized Cartilage Nanocomposite Hydrogel for Injectable Tissue Engineering Scaffolds

E. BECK¹ AND M. DETAMORE¹¹University of Kansas, Lawrence, KS

P-Th-A-14

An *In Vitro* Model for High-throughput Screening of Antifungals Against Invasive *Candida albicans* BiofilmsA. SRINIVASAN¹, C. M. GUPTA¹, M. AGRAWAL¹, J. L. LOPEZ-RIBOT¹, AND A. K. RAMASUBRAMANIAN¹¹The University of Texas at San Antonio, San Antonio, TX

P-Th-A-15

Inkjet Bioprinting of Solid Peroxide for Oxygen Releasing Scaffolds Construction

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P-Th-A-16

Insertion of PLA Film on Scaffold HA/TCP: *In Vitro* TestL. R. RODRIGUES^{1,2}, C. A. ZAVAGLIA^{2,3}, AND C. B. LOMBELLO¹¹UFABC, Santo André, Brazil, ²INCT-BIOFABRIS, Campinas, Brazil, ³FEM-UNICAMP, Campinas, Brazil

P-Th-A-17

Biofabrication of 3D Collagen Scaffold Mimicking the *In Vivo* Tissue ArchitectureV. RODRIGUEZ-RIVERA¹, R. GOODWIN², J. W. WEIDNER¹, AND M. J. YOST³¹University of South Carolina, Columbia, SC, ²University of South Carolina-School of Medicine, Columbia, SC, ³Medical University of South Carolina, Charleston, SC

P-Th-A-18

An *In Vitro* and *In Vivo* Study of AuNP-Collagen ScaffoldsS. GRANT¹, J. ZHU¹, R. RONE¹, L. JIMENEZ¹, AND D. GRANT¹¹University of Missouri, Columbia, MO

P-Th-A-19

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

P. A. MOUNTFORD¹, S. R. SIRSI¹, I. M. BAUS¹, E. J. KINZIE¹, S. A. ETEZAZIAN¹, E. G. LIMA², C. T. HUNG², AND M. A. BORDEN¹¹University of Colorado Boulder, Boulder, CO, ²Columbia 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 InvasionJ. M. HEFFERNAN^{1,2}, D. J. OVERSTREET¹, B. L. VERNON^{1,2}, AND R. W. SIRIANNI^{1,2}¹Barrow Neurological Institute, Phoenix, AZ, ²Arizona State University, Tempe, AZ

P-Th-A-21

Evaluating 3D Porous Geopolymers As Cancellous Bone Filling Biomaterials

P. M. MEHL¹, W. GONG¹, AND I. L. PEGG¹¹Catholic University of America, Washington, DC

P-Th-A-22**Nanopatterning Wrinkles into Biodegradable Materials for Aligning Heart Cells**S. VAN¹, W. TURNER², AND K. MCCLOSKEY²¹School of Natural Sciences, University of California, Merced, Merced, CA,²School 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}¹Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC,²Wake 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. LIN¹, L. WU¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**P-Th-A-26****Scaffold Permeability Estimated Using Average Pore Characteristics is Useful in Pressure drop Predictions**J. T. PODICHETTY¹, A. KHALF¹, AND S. V. MADHALLY¹¹Oklahoma 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}¹Geriatrics Research, Education, and Clinical Center, Veterans Affairs, Ann Arbor, MI,²Department of Neurology, Ann Arbor, MI, ³Department of Biomedical Engineering, Ann Arbor, MI**P-Th-A-28****Development of a Novel Device for the Perfusion Driven Decellularization of Skeletal Muscle**B. KASUKONIS¹ AND J. WOLCHOK¹¹University of Arkansas, Fayetteville, AR**P-Th-A-29****Shear-Induced Prevention of Shunt Occlusion in a 3D Astrocyte Culture Model**C. HARRIS¹, K. PEARSON¹, W. SHAIN^{1,2}, K. TRETT¹, S. BROWD^{3,4}, T. CLEMENT⁴, B. LUTZ^{2,4}, AND J. RELETHFORD⁴¹Seattle Children's Research Institute, Seattle, WA, ²University of Washington, Seattle, WA,³Seattle Children's Hospital, Seattle, WA, ⁴Aqueduct Neurosciences, Seattle, WA**P-Th-A-30****Development and Implementation of Artificial Ovary Using Multi-arm Poly-(ethylene glycol) Hydrogels**J. KIM¹ AND A. SHIKANOV¹¹University 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. PHOLPABU¹, P. CAMPBELL¹, AND C. J. BETTINGER¹¹Carnegie Mellon University, Pittsburgh, PA**P-Th-A-32****Multiscale Composite Alginate Hydrogels: A Platform Technology for Multifunctional Injectable Biomaterials**J. R. ROBERTS¹, D. RITTER¹, AND M. MCSHANE¹¹Texas A&M University, College Station, TX**P-Th-A-33****Endothelial Signaling on Micro- & Nano-Patterned Titanium**P. VANDRANGI¹, R. KOZAKA¹, S. GOTT¹, M. P. RAO¹, AND V. G. RODGERS¹¹University of California Riverside, Riverside, CA**P-Th-A-34****Molecular Level Control of Microengineered Matrices for Studying and Directing Cell Fate**K. A. KILIAN¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Th-A-35****Cytocompatibility of Three-Dimensional Macroporous Multiwalled Carbon Nanotube Scaffolds**G. LALWANI¹, Y. TALUKDAR¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Th-A-36****In Vitro Cytotoxicity of Molybdenum Disulfide Nanoplatelets or Tungsten Disulfide Nanotubes**J. T. RASHKOW¹, Y. TALUKDAR¹, G. LALWANI¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Th-A-37****In situ Blow Spun PLGA Nanofibers as a Surgical Hemostatic**A. M. BEHRENS¹, M. J. SIKORSKI¹, W. TUTAK², AND P. KOFINAS¹¹University of Maryland, College Park, MD, ²American Dental Association Foundation, Gaithersburg, MD**P-Th-A-38****Blood Compatibility Study of Dysprosium Aerogels**D. KOLASINAC¹, D. A. RUBENSTEIN¹, AND W. YIN¹¹Oklahoma 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. GEILICH¹ AND T. WEBSTER¹¹Northeastern University, Boston, MA**P-Th-A-40****Micropatterned Sensing Hydrogels for Detecting Protease Release from Cells**K. SON¹, D-S. SHIN¹, T. KWA¹, AND A. REVZIN¹¹UC Davis, Davis, CA**P-Th-A-41****Surface-Engineered Microfluidic Substrates for Screening of Exopolysaccharide Production and Composition in Microbial Systems**R. R. HANSEN¹, J. P. HINESTROSA¹, J. L. MORRELL-FALVEY², B. S. LOKITZ¹, J. M. MESSMAN¹, AND S. T. RETTERER^{1,2}¹Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN,²Biosciences Division, Oak Ridge National Laboratory, Oak Ridge, TN

P-Th-A-42**Transfer of Loads between Mineral and Fiber Phases in Bone**M. GHALI¹, D. WOODARD², AND K. MITRA¹¹Florida Institute of Technology, Melbourne, FL, ²Kennedy Space Center, Melbourne, FL**P-Th-A-43****Implant Surface Modification with Titania Nanotubes for Enhanced Cell-Substrate Interlock**T. SHOKUH FAR¹¹Michigan Technological University/ University of Illinois at Chicago, Houghton, MI**P-Th-A-44****Preparation of a Nanotubular Polymer Replica for Reduced Catheter Infection**L. LIU¹, T. J. WEBSTER¹, AND B. ERCAN¹¹Northeastern 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. BHARDWAJ¹, D. MATHEW¹, L. SUN², T. J. WEBSTER², AND G. MANIVASAGAM¹¹VIT University, Vellore, India, ²Northeastern University, Boston, MA**P-Th-A-46****Micro patterning of Polyvinyl Alcohol to Enhance Adhesion of Vascular Endothelial Cells**S. GOH^{1,2}, G. POHAN², M. F. CUTIONGCO², C. LE VISAGE³, H. LOW^{1,4}, AND E. K. YIM^{2,5}¹Institute of Materials Research and Engineering, Singapore, Singapore, ²National University of Singapore, Singapore, Singapore, ³INSERM U698, Paris, France, ⁴Singapore University of Technology and Design, Singapore, Singapore, ⁵Mechanobiology Institute Singapore, Singapore, Singapore**P-Th-A-47****Living Vaccine Factories: Alginate Microcapsules for a Cell-Based HIV-1 Vaccine**H. R. BENNETT¹, J. PHAN¹, AND K. A. WOODROW¹¹University of Washington, Seattle, WA**P-Th-A-48****Controllable Pore Growth in Degradable Orthopedic Fixation Device mMaterial**S. M. DEVLIN¹ AND P. I. LELKES¹¹Temple University, Philadelphia, PA**P-Th-A-49****Effective Myogenic Commitment of Stem Cells on Graphene Oxide Immobilized Micro-Patterned Substrates**A. LEE¹, S-Y. KWAK¹, Y-S. LEE¹, J-H. KIM², AND N. HWANG¹¹Seoul National University, Seoul, Korea, Republic of, ²Hanyang 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. GRIGOLA¹ AND J. HSIA²¹University of Illinois, Urbana, ²University 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. ZIELINSKI¹, V. SHUKLA¹, AND S. N. GHADIALI¹¹The Ohio State University, Columbus, OH**P-Th-A-52****SynVivo-Tumor: Microfluidic Assay For Screening Drug Delivery Systems**A. SMITH¹, C. GARSON¹, I. MILLS¹, J. FEWELL², M. MATAR², B. PRABHAKARPANDIAN¹, AND K. PANT¹¹CFD Research Corporation, Huntsville, AL, ²EGEN Inc., Huntsville, AL**P-Th-A-53****Engineered In Vitro Microtumors of Controlled Sizes as Models for Breast Cancer**S. MUKUNDAN¹, V. SANT¹, AND S. SANT^{2,3}¹University of Pittsburgh, Department of Pharmaceutical Sciences, Pittsburgh, PA, ²University of Pittsburgh, Department of Pharmaceutical Sciences/ Bioengineering, Pittsburgh, PA, ³McGowan Institute for Regenerative Medicine, Pittsburgh, PA**P-Th-A-54****Bioengineered Microenvironments for the Study of Human Tumor Metastasis**J. LEE^{1,2}, F. BERSANI³, M. YU³, D. HABER³, AND B. PAREKKADAN^{1,2}¹Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Shriners Hospital for Children, Boston, MA, ³Massachusetts 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. POTTA¹, T. S. GRANDHI¹, J. RAMOS¹, AND K. REGE¹¹Arizona State University, Tempe, AZ**P-Th-A-56****Matrix Remodeling by Breast Cancer Adipose Stromal Cells Modulates Tumor Vascularization**Y. SONG¹, S. SHON¹, B. SEO¹, A. D. STROOCK¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**P-Th-A-57****Migration of Metastatic Triple Negative Breast Cancer Cells is Strongly Inhibited by Novel Natural Compounds**S. NASROLAHI¹ AND H. TAVANA¹¹University of Akron, Akron, OH**P-Th-A-58****Three Dimensional Model of the Ovarian Cancer Microenvironment**G. V. ORSINGER¹, J. D. WILLIAMS¹, AND M. ROMANOWSKI¹¹University of Arizona, Tucson, AZ**P-Th-A-59****Biomaterials-Based Prostate Cancer Xenografts to Study Tumorigenesis and Dormancy Escape**T. J. LONG¹, C. C. SPRENGER¹, S. R. PLYMATE^{1,2}, AND B. D. RATNER¹¹University of Washington, Seattle, WA, ²Veterans 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. ANDERSON¹, A. DE GUILLEBON¹, Y. GENG¹, A. D. HUGHES¹, W. WANG¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**P-Th-A-61****Study of Angiogenic Sprouting in a Multicellular 3D Tumor Model**M. GADDE¹, C. S. SZOT¹, AND M. N. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Th-A-62****A Novel Engineered Platform to Evaluate Cancer Metastasis**C. ZHANG¹, E. SHENK¹, L. BLAHA¹, B. RYU², R. ALANI², M. CABODI¹, AND J. WONG¹¹Boston University College of Engineering, Boston, MA, ²Boston University School of Medicine, Boston, MA

P-Th-A-63**Quantitative Analysis of Contact Inhibition of Locomotion During Fibrillar-like Migration**A. R. ASTHAGIRI¹ AND D. F. MILANO¹¹Northeastern University, Boston, MA**P-Th-A-64****Interstitial Fluid Pressure Modulates Gene Expression in Engineered Breast Tumors**A. S. PIOTROWSKI¹, J. TIEN², AND C. M. NELSON^{1,3}¹Chemical and Biological Engineering, Princeton University, Princeton, NJ, ²Biomedical Engineering, Boston University, Boston, MA, ³Molecular Biology, Princeton University, Princeton, NJ**P-Th-A-65****Microfluidic Devices for Studying Intermittent Hypoxia Response in Cancer**M. ACOSTA¹, X. JIANG¹, P-K. HUANG², C. GRANT¹, G. WALKER¹, AND M. GAMCSIK³¹North Carolina State University, Raleigh, NC, ²National Taiwan University of Science & Technology, Taipei City, Taiwan, ³North Carolina State University, Raleigh, NC**P-Th-A-66****Tissue Macrophages Enhance Vessel Network Formation in 3D Collagen Scaffold**M. COX¹ AND S. VERBRIDGE¹¹Virginia Tech, Blacksburg, VA**P-Th-A-67****A Microfluidic Approach to Breast Cancer Metastasis under Variable pO₂ Levels**X. JIANG¹, M. ACOSTA¹, P-K. HUANG², C. GRANT¹, G. WALKER¹, AND M. GAMCSIK³¹North Carolina State University, RALEIGH, NC, ²National Taiwan University of Science and Technology, Taipei, Taiwan**P-Th-A-68****Glioma Metabolic Evolution In An Engineered Physiological Model**J. IVEY¹, C. FISCHBACH², AND S. VERBRIDGE¹¹Virginia Tech, Blacksburg, VA, ²Cornell University, Ithaca, NY**P-Th-A-69****The Interaction of Breast Cancer and Dendritic Cells on the Lymphatic Endothelium**G. CALDERON¹ AND D. KHISMATULLIN¹¹Tulane University, New Orleans, LA**P-Th-A-70****Drug Response of Cancer Cell Spheroids in 3D Collagen Gels**B. FALLICA¹, J. MAFFEI¹, AND M. ZAMAN¹¹Boston University, Boston, MA**P-Th-A-71****Engineering a Three-dimensional Microfluidic Cell Culture Platform for Cancer Research**A. BRUCE¹, B. HINDMAN¹, R. WYSOLMERSKI¹, AND Y. YANG¹¹West Virginia University, Morgantown, WV**P-Th-A-72****Nanoparticle Transport and Tumor Cell Migration Simulation using a Multi-Scale Approach**S. J. BOUKHRIS¹, R. A. VALENCIA¹, AND Y. FENG¹¹The 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. HUANG¹ AND P. SEARSON¹¹Johns Hopkins University, Baltimore, MD**P-Th-A-74****Polymeric Aqueous Biphasic Engineering of High Throughput Cancer Cell Spheroid Microtechnology for Drug Screening**E. ATEFI¹ AND H. TAVANA¹¹University 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. ZIELINSKI¹ AND S. GHADIALI¹¹The Ohio State University, Columbus, OH**P-Th-A-76****Elevated Endothelial Nitric Oxide Production Correlates with the Tumor Cell Adhesion in the Microvessel**L. ZHANG¹, J. YANG¹, M. ZENG¹, AND B. M. FU¹¹The 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. SHAH¹ AND A. SHIEH¹¹Drexel University, Philadelphia, PA**P-Th-A-78****Impact of Lung Biomechanics on Tumor Metastasis**V. C. SHUKLA¹, N. HIGUITA-CASTRO¹, P. NANA-SINKAM², AND S. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²Wexner 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. KRAIS¹ AND R. HARRISON¹¹University of Oklahoma, Norman, OK**P-Th-A-80****Microfluidic Inserts to Study Cancer Growth and Division Under Confinement**H. M. KITTUR¹, W. M. WEAVER¹, AND D. DI CARLO¹¹UCLA, 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. CHIVUKULA¹, J. T. NAUSEEF¹, M. HENRY¹, K. B. CHANDRAN¹, AND S. C. VIGMOSTAD¹¹The University of Iowa, Iowa City, IA**P-Th-A-82****High-Affinity Multiepitopic Antibodies Block Tumor Growth by Inhibiting EGFR-Dependent Signaling**M. S. SANTOS¹ AND K. D. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Th-A-83****Cold Non-thermal Atomspheric Plasma: A Novel Metastatic Breast Cancer Therapy**M. WANG¹, B. HOLMES¹, X. CHENG¹, M. KEIDAR¹, AND L. G. ZHANG¹¹The George Washington University, Washington, DC**P-Th-A-84****Ablation of Aggressive Thyroid Cancer Cells with HIFU and Ethanol**S. RATNAYAKA¹, N. HOANG¹, K. TSUMAGARI², E. KANDIL², AND D. KHISMATULLIN¹¹Tulane University, New Orleans, LA, ²Tulane 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. LYON¹, A. VAKHARIA¹, AND R. V. BELLAMKONDA¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-A-86****Imaged-Based Analyses Identify Angiogenic Cell Phenotypes**D. T. RYAN¹, B. L. LONG¹, R. J. ZAUNBRECHER¹, AND A. A. QUTUB¹¹Rice University, Houston, TX**P-Th-A-87****The Interplay of Growth and Migration of Cancer Cells in Tumor Growth Dynamics and Invasion**A. M. JIMENEZ¹, O. M. YOGURTCU¹, M-H. LEE¹, P-H. WU¹, S. X. SUN¹, AND D. WIRTZ¹¹Johns 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. PALMER¹, N. C. THOMPSON¹, P. S. SPECTOR¹, AND J. H. BATES¹¹University of Vermont, Burlington, VT**P-Th-A-89****Reduced-Order Finite Element Bidomain Modeling of Cardiac Propagation**D. H. VU¹ AND K. T. NG¹¹New Mexico State University, Las Cruces, NM**P-Th-A-90****Semi-implicit Adaptive Mesh Refinement for Realistic Bidomain Modeling of Cardiac Propagation**M. A. FUNK¹ AND K. T. NG¹¹New Mexico State University, Las Cruces, NM**P-Th-A-91****Preconditioning and Ionic Current Modeling for Element Free Simulation of Cardiac Propagation**I. STURDEVANT¹ AND K. T. NG¹¹New Mexico State University, Las Cruces, NM**P-Th-A-92****Abrupt Expansion Induced Reentry Observed with Multielectrode Arrays**Z. WANG¹, H. YANG¹, N. ERDMAN¹, T. K. BORG², AND B. Z. GAO¹¹Clemson university, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**P-Th-A-93****Memory in Restitution of Action Potential Duration in Mouse Ventricles**Y. ZHAO¹, K. BROWNSON¹, AND A. PATWARDHAN¹¹University of Kentucky, Lexington, KY**P-Th-A-94****The Latency-Spontaneous Beat Relationship: Two mechanisms at Play?**A. GREER-SHORT¹, M. HEIDINGER², AND S. POELZING¹¹Virginia Tech Carilion Research Institute, Roanoke, VA, ²University of Utah, Salt Lake City, UT**P-Th-A-95****Improving Shock Delivery in Cardioversion and Defibrillation**P. PODDAR¹, M. CHEN¹, A. CHANG¹, S. SUBRAMANIAN¹, P. MALAMAS¹, J. EOH¹, K. GEORGE¹, AND R. MALPANI¹¹Johns Hopkins University, Baltimore, MD**Track: Cardiovascular Engineering****Cardiac Regeneration****P-Th-A-96****An Implantable Mea to Elucidate Heart Regeneration in Zebrafish**H. CAO¹, F. YU¹, Y. ZHAO², Y-C. TAI², AND T. HSIAI¹¹USC, Los Angeles, CA, ²Caltech, Pasadena, CA**P-Th-A-97****Fetal Cardiac Extracellular Matrix Promotes Adhesion and Expansion of Neonatal Cardiomyocytes**C. WILLIAMS¹ AND L. D. BLACK¹¹Tufts University, Medford, MA**P-Th-A-98****A Cardiac Patch for Delivering Therapeutic Stem Cells to the Heart Following Myocardial Infarction**M. Melhem¹, T. Jensen¹, J. Jeong¹, V. Chan¹, L. Knapp¹, R. Bashir¹, H. Kong¹, and L. Schoolk¹¹University 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. LEE¹, J. R. MACADANGDANG¹, L. M. PABON¹, J. A. FUGATE¹, C. E. MURRY¹, AND D-H. KIM¹¹University of Washington, Seattle, WA**P-Th-A-100****A Perivascular Stem Cell Network Within Human Adult Thoracic Aorta**B. R. GREEN¹, V. S. DONNENBERG², M. A. ESKAY², A. D. DONNENBERG², M. E. PFEIFER², T. G. GLEASON², AND J. A. PHILLIPPI²¹University of Pittsburgh Medical Center, Pittsburgh, PA, ²University 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. LING¹, Z. MOYEDI¹, Y. K. WONG¹, W. DEMBITSKY², R. ADAMSON², AND K. MAY-NEWMAN¹¹San Diego State University, San Diego, CA, ²Sharp Memorial Hospital, San Diego, CA**P-Th-A-102****Degree of Radial Expansion Dictates Resorbable Vascular Scaffold Performance**J. FERDOUS¹, N. FATEMATUZZAHAN¹, AND T. SHAZLY¹¹University 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. GRUNENWALD¹, J. TAYLOR¹, M. SLATTERY¹, S. DEUTSCH¹, C. A. SIEDLECKI^{1,2}, AND K. B. MANNING^{1,2}¹The Pennsylvania State University, University Park, PA, ²Penn State Hershey Medical Center, Hershey, PA

P-Th-A-104**LVAD-Integrated Ex Vivo Arterial Perfusion System**M. J. BULLER¹, G. A. GIRIDHARAN¹, M. A. SOBIESKI¹, M. S. SLAUGHTER¹, S. C. KOENIG¹, AND K. G. SOUCY¹¹University of Louisville, Louisville, KY**P-Th-A-105****Cardiac Pacing Using Low Intensity Focused Pulsed Ultrasound: Preliminary Findings**G. SAAVEDRA¹, L. RODRIGUEZ¹, AND E. JUAN¹¹University 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. GRUIONU¹, L. GRUIONU², D. BAZOU³, AND L. MUNN³¹Massachusetts General Hospital and Harvard Medical School, Charlestown, MA,²University of Craiova, Craiova, Romania, ³Massachusetts 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. YEN¹, J. YANG¹, M. ZENG¹, J. M. TARBELL¹, AND B. M. FU¹¹Department 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. LAURIDSEN¹, B. J. WALKER¹, S. P. GALARZA¹, AND A. L. GONZALEZ¹¹Yale 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-SUKI¹, J. IMSIROVIC¹, AND B. SUKI¹¹Boston University, Boston, MA**P-Th-A-110****Syndecan-1 Regulates Mechanotransduction Pathways in Endothelial Cells in Response to Shear Stress**P. L. VOYVODIC¹, D. MIN¹, R. LIU¹, E. WILLIAMS¹, AND A. B. BAKER¹¹The 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. LIU¹, J. ZHANG^{1,2}, AND H-C. HAN¹¹University of Texas, San Antonio, TX, ²Xijing 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. SEDA¹, J. B. FOWLKES¹, AND J. L. BULL¹¹University of Michigan, Ann Arbor, MI**P-Th-A-113****Smooth Muscle Cell Biomechanics and Matrix Remodeling in Bicuspid Aortic Valve-Associated Aortopathy**J. A. PHILLIPPI¹, B. R. GREEN², M. A. ESKAY¹, F. LANNI³, C. NG⁴, A. S. NAIN⁴, AND T. G. GLEASON¹¹University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh Medical Center, Pittsburgh, PA, ³Carnegie Mellon University, Pittsburgh, PA, ⁴Virginia Tech, Blacksburg, VA**P-Th-A-114****A Flexible System for Studying Mechanical Stretch Waveform-Mediated Signaling in Vascular Cells**J. LEE¹, M. WONG¹, Q. SMITH¹, AND A. BAKER¹¹University 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. KUMAR¹, AND H. JO^{1,2}¹Emory University & Georgia Institute of Technology, Atlanta, GA, ²Ewha Womans University, Seoul, Korea, Republic of**P-Th-A-116****Transmural Flow Controls the Location and Direction of Angiogenic Sprouts**P. GALIE¹ AND C. CHEN¹¹University 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. WEN¹, Y. FAN², AND T. ZHENG¹¹Sichuan University, CHENGDU, China, People's Republic of, ²beihang 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 OOSTROM¹, M. BOERS², AND A. GABRIELLI¹¹University of Florida, Gainesville, FL, ²Twente 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. CROUCH¹, M. C. RESTREPO¹, C. M. HAGGERTY¹, K. R. KANTER², T. C. SLESNICK², J. ROSSIGNAC¹, T. L. SPRAY³, M. A. FOGEL³, AND A. P. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine and Children's Healthcare of Atlanta, Atlanta, GA, ³Children's Hospital of Philadelphia, Philadelphia, PA**P-Th-A-120****Prestressed Fluid-Structure Interaction Model of the Aortic Root**V. FLAMINI¹ AND B. E. GRIFFITH²¹Polytechnic Institute of New York University, Brooklyn, NY, ²New York University School of Medicine, New York, NY

P-Th-A-121**Fluid-Structure Interaction Model of Aortic Dissection Driven by Fluid Forcing**V. FLAMINI¹, G. HOLZAPFEL^{2,3}, A. DEANDA⁴, AND B. GRIFFITH⁴¹Polytechnic Institute of New York University, Brooklyn, NY, ²Graz University of Technology, Graz, Austria, ³Royal Institute of Technology, Stockholm, Sweden, ⁴New 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. MUNDKUR¹, M. RESTREPO¹, E. TANG¹, C. M. HAGGERTY¹, M. A. FOGEL², A. M. VALENTE³, D. B. MCELHINNEY³, AND A. P. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²Children's Hospital of Philadelphia, Philadelphia, PA, ³Children's Hospital Boston, Boston, MA**P-Th-A-123****Distortions of Pressure Drop Measurement Using Fluid-Filled Double-Lumen Catheter**O. ROTMAN¹, U. ZARETSKY¹, A. SHITZER², AND S. EINAV¹¹Tel-Aviv University, Tel-Aviv, Israel, ²Technion, Haifa, Israel**P-Th-A-124****Intraventricular Vortex Flow in Non-Ischemic Dilated Cardiomyopathy**J. BERMEJO¹, Y. BENITO¹, M. ALHAMA¹, R. YOTTI¹, P. MARTINEZ-LEGAZPI², C. PEREZ DEL VILLAR¹, E. PÉREZ-DAVID¹, A. GONZALEZ-MANSILLA¹, C. SANTA-MARTA³, A. BARRIO¹, F. FERNANDEZ-ÁVILES¹, AND J. DEL ALAMO²¹Hospital General Universitario Gregorio Marañón, Madrid, Spain, ²University of California San Diego, San Diego, CA, ³Universidad Nacional de Educación 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. CHEN¹, B-K. KOO², D. L. BHATT³, AND G. S. KASSAB¹¹Indiana Univ. Purdue Univ. Indianapolis, Indianapolis, IN, ²Seoul National University Hospital, Seoul, Korea, Republic of, ³Harvard Medical School, Boston, MA**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. DESAI¹, D. CAPPELLERI¹, A. VALDEVIT¹, AND A. RITTER¹¹Stevens 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. NGUYEN¹, I. GURUNG¹, S. RAO¹, AND J-C. CHIAO^{1,2}¹UT Arlington, Arlington, TX, ²UTSW 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. ROBERTS¹ AND M. MCSHANE¹¹Texas A&M University, College Station, TX**P-Th-A-129****Layer-By-Layer Assembly of Linear Polyethylenimine Redox Polymer Films**J. L. DELUCA¹ AND D. W. SCHMIDTKE¹¹University 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. ROBERTS¹, L. QI¹, L. A. SOMBERS¹, AND G. S. MCCARTY^{1,2}¹North Carolina State University, Raleigh, NC, ²University 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. JAHANIAN¹, A. K. RAMASUBRAMANIAN¹, AND L. TANG¹¹UTSA, San Antonio, TX**P-Th-A-132****Towards the Development of a Multimarker Point of Care Technology**J. T. LA BELLE¹¹Arizona State University, Tempe, AZ**P-Th-A-133****Hybrid Conducting Polymer-Hydrogel Nanofibers for Highly Sensitive Detection of Glucose**M. ABIDIAN¹ AND G. B. KIM¹¹Pennsylvania 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}¹Northwestern University, Chicago, IL, ²Rehabilitation 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}¹CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain, ²CIC microGUNE, Arrasate-Mondragon, Spain**P-Th-A-136****SNP Detection by Modulating the Fluorescence of DNA-templated Silver Nanoclusters**J. LEE¹ AND W. J. KIM¹¹POSTECH, Pohang, Korea, Republic of**P-Th-A-137****Development of Oxygen-sensing Films and Their Application in Biometry**A. MIYAYAMA¹, H. UCHIDA¹, A. SATO¹, AND K. TSUKADA^{1,2}¹Graduate School of Fundamental Science and Technology, Keio University, Kanagawa, Japan, ²Department 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. RAMACHANDRAN¹¹Indian Institute of Technology Bombay, Mumbai, India**P-Th-A-139****Separation of Live and Dead E. Coli using Embedded Passivated Electrode Insulator-based Dielectrophoresis (E₁DEP)**P. A. ZELLNER¹, T. SHAKE¹, A. SAHARI¹, B. BEHKAM¹, AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**P-Th-A-140****Distance-Mediated Plasmonic Dimers for Reusable Colorimetric Switches**D. R. KIM¹¹Nanyang Technological University, Singapore, Singapore

P-Th-A-141**Simultaneous Measurement of pH and Bacterial Markers in a Single Sensor**H. J. SISMAET¹ AND T. A. WEBSTER¹¹Northeastern University, Boston, MA**P-Th-A-142****Anti-Inflammatory Drug Releasing Conducting Polymer/Graphene Oxide Nanocomposite For Improved Dopamine Sensing**C. L. WEAVER¹, L. ZHANG¹, J. M. LAROSA¹, AND X. T. CUI¹¹University of Pittsburgh, Pittsburgh, PA**P-Th-A-143****In Vivo Biosensor Applications for Polymeric Nanosensors**K. J. CASH¹ AND H. A. CLARK¹¹Northeastern University, Boston, MA**P-Th-A-144****Aggregation Studies of Concanavalin A in Free Solution with Dextran Glycoconjugates**A. LOCKE¹, B. CUMMINS¹, AND G. COTÉ¹¹Texas A&M University, College Station, TX**P-Th-A-145****Slices for Devices: Organotypic Slice Cultures for In Vitro Sensor Analyses**S. TOBET¹, C. EITEL¹, D. DANDY¹, R. BARTELS¹, M. REYNOLDS¹, T. CHEN¹, AND C. HENRY¹¹Colorado State University, Fort Collins, CO**P-Th-A-146****Rapid Detection of Adiponectin Using a Lateral Flow Assay**K. DUFFY¹, P. SARKARIA¹, C. ZHANG¹, F. HASSAN¹, J. THOMPSON¹, M. SHULER¹, AND M. ARIZA-NIETO¹¹Cornell University, Ithaca, NY**P-Th-A-147****Distance Dependent Electromagnetic Enhancement of Localized Surface Plasmon Resonance Biosensing Based on Magnetic and Gold Nanoparticles**Y. WANG¹ AND L. TANG¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-A-148****Wearable Biochemical Sensor to Monitor Sweat pH Change**J. DEAN¹, F. ZAMBRANO¹, N. SERAFINO¹, AND M. H. LOEW¹¹The George Washington University, Washington, DC**P-Th-A-149****Evaluation of Boron Doped Ultra Nanocrystalline Diamond-based Impedance Biosensor**W. ZHANG¹, A. RADADIA¹, P. ARUMUGAM², H. ZENG², AND J. CARLISLE²¹Louisiana Tech University, Ruston, LA, ²Advanced Diamond Technologies Inc., Romeville, IL**P-Th-A-150****Real-Time Detection of Bacterial Movement, Growth and Biofilm Formation with Surface Plasmon Resonance Imaging**P. N. ABADIAN¹ AND E. D. GOLUCH¹¹Northeastern University, Boston, MA**P-Th-A-151****Selective Detection of P.Aeruginosa in Bacterial Cultures**T. A. WEBSTER¹ AND E. D. GOLUCH¹¹Northeastern University, Boston, MA**P-Th-A-152****A Mathematical Framework for Extracting Cell Secretion Rates from Affinity-Based Biosensors Continuously Monitoring Cell Activity**Y. GAO¹, Z. MATHARU¹, Y. LIU¹, Q. ZHOU¹, T. KWA¹, AND A. REVZIN¹¹University of California, Davis, Davis, CA**P-Th-A-153****Quantification of DNA Hybridization by Fluorescence Axial Localization and Label-free Biosensing**X. ZHANG¹, G. G. DAABOUL¹, P. S. SPUHLER¹, D. S. FREEDMAN¹, AND M. S. ÜNLÜ¹¹Boston University, Boston, MA**P-Th-A-154****Improving Back-scattering Interferometry for Viral Detection**J. EVANS¹, I. OLMSTED¹, A. KUSSROW¹, D. DUGMORE², D. BORNHOP¹, AND R. HASELTON¹¹Vanderbilt University, Nashville, TN, ²Rose-Hulman Institute of Technology, Terre Haute, IN**Track: Nano to Micro Technologies****BioMEMS****P-Th-A-155****A Microfluidic D-Subminiature Connector**A. K. AU¹, A. SCOTT¹, E. VINCKENBOSCH^{1,2}, AND A. FOLCH¹¹University of Washington, Seattle, WA, ²École 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. SHAH¹ AND C. LI¹¹Florida International University, Miami, FL**P-Th-A-157****Phase-shifted Slot Waveguide Bragg Grating Biosensors**S. SCHMIDT¹, X. WANG², J. FLUECKIGER², S. GRIST², J. KIRK¹, K. CHEUNG², L. CHROSTOWSKI², AND D. M. RATNER¹¹University of Washington, Seattle, WA, ²University of British Columbia, Vancouver, BC, Canada**P-Th-A-158****Operational Factors Affecting Performance of MEMS-Based Ultrahigh Throughput Mechanoporation Devices**H. G. DIXIT¹, D. NAMPE¹, Y. ZHANG¹, C. B. BALLAS², H. TSUTSUI¹, AND M. P. RAO¹¹University of California, Riverside, Riverside, CA, ²Indiana University, Indianapolis, IN**P-Th-A-159****Multiplex Immunoassay System Based on Suspension Array Incorporated into Microfluidic Devices**S. HAN¹, H. LEE¹, U. CHUNG¹, AND W-G. KOH¹¹Yonsei 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 URBANO¹ AND A. MORSS CLYNE¹¹Drexel University, Philadelphia, PA**P-Th-A-161****Electronic Detection of Magnetic Post Deflection**N. TAPARIA¹, K. BIELAWSKI¹, AND N. SNIADOCKI¹¹University of Washington, Seattle, WA**P-Th-A-162****Size Selection of C. elegans Through a Microfabricated Filter**M. A. CORRADO¹, D. J. LI¹, O. CINQUIN¹, AND E. E. HUI¹¹University 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. LI¹, S. M. MEARNs¹, M. MARTINS-GREEN², AND Y. LIU¹

¹West Virginia University, Morgantown, WV, ²University of California at Riverside, Riverside, CA

P-Th-A-165

Microfluidic Device and Assay for Mimicking the Leukocyte-Endothelium Interactions *In Vivo*

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P-Th-A-166

Development of a Microfluidic Device to Model Human Kidney Function

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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

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P-Th-A-168

SYN-TOX: A Microfluidic Platform For Drug Toxicity Studies

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P-Th-A-169

Drug Particle Adhesion Depends on Bifurcation Angle

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P-Th-A-170

Human Umbilical Vein Endothelial Cell Tube Formation Under Fluid Perfusion

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P-Th-A-171

A Universal 3D Biochip for Interrogation of Neuro-circuitry at Single Cell Resolution

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P-Th-A-172

Integration of Molecular Imaging with Microwell Arrays for Rapid Assessment of Drug Response in Cancer Response in Cancer Cells

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P-Th-A-173

Characterization of Flow Profiles and Reaction Rates in a 3d Microfluidic Cell Culture Array via Simulation

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P-Th-A-174

Design, Fabrication and Characterization of a Microphysiological System to Study Drug Toxicity in Cardiac Tissue

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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

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P-Th-A-176

Controlled Toxicity Studies Using Micropatterned Cells and Nanomaterials

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P-Th-A-177

Macromolecular Imprinted Silica Particles in the Presence of Carbon Black

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P-Th-A-178

Hydrogel Microwell Arrays for *In Situ* Culture and Analysis of Single Cells

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P-Th-A-179

Laser-Based Fabrication and Patterning of Chitosan Microcapsules and Microstrands

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P-Th-A-180

Fabrication of Protein Dots Pattern via Template Assisted Particle Lithography

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P-Th-A-181

Dielectrophoretic Cell Aggregation in Biocompatible Hydrogels

E. A. HENSLEE¹, H. O. FATOYINBO¹, M. P. HUGHES¹, AND F. H. LABEED¹

¹University of Surrey, Guildford, United Kingdom

P-Th-A-182**Shape Alone Can Induce Biochemical Changes Associated with Differentiated Podocyte Morphology**E. U. AZELOGLU¹, A. RON², M. HU², Y. CHEN¹, P. Y. CHUANG¹, J. C. HE¹, J. HONE², AND R. IYENGAR¹¹Mount Sinai School of Medicine, New York, NY, ²Columbia University, New York, NY**P-Th-A-183****Large Area Ultrathin Transparent Silicon Membranes for High Content Cellular Imaging**T. GABORSKI¹, K. BUSSE¹, AND J. MILLER¹¹Rochester 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. KIM¹, S. KWON², AND D-H. KIM¹¹University of Washington, Seattle, WA, ²Seoul National University, Seoul, Korea, Republic of**P-Th-A-185****A Projection Stereolithography System for High Resolution Patterning of Cells in 3D**R. RAMAN¹, V. CHAN¹, M. MIR¹, B. BHADURI¹, C. CVETKOVIC¹, G. POPESCU¹, AND R. BASHIR¹¹University of Illinois at Urbana-Champaign, Champaign, IL**P-Th-A-186****Chitosan Surface Enhances the Mobility, Cytoplasm Spreading and Phagocytosis of Macrophages**Y. GU¹, W. ZHANG¹, H. WANG¹, AND W. Y. LEE¹¹Stevens Institute of Technology, Hoboken, NJ**P-Th-A-187****Giant Lipid Vesicles for Studying Enzymatic Activity of Phospholipase D**Y. KANG¹ AND S. MAJD²¹Pennsylvania State University, State College, PA, ²Pennsylvania University, State College, PA**P-Th-A-188****Spatially Controlling Differentiation of Human Pluripotent Stem Cells to Generate Nascent Cardiac Microtissues**Z. MA¹, J. WANG¹, M. FINNEGAN¹, N. C. MARKS¹, AND K. E. HEALY¹¹University 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. KIM¹, M. KARGAR¹, A. NAIN¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**P-Th-A-190****Study of Platelet Adhesion using the Novel Dynamic Layer-By-Layer Biointerface Construction**P. LAMMERT¹, A. GENET¹, Z. STEEGE¹, A. RHYNER¹, J. MALINARIC¹, L. GALEY¹, AND M. G. WATSON¹¹LeTourneau University, Longview, TX**P-Th-A-191****Role of Nanometer and Sub-Micron Surface Features on Dermal Fibroblast Adhesion to Titanium**B-W. PARK¹, J. RANKENBERG¹, T. SOUSA¹, H. YOKOYAMA¹, C. LAMBERT², W. MCGIMPSEY¹, AND C. MALCUI¹¹Kent State University, Kent, OH, ²Worcester Polytechnic Institute, Worcester, MA**P-Th-A-192****Layer-by-Layer Surface Modification of Colloidal Quantum Dots for Biosensor Applications**A. NAGARAJA¹, A. SOORESH¹, K. MEISSNER¹, AND M. MCSHANE¹¹Texas A&M University, College Station, TX**P-Th-A-193****Nanotextured Biomaterials for Stem Cell Engineering**G. JIN¹, J. KIM¹, AND W. H. SUH¹¹Temple University, Philadelphia, PA**P-Th-A-194****Carbon Nanotube Thin Film via Interfacial Film-Climbing: A Potential Platform for Cell Growth**M. PATIL¹, R. GOTTARDI¹, S. S. VELANKAR¹, AND S. R. LITTLE¹¹University of Pittsburgh, Pittsburgh, PA**P-Th-A-195****Interaction Between Adeno-associated Virus Gene Delivery Vectors and Extracellular Matrix Proteins**E. J. GOMEZ¹ AND J. SUH¹¹Rice 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 ALMEIDA¹, A. LIN¹, R. LANGSNER¹, P. ECKELS², A. FOSTER², AND R. DREZEK¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**P-Th-A-197****Enhancing Magnetic Nanoparticle Based DNA Transfection: Intracellular-Active Cassette Features**M. M. VERNON¹, D. DEAN², AND J. DOBSON^{1,3}¹University of Florida, Gainesville, FL, ²University of Rochester Medical Center, Rochester, NY, ³University of Florida, Gainesville**P-Th-A-198****Electrophoretic Alignment of Multi-Walled Carbon Nanotubes in Poly Vinyl Alcohol Gel**D. GONDI¹, B. V. DHARMADHIKARI¹, P. K. PATRA¹, AND A. SANTIAGO¹¹University of Bridgeport, Bridgeport, CT**P-Th-A-199****Time Resolved, High-throughput Microscopy in Nanotoxicological Assessment**M. J. WARE^{1,2}, N. SINGH², K. MEISSNER³, P. REES², B. GODIN¹, AND H. SUMMERS²¹The Methodist Hospital Research Institute, Houston, TX, ²Swansea University, Swansea, United Kingdom, ³Texas A&M University, Houston, TX**P-Th-A-200****Transfection of Polyethylenimine and Its Coated Magnetic Nanoparticles by Different Pathways in Cytoplasm**S. OTA¹, A. TOMITAKA², T. YAMADA¹, D. KAMI³, M. WATANABE¹, AND Y. TAKEMURA¹¹Yokohama National University, Yokohama, Japan, ²University of Washington, Seattle, WA, ³Kyoto Prefectural University of Medicine, Kyoto, Japan**P-Th-A-201****Degradation of Oxidized and Reduced Graphene Nanoribbons by Lignin Peroxidase**W. XING¹, G. LALWANI², AND B. SITHARAMAN²¹Stony Brook University, Stony Brook, NY, ²Stony Brook University, Stony Brook, NY

P-Th - A - 202**Energy Harvesting Using Nano Scale Dual Layers PVDF Film for Blood Artery**N. A. FADHIL¹, D. S. SABER¹, AND P. K. PATRA¹¹University 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. GUAN¹ AND R. Z. GAN¹¹University 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. WANG¹, W. TAI¹, S. ANGIOINE¹, A. R. JOHN², S. M. OPAL^{1,2}, A. W. ARTENSTEIN^{1,2}, AND A. TRIPATHI¹¹Brown University, Providence, RI, ²Memorial Hospital of RI, Providence, RI**P-Th - A - 205****A Paper-based Test for Sickle Cell Disease Diagnosis in Resource-Limited Settings**X. YANG¹, S. M. VIGNES¹, N. Z. PIETY¹, M. S. BENTON², J. KANTER^{2,3}, AND S. S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA, ²Sickle Cell Center of Southern Louisiana, New Orleans, LA, ³Tulane University School of Medicine, New Orleans, LA**P-Th - A - 206****On-Paper Purification of Nucleic Acids for Point-of-Care Applications**S. BYRNES¹, B. LUTZ¹, L. LAFLEUR¹, AND P. YAGER¹¹University of Washington, Seattle, WA**P-Th - A - 207****A Comparison of Gold Detection Labels in Paper Based Point-of-Care Assays**S. RANGARAJAN¹, N. SCARR², C. A. HOLSTEIN¹, E. A. LUKHTANOV², B. LI³, C. E. OLSEN³, B. LUTZ¹, AND P. YAGER¹¹University of Washington, Seattle, WA, ²Elitechgroup (Epoch Biosciences), Bothell, WA, ³GE Global Research Center, Niskayuna, NY**P-Th - A - 208****Oscillating Pressure Driven Microfluidic Bridge Networks for Point-of-Care Diagnostics**R. JAIN¹ AND B. LUTZ¹¹University of Washington, Seattle, WA**P-Th - A - 209****Methods for Background Subtraction in High-Resolution Melting Analysis**L. N. SANFORD¹ AND C. T. WITTEWIT¹¹University 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. ONASOGA¹, K. NEEVES¹, J. DI PAOLA², M. MANCO-JOHNSON², M. WANG², K. LEIDERMAN³, AND A. FOGELSON⁴¹Colorado School of Mines, Golden, CO, ²University of Colorado, Aurora, CO, ³University of California, Merced, Merced, CA, ⁴University of Utah, Salt Lake City, UT**P-Th - A - 211****Point-of-Treatment HIV Drug Resistance Test**N. PANPRADIST¹, I. A. BECK², L. M. FRENKEL^{1,2}, J. J. LAI¹, AND B. R. LUTZ¹¹University of Washington, Seattle, WA, ²Seattle 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. TRANTUM¹, M. BAGLIA¹, Z. EAGLETON¹, AND F. HASELTON¹¹Vanderbilt 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. LELEUX¹, C. BÉNAR², J.-M. BADIÉ², T. HERVÉ³, P. CHAUVEL², AND G. G. MALLIARAS¹¹Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan, ²INSERM, Marseille cedex 05, France, Metropolitan, ³Microvitae Technologies, Gardanne, France, Metropolitan**P-Th - A - 214****Nonhermetic Micropackage For Implant MEMS Systems**W. H. KO¹¹Case western reserve university, Cleveland, OH**P-Th - A - 215****A Transparent Conducting Polymer Device for Electronic and Optical Monitoring of Barrier Tissue**R. M. OWENS¹¹Ecole Nationale Supérieure des Mines de St. Etienne, Gardanne, France**P-Th - A - 216****Mechanism of Electrochemical Biofilm Control and Its Applications**H. BEYENAL¹, S. SULTANA¹, AND J. BABAUTA¹¹Washington 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. CHAKRABORTY³, S. C. HAND⁴, AND M. TONER^{1,2}¹Massachusetts General Hospital and Harvard Medical School, Boston, MA, ²Center for Engineering in Medicine, Charlestown, MA, ³University of Michigan-Dearborn, Dearborn, MI, ⁴Louisiana 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. GAINEY¹, P. T. OVINGTON¹, J. DESJARDINS¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Th - A - 219****Developing a Woven Grass Neck Brace for Low Resource Implementation**T. YOUNGMAN¹, M. KOFOED¹, D. MARTIN¹, A. METZGER¹, D. DEAN¹, AND J. DESJARDINS¹¹Clemson University, Clemson, SC**P-Th - A - 220****A Simple, Low-cost Paper-based Assay for Measuring Blood Hemoglobin Concentration in Resource-limited Settings**X. YANG¹, N. Z. PIETY¹, S. M. VIGNES¹, M. S. BENTON², J. KANTER^{2,3}, AND S. S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA, ²Sickle Cell Center of Southern Louisiana, New Orleans, LA, ³Tulane University School of Medicine, New Orleans, LA

P - Th - A - 221**Development of a Point-of-Care High-throughput Platform for Inhibition of CA-MRSA Biofilms**A. SRINIVASAN¹, J. L. LOPEZ-RIBOT¹, C. FREI², AND A. K. RAMASUBRAMANIAN¹¹The University of Texas at San Antonio, San Antonio, TX, ²University 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. ABE¹ AND P. YAGER¹¹University of Washington, Seattle, WA**P - Th - A - 223****Battery-Powered Incubator for Water Quality Testing in Remote Areas**J. BARFKNECHT¹, A. KOLLMAN¹, J. HARVESTINE¹, J. TRACEY¹, W. GONWA¹, AND D. STAHL¹¹Milwaukee School of Engineering, Milwaukee, WI**P - Th - A - 224****Total Adiponectin in Clinical and *In Vitro* for the Evaluation of Metabolic Dysregulations**P. I. SARKARIA¹, J-M. PROT¹, M. L. SHULER¹, M. ARIZA-NIETO¹, J. B. ALLEY², AND S. A. SAMY³¹Cornell University, Ithaca, NY, ²Guthrie Weight Loss Center, Sayre, PA, ³Guthrie 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. DAHINTEN¹, C. WHITTLE¹, AND R. MALKIN¹¹Robert 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. CREECY¹, S. PICKERILL², Q. YOU², D. WRIGHT¹, AND R. HASELTON¹¹Vanderbilt University, Nashville, TN, ²Ustar Biotechnologies Ltd., Hangzhou, China, ³People'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. LI¹, D. RENARD¹, K. N. BANDYOPADHYAY¹, AND N. CHAKRABORTY¹¹University 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. ZHANG¹, M. SHULER¹, AND M. ARIZA¹¹Cornell 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. KWON¹, J. KIM¹, AND K. PARK¹¹Seoul National University, Seoul, Korea, Republic of**P - Th - A - 230****Mechanics of Smart Needle within Tissue**N. V. DATLA¹, T. K. PODDER², Y. YU³, A. DICKER³, AND P. HUTAPEA¹¹Temple University, Philadelphia, PA, ²Case Western Reserve University, Cleveland, OH, ³Thomas Jefferson University, Philadelphia, PA**P - Th - A - 231****Development of Motion Artifact Free Pulse Oximeter Based on Camera**J. LEE¹, Y. NAM², C. JEONG³, S-C. JOO³, AND K. YOON³¹Wonkwang University School of Medicine, Iksan, Korea, Republic of, ²Worcester Polytechnic Institute, Worcester, MA, ³Wonkwang 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. ENGBRETSON¹ AND V. I. SIKAVITSAS¹¹University of Oklahoma, Norman, OK**P - Th - A - 233****Mechanical Stimulation of a Healing Fracture Using a Mouse Model**J. A. CURREY¹, E. MILLER², S. DAY¹, AND M. MANCUSO¹¹Union College, Schenectady, NY, ²Rensselaer Polytechnic Institute, Troy, NY**P - Th - A - 234****Perfusion Bioreactor Enhances Cryoprotective Agent Permeation into Intact Porcine Articular Cartilage**O. M. ISMAIL¹, W. DAHL^{1,2}, K. G. BROCKBANK³, E. D. GREENE³, AND T. M. WICK¹¹University of Alabama at Birmingham, Birmingham, AL, ²Washington University in St. Louis, St. Louis, MO, ³Cell 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. MACDONALD¹ AND S. R. SCHMID¹¹University of Notre Dame, Notre Dame, IN**P - Th - A - 236****The Anabolic Effects of Electrical Stimulation on Endochondral Bone Formation**S. LABABIDI¹, R. WILLITS², K. NOVAK¹, R. RAZMPOUR³, R. FITZGERALD⁴, W. LANDIS², D. WEINER⁵, AND F. SAFADI¹¹NEOMED, Rootstown, OH, ²University Of Akron, Akron, OH, ³Temple University, Philadelphia, PA, ⁴Summa Hospital, Akron, OH, ⁵Akron 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

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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

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P-Th-A-239

Injectable Riboflavin-Crosslinked Collagen Gels for Annulus Fibrosus Repair

B. H. BORDE¹, P. GRUNERT², M. MACIELAK², R. HÄRTL², AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY

P-Th-A-240

Age Dependent Thoracic Vertebral Morphology in the Adolescent Population

J. R. PETERS¹, C. CHANDRASEKARAN¹, L. WALTZ¹, AND S. BALASUBRAMANIAN¹¹Drexel 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. KIM¹, T. W. CASPAR¹, S. B. SHAH², AND A. H. HSIEH^{1,3}¹University of Maryland, College Park, MD, ²University of California, San Diego, CA,³University of Maryland, Baltimore, MD

P-Th-A-242

MRI Compatible Rat-Tail Distraction Device

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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. YARMOLA¹, Z. KAUFMAN¹, B. KOZISSNIK¹, D. ARNOLD¹, J. DOBSON¹, AND K. D. ALLEN¹¹University of Florida, Gainesville, FL

P-Th-A-244

Extraction of Biomarkers from Synovial Fluid Using Magnetic Nanoparticle Harvesting - Practical Validation of a Theoretical Model

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Track: Orthopaedic and Rehabilitation Engineering

Orthopaedic and Rehabilitation Engineering

P-Th-A-245

Synergistic Effects of Lactoferrin and Xylitol on Osteoblast Maturation

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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. BROCHU¹, O. MATTHYS¹, G. EVANS¹, AND W. REICHERT¹¹Duke 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. COMADURAN¹, J. M. DE SANTIAGO¹, E. A. BRAVO¹, AND K. D. BUSTAMANTE^{1,2}¹ITESM, Chihuahua, Mexico, ²Marquette University, Milwaukee, WI

P-Th-A-248

High Intensity Pressure Wave Transmission in Human Ear: A Three Dimensional Nonlinear Finite Element Simulation Study

T. HAWA¹ AND R. Z. GAN¹¹The 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. CHENG¹, T. H. STOKES^{1,2}, C. KADDI¹, AND M. D. WANG^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Th-A-250

Evaluation of Joint Angle Coordination Pattern in a New Moving System with Gait Rehabilitative Training Assistance

D. LIM¹, B. LEE¹, L. SONG¹, K. CHUN², H. JUNG¹, K. JANG³, AND K-Y. LEE¹¹Sejong University, Seoul, Korea, Republic of, ²Korea Institute of Industrial Technology, Cheonan, Korea, Republic of, ³Korea 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. BURKS¹, M. TRAN¹, P. JARAMILLO¹, AND A. LEONESSA¹¹Virginia Tech, Blacksburg, VA

P-Th-A-252

Fabricating Prosthetic Sockets with Rapid Prototyping Technology<I>

B. ROBILLARD¹, O. KOMOLAFE¹, R. CALDWELL¹, AND S. FATONE¹¹Northwestern University, Chicago, IL

P-Th-A-253

Prosthetics for the Developing World

K. P. KEENAHAN¹¹Johns Hopkins University, Baltimore, MD

P-Th-A-254

Development of a Control System for a Power Wheelchair Trainer

S. J. HILDEBRAND¹, L. K. KENYON¹, AND J. P. FARRIS¹¹Grand Valley State University, Grand Rapids, MI

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. HU¹ AND Y-X. QIN¹

¹Stony Brook University, Stony Brook, NY

P-Th-A-256

A First Study of the Mechanical Behavior of the Swine Sacrospinous Ligament

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¹Virginia Tech, Blacksburg, VA

P-Th-A-257

Effects of -aminopropionitrile and Exercise on Type I Collagen Morphology in Murine Bone

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P-Th-A-258

Mechanical Damage of Tympanic Membrane in Relation to Impulse Pressure Waveform in Chinchilla

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¹University of Oklahoma, Norman, OK

P-Th-A-259

Mechanical Fluid Pressure Regulated Muscle Fiber in a Rat Disuse Model

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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. TSAI², R. J. VANDERBY², G. BRADICA³, S-L. LOU¹, AND W-J. LI²

¹Chung Yuan Christian University, Chung Li, Taiwan, ²University of Wisconsin-Madison, Madison, WI, ³Kensey 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. LIKHITPANICHKUL¹, Y. BORISOV¹, P. NASSER¹, AND J. IATRIDIS¹

¹Icahn School of Medicine at Mount Sinai, New York, NY, ²The 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 MOREN¹, H. HOTALING², B. WILLIAMS³, B. ASHBY¹, AND T. BURGERS³

¹Grand Valley State University, Grand Rapids, MI, ²Loyola University, Chicago, IL, ³Van Andel Institute, Grand Rapids, MI

P-Th-A-263

Location-Dependent Tensile Properties of the Swine Uterosacral-Cardinal Ligament Complex

T. TAN¹, F. M. DAVIS¹, S. NICEWONDER¹, J. C. MASSENGILL², D. D. GRUBER², AND R. DE VITA¹

¹Virginia Tech, Blacksburg, VA, ²Walter 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 HUU¹, J. LUO¹, J. ZHAO¹, A. ALMUTAIRI¹, AND K. ZHANG¹

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

P-Th-A-265

Surface Immobilization of P-Selectin Glycoprotein Ligand-I on Mesenchymal Stem Cells Enables Selectin Mediated Cell Tethering and Rolling

C. Y. LO¹, A. ANTONOPOULOS², A. DELL², S. HASLAM², T. LEE¹, AND S. NEELAMEGHAM¹

¹The State University of New York at Buffalo, Buffalo, NY, ²Imperial College, London, United Kingdom

P-Th-A-266

Development of an Engineered Nanoparticle System to Increase Adipose Stem Cell Survival

D. Y. SANTIESTEBAN¹, E. CHUNG¹, A. S. HANNAH¹, L. J. SUGGS¹, AND S. EMELIANOV¹

¹The 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. WILLIAMS³, I. R. VELAND², S. T. CHRISTENSEN², AND E. G. LOBOA^{1,3}

¹North Carolina State University/University of North Carolina - Chapel Hill, Raleigh, NC, ²University of Copenhagen, Copenhagen, Denmark, ³North Carolina State University, Raleigh, NC

P-Th-A-268

Cell Culture Environments with High Cell-Cell Contact Enhance Neural Stem Cell Viability

M. E. BOUTIN¹ AND D. HOFFMAN-KIM¹

¹Brown 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. PAUL¹, D. FRANZ¹, S. YAHYA¹, S. SUN¹, AND M. CHO¹

¹University of Illinois at Chicago, Chicago, IL

P-Th-A-270

Role of FAK in BMP4 Induction of Mesenchymal Stem Cell Adipogenesis

J. LEE¹, L. HA¹, AND J. LIM¹

¹University of Nebraska-Lincoln, Lincoln, NE

P-Th-A-271

Signaling Pathway Modulation for Directed Cardiogenic Differentiation of Human Pluripotent Stem Cells

A. PARIKH¹ AND E. S. TZANAKAKIS¹

¹SUNY-Buffalo, Buffalo, NY

P-Th-A-272

Investigation of GSK-3 Inhibitor BIO in Endothelial Differentiation of Murine Embryonic Stem Cells

D. Y. KIM¹ AND G. DAI¹

¹Rensselaer 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. DINGLE¹, R. SOOKRAM¹, D. HOFFMAN-KIM¹, AND M. ZERVAS¹

¹Brown University, Providence, RI

P-Th-A-274

Alginate Encapsulated Human Embryonic Stem Cell Derived Islet Cells For Type 1 Diabetes Treatment

T. C. RICHARDSON¹, P. N. KUMTA¹, AND I. BANERJEE¹

¹University 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. MALDONADO¹, T. FUJIMOTO¹, L. WONG¹, K. LOW¹, AND J. NAM¹

¹University of California, Riverside, CA

P-Th-A-276

Suspension Shear Stimulation Accelerates Differentiation of Human Mesenchymal Stem Cells Towards Adipogenic Lineage

A. ADENIRAN-CATLETT¹ AND S. MURTHY¹

¹Northeastern 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. MISTRIOTIS¹, M. LIANG¹, AND S. ANDREADIS^{1,2}

¹University at Buffalo, Amherst, NY, ²Center 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. DUAN¹, L. A. HOCKADAY¹, E. KAPETANOVIC¹, AND J. T. BUTCHER¹

¹Cornell 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. KAMAT¹ AND S. L. DIAMOND¹

¹University of Pennsylvania, Philadelphia, PA

P-Th-A-280

HMSC Commitment: A Matter of Stiffness

A. MEMBRINO¹, C. DOHERTY¹, D. KILINC¹, D. VANDAMME¹, K. IVANOV¹, G. U. LEE¹, W. KOLCH¹, AND D. MATALLANAS¹

¹University College Dublin, Dublin, Ireland

P-Th-A-281

Chondrogenic Differentiation of Adipose Derived Stem Cells on Polymeric Nanowire Surfaces

N. A. TRUJILLO¹ AND K. C. POPAT¹

¹Colorado State University, Fort Collins, CO

P-Th-A-282

Heterogeneous Traction Force Distributions in MSC Clonal Populations

B. D. COSGROVE¹, C. M. MCLEOD¹, M. J. FARRELL¹, M. GUVENDIREN¹, J. A. BURDICK¹, AND R. L. MAUCK¹

¹University of Pennsylvania, Philadelphia, PA

P-Th-A-283

Hematopoietic Stem and Progenitor Cells Locally Produce Neutrophils Necessary to Resolve Infected Wounds

P. FALAHEE¹

¹UC Davis, Davis, CA

2013 BMES ANNUAL MEETING

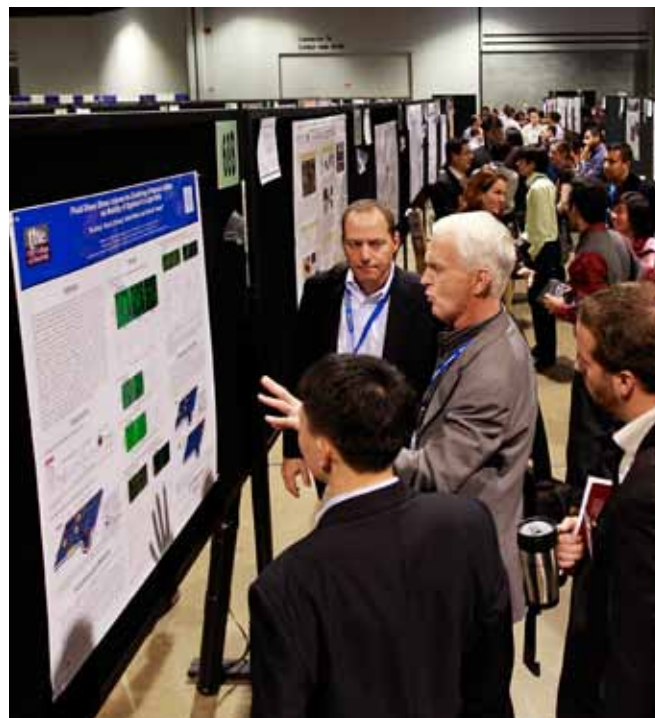
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P = Poster Session
OP = Oral Presentation

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. ANDALIB¹, J. LEE¹, L. HA¹, Y. DZENIS¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**P-Th-B-2****Spatial and Temporal Modulation of 3D Hydrogel Physical Properties**R. STOWERS¹, C. L. DAVIS¹, AND L. J. SUGGS¹¹The University of Texas at Austin, Austin, TX**P-Th-B-3****Absorption, Degradation, and Cell Adhesion on Polyelectrolyte-Complex Films**S. A. MISTRY¹, S. PURI¹, D. VERMA¹, R. SCHLOSS¹, AND N. A. LANGRANA¹¹Rutgers 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. TODA¹, M. YAMAMOTO¹, AND Y. TABATA¹¹Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Japan**P-Th-B-5****Engineering a Heart-On-Chip Platform**N. ANNABI^{1,2}, S. SELIMOVIC¹, J. COX³, J. RIBAS¹, M. AFSHAR BAKOOSHLI¹, D. HEINTZE¹, A. S. WEISS⁴, D. CROPEK⁵, AND A. KHADEMOSSEINI^{1,2}¹Harvard Medical School, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Cambridge, ³Faculty of Medicine, Santiago, Chile, ⁴The University of Sydney, Sydney, Australia, ⁵US 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. BRITTAIN¹ AND L. S. NAIR²¹University of Connecticut, Storrs, CT, ²University 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. THOMAS¹, S. SEIDLITS¹, A. GOODMAN¹, T. KUKUSHLIEV¹, D. HASSANI¹, A. ANDERSON², B. CUMMINGS², AND L. SHEA¹¹Northwestern University, Evanston, IL, ²University of California at Irvine, Irvine, CA**P-Th-B-8****Endothelial Cell Function on Polyurethane Matrix for Tissue Vascularization**Y. YUAN¹, C. CHEAH¹, AND D. SARKAR¹¹University at Buffalo, SUNY, Buffalo, NY**P-Th-B-9****A Haptotaxis Neutral Biomaterial to Examine Motility of CNS-Derived Tumor Cells**T. SINGH¹, C. KOTHAPALLI², D. VARMA¹, M. VAZQUEZ¹, AND S. B. NICOLL¹¹CCNY-CUNY, New York, NY, ²Cleveland State University, Cleveland, OH**P-Th-B-10****Macrophage Polarizing Peptides Grafted onto Hydrogel Substrates for Contact Lens Applications**A. CHEN¹, V. AGRAWAL², B. RATNER¹, AND S. BADYLAK²¹University of Washington, Seattle, WA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**P-Th-B-11****Ionically- and Photo-crosslinked Alginate Hydrogels for Spatial Control of Cell Behavior**J. E. SAMOREZOV¹, C. M. MORLOCK¹, AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH**P-Th-B-12****Titanium Oxide Crystallinity Nanomodification Affects Stem Cell Attachment and Differentiation on Microstructured Surfaces**R. OLIVARES-NAVARRETE¹, S. L. HYZY¹, C. A. CUNDIFF², S. E. RODIL³, A. ALMAGUER-FLORES³, B. D. BOYAN¹, AND Z. SCHWARTZ¹¹Virginia Commonwealth University, Richmond, VA, ²Georgia Institute of Technology, Atlanta, GA, ³UNAM, Mexico City, Mexico**P-Th-B-13****Superhydrophilic Microstructured Surfaces Decrease Proinflammatory Interleukin Production on Stem Cells**S. L. HYZY¹, R. OLIVARES-NAVARRETE¹, K. O. MARCHAND², D. A. HAITHCOCK³, Z. SCHWARTZ¹, AND B. D. BOYAN¹¹Virginia Commonwealth University, Richmond, VA, ²Georgia Institute of Technology, Atlanta, GA, ³Georgia Institute of Technology, Atlanta, VA**P-Th-B-14****Utilizing Microfiber-Enabled Lithography to Engineer Spatially Diverse Tissue Microenvironments**M. R. ANDERSON¹ AND W. C. RUDER¹¹Virginia Tech, Blacksburg, VA**P-Th-B-15****Single Cell Response to Changes in Nanofiber Structural Stiffness**S. MEEHAN¹ AND A. S. NAIN¹¹Virginia 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. PACHECO¹, B. LE¹, D. WHITE², AND T. SULCHEK¹¹Georgia Institute of Technology, Atlanta, GA, ²United States Department of Agriculture, Ames, IA**P-Th-B-17****Immunomodulation of the Foreign Body Reaction by MSCs Declines with Differentiation**M. D. SWARTZLANDER¹, A. K. BLAKNEY¹, K. D. HANKENSON², T. R. KYRIAKIDES³, AND S. J. BRYANT¹¹University of Colorado, Boulder, CO, ²University of Pennsylvania, Philadelphia, PA, ³Yale 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. CHESSON¹, R. APPAVU¹, AND J. S. RUDRA¹¹University 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. KE¹ AND D. J. IRVINE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD**P-Th-B-20****Functional Characterization of Chitosan and its Influence on Immune Response**S. RAVINDRANATHAN¹ AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, ARPOSTER
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. LOOK¹, E. STERN¹, Q. A. WANG¹, L. DIPLACIDO¹, M. KASHGARIAN¹, W. SALTZMAN¹, J. CRAFT¹, AND T. M. FAHMY¹¹Yale University, New Haven, CT**P-Th-B-22****Time Course Study of the Antigen-Specific Immune Response of a PLGA Microparticle Vaccine Formulation**Q. WANG¹, B. KEEGAN¹, AND M. J. HEFFERNAN¹¹Baylor College of Medicine, Houston, TX**P-Th-B-23****Delivery of Acetylsalicylic Acid to Dendritic Cells Using Degradable Microparticles**E. BRACHO-SANCHEZ¹, J. S. LEWIS¹, AND B. G. KESELOWSKY¹¹University of Florida, Gainesville, FL**P-Th-B-24****Developing Elastomer Beads for T Cell Activation and Expansion**S. E. DE LEO¹, D. DUTTA¹, G. HICKEY¹, AND L. KAM¹¹Columbia University, New York, NY**P-Th-B-25****Biodegradable Nanoparticles for Tolerance in Type I Diabetes**M. MCHUGH¹ AND T. FAHMY¹¹Yale University, New Haven, CT**Track: Biomaterials****Therapeutic Biomaterials****P-Th-B-26****Tea Nanoparticles for Immunostimulation and Chemo-drug Delivery in Cancer Treatment**S. YI¹, Y. WANG¹, Y. HUANG¹, L. XIA¹, L. SUN¹, S. C. LENAGHAN¹, AND M. ZHANG¹¹University of Tennessee, Knoxville, TN**P-Th-B-27****A Novel Composite Graft for Cleft Palate Repair**B. WANG¹, W. LI², B. WEED¹, S. S. PATNAIK¹, J. XIAO², R. BUTLER¹, AND J. LIAO¹¹Mississippi State University, Mississippi State, MS, ²Dalian 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. WANG¹, Z. ZHANG¹, J. NONG¹, AND Y. ZHONG¹¹Drexel 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. MOSKOWITZ¹, M. QUADIR^{1,2}, S. MORTON^{1,2}, H. J. SEEHERMAN³, R. F. PADERA^{1,4}, M. SPECTOR^{1,4}, AND P. T. HAMMOND^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Koch Institute for Integrative Cancer Research, Cambridge, MA, ³Restituo LLC., Cambridge, MA, ⁴Brigham and Women's Hospital, Boston, MA**P-Th-B-30****Non-Viral Oral Gene Delivery for Treatment of Hemophilia B**J. M. GAMBOA¹ AND K. W. LEONG¹¹Duke University, Durham, NC**P-Th-B-31****Biological Effects of Therapeutic Polymers for Diabetic Wound Healing Applications**K. A. WOLD¹, V. B. DAMODARAN¹, AND M. M. REYNOLDS¹¹Colorado State University, Fort Collins, CO**P-Th-B-32****Rare Earth Nanoparticle Tb4O7 Induced Autophagy and Toxicity in Cancer Cells**R. RUAN¹, S. SUN², AND W. DING¹¹University of Science and Technology of China, Hefei, China, People's Republic of, ²University of Washington, Seattle, WA**P-Th-B-33****Suppression of Fibrosis Formation Around Silicone Implant by Local, Sustained Exposure of Tranilast**S. PARK¹, M. PARK¹, J. LEE¹, C. PARK¹, S. LEE¹, H. PARK², C. HEO², AND Y. CHOY¹¹Seoul National University, Seoul, Korea, Republic of, ²Seoul 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. ROBERTS¹, F. GARCIA QUIROZ¹, AND A. CHILKOTI¹¹Duke University, Durham, NC**P-Th-B-35****Clinical Applicability of Binding Bone Morphogenetic Protein-2 to Polycaprolactone**J. J. PATEL¹ AND S. J. HOLLISTER¹¹University of Michigan, Ann Arbor, MI**P-Th-B-36****Recombinant Functional Biomaterials for Neuronal Regeneration**T. JOHNSON¹ AND P. KORJA²¹University of South Florida, Tampa, FL, ²University of South Florida, Tampa, FL**P-Th-B-37****Lubricin Mimic: Synthetic Peptidoglycan Lowers Friction Levels in Articular Cartilage Surfaces**N. M. VÁZQUEZ-PORTALATÍN¹ AND A. PANITCH¹¹Purdue University, West Lafayette, IN**P-Th-B-38****Tuning Keratin Hydrogels to Achieve Controlled Rates of Degradation and Bioactive Agent Release**T. HAM¹, R. LEE¹, L. BURNETT², S. TOMBLYN², AND J. M. SAUL¹¹Miami University, Oxford, OH, ²KeraNetics, LLC, Winston-Salem, NC**P-Th-B-39****Endotoxin Binding by the Cationic Amphiphilic Peptide WLBU2 in Relation to Polymyxin B**M. P. RYDER¹, X. WU¹, K. SCHILKE¹, AND J. MCGUIRE¹¹Oregon State University, Corvallis, OR**P-Th-B-40****Effect of Nanophase Topography on the Adhesion of Staphylococcus aureus onto Biomaterial Surfaces**B. ERCAN¹ AND T. WEBSTER¹¹Northeastern 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}¹Brown University, Providence, RI, ²Rhode Island Hospital, Providence, RI, ³Biontraface 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. CALCATERRA¹, A. ISMAIL¹, M. A. CARLSON^{2,3}, T. R. PENNA¹, W. H. BURGESS¹, AND W. H. VELANDER¹¹University of Nebraska, Lincoln, NE, ²University of Nebraska Medical Center, Omaha, NE, ³Omaha VA Medical Center, Omaha, NE

P-Th-B-43**Inducible Nitric Oxide Releasing PEG-Fibrinogen Adhesive Hydrogels for Tissue Regeneration**M. A. BRUNETTE¹, H. R. HOLMES¹, M. G. LANCINA¹, W. HE¹, B. P. LEE¹, M. C. FROST¹, AND R. M. RAJACHAR¹¹Michigan Technological University, Houghton, MI**Track: Cancer Technologies****Biomarkers****P-Th-B-44****Dynamic Biochemical Tissue Analysis: A Novel Method for *In Situ* Antigen Detection**V. S. SHIRURE¹, G. E. CARLSON¹, E. W. MARTIN¹, R. MALGOR¹, V. A. RESTO², D. J. GOETZ¹, AND M. M. BURDICK¹¹Ohio University, Athens, OH, ²University 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. HUANG¹, S. M. SANTANA¹, M. A. ANTONYAK¹, C. FISCHBACH-TESSLER¹, R. A. CERIONE¹, AND B. J. KIRBY¹¹Cornell University, Ithaca, NY**P-Th-B-46****Mechanical Properties of Cancer Cells: A Possible Biomarker for Stemness**A. MOHAMMADALIPOUR¹, F. BENENCIA¹, M. BURDICK¹, AND D. TEES¹¹Ohio University, Athens, OH**P-Th-B-47****Dynamic Biochemical Tissue Analysis detects functional L-selectin Ligands on Colon Cancer Tissues**G. E. CARLSON¹, V. S. SHIRURE¹, V. A. RESTO², R. MALGOR¹, D. J. GOETZ¹, AND M. M. BURDICK¹¹Ohio University, Athens, OH, ²University of Texas-Medical Branch, Galveston, TX**P-Th-B-48****Lossless Immobilization of Purified Rare Cells using Spintrap**M. KARABACAK¹, N. KOJIC¹, V. PAI¹, E. OZKUMUR¹, A. M. SHAH¹, J. CICALIANO¹, E. BRACHTEL¹, S. STOTT¹, S. MAHESWARAN¹, D. A. HABER¹, AND M. TONER¹¹Massachusetts General Hospital, Charlestown, MA**P-Th-B-49****Time of Flight Secondary Ion Mass Spectrometry Analysis of Breast Cancer Cell Lines**L. GAMBLE¹, M. ROBINSON¹, F. MORRISH², AND D. HOCKENBERY²¹University of Washington, Seattle, WA, ²Fred 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 RASHIDI¹, H. HOMAYONI¹, L. MA², X. ZOU², AND W. CHEN²¹Joint Biomedical Engineering Program, UT Arlington, UT Southwestern Medical Center, Arlington, Dallas, TX, ²UT Arlington, Physics, Arlington, TX**P-Th-B-51****Machine Learning Outperforms Manual Counting for Classifying Circulating Tumor Cells from Cancer Patients**T. B. LANNIN¹, M. S. SUNG², F. I. THEGE³, Y. A. SYED¹, G. I. GALLETI², A. D. RHIM⁴, P. A. GIANNAKAKOU², AND B. J. KIRBY^{1,5}¹Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY,²Weill Cornell Medical College, New York, NY, ³Department of Biomedical Engineering,⁴Cornell University, Ithaca, NY, ⁵University of Pennsylvania Perelman School of Medicine,Philadelphia, PA, ⁵Weill 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-DEVORA¹, D. REYNA¹, M. K. BHUYAN¹, AND T. BOLAND¹¹University of Texas at El Paso, El Paso, TX**P-Th-B-53****Biophysical Effects of Pulsed Electric Fields in the Brain**P. A. GARCIA¹, C. B. ARENA¹, J. H. ROSSMEISL, JR.², AND R. V. DAVALOS¹¹Virginia Tech - Wake Forest University, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P-Th-B-54****Sensitive Quantification of Vascular Endothelial Growth Factor (VEGF) using Porosity Induced Hydrogel Microspheres**M. AL AMEEN¹ AND G. GHOSH¹¹University 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. HOANG¹, S. H. RATNAYAKA¹, C. CHEN¹, AND D. B. KHISMATULLIN¹¹Tulane University, New Orleans, LA**P-Th-B-56****Patient-Specific Drug Efficacy Analysis on Circulating Tumor Cells Captured from Peripheral Blood**J. MARSHALL¹, A. HUGHES¹, E. KELLER^{2,3}, J. POWDERLY^{2,3}, B. GREENE^{2,3}, AND M. KING¹¹Cornell University, Ithaca, NY, ²Biocytics, Inc., Huntersville, NC, ³Carolina BioOncology Institute, Huntersville, NC**P-Th-B-57****Advancing Quantum Dot Nanosensors and Calibration Beads for Quantitative Cellular Profiling**F. T. LEE-MONTIEL¹ AND P. IMOUKHUEDE¹¹University of Illinois Urbana-Champaign, Urbana, IL**P-Th-B-58****A Microfluidic Device to Dissociate Tumor Tissue into Single Cells**J. DE JESUS¹, E. HUI¹, AND J. HAUN¹¹University 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. BARHAM², O. TIKHOMIROV², B. KUMAR¹, F. YULL², AND T. D. GIORGIO^{1,2}¹Vanderbilt University Department of Biomedical Engineering, Nashville, TN, ²Vanderbilt University Department of Cancer Biology, Nashville, TN

P-Th-B-60**Activation of the Tumor Endothelium for Increased Infiltration of Lymphocytes**B. H. KWAN¹, J. R. COCHRAN², AND K. D. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Stanford University, Stanford, CA**P-Th-B-61****Study of Anti-tumor Immunity Induced by Local Thermal Stimulation Using Animal Breast Cancer Model**J. LIU¹, P. LIU¹, AND L. XU²¹Med-X Research Institute, Shanghai, China, People's Republic of, ²School 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. CHAN¹, J. HWANG¹, W. M. GRADY^{1,2}, AND S. H. PUN¹¹University of Washington, Seattle, WA, ²Fred Hutchinson Cancer Research Center, Seattle, WA**P-Th-B-63****Compton Imaging for Heavy Ion Radiation Therapy**J. P. MILLER¹¹Cornell University, New York, NY**P-Th-B-64****Folate Receptor Targeted Nanocomposites for Bimodal Imaging of Prostate Cancer**A. SHANAVAS¹, D. BAHADUR¹, AND R. SRIVASTAVA¹¹Indian 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. CHOI¹, M. R. DALLAS¹, K. KONSTANTOPOULOS^{1,2}, S. X. SUN^{1,2}, J. S. LEE³, D. HODZIC⁴, AND D. WIRTZ^{1,2}¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins Physical Sciences - Oncology Center, Baltimore, MD, ³National Cancer Institute, Bethesda, MD, ⁴Washington University, St. Louis, MO**P-Th-B-66****Co-registration of Optical Coherence Tomography Volumes for 3D Bladder Mosaicing**K. L. LURIE¹, T. MARVDASHTI¹, AND A. K. ELLERBEE¹¹Stanford University, Stanford, CA**P-Th-B-67****A Single-cell Method to Determine the Role of the LINC Complex in Epigenetic Regulation**A. B. CHAMBLISS¹, P-H. WU¹, A. CHISENHALL¹, AND D. WIRTZ¹¹Johns 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. SRINIVASARAGHAVAN¹, J. STROBL¹, AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**P-Th-B-69****Characterization of Leukemic Stem Cells by Assessing DNA Damage**J. PARK¹, R. JONES¹, AND N. SINGH¹¹University 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-POLYACHENKO¹, E. A. THOMPSON¹, C. MACNEILL¹, G. DONATI², E. WAILES¹, AND B. T. JONES²¹Wake Forest University Health Sciences, Winston-Salem, NC, ²Wake Forest University, Winston-Salem, NC**P-Th-B-71****Fungal Nanoparticles as a Multifunctional Anti-tumor Therapeutics for Cancer Therapy**Y. WANG¹, S. YI¹, L. SUN¹, Y. HUANG¹, AND M. ZHANG¹¹The 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-POLYACHENKO¹¹Wake Forest Baptist Medical Center, Winston-Salem, NC, ²Virginia Tech-Wake Forest, Winston-Salem, NC**P-Th-B-73****Polymer Nanoparticles for NIR-mediated Photothermal Ablation of Colorectal Cancer**C. M. MACNEILL¹, R. C. COFFIN², D. L. CARROLL², AND N. H. LEVI-POLYACHENKO¹¹Wake Forest University Health Sciences, Winston Salem, NC, ²Center 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. MAYLE¹, R. Y. CHIU¹, R. J. LAMM¹, S. KNOWLES¹, A. M. WU¹, AND D. T. KAMEI¹¹University of California, Los Angeles, Los Angeles, CA**P-Th-B-75****Enzymatically Degradable Nano-films for Capture and Release of Circulating Tumor Cells**W. LI¹, E. REATEGUI², M-H. PARK¹, S. CASTLEBERRY¹, S. MAYNER¹, A. JENSEN², S. L. STOTT², M. TONER², AND P. T. HAMMOND¹¹MIT, Cambridge, MA, ²Massachusetts 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. DEWITT¹, A. PEKKANEN¹, J. ROBERTSON¹, AND M. N. RYLANDER^{1,2}¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P-Th-B-77****Platelet-inspired Nanovehicles for Targeted Delivery of Doxorubicin to Metastatic Breast Cancer**V. PAN¹, C. L. MODERY-PAWLOWSKI¹, A. MASTER¹, P. SIVA¹, G. HOWARD², AND A. SEN GUPTA¹¹Case Western Reserve University, Cleveland, OH, ²University of Akron, Akron, OH**P-Th-B-78****A Novel Method of Early detection for Oral Cancer**M. DHAR¹, Y-A. CHEN¹, J. YU¹, W. J. MELVIN¹, A. DAKOS¹, J. ZHENG¹, AND T. WU¹¹Johns Hopkins University, Baltimore, MD**P-Th-B-79*****In Vivo* Microwave Dielectric Spectroscopy of Breast Tumor Xenografts with SWCNT Injections**S. X. XIE¹, F. GAO², J. H. BOOSKE², S. C. HAGNESS², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²University of Wisconsin-Madison, Madison, WI

P-Th-B-80**Engineering Polymer Linkers to Improve Quantum Dot Signal Obtained by Chemical Amplification**M. K. RAHIM¹, R. KOTA¹, AND J. B. HAUN¹¹University 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. RAO¹, I. P. FUENTES², AND X. HE¹¹The Ohio State University, Columbus, OH, ²University of Puerto Rico, Mayaguez, PR**P-Th-B-82****Assessing Pancreatic Cancer Cell Uptake Of Gold-Based Nanoparticles Using Confocal Raman Microscopy**L. M. REESE¹, W. LENG¹, P. J. VIKESLAND¹, AND L. R. BICKFORD¹¹Virginia Tech, Blacksburg, VA**P-Th-B-83****Targeted Single-Walled Carbon Nanotubes for Radiofrequency Induced Thermal Ablation of Metastatic Breast Cancer**E. HUGGINS¹, K. PASSLACK¹, AND R. HARRISON¹¹University of Oklahoma, Norman, OK**P-Th-B-84****Gold Nanoparticles Enable Targeted Labeling and Enhanced Contrast for Radiographic Imaging of Breast Microcalcifications**L. E. COLE¹, T. C. VARGO-GOGOLA², AND R. K. ROEDER¹¹University of Notre Dame, Notre Dame, IN, ²Indiana University School of Medicine - South Bend, South Bend, IN**P-Th-B-85****Elastin Based Multifunctional Nanoparticles for Targeted Therapy of Lung Adenocarcinomas**R. IGLESIAS¹ AND P. KORA¹¹University of South Florida, Tampa, FL**P-Th-B-86****Lysosome Disruption by Targeted Magnetic Nanoparticles**M. DOMENECH¹, I. MARRERO-BERRIOS¹, M. TORRES-LUGO¹, AND C. RINALDI²¹University of Puerto Rico, Mayagüez, Mayagüez, PR, ²University of Florida, Gainesville, FL**P-Th-B-87****Nanopore Single-molecule Detection of Cancer-derived microRNA Biomarkers**Y. WANG¹ AND L-Q. GU¹¹University of Missouri, Columbia, MO**P-Th-B-88****NanoDoctor: Crowdsourcing the Design of Swarming Nanoparticles**S. HAUERT¹, J. LO¹, O. NACHUM¹, AND S. N. BHATIA¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Th-B-89****Multifunctional Prussian Blue Nanoparticles for Theranostics of Pediatric Brainstem Gliomas**M. F. DUMONT¹, S. YADAVILLI¹, R. W. SZE^{1,2}, J. NAZARIAN^{1,2}, AND R. FERNANDES^{1,2}¹Children's National Medical Center, Washington, DC, ²George 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. SULLIVAN³, N. ACETO³, S. MAHESWARAN³, D. HABER^{3,4}, M. TONER^{1,2}, AND S. STOTT^{1,3}¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, ²Department of Surgery, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, ³Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA, ⁴Howard 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. KOPECEK¹, E-J. PARK², C-S. MEI², Y-Z. ZHANG², N. J. MCDANNOLD², AND T. M. PORTER¹¹Boston University, Boston, MA, ²Brigham and Women's Hospital, Harvard Medical School, Boston, MA**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. MENON¹ AND S. M. ADHYAPAK²¹Carnegie Mellon University, Pittsburgh, PA, ²St.John's Medical College Hospital, Bangalore, India**P-Th-B-93****Decellularized Myocardial Thin Sections as Scaffolds for Engineered Heart Tissue**A. H. MORRIS¹, J. SCHWAN¹, A. KWACZALA¹, M. B. AYERS¹, AND S. G. CAMPBELL¹¹Yale University, New Haven, CT**P-Th-B-94****Structural Assessment of Pre-Powerstroke Myosin Elucidates How dADP Binding Increases Contractile Function**S. G. NOWAKOWSKI¹, M. REGNIER¹, AND V. DAGGETT¹¹University 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. FOROOUZAN¹, A. BELLOFIORE¹, M. BATES¹, H. KELLIHAN¹, D. CONSIGNY¹, C. FRANÇOIS¹, AND N. CHESLER¹¹University 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. ALAVI¹ AND A. KHERADVAR¹¹University 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. PAHLEVAN³, B. DUEITT¹, AND A. KHERADVAR^{1,2}¹University of California, Irvine, Irvine, CA, ²Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA, ³California Institute of Technology, Pasadena, CA**P-Th-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}¹University of California, Irvine, Irvine, CA, ²Edwards 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. SEAMAN¹, S. BIDDLE¹, AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, IN

P-Th-B-100**Hemodynamic Comparison of Normal and Calcified Aortic Valve Anatomies Under Physiologic Flow Conditions**C. SEAMAN¹ AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, IN**P-Th-B-101****Effect of Anomalous Papillary Muscles on Mitral Valve Function**Y. RIM¹, D. D. MCPHERSON¹, AND H. KIM¹¹The 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. RIM¹, D. D. MCPHERSON¹, K. B. CHANDRAN², AND H. KIM^{1,2}¹The University of Texas Health Science Center at Houston, Houston, TX, ²The University of Iowa, Iowa City, IA**P-Th-B-103****Calcification by Valve Interstitial Cells Cultured on Stiff Substrates is Caused by Anoikis**R. ZHAO¹, Z. MIRZAEI¹, C. Y. YIP¹, AND C. A. SIMMONS¹¹University 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. JACKSON¹, S. R. IGO¹, D. MARAGIANNIS¹, AND S. H. LITTLE¹¹The 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. SAPP¹, H. FARES¹, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX**P-Th-B-106****Altered Extracellular Matrix Induces Mesenchymal Transformation in Adult Valve Endothelial Cells**S. DAHAL¹ AND G. MAHLER¹¹Binghamton University, Binghamton, NY**P-Th-B-107****Detecting Differences in Calcification among the Aortic Valve Cusps**S. MASJEDI¹, A. AMARNATH¹, K. M. BAILEY¹, AND Z. FERDOUS¹¹University of Tennessee Knoxville, Knoxville, TN**P-Th-B-108****Elucidating Sex-Related Differences in Calcification Using Rat Aortic Valve Cells**S. MASJEDI¹ AND Z. FERDOUS¹¹University of Tennessee Knoxville, Knoxville, TN**P-Th-B-109****Pregnancy-Induced Collagen and Cellular Remodeling in Heart Valves**C. M. PIERLOT¹, M. TURCHIN¹, J. J. BAK¹, L. G. JOHNSTON¹, J. F. PRADO¹, C. N. CLEVERSEY¹, J. M. LEE¹, AND S. M. WELLS¹¹Dalhousie 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. MADAPPALLATH¹, R. M. ALEX², AND K. BEHBEHANI¹¹University of Texas Arlington, Arlington, TX, ²UT Arlington, Arlington, TX**P-Th-B-111****Artery Buckling Stimulates MMP-2 Expression in Arterial Wall**Y. XIAO¹, J. K. CHESNUTT¹, AND H-C. HAN¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-B-112****Left Ventricular Diastolic Function During Head Up Tilt and Hypovolemia**Q. ZHANG¹, M. B. STENGER², T. P. MATZ³, C. F. KNAPP¹, A. R. PATWARDHAN¹, AND J. M. EVANS¹¹University of Kentucky, Lexington, KY, ²Wyle Science, Technology and Engineering Group, Houston, TX, ³MEI Technologies, Houston, TX**P-Th-B-113****The Effects of Shear Stress and Secondhand Smoke on Platelet Activation and Aggregation**M. SULTANA¹, D. A. RUBENSTEIN¹, AND W. YIN¹¹Oklahoma State University, Stillwater, OK**P-Th-B-114****Moving Domain Computational Fluid Dynamics to Interface with An Embryonic Model of Cardiac Morphogenesis**J. LEE¹, M. ESMAILY-MOGHADAM², E. KUNG², A. L. MARSDEN², AND T. K. HSIAI¹¹University of Southern California, Los Angeles, CA, ²University of California, San Diego, La Jolla, CA**P-Th-B-115****Dynamic Nonlinear Modeling of EEG data for Diagnosis of Alzheimer's Disease**Y. KANG¹, D. SHIN¹, J. ESCUDERO², E. IFEACHOR², AND V. MARMARELIS¹¹University of Southern California, Los Angeles, CA, ²Plymouth 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. SEONG¹, W. JEONG², N. SMITH³, AND R. TOWNER³¹California State Polytechnic University, Pomona, CA, ²University of Central Oklahoma, Edmond, OK, ³Oklahoma Medical Research Foundation, Oklahoma City, OK**P-Th-B-117****Nested-Loop Modeling of Cerebral Hemodynamics**V. MARMARELIS¹, D. C. SHIN¹, M. E. ORME², AND R. ZHANG³¹University of Southern California, Los Angeles, CA, ²Sonovation Inc., Palos Verdes Estates, CA, ³University of Texas Southwestern Medical Center, Dallas, TX**P-Th-B-118****Model-Based Estimation of Cerebrovascular Resistance**V. MARMARELIS¹, D. SHIN¹, M. ORME², AND R. ZHANG³¹University of Southern California, Los Angeles, CA, ²Sonovation Inc., Palos Verdes Estates, CA, ³University 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. RHYNER¹, J. MALINARIC¹, L. GALEY¹, P. LAMMERT¹, A. GENET¹, Z. STEEGE¹, J. M. LOPEZ², AND M. G. WATSON¹¹LeTourneau University, Longview, TX, ²UPAEP, Puebla, Mexico

P-Th-B-120

Mechanical Factors Influencing Initial Platelet Adhesion to Collagen

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P-Th-B-121

Hydraulic Permeability and Macromolecule Diffusivity in Fibrin Gels and Platelet Rich Thrombi

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Track: Cardiovascular Engineering

Lymphatic System

P-Th-B-122

Effects of Interstitial and Luminal Flow on Dendritic Cell Transmigration into Initial Lymphatic Vessels

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P-Th-B-123

Multiple Modes of Lymphatic Vessel Pumping Predicted by One Simple Mechanism

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Cardiovascular Engineering

P-Th-B-124

Spatial Variation of Protein and Elastic Lamellae along Aortic Media

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P-Th-B-125

Alleviation of Disrupted Growth Factor Signaling in a Diabetic Mouse Model

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P-Th-B-126

Using MRI and CFD to Investigate Thrombosis Growth and the Correlations to Wall Shear Stress Distribution

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P-Th-B-127

Shear Stress-Induced Protein Kinase C Epsilon Modulates Endothelial Tube Formation

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P-Th-B-128

A Comparative Study of The Effects of Different Biotinylation Reagents on The Membrane Fluidity of Red Blood Cells

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P-Th-B-129

TNF- α ; Stimulated Endothelial Cells Become Elongated When Exposed to Statin Drugs and Laminar Wall Shear Stress

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¹McGill University, Montreal, QC, Canada

P-Th-B-130

Antiretroviral Drugs and Their Effects On Arterial Remodeling and Protease Activity

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P-Th-B-131

Effect of Intraluminal Thrombus in Abdominal Aortic Aneurysm Expansion: A Longitudinal Patient Study

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Track: Device Technologies and Biomedical Robotics

Stents

P-Th-B-132

Vascular Stents With Rationally-Designed Surface Nanopatterning

S. C. GOTT¹, B. A. JABOLA², G. XU¹, AND M. P. RAO¹

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Track: Device Technologies and Biomedical Robotics

Implantable Devices

P-Th-B-133

Miniaturized Implantable Wireless Gastrostimulator

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P-Th-B-134

A Novel Implantable Glaucoma Valve Using Ferrofluid

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P-Th-B-135

Implantable Pressure Telemetry Device With Thin Film Micropackage

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P-Th-B-136

Improved Bending Strength Through Surface Engineering

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P-Th-B-137

Closed-Loop Recharging System for a Fetal Pacemaker

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P-Th-B-138**Package Design and Life Testing of a Percutaneously Implanted Cardiac Pacemaker for Fetuses**L. ZHOU¹, R. CHMAIT¹, B-C. YANIV², R. A. PECK¹, M. LU¹, AND G. E. LOEB¹¹University of Southern California, Los Angeles, CA, ²Children'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. BINGABR¹, B. ESPINOZA-VARAS², S. BINGABR³, AND A. MOUSSA¹¹University of Central Oklahoma, Edmond, OK, ²Oklahoma University Health Science Center, Oklahoma City, OK, ³Oklahoma University, Norman, OK**P-Th-B-140****Three-dimensional Slot Filter for Viable Capture of Circulating Tumor Cells**M. ZHOU¹, J. WANG¹, J. CHANG², W. KHAN¹, AND S. ZHENG¹¹Pennsylvania State University, University Park, PA, ²Harvard 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. WANG², D. J. BURGESS², AND F. PAPANIMITRAKOPOULOS²¹Biorasis Inc., Storrs, CT, ²University 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. BYRNE¹, M. JAJJA¹, A. O'NEILL¹, M. NAPIER¹, J. C. LUFT¹, J. YEH¹, AND J. DESIMONE^{1,2}¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²North Carolina State University, Raleigh, NC**Track: Device Technologies and Biomedical Robotics****Implantable Electronics****P-Th-B-143****Mapping Wireless Power Transfer for Implantable Stimulator Applications**Z. HUGHES¹, Y-S. SEO¹, P. WOODS¹, M. NGUYEN¹, P. G. MCCORKLE¹, S. RAO¹, AND J-C. CHIAO^{1,2}¹UT Arlington, Arlington, TX, ²UTSW Medical Center at Dallas, Dallas, TX**P-Th-B-144****Fabrication and Characterization of Enzymatic Biofuel Cells in Series**S. J. STEPHENSON¹ AND D. W. SCHMIDTKE¹¹University 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. WATERS¹, S. ASGARI², B. MAHONEY¹, P. BONDE², AND J. R. SMITH³¹University of Washington, Seattle, WA, ²Yale University, New Haven, CT, ³Univ, Seattle, WA**P-Th-B-146****Impact of In Vivo Conditions on Power Transfer to Transmitters and Methods for Reliable Function**J. A. SZIVEK¹, J. L. OUELLETTE¹, A. C. ARELLANO¹, AND J. T. RUTH¹¹University of Arizona, Tucson, AZ**P-Th-B-147****Wirelessly Powered Implantable Physiological Controller (WPIC) for Ventricular Assist Devices**S. S. ASGARI¹ AND P. BONDE¹¹Bonde 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. YU¹, A. BRUCE¹, L. WANG², P. P. FULAY¹, Y. ROJANASAKUL¹, AND Y. YANG¹¹West Virginia University, Morgantown, WV, ²National Institute for Occupational Safety and Health, Morgantown, WV**P-Th-B-149****Evaluation of Nanocrystalline Diamond Seeding Process to Develop a Bacterial Biosensor**W. ZHANG¹, A. RADADIA¹, S. BANU¹, AND A. SCHEXNIDER²¹Louisiana Tech University, Ruston, LA, ²University 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. MAKOWSKI¹, J. S. KNUTSON^{1,2}, J. CHAE^{1,2}, AND P. E. CRAGO¹¹Case Western Reserve University, Cleveland, OH, ²MetroHealth 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. YAO¹, N. VAN KLINCK², J. SULLIVAN¹, AND J. DEWALD¹¹Northwestern University, Chicago, IL, ²University 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. LAI¹ AND C. TAN¹¹Wayne 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. LIN¹¹Drexel Plasma Institute, Camden, NJ**P-Th-B-154****A Novel Approach in Detecting Normal and Shear Forces at the Fingertips with Minimal Hysteresis**X. ZHENG¹ AND P. TROYK^{1,2}¹Illinois Institute of Technology, Chicago, IL, ²Pritzker Institute of Biomedical Science and Engineering, Chicago, IL**P-Th-B-155****Development and Application of Biomuscles in Prosthetics**K. M. CONRAD¹, C. NOE¹, AND J. LA BELLE¹¹Arizona State University, Tempe, AZ

P-Th-B-156**Preliminary Study to Optimize the LED Operation of the Unconstrained Photoplethysmography System**S. HONG¹, J. LEE², H. BAEK³, AND K. PARK⁴¹Seoul National University, Seoul, Korea, Republic of, ²Texas Instruments, Seoul, Korea, Republic of, ³Samsung, Seoul, Korea, Republic of, ⁴College of Medicine, Seoul National University, Seoul, Korea, Republic of**Track: Nano to Micro Technologies****Microfluidic Platforms****P-Th-B-157****Simultaneous Perfusion Apparatus (SPA) for Oocyte Manipulation and Tracking**S. ANGIONE¹, L. BRAYBOY^{2,3}, N. OULHEN⁴, G. WESSEL⁴, AND A. TRIPATHI¹¹School of Engineering, Center for Biomedical Engineering, Brown University, Providence, RI, ²Division of Reproductive Endocrinology and Infertility, Women and Infants Hospital, Providence, RI, ³Warren Alpert Medical School, Brown University, Providence, RI, ⁴Department 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. AU¹, S. GIBBS¹, A. SCOTT¹, L. F. HOROWITZ¹, E. VINCKENBOSCH^{1,2}, B. OTIS¹, AND A. FOLCH¹¹University of Washington, Seattle, WA, ²École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**P-Th-B-159****Simulation Tools for Design Optimization of Microchannels Using Antibody-Analyte Transport-Reaction**K. L. HAMLINGTON¹, R. CORTEZ¹, H. FUJIOKA¹, AND D. P. GAVER¹¹Tulane University, New Orleans, LA**P-Th-B-160****Simultaneous O₂ and CO₂ Measurements Localized in an Open Top Microfluidic Cell Culture**Z. LI¹, Z. ZHAO¹, R. LIU¹, AND J. F.-J. LO¹¹University 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. RAO¹, U. TATA², P. GARIGIPATI³, C. HERNANDEZ⁴, A. SHARMA¹, V. K. LIN¹, AND J.-C. CHIAO^{1,5}¹UT Arlington, Arlington, TX, ²UCLA, Los Angeles, CA, ³Plano High East, Plano, TX, ⁴Arlington High School, Arlington, TX, ⁵UTSW Medical Center of Dallas, Dallas, TX**P-Th-B-162****Sphingolipid Metabolites Affect Dielectrophoretic Signature of Syngeneic Murine Ovarian Cancer Cells**A. SALMANZADEH¹, E. S. ELVINGTON¹, M. BONAKDAR¹, P. C. ROBERTS¹, E. M. SCHMELZ¹, AND R. V. DAVALOS¹¹Virginia Tech, Blacksburg, VA**P-Th-B-163****High Efficiency Magnetic Sieving Device for Rare T Cell Population**J.-H. LEE¹, R. KERSLAKE², AND L. C. KAM¹¹Columbia University, New York, NY, ²City College of New York, New York, NY**P-Th-B-164****Characterizing Bacterial Adhesion in Flow without Transport Artifacts**W. E. THOMAS¹¹University of Washington, Seattle, WA**P-Th-B-165****Effective Microfluidic Mixing by Paramagnetic Microbeads Rotation: MEMS and Numerical Analysis**S. KIM¹, D. P. GIDDENS¹, D. OWEN¹, AND P. J. HESKETH¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-B-166****Hypoxia Tolerance of the Mammalian Nervous System Under Spatially Controlled Oxygen Conditions**G. MAULEON¹, J. LARSON¹, AND D. T. EDDINGTON¹¹University 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. MARKS¹, M. PISHKO¹, G. W. JACKSON², J. KAMEOKA¹, AND G. COTÉ¹¹Texas A&M, College Station, TX, ²Base Pair Biotechnologies, Inc., Houston, TX**P-Th-B-168****EGF as a Novel Therapeutic Target for Medulloblastoma Metastasis**J. RICO¹ AND M. VAZQUEZ¹¹The City College of New York, New York, NY**P-Th-B-169****Fast Microfluidic Mixing Via Acoustically Oscillated Sharp Edges**P.-H. HUANG¹, D. AHMED¹, L. WANG², AND T. J. HUANG¹¹The Pennsylvania State University, State College, PA, ²Ascent Bio-Nano Technologies Inc., State College, PA**P-Th-B-170****An On-chip, Multichannel Droplet Sorter Using Standing Surface Acoustic Waves (SSAW)**S. LI¹, X. DING¹, F. GUO¹, Y. CHEN¹, M. I. LAPSELY¹, S.-C. LIN¹, AND T. HUANG¹¹Pennsylvania State University, University Park, PA**P-Th-B-171****Improving the Post-thaw Wash Process for Cryopreserved Red Blood Cells Using Microfluidics**R. E. LUSIANTI¹ AND A. Z. HIGGINS¹¹Oregon State University, Corvallis, OR**P-Th-B-172****Ciliated Micropillar Based Microfluidic Isolation of Cancer Derived Exosomes**Z. WANG¹, H.-J. WU², Y. HU², B. GODIN², J. X. ZHANG¹, AND X. LIU²¹University of Texas at Austin, Austin, TX, ²The Methodist Hospital Research Institute, Houston, TX**P-Th-B-173****Deformability Dependent Separation of Cells in a Microfluidic Device**G. WANG¹, W. MAO¹, R. BYLER¹, K. PATEL¹, C. HENEGAR¹, A. ALEXEEV¹, AND T. SULCHEK¹¹Georgia Tech, Atlanta, GA**P-Th-B-174****Post-Assembly PEGylation of a PDMS Microchannel for Enhancing Hemocompatibility**K. M. KOVACH¹, J. R. CAPADONA^{1,2}, A. SEN GUPTA², AND J. A. POTKAY^{2,3}¹Advanced Platform Technology (APT) Center, Louis Stokes Cleveland VA Medical Center, Cleveland, OH, ²Case Western Reserve University, Cleveland, OH, ³VA Ann Arbor Healthcare System, Ann Arbor, MI**P-Th-B-175****Delayed Drosophila Embryogenesis under Oxygen Deprivation in Microfluidic Device**Z. WANG¹, S. OPPEGARD¹, D. EDDINGTON¹, AND J. CHENG¹¹University of Illinois at Chicago, Chicago, IL

P-Th-B-176**Tension Induced Neurite Growth in Microfluidic Channels**T. D. NGUYEN¹ AND M. C. MCALPINE¹¹Princeton University, Princeton, NJ**P-Th-B-177****Microfluidic Synthesis of Composite Microgels Converting Light into Mechanical Force**C-H. CHEN¹¹National University of Singapore, Singapore, Singapore**P-Th-B-178****Preparation and Characterization of PEO Coating for Microchannel Hemodialyzer Application**M. COBLYN¹, K. HEINTZ², K. SCHILKE¹, J. SNIDER¹, M. TRUONG¹, G. JOVANOVIĆ², J. MCGUIRE¹, AND W-K. LEE³¹Oregon State University, Corvallis, OR, ²Lehigh University, Bethlehem, PA, ³Dankook 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. MURATA², R. KOEPEL², J. ANDERSEN², T. KANADE², A. C. BALAZS¹, Z. LIRON³, AND A. J. RUSSELL²¹University of Pittsburgh, Pittsburgh, PA, ²Carnegie Mellon University, Pittsburgh, PA, ³Israel Institute for Biological Research, Ness-Ziona, Israel**P-Th-B-180****A Chip for Hydrodynamic Microvortical Rotation of Live Single Cells**R. M. SHETTY¹, J. MYERS¹, W. TELLER¹, A. SHABILLA¹, H. WANG¹, S-H. CHAO¹, D. SMITH¹, J. HOUKAL¹, J. VELA¹, L. KELBAUSKAS¹, R. H. JOHNSON¹, AND D. R. MELDRUM¹¹Arizona State University, Tempe, AZ**P-Th-B-181****The Integration Of Tailorable Membranes Within Microchannels To Electrophoretically Fractionate DNA**M. ZHENG¹, B. KALARIA¹, AND J. D. ZAHN¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**P-Th-B-182****Simple Microfluidic Assay For The Measurement Of Neutrophil Oxidative Burst**S. MOUSSAVI-HARAMI¹, E. K. SACKMANN¹, A. HUTTENLOCHER¹, AND D. J. BEEBE¹¹University 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. MINA¹, W. WANG¹, Q. CAO¹, B. MURRAY¹, P. HUANG¹, AND G. MAHLER¹¹Binghamton University, Binghamton, NY**P-Th-B-185****Guided Cell Migration by Topographical Guidance and Biomolecular Gradients Within an Open Access Microfluidic Chamber array**P. KIM¹, K. NAM¹, N. BHATTACHARJEE¹, A. FOLCH¹, S. KWON², AND D-H. KIM¹¹University of Washington, Seattle, WA, ²Seoul National University, Seoul, Korea, Republic of**P-Th-B-185****Development of Sealing Methods for a Microchannel Hemodialyser**P. S. MCNEFF¹, S. PORTER¹, D. WARD¹, AND B. PAUL¹¹Oregon State University, Corvallis, OR**P-Th-B-156****A Micropore-based Impedance Flow Cytometer for Identifying Differentiation State of Stem Cells**H. SONG¹, Y. WANG¹, J. ROSANO¹, B. PRABHAKARPANDIAN¹, C. GARSON¹, K. PANT¹, AND E. LAI^{2,3}¹CFD Research Corporation, Huntsville, AL, ²U.S. Army Medical Research and Materie, Fort Detrick, MD, ³Johns Hopkins University, Baltimore, MD**P-Th-B-186****A Micropatterned Microfluidic Platform for Probing Physicochemical Effects on Cell Behavior**R. NATIVIDAD¹ AND A. ASTHAGIRI¹¹Northeastern University, Boston, MA**P-Th-B-187****Cell Communication in Three Dimensional Microenvironments**M. BYRNE¹, L. TRUMP¹, A. DESAI¹, L. A. RUND¹, L. A. SCHOOK¹, AND P. J. KENIS¹¹University 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. VU¹, A. CHEN¹, T. PAN¹, AND A. REVZIN¹¹UC Davis, Davis, CA**P-Th-B-189****Standing Surface Acoustic Wave (SSAW) Based Rare Cell Enrichment**Y. CHEN¹ AND T. J. HUANG¹¹The Pennsylvania State University, University Park, PA**P-Th-B-190****High-throughput Cell Screening in an Open Microfluidic Platform**L. F. HOROWITZ¹, A. K. AU¹, A. SCOTT¹, D. R. STORM¹, AND A. FOLCH¹¹University of Washington, Seattle, WA**P-Th-B-191****Design and Fabrication of Engineered Platforms to Control Multiple-cue Directional Migration**L. M. LARA¹ I. C. SCHNEIDER¹ AND S. WILLET²¹Iowa State University, Ames, IA, ²Arkansas Tech University, Russellville, AR**P-Th-B-192****Point-of-Care CD Immunoassay for Characterization of Age-Related Macular Degeneration**D. I. WALSH¹ AND S. K. MURTHY¹¹Northeastern University, Boston, MA**P-Th-B-193****Magnetically Coated Track-Etched Membranes for Highly Efficient Sorting of Biological Targets**M. MULUNEH¹ AND D. ISSADORE¹¹University of Pennsylvania, Philadelphia, PA**P-Th-B-194****Electrotaxis-on-Disc: A High Throughput Screening Platform for Electrotaxis-Related Genes**S. ZHAO¹, R. GAO², M. ZHAO², T. PAN¹, AND P. DEVREOTES³¹University of California, Davis, Davis, CA, ²University of California, Davis, Sacramento, CA, ³Johns Hopkins University School of Medicine, Baltimore, MD**P-Th-B-195****Self-Sorting Bacteria from Heterogeneous Samples Using Microfluidic Devices**N. TANDOGAN¹ AND E. D. GOLUCH¹¹Northeastern University, Boston, MA**P-Th-B-196****Integrated In-Film Bioprocessing in Microfluidics Enabled Membranes and Cell-Gel Composites**X. LUO¹, J. TERRELL², H-C. WU², C-Y. TSAO², AND W. BENTLEY²¹Catholic University of America, Washington, DC, ²University of Maryland, College Park, MD**P-Th-B-197****Leukocyte Isolation and Sorting Using Microdiaphragm Pumping and Registered Microfiltration**T. GABORSKI¹ AND J. WILCOX¹¹Rochester Institute of Technology, Rochester, NY

P-Th-B-198**Quality Control of Milk Sample Using MEMS-based Purge & Trap Technique**M. AKBAR¹, M. RESTAINO¹, AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**P-Th-B-199****Large Capacity Electrode Arrays for High Throughput Cell Sorting using Positive Dielectrophoresis**M. G. SIMON¹, A. AKIL¹, J. L. NOURSE¹, A. P. LEE¹, AND L. A. FLANAGAN¹¹University of California, Irvine, Irvine, CA**P-Th-B-200****Microfluidic Serial Dilution Ladder**M. HWANG¹, S. AHRAR¹, P. N. DUNCAN¹, AND E. E. HUI¹¹University of California, Irvine, Irvine, CA**P-Th-B-201****Application of Ultra Dielectrophoresis (uDEP) for Multiplexed Proteomics**S. EMAMINEJAD^{1,2}, M. JAVANMARD², R. W. DUTTON¹, AND R. W. DAVIS²¹Stanford University, Stanford, CA, ²Stanford Genome Technology Center, Palo Alto, CA**P-Th-B-202****Full Length Linearization of Yeast Chromosome in Tuneable Nanochannels**B. KIM¹, T. MATSUKA¹, AND S. TAKAYAMA¹¹University 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. IMSIROVIC¹, H. PARAMESWARAN¹, E. BARTOLAK-SUKI¹, AND B. SUKI¹¹Boston University, Boston, MA**P-Th-B-204****Collagen Remodeling by Pulmonary Fibroblasts: Role of ETS-2, TFB and Biomechanical Forces**M. SCHICKEL¹, C. BARAN², J. LANNUTTI³, H. POWELL^{1,3}, S. GHADIALI^{1,2}, AND C. MARSH²¹Biomedical Engineering Department, The Ohio State University, Columbus, OH, ²Internal Medicine: Pulmonary, Allergy, Critical Care, and Sleep Medicine, The Ohio State University, Columbus, OH, ³Material 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. LIU¹ AND D. TSCHUMPERLIN¹¹Harvard School of Public Health, Boston, MA**P-Th-B-206****Ventilation Effects On Surfactant Secretion And Spreading In Acute Lung Injury**A. B. KHARGE¹ AND C. E. PERLMAN¹¹Stevens 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. POTHEM¹, D. E. WAGNER¹, D. J. WEISS¹, AND J. H. T. BATES¹¹University 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. POULIOT¹, M. MALIK¹, AND R. L. HEISE¹¹Virginia 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. STANTON¹, J. P. GLEGHORN¹, AND C. M. NELSON¹¹Princeton University, Princeton, NJ**P-Th-B-210****Human Respiratory Lung Bronchioles: In Vitro Bio-assessment Platform**J-H. HUANG¹, A. M. GOUMAS¹, A. A. CRAWLEY¹, A. AREFIN², J. GAO¹, AND R. S. IYER¹¹Los Alamos National Laboratory, Los Alamos, NM, ²University 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. BONENFANT¹, D. E. WAGNER¹, C. PARSONS¹, D. SOKOCEVIC¹, Z. D. BORG¹, E. BROOKS¹, M. LATHROP¹, Y. W. LAM¹, B. DENG¹, M. DE SARNO¹, T. ASHIKAGA¹, R. LOI², A. M. HOFFMAN³, AND D. J. WEISS¹¹University of Vermont, Burlington, VT, ²University of Cagliari, Cagliari, Italy, ³Tufts 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. BATES¹ AND B. J. SMITH¹¹University of Vermont, Burlington, VT**P-Th-B-213****Endothelial Barrier Disruption and Recovery is Controlled by Substrate Stiffness**K. BIRUKOV¹, X. TIAN¹, I. COKIC¹, A. A. BIRUKOVA¹, AND M. GARDEL¹¹University of Chicago, Chicago, IL**P-Th-B-214****Bulk Modulus and the Distribution of Mechanical Forces in a Model of Pulmonary Fibrosis**B. SUKI¹, C. L. OLIVEIRA¹, AND J. H. BATES²¹Boston University, Boston, MA, ²University 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. NELSON¹ AND S. GHADIALI¹¹Ohio State University, Columbus, OH**P-Th-B-216****Fibrotic Microenvironment Sensitization of Endothelial Cells and Pericytes Induces Leukocyte Recruitment**P. SAVA¹ AND A. L. GONZALEZ¹¹Yale University, New Haven, CT

P –Th - B - 217**Multi-Level Disease Models from Gene Expression Data**J. E. SHOEMAKER¹, S. FUKUYAMA¹, H. KITANO^{1,2}, AND Y. KAWAOKA^{1,3}¹Japan Science and Technology Agency, Minato-ku, Japan, ²The Systems Biology Institute, Tokyo, Tokyo, Japan, ³The 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 I (Nrg1)**N. YEHYA^{1,2}, M. J. SONG¹, G. G. LAWRENCE¹, N. DAVIDOVICH¹, AND S. S. MARGULIES¹¹University of Pennsylvania, Philadelphia, PA, ²Children'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. MA¹ AND J. H. BATES¹¹University of Vermont, Burlington, VT**P –Th - B - 220****Interaction Between Cortical Actin and Extracellular Matrix Contributes to Airway Smooth Muscle Reactivity**H. PARAMESWARAN¹, E. CANOVIC¹, B. HARVEY¹, M. SMITH¹, D. STAMENOVIC¹, B. SUKI¹, AND K. R. LUTCHEN¹¹Boston University, Boston, MA**P –Th - B - 221****Modeling the Pulmonary Distribution of Surfactant Administered into an Asymmetric Airway Tree**M. FILOCHE¹, C-F. TAI², M. FLORENS¹, AND J. B. GROTBORG²¹Ecole Polytechnique, CNRS, Palaiseau, France, ²University of Michigan, Ann Arbor, MI**P –Th - B - 222****Modeling and Experimental Validation of Sound Transmission in Human Torso**Y. PENG¹, Z. DAI², H. MANSY³, B. HENRY⁴, R. SANDLER⁵, AND T. ROYSTON⁴¹University of Illinois at Chicago, Chicago, IL, ²Univ. of Illinois at Chicago, Chicago, IL, ³Rush Univ., Chicago, IL, ⁴University of Illinois at Chicago, CHICAGO, IL, ⁵Rush Univ., Chicago**P –Th - B - 223****A Five Layer Finite Element Model for Simulation of Passive and Active Airway Wall Mechanics**B. J. BREEN¹ AND M. H. TAWHAI¹¹Auckland Bioengineering Institute, Auckland, New Zealand**P –Th - B - 224****Numerical Model of Oxygen Trapping in the Healthy and Diseased Lung**M-Y. KANG¹, M. FILOCHE^{1,2}, I. KATZ^{3,4}, AND B. SAPOVAL^{1,2}¹CNRS - Ecole Polytechnique, Palaiseau Cedex, France, ²UniverSud, Cachan, France, ³Air Liquide Santé International, Jouy-en-Josas, France, ⁴Lafayette College, Easton, PA**P –Th - B - 225****What Triggers the Emergence of Ventilation Defects in Asthma?**T. WINKLER¹, A. GROS², Y. BAR-YAM², J. G. VENEGAS¹, AND M. A. DE AGUIAR³¹Harvard Medical School & Massachusetts General Hospital, Boston, MA, ²New England Complex Systems Institute, Boston, MA, ³Universidade Estadual de Campinas, Instituto de Física, Campinas, SP, Brazil**P –Th - B - 226****Proteoglycans Protect the Lung from Mechanical Failure During the Progression of Emphysema**A. TAKAHASHI¹, A. MAJUMDAR¹, E. BARTOLÁK-SUKI¹, AND B. SUKI¹¹Boston University, Boston, MA**P –Th - B - 227****Characterization of *In Vivo* Pulmonary Elastance: Comparison of Forced Oscillation and Image Registration Techniques**C. OLSON¹, A. TAKAHASHI¹, B. SUKI¹, AND B. SNYDER^{2,3}¹Boston University, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA, ³Childrens 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. FUJIOKA¹ AND D. P. GAVER III¹¹Tulane 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. SEROV¹, M. FILOCHE¹, C. M. SALAFIA², AND D. S. GREBENKOV¹¹Ecole Polytechnique, CNRS, Palaiseau, France, ²Placental Analytics LLC, Larchmont, NY**P –Th - B - 230****Dynamic Multiscale Model of the Human Respiratory System**S. KABILAN¹, A. KUPRAT¹, D. EINSTEIN¹, J. CARSON¹, R. JACOB¹, K. MINARD¹, AND R. CORLEY¹¹Pacific 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. REYNOLDS¹, W. MCKINNEY¹, AND D. FRAZER¹¹NIOSH, Morgantown, WV, ²WVU 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. VOSSOUGH¹ AND A. JOHNSON²¹UMD/ESRA, Brookeville, MD, ²University of Maryland, College Park, MD**P –Th - B - 233****A Vertical Clearance Model to Define the Mechanisms Behind Mucociliary Clearance and Interactions**S. LYNCH¹, J. CARPENTER¹, J. CRIBB¹, AND R. SUPERFINE¹¹University 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 Lung Mechanics and Gas Exchange**M. ISMAIL¹, L. YOSHIHARA¹, C. ROTH¹, AND W. A. WALL¹¹Technische Universitaet Muenchen, Garching, Germany**P –Th - B - 235****Evidence of the Recruitment-Derecruitment of Lung Units Derived from Previous Surface Tension (γ), and Pressure-Volume (PL – VL) Measurements**D. FRAZER¹, J. REYNOLDS¹, W. MCKINNEY¹, AND W. T. GOLDSMITH^{1,2}¹NIOSH, Morgantown, WV, ²WVU School of Public Health, Morgantown, WV

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. ALEX¹, G. BHAVE¹, A. BASHABOYINA¹, M. AL-ABED², S. IYER¹, D. E. WATENPAUGH³, R. ZHANG⁴, AND K. BEHBEHANI¹¹University of Texas Arlington, Arlington, TX, ²Hashemite University, Amman, Jordan, ³Sleep Consultants Inc., Fort Worth, TX, ⁴University of Texas Southwestern Medical Center, Dallas, TX**P-Th-B-237****Physiologic Airway Models to Explore Surfactant Delivery to Infants**P. BACH¹, M. FILOCHE², J. B. GROTEBERG³, AND H. TAVANA¹¹University of Akron, Akron, OH, ²Ecole Polytechnique, Palaiseau Cedex, France, ³University of Michigan, Ann Arbor, MI**P-Th-B-238****Microfluidic Models of Surfactant and Liquid Plug Delivery in Small Airways**J. B. GROTEBERG¹, M. K. MULLIGAN², J. K. SZNITMAN², AND D. K. WAISMAN^{3,4}¹University of Michigan, Ann Arbor, MI, ²Technion - Israel Technical University, Haifa, Israel, ³Technion-Israel Institute of Technology, Haifa, Israel, ⁴Carmel 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 PETERS¹, B. LIU¹, J. WEST¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**P-Th-B-240****Mechanical Stiffness as an Indicator of Osteoblastic Human Mesenchymal Stem Cell Differentiation**T. BONGIORNO¹, J. KAZLOW^{1,2}, R. MEZENCEV¹, S. GRIFFITHS¹, R. OLIVARES-NAVARRETE³, J. McDONALD¹, Z. SCHWARTZ³, B. D. BOYAN³, T. C. MCDEVITT^{1,2}, AND T. SULCHEK^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³Virginia Commonwealth University, Richmond, VA**P-Th-B-241****Alginate Composition Impacts Differentiation Trajectories of Microencapsulated Embryonic Stem Cell Aggregates**J. L. WILSON¹, M. NAJIA¹, R. SAEED¹, AND T. C. MCDEVITT^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²The 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. OKARSKI¹, W. ELLIS¹, L. POWERS¹, AND J. SZIVEK¹¹University of Arizona, Tucson, AZ**P-Th-B-243****3D Expansion of MSC-Like Cells for Clinical Use - Bioprocessing Solutions and Biological Implications**E. ABRAHAM¹, M. WADMANY¹, A. GILERT¹, O. MAKLER¹, L. PINZUR¹, E. ZAHAVI¹, AND A. CHAJUT¹¹Pluristem 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. TONG¹ AND X. JIA¹¹University of Delaware, Newark, DE**P-Th-B-245****Enrichment of Prostate Cancer Stem Cells by Cell Microencapsulation for Miniaturized 3D Culture**W. RAO¹, S. ZHAO¹, AND X. HE¹¹The 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. BANG¹ AND J. CHENG¹¹University of Illinois at Chicago, Chicago, IL**P-Th-B-247****Heterotypic Cell Interactions Enhance Liver Functions of iPSC-Derived Human Hepatocytes *In Vitro***D. BERGER¹, M. DAVIDSON¹, B. WARE¹, A. BAILEY¹, AND S. KHETANI¹¹Colorado 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. GAO¹, J.-A. REEMS⁴, B. TOROK-STORB³, J. LOPEZ^{1,2}, AND Y. ZHENG¹¹University of Washington, Seattle, WA, ²Puget Sound Blood Center, Seattle, WA, ³Fred Hutchinson Cancer Research Center, Seattle, WA, ⁴University 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. HUEBSCH¹, Z. MA², Y. MIYAOKA¹, J. WANG², M. J. SPINDLER¹, C. R. RUSSELL¹, P. LIZARRAGA¹, T. NGUYEN¹, J. YOO¹, A. CHAN¹, P.-L. SO¹, K. E. HEALY², AND B. R. CONKLIN¹¹Gladstone Institute of Cardiovascular Disease, San Francisco, CA, ²University 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. LEWIS¹, C. M. AMBROSE¹, P. A. SHORT¹, B. W. SCHMIDT¹, S. MURTHY³, AND H.-J. SUNG^{1,2}¹Vanderbilt University, Nashville, TN, ²Vanderbilt University Medical Center, Nashville, TN, ³Rutgers University, Piscataway, NJ**P-Th-B-251****Neural Differentiation of Induced Pluripotent Stem Cells in 3D Matrices**A. MONTGOMERY¹, A. WONG¹, L. SUN¹, AND S. M. WILLERTH¹¹University 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. GOH¹, S. BERTERA², AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA, ²Children'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}¹Virginia Tech-Wake Forest School of Biomedical Engineering & Sciences, Winston-Salem, NC, ²Wake 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. RODRIGUEZ¹, C. E. MURRY¹, AND N. J. SNIADOCKI¹¹University 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. HOLLE¹ AND A. ENGLER¹¹UC San Diego, La Jolla, CA**P-Th - B - 256****FAK Control of Fluid Flow-induced ERK Activation in Mesenchymal Stem Cells**A. GOGOS¹, D. E. MENTER², J. LEE², L. HA², AND J. LIM²¹Grinnell College, Grinnell, IA, ²University 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. WONG³, C. LIM², T. KUNG², L. H. ROMER⁴, AND E. K. YIM^{1,2}¹National University of Singapore, Singapore, Singapore, ²Mechanobiology Institute Singapore, Singapore, Singapore, ³Institute of High Performance Computing, A*STAR, Singapore, Singapore, ⁴The Johns Hopkins University School of Medicine, Baltimore, MD**P-Th - B - 258****Epigenetic Modifications During Mechanically Induced Osteogenesis of Mesenchymal Stem Cells**J. C. CHEN¹, M. C. CHUA², R. B. BELLON¹, AND C. R. JACOBS¹¹Columbia University, New York, NY, ²University 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. LAI¹, G. KAJIYAMA², R. L. SMITH², W. MALONEY², AND F. YANG^{1,2}¹Stanford University, Stanford, CA, ²Stanford 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. ENGBRETSON¹ AND V. I. SIKAVITSAS¹¹University of Oklahoma, Norman, OK**P-Th - B - 261****Fatigue Characteristics of PCL Dual Modulus Scaffolds for Bone Regeneration**B. GODSELL¹, R. CHUNG¹, C. MAGLARAS¹, A. RITTER¹, D. KALYON², AND A. VALDEVI¹Stevens Institute of Technology, Dept. of Chemistry, Chemical Biology, and Biomedical Engineering, Hoboken, NJ, ²Stevens 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. THAYER¹, A. DIMLING¹, D. PLESSL¹, M. HAHN², S. GUELCHER³, AND A. GOLDSTEIN¹¹Virginia Tech, Blacksburg, VA, ²Rensselaer Polytechnic Institute, Troy, NY, ³Vanderbilt 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. JURAN¹ AND P. S. MCFETRIDGE¹¹University of Florida, Gainesville, FL**P-Th - B - 264****Hydrogels to Enhance New Matrix Assembly**J. ROBERTS¹, M. D. SWARTZLANDER¹, AND S. J. BRYANT^{1,2}¹University of Colorado, Boulder, CO, ²BioFrontiers 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. CORONA³, C. L. WARD³, B. S. HARRISON^{1,2}, J. M. SAUL⁴, AND G. J. CHRIST^{1,2}¹Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, ³US Army Institute of Surgical Research, Fort Sam Houston, TX, ⁴Miami 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. MERETOJA¹, R. L. DAHLIN¹, S. WRIGHT¹, M. NI¹, F. K. KASPER¹, AND A. G. MIKOS¹, M. SANTORO¹¹Rice University, Houston, TX**P-Th - B - 267****Anatomical Location Affects Adipose-Derived Stem Cell Myogenesis**G. A. MEYER¹, E. SATO¹, M. MCCARTHY¹, S. WARD¹, AND A. J. ENGLER¹¹UCSD, 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. HEO¹, T. P. DRISCOLL¹, D. M. ELLIOTT², AND R. L. MAUCK¹¹University of Pennsylvania, Philadelphia, PA, ²University of Delaware, Newark, DE

P-Th-B-270

Novel (Poly)caprolactone (PCL) Scaffold Architecture for Tendon Tissue Engineering Applications

B. L. BANIK¹ AND J. L. BROWN¹

¹The Pennsylvania State University, State College, PA

P-Th-B-271

Development of Biomimetic 3D Bioprinted Scaffolds for Osteochondral Regeneration

B. HOLMES¹, J. LI¹, J. D. LEE¹, AND L. G. ZHANG¹

¹The 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. WANG¹, X. CHENG¹, B. HOLMES¹, M. KEIDAR¹, AND L. G. ZHANG¹

¹The George Washington University, Washington, DC

P-Th-B-273

Sphingosine 1-Phosphate Functionalized Nanopatterned Scaffolds for Engineering Vascularized Skeletal Muscle Tissue

J. H. TSUI¹, H. S. YANG¹, N. IERONIMAKIS¹, D. LIH¹, M. REYES¹, AND D-H. KIM¹

¹University of Washington, Seattle, WA

P-Th-B-274

Design of a Tendon Graft for Rotator Cuff Injury Repair

M. C. MOUCHIROUD¹, J. H. ARRIZABALAGA¹, K. P. KIESTER¹, A. R. PASCOE¹, AND M. U. NOLLERT¹

¹University 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}

¹Clemson University, Charleston, SC, ²Medical 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. FARRARO¹, N. SASAKI¹, H. S. EASON¹, K. E. KIM¹, AND S. L-Y. WOO¹

¹University of Pittsburgh, Pittsburgh, PA

P-Th-B-277

A Mesenchymal Stem Cell Derived Extracellular Matrix Approach for Cartilage Repair

N. FARHANG¹, M. POLE¹, M. B. CHRISTENSEN¹, AND P. A. TRESKO¹

¹University 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. HARMON¹, C. BADALUCCO², R. JAMES³, AND S. G. KUMBAR³

¹University of Connecticut, Storrs-Mansfield, CT, ²University of Connecticut Medical School, Farmington, CT, ³University of Connecticut Health Center, Farmington, CT

P-Th-B-279

In Vitro Characterization of Organic-Inorganic Composite Lypolyzed Gelatin Sponges for Bone Regeneration

¹A. RODRIGUEZ¹, S. A. SELL², J. M. MCCOOL¹, G. SAXENA¹, A. J. SPENCE¹, D. ABEBAYEHU¹, AND G. L. BOWLIN¹

¹Virginia Commonwealth University, Richmond, VA, ²Saint Louis University, Saint Louis, MO

P-Th-B-280

Polycaprolactone-graphene Nanocomposite Scaffolds for Tissue Engineering

S. MUKUNDAN¹, V. SANT¹, AND S. SANT^{2,3}

¹University of Pittsburgh, Department of Pharmaceutical Sciences, Pittsburgh, PA, ²University of Pittsburgh, Department of Pharmaceutical Sciences & Bioengineering, Pittsburgh, PA, ³McGowan Institute for Regenerative Medicine, Pittsburgh, PA

P-Th-B-281

Bone Matrix Formation on Oxidized Carbon Based Nanomaterial Films

S. C. PATEL¹, J. RASHKOW¹, AND B. SITHARAMAN¹

¹Stony 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. LAM¹, S. LU¹, A. G. MIKOS¹, AND F. K. KASPER¹, M. SANTORO¹

¹Rice University, Houston, TX



Thursday, September 26, 2013**1:30PM – 3:00PM****PLATFORM SESSION –THURS – 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 Dipyradamole Release for Vascular Engineering**P. PUNNAKITIKASHEM¹, K. T. NGUYEN¹, AND Y. HONG¹¹University of Texas at Arlington, Arlington, TX**1:45PM****3D In Vitro Cardiac Microtissues with Perfused Human Capillaries**M. L. MOYA¹, L. ALONZO¹, J. WANG², K. CHRISTMAN², AND S. C. GEORGE^{1,3}¹University of California, Irvine, Irvine, CA, ²University of California, San Diego, San Diego, CA, ³The 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. AWOJODOU¹, M. E. OGLE¹, K. MARTIN², S. PEIRCE-COTTLER², AND E. A. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA, ²University 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. SOARES¹, T. B. LE², F. SOTIROPOULOS², AND M. S. SACKS¹¹University of Texas at Austin, Austin, TX, ²University of Minnesota, Minneapolis, MN**2:30PM****"Vasculogenic Mimicry" as a Model for Understanding Endothelial-like Stem Cell Behavior**J. A. RYTLEWSKI¹, A. ALDON¹, E. LEWIS¹, N. HASEGAWA¹, AND L. SUGGS¹¹The 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. ROW¹, H. PENG¹, E. M. SCHLAICH¹, D. D. SWARTZ^{1,2}, AND S. T. ANDREADIS^{1,2}¹University at Buffalo, Buffalo, NY, ²New 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. SILTANEN¹, D-S. SHIN¹, AND A. REVZIN¹¹University 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-DIRK¹, T. R. HOWDIESHELL², K. N. CICCOTTE¹, AND P. MCGUIRE²¹University of New Mexico, Albuquerque, NM, ²University 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. CHOI¹, M. ONDECK¹, L. VINCENT¹, A. LEE¹, M. DOBKE¹, AND A. ENGLER¹¹University of California, San Diego, La Jolla, CA**2:15PM****Engineering Laminin Micropatterned Surfaces to Maximize the Alignment and Contractility of Skeletal Muscle Tissue**R. DUFFY¹ AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**2:30PM****Hydrogel-Based Microcontact Printing of Conducting Polymers for Cell Studies**S. PARK¹ AND S. MAJD¹¹Penn State University, University Park, PA**2:45PM****Cell Behavior on Chemically Patterned and Physically Modified PDMS Surfaces**M. M. STANTON¹, C. MALCUIT², W. G. MCGIMPSEY², AND C. R. LAMBERT¹¹Worcester Polytechnic Institute, Worcester, MA, ²Kent 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. ROSENTHAL¹, K. ABSTIENS¹, C. LEIFER¹, AND D. PUTNAM¹¹Cornell University, Ithaca, NY**1:45PM****Pollen Grains: Novel Materials for Oral Vaccination**S. ATWE¹, H. GILL¹, AND Y. MA¹¹Texas Tech University, Lubbock, TX**2:00PM****Intravaginal Recruitment of Dendritic Cells for Nanoparticle Transport Using DC Chemokines**R. RAMANATHAN¹, W. LYKINS¹, H. BENNETT¹, J. PARK¹, AND K. A. WOODROW¹¹University of Washington, Seattle, WA**2:15PM****An Immunomodulatory Protein Coating that Mitigates the Host Response to Implanted Biomaterials**Y. KIM¹, R. QUE¹, S-W. WANG¹, AND W. LIU¹¹Univ of California, Irvine, Irvine, CA**2:30PM****A Multifunctional Immunomodulatory Scaffold to Engineer the Dendritic Cell Environment For Allograft Acceptance**S. SRINIVASAN¹, G. PATEL¹, U. GOH¹, AND J. E. BABENSEE¹¹Georgia Institute of Technology, Atlanta, GAP = Poster Session
OP = Oral Presentation

2:45PM

Stabilization of Vaccines in Silk

J. ZHANG¹, X. HU¹, B. PANILAITIS¹, AND D. KAPLAN¹

¹Tufts 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. SAKAMOTO¹, S. PRUDHOMME², AND M. SACKS¹

¹The University of Texas at Austin, Austin, TX, ²Ecole Polytechnique de Montréal, Montréal, QC, Canada

1:45PM

Impact of the Actin Cytoskeleton on the Mechanical Properties of Cells

I. JALILIAN¹, G. SCHEVZOV¹, T. FATH¹, L. BISCHOF², H. VINDIN¹, J. STEHN², AND P. GUNNING¹

¹The University of New South Wales, Sydney, Australia, ²CSIRO, Sydney, Australia, ³The University Of New South Wales, Sydney, Australia

2:00PM

Stiffness-Prestress Relationship at the Subcellular Level

E. P. CANOVIC¹, D. T. SEIDL¹, P. E. BARBONE¹, M. L. SMITH¹, AND D. STAMENOVIC¹

¹Boston University, Boston, MA

2:15PM

Shear Induced Activation Leads To Platelet Contractile Forces

L. TING¹, S. FEGHNI¹, AND N. SNIADOCKI¹

¹University of Washington, Seattle, WA

2:30PM

Mechanotransduction of Interstitial Fluid Stresses Induces Upstream Protrusion Formation and Cell Migration

W. J. POLACHEK¹ AND R. D. KAMM¹

¹MIT, Cambridge, MA

2:45PM

Analysis of the Pathophysiology of Ischemia and Reperfusion Injury using a Novel Confocal/Nanoindentation Imaging Platform

B. REESE¹, S. LENAGHAN¹, AND M. ZHANG¹

¹University 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. LUONG¹, D. BAPTISTE¹, H. V. VO¹, AND D. V. HAGAN¹

¹Mercer University, Macon, GA

1:45PM

Effect of Matrix Ages (Advanced Glycation Endproducts) on Bone Formation

J. MOSTAFA¹, B. GIRI¹, J. SAENZ¹, M. APPLEFORD¹, AND X. WANG¹

¹University of Texas at San Antonio, San Antonio, TX

2:00PM

Multi-scale Analysis of Composition and Structure of Osteogenesis Imperfecta Murine Bone

Z. R. BART¹, M. A. HAMMOND², AND J. M. WALLACE^{1,2}

¹Indiana University - Purdue University Indianapolis, Indianapolis, IN, ²Purdue 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. ROGERS¹, A. BERTRAM¹, J. D. DESJARDINS¹, C. HYDORN², M. KANWISHER³, AND K. NATHE³

¹Clemson University, Clemson, SC, ²Moore Orthopaedic Clinic, Columbia, SC, ³University 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. KWON¹, D. THREET¹, E. M. GARDINER¹, L. E. WORTON¹, T. S. GROSS¹, AND S. SRINIVASAN¹

¹University of Washington, Seattle, WA

2:45PM

Trabecular Bone Adaptation in Response to Exercise is Regulated by Systemic PTH Release

J. GARDINIER¹, F. MOHAMED¹, AND D. KOHN¹

¹University 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. LEE¹, I. AIFUWA¹, P-H. WU¹, AND D. WIRTZ¹

¹Johns Hopkins University-Physical Sciences- Oncology Center, Baltimore, MD

1:45PM

Loss of Giant Obscurins Promotes a Metastatic Phenotype in Breast Epithelium

K. M. STROKA¹, M. SHRIVER², K. KONSTANTOPOULOS¹, AND A. KONTRIGIANNI-KONSTANTOPOULOS²

¹Johns Hopkins University, Baltimore, MD, ²University of Maryland School of Medicine, Baltimore, MD

2:00PM

Biomaterial Scaffolds for Early Detection of Breast Cancer Metastasis

S. M. AZARIN¹, R. M. GOWER¹, B. A. AGUADO¹, J. YI¹, J. S. JERUSS¹, V. BACKMAN¹, AND L. D. SHEA¹

¹Northwestern University, Evanston, IL

2:15PM

Stromal-like Cation Concentrations Induce Adhesive Heterogeneity in Metastatic Cancer Cells

A. FUHRMANN¹, T. D. TLSTY², AND A. J. ENGLER¹

¹University of California San Diego, La Jolla, CA, ²University of California San Francisco, San Francisco, CA

2:30PM

Lamins Modulate Nuclear Deformability and Transit Through Narrow Constrictions of Cancer Cells

C. DENAIS¹, U. JONNALAGADDA¹, M. ZWERGER², M. KRAUSE³, K. WOLF³, L. VAHDAT⁴, AND J. LAMMERDING¹

¹Cornell University, Ithaca, NY, ²University of Zürich, Zürich, Switzerland, ³Radboud University Nijmegen Medical Center, Nijmegen, Netherlands, ⁴Weill Cornell Medical College, New York, NY

2:45PM**Fibronectin Domains Targeting Individual Murine Fc gamma Receptors Modulate Tumor Control**T. F. CHEN¹, K. LI¹, AND K. D. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Cardiovascular Engineering
OP - Thurs - 2 - 7 - Room 612****Thrombosis and Hemostasis****Chairs:** Eno Ebong, Joyce Wong**1:30PM****Combined Effects of Shear Rates and Platelet Therapy Dosage on Thrombosis in a Microfluidic System**M. LI¹, N. A. HOTALING¹, AND C. R. FOREST¹¹Georgia 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. LI¹, S. FRIES², X. LI², T. GROSSER², AND S. DIAMOND¹¹Institute for Medicine and Engineering, University of Pennsylvania, Philadelphia, PA,²Institute for Translational Medicine and Therapeutics, University of Pennsylvania, Philadelphia, PA**2:00PM****Perturbations in Local Clot Hemodynamics Triggers Intraluminal Thrombus Contraction**R. W. MUTHARD¹ AND S. L. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA**2:15PM****Exploring the Impact of Fluid Shear Stress Level and Flow Pattern on VWF Degradation**S. YANG¹, V. TURITTO¹, AND Z. N. DEMOU¹¹Illinois Institute of Technology, Chicago, IL**2:30PM****Thrombin Generation and Fibrin Formation Under Flow on Biomimetic Tissue Factor Rich Surfaces**A. ONASOGA¹ AND K. NEEVES¹¹Colorado School of Mines, Golden, CO**2:45PM****Platelet Size and Stiffness, Vessel Size and Shear Rate Govern Platelet Transport to Growing Thrombi**M. MEHRABADI¹, C. AIDUN¹, AND D. KU¹¹Georgia 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. YUAN¹, J. CHU¹, A. FRITZ¹, S. PATEL¹, D. SCHAFFER¹, AND S. LI¹¹University of California, Berkeley, Berkeley, CA, ²UC Berkeley & UCSF Joint Graduate Program in Bioengineering, Berkeley/San Francisco, CA, ³Ecole Polytechnique, 91128 Palaiseau, France, ⁴University Lille Nord de France, F-59000 Lille, France**1:45PM****Mechanosensitive Kinases Regulate Stiffness-Induced Cardiomyogenesis**J. L. YOUNG¹, K. KRETCHMER¹, A. ZAMBON¹, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA**2:00PM****Fibronectin and Type I Collagen Synergy in Tumor Progression**K. WANG¹, R. ANDRESEN-EGUILUZ¹, B. SEO¹, S. HU¹, V. BENSON¹, C. FISCHBACH¹, AND D. GOURDON¹¹Cornell University, Ithaca, NY**2:15PM****Tissue Elasticity Provokes a Pro-Inflammatory Reaction in Innate Immune Cells**M. L. PREVITERA¹, A. SENGUPTA¹, AND T. M. MIRZA¹¹New Jersey Neuroscience Institute, Edison, NJ**2:30PM****Actin Architecture and Contractile Force Regulate the Anisotropy of Endothelial Cell Mechanosensitivity to Directional Substrate Stretch**Y. SHAO¹, J. MANN¹, AND J. FU¹¹University 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. MEISNER¹, J. L. HEUSLEIN¹, B. R. BLACKMAN¹, AND R. J. PRICE¹¹University of Virginia, Charlottesville, VAtrack sponsored by  Edwards**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. CHEN¹, C. PAUL¹, K. STROKA¹, J. YANG¹, AND K. KONSTANTOPOULOS¹¹Johns Hopkins University, Baltimore, MD, ²Center for Cancer Nanotechnology Excellence, Baltimore, MD**1:45PM****Migratory Patterns of Cells in the Presence of Opposing Chemical and Mechanical Cues**G. JAIN¹ AND P. RAJAGOPALAN¹¹Virginia 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}¹Johns Hopkins University, Baltimore, MD, ²Institute for NanoBio Technology, Baltimore, MD**2:15PM****Single-Cell Dynamics of Collective Cell Migration in Microfluidic Chemokine Gradients**S. TAY¹, T. FRANK¹, AND M. MEHLING¹¹ETH ZURICH, Basel, Switzerland**2:30PM****Bioactive Chemokine-Conjugated Surfaces for Studying Haptotactic Immune Cell Migration**V. VERNEKAR¹, C. WALLACE¹, M. WU¹, J. CHAO¹, A. RALEIGH¹, X. LIU², J. HAUGH², AND W. REICHERT¹¹Duke University, Durham, NC, ²North Carolina State University, Raleigh, NC

2:45PM

Microfluidic Platform for On-Demand, Competitive, Large-Scale Chemotaxis Assays of Neutrophils

H. CHO¹, B. HAMZA¹, E. A. WONG¹, AND D. IRIMIA¹

¹Harvard 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. AYYUB¹, A. BEHRENS¹, M. NATOLI¹, J. AYUB¹, J. CABRERA-LUQUE², G. CUNNINGHAM², M. SUMMAR², J. MARUGAN³, A. SIMEONOV³, AND P. KOFINAS¹

¹University of Maryland, College Park, MD, ²Children's National Medical Center, Washington, DC, ³NCATS NIH, Rockville, MD

1:45PM

Serologic and Phenotypic Analysis of Blood via Silicon Photonics

J. KIRK¹, N. STENDER¹, G. HANSEN¹, K. LANNERT², J. JOHNSEN², AND D. M. RATNER¹

¹University of Washington, Seattle, WA, ²Puget Sound Blood Center, Seattle, WA

2:00PM

Telemetry Monitoring of Liver Perfusion and Oxygenation In Vivo

T. J. AKL¹, M. A. WILSON^{2,3}, M. N. ERICSON⁴, E. FARQUHAR⁴, AND G. L. COTÉ¹

¹Texas A&M University, College Station, TX, ²Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, PA, ³University of Pittsburgh, Pittsburgh, PA, ⁴Oak Ridge National Laboratory, Oak Ridge, TN

2:15PM

Photonic Crystal Based Biosensor for Label-free Detection of Cardiac Biomarkers

B. ZHANG¹, R. PETERSON¹, J. M. VELA¹, L. TANG¹, AND J. YE¹

¹University of Texas at San Antonio, San Antonio, TX

2:30PM

A Liposome-based Impedance Sensing Device for Biological Detection

G. L. DAMHORST¹, C. E. SMITH¹, E. M. SALM¹, M. M. SOBIEK¹, H. NI¹, H. KONG¹, AND R. BASHIR¹

¹University 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}, V. RODRIGUEZ⁴, AND R. BASHIR^{1,2}

¹Department of Electrical and Computer Engineering, University of Illinois Urbana Champaign, Urbana, IL, ²Micro and Nanotechnology Laboratory, University of Illinois Urbana Champaign, Urbana, IL, ³Department of Bioengineering, University of Illinois Urbana Champaign, Urbana, IL, ⁴Daktari 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. LAUFFENBURGER¹, M. A. MILLER¹, A. S. MEYER¹, M. BESTE¹, K. ISAACSON², AND L. G. GRIFFITH¹

¹MIT, Cambridge, MA, ²Newton-Wellesley Hospital, Newton, MA

2:00PM

Synergistic Drug Targets of Human Pathogens Identified with Analysis of Integrated Transcriptional Regulatory and Metabolic Networks (Invited)

J. PAPIN¹

¹University of Virginia, Charlottesville, VA

2:30PM

Systems Approaches to Multi-Parameter Disease Diagnostics (Invited)

N. D. PRICE¹

¹Institute 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. BONASSAR¹

¹Cornell 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. SMITH¹, R. MAUCK¹, AND D. ELLIOTT²

¹University of Pennsylvania, Philadelphia, PA, ²University of Delaware, Newark, DE

2:15PM

Metabolic Association between IGF1, Glycation and Bone Quality

G. E. SROGA¹, P-C. WU², AND D. VASHISHTH³

¹Rensselaer Polytechnic Institute, Troy, NY, ²Oregon Health and Science University, Portland, OR, ³Rensselaer Polytechnic Institute, Troy, NY

2:30PM

Mechano-Modulation of Burn Wound Scarring

J. KIM¹, J. J. WILLIARD¹, J. HAHN², K. MCFARLAND³, D. M. SUPP³, C. SEN¹, AND H. M. POWELL¹

¹The Ohio State University, Columbus, OH, ²Shriners Hospital for Children, Cincinnati, OH, ³Shriners Hospitals for Children, Cincinnati, OH

2:45PM

Electrical Stimulation for Meniscus Cell Migration and Tissue Repair

X. YUAN¹, S. P. HALLIGAN¹, AND G. VUNJAK-NOVAKOVIC¹

¹Columbia University, New York, NY

**Track: Biomedical Imaging and Optics
OP - Thurs - 2 - 13 - Room 618**

Optical Imaging and Microscopy

Chairs: Andreas Hieslcher

1:30PM

Computational Imaging and High-throughput 3D Tracking of Human Sperms

T-W. SU¹, L. XUE¹, AND A. OZCAN¹

¹University of California, Los Angeles, CA

1:45PM

Using the Parallelized High-Throughput Microscope to Greatly Accelerate Microrheology Experiments

J. A. CRIBB¹, L. OSBORNE¹, P. HEENAN¹, J. HSIAO¹, L. VICCI¹, R. TAYLOR, II¹, AND R. SUPERFINE¹

¹University of North Carolina - Chapel Hill, Chapel Hill, NC

2:00PM**High-Throughput Partial Wave Spectroscopic Microscopy for Early Cancer Detection**J. E. CHANDLER¹, H. SUBRAMANIAN¹, C. D. MANEVAL¹, C. A. WHITE¹, AND V. BACKMAN¹¹Northwestern University, Evanston, IL**2:15PM****Computational Field-Portable Microscope for On-Chip Imaging of Confluent Samples**A. GREENBAUM¹, N. AKBARI¹, AND A. OZCAN^{1,2}¹Electrical Engineering Department, University of California, Los Angeles, CA, ²Bioengineering Department, University of California, Los Angeles, CA**2:30PM****The Optics Of Low-Cost Microscopy**N. A. SWITZ¹, C. D. REBER¹, M. BAKALAR¹, M. V. D'AMBROSIO¹, A. SKANDARAJAH¹, R. N. MAAMARI², AND D. A. FLETCHER¹¹University of California Berkeley, Berkeley, CA, ²University of California Irvine, Irvine, CA**2:45PM****Can Capillaries Grown in 3D Culture be Imaged without the Use of an Optical Lens System?**J. WEIDLING¹, S. ISIKMAN², A. GREENBAUM², A. OZCAN², AND E. BOTVINICK³¹University of California Irvine, Irvine, CA, ²University of California Los Angeles, Los Angeles, CA, ³University of California 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. LU¹, Y-P. HO^{2,3}, C. GRIGSBY², D. AHMED¹, K. LEONG², AND T. HUANG¹¹Pennsylvania State University, University Park, PA, ²Duke University, Durham, NC, ³Aarhus University, Aarhus, Denmark**2:15PM****Kinetic Polyacrylamide Gel Electrophoresis (KPAGE): Microfluidic Binding Assay Enables Measurements of Kinetic Rates for Immunoreagent Quality Assessment**M. A. KAPIL¹, K. APORI¹, AND A. E. HERR¹¹University of California, Berkeley, Berkeley, CA**2:30PM****Using Actuating Surface Attached Posts (ASAPs) to Measure Clotting Time for Point of Care Diagnostics**R. JUDITH¹, J. FISHER², T. A. MANGALDAS², R. C. SPERO², B. J. OBERHARD^{1,3}, B. FISER⁴, M. FALVO¹, R. M. TAYLOR^{1,2}, AND R. SUPERFINE^{1,2}¹University of North Carolina, Chapel Hill, NC, ²Rheomics Inc., Chapel Hill, NC, ³North Carolina State University, Raleigh, NC, ⁴High Point University, High Point, NC**2:45PM****Improved Microarray Readout By Fluorescence Micro-Confinement**D. V. NICOLAU¹ AND S. V. DOBROIU¹¹McGill 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. BREGER¹, C. YOON¹, K. MALACHOWSKI¹, M. WANG², J. FISHER², AND D. GRACIAS¹¹Johns Hopkins University, Baltimore, MD, ²University of Maryland, College Park, College Park, MD**1:45PM****Rapid Synthesis of Monodisperse Biodegradable PEG Microspheres for Controlled Protein Release**L. DEVEZA¹, M. KEENEY¹, AND F. YANG¹¹Stanford University, Stanford, CA**2:00PM****Phospholipid-PEG Coated Superparamagnetic Iroxo Oxide Nanoparticles for Drug Delivery and Hyperthermia**C. QUINTO^{1,2} AND G. BAO^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**2:15PM****Planar Bioadhesive Microdevices for Enhanced Oral Drug Delivery**T. A. DESAI¹, H. D. CHIRRA¹, L. C. SHAO¹, AND N. C. CIACCIO¹¹University 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. VENUGOPAL¹ AND A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL**2:45PM****Rapidly-Dissolvable Micro-needle Patches via a Highly Scalable and Reproducible Soft Lithography Approach**A. R. JOHNSON¹, C. F. ARCHULETA¹, K. A. MOGA¹, L. R. BICKFORD¹, J. XU¹, R. D. GEIL¹, G. OWENS², P. BERGLUND², C. LUFT¹, AND J. M. DESIMONE^{1,2}¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²Liquidia 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. CULLEN¹, M. SKOTAK², C. J. MIETUS¹, J. FRASCA¹, F. WANG², K. D. BROWNE¹, D. H. SMITH¹, AND N. CHANDRA²¹University of Pennsylvania, Philadelphia, PA, ²University of Nebraska-Lincoln, Lincoln, NE**1:45PM****A Novel Mouse Model of Blast Brain Injury: Blast Conditions Seen in Theater**A. W. YU¹, H. WANG¹, K. A. MATTHEWS¹, D. LASKOWITZ¹, AND C. R. BASS¹¹Duke 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. STUCKY¹, R. SCHLOSS¹, M. L. YARMUSH¹, AND D. I. SHREIBER¹¹Rutgers University, Piscataway, NJP = Poster Session
OP = Oral Presentation

2:15PM

Pro-Oxidative and Pro-Inflammatory Environments Contribute to Blast-Induced Neurotrauma

H. J. CHO¹, S. SAJJA¹, P. J. VANDEVORD^{1,2}, AND Y. W. LEE¹

¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Veterans Affairs Medical Center, Salem, VA

2:30PM

Effects of Shoulder Torque on Hand Function in Stroke: Implications for Control of Assistive Devices

L. MILLER¹ AND J. DEWALD¹

¹Northwestern University, Chicago, IL

2:45PM

Spontaneous Extension-Adduction Coupling in the Post-Stroke Lower Extremity

N. SANCHEZ¹, R. LOPEZ-ROSADO¹, AND J. P. DEWALD¹

¹Northwestern 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. JUUL¹, J. OBLIOSCA², Y-P. HO³, B. KNUDSEN³, H-C. YEH², AND K. LEONG¹

¹Duke University, Durham, NC, ²University of Texas at Austin, Austin, TX, ³Aarhus 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. YANG², AND T-H. WANG¹

¹The Johns Hopkins School of Medicine, Baltimore, MD, ²The Johns Hopkins University, Baltimore, MD

2:00PM

Paper-Based Sample Preparation for Disposable Molecular Diagnostics at the Point-of-Care

J. C. LINNES¹ AND C. M. KLAPPERICH¹

¹Boston 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. ANGIONE¹, A. SARMA², L. MERMEL^{3,4}, AND A. TRIPATHI¹

¹School of Engineering, Center for Biomedical Engineering, Brown University, Providence, RI, ²Harvard Medical School, Boston, MA, ³Division of Infectious Diseases, Rhode Island Hospital, Providence, RI, ⁴Warren Alpert Medical School, Brown University, Providence, RI

2:30PM

Paper-Based Assay for Influenza Hemagglutinin Using Computationally Designed Affinity Protein

C. A. HOLSTEIN¹, S. BENNETT¹, A. CHEVALIER¹, D. BAKER¹, E. FU¹, AND P. YAGER¹

¹University of Washington, Seattle, WA

2:45PM

Microfluidic System For Automated, Quantitative Flow Cytology

J. S. DUDANI¹, A. P. TAN¹, A. ARSHI¹, R. J. LEE¹, H. T. TSE¹, D. R. GOSSETT¹, AND D. DI CARLO¹

¹University 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. TUIN¹, S. M. MILLER¹, D. J. CUNNINGHAM¹, W. T. PFEILER¹, S. H. BERNACKI¹, B. POURDEYHIMI², AND E. G. LOBOA^{1,2}

¹North Carolina State University and University of North Carolina, Raleigh, NC, ²North Carolina State University, Raleigh, NC

1:45PM

Photopolymerization Mechanism Impacts Cartilage Development in Poly(ethylene glycol) Hydrogels

J. ROBERTS¹ AND S. J. BRYANT^{1,2}

¹University of Colorado, Boulder, CO, ²BioFrontiers Institute, Boulder, CO

2:00PM

Nano-grafts for ACL Reconstruction: In Vitro and In Vivo Characterization

S. E. SMITH¹, S. GRANT¹, AND R. WHITE¹

¹University of Missouri, Columbia, MO

2:15PM

Alkylation of Keratin for a Tunable Biomaterial Platform in Bone Regeneration

S. HAN¹, T. HAM¹, AND J. M. SAUL¹

¹Miami University, Oxford, OH

2:30PM

Engineering a Muscle Mimetic ECM Biomaterial

S. HURD¹, B. KASUKONIS¹, K. CHERRY¹, S. AHMADI², AND J. WOLCHOK¹

¹University of Arkansas, Fayetteville, AR, ²University 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. GUPTA¹ AND M. S. DETAMORE¹

¹University of Kansas, Lawrence, KS

PLATFORM SESSIONS
Th-2



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)

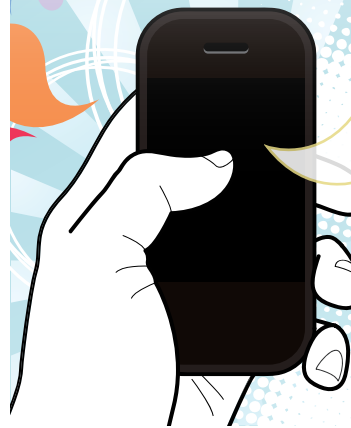
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P = Poster Session
OP = Oral Presentation

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. TRAN¹, M. L. MOYA¹, R. DATTA¹, M. A. DIGMAN¹, J. J. WANG², K. L. CHRISTMAN², E. GRATTON¹, AND S. C. GEORGE^{1,3}¹University of California, Irvine, Irvine, CA, ²University of California, San Diego, San Diego, CA, ³The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA**4:15PM****Sustained Oxygenation Stimulated Cardiac Differentiation of Cardiosphere Derived Cells Under Hypoxic Condition**J. GUAN¹ AND Z. LI¹¹Ohio State University, Columbus, OH**4:30PM****Engineered Cardiac Micro-Tissue Particles Electrically Integrate and Maintain Heart Function After Infarction**K. A. BERES¹, K. L. KREUTZIGER¹, S. DUPRAS¹, X. YANG¹, V. MUSKHELI¹, AND C. E. MURRY¹¹University of Washington, Seattle, WA**4:45PM****Stepwise, Solubilization-Based Antigen Removal Maintains Xenogeneic Scaffold Recellularization Capacity**M. L. WONG¹, C. SONDERGAARD², J. L. WONG¹, AND L. G. GRIFFITHS¹¹University of California, Davis, Davis, CA, ²University of California, Davis, Sacramento, CA**5:00PM****Generation of Dynamically-Perfused Functional Vascular Network System within Hydrogel using 3D Bio-Printing Technology**V. K. LEE¹, S-S. YOO², P. A. VINCENT³, AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ³Albany Medical College, Albany, NY**5:15PM****Aligned Engineered Microvessels with High Lumen Density via Cell-Induced Fibrin Gel Compaction and Interstitial Flow**K. T. MORIN¹, J. L. DRIES-DEVLIN¹, AND R. T. TRANQUILLO¹¹University 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. BAYLY¹, L. YU¹, AND K. CHEUNG¹¹University of British Columbia, Vancouver, BC, Canada**4:15PM****Albuminated Glycoenzymes: A New Class of "All-Natural" Single Enzyme Nanoparticles**D. W. RITTER¹, J. R. ROBERTS¹, J. M. NEWTON¹, B. B. COLLIER¹, AND M. J. MCSHANE¹¹Texas 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. TAYLOR¹, K. M. KUMMER², D. DYONDI², R. BANERJEE², AND T. J. WEBSTER¹¹Northeastern University, Boston, MA, ²Indian 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. LALWANI¹, AND B. SITHARAMAN¹¹Department of Bioengineering, Stony Brook University, Stony Brook, NY, Stony Brook, NY,²Department of Materials Science and Engineering, Stony Brook University, Stony Brook**5:00PM****Isolating Circulating Fetal Cells from Maternal Blood Using Naturally Occurring Nanotubes**Y. GENG¹, A. D. HUGHES¹, J. C. MATTISON¹, M. PROVENÇAL², P. MIRON², AND M. R. KING¹¹Cornell University, Ithaca, NY, ²Centre de procréation FERTILYS/Prenagen Inc, Terrebonne, QC, Canada**5:15PM****A Paradigm for Quantifying the Elution of Biomaterials in Tissue**T. W. LANCON¹ AND F. J. CLUBB¹¹Texas 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. PUN¹¹University of Washington, Seattle, WA**4:30PM****Hydrogels for Transplantation of iPSC-NPC After Stroke**J. LAM¹, W. LOWRY¹, S. CARMICHAEL¹, AND T. SEGURA¹¹University of California, Los Angeles, CA**4:45PM****Amnion Hydrogel Accelerates Skin Wound Healing**S. V. MURPHY¹, A. SKARDAL¹, R. HAUG¹, L. SONG^{1,2}, D. MACK^{1,3}, J. D. JACKSON¹, J. YOO¹, S. SOKER¹, AND A. ATALA¹¹Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, ²Shanghai Jiao Tong University, Shanghai, China, People's Republic of, ³Institute 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. QI¹, M. AMIRAM², W. GAO³, D. MCCAFFERTY¹, AND A. CHILKOTI¹¹Duke University, Durham, NC, ²Yale University, West Haven, CT, ³Tsinghua 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. SCOTT¹, D. DOWLING², A. SCHEID², I. BERGELSON², J. NINKOVIC², G. SANCHEZ-SCHMITZ², O. LEVY², AND J. HUBBELL¹¹Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland, ²Boston Children's Hospital & Harvard Medical School, Boston, MA

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. KNOLL¹, W. AHMED², AND T. SAIF³¹University of Illinois, Urbana, IL, ²Curie Institute, Paris, France, ³University of Illinois, Champaign, IL**4:15PM****The Nanoscale Organization of Focal Adhesion Signaling Complexes Can Reflect Changes in Cellular Contractility and Motility**M. G. RUBASHKIN¹, C. DUFORT¹, P. OAKES², M. PASZEK³, M. DAVIDSON⁴, M. GARDEL², AND V. WEAVER¹¹University of California, San Francisco, San Francisco, CA, ²University of Chicago, Chicago, IL, ³Cornell University, Ithaca, NY, ⁴Florida State University, Tallahassee, FL**4:30PM****Knockout of Nesprin I and Desmin Causes Aberrant Nuclear Mechanics and Fibrosis in Skeletal Muscle**M. A. CHAPMAN¹, J. ZHANG¹, J. CHEN¹, AND R. L. LIEBER¹¹University of California - San Diego, La Jolla, CA**4:45PM****Role of Chromatin Structure in Large Strain High-Throughput Cell Deformability Measurements**M. MASAEI¹, H. TSE¹, D. GOSSETT¹, AND D. DI CARLO¹¹University of California, Los Angeles, CA**5:00PM****Elucidating Strain-Dependent Changes in FN Molecular Conformation Using Monodisperse Nanofibers**J. M. SZYMANSKI¹ AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**5:15PM****Changes in Hydrogen Bonding of Hydration Water Induced By Contraction of Skeletal Muscle Myofibrils**H. YOO¹, E. NAGORNYAK¹, AND G. POLLACK¹¹University 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}¹UTSA/UTHSCSA Joint Program in Biomedical Engineering, San Antonio, TX, ²San Antonio Cardiovascular Proteomics Center, San Antonio, TX, ³Jackson Center for Heart Research, University of Mississippi Medical Center, Jackson, MS, ⁴The University of Texas Health Science Center at San Antonio, San Antonio, TX, ⁵The 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. BUCHANAN¹ AND M. S. SACKS¹¹The 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. FEGHHI¹, A. D. MUNDAY², W. W. TOOLEY¹, J. A. LOPEZ^{1,2}, AND N. J. SNIADOCKI¹¹University of Washington, Seattle, WA, ²Puget Sound Blood Center, Seattle, WA**4:45PM****Flow Reversal Elicits a Pro-Arteriogenic ICAM-1hi/KLF2hi Phenotype**J. HEUSLEIN¹, J. MEISNER¹, H. VINCENTELLI¹, B. BLACKMAN¹, AND R. PRICE¹¹University of Virginia, Charlottesville, VA**5:00PM****Effect of Blast Wave on Cerebral Blood Pressure during Blast Exposure in a Rat Injury Model**S. ASSARI¹, K. LAKSARI¹, M. F. BARBE¹, E. T. CHOI¹, AND K. DARVISH¹¹Temple University, Philadelphia, PA**5:15PM****Hemodynamic Forces Control Ventricular and Valvular Growth Independent of Sidedness During Embryonic Development**H. C. YALCIN¹, R. GOULD², AND J. BUTCHER²¹Dogus University, Istanbul, Turkey, ²Cornell 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. BHARADWAJ¹, R. TRAN-SON-TAY¹, AND S. GLOVER¹¹University of Florida, Gainesville, FL**4:15PM****Development of a Mechanically-Sensitive Antibody Against Fibronectin for Imaging of Fibrosis**L. CAO¹, A. SURESH¹, S. LEES¹, AND T. BARKER¹¹Georgia Institute of Technology, Atlanta, GAP = Poster Session
OP = Oral Presentation

4:30PM**Multiplexed Molecular Detection Using FLIM and Lifetime Probes**R. KOTA¹, M. RAHIM¹, C-L. CHIU¹, S. LEE¹, E. GRATTON¹, AND J. B. HAUN¹¹University of California, Irvine, CA**4:45PM****An Engineered Peptide for Non-Invasive Optical Imaging of Brain Tumors**S. J. MOORE¹, M. HAYDEN-GEHART¹, J. M. BERGEN¹, Y. S. SU¹, H. RAYBURN¹, M. P. SCOTT¹, AND J. R. COCHRAN¹¹Stanford University, Stanford, CA**5:00PM****Dual Transcript and Protein Quantification in a Massive Single Cell Array Toward Effective Cancer Therapy**S-M. PARK¹, J. LEE¹, S. HONG¹, I. K. DIMOV^{1,2}, S. LEE¹, Q. PAN¹, K. LI³, A. W. WU³, S. MUMENTHALER⁴, P. MALLICK², AND L. P. LEE¹¹UC Berkeley, Berkeley, CA, ²Stanford University, Stanford, CA, ³David Geffen School of Medicine at UCLA, Los Angeles, CA,⁴University of Southern California, Los Angeles, CA^{5:15PM}**5:15PM****Profiling of Human Cells with a Portable Holographic Imaging System**H. IM¹, J. SONG¹, M. LIONG¹, L. FEXON¹, M. PIVOVAROV¹, R. WEISSLEDER^{1,2}, AND H. LEE¹¹Massachusetts General Hospital, Boston, MA, ²Harvard 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. SCHREIER¹, T. HACKER¹, G. SONG¹, AND N. CHESLER¹¹University of Wisconsin-Madison, Madison, WI**4:15PM****Contribution of Intraventricular Vortices to Left Ventricular Filling**P. MARTINEZ-LEGAZPI¹, J. BERMEJO², Y. BENITO², M. ALHAMA², R. YOTTI², C. PEREZ DEL VILLAR², E. PÉREZ-DAVID², A. GONZALEZ-MANSILLA², C. SANTA-MARTA³, A. BARRIO², F. FERNANDEZ-AVILES², AND J. DEL ALAMO¹¹University of California San Diego, San Diego, CA, ²Hospital General Universitario Gregorio Marañón, Madrid, Spain, ³Universidad Nacional de Educacion a Distancia, Madrid, Spain**4:30PM****Relative Area Change Is Inversely Related to Elastic Modulus of Proximal Pulmonary Arteries**L. TIAN¹, A. BELLOFIORE¹, H. B. KELLIHAN¹, A. ROLDAN-ALZATE¹, D. W. CONSIGNY¹, C. J. FRANCOIS¹, AND N. C. CHESLER¹¹University 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. PARKER¹, R. GLEASON^{1,2}, R. SUTLIFF², AND M. PLATT^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**5:00PM****Rotational Seeding and Flow Pre-conditioning for Improved Endothelialization of Vascular Allografts**J. S. UZARSKI¹ AND P. S. MCFETRIDGE¹¹University of Florida, Gainesville, FL**5:15PM****Multiscale Modeling of Coronary Artery Hemodynamics in Kawasaki Disease**A. L. MARSDEN¹, D. SENGUPTA¹, A. KAHN¹, AND J. BURNS¹¹University of California San Diego, La Jolla, CAtrack sponsored by  Edwards**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. CHEN¹, J. LOU², E. EVANS³, AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA, ²Institute of Biophysics of Chinese Academy of Sciences, Beijing, China, People's Republic of, ³Boston University, Boston, MA**4:15PM****Visualization of Chondrocyte Mechanotransduction in 3D**Q. WAN^{1,2}, E. CHO², S. PARK¹, B. HAN¹, H. YOKOTA², AND S. NA²¹PURDUE UNIVERSITY, WEST LAFAYETTE, IN, ²INDIANA 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. DEVERSE¹, A. S. SANDHU¹, N. MENDOZA¹, C. M. EDWARDS¹, C. SUN¹, S. I. SIMON¹, AND A. G. PASSERINI¹¹University of California, Davis, Davis, CA**4:45PM****Substrate Stiffness Modulates Cell Volume in 2D, But Not in 3D**M. ALI¹, S. PEDRONI¹, C. NEMEH¹, B. A. HARLEY¹, AND T. A. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL**5:00PM****Parallel Magnetic Tweezers for Pulling CNS Axons towards a Source of Repellent Factors**D. KILINC¹, A. BLASIAK¹, J. J. O'MAHONY¹, AND G. U. LEE¹¹University 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. CHO², H. YOKOTA², AND S. NA²¹Purdue University, West Lafayette, IN, ²Indiana 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-RUSH¹, O. M. TORRE¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY

4:15PM**A Microfluidic Device to Measure Traction Forces During Confined Chemotactic Migration**

C. D. PAUL¹, P. S. RAMAN¹, K. M. STROKA¹, AND K. KONSTANTOPOULOS¹
¹Johns Hopkins University, Baltimore, MD

4:30PM**Dorsal Adhesion Slows Glioblastoma Migration in Perivascular Mimics**

A. D. RAPE¹ AND S. KUMAR¹
¹University of California - Berkeley, Berkeley, CA

4:45PM**Maintenance of Neuronal Polarity By a Microtubule Steering Mechanism Involving Kinesin and EB1**

W. O. HANCOCK¹ AND Y. CHEN^{1,2}
¹Penn State University, University Park, PA, ²Huck Institutes for Life Sciences, University Park, PA

5:00PM**Large Scale Analysis of Mammalian Axon Growth and Guidance in Microfluidic Gradient Arrays**

N. BHATTACHARJEE¹ AND A. FOLCH¹
¹University of Washington, Seattle, WA

5:15PM**Macrophage Chemokinesis and Force Generation on Microcontact Printed Surfaces**

L. HIND¹, D. COX², AND D. HAMMER¹
¹University of Pennsylvania, Philadelphia, PA, ²Albert 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. BARYSHYAN¹, L. DOMIGAN¹, E. PITCAIRN¹, B. TRIMMER¹, AND D. KAPLAN²
¹Tufts University, Medford, MA, ²Department of Biomedical Engineering, Medford, MA

4:15PM**Statistical Approach to Biopsy: Screening Large Area Organs with Untethered Surgical Tools**

E. GULTEPE¹, M. KHASHAB¹, A. N. KALLOO¹, F. M. SELARU¹, AND D. H. GRACIAS¹
¹The Johns Hopkins University, Baltimore, MD

4:30PM**Development of a 3-D Skeletal Muscle Biological Actuator**

C. CVETKOVIC¹, V. CHAN¹, R. RAMAN¹, AND R. BASHIR¹
¹University of Illinois at Urbana-Champaign, Urbana, IL

4:45PM**Functional Three-Dimensional Insect Muscle Tissue for Bioactuation Applications**

A. BARYSHYAN¹, L. DOMIGAN¹, B. TRIMMER¹, AND D. KAPLAN¹
¹Tufts University, Medford, MA

5:00PM**Portable Robotic Device for Autonomous Peripheral Venous Access using Near Infrared Image Guidance**

A. CHEN¹
¹Rutgers University, Holmdel, NJ

5:15PM**Open Surgery Simulation with Multi-Level Force Feedback**

S. LI¹, G. SAUNDERS¹, T. HALIC², A. GALEA³, K. LEROY³, G. HIRSCHMAN³, AND J. WEN¹
¹Rensselaer Polytechnic Institute, Troy, NY, ²University of Central Arkansas, Conway, AR, ³Vivonics 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}
¹University of California Berkeley, Berkeley, CA, ²Lawrence Berkeley National Laboratory, Berkeley, CA

4:30PM**Linking Signal-Transduction and Gene-Expression Networks By Statistical Modeling (Invited)**

Z. CHITFOROUSHZADEH¹, S. I. LARUE¹, M. B. YAFFE², D. A. LAUFFENBURGER², P. K. SORGER³, R. C. FRY⁴, AND K. A. JANES¹
¹University of Virginia, Charlottesville, VA, ²Massachusetts Institute of Technology, Cambridge, MA, ³Harvard Medical School, Boston, MA, ⁴University 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. LINGGI¹, W.-J. QIAN¹, W. CHRISLER¹, AND H. S. WILEY¹
¹Pacific 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. MAUCK¹
¹University of Pennsylvania, Philadelphia, PA

4:30PM**Engineering Collagen Maturity and Density for the Knee Meniscus**

P. HADIDI¹, M. M. HIGASHIOKA¹, E. A. MAKRIS¹, J. C. HU¹, AND K. A. ATHANASIOU¹
¹University of California, Davis, CA

4:45PM**Decellularized Cartilage as a Chondroinductive Material for Cartilage Tissue Engineering**

A. N. RENTH¹, G. L. CONVERSE², R. J. HOPKINS², AND M. S. DETAMORE¹
¹University of Kansas, Lawrence, KS, ²Children's Mercy Hospital, Kansas City, MO

5:00PM**Multi-Compartment Collagen-GAG Scaffolds to Guide MSC Differentiation for Osteotendinous Junction Repair**

S. CALIARI¹, D. WEISGERBER¹, W. GRIER¹, Z. MAHMASSANI¹, M. BOPPART¹, AND B. HARLEY¹
¹University of Illinois Urbana Champaign, Urbana, IL

5:15PM**Deletion of Scleraxis Impairs Supraspinatus Enthesis Development**M. L. KILLIAN¹ AND S. THOMOPOULOS¹¹Washington 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. KEENAN¹, S. LEUNG¹, P. S. RICE¹, R. A. WALL¹, AND J. K. BARTON¹¹The 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. PHIPPS¹, D. VELA², T. HOYT¹, D. HALANEY¹, J. J. MANCUSO¹, T. E. MILNER³, AND M. D. FELDMAN¹¹University of Texas Health Science Center San Antonio, San Antonio, TX, ²Texas Heart Institute, Houston, TX, ³University 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. GURBANI¹, M. ZHAO¹, P. WILKENING¹, B. GONENC¹, G. CHEON¹, I. IORDACHITA¹, W. CHIEN¹, R. TAYLOR¹, J. NIPARKO², AND J. U. KANG¹¹Johns Hopkins University, Baltimore, MD, ²University 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. WONG¹, T-M. NGUYEN¹, B. ARNAL¹, M. O'DONNELL¹, Z. HUANG², AND R. WANG¹¹University of Washington, Seattle, WA, ²University of Dundee, Dundee, United Kingdom**5:00PM****Quantification of 3D Fiber Orientation for Myocardial Tissues Using Optical Coherence Tomography**Y. GAN¹ AND C. P. FLEMING¹¹Columbia University, New York, NY**5:15PM****Optical Imaging and Spectroscopy of Tumor Bioenergetics In Vivo to Interpret Response to Therapy**N. RAJARAM¹, J. ZHONG¹, A. E. FREES¹, N. RAMANUJAM¹, AND M. W. DEWHIRST¹¹Duke 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. LI¹, A. G. SCHEPERS¹, R. E. SCHWARTZ¹, B. S. ALEJANDRO¹, AND S. N. BHATIA^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Brigham and Women's Hospital, Boston, MA**4:15PM****Glioma-On-A-Chip: Gradient Hydrogel Platform to Explore Extracellular Effects on Glioblastoma Malignancy**S. PEDRON¹, E. BECKA¹, B. MAHADIK¹, L. SKERTICH¹, E. J. ROY¹, AND B. HARLEY¹¹University 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. GALLEG0-PEREZ¹, J. MA¹, P. MAO¹, K. J. KWAK¹, D. J. HANSFORD¹, I. NAKANO¹, AND L. J. LEE¹¹The Ohio State University, Columbus, OH**4:45PM****Low Cost Microphysiological Systems with Analytics**J. J. HICKMAN¹ AND M. L. SHULER²¹University of Central Florida, Orlando, FL, ²Cornell University, Ithaca, NY**5:00PM****Disease-Specific Cardiac Tissue Models for Drug Discovery and Toxicology**A. MATHUR¹, P. LOSKILL¹, B. BERG-JOHANSEN¹, N. MARKS¹, S. HONG¹, L. LEE¹, AND K. HEALY¹¹University of California, Berkeley, CA**5:15PM****Blood-Brain Barrier on Chip, Drug Delivery Enhancement By Electroporation**M. BONAKDAR¹, P. A. GARCIA¹, AND R. V. DAVALOS¹¹Virginia 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. PASSLACK¹, A. RESTUCCIA¹, C. KURKJIAN², AND R. HARRISON¹¹University of Oklahoma, Norman, OK, ²University 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. TZENG¹, H. GUERRERO-CAZARES¹, N. P. YOUNG², A. QUINONES-HINOJOSA¹, AND J. J. GREEN¹¹Johns Hopkins University, Baltimore, MD, ²Stanford University, Stanford, CA**4:30PM****Unnatural Killer Cells:TRAIL-coated Leukocytes that Kill Cancer Cells in the Circulation**M. J. MITCHELL¹, E. C. WAYNE¹, K. RANA¹, C. SCHAFFER¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**4:45PM****Combination Delivery of Doxorubicin and siRNA Using LbL Nanoparticles for Triple Negative Breast Cancer Treatment**J. DENG¹, S. MORTON¹, AND P. HAMMOND¹¹MIT, Cambridge, MA**5:00PM****Sensitization of Circulating Tumor Cells to TRAIL-induced Apoptosis by Targeting ROS Signaling**J. LI¹, C. SHARKEY¹, AND M. KING¹¹Cornell University, Ithaca, NY

5:15PM

Brain-Penetrating Nanoparticles Improve Efficacy Against Gliosarcomas
E. NANCE¹, C. ZHANG¹, T-Y. SHIH², AND J. HANES¹

¹Johns Hopkins University, Baltimore, MD, ²Harvard 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. WHEELER¹, S. ALAGAPAN¹, L. PAN¹, E. FRANCA¹, G. J. BREWER², AND T. B. DEMARSE¹

¹University of Florida, Gainesville, FL, ²University of California Irvine, Irvine, CA

4:15PM

Transcranial Ultrasound for Noninvasive Targeted Modulation of Cortical Brain Circuits in Humans

J. MUELLER¹, W. LEGON², T. SATO², A. OPITZ^{2,3}, A. BARBOUR², A. WILLIAMS², AND W. TYLER^{1,2}

¹Virginia Tech School of Biomedical Engineering and Sciences, Blacksburg, VA, ²Virginia Tech Carilion Research Institute, Roanoke, VA, ³Georg-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. ANDERSON³, M. KEITH^{2,4}, AND D. TYLER^{1,2}

¹Louis Stokes Cleveland Dept of Veterans Affairs Medical Center, Cleveland, OH, ²Case Western Reserve University, Cleveland, OH, ³University Hospitals, Cleveland, OH, ⁴MetroHealth Medical Center, Cleveland, OH

4:45PM

***In Vivo* and *In Vitro* Peripheral Nerve Stimulation via Electromagnetic Induction**

Z. KAGAN¹, A. RAMRAKHYANI¹, F. KHAN¹, G. LAZZI¹, D. WARREN¹, AND R. NORMANN¹

¹University of Utah, Salt Lake City, UT

5:00PM

A Probabilistic Model Predicting Retinal Ganglion Cells Responses to Natural Images

N. IVZAN¹ AND N. M. GRZYWACZ¹

¹University of Southern California, Los Angeles, CA

5:15PM

Autonomic Function Assessment in Chronic Fatigue Syndrome Patients Using Kernel Method

A. K. KAMAL^{1,2}

¹Tennessee Tech University, Cookeville, TN, ²TTU, 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. SAHARI¹, M. A. TRAORE¹, AND B. BEHKAM¹

¹Virginia Tech, Blacksburg, VA

4:15PM

TRAIL Mediated Apoptosis in the Third Dimension

S. CHANDRASEKARAN¹, J. R. MARSHALL¹, AND M. R. KING¹

¹Cornell University, Ithaca, NY

4:30PM

Biomimetic Stem Cell Modified Tissue Engineered Nanostructured *In Vitro* Bone Model for Breast Cancer Bone Metastasis Study

M. WANG¹, S. FU¹, AND L. ZHANG¹

¹The George Washington University, Washington, DC

4:45PM

Stimuli-Responsive Binary Reagent Systems for Enabling Rapid and Effective Immunoaffinity Separation

J. J. LAI¹, B. J. NEHILLA², T. H. SCHULTE², AND P. S. STAYTON¹

¹University of Washington, Seattle, WA, ²Nexgenia, Inc., Seattle, WA

5:00PM

Red Blood Cell Manipulation Using Ultrasound Microbeam

K. LAM¹, Y. LI¹, Q. ZHOU¹, AND K. SHUNG¹

¹University of Southern California, Los Angeles, CA

5:15PM

Toxin Detection Using Organic Electrochemical Transistors Integrated with Living Cells

S. A. TRIA¹, M. RAMUZ¹, L. H. JIMISON², P. LELEUX¹, A. HAMA¹, G. G. MALLIARAS¹, AND R. M. OWENS¹

¹Ecole des Mines supérieure de Saint Etienne, Centre de Microélectronique de Provence, Gardanne, France, ²NIST, 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. WALT¹

¹Tufts 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. ADACHI², AND P. R. GASCOYNE²

¹University of Texas at Austin, Austin, TX, ²University of Texas MD Anderson Cancer Center, Houston, TX

4:45PM

Stabilization and Delivery of Vaccines with Silk Microneedles

W. RAJA¹, B. PANILAITIS¹, I. DIWAN¹, AND D. KAPLAN¹

¹Tufts University, Medford, MA

5:00PM

Nano-BaSO₄ in Pellethane Creates Radiopaque Thermoplastics That Are Less Prone To Bio-fouling

G. E. ANINWENE II¹, D. STOUT², Z. YAN², Z. YAN², AND T. J. WEBSTER¹

¹Northeastern University, Boston, MA, ²Brown University, Providence, RI

5:15PM

Development of a Simple and Self-Contained mRNA Biomarker Extraction and Detection Assay

N. M. ADAMS¹, A. WANG¹, D. GVARJALADZE², L. LOMIDZE², B. I. KANKIA², D. W. WRIGHT¹, AND F. R. HASELTON¹

¹Vanderbilt University, Nashville, TN, ²Ohio 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 –I

Track: Tissue Engineering
OP - Fri - I - I - 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. TORREJON¹, M. BERGKVIST¹, J. DANIAS², S. SHARFSTEIN¹, AND Y. XIE¹

¹SUNY at Albany-College of Nanoscale Science and Engineering, Albany, NY, ²SUNY
Downstate Medical Center, Brooklyn, NY

8:15AM

**3D In Vitro Model of Vascularized Cardiac Tissue for Cardiac
Drug Screening**

D. D. TRAN¹, M. L. MOYA¹, L. F. ALONZO¹, AND S. C. GEORGE^{1,2}

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

8:30AM

**Mechanical Loading Inhibits Metastasis-mediated Osteolysis via Effects
on Osteoclasts**

M. E. LYNCH¹, M. J. LEE¹, P. V. POLAMRAJU¹, L. BONASSAR¹, AND C. FISCHBACH¹

¹Cornell 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}

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

9:00AM

**Hypoxia Promotes Liver-Stage Malaria Infection in Primary Human
Hepatocytes In Vitro**

S. NG¹, S. MARCH¹, A. GALSTIAN¹, M. M. MOTA², AND S. BHATIA¹

¹Massachusetts Institute of Technology, Cambridge, MA, ²Instituto de Medicina Molecular,
Universidade de Lisboa, Lisbon, Portugal

9:15AM

3D Adipose Tissue Model for Type 2 Diabetes Mellitus

K. A. BURKE¹, R. D. ABBOTT¹, AND D. L. KAPLAN¹

¹Tufts University, Medford, MA

Track: Biomaterials

OP - Fri - I - 2 - Room 6C

Micro and Nanostructured Materials IV

Chairs: Jordan Green, Mehdi Nikkah

8:00AM

Tunable Peptoid Microsphere Coatings

S. SERVOSS¹, M. HEBERT¹, D. SHAH¹, P. BLAKE¹, AND J. P. TURNER¹

¹University of Arkansas, Fayetteville, AR

8:15AM

**Nanocomposites Improved Magnesium Degradation Properties for
Biomedical Implants**

I. JOHNSON¹ AND H. LIU¹

¹University of California at Riverside, Riverside, CA

PLATFORM
SESSIONS

Fri-1

8:30AM**Biomimetic Peptide Coating on Bioresorbable Magnesium Metal**A. J. PATIL¹, E. BENIASH¹, AND C. SFEIR¹¹University of Pittsburgh, Pittsburgh, PA**8:45AM****Bifunctional Janus Microparticles with Spatially Segregated Proteins**T. SULCHEK¹, J. TANG¹, K. SCHOENWALD¹, D. POTTER¹, AND D. WHITE²¹Georgia Tech, Atlanta, GA, ²USDA, Ames, IA**9:00AM****Forming of Janus Particle Surface By Adsorption**D. GAI¹, H. TAN¹, S. ZHANG², Y. LU¹, AND J. K. HSIA¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Pennsylvania State University, University Park, PA**9:15AM****Spatially Defined Reconfigurable Topography for Tracking Filopodia Dynamics**P. PHOLPABU¹, H. WU¹, AND C. A. BETTINGER¹¹Carnegie Mellon University, Pittsburgh, PAPLATFORM
SESSIONS

Fri-1

Track: Biomaterials**OP - Fri - I - 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. SEGAR¹ AND E. BOTCHWEY¹¹Georgia Institute of Technology and Emory University, Atlanta, GA**8:15AM****Dynamic Biomaterials for Healing Chronic Wounds**B. D. ALMQUIST¹ AND P. T. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA**8:30AM****pH-Responsive Micelles for the Targeted Delivery of Chemotherapeutic Drugs**A. J. CONVERTINE¹, P. STAYTON¹, G. Y. BERGUIG¹, M. J. MANGANIELLO¹, B. GHOSN¹, AND J. T. WILSON¹¹University of Washington, Seattle, WA**8:45AM****Non-Viral Gene Carriers for Retinal Therapies**S. MERRITT¹ AND H. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**9:00AM****Peptide-functionalized Scaffolds Regulating Angiogenesis and Inflammation in Peripheral Artery Disease**A. L. ZACHMAN¹, J. TUCKER-SCHWARTZ¹, F-W. SHEN¹, S. T. FITZPATRICK¹, M. SKALA¹, AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN**9:15AM****Polypeptide-Gold Nanorod Solders for Laser Tissue Welding**J. RAMOS¹, H-C. HUANG², K. PUSHPAVANAM¹, J. FAUST¹, AND K. REGE¹¹Arizona State University, Tempe, AZ, ²Massachusetts General Hospital and Harvard Medical School, Boston, MA**Track: Biomechanics****OP - Fri - I - 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. AUNG¹, Y. N. SEO¹, C. JAMORA¹, J. DEL ALAMO¹, AND S. VARGHESE¹¹University of California, San Diego, La Jolla, CA**8:15AM****Dynamic Regulation of Cellular Mechanics During Lung Cancer Metastasis**L. I. VOLAKIS¹, N. HIGUITA-CASTRO¹, AND S. N. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²The Wexner Medical Center at the Ohio State University, Columbus, OH**8:30AM****ECM Alignment Polarizes Focal Adhesions and Directs Cell Migration**B. M. BAKER¹ AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA**8:45AM****Physical Mechanism for Lung Branching Morphogenesis Revealed by 3D Traction Force Microscopy**V. D. VARNER¹, J. P. GLEGHORN¹, AND C. M. NELSON¹¹Princeton 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. EDGAR¹, S. A. MAAS¹, J. E. GUILKEY¹, AND J. A. WEISS¹¹University 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. TSENG¹ AND D. DI CARLO¹¹University of California, Los Angeles, Los Angeles, CA**Track: Tissue Engineering****OP - Fri - I - 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. BINDER¹, D. C. GENETOS¹, AND J. K. LEACH¹¹University of California Davis, Davis, CA**8:15AM****Polycaprolactone Fumarate as a Novel Biomaterial for Soft Tissue Engineering**S. C. CHASE¹, E. WAGNER¹, D. BRAVO¹, M. DADSETAN¹, S. KAKAR¹, AND WM. YASZEMSKI¹¹Mayo Clinic, Rochester, MNP = Poster Session
OP = Oral Presentation

8:30AM**Critical Seeding Density Enhances Scaffold-Free Engineered Meniscus**P. HADIDI¹, T. C. YEH¹, D. J. HUEY¹, J. C. HU¹, AND K. A. ATHANASIOU¹¹University of California, Davis, CA**8:45AM****Gene Expression-Based Enrichment of Human Adipose-Derived Stem Cells for Enhanced Osteogenic Differentiation**H. V. DESAI¹ AND E. M. DARLING¹¹Brown University, Providence, RI**9:00AM****Biomechanical Evaluation of Suture Holding Properties of Native and Engineered Articular Cartilage**G. DURAINÉ¹, B. ARZI¹, J. LEE¹, C. LEE², D. RESPONTE¹, J. HU¹, AND K. ATHANASIOU¹¹University of California Davis, Davis, CA, ²University of California Davis Medical Center, Sacramento, CA**9:15AM****Mechanical Control of Collagen Organization and Anisotropy in Tissue Engineered Menisci**J. L. PUETZER¹ AND L. BONASSAR¹¹Cornell 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. JEON¹, S. BERSINI², C. ARRIGONI³, S. CHUNG⁴, J. CHAREST⁵, M. MORETTI², AND R. D. KAMM¹¹MIT, Cambridge, MA, ²Politecnico di Milano, Milan, Italy, ³Gruppo Ospedaliero San Donato Foundation, Milan, Italy, ⁴Korea University, Seoul, Korea, Republic of, ⁵Draper Laboratory, Cambridge, MA**8:15AM****Recapitulating Ewing's Sarcoma Signature in Tumor Cell Lines By An Engineered Bone Microenvironment**A. VILLASANTE¹, A. MARTURANO^{1,2}, F. Y. LEE¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY, ²Politecnico di Milano, Milan, Italy**8:30AM****Receptor Tyrosine Kinase Inhibitor Efficacy in Carcinoma is Stiffness Dependent**T. NGUYEN¹, W. HERRICK¹, M. SLEIMAN¹, T. MORIARTY¹, AND S. PEYTON¹¹University of Massachusetts, Amherst, Amherst, MA**8:45AM****Micropatterned Tumor-Stromal Assay for Cancer Drug Discovery**K. SHEN¹, D. HICKS², J. S. ELMAN¹, S. BOHR¹, K. PENNA³, E. SEKER¹, F. WANG¹, M. L. YARMUSH¹, D. SGROI², M. TONER¹, AND B. PAREKKADAN¹¹Center for Engineering in Medicine, MGH/HMS, Boston, MA, ²Center for Cancer Research, MGH, Boston, MA, ³Massachusetts Institute of Technology, Cambridge, MA**9:00AM****Characterization of Tumor Heterogeneity Using Bioimage Informatics and 3D Computational Modeling**S. K. STAMATELOS¹, A. CARLIER², E. KIM¹, A. P. PATHAK¹, AND A. S. POPEL¹¹Johns Hopkins University, School of Medicine, Baltimore, MD, ²Katholieke Universiteit Leuven, Heverlee, Belgium**9:15AM****Tumor-Microenvironment-On-Chip: Simulation of Complex Transport Around Tumor**B. KWAK¹, C. SHIN¹, K. PARK¹, AND B. HAN¹¹Purdue University, 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. TAM¹, W. ZHANG², M. SACKS², AND N. VYVAHARE¹¹Clemson University, Clemson, SC, ²The University of Texas at Austin, Austin, TX**8:15AM****The Spatiotemporal Evolution of Mineral Deposition and Maturation During Aortic Valve Leaflet Calcification**J. RICHARDS¹, L. MILLER¹, L. ESTROFF¹, A. BOSKEY¹, AND J. BUTCHER¹¹Cornell 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. SIEFERT¹, T. A. HERRMANN¹, J.-P. M. RABBAH¹, N. SAIKRISHNAN¹, K. S. KUNZELMAN², AND A. P. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²University 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. LEE¹, J. H. GORMAN, III², R. C. GORMAN², R. AMINI³, AND M. SACKS¹¹The University of Texas at Austin, Austin, TX, ²University of Pennsylvania, Philadelphia, PA, ³University of Pittsburgh, Pittsburgh, PA**9:00AM****Fluid-Structure Interaction with Adaptive Fluid Mesh for Large Deflections in a Trileaflet Valve**T. E. CLAIBORNE¹, M. HORNER², S. PRABHAKAR³, G. VERMA³, M. SLEPIAN⁴, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²Ansys, Inc., Evanston, IL, ³Ansys Fluent India Pvt. Ltd., Pune, India, ⁴University of Arizona, Tucson, AZ**9:15AM****The Effects of Transcatheter Aortic Valve Placement and Sizing on Geometric Orifice Area and Leaflet Curvature**G. M. STEARNS¹, N. SAIKRISHNAN¹, A. W. SIEFERT¹, AND A. YOGANATHAN¹¹Georgia Institute of Technology & Emory University, Atlanta, GAtrack 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. KIM¹, S. ZHENG², J. SUN², Y. ZHUO², H. CAI², D. E. LECKBAND^{1,3}, AND Y. WANG^{1,2}¹Neuroscience Program, University of Illinois at Urbana-Champaign, Urbana, IL, ²Department of Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL, ³Department 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. FOSTER¹, R. M. GOWER², E. J. ARMSTRONG¹, AND S. I. SIMON¹¹University of California Davis, Davis, CA, ²Northwestern University, Chicago, IL**8:30AM****Evaluation of the Endothelial Glycocalyx as a Barrier to Leukocyte Adhesion**G. MARSH¹ AND R. E. WAUGH¹¹University of Rochester, Rochester, NY**8:45AM****Cell-Matrix Interactions Dominate the Self-Organization of Human Mammary Epithelial Cells**A. CERCHIARI¹, J. GARBE², M. THOMSON³, M. TODHUNTER³, N. JEE³, M. LABARGE², T. DESAI³, AND Z. GARTNER³¹UC Berkeley - UCSF, San Francisco, CA, ²Lawrence Berkeley National Laboratory, Berkeley, CA, ³UCSF, San Francisco, CA**9:00AM****Oxidized Low-Density Lipoprotein Increases a Risk of Atherogenesis via Coactivation of Macrophages and Mast Cells**C. CHEN¹ AND D. KHISMATULLIN¹¹Tulane University, New Orleans, LA**9:15AM****Terminal Sterilization of a Decellularized Cartilage Scaffold Affects Cell Viability and Adhesion**A. MATUSKA¹ AND P. MCFETRIDGE¹¹University of Florida, Gainesville, FL**Track: Stem Cell Engineering****OP - Fri - I - 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. VISWANATHAN¹, S. CHIRASATITSIN², G. BATTAGLIA¹, AND A. J. ENGLER²¹University College London, London, United Kingdom, ²UC San Diego, La Jolla, CA**8:15AM****Directing Mesenchymal Stem Cell Fate Decisions By Engineering Cell-Cell Adhesion Pathways**S. ALIMPERTI¹, S. ROW¹, S. AGARWAL², AND S. ANDREADIS¹¹SUNY at Buffalo, Buffalo, NY, ²Baylor 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. REXIUS¹, J. REHMAN¹, A. B. MALIK¹, AND D. T. EDDINGTON¹¹University of Illinois at Chicago, Chicago, IL**8:45AM****Engineering 3D Cardiospheres from Human Pluripotent Stem Cells**T. HOOKWAY¹, D. NGUYEN², C. XU², AND T. MCDEVITT¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**9:00AM****Stem Cell-Derived Microvascular Networks in a Synthetic Matrix**S. KUSUMA¹, Y-I. SHEN¹, D. HANJAYA-PUTRA¹, P. MALI¹, L. CHENG¹, AND S. GERECHT¹¹Johns 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. SA¹ AND K. E. MCCLOSKEY¹¹University of California, Merced, Merced, CA**Track: Device Technologies and Biomedical Robotics****OP - Fri - I - 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. JANTZEN¹, H. E. ACHNECK², AND G. A. TRUSKEY¹¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC**8:15AM****A Novel Bioresorbable Stent Coating for Drug Release in Congenital Heart Disease Applications**A. C. GOODFRIEND¹, G. BARKER¹, T. R. WELCH¹, R. GINTHER¹, M. REAGEL¹, S. REDDY¹, J. WANG¹, A. NUGENT¹, AND J. FORBESS¹¹University of Texas Southwestern Medical Center, Dallas, TX**8:30AM****Mitigation of Flow Separation Improves Procoagulant Milieu in an In Vitro Stent Model**J. M. JIMÉNEZ¹, C. KAMPMEYER¹, M. YU¹, I. H. JOHNSTON¹, AND P. F. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**8:45AM****Design of a Flexible Balloon-Expandable Peripheral Stent Using Finite Element Analysis**K. SHANMUGAM¹, R. RAMANATHAN¹, J. RAJAN¹, G. JOSEPH², AND M. THANIKACHALAM³¹Agada Medical Technologies, Chennai, India, ²Christian Medical College, Vellore, India, ³OSU, Columbus, OH**9:00AM****Magnetic Capture of Endothelial Cells to Vascular Stents**B. J. TEFFT¹, S. UTHAMARAJ¹, J. J. HARBURN², M. KLABUSAY³, O. HLINOMAZ³, D. R. HOLMES¹, R. D. SIMARI¹, D. DRAGOMIR-DAESCU¹, AND G. S. SANDHU¹¹Mayo Clinic, Rochester, MN, ²Durham University, Stockton, United Kingdom, ³St. Anne's University Hospital, Brno, Czech Republic**9:15AM****Titania Nanotube Formation on Cardiovascular Stents**H. NUHN¹¹UCSF Mission Bay Campus, San Francisco, CAtrack sponsored by  Medtronic**Track: Bioinformatics, Computational and Systems Biology****OP - Fri - I - 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. BILD¹¹University of Utah, Salt lake city, UT

8:30AM**Network Biology and Personalized Medicine in Multiple Sclerosis**
(Invited)R. NIBBE¹, Y. LIU², M. KOYUTURK², AND M. CHANCE^{1,2}¹NeoProteomics, Inc., Cleveland, OH, ²Case Western Reserve U, Cleveland, OH**9:00AM****Computational Models and Crowd-Sourcing Initiatives for Inferring Genetic Predictors of Cancer Phenotypes.** (Invited)A. A. MARGOLIN¹¹Sage 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. MARGULIES¹¹University of Pennsylvania, Philadelphia, PA**8:15AM****Mechanotransduction in Lung Endothelium**D. LECKBAND¹, A. BARRY¹, S. DUDEK², J. G. GARCIA², AND N. WANG¹¹University of Illinois, Urbana, IL, ²University of Illinois College of Medicine, Chicago, IL**8:30AM****Evaluation of *In Vitro* Tissue Models of Upper and Lower Airway**A. MAHMOOD¹, J. DYE², E. MISHKIN¹, AND W. WARREN¹¹Sanofi Pasteur, Orlando, FL, ²US 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. WAGNER¹, N. R. BONENFANT¹, C. PARSONS¹, Z. D. BORG¹, E. BROOKS¹, M. LATHROP¹, Y. W. LAM¹, B. DENG¹, M. DESARNO¹, T. ASHIKAGA¹, R. LOI², AND D. J. WEISS¹¹University of Vermont, Burlington, VT, ²University of Cagliari, Cagliari, Italy**9:00AM****Design and Synthesis of an Adherent Artificial Pulmonary Pleura**D. E. WAGNER¹, S. L. FENN¹, N. R. BONENFANT¹, R. OLDINSKI¹, AND D. J. WEISS¹¹University 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. KIM¹, E. MILLER², D. C. RADISKY², AND C. M. NELSON¹¹Princeton University, Princeton, NJ, ²Mayo 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. ZHOU¹, T. MA¹, X. LI¹, K. SHUNG¹, J. LI², J. JING², J. ZHANG², AND Z. CHEN²¹University of Southern California, Los Angeles, CA, ²University of California Irvine, Irvine, CA**8:15AM****Noninvasive, Quantitative Monitoring of *In Vitro* Osteoblastic Differentiation in 3D Engineered Tissues using Spectral Ultrasound Imaging**M. GUDUR¹, R. R. RAO¹, A. W. PETERSON¹, D. J. CALDWELL¹, C. X. DENG¹, AND J. P. STEGEMANN¹¹University of Michigan, Ann Arbor, MI**8:30AM****Controlling Nanoparticle Delivery Across the Blood-Brain Barrier Using MR Guided Focused Ultrasound**K. TIMBIE¹, G. W. MILLER¹, E. NANCE², J. SONG¹, C. ZHANG², J. HANES², AND R. J. PRICE¹¹University of Virginia, Charlottesville, VA, ²Johns 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. HARTMAN¹, S. KAZMI¹, A. SALVAGGIO¹, C. SCHRANDT¹, C. SULLENDER¹, C. SULLENDER¹, S. EMELIANOV¹, AND A. DUNN¹¹University of Texas at Austin, Austin, TX**9:00AM****Nucleation Site Formation During Acoustic Droplet Vaporization**D. S. LI¹, J. B. FOLKES¹, AND J. L. BULL¹¹University of Michigan, Ann Arbor, MI**9:15AM****Characterization of Optically Induced Microbubble Oscillations**J. DOVE¹, M. BORDEN¹, AND T. MURRAY¹¹University 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. FRAMPTON¹ AND S. TAKAYAMA¹¹University 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. HUI¹ AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA

8:30AM**Local Thermal Effects on the Surface of Magnetic Nanoparticles**L. POLO-CORRALES¹ AND C. RINALDI²¹University of Puerto Rico, Mayagüez, Mayagüez, PR, ²University of Florida, Gainesville, FL**8:45AM****Controlled Rupture of Drug-Encapsulated Ultrasound Contrast Agents in Blood Vessels on a Chip**Y. PARK¹, T. PHAM¹, S. KIM², J. KIM², W. PARK², R. O. CLEVELAND³, N. JEON², J. O. NAGY⁴, AND J. Y. WONG¹¹Boston University, Boston, MA, ²Seoul National University, Seoul, Korea, Republic of, ³University of Oxford, Oxford, United Kingdom, ⁴Nanovalent Pharmaceuticals, Bozeman, MT**9:00AM****Alpha-Helical Peptide-Induced Vesicle Fusion to Form Complex Supported Lipid Bilayers for Biosensing Applications**G. HARDY¹, R. NAYAK¹, AND S. ZAUSCHER¹¹Duke University, Durham, NC**9:15AM****Universal Platform for On-Demand Preparation of Antibody-Functionalized Quantum Dots**P. ZRAZHEVSKIY¹ AND X. GAO¹¹University of Washington, Seattle, WA**Track: Drug Delivery****OP - Fri - I - 15 - Room 620****Cancer Drug Delivery II****Chairs:** Angela Pannier, Tatiana Segura**8:00AM****Drug Eluting Stent for the Treatment of Pancreatic Cancer**L. INDOLFI¹, M. LIGORIO², D. TING², C. FERRONE², J. CLARK², R. LANGER¹, AND E. EDELMAN¹¹MIT, Cambridge, MA, ²MGH, Cambridge, MA**8:15AM****Engineered Probiotics for Urinary Detection of Cancer Metastases**T. DANINO¹, A. PRINDLE², G. KWONG¹, M. SKALAK¹, J. HASTY², AND S. BHATIA¹¹MIT, Cambridge, MA, ²UCSD, La Jolla, CA**8:30AM****Intratumoral Depot of TNF-alpha-ELP Fusion Protein for Local Cancer Therapy**J. PARK¹, W. LIU¹, AND A. CHILKOTI¹¹Duke University, Durham, NC**8:45AM****Polymer Nanoparticles for Delivery of Multiple Therapeutic Agents and Their Effect on Cancer Cell Growth**A. EDIRIWICKREMA¹, J. ZHOU¹, AND M. SALTZMAN¹¹Yale University, New Haven, CT**9:00AM****Genetically Encoded Polypeptide Nano-Micelle for Paclitaxel Delivery to Triple Negative Breast Tumor**J. BHATTACHARYYA¹, J. R. MCDANIEL¹, AND A. CHILKOTI¹¹Duke University, Durham, NC**9:15AM****Mesothelin-targeted Nanoparticles for the Effective Use of Gemcitabine against Pancreatic Cancer**J. POLLET¹, E. POTEET¹, Z. LIU¹, B. ZHAN¹, Q. C. YAO¹, AND M. HEFFERNAN¹¹Baylor College of Medicine, Houston, TX**Track: Neural Engineering****OP - Fri - I - 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. TRETT¹, C. A. HARRIS¹, W. SHAIN^{1,2}, D. R. KIPKE³, C. STOETZNER³, B. ROYSAM⁴, Y. XU⁴, R. PADMANABHAN^{4,5}, D. CARLSON⁶, AND L. CARIN⁶¹Seattle Children's Research Institute, Seattle, WA, ²University of Washington, Seattle, WA, ³University of Michigan, Ann Arbor, MI, ⁴University of Houston, Houston, TX, ⁵Duke 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. SKOUSEN², A. E. HESS², D. TYLER^{1,2}, S. ROWAN³, C. WEDER³, AND J. R. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH, ³University of Fribourg, Fribourg, Switzerland**8:30AM****A CAD-Based Modeling Approach that Predicts the Foreign Body Response to Chronic CNS Implants**N. F. NOLTA¹, M. B. CHRISTENSEN¹, P. D. CRANE¹, AND P. A. TRESKO¹¹University of Utah, Salt Lake City, UT**8:45AM****Multielectrode Arrays Implanted in the Feline Spinal Nerve Elicit a Characteristic Tissue Response**C. L. KOLARCIC¹, C. A. CASTRO², T. M. BRUNS¹, R. A. GAUNT¹, D. J. WEBER¹, AND X. T. CUI^{1,3}¹University of Pittsburgh, Pittsburgh, PA, ²Magee Women's Research Institute, Pittsburgh, PA, ³McGowan Institute for Regenerative Medicine, Pittsburgh, PA**9:00AM****Identifying Motor Objectives in a Brain-Computer Interface Task by Inverse Optimal Control**A. HADDOCK¹, C. MATLACK¹, AND H. J. CHIZECK¹¹University of Washington, Seattle, WA**9:15AM****Effect of Transection on Decoding Postural Responses in the Rat**J. B. DOUGHERTY¹ AND K. A. MOXON¹¹Drexel University, Philadelphia, PA**Track: New Frontiers and Special Topics****OP - Fri - I - 17 - Room 614****Emerging Technology I****Chairs:** Elliot Botvinick**8:00AM****Single Cell Proteomics Using Commercial Elisa Kits and Plate Readers**A. P. ACHARYA¹, K. KUNDU², A. GARDNER¹, J. MACKAY¹, S. KUMAR¹, AND N. MURTHY¹¹University of California, Berkeley, CA, ²Li-Cor Inc., Omaha, NE**8:15AM****nBioChip- A Nano-Biofilm Chip for Ultra High-Throughput Drug Discovery of Antibiotics Against Polymicrobial Biofilms**A. SRINIVASAN¹, K. P. LEUNG², J. L. LOPEZ-RIBOT¹, AND A. K. RAMASUBRAMANIAN¹¹The University of Texas at San Antonio, San Antonio, TX, ²US Army Institute of Surgical Research, San Antonio, TX

8:30AM**Electrical Dosimetry for Potential Driven Electromechanical Reshaping of Cartilage**D. PROTSENKO¹ AND B. WONG²¹University of California Irvine, Irvine, CA, ²Beckman Laser Institute, Irvine, CA**8:45AM****Multicycle Quantum Dot Staining for Comprehensive Single-Cell Molecular Characterization**P. ZRAZHEVSKIY¹ AND X. GAO¹¹University of Washington, Seattle, WA**9:00AM****Co-Regulation of Follow-The-Leader Invasion by Proteolysis and Extracellular Matrix Microarchitecture**S. P. CAREY¹, A. STARCHENKO¹, A. L. MCGREGOR¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**9:15AM****Automatic Optical Tweezers Based Active Microrheology (AMR)**M. KEATING¹, M. B. ALVAREZ-ELIZONDO¹, A. KURUP¹, AND E. BOTVINICK¹¹University of 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 - I - 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 Small- and Large-Animal Studies**K. CHRISTMAN¹¹UC San Diego, La Jolla, CA**8:15AM****Therapeutic Microstructures for the Attenuation of Fibrosis after Myocardial Infarction**J. R. PINNEY¹, K. T. DU¹, Q. FANG¹, P. AYALA², R. SIEVERS¹, L. DELROSARIO¹, R. J. LEE¹, AND T. A. DESAI¹¹University of California, San Francisco, CA, ²Beth Israel Deaconess Medical Center, Boston, MA**8:30AM****A Customizable Biological Extracellular Matrix As An Arterial Substitute In A Rabbit Model**L. GOLDBERG¹, S. AMENSAG¹, S. BERCELI¹, AND P. MCFETRIDGE¹¹University of Florida, Gainesville, FL**8:45AM****Nerve-Specific Extracellular Matrix Hydrogel for Peripheral Nerve Reconstruction**B. N. BROWN¹, T. A. PREST¹, S. T. LOPRESTI¹, M. J. MARTIN², AND J. CHEETHAM²¹University of Pittsburgh, Pittsburgh, PA, ²Cornell University, Ithaca, NY**9:00AM****Duraplasty with a Novel Synthetic Microfibrous Dural Graft In a Canine Craniotomy Model.**V. UMESH¹, L. WILENSKY¹, J. ENG¹, G. CASADIEGO CUBIDES¹, J. MA¹, D. CARLINI¹, S. LI¹, AND S. PATEL^{1,2}¹University of California, Berkeley, Berkeley, CA, ²NanoNerve, Inc., Berkeley, CA**9:15AM****An Engineered Liver Graft with Enhanced Blood Compatibility and Prolonged Survival**Y. KIM¹, T. A. BERENDSEN¹, S. OZER¹, K. UYGUN¹, M. L. YARMUSH¹, AND B. E. UYGUN¹¹Harvard 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. JI¹, X. ZHANG¹, AND R. GAN¹¹University of Oklahoma, Norman, OK

P – Fri - A - 2

Towards a Computational Framework for Simulating Coupled Arterial Cells in a Realistic Vascular Geometry

M. A. SHAIKH¹, C. BACON², S. MOORE³, AND T. DAVID¹¹University of Canterbury, Christchurch, New Zealand, ²Argonne National Laboratory, Christchurch, New Zealand, ³University of Melbourne, Melbourne, Australia

P – Fri - A - 3

Graph-Models to Lead Genetic Signaling Path Discovery: Preliminary Ideas and Results

Y. E. CRUZ-RIVERA¹, E. L. LORENZO¹, N. J. ORTIZ¹, C. E. ISAZA², AND M. CABRERA-RÍOS¹¹University of Puerto Rico - Mayagüez, Mayagüez, PR, ²Bio 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. SCHOMAY¹, P. SANKARANARAYANAN¹, AND O. ALTER¹¹Department 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. BENSON¹, R. T. CARRICK¹, N. HABEL¹, P. BIELAU¹, O. BATES², AND P. S. SPECTOR¹¹University of Vermont, Burlington, VT, ²Boston University, Boston, MA

P – Fri - A - 6

Velocity and Curvatures of 3-D Wave Front in Cardiac Simulation

N. MAZEH¹, D. HAINES¹, AND B. ROTH²¹Beaumont Health System, Royal Oak, MI, ²Oakland University, Rochester, MI

P – Fri - A - 7

Modeling Platelet Aggregation on a Circulating Tumor Cell in a Microchannel

Y. LU¹, S. LYNCH¹, AND D. KHISMATULLIN¹¹Tulane University, New Orleans, LA

P – Fri - A - 8

Ablation of Multi-Wavelet Reentry Guided by Circuit Density

R. T. CARRICK^{1,2}, B. BENSON², O. BATES², N. HABEL¹, J. BATES², AND P. SPECTOR¹¹University of Vermont College of Medicine, Burlington, VT, ²University of Vermont College of Engineering and Mathematical Sciences, Burlington, VT, ³Boston 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. FAN¹, C. S. SUN¹, G. P. REECE², AND M. K. MARKEY¹¹The University of Texas at Austin, Austin, TX, ²The 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. RANDOLPH¹¹Fred 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. CHEN¹, S-C. CHAO¹, AND H-Y. TENG¹¹Chang 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. AKPA¹¹University of Illinois at Chicago, Chicago, IL

P – Fri - A - 13

Effect of Spinal Micro-anatomy on CSF Flow Patterns

K. TANGEN¹, T. MARRINAN¹, Y. HSU¹, AND A. LINNINGER¹¹University 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. MO¹ AND V. DAGGETT¹¹University of Washington, Seattle, WA

P – Fri - A - 15

A Multi-phase CFD Model for the Simulation of Blood Flow in Microfluidic Devices

E. B. DURANT¹, K. V. SHARP¹, AND A. Z. HIGGINS¹¹Oregon State University, Corvallis, OR

P – Fri - A - 16

Modeling RNA Devices for Applications in Synthetic Biology

J. T. STEVENS¹, W. VOJE, JR.¹, R. CORREA¹, AND J. M. CAROTHERS¹¹University of Washington, Seattle, WA

P – Fri - A - 17

Low-Cost EEG-Based Assistive Technology for People with Motor Disabilities

R. BEGOSSO¹, L. P. DOS SANTOS¹, K. R. COTOSCK¹, AND J. S. IDE¹¹UNIFESP, São José dos Campos, Brazil

P – Fri - A - 18

Vector Length Selection in a Fixed Point Digital Quadratic Integrate and Fire Neuron

E. BASHAM¹ AND D. PARENT¹¹SJSU, 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-ADAMS¹, G. GARCIA-CARDENA², AND C. DEWEY JR³¹University of Illinois - Chicago, Chicago, IL, ²Harvard Medical School, Boston, MA, ³Massachusetts Institute of Technology, Cambridge, MA

P – Fri - A - 20

The Affinity Gradient in the Nuclear Pore Complex is Optimized to Maximize Transport Rate

M. AZIMI¹ AND M. MOFRAD¹¹University of California Berkeley, Berkeley, CAP = Poster Session
OP = Oral Presentation

P – Fri - A - 21**Models of the Nuclear Pore Complex: Structure, Mechanochemistry, and Function**M. R. MOFRAD¹¹University of California, Berkeley, Berkeley, CA**P – Fri - A - 22****Exploring Network Dynamics of the Working Brain During Upper Extremity Movements**D. E. NATHAN¹, R. W. PROST², S. J. GUASTELLO¹, AND D. C. JEUTTER¹¹Marquette University, Milwaukee, WI, ²Medical College of Wisconsin, Milwaukee, WI**P – Fri - A - 23****The Effect of Heart Rate Variability on Alternans Formation in the Heart**S. D. MCINTYRE¹, V. KAKADE¹, Y. MORI¹, AND E. TOLKACHEVA¹¹University 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. ROSTAMI¹, J. WU¹, AND E. S. TZANAKAKIS¹¹SUNY-Buffalo, Buffalo, NY**P – Fri - A - 25****Parametric and Non-parametric Mathematical Modeling of Experimental Endotoxemia**S. E. EIKENBERRY¹ AND V. Z. MARMARELIS¹¹University 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}¹University of Virginia, Charlottesville, VA, ²Google, Inc, Mountain View, CA**P – Fri - A - 27****A Three-Enzyme Cascade During N-Glycan Branching: The Minimal Model for Ultrasensitivity**G. LIU¹ AND S. NEELAMEGHAM¹¹State 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. BINDSCHADLER¹ AND J. B. BASSINGTHWAIGHTE²¹U. Washington, Seattle, WA, ²University of Washington, Seattle, WA**P – Fri - A - 29****Immune Cell Mediated Transcription Factor Activity in Metastatic Breast Cancer Cells**B. A. AGUADO¹, S. M. AZARIN¹, R. M. GOWER¹, J. S. JERUSS², AND L. D. SHEA¹¹Northwestern University, Chicago, IL, ²Northwestern University Feinberg School of Medicine, Chicago, IL**P – Fri - A - 30****Monitoring and Supervision of Machine Perfusion Resuscitation of Rat Livers**S. PERK¹, M-L. IZAMIS¹, H. TOLBOOM², B. UYGUN¹, M. YARMUSH^{1,3}, AND K. UYGUN¹¹Massachusetts General Hospital, Harvard Medical School, Shriners Hospitals for Children, Boston, MA, ²University Hospital Zurich, Zurich, Switzerland, ³Rutgers University, Piscataway, NJ**P – Fri - A - 31****Input-Output and Compartmental Modeling of Cerebral Hemodynamics**B. C. HENLEY¹¹University of Southern California, Los Angeles, CA**P – Fri - A - 32****A New Way to Look at Trajectory Data in Biology**G. PICASSO¹, D. MALASPINA¹, T. HOPE¹, J. I. SZNAJDER¹, AND I. SZLEIFER¹¹Northwestern University, Evanston, IL**P – Fri - A - 33****Modeling the Cardiovascular and Endocrinologic Adaptations of Pregnancy**V. L. WOLF^{1,2}, W. A. PRUETT¹, AND R. L. HESTER¹¹University of Mississippi Medical Center, Jackson, MS, ²Mississippi State University, Mississippi State, MS**P – Fri - A - 34****Effects of Propofol on Neocortical Signals and Information Processing in Humans and Felines**S. J. HANRAHAN¹, Z. KAGAN¹, R. A. PARKER², T. OGURA³, S. OBARA⁴, T. D. EGAN¹, P. A. HOUSE¹, AND B. GREGER¹¹University of Utah, Salt Lake City, UT, ²University of Pittsburgh, Pittsburgh, PA, ³National Defense Medical College, Tokorozawa, Japan, ⁴Fukushima Medical University, Fukushima, Japan**P – Fri - A - 35****A Novel Stochastic Model of Cardiac CaMKII Activation**P. T. FOTEINOU¹, J. L. GREENSTEIN^{1,2}, AND R. L. WINSLOW^{1,2}¹Institute for Computational Medicine, The Johns Hopkins University, Baltimore, MD, ²Whitaker 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. LANSDELL¹ AND J. N. KUTZ¹¹University of Washington, Seattle, WA**P – Fri - A - 37****Investigating Dynamical Properties of the *C. elegans* Connectome through Full-Network Simulations**J. M. KUNERT¹, E. SHLIZERMAN¹, AND J. KUTZ¹¹University of Washington, Seattle, WA**P – Fri - A - 38****Fluctuations in Calcium Concentration Influence Calcium Spark Dynamics in Cardiac Myocytes**S. H. WEINBERG¹ AND G. D. SMITH¹¹College of William and Mary, Williamsburg, VA**P – Fri - A - 39****The Role of Oxidative Stress in eNOS Catalyzed NO Production**S. KAR¹, K. C. DAS², AND M. KAVDIA¹¹Wayne State University, Detroit, MI, ²Texas Tech University Health Sciences Center, Lubbock, TX**P – Fri - A - 40****Consequences of Axonal Injuries to Neural Propagation Dynamics: A Computational Study**P. D. MAIA¹ AND N. KUTZ¹¹University of Washington, Seattle, WA**P – Fri - A - 41****Bifurcating Response to Hemorrhage in a Population of Mathematical Models of Human Circulation**W. A. PRUETT¹, G. HUSBAND², K. BELLAMY³, M. DAKHLALLA³, T. COLEMAN¹, AND R. L. HESTER¹¹University of Mississippi Medical Center, Jackson, MS, ²Vanderbilt University, Nashville, TN, ³Mississippi State University, Starkville, MS**P – Fri - A - 42****Sparse Sensing in Mechanosensory Systems**S. L. BRUNTON¹, B. W. BRUNTON¹, A. EBERLE¹, AND J. N. KUTZ¹¹University of Washington, Seattle, WA

P – Fri - A - 43**An Adaptive Sparse Sampling Approach to Sensory Decision-making**B. W. BRUNTON¹, S. L. BRUNTON¹, J. L. PROCTOR², AND J. N. KUTZ¹¹University of Washington, Seattle, WA, ²Intellectual 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- β Signal Transduction Pathway**D. NICKLAS¹ AND L. SAIZ¹¹University of California, Davis, CA**P – Fri - A - 45****Nonlinear Signal Processing via Noise Propagation**K. H. KIM¹, H. QIAN¹, AND H. M. SAURO¹¹University of Washington, Seattle, WA**P – Fri - A - 46****Myofilament Acetylation-Induced Regulation of Cross-Bridge Dynamics in Cardiac Muscle**K. RELWANI¹, S. H. SMITH¹, AND S. G. SHROFF¹¹University of Pittsburgh, Pittsburgh, PA**P – Fri - A - 47****Gene Regulation Network on Megakaryocytic/Erythroid Differentiation of K562 Cells by PMA/Hemin**L. WANG¹, D. ZHOU², AND Z. LU^{1,3}¹Southeast University, Nanjing, China, People's Republic of, ²Lanzhou University, Lanzhou, China, People's Republic of, ³Peking 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. IGNATENKO³, E. SIMEONIDIS^{1,2}, V. SANGAR², C. CHOE⁴, B. PETERS³, N. D. PRICE², R. BALLING¹, AND N. BRADY⁴¹Luxembourg Centre for Systems Biomedicine, Esch-sur-Alzette, Luxembourg, ²Institute for Systems Biology, Seattle, WA, ³University of Luxembourg, Luxembourg, Luxembourg, ⁴German Cancer Research Center and Bioquant, Heidelberg, Germany**P – Fri - A - 49****A Computational Model of Bcl-2 Regulated Apoptosis: Bistability Revisited**B. J. LANSDELL¹, R. KLUCK^{2,3}, E. LEE^{2,3}, D. FAIRLIE^{2,3}, F. FRASCOLI³, M. O'HELY², K. LANDMAN³, AND T. SPEED²¹University of Washington, Seattle, WA, ²Walter and Eliza Hall Institute, Melbourne, VIC, Australia, ³University of Melbourne, Melbourne, VIC, Australia**P – Fri - A - 50****Gene Regulatory Network Modeling via Rank Constrained Optimization**R. ARASTOO¹, V. V. KULKARNI², N. MOTEE³, AND M. V. KOTHARE³¹Lehigh University, Bethlehem, PA, ²University of Minnesota, Minneapolis, MN, ³Lehigh University, Bethlehem, PA**Track: Biomaterials****Bioinspired Materials****P – Fri - A - 51****Redox-Responsive Complexes Derived from Tannin-Like Polymers**O. Z. FISHER¹ AND H. A. CHENG¹¹Temple University, Philadelphia, PA**P – Fri - A - 52****Engineering Cholesterol-based Hybridized Fibers for Enhanced Surface Functionalization**C. M. COHN¹, S. L. LEUNG¹, AND X. WU¹¹University of Arizona, Tucson, AZ**P – Fri - A - 53****Injectable Resilin-based Elastomeric Hydrogels for Vocal Fold Therapies**L. LI¹, Z. TONG¹, X. JIA^{1,2}, AND K. L. KIICK^{1,2}¹University of Delaware, Newark, DE, ²Delaware Biotechnology Institute, Newark, DE**P – Fri - A - 54****Biodegradable Photo-crosslinked Polycarbonates from the Natural Product Quinic Acid**L. A. LINK¹, A. T. LONNECKER¹, K. HEARON¹, J. E. RAYMOND¹, AND K. L. WOOLEY¹¹Texas A&M University, College Station, TX**P – Fri - A - 55****A Novel Biomimetic Collagen-Apatite Scaffold for Bone Tissue Engineering Applications**Z. XIA¹, M. WEI¹, AND D. ROWE²¹University of Connecticut, Storrs, CT, ²University 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. EBARA², S. TANAKA³, T-A. ASOH¹, A. KIKUCHI¹, AND T. AOYAGI^{2,4}¹Tokyo University of Science, Katsushika, Japan, ²NIMS, Tsukuba, Japan, ³NOF.co., Tsukuba, Japan, ⁴University of Tsukuba, Tsukuba, Japan**P – Fri - A - 57****Low-Cost Simulated Human Tissues for a Wide Range of Tissue Types and Training Applications**S. S. NEWMAN¹, L. WHITE¹, V. HOU¹, AND B. HANNAFORD¹¹University of Washington, Seattle, WA**P – Fri - A - 58****Snapping Surfaces of the Venus flytrap's Fast Motion and Bio-mimetic flytrap-robots**Z. CHEN¹, Q. GUO^{2,3}, H. ZHENG⁴, S. XIE⁵, G. SU³, J. LIN³, Y. LIU⁶, Y. DING⁷, W. CHEN³, AND L. TABER⁵¹Washington University in Saint Louis, Saint Louis, MO, ²Fuzhou University, Fuzhou, China, People's Republic of, ³Fujian Institute of Technology, Fuzhou, China, People's Republic of, ⁴Fujian Radio and Television University, Fuzhou, China, People's Republic of, ⁵Washington University in St. Louis, Saint Louis, MO, ⁶Wuhan Foreign Languages School, Wuhan, China, People's Republic of, ⁷Tsinghua University, Beijing, China, People's Republic of**P – Fri - A - 59****Communicating With Cells by Incorporating Functional Intercellular Junctions in Therapeutic Vesicles**A. M. GADOK¹, D. J. BUSCH¹, J. T. JOSE¹, AND J. C. STACHOWIAK¹¹University of Texas at Austin, Austin, TX**P – Fri - A - 60****Smart Cortical Bone Allografts for Critical Sized Defects: Engineering a Biomimetic Periosteum**R. ROMERO¹, L. CHUBB¹, N. EHRHART¹, AND M. J. KIPPER¹¹Colorado State University, Fort Collins, CO

Track: Biomaterials**Biomaterial Design****P – Fri - A - 61****Percolation Phenomena of Alginate and Hyaluronic Acid Blended Films**S. MAYES¹, J. DAVIS¹, AND C. E. SCHMIDT²¹UT Austin, Austin, TX, ²The University of Florida, Gainesville, FL**P – Fri - A - 62****Poly(propylene) Fumarate as Reinforcement for Cardiovascular Applications**L. G. BRACAGLIA¹, P. SHARMA¹, N. HIBINO², AND J. P. FISHER¹¹University of Maryland, College Park, MD, ²Children's National Medical Center, Washington, DC**P – Fri - A - 63****Molecular Distribution of Bioreactive Groups in Dextran-chitosan Sealants Confers Tissue-specific Adhesion**J. FERDOUS¹, E. JUAREZ-PEREZ¹, AND T. SHAZLY¹¹University of South Carolina, Columbia, SC**P – Fri - A - 64****Synthesis of PCL/Keratin Composite Nanofibers for Nerve Repair**A. EDWARDS¹, T. HOPKINS², S. PIXLEY², AND N. BHATTARAI¹¹North Carolina A&T State University, Greensboro, NC, ²University of Cincinnati, Cincinnati, OH**P – Fri - A - 65****PEDOT:Gelatin Composites Mediate Brain Endothelial Cell Adhesion**M. BONGO¹, O. WINTHER-JENSEN², S. HIMMELBERGER³, X. STRAKOSAS¹, M. RAMUZ¹, A. HAMA¹, E. STAVRINIDOU¹, G. MALLIARAS¹, A. SALLEO³, B. WINTHER-JENSEN², AND R. OWENS¹¹Department of Bioelectronics, Ecole Nationale Supérieure des Mines, CMP-EMSE, MOC, Gardanne, France, ²Materials Engineering, Monash University Clayton, Victoria, Australia, ³Department 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. LALWANI¹, A. M. HENSLEE², B. FARSHID¹, L. LIN¹, F. K. KASPER², Y-X. QIN¹, A. G. MIKOS², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²Rice 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. RUFIN¹, J. A. GRUETZNER¹, M. J. HURLEY¹, M. L. HAWKINS¹, AND M. A. GRUNLAN¹¹Texas A&M University, College Station, TX**P – Fri - A - 68****Nanopatterned Polymers Have Antibacterial Properties**E. LIANG¹, N. ING¹, AND A. YEE¹¹University of California, Irvine, Irvine, CA**P – Fri - A - 69****Development of Sugar-responsive Hydrogel Rods as a Sacrificial Template to Create Vessel-like Structures in Collagen Gels**M. YAMAMOTO¹, K. ARIMOTO¹, AND Y. TABATA¹¹Kyoto University, Kyoto, Japan**P – Fri - A - 70****Iron Substituted Hydroxyapatite an Intrinsically Magnetic Biomaterial**M. ZILM¹, M. JAIN¹, AND M. WEI¹¹University of Connecticut, Storrs, CT**P – Fri - A - 71****Fabrication and Characterization of Novel Polymer-Contrast Agent Composites for Near-Infrared *In Situ* Imaging**A. STEVENSON¹, L. REESE¹, R. SHEKHAR², L. BICKFORD¹, AND A. WHITTINGTON¹¹Virginia Tech, Blacksburg, VA, ²Children'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}¹Harvard-MIT Division for Health Sciences and Technology, Cambridge, MA, ²Institut Quimic de Sarrià, Barcelona, Spain, ³Ort Braude College, Karmiel, Israel, ⁴Harvard Medical School, Boston, MA**P – Fri - A - 73****Development of a Synthetic Thermosensitive Hydrogel for Drug Delivery after Spinal Cord Injury**P. Z. ELIAS¹, H. WEI¹, P. J. HORNER¹, AND S. PUN¹¹University of Washington, Seattle, WA**P – Fri - A - 74****Metal-directed Assembly of Stimuli-responsive Hydrogels Comprised of Polypeptide Micelles**A. GHOORCHIAN¹, J. SIMON¹, A. CHILKOTI¹, AND G. LÓPEZ¹¹Duke University, Durham, NC**P – Fri - A - 75****A Cross-linking Technique for Rapid Prototyping of 3D Micropatterned Cell-Laden Hydrogels**A. L. RUTZ¹ AND R. N. SHAH¹¹Northwestern University, Evanston, IL**P – Fri - A - 76****Autologous Materials for Promoting a Perfused Vasculature**B. S. SHERGILL¹ AND E. B. BOTVINICK¹¹University 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. EBARA¹¹National Institute for Materials Science, Tsukuba, Japan**P – Fri - A - 79****Stimuli-Responsive Polypeptide Microparticles**J. SIMON¹, A. GHOORCHIAN¹, A. CHILKOTI¹, AND G. LOPEZ¹¹Duke University, Durham, NC**P – Fri - A - 80****Self-Cleaning Membranes for Implanted Glucose Biosensors**A. K. MEANS¹, R. FEI¹, AND M. A. GRUNLAN¹¹Texas 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. YUAN¹ AND P. KORJA¹¹University 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. SHUKLA¹, F. EBER², S. EIBEN², C. WEGE², AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²University of Stuttgart, Germany, Stuttgart, Germany**P – Fri - A - 83****Temperature Dependent Characterization of Collagen and Methacrylated Collagen**K. DRZEWIECKI¹, I. GAUDET¹, J. KHAN², D. PIKE², V. NANDA², AND D. SHREIBER¹¹Rutgers, The State University of New Jersey, Piscataway, NJ, ²Robert Wood Johnson Medical School, Rutgers, The State University of New Jersey, Piscataway, NJ**P – Fri - A - 84****DNA Circuit Boards for Molecular Computation**G. CHATTERJEE¹, R. MUSCAT¹, K. STRAUSS^{1,2}, L. CEZE¹, AND G. SEELIG¹¹University of Washington Seattle, Seattle, WA, ²Microsoft Research, Redmond, WA**P – Fri - A - 85****Design of New Modular Repeat Proteins for Assembly of Large Structures**F. PARMEGGIANI¹, P. HUANG¹, AND D. BAKER¹¹University 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. JODDAR¹, A. T. GUY², H. KAMIGUCHI², AND Y. ITO¹¹RIKEN Advanced Science Institute, Wako, Japan, ²RIKEN 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. ALMODOVAR¹, F. DALONNEAU¹, T. BOUDOU¹, Š. SELIMOVIC^{2,3}, H. LORTAT-JACOB⁴, A. KHADEMHOSSEINI^{2,5}, AND C. PICART¹¹Grenoble Institute of Technology, Grenoble, France, ²Harvard Medical School, Cambridge, MA, ³Massachusetts Institute of Technology, Cambridge, MA, ⁴Institut de Biologie Structurale, Grenoble, France, ⁵Harvard University, Cambridge, MA**P – Fri - A - 88****Guided Neurite Outgrowth of Cultured Neurons on a Polylysine-on-polylysine Micropattern**S. JOO¹ AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**P – Fri - A - 89****Spatiotemporal Detection of Localized Reactive Oxygen Species in Cell Signaling and Homeostasis**M. A. GRAN¹, K. G. REDDIE¹, N. MURTHY², AND M. L. KEMP¹¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²University 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. LEE¹, S. HAN¹, U. CHUNG¹, AND W-G. KOH¹¹Yonsei University, Seoul, Korea, Republic of**P – Fri - A - 91****Effect of Encapsulated Species on the Transport of Small Molecules through Hydrogels**R. M. UNRUH¹ AND M. J. MCSHANE¹¹Texas 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. PARK¹, R. S. STOWERS¹, AND L. J. SUGGS¹¹University 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-HELIGON¹ AND W. M. REICHERT¹¹Duke University, Durham, NC**P – Fri - A - 94****Aptamer-Carrying Hydrogels for Detection of Cell Secreted Interferon Gamma**Q. ZHOU¹, D-S. SHIN¹, K. SON¹, AND A. REVZIN¹¹UC Davis, Davis, CA**P – Fri - A - 95****Role of Microenvironmental Stiffness on the Response of Human Neural Cells to Environmental Toxins**K. RAMAMOORTHY¹, C. ITO¹, AND P. ASURI¹¹Santa Clara University, Santa Clara, CA**P – Fri - A - 96****Effect of Variable Tissue ECMs on Cell Function/Behavior**V. BEACHLEY¹, M. GIBSON¹, C. PAPADIMITRIOU¹, AND J. ELISSEFF¹¹Johns 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. SU¹, A. SCHUBAUER¹, E. J. ORWIN¹, AND S. C. ADOLPH¹¹Harvey Mudd College, Claremont, CA**P – Fri - A - 98****Creep Behavior of Solder Joints Under Combined Tension and Shear Stresses**M. ALLAMI¹, G. SELVADURAY¹, S. VUKAZICH¹, AND M. ABTEW²¹San Jose State University, San Jose, CA, ²Sanmina-SCI, San Jose, CA**P – Fri - A - 99****Characterization of a Silver Nanoparticle Infused High Strength Tissue Adhesive for Ophthalmic Use**W. YEE¹, G. SELVADURAY¹, AND B. G. HAWKINS¹¹San José State University, San José, CA**P – Fri - A - 100****The Effect of Surface Treatment on Nickel Leaching from Nitinol**D. MADAMBA¹ AND G. SELVADURAY¹¹San Jose State University, San Jose, CAP = 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. LIPSON¹, R. NEWMAN¹, AND J. THOMPSON¹

¹Cornell University, Ithaca, NY

P – Fri - A - 102

Engineering, Education and Inclusion: Center for Development and Transfer of Assistive Technology

F. V. CARVALHO¹ AND C. C. GARCEZ¹

¹INATEL, S. Rita Do Sapucaí, 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. BICKFORD¹ AND C. GABLER¹

¹Virginia 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. RICHARDS¹, S. ARCHER¹, AND J. BUTCHER¹

¹Cornell University, Ithaca, NY

P – Fri - A - 105

The Temperature of Biomedical Entrepreneurship

J. TRANQUILLO¹

¹Bucknell 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^κ

V. PIZZICONI¹, J. LABELLE¹, D. FRAKES¹, M. CAPLAN¹, AND C. TRIPPLET¹

¹Arizona State University, Tempe, AZ

P – Fri - A - 107

A Problem Based Learning Introductory Course to Biomedical Engineering

D. M. GAITAN-LEON¹ AND J. C. BRICENO¹

¹Universidad 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. MASON¹, L. AUSTEN², S. D. ARCHER¹, AND C. A. REINHART-KING¹

¹Cornell University, Ithaca, NY, ²Elmira City Schools, Elmira, NY

P – Fri - A - 109

Developing Interdisciplinary Research Partners: The Xxxxx by Yyyyyy Neuro Collaboration Research URE

B. B. FASSE¹ AND J. SCHWOEBEL¹

¹Georgia 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. BARRETT¹, E. BURGHARDT¹, J. HODGE¹, N. LUEDICKE¹, R. THOMAS¹, D. DEAN¹, AND J. NAGATOMI¹

¹Clemson University, Clemson, SC

P – Fri - A - 111

Interdisciplinary Laboratory Course in Biosignal Measurement

K. MAY-NEWMAN¹, R. BANERJEE¹, AND Y. K. WONG¹

¹San Diego State University, San Diego, CA

P – Fri - A - 112

A Novel Bioengineering Laboratory Course: Integrating Experimentation with Computational Simulation and Analysis

A. TAYLOR¹

¹University of Washington, Seattle, WA

P – Fri - A - 113

Building Experimental Design Skills Using Learning Modules

A. L. SIEVING¹, M. A. POOL¹, A. T. DAVIDSON¹, K. A. STUART², AND A. E. RUNDELL¹

¹Purdue University, West Lafayette, IN, ²Symc 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. POOL¹, A. O. BRIGHTMAN¹, C. W. PEAK¹, A. L. SIEVING¹, AND A. E. RUNDELL¹

¹Purdue University, West Lafayette, IN

P – Fri - A - 115

The Design and Implementation of a Four Year Medical Device Product Design Spine

J. T. LA BELLE¹, D. FRAKES¹, J. KLEIM¹, M. CAPLAN¹, K. HAYNES¹, A. GARCIA¹, S. HELMS-TILLERY¹, AND V. PIZZICONI¹

¹Arizona 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. BILLIAR¹, G. GAUDETTE¹, F. HOY¹, AND T. A. CAMESANO¹

¹Worcester Polytechnic Institute, Worcester, MA

P – Fri - A - 117**Clinical Training for BME Graduate Students**W. OLBRIGHT¹, P. DOERSCHUK¹, Y. WANG^{1,2}, W. FRAYER², C. SCHAFFER¹, AND S. ARCHER¹¹Cornell University, Ithaca, NY, ²Weill 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. SEKER¹¹University 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. COLLINS¹, E. CEBERT¹, E. HEITMAN², L. KASSAMA¹, AND M. VERGHESE¹¹Alabama A & M University, Normal, AL, ²Vanderbilt University, Nashville, TN**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. MIAO¹, B. LIU¹, AND H. YU¹¹VT-WFV School of Biomedical Engineering and Sciences, Wake Forest University Health Sciences, Winston Salem, NC, ²North 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. GONG¹, B. LIU², O. GHAZEMALIZADEH¹, H. YU², G. WANG³, AND G. CAO¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Wake Forest University, Winston Salem, NC, ³rensselaer polytechnic institute, Troy, NY**P – Fri - A - 123****GPU-based Fast Implementation for Interior Tomography**R. LIU¹ AND H. YU¹¹Wake Forest University Health Sciences, Winston-Salem, NC**P – Fri - A - 124****Tractography of Rat Brain in Phase-contrast X-ray CT**S. KOKUBO¹, L. THET-THET², A. YONEYAMA³, H. MARUYAMA², AND T. TAKEDA¹¹Kitasato University, Sagami-hara, Kanagawa, Japan, ²Kitasato University, Sagami-hara, Kanagawa, Japan, ³Hitachi Ltd, Hatoyama, Saitama, Japan**P – Fri - A - 125****An Electrode Chip to Rotate Live Cells for Computerized Tomographic Imaging**M. STANLEY¹, I. S. ELANGO¹, A. SHABILLA¹, D. SMITH¹, P. LIMSIRICHA¹, H. ZHU¹, H. WANG¹, S-H. CHAO¹, L. KELBAUSKAS¹, R. H. JOHNSON¹, AND D. R. MELDRUM¹¹BioDesign 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. HARRIS¹, R. M. CAMPBELL JR.², AND S. BALASUBRAMANIAN¹¹Drexel University, Philadelphia, PA, ²Children'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. ZAAZHOA¹, A. ERANKI¹, L. GERBER¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**P – Fri - A - 128****Molecular Breast Imaging Using a Variable Angle Slant Hole Collimator**O. GOPAN¹ AND D. GILLAND¹¹University of Florida, Gainesville, FL**P – Fri - A - 129****Non-iterative EIT Reconstructions of Ventilation from a Pairwise Current Injection System**M. F. MONTOYA¹, J. MUELLER¹, AND R. GONZALEZ LIMA²¹Colorado State University, Fort Collins, CO, ²University 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. ZENG¹, L. PIERCE¹, K. KANAL¹, L. MACDONALD¹, AND P. KINAHAN¹¹University 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. LI¹, O. A. SAPOZHNIKOV^{1,2}, T. KHOKHLOVA¹, AND J. H. HWANG¹¹University of Washington, Seattle, WA, ²Moscow State University, Moscow, Russian Federation**P – Fri - A - 132****Creation and Validation of a Tissue Phantom for the Improvement of Ultrasound Thermometry**C-Y. LAI¹, D. E. KRUSE¹, K. W. FERRARA¹, AND C. F. CASKEY¹¹University of California at Davis, Davis, CA**P – Fri - A - 133****Non-invasive Determination of Bioheat Transfer Parameters for Improved MRgHIFU Treatment Planning**C. R. DILLON¹, D. CHRISTENSEN¹, AND R. ROEMER¹¹University of Utah, Salt Lake City, UT**P – Fri - A - 134****Blurred Edge Detection using a Gradient-based, Modified Fuzzy K-means Clustering Method**Y. FENG¹ AND Y. HU¹¹Washington University, Saint Louis, MO

Track: Biomedical Imaging and Optics**Molecular Probes****P – Fri - A - 135****Iron Oxide Based Polymer Nanocomplex for Functional Detection of Atherosclerosis**A. L. DOIRON¹ AND O. Z. FISHER²¹Binghamton University, Vestal, NY, ²Temple University, Philadelphia, PA**P – Fri - A - 136****NanoCluster Beacons as Reporters for Rolling Circle Enhanced Enzyme Activity Detection**J. M. OBLIOSCA¹, S. JUUL^{2,3}, C. LIU¹, R. A. BATSON¹, B. R. KNUDSEN³, Y-P. HO³, K. W. LEONG², AND H-C. YEH¹¹University of Texas at Austin, Austin, TX, ²Duke University, Durham, NC, ³Aarhus University, Aarhus, Denmark**P – Fri - A - 137****Targeting Fibrin for In Vivo Imaging of Cardiovascular Disease**A. C. BROWN¹, S. STABENFELDT², V. STEFANELLI¹, L. TUCKER¹, AND T. BARKER^{1,3}¹Georgia Institute of Technology, Atlanta, GA, ²Arizona State University, Tempe, AZ, ³Emory University, Atlanta, GA**P – Fri - A - 138****Size-tunable RGD Peptide Functionalized, I251 Labeled, Au Nanoparticles for Theronostics of Cancer**L. ZHANG¹, Y. YANG¹, C. ZHANG¹, AND L. X. XU¹¹Shanghai Jiao Tong University, Shanghai, China, People's Republic of**Track: Biomedical Imaging and Optics****MRI****P – Fri - A - 139****Ferumoxylol Iron Oxide Nanoparticle Trafficking from Brain to Lymph Nodes**G. L. PISHKO¹, R. L. WOLTJER¹, J. A. ROBERTSON¹, M. N. NASSERI¹, L. L. MULDOON¹, AND E. A. NEUWELT^{1,2}¹Oregon Health & Science University, Portland, OR, ²Portland VA Medical Center, Portland, OR**P – Fri - A - 140****Transition Metal-containing Polyoxometalates: A New Type of Molecular MRI Agents for Cancer Diagnosis**J. SONG¹, X. ZHANG¹, J. MI², C. HILL¹, X. HU³, AND S. NIE³¹Emory University, Atlanta, GA, ²Georgia State University, Atlanta, GA, ³Emory University and Georgia Institute of Technology, Atlanta, GA**P – Fri - A - 141****Quantitative MRI Volumetry in Detection of Hippocampal Atrophy and Pathologies**P. NI¹, Z. CHEN¹, C. CHEN², Z. WANG¹, P. YANG¹, Y. YU¹, AND J. M. CAVANAUGH²¹Fuzhou General Hospital of Nanjing Military Area Command of Chinese PLA, Fuzhou, China, People's Republic of, ²Wayne 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. FIGIEL¹¹AGH University of Science and Technology, Kraków, Poland, ²Jagiellonian Centre for Experimental Therapeutics (JCET), Kraków, Poland**P – Fri - A - 143****MR Imaging of Tumor Permeability in Brain Metastases at 7T**B. Z. FITE¹, F. THORSEN², L. M. MAHAKIAN¹, J. W. SEO¹, S. QIN¹, V. HARRISON³, S. JOHNSON¹, E. INGHAM¹, C. F. CASKEY¹, T. SUNDSTRÖM², T. MEADE³, P. N. HARTER⁴, K. O. SKAFTNESMO², AND K. W. FERRARA¹¹University of California, Davis, CA, ²University of Bergen, Bergen, Norway, ³Northwestern University, Evanston, IL, ⁴Goethe-University Medical School, Frankfurt am Main, Germany**P – Fri - A - 144****MRI Detection of Osteoporosis**A. RAVIKUMAR¹, E. G. RANDOU¹, M. ZAGHLOUL², R. W. NEWCOMB³, AND V. N. IKONOMIDOU¹¹George Mason University, Fairfax, VA, ²George Washington University, Washington, DC, ³University of Maryland, College Park, MD**P – Fri - A - 145****Fast Directional Interpolation for MR Velocimetry Data**A. PRADEEP¹, C. ZWART¹, D. SOERENSEN², H. BABIKER¹, K. SUNDARESWARAN³, A. YOGANATHAN², AND D. FRAKES¹¹Arizona State University, Tempe, AZ, ²Georgia Institute of Technology, Atlanta, GA, ³Thoratec Corporation, Pleasanton, CA**P – Fri - A - 146****Synthesis, Optimization of Mn2+ Loading and In-vitro toxicity assessment of Dextran coated Graphene Nanoplatelets**J. M. FANG¹, S. M. CHOWDHURY¹, S. KANAKIA¹, S. LEE¹, AND B. SITHARAMAN¹¹SUNY 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. DIXON¹, J. L. CHEN¹, A. H. DHANALIWALA¹, A. L. KLIBANOV¹, AND J. A. HOSSACK¹¹University of Virginia, Charlottesville, VA**P – Fri - A - 148****Longitudinal Evaluation of Mouse Colon Tumors by Endoluminal Ultrasonic Biomicroscopy**R. C. SOLETTI¹, K. Z. ALVES¹, M. A. BRITTO¹, D. G. DE MATOS¹, M. SOLDAN¹, H. L. BORGES¹, AND J. C. MACHADO¹¹Federal 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. APTE¹, A. HAN¹, L. TAM¹, M. ZHU¹, M. ASHRAF¹, D. SAHN¹, AND Z. ZHANG²¹Oregon Health & Science University, Portland, OR, ²OHSU - 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. ZAFAR¹, N. AKHLAGHI¹, K. MCDONALD¹, H. RANGWALA¹, AND S. SIKDAR¹¹George 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. HARTMAN¹, S. AGLYAMOV², D. FOX³, AND S. EMELIANOV²¹University of Texas at Austin, Austin, TX, ²University of Texas at Austin, Austin, TX, ³NeuroTexas Institute at St. David's, Austin, TX**P – Fri - A - 152****Development of Shaped Solid Ultrasound Contrast Agents**R. CONDIE¹, H. SAFFARI¹, A. KENNEDY¹, K. PETERSON¹, G. GLEICH¹, AND L. PEASE III¹¹University 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. BARNEY¹, E. DANDLEY¹, AND S. PEYTON¹¹University of Massachusetts, Amherst, Amherst, MA

P – Fri - A - 154

Alteration of Migration Pattern for Mechanics-Induced Colon Cancer Metastasis

X. TANG¹, V. JUNG¹, J. HSU¹, L. GUAN¹, AND T. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL

P – Fri - A - 155

Bi-Directional Microfluidic Devices for Leukocyte Migration Study

J. YAN^{1,2}, L. BONESCHANKSER^{2,3}, E. WONG^{1,2}, D. M. BRISCOE^{2,3}, AND D. IRIMIA^{1,2}¹Massachusetts General Hospital, Boston, MA, ²Harvard Medical School, Boston, ³Boston Children's Hospital, Boston, MA

P – Fri - A - 156

Three-dimensional Computational Model for the Active Deformation and Migration of Circulating Cells

H. LAN¹ AND D. B. KHISMATULLIN¹¹Tulane 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. KIM¹, P. CHEN^{1,2}, R. KAMM^{1,3}, AND H. ASADA^{1,3}¹Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, ²National University of Singapore, Singapore, Singapore, ³Massachusetts Institute of Technology, Cambridge, MA

P – Fri - A - 158

Directional Motility of Cell Migration on Tubular Conduits: Experiment and Simulation

M-C. KIM¹, Y-H. KIM², D. NEAL², R. KAMM^{1,2}, AND H. ASADA^{1,2}¹Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, ²Massachusetts Institute of Technology, Cambridge, MA

P – Fri - A - 159

Study of Axon-Guidance Interactions in Controlled Microfluidic Environments

S. MOORJANI¹, N. BHATTACHARJEE¹, AND A. FOLCH¹¹University of Washington, Seattle, WA

P – Fri - A - 160

Physical Role of Cell-Cell Contact in Collective Cell Migration

J. MARCHAND¹, P-H. WU¹, M-H. LEE¹, AND D. WIRTZ¹¹Johns Hopkins University, Baltimore, MD

P – Fri - A - 161

Collective Migration of a Complex Tissue Studied with "3D Tissue Etching"

M. HAZAR¹, Y. KIM², W. C. MESSNER³, P. R. LEDUC¹, AND L. A. DAVIDSON⁴¹Carnegie Mellon University, Pittsburgh, PA, ²Massachusetts Institute of Technology, Cambridge, MA, ³Tufts University, Medford, MA, ⁴University of Pittsburgh, Pittsburgh, PA

P – Fri - A - 162

A Simple and Rapid Method for Neutrophil Enrichment and Chemotaxis Analysis

J. WU¹ AND F. LIN¹¹University of Manitoba, Winnipeg, MB, Canada

P – Fri - A - 163

Elucidating Mechanisms Behind Cell Migration at Polystyrene-hydrogel Interfaces

M-P. PEBWORTH¹, J. CARLISLE¹, AND P. ASURI¹¹Santa 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. MCCUTCHEON¹ AND M. VAZQUEZ¹¹The 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. TRENTON¹, H. JAYATILAKA¹, G. D. LONGMORE^{2,3}, AND D. WIRTZ^{1,2}¹Chemical and Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, ²Johns Hopkins Physical Sciences - Oncology Center, Baltimore, MD, ³Departments 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. BYRNE¹, Y. KIMURA¹, A. KAPOOR¹, F. WANG¹, P. J. KENIS¹, AND C. V. RAO¹¹University 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. WEN¹, J. KARPIAK¹, A. ALMUTAIRI¹, AND A. J. ENGLER¹¹UC San Diego, La Jolla, CA

P – Fri - A - 168

Integrin α 1 and MT1-MMP Govern Cell Migration in 3D Matrices via ROCK Mediated ERK ActivationJ. S. MAFFEI¹, J. SRIVASTAVA², B. FALLICA¹, AND M. ZAMAN¹¹Boston University, Boston, MA, ²University of Texas, Austin, TX

P – Fri - A - 169

A User-friendly Microfluidic Device for Examining Growth Cone Dynamics

A. M. TAYLOR^{1,2}, N. DESOUZA², A. KHAN¹, AND S. GUPTON¹¹UNC-Chapel Hill, Chapel Hill, NC, ²NCSU, Raleigh, NC

P – Fri - A - 170

The Influence of Alignment and Suspended Fiber Structural Stiffness on Cancer Cell Migration

P. SHARMA¹, S. BHATIA¹, C. HUGHES¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA

P – Fri - A - 171

Controlling Bacterial Motility by Quorum Sensing Signal Generation and Transduction

H-C. WU¹, C-Y. TSAO¹, D. N. QUAN¹, K. CARTER¹, J. TERRELL¹, AND W. BENTLEY¹¹Institute 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. RICOULT¹, G. H. THOMPSON-STECKEL¹, J. P. CORREIA¹, T. E. KENNEDY¹, AND D. JUNCKER¹¹McGill University, Montreal, QC, Canada

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

P – Fri - A - 173**Fibroblast Growth Factor-2 Binding to Cell Surface Heparan Sulfate Proteoglycans Increases in Flow Adapted Endothelial Cells**N. PATEL¹, T. CAI¹, AND A. M. CLYNE¹¹Drexel University, Philadelphia, PA**P – Fri - A - 174****Oil Biosynthesis in Microalgae *Chlamydomonas reinhardtii***A. CLAVEL¹, C. XU², AND C. YAN²¹Stony Brook University, Stony Brook, NY, ²Brookhaven National Laboratory, Upton, NY**P – Fri - A - 175****Shear Mediated Monocyte Pro-inflammatory Response to Chlamydia pneumoniae Infection**S. J. EVANI¹, S. F. DALLO¹, AND A. K. RAMASUBRAMANIAN¹¹University of Texas at San Antonio, San Antonio, TX**P – Fri - A - 176****Anchoring on an Erythroblastic Island**J. JANG^{1,2}, T. ULYANOVA², K. GUPTA², R. LUCERO², K. NAM², D-W. CHO^{1,2}, T. PAPAYANNOPOULOU², AND D-H. KIM²¹POSTECH, Pohang, Korea, Democratic People's Republic of, ²University 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. CRADICK¹, E. J. FINE¹, AND G. BAO¹¹Georgia Institute of Technology and Emory University, Atlanta, GA**P – Fri - A - 179****PKU Enzyme Replacement Through MSC Based Therapy**S. A. KNUPP¹ AND Q. XU¹¹Tufts 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. WHITAKER¹, S. A. DAVIS¹, A. P. ARKIN^{1,2}, AND J. E. DUEBER¹,²U.C. Berkeley, Berkeley, CA, ²Lawrence 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. STUKEL¹, S. THOMPSON¹, L. SIMON², AND R. K. WILLITS¹¹The University of Akron, Akron, OH, ²New Jersey Institute of Technology, Newark, NJ**P – Fri - A - 182****Microscopic Transport of Bile Salt Micelles in Gastrointestinal Mucus**H. M. YILDIZ¹, D. RANNETSBERGER BRUNSCHWIG¹, AND R. L. CARRIER¹¹Northeastern 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. MA¹, L. ZHANG¹, AND J. D. BRYERS¹¹University of Washington, Seattle, WA**P – Fri - A - 184****Shell-type Multilayered Hydrogel Scaffolds with Heterogeneous Porosity**G. AHN¹, J-Y. MOON¹, Y. KIM¹, AND D. LEE¹¹Chung-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. LIN¹, B. GALE¹, H. SANT¹, J. SHEA¹, W. SANDERS¹, C. M. TERRY¹, AND J. AGARWAL¹¹University 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. PARAS¹, P. PUNNAKITKASHEM¹, H. WENG¹, L-C. SU¹, K. VU¹, L. TANG^{1,3}, J. YANG², AND K. T. NGUYEN^{1,3}¹University of Texas at Arlington, Arlington, TX, ²Pennsylvania State University, University Park, PA, ³University 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-DELGADO¹, N. X. WANG¹, Z. SADEGHI¹, M. KAVRAN¹, A. HIJAZ¹, AND H. A. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**P – Fri - A - 188****Novel Bioreactor for 3D Series Perfusion Culture and Drug Testing Studies**N. L. BAYHI¹, D. KAPLAN¹, AND Q. XU¹¹Tufts University, Medford, MA**P – Fri - A - 189****The Effects of PEG Hydrogel Crosslinking Mechanism and Crosslinking Density on Protein Release**S. LEE¹, X. TONG¹, AND F. YANG¹¹Stanford University, Stanford, CA**P – Fri - A - 190****Investigation of the Protecting Effect of a Polymeric Carrier on Protein Activity in Electrospun Meshes**A. R. WHITTINGTON¹, S. SAMAVEDI¹, C. J. FLEMING¹, S. INKROTE¹, AND A. S. GOLDSTEIN¹¹Virginia 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. SHMUELI¹, M. OHNAKA¹, A. MIKI¹, N. B. PANDEY¹, R. FORMICA¹, J. E. KOSKIMAKI¹, J. KIM¹, A. S. POPEL¹, P. A. CAMPOCHIARO¹, AND J. J. GREEN¹¹Johns Hopkins School of Medicine, Baltimore, MD**P – Fri - A - 192****Controlled Release of Glial Cell-Derived Neurotrophic Factor From Biodegradable Poly (ϵ -caprolactone) Microspheres**A. AAGBY¹, N. KHADEM MOHTARAM¹, AND S. M. WILLERTH¹¹University of Victoria, Victoria, BC, Canada**P – Fri - A - 193****Quantification of the Transport of Live Autonomous Drug Particles (DrugBots) in Tumor Spheroids**M. A. TRAORE¹, A. SAHARI¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**P – Fri - A - 194****Optimal Assembly of Permanent Magnets to Obtain Maximum Magnetic Force for Magnetic Drug Targeting *In Vivo***J. SUO¹, N. LANDAZURI², S. TONG³, H. JO³, G. BAO¹, R. TAYLOR³, AND D. GIDDENS¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory university, Atlanta, GA, ³Emory University, Atlanta, GA

P – Fri - A - 195**Electrospun Solid Dispersions of the Antiretroviral Drug Maraviroc for Rapid Prevention of HIV**C. BALL¹ AND K. A. WOODROW¹¹University of Washington, Seattle, WA**P – Fri - A - 196****Implant-Assisted Intrathecal Magnetic Drug Targeting: A New Approach for Treatment of CNS Diseases**E. LUESHEN¹, I. VENUGOPAL¹, AND A. A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL**P – Fri - A - 197****Characterization of Fenestrated Titanium Microneedles for Passive Ocular Drug Delivery**O. KHANDAN¹, A. FAMILI², M. Y. KAHOOK², AND M. P. RAO¹¹University of California, Riverside, CA, ²University 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. BLAKNEY¹, E. A. KROGSTAD¹, AND K. A. WOODROW¹¹University of Washington, Seattle, WA**P – Fri - A - 199****Nanostructured Mucoadhesive Microparticles for Enhanced Bioavailability of Brimonidine**C. PARK¹, S. CHOI¹, M. PARK¹, S. LEE¹, Y. CHUNG¹, Y. JUNG¹, AND Y. CHOY¹¹Seoul National University, Seoul, Korea, Republic of**P – Fri - A - 200****Developing Nanoparticle-based Combination ARVs as an Effective Strategy for HIV Prevention**E. DO¹, E. KROGSTAD¹, D. BRIGHT², I. T. SUYDAM², AND K. A. WOODROW¹¹University of Washington, Seattle, WA, ²Seattle University, Seattle, WA**P – Fri - A - 201****Creation of Novel Flow Systems Inspired by Insects Utilizing Microfabrication Techniques**Y. HOSSEINI¹ AND M. AGAH¹¹Virginia 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. SCHLESINGER¹¹UCSF/UC-Berkeley, San Francisco, CA**P – Fri - A - 203****Optimization of Novel Multifunctional Nanoscaffolds for Re-endothelialization *In Situ***M. HOLDEN¹, V. SUNDARESAN¹, P. PUNNAKITIKASHEM¹, L-C. SU¹, B. PRABHAKARPANDIAN², AND K. T. NGUYEN^{1,3}¹University of Texas at Arlington, Arlington, TX, ²CFD Research Corporation, Huntsville, AL,³University 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. ANDRIANI¹, R. L. HOOD¹, J. ROSSMEISL², AND C. G. RYLANDER¹¹Virginia Tech, Blacksburg, VA, ²Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA**P – Fri - A - 205****DNA-based Transcription Factor Nrf2 Delivery for Acetaminophen Induced Liver Failure**K. LEE¹, X. FENG¹, M. RAFI¹, R. E. ALEI¹, R. TANG¹, N. LINGAMPALLI¹, AND N. MURTHY¹¹University 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. SUHRLAND¹, S. M. CHOWDHURY¹, M. NAIDU¹, AND B. SITHARAMAN¹¹SUNY 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. RYLANDER¹, E. BRANDON¹, J. WHITNEY¹, AND J. ROBERSTON¹¹Virginia 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. FAUCHER⁶, S. CONROY⁷, A. DALE^{5,6}, E. EDELMAN⁴, AND P. MARTAKUS⁶¹MIT, HST, Cambridge, ²Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ³Institut Quimic de Sarria, Universitat Ramon Llull, Barcelona, Spain, ⁴MIT, HST, Cambridge, MA, ⁵Ort Braude College, Karmiel, Israel, ⁶Atrium Medical, Hudson, NH, ⁷Atrium Medical, Hudson**P – Fri - A - 209****Modular Synthetic Glycopolymers for Cell Targeting and Drug Delivery**M. MANGANIELLO¹, E-H. SONG¹, A. CONVERTINE¹, P. STAYTON¹, AND D. M. RATNER¹¹University of Washington, Seattle, WA**P – Fri - A - 210****Dendrimers Built of DNA, Nucleodendrimers, Provide Intracellular Delivery and Effects of siRNA**V. MANE¹ AND S. MURO¹¹University of Maryland College Park, College Park, MD**P – Fri - A - 211****Biopolymer-mediated Drug/Gene Delivery**W. KIM¹¹POSTECH, Pohang, Korea, Republic of**P – Fri - A - 212****Hyperbranched Polyglycerols Coated Polylactic Acid Nanoparticles for Drug Delivery**Y. DENG¹, J. SAUCIER-SAWYER¹, J. ANDREJECSK¹, C. HOIMES¹, Y-E. SEO¹, J. ZHANG¹, N. DUONG¹, AND M. SALTZMAN¹¹Yale University, New Haven, CT**P – Fri - A - 213****Detoxification of Gold Nanorods for Improved Cytocompatibility and Biofunctionalization**A. P. DHANALE¹¹University of Texas at San Antonio, San Antonio, TX**P – Fri - A - 214****A Novel Encapsulation Method for Ferritin Nanocage**A. E. LORENZ¹¹MIT, Cambridge, MA

Track: Drug Delivery**Targeted Delivery****P – Fri - A - 215****A Systems Approach to Engineering Tf-Conjugated Drug-Encapsulated Nanoparticles**

R. Y. CHIU¹, T. TSUJ², S. J. WANG¹, J. WANG¹, A. B. MASON³, AND D. T. KAMEI¹
¹University of California, Los Angeles, Los Angeles, CA, ²University of Nagoya, Nagoya, Japan, ³University 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. GUO¹, D. AUGUSTE², AND J.-O. YOU³
¹Children Hospital Boston, Boston, MA, ²City College of New York, New York, NY, ³Chungbuk National University, Cheongju, Korea, Republic of

P – Fri - A - 217**Synthesis and Characterization of pH-sensitive Hydrogel Carriers for Oral Vaccine Delivery**

L. A. SHARPE¹, M. DURAN-LOBATO², AND N. A. PEPPAS¹
¹University of Texas at Austin, Austin, TX, ²University of Sevilla, Sevilla, Spain

P – Fri - A - 218**Delivery Vectors for Oral Protein Therapeutics: Characterization and Cellular Transport**

A. M. DAILY¹ AND N. PEPPAS¹
¹University of Texas at Austin, Austin, TX

P – Fri - A - 219**An Anti-obesity, Apoptosis-inducing ScFv Fusion Protein Targeting Mature Adipocytes**

Y. ROYET¹, H. HARPER¹, N. RIVALAIN², AND W. FARIN²
¹University of Oklahoma, Norman, OK, ²University of Oklahoma, Norman

P – Fri - A - 220**Targeted Inhalable Pegylated Lipid Nanomicelles Containing Fasudil: Formulation and Characterization**

N. GUPTA¹, B. PATEL¹, A. ABSAR¹, AND F. AHSAN¹,
¹Texas 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. FARR¹, Y.-N. WANG¹, S. D'ANDREA¹, F. STARR¹, D. LEE¹, AND J. HWANG¹
¹University 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. HSU¹, J. RAPPAPORT¹, AND S. MURO^{1,2}
¹University of Maryland, College Park, College Park, MD, ²Institute 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. SCHMITT¹ AND D. S. BENOIT¹
¹University of Rochester, Rochester, NY

P – Fri - A - 224**Evaluation of Pressure Dependent Oxygen Diffusion in an Ex-vivo Tissue Model**

A. B. ALLAWALA¹, P. RAO¹, G. SELVADURAY¹, AND J. MANDRUSOV¹
¹San Jose State University, San Jose, CA

P – Fri - A - 225**PDT Drug Delivery in Brain Tumors using Biocompatible Micelle/Liposome Based Carriers**

S. K. DIXIT¹, K. J. MILLER¹, P. ZHANG², M. KENNEY², AND A.-M. BROOME¹
¹Medical University of South Carolina, Charleston, SC, ²Case 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. NARLA¹ AND P. PATRA¹
¹University of Bridgeport, Bridgeport, CT

P – Fri - A - 227**A Novel Graphene Nanoribbon Based Targeted Drug Delivery System For Human Papilloma Virus Mediated Cancers**

S. MULLICK CHOWDHURY¹ AND B. SITHARAMAN¹
¹Stony Brook University, Stony Brook, NY

P – Fri - A - 228**Lipid-Coated Biodegradable Nanoparticles for Delivery of Curcumin to Brain**

S. MAJD¹ AND C.-F. KUO¹
¹Penn 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. PUNTEL¹ AND Z.-R. LU¹
¹Case Western Reserve University, Cleveland, OH

P – Fri - A - 230**Modeling pH-induced Release of Polyanions From Weak Polyelectrolyte Multilayer Films**

J. MIN¹, P. HAMMOND¹, AND R. BRAATZ¹
¹MIT, Cambridge, MA

P – Fri - A - 231**Improving Sonoporative Drug-delivery Through the Use of Size-isolated Microbubbles**

K.-H. SONG¹, J. FESHITAN¹, A. FAN¹, R. YANG¹, S. SIRSI¹, AND M. BORDEN¹
¹CU Boulder, Boulder, CO

P – Fri - A - 232**Synthetic Biocomposites for Staged Multi-Drug Delivery**

L. GAVIRIA¹, T. GUDA¹, AND J. L. ONG¹
¹University 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. CANADY¹, R. D. TILTON¹, AND T. M. PRZYBYCIEN¹
¹Carnegie 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}
¹Barrow Neurological Institute, Phoenix, AZ, ²Arizona State University, Tempe, AZ

Track: Neural Engineering**Brain Injury****P – Fri - A - 235**

Identifying the Shear Material Properties of Brain using Analytical and Finite Element Approaches

C. D. UNTAROIU¹

¹Virginia Tech, Blacksburg, VA

P – Fri - A - 236

Glial Activation is Associated with Chronic Behavioral Deficits Following Blast Neurotrauma

S. SAJJA¹, W. HUBBARD¹, C. HALL¹, AND P. VANDEVORD^{1,2}

¹Virginia Polytechnic and State University, Blacksburg, VA, ²Veterans 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. HUBBARD¹, S. SAJJA¹, E. EREIFEJ¹, AND P. VANDEVORD^{1,2}

¹Virginia Tech, Blacksburg, VA, ²Veterans Affairs Medical Center, Salem, VA

P – Fri - A - 238

Antibacterial Properties of Collagen Scaffolds with Tunable Mechanical Properties

C. KEELER¹, K. CRAWFORD¹, M. JIMENEZ¹, AND E. ORWIN¹

¹Harvey 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. HONEYCUTT¹, U. A. TRESCH², AND E. J. PERREAULT^{1,3}

¹Rehabilitation Institute of Chicago, Chicago, IL, ²Institute of Biomechanics, ETH Zurich, Zurich, Switzerland, ³Northwestern University, Chicago, IL

P – Fri - A - 240

The Impact of Shoulder Abduction Loading on the Ability to Grasp and Release Following Stroke

Y. LAN¹, J. YAO¹, AND J. DEWALD¹

¹Northwestern University, Chicago, IL

P – Fri - A - 241

Development of a Traumatic Brain Injury Bioreactor

Z. HELLER¹, J. WYATT¹, AND J. WOLCHOK¹

¹University 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. CHANDRA¹, M. SKOTAK¹, AND F. WANG¹

¹University of Nebraska-Lincoln, Lincoln, NE

P – Fri - A - 243

Cellular Mechanisms of Shock Wave Generated Blast Neurotrauma

E. S. EREIFEJ¹, C. E. HAMPTON¹, C. N. THORPE², B. A. RZIGALINSKI², AND P. J. VANDEVORD¹

¹Virginia Tech, Blacksburg, VA, ²Edward 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. KOIVUNEMI¹ AND K. OTTO²

¹Purdue University, Indianapolis, IN, ²Purdue University, West Lafayette, IN

P – Fri - A - 245

Conducting Polymer Electrodes for EEG Application

P. LELEUX^{1,2}, C. BÉNAR², J-M. BADIÉ², T. HERVÉ³, P. CHAUVEL², AND G. G. MALLIARAS¹

¹Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan, ²INSERM, Marseille cedex 06, France, Metropolitan, ³Microvitae Technologies, Gardanne, France, Metropolitan

P – Fri - A - 246

Biohybrid Neural Tissue Engineered Constructs for Electrical Interface with Peripheral Nerve

L. STRUZYNA¹, J. WOLF¹, AND D. K. CULLEN¹

¹University of Pennsylvania, Philadelphia, PA

P – Fri - A - 247

Histological Correlates to Functionality in 4x4 Utah Electrode Arrays in Rat Cortex

M. B. CHRISTENSEN¹, N. F. NOLTA¹, J. L. SKOUSEN¹, AND P. A. TRESCO¹

¹University 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. LO¹, S. SINGH¹, S. WANG¹, J. D. ZAHN¹, D. I. SHREIBER¹, AND J. KOHN¹

¹Rutgers, 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. RANA¹, S. RUIZ², A. MUEHLECK³, K. BUYUKTURKOGLU⁴, J. DALBONI DA ROCHA⁵, S. ECK³, A. BATRA³, N. BIRBAUMER⁶, AND R. SITARAM^{4,7}

¹Institute of Med. Psychology & Behavioral Neurobiology, University of Tuebingen, Tuebingen, Germany, ²Pontificia Universidad Catolica de Chile, Santiago, Chile, ³Department of Psychiatry and Psychotherapy, University of Tuebingen, Tuebingen, Germany, ⁴Institute of Med. Psychology & Behavioral Neurobiology, University of Tuebingen, Tuebingen, Germany, ⁵Department of Biomedical Engineering, University of Florida, Gainesville, FL, ⁶Institute of medical psychology and Behavioural neurobiology, Tuebingen University, Tuebingen, Germany, ⁷Department 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. KIM¹, H. BAEK¹, H. LEE¹, Y. LIM², AND K. PARK¹

¹Seoul National University, Seoul, Korea, Republic of, ²Sangji 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. VITALE¹, C. KEMERE¹, AND M. PASQUALI¹

¹Rice University, Houston, TX

P – Fri - A - 252

Aligned RGD-MeHA Nanofibers: Adhesive and Topographical Cues for Improving Neural Regeneration

M. WROBEL¹ AND H. SUNDARARAGHAVAN¹

¹Wayne State University, Detroit, MI

P = Poster Session
OP = Oral Presentation

P – Fri - A - 253**The Effect of Peptoids on AB Aggregation and NF- κ B Activation in Alzheimer's Disease**K. MOORE¹, L. M. WOLF¹, AND M. MOSS¹¹University 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. ADEWUYI¹, L. HARGROVE^{1,2}, AND T. KUIKEN^{1,2}¹Northwestern University, Chicago, IL, ²Rehabilitation Institute of Chicago, Chicago, IL**Track:Tissue Engineering****Biomimetics for Tissue Engineering****P – Fri - A - 255****Synergistically Providing Cyclic Mechanical Stimulation and Local TGF- β 1 Delivery Enhances Mechanical Properties and Uniformity of the Fibrin Vascular Constructs**M-S. LIANG¹, M. KOOBATIAN¹, D. D. SWARTZ¹, AND S. T. ANDREADIS¹¹State 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-KING¹ AND S. BAJPAI¹¹Cornell University, Ithaca, NY**P – Fri - A - 257****Characterization of Localized Antithrombotics for the Treatment of Restenosis**R. A. SCOTT¹ AND A. PANITCH¹¹Purdue University, West Lafayette, IN**P – Fri - A - 258****Effects of Mechanical Stimuli on Proliferation, Senescence and Suppression of Osteogenesis in hMSCs**Y. KANG¹, S. PARK¹, J-S. HYUN¹, M-J. OH¹, AND J-W. SHIN^{1,2}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ²First Research Team/Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Inje University, Gimhae, Korea, Republic of**P – Fri - A - 259****In Vitro Cytotoxicity Evaluation of PCL Fibers Produced by Forcespinning**G. R. PEREA¹, A. A. RODRIGUES¹, N. A. BATISTA¹, W. D. BELANGERO¹, C. C. ZAVAGLIA¹, AND M. A. D'AVILA¹¹UNICAMP, Campinas, Brazil**P – Fri - A - 260****Functional Analysis of Cell Aggregation Induction Proline Containing Periodic Peptides**Y. HIRANO¹ AND Y. FUTAKI¹¹Kansai University, Suita, Japan**P – Fri - A - 261****How Curvature is Perceived by a Cell as a Three Dimensional Cue?**J. KIM¹, C. YANG¹, AND J. WONG¹¹Boston University, Boston, MA**P – Fri - A - 262****Biomimetic Polyurea for Substantial Nerve Regeneration**D. YUN¹, A. FAMILI¹, P. JENKINS¹, AND D. PARK¹¹UC Denver/AMC, Aurora, CO**P – Fri - A - 263****The Effects of Mechanical Stimulation and Neighboring Cells to Mesenchymal Stem Cell Migration**M. V. GARCIA¹, S. KIM², S. PARK³, Y. KANG³, J-S. HYUN³, M-J. OH³, AND J-W. SHIN⁴¹Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, ²Engineering Ceramic Research Group, Functional Materials Division, KIMS, Changwon, Korea, Republic of, ³Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ⁴First 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. JAO¹, S-P. FANG¹, W. U. HASANAT¹, AND Y-K. YOON¹¹University of Florida, Gainesville, FL**P – Fri - A - 265****Elucidating the Effects of Cytokine Signaling on Hepatic Function in *in vitro* Tissue Mimics**L. VU¹ AND P. RAJAGOPALAN^{1,2}¹Department of Chemical Engineering Virginia Tech, Blacksburg, VA, ²School of Biomedical Engineering and Sciences Virginia Tech, Blacksburg, VA**P – Fri - A - 266****Cartilage Regeneration using Chitosan-based Anisotropic Hydrogels**K. J. WALKER¹ AND S. MADHALLY¹¹Oklahoma State University, Stillwater, OK**P – Fri - A - 267****Biomimetic Hydrogel Promotes Mesenchymal Stem Cell Osteogenesis for Cartilage Engineering**Y. YUAN¹ AND F. CHI¹¹Eye 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. GRIFFIN¹, G. ACOSTA¹, J. MACK¹, A. SOON¹, J. BORRAJO¹, V. OSHITA¹, AND T. SEGURA¹¹UC 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. DRINNAN¹, A. MEHTA¹, AND O. Z. FISHER¹¹Temple 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. TALUKDAR¹, J. T. RASHKOW¹, G. LALWANI¹, AND B. SITHARAMAN¹¹State 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. MELLOTT¹, H. SHINOGLE¹, D. MOORE¹, H. STAECKER², AND M. DETAMORE¹¹University of Kansas, Lawrence, KS, ²University 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. MINTEER¹, K. G. MARRA¹, AND J. P. RUBIN¹¹University of Pittsburgh, Pittsburgh, PA

P – Fri - A - 273**Arthritic Periosteal Tissue from Joint Replacement Surgery as an Autologous Source of Stem Cells**H. CHANG¹, D. DOCEVA², U. KNOTHE³, AND M. L. KNOTHE TATE¹¹Case Western Reserve University, Cleveland, OH, ²Ludwig Maximilians University, Munich, Germany, ³Cleveland Clinic, Cleveland, OH**P – Fri - A - 274****Examining the Effect of Stiffness on Vascular Differentiation**L. WONG¹, D. GLASER¹, AND K. MCCLOSKEY¹¹University of California, Merced, Merced, CA**P – Fri - A - 275****A 3D Microfluidic Gel System for Stem Cell Derived Endothelial Cells**N. HAQ-SIDDIQI¹ AND E. LEE¹¹New 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. NAZEMPOUR¹, C. R. QUISENBERRY¹, H. KIM², N. ABU-LAIL¹, V. IDONE², AND B. VAN WIE¹¹Washington State University, Pullman, WA, ²Regeneron Pharmaceutical Corporation, Tarrytown, NY**P – Fri - A - 277****Collagen-Based Hydrogels Direct Spinal Progenitor Cell Differentiation Toward Oligodendrocytes**S. A. GEISSLER¹, Z. Z. KHAING², AND C. E. SCHMIDT^{1,2}¹The University of Texas, Austin, Austin, TX, ²University 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. WENDT², J. K. LEACH^{1,3}, AND I. MARTIN²¹University of California, Davis, Davis, CA, ²University Hospital Basel, Basel, Switzerland, ³UCDMC, Sacramento, CA**P – Fri - A - 279****Nanopatterned Hyaluronan Hydrogels Enhance Chondrogenic Differentiation in Dental Pulp Stem Cells**C. NEMETH¹, K. JANEBOBIN^{1,2}, A. YUAN¹, M. REYES¹, AND D-H. KIM¹¹University of Washington, Seattle, WA, ²Mahidol University, Bangkok, Thailand**P – Fri - A - 280****Modulation of RHAMM Protein Function Alters Mesenchymal Tissue Differentiation**B. BAHRAMI¹, C. TOELG², M. J. BISSELL¹, AND E. A. TURLEY²¹Lawrence Berkeley National Laboratory, Berkeley, CA, ²London 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. PETSCHÉ CONNELL¹, E. D. AUGUSTINI¹, S. K. CHENG¹, R. RUANO^{2,3}, AND J. G. JACOT^{1,3}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas Children's Hospital, Houston, TX**P – Fri - A - 282****Stage- and Cell Line-Specific Optimizations for Efficient Derivation of Human and Mouse Endothelial Cells**D. E. GLASER¹, W. S. TURNER¹, A. B. BURNS¹, AND K. E. MCCLOSKEY¹¹University of California, Merced, Merced, CA**P – Fri - A - 283****Enhancing hMSC Attachment to Fibrin Microthreads**A. E. CUNHA¹, K. J. HANSEN², I. CICH², AND G. R. GAUDETTE²¹Quinsigamond Community College, Worcester, MA, ²Worcester Polytechnic Institute, Worcester, MA**2013 BMES ANNUAL MEETING***New Mobile App*

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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-SICHANI¹, N. J. MOERKE¹, A. DASTUR², C. H. BENS², AND P. K. SORGER¹¹Harvard Medical School, Boston, MA, ²Massachusetts General Hospital Cancer Center, Charlestown, MA**P – Fri - B - 2****Computational Model of IGF1R Signaling Dynamics in Ovarian Cancer Cells**D. TIAN¹ AND P. K. KREEGER¹¹University 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. WONG², B. KIDD², S. QUAKE², AND M. DAVIS²¹University of Texas at Austin, AUSTIN, TX, ²Stanford University, Stanford, CA**P – Fri - B - 4****Similarity Measures for Analyzing Head and Neck Cancer Gene Expression Data**C. D. KADDI¹ AND M. D. WANG¹¹Georgia Institute of Technology, Atlanta, GA**P – Fri - B - 5****The Effect of Genome Annotation Complexity on RNA-Seq Gene Expression Estimation**P.-Y. WU¹, J. H. PHAN¹, AND M. D. WANG¹¹Georgia 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. BLAIS¹, S. J. ADAIR¹, J. M. LINDBERG¹, T. E. NEWHOOK¹, T. W. BAUER¹, J. T. PARSONS¹, AND J. A. PAPIN¹¹University of Virginia, Charlottesville, VA**P – Fri - B - 7****Intricate Interplay Between TLR4 and Purinergic Receptor Signaling in Activated Macrophages**S. GUPTA¹, A. R. DINASARAPU², M. R. MAURYA², E. FAHY², J. MIN², M. SUD², M. J. GERSTEN², C. K. GLASS², AND S. SUBRAMANIAM²¹University of California, San Diego, La Jolla, CA, ²University 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. LIU¹ AND S. NEELAMEGHAM¹¹State University of New York, Buffalo, NY**P – Fri - B - 9****SVD of Transcript Length Distributions Reveals Evolutionary Forces Globally Affecting GBM Metabolism**N. M. BERTAGNOLLI¹, J. A. DRAKE¹, J. M. TENNESSEN¹, AND O. ALTER¹¹Scientific 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. WILSON¹, S. GOSLINE¹, E. FRAENKEL¹, AND D. LAUFFENBURGER¹¹Massachusetts 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. MILLER³, AND M. FACCIOTTI^{1,2}¹UC Davis, Davis, CA, ²Genome Center, Davis, CA, ³New York University, New York, NY**P – Fri - B - 12****Comparison of Two Types of Barcodes Used for Multiple miRNAs Sequencing in the Ligation Sequencing Platform**J. TU¹, L. WANG¹, S. WANG¹, AND Z. LU^{1,2}¹Southeast University, Nanjing, China, People's Republic of, ²Peking University, Beijing, China, People's Republic of**P – Fri - B - 13****Protein Identification in Macrophages**P. M. VARMAN¹ AND N. HAVERLAND²¹Duchesne Academy, Omaha, NE, ²University 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. SUNG³, A. MAGIS^{1,2}, Y. WANG^{1,2}, D. GEMAN⁴, AND N. PRICE^{1,2}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Institute for Systems Biology, Seattle, WA, ³Pohang University of Science and Technology, Pohang, Korea, Republic of, ⁴Johns Hopkins University, Baltimore, MD**P – Fri - B - 15****Investigation of k-means Clustering for the Analysis of Mass Spectrometry Imaging Data**S. SARKARI¹, C. D. KADDI¹, AND M. D. WANG¹¹Georgia Institute of Technology, Atlanta, GA**P – Fri - B - 16****Identifying Signaling Networks and Therapeutic Targets in Glioblastoma Cancer Stem Cells**N. CAMP¹, P. HOTH², G. FOLTZ², AND A. WOLF-YADLIN¹¹University of Washington, Seattle, WA, ²The 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. RODRIGUES¹, A. L. LARKIN¹, L. T. VU¹, A. N. TEGGE¹, T. M. MURALI¹, AND P. RAJAGOPALAN¹¹Virginia 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. LIU¹, M. KOYUTURK¹, S. MAXWELL¹, M. XIANG¹, M. VEIGL¹, R. COOPER², B. TAYO², L. LI¹, T. LAFRAMBOISE¹, Z. WANG¹, X. ZHU¹, AND M. CHANCE¹¹Case Western Reserve University, Cleveland, OH, ²Loyola University, Chicago, IL**P – Fri - B - 19****What Do We Learn from Network-based Analyses of GWAS data?**M. AYATI¹, Y. LIU¹, M. R. CHANCE¹, AND M. KOYUTURK¹¹Case Western Reserve University, Cleveland, OHPOSTER
SESSION
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See page 21 for Poster floor plan

P – Fri - B - 20**The Biological Roles of Inconsistently-Expressed Genes**J. B. SHEPPARD¹¹University of Memphis, Memphis, TN**P – Fri - B - 21****An Integrated Transcriptomic and Lipidomic Study of Oxidized Lipid Activated RAW 264.7 Macrophages**M. R. MAURYA¹, A. R. DINASARAPU¹, S. GUPTA¹, E. FAHY¹, M. SUD¹, AND S. SUBRAMANIAM¹¹University of California, San Diego, La Jolla, CA**P – Fri - B - 22****A Selected Reaction Monitoring Framework to Quantify Kinase Expression and Phosphorylation Stoichiometry**K. BECK¹, M. BEREMAN¹, M. MACCOSS¹, AND A. WOLF-YADLIN¹¹University of Washington, Seattle, WA**P – Fri - B - 23****Gene Expression Analysis Highlights the Emergence of Substructures in the Developing Mouse Brain**V. MENON¹, C. THOMPSON¹, J. HOHMANN¹, AND M. HAWRYLYCZ¹¹Allen 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. BLABY², C. E. BLABY-HAAS², X. F. WANG¹, S. MERCHANT², AND M. PELLEGRINI²¹Shanghai Jiao Tong University, Shanghai, China, People's Republic of, ²University of California Los Angeles, Los Angeles, CA**Track: Bioinformatics, Computational and Systems Biology****Image-based Models****P – Fri - B - 25****Histological Image Classification Using Biologically Interpretable Shape-Based Features**S. KOTHARI¹, J. H. PHAN², AND M. D. WANG²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia 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}¹The University of Texas at Austin, Austin, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX**P – Fri - B - 27****A Hierarchical Geodesic Model for Diffeomorphic Longitudinal Shape Analysis**N. SINGH¹, J. HINKLE¹, S. JOSHI¹, AND P. T. FLETCHER¹¹Scientific 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. REDDY¹, L. ROBINSON¹, R. M. CAMPBELL², AND S. BALASUBRAMANIAN¹¹Drexel University, Philadelphia, PA, ²The Children's Hospital of Philadelphia, Philadelphia, PA**P – Fri - B - 29****Three-Dimensional Reconstruction of Protein P62IMP2**J. LI¹, M. ZHANG¹, L. ZHANG², W. SUN¹, G. REN², W. QIAN¹, AND J. ZHANG¹¹University of Texas at El Paso, El Paso, TX, ²Lawrence Berkeley National Laboratory, Berkeley, CA**P – Fri - B - 30****Autocalibrating CT Reconstruction from C-Arm Fluoroscopy Data**J. D. HINKLE¹, A. CHERYAUKA², R. WHITAKER¹, AND S. JOSHI¹¹University of Utah, Salt Lake City, UT, ²GE Healthcare, Salt Lake City, UT**P – Fri - B - 31****Cerebral Blood Flow Measurement by Inversion of Slow DSA Data**C-Y. HSU¹, S. KIM¹, AND A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL**P – Fri - B - 32****Modeling Temporal Progression of Alzheimer's Disease**N. VERMA¹ AND M. K. MARKEY^{1,2}¹The University of Texas at Austin, Austin, TX, ²UT 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. XU¹, C. PAGE¹, AND N. VOLKMANN¹¹Sanford-Burnham Medical Research Institute, La Jolla, CA**P – Fri - B - 34****Automated High-throughput 3D Neuron Reconstruction Using All-Path-Pruning**H. PENG¹¹Allen 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. MARGINEANTU³, D. HOCKENBERY³, AND N. PRICE²¹University of Illinois, Urbana-Champaign, Urbana, IL, ²Institute for Systems Biology, Seattle, WA, ³Fred 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. GEMAN³, AND N. PRICE^{1,2}¹University of Illinois, Urbana-Champaign, Urbana, IL, ²Institute for Systems Biology, Seattle, WA, ³The Johns Hopkins University, Baltimore, MD**P – Fri - B - 37****Design of Surveillance Intervals for Abdominal Aortic Aneurysms**E. SHERER¹¹Louisiana 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. AIELLO¹ AND O. ALTER¹¹Department 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. SANKARANARAYANAN¹, T. E. SCHOMAY¹, K. A. AIELLO¹, AND O. ALTER¹¹Department of Bioengineering and Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

P – Fri - B - 40**Entropy of Acceleration Measurements During Swallowing**N. P. REDDY¹ AND J. T. PAXITZIS JR²¹University of Akron, Akron, OH, ²Philips 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. EDDY¹ AND N. D. PRICE¹¹Institute for Systems Biology, Seattle, WA**P – Fri - B - 42****An *In Silico* Diagnostic for HIV Coreceptor Selection and Disease Progression**D. MORIKIS¹, G. GONZÁLEZ-RIVERA¹, C. A. KIESLICH¹, A. LÓPEZ DE VICTORIA¹, AND D. SHIN¹¹University 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. GRUJICIC¹, R. YAVARI¹, J. SNIPES¹, R. SUBRAHMANYAN¹, M. GRUJICIC¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P – Fri - B - 44****Interpreting the Effect of Heterogeneity and Hemodynamics on Tumor Angiogenesis Using a Multi-scale Model of Anti-angiogenic Therapy**J. WEDDELL¹, J. KWACK¹, A. MASUD¹, AND P. IMOUKHUEDE¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P – Fri - B - 45****Multi-resolution Network Modeling of Inhomogeneous Nerve Bundle for Magnetic Stimulation**A. K. RamRakhyani¹, F. Khan¹, D. J. Warren¹, Z. B. Kagan¹, R. A. Normann¹, and G. Lazzi¹¹University of Utah, Salt Lake City, UT**P – Fri - B - 46****Extreme Pathways and *In Silico* Determined Steroidogenic Robustness**D. HALA¹ AND D. HUGGETT¹¹University of North Texas, Denton, TX**P – Fri - B - 47****Agent Based Modeling of Stretched Induced Lung Inflammation**A. REYNOLDS¹, J. HERBERT¹, R. HEISE¹, AND R. PIDAPARTI¹¹Virginia Commonwealth University, Richmond, VA**P – Fri - B - 48****An Agent-Based Model of Cancer Stem Cell Seeding**K-A. NORTON¹ AND A. S. POPEL¹¹Johns 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. Ornelas¹, N. U. Ozaki¹, and V. G. Rodgers¹¹University of California, Riverside, Riverside, CA**P – Fri - B - 50****Linking Ciliary Metachronicity to Dynein Motion - A Multiscale Computational Model**S. MITRAN¹¹University of North Carolina, Chapel Hill, NC**P – Fri - B - 51****Multi-Scale Modeling of Electrical Stimulation of the Retina**K. LOIZOS¹, V. BHOLA¹, AND G. LAZZI¹¹University 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. CHENG¹, C. D. KADDI¹, T. G. BURNS^{2,3}, AND M. D. WANG^{1,4}¹Georgia Institute of Technology, Atlanta, GA, ²Children's Healthcare of Atlanta, Atlanta, GA,³Emory School of Medicine, Atlanta, GA, ⁴Emory university, 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'AURIA¹, G. L. KOLLING¹, G. M. DONATO¹, C. A. WARREN¹, M. C. GRAY¹, E. L. HEWLETT¹, AND J. A. PAPIN¹¹University of Virginia, Charlottesville, VA**P – Fri - B - 54****Database for Aerobic Capacity: Age, Gender, and Activity Level**T. J. MALKINSON¹¹SAIT 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. GO¹, K. COLEMAN-WOOD¹, AND K. R. KAUFMAN¹¹Mayo 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. Evertz¹, K. R. Kaufman¹, and M. M. Morrow¹¹Mayo Clinic, Rochester, MN**P – Fri - B - 58****3-D Analysis of Metatarsophalangeal Joint in Normal Walking Using 4-segment Foot Model**B. JEONG¹, S. KIM¹, J. SON¹, AND Y. KIM¹¹Yonsei University, Wonju, Korea, Republic of**P – Fri - B - 59****Neuromuscular Control of Lumbar Spine in People with Chronic Low Back Pain**K. M. SANCHEZ¹¹The University of Kansas, Lawrence, KS

Track: Biomechanics**Biomaterials and Devices****P – Fri - B - 60**

Effects of Hydrogel Layer on Adsorption of Proteins and Lubrication

Properties of Articular Cartilage

A. Takai¹, Y. Morita¹, and E. Nakamachi¹¹Doshisha University, Kyotanabe, Japan**P – Fri - B - 61**

Developing a Magnetic Tweezer Method for High-Resolution Multiplexed Single Molecule Protein Stretching Measurements

H. J. MAHMOUD¹, K. JOHNSON¹, E. CLEMMENS¹, T. OLMSTEAD¹, R. KIRKPATRICK², AND W. THOMAS¹¹University of Washington, Seattle, WA, ²Harvard University, Cambridge, MA**P – Fri - B - 62**

Quantitative Evaluation of Cell Adhesion Toward RADI6RGDS Peptide Coated Substrate

Y. TAGAWA¹, Y. MORITA¹, Y. HIRANO², AND E. NAKAMACHI¹¹Doshisha University, Kyotanabe, Japan, ²Kansai 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. SATO¹, Y. MORITA¹, AND E. NAKAMACHI¹¹Doshisha University, Kyotanabe, Japan**P – Fri - B - 64**

Evaluation of Chondrocyte Damage Caused by Impact Hydrostatic Pressure

T. YAMAGUCHI¹, Y. MORITA¹, AND E. NAKAMACHI¹¹Doshisha University, Kyotanabe, Japan**Track: Biomechanics****Cardiovascular Biomechanics****P – Fri - B - 65**

Hemodynamics-Induced Autophagy Modulates Mitochondrial Redox Status in Vascular Endothelium

N. JEN¹, K. FANG¹, R. LI¹, D. ANN², AND T. HSIAI¹¹University of Southern California, Los Angeles, CA, ²City of Hope, Duarte, CA**P – Fri - B - 66**

Human AAA Tissue in Strain Controlled Biaxial Loading: Histology and Anisotropic Mechanical Response

F. PANCHERI¹, W. LIN¹, M. D. IAFRATI², L. DORFMANN¹, AND R. A. PEATTIE²¹Tufts University, Medford, MA, ²Tufts Medical Center, Boston, MA**P – Fri - B - 67**

Direction-dependent Failure of the Porcine Ascending Thoracic Aorta in Peel and Lap Testing

H. P. WAGNER¹, C. WITZENBURG¹, S. B. SHAH¹, J. M. GOODRICH¹, AND V. BAROCAS¹¹University 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. MEREI¹, M. SUTTON¹, S. LESSNER¹, S. AVRIL², AND P. BADEL²¹University of South Carolina, Columbia, SC, ²Ecole Nationale Supérieure Des Mines De Saint Etienne, Saint Etienne, France**P – Fri - B - 69**

Simulation of Atherosclerotic Plaque Delamination Using the Cohesive Zone Model

X. LENG¹, X. CHEN¹, X. DENG¹, M. A. SUTTON¹, AND S. M. LESSNER²¹University of South Carolina, Columbia, SC, ²University of South Carolina School of Medicine, Columbia, SC**P – Fri - B - 70**VE-cadherin, β -catenin and F-actin Expression in Endothelial Cells Exposed to Shear *In Vitro*P. TREMBLAY¹ AND L. ROULEAU^{1,2}¹Université de Sherbrooke, Sherbrooke, QC, Canada, ²Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, QC, Canada**P – Fri - B - 71**

Spline Based Microstructural Mapping for Soft Biological Tissues: Application to Aortic Valves

A. AGGARWAL¹, V. AGUILAR¹, G. FERARRI², J. GORMAN², R. GORMAN², AND M. SACKS¹¹UT Austin, Austin, TX, ²UPenn, Philadelphia, PA**P – Fri - B - 72**

Endothelial Cell Collective Migration is Enhanced on Soft Substrates

A. C. CANVER¹ AND A. MORSS CLYNE¹¹Drexel University, Philadelphia, PA**P – Fri - B - 73**

Measurement of Endothelial Permeability Under Chronic Applied Shear Stress in a Bioreactor

S. GRAY¹ AND P. WEINBERG¹¹Imperial College London, London, United Kingdom**P – Fri - B - 74**

Cellular and Extracellular Mechanisms of Arterial Stiffness with Aging

Y. Z. GAO¹, R. J. SAPHIRSTEIN¹, R. A. COHEN², B. SUKI¹, AND K. G. MORGAN¹¹Boston University, Boston, MA, ²Boston 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. KOOBATIAN¹, M-S. LIANG¹, D. SWARTZ¹, AND S. ANDREADIS¹¹State 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. ZAMBRANO¹, R. S. THOMPSON¹, AND M. MORENO¹¹Texas A&M University, College Station, TX**P – Fri - B - 77**

Effect of Strain Rate and Cryopreservation Conditions on Elastic Modulus of Veins

S. A. PASQUESI¹ AND S. S. MARGULIES¹¹University of Pennsylvania, Philadelphia, PA**P – Fri - B - 78**

A Method for Quantifying Fiber Orientation in Valvular Tissues with Polarized Spatial Frequency Domain Imaging

B. YANG¹, M. SHARMA¹, M. R. HILL¹, J. TUNNELL¹, AND M. S. SACKS¹¹University of Texas, Austin, TX**P – Fri - B - 79**

Simulation of Endovascular Treatments for Cerebral Aneurysms

H. BABIKER¹, B. CHONG², J. RYAN¹, F. GONZALEZ², AND D. H. FRANKS¹¹Arizona State University, Tempe, AZ, ²Mayo Clinic College of Medicine, Phoenix, AZ, ³Thomas Jefferson Medical College, Philadelphia, PA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

P – Fri - B - 80**High-Resolution Characterization of Deformation and Material Parameters In Vein Specimens**A. D. GOMEZ¹, B. R. WATSON¹, H. LI¹, I. S. ZHUPLATOV¹, Y-T. E. SHIU¹, AND E. W. HSU¹¹University of Utah, Salt Lake City, UT**P – Fri - B - 81****Studying Atherosclerotic Plaque Formation Using In Vivo Imaging and Computational Fluid Dynamics**V. MEHTA¹, S. M. BOVENS¹, J. L. TREMOLEDA¹, M. WYLEZINSKA-ARRIDGE¹, W. GSELL¹, R. PEDRIGI¹, AND R. KRAMS¹¹Imperial 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. LOCKHART¹, R. SOANGRA¹, AND J. ZHANG¹¹Virginia Tech, Blacksburg, VA**P – Fri - B - 83****A Numerical Investigation on Thoracolumbar Vertebral Fractures Related to Falls**H. ZHAO¹, H. MAO², Z. YIN¹, R. CHEN¹, P. BEGEMAN², X. JIN², F. ZHU², Z. WANG¹, AND K. YANG²¹Institute of Surgery, Chongqing, China, People's Republic of, ²Bioengineering Center, Detroit, MI**P – Fri - B - 84****Comparing Human Cadaveric Anterior Cruciate Ligament Biomechanical Properties During Knee Flexion Using Mechanical Testing System**V. D. NGUYEN¹ AND H. V. VO¹¹Mercer 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}¹Wake Forest University School of Medicine, Winston-Salem, NC, ²Virginia 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. SINGH¹, V. PATEL¹, A. PLEGRI¹, AND D. I. SHREIBER¹¹Rutgers University, Piscataway, NJ**P – Fri - B - 87****Multi-Scale Modeling of the Endothelial Glycocalyx Layer**M. PIKOULA¹, C. F. DEWEY, JR², AND Y. VENTIKOS¹¹University of Oxford, Oxford, United Kingdom, ²Massachusetts 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. PARKOT², AND H. FISCHER²¹Massachusetts General Hospital, Boston, MA, ²RWTH Aachen University Hospital, Aachen, Germany**P – Fri - B - 89****Pattern Recognition of Adipose Tissue in the Lumbar Para-Spinal Muscles Predicts Gender**N. V. BATTAGLIA¹, M. R. MAHFOUZ^{1,2}, AND R. D. KOMISTEK¹¹University of Tennessee, Knoxville, TN, ²Institute 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. ROWSON¹, J. A. BEYER¹, AND S. M. DUMA¹¹Virginia Tech, Blacksburg, VA**P – Fri - B - 91****A Mechanical Evaluation of Ice Hockey Glove Performance**C. MAGLARAS¹, M. POSNER², AND A. VALDEVIT³¹Stevens Institute of Technology, Hoboken, NY, ²NYU Langone Medical Center, New York, NY, ³The Stevens Institute of Technology, Hoboken, NJ**P – Fri - B - 92****Biomechanical Simulation to Estimate the Load on the Ulnar Collateral Ligament during Pitching**J. Buffi¹ and W. Murray^{1,2}¹Northwestern University, Chicago, IL, ²Rehabilitation Institute of Chicago, Chicago**P – Fri - B - 93****Prediction of Vertical Ground Reaction Forces during Golf Swing of Professional Golfers**A. CHOI¹, H. KIM¹, AND J. H. MUN²¹The University of Texas Health Science Center at Houston, Houston, TX, ²Sungkyunkwan 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. HANDSFIELD¹, L. A. CHERNAK², D. G. THELEN², AND S. S. BLEMKER¹¹University of Virginia, Charlottesville, VA, ²University 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. BEEMAN¹, A. R. KEMPER¹, M. L. MADIGAN², AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P – Fri - B - 96****Response of Isolated Whole Human Spleens in Compression: Effect of Perfusion and Loading Rate**A. R. KEMPER¹, A. C. SANTAGO², J. D. STITZEL³, J. L. SPARKS³, AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA, ²Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Winston-Salem, NC, ³Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Winston-Salem, NC

P – Fri - B - 97**Torsion-Induced Traumatic Optic Neuropathy**M. A. REILLY¹, W. E. SPONSEL^{1,2}, AND R. D. GLICKMAN^{1,3}¹University of Texas at San Antonio, San Antonio, TX, ²WESPA, San Antonio, TX, ³University 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. LEHN¹ AND M. C. LEFTWICH¹¹The George Washington University, Washington, DC**P – Fri - B - 99****A Pre- and Post- Dilution Method with Filtration for Removing Cryoprotective Agents**L. GONG¹, W. DING¹, X. HU¹, S. SUN², AND D. GAO²¹University of Science and Technology of China, Hefei, China, People's Republic of, ²University of Washington, Seattle, WA**P – Fri - B - 100****A Non-Segmental Rabbit Mandible Model for Bone Regeneration**T. GUDA¹, D. T. SILLIMAN², A. MONGIA¹, AND P. BROWNBAER²¹University of Texas at San Antonio, San Antonio, TX, ²US Army Institute of Surgical Research, Fort Sam Houston, TX**P – Fri - B - 101****On Mechanical Origins of Embryonic Brain Torsion**Z. CHEN¹, Q. GUO^{1,2}, N. FORSCH¹, AND L. TABER¹¹Washington University in St. Louis, Saint Louis, MO, ²Fuzhou University, Fuzhou, China, People's Republic of**P – Fri - B - 102****Method for Estimation of Skull Table Thickness from Clinical CT**E. M. LILLIE¹, J. E. URBAN¹, A. A. WEAVER¹, AND J. D. STITZEL¹¹Wake Forest University, Winston Salem, NC**P – Fri - B - 103****Finite Element Modeling of In Vitro Acupuncture Needling**H. WAGNER¹, J. R. HOGATE², D. SHREIBER², AND V. BAROCAS¹¹University of Minnesota, Minneapolis, MN, ²Rutgers University, Piscataway, NJ**P – Fri - B - 104****FEA Simulation Comparison for Crash Test Modeling of Frontal Impacts Using Hybrid-III ATD**C. M. WEAVER¹, K. A. DANELSON¹, A. J. GOLMAN¹, AND J. D. STITZEL¹¹Wake 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. BRUCKMAN¹, L. N. RANDOLPH¹, K. JIANG¹, E. J. SIMPSON², L. G. LUYT², X. YU¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²University of Western Ontario, London, ON, Canada**P – Fri - B - 106****Identification of Optical Changes Preceding Seizure Activation Using Optical Coherence Tomography**M. R. HAQUE¹, M. C. OLIVEIRA¹, M. S. ISLAM¹, G. N. FILATOV¹, M. S. HSU¹, D. K. BINDER¹, M. BAZHENOV¹, AND B. H. PARK¹¹University of California Riverside, Riverside, CA**P – Fri - B - 107****An Evaluation of Age-specific Atlas-based MRI Brain Segmentation in Premature Neonates**M. LIU¹, J. SCOTT¹, V. CHAU², K. J. POSKITT², S. MILLER², AND C. STUDHOLME¹¹University of Washington, Seattle, WA, ²University of British Columbia, Vancouver, BC, Canada**P – Fri - B - 108****Investigating In Vivo Fluorescence Imaging of Microdialysis Sampling**J. HAYNIE¹, C. SIDES¹, T. POSENO¹, J. HAVENS¹, AND J. A. STENKEN¹¹University of Arkansas, Fayetteville, AR**P – Fri - B - 109****Developing a Physical Model for Multi-Modal Mammographic Image Registration in the Temporal Domain**J. T. MACDONALD¹ AND S. SHARMA¹¹DeVry 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. JACOB¹, S. KABILAN¹, AND J. CARSON¹¹Pacific 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. MA¹, J. T. WALSH¹, R. P. VAN DUYN¹, AND M. R. GLUCKSBERG¹¹Northwestern University, Evanston, IL**P – Fri - B - 112****Polymer-Free Optode Nanosensors for Dynamic, Reversible, and Ratiometric Physiological Sodium Imaging**T. RUCKH¹, A. MEHTA¹, AND H. CLARK¹¹Northeastern University, Boston, MA**P – Fri - B - 113****Optical Redox Imaging of Metabolic Dysfunction in Polycystic Ovary Syndrome**Z. GHANIAN¹, S. MALEKI¹, M. MASOUDIMOTLAGH¹, Z. BOLANDNAZAR², F. ASSADI PORTER², AND M. RANJIL¹¹University of Wisconsin Milwaukee, Milwaukee, WI, ²University of Wisconsin Madison, Madison, WI**P – Fri - B - 114****Blood Analysis on a Cellphone**H. ZHU¹, I. SENCAN¹, J. WONG¹, S. DIMITROV¹, D. TSENG¹, AND A. OZCAN¹¹University of California Los Angeles, Los Angeles, CA**P – Fri - B - 115****Optical Coherence Tomography Imaged Ischemic Insult During Kidney Transplant**H-W. WANG¹, P. ANDREWS², A. CHEN², AND Y. CHEN¹¹University of Maryland, College Park, MD, ²Georgetown University, Washington, DC**P – Fri - B - 116****Structural Imaging Biomarkers for Early Detection of Alzheimer's Disease**B. P. PRINTY¹, N. VERMA¹, AND M. K. MARKEY^{1,2}¹The University of Texas at Austin, Austin, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

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. STARK¹, G. K. DAS¹, AND I. M. KENNEDY¹¹University of California, Davis, CA**P – Fri - B - 118****PAS/TIRPAS Refractometry: Refractive Index Measurement of Highly Absorbing Materials**B. S. GOLDSCHMIDT¹, S. MEHTA¹, J. MOSLEY¹, C. WALTER¹, P. J. WHITESIDE¹, H. HUNT¹, AND J. VIATOR¹¹University of Missouri-Columbia, Columbia, MO**P – Fri - B - 119****Development of a Novel Imaging Probe for Early Detection of Foreign Body Reactions**Y-T. TSAI¹, J. ZHOU¹, H. WENG¹, E. N. TANG¹, D. BAKER¹, AND L. TANG¹¹University 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. Nawaz¹, X. Mao¹, J. Rufo¹, L. Wang², and T. J. Huang¹¹Pennsylvania State University, State College, PA, ²Ascent Bionano, State College, PA**P – Fri - B - 121****Testing and Calibration of a Novel Portable Multi-channel Near Infrared Spectroscopy System**M. N. Kostic¹, J. Garritano¹, T. Vartanian¹, and W. S. Grundfest, M.D., FACS¹¹University 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. SCHWARTZ¹, S. KERWELL¹, V. SANDOVAL¹, K. M. SHAH¹, K. YASAR¹, AND R. L. MAGIN¹¹University 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. XU¹, P. ZHANG¹, AND J. LIU¹¹Ohio University, Athens, OH**P – Fri - B - 124****An Identification Aystem for Unstained Cells Using Mie Scattering**K. TOMITA¹ AND K. TSUKADA^{1,2}¹Graduate School of Fundamental Science and Technology, Keio University, Yokohama, Japan, ²Department 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. STARK¹, J. LEE², AND J. HWANG¹¹National Institute of Standards and Technology, Boulder, CO, ²Korea 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}¹University of Texas at Arlington, Arlington, TX, ²University 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. PETERSON¹, S. SOLIS¹, B. ZHANG¹, H. HUANG¹, AND J. YE¹¹University 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. METZGER¹, B. A. SCHMITT¹, K. T. CARNAHAN¹, D. E. CARVER¹, D. B. REYNOLDS¹, AND M. P. ANSTADT¹¹Wright State University, Dayton, OH**P – Fri - B - 129****Acoustic Radiation Force Optical Coherence Elastography For Assessing Tissue Biomechanical Properties**R. LI¹, W. QI¹, T. MA², Q. ZHOU², K. SHUNG², AND Z. CHEN¹¹University of California, Irvine, Irvine, CA, ²University of Southern California, Los Angeles, CA**Track: Biomedical Imaging and Optics****Optical Imaging and Microscopy****P – Fri - B - 130****Widefield Imaging of Changes in Glucose Metabolism and Extracellular pH in Head and Neck Cancer**Z. LUO¹, M. LOJA¹, G. FARWELL¹, R. GANDOUR-EDWARDS¹, AND N. NITIN¹¹UC Davis, Davis, CA**P – Fri - B - 131****3D Characterization of the Fibronectin Matrix in the Embryonic Heart Using Whole-Mount Confocal Microscopy**Q. JALLERAT¹ AND A. W. FEINBERG¹¹Carnegie 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. CALHOUN², J. PI², M. FERRARO³, AND P. M. PARDALOS²¹Florida Institute of Technology, Melbourne, FL, ²University of Florida, Gainesville, FL, ³National Research Council, Naples, Italy**P – Fri - B - 133****Characterizing Collagen Fiber Angles in Mouse Aortas Using Second-Harmonic Generation Microscopy**S. R. WATSON¹, M. A. SUTTON¹, AND S. M. LESSNER¹¹University of South Carolina, Columbia, SC**P – Fri - B - 134****Image Correlation Spectroscopy of Multiphoton Images Predicts Mechanics During Decellularization of Cardiac Tissue**N. J. MERNA¹, C. ROBERTSON¹, A. LA¹, AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CAPOSTER
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P – Fri - B - 135**High Speed Dual-wavelength Photoacoustic Microscopy with an Acousto-optic Tunable Filter**J. P. DUMAS¹, A. K. LOYA¹, AND T. BUMA¹¹Union College, Schenectady, NY**P – Fri - B - 136****Dual-wavelength Photoacoustic Microscopy at 532 and 1064 nm with a Cost-effective Microchip Laser**A. K. LOYA¹, J. P. DUMAS¹, AND T. BUMA¹¹Union College, Schenectady, NY**P – Fri - B - 137****A Large Field-of-View Nonlinear Microscope for Biological Imaging**J. J. FIELD¹, M. D. YOUNG², C. EITEL¹, S. TOBET¹, J. A. SQUIER², AND R. A. BARTELS¹¹Colorado State University, Fort Collins, CO, ²Colorado School of Mines, Golden, CO**P – Fri - B - 138****Interferometric Scattering Measurements of Organelle Sizes in Single Cells**R. QIAN¹, D. W. SHIPP¹, AND A. J. BERGER¹¹University of Rochester, Rochester, NY**P – Fri - B - 139****Modular Automated Optical Tweezers**B. REED¹, B. JASSEMNEJAD¹, AND G. XU¹¹University of Central Oklahoma, Edmond, OK**P – Fri - B - 140****Optical Measurement of Muscle Oxygenation Identifies Oxygen Insufficiency in Hemorrhage and Hypoxia**L. S. ARAKAKI¹, W. A. CIESIELSKI¹, D. M. MCMULLAN¹, AND K. A. SCHENKMAN¹¹University of Washington, Seattle, WA**P – Fri - B - 141****In Vivo Imaging of Cerebral Edema with Optical Coherence Tomography**C. Reynolds¹, M. M. Eberle¹, J. I. Szu¹, M. S. Hsu¹, D. K. Binder¹, and B. Park¹¹University of California Riverside, Riverside, CA**P – Fri - B - 142****Development of a Color-Matched Esophagus Phantom featuring Autofluorescence**V. HOU¹, C. YANG¹, L. NELSON¹, AND E. SEIBEL¹¹University 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. VIKALO¹, AND M. K. MARKEY^{1,2}¹The University of Texas at Austin, Austin, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX**P – Fri - B - 144****Development of a Whole-body-mouse Statistical Shape Atlas for Obesity Research**B. SHI¹, J. LIU¹, D. BERRYMAN¹, E. LIST¹, B. KELDER¹, AND J. KOPCHICK¹¹Ohio University, Athens, OH**P – Fri - B - 145****Development and Application of an Ultrafast Laser Microsurgery Platform to Precisely Remove Cilia**A. E. FELDER¹, L. SOETEDJO¹, H. JIN¹, AND J. CHENG¹¹University of Illinois at Chicago, Chicago, IL**P – Fri - B - 146****Optical and Mechanical Characterization of Collagen Hydrogels**E. Y. ELENES¹, M. N. RYLANDER¹, AND C. G. RYLANDER¹¹Virginia Polytechnic Institute 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. LECKBAND¹, N. SHASHIKANTH², AND J. NEWHALL²¹University of Illinois, Champaign, IL, ²University of Illinois, Urbana, IL**P – Fri - B - 148****On the Activation of Integrin $\alpha 5 \beta 1$: "Inside-Out" and "Outside-In" Perspectives**M. MEHRBOD¹ AND M. R. MOFRAD¹¹University of California, Berkeley, Berkeley, CA**P – Fri - B - 149****Matrix Adhesiveness and Force Generation in Microvascular Network Formation**A. GARRETT¹, K. GOOCH², AND A. SARANG-SIEMINSKI¹¹Olin College, Needham, MA, ²Ohio 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. ALIMPERTI¹, H. YOU², T. A. GEORGE³, S. AGARWAL³, AND S. ANDREADIS²¹SUNY at Buffalo, Buffalo, NY, ²SUNY at Buffalo, Amherst, NY, ³Baylor College of Medicine, Houston, TX**P – Fri - B - 151****Micro/Nanoscale Spatial Regulation of Platelet α -Granule Secretion and Platelet Adhesion**Y. SAKURAI^{1,2}, Y. QIU², J. L. FITCH-TEWFIK³, B. AHN^{1,2}, L. DING¹, P. W. SPEARMAN¹, R. FLAUMENHAFT³, AND W. A. LAM^{1,2}¹Children's Healthcare of Atlanta/Emory University School of Medicine, Atlanta, GA,²Georgia Tech and Emory University, Atlanta, GA, ³Beth Israel Deaconess Medical Center, Boston, MA**P – Fri - B - 152****Simulations Relate Cellular Adhesion to Molecular Properties**W. E. THOMAS¹, M. WHITFIELD^{1,2}, AND O. YAKOVENKO¹¹University of Washington, Seattle, WA, ²MIT, Boston, MA**P – Fri - B - 153****Integrated Cell Migration Model incorporating Spatiotemporal Kinetics of Focal Adhesion Assembly and Disassembly**M-C. KIM¹, C. TAN^{1,2}, J. CHAN^{1,3}, L. GRIFFITH^{1,4}, R. KAMM^{1,4}, AND H. ASADA^{1,4}¹Singapore-MIT Alliance for Research & Technology, Singapore, Singapore, ²NationalUniversity of Singapore, Singapore, Singapore, Singapore, ³Duke-NUS - Graduate Medical SchoolSingapore, Singapore, Singapore, ⁴Massachusetts Institute of Technology, Cambridge, MA**P – Fri - B - 154****Efficient Self-contact Induced Membrane Fusion Depends on E-cadherin**G. SUMIDA¹ AND S. YAMADA¹¹University of California, Davis, Davis, CA**P – Fri - B - 155****Comparative Endothelial Cell Response on Micro- & Nanopatterned Titanium & Silicon**P. VANDRANGI¹, S. C. GOTT¹, V. G. RODGERS¹, AND M. P. RAO¹¹University of California-Riverside, Riverside, CA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

P – Fri - B - 156**Cell Adhesion on Micropatterned Surfaces**Y. LIU¹ AND J. HU¹¹Lehigh University, Bethlehem, PA**P – Fri - B - 157****Cells Sense and Respond to Substrate Viscoelasticity**A. KOUROUKLIS¹, R. LERUM¹, AND H. BERMUDEZ¹¹University of Massachusetts, Amherst, MA**P – Fri - B - 158****Stem Cell Enrichment with Selectin Receptors: Mimicking the pH Environment of Trauma**T. M. CAO¹, M. J. MITCHELL¹, J. L. LIESVELD², AND M. R. KING¹¹Cornell University, Ithaca, NY, ²University 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. JUDOKUSUMO¹, R. O'CONNOR², M. MILONE², AND L. C. KAM¹¹Columbia University, New York, NY, ²University of Pennsylvania, Philadelphia, PA**P – Fri - B - 160****Submillisecond Pulses of Fluid Shear Stress Suppress Chemoattractant-Induced Neutrophil Activation**M. J. MITCHELL¹ AND M. R. KING¹¹Cornell University, Ithaca, NY**P – Fri - B - 161****Role of the Nuclear Lamina on Endothelial Glucocorticoid Receptor Translocation and Transcription**A. NAYEBOSADRI¹ AND J. Y. JI²¹Purdue University, West Lafayette, IN, ²Indiana University Purdue University Indianapolis, Indianapolis, IN**P – Fri - B - 162****Shear Stress Attenuates Multiple Apoptosis Pathways by Modulating Endothelial DAPK Expression**K. RENNIER¹ AND J. Y. JI²¹Purdue University, West Lafayette, IN, ²Indiana University - Purdue University Indianapolis, Indianapolis, IN**P – Fri - B - 163****Modulation of Nuclear Shape by Substrate Rigidity**D. LOVETT¹, N. SHEKHAR¹, J. A. NICKERSON², K. J. ROUX³, AND T. P. LELE¹¹University of Florida, Gainesville, FL, ²University of Massachusetts Medical School, Worcester, MA, ³Sanford 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. HONG¹, B. EVAVOLD², AND C. ZHU¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P – Fri - B - 165****Endogenous Nitric Oxide Regulates Calcium Homeostasis in Sheared Vascular Endothelial Cells**C. G. SCHEITLIN¹, C. J. LLOYD¹, M. ZIOLO¹, AND B. R. ALEVRIADOU¹¹The 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. KURUP¹, T. TLSTY², C. YU¹, AND E. BOTVINICK¹¹University of California, Irvine, Irvine, CA, ²University 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. MAVI¹ AND J. Y. JI²¹Indiana University Purdue University Indianapolis, Indianapolis, IN, ²Indiana 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-κB Activation**F. ROUF¹, D. A. RUBENSTEIN¹, AND W. YIN¹¹Oklahoma State University, Stillwater, OK**P – Fri - B - 170****Spatially-segregated Engagement of Multiple Integrin Types Alters Mechanotransduction**S. R. POLIO¹, D. STAMENOVIC¹, AND M. L. SMITH¹¹Boston 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'BRIEN¹, M. ALIABOUZAR¹, W. ZHU¹, K. SARKAR¹, AND L. G. ZHANG¹¹The George Washington University, Washington, DC**P – Fri - B - 172****Non-Affine Fiber Network Model Predicts Long-Range Stress Propagation Through Fibrous Gels**M. AGHVAMI¹, M. S. RUDNICKI², H. A. CIRKA², H. ZARKOOB¹, K. L. BILLIAR², AND E. A. SANDER¹¹University of Iowa, Iowa City, IA, ²WPI, Worcester, MA**P – Fri - B - 173****Combinatorial Effects of Matrix Stiffness and Soluble Epidermal Growth Factor (EGF) on Keratinocyte Behavior**Y. FU¹, P. K. KREEGER¹, AND K. MASTERS¹¹University of Wisconsin-Madison, Madison, WI**P – Fri - B - 174****ECM Stiffness Regulates the TGF β Pathway to Induce Chondrocyte Lineage Selection of hMSCs**J. RYS^{1,2}, C. DUFORT², J. ALLEN², AND T. ALLISTON²¹UC Berkeley - UCSF, Berkeley, CA, ²UCSF, San Francisco, CA**P – Fri - B - 175****The Role of Fibronectin Signaling in Epithelial to Mesenchymal Transition**L. A. GRIGGS¹, D. BERRIE¹, AND C. LEMMON¹¹Virginia Commonwealth University, Richmond, VA**P – Fri - B - 176****Endothelial Dynamics During Sprouting Morphogenesis**D. BAZOU¹, J. SONG¹, AND L. MUNN¹¹MGH, 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. SCHMIDT¹, K. CHEN¹, AND R. T. TRANQUILLO¹¹University 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. PETERSON¹, S. S. NIDADAVOLU¹, AND S. KUDERNATSCH¹

¹University of Connecticut Health Center, Farmington, CT

P – Fri - B - 179

Fractal Dimension of Microtubules: Effects of Stretch Pattern

C. L. OLIVEIRA¹, H. PARAMESWARAN¹, E. BARTOLAK-SUKI¹, AND B. SUKI¹

¹Boston University, Boston, MA

P – Fri - B - 180

Deletion of Primary Cilia Ift88 Gene from Osteocytes Reduces Loading-Induced Bone Formation

A. M. NGUYEN¹ AND C. R. JACOBS¹

¹Columbia University, New York, NY

P – Fri - B - 181

Cell Shape Regulates Epithelial-Myofibroblast Transition

J. W. O'CONNOR¹ AND E. W. GOMEZ¹

¹The 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. GERSHLAK¹ AND L. D. BLACK¹

¹Tufts University, Medford, MA

P – Fri - B - 183

Tensile Forces Drive Collective Cell Migration Through Three-Dimensional Extracellular Matrices

M. J. SIEDLIK¹, N. GJOREVSKI¹, A. PIOTROWSKI¹, V. D. VARNER¹, AND C. M. NELSON^{1,2}

¹Department of Chemical and Biological Engineering, Princeton University, Princeton, NJ, ²Department 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. RODRIGUEZ¹, M. REGNIER¹, AND N. J. SNIADOCKI¹

¹University of Washington, Seattle, WA

P – Fri - B - 185

ColVI and Dcn's Control Over Cytoskeletal Reorganization To Load in Differentiating hMSCs

J. D. TWOMEY¹ AND A. H. HSIEH^{1,2}

¹University of Maryland, College Park, MD, ²University of Maryland, Baltimore, MD

P – Fri - B - 186

Analysis of Cellular Rigidity Sensing Using a Cell-on-a-Chip Assay

S. WONG¹, W-H. GUO¹, AND Y-L. WANG¹

¹Carnegie Mellon University, Pittsburgh, PA

P – Fri - B - 187

A Quantitative Analysis of Superoxide Dismutase and Catalase Augmented Oxidative Stress in Hyperglycemic Environment

J. CHEN¹, H. PATEL¹, K. C. DAS², AND M. KAVDIA¹

¹Wayne State University, Detroit, MI, ²Texas 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. JOAQUIN¹, M. GRIGOLA¹, A. TIPPUR², C. DYCK¹, A. M. NARDULLI¹, Y. S. ZIEGLER¹, S. CLARE³, AND K. HSIA¹

¹University of Illinois Urbana-Champaign, Urbana, IL, ²Georgia Institute of Technology, Atlanta, GA, ³Indiana 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. TOKARZ¹, S. KUDERNATSCH¹, S. S. NIDADAVOLU¹, AND D. R. PETERSON¹

¹University 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. LOPEZ¹, M. NAVATI¹, P. NACHARAJU¹, M. SILVA¹, J. FRIEDMAN¹, AND D. SPRAY¹

¹Albert Einstein College of Medicine, Bronx, NY

P – Fri - B - 191

Thermo-sensitive Fluorescent Theranostic Nanoparticles For Cancer Therapy

P. JADEJA^{1,2}, Z. XIE³, J. U. MENON^{1,2}, J. YANG³, AND K. T. NGUYEN^{1,2}

¹University of Texas at Arlington, Arlington, TX, ²UT Southwestern Medical Center, Dallas, TX, ³Pennsylvania State University, University Park, PA

P – Fri - B - 192

Development of Microneedles for Treatment of Oral Cancers

Y. MA¹, Z. LUO², W. LIU³, N. NITIN², AND H. S. GILL¹

¹Texas Tech University, Lubbock, TX, ²University of California at Davis, Davis, CA, ³Davis 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. LEE¹, L. HUBBARD¹, S. HERN¹, M. GRATZL¹, AND N. F. STEINMETZ¹

¹Case Western Reserve University, Cleveland, OH

P – Fri - B - 194

Attachment and Uptake of Pendant-Chain Delivery System for Cancer Under Physiological Flow

K. SHAH¹, D. CROWDER¹, R. CALDERON¹, AND Y. YUN¹

¹The 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. FLOYD¹, A. GALPERIN¹, R. RAMAKRISHNA¹, R. ROSTOMILY¹, AND B. RATNER¹

¹University of Washington, Seattle, WA

P – Fri - B - 196

Self-assembled Micelles of RAFT-synthesized Polymers: *In Vitro* Characterization of Hydrophobic Drug Delivery

M. P. BARANELLO¹, E. M. BUX¹, AND D. BENOIT¹

¹University of Rochester, Rochester, NY

P – Fri - B - 197

Folic Acid-Conjugated Lipid-Polymer Hybrid Nanoparticles for Targeted Delivery of Chemotherapy

E. PALMER¹ AND T. PORTER¹

¹Boston University, Boston, MA

P – Fri - B - 198

Preparation and Characterization of PCL-PEG-PCL Nanoparticles for Paclitaxel Delivery

L. ZHANG¹, H. SUN¹, C. SONG¹, AND D. KONG¹

¹Institute 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-DELGADO¹ AND H. A. VON RECUM¹

¹Case Western Reserve University, Cleveland, OH

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

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}¹Harvard University, Cambridge, MA, ²Chungbuk National University, Cheongju, Korea, Republic of, ³The 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. SCHAAL¹, X. LI¹, J. BHATTACHARYYA¹, M. ZALUTSKY¹, A. CHILKOTI¹, AND W. LIU¹¹Duke 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. HOMAYONI¹, M. HOSSU², X. ZOU², K. JIANG², AND W. CHEN²¹Joint Biomedical Engineering Program, UT Arlington, UT Southwestern Medical Center, Arlington, Dallas, TX, ²UT Arlington, Physics, Arlington, TX**Track: Drug Delivery****Nucleic Acid Delivery****P – Fri - B - 203****Insight into the Cellular Uptake and Endosomal Release of Lipid Nanoparticle Based Delivery of siRNA/miRNA Using Novel Probes**X. WANG¹, B. YU¹, C. ZHOU¹, Z. YANG¹, R. J. LEE¹, AND J. L. LEE¹¹The Ohio State University, Columbus, OH**P – Fri - B - 204****Development of a Novel Multifunctional Nanocarrier for siRNA Delivery**M. GUJRATI¹, A. MALAMAS¹, T. SHIN¹, AND Z-R. LU¹¹Case Western Reserve University, Cleveland, OH**P – Fri - B - 205****Reducible Star Polymers for Gene Delivery**J-K. Y. TAN¹, H. WEI¹, J. G. SCHELLINGER¹, AND S. H. PUN¹¹University of Washington, Seattle, WA**P – Fri - B - 206****Identification of Adenovirus-Binding Peptides for Use in Self-Assembling Polymer Shields**C. E. WANG¹, A. LIEBER¹, D. SHAYAKHMETOV¹, AND S. H. PUN¹¹University of Washington, Seattle, WA**P – Fri - B - 207****Ballon Perfusion Novel Bi-layer Nanoparticles to Inhibition Restenosis in Animal Models**J. YANG¹, H. XIE², Z. YANG¹, Y. CHEN¹, C. WANG¹, Y. ZENG², Q. FANG², X. LENG¹, D. KONG¹, H. SUN¹, AND C. SONG¹¹Institute of Biomedical Engineering, Chinese Academy of Medical Science & PUMC, Tianjin, China, People's Republic of, ²Department 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. LOOMIS¹, S. PAI¹, AND R. BELLAMKONDA¹¹Georgia 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. ZHU¹, C. SONG¹, D. KONG¹, AND X. LENG¹¹Institute 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. SHOPSOWITZ¹, J. DENG¹, S. W. MORTON¹, AND P. T. HAMMOND¹¹Koch 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. FIGUEROA¹, A. Y. LIN¹, S. J. YAN¹, AND R. DREZEK¹¹Rice University, Houston, TX**P – Fri - B - 212****Influence of Polyplex Morphology on Cellular Uptake, Intracellular Trafficking, and Transgene Expression**J. SHI¹, J. L. CHOI¹, B. CHOU¹, R. N. JOHNSON¹, J. G. SCHELLINGER¹, AND S. H. PUN¹¹University 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. KIM¹, S-R. RYOO¹, AND D-H. MIN¹¹Seoul 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. BEAVERS¹, J. W. MARES¹, B. C. EVANS¹, S. M. WEISS¹, AND C. L. DUVALL¹¹Vanderbilt 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. LAWRENCE¹, R. A. SCOTT¹, AND A. PANITCH¹¹Purdue 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}¹University of Texas at Arlington, Arlington, TX, ²UT 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. STEICHEN¹, E. J. FISCHER¹, AND N. A. PEPPAS¹¹The University of Texas at Austin, Austin, TX**P – Fri - B - 218****Injectable Nanocomposite Hydrogel System for Skin Cancer Treatment**T. N. HILL¹, P. TAMBE¹, J. MENON¹, J. YANG¹, AND K. NGUYEN¹¹University of Texas at Arlington, Arlington, TX**P – Fri - B - 219****Vascular Smooth Muscle Responses Under Influence of Stretch and Biological Factors**T. N. HILL¹, P. TAMBE¹, P. JADEJA¹, T. KADAPURE¹, J-C. CHIAO¹, C-J. CHUONG¹, AND K. NGUYEN¹¹University of Texas at Arlington, Arlington, TX**P – Fri - B - 220****Photothermally Controlled Gene/Drug Delivery Using a Functionalized Graphene Oxide**H. KIM¹ AND W. J. KIM¹¹POSTECH, Pohang, Korea, Republic of

P – Fri - B - 221**Long-Wavelength Light Responsive Mesoporous Silica Nanoparticle Driven by Activated Photosensitizer**J. LEE¹, K. SINGHA¹, AND W. KIM¹¹POSTECH, Pohang, Korea, Republic of**P – Fri - B - 222****Structural Attributes Affecting Peptide Entrapment in PEO Brush Layers**X. WU¹, M. P. RYDER¹, M. C. LAMPI¹, K. F. SCHILKE¹, AND J. MCGUIRE¹¹Oregon 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. MOSLEY¹, S. K. CHENG¹, D. S. QUINLAN¹, C. T. LIU¹, P. M. NAFISI¹, D. DAS¹, G. FANG¹, AND D. T. KAMEI¹¹UCLA, Los Angeles, CA**P – Fri - B - 224****Controlled Release of Antineoplastic Agents to Brain Tumors Using Conducting Polymer Microcavities**P. FATTAHI^{1,2}, A. BORHAN¹, AND M. R. ABIDIAN^{1,2}¹Chemical Engineering, University Park, PA, ²Bioengineering, University Park, PA**Track: Neural Engineering****Deep Brain Stimulation****P – Fri - B - 225****Charge Steering DBS Accommodates Non-optimal Targeting**A. WILLSIE¹ AND A. D. DORVAL¹¹University of Utah, Salt Lake City, UT**P – Fri - B - 226****AC Stimulated Schwann Cells Increase NGF Secretion and Promote Greater Neurite Outgrowth**L. ZHANG¹, A. N. KOPPEL¹, AND D. M. THOMPSON¹¹RPI, 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. ANDERSON¹ AND A. D. DORVAL, II¹¹University 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. CAICEDO¹, G. PIGINO¹, AND S. BRADY¹¹University 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. DAMLE¹, P. NGUYEN¹, S. REISS¹, G. A. SILVA^{1,2}, AND G. CAUWENBERGHS^{1,2}¹UCSD, La Jolla, CA, ²Institute 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. BLASIAK¹, D. KILINC¹, AND G. U. LEE¹¹University College Dublin, Dublin, Ireland**P – Fri - B - 231****Neuronal Distribution Around a Biodissolvable Delivery Vehicle for the Insertion of an Ultra-compliant Neural Probe**Z. GUGEL¹, T. D. KOZAI¹, P. J. GILGUNN², R. KHILWANI², O. B. OZDOGANLAR², G. K. FEDDER², D. J. WEBER¹, X. LI¹, AND X. T. CU¹¹University of Pittsburgh, Pittsburgh, PA, ²Carnegie Mellon University, Pittsburgh, PA**P – Fri - B - 232****Directed Neuronal Growth Using Magnetic Gradients and Nanoparticles**A. KUNZE¹, P. TSENG¹, AND D. DICARLO¹¹UCLA, Los Angeles, CA**P – Fri - B - 233****In Vitro Modeling for Central Nervous System Migratory Disorders**A. R. SHORT¹, C. CZEISLER¹, T. NELSON¹, J. LANNUTTI¹, J. WINTER¹, AND J. OTERO¹¹The 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. AHN¹, J-S. PARK¹, S. SONG¹, AND J. H. SHIN¹¹KAIST, 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. PAGE¹, M. D. KELLER², AND G. A. CLARK¹¹University of Utah, Salt Lake City, UT, ²Lockheed 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. KHRAICHE¹, A. AKININ¹, G. CAUWENBERGHS¹, AND G. A. SILVA¹¹UCSD, La Jolla, CA**P – Fri - B - 237****Detection of Epileptic Seizures from ECoGs: Time-Frequency Analysis and Artificial Neural Networks**J. PACE¹, R. BOSSEMEYER¹, P. FISHBACK², K. ELISEVICH³, AND S. RHODES¹¹Grand Valley State University, Grand Rapids, MI, ²Grand Valley State University, Allendale, MI, ³Spectrum Health Medical Group, Grand Rapids, MI**P – Fri - B - 238****Evaluating Supervision Methods for Lower-Limb Prosthesis Adaptation**J. SPANIAS¹, L. HARGROVE¹, AND E. PERREAULT¹¹Northwestern University, Chicago, IL**P – Fri - B - 239****Side-by-side Experiments and Simulations of Neuronal Circuitry and Responses to Stimuli**K. M. FITZGERALD¹, T. SHINBROT¹, AND B. L. FIRESTEIN¹¹Rutgers 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. JUNG¹ AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 3:45PM - 4:45PM

P – Fri - B - 241**Mechanisms of Force Enhancement During Mixed Voluntary and Stimulation Induced Muscle Contractions**P. E. CRAGO¹, N. M. COLE¹, AND N. S. MAKOWSKI¹¹Case 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. PARK¹, T. SOUSA¹, M. STANTON², J. RANKENBERG¹, K. WELSHHANS¹, C. LAMBERT², W. MCGIMPSEY¹, AND C. MALCUIT¹¹Kent State University, Kent, OH, ²Worcester Polytechnic Institute, Worcester, MA**P – Fri - B - 243****Decoding Neural Spike-trains to Answer Yes-No Questions :A Novel Geometric Approach**A. IYER¹ AND N. GRZYWACZ¹¹University of Southern California, Los Angeles, CA**P – Fri - B - 244****Investigating the Role of Chronic Stimulation in Dissociated Cortical Neuron Development**A. NAPOLI¹ AND I. OBEID¹¹Temple 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. GAD¹, J. CHO¹, V. EDGERTON¹, R. R. ROY¹, H. ZHONG¹, AND Y. GERASIMENKO^{1,3}¹UCLA, Los Angeles, CA, ²UCLA, Los Angeles, ³Pavlov Institute of Physiology, St. Petersburg, Russian Federation**P – Fri - B - 246****Electrical Stimulation Induces Enhanced Myelination in a Novel Microfluidic Platform**H. LEE¹, N. THAKOR^{1,2}, AND I. YANG^{1,2}¹National University of Singapore, Singapore, Singapore, ²Johns 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. DASARI¹, G. SHOU¹, AND L. DING^{1,2}¹School of Electrical and Computer Engineering, University of Oklahoma, Norman, OK, ²Center 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. BRILL¹, S. NAUFEL², C. ETHIER², L. MILLER², AND D. TYLER¹¹Case Western Reserve University, Cleveland, OH, ²Northwestern University, Chicago, IL**P – Fri - B - 249****Electromagnetic Neural Stimulation for a Biohybrid Water Quality System**A. CAMINO¹, E. BASHAM², D. W. PARENT², AND D. TAUCK¹¹Santa Clara University, Santa Clara, CA, ²San 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. GEE¹, M. N. ECONOMO¹, M. ROTHERMEL¹, S. C. MORRIS¹, M. WACHOWIAK¹, M. R. CAPECCHI¹, K. S. WILCOX¹, J. A. WHITE¹, AND P. TVRDIK¹¹University of Utah, Salt Lake City, UT**Track: Tissue Engineering****Cardiovascular Tissue Engineering****P – Fri - B - 251****Injectable Matrix Embedded Endothelial Cells (MEEC) for Vascular Therapy**A. FREIMAN^{1,2}, M. ST. PIERRE¹, E. EDELMAN^{3,4}, AND N. ARTZI¹¹MIT, HST, Cambridge, MA, ²Ort Braude College, Karmiel, Israel, ³MIT, Cambridge, MA, ⁴Harvard 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. HOCKADAY¹, B. DUAN¹, E. KAPETANOVIC¹, K. H. KANG¹, P. ARMSTRONG¹, L. LEE¹, AND J. T. BUTCHER¹¹Cornell 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-MUKHERJEE¹, J. MACADANGDANG², G. KOSTECKI¹, N. TROSPER², D. YUE¹, D-H. KIM², AND L. TUNG¹¹Johns Hopkins University, Baltimore, MD, ²University of Washington, Seattle, WA**P – Fri - B - 254****Impact of Pericytes on Vessel Formation and Anastomosis in Prevascularized Tissues**L. TIAN¹, A. ALEDIA¹, C. HUGHES¹, AND S. GEORGE¹¹University 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. BENAVIDES¹, J. QUINN¹, J. P. CONNELL¹, R. RUANO^{2,3}, AND J. G. JACOT^{1,3}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas Children's Hospital, Houston, TX**P – Fri - B - 256****Fatigue Properties of Electrospun Tri-Layered Vascular Graft Scaffolds**C. H. LEE¹, B. N. BLACKSTONE¹, M. T. NELSON¹, J. J. LANNUTTI¹, AND H. M. POWELL¹¹The Ohio State University, Columbus, OHPOSTER
SESSION
FriB

P – Fri - B - 257**Induction of Mesenchymal Stem Cell Antithrombogenicity with Laminar Flow**L. A. MEIER¹, M. H. CHEN¹, AND R. T. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**P – Fri - B - 258****Mechanical Characterization of Cellularized and Decellularized Tissue Constructs**B. ZHOU¹, M. G. GABR¹, S. KLATT², W. TVAL², T. SHAZLY¹, S. M. LESSNER¹, AND W. S. ARGRAVES²¹University of South Carolina, Columbia, SC, ²Medical 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 WALLE¹ AND P. S. MCFETRIDGE¹¹University of Florida, Gainesville, FL**P – Fri - B - 260****Development of a Small Diameter Vascular Graft Using Adipose-Derived Stem Cells**J. H. ARRIZBALAGA¹ AND M. U. NOLLERT¹¹University of Oklahoma, Norman, OK**P – Fri - B - 261****Effect of Glycidyl Methacrylate Conjugation and Crosslinking on Chitosan Material Properties**A. M. JACOB¹ AND H. W. MATTHEW¹¹Wayne State University, Detroit, MI**P – Fri - B - 262****The Effect of Cell Shape on Foam Cell Formation**T. D. SMITH¹, T. WANG¹, J. SUHALIM¹, A. ALFONSO GARCIA¹, E. O. POTMA¹, AND W. F. LIU¹¹University of California, Irvine, Irvine, CA**P – Fri - B - 263****Towards Large-scale Micro-vessel Networks Via Microfluidic Tissue Engineering**M. XU¹, Y. XIAO¹, G. ZHENG², R. FAN¹, AND J. ZHOU¹¹Yale University, New Haven, CT, ²Fudan 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. DORSEY¹ AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY**P – Fri - B - 265****Evaluating Pericyte-like Behaviors of Stem Cells on Excised Microvessels**E. L. NYBERG¹, S. SEAMAN¹, AND S. M. PEIRCE¹¹University of Virginia, Charlottesville, VA**P – Fri - B - 266****Collagen Immobilized Nanowire Surfaces for Cardiovascular Applications**V. LESZCZAK¹ AND K. C. POPAT¹¹Colorado State University, Fort Collins, CO**P – Fri - B - 267****Coculture with Cardiac Cells Demonstrated Cardiogenic Potential in Amniotic Fluid-Derived Stem Cells**Y. GAO¹, R. RUANO^{2,3}, AND J. G. JACOT^{1,2}¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX, ³Baylor College of Medicine, Houston, TX**P – Fri - B - 268****Utilizing IPS Derived Endothelial Cells on Bioprosthetic Venous Valves**C. M. JONES¹, K. L. MIRZA¹, A. M. DILLIER¹, D. PAVCNIK¹, AND M. T. HINDS¹¹Oregon 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. WENDEL¹, L. YE¹, P. ZHANG¹, R. T. TRANQUILLO¹, AND J. ZHANG¹¹University of Minnesota, Minneapolis, MN**P – Fri - B - 270****Cardiac Tissue Constructs with Perfusable Hierarchical Vasculature**M. ROBERTS¹, C. MURRY¹, AND Y. ZHENG¹¹University of Washington, Seattle, WA**P – Fri - B - 271****Antigen Removal for the Production of Immunoacceptable Xenogeneic Scaffolds for Myocardial Patch Tissue Engineering**A. PAPALAMPROU¹ AND L. GRIFFITHS¹¹University 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. KRAWIEC¹, J. A. PHILLIPPI¹, B. J. PHILIPS¹, C. M. ST. CROIX¹, S. C. WATKINS¹, T. G. GLEASON¹, J. P. RUBIN¹, AND D. A. VORP¹¹University of Pittsburgh, Pittsburgh, PA**P – Fri - B - 273****In Vitro Self-assembly of Tissue Constructs Containing Capillary-like Vascular Networks**C. A. CZAJKA¹ AND C. J. DRAKE¹¹Medical 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. KHADEMOSSEINI^{1,2}¹Harvard Medical School, Cambridge, MA, ²Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA**P – Fri - B - 275****Estimating Effective Conductivities Of Engineered Cardiac Monolayers**T. GOKHALE¹ AND C. HENRIQUEZ¹¹Duke 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. CHAVEZ¹, T. VO¹, O. D. KLEIN¹, AND T. A. DESAI¹¹University 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. SHUBIN¹, T. FELONG¹, C. E. OVITT¹, AND D. S. BENOIT¹¹University of Rochester, Rochester, NY

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-ASLI¹, S. V. MURPHY², S. SAHA³, B. POURDEYHIMI¹, A. ATALA², AND E. G. LOBOA^{1,3}

¹North Carolina State University, Raleigh, NC, ²Wake Forest Institute of Regenerative Medicine, Winston-Salem, NC, ³North 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. INSKEEP¹ AND K. BURG¹

¹Clemson University, Clemson, SC

P – Fri - B - 280

Printable Skin Graft in Athymic Nude Mouse Model

M. G. YANEZ¹, J. RINCON¹, A. DONES¹, R. GONZALES¹, AND T. BOLAND¹

¹The University of Texas at El Paso, EL Paso, TX

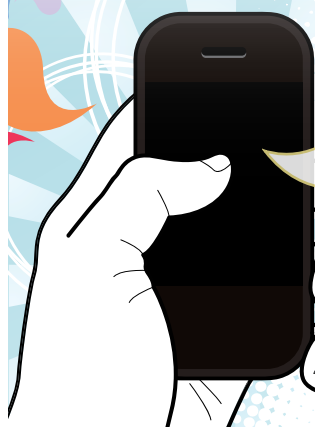
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POSTER SESSION
FriB



Friday, September 27, 2013

1:30PM – 2:30PM

PLATFORM SESSION – FRI – 2

Track: Tissue Engineering

OP - Fri - 2 - I - 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. LI¹, B. LIAU¹, R. KIRKTON¹, AND N. BURSAC¹¹Duke University, Durham, NC

1:45PM

Asynchronous Dual Electrical and Mechanical Stimulation Improves the Calcium Handling Dynamics in Engineered Cardiac Tissue

K. Y. MORGAN¹ AND L. D. BLACK¹¹Tufts University, Medford, MA

2:00PM

Plug & Play Bioreactor with Electrical Stimulation and Perfusion for Cardiac Tissue Engineering

N. TANDON^{1,2}, E. CIMETTA¹, E. DE BERNARDINIS^{1,3}, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY, ²Cooper Union, New York, NY, ³Politecnico di Milano, Milano, Italy

2:15PM

Dynamic Contrast-Enhanced MRI Measures Increasing Vascularity Over Time in Implanted Tissue Matrix

P. ANTKOWIAK¹, A. BRUCE¹, N. PALACIO¹, H. ANSORGE², A. BARERE², S. PEIRCE-COTTLER¹, AND F. EPSTEIN¹¹University of Virginia, Charlottesville, VA, ²Lifecell 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 LITH¹, E. GREGORY¹, M. KIBBE¹, AND G. AMEER¹¹Northwestern University, Evanston, IL

1:45PM

Designing Safe Long-Circulating Tracers for the New Magnetic Particle Imaging (MPI) Modality

A. P. KHANDHAR¹, H. ARAMI¹, R. M. FERGUSON¹, AND K. M. KRISHNAN¹¹University of Washington, Seattle, WA

2:00PM

Biodegradable Magnesium Vascular Stent with Low Inflammatory Response and Reduced In-Stent Restenosis

L. MAO¹, M. KWAK², L. SHEN³, R. FAN², AND G. YUAN¹¹Shanghai Jiaotong University, Shanghai, China, People's Republic of, ²Yale University, New Haven, CT, ³Fudan 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. POK¹, O. BENAVIDES², AND J. G. JACOT^{2,3}¹Rice University, Houston, TX, ²Rice University, Houston, TX, ³Texas 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 I Diabetes

C. NYITRAY¹, G. FALEO¹, Q. TANG¹, AND T. DESAI¹¹University of California, San Francisco, San Francisco, CA

1:45PM

Enhancing Immunomodulatory Secretion of Mesenchymal Stem Cells by Pre-Conditioning through Environmental Conditions

J. A. ZIMMERMANN¹ AND T. C. MCDEVITT^{1,2}¹Georgia Institute of Technology & Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA

2:00PM

Innovative Strategy for the Recruitment of Progenitor Cells Using Tissue-Engineered 3D-Endothelial Cells

L. INDOLFI¹, C. IACONETTI², C. INDOLFI², AND E. R. EDELMAN¹¹MIT, Cambridge, MA, ²Magna Graecia University, Catanzaro, Italy

2:15PM

Harnessing Native Signaling Pathways to Improve the Function and Survival of β -cells for a Bioartificial PancreasS. DUNCANSON¹ AND A. SAMBANIS¹¹Georgia 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}¹University of Pittsburgh, Pittsburgh, PA, ²Center for Vascular Remodeling & Regeneration, Pittsburgh, PA, ³McGowan Institute of Regenerative Medicine, Pittsburgh, PA

1:45PM

Capturing the Local Mechanical Environment and Single Fiber Response in PCL Scaffolds

D. GUTSCHICK¹, H. PARANJPE¹, A. M. DE JESUS², E. SANDER³, H. M. POWELL¹, AND P. M. ANDERSON¹¹The Ohio State University, Columbus, OH, ²The University of Iowa, Columbus, OH, ³The 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. MCNAMARA¹, T. J. LO¹, AND D. L. KAPLAN¹¹Tufts University, Medford, MA

2:15PM**Using Microcantilevers to Study Interactions Between Tissue Mechanics and Cell Function During Remodeling of 3D Microtissues**R. ZHAO¹, T. BOUDOU², W-G. WANG¹, C. S. CHEN², AND D. H. REICH¹¹Johns Hopkins University, Baltimore, MD, ²University 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. MORAN¹, P. M. BAPTISTA², J. L. SPARKS³, AND S. SOKER²¹Wake Forest University, Winston-Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, ³Miami University, Oxford, OH**1:45PM****Progenitor Cell Recruitment via SDF-1 Coacervate-absorbed in Vascular Grafts**K-W. LEE¹, N. JOHNSON¹, J. GAO¹, AND Y. WANG^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**2:00PM****A Cell-friendly Process to Fabricate Hydrogels with Microchannel-like Porosity for Tissue Engineering**L-H. HAN¹, J. HAMMER², X. TONG¹, AND F. YANG¹¹Stanford University, Stanford, CA, ²Arizona State University, Phoenix, AZ**2:15PM****Human Integration-free iPSC-derived Neural Crest Stem Cells for Peripheral Nerve Regeneration**C-W. HUANG¹, W-C. HUANG^{1,2}, X. QIU^{1,3}, F. YUAN¹, J. WANG¹, R. CHEN¹, D. ISRANI¹, S. PATEL¹, M-M. POO¹, AND S. LI^{1,2}¹UC Berkeley, Berkeley, CA, ²UC Berkeley-UCSF, Berkeley, CA, ³Huazhong 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. XU¹ AND X. JIA^{1,2}¹Department of Materials Science & Engineering, University of Delaware, Newark, DE, ²Biomedical Engineering Program, University of Delaware, Newark, DE**1:45PM****Interfacial Mechanics in an Electrospun Fiber Mat-Hydrogel Composite Brain Cancer Model**M. CALHOUN¹, A. SHORT¹, T. NELSON¹, A. SARKAR², J. LANNUTTI¹, AND J. WINTER¹¹The Ohio State University, Columbus, OH, ²Geisinger Medical Center, Danville, PA**2:00PM****"Prevascularized Tumors": Tissue Engineering a Multicellular Model of Solid Human Tumor Spheroids Perfused By Microvessels**S. M. EHSAN¹, L. F. ALONZO¹, M. L. WATERMAN¹, C. C. HUGHES¹, AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA**2:15PM****Tissue-Engineered Models of the Tumor Microenvironment to Study Inflammation, Hypoxia, and Angiogenesis**P. DELNERO¹, B. KWEE¹, S. VERBRIDGE², M. LANE³, B. HEMPSTEAD³, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY, ²Virginia Tech-Wake Forest, Blacksburg, VA, ³Weill 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. CHANDRASEKARAN¹, M. J. MCGUIRE¹, AND M. R. KING¹¹Cornell 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. PATIBANDLA¹, R. ESTRADA¹, M. KANNAN¹, C. BHIKHA¹, Y. LIAN¹, AND P. SETHU¹¹University of Louisville, Louisville, KY**2:00PM****Caged Fluorescein Linked Albumin Reveals Regional Heterogeneity During Thrombus Formation in Mice**J. D. WELSH¹, T. J. STALKER¹, R. VORONOV¹, R. MUTHARD¹, S. L. DIAMOND¹, AND L. F. BRASS¹¹University of Pennsylvania, Philadelphia, PA**2:15PM****The Contributory Role of Impaired Neutrophil Fluid Shear Mechanotransduction in Hypercholesterolemia-Related Dysregulation of Microvascular Blood Flow**X. ZHANG¹, R. CHENG¹, D. ROWE², P. SETHU³, G. YU¹, A. DAUGHERTY¹, AND H. Y. SHIN¹¹University of Kentucky, Lexington, KY, ²Paul L. Dunbar High School, Lexington, KY, ³University of Louisville, Louisville, KYtrack sponsored by  Edwards**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 LIZANA¹, J. LOU², AND C. ZHU³¹Georgia Institute of Technology / Emory University, Atlanta, GA, ²Chinese Academy of Science, Beijing, China, People's Republic of, ³Georgia Institute of Technology, Atlanta, GA**1:45PM****Dynamics of Cell-ECM Interactions Under Acute Shear Stress By Modulation of Integrin Affinity**A. FUHRMANN¹ AND A. J. ENGLER¹¹University of California San Diego, La Jolla, CA

2:00PM**The Shear Rate Dependence of Nitric Oxide Inhibition of Platelet Aggregation**J. L. SYLMAN¹, S. M. LANTVIT², M. M. REYNOLDS², AND K. B. NEEVES^{1,3}¹Colorado School of Mines, Golden, CO, ²Colorado State University, Fort Collins, CO,³University of Colorado, Denver, Denver, CO**2:15PM****Myoferlin Depletion Increases Adhesion and Alters Adhesion Proteins in Breast Cancer Cells**B. N. BLACKSTONE¹, R. LI¹, M. BECHEL¹, J. J. WILLARD¹, W. E. ACKERMAN¹, S. N. GHADIALI¹, H. M. POWELL¹, AND D. A. KNISS¹¹The 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 PEPPO¹, I. MARCOS CAMPOS², D. KAHLER¹, D. ALSALMAN¹, L. SHANG¹, G. VUNJAK NOVAKOVIC², AND D. MAROLT¹¹The New York Stem Cell Foundation, New York, NY, ²Columbia University, New York, NY**1:45PM****A Defined, Scalable 3D Culture System for Producing Human Pluripotent Stem Cells and Their Progenies**Y. LEI¹ AND D. SCHAFFER¹¹University 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. WANG¹, B-K. CHOU², S. DOWEY², S. GERECHT¹, AND L. CHENG²¹The Johns Hopkins University, Baltimore, MD, ²The 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. FAN¹, M. HSIUNG¹, C. CHENG¹, AND E. S. TZANAKAKIS¹¹SUNY-Buffalo, Buffalo, NY**Track: Device Technologies and Biomedical Robotics****OP - Fri - 2 - 10 - Room 602****Implantable Devices****Chairs:** Keefe Manning, Sarah Vigmstad**1:30PM****Computational Simulations of IVC Filter Implantation in Patient-Specific Geometries**K. I. AYCOCK¹, E. M. FOX¹, S. M. SASTRY², J. KIM¹, S. M. SHONTZ³, F. C. LYNCH⁴, B. A. CRAVEN¹, AND K. B. MANNING^{1,4}¹The Pennsylvania State University, University Park, PA, ²University of Utah, Salt Lake City, UT, ³Mississippi State University, Starkville, MS, ⁴Penn State Hershey Medical Center, Hershey, PA**1:45PM****An Implantable Vascular Coupling Device for End-to-End Anastomosis**H. LI¹, C. GEHRKE¹, H. SANT¹, B. GALE¹, AND J. AGARWAL¹¹University of Utah, Salt Lake City, UT**2:00PM****Micromachined Multielectrode Microprobes for Sensing of Glutamate and Dopamine *In Vivo***T. T-C. TSENG¹, V. TOLOSA², K. WASSUM³, N. MAIDMENT³, AND H. MONBOUQUETTE³¹National Taiwan University of Science and Technology, Taipei, Taiwan, ²Lawrence Livermore National Laboratory, Livermore, CA, ³UCLA, Los Angeles, CA**2:15PM****Early Detection of Biofilm-Related Infections by Impedance Monitoring in Central Venous Port Prototypes.**J. PAREDES^{1,2}, A. AGUINAGA³, J. L. DEL POZO³, AND S. ARANA^{1,2}¹CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain, ²CIC microGUNE, Arrasate-Mondragon, Spain, ³Clinica University of Navarra, Pamplona, Spaintrack sponsored by  Medtronic**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. WANG¹, T. G. DIACOVO², J. CHEN², J. B. FREUND³, AND M. R. KING¹¹Cornell University, Ithaca, NY, ²Columbia University, New York, NY, ³University of Illinois at Urbana-Champaign, Urbana, IL**2:00PM****Motifs for Encoding/Decoding of Neuro-Sensory Information (Invited)**J. KUTZ¹¹University 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. CRANNELL¹, B. GRANT¹, A. ORDONEZ², E. PICKETT², E. ALEMAYEHU³, G. ALEMU⁴, S. JACQUES², R. RICHARDS-KORTUM¹, AND A. SATERBAK¹¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX, ³Jimma University, Jimma, Ethiopia, ⁴Tegbare-id Polytechnic College, Addis Ababa, Ethiopia**1:45PM****A BME Outreach Experience: Development of an Inquiry-based Optics Module for Middle School Students**K. WANG¹, R. DORAN², S. SHAKED³, S. ARCHER¹, C. FISCHBACH¹, AND D. GOURDON¹¹Cornell University, Ithaca, NY, ²Newfield Central School, Newfield, NY, ³Ithaca College, Ithaca, NY**2:00PM****Virtual Engineering Internships: Increasing the Participation of Women and Minorities through Epistemic Games**D. E. TETRICK¹, G. ARASTOPOUR¹, A. RUIS¹, D. W. SHAFFER¹, AND N. C. CHESLER¹¹University of Wisconsin-Madison, Madison, WI

2:15PM**Teaching Pre-College Students to Solve 'Wicked' Design Problems**C. MORAES¹, S. BLAIN-MORAES¹, S. MORELL-TOMASSONI¹, AND R. GORBET²¹University of Michigan, Ann Arbor, MI, ²University 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. PATRICK³, M. CDEBACA⁴, C. RILEY III⁴, D. WILSON⁴, AND A-M. BROOME^{1,2}¹Radiology and Radiological Science, Medical University of South Carolina, Charleston, SC, ²Center for Biomedical Imaging, Medical University of South Carolina, Charleston, SC, ³Department of Drug Discovery and Biomedical Sciences, Medical University of South Carolina, Charleston, SC, ⁴Triad Isotopes Inc., Charleston, SC**1:45PM****Collecting Depth of Interaction Information Using Phosphor Coated Crystals for High Resolution Positron Emission Tomography**V. VISWANATH¹, E. RONCALI¹, AND S. R. CHERRY¹¹University of California, Davis, Davis, CA**2:00PM****Measurement of Regional Pulmonary Perfusion from Early 18F-FDG Kinetics Imaged with PET**T. J. WELLMAN¹, T. WINKLER¹, N. DE PROST¹, AND M. VIDAL MELO¹¹Massachusetts General Hospital, Boston, MA**2:15PM****Improving Breast Cancer Lesion Detectability in 18F-FDG PET Imaging**K. WANGERIN^{1,2}, M. MUZI², B. ELSTON², R. HARRISON², AND P. KINAHAN^{1,2}¹Bioengineering, University of Washington, Seattle, WA, ²Radiology, 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. PEKKANEN¹, D. INGLEFIELD¹, M. R. DEWITT¹, T. E. LONG¹, AND M. N. RYLANDER¹¹Virginia Tech, Blacksburg, VA**1:45PM****Magnetic Intracellular Manipulation with Customizable Bioactive Superparamagnetic Nanoparticles**J. KONG¹, C. MURRAY¹, P. TSENG¹, AND D. DI CARLO¹¹University of California Los Angeles, Los Angeles, CA**2:00PM****Photopatterned SU-8 Derived Carbon Nanofibers for Neural Engineering Applications**P-F. JAO¹, E. FRANCA¹, G. J. KIM¹, B. WHEELER¹, AND Y-K. YOON¹¹University 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. GOTTIPATI¹, I. KALININA², E. BEKYAROVA², R. C. HADDON², AND V. PARPURA¹¹University of Alabama, Birmingham, AL, ²University 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. SAHA², AND K. T. NGUYEN^{1,2}¹University of Texas at Arlington, Arlington, TX, ²UT Southwestern Medical Center, Dallas, TX**1:45PM****Protease-Sensitive Virus Vectors for Targeted Gene Delivery**J. JUDD¹, M. HO¹, M. LAM¹, O. DAO¹, AND J. SUH¹¹Rice University, Houston, TX**2:00PM****A pH-Responsive Polymeric Antigen Carrier for Enhancing Antigen-Specific CD8 T Cell Responses**S. KELLER¹, J. T. WILSON¹, H. B. KERN¹, A. J. CONVERTINE¹, AND P. S. STAYTON²¹University of Washington, Seattle, WA, ²University of Washington, Seattle**2:15PM****MMP-9 Sensitive Polymers for Environmentally-Responsive Bivalirudin Release and Thrombin Inhibition**D. S-H. CHU¹, M. J. BOCEK¹, D. L. SELLERS¹, P. J. HORNER¹, AND S. H. PUN¹¹University 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. XU¹, N. REY-VILLAMIZAR¹, M. MEGJHANI¹, A. CHEONG¹, K. TRETTE², P. QUI³, W. SHAIN^{2,4}, AND B. ROYSAM¹¹University of Houston, Houston, TX, ²Seattle Children's Research Institute, Seattle, WA, ³MD Anderson Cancer Center, Houston, TX, ⁴University of Washington, Seattle, WA**1:45PM****Volumetric Microscopy of Cytoarchitecture and Myeloarchitecture with Intrinsic Scattering Contrast**V. J. SRINIVASAN¹ AND H. RADHAKRISHNAN¹¹UC Davis, Davis, CA**2:00PM****Relative Spectral Power Based Clustering of Dense-Array Event Related Potentials**S. KOTA¹, C. CORTESSA¹, AND D. L. MOLFESE¹¹University of Nebraska - Lincoln, Lincoln, NE

2:15PM**LI Coating Improves Neural Electrode Integration as Revealed by Multi-photon Microscopy**T. D. KOZAI¹, N. SNYDER¹, A. L. VAZQUEZ¹, C. F. LAGENAUR¹, S-G. KIM¹, AND X. CUI¹¹University of Pittsburgh, Pittsburgh, PA**Track: New Frontiers and Special Topics****OP - Fri - 2 -17 - Room 614****Emerging Technology II****Chairs:** Elaine Fu, Chris Jewell**1:30PM****Photoactivation of Micropatterned Antibodies for T-cell Activation**W. JIN¹, D. DUTTA¹, S. SIL¹, AND L. KAM¹¹Columbia University, New York, NY**1:45PM****Lymph Node Delivery as a Platform for Studying the Interactions Between Biomaterials and Lymph Nodes**L. H. TOSTANOSKI¹, J. I. ANDORKO¹, AND C. M. JEWELL¹¹University of Maryland, College Park, MD**2:00PM****Tunable Time-delays for Paper Microfluidic Devices**B. TOLEY¹, B. MCKENZIE¹, AND E. FU¹¹University of Washington, Seattle, WA**2:15PM****Detection and Measurement of Micronutrients in Blood Based Samples**E. LO¹, M. J. STEIN¹, D. G. CASTNER¹, AND B. D. RATNER¹¹University 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 Domshe
*Technology Consultant*Roderic Pettigrew
National Institutes of Health

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. MEIER¹, Z. H. SYEDAIN¹, AND R. T. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**3:00PM****Elastomeric Cellularized Constructs for Ventricular Outflow Tract Reconstruction: Fate and Function of Integrated Cells *In Vivo***N. J. AMOROSO¹, T. YOSHIZUME¹, H. JIAN¹, K. TAKANARI¹, Y. HONG¹, K. TOBITA¹, AND W. R. WAGNER¹¹University 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. FERNANDEZ¹, G. A. TRUSKEY¹, AND W. M. REICHERT¹¹Duke University, Durham, NC**3:30PM****Hypertrophic Stimulation of Engineered Cardiac Muscle from Human Pluripotent Stem Cells**K. L. KREUTZIGER¹, K. DAO¹, M. RAZUMOVA¹, M. REGNIER¹, AND C. E. MURRY¹¹University 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. DONG¹, R. LANGER¹, AND D. ANDERSON¹¹Massachusetts Institute of Technology, Cambridge, MA**3:00PM****Biologically Inspired Engineering of Underwater Adhesives with Synthetic Biology**C. ZHONG^{1,2}, A. CHENG¹, AND T. LU^{1,2}¹MIT Synthetic Biology Center, Cambridge, MA, ²Research Laboratory of Electronics, MIT, Cambridge, MA**3:15PM****Mechano-Responsive Hydrogels for Tissue Repair and Regeneration**L. XIAO¹ AND X. JIA¹¹University of Delaware, Newark, DE**3:30PM****Nanoparticle-Templated Phospholipid Layers Facilitate Understanding of Protein Recognition**S. REED¹¹University 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. MURPHY¹ AND K. A. ATHANASIOU¹¹University of California Davis, Davis, CA**3:00PM****Magnetic Resonance Characterization of ECM Integrated Scaffolds for Bone and Cartilage Tissue Engineering**P. POTHIRAJAN¹, S. RAVINDRAN¹, AND M. KOTECHA¹¹University 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. MACBARB¹, J. HU¹, AND K. A. ATHANASIOU¹¹University of California, Davis, Davis, CA, ²University of Thessaly, Larisa, Greece**3:30PM****Preclinical Assessment of a Regenerative Medicine Approach to Temporomandibular Joint Meniscus Reconstruction In a Porcine Model**B. N. BROWN¹, W. L. CHUNG¹, J. CHEETHAM², AND S. F. BADYLAK¹¹University of Pittsburgh, Pittsburgh, PA, ²Cornell 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. YOUNG¹, R. W. DANIEL¹, S. ROWSON¹, AND S. M. DUMA¹¹Virginia 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. COBB¹, J. E. URBAN^{2,3}, E. M. DAVENPORT^{2,3}, S. ROWSON¹, S. M. DUMA¹, J. A. MALDJIAN^{2,3}, C. T. WHITLOW³, A. K. POWERS³, AND J. D. STITZEL^{2,3}¹School of Biomedical Engineering & Sciences, Virginia Tech-Wake Forest University, Blacksburg, VA, ²School of Biomedical Engineering & Sciences, Virginia Tech-Wake Forest University, Winston-Salem, NC, ³Wake Forest University School of Medicine, Winston-Salem, NC**3:15PM****Head Impact Exposure in Middle School Football**R. W. DANIEL III¹, S. ROWSON¹, AND S. DUMA¹¹Virginia Tech - Wake Forest University, Blacksburg, VA**3:30PM****Head Impact Exposure Measurements in Pediatric Populations**J. URBAN¹, E. M. DAVENPORT², A. K. POWERS^{3,4}, J. A. MALDJIAN^{2,3}, C. T. WHITLOW^{2,3}, AND J. D. STITZEL¹¹Virginia Tech- Wake Forest University Center for Injury Biomechanics, Winston Salem, NC, ²Advanced Neuroscience Imaging Research Laboratory, Winston Salem, NC, ³Wake Forest University School of Medicine, Winston Salem, NC, ⁴Department 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. KRICK¹, Y.-J. HUANG², R. MARTIN², P. SEARSON², A. KHADEMHOSEINI², A. HOKE¹, AND H.-Q. MAO²¹Johns Hopkins School of Medicine, Baltimore, MD, ²Johns Hopkins University, Baltimore, MD, ³Massachusetts Institute of Technology, Cambridge, MA**3:00PM****Direct Conversion of Fibroblast to Neurons via Nanochannel Electroporation**D. GALLEGU-PEREZ¹, J. MA¹, C. CZEISLER¹, P. GYGLI¹, T. W. SHERWOOD¹, X. WANG¹, A. ADLER², Y. WU¹, K. LEONG², C. ASKWITH¹, J. OTERO¹, AND L. J. LEE¹¹The Ohio State University, Columbus, OH, ²Duke University, Durham, NC**3:15PM****Tissue Engineered Grafts with Stretch-Grown Axons Accelerate Peripheral Nerve Regeneration Based on Direct Axon-Induced Axon Regeneration**L. STRUZYNIA¹, J. MORAND¹, N. KAMESWARAN¹, J. WOLF¹, H. LEDEBUR², D. SMITH¹, AND D. K. CULLEN¹¹University of Pennsylvania, Philadelphia, PA, ²Axonion Medical, Inc., Kalamazoo, MI**3:30PM****Characterization of Optically Transparent Silk Hydrogels for Biomedical Applications**A. N. MITROPOULOS¹, M. APPLIGATE¹, B. MARELLI¹, F. OMENETTO¹, AND D. KAPLAN¹¹Tufts University, Medford, MAPLATFORM
SESSIONS**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. CHANG¹, A. M. MIKHEEV¹, R. J. MONNAT, JR.¹, R. C. ROSTOMILY¹, AND A. FOLCH¹¹University of Washington, Seattle, WA**3:00PM****Microfluidic 3D Cancer-Type Specific Platform for EMT Blocking Agents Screening**J. BAI¹, T.-Y. TU¹, J.-P. THIERY², AND R. D. KAMM^{1,3}¹Singapore-MIT Alliance for Research and Technology, Singapore, Singapore, ²Institute of Molecular and Cell Biology (IMCB), A*STAR, Singapore, Singapore, ³Massachusetts Institute of Technology, Cambridge, MA**3:15PM****Isolation of Adherent Tumor-Derived Cells: Probing the Biophysical Properties of Human Malignant Cells**T. A. ALCOSER¹, S. VARMA², C. M. KRANING-RUSH¹, S. J. SHIN², AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**3:30PM****Scalable Manufacture of Built-to-Order Nanomedicine: Spray-Lbl on PRINT®**S. MORTON¹, K. HERLIHY², K. SHOPSOWITZ¹, J. DENG¹, K. CHU², C. BOWERMAN², J. DESIMONE², AND P. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA, ²UNC-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. CHATERJI¹, P. KIM², H. J. LEE², K. GUPTA², J. LEE², A. B. BAKER¹, AND D.-H. KIM²¹The University of Texas at Austin, Austin, TX, ²University 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. AMAYA¹ AND J. M. TARBELL¹¹The 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. CHEUNG¹, J. FU¹, L. CAO¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**3:30PM****An Ex Vivo Bio-Assay Chamber for Studying Inflammatory Response in the Mouse Femoral Artery**A. K. BALDWIN¹, R. P. GERSCH¹, B. M. DOUGLASS¹, A. NASSER¹, T. K. ROSENGART², AND M. D. FRAME¹¹Stony Brook University, Stony Brook, NY, ²Baylor University, Houston, TXtrack sponsored by  Edwards**Track: Cellular and Molecular Bioengineering****OP - Fri - 3 - 8 - Room 604****Translational Cellular and Molecular Bionengineering****Chairs:** Charles Gersbach, Krishanu Saha**2:45PM****Endothelial Glycocalyx and Apoptosis in the Brachiocephalic Artery of a High Fat Fed ApoE^{-/-} Mouse**L. M. CANCEL¹, E. E. EBONG^{1,2}, AND J. M. TARBELL¹¹The City College of New York, New York, NY, ²Albert 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. LIPPENS¹, K. LEE¹, M. MEHTA¹, C. M. MADL¹, M. M. XU¹, X. ZHAO^{1,3}, O. CHAUDHURI¹, W. KIM^{1,4}, K. ALIM¹, A. MAMMOTO⁵, D. E. INGBER^{1,5}, G. DUDA⁶, AND D. J. MOONEY¹¹Harvard University, Cambridge, MA, ²Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, ³Duke University, Durham, NC, ⁴Chung-Ang University, Seoul, Korea, Republic of, ⁵Children's Hospital, Boston, MA, ⁶Julius Wolff Institute, Charite, Berlin, GermanyP = 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. FINE¹, T. J. CRADICK¹, AND G. BAO¹¹Georgia Tech/Emory University, Atlanta, GA**3:30PM****Developing Models of Ectopic Calcification for Testing an Osteoclast Cell Therapy**C. W. REMENTER¹, M. WU¹, B. J. AUSK¹, T. S. GROSS¹, AND C. M. GIACHELLI¹¹University 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. HENAK¹, A. E. ANDERSON¹, M. D. HARRIS^{1,2}, E. D. CARRUTH^{1,3}, B. J. ELLIS¹, C. L. PETERS¹, AND J. A. WEISS¹¹University of Utah, Salt Lake City, UT, ²University of Denver, Denver, CO, ³University of California, San Diego, La Jolla, CA**3:00PM****Thoracic Pedicle Dimensions: Variation in Normal and AIS Pediatric Subjects**J. R. PETERS¹, C. CHANDRASEKARAN¹, L. WALTZ¹, AND S. BALASUBRAMANIAN¹¹Drexel University, Philadelphia, PA**3:15PM****Design of a 16-bit Custom Waveform Spinal Stimulator**T. MARTIN¹, S. UPCHURCH¹, R. KEYNTON¹, S. HARKEMA¹, R. EDGERTON², J. BURDICK³, AND J. NABER¹¹University of Louisville, Louisville, KY, ²University of California, Los Angeles, Los Angeles, CA, ³California 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. GARCEZ¹, A. C. GRUITER¹, F. V. CARVALHO¹, AND R. A. DE SOUZA¹¹INATEL, S. Rita Do Sapucaí, 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. KOBETIC², AND R. J. TRIOLO^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH**3:00PM****Droplet-Based Pressure Sensor Array for Artificial Skin Application**B. NIE¹, R. LI¹, J. D. BRANDT², AND T. PAN¹¹University of California, Davis, Davis, CA, ²University of California, Davis, Sacramento, CA**3:15PM****Soft Exo-Skeletal Arm for C4-C5 Trauma Induced Spinal Cord Injuries**M. BRAUCKMANN¹, E. CALAMARI¹, S. LIPKIND¹, B. LEONE¹, C. MOLICA¹, A. PISCOPIELLO¹, W. TERRY¹, M. A. DELPH¹, E. TORRES-JARA¹, M. B. POPOVIC¹, E. A. CLANCY¹, AND G. S. FISCHER¹¹Worcester Polytechnic Institute, Worcester, MA**3:30PM****R-ARM: Robotic Assistive Reaching Mechanism**M. NOJOOMI¹, S. GONZALEZ¹, N. MITTAL¹, AND A. SATERBAK¹¹Rice University, Houston, TXtrack 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 C57G1/6J Developing Mouse Brain (Invited)**M. HAWRYLYCZ¹, L. NG¹, AND C. THOMPSON¹¹Allen Institute for Brain Science, Seattle, WA**3:15PM****Image-Based Biomedical Modeling, Simulation, and Visualization (Invited)**C. R. JOHNSON¹¹University of Utah, Salt Lake City, UT**Track: Biomedical Engineering Education
OP - Fri - 3 - 12 - Room 616****Innovative Hands on Approaches****Chairs:** Damir Khismatullin, Alyssa Taylor**2:45PM****Integrating 3D Additive Manufacturing Technologies into a Tissue Engineering Lab Course**A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**3:00PM****An Active Learning Approach to Developing Manufacturing Literacy in Biomedical Engineering Students**J. R. GOLDBERG¹¹Marquette University, Milwaukee, WI**3:15PM****Integrating Practical Instrumentation Control Skills Into a Laboratory Module Teaching the Fundamentals of Ultrasound Imaging**T. E. ALLEN¹¹University of Virginia, Charlottesville, VA**3:30PM****Implementation of Flipped Classroom Model in Medical Electronics Course**J-M. MAAREK¹¹University 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. GOMEZ¹, S. S. MERCHANT¹, AND E. W. HSU¹
¹University of Utah, Salt Lake City, UT

3:00PM

Optimizing MRI Pulse Parameters for T1 Estimation to Minimize the Cramer-Rao Lower Bound

Y. LIU¹, J. R. BUCK¹, AND V. N. IKONOMIDOU²
¹University of Massachusetts Dartmouth, North Dartmouth, MA, ²George Mason University, Fairfax, VA

3:15PM

Genetically Engineered Molecular Sensors for Non-Invasive Imaging of Glutamate in MRI

G. L. SUN¹, D. V. SCHAFFER¹, AND M. G. SHAPIRO¹
¹University of California, Berkeley, Berkeley, CA

3:30PM

In Vivo Monitoring of Chondrogenic Differentiation in a Biomimetic ECM-Incorporated Scaffold via MRI

A. YE¹, Z. YIN¹, T. K. YASAR¹, A. KHAN¹, AND R. MAGIN¹
¹University 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. WILLIAMS¹, S. V. ANAND¹, AND T. SAIF¹
University of Illinois at Urbana-Champaign, Urbana, IL

3:00PM

Using Microfluidics to Evaluate the Differential Effect of SIP Receptor Targeting Drugs on Endothelial Cell Sprouting

A. DAS¹, S. LENZ¹, AND E. BOTCHWEY²
¹University of Virginia, Charlottesville, VA, ²Georgia Institute of Technology, Atlanta, GA

3:15PM

Development of Graphene Oxide Based Multiplexed Helicase Activity Assay Platform for Anti-viral Drug Screening

H. JANG¹, S-R. RYOO¹, AND D-H. MIN¹
¹Seoul National University, Seoul, Korea, Republic of

3:30PM

Controlling Cell Shape in Three imensions with Microfabricated Protein Matrices

C. MORAES¹, B. KIM¹, X. ZHU¹, K. MILLS¹, A. R. DIXON¹, M. D. THOULESS¹, AND S. TAKAYAMA¹
¹University 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. YAMAGUCHI¹, M. J. GIANNETTI¹, M. J. VAN HOUTEN¹, O. FOROUZAN¹, S. S. SHEVKOPLYAS¹, AND D. P. GAVER¹
¹Tulane University, New Orleans, LA

3:00PM

Fluid Dynamics of Mucus Plug Rupture

Y. HU¹, S. BIAN¹, S. TAKAYAMA¹, AND J. B. GROTBORG¹
¹University of Michigan, Ann Arbor, MI

3:15PM

Simulations Identify Optimal Mechanical Ventilation Parameters for Surfactant Uptake in Occluded Pulmonary Airways

J. E. PILLERT¹, H. FUJIOKA¹, D. HALPERN², AND D. P. GAVER¹
¹Tulane University, New Orleans, LA, ²University of Alabama, Tuscaloosa, AL

3:30PM

Direct Surfactant Application in Edematous Alveoli Lowers Ventilation Injury

Y. WU¹ AND C. E. PERLMAN¹
¹Stevens 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. TEPLITZKY¹, A. T. CONNOLLY¹, J. A. BAJWA², AND M. D. JOHNSON¹
¹University of Minnesota, Minneapolis, MN, ²National Neuroscience Institute, King Fahad Medical City, Saudi Arabia

3:00PM

Neuroglial Circuit Dynamics in Simulated Deep Brain Stimulation

V. TIRUVADI^{1,2}
¹Emory University School of Medicine, Atlanta, GA, ²Georgia 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. POLAR¹ AND A. D. DORVAL¹
¹University of Utah, Salt Lake City, UT

3:30PM

Neural Information in Globus Pallidus Degrades with Increasing Parkinsonian Severity

A. D. DORVAL¹, A. L. JENSEN², K. B. BAKER², AND J. L. VITEK²
¹University of Utah, Salt Lake City, UT, ²University of Minnesota, Minneapolis, MN

SATURDAY, 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
Investigator 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 – I

Track: Tissue Engineering**OP - Sat - I - I - 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. SOLORIO¹, C. W. CHENG¹, D. CORREA¹, L. M. PHILLIPS¹, AND E. ALSBERG¹
¹Case Western Reserve University, Cleveland, OH**8:15AM****Preclinical Assessment of Mesenchymal Stromal Cell (MSC) Transplantation to Treat Type II (age-related) Osteoporosis**J. J. KIERNAN¹, J. E. DAVIES¹, AND W. L. STANFORD^{1,2}¹University of Toronto, Toronto, ON, Canada, ²Ottawa Hospital Research Institute, Ottawa, ON, Canada**8:30AM****Tissue-Engineering of Functional Human Skeletal Muscle**L. R. MADDEN¹, M. JUHAS¹, C. CHENG¹, W. E. KRAUS¹, G. A. TRUSKEY¹, AND N. BURSAC¹¹Duke 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. CHENG¹, L. MADDEN¹, W. E. KRAUS², N. BURSAC¹, AND G. A. TRUSKEY¹¹Duke University Biomedical Engineering, Durham, NC, ²Duke University Medical Center, Durham, NC**9:00AM****Effects of Mild Heating on the Osteogenesis of Mesenchymal Stem Cells During Inflammation**K. SUNDERIC¹, D. DAWKINS¹, AND S. WANG¹¹City College of New York, New York, NY**9:15AM****Tissue Engineering Cartilage Using Naturally Derived Multi-Layer ECM Scaffolds**A. CALLANAN^{1,2}, S. MCCULLEN¹, J. STEELE¹, R. NAIR¹, AND M. M. STEVENS¹¹Departments of Materials and Bioengineering, Institute of Biomedical Eng, Imperial College London, London, United Kingdom, ²Institute for Materials and Processes, School of Engineering, University of Edinburgh, Edinburgh, United Kingdom**Track: Tissue Engineering****OP - Sat - I - 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. SPENCER¹ AND E. E. HUI¹¹University of California-Irvine, Irvine, CAPLATFORM
SESSIONS
Sat-1

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. OVERSTREET¹¹Barrow Neurological Institute, Phoenix, AZ, ²Arizona State University, Tempe, AZ**8:30AM****The Use of Wicking Fibers to Distinguish Cell Types**S. TABBAA¹ AND K. J. BURG¹¹Clemson 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. JIAO¹, N. E. TROSPER¹, J. H. TSUI¹, D-H. KIM¹, AND C. E. MURRY¹¹University of Washington, Seattle, WA**9:00AM****Computational Modeling and Mechanical Stimulation for Enhanced Bioengineered Skin Mechanics**B. N. BLACKSTONE¹, F. SHEER¹, S. N. GHADIALI¹, AND H. M. POWELL¹¹The Ohio State University, Columbus, OH**9:15AM****In Vitro Tumor Model Generated Using a Flow Perfusion Bioreactor**M. SANTORO¹, S-E. LAMHAMEDI CHERRADI², F. K. KASPER¹, J. A. LUDWIG², AND A. G. MIKOS¹¹Rice University, Houston, TX, ²University of Texas MD Anderson Cancer Center, Houston, TX**Track: Biomaterials****OP - Sat - I - 3 - Room 606****Biomaterials for Controlling Cell Environment I****Chairs:** Jason Burdick, Alisha Sarang-Sieminski**8:00AM****Biomaterials for Intelligently Manipulating Cells (Invited)**B. RATNER¹¹University 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. GOETTSCHE⁵, K. SCHERER¹, L. LAX¹, F. J. SCHOEN⁶, J. KLUIN², E. AIKAWA^{1,5}, AND A. KHADEMOSSEINI^{3,4}¹Center of Excellence in Vascular Biology, Department of Medicine, Brigham and Women's Hospital, Boston, MA, ²Department of Cardiothoracic Surgery, University Medical Center Utrecht, Utrecht, Netherlands, ³Division of Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ⁴Harvard-MIT Division of Health Sciences and Technology, MIT, Cambridge, MA, ⁵Center for Interdisciplinary Cardiovascular Sciences, Brigham and Women's Hospital, Boston, MA, ⁶Department 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. SCHWELLER¹ AND J. L. WEST¹¹Duke University, Durham, NC**9:00AM****Dynamic and Reversible Surface Topography Influences Cell Morphology**J. D. KIANG¹, J. H. WEN¹, J. C. DEL ALAMO¹, AND A. J. ENGLER^{1,2}¹UC San Diego, La Jolla, CA, ²Sanford 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. HAN¹, X. TONG¹, AND F. YANG¹¹Stanford University, Stanford, CA**Track: Biomechanics****OP - Sat - I - 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. SHAHMIRZADI¹, I. JOURARD¹, AND E. E. KONOFAGOU¹¹Columbia University, New York, NY**8:15AM****Finite Element Analysis of the Lower Extremity Due to Anti-Vehicle Blasts**R. BERTUCCI¹, R. PRABHU¹, M. F. HORSTEMEYER¹, J. SHENG², J. LIAO¹, AND L. N. WILLIAMS¹¹Mississippi State University, Mississippi State, MS, ²U.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. KHATAM¹, M. C. FINGERET², G. P. REECE², M. K. MARKEY¹, AND K. RAVI-CHANDAR¹¹University of Texas at Austin, Austin, TX, ²MD Anderson Cancer Center, Houston, TX**8:45AM****Inverse Finite Element Modeling for Viscoelastic Biomechanical Properties of Spinal Cord**M. B. PANZER¹, B. R. BIGLER¹, A. W. YU¹, N. M. KLOPPENBORG¹, C. R. BASS¹, G. R. PASKOFF², AND B. S. SHENDER²¹Duke University, Durham, NC, ²NAVAIR, Patuxent River, MD**9:00AM****Primary Blast-Induced Ocular Trauma**M. A. REILLY¹, D. SHERWOOD¹, R. WATSON^{1,2}, B. J. LUND³, W. E. SPONSEL^{1,4}, K. THOE⁴, R. D. GLICKMAN^{1,5}, AND W. GRAY¹¹University of Texas at San Antonio, San Antonio, TX, ²Biodynamic Research Corporation, San Antonio, TX, ³US Army Institute of Surgical Research, San Antonio, TX, ⁴WESPA, San Antonio, TX, ⁵University of Texas Health Science Center at San Antonio, San Antonio, TX**9:15AM****Multiscale Model of Shear Induced Platelet Activation and Pseudopod Formation**S. POTHAPRAGADA¹, P. ZHANG¹, M. LIVELLI¹, J. SHERIFF¹, Y. DENG¹, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY**Track: Stem Cell Engineering****OP - Sat - I - 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. KINNEY¹, R. SAEED¹, AND T. C. MCDDEVITT¹¹Georgia Institute of Technology, Atlanta, GA

8:30AM**Novel and Scalable Derivation of Neuroepithelium and Ventral Progenitors of Defined Spinal Cord Position**E. S. LIPPMANN¹, M. ESTEVEZ-SILVA¹, AND R. S. ASHTON¹¹University of Wisconsin, Madison, WI**8:45AM****Defined Extracellular Matrix Components are Necessary for -cell Precursor Induction**H. TAYLOR-WEINER¹, J. E. SCHWARZBAUER², AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²Princeton University, Princeton, NJ**9:00AM****Intrafusal Myofibers from Human Stem Cells and Their Innervations by Human Sensory Neurons**X. GUO¹, S. SPRADLING¹, A. MAZZA¹, S. LAMBERT¹, AND J. J. HICKMAN¹¹University of Central Florida, Orlando, FL**9:15AM****Directed In Vitro Myogenesis of Human Embryonic Stem Cells and Their In Vivo Engraftment (Invited)**Y. HWANG¹¹University of California San Diego, La Jolla, CA**Track: Cancer Technologies****OP - Sat - I - 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. SMITH¹, L. YANG¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, AR**8:15AM****High Efficiency MHC Class I Antigen Presentation By Microfluidic Delivery of Target Proteins**A. SHARE¹, S. MAO¹, P. BASTO¹, G. SZETO¹, G. HARTOULAROS¹, R. LANGER¹, D. IRVINE¹, AND K. JENSEN¹¹MIT, Cambridge, MA**8:30AM****Preventing Cancer Relapse with Biomaterial-Supported Immune Cell Implants**A. G. FITZSIMONS¹, M. MECWAN², AND M. T. STEPHAN^{1,2}¹Fred Hutchinson Cancer Research Center, Seattle, WA, ²University of Washington, Seattle, WA**8:45AM****Shape Matters: Particle Shape Affects Artificial Antigen Presenting Cell Activity**J. C. SUNSHINE¹, K. PERICA¹, J. P. SCHNECK¹, AND J. J. GREEN¹¹Johns 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 Murine Tumor Models**J. LELEUX¹, P. PRADHAN¹, E. DAWSON¹, I. SAKAMAKI², H. QIN², L. W. KWAK², AND K. ROY¹¹University of Texas at Austin, Austin, TX, ²UT MD Anderson Cancer Center, Houston, TX**9:15AM****Targeted Delivery of Pro-Apoptotic Peptides to Tumor-associated Macrophages Delays Tumor Growth**M. CIESLEWICZ¹, J. TANG¹, J. YU¹, M. ZAVALJEVSKI¹, E. RAINES¹, AND S. PUN¹¹University of Washington, Seattle, WA**Track: Cardiovascular Engineering****OP - Sat - I - 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. BROWN¹, J. RAO¹, E. L. OFSTUN¹, J. D. HUMPHRIES², AND D. A. VORP¹¹University of Pittsburgh, Pittsburgh, PA, ²Yale University, New Haven, CT**8:15AM****Aortic Valve Morphology Predicts Spatially-Distinct Fiber Architecture in Ascending Aortic Aneurysm**A. TSAMIS¹, J. A. PHILLIPPI¹, R. G. KOCH¹, J. T. KRAWIEC¹, A. D'AMORE^{1,2}, S. C. WATKINS¹, W. R. WAGNER¹, D. A. VORP¹, AND T. G. GLEASON¹¹University of Pittsburgh, Pittsburgh, PA, ²Fondazione Ri.MED, Palermo, Italy**8:30AM****Multi-Modality Imaging of Type-B Aortic Dissection Using a Novel Hemodynamic Model**A. P. PATEL¹, S. R. IGO¹, D. MARAGIANNIS¹, M. S. JACKSON¹, D. J. SHAH¹, A. B. LUMSDEN¹, S. H. LITTLE¹, AND J. BISMUTH¹¹Methodist DeBakey Heart & Vascular Center, Houston, TX**8:45AM****Mechanistic Model on Role of "Radially-Running" Collagen in Dissection Properties of Ascending Aorta**S. PAL¹, A. TSAMIS¹, S. PASTA², A. D'AMORE^{1,2}, T. G. GLEASON¹, D. A. VORP¹, AND S. MAITI¹¹University of Pittsburgh, Pittsburgh, PA, ²Fondazione Ri.MED, Palermo, Italy**9:00AM****Prediction of Stretch and Wall-Shear Stress Abnormalities in the Bicuspid Aortic Valve Ascending Aorta**K. CAO¹ AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, IN**9:15AM****The Role of Bicuspid Aortic Valve Hemodynamics in the Development of Acute Aortic Dilation**S. RATLEY¹, K. CAO¹, L. SUN¹, AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, INtrack sponsored by  Edwards**Track: Cellular and Molecular Bioengineering****OP - Sat - I - 8 - Room 604****Cell Biomechanics I****Chairs:** Adam Engler, Jeffrey Jacot**8:00AM****Single Cell Traction Microscopy within 3D Collagen Matrices**M. S. HALL¹, X. FENG¹, Y. HUANG¹, R. LONG², C-Y. HUI¹, AND M. WU¹¹Cornell University, Ithaca, NY, ²University of Alberta, Edmonton, AB, Canada

8:15AM**TGF- β 1 Induced Stiffening of Mesenchymal Stem Cells Depends on PDGF-BB Signaling**D. GHOSH¹, L. LILLI¹, D. MCGRAIL¹, L. V. MATYUNINA¹, J. McDONALD¹, AND M. R. DAWSON¹¹Georgia Institute of Technology, Atlanta, GA**8:30AM****Focal Adhesion Dynamics Coupled with Cytoskeletal Stresses and Reorganization Under Flow**D. VERMA¹, F. MENG¹, AND S. Z. HUA¹¹State University of New York at Buffalo, Buffalo, NY**8:45AM****Cellular Force Modulation Through Zyxin Rearrangement in a Fused-fiber Nanonet Environment**C. NG¹, B. KOONS¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**9:00AM****A Multiscale Framework for Modeling and Investigating Cell Mechanics in 3D Extracellular Matrix Environments**V. RAJAGOPAL^{1,2}, Q. ZHANG³, AND R. D. KAMM^{1,4}¹Singapore-MIT Alliance for Research and Technology Center, Singapore, Singapore, ²Auckland Bioengineering Institute, Auckland, New Zealand, ³National University of Singapore, Singapore, Singapore, ⁴Massachusetts Institute of Technology, Cambridge, MA**9:15AM****Live-Cell Subcellular Study of Force-Mediated Focal Adhesion Morphogenesis Using Elastomeric Micropost Force Sensors**S. WENG¹ AND J. FU¹¹University of Michigan, Ann Arbor, MI Track: Nano to Micro Technologies**OP - Sat - I - 9 - Room 611****Microfluidic Platform I****Chairs:** Dino Di Carlo, Joel Voldman**8:00AM****Microfluidic Reconstitution of Multimodal High-Density Lipoprotein-Derived Nanomaterials**Y. KIM¹, F. FAY², D. P. CORMODE³, B. L. SANCHEZ², J. TANG², E. A. FISHER⁴, Z. A. FAYAD², W. J. MULDER², O. C. FAROKHZAD⁵, AND R. LANGER¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Icahn School of Medicine at Mount Sinai, New York, NY, ³University of Pennsylvania, Philadelphia, PA, ⁴NYU School of Medicine, New York, NY, ⁵Brigham 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. HOU¹, R. P. BHATTACHARYYA², D. T. HUNG², AND J. HAN¹¹Massachusetts Institute of Technology, Cambridge, MA, ²The 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. HU¹, C. W. BEH¹, J. PARK¹, C. R. WEISS¹, D. L. KRAITCHMAN¹, J. T-H. WANG¹, AND H-Q. MAO¹¹Johns Hopkins University, Baltimore, MD**8:45AM****Programmed Flows for Precise Solution Transfer Around Particles and Cells**D. E. GO¹, E. SOLLIER¹, H. AMINI¹, P. SANDOZ¹, AND D. DI CARLO¹¹UCLA, Los Angeles, CA**9:00AM****Colorimetric Microfluidic Biosensing Platform with Integrated nanoLCA Plasmonic Device**A. Y. HSIAO¹, M. R. GARTIA¹, P. KHUMWAN¹, AND G. L. LIU¹¹University of Illinois at Urbana-Champaign, Urbana, IL**9:15AM****High-Throughput Microfluidic Cell Pairing for Measurement of Immune Cell Activation Kinetics**B. DURA¹, S. K. DOUGAN¹, M. BARISA¹, H. L. PLOEGH¹, AND J. VOLDMAN¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Nano to Micro Technologies****OP - Sat - I - 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. GABORSKI¹, R. CARTER¹, J. SNYDER², AND J. MCGRATH²¹Rochester Institute of Technology, Rochester, NY, ²University of Rochester, Rochester, NY**8:15AM****Hormone and Drug-Mediated Modulation of Glucose Metabolism in a Microscale Model of the Human Liver**M. DAVIDSON¹, M. LEHRER¹, AND S. KHETANI¹¹Colorado State University, Fort Collins, CO**8:30AM****Multiple Myeloma Cancer Niche Reconstructed by 3D Microfluidic Tissue Culture**W. ZHANG¹, J. ZILBERBERG², D. SIEGEL², H. WANG¹, AND W. LEE¹¹Stevens Institute of Technology, Hoboken, NJ, ²Hackensack University Medical Center, Hackensack, NJ**8:45AM****Generating Physiological Microfluidic Flow Patterns with Magnetoactive Sponges**S. HONG¹, R. YEN¹, G. A. TRUSKEY¹, AND X. ZHAO¹¹Duke University, Durham, NC**9:00AM****Geometric Control of Hepatic and Vascular Engineered Tissue Architecture *In Vivo***K. R. STEVENS¹, R. R. CHATURVEDI², J. D. BARANSKI², R. E. SCHWARTZ¹, M. D. UNGRIN³, J. S. MILLER⁴, C. S. CHEN², AND S. N. BHATIA¹¹Massachusetts Institute of Technology, Cambridge, MA, ²University of Pennsylvania, Philadelphia, PA, ³University of Calgary, Calgary, AB, Canada, ⁴University of Pennsylvania, University of Pennsylvania, PA**9:15AM****Exclusion of CD45 from Vicinity of T Cell Receptor**J-H. LEE¹, M. L. DUSTIN², AND L. C. KAM¹¹Columbia University, New York, NY, ²Skirball Institute of Biomolecular Medicine, New York, NY

Track: Bioinformatics, Computational and Systems Biology

OP - Sat - I - 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. ACAR¹, A. J. LAWAETZ¹, M. A. RASMUSSEN¹, AND R. BRO¹

¹University of Copenhagen, Frederiksberg C, Denmark

8:30AM

Numerical Linear Algebra and Optimization Tools for Bioinformatics (Invited)

M. A. SAUNDERS¹, S. AKLE¹, D. MA¹, Y. SUN¹, R. M. FLEMING², AND I. THIELE²

¹Stanford University, Stanford, CA, ²University of Luxembourg, Esch-sur-Alzette, Luxembourg

9:00AM

Reduction and Analysis of Large Scale Systems (Invited)

L. SIROVICH¹

¹Rockefeller University, New York, NY

Track: Biomedical Imaging and Optics

OP - Sat - I - 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 HERRERA¹, J. MUELLER¹, AND R. GONZALEZ²

¹Colorado State University, Fort Collins, CO, ²University of Sao Paulo, Sao Paulo, Brazil

8:15AM

Quantification of 3D Pulmonary Vascular Morphology in Pediatric Patients with Pulmonary Vascular Disease

W. O'DELL¹, S. PRABHAKARAN¹, AND S. HEGDE¹

¹University of Florida, Gainesville, FL

8:30AM

In Vivo Detection of Hyperoxia-Induced Pulmonary Endothelial Cell Death Using ^{99m}Tc-Duramycin

S. H. AUDI¹, E. R. JACOBS², M. ZHAO³, S. T. HAWORTH⁴, D. L. ROERIG², AND A. V. CLOUGH¹

¹Marquette University, Milwaukee, WI, ²Zablocki VA Medical Center, Milwaukee, WI, ³Northwestern University, Chicago, IL, ⁴Medical College of Wisconsin, Milwaukee, WI

8:45AM

Quantitative Measure of Remotely Detected Human Pulse in Visible Spectrum

B. KAUR¹, V. A. HODGKIN¹, J. A. HUTCHINSON¹, J. K. NELSON², AND V. N. IKONOMIDOU²

¹US Army Night Vision and Electronic Sensors Directorate, Fort Belvoir, VA, ²George Mason University, Fairfax, VA

9:00AM

Infrared Spectroscopy with PLS Regression Predicts Elastin Content in Aorta Samples

R. CHEHELTANI¹, J. RAO², D. A. VORP², M. KIANI¹, AND N. PLESHKO¹

¹Temple University, Philadelphia, PA, ²University of Pittsburgh, Pittsburgh, PA

9:15AM

Detection of Spinal Cord Ischemia Using a Novel Optical Monitor

A. D'SOUZA¹, R. MESQUITA², T. BILFINGER¹, R. GALLER¹, A. YODH², AND T. FLOYD¹

¹SUNY Stony Brook, Stony Brook, NY, ²University of Pennsylvania, Philadelphia, PA

Track: Biomedical Imaging and Optics

OP - Sat - I - 13 - Room 618

Novel Approaches

Chairs: Richard Price

8:00AM

Tissue Fractionation by Ultrasonic Atomization

J. C. SIMON¹, O. A. SAPOZHNIKOV^{1,2}, V. A. KHOKHLOVA^{1,2}, Y.-N. WANG¹, L. A. CRUM¹, AND M. R. BAILEY¹

¹University of Washington, Seattle, WA, ²Moscow 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. SWALWELL², J. TU³, A. BRAYMAN², AND T. J. MATULA²

¹Department of Bioengineering, University of Washington, Seattle, WA, ²Center for Industrial and Medical Ultrasound- Applied Physics Laboratory, University of Washington, Seattle, WA, ³Nanjing University, Nanjing, China, People's Republic of

8:30AM

Nanocrystal Loaded Polymeric Microbubbles for Multimodal Imaging

N. TERAPHONGPHOM¹, P. CHHOUR², P. C. NAHA², W. WITSCHY², D. P. CORMODE², AND M. A. WHEATLEY¹

¹Drexel University, Philadelphia, PA, ²University of Pennsylvania, Philadelphia, PA

8:45AM

Estimating Pedicle Screw Fastening Strength via a Virtual Modeling and Templating Technique for Spine Surgery Planning

C. A. LINTE¹, J. CAMP¹, K. AUGUSTINE¹, D. HOLMES¹, AND R. ROBB¹

¹Mayo Clinic, Rochester, MN

9:00AM

Chemical Imaging of Human Breast Cancer Tissue Using ToF-SIMS

B. BLUESTEIN¹, M. ROBINSON¹, F. MORRISH², D. HOCKENBERY², P. PORTER², AND L. J. GAMBLE¹

¹University of Washington, Seattle, WA, ²Fred Hutchinson Cancer Research Center, Seattle, WA

9:15AM

BioGames – A Crowd-Sourced Gaming Platform for Distributed Tele-pathology and Training of Experts

S. MAVANDADI¹, S. FENG¹, F. YU¹, S. DIMITROV¹, R. YU¹, AND A. OZCAN¹

¹University of California, Los Angeles, CA

Track: Drug Delivery

OP - Sat - I - 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. HOFMEISTER¹, S. LEE¹, W. CHEN¹, T. GIORGIO¹, D. HARRISON¹, AND H.-J. SUNG¹

¹Vanderbilt University, Nashville, TN

8:30AM**Periadventitial Delivery of a Retinoid via Biodegradable Nanonets for the Inhibition of Neointimal Hyperplasia in Prosthetic Vascular Grafts**J. YANG¹, K. BALER¹, J. J. WANG², J. ZHANG², AND G. A. AMEER^{1,3}¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL, ³Northwestern University, Chicago**8:45AM****Matrix Rigidity Controls Nanoparticle Uptake By Endothelial Cells via Alterations in Apical Membrane Mechanics**C. HUANG¹, P. J. BUTLER¹, S. TONG², H. S. MUDDANA³, G. BAO², AND S. ZHANG¹¹The Pennsylvania State University, University Park, PA, ²Georgia Institute of Technology and Emory University, Atlanta, GA, ³University of California San Diego, La Jolla, CA**9:00AM****Bio-Inspired Approach to Avoid Mononuclear Phagocytic System Clearance in Systemic Treatments**A. PARODI¹ AND E. TASCOTTI¹¹The Methodist Hospital Research Institute, Houston, TX**9:15AM****Elongated Viral Nanoparticles for Enhanced Thrombus Targeting**A. M. WEN¹, Y. WANG^{1,2}, A. C. YANG¹, H. GAO^{1,2}, D. I. SIMON^{1,2}, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²University Hospitals Case Medical Center, Cleveland, OH**Track: Respiratory Bioengineering****OP - Sat - I - 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. BIRUKOVA¹, A. Y. MELTON¹, N. M. MUNOZ¹, A. R. LEFF¹, AND K. G. BIRUKOV¹¹University of Chicago, Chicago, IL**8:15AM****Inhibiting the Rho Kinase Pathway to Reduce Cell Injury and Inflammation During Cyclic Airway Reopening**N. HIGUITA-CASTRO¹, K. NELSON¹, D. J. HANSFORD¹, AND S. N. GHADIALI²¹The Ohio State University, Columbus, OH, ²The 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. SMITH¹ AND J. H. BATES¹¹University of Vermont, Burlington, VT**8:45AM****Quantifying Stress-Induced Pulmonary Epithelial Damage During Airway Reopening**J. RYANS¹, H. W. GLINDMEYER IV¹, J. PILLERT¹, B. SMITH², AND D. P. GAVER III¹¹Tulane University, New Orleans, LA, ²University of Vermont, Burlington, VT**9:00AM****Model-Based Estimation of Ventilatory Control Dynamics during Sleep in Pediatric Obesity**L. NAVA-GUERRA¹, P. CHALACHEVA¹, W. TRAN¹, S. WARD², T. KEENS², AND M. KHOO¹¹University of Southern California, Los Angeles, CA, ²Children'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. HERBERT¹, A. VENKATASUBRAMANIAN¹, R. PIDAPARTI¹, A. REYNOLDS¹, AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**Track: Neural Engineering****OP - Sat - I - 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. HOPKINS¹, J. VENNEMEYER¹, D. MINTEER², K. LITTLE³, M. HERSHCOVITCH¹, D. HOM^{1,3}, K. MARRA², AND S. K. PIXLEY¹¹University of Cincinnati, Cincinnati, OH, ²University of Pittsburgh, Pittsburgh, PA, ³Cincinnati Children's Hospital, Cincinnati, OH**8:15AM****Development and Characterization of a System for High-Content Screening of Functional NMJs *In Vitro***A. S. SMITH¹, C. J. LONG¹, K. PIROZZI¹, AND J. J. HICKMAN¹¹UNIVERSITY 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. PLUMTON¹, P. ALLEN¹, A. ELLINGTON¹, AND C. E. SCHMIDT^{1,2}¹The University of Texas at Austin, Austin, TX, ²University of Florida, Gainesville, FL**8:45AM****Ability of Polyphenols to Attenuate Alzheimer's Disease by Reducing Nuclear Factor- κ B Activation**K. M. PATE¹, M. ROGERS¹, J. CLEGG¹, AND M. A. MOSS¹¹University of South Carolina, Columbia, SC**9:00AM****Towards a System for Intraocular Pressure Regulation**C. PASSAGLIA¹, S. BELLO¹, R. TZEKOV^{1,2}, AND S. MALVADE¹¹University of South Florida, Tampa, FL, ²Roskamp Institute, Sarasota, FL**9:15AM****Thermal Mechanisms of Millimeter Wave Neural Stimulation**M. G. SHAPIRO¹, M. F. PRIEST², P. H. SIEGEL³, AND F. BEZANILLA²¹University of California at Berkeley, Berkeley, CA, ²University of Chicago, Chicago, IL, ³California Institute of Technology, Pasadena, CA

Track: Translational Biomedical Engineering
OP - Sat - I - 17 - Room 6A

Translational Therapeutics and Imaging

Chairs: Harvinder Gill, Kent Leach

8:00AM

Blockade of Placental Growth Factor/Neuropilin I 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 ALMODOVAR³, L. RIEDEMANN^{1,2}, P. CARMELIET³, AND R. JAIN^{1,2}

¹Harvard Medical School, Boston, MA, ²Massachusetts General Hospital, Boston, MA, ³VIB-KU Leuven, Leuven, Belgium

8:15AM

Engineering Gene Targeting and Editing Molecules to Treat Monogenic Thalassemia Diseases

F. REZA¹ AND P. M. GLAZER¹

¹Yale University, New Haven, CT

8:30AM

Living without Breathing: Intraperitoneal Administration of Oxygen Microbubbles Significantly Extends Life in Hypoxemic Rodents

J. FESHITAN¹, N. LEGBAND², B. TERRY², AND M. BORDEN¹

¹University of Colorado, Boulder, CO, ²University 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 BASTIAN¹, M. CONTARINO¹, K. KIMENE¹, K. FREEDMAN¹, C. DUFFY¹, AND I. CHAIKEN¹

¹Drexel University, Philadelphia, PA

9:00AM

Gold Nanoparticle-M2e Conjugate as a Platform for Universal Influenza Vaccine

W. TAO¹, K. ZIEMER², AND H. S. GILL¹

¹Texas Tech University, Lubbock, TX, ²Northeastern University, Boston, MA

9:15AM

Morphological Characterization to Inform Complex Surgical Decisions in Chronic Tetralogy of Fallot

A. S. RAO¹ AND P. G. MENON²

¹University of Buffalo, State University of New York, Buffalo, NY, ²Carnegie Mellon University, Pittsburgh, PA

Track: Cellular and Molecular Bioengineering
OP - Sat - I - 18 - Room 6E

Molecular Bioengineering

Chairs: Matthew J. Lazzara, Casim Sarkar

8:00AM

Light Activated Protein Clustering and Signaling Activation in Mammalian Cells

L. BUGAJ¹, A. CHOKSI¹, C. MESUDA¹, R. KANE², AND D. SCHAFFER¹

¹University of California Berkeley, Berkeley, CA, ²Rensselaer Polytechnic Institute, Troy, NY

8:15AM

Engineering Transcriptional Factor Runx2 to Target Vascular Calcification

T. M. CHEN¹, N. B. NGUYEN¹, K. V. EATON¹, C. M. GIACHELLI¹, AND M. Y. SPEER¹

¹University of Washington, Seattle, WA

8:30AM

Developing And Screening A Library Of Activatable Recognition Proteins

S. K. GUPTA¹, R. NGUYEN¹, J. GLEIXNER¹, L. WENTLAND¹, A-Y. TU¹, AND W. E. THOMAS¹

¹University of Washington, Seattle, WA

8:45AM

Multivalent Ligands to Control Stem Cell Fate

A. CONWAY¹ AND D. V. SCHAFFER¹

¹University of California, Berkeley, Berkeley, CA

9:00AM

Modulating CSPG Biosynthesis in Reactive Astrocytes to Enhance Neuronal Regeneration

V. P. SWARUP^{1,2}, V. M. TRAN¹, M. KALITA¹, M. V. QUINTERO¹, V. HLADY¹, AND K. BALAGURUNATHAN¹

¹University of Utah, Salt Lake City, UT, ²University 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. TSENG¹, J. CHAPMAN¹, AND M. MOSS¹

¹University 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. SUN¹, Z. SONG¹, AND M. CHO¹¹University 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. DESAI¹, S. DEITCH¹, AND D. DEAN¹¹Clemson University, Clemson, SC

P – Sat - A - 3

Mechanical Properties of Bone Marrow and Adipose Stem Cells during Vascular Smooth Muscle Cell Differentiation

R. CHEN¹ AND D. DEAN¹¹Clemson University, Clemson, SC

P – Sat - A - 4

The Effects of Different Size Nanoparticles on the Mechanical Properties of Vascular Smooth Muscle Cells

T. KIEU¹, W. MCALLISTER¹, C. KITCHEN¹, AND D. DEAN¹¹Clemson University, Clemson, SC

P – Sat - A - 5

Schwann Cell Dynamics on Substrates of Varying Stiffness

C. LOPEZ-FAGUNDO¹, E. BAR-KOCHBA¹, C. OH¹, L. LIVI¹, D. HOFFMAN-KIM¹, AND C. FRANCK¹¹Brown University, Providence, RI

P – Sat - A - 6

Localized Lipid Packing of Transmembrane Domains Impedes Integrin Clustering

M. MEHRBOD¹ AND M. R. MOFRAD¹¹University of California, Berkeley, Berkeley, CA

P – Sat - A - 7

Effect of Mounting Technique for Tissue Mechanics Measurements Using Atomic Force Microscopy

J. T. MORGAN¹, V. K. RAGHUNATHAN¹, C. J. MURPHY¹, AND P. RUSSELL¹¹University of California, Davis, Davis, CA

P – Sat - A - 8

Course-grained Molecular Dynamics Simulation of Diffusion and Vesiculation in Defective Erythrocyte Membrane

H. LI¹ AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT

P – Sat - A - 9

Modeling the Hydrodynamic Interaction and Lateral Migration of Circulating Cells in a Microchannel

H. LAN¹ AND D. B. KHISMATULLIN¹¹Tulane University, New Orleans, LA

P – Sat - A - 10

Development of Mechanical Stability of Primitive Erythroblasts During Mammalian Erythropoiesis

L. F. DELGADILLO¹, Y-S. HUANG², R. E. WAUGH¹, AND J. PALIS²¹University of Rochester, Rochester, NY, ²University 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. KUMAR¹, W. TAKABE¹, C. KIM^{1,2}, N. ALBERTS-GRILL¹, J. W. SEO³, K. W. FERRARA³, AND H. JO^{1,2}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Ewha Womans University, Seoul, Korea, Republic of, ³University of California, Davis, Davis, CA

P – Sat - A - 12

In Vitro Model of Blunt Impact Injury

R. MCCULLOCH¹ AND T. O'SHAUGHNESSY¹¹Naval 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. OSBORNE¹, G. LI², M. KARTHIKEYAN², E. O'BRIEN¹, G. BLOBE², AND R. SUPERFINE¹¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²Duke University, Durham, NC

P – Sat - A - 14

Mechanical Factors Affect Fiber Alignment and Fibroblast Remodeling of Collagen and Fibrin Gels

A. M. DE JESUS¹, Z. C. SEIKEL¹, AND E. A. SANDER¹¹University of Iowa, Iowa City, IA

P – Sat - A - 15

Optimized Compliant In Vitro Models for Endothelial Mechanobiological Studies

P. TREMBLAY¹, D. DUBE¹, AND L. ROULEAU^{1,2}¹Université de Sherbrooke, Sherbrooke, QC, Canada, ²Centre 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. TAN¹ AND A. LIU¹¹University of Michigan, Ann Arbor, MI

P – Sat - A - 17

Nanomechanics of Engineered, Native and Pellet Cartilage Tissues

C. R. QUISENBERRY¹, A. NAZEMPOUR¹, B. VAN WIE¹, AND N. ABU-LAIL¹¹Washington State University, Pullman, WA

P – Sat - A - 18

Modeling the Structural Mechanics of Cilia and Flagella

M. GUY¹ AND G. XU¹¹University of Central Oklahoma, Edmond, OK

P – Sat - A - 19

Influence of Mechanical Environment on Vascular Smooth Muscle Functional Contractility

K. E. STEUCKE¹, P. A. VOIGT¹, E. S. HALD¹, AND P. W. ALFORD¹¹University of Minnesota, Minneapolis, MN

P – Sat - A - 20

The Contribution of Platelets to Clot Stiffness Through the Formation of Fibrin "Macro-Fibers"

M. J. PEREZ¹, C. WANG¹, B. HELMKE¹, F. VIOLA¹, AND M. LAWRENCE¹¹University of Virginia, Charlottesville, VA

P – Sat - A - 21**Identifying Key Paratope Residues and Their Partners in the Interface Between GPVI and 10B12 Through Molecular Dynamics Simulation**Y. FANG¹, W. LIU¹, AND J. WU¹¹South 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. WANG¹, M. PEREZ¹, B. HELMKE¹, AND M. LAWRENCE¹¹University of Virginia, Charlottesville, VA**P – Sat - A - 23****Flexibility Serves as a Mechanical Regulator of Antimicrobial Activity for Amphipathic Cationic α -Helical Antimicrobial Peptides**L. LIU¹, Y. FANG¹, AND J. WU¹¹South 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. RICHARDSON¹, J. HOLMAN¹, AND J. M. WALLACE^{1,2}¹Indianapolis University Purdue University Indianapolis, Indianapolis, IN, ²Purdue University, West Lafayette, IN**P – Sat - A - 25****Photokinesis in Algae and Unanimated Microspheres. Do They Follow Different Mechanisms?**R. STAHLBERG¹¹University of Washington, Seattle, WA**P – Sat - A - 26****Advanced Cell Culture Well for Mechanobiology**K. L. BILLIAR¹, J. M. PRUDEN¹, J. M. MANN¹, D. GARCIA¹, AND J. S. KELLEY¹¹Worcester Polytechnic Institute, Worcester, MA**Track: Biomechanics****Neuromuscular Biomechanics and Physiology****P – Sat - A - 27****Development of an Involuntary Eccentric Contraction Training System**J. SON¹, D. LEE¹, AND Y. KIM¹¹Yonsei University, Wonju, Korea, Republic of**P – Sat - A - 28****Neck Muscle Mechanical Demand During Tablet PC Use**A. N. VASAVADA¹, D. D. NEVINS¹, S. MONDA¹, AND D. C. LIN¹¹Washington State University, Pullman, WA**Track: Biomechanics****Orthopaedic and Dental Biomechanics****P – Sat - A - 29****Facet Joint Response to Loading at High Frequencies**E. NOONAN¹, H. SIDOTI¹, A. RITTER¹, T. ERRICO², AND A. VALDEVIT¹¹Stevens Institute of Technology, Hoboken, NJ, ²NYU 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. SIDOTI¹, E. NOONAN¹, A. RITTER¹, T. ERRICO², AND A. VALDEVIT¹¹Stevens Institute of Technology, Hoboken, NJ, ²NYU Langone Medical Center, New York, NY**P – Sat - A - 31****Facet Joint Stiffness Response to Loading Frequencies**R. CHUNG¹, E. NOONAN¹, H. SIDOTI¹, A. RITTER¹, T. ERRICO², AND A. VALDEVIT¹¹Stevens Institute of Technology, Hoboken, NJ, ²NYU Langone Medical Center, New York, NY**P – Sat - A - 32****Porcine Eye Response to Blast Ovepressure**V. D. ALPHONSE¹, A. R. KEMPER¹, C. MCNALLY¹, I. P. HERRING¹, P. J. BROWN², J. D. STITZEL², AND S. M. DUMA¹¹Virginia Tech, Blacksburg, VA, ²Wake 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. TOWLES¹ AND V. HENTZ²¹University of Wisconsin-Madison, Madison, WI, ²Stanford University, Palo Alto, CA**P – Sat - A - 34****Influence of Age and Gender on Lumbar Impact Response and Injury Tolerance**S. D. SHIMADA¹ AND N. MERRIER¹¹Biomechanical Consultants of CA, Davis, CA**P – Sat - A - 35****Impact Response and Injury Tolerance Corridors of the Lumbar Spine**S. D. SHIMADA¹ AND N. MERRIER¹¹Biomechanical 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. WEEMS¹ AND H. VO¹¹Mercer University, Macon, GA**P – Sat - A - 37****Comparison of Surface Arthroplasty Metacarpophalangeal/Phalangeal-Phalangeal Total Joint Replacements: A Computational and Numerical Study**A. C. WEEMS¹ AND H. VO¹¹Mercer 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. NGUYEN¹, V. NGUYEN¹, D. BAPTISTE¹, AND H. V. VO¹¹Mercer University, Macon, GA**P – Sat - A - 39****The Risk of Thoracic Injury in Direct Steering Wheel Impacts in Vehicles Equipped with Advanced Airbags**R. CHEN¹ AND H. C. GABLER¹¹Virginia Tech, Blacksburg, VA**P – Sat - A - 40****Structural and Morphologic Properties of the Mouse Femur are Rapidly Compromised by High Fat Diet**A. H. YANG¹, B. NGUYEN¹, B. ADLER¹, E. M. CHAN¹, AND C. RUBIN¹¹State 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. LIM¹, Y. JANG¹, P. HAN¹, O. YOO², K-Y. LEE¹, H. JUNG¹, AND J. KIM²¹Sejong University, Seoul, Korea, Republic of, ²Corentec Co., Ltd., Seoul, Korea, Republic of

P – Sat - A - 42**Evaluating Bending Stiffness Sensitivity through Parametric Models of the Human Ulna**B. GARVEN¹, E. ELLERBROCK¹, L. BOWMAN¹, A. B. LOUCKS¹, AND J. R. COTTON¹¹Ohio University, Athens, OH**P – Sat - A - 43****Effect of Coring Conditions on Temperature Rise in Bone**M. M. ISLAM¹, R. HANSBERGER¹, J. JAMES¹, AND X. WANG¹¹University 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. NGUYEN¹, D. NGUYEN¹, M. E. CHAN¹, AND C. RUBIN¹¹Stony 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. DAVIS¹, S. T. BAKER¹, G. A. BONIN¹, A. A. HILDEBRANDT¹, D. A. HULSE¹, S. C. KERWIN¹, W. B. SAUNDERS¹, AND M. R. MORENO¹¹Texas A&M University, College Station, TX**P – Sat - A - 46****Development of Age and Gender-Specific Thorax Finite Element Models**S. L. SCHOELL¹, A. A. WEAVER¹, AND J. D. STITZEL¹¹Virginia 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. RZEZNIK¹, K. MATTHEWS¹, J. SHRIDHARANI¹, G. WOOD¹, B. BIGLER¹, C. RICH¹, M. B. PANZER², AND C. R. BASS¹¹Duke University Injury Biomechanics Laboratory, Durham, NC, ²University 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. AHMED¹ AND T. SAIF¹¹Univ of IL, Urbana, IL**P – Sat - A - 49****Elastic Stiffness of Glioblastoma Cells Migrating in Confined Microfluidic Channels**J. WRIGHT¹, T. BLESENER¹, S. BHATTARAI¹, R. BACHOO², D. DAVE¹, Y-T. KIM¹, S. MOHANTY¹, AND C-J. CHUONG¹¹University of Texas at Arlington, Arlington, TX, ²University 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. NISHITANI¹, R. C. CARBONARI², AND A. M. ALENCAR¹¹Universidade de Sao Paulo, Sao Paulo, SP, Brazil, ²Universidade Federal do ABC, Santo Andre, SP, Brazil**P – Sat - A - 51****Nuclear Stiffening Inhibits Invasive Melanoma Cells**A. J. RIBEIRO¹, P. KHANNA², A. SUKUMAR¹, K. N. DAHL¹, AND C. DONG²¹Carnegie Mellon University, Pittsburgh, PA, ²The Pennsylvania State University, University Park, PA**P – Sat - A - 52****How Cytoskeletal Forces Determine Nuclear Shape**D. B. LOVETT¹, R. B. DICKINSON¹, AND T. P. LELE¹¹University 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. KANTHILAL¹ AND E. M. DARLING^{1,2}¹Brown University, Providence, RI, ²Brown University, Providence**P – Sat - A - 55****Spatial Control of Cell Seeding in 2-D Engineered Tissues**Z. WIN¹, G. D. VRLA¹, E. N. SEVCIK¹, AND P. W. ALFORD¹¹University of Minnesota, Minneapolis, MN**P – Sat - A - 56****Responses of C2C12 Cells on Asymmetric Nanostructured Surfaces**Q. LIU^{1,2}, J. JIANG², X. LI², X. S. WEI², B. XI^{2,3}, M. GRIGOLA², C. DYCK², P. WANG¹, G. L. LIU², AND K. J. HSIA²¹Zhejiang University, Hangzhou, China, People's Republic of, ²University of Illinois at Urbana-Champaign, Urbana, IL, ³Tsinghua University, Beijing, China, People's Republic of**P – Sat - A - 57****Oxidative Stress Comprised the Cytoskeleton Structure of Muscles Cells In Vitro**S. WONG¹, K. K. LEE¹, AND A. F. MAK¹¹The 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. MATHEW¹ AND A. MORSS CLYNE¹¹Drexel University, Philadelphia, PA**P – Sat - A - 59****Calcium Regulates Intracellular and Extracellular Cleavage of VWF by ADAMTS13**S. GOGIA¹, K. M. DAYANANDA¹, AND S. NEELAMEGHAM¹¹State University of New York at Buffalo, Buffalo, NY**P – Sat - A - 60****The Role of Chlamydia pneumonia Infection in Monocyte Biomechanics**A. K. SAHA¹, S. J. EVANI¹, T. GUDA¹, AND A. K. RAMASUBRAMANIAN¹¹University of Texas at San Antonio, San Antonio, TX**P – Sat - A - 61****The Role of Furin Processing in Notch Signal Transduction Mechanics**S. RAVINDRANATH¹, A. A. MUSSE², G. WEINMASTER², AND E. BOTVINICK¹¹University of California, Irvine, Irvine, CA, ²University of California, Los Angeles, Los Angeles, CA**P – Sat - A - 62****Venous Phlebitis: The Effect of Pressure Contact on Endothelial Cells Activation**D. WEISS¹ AND S. EINAV^{1,2}¹Tel Aviv University, Tel Aviv, Israel, ²Stony Brook University, Stony Brook, NY**P – Sat - A - 63****Using Microneedle Manipulation to Study Nuclear Envelopopathies**G. R. FEDORCHAK¹, M. KETEMA², AND J. LAMMERDING¹¹Cornell University, Ithaca, NY, ²The 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. HSIEH¹, Y-C. LEE¹, S-Y. CHOU¹, AND Y-K. WANG¹¹Taipei Medical University, Taipei City, TaiwanP = Poster Session
OP = Oral Presentation

P – Sat - A - 65**Orienting the Division Axis of Mammalian Cells in 3D Matrix by Interphase Protrusion**L. HE¹, W-T. CHEN¹, P-H. WU¹, AND D. WIRTZ¹¹Johns Hopkins University, Baltimore, MD**P – Sat - A - 66****Actin Filaments Regulate Migration Time of Cells Through a Microfluidic Constriction Channel**V. SRINIVASARAGHAVAN¹, H. BABAHOSSEINI¹, E. M. SCHMELZ¹, P. C. ROBERTS¹, AND M. AGAH¹¹Virginia 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. AWOJODU¹, P. KEEGAN¹, F. AHMED¹, M. O. PLATT¹, AND E. A. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA**P – Sat - A - 68****Confirmation-Dependent Inhibitory Binding of Green Tea Catechins to Amyloid- β in Alzheimer's Disease**S. E. CHASTAIN¹, K. PATE¹, AND M. MOSS¹¹University of South Carolina, Columbia, SC**P – Sat - A - 69****Simplicity of Design Principles underlying Tunable cis-Interactions within Shp2 Revealed**Y. WANG¹ AND J. SUN²¹UCSD, La Jolla, CA, ²UIUC, Urbana, IL**P – Sat - A - 70****Concatameric Nicotinic Acetylcholine Receptors to Study Receptor Mediated Internalization of Amyloid Beta Peptide**T. A. MURRAY¹¹Louisiana 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. CRADICK¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P – Sat - A - 72****Inactivation of the FokI Catalytic Domain of TALEN Monomer Can Reduce Nuclease Off-target Activity**C. J. ANTICO¹, T. J. CRADICK¹, H. DESHMUKH¹, E. J. FINE¹, E. KILDEBECK², M. H. PORTEUS², D. B. ROTH², AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Stanford University, Palo Alto, CA, ³University of Pennsylvania, Philadelphia, PA**P – Sat - A - 73****Developing Rationally Designed FRET-based Molecular Tension Sensors**B. D. HOFFMAN¹, A. LACROIX¹, AND M. A. SCHWARTZ²¹Duke University, Durham, NC, ²Yale University, New Haven, CT**P – Sat - A - 74****Ultraspecific DNA and RNA Hybridization Probes and Primers**D. Y. ZHANG¹ AND P. YIN²¹Rice University, Houston, TX, ²Harvard University, Boston, MA**P – Sat - A - 75****Electrical Potential Measurements of the Interfacial-bulk Water Complex Using a Hydrophilic Nafion Surface**R. DAS¹¹University of Washington, Seattle, WA**P – Sat - A - 76****Increasing Sensitivity in Identifying TALEN Off-target Cleavage by Co-expression of Exonucleases**C. J. KRUEGER¹, C. J. ANTICO¹, E. J. FINE¹, Y. LIN¹, T. J. CRADICK¹, AND G. BAO¹¹Georgia 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. TIRRELL¹, AND T. L. KINZER-URSEM^{1,3}¹California Institute of Technology, Pasadena, CA, ²Pfizer, Inc., Groton, CT, ³Purdue 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. WHITAKER¹, S. A. DAVIS¹, A. P. ARKIN^{1,2}, AND J. E. DUEBER^{1,2}¹U.C. Berkeley, Berkeley, CA, ²Lawrence Berkeley National Laboratory, Berkeley, CA**P – Sat - A - 79****Specific Interactions Underlie the Auto-inhibitory Mechanism of von Willebrand Factor AI Domain**G. INTERLANDI¹, O. YAKOVENKO¹, A. TU¹, AND W. THOMAS¹¹University 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. PATEL¹, M. E. CHAN¹, AND C. T. RUBIN¹¹Stony 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. FU¹, J. YANG¹, S. SHEN², B. CAI¹, W. YEN¹, L. ZHANG¹, AND M. ZENG¹¹The City College of the City University of New York, New York, NY, ²University of Nevada, Las Vegas, Las Vegas, NV**P – Sat - A - 82****Development of FRET Technologies for Quantitative Systems Biology Research of SUMOylation Pathway**J. LIAO¹, Y. SONG^{1,2}, Y. LIU^{1,3}, H. M. KAUR¹, A. N. SAAVEDRA¹, AND H. WIRYAWAN¹¹University of California at Riverside, Riverside, CA, ²University of Pennsylvania, Philadelphia, PA, ³California Institute of Biomedical Research, La Jolla, CA**P – Sat - A - 83****Microinjection-based delivery of β -globin-targeting TALENs into K562 cells for gene modification**R. N. COTTLE¹, D. ARCHER², AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory School of Medicine, Atlanta, GA

P – Sat - A - 84**Engineering PiT-I in Vascular Smooth Muscle Cells: Role of Phosphate Uptake in Matrix Calcification**N. W. CHAVKIN¹, M. H. CROUTHAMEL¹, AND C. M. GIACHELLI¹¹University of Washington, Seattle, WA**P – Sat - A - 85****ATP Release by Connexin43 Hemichannels Mediates Inflammation and Scarring Around Implants**J. M. RHETT¹, S. A. FANN¹, AND M. J. YOST¹¹Medical 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. HALL¹, Y-H. LEE², AND V. T. TURITTO²¹The College of New Jersey, Ewing, NJ, ²Illinois Institute of Technology, Chicago, IL**P – Sat - A - 87****Investigation of Novel Thalidomide-based Pro-angiogenic Small Molecules Through Gene Network Analysis**A. DAS¹, P. MERRILL¹, M. BROWN², AND E. BOTCHWEY³¹UVA, Charlottesville, VA, ²Georgetown, Washington DC, DC, ³Georgia Institute of Technology, Atlanta, GA**P – Sat - A - 88****Immunization of Subunit Vaccine rAapG5 Protected Mice Against Staphylococcus epidermidis Implant Infections**L. YAN¹ AND J. BRYERS¹¹University of Washington, Seattle, WA**P – Sat - A - 89****Rhamnan Sulfate Decreases the LDL Permeability of Human Coronary Artery Endothelial Cells *In Vitro***L. M. CANCEL¹ AND J. M. TARBELL¹¹The 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. POLLACK²¹Drexel University, Philadelphia, PA, ²University of Washington, Seattle, WA**P – Sat - A - 93****Fortified Nanofibrous Tubular Scaffold Made by Combination of Electrospinning and Rapid Prototyping**M-J. OH¹, S. PARK², S. PARK¹, Y. KANG¹, J-S. HYUN¹, J-W. SHIN¹, AND J-W. SHIN^{1,3}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ²Korea Institute of Machinery and Materials (KIMM), Daejeon, Korea, Republic of, ³First 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. WANG¹, J. A. THOMPSON¹, AND J. P. FISHER¹¹University 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. ALZEBDEH¹ AND H. MATTHEW¹¹Wayne State University, Detroit, MI**P – Sat - A - 96****Tetra-PEG Cartridges for Cell Encapsulation**Y. HEO¹, S. IWANAGA¹, AND S. TAKEUCHI¹¹The 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. BHUYAN¹, T. BOLAND², AND T-L. TSENG³¹Department of Mechanical Engineering, University of Texas at El Paso, El Paso, TX, ²Material Science and Biomedical Program, University of Texas, El Paso, El Paso, TX, ³Industrial, 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. DAVOUDI¹ AND P. M. GILBERT¹¹University 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. MARQUARDT¹, D. DAY², S. E. SAKIYAMA-ELBERT¹, AND A. B. HARKINS³¹Washington University in St. Louis, St. Louis, MO, ²Missouri University of Science and Technology, St. Louis, MO, ³Saint Louis University, St. Louis, MO**P – Sat - A - 100****Restoring Brain Circuitry Using Micro-Tissue Engineered Neural Networks**L. STRUZYN¹, J. WOLF¹, C. MIETUS¹, J. MORAND¹, AND D. K. CULLEN¹¹University of Pennsylvania, Philadelphia, PA**P – Sat - A - 101****Extended Protein Release from Microspheres Incorporated in Electrospun HA to Support Nerve Repair**T. WHITEHEAD¹ AND H. SUNDARARAGHAVAN¹¹Wayne State University, Detroit, MI**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. COHN¹, R. NORRIS², K. RUNDEL¹, S. L. LEUNG¹, AND X. WU¹¹University of Arizona, Tucson, AZ, ²Tucson 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. JURAN¹ AND P. S. MCFETRIDGE¹¹University of Florida, Gainesville, FL

P – Sat - A - 102**3D Tissue-engineered Model of the Neurovascular Unit for Study of Neurological Disease and Drug Treatments**A. M. HOPKINS¹, E. DESIMONE¹, D. SOOD¹, W. WONG¹, L. WRAY¹, L. TIEN¹, J. WHITE¹, J. RNJAK¹, M. TANG-SCHOMER¹, AND D. L. KAPLAN¹¹Tufts University, Medford, MA**P – Sat - A - 103****Highly Aligned Conducting Polymer Nanotubes Improves Axonal Regeneration**G. Yang¹, A. Greever¹, and M. R. Abidian¹¹Pennsylvania State University, State College, PA**P – Sat - A - 104****Co-axial Electrospun Aligned Microfibrous Scaffold With Rosette Nanotubes for Nerve Regeneration**W. ZHU¹, D. FRAUCHIGER¹, H. FENNIR², AND L. ZHANG¹¹The George Washington University, Washington, DC, ²University 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. ROMAN¹, A. HURTADO², AND H-Q. MAO¹¹Johns Hopkins University, Baltimore, MD, ²Kennedy Krieger Institute, Baltimore, MD**P – Sat - A - 106****Synergistic Effects of Substrate Morphology and Shear Stress on Neuronal Differentiation of hMSCs**J. C. MARQUEZ¹, K-J. JEON², S. PARK³, Y. KANG³, J-S. HYUN³, M-J. OH³, AND J-W. SHIN^{3,4}¹Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, ²Cell & Gene Biotechnology (CG Bio), Seongnam, Kyunggi-do, Korea, Republic of, ³Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ⁴First 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. RICHARDS¹, D. D. LIN¹, L. ESTROFF¹, AND J. BUTCHER¹¹Cornell University, Ithaca, NY**P – Sat - A - 108****Implanted Prevascularized Spheroids Develop Functional Vasculature that Supports Normoxic pO₂ Following Thrombosis**S. M. WHITE¹, C. PITTMAN¹, R. ARORA², R. HINGORANI³, T. ESIPOVA⁴, C. C. HUGHES¹, B. CHOI¹, AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA, ²The George Washington University, Washington DC, DC, ³St. George's University, Grenada, Grenada, ⁴University of Pennsylvania, Philadelphia, PA**P – Sat - A - 109****Photonic Crystal Fractal Structure for Lung Tissue – Irradiation Interaction Modeling**E. G. AZNAKAYEV¹, A. V. VISHNEVSKY¹, AND D. E. AZNAKAYEVA¹¹National Aviation University, Kiev, Ukraine**P – Sat - A - 110****In Vitro Bone Marrow Niche Model Lends Insight into SIP Receptor Signaling in the Mobilization and Homing of Hematopoietic Stem Cells**M. E. OGLE¹, A. AWOJODOU¹, A. DAS², AND E. A. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Virginia, Charlottesville, VA**P – Sat - A - 111****Generating 3D Microtumor Beads for Anti-Cancer Drug Screening**M. E. ZIEGLER¹ AND C. C. HUGHES¹¹University 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. DAUTRICHE¹, K. TORREJON¹, Y. XIE¹, M. BERGKVIST¹, S. SHARFSTEIN¹, AND J. DANIAS²¹College of Nanoscale Science SUNY Albany, Albany, NY, ²Downstate Medical Center, Brooklyn, NY**P – Sat - A - 113****Collagen Coating Enhances MSC-mediated Chondrogenesis on Chitosan-Calcium Phosphate Scaffolds**A. GOTTIPATI¹ AND S. H. ELDER¹¹Mississippi State University, Starkville, MS**P – Sat - A - 114****Characterization of SPIONs Permeability by an In Vitro Blood-Brain Barrier Model**D. SHI¹, D. HOFF², S. NAYAR³, AND T. J. WEBSTER¹¹Northeastern University, Boston, MA, ²Brown University, Providence, RI, ³CSIR-National Metallurgical Laboratory, Jamshedpur, India**P – Sat - A - 115****Design of a High-Throughput Report System of Follicle Health**H. ZHOU¹ AND A. SHIKANOV¹¹University of Michigan, Ann Arbor, MI**P – Sat - A - 116****A Microfluidic In Vitro Liver Model for Malaria Drug Discovery**S. P. MAHER¹, R. CROUSE², A. J. CONWAY², E. BANNISTER², A. K. ACHYUTA², N. SINGH³, S. XU³, N. YIMAMNUAYCHOK⁴, J. PRACHUMSR⁵, J. D. CUIFFI², J. H. ADAMS⁶, W. SAADI², AND D. E. KYLE²¹Draper Laboratory, Tampa, ²Draper Laboratory, Tampa, FL, ³University of South Florida, Tampa, FL, ⁴Mahidol Vivax Research Center, Bangkok, Thailand, ⁵Mahidol University, Bangkok, Thailand, ⁶University of South Florida, Tampa**Track:Tissue Engineering****Tissue Engineering****P – Sat - A - 117****Application of Elastomeric Polymers for Bladder Regeneration**S. SIVARAMAN¹, J. MYERS¹, N. AMOROSO², W. WAGNER², AND J. NAGATOMI¹¹Clemson university, Clemson, SC, ²University 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. URCIUOLO¹, C. CASALE¹, AND P. NETTI¹¹Center for Advanced Biomaterials for Health Care@CRIB, Istituto Italiano di Tecnologia, Naples, Italy, ²Interdipartimental 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. AN¹, S. PARK¹, Y. KANG¹, J-S. HYUN¹, M-J. OH¹, AND J-W. SHIN^{1,2}¹Department of biomedical engineering, Inje university, Gimhae, Korea, Republic of, ²First Research Team/ Inst. of Aged Life Redesign/ Cardiovascular and Metabolic Disease Center/ UHRC, Inje university, Gimhae, Korea, Republic of

P – Sat - A - 120**Morphological Changes of Mitochondria during Endothelial Differentiation of hMSCs**S. JEONG¹, J. SHIN², S. PARK³, Y. KANG³, J-S. HYUN³, M-J. OH³, AND J-W. SHIN^{3,4}¹Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, ²Cardiovascular and Metabolic Disease Center, Inje University, Gimhae, Korea, Republic of, ³Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, ⁴First 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. CASALI¹ AND M. A. MATTHEWS¹¹University of South Carolina, Columbia, SC**P – Sat - A - 122****Bioprinting of Controlled Thickness and Microvascularization Using Biodegradable Polymers**K. SINGARAPU¹, K. SINGARAPU¹, AND S. V. MADIHALLY¹¹Oklahoma State University, Stillwater, OK**P – Sat - A - 123****Effect of Combined Shear and Thermal Stress on Pre-osteoblasts for Bone Regeneration**A. C. SAMPSON¹ AND N. RYLANDER¹¹Virginia Tech, Blacksburg, VA**P – Sat - A - 124****Fabrication of Woven Tissue Engineering Scaffolds with Variable Porosity Using a Novel Bio-loom**J. GILMORE¹¹Clemson 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. KUNDU¹, A. MICHAELSON¹, K. TALBOT¹, P. BARANOV², M. J. YOUNG², AND R. L. CARRIER¹¹Northeastern University, Boston, MA, ²Schepens 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. HICKEY¹ AND T. J. WEBSTER¹¹Northeastern University, Boston, MA**P – Sat - A - 127****Evaluation of Immune Response to Subcutaneously Implanted Decellularized Liver Matrix**D. C. SULLIVAN¹, S-H. MIRMALEK-SANI², C. ZIMMERMAN², T. SHUPE², AND B. E. PETERSEN¹¹University of Florida, Gainesville, FL, ²Wake 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. LEI¹ AND D. SCHAFER¹¹University 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. MACHIRAJU¹, V. MONTAZERI², I. M. PANAH², AND K. BEHBEHANI³¹University of Texas Arlington, Arlington, TX, ²University of Texas Dallas, Richardson, TX, ³The University of Texas Arlington, Arlington, TX**P – Sat - A - 130****Design of a Portable Fast Scan Cyclic Voltammetry System for Measuring Neurotransmitter Levels**J. FOSTER¹, E. RAMSSON², AND S. RHODES¹¹Grand Valley State University, Grand Rapids, MI, ²Grand Valley State University, Allendale, MI**P – Sat - A - 131****Training System to Improve the Skills of Medical Residents Necessary to Perform Laparoscopic Surgery**W. RYTLEWSKI¹, S. RHODES¹, AND J. FARRIS¹¹Grand 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. ALBAL¹ AND P. G. MENON¹¹Carnegie 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. PIETY¹, X. YANG¹, AND S. S. SHEVOKOPLYAS¹¹Tulane 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. ARGENTA², M. J. MORYKWAS^{1,2}, AND W. WAGNER^{1,2}¹Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC**P – Sat - A - 136****Intravascular Multi-Layered Glucose Sensor for An Artificial Pancreas**D. S. SABER¹, N. A. FADHIL¹, P. PATRA¹, AND M. FAEZIPOUR¹¹University of Bridgeport, Bridgeport, CT**P – Sat - A - 137****Biomaterial Evaluation in Clinically Relevant Disease Microenvironments Promotes Device Translational Capacity**N. OLIVA-JORGE¹, M. CARCOLE^{1,2}, M. BECKERMAN^{1,3}, E. R. EDELMAN^{1,4}, AND N. ARTZI^{1,4}¹MIT, Cambridge, MA, ²IQS, Barcelona, Spain, ³Ort Braude College, Karmiel, Israel, ⁴Brigham and Women's Hospital, Harvard Medical School, Boston, MA

P – Sat - A - 138**Additive Manufacture of Minimally-Invasive Medical Devices for Pancreatic Cancer Treatment**L. M. REESE¹, P. GARCIA¹, R. DAVALOS¹, P. SHEN², G. MISHRA², C. WILLIAMS¹, AND L. R. BICKFORD¹¹Virginia Tech, Blacksburg, VA, ²Wake Forest Medical Center, Winston Salem, NC**P – Sat - A - 139****Microfluidic Device Development and Analysis to Prepare Bulk Pancreas Tissue for 3D Imaging**C. BURFEIND¹, R. DAS¹, AND E. SEIBEL¹¹University of Washington, Seattle, WA**P – Sat - A - 140****A Standardized Procedure for Generating Fibrin Clots *In Vitro* on Rotating Mechanical Surfaces**S. L. JESSEN¹, B. R. WEEKS¹, AND F. J. CLUBB, JR.¹¹Texas 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. SIU¹, AND W. A. LAM^{1,2}¹Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology, Atlanta, GA, ²Aflac 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 III², AND Q-J. FU^{1,2}¹University of Southern California, Los Angeles, CA, ²House 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}¹Case Western Reserve University, Cleveland, OH, ²Louis-Stokes Department of Veterans Affairs Medical Center (LSDVAMC), Cleveland, OH, ³MetroHealth, Cleveland, OH, ⁴UH 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. ANDERSON¹, J. J. GLYNN¹, AND M. T. HINDS¹¹Oregon 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. LUO¹, M. LOJA¹, G. FARWELL¹, R. GANDOUR-EDWARDS¹, AND N. NITIN¹¹UC Davis, Davis, CA**P – Sat - A - 146****Gastrointestinal Absorption of 99mTc-Heparin: A Radiocontrast Agent for Eosinophilic Inflammation**H. SAFFARI¹, R. CONDIE¹, J. J. KRSTYEN¹, P. JENKINS¹, K. A. PETERSON¹, G. J. GLEICH¹, AND L. F. PEASE III¹¹University 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. SWITZ¹, L. M. NILSSON¹, AND D. A. FLETCHER¹¹University of California, Berkeley, Berkeley, CA, ²University 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. DAS¹, J. R. LAPOINTE², S. SHIMER³, B. HAWTHORNE³, M. P. UPTON¹, AND E. J. SEIBEL¹¹University of Washington, Seattle, WA, ²University of Washington Medical Center, Seattle, WA, ³Vision Gate, Inc., Seattle, WA**P – Sat - A - 149****Cardiac Architecture Assessed *In Vivo* using Speckle Tracking Echocardiography**N. MAZEH¹, D. HAINES¹, G. RAFF¹, A. ABASS², AND B. ROTH³¹Beaumont Health System, Royal Oak, MI, ²Beaumont Health System, Royal oak, MI, ³Oakland 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. SANO¹, C. B. ARENA¹, P. A. GARCIA¹, J. M. CISELL², J. L. ROBERTSON¹, AND R. V. DAVALOS¹¹Virginia Tech, Blacksburg, VA, ²Virginia-Maryland College of Veterinary Medicine, Blacksburg, VA**P – Sat - A - 151****Combined Strategies to Improve Adipose-derived Stem Cells-mediated Tissue Regeneration**E. CHUNG¹, S. NAM¹, D. Y. SANTIESTEBAN¹, L. M. RICLES¹, R. S. STOWERS¹, S. EMELIANOV¹, AND L. J. SUGGS¹¹The University of Texas at Austin, Austin, TX**P – Sat - A - 152****Platelet Storage: A Chilling Story**K. REDDOCH¹, P. NAIR¹, R. MONTGOMERY², C. FEDYK², H. PIDCOKE², A. RAMASUBRAMANIAN¹, AND A. CAP²¹The University of Texas at San Antonio, San Antonio, TX, ²US 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 Hemophilic Patients**T. V. COLACE¹, K. A. PANCKER², P. F. FOGARTY², AND S. L. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA, ²Hospital 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. KANAKIA¹, J. TOUSSAINT¹, S. MULLICK CHOWDHURY¹, T. TEMBULKAR¹, S. LEE¹, Y. JIANG¹, R. Z. LIN¹, K. SHROYER¹, W. MOORE¹, AND B. SITHARAMAN¹¹Stony 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. ROBERSON¹ AND H. GARNER²¹Virginia Tech School of Biomedical Engineering and Sciences, Blacksburg, VA, ²Virginia Bioinformatics Institute, Blacksburg, VA**P – Sat - A - 156****Improving Cancer Detection Performance of Quantitative Phase Microscopy through Image Registration**S. KITA¹, S. UTTAM¹, AND Y. LIU¹¹University of Pittsburgh, Pittsburgh, PA**P – Sat - A - 157****LC-MS/MS Identification of the Aquaporin-2 Interactome**D. J. HAGEMAN^{1,2}, C-L. CHOU², AND M. KNEPPER²¹Case Western Reserve University, Cleveland, OH, ²National Institutes of Health, Bethesda, MD**P – Sat - A - 158****Quantitative Flow Cytometry Analysis of Angiogenic Growth Factor Receptors**P. K. GUPTA¹, G. CONARD¹, J. PARKIN¹, F. L. MONTIEL¹, AND P. IMOUKHUEDE¹¹University 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. SPAR¹, Q. CHEN¹, AND C. NELSON¹¹Princeton University, Princeton, NJ**Track: Undergraduate Research****Biomaterials - Undergraduate Research****P – Sat - A - 160****Material Interaction with Touchscreens for Artificial Fingertip Research**A. B. DEINES¹, E. N. MAZAR¹, J. R. WISSINGER², AND B. R. CAMPBELL¹¹Robert Morris University, Moon Township, PA, ²Robert Morris University, Moon Township, PA**P – Sat - A - 161****Biocompatibility of Oxime Crosslinked Hydrogels**M. R. ZANOTELLI¹, G. N. GROVER², AND K. L. CHRISTMAN²¹University of Wisconsin-Madison, Madison, WI, ²University of California, San Diego, La Jolla, CA**P – Sat - A - 162****Nanoscale Physicochemical Properties of Chain- and Step-Growth Polymerized PEG Hydrogels**K. HARDING¹, I. ZAMPETAKIS¹, G. MARSH¹, K. VATS¹, R. E. WAUGH¹, AND D. S. BENOIT^{1,2}¹University of Rochester, Rochester, NY, ²University 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. LACCETTI¹, K. CHANG¹, AND L. TAITE¹¹Georgia Institute of Technology, Atlanta, GA**P – Sat - A - 164****Engineering Potato Virus X as a Platform for Targeted Cancer Therapy**P. L. CHARIOU¹, K. L. LEE¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P – Sat - A - 165****Divalent Ion Removal Improves Stability and Mechanical Properties of Gelatin Hydrogel**K. YATES¹, Q. XING¹, C. VOGT¹, F. ZHAO¹, AND M. FROST¹¹Michigan Technological University, Houghton, MI**P – Sat - A - 166****Examining RGD Concentration of Poly(Ethylene Glycol)-Diacrylate Hydrogels for Cell Adhesion**E. J. ENGLISH¹, D. A. YOUNG¹, J. LARSON¹, AND G. PAPAVALIIOU¹¹Illinois Institute of Technology, Chicago, IL**P – Sat - A - 167****Electrically Responsive Tough Hydrogels**F. Y. SU¹, M. DARNELL^{2,3}, S. KENNEDY^{2,3}, AND D. J. MOONEY^{2,3}¹Harvey Mudd College, CA - California, CA, ²Harvard University, Cambridge, MA, ³Wyss Institute for Biologically Inspired Engineering, Cambridge, MA**P – Sat - A - 168****Small Molecule Eluting Nanofiber Based Bioactive Bandages for Expedited Chronic Wound Healing**E. GUADALUPE¹, D. RAMOS^{1,2}, AND S. KUMBAR^{1,2}¹University of Connecticut, Storrs, CT, ²University of Connecticut Health Center, Farmington, CT**P – Sat - A - 169****Engineering pH- and Thermo-Responsive Nanogels by Pseudo Initiator-Free Graft Polymerization**S. SRINIVASAN¹, L. LIN¹, R. E. MARCHANT¹, AND J. ZHU¹¹Case 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. MESHOYRER¹, R. D. MENEZES¹, T. L. ARINZEH¹, AND B. J. PFISTER¹¹New Jersey Institute of Technology (NJIT), Newark, NJ, ²The College of New Jersey (TCNJ), Ewing Township, NJ**P – Sat - A - 171****In-Vitro Hemato-Compatibility of Dextran Functionalized Graphene Nanoparticles**J. M. FANG¹, S. CHOWDHURY¹, S. KANAKIA¹, AND B. SITHARAMAN¹¹SUNY Stony Brook University, Stony Brook, NY

P – Sat - A - 172**Effects of Detergents on the Biological Properties of Pig Liver Extract for Liver Regeneration Study**J. P. REPPER¹, D. C. SULLIVAN¹, AND B. E. PETERSEN¹¹University of Florida, Gainesville, FL**P – Sat - A - 173****Oral Delivery of siRNA Using pH-Responsive Hydrogel Nanoparticles**H. FRIZZELL¹, D. FORBES¹, AND N. A. PEPPAS¹¹University 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. STELLON¹, S. LI², AND Y. WANG²¹University of Connecticut, Storrs, CT, ²Pennsylvania State University, University Park, PA**P – Sat - A - 175****Solubility and Gelation Behavior of Keratin Biomaterials**S. M. TSUDA¹, R. DE GUZMAN¹, AND M. VAN DYKE¹¹Virginia 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. KLEIN¹¹Bucknell University, Lewisburg, PA**P – Sat - A - 177****Evaluation of the Immunogenic Properties and Phagocytotic Uptake of PEGylated Potato Virus X**M. WU¹, K. L. LEE¹, S. SHUKLA¹, N. R. AYAT¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**P – Sat - A - 178****Biocompatibility of Mg-Rare Earth Element Alloys as Biodegradable Bone Implant Materials**D. ALBERT¹ AND F. WITTE²¹University of Pittsburgh, Pittsburgh, PA, ²Charité - Universitätsmedizin Berlin, Berlin, Germany**P – Sat - A - 179****Growth Factor Integration to Electrochemically Aligned Collagen Sutures for Tendon Repair**S. PANIT¹, V. KISHORE¹, AND O. AKKUS¹¹Case Western Reserve University, Cleveland, OH**P – Sat - A - 180****Fabrication and Characterization of Shape Coded Hydrogel Microparticles for Biomolecule Detection**M. AL-AMEEN¹ AND G. GHOSH¹¹University of Michigan, Dearborn, Dearborn, MI**P – Sat - A - 181****Improved Mechanical Properties in Hyaluronic Acid Hydrogels from Exogenous Horseradish Peroxidase**S. KAMAL¹, A. ABU-HAKMEH², AND L. Q. WAN²¹Cornell University, Ithaca, NY, ²Rensselaer Polytechnic Institute, Troy, NY**P – Sat - A - 182****Histomorphometric Analysis of Inflammation Around Stable and Failed Alginate Encapsulation Materials**V. IBARRA¹, V. GUPTA², A. APPEL¹, AND E. M. BREY¹¹Illinois Institute of Technology, Chicago, IL, ²Georgia Tech, Atlanta, GA**P – Sat - A - 183****Modular Tissue Engineering: Chitosan-GAG Fibers Formed From an Ionic Complex**A. GAGLIARDI¹¹Wayne State University, Harrison Township, MI**P – Sat - A - 184****Swelling and Degradation of Decellularized Cartilage and Hyaluronic Acid Nanocomposite Hydrogels**B. LOHMAN¹, E. BECK¹, AND M. DETAMORE¹¹University of Kansas, Lawrence, KS**P – Sat - A - 185****Compressive Mechanical Properties of PRP-eluting Candidate Materials for a Tissue-engineered Nucleus Pulposus**C. M. LUETKEMEYER¹, E. A. KALAF¹, J. G. BLEDSOE¹, AND S. A. SELL¹¹Saint 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. SAXON¹, A. HOLIAN¹, AND K. L. TROUT¹¹University 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. PUMPHREY¹, J. M. GRASMAN¹, AND G. D. PINS¹¹Worcester Polytechnic Institute, Worcester, MA**P – Sat - A - 188****Quantitative Study of Bacterial Detachment from Nanopatterned Thermo-Responsive Polymer Brushes**O. PADILLA¹, P. SHIVAPOOJA², AND G. LOPEZ²¹University of Puerto Rico-Cayey, Cayey, PR, Puerto Rico, ²Duke 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. KIM¹, P. FATTABI¹, AND M. R. ABIDIAN¹¹Pennsylvania State University, State College, PA**P – Sat - A - 190****Bioactive Modification of Venous Valve Biomaterial to Enable Protein C Activation**E. POLSIN¹, J. GLYNN², AND M. T. HINDS²¹University of Portland, Portland, OR, ²Oregon Health & Science University, Portland, OR**P – Sat - A - 191****Additive Manufacturing of Silicate Bioactive Glass (13-93) Porous Constructs for Bone Repair**T. L. COMTE¹, K. KOLAN², M. LEU², AND P. MADRIA²¹University of North Carolina, Chapel Hill, NC, ²Missouri University of Science and Technology, Rolla, MO**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. YUSUFBEKOV¹, K. M. CURTIS¹, S. FELTON¹, T. BEVINS¹, AND K. CSAVINA¹¹Florida Gulf Coast University, Fort Myers, FL**P – Sat - A - 193****Aging Weakens Lumbar Vertebrae but Strengthens Coccygeal Vertebrae in C57Bl/6 Mice**B. A. BOMAR¹, N. HOLGUIN¹, AND M. J. SILVA¹¹Washington University, Saint Louis, MO

P – Sat - A - 194**Differing Modes of Lubrication for TMJ Condylar Cartilage and Articular Disc**B. K. ZIMMERMAN¹, D. L. BURRIS¹, AND X. L. LU¹¹University of Delaware, Newark, DE**P – Sat - A - 195****Intrinsic Healing of Mouse Flexor Tendons *In Vitro***M. A. WINKELMAN¹ AND M. R. BUCKLEY²¹University of Rochester Department of Biomedical Engineering, Rochester, NY, ²University 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. LEE¹ AND M. BUCKLEY¹¹University of Rochester, Rochester, NY**P – Sat - A - 197****Contribution of Age and Gender on Running Mechanics of the Hip at Different Running Speeds**A. HUA¹, E. SHEEDY¹, A. SEAY¹, C. MONTERO¹, L. BARNES¹, H. VINCENT¹, AND B. CONRAD^{1,2}¹University of Florida, Gainesville, FL, ²Nike 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. LUETKEMEYER¹, R. JAMES¹, Z. SCHWARTZ¹, S. V. DEVARAKONDA¹, AND J. E. WAGENSEIL¹¹Saint 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. DEVARAKONDA¹, S. BHAYANI¹, C. M. LUETKEMEYER¹, J. PROCKNOW¹, AND J. E. WAGENSEIL¹¹Saint 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. GARDNER¹, J. HOWENSTEIN¹, B. SATHER¹, S. BHAYANI¹, L. BENNETT¹, AND J. WAGENSEIL¹¹Saint Louis University, St. Louis, MO**P – Sat - A - 201****Effects of Western Diet on Arterial Mechanics of ApoE^{-/-} Mice**S. BHAYANI¹, J. MAEDEKER¹, W. GARDNER¹, L. BENNETT¹, AND J. WAGENSEIL¹¹Saint Louis University, Saint Louis, MO**P – Sat - A - 202****Dynamic Fluid Loading on Turkey Trabecular Bone Marrow Morphology**Q. ENG¹, M. HU¹, AND Y-X. QIN¹¹SUNY Stony Brook, Stony Brook, NY**P – Sat - A - 203****Likelihood of Head Injury During Moderate to Severe Rear End Collisions**A. GUIANG¹ AND S. RUNDELL²¹University of Illinois at Urbana-Champaign, Champaign, IL, ²Armstrong Forensic Engineers, Milford, MI**P – Sat - A - 204****Cell Viscoelasticity as a Function of Substrate Stiffness Quantified by Atomic Force Microscopy**R. BRUNETTI¹, G. THOMAS², AND Q. WEN²¹Scripps College, Claremont, CA, ²Worcester 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. DAY¹, J. P. CAFFREY², F. H. HSU², A. C. CHEN², AND R. L. SAH²¹Union College, Schenectady, NY, ²University 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. WILKISON¹, E. M. NOTTINGHAM², A. A. LINBERG², N. CORTES¹, AND E. J. WOLF²¹George Mason University, Fairfax, VA, ²Walter Reed National Military Medical Center, Bethesda, MD**P – Sat - A - 207****Characterization of Cartilage Mechanics and Wear After Trauma**J. G. JIMENEZ¹, E. D. BONNEVIE², AND L. J. BONASSAR²¹Inter American University of Puerto Rico, Bayamon Campus, Mayaguez, PR, Puerto Rico, ²Cornell University, Ithaca, NY**P – Sat - A - 208****Pull-off Stress Assessment on Commercially Available Polymers Intended for Wound Treatment**R. THORNTON¹, V. KHEYFETS¹, AND E. FINOL¹¹University 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. NJINIBAM¹, J. DESJARDINS¹, B. KALUF², N. HOOKS², D. BALLARD³, S. HOEFFNER⁴, AND T. PRUETT⁵¹Clemson University, Clemson, SC, ²Ability Prosthetics and Orthotics, Inc., Greenville, SC, ³Upstate Pedorthic Services, Greer, SC, ⁴Clemson Environmental Technologies Laboratory, Anderson, SC, ⁵Clemson Environmental Technologies Laboratory, Anderson, SC**P – Sat - A - 210****Dynamic Hydraulic Fluid Loading on Tibial Articular Cartilage**S. MOY¹, M. HU¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**P – Sat - A - 211****Impact Force Testing on NFL Thigh Pads**N. PRACHT¹, C. WILLIAMSON¹, AND D. FRAKES¹¹Arizona State University, Tempe, AZ**P – Sat - A - 212****Novel Electrodes for Blast Experimentation**A. A. ALSHAREEF¹, M. REINSVOLD¹, G. W. WOOD¹, B. R. BIGLER¹, J. K. SHRIDHARANI¹, K. DZIRASA¹, AND C. R. BASS¹¹Duke University, Durham, NC**P-Sat-A-213****Three-Dimensional Endothelial Cell Invasion and Migration are Modulated by a Collagen Gel Stiffness**S. SOMASEGAR¹, B. N. MASON¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY

Track: Undergraduate Research**Biomedical Engineering Education - Undergraduate Research****P – Sat - B - 1****Understanding Gold Nanoparticles Peptide Triazole mediated HIV-1 Virolysis**A. NANGARLIA¹, A. ROSEMARY BASTIAN¹, C. DUFFY¹, L. BAILEY¹, R. KALYAN SUNDARAM¹, A. ELFMAN¹, C. ANG¹, AND I. CHAIKEN¹¹Drexel University, Philadelphia, PA**P – Sat - B - 2****Characterization of Parthenolide Delivery Using Micelles: Treatment of Leukemia Cells**L. J. BAUER¹, M. P. BARANELLO², AND D. S. BENOIT³¹Department of Biomedical Engineering at University of Rochester, Rochester, NY,²Department of Chemical Engineering at University of Rochester, Rochester, NY,³Department 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. YU¹, J. JIMENEZ¹, AND P. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**P – Sat - B - 4****Creation of a Wristwatch Sensor to Enhance Diabetic Footwear Adherence**R. GAPP¹¹University of Arizona, Tucson, AZ**P – Sat - B - 5****Case Study on the Educational Efficacy of an Intensive Research Based Science Summer Program**S. M. ROBB¹, B. R. CAMPBELL¹, M. MUTUNGA¹, AND S. ABBOTT¹¹Robert Morris University, Moon Township, PA**P – Sat - B - 6****Tunable Collagen Polymers for Improved Design and Control of Collagen-Drug Delivery Systems**R. L. NKULU¹, R. V. JOSH², AND S. L. VOYTIK-HARBIN^{2,3}¹Franklin College of Indiana, Franklin, IN, ²Purdue University Weldon School of Biomedical Engineering, West Lafayette, IN, ³Purdue University Department of Basic Medical Sciences, West Lafayette, IN**P – Sat - B - 7****Design and Development of a Stream Steerable Microfluidic Device**A. HOUSTON¹¹Vanderbilt, Nashville, TN**Track: Undergraduate Research****Biomedical Imaging and Optics - Undergraduate Research****P – Sat - B - 8****Modeling Countertransport: To Equilibrate or Not To Equilibrate**Y. ABDULLAH¹¹Seattle Central Community College/University of Washington, Seattle, WA**P – Sat - B - 9****Observation of Diffusion of Liposomal Drug Carriers in Collagen**S. THANIKACHALAM¹, G. ORSINGER¹, S. LEUNG¹, AND M. ROMANOWSKI¹¹University 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. MOY¹, AND B. CHOI¹¹Beckman Laser Institute and Medical Clinic, Irvine, CA, ²University of California, Irvine, Irvine**P – Sat - B - 11****Finding Medial Points Using Homogeneity Ascent Graphs in High-Frequency Ultrasound**C. WONG¹, V. SHIVAPRABHU¹, S. HORVATH², J. GALEOTTI², J. WANG¹, A. ZHANG², V. GORANTLA¹, AND G. STETTEN¹¹University of Pittsburgh, Pittsburgh, PA, ²Carnegie Mellon University, Pittsburgh, PA**P – Sat - B - 12****How Biofilm Inhibitors Affect Biofilm Structure**M. KIAMCO¹, M. KHAN¹, H. BEYENAL¹, N. ABU-LAIL¹, AND D. CALL¹¹Washington 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. CLARK¹, K. M. PARKER¹, AND J. W. HOLMES¹¹University of Virginia, Charlottesville, VA**P – Sat - B - 14****Towards Monitoring Bone Graft Healing with Diffuse Correlation Spectroscopy**H. KIM¹, K. JUNG¹, M. D. HOFFMAN¹, D. S. BENOIT¹, AND R. CHOE¹¹University of Rochester, Rochester, NY**P – Sat - B - 15****Functional Imaging of Vigilance Decrement By Characterizing Brain Tissue Pulsatility Using Ultrasound**V. F. BOTTEICHER¹, R. G. RAMIREZ¹, T. H. SHAW¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**P – Sat - B - 16****Simulation of Refraction Artifacts in Shear Wave Velocity Estimation with Curvilinear Transducers**V. SAYSENG¹, J. LANGDON¹, AND S. MCALEAVEY¹¹University of Rochester, Rochester, NY**P – Sat - B - 17****Monitoring Cardiac Development in Drosophila Melanogaster using Optical Coherence Microscopy**N. M. PIROZZI¹, A. ALEX¹, A. LI², R. E. TANZI², AND C. ZHOU¹¹Lehigh University, Bethlehem, PA, ²Massachusetts 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. GUPTA¹, A. A. APPEL^{2,3}, J. C. LARSON^{2,3}, M. A. ANASTASIO⁴, AND E. M. BREY^{2,3}¹Georgia Institute of Technology, Atlanta, GA, ²Illinois Institute of Technology, Chicago, IL, ³Edward Hines Jr. VA Hospital, Hines, IL, ⁴Washington University in St. Louis, St. Louis, MT**P – Sat - B - 19****Oblique Illumination Interferometric Reflectance Imaging Sensor for Small Molecule Detection**A. GOKOGLU¹, A. P. REDDINGTON¹, AND M. S. UNLU¹¹Boston University, Boston, MA**P – Sat - B - 20****AFM Adhesion Analysis of Pseudomonas fluorescens**M. E. SCHWARTZ¹, I. IVANOV², C. D. BOYD³, G. A. O'TOOLE³, AND T. A. CAMESANO¹¹Worcester Polytechnic Institute, Worcester, MA, ²Stanford, Stanford, CA, ³Dartmouth College, Dartmouth, NH

P – Sat - B - 21**Creation of a Handheld NIRS Imaging Device for Infants**D. C. PELKEY¹¹University of Pittsburgh, Richmond, VA**P – Sat - B - 22****Patient Motion Tracking for Medical Imaging Using 3D Sensing**N-C. H. LY¹, J. T. EAGLE², J. MEYER¹, AND A. M. ALESSIO¹¹University of Washington, Seattle, WA, ²University 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. SLANIA¹, I. T. DOBRUCKI², A. CZERWINSKI³, F. VALENZUELA³, AND L. W. DOBRUCKI^{1,2}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Beckman Institute, Urbana, IL, ³Peptides 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. JUNG², AND E. PELI²¹University of Rochester, Rochester, NY, ²Schepens 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. MERRITT¹, S. SPRATT¹, J. GROOMS², G. THOMPSON², W. PAN², E. SCHUMACHER¹, AND S. KEILHOLZ²¹Georgia Tech, Atlanta, GA, ²Georgia Tech and Emory University, Atlanta, GA**P – Sat - B - 26****Micro-PIV of Bubble Splitting in a Bifurcation**

S. L. Stephenson I, F. Hellmeier I, J. J. Pitre I, D. S. Li I, and J. L. Bull I

I University of Michigan, Ann Arbor, MI

P – Sat - B - 31**Development of a Screening Assay to Identify Inhibitors of the ROR2 Receptor**A. A. VALIGA¹, M. P. O'CONNELL¹, D. SCHULTZ¹, K. MARCHBANK¹, M. WEBSTER¹, A. KAUR¹, AND A. T. WEERARATNA¹¹The Wistar Institute, Philadelphia, PA**P – Sat - B - 32****The Use of Electrokinetic Phenomena to Characterize Malignant Cells**P. KYLE¹, L. ANDERS¹, J. CEMAZAR¹, C. ROBERTS¹, E. SCHMELZ¹, AND R. DAVALOS¹¹Virginia Tech, Blacksburg, VA**P – Sat - B - 33****The Effect of Primary Cilia on Non-Small Cell Lung Cancer**K. M. MOBARAKEH¹, M. RADHIKA¹, E. XU¹, AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P – Sat - B - 34****Development of a Deterministic Antibody Array Display Technology using a Plant Virus-based Molecular Scaffold**K. CHEN¹, M. GLIDDEN¹, M. MCBURNEY¹, D. A. THOMPSON², P. DAWSON², AND N. F. STEINMETZ³¹Case Western Reserve University, Cleveland, OH, ²The Scripps Research Institute, La Jolla, CA, ³Case Western Reserve University, Cleveland, CA**P – Sat - B - 35****The Effect of miRNA Secondary Structure and Drosha Expression on miRNA Biosynthesis**R. D. JONES¹, H. SPERBER¹, A. BEEM¹, A. KUKREJA², AND H. RUOHOLA-BAKER¹¹University of Washington, Seattle, WA, ²Carnegie Mellon University, Pittsburgh, PA**P – Sat - B - 36****Simulating Delivery, Binding, and Clearance of a Novel Hypoxia-Binding Contrast Agent**J. M. MARTIN¹, P. K. GULAKA², AND V. D. KODIBAGKAR^{1,2}¹Arizona State University, Tempe, AZ, ²University 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. WALLACE¹, A. OKAL¹, AND C. S. LIM¹¹University 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. LUCERO¹, T. JACOB², W. LAM², AND T. VU²¹University of Washington, Seattle, WA, ²Oregon 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. KOLBERG¹, B. SEO¹, J. GONZALEZ¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**P – Sat - B - 30****Engineering Lipid-Polymer Hybrid Nucleic Acid Delivery Vehicles for Gene Therapy**K. M. KARROBI¹, M. T. BURGESS¹, T. TA¹, AND T. M. PORTER¹¹Boston 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. SNYDER¹, S. LOGAN¹, S. TAOKEAW², B-M. ZHANG NEWBY², AND W. CHILIAN¹¹Northeast Ohio Medical University, Rootstown, OH, ²University of Akron, Akron, OH**P – Sat - B - 38****The Role of Flow Patterns and Apoptosis on Atherosclerosis Plaque Formation**S. MENSAH¹, E. EBONG², AND J. TARBELL³¹City College of New York, New York, NY, ²Albert Einstein School of Medicine, Bronx, NY, ³City College of New York, New York, NY**P – Sat - B - 39****Quantification of Cardiac Function by 4D Shape Analysis Objectively Characterizes Ventricular Remodeling**A. MEHRA¹, S. M. ADHYAPAK², S. TULLY², AND P. G. MENON⁴¹Georgia Institute of Technology, Atlanta, GA, ²St. John's Medical College Hospital, Bangalore, India, ³QuantMD, LLC, Pittsburgh, PA, ⁴Sun 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. FARRAR², AND J. BUTCHER²¹Case Western Reserve University, Cleveland, OH, ²Cornell University, Ithaca, NY

P – Sat - B - 41**Fibrin Deposition: a Reductionist Model for Clot Formation on Streamlined vs. Non-streamlined Stents**C. KAMPMEYER¹, J. M. JIMÉNEZ¹, AND P. F. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**P – Sat - B - 42****Calcific Aortic Valve Disease Cell Culture: Three Dimensional Methods for Cellular Characterization of Calcified Valves**H. FARES¹, M. SAPP¹, AND K. GRANDE-ALLEN¹¹Rice, Houston, TX**P – Sat - B - 43****Drying of Collagen Gels to Increase Stiffness and Strength**D. J. SHAVER¹, J. RAYKIN², AND R. GLEASON³¹Georgia Institute of Technology, Sharpsburg, GA, ²Georgia Institute of Technology, Marietta, GA, ³Georgia 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. GOKHIN²¹WESTERN NEW ENGLAND UNIVERSITY, SPRINGFIELD, MA, ²THE 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. SCHWARTZ¹, M. E. VODZAK¹, K. A. FIELD¹, AND D. M. REEDER¹¹Bucknell 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. KLAUS³, J. JUNKO³, E. MILLER³, AND F. SAFADI^{2,4}¹The University of Akron, Akron, OH, ²Northeast Ohio Medical University, Rootstown, OH, ³Summa Health Systems, Akron, OH, ⁴Kent 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. AWORANTI¹, E. SULISTJO², Y. WU², R. FAN², AND K. MILLER-JENSEN²¹University of Maryland Baltimore County, Baltimore, MD, ²Yale University, New Haven, CT**P – Sat - B - 48****A Novel Peptide That Preferentially Binds Tumor-Associated Macrophages in Solid Tumors**J. YU¹, M. CIESLEWICZ¹, AND S. PUN¹¹University of Washington, Seattle, WA**P – Sat - B - 49****Automating the Transformation of Tobacco Mosaic Virus to Spherical Viruses for Biomedical Applications**A. L. VANMETER¹, M. A. BRUCKMAN¹, AND N. F. STEINMETZ^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Case Western Reserve University School of Medicine, Cleveland**P – Sat - B - 50****Transfection Optimization for Precise Control of Insulin Expression**L. CRUDUP¹¹University of California, San Diego, Ontario, CA**P – Sat - B - 51****High-throughput Quantitative Assays to Characterize Protein Interaction Systems**S. KISHTA¹, R. MCNALLY¹, AND T. KINZER-URSEM¹¹Purdue University, West Lafayette, IN**P – Sat - B - 52****In Vitro Suppression of Fibroblast Density by Lubricin Coating**Z. YANG¹, G. ANINWENE II², AND T. WEBSTER²¹Brown University, Providence, RI, ²Northeastern 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. CLOUGH¹ AND M. O. PLATT¹¹Georgia 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. WORKMAN¹, C. CIRJAN¹, L. H. SNYDER¹, A. QUACH¹, AND D. H. FRAKES¹¹Arizona State University, Tempe, AZ**P – Sat - B - 55****Applying Microfluidic Technology to Zebrafish Handling and Orientation**C. R. BULOW¹, D. SCHAFFER¹, R. REISERER¹, Q. GUAN¹, J. GAMSE¹, AND K. SEALE¹¹Vanderbilt University, Nashville, TN**P – Sat - B - 56****Model-Based Conformance Testing for Implantable Pacemakers**G. M. CHEN¹, Z. JIANG², AND R. MANGHARAM²¹Johns Hopkins University, Baltimore, MD, ²University of Pennsylvania, Philadelphia, PA**Track: Undergraduate Research****Drug Delivery - Undergraduate Research****P – Sat - B - 57****Delayed Drug Release by Chitosan-Alginate Beads**D. ZHANG¹, L. ACTIS¹, AND J. L. ONG¹¹University of Texas at San Antonio, San Antonio, TX**P – Sat - B - 58****Effects of Chitosan Modifications on Protein Release**S. KUMAR¹, B. KOPPOLU¹, C. W. WALLACE¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, AR**P – Sat - B - 59****Release of Amphotericin B From Cyclodextrin Polymer Delivery System**C. A. GORMLEY¹, S. ZUCKERMAN¹, J. KORLEY¹, AND H. VON RECUM¹¹Case 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. DOSMAR¹, AND J. J. KANG-MIELER¹¹Illinois Institute of Technology, Chicago, IL, ²Western New England University, Springfield, MA**P – Sat - B - 61****Medifuze: Mobile Medical Injections**A. BUKHTA¹, B. HIRD², AND J. LEE²¹Harvard University, Brooklyn, NY, ²Harvard University, Cambridge, MA

P – Sat - B - 62**Modeling of Drug Release from Polyurethane Matrix**Y. YUAN¹ AND D. SARKAR¹¹University 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. PAREKH², AND Y. M. LVOV²¹Clarkson University, Potsdam, NY, ²Louisiana Tech University, Ruston, LA**P – Sat - B - 64****Characterizing and Optimizing a Lateral Flow Assay for the Quantitative Detection of Amplified HIV DNA**K. SHAH¹, B. ROHRMAN¹, AND R. RICHARDS-KORTUM¹¹Rice University, Houston, TX**P – Sat - B - 65****Fabrication of a 3D Microflow Cytometer**A. J. DY^{1,2}, R. A. ERICKSON², AND R. JIMENEZ²¹Indiana University, Bloomington, IN, ²University of Colorado/JILA, Boulder, CO**P – Sat - B - 66****Dissolvable Bridges for Manipulating Fluid Volumes in Paper Networks**J. S. HOUGHTALING¹ AND E. FU¹¹University of Washington, Seattle, WA**P – Sat - B - 67****Increased Adhesion of Fibroblasts to ZnO/PVC Nanocomposites**P. M. MASCHHOFF¹, B. M. GEILICH¹, AND T. J. WEBSTER¹¹Northeastern University, Boston, MA**P – Sat - B - 68****The Advancement of an Automated Extruder to Aid Nanoparticle Synthesis**T. TANNER¹ AND A. OSTAFIN¹¹University of Utah, Salt Lake City, UT**P – Sat - B - 69****Extraction of Neisseria gonorrhoeae DNA in a Microfluidic Chip for Point-of-Care Molecular Diagnostics**A. LAI¹, C. ELLENSON¹, J. LINNES¹, AND C. KLAPPERICH¹¹Boston University, Boston, MA**P – Sat - B - 70****Gold Nanoparticles Enhanced Electroporation for Gene Delivery in Mammalian Cells**A. PUN¹, Y. ZU², Y. LU², S. HUANG², AND S. WANG²¹Duke University, Durham, NC, ²Louisiana Tech University, Ruston, LA**P – Sat - B - 71****Modeling DNA Strand Displacement Reactions for Use in Nano-Machinery**A. HERUR-RAMAN¹, P. B. LANDON², AND R. LAL²¹Northwestern University, Chicago, IL, ²University of California, San Diego, La Jolla, CA**P – Sat - B - 72****Targeting Atherosclerotic Plaques In Vivo using Rod-shaped Tobacco Mosaic Virus**L. N. RANDOLPH¹, M. A. BRUCKMAN¹, E. J. SIMPSON², L. G. LUYT², AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²The University of Western Ontario, London, ON, Canada**P – Sat - B - 73****Supramolecular Sulfamethazine Nanobelts for Antimicrobial Hydrogel Formation**C. MACIAS^{1,2}, Y-A. LIN², AND H. CUI²¹University of Texas at San Antonio, San Antonio, TX, ²Johns Hopkins University, Baltimore, MD**P – Sat - B - 74****Glycan Array Chamber for Multiplexed Measurement of Bacterial Adhesion**A. C. BLEEM¹ AND W. E. THOMAS²¹Montana State University, Bozeman, MT, ²University of Washington, Seattle, WA**P – Sat - B - 75****Development of Polymersome Nanocarriers for the Targeted Delivery of Therapeutic Compounds**G. SINGLETON¹, B. GEILICH¹, AND T. WEBSTER¹¹Northeastern University, Boston, MA**P – Sat - B - 76****Cross-linking of PEGylated Enzymes: Effects on Aggregation Potential and Enzymatic Longevity**J. M. NEWTON¹, D. W. RITTER¹, AND M. J. MCSHANE¹¹Texas A&M University, College Station, TX**P – Sat - B - 77****Open-Sourced Optical Test Setup for Rapid and Affordable Silicon Photonic Biosensor Development**W. WU¹, P. KULIK¹, S. SCHMIDT¹, J. FLUECKIGER², L. CHROSTOWSKI², AND D. M. RATNER¹¹University of Washington, Seattle, WA, ²University of British Columbia, Vancouver, BC, Canada**P – Sat - B - 78****Stability and Cytotoxicity of One Step Synthesis Cationic Gold Nanoparticles**S. R. COLE¹, D. DEAN¹, AND C. KITCHENS¹¹Clemson 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. LESTRANGE¹, AND T. L. ALVAREZ¹¹New Jersey Institute of Technology (NJIT), Newark, NJ, ²Clemson University, Clemson, SC, ³Hampton University, Hampton, VA**P – Sat - B - 80****Strategies to Direct and Characterize the Tissue Response at the Electrode-Tissue Interface**¹University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh School of Medicine, Pittsburgh, PA, ³McGowan 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. SENGUPTA¹, C. S. KEENE¹, J. H. BLADON¹, AND H. EICHENBAUM¹¹Boston University, Boston, MA**P – Sat - B - 82****Comparing Tremor Detection Algorithms Using Acceleration Data from an ez430 Chronos Watch**L. A. HYLTON¹, T. SANDERS², AND M. CLEMENTS²¹Georgia Institute of Technology, Falls Church, VA, ²Georgia Institute of Technology, Atlanta, GA

P – Sat - B - 83**Development of an Actuated Thumb Exoskeleton with Adjustable Axes of Rotation for Stroke Rehabilitation**D. CHARLES¹, D. KAMPER^{1,2}, K. QIAN^{1,3}, AND I. OCHIR¹¹Illinois Institute of Technology, Chicago, IL, ²Northwestern University, Chicago, IL, ³University of Chicago, Chicago, IL**P – Sat - B - 84****Implantable System for Bi-directional Wireless Stimulation and Data Logging**D. RUBENSTEIN¹, P. GAMBLE², K. TRIPLETT², M. STEPHEN², W. Z. RAY², AND M. R. MACEWAN²¹George Washington University, Washington, DC, ²Washington 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}¹University of Pittsburgh, Pittsburgh, PA, ²Neural Tissue/Electrode Interface & Neural Tissue Engineering Lab, Pittsburgh, PA**P – Sat - B - 86****Tunable Hyaluronic Acid Hydrogel for Neural Engineering**A. SADRAEI¹ AND A. JAIN¹¹Worcester Polytechnic Institute, Worcester, MA**P – Sat - B - 87****Assessment of Neurite Growth in Methacrylated Collagen Gels with Patterned Stiffness**S. M. KNOWLTON¹, K. E. DRZEWIECKI², AND D. I. SHREIBER²¹University of Connecticut, Storrs, CT, ²Rutgers, 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. IYER¹, H. VALLABHANENI¹, A. SENGUPTA¹, R. E. KOHMAN¹, AND X. HAN¹¹Boston University, Boston, MA**P – Sat - B - 89****Beta Sensorimotor Rhythms in a Brain-Computer Interface Model**R. DE LA ROSA¹, K. BALASUBRAMANIAN², M. VAIDYA², AND N. HATSOPOULOS²¹Brown University, Providence, RI, ²University 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}¹University of Pittsburgh, Pittsburgh, PA, ²Massachusetts Institute of Technology, Cambridge, MA, ³McGovern Institute for Brain Research, Cambridge, MA**P – Sat - B - 91****Characterization of Blood Brain Barrier Disruption at the Tissue-Electrode Interface**S. SUNIL¹, M. RAVIKUMAR¹, AND J. CAPADONA¹¹Case Western Reserve University, Cleveland, OH**P – Sat - B - 92****Disruption of Cluster of Differentiation 14 Signaling to Improve Intracortical Microelectrode Integration**W. TOMASZEWSKI¹, M. RAVIKUMAR¹, S. SUNIL¹, AND J. CAPADONA¹¹Case 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. HALL², C. TORRES², J. C. BARROZO³, M. KATO-MAEDA³, A. CATTAMANCHI³, D. A. FLETCHER⁴, AND B. R. BAKER²¹Clemson University, Clemson, SC, ²Lawrence Livermore National Laboratory, Livermore, CA, ³University of California, San Francisco, San Francisco, CA, ⁴University of California, Berkeley, Berkeley, CA**P – Sat - B - 94****A Quantitative Assay for Optimizing DNA Polymerase Activity on a Real-time PCR Platform**N. REJALI¹, J. L. MONTGOMERY¹, AND C. T. WITTMER¹¹University 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. KARUNAKARAN¹, K. M. ABBRUZZESE¹, AND R. A. FOULDS¹¹New 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. PATEL¹, B. HERTZ^{1,2}, A. J. RAMAPPA¹, J. P. DEANGELIS¹, AND A. NAZARIAN¹¹Department of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, ²Department of Biomedical Engineering, Boston University, Boston, MA, ³Department of Biomedical Engineering, University of Connecticut, Storrs, CT, ⁴Harvard 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. BEAMER¹, A. MASOUDI^{1,4}, N. PATEL¹, J. J. OLSON⁵, B. HERTZ^{1,2}, A. NAZARIAN¹, AND A. J. RAMAPPA¹¹Department of Orthopaedic Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, ²Department of Biomedical Engineering, Boston University, Boston, MA, ³Department of Biomedical Engineering, University of Connecticut, Storrs, CT, ⁴Harvard Medical School, Boston, MA, ⁵Case Western Reserve University School of Medicine, Cleveland, OH**P – Sat - B - 98****Effect of X-Ray Dose on Porcine Articular Cartilage**J. WILLIAMS¹, J. WILSON¹, K. NUGENT², AND D. DEAN¹¹Clemson University, Clemson, SC, ²SC 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. HIPPENSTEEL², AND M. DRESSLER²¹University of Toledo, Toledo, OH, ²DePuy Synthes Joint Reconstruction, Warsaw, IN

P – Sat - B - 100**Force Sensor Ultrasound Probe Design for Better Rotator Cuff Injury Diagnosis**H. SCRUGGS¹, C. CORBETT¹, A. CUSICK¹, K. PERRY¹, B. SUDDUTH¹, H. CASH¹, K. SHOWERS¹, M. HANSCHKE¹, D. DEAN¹, AND D. KWARTOWITZ¹¹Clemson University, Clemson, SC**P – Sat - B - 101****Sclerostin Antibody Effect on Bone Mass in an Ovariectomized and Hindlimb-Suspended Rat Model**T. CHU¹, D. ZHANG¹, AND Y-X. QIN¹¹Stony 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. BUSHA¹ AND G. E. BANIS¹¹The 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. TAKAHASHI¹, R. POULIOT¹, AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P – Sat - B - 104****In Vitro Intersubject Comparison of Inhaled Aerosol Deposition in Realistic Human Upper Respiratory Models**D. D. YOON¹, B. HUDSON¹, A. RAMOSVIEIRA¹, S. MOON¹, T. F. HANNAH¹, L. N. REAGIN¹, M. Z. NVE-NSI¹, AND S. HYUN¹¹Merer 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. WANG¹, Z. MA¹, M. FINNEGAN¹, B. CONKLIN², AND K. HEALY¹¹University of California Berkeley, Berkeley, CA, ²University of California San Francisco, San Francisco, CA**P – Sat - B - 106****Adipose-Derived Stem Cell Potential for Tissue Engineering the Temporomandibular Joint Disc**J. GORSKI¹, C. HAGANDORA¹, A. ALMARZA¹, K. MARRA¹, J. GAO¹, AND Y. WANG¹¹University of Pittsburgh, Pittsburgh, PA**P – Sat - B - 107****Decapsulation of Alginate-Poly-L-Lysine Microcapsules via Sodium Carbonate**M. T. NAJIA¹, J. L. WILSON¹, AND T. C. MCDEVITT^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Institute for Bioengineering & Bioscience, Atlanta, GA**P – Sat - B - 108****The In Vitro Effects of Embryonic Stem Cell Paracrine Signaling on Macrophage Phenotype**M. MAURER¹, L. FITZPATRICK², AND T. MCDEVITT²¹University of Texas at Dallas, Richardson, TX, ²Georgia Institute of Technology, Atlanta, GA**P – Sat - B - 109****Traction Forces on Fibrillar Matrices Regulate Embryonic Stem Cell Fate Decisions**N. RAVI¹, H. TAYLOR-WEINER¹, AND A. J. ENGLER¹¹University 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. FARRIS¹, G. A. MEYER², E. SATO², S. R. WARD², AND A. J. ENGLER²¹University of Kansas, Lawrence, KS, ²University 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. PU¹ AND L. A. DELOUISE^{1,2}¹University of Rochester, Rochester, NY, ²University of Rochester Medical Center, Rochester, NY**P – Sat - B - 113****In Vivo Imaging of Stem Cells during Soft Tissue Reconstruction**J. DAY¹, J. BLILEY², 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}¹University of Pittsburgh, Pittsburgh, PA, ²UPMC, Pittsburgh, PA**P – Sat - B - 114****The Effects of Hydroxyapatite and Fluorapatite on Dental Cell Differentiation**A. FARLEY¹, K. SHORES¹, M. KENNEDY¹, AND D. DEAN¹¹Clemson 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. SNYDER¹ AND R. WILLITS¹¹University of Akron, Akron, OH**P – Sat - B - 116****Degradation Products of Biologic Scaffolds Promote a Constructive Macrophage Phenotype**J. L. DZIKI¹, B. M. SICARI¹, C. L. DEARTH¹, AND S. F. BADYLAK¹¹University of Pittsburgh, Pittsburgh, PA**P – Sat - B - 117****Response of Human Periodontal Ligament Stem Cells (PDLSCs) on Mineral-containing Nanofiber Scaffolds**N. L. BLACK¹, N. M. LEE¹, AND H. H. LU¹¹Columbia University, New York, NY**P – Sat - B - 118****Nanoengineered PNIPAAm Platform Combined with Microstencil-Assisted Cell Patterning towards Cell Sheet Origami**N. E. TROSPER¹, A. JIAO¹, AND D-H. KIM¹¹University of Washington, Seattle, WA**P – Sat - B - 119****Development of Nanofabricated Scleral Patch for Use Following Trabeculotomy**C. HARDY¹ AND M. R. MACEWAN²¹Lehigh University, Park Ridge, NJ, ²Washington University School of Medicine, Saint Louis, MOP = 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. YANG¹, D. T. BRIDGEN¹, D. A. ALCORTA¹, L. JING¹, R. E. ISAACS¹, C. A. BAGLEY¹, J. CHEN¹, AND L. A. SETTON¹¹Duke University, Durham, NC**P – Sat - B - 121****Trehalose Incubation Improves Cryopreservation of Hepatoma Cell Monolayers**B. R. STOKICH¹, B. SCHRYVER², Q. OSGOOD³, N. CHAKRABORTY³, M. THOMPSON², AND M. A. MENZE¹¹Eastern Illinois University, Charleston, IL, ²BioCision, LLC, Larkspur, CA, ³University 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. THIEDE¹, N. BAJAJ¹, C. WHITTINGTON¹, A. RUNDRELL¹, AND S. VOYTIK-HARBIN¹¹Purdue University, West Lafayette, IN**P – Sat - B - 123****Cell-Cell Contact Enhances Wnt-Notch Crosstalk for Subsequent Proliferation and Chondrogenesis**A. CHEN¹, M. D. HOFFMAN^{1,2}, C. S. CHEN¹, D. S. REYNOLDS¹, AND D. S. BENOIT^{1,2}¹University of Rochester, Rochester, NY, ²Center for Musculoskeletal Research, Rochester, NY**P – Sat - B - 124****Polymeric Coated Microparticle Scaffolds Engineered for Future Use in Musculoskeletal Tissue Regeneration**G. SAMANDI¹, M. DETAMORE¹, C. BERKLAND¹, J. HASLAM¹, AND V. GUPTA¹¹University of Kansas, Lawrence, KS**P – Sat - B - 125****Investigation of Gold Nanoparticles as Contrast Agents for Cellular Tracking**E. A. TREVINO¹, L. M. RICLES¹, AND L. J. SUGGS¹¹The University of Texas, Austin, TX**P – Sat - B - 126****The Role of Dimensionality on Cancer Cell Response to Cytotoxic Drugs**K. L. KALINOWSKI¹ AND S. P. ZUSTIAK¹¹Saint Louis University, Saint Louis, MO**P – Sat - B - 127****Nonviral Gene Delivery within a 3D Fiber-Templated Hydrogel for Cardiac Tissue Engineering**Z. L. PAULSON¹, T. KASPUTIS², C. N. SARGUS², AND A. K. PANNIER²¹Texas A&M University, College Station, TX, ²University 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-BIRKENMAIER¹, J. T. LAMASTER¹, B. E. JANOWIAK¹, AND S. A. SELL²¹Saint Louis University, St Louis, MO, ²Saint 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. TRIACCA², M. PISANO², AND M. A. SWARTZ²¹Drexel University, Philadelphia, PA, ²Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland**P – Sat - B - 130****The Induction of Myogenesis Through Electrical Stimulation**M. B. ELLIOTT¹, E. ANTONIADOU², AND H. KONG²¹Saint Louis University, St. Louis, MO, ²University 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. RINDONE¹, A. R. VANNASSE², J. M. FORTE², AND R. L. PAGE²¹Rensselaer Polytechnic Institute, Troy, NY, ²Worcester Polytechnic Institute, Worcester, MA**P – Sat - B - 132*****In Vitro* Assay of Reaction Torque During Collagen Fiber Acupuncture Needle Rotation**J. HOGATE¹ AND D. SHREIBER¹¹Rutgers University, Piscataway, NJ**P – Sat - B - 133****Comparison of Degradation of PEG-PLLA-DA hydrogels: PMMA sphere templating vs. Salt Leaching**M. PARULEKAR¹, B. AKAR¹, E. M. BREY¹, AND S. SOMO¹¹Illinois Institute of Technology, Chicago, IL**P – Sat - B - 134****An *In Vitro* Model of Adipose Expansion Regulated by Hydrogel Stiffness**J. A. RIOS¹, M. K. VAICIK¹, AND E. M. BREY¹¹Illinois Institute of Technology, Chicago, IL**P – Sat - B - 135****TGF- β 1 vs. Dynamic Mechanical Stimulation of Tissue-Engineered Cartilage**C. BAUTISTA¹, A. MEI^{2,3}, M. KELLEY^{2,3}, R. STEFANI^{2,3}, AND B. BILGEN^{2,3}¹Brown University, Providence, RI, ²Providence VA Medical Center, Providence, RI, ³Alpert Medical School of Brown University and Rhode Island Hospital, Providence, RI**P – Sat - B - 136****Analyzing Nuclear Orientation in MATLAB Compared to ImageJ**A. SWEI¹, J. L. COOPER¹, AND M. W. ROLLE¹¹Worcester 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. MORA², T-H. CHUANG², J. R. PAPRECK², AND S. SHAH²¹University of Arizona, Tucson, AZ, ²University of California San Diego, San Diego, CA**P – Sat - B - 138****Nanofeatured Silk Fibroin Membranes for Orthopedic Applications**Z. KARAHALILODLU¹, B. ERCAN², E. B. DENKBAB³, AND T. J. WEBSTER²¹Hacettepe University, Boston, MA, ²Northeastern University, Boston, MA, ³Hacettepe University, Ankara, Turkey**P – Sat - B - 139****Modeling Flow Characteristics Within a Perfusion Bioreactor Using Computational Fluid Dynamics**M. J. ROBESON¹, J. GANDHI², E. BERSON¹, AND E. M. BREY²¹University of Louisville, Louisville, KY, ²Illinois Institute of Technology, Chicago, IL**P – Sat - B - 140****Synthesis of Hydrogels for 3-D Cell Culture via Copper Free Click Chemistry**K. BEAVEN¹, R. NAVARRO², AND T. BETANCOURT²¹University of Kentucky, Lexington, KY, ²Texas State University, San Marcos, TX**P – Sat - B - 141****Pittsburgh Tissue Engineering Summer Camps: Seeding Young Minds with TE**H. M. SMITH¹ AND A. P. MAXEY²¹University of Pittsburgh, Glenshaw, PA, ²University 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. NANDYALA¹, E. SALM¹, C. DUARTE¹, G. DAMHORST¹, AND R. BASHIR^{1,2}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Illinois at Urbana-Champaign, Champaign, IL**P – Sat - B - 143****Designing Neonatal Monitoring Devices for Resource-Poor Settings**A. DEVON¹, K. GAINEY¹, H. ADAMS¹, J. DESJARDINS¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P – Sat - B - 144****Mechanical, Low-cost, and Accurate IV Volume Regulator for Developing Countries**E. SKERRETT¹, K. SHAH¹, M. NOJOOMI¹, M. PAN¹, B. FLYNN¹, T. WALKER¹, M. ODEN¹, AND R. RICHARDS-KORTUM¹¹Rice University, Houston, TX**Track: Undergraduate Research****Undergraduate Research****P – Sat - B - 145****Three-Dimensional Printed Sucrose Preforms for Aqueous-Polymer Scaffold Fabrication**S. WONGVIBULSIN¹, S. REED¹, AND B. WU¹¹University of California, Los Angeles, Los Angeles, CA**P – Sat - B - 146****Exploring the Middle Ear Function in the Parakeet**Y. LEE¹, E. S. OLSON¹, AND W. DONG¹¹Columbia University, New York, NY**P – Sat - B - 147****Sample Purification and Concentration for Bacterial Identification for Rapid Point-of-Care Sepsis Diagnosis**T. MON¹, J. SAFFIE¹, W. WONG¹, C. KLAPPERICH¹, AND A. SAUER-BUDGE^{1,2}¹Boston University, Boston, MA, ²Fraunhofer CMI, Boston, MA**P – Sat - B - 148****Hsp90 Inhibitor Ganetespib Radiosensitizes Liver Cancer Cells**A. ANNADANAM¹, S. THIRUGANASAMBANDAM¹, N. GANDHI¹, A. WILD¹, J. HERMAN¹, AND P. T. TRAN¹¹Johns Hopkins University, Baltimore, MD**P – Sat - B - 149****A Microwell Array for Culturing Hepatocytes**M. E. WECHSLER¹, E. I. QENDRO¹, M. AKBARI¹, AND A. KHADEMOSSEINI¹¹Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA**P – Sat - B - 150****Automated Behavioral Interface for Optogenetic Manipulation**M. P. ELAM¹, X. HAN¹, M. BUCKLIN¹, J. ZHUO¹, AND T. GUNNELS¹¹Boston University, Boston, MA**P – Sat - B - 151****Automated Quantification of Cardiac Fibrosis in the mRen2(27) Transgenic Rat**C. E. RAYBURG¹, J. HANEY¹, AND S. G. SHROFF¹¹University of Pittsburgh, Pittsburgh, PA**P – Sat - B - 152****Glucose-Dependent GIP Receptor Expression in MIN6 Cells**Q. WANG¹, S. RAJAN², AND L. PHILIPSON²¹Illinois Institute of Technology, Chicago, IL, ²University of Chicago, Chicago, IL**P – Sat - B - 153****A Flexibly Configured Surgical Simulator**A. K. ROLLANDO¹, P. A. OSEI¹, D. CAVANAGH¹, J. BAISH¹, M. SHABAHANG², AND N. WOLL²¹Bucknell University, Lewisburg, PA, ²Geisinger Medical Center, Danville, PA**P – Sat - B - 154****Poly (N-isopropyl Acrylamide)-coated Surfaces: Investigation of Cytotoxicity of CpNIPAM**L. M. STAPLETON¹, M. A. COOPERSTEIN¹, AND H. E. CANAVAN¹¹University 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. FU¹, T. CHEUNG¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**P – Sat - B - 156****Neuronal Regulation of Fin Regeneration in Zebrafish**A. M. RECIDORO¹, A. C. ROOF¹, AND R. Y. KWON¹¹University of Washington Medical Center, Seattle, WA**P – Sat - B - 157****Investigation of Molecular Delivery Enhancement Through Microscale Electroporation Pulse Manipulation**D. G. TEKVERK¹, J. ZHENG², D. I. SHREIBER², AND J. D. ZAHN²¹Marist College, Poughkeepsie, NY, ²Rutgers University, Piscataway, NJ**P – Sat - B - 158****Effect of a Novel Lateral Extension Ankle-Brace Component on Foot Kinematics**M. BUCKLIN¹, F. LEMLEY², N. ORDWAY³, AND C. NEVILLE³¹University of Rochester, Rochester, NY, ²Syracuse Orthopedic Specialists, Syracuse, NY, ³SUNY Upstate Medical University, Syracuse, NY**P – Sat - B - 159****Guanidinylation of Cationic Copolymers for Nonviral Gene Delivery**J. CHOI¹, J. SHI¹, H. WEI¹, D. CHU¹, AND S. PUN¹¹University 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. LEONESSA¹¹Virginia Tech, Blacksburg, VA, ²University of Hartford, West Hartford, CT**P – Sat - B - 161****Characterization of the In Vivo Degradation Mechanisms of PEGDA Hydrogels**S. N. CERECERES¹, M. B. BROWNING¹, P. T. LUONG¹, AND E. M. COSGRIFF-HERNANDEZ¹¹Texas 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. VASSEUR¹, C. A. GAMACHE¹, G. J. KOST², AND M. J. RUST¹¹Western New England University, Springfield, MA, ²University of California, Davis, Davis, CA**P – Sat - B - 163****Design of a Motorized Computer Monitor Arm for Client with Quadraplegia**G. M. WATERS¹, J. D. BUMGARDNER¹, L. P. CLAYBON¹, AND T. E. WYATT¹¹The University of Memphis, Memphis, TNP = Poster Session
OP = Oral Presentation

P – Sat - B - 164**Characterization of a Human Kidney Cell Line for Physiologically Realistic *In Vitro* Models**M. REISS¹, C. SAKOLISH¹, AND G. MAHLER¹¹Binghamton University, Vestal, NY**P – Sat - B - 165****The Effect of Surface Variation on the Risk of Head Injury on a Playground**G. P. DANCIK¹, C. D. DIDOMENICO¹, AND E. A. KENNEDY¹¹Bucknell University, Lewisburg, PA**P – Sat - B - 166****Relation of Hemorheological Parameters and ADMA in Ethnic Groups of African Descent**C. J. DEANES¹, R. S. MADHURAPANTULA¹, K. GERALD¹, A. SINGH¹, AND P. DHAR¹¹Illinois Institute of Technology, Chicago, IL**P – Sat - B - 167****The Effect of Inflammation on Muscle Sensory Function in Adult Mice**A. B. ALLAWALA¹ AND K. WILKINSON¹¹San Jose State University, San Jose, CA**P – Sat - B - 168****Nanochain Particles Prevent Metastatic Growth Using Radiofrequency-Triggered Release of Chemotherapy**S. T. TUCCI¹, P. PIERIS¹, M. TAM¹, A. ABRAMOWSKI¹, R. TOY¹, P. VICENTE¹, L. BAUER¹, A. MAYER¹, J. PANSKY¹, E. DOOLITTLE¹, E. SCHMIDT¹, R. GOPALAKRISHNAN¹, R. KERI¹, J. BASILION¹, M. GRISWOLD¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**P – Sat - B - 169****Correlation of Micro-indentation to Other Factors Indicative of Bone Quality**A. DINCER¹, S. DENNING¹, R. PISANO¹, E. A. KENNEDY¹, AND D. M. EBENSTEIN¹¹Bucknell University, Lewisburg, PA**P – Sat - B - 170****Computational Modeling and Prediction of G-quadruplex Formation**J. S. CALVERT¹, A. KREIG¹, S. SINHA¹, AND S. MYONG¹¹University 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. GONZALEZ¹, M. LORENZO¹, J. DIAS¹, AND N. ZIEBARTH¹¹University 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. SIMMONDS¹, J. FAVREAU², AND G. GAUDETTE²¹Rutgers University, Plainfield, NJ, ²Worcester Polytechnic Institute, Worcester, MA**P – Sat - B - 173****Investigation of the efficacy of genipin solution as a possible treatment for keratoconus**M. A. LORENZO¹, F. GONZALEZ¹, J. DIAS¹, AND N. ZIEBARTH¹¹University 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. DENNING¹, R. C. PISANO III¹, A. DINCER¹, D. M. EBENSTEIN¹, AND E. A. KENNEDY¹¹Bucknell University, Lewisburg, PA**P – Sat - B - 175****Soft Substrate Does Not Inhibit Stretch Avoidance in U2OS Cells**N. DIAMANTIDES¹, M. MONTEROSSO², M. KURAL³, H. CIRKA³, AND K. BILLIAR³¹Bucknell University, Lewisburg, PA, ²Sweet Briar College, Sweet Briar, VA, ³Worcester Polytechnic Institute, Worcester, MA**P – Sat - B - 176****Development of a Low-Cost Pericardiocentesis Simulator**F. RUPPE¹, A. ROLLANDO¹, A. BECKER¹, L. DUFFY¹, D. STERN¹, J. BAISH¹, D. CAVANAGH¹, AND S. STEINHUBL²¹Bucknell University, Lewisburg, PA, ²Geisinger 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. HEDGELAND¹, C. M. BUFFINTON¹, A. M. MARTENS², AND A. M. MOON²¹Bucknell University, Lewisburg, PA, ²Geisinger Health System, Danville, PA**P – Sat - B - 178****Co-culture Conditions for Human Endothelial Cells and Skeletal Myoblasts**L. RAN¹, C. S. CHENG¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC**P – Sat - B - 179****Characterization of Bioactive Components in Human Blood Clot**E. KAHN¹, A. DOODLESACK¹, A. KONDO¹, D. CIOMBOR¹, AND A. ZEGA¹¹Brown University, Providence, RI**P – Sat - B - 180****Role of Mechanical Loading in Modulating Breast Cancer Metastasis-Associated Osteoclastogenesis**P. POLAMRAJU¹, M. LYNCH¹, M. LEE¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**P – Sat - B - 181****Investigating RNA-DNA Difference (RDD) and Allelic Specific Expression (ASE) using Next-Generation Sequencing and Bioinformatics**D. DOHERTY¹¹Case Western Reserve University, Cleveland, OH**P – Sat - B - 182****Competitive Displacement Reaction for DNA Sequence Biosensors Using a Stem-loop Hybridization Scheme**K. L. GILES¹, S. H. YAZDI¹, AND I. M. WHITE¹¹University 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. GUPTA¹, A. YANG², E. CHAN², AND C. RUBIN²¹Case Western Reserve University, Cleveland, OH, ²Stony Brook University, Stony Brook, NY**P – Sat - B - 184****1000-Fold Macrofluidic Concentrator**G. R. STUEBER¹, S. WONG¹, D. RANTI¹, M. CABODI¹, AND C. KLAPPERICH¹¹Boston University, Boston, MA**P – Sat - B - 185****Differential Cell Response to Alternating Axis and Equibiaxial Stretch**M. MONTEROSSO¹, N. DIAMANTIDES², M. KURAL³, H. CIRKA³, AND K. BILLIAR³¹Sweet Briar College, Sweet Briar, VA, ²Bucknell University, Lewisburg, PA, ³Worcester 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. MACDONALD¹, J. GALEOTTI^{1,2}, J. WANG¹, S. HORVATH², A. ZHANG², B. WU³, AND R. KLATZKY²¹University of Pittsburgh, Pittsburgh, PA, ²Carnegie Mellon University, Pittsburgh, PA, ³Arizona State University, Mesa, AZ

P – Sat - B - 187**Assessment of Design Gate Methods for Biomedical Senior Design Course**S. G. STAFFORD¹ AND J. D. DESJARDINS²¹Clemson University, Simpsonville, SC, ²Clemson 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. LOZEAU², T. ALEXANDER², AND T. CAMESANO²¹Case Western Reserve University, Cleveland, OH, ²Worcester 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. BRAKEMAN³, W. H. FISSELL⁴, AND N. FERRELL⁴¹Searle Systems Biology and Bioengineering Undergraduate Research Experience, Nashville, TN, ²Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, ³University of California San Francisco, San Francisco, CA, ⁴Vanderbilt University School of Medicine, Nashville, TN**P – Sat - B - 190****Intercellular Adhesion Molecule 5 (ICAM-5) Metabolism and Neuroinflammation**Y. WU¹, N. TONG², AND H. GELBARD²¹University of Rochester, Rochester, NY, ²University of Rochester Medical Center, Rochester, NY**P – Sat - B - 191****The Role of Interferon Regulatory Factor 6 in Skin Homeostasis**K. HIXON¹ AND M. DUNNWARD¹¹The University of Iowa, Iowa City, IA**P – Sat - B - 192****The Interactions of Gold Nanoparticles with Model Cell Membranes**C. M. BAILEY¹, K. L. WATERMAN¹, J. B. MACEDONIO¹, AND T. A. CAMESANO¹¹Worcester Polytechnic Institute, Worcester, MA**P – Sat - B - 193****Novel Protein Acts as Cryoprotectant for Human Embryonic Kidney Cell Monolayers**Q. OSGOOD¹, N. CHAKRABORTY¹, B. STOKICH², AND M. MENZE²¹University of Michigan-Dearborn, Dearborn, MI, ²Eastern Illinois University, Charleston, IL**P – Sat - B - 194****Switchable Gene Expression for Behavioral Studies in C. Elegans**C. E. ZIEMINSKI¹, B. ALTSHULER², AND D. ALBRECHT²¹Western New England University, Springfield, MA, ²Worcester Polytechnic Institute, Worcester, MA**P – Sat - B - 195****Quantifying the Effect of Different Colonoscopy Techniques on a Simulated Colon Model**J. SHUI¹, K. BIERYLA¹, E. GEIST¹, AND D. DIEHL²¹Bucknell University, Lewisburg, PA, ²Geisinger Health System, Danville, PA**P – Sat - B - 196****Enhanced Secondary Metabolite Production in Streptomyces coelicolor through Mixed Fermentation**J. PHILLIPS¹, C. GOODWIN¹, AND J. MCLEAN²¹Vanderbilt University, Nashville, TN, ²Vanderbilt University, Nashville, TN**P – Sat - B - 197****Assessment of Mitigation on Mechanical Integrity Loss in Concurrent Disuse Osteopenia and OVX by Drug Therapy**K. N. AGARWAL¹, D. ZHANG¹, M. HU¹, L. LIN¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**P – Sat - B - 198****Biomimetic Channels for In Vivo Blood Vessel Modeling and Nanoparticle Drug Delivery Applications**C. ORR¹, Y. LIU¹, AND A. THOMAS¹¹Lehigh University, Bethlehem, PA**P – Sat - B - 199****A Microfluidic Platform for Revealing Mechanoregulation of Endothelial Migration**J. M. VALDEZ¹, N. JAMILPOUR¹, AND P. K. WONG¹¹University of Arizona, Tucson, AZ**P – Sat - B - 200****Developing "Nanogels" for Molecularly Triggered Drug Delivery**K. ABDELRAHMAN^{1,2}, R. DANSO², AND T. BETANCOURT²¹University of Pittsburgh, Pittsburgh, PA, ²Texas State University, San Marcos, TX**P – Sat - B - 201****Enhancing the Durability of a Deposited Silver Nanoparticle Layer for Inhibiting Biofilm Growth**K. ABDELRAHMAN¹, C. LARIMER¹, AND I. NETTLESHIP¹¹University 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-RHOADES¹, J. BLILEY¹, AND K. MARRA¹¹University of Pittsburgh, Pittsburgh, PA**P – Sat - B - 203****Method to Control Fluid Flow Rate Profile in Multi-Step Lateral Flow Assays**J. YANG¹, J. BUSER¹, AND E. FU¹¹University of Washington, Seattle, WA**P – Sat - B - 204****Observing the Uptake of HDL miRNAs by Placing Shear Stress on Human Aortic Endothelial Cells**J. HIGGINS¹¹Vanderbilt 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. WANG², M. E. SCHWARTZ², K. C. VOLK^{2,4}, C. R. LAMBERT^{2,3}, T. A. CAMESANO², AND G. D. PINS^{2,3}¹Georgia Institute of Technology, Atlanta, GA, ²Worcester Polytechnic Institute, Worcester, MA, ³Bioengineering Institute, Worcester, MA, ⁴Drexel University, Philadelphia, PA**P – Sat - B - 206****Electron Transfer Mediator Increases Production Of 1,3-Propanediol In Bioelectrochemical Reactors**V. N. TRAN¹, T. D. HARRINGTON¹, A. MOHAMED¹, AND H. BEYENAL¹¹Washington State University, Pullman, WA**P – Sat - B - 207****Optimization of Heterodyne Chemistry for Complex Biochemical Reactions**M. DURKEE¹, R. PLANCHARD¹, H. TIDWELL², K. HUANG¹, A. KOLE¹, C. MARASCO¹, AND J. WIKSWO¹¹Vanderbilt University, Nashville, TN, ²Rice University, Houston, TX**P – Sat - B - 208****Sodium Salicylate Enhances Cytotoxic Effect of Artemisinin on Human Leukemia Molt-4 Cells**M. J. WICKERATH¹ AND N. SINGH¹¹University of Washington, Seattle, WA**P-Sat-B-209****Engineering of a Hybrid IgG-IgA Fc Domain to Introduce New Effector Function to IgG**N. MEHTA¹, W. KELTON¹, AND G. GEORGIU¹¹University of Texas at Austin, Austin, TXP = Poster Session
OP = Oral Presentation

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-PINTO¹, A. C. JIMENEZ-VERGARA¹, D. ZHANG², M. GRUNLAN², AND M. HAHN¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Texas 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. DUA¹ AND S. RAMASWAMY¹¹Florida International University, Miami, FL**2:00PM****Improvement of the Enthesis in Engineered Ligaments Through Localized Growth Factor Release**A. LEE¹ AND K. BAAR¹¹University 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. DANG¹, X. YU², C. BOWERMAN¹, W. L. MURPHY², AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH, ²University of Wisconsin, Madison, WI**2:30PM****Autologous Stem Cell Recruitment for Articular Cartilage Regeneration**R. GOTTARDI^{1,2}, M. HWANG¹, M. SIMSON¹, P. A. MANNER³, J. TAN¹, P. G. ALEXANDER¹, S. R. LITTLE¹, AND R. S. TUAN¹¹University of Pittsburgh, Pittsburgh, PA, ²RIMED Foundation, Palermo, Italy, ³University of Washington, Seattle, WA**2:45PM****Functional Maturation of a Cell-Seeded Hyaluronic Acid Hydrogel-Based Engineered Nucleus Pulposus**D. KIM¹, L. J. SMITH¹, M. KIM¹, D. M. ELLIOTT², AND R. L. MAUCK¹¹University of Pennsylvania, Philadelphia, PA, ²University 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. HOTALING¹, D. F. SMITH², D. M. RATNER³, R. D. CUMMINGS², AND J. E. BABENSEE¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³University of Washington, Seattle, WA**1:45PM****Label-Free Fluorescent Biodegradable Polylactones**Z. XIE¹, L. LIU², H. WENG³, R. P. MASON², L. TANG³, K. T. NGUYEN³, AND J. YANG¹¹Pennsylvania State University, University Park, PA, ²University of Texas Southwestern Medical Center, Dallas, TX, ³University of Texas at Arlington, Arlington, TX**2:00PM****Antibacterial Properties of Biodegradable Magnesium Alloys for Ureteral Stent Applications**J. Y. LOCK¹, E. WYATT¹, S. UPADHYAYULA¹, A. WHALL¹, V. NUNEZ¹, V. I. VULLEV¹, AND H. LIU¹¹University of California, Riverside, Riverside, CA**2:15PM****The Effects of PEG Hydrogel Crosslinking Density and Network Homogeneity on Protein Diffusion**S. LEE¹, X. TONG¹, AND F. YANG¹¹Stanford University, Stanford, CA**2:30PM****Tetrazine Click Chemistry: The Right "Click" for Biomaterials?**D. L. ALGE¹, D. F. DONOHUE¹, AND K. S. ANSETH¹¹University of Colorado, Boulder, CO**2:45PM****Dual-Crosslinked Oxidized, Methacrylated Alginate/PEG Hydrogels for Bioadhesive Applications**O. JEON¹, J. E. SAMOREZOV¹, AND E. ALSBERG¹¹CASE 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. BORDELEAU¹, L. N. TANG¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**1:45PM****Mineral Particle Incorporation within Embryonic Stem Cell Aggregates Induces Osteochondral Differentiation**Y. WANG¹, X. YU², C. BAKER¹, W. MURPHY², AND T. MCDEVITT¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Wisconsin, Madison, WI**2:00PM****Tailoring Biophysical Properties of Fibrin Gels for Bone Formation with Co-Cultured Progenitor Cells**K. C. MURPHY¹ AND J. K. LEACH¹¹University of California Davis, Davis, CA

2:15PM**Gene Activated Collagen-GAG Scaffolds for Tendon Repair**R. A. HORTENSIUS¹, J. R. BECRAFT¹, D. W. PACK², AND B. A. HARLEY¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Kentucky, Lexington, KY**2:30PM****Direct Measurement of MMP Activity in 3D Cellular Microenvironments Using Fluorogenic Peptide Substrates**J. L. LEIGHT^{1,2}, D. L. ALGE^{1,2}, AND K. S. ANSETH^{1,2}¹University of Colorado Boulder, Boulder, CO, ²Howard Hughes Medical Institute, Boulder, CO**2:45PM****Matrix-Integrin-Cytoskeleton Signaling Guides Force-Dependent Modulation of 3D Vessel Morphogenesis within Collagen Matrices**C. F. WHITTINGTON¹, P. J. CRITSER^{1,2}, R. V. JOSHI¹, M. C. YODER^{2,3}, AND S. L. VOYTIK-HARBIN^{1,4}¹Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, ²Herman B. Wells Center for Pediatric Research, Indiana University School of Medicine, Indianapolis, ³Department of Pediatrics, Indiana University School of Medicine, Indianapolis, IN, ⁴Department 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. GAO¹, P. ZHANG¹, M. LIVELLI¹, J. SHERIFF¹, J. S. SOARES¹, S. POTHAPRAGADA¹, N. ZHANG¹, Y. DENG¹, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY**1:15PM****The Effect of Freezing Preservation on the Tensile Material Properties of Liver Parenchyma**Y-C. LU¹ AND C. D. UNTAROIU¹¹Virginia 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. HORSTEMEYER², L. WILLIAMS^{1,2}, AND J. LIAO^{1,2}¹Mississippi State University, Mississippi State, MS, ²Center For Advanced Vehicular Systems, Mississippi State, MS, ³Vanderbilt University, Nashville, TN**1:45PM****Assessing the Biomechanical Role of the Linea Aspera Using Finite Element Analysis**S. R. MOORE¹, S. MILZ², AND M. KNOTHE TATE¹¹Case Western Reserve University, Cleveland, OH, ²Ludwig Maximilians University, Munich, Germany**2:00PM****Development of 10-Year-Old Child Pelvis and Lower Extremities Finite Element Model**M. SHEN¹, H. MAO¹, H. FAN¹, S. LAKSHMANAN¹, AND K. H. YANG¹¹Wayne State University, Detroit, MI**2:15PM****Necking and Failure of Constrained Contractile 3D Microtissues: Role of Geometry and Stiffness**V. B. SHENOY¹, H. WANG¹, A. A. SVORONOS², T. BOUDOU³, J. R. MORGAN², AND C. S. CHEN³¹University of Pennsylvania, Philadelphia, MA, ²Brown University, Providence, RI, ³University 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. CHOI¹ AND B. A. HARLEY^{1,2}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Institute for Genomic Biology, Urbana, IL**1:45PM****Combined Biophysical and Biochemical Cues Enhance the Function of an Aged Muscle Stem Cell Population**B. D. COSGROVE¹, P. M. GILBERT¹, E. PORPIGLIA¹, S. P. LEE¹, S. Y. CORBEL¹, AND H. M. BLAU¹¹Stanford 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. TONG¹ AND F. YANG¹¹Stanford University, Stanford, CA**2:15PM****Elongated Stem Cell Morphology and Matrix Stiffness Influences Lineage by Modulating Contractility**L. G. VINCENT¹, C. TAY², Y. CHOI¹, J. DEL ALAMO¹, L. TAN³, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²National University of Singapore, Singapore, Singapore, ³Nanyang Technological University, Singapore, Singapore**2:30PM****Mesenchymal Stem Cell Mechanobiology Is Clone Dependent**C. M. MCLEOD¹, T. P. DRISCOLL¹, B. D. COSGROVE¹, S. HEO¹, AND R. L. MAUCK^{1,2}¹University of Pennsylvania, Philadelphia, PA, ²Department of Veterans Affairs Medical Center, Philadelphia, PA**2:45PM****Cyclic Stretch Enhances Myogenic Differentiation of ASCs**P. Y. HURI¹, C. A. COOK¹, D. L. HUTTON¹, B. C. GOH², D. J. DIGIROLAMO², AND W. L. GRAYSON¹¹Johns Hopkins University, Baltimore, MD, ²Johns 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 DEVENTER¹, S. RAJAN², S. S. SIDHU², AND K. D. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA, ²University of Toronto, Toronto, ON, Canada

1:45PM**Multi-Modal Imaging of Genetically-Engineered Human T Cells for Targeting Tumor**P. BHATNAGAR^{1,2}, M. ALAUDDIN³, P. SEIFI⁴, J. A. BANKSON⁵, D. K. KIRUI⁶, H. HULS⁵, D. A. LEE³, A. BABAKHANI⁴, K. C. LI⁶, AND L. J. COOPER³¹Baylor College of Medicine, Houston, TX, ²Texas Children's Hospital, Houston, TX, ³The University of Texas MD Anderson Cancer Center, Houston, TX, ⁴Rice University, Houston, TX, ⁵The Methodist Hospital Research Institute, Houston, TX, ⁶Wake 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}¹MIT, Cambridge, MA, ²Koch Institute for Integrative Cancer Research, Cambridge, MA**2:15PM****Breast Cancer Targeted Bismuth Sulfide Nanoparticles for CT Imaging**J. KINSELLA¹, R. JIMENEZ², P. KARMALI³, N. GIANNESCHI², E. RUOSLAHTI³, D. STUPACK², AND M. SAILOR²¹McGill University, Montreal, QC, Canada, ²University of California, San Diego, San Diego, CA, ³Sanford 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. LEI¹, A. FERNANDEZ-FERNANDEZ^{1,2}, R. MANCHANDA^{1,3}, Y-C. HUANG¹, AND A. J. MCGORON¹¹Florida International University, Miami, FL, ²Nova Southeastern University, Fort Lauderdale, FL, ³Galgotias University, Uttar Pradesh, India**2:45PM****Nanoscale Roughness and Surface Charge Control Selectin-Mediated Adhesion of Malignant and Non-Malignant Cells Under Flow**M. J. MITCHELL¹, C. A. CASTELLANOS¹, AND M. R. KING¹¹Cornell 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. LAFLAMME¹¹University 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. MIKLAS², J. LIU², R. ASCHAR-SOBBIF², Y. XIAO², B. ZHANG², J. JIANG³, S. MASSE¹, K. NANTHAKUMAR¹, G. GROSS³, P. BACKX², G. KELLER¹, AND M. RADISIC²¹University Health Network, Toronto, ON, Canada, ²University of Toronto, Toronto, ON, Canada, ³Hospital for sick children, Toronto, ON, Canada**2:15PM****Functional Maturation of Early Stage Cardiomyocytes via Mechanical Conditioning**M-D. T. NGUYEN¹, J. P. TINNEY¹, F. YUAN¹, B. B. KELLER¹, G. GIRIDHARAN¹, AND P. SETHU¹¹The University of Louisville, Louisville, KY**2:30PM****Interactions Between Human Pluripotent Stem Cell Derived Cardiomyocytes and Polarized Macrophages**D. O. FREYTES¹, E. WRONA¹, R. ANFANG², A. MARTURANO², AND G. VUNJAK-NOVAKOVIC²¹The New York Stem Cell Foundation, New York, NY, ²Columbia University, New York, NY**2:45PM****Cardiac Progenitor Cells Release Pro-Survival microRNA-Loaded Exosomes that Enhance Angiogenesis and Mitigate Hypoxic Death**W. GRAY¹, N. FINN², C. SEARLES², AND M. DAVIS¹¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Atlanta VA Hospital, Atlanta, GAtrack sponsored by  Edwards**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. MCWHORTER¹, T. WANG¹, AND W. F. LIU¹¹University of California, Irvine, Irvine, CA**1:45PM****White Cell Mechanics Mediate Both Margination and Demargination During an Inflammatory Response**M. E. FAY¹, D. R. MYERS^{1,2}, A. KUMAR³, M. D. GRAHAM³, AND W. A. LAM^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA, ³University of Wisconsin-Madison, Madison, WI**2:00PM****The Mechanical Implications of Cell Size on Tissue Stiffness**J. H. SHAWKY¹ AND L. A. DAVIDSON¹¹University of Pittsburgh, Pittsburgh, PA**2:15PM****Novel Method to Apply Controlled Forces to the Nucleus**S. NEELAM¹, A. MENDONCA¹, T. CHANCELLOR¹, R. DICKINSON¹, AND T. LELE¹¹University of Florida, Gainesville, FL**2:30PM****Lamin and Titin Mutations Causing Cardiomyopathy Disturb Nuclear Mechanics and Cytoskeletal Coupling**P. DAVIDSON¹, E. DI PASQUALE^{2,3}, H. NAKAHAMA², G. CONDORELLI^{2,4}, AND J. LAMMERDING¹¹Cornell University, Ithaca, NY, ²Humanitas Clinical and Research Center, Milan, Italy, ³National Research Council, Milan, Italy, ⁴University of Milan, Milan, Italy**2:45PM****Multicellularity is Required for Tensional Homeostasis**E. P. CANOVIC¹, S. R. POLIO¹, M. L. SMITH¹, AND D. STAMENOVIC¹¹Boston 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. WEAVER¹, V. MILISAVLJEVIC¹, AND D. DI CARLO^{1,2}¹University of California Los Angeles, Los Angeles, CA, ²California NanoSystems Institute, Los Angeles, CA**1:45PM****A micro-Hall Chip for Sensitive Detection of Bacteria**D. ISSADORE¹, R. WEISSLEDER², AND H. LEE²¹University of Pennsylvania, Philadelphia, PA, ²Massachusetts General Hospital - Center for Systems Biology, Boston, MA**2:00PM****Microfluidic Quantification of Single-Cell Cytokine Secretion Dynamics Under Time-Varying Inflammatory Inputs**S. TAY¹ AND M. JUNKIN¹¹ETH Zurich, Basel, Switzerland**2:15PM****A Versatile Valving Toolkit Based on Expanding Elements for Automating Paper Fluidic Devices**B. J. TOLEY¹, J. WANG¹, M. GUPTA¹, J. BUSER¹, L. LAFLEUR¹, E. FU¹, AND P. YAGER¹¹University of Washington, Seattle, WA**2:30PM****Cryogenic Photo-Chemical DNA Synthesis with Increased Yield in a Microfluidic Platform**S. S. PANDEY¹, R. E. FERNANDEZ¹, AND C. MASTRANGELO¹¹University of Utah, Salt Lake City, UT**2:45PM****SynVivo-BBB: Microfluidic Assay For Modeling The Blood Brain Barrier**A. SMITH¹, C. GARSON¹, I. MILLS¹, K. BHATT¹, M. ASCHNER², B. PRABHAKARPANDIAN¹, AND K. PANT¹¹CFD Research Corporation, Huntsville, AL, ²Vanderbilt 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-YADLIN¹, K. BECK¹, A. HU¹, A. MCKENNA¹, AND J. SHENDURE¹¹University of Washington, Seattle, WA**1:45PM****Oncogenic Phospho-tyrosine Signaling in the Absence of Mutated or Amplified tyrosine Kinases**N. A. GRAHAM¹, J. M. DRAKE¹, M. TAHMASIAN¹, K. J. PIENTA², O. N. WITTE^{1,3}, AND T. G. GRAEBER¹¹University of California, Los Angeles, Los Angeles, CA, ²University of Michigan, Ann Arbor, MI, ³Howard Hughes Medical Institute, Los Angeles, CA**2:00PM****A Microfluidic Platform for Visualizing Single-Cell Regulatory Dynamics in Mycobacteria**J. P. KELLER¹, W-H. YU¹, J. E. GALAGAN¹, AND C. M. KLAPPERICH¹¹Boston University, Boston, MA**2:15PM****Gene Expression from the Gq Transgenic Mouse is Sufficient to Mechanistically Predict Altered Cardiac EC Coupling**F. WU¹, J. WADDEN¹, J. LACH¹, K. SKADRON¹, AND J. J. SAUCERMAN¹¹University of Virginia, Charlottesville, VA**2:30PM****Comparative Metabolic Capacities of Bacterial Pathogens Using Reconciled Genome-Scale Metabolic Reconstructions**P. YEN¹, J. A. BARTELL¹, J. J. VARGA², J. B. GOLDBERG², AND J. A. PAPIN¹¹University of Virginia, Charlottesville, VA, ²Emory University, Atlanta, GA**2:45PM****Entrainment of a Population of NF- B Oscillators Under Periodic Inputs**S. TAY¹ AND R. KELLOGG¹¹ETH 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. OBERHARDT¹, R. ZARECKI¹, K. YIZHAK¹, R. PUGATCH², A. WAGNER¹, E. SHTIFMAN SEGAL¹, S. FREILICH³, C. S. HENRY⁴, U. GOPHNA¹, AND E. RUPPIN¹¹Tel Aviv University, Tel Aviv, Israel, ²Princeton, NJ, Princeton, NJ, ³Agricultural Research Organization, Volcani Center, Newe Ya'ar, Israel, ⁴Argonne National Laboratory, Argonne, IL**1:45PM****A Higher-Order Generalized Singular Value Decomposition for Comparison of Global mRNA Expression from Multiple Organisms**S. P. PONNAPALLI¹, M. A. SAUNDERS², C. F. VAN LOAN³, AND O. ALTER⁴¹Bloomberg LP, New York, NY, ²Stanford University, Stanford, CA, ³Cornell University, Ithaca, NY, ⁴University of Utah, Salt Lake City, UT**2:00PM****Multi-Layer Motion Estimation for Fluoroscopic Imaging**C. ROTTMAN¹, J. S. PRESTON¹, A. CHERYAUKA², L. ANDERTON², R. WHITAKER¹, AND S. JOSHI¹¹University of Utah, Salt Lake City, UT, ²GE Healthcare, Salt Lake City, UT**2:15PM****Multiscale Modeling of Nanog Heterogeneity in Pluripotent Stem Cell Populations**J. WU¹ AND E. S. TZANAKAKIS^{1,2}¹Chemical and Biological Engineering, SUNY-Buffalo, Buffalo, NY, ²Biomedical Engineering, SUNY-Buffalo, Buffalo**2:30PM****Quantifying Spatial Patterns of Mouse Embryonic Stem Cell Differentiation within Embryoid Bodies**D. WHITE¹, T. MCDEVITT¹, AND M. KEMP¹¹Georgia Institute of Technology, Atlanta, GA**2:45PM****PTMScout: Understanding Protein Post-Translational Modifications**M. MATLOCK¹, A. HOLEHOUSE¹, C. ZHANG¹, AND K. NAEGLER¹¹Washington University in St Louis, St Louis, MO

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. WHITEHEAD¹, R. DORKIN², R. LANGER², AND D. G. ANDERSON²¹Carnegie Mellon University, Pittsburgh, PA, ²Massachusetts Institute of Technology, Cambridge, MA**2:00PM****Identifying Key Parameters for Controlling the Shape of Polymer/DNA Nanoparticles**J-M. WILLIFORD¹, Y. REN¹, K. HUANG¹, D. PAN¹, AND H-Q. MAO¹¹Johns Hopkins University, Baltimore, MD**2:15PM****Magnetic Core-Shell Nanoparticle-Based microRNA and Hyperthermia Therapy to Enhance the Treatment of Brain Tumors**P. T. YIN¹, B. P. SHAH¹, AND K-B. LEE¹¹Rutgers 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. RANDERIA¹, D. SHIPP², X. WANG², A. PALLER², AND C. MIRKIN¹¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL**2:45PM****Functional Delivery of siRNA and DNA based on Mesoporous Silica Nanoparticles with Large Pores**D-H. MIN¹¹Seoul 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. DUMONT¹, L. S. CONKLIN^{1,2}, R. W. SZE^{1,2}, AND R. FERNANDES^{1,2}¹Children's National Medical Center, Washington, DC, ²George Washington University, Washington, DC**1:45PM****Polymeric Vesicles as Novel Nanoplatforms for Tumor-targeted Molecular Imaging**Z. CHENG¹ AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA**2:00PM****Au/Fe₃O₄ Nanocluster Probes for MRI/SPECT/CT Molecular Imaging of Cancer**S. XUE¹, Y. LIU¹, L. ZHANG¹, Y. YANG¹, P. LIU¹, C. ZHANG¹, AND L. X. XU¹¹Shanghai Jiao Tong University, Shanghai, China, People's Republic of**2:15PM****Safe Iron Oxide Nanoparticles Tailored for Magnetic Particle Imaging**R. M. FERGUSON¹, A. P. KHANDHAR¹, H. ARAMI¹, L. HUA¹, J. RAHMER², AND K. M. KRISHNAN¹¹University of Washington, Seattle, WA, ²Philips, 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}¹University of Texas at Arlington, Arlington, TX, ²The 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. GREGG¹, T. DERRIEN¹, H. ZHAO¹, AND J. BUTCHER¹¹Cornell 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. SIRSI¹, J. J. KANDEL², D. J. YAMASHIRO², AND M. A. BORDEN¹¹University of Colorado at Boulder, Boulder, CO, ²Columbia University Medical Center, New York City, NY**1:45PM****Image-Guided Magneto-Acoustic Gene Targeting to Tumors Prolongs Survival in Tumor-Bearing Mice**B. CHERTOK¹, R. S. LANGER¹, AND D. G. ANDERSON¹¹MIT, Cambridge, MA**2:00PM****PLGA Nanoparticles Modified with Rabies Virus Glycoprotein (RVG) for Improved Brain Tumor Delivery**R. L. MCCALL¹ AND R. W. SIRIANNI¹

I Barrow Neurological Institute, Phoenix, AZ

2:15PM**Enhanced Delivery and Imaging of Neurotherapeutics via US, MRI, SPECT**M. VALDEZ¹, E. YOSHIMARU¹, P. INGRAM¹, J. TOTENHAGEN¹, A. FORBES², S. MOORE¹, P. HELQUIST², T. MATSUNAGA¹, R. WITTE¹, L. FURENLID¹, Z. LIU¹, R. ERICKSON¹, AND T. TROUARD¹¹University of Arizona, Tucson, AZ, ²Notre Dame, Notre Dame, IN**2:30PM****Ultrasound-Assisted Convection Enhanced Drug Delivery to the Brain**M. SISTLA¹, G. LEWIS², A. SARVAZYAN³, AND W. OLBRIGHT¹¹Cornell University, Ithaca, NY, ²Zetoz, Inc., Ithaca, NY, ³Artann Laboratories, West Trenton, NJ**2:45PM****Convection-Enhanced Delivery of Brain-Penetrating Nanoparticles in Glioma**J. SAUCIER-SAWYER¹, Y-E. SEO¹, J. ZHOU¹, A. SAWYER¹, AND W. SALTZMAN¹¹Yale 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 IV¹ AND D. GAVER¹

¹Tulane 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}

¹Massachusetts General Hospital, Boston, MA, ²Harvard Medical School, Boston, MA

2:00PM

Developing a Piezo-Actuated Airwave Oscillometry Device on Resonance for Measurement of Respiratory System Mechanics.

H. HANAFI¹, L. POSADA¹, AND G. N. MAKSYM¹

¹Dalhousie University, Halifax, NS, Canada

2:15PM

Strain as a Primary Determinant for Reversal of Airway Bronchoconstriction

B. C. HARVEY¹, H. PARAMESWARAN¹, AND K. R. LUTCHEN¹

¹Boston University, Boston, MA

2:30PM

Patient Specific Simulations of Forced Expiration Flow Volume Loops

A. PRADEL^{1,2}, K. BLANC², C. STRAUS^{1,2}, T. SIMILOWSKI^{1,2}, AND M. FILOCHE^{2,3}

¹Université Pierre et Marie Curie, Paris, France, ²Assistance Publique - Hôpitaux de Paris, Groupe Hospitalier Pitié-Salpêtrière, Paris, France, ³Ecole Polytechnique, Palaiseau, France, ⁴ENS Cachan, Cachan, France

2:45PM

A Novel Graph Theoretical Transformation: Application for Pendelluft in the Airways

S. D. AMIN¹ AND B. SUKI¹

¹Boston 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. MASSOUD¹, G. BRUNETTO¹, D. REICH¹, G. NAIR¹, AND S. JACOBSON¹

¹National Institute of Neurological Disorders and Stroke, Bethesda, MD, ²University of Maryland, College Park, MD

1:39PM

A Comparison of Intracardiac ARFI and SWI for Imaging Radiofrequency Ablation Lesions

P. HOLLENDER¹, L. KUO¹, V. CHEN¹, S. EYERLY¹, G. TRAEHEY¹, AND P. WOLF¹

¹Duke University, Durham, NC

1:48PM

3D Ultrasound Analysis of Angiotensin II-Induced Dissecting Murine Abdominal Aortic Aneurysms

H. D. SCHROEDER¹, A. A. YRINEO¹, A. E. BOGUCKI¹, AND C. J. GOERGEN¹

¹Purdue University, West Lafayette, IN

1:57PM

4D Shape Analysis Applied to Post-operative Wall Motion Function Assessment of Extracardiac Total Cavopulmonary Connections

M. ECKMAN¹ AND P. G. MENON²

¹Penn State University, State College, PA, ²Sun 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. ZELLER¹ AND B. GHORAANI¹

¹Rochester Institute of Technology, Rochester, NY

2:15PM

Effects of Enterprise Stent Treatment on Basilar Tip Aneurysm Hemodynamics

J. LINDSAY¹, P. NAIR¹, J. RYAN¹, AND D. FRAKES¹

¹Arizona State University, Tempe, AZ

2:24PM

Adaptation to Shear Stress Explains the Spontaneous Regression of the Ductus Arteriosus

S. MUNAWAR¹, U. MUHAMMAD¹, M. ALBABA¹, R. JAMESON¹, H. AHMED¹, A. MINZENNEYER¹, AND C. QUICK¹

¹Texas A&M, College Station, TX

2:33PM

In Vitro Cardiac Electrogram Monitoring System for Langendorff-perfused Guinea Pig Hearts

K. SHAH¹, R. ZHU², D. HUNTER², AND L. TUNG²

¹Rice University, Houston, TX, ²Johns Hopkins University, Baltimore, MD

2:42PM

Modulating the Neuro-inflammatory Response In Vitro by Treatment with Encapsulated hMSCs

J. A. HAWAYEK^{1,2}, E. STUCKY², D. I. SHREIBER², AND M. L. YARMUSH²

¹UPRM, Rio Grande, PR, Puerto Rico, ²Rutgers, Piscataway, NJ

2:51PM

An Electrochemical Method for Detecting Autoinducer-2 Mediated Quorum Sensing

X. Y. ZHOU¹, T. GORDONOV¹, AND W. E. BENTLEY¹

¹University of Maryland - College Park, College Park, MD

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. MACBARB¹, A. L. CHEN¹, J. C. HU¹, AND K. A. ATHANASIOU¹¹University of California, Davis, Davis, CA**3:30PM****Engineered Basement Membranes for Regeneration of the Corneal Endothelium**R. N. PALCHESKO^{1,2}, O. CREASEY², J. L. FUNDERBURGH², AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA**3:45PM****Perfusion-decellularized Pancreas as a Natural Scaffold for Pancreatic Tissue and Organ Engineering**S. GOH¹, S. BERTERA², P. OLSEN¹, J. CANDIELLO¹, B. SICARI¹, S. JOHNSON³, G. UECHI¹, M. BALASUBRAMANI¹, S. F. BADYLA^{1,3}, AND I. BANERJEE^{1,3}¹University of Pittsburgh, Pittsburgh, PA, ²Children's Hospital of Pittsburgh, Pittsburgh, PA, ³McGowan Institute for Regenerative Medicine, Pittsburgh, PA**4:00PM****Discovering the Hepatoprotective Effect of Human Cathelicidins using Organotypic Liver Models**L. VU¹, A. BARRON², AND P. RAJAGOPALAN^{1,3}¹Department of Chemical Engineering Virginia Tech, Blacksburg, VA, ²Department of Bioengineering Stanford University, Stanford CA, ³School of Biomedical Engineering and Sciences Virginia Tech, Blacksburg, VA**4:15PM****Binding and Lubricating Properties of Biomimetic Boundary Lubricants for Articular Cartilage**K. SAMAROO¹, M. TAN¹, D. PUTNAM¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY**4:30PM****Differing Response of Disc Cell to Variations in 3D and Mechanical Culture Conditions**D. KIM¹, S. HEO¹, L. J. SMITH¹, D. M. ELLIOTT², AND R. L. MAUCK¹¹University of Pennsylvania, Philadelphia, PA, ²University 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. TASK¹, A. D'AMORE¹, S. SINGH¹, J. CANDIELLO¹, M. JARAMILLO¹, W. R. WAGNER¹, P. N. KUMTA¹, AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA**3:30PM****Cavitation Microrheology: New Tool to Quantify Mechanical Properties within 3D Biomaterials**W. L. STOPPEL¹, S. B. HUTCHENS¹, A. J. CROSBY¹, AND S. C. ROBERTS¹¹University of Massachusetts Amherst, Amherst, MA**3:45PM****Selenium Nanoparticles Coated Paper Towels Inhibiting the Growth of Staphylococcus aureus and Pseudomonas aeruginosa**Q. WANG¹ AND T. J. WEBSTER¹¹Northeastern University, Boston, MA**4:00PM****Particulate Oxygen Generating Substances (POGS) as Oxygen Source for Islet Isolation and Processing**J. P. MCQUILLING^{1,2}, S. SITTADJODY¹, S. BALAJI¹, B. S. HARRISON^{1,2}, A. C. FARNEY¹, AND E. C. OPARA^{1,2}¹Wake Forest University School of Medicine, Winston-Salem, NC, ²Virginia 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. ZHAO³, J. KIM^{1,2}, C. CEZAR¹, Z. SUO¹, AND D. J. MOONEY^{1,2}¹Harvard University, Cambridge, MA, ²Wyss Institute, Cambridge, MA, ³Duke University, Durham, NC**4:30PM****Mineralized Biomaterials Induces Osteogenic Differentiation of Stem Cells through Adenosine Signaling**Y-R. V. SHIH¹, Y. HWANG¹, H. KANG¹, A. PHADKE¹, AND S. VARGHESE¹¹UC 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. BOIRE¹, M. K. GUPTA¹, S. H. LEE¹, AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN**3:30PM****Crosslinked and Bioreducible Poly(Beta-Amino Ester)-Based Nanoparticles for Enhanced siRNA Delivery**K. L. KOZIELSKI¹, S. Y. TZENG¹, AND J. J. GREEN¹¹Johns Hopkins University, Baltimore, MD**3:45PM****Strand Displacement Based Intracellular Computation Devices**B. B. GROVES¹, Y-J. CHEN¹, S. POCHKAILOV¹, AND G. SEELIG¹¹University of Washington, Seattle, WA**4:00PM****A Thermoresponsive Magnetic Nanoparticle System Using an Antiviral Lectin for HIV Capture and Concentration**J. C. PHAN¹, J. J. LAI¹, AND K. A. WOODROW¹¹University of Washington, Seattle, WA**4:15PM****Synergistically Enhanced Functions of Endograft by Integrating Thin Layers of Nitinol and Silk**M. SHAYAN¹, S. YANG², W. RYU², AND Y. CHUN¹¹University of Pittsburgh, Pittsburgh, PA, ²Yonsei University, Seoul, Korea, Republic of

4:30PM**Design of Surface Imprinted Nanoparticles for Enhanced Recognition of Biomacromolecules**H. R. CULVER¹ AND N. A. PEPPAS¹¹University 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. BAILLARGEON², T. G. SANDERCOCK², AND E. J. PERREAULT^{1,2}¹Rehabilitation Institute of Chicago, Chicago, IL, ²Northwestern University, Chicago, IL**3:30PM****Changes in Musculotendon Length with AFO Tuning after Stroke: A Musculoskeletal Modeling Case Study**H. CHOI¹, K. BJORNSON^{1,2}, S. FATONE³, AND K. M. STEELE⁴¹University of Washington, Seattle, WA, ²Seattle Children's Research Institute, Seattle, WA, ³Northwestern University Feinberg School of Medicine, Chicago, IL, ⁴University of Washington, Chicago, IL**3:45PM****Muscle Synergy Complexity Decreases with Severity of Cerebral Palsy**K. M. STEELE¹, A. ROZUMALSKI^{2,3}, AND M. H. SCHWARTZ^{2,3}¹University of Washington, Chicago, IL, ²Gillette Children's Specialty Healthcare, St. Paul, MN, ³University of Minnesota, Minneapolis, MN**4:00PM****Increased Rotational Loading During Stabilization Task 1 Year After ACL Injury**A. LANIER^{1,2}, K. MANAL², AND T. BUCHANAN²¹University of Delaware, Newark, DE, ²Delaware 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. DAVIS¹, A. HAYES¹, D. MORENO¹, F. S. GAYZIK¹, AND J. STITZEL¹¹Virginia Tech-Wake Forest University, Winston Salem, NC**4:30PM****Kinetics Changes in Distal Arthrogyposis Skeletal Muscle with MYH3 R672C Mutation**A. W. RACCA¹, A. E. BECK^{1,2}, V. S. RAO¹, M. J. BAMSHAD^{1,2}, AND M. REGNIER¹¹University of Washington, Seattle, WA, ²Seattle 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 QUIROZ¹ AND A. CHILKOTI¹¹Duke University, Durham, NC**3:30PM****Self-Assembled Rosette Nanotube Composites Improve Skin Cell Functions**L. SUN¹, H. FENNIRI², AND T. J. WEBSTER¹¹Northeastern University, Boston, MA, ²University of Alberta, Edmonton, AB, Canada**3:45PM****Highly Asymmetric Genetically Encoded Amphiphiles Spontaneously Assemble into Unexpected Morphologies**J. R. MCDANIEL¹, K. B. VARGO², I. WEITZHANDLER¹, D. A. HAMMER², AND A. CHILKOTI¹¹Duke University, Durham, NC, ²University of Pennsylvania, Philadelphia, PA**4:00PM****3D Self-assembling Peptide Gel Stiffness and Adhesiveness Affect hMSC Morphology and Gene Expression**N. HOGREBE¹ AND K. GOOCH¹¹THE OHIO STATE UNIVERSITY, COLUMBUS, OH**4:15PM****Electrostatically Triggered Hydrophobic Self-Assembly of Protein Hydrogels**K. BALER¹, M. CARIGNANO¹, G. AMEER¹, AND I. SZLEIFER¹¹Northwestern University, Evanston, IL**4:30PM****Spontaneous Solution and Interfacial Self-Assembly of Protein Surfactants**K. B. VARGO¹, M. CAVALLARO JR.¹, K. J. STEBE¹, AND D. A. HAMMER¹¹University 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. GO¹, E. SOLLIER², J. CHE¹, R. KULKARNI¹, AND D. DI CARLO¹¹UCLA, Los Angeles, CA, ²Vortex Biosciences, Palo Alto, CA**3:30PM****LbL Nanoparticles for Combination Cancer Therapies: Receptor Targeting and Microenvironment Response**E. DREADEN¹, S. MORTON¹, J. DENG¹, AND P. HAMMOND¹¹Koch 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 ZAKI¹, C. MCQUADE¹, Y. DESAI¹, M. VIDO¹, T. SAKHUJA¹, R. HICKEY¹, D. JOH¹, S.-J. PARK¹, G. KAO¹, J. DORSEY¹, AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA

4:00PM**DNA Nanostructures as Targeted and Therapeutic Delivery Vehicles for Cancer**P. CHAROENPHOL¹ AND H. BERMUDEZ¹¹University of Massachusetts, Amherst, MA**4:15PM****Tethered Cationic Lipoplex Nanoparticles Detect Extracellular RNAs in Liver Cancer Mouse Models and Patients**X. WANG¹, Y. WU¹, K. J. KWAK¹, H. KUTAY¹, R. SULLIVAN¹, C. SCHMIDT¹, K. GHOSHAL¹, AND J. L. LEE¹¹The Ohio State University, Columbus, OH**4:30PM****Quantitative Sensing of microRNA inside Living Cells Based on Nanomaterial**S-R. RYOO¹ AND D-H. MIN¹¹Seoul 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. FREEMAN¹ AND B. OGLE¹¹University of Wisconsin-Madison, Madison, WI**3:30PM****Endocrine Protection of Ischemic Myocardium by FGF21 from the Liver and Adipose Tissue**S. Q. LIU¹, D. ROBERTS¹, A. KHARITONENKOV², Y. C. LI³, L-Q. ZHANG⁴, AND Y. WU¹¹Northwestern University, Evanston, IL, ²Lilly Research Laboratories, Indianapolis, IN, ³The University of Chicago, Chicago, IL, ⁴Rehabilitation Institute of Chicago, Chicago, IL**3:45PM****In Vivo Application of Dynamic Hyaluronic Acid Hydrogels**J. L. YOUNG¹, J. TULER¹, R. BRADEN¹, P. SCHUP-MAGOFFIN¹, J. SCHAEFER¹, K. KRETCHMER¹, K. L. CHRISTMAN¹, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA**4:00PM****Controlled Delivery of Sonic Hedgehog for Cardiac Regeneration**N. JOHNSON¹ AND Y. WANG¹¹University of Pittsburgh, Pittsburgh, PA**4:15PM****Glypican-I Proteoliposomes Enhance Angiogenic Activity of Delivered Growth Factors**A. J. MONTEFORTE¹ AND A. B. BAKER¹¹University of Texas at Austin, Austin, TX**4:30PM****Comparative Studies of Ventricular Assist Devices and the Effect of Inflow and Outflow Cannulations**W-C. CHIU¹, Y. ALEMU¹, C. GAO¹, B. LYNCH², S. EINAV¹, M. SLEPIAN^{1,3}, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²MicroMed Cardiovascular Inc., Houston, TX, ³The University of Arizona, Tucson, AZtrack sponsored by  Edwards**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 Angiogenesis and Transdifferentiation by Valve Endothelial Cells**C. A. AREVALOS¹, A. WALBORN¹, AND K. J. GRANDE-ALLEN¹¹Rice University, Houston, TX**3:30PM****Engineering Biological State Machines with Synthetic Biology**T. K. LU¹, P. SIUTI¹, AND J. YAZBEK¹¹MIT, Cambridge, MA**3:45PM****Augmentation of Chondrocyte Gene Therapy Using Customized Biomaterials**I. N. AGUILAR¹, S. TRIPPEL², AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY, ²Indiana University, Indianapolis, IN**4:00PM****Induction of Prostate Cancer Bone Metastasis in an Immunocompetent Mouse Model**J. LI¹, A. DE GUILLEBON², AND M. KING²¹CORNELL UNIVERSITY, ITHACA, ²CORNELL UNIVERSITY, ITHACA, NY**4:15PM****The Role of Cellular Morphology on Muscle Stem Cell Self-Renewal**N. GUPTA¹ AND P. M. GILBERT¹¹University of Toronto, Toronto, ON, Canada**4:30PM****The Temperature Stress Associated with Heat Stroke Causes Profound Changes in Cell Signal Transduction Pathways**D. C. CLARKE¹, C. J. BARKER¹, D. ZHOU², S. W. INMAN¹, D. A. LAUFFENBURGER¹, AND L. R. LEON³¹Massachusetts Institute of Technology, Cambridge, MA, ²Cornell University, Ithaca, NY, ³United 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. HUANG¹, J. P. SMITH¹, H. LIU², N. H. BANDER², AND B. J. KIRBY¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**3:30PM****Sheathless, On-Chip Flow Cytometer Enabled by Standing Surface Acoustic Waves (SSAW)**Y. CHEN¹, L. WANG², AND T. J. HUANG¹¹The Pennsylvania State University, University Park, PA, ²Ascent Bio-Nano Technologies, Inc., State College, PA**3:45PM****Optoacoustic Tweezers: A Versatile Tool for Concentrating, Patterning, and Manipulating Cells/Particles**Y. XIE¹ AND T. J. HUANG¹¹Pennsylvania State University, State College, PA

4:00PM**Polymer-DNA Nanocomplex Synthesis by “Microfluidic Drifting” Based Three-Dimensional Hydrodynamic Focusing Method**M. LU¹, Y.-P. HO^{2,3}, C. GRIGSBY², D. AHMED¹, A. A. NAWAZ¹, K. LEONG⁴, AND T. HUANG¹¹Pennsylvania State University, University Park, PA, ²Duke University, Durham, NC, ³Aarhus University, Aarhus, Denmark, ⁴Duke University, Durham**4:15PM****Quantitative Electrophoretic Mobility Shift Assays Enabled by Microsystems**Y. PAN¹, T. A. DUNCOMBE¹, AND A. E. HERR¹¹University 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. HOANG¹, L. DIMISKO¹, B. HAMZA¹, AND D. IRIMIA^{1,2}¹Harvard Medical School, Charlestown, MA, ²Shriners 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. SHLIZERMAN¹, J. RIFFELL¹, AND J. KUTZ¹¹University of Washington, Seattle, WA**3:30PM****Understanding Signal Transduction at the Neuroelectronic Interface**V. THAKORE¹, P. MOLNAR^{1,2}, A. BEHAL¹, AND J. J. HICKMAN¹¹University of Central Florida, Orlando, FL, ²University of West Hungary, Szombathely, Hungary**3:45PM****Length and Sequence Dependence in the Association of HTT Protein with Model Membranes**A. NAGARAJAN¹, S. JAWAHERY¹, AND S. MATYSIAK¹¹University 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. TASK¹, O. KOUBAA¹, AND I. BANERJEE¹¹University of Pittsburgh, Pittsburgh, PA**4:15PM****What is the Optimal Amount of Somatic Repair?**D. C. VURAL¹, G. MORRISON^{2,3}, AND L. MAHADEVAN¹¹Harvard University, Cambridge, MA, ²Laboratory for the Analysis of Complex Economic Systems, IMT Institute for Advanced Studies, Lucca, Italy, ³Harvard 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. FERNANDEZ¹, P. MALERBA¹, AND J. A. WHITE¹¹University 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. SJOLANDER¹¹University of California, Berkeley, Berkeley, CA**3:30PM****Inferring Single-Cell Gene Expression Frequencies From Stochastic Transcriptional Profiles**S. S. BAJIKAR¹, C. FUCHS², A. ROLLER², F. J. THEIS², AND K. A. JANES¹¹University of Virginia, Charlottesville, VA, ²Helmholtz Center Munich, Munich, Germany**3:45PM****Misfolded Conformations of the Bovine Prion Protein at Acidic pH**C. CHENG¹ AND V. DAGGETT¹¹University 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. HOFFMAN¹, I. JANG^{1,2}, AND H. JO^{1,2}¹Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology and Emory, Atlanta, GA, ²Division 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. FUNK², AND N. D. PRICE²¹University of Illinois, Urbana-Champaign, Urbana, IL, ²Institute for Systems Biology, Seattle, WA**4:30PM****Family Genomics Reveals Disease Genetics**A. STITTRICH¹, H. COX¹, H. LI¹, S. AMENT¹, P. MAY^{1,2}, D. MAULDIN¹, S. MONTSAROFF¹, R. HUBLEY¹, R. GELINAS¹, M. BRUNKOW¹, L. ROWEN¹, A. SMIT¹, G. GLUSMAN¹, J. ROACH¹, AND L. HOOD¹¹Institute for Systems Biology, Seattle, WA, ²Luxembourg 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. KOTTERMAN¹, B.-Y. HWANG¹, D. STONE¹, J. T. KOERBER¹, L. COUTO², F. MINGOZZI², K. HIGH^{2,3}, AND D. V. SCHAFFER^{1,4}¹University of California, Berkeley, Berkeley, CA, ²The Children's Hospital of Philadelphia, Philadelphia, PA, ³The Children's Hospital of Philadelphia, Philadelphia, ⁴University of California, Berkeley, Berkeley**3:30PM****Local and Sustained Silencing of Proline Hydroxylase 2 Increases Blood Vessel Production in Mice**C. E. NELSON¹, A. HANNA¹, F. YU¹, J. M. DAVIDSON¹, S. A. GUELCHER¹, AND C. L. DUVALL¹¹Vanderbilt University, Nashville, TN

3:45PM**Layer-by-Layer for the Localized Delivery of siRNA**S. CASTLEBERRY¹ AND P. HAMMOND¹¹MIT, Cambridge, MA**4:00PM****Enhancing Nonviral Gene Delivery to Human Mesenchymal Stem Cells through Upregulation of the Glucocorticoid Receptor**A.M. KELLY¹, Z. HAN¹, J. ZEMPLENI¹, AND A. K. PANNIER¹, IRENE GEORGAKOUDI¹University 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. SON¹, M-S. LIANG¹, P. LEI¹, AND S. T. ANDREADIS^{1,2}¹State University of New York at Buffalo, Amherst, NY, ²Center of Excellence in Bioinformatics and Life Sciences, Buffalo**4:30PM****Responsive, Targeted, and Therapeutic: Delivery Vehicles Entirely from DNA**J-W. KEUM¹, P. CHAROENPHOL¹, AND H. BERMUDEZ¹¹University 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. ARAMI¹, A. P. KHANDHAR¹, R. FERGUSON¹, A. TAMITAKA-KAMI¹, AND K. M. KRISHNAN¹¹University of Washington, Seattle, WA**3:30PM****Protein Beacon Targeting of Inactive Heterotrimeric Guanine-Nucleotide Binding Protein in Live HeLa Cells**R. N. COTTLE¹, A. SUNDARARAGHAVAN¹, J. HEPLER², AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**3:45PM****Imaging Cell Metabolism in Diabetic Wounds Using Endogenous Sources of Contrast**K. P. QUINN¹, E. C. LEAL², M. E. AUSTER², A. VEVES², AND I. GEORGAKOUDI¹¹Tufts University, Medford, MA, ²Beth Israel Deaconess Medical Center, Boston, MA**4:00PM****In Vivo Imaging of Inflammation in Carotid Ligation Mouse Model Using VCAM-Targeted Nanoparticles**N. MASOODZADEHGAN¹, W. SEO², AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory 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. NA⁴, M. BIRRER⁴, A. M. BELCHER^{1,3}, AND S. N. BHATIA^{1,5}¹Koch Institute for Integrative Cancer Research/MIT, Cambridge, MA, ²Harvard Biophysics Program, Boston, MA, ³Department of Materials Science and Engineering/MIT, Cambridge, MA, ⁴Department of Medicine, Massachusetts General Hospital, Boston, MA, ⁵Howard Hughes Medical Institute, Chevy Chase, MD**4:30PM****Genetically Encoded Gas Nanostructures as Ultrasonic Molecular Reporters**M. G. SHAPIRO¹, P. W. GOODWILL¹, A. NEOGY¹, D. V. SCHAFFER¹, AND S. M. CONOLLY¹¹University 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. YANG¹ AND D. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA**3:30PM****Development of Neuron-Targeted Polymers for Nucleic Acid Delivery to Brain**H. WEI¹, J. SCHELLINGER¹, J. SHI¹, D. CHU¹, D. SELLERS¹, D. MARIS¹, P. CARLSON¹, J. PAHANG¹, P. HORNER¹, AND S. H. PUN^{1,2}¹University of Washington, Seattle, WA, ²Institute of Molecular Engineering and Science, Seattle, WA**3:45PM****A Reservoir Intravaginal Ring Protects Macaques from Vaginal SHIV Infection**R. TELLER¹, R. RASTOGI¹, P. MESQUITA², B. HEROLD², AND P. KISER¹¹University of Utah, Salt Lake City, UT, ²Albert Einstein College of Medicine, Bronx, NY**4:00PM****Enhanced Vaginal Drug Delivery Using Hypotonic Vehicles**L. M. ENSIGN¹, T. HOEN¹, K. MAISEL¹, R. CONE¹, AND J. HANES¹¹Johns Hopkins University, Baltimore, MD**4:15PM****Hyperthermia-Triggered Nanoparticle Assembly Controls Toxicity of Pro-Apoptotic Peptide Drug Cargo**S. MACEWAN¹ AND A. CHILKOTI¹¹Duke University, Durham, NC**4:30PM****Seeking Hyperthermia Directed Therapeutics: Identification and Development of Thermally Sensitive Genetically-Encoded Polypeptide Nanoparticles**J. R. MCDANIEL¹, X. LI¹, AND A. CHILKOTI¹¹Duke 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. MARTIN¹, V. S. SHIRURE¹, V. A. RESTO², R. MALGOR¹, D. J. GOETZ¹, AND M. M. BURDICK¹¹Ohio University, Athens, OH, ²University of Texas-Medical Branch, Galveston, TX

3:30PM**Detection and Identification of cfc-DNA Biomarkers Directly from CLL Cancer Patient Blood**M. J. HELLER¹, A. SONNENBERG¹, J. MARCINIAK², AND R. KRISHNAN³¹University of California San Diego, La Jolla, CA, ²University of California San Diego, La Jolla, CA, ³Biological Dynamics, La Jolla**3:45PM****Uncovering Aggressive Cancer Cell Heterogeneity by Tumor Microenvironmental Glyco-conjugates**M. VEISEH¹, E. A. TURLEY^{2,3}, AND M. J. BISSELL¹¹Lawrence Berkeley National Laboratory, Berkeley, CA, ²London Health Sciences Centre, London, ON, Canada, ³University of Western Ontario, London, ON, Canada**4:00PM****Coordinated PSA Biosensor Diagnostic and Prognostic Device**J. I. YEH¹ AND H. SHI¹¹Univ of Pittsburgh SOM, Pittsburgh, PA**4:15PM****Multiplexed Microfluidic Immunocapture of Circulating Pancreas Cells for the Early Detection of Pancreatic Carcinogenesis**F. I. THEGE¹, S. M. SANTANA¹, A. D. RHIM², AND B. J. KIRBY^{1,3}¹Cornell University, Ithaca, NY, ²University of Pennsylvania, Philadelphia, PA, ³Weill 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. MAHESWARAN³, D. A. HABER^{1,3}, S. L. STOTT^{1,3}, AND M. TONER^{1,2}¹Harvard Medical School, Boston, MA, ²Surgical Services and BioMEMS Resource Center, Massachusetts General Hospital, Charlestown, MA, ³Massachusetts 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}¹UCSF, San Francisco, CA, ²Pomona College, Claremont, CA**3:24PM****Polymeric Nanoparticles for Modulated Clot Lysis in Abdominal Aortic Aneurysms (AAAs)**A. SYLVESTER^{1,2}, B. SIVARAMAN¹, AND A. RAMAMURTHI¹¹Cleveland Clinic, Cleveland, OH, ²Case 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. CALLANAN¹, S. SUNIL^{1,2}, AND J. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Advanced 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. SWAIN¹, C. E. NELSON², AND C. L. DUVALL²¹Washington University in St. Louis, St. Louis, MO, ²Vanderbilt University, Nashville, TN**3:51PM****Multifunctional Hybrid Nanoparticles as a Co-delivery System for RNAs and Chemotherapeutics**G. P. HOWARD¹, K. Y. CHOI², O. R. FERREIRA SILVESTRE², AND X. CHEN²¹The University of Akron, Akron, OH, ²National 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. LELEUX², AND G. MALLIARAS²¹Louisiana State University, Baton Rouge, LA, ²CMP-EMSE, Gardanne, France**4:09PM****Quantification of Chronic Cortical Functionality Using Local Field Potential Recorded From the Mouse Visual Cortex**Z. GUGEL¹, T. D. KOZAI¹, AND X. T. CUI¹¹University 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}¹University of Pittsburgh, Pittsburgh, PA, ²Center for Neural Basis of Cognition, Pittsburgh, PA, ³VA Pittsburgh Healthcare System, Pittsburgh, PA**4:27PM****Computational Optimization of Electroactive Femoral Implants**A. DOUGLAS¹, E. ZELLMER¹, AND M. MACEWAN²¹Washington University in St. Louis, Saint Louis, MO, ²Washington University School of Medicine, Saint Louis, MO**4:36PM****Telomere Overhang Accessibility to Telomerase and ALT Proteins Depends on Telomeric Repeat Number**J. S. CALVERT¹, H. HWANG¹, A. KREIG¹, AND S. MYONG¹¹University of Illinois at Urbana-Champaign, Champaign, IL**2013 BMES
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Cellular and Molecular Bioengineering

Introducing the 2014 Young Innovators Issue

Edited by David Mooney, Cynthia Reinhart-King and David Schaffer



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- 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.
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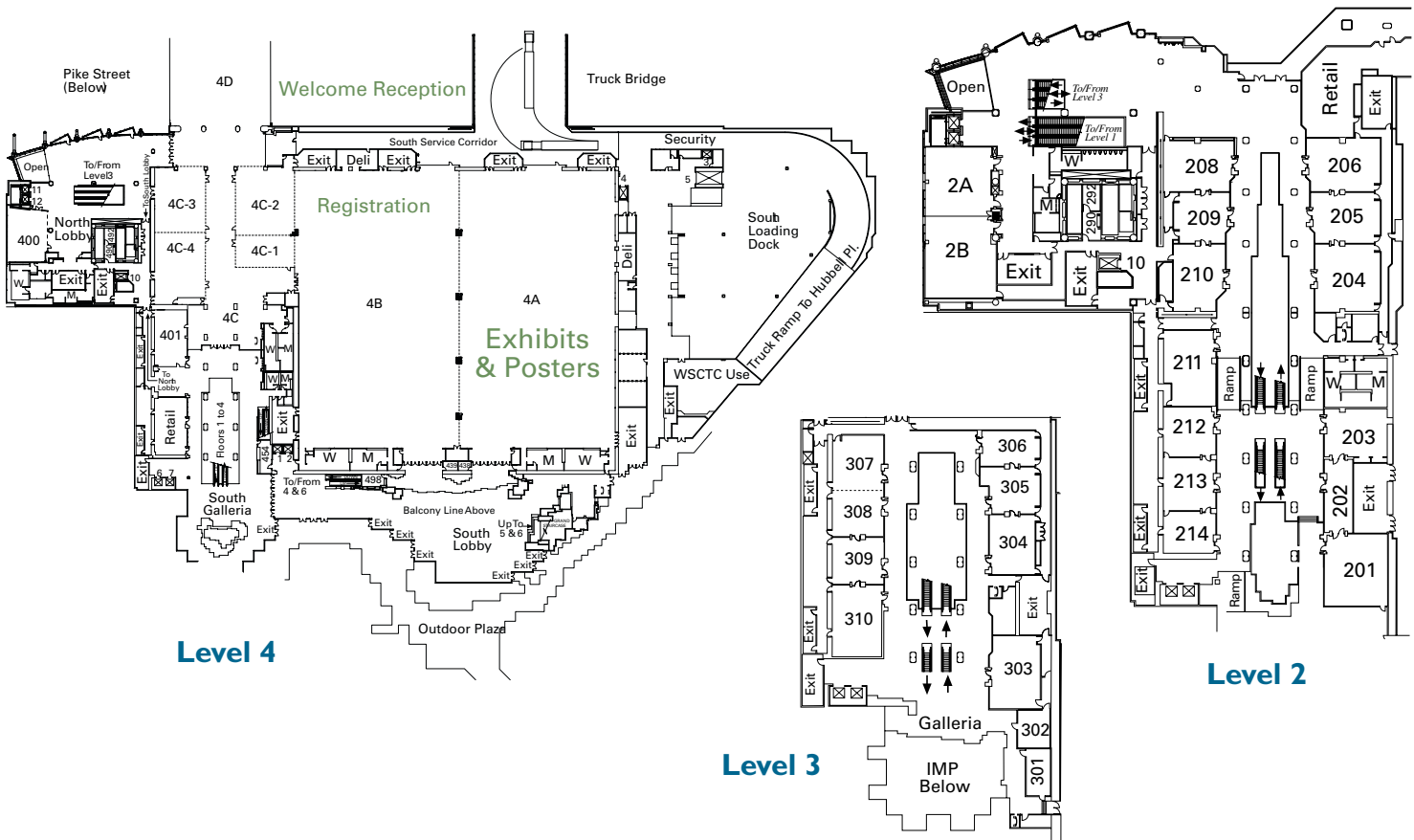
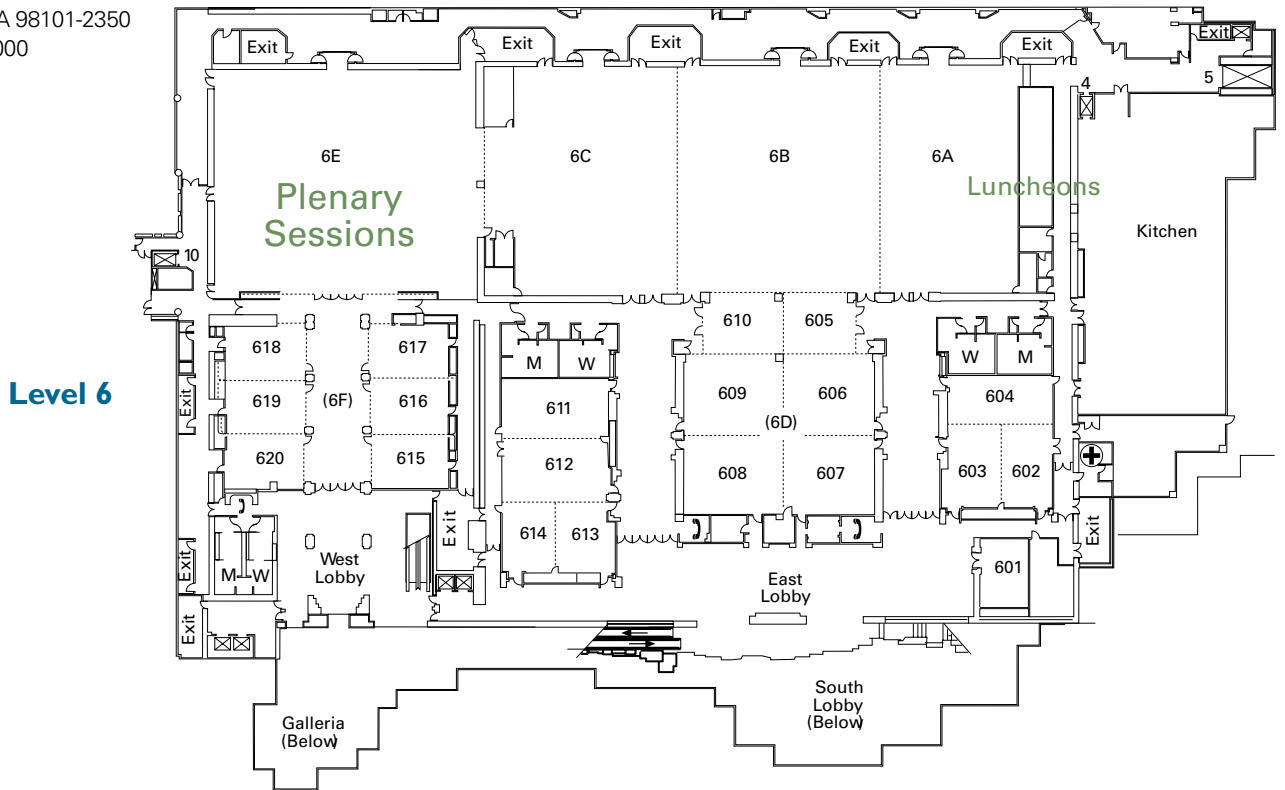
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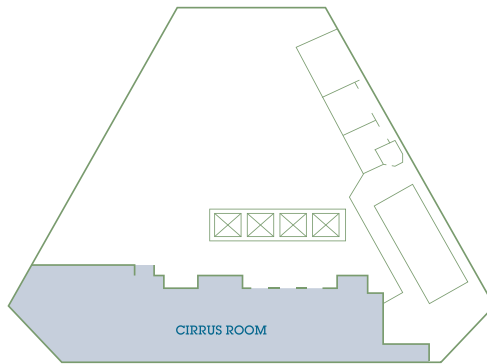
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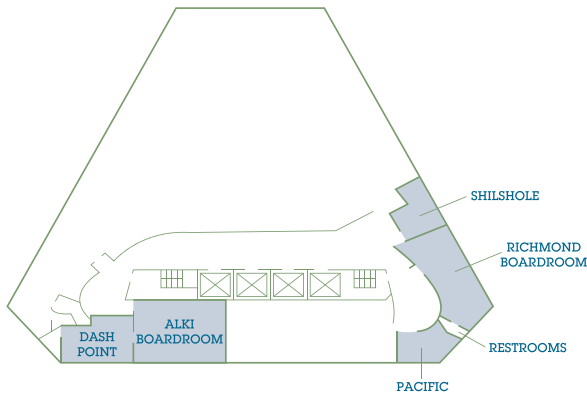
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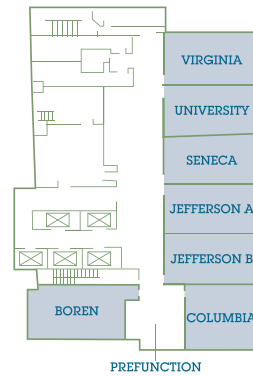
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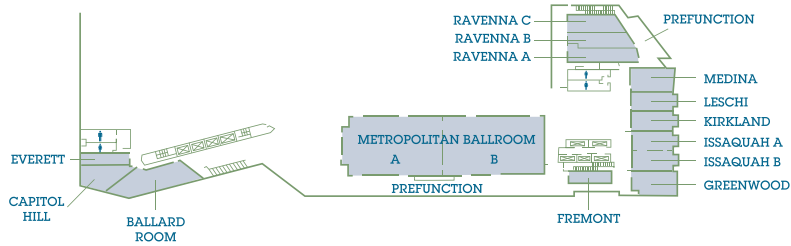
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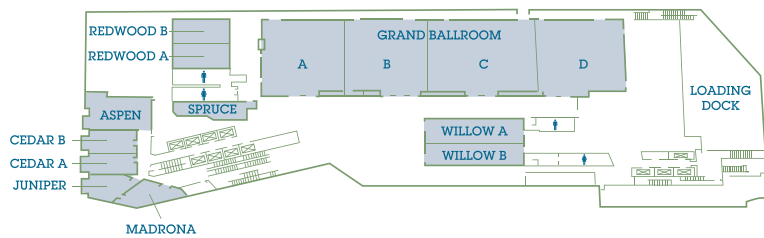
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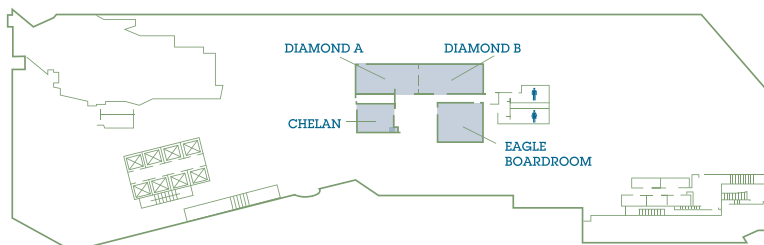
THIRD FLOOR



SECOND FLOOR



FIRST FLOOR LOBBY LEVEL



| Track | 8:00am – 9:30am | 1:30pm -3:00pm | 4:00pm – 5:30pm |
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| 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 <i>Track sponsored by</i>  | 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 <i>Track sponsored by</i>  | 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 |
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| 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 |

| Track | 8:00am – 9:30am | 1:30pm -2:30pm | 2:45pm – 3:45pm |
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| 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 <i>Track sponsored by</i>  | 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 <i>Track sponsored by</i>  | 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 |
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| 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 | |

| 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 <i>Track sponsored by</i>  | 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 |

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|---|------------------------|
|  | 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*

SCHEDULE AT-A-GLANCE

2013 | SEPTEMBER 26 | THURSDAY

THURSDAY, September 26, 2013

| | | |
|--------------------|---|----------------------------|
| 7:00am – 6:00pm | Registration | WSSC, 4C |
| 8:00am – 9:30am | Platform Sessions - Thurs-I | WSSC - 18 concurrent rooms |
| 8:00am - 9:00am | International Affairs Committee Meeting | WSSC, Room 214 |
| 8:30am – 10:00am | National Meetings Committee Meeting | WSSC, 601 |
| 9:00am - 10:00am | Choosing a Career Pathway in BME That's Right for You | WSSC, 2AB |
| 9:30am – 5:00pm | Exhibit Hall Open | WSSC, Exhibit Hall 4AB |
| 9:30am – 1:00pm | Poster Session – Thurs - A | WSSC, Exhibit Hall 4AB |
| 9:30am – 10:30am | Poster Viewing with Authors & Refreshment Break | WSSC, Exhibit Hall 4AB |
| 10:30am – 11:45 | Plenary Session Pritzker Distinguished Lecturer | WSSC, 6E |
| 12:00noon – 1:15pm | Celebration of Minorities in BME Luncheon | WSSC, 6A |
| 12noon – 1:30pm | Lunch on Your Own | |
| 1:00pm - 2:00pm | Membership Committee Meeting | WSSC, 214 |
| 1:30pm – 2:45pm | BME Careers in Industry | WSSC, 2AB |
| 1:30pm – 5:30pm | One on One Career Consulting | WSSC, 212, 213 |
| 1:30pm – 3:30pm | Resume Review & Critique | WSSC, 307, 308 |
| 1:45pm - 3:15pm | Mock Interview Demonstration | WSSC, 310 |
| 1:30pm – 5:00pm | Poster Session – Thurs - B See pages ?? | WSSC, Exhibit Hall 4AB |
| 1:30pm – 3:00pm | Platform Session – Thurs - 2 | WSSC - 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 | WSSC, Exhibit Hall 4AB |
| 3:15pm – 4:30pm | BME Careers in Government | WSSC, 2AB |
| 4:00pm – 5:30pm | Platform Session – Thurs - 3 | WSSC - 18 concurrent rooms |
| 4:00pm - 5:30pm | Korea-US Joint Workshop in Biomedical Engineering | WSSC, Room 201 |
| 4:00pm – 6:00pm | Resume Review & Critique, <i>repeated</i> | WSSC, 307, 308 |
| 4:00pm – 5:30pm | Mock Interview Demonstration, <i>repeated</i> | WSSC, 310 |
| 5:00pm – 6:15pm | BME Careers in Academia | WSSC, 6E |
| 5:45pm – 7:15pm | BME State of the Society Town Hall & Award Ceremony | WSSC, 6E |
| 8:00pm – 9:00pm | University Receptions | Sheraton |

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|---|------------------------|
|  | Plenary Sessions |
|  | Platform Sessions |
|  | Posters |
|  | Workshops |
|  | Student & Early Career |
|  | Exhibits |
|  | Special Events |
|  | General |

AFFILIATE EVENTS:

| | | | |
|---|---|---|---|
| 12noon – 1:30pm | 3:00pm – 4:00pm | 4:00pm – 5:00pm | 5:30pm – 7:00pm |
| Cellular and Molecular Bio-engineering - Editorial Board | AIMBE Council Meeting | AEMB Annual Grand Meeting | AEMB Reception |
| <i>Sheraton Seattle, Greenwood Room</i> | <i>Washington State Convention Center, Room 203</i> | <i>Washington State Convention Center, Room 303</i> | <i>Sheraton Seattle, Daily Grill Restaurant</i> |

FRIDAY, September 27, 2013

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|------------------------|
| Plenary Sessions |
| Platform Sessions |
| Posters |
| Workshops |
| Student & Early Career |
| Exhibits |
| Special Events |
| General |

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|------------------|---|----------------------------|
| 7:00am – 6:00pm | Registration | WSSC, 4C |
| 8:00am – 9:30am | Platform Sessions - Fri-I-I | WSSC - 18 concurrent rooms |
| 8:30am – 10:00am | 2014 Annual Meeting Planning Committee Meeting | WSSC, 601 |
| 8:30am - 9:30am | BMES Student Chapter—Outstanding Chapter Best Practicest | WSSC, 2A2B |
| 9:30am - 10:30am | BMES Student Chapter - Outreach and Mentoring Best Practices | WSSC, 2A2B |
| 9:30am – 5:00pm | Exhibit Hall Open | WSSC, Exhibit Hall 4AB |
| 9:30am – 1:00pm | Poster Session – Fri - A | WSSC, Exhibit Hall 4AB |
| 9:30am – 10:30am | Poster Viewing with Authors & Refreshment Break | WSSC, Exhibit Hall 4AB |
| 10:30am – 12noon | Plenary Session Distinguished Achievement & NIBIB Lecture/DEBUT Awards Ceremony | WSSC, 6E |
| 12noon – 1:30pm | Lunch on Your Own | |
| 12:15pm - 1:15pm | Woman in BME Luncheon | WSSC, 6A |
| 1:00pm – 5:00pm | Career Fair | WSSC, South Lobby |
| 1:30pm – 5:00pm | Poster Session – Fri - B <i>See pages ?-?</i> | WSSC, Exhibit Hall 4AB |
| 1:30pm – 5:30pm | One on One Career Consulting, <i>repeated</i> | WSSC, 212, 213 |
| 1:30pm – 3:30pm | Resume Review & Critique, <i>repeated</i> | WSSC, 307, 308 |
| 1:30pm – 2:30pm | Platform Session – Fri - 2 | WSSC - 18 concurrent rooms |
| 2:45pm – 3:45pm | Platform Session – Fri - 3 | WSSC - 17 concurrent rooms |
| 3:45pm – 4:45pm | Diversity Committee Meeting | WSSC, 214 |
| 3:45pm – 4:45pm | Poster Viewing with Authors & Refreshment Break | WSSC, Exhibit Hall 4AB |
| 4:45pm – 6:00pm | Plenary Session | WSSC, 6E |
| 7:00pm – 10:00pm | BMES BASH | Experience Music Project |

AFFILIATE EVENTS:

12noon – 1:30pm

Cardiovascular Engineering and TechnologySheraton Seattle,
Capitol Hill Room Room

9:00am – 10:00am









AEMB Ethics SessionWashington State
Convention Center,
Room 303

2:00pm – 3:00pm

AIMBE-AEMB Student Public Policy SessionWashington 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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|---|------------------------|
|  | Plenary Sessions |
|  | Platform Sessions |
|  | Posters |
|  | Workshops |
|  | Student & Early Career |
|  | Exhibits |
|  | Special Events |
|  | General |

2013 BMES ANNUAL MEETING

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