
BMES2011
BMES
BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™
2011 ANNUAL MEETING
Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering
October 12–15, 2011
Connecticut Convention Center, Hartford, CT
TRAVELERS
PHOENIX
Lady Katharine Cruises

BMES

BIOMEDICAL ENGINEERING SOCIETY

Advancing Human Health and Well Being

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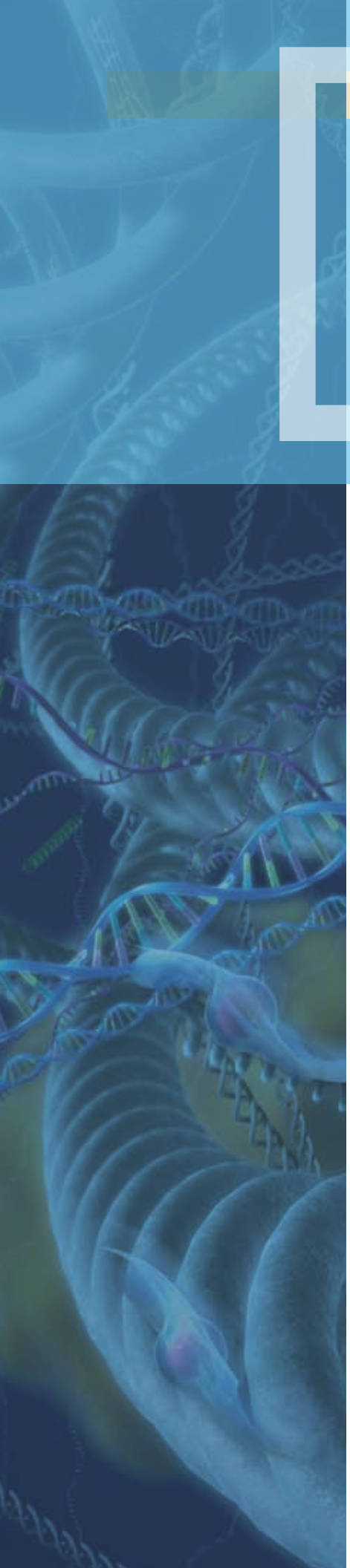

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Richard E. Waugh, PhD
BMES President

University of Rochester

WELCOME TO THE 2011 Annual Meeting of the Biomedical Engineering Society! The theme this year is "Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering," and Conference Chair Tom Webster, Vice Conference Chair Don Peterson, and Technical Program Chair, Karen Haberstroh, have assembled an exciting program. I want to thank all of the track chairs and session chairs for their important role in reviewing the new extended abstracts and assembling an outstanding program that highlights the latest advances in both basic and translational research.

Our plenary lectures highlight the range of achievement in the field. Professor Michael Schuler from Cornell University will deliver the 2011 Robert A. Pritzker Distinguished Award Lecture, and Roderic Pettigrew, Director of NIBIB, will deliver the BMES Distinguished Achievement Award Lecture. Professor Cato T. Laurencin, M.D., Ph.D., from the University of Connecticut is this year's winner of the BMES Diversity Award, and Jordan Green, Assistant Professor at Johns Hopkins University, was selected for the BMES Rita Schaffer Memorial Award. There will also be a special session this year celebrating the International Journal of Nanomedicine Early Career Award and Distinguished Scientists Award winners.

As part of our efforts to increase interactions among physicians and engineers in academia and industry, we are, for the first time, offering CME credit for a number of our sessions and symposia, and we are introducing several sessions with a panel discussion format to encourage greater interaction among participants in our translational research track. We will continue our new tradition on Wednesday afternoon, October 12 from 3-5 PM, and hold a poster session for faculty candidates. This will provide an opportunity for those BMES members looking for faculty positions to meet faculty from departments that are recruiting this year.

There are a number of special events you might wish to check out. Don't miss the special social event on Friday evening, October 14 at the Connecticut Science Center. You'll get to sample local food and enjoy the more than 150 hands-on exhibits. In addition, there will be a Women in BMES Luncheon on Friday, and last year's Celebration of Minorities in BME Luncheon returns to this year's meeting on Thursday. This year's speaker for the Celebration of Minorities in BME luncheon is Roderic I. Pettigrew. All are welcome (with ticket, of course!).

The student program includes several career related activities including an alumni panel, a resume review and writing workshop, and career fair. There are undergraduate technical sessions and design project sessions and special sessions for BMES student chapters. There is a Student Chapter Development workshop Friday morning and the Student Chapter Leadership workshop Friday early afternoon. A Professional Development workshop will also take place Friday afternoon. The workshop will provide students and early career workers with insights on what skills made the speakers marketable in the workforce.

We welcome other student and professional groups attending the meeting including the student honor society Alpha Eta Mu Beta, the Council of Chairs, AIMBE, the BME Career Alliance, and the Whitaker International Scholars and Fellows program.

Finally I would be remiss if I did not express a big "Thank You!" to our record number of supporters for the meeting, including NIH, NSF, Medtronic, Boston Scientific, Clemson University, the Whitaker Foundation, and especially Covidien, our first ever Diamond level supporter.

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

Richard E. Waugh, PhD
BMES President

Thomas Webster, PhD

Annual Meeting Chair

Brown University

WELCOME TO NEW ENGLAND AND THE CONNECTICUT CONVENTION CENTER in Hartford, the Northeast's newest Convention Center ideally located close to numerous hospitals, universities, and BME industries. For those of you new to Hartford, it is a city rich in history, Connecticut after all is nicknamed the "Constitution State." In 1868, Mark Twain wrote "Of all the beautiful towns it has been my fortune to see this [Hartford] is the chief." The Convention Center is just steps from Downtown Hartford, overlooking the beautiful Connecticut River at Adriaen's Landing, the city's exciting new riverfront district — so take advantage of the free hotel and downtown shuttles to explore (just not during the meeting). Hartford has been often called the "Insurance Capital of World" generating more economic activity than sixteen U.S. states, but today and this week, it will definitely be the "Biomedical Engineering Capital of the World".

Hartford is also home to the new Connecticut Science Center which currently boasts 6 floors of over 150 hands-on exhibits, a state-of-the-art 3D digital theater, and four educational labs which makes it perfect for endless exploration for children, teens and adults. A two minute walk from the Connecticut Convention Center, we will take advantage of this inspirational Science Center for our Friday Night Celebration so that we can mingle, network, and refresh our excitement towards science — be sure to check out the Sports Lab and Picture of Health exhibits!

This year at the BMES Annual Meeting, some things are the same, but a lot is new. We have worked very hard over the past year to put together a stimulating program featuring over 2000 presentations covering all aspects of Biomedical Engineering. While we are confident that the tradition of a strong BMES meeting will continue this year, we have made a number of key changes for improvement. Since our theme is: "Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering," one of our goals was to increase participation among clinicians, academics, and industry. Of course, New England is home to a number of biomedical industries which has brought new faces to our exhibit hall, and new supporters, with a first time ever Diamond Supporter from New England's own Covidien (thanks to all of our supporters). To increase clinical participation, for the first time ever, we have incorporated Continuing Medical Education (CMEs) Credits into the program. For those that do not know, it is required that clinicians complete a certain number of CMEs every year and we hope that this new direction for BMES will continue in the years to come to improve clinical participation. As New England is home to more than 300 Universities and Colleges, the strong academic presence at BMES will continue this year. We have also continued the well received "Meet the Faculty Candidate" event to help our newest graduates find jobs and we will have a special birthday to celebrate this year—Dr. Shu Chien turns 80 ! (be sure to check out the special symposium in his honor—party hats required).

On a more practical level, this year, we moved into a longer abstract format, incorporated required financial disclosures of presenters to become a more open society, and established stronger guidelines for abstract reviews. A longer abstract format improves our society by increasing quality and providing more information for assessment. It is also anticipated that the new longer abstract format will increase research visibility both in terms of references in scholarly journals and presentations.

So get out there BMES attendees, catch up with old friends, meet new people, and have a great meeting (just don't eat too much lobster) !

Thomas Webster, PhD

Annual Meeting Chair

Don Peterson PhD

Annual Meeting Vice-Chair
University of Connecticut

IT IS WITH GREAT HONOR AND PRIVILEGE that I welcome you to Hartford, Connecticut, for the 2011 Annual Meeting of the Biomedical Engineering Society! We here at the University of Connecticut are honored to be co-hosting the Annual Meeting in the Connecticut Convention Center with Brown University! For several decades following the Civil War, Hartford was the wealthiest city in the U.S. and, from October 12th through the 15th, 2011, it will once again become the nation's wealthiest – but this time in BME!

The BMES Annual Meetings provide a vehicle for understanding the latest trends in BME as it embodies the cutting-edge of BME research and technological developments from faculty and students from top universities and colleges. The theme for this year's meeting is "Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering" and the Technical Program Chair, Karen Haberstroh, has composed a great Program that will certainly expand upon this theme. I am proud to announce that a newly restructured Translational Biomedical Engineering track has been incorporated into this year's Program that promises to demonstrate how Translation is BME's next engineering milestone. This track will have platform presentations and posters from students and faculty who are on the cutting-edge of translational work and it will also feature panel sessions on Nanomedicine, Personalized Medicine, Translational Education, and the translational initiatives of universities funded by the Coulter Foundation. Also new this year is an additional plenary lecture sponsored by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) on Robotics and Sensory Motor Restoration. And, I would also like to welcome BMES's first ever Diamond-level sponsor, Covidien, who is Connecticut's largest manufacturer of medical devices.

The conference theme is ideally suited for the location of this year's BMES Annual Meeting. The Hartford metropolitan area continues to be a dynamic leader in economic development and in Biomedical Engineering. In 2010, the Hartford area ranked 2nd nationally based on per capita economic activity behind San Francisco, California, and is currently ranked 32nd (out of 318 metropolitan areas) in total economic production. The Hartford-Springfield metropolitan region is collectively nicknamed the "Knowledge Corridor" because of its 32 universities and colleges (including several of the America's most prestigious) and approximately 160,000 students. The Corridor also has a significantly large educated workforce that supports a concentration of high-tech industries, from health care services to the precision manufacturing of metals, plastics, and electronics. Incidentally, the Knowledge Corridor region generates over $110 billion GDP, which is higher than the GDP of 16 U.S. states. Connecticut alone has about 800 biomedical companies, half of which are medical device manufacturers producing $3.5 billion in sales and about $1 billion in exports per year. Overall, Hartford and the Knowledge Corridor have become vital components to the thriving medical device manufacturing industry in the United States and to the advancement of Biomedical Engineering.

The city of Hartford, which is nicknamed the "Insurance Capital of the World" as it is the headquarters for many of the world's insurance companies, is rich in history and accomplishment. At nearly 375 years old, Hartford is one of oldest cities in the U.S. In 1639, the world's first written constitution used to establish a government was created here and served as a prototype for the U.S. Constitution. Hartford has the oldest continually-published newspaper in the U.S., the Hartford Courant, whose first issue appeared on October 29, 1764 (as the Connecticut Courant). Many of the nation's oldest landmarks are here: the oldest state house in the U.S. (1796), the oldest public art museum, the Wadsworth Atheneum (1842 and has a collection that spans over 5000 years), and the world's oldest publically-established park, Bushnell Park (1854). (All three of these landmarks are just a short walk from the Convention Center.)

Hartford was home to several famous people, such as authors Mark Twain and Harriet Beecher Stowe, and to inventors like Samuel Colt, who patented the first revolving cylinder firearm (1836) and invented the first electrically-powered underwater torpedo (1841). (If you walk out the back side of the Convention Center overlooking Interstate 91 and look off in the distance to your right, you will see a large red brick building with a large blue onion dome on top. This was his firearms factory, the Colt Armory.) Hartford is also home to many of the nation's firsts. Apollos Kinsley built the first steam-powered road wagon (1797), Charles Richtel flew the first successful dirigible flight for two hours (1878), and the first pneumatic tires were manufactured here (1895). Hartford was the birth place of the American automobile industry and was its center for many years, where the Pope Manufacturing Company made electric and gasoline powered automobiles (and motorcycles and bicycles) under the brand name Columbia (1897). President Theodore Roosevelt was the first president to ride in an automobile on August 22, 1902, as he rode through Hartford in a Columbia Electric Victoria. Hartford was also the first city in the world to have a radio station broadcast in FM (WDRC in 1939).

Many thanks to Tom Webster, the Meeting Chair, and Karen Haberstroh, the Technical Program Chair, for all their hard work to make this event possible and to the entire staff at BMES for supporting this Annual Meeting, especially Ed Schilling, BMES Executive Director, and Debby Tucker, BMES Meetings Director, for their patience and support of our ideas, suggestions, and modifications. This will truly be a great meeting and I hope that you find it both beneficial and experiential in your career as a Biomedical Engineer! I hope your visit to BMES 2011 and to Hartford will be enjoyable and memorable.

Sincerely,

Don Peterson, PhD
Annual Meeting Vice Chair

Karen M. Haberstroh, PhD

Program Chair

Brown University

WELCOME TO BMES 2011 and to Hartford, CT! This year's meeting promises to be very exciting. From systems biology to tissue engineering - it includes tracks and sessions that have been well-received in previous years, and also features some new biomedical engineering research and educational sessions. Of note, the technical program now highlights multiple sessions and panels focused on translational biomedical engineering and industrial collaborations, including "Clinical and Translational Research and Science in Biomedical Engineering" and "Research to Practice (R2P)". In total, the meeting contains 14 concurrent sessions, 704 oral presentations, and 1,357 poster presentations, and represents speakers chosen from over 2,188 submitted abstracts. In addition, we have an excellent representation of undergraduate student presenters, as highlighted in the Saturday afternoon undergraduate sessions. Please attend their talks and support the next generation of biomedical engineers!

We know that there were a lot of changes put into effect with this year's meeting, including a new one page abstract, a new abstract scoring rubric, and an earlier abstract deadline. We appreciate everyone's patience in this process and hope is that these have all helped to ensure the highest quality of technical presentations in each of these exciting areas.

Before we all head to our favorite sessions, I'd like to take this opportunity to thank a few people that have helped to make this meeting a success. First and foremost, I'd like thank the staff at BMES for their patience and guidance in this process - I now (fully) appreciate all of the hard work that goes into planning a meeting of this scale, and I hope that the staff knows how much they are appreciated and valued. Debby Tucker, in particular, has spent endless hours communicating with myself, the track chairs, Mira, researchers, and the Hartford convention center, among others; she has aided in creating not only a fantastic technical and social agenda, but also a high quality and professional meeting program. I would also like to thank all of the track chairs, reviewers, and session chairs - as specialists in their fields, these scientists have each volunteered their (extensive) time and effort to this event, and I truly appreciate all of their hard work. I'd like to thank the meeting co-chairs, Tom Webster and Don Peterson, who together have helped the BMES staff and I pull off this monumental event. Finally, I'd like to thank all of the previous meeting and technical chairs - I now understand the hard work and care that they donated in making their own BMES meeting run smoothly. We are very fortunate to have members so dedicated to this society, and to making this annual meeting a success!

Again, welcome to Hartford and enjoy BMES 2011!

Karen Haberstroh

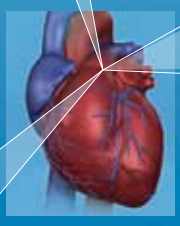
Technical Program Chair

Medtronic

Who knew that space exploration would lead us closer to the human heart?

We did.

We're always exploring new ways to apply innovative technologies. By applying NASA technology we were able to leverage an innovative polymer originally designed to survive challenges in space. Its stability in extreme environments, corrosion-protective qualities and ability to work in very small places allowed us to reach the complex left side of the heart, which led to one giant leap in product design. We're always reaching further, going farther.



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BMES ROBERT A. PRITZKER DISTINGUISHED LECTURE

Pritzker Distinguished Lecturer:

Michael L. Shuler, PhD

Cornell University

THURSDAY, OCTOBER 13, 2011
8:00AM
BALLROOM, CONVENTION CENTER

Modeling Life

WE SEEK TO CONSTRUCT physical and mathematical models of life. Such models allow us to test our understanding of how living systems function and how they respond to human imposed stimuli. Our "Body-on-a-Chip" is a microfabricated, microfluidic system with cells or tissue constructs representing various organs in the body. It can be constructed from human or animal cells and used in drug discovery development. The model is a physical representation of a physiologically based pharmacokinetic model. The second system is a genomically and chemically complete model of a minimal cell. This cell is a hypothetical bacterium with the fewest number of genes possible. Such a minimal cell provides a platform to ask about the essential features of a living cell and forms a platform to investigate "synthetic biology." While the two systems differ greatly in detail, both illustrate an engineering approach to understand "What is life?" and how living organisms can be manipulated for human benefit.

MICHAEL SHULER is the James and Marsha McCormick Chair of the Department of Biomedical Engineering as well as the Samuel Eckert Professor of Chemical Engineering in the School of Chemical and Biomolecular Engineering at Cornell University. He is also the Director of the Center on the Microenvironment and Metastasis, a Physical Sciences-Oncology Center funded by the National Cancer Institute. Shuler received his degrees in chemical engineering (BS, University of Notre Dame, 1969 and Ph.D., University of Minnesota, 1973) and has been a faculty member at Cornell University since January 1974. He joined the faculty of chemical engineering and chaired the School of Chemical and Biomolecular Engineering from 1998 to 2002. He was the founding chair of Biomedical Engineering starting July 2004. Mike has advised 59 PhD students as well as numerous Masters level students and 17 post-doctoral associates.

Shuler's research is focused on biomolecular engineering and nanobiotechnology with a recent emphasis on applications in human health. His work includes development of an "artificial" animal (in vitro) for testing pharmaceuticals, models of the vasculature to identify interactions of circulating tumor cells with the endothelium, controlled drug delivery to treat brain tumors, production systems for useful compounds, such as paclitaxel from plant cell cultures, and computer models of cells relating physiological function to genomic structure. Shuler's research has led to commercial processes for production of the anticancer agent, Taxol, to tools to produce proteins from recombinant DNA (the "High Five" cell line), to software to support systems biology, and to devices for drug development (HuRel system).

He has received numerous awards for his research and teaching. He has an honorary doctorate from the University of Notre Dame. He has received the Amgen Award in Biochemical Engineering, the Professional Progress and Warren K. Lewis Awards from the American Institute of Chemical Engineers and the Marvin Johnson Award from American Chemical Society. Also, he was the inaugural awardee for the J.E. Bailey Award from the Society for Biological Engineering. Shuler has been elected to membership in the National Academy of Engineering (1989) and the American Academy of Arts and Science (1996).

BMES Distinguished Achievement Lecture Award:

Roderic Pettigrew, PhD, MD

National Institute of Biomedical Imaging and Bioengineering

FRIDAY, OCTOBER 14, 2011
8:00AM
BALLROOM, CONVENTION CENTER

The Critical Roles of Convergence Science and Technological Innovation in Tomorrow's Healthcare

ADDRESSING THE CURRENT AND emerging challenges in healthcare through biomedical science and technological innovation increasingly requires expertise from several disciplines such as chemistry, physics, mathematics, engineering, computer science, cell /molecular biology and genomics. Scientists from different disciplines collaborating to form a new interdisciplinary team is a powerful approach to achieve an important research and development goal. This is essential for realizing the vision of patient-centric medicine that is more personalized and globally accessible. Moreover, meeting the opposing modern challenges of increased medical access and functionality while decreasing cost is critically dependent on technological innovation. Such innovation has already begun to show advances in a number of healthcare areas, including point-of-care systems, mobile health, image guided interventions, regenerative medicine, and molecular theranostics. This promises even greater advances in both the understanding and treatment of disease and in reshaping tomorrow's practice of medicine towards more effective healthcare for all.

RODERIC I. PETTIGREW, PH.D., M.D., is the first Director of the National Institute of Biomedical Imaging and Bioengineering at the NIH. Prior to his appointment at the NIH, he was Professor of Radiology, Medicine (Cardiology) at Emory University and Bioengineering at the Georgia Institute of Technology and Director of the Emory Center for MR Research, Emory University School of Medicine, Atlanta, Georgia.

Dr. Pettigrew is known for his pioneering work at Emory University involving four-dimensional imaging of the cardiovascular system using magnetic resonance (MRI). More recently he has focused on integrated coronary imaging and the biomechanics of atherosclerotic plaque. Dr. Pettigrew graduated cum laude from Morehouse College with a B.S. in Physics, where he was a Merrill Scholar; has an M.S. in Nuclear Science and Engineering from Rennselear Polytechnic Institute; and a Ph.D. in Applied Radiation Physics from the Massachusetts Institute of Technology, where he was a Whitaker Harvard-MIT Health Sciences Scholar. Subsequently, he received an M.D. from the University of Miami School of Medicine in an accelerated two-year program, did an internship and residency in internal medicine at Emory University and completed a residency in nuclear medicine at the University of California, San Diego. Dr. Pettigrew then spent a year as a clinical research scientist with Picker International, the first manufacturer of MRI equipment. In 1985, he joined Emory as a Robert Wood Johnson Foundation Fellow with an interest in non-invasive cardiac imaging.

Dr. Pettigrew's awards include membership in Phi Beta Kappa, the Bennie Award (Benjamin E. Mays) for Achievement, and being named the Most Distinguished Alumnus of the University of Miami. In 1989, when the Radiological Society of North America celebrated its 75th Diamond anniversary scientific meeting, it selected Dr. Pettigrew to give the keynote Eugene P. Pendergrass New Horizons Lecture. He has also served as chairman of the Diagnostic Radiology Study Section, Center for Scientific Review, NIH. He has been elected to membership in both the Institute of Medicine, and the National Academy of Engineering of the National Academies, fellowship in the American Heart Association, American College of Cardiology, American Institute for Medical and Biological Engineering, International Society for Magnetic Resonance in Medicine, and was elected an Honorary Fellow of the Biomedical Engineering Society.

Numerical and Statistical Methods for Bioengineering

Applications in MATLAB

Michael R. King, *Cornell University, New York*

Nipa A. Mody, *Cornell University, New York*

"The book is really easy to read and places frameworks for numerical analysis into realistic bioengineering concepts that students will find familiar and relevant. This is most evident in the excellent boxed examples, but also in many of the homework problems. I also really liked the 'key points to consider' at the end of the chapters – these are useful reminders for the students. Finally, the book presents bioinformatics in a manageable fashion that should help demystify this subject for interested students."

- K. Jane Grande-Allen, *Rice University*

The first MATLAB-based numerical methods textbook for bioengineers that uniquely integrates modeling concepts with statistical analysis, while maintaining a focus on enabling the user to report the error or uncertainty in their result. A unique feature of the book is the inclusion of examples from clinical trials and bioinformatics, which are not found in other numerical methods textbooks for engineers. With a wealth of biomedical engineering examples, case studies on topical biomedical research, and the inclusion of end of chapter problems, this is a perfect core text for a one-semester undergraduate course.

For further information or to request an examination copy visit www.cambridge.org/9780521871587

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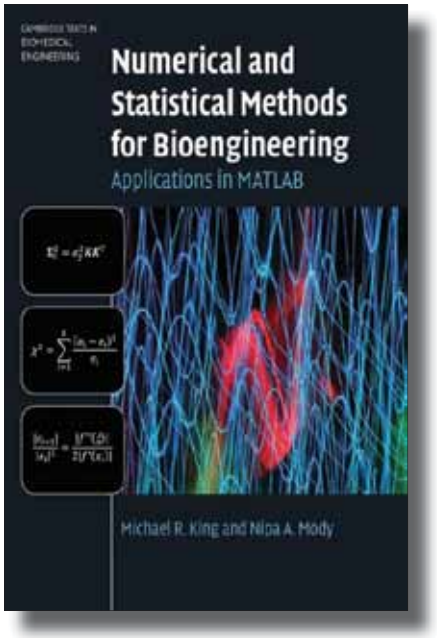

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Features

- The first numerical methods textbook specifically for bioengineers, with numerous examples drawn exclusively from biomedical engineering applications
- Combines traditional engineering analysis topics with hypothesis testing, supporting the objectives and outcomes of biomedical engineering undergraduate programs
- Includes implementation based on MATLAB, with many examples included, providing readers with analysis programs that are easy to understand and apply

CAMBRIDGE UNIVERSITY PRESS

NIH National Institute of Biomedical Imaging and Bioengineering Lecture:

David Reinkensmeyer, PhD

University of California at Irvine

FRIDAY, OCTOBER 14, 2011
8:45AM
BALLROOM, CONVENTION CENTER

Robotics and Sensory Motor Restoration

ADVANCES IN ROBOTICS are assisting people with sensory motor impairment in achieving greater mobility. For example, exoskeletons help people with paralysis to walk and use their hands, and robotic training devices allow movement training to be delivered in more intense, motivating, and quantifiable ways. Yet, even with these advances in rehabilitation technology, individuals with mobility impairment still too often experience too little recovery. This talk will describe efforts of rehabilitation, robotics, and neural engineers to develop technologies to assist the injured motor system in reorganizing in a way that best promotes functional recovery. A central theme is that technologies that provide an optimal level of challenge to the patient produce better therapeutic outcomes; a key question is whether optimal recovery requires more sophisticated assistive technologies, such as multi-joint exoskeletons, that can assist in more naturalistic movement. Ultimately, treatments that combine regenerative or plasticity-enhancing therapies with intensive motor learning experiences will facilitate neuro-recovery beyond what is currently possible. These treatments will require a new science of combination therapies to be developed.

DAVID REINKENSMEYER is Professor in the Departments of Mechanical and Aerospace Engineering, Anatomy and Neurobiology, and Biomedical Engineering at the University of California at Irvine. He received the B.S. degree in electrical engineering from the Massachusetts Institute of Technology and the M.S. and Ph.D. degrees in electrical engineering from the University of California at Berkeley, in 1988, 1991, and 1993, respectively, studying robotics and the neuroscience of human movement. He carried out postdoctoral studies at the Rehabilitation Institute of Chicago and Northwestern University Medical School from 1994 to 1997, building one of the first robotic devices for rehabilitation therapy after stroke. He became an assistant professor at U.C. Irvine in 1997, establishing a research program that develops robotic and sensor-based systems for movement training and assessment following neurologic injuries and disease. He recently served as the chair of the National Science Foundation initiated International Study on Technology for Mobility, and is the lead researcher for iMove, a collaborative effort at U.C. Irvine focused on using technology to help restore human mobility.

Dr. Reinkensmeyer's research group seeks to understand how to improve sensory motor recovery following neurologic injury and disease. Since motor learning and neuroplasticity occur in response to the physical effects of motion, his group manipulates the physics of motor tasks with robots to try to enhance motor learning, developing and drawing on computational models of neuromotor learning and plasticity to provide a rational framework for device development. Increasingly his group is interested in combining technologies for movement training with regenerative therapies, including stem cell therapies. His group is also seeking to develop sensor-based technologies for movement evaluation that improve insight into regenerative clinical trials by enabling continuous, high-resolution assessment of neuro-muscular control.

RITA SCHAFFER MEMORIAL LECTURE

BMES 2011 Rita Schaffer Memorial - Young Investigator Lecturer:

Jordan Green, PhD

Johns Hopkins University

SATURDAY, OCTOBER 15, 2011
8:00AM
BALLROOM, CONVENTION CENTER

Polymeric Nanoparticles for Cell-Specific Intracellular Delivery

THERE IS A NEED to safely and effectively deliver biological molecules inside cells to treat many diseases. We have developed a library of polymers to encapsulate various molecules including nucleic acids into biodegradable nanoparticles. These particles degrade either hydrolytically or in response to changing environmental conditions. Nucleic acid-based medicines (DNA or RNA) in particular hold great promise in treating many genetic disorders including cancer, but lack a viable delivery method. The nanobiotechnologies that we develop here are more effective than the leading commercially available reagents for in vitro intracellular delivery to a range of cell types including human primary cells and human cancer cells and are promising for in vivo use. Small changes to chemical structure tune intracellular delivery in a cell-type specific manner. Leading polymeric nanoparticles exhibit low non-specific toxicity and high transfection efficiencies of ~80% in difficult to transfect human cells. Certain nanoparticle formulations are particularly effective for transfection of human macrovasculature and microvasculature cells and for transfection of human brain cancer cells.

DR. JORDAN J. GREEN is an assistant professor of Biomedical Engineering and Ophthalmology at the Johns Hopkins University School of Medicine. He is also a member of the Institute for NanoBioTechnology and the Translational Tissue Engineering Center at JHU. Dr. Green received his B.S. in biomedical engineering and chemical engineering from Carnegie Mellon University in 2003 and studied at Imperial College London from 2001-2002. He was awarded Whitaker, NSF, and Phi Kappa Phi Fellowships for graduate study and completed his Ph.D. in biological engineering from the Massachusetts Institute of Technology in 2007. Subsequently, Dr. Green was a postdoctoral associate at MIT in Institute Professor Robert Langer's lab from 2007-2008 and was also a biotechnology consultant. His work has resulted in 25 papers and book chapters, 24 invited talks, multiple patents, and has been featured by News@Nature.com and the Boston Globe among other outlets. He has served on national grant panels for the National Institutes of Health, the National Science Foundation, the Department of Defense, and the American Association for the Advancement of Science. Dr. Green's main research interests are in developing biomaterials and nanobiotechnology to meet challenges in regenerative medicine, ophthalmology, and cancer. His work on biomaterials and drug delivery is supported by grants from the National Institutes of Health, the Maryland Technology Development Corporation, the Institute for Nanobiotechnology, and the Edward N. and Della L. Thome Memorial Foundation, Award in Age-Related Macular Degeneration Research.

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

Diversity Lecture:

Cato Laurencin, MD, PhD

University of Connecticut Health Center

SATURDAY, OCTOBER 15, 2011
8:45AM
BALLROOM, CONVENTION CENTER

What I Teach When I Mentor, What I've Learned When I've Been Taught

CATO T. LAURENCIN, M.D., PH.D. is an elected member of the Institute of Medicine of the National Academy of Sciences and an elected member of the National Academy of Engineering.

Dr. Laurencin is the Albert and Wilda Van Dusen Distinguished Chair in Orthopaedic Surgery, and Professor of Chemical, Materials and Biomolecular Engineering at the University of Connecticut. In addition, Dr. Laurencin is a University Professor at the University of Connecticut (the 5th in the institution's history). An internationally prominent orthopaedic surgeon, engineer, and administration, Dr. Laurencin directs the Institute for Regenerative Engineering at the University of Connecticut Health Center, and is Chief Executive Officer of the Connecticut Institute for Clinical and Translational Science. Dr. Laurencin previously served as Vice President for Health Affairs and Dean of the School of Medicine at the University of Connecticut Health Center.

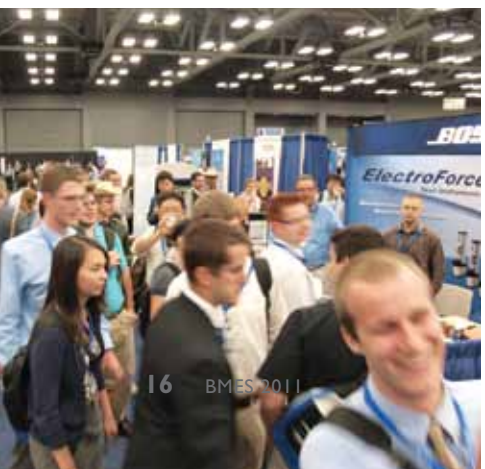
Dr. Laurencin earned his undergraduate degree in chemical engineering from Princeton University and his medical degree Magna Cum Laude from Harvard Medical School. During medical school, he also earned his Ph.D. in biochemical engineering/biotechnology from the Massachusetts Institute of Technology.

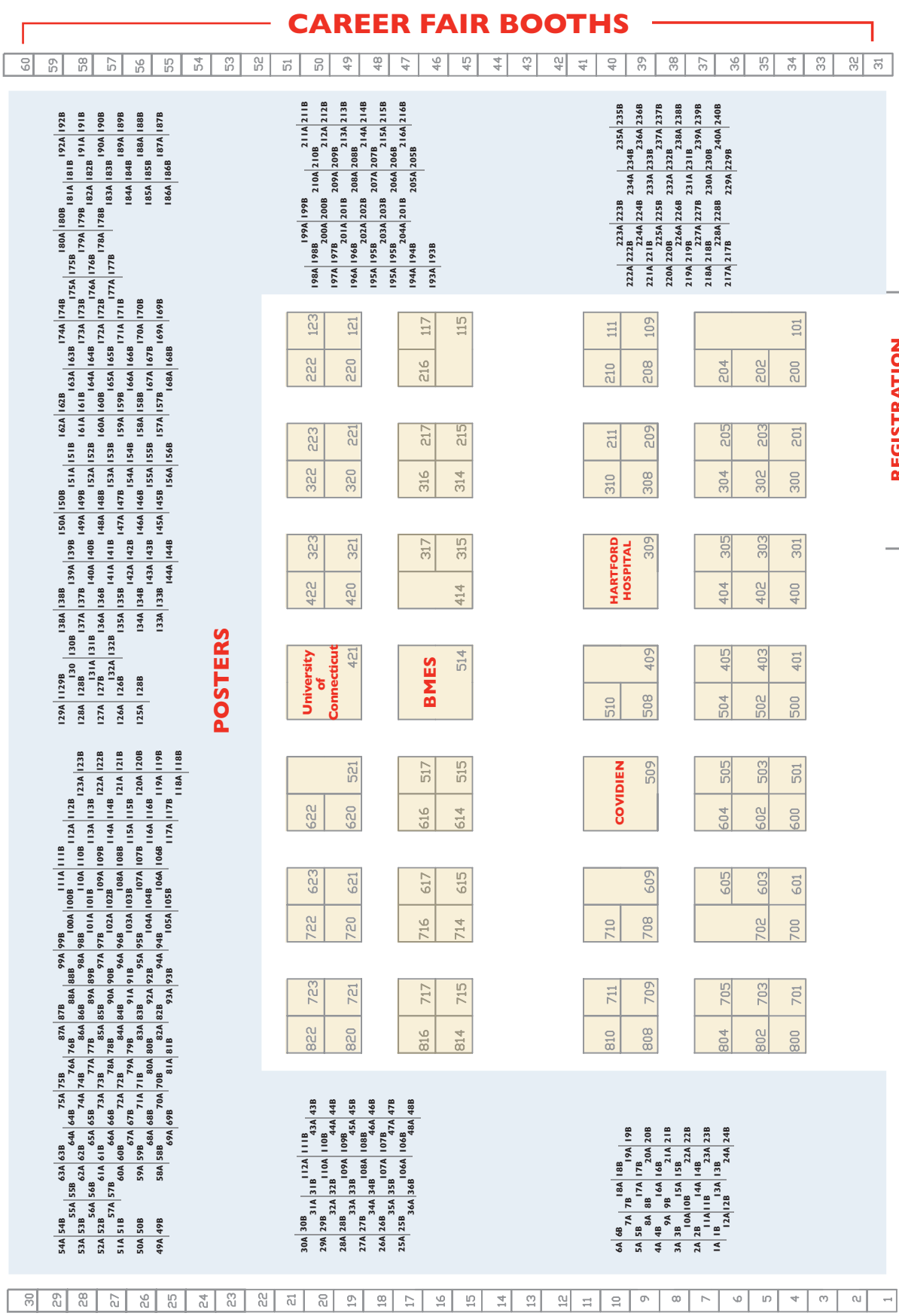
Dr. Laurencin has been named to America's Top Doctors and America's Top Surgeons, and is a Fellow of the American Surgical Association, a Fellow of the American College of Surgeons, and a Fellow of the American Academy of Orthopaedic surgeons.

Dr. Laurencin's research involves tissue engineering, biomaterials science, nanotechnology and stem cell science. He is an International Fellow in Biomaterials Science and Engineering and a Fellow of the American Institute for Medical and Biological Engineering. His work was honored by Scientific American Magazine as one of the 50 greatest achievements in science in 2007. Dr. Laurencin was named the 2009 winner of the Pierre Galletti Award, medical and biological engineering's highest honor and was named one of the 100 Engineers of the Modern Era by the American Institute of Chemical Engineers at its Centennial celebration.

Dr. Laurencin's work in mentoring students is well known. He received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring from President Obama in ceremonies at the Whitehouse. He has been a member of the National Science Foundation's Advisory Committee for Engineering (ADCOM), and has served both on the National Science Board of the FDA, and the National Advisory Council for Arthritis, Musculoskeletal and Skin Diseases at N.I.H. Dr. Laurencin is a former Speaker of the House of the National Medical Association, and currently serves as Chairman of the Board of the W. Montague Cobb/National Medical Association Health Policy Institute. Dr. Laurencin is also a member of the National Academies Board on Life Sciences, and sits on the National Academy of Sciences Roundtable on Evidence Based Medicine and Value.

EXHIBITS

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BOOTH # 209

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BOOTH # 123

American Physiological Society

9650 Rockville Pike
Bethesda, MD 20814
Phone: 301-654-7930
Email: ssabur@the-aps.org
Web: www.the-aps.org

Founded in 1887, APS was established to advance understanding of how living organisms function. Today APS helps disseminate physiological research through its scientific meetings and journals. APS also offers outstanding educational, professional development, and public policy programs.

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Arizona State University

BIOMEDICAL ENGINEERING

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P.O. Box 879709
Tempe, AZ 85287-9709
Phone: 480-727-5485
Email: allison.avans@asu.edu
Web: http://engineering.asu.edu/bhse

The School of Biological and Health Systems Engineering (SBHSE) provides a relevant and challenging curriculum that immerses our students in progressive and exciting developments and discoveries of Biomedical Engineering and medicine. SBHSE represents the true fusion of modern medicine and modern engineering. Research and development areas include Neuroengineering, Regenerative Medicine, Imaging, Tissue Engineering, Cardiovascular Engineering, Genetic Engineering, Computational and Synthetic Biological Engineering, and Medical Devices and Diagnostics. In addition to the PhD program, we offer a Master's degree designed to be completed in one calendar year of full-time study.

BOOTH # 321

Biomedical Engineering Alliance & Consortium - BEACON

One Congress Street, Suite 201
Hartford, CT 06114
Phone: 860-547-1995
Email: joseph.bronzino@beaconalliance.org
Web: www.beaconalliance.org

BOOTH # 301

BIOPAC Systems, Inc.

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BOOTH # 303

BME Career Alliance

4809 E. Thistle Landing, Suite 100
Phoenix, AZ 85044
Phone: 480-726-7272
Email: charla@bmecareer.org
Web: www.bmecareer.org

The BME Career Alliance is a non-profit organization that facilitates interactions between biomedical engineering programs and industry. Students, alumni, faculty and industry can access our job board, regional meetings and many other career resources on our website: www.bmecareer.org . Come by our booth at BMES to learn more!

BOOTH # 515

Boston University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 810

Brown University

BIOMEDICAL ENGINEERING

Box D, 184 Hope Street
Providence, RI 02912
Phone: 401-863-2318
Email: Thomas_Webster@Brown.edu
Web: http://www.brown.edu/Departments/Center_for_Biomedical_Engineering/

THE Center for Biomedical Engineering (BME) is a joint program between the School of Engineering and the Division of Biology and Medicine at Brown University. As the oldest Engineering program in the Ivy League, Brown has a strong tradition of innovative biomedical engineering research. We offer B.S., Sc.M., and Ph.D. degress in BME that closely link clinicians from the Brown Medical School with researchers possessing strengths in biomaterials, biomechanics, neuroscience, nanotechnology, regnerative medicine, tissue engineering, and many others.

BOOTH # 616

Cambridge University Press

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Please stop by the Cambridge University Press booth to peruse the latest in biomedical engineering, including: Mechanics of Biomaterialsby Pruitt and Chakravartula; Biomedical Engineering by Saltzman; BiodesignbyZenios, Makower and Yock; Introduction to Medical Imaging by Barrie Smith and Webb and Numerical and Statistical Methods in Bioengineering by King and Mody. Buy now and enjoy a special 20% discount!

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Carnegie Mellon University

700 Technology Drive - PTC 4105
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Phone: 412-268-6222
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Web: www.bme.cmu.edu

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

BOOTH # 400

Case Western Reserve University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

The Department of Biomedical Engineering at CaseWesternReserveUniversity 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, transportand metabolic engineering, biomechanics, and targeted therapeutics.

BOOTH # 802

The City College of New York

DEPARTMENT OF BIOMEDICAL ENGINEERING

160 Convent Avenue
New York, NY 10031
Phone: 212-650-7531
Email: fu@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 # 205

Clemson University

INSTITUTE FOR BIOLOGICAL INTERFACES OF ENGINEERING

301 Rhodes Research Center
Clemson, SC 29634-0905
Phone: 864-656-7276
Email: mariam@clemson.edu
Web: www.clemson.edu/centers-institutes/ibioe/

The IBIOE mission is to develop diagnostic tissue test systems to improve health care though education, research and training in: advanced biomaterials, biotooling and instrumentation, human-centered electronic collaboration, and tissue fabrication. We are proud to offer innovative graduate opportunities in leading-edge tissue engineering research.

BOOTH # 614

Colorado State University

SCHOOL OF BIOMEDICAL ENGINEERING

1376 Campus Delivery, Engineering Building, AR 204
Fort Collins, CO 80523
Phone: 970-491-7157
Email: sara.neys@colostate.edu
Web: www.engr.colostate.edu/sbme

Colorado State University's School of Biomedical Engineering offers Biomedical Engineering undergraduate and graduate degrees (BS, ME, MS, PhD, and ME online) and certificates in Regulatory Affairs. We integrate engineering, veterinary and human medicine and basic sciences to transcend disciplinary boundaries, providing breadth and depth in bioengineering education and research.

BOOTH # 323

Connecticut's Business Development Team

Phone: Business Response Center: 1-800-392-2122
Web: Connecticut Department of Economic and Community Development
Web: www.decd.org
Connecticut Development Authority - www.ctcda.com
Connecticut Innovations - www.ctinnovations.com

Connecticut's Business Development team is comprised of three agencies dedicated to creating and retaining jobs, attracting capital investment, and supporting innovation and growth in key industry sectors.

BOOTH # 500

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 as its main campus at Ithaca in the Finger Lakes Region of upstate New York. The Biomedical Engineering Department has close collaborations with a wide variety of other departments in Ithaca, especially with those in the Colleges of Engineering, Veterinary Medicine, Agriculture and Life Sciences, Arts and Sciences, and Human Ecology. For more information, please visit http://www.bme.cornell.edu/.

BOOTH # 509

Covidien

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Covidien is a leading global healthcare products company that creates innovative medical solutions for better patient outcomes and delivers value through clinical leadership and excellence. Covidien manufactures, distributes and services a diverse range of industry-leading product lines in three segments: Medical Devices, Pharmaceuticals and Medical Supplies. With 2010 revenue of $10.4 billion, Covidien has 41,000 employees worldwide in more than 65 countries, and its products are sold in over 140 countries. Please visit www.covidien.com to learn more about our business.

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CRC Press – Taylor & Francis is a premier publisher in biomedical engineering textbooks, professional manuals, reference works, journals, and electronic databases. Please visit our booth to peruse our titles, receive special convention discounts, and pick up copies of our journals. Talk to us about being a CRC Press Author!

BOOTH # 308

Dalhousie University

SCHOOL OF BIOMEDICAL ENGINEERING

5981 University Avenue
Halifax, Nova Scotia B3H 1W2
Canada
Phone: 902-494-3427
Email: esb@dal.ca
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. The new Bio-Medic Entrepreneurship Certificate program includes stipend support , clinician mentoring, industrial placements, training in clinical needs and medical device regulatory & industry standards.

BOOTH # 208

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BOOTH # 216

Drexel University

SCHOOL OF BIOMEDICAL ENGINEERING

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Email: nnjb33@drexel.edu
Web: www.biomed.drexel.edu

Drexel's School of Biomedical Engineering, Science and Health Systems academic thrust areas focus on bringing life saving solutions to health care and include cellular tissue engineering, neuroengineering and integrated bioinformatics. The faculty's core competences are at the forefront of biosensing, bioimaging, bioinformation engineering and, drug delivery, biomedical ultrasound & optics, bionanotechnology, and human performance. The School's student body comprises more than 650 students, 40% of whom are graduate students.

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BOOTH # 710

Engineering World Health

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

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

BOOTHS # 409 / 411

FASEB Marc Program

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

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

The FASEB MARC Program will provide career counseling and resume critiquing in booth 409 in the exhibit hall during the BMES meeting. This service is free to you; therefore come by and sign-up for a session with either Dr. Howard Adams or Dr. Andrew Green.

Career Counseling Scheduling:
Thursday, October 13, from 10:00am-4:30pm
Friday, October 14, from 10:00am-4:30pm
Saturday, October 15, from 10:00am-1:00pm

BOOTHS # 622

Florida International University

BIOMEDICAL ENGINEERING DEPARTMENT

10555 West Flagler Street
EC 2618
Miami, FL 33174
Phone: 305-348-6717
Email: claudia.estrada1@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 # 605

Found Animals Foundation

4079 Redwood Avenue, Suite C
Los Angeles, CA 90066
Phone: 310-574-5793
Email: k.palfrey@foundanimals.org
Web: michelson.foundanimals.org

Found Animals Foundation sponsors the Michelson Prize and Grants in Reproductive Biology - $75 million available toward achievement of a single dose, non-surgical sterilant that is safe, effective, and practical for use in male and female cats and dogs. Visit http://michelson.foundanimals.org/ for more information.

BOOTH # 414 / 416

Georgia Tech / Emory University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 203

Hartford Hospital

80 Seymour Street
Hartford, CT 06102
Phone: 860-545-6048
Email: mmaibau@harthosp.org
Web: www.harthosp.org

Hartford Hospital's Research Program supports the research endeavors of world-class investigators in diverse fields such as Cardiology, Psychiatry, Genetics and other critical areas. Hartford Hospital's Center for Education, Simulation and Innovation is a premier center for experiential learning, simulation and other leading-edge training technologies housed in a new, state-of-the-art facility.

BOOTH # 210

Illinois Institute of Technology

3255 South Dearborn Street
Wishnick Hall 314
Chicago, IL 60616
Phone: 312-567-5324
Email: mogul@iit.edu
Web: www.iit.edu/engineering/bme/

The Department of Biomedical Engineering at the Illinois Institute of Technology offers B.S. and Ph.D. degrees specializing in the areas of cell and tissue engineering, neuroengineering, and medical imaging. Partnerships within IIT and across multiple academic institutions in the Chicago area offer students unique opportunities to engage in state-of-the-art research in areas at the intersection of engineering and biomedical & clinical biology.

BOOTH # 602

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BOOTHS # 702/704

Johns Hopkins University

DEPARTMENT OF BIOMEDICAL ENGINEERING

3400 N. Charles Street
316 Clark Hall
Baltimore, MD 21212
Phone: 410-516-0786
Email: camerer@jhu.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 # 820

Journal of Visualized Experiments

48 Grove Street, Suite 325
Somerville, MA 02144
Phone: 617-996-5363
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Web: www.jove.com

The Journal of Visualized Experiments (JoVE) is the first and only PubMed/MEDLINE indexed online journal publishing video articles of methods in biological, medical, chemical, and physical sciences research. JoVE has published over 1,200 articles from leading academic and research institutions. JoVE articles are read by more than 120,000 scientists per month.

BOOTH # 302

Khalifa University

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Phone: 001-971-2-401-8000
Email: erin.brannen@kustar.ac.ae
Web: www.kustar.ac.ae

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

BOOTH # 615

Marquette University

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

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

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

BOOTH # 201

Materialise

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Plymouth, MI 48170
Phone: 734-259-6672
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Web: www.materialise.com

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Medtronic, Inc.

710 Medtronic Parkway
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Phone: 763-505-4542
Email: mike.hess@medtronic.com
Web: www.medtronic.com

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BOOTH # 502

The Methodist Hospital Research Institute

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

The purpose of The Methodist Hospital Research Institute (TMHRI) Academy for Medical Science and Technology is to develop educational and research partnerships that foster medical innovation. In conjunction with partner institutions, the Academy will teach students and postgraduate trainees to be leaders of medicine by identifying clinically relevant challenges, and developing research programs that translate into technological advances in the clinic. In addition to being governed by the Council of Deans, which includes members of the Institute of Medicine, National Academy of Science, and National Academy of Engineers; the Academy has organized the Methodist Academy Trainee Association. The Association is a self-governed organization of undergraduate, graduate, and medical students, as well as postdoctoral fellows, residents, and clinical research fellows involved in research at TMHRI. The Association has journal clubs, open-mic research sessions, as well as social activities for all trainees to participate in. Come by and visit our booth to learn more about our translational research opportunities!

BOOTH # 305

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

BOOTH # 316

NanoInk, Inc.

8025 Lamon Avenue
Skokie, IL 60077
Phone: 847-679-6266
Email: info@nanoink.net
Web: www.nanoink.net

NanoInk provides direct write, tip-based desktop lithography instruments and services for nano and micro scale patterning. The product portfolio optimizes controllable deposition of different materials, under ambient conditions, to rapidly generate user-defined multiplexed patterns with feature sizes 50 nm to 10 microns, enabling cutting edge nanofabrication, nanoengineering and nanobiological applications.

BOOTH # 211

National Institute of Biomedical Imaging and Bioengineering

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

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) leads the development and accelerates the application of emerging and breakthrough biomedical technologies in order to improve human health. The Institute is committed to integrating the engineering and physical sciences with the life sciences to advance basic research and medical care.

BOOTHS # 609 / 611

National Instruments

11500 N. Mopac Expressway
Austin, TX 78759
Phone: 512-683-0100
Email: info@ni.com
Web: www.ni.com/biomedical

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

BOOTH # 714

New Jersey Institute of Technology

DEPARTMENT OF BIOMEDICAL ENGINEERING

University Heights
Newark, NJ 07702
Phone: 973-596-5476
Email: rocha@njit.edu
Web: http://biomedical.njit.edu

The Department of Biomedical Engineering at NJIT offers Bachelor's, Master's and Doctor of Philosophy degrees in Biomedical Engineering: BS in Biomedical Engineering. Biomedical engineering students combine a study of fundamental biological and physiological processes with a study of engineering methods. Master of Science in Biomedical Engineering. The MS in Biomedical Engineering stresses the application of the principles and practices of engineering, science and mathematics in solving clinical problems in medicine and surgery. PhD in Biomedical Engineering. The Doctor of Philosophy in Biomedical Engineering offers advanced graduate education providing students with the skills necessary for careers in basic and applied research, as well as the intellectual foundation to provide leadership in academia and industry. The PhD is jointly awarded by NJIT and The University of Medicine & Dentistry of New Jersey (UMDNJ).

BOOTH # 822

nScrypt

12151 Research Parkway, Suite 150
Orlando, FL 32826
Phone: 407-275-4720
Email: jrobinson@nscrypt.com
Web: www.nscrypt.com

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

BOOTH # 111

The Ohio State University

DEPARTMENT OF BIOMEDICAL ENGINEERING

270 Bevis Hall, 1080 Carmack Road
Columbus, OH 43210
Phone: 614-292-7152
Email: bmegrad@osu.edu
Web: www.bme.ohio-state.edu

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

BOOTH # 517

Pennsylvania State University

DEPARTMENT OF BIOENGINEERING

205 Hallowell Building
University Park, PA 16802
Phone: 814-865-1407
Email: hhlbio@engr.psu.edu
Web: http://bioeng.psu.edu

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

BOOTH # 723

PolySciTech Division: Akina, Inc.

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

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

BOOTH # 300

Purdue University

WELDON SCHOOL OF BIOMEDICAL ENGINEERING

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

Opportunities abound through the Weldon School of Biomedical Engineering's innovative graduate programs, interdisciplinary research, and entrepreneurial partnerships. Graduate degrees are focused in the following areas of research excellence: Engineered Biomaterials and Tissue Systems, Biophotonics and Medical Imaging, Neuroengineering, Orthopaedic Biomechanics, and Systems Science and Healthcare Engineering. Our courses on Regulatory Affairs provide outstanding preparation for industrial careers. Students can also participate in BIOMEDSHIP, a focused educational program that provides formal training in innovation and entrepreneurship in the context of biomedical technology, leading to insight on the processes necessary for taking medical technology from design to implementation and commercialization.

BOOTH # 715

Rensselaer Polytechnic Institute

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

Rensselaer Polytechnic Institute is the nation's oldest technological research university. Rensselaer offers a broad range of graduate programs from five schools—Engineering, Science, Lally School of Management and Technology, Architecture, and Humanities and Social Sciences. Unique programs include interdisciplinary degrees in information technology, the MFA and Ph.D. in Electronic Arts.

BOOTH # 215

Rutgers University

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

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

BOOTH # 620

Simulia

166 Valley Street
Providence, RI 02909
Phone: 401-276-8423
Email: Christina.apostal@3ds.com
Web: www.3ds.com

SIMULIA is the DassaultSystèmes brand that makes realistic simulation an integral business practice improving product performance, reducing physical prototypes, and driving innovation. SIMULIA solutions include Abaqus Unified Finite Element Analysis solutions, multiphysics solutions for insight into challenging engineering problems, and SIMULIA SLM for managing simulation data, processes, and intellectual property.

BOOTH # 708

Springer

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

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

BOOTH # 703

Stanford University

318 Campus Drive
Stanford, CA 94305-5428
Phone: 650-723-9645
Email: christina.kurihara@stanford.edu
Web: http://biodesign.stanford.edu

Stanford University offers several programs in the Biomedical Engineering arena. The Biodesign Program is a multi-disciplinary training program in Medical Technology Innovation that features a fellowship and course offerings to graduate and undergraduate students in Engineering, Medicine and Business; the Department of Bioengineering is jointly supported by the Schools of Medicine and Engineering and includes, in a single department, research and teaching programs that embrace biology as a new engineering paradigm and apply engineering principles to medical problems and biological systems. Bioengineering has undergraduate and graduate program offerings.

BOOTH # 814

Temple University

College of Engineering
1947 N. Broad Street
Philadelphia, PA 19122
Phone: 215-204-8824
Email: grbaran@temple.edu
Web: www.temple.edu/engineering

Temple University's College of Engineering offers graduate programs in a number of specialty areas including Bioengineering, which is managed by the new Department of Bioengineering. The department includes faculty advisors and collaborators at the School of Medicine and the College of Science and Technology.

BOOTH # 403

Texas A & M University

DEPARTMENT OF BIOMEDICAL ENGINEERING

4462 TAMU
College Station, TX 77843-4462
Phone: 979-845-4631
Email: bmckay@bme.tamu.edu
Web: biomed.tamu.edu

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

BOOTHS # 521 / 523

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 # 310

Tulane University

500 Lindy Boggs Bldg.
New Orleans, LA 70118
Phone: 504-865-5897
Email: cstewar3@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 # 117

University of Alabama at Birmingham

DEPARTMENT BIOMEDICAL ENGINEERING

1530 3rd Avenue South, Shel 801
Birmingham, AL 35294-2182
Phone: 205-934-8420
Email: tmwick@uab.edu
Web: http://www.uab.edu/engineering/departments-research/bme

The Biomedical Engineering Graduate Program at The University of Alabama at Birmingham (UAB) has both Master's (thesis-based) and Doctoral degree options. Primary research areas are biomedical imaging, biomedical implants and devices, cardiac electrophysiology, multiscale computational modeling, tissue engineering, and regenerative medicine. Other research opportunities are available through our ongoing collaborations with the UAB Medical and Dental Schools. Students complete the Master of Science in Biomedical Engineering in 18-24 months. The Ph.D. degree usually takes 24-42 months beyond the Master's degree. UAB graduates find employment in healthcare delivery, medical devices, pharmaceuticals, biomedical imaging, instrumentation, medical sales and marketing, regulatory agencies, or computer application groups.

BOOTH # 800

The University of Arizona

BIOMEDICAL ENGINEERING

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

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

BOOTH # 402

University of Arkansas

Biomedical Engineering
3189 Bell Engineering
Fayetteville, AR 72701
Phone: 479-575-7236
Email: bwhill@uark.edu
Web: www.engr.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 # 304

University of California at Davis

BIOMEDICAL ENGINEERING

One Shields Avenue
Davis, CA 95616
Phone: 530-752-6978
Email: jcyhu@ucdavis.edu
Web: www.bme.ucdavis.edu

BME at UC Davis consists of 27 primary faculty and a graduate group of ~70 faculty members spanning the Medical and Veterinary Schools. Our mission is to combine exceptional teaching with state-of-the-art research to prepare students for challenges in academics and industry. Visit our exhibit to learn about our BS program emphasizing biomolecular engineering and PhD programs in imaging, cell and molecular systems, biomechanics, and regenerative medicine

BOOTH # 603

University of California, Irvine

DEPARTMENT OF BIOMEDICAL ENGINEERING

3120 Natural Sciences II
Irvine, CA92697-2715
Phone: 949-824-3494
Email: kstephen@uci.edu
Web: www.wng.uci.edu/dept/bme

The Department of Biomedical Engineering at UCI has 19 faculty, 5 staff, 574 undergraduates, and 156 graduate students, with significant potential for growth. Our research programs are supported by major centers including the Beckman Laser Institute, the Laboratory for Florescence Dynamics, the Micro/Nano Fluidics Fundamentals Focus Center, and the Edwards Lifesciences Center for Advanced Cardiovascular Technology.

BOOTH # 816

University of California at Riverside

DEPARTMENT OF BIOENGINEERING

900 University Drive
Bourns Hall, Room A 220
Riverside, CA 92521
Phone: 951-827-6416
Email: jennifer@engr.ucr.edu
Web: www.bioeng.ucr.edu

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

BOOTH # 421

University of Connecticut

SCHOOL OF ENGINEERING

191 Auditorium Road, Unit 3187
Storrs, CT 06269
Phone: 860-486-5536
Email: srenfro@engr.uconn.edu
Web: www.engr.uconn.edu

UConn Engineering offers nine M.S. and Ph.D. degree programs in core and interdisciplinary subjects. Our faculty are superbly trained, widely respected, and involved in strategic research in areas such as nanotechnology, sustainable engineering, security technologies, wireless and sensor network technologies, informatics and bioinformatics, tissue engineering and regenerative medicine. Nestled amid handsome forests and farmlands, UConn is located near the urban centers of Hartford, Boston and New York. The UConn community provides exciting cultural and athletic activities, dedicated housing for graduate student families and individuals, and top ranked K-12 schools.

Our graduates advance to impressive careers in industry, government and academic institutions. Over 150 of our alumni serve as faculty members at top colleges and universities across the globe. UConn Engineering is a great place to pursue your graduate studies - and a potent launching pad for your career. Please visit www.engr.uconn.edu for more information

.BOOTH # 315

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: bioen@illinois.edu
Web: www.bioen.illinois.edu

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

BOOTH # 200

University of Kansas

BIOENGINEERING GRADUATE PROGRAM

1520 West 15th Street, Room 1
Lawrence, KS 66045
Phone: 785-864-5258
Email: sewilson@ku.edu
Web: http://bio.engr.ku.edu

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

BOOTH # 503

University of Maryland College Park

FISCHELL DEPARTMENT OF BIOENGINEERING

Room 2330
Jeong H. Kim Engineering Building (Bldg. #225)
College Park, MD 20742
Phone: 301-405-7426
Email: rnoble2@umd.edu
Web: http://www.bioe.umd.edu

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

BOOTH #600

University of Memphis

UNIVERSITY OF TENNESSEE HEALTH SCIENCES CENTER

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

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

BOOTH # 401

University of Michigan

BIOMEDICAL ENGINEERING DEPARTMENT

1107 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 Biomedical Engineering Department provides outstanding education for engineers in biomedical engineering and develops future leaders in the field. The program's primary emphasis is on biomedical engineering fundamentals, while allowing students to personalize their curriculum to prepare them for a wide variety of careers including biomedical engineering, law, medicine, and business.

BOOTH # 700

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 # 701

University of Pittsburgh

CENTER FOR BIOTECHNOLOGY

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

The University of Pittsburgh, Department of Bioengineering display includes materials related to undergraduate and graduate educational programs and fellowship opportunities along with examples of faculty research programs

BOOTH # 314

University of Rochester

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 204

University of Southern California

VITERBI SCHOOL OF ENGINEERING

3650 McClintock Ave, Suite 106
Los Angeles, CA 90089
Phone: 213-821-1553
Email: camillia.lee@usc.edu
Web: usc.edu/viterbi

BOOTH # 510

University of Texas at Arlington

BIOENGINEERING

500 UTA Blvd., ERB 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 at Arlington offers joint Ph.D. and M.S. degrees with The University of Texas Southwestern Medical Center at Dallas and The University of Texas at Dallas. Many research opportunities in the areas of Bioinstrumentation, Biomaterials & Tissue Engineering, Biomechanics & Orthopedics, Medical Imaging and Protein Engineering are available. Please visit our booth to learn more.

BOOTH # 504

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

1 University Station, 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 research areas such as cellular and molecular imaging, cellular and biomolecular engineering, and computational biomedical engineering and bioinformatics.

BOOTH # 501

University of Washington

DEPARTMENT OF BIOENGINEERING

William H. Foege Building
3720 15th Avenue NE, Box 355061
Seattle, WA 98195-5061
Phone: 206-685-2000
Email: bioeng@uw.edu
Web: http://depts.washington.edu/bioe/index.html

Our department serves a worldwide leadership role in bioengineering research, education, service, clinical applications, and technology transfer. Prospective graduate students, postdoctoral fellows, and faculty candidates are encouraged to hear, from faculty and students, about educational paths, research projects, and employment opportunities in the department. Informational brochures and souvenirs are also available.

BOOTH # 420

Valtronic

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

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

BOOTH # 404

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

VU BME exists at both the scientific and geographic intersection of Vanderbilt's engineering and basic science departments and its renowned medical center, providing an ideal location for engineering research at the interface of technology and medicine. Research strengths exist in image-based technologies, nanobiotechnology and biophotonics and are complemented by other core competencies, including modeling and forecasting, biomaterials and bioregenerative engineering, bioMEMS, multiscale systems biology and the capacity for translation of research into practice. In close association with VU BME is the Institute of Imaging Science (vuiis.vanderbilt.edu), the Institute of Nanoscale Science and Engineering (www.vanderbilt.edu/vinse) and the Institute for Integrative Biosystems Research and Education (www.vanderbilt.edu/viibre). The VU School of Medicine is among the top ten in funding from the NIH and includes a cancer center, a children's hospital and a Level I trauma center. Proximity to these resources, all positioned within our compact campus, and the strong relationships among faculty across multiple Vanderbilt schools stimulate high impact research and provide unique educational and research opportunities for learners. A comprehensive and highly integrated program of graduate education, including a unique first year curriculum, rapidly prepares graduate students for success in research.

BOOTHS # 101 / 103 / 105

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

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

The Virginia Tech—Wake Forest University, School for Biomedical Engineering and Sciences offers MS, PhD, MD/PhD, and DVM/PhD degrees. We have 70 biomedical engineering faculty with active research programs in tissue engineering, imaging, biomechanics, medical physics, nano-medicine, surgical simulation, and other emerging fields.

BOOTH # 601

Washington University in St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 604

Wayne State University

BIOMEDICAL ENGINEERING

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

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

BOOTH # 508

Whitaker International Fellows and Scholars Program Institute of International Education (IIE)

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

The Whitaker International Fellows and Scholars 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. Prior to closing in 2006, the Whitaker Foundation provided funding for the ongoing administration of the Whitaker Program by the Institute of International Education (IIE). The 2012-2013 competition is now open, with a January 23th deadline. For more information, including program details and the online application, visit: http://www.whitaker.org

BOOTH # 705

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 # 709

World Precision Instruments, Inc.

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

World Precision Instruments (WPI) proudly represents Fluigent microfluidic pressure pumps. Our display features a live demonstration of the MFCS control system and FAESFLO software interface. Product features: fast response time (<200ms), non-pulsatile flow, low volume delivery can be determined by pressure OR flow rate, 1 - 8 channels.

BOOTH # 322

Yale University

BIOMEDICAL ENGINEERING

55 Prospect Street
New Haven, CT 06516
Phone: 203-432-4262
Email: tarek.fahmy@yale.edu
Web: www.seas.yale.edu

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.

Congratulations
2011 Coulter Fellows

For successfully completing the requirements of the

Coulter Translational Research Award

Edward Boyden

Massachusetts Institute of Technology

Direct Optical Neural Silencing: A new strategy for Treating Brain Disorders

Utkan Demirci

Harvard University – MIT

Electrical Sensors for Rare Cell Populations in Whole Blood

Ayman El-Baz

University of Louisville

Novel Image Analysis Framework for Early Diagnosis of Lung Cancer

Julie Hasenwinkel

Syracuse University

Novel Two-solution Based Bone Cements for Vertebroplasty and Kyphoplasty

- **Pedro Irazoqui**

  Purdue University

  A Hermetic Biocompatible Ceramic Package for Neural Prosthesis

- **Ho-Wook Jun**

  University of Alabama at Birmingham

  Biomimetic Nano Matrix for Drug Eluting Stent Application

- **Yunzhi Yang**

  University of Texas – Austin

  Optimizing Bone Regeneration with Load-bearing
  and Osteoinductive Functionally Graded Biomimetic Scaffolds

- **Xiaojun Yu**

  Stevens Institute of Technology

  Novel Structured Nanofibrous Scaffolds for Bone Healing

GENERAL INFORMATION & PRESENTER INFORMATION

Meeting Location

Connecticut Convention Center
100 Columbus Boulevard
Hartford, CT 06103
860-249-6000

Marriott Hartford Downtown
200 Columbus Boulevard
Hartford, CT 06103
860-249-8000

Registration

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

On-Site Registration Hours

Wednesday, October 12	10:00am – 5:00pm
Thursday, October 13	7:00am – 6:00pm
Friday, October 14	7:00am – 6:00pm
Saturday, October 15	7:00am – 2:00pm

Exhibits

Exhibit Hall , Convention Center

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

Thursday, October 13	9:30am – 5:00pm
Friday, October 14	9:30am – 5:00pm
Saturday, October 15	9:30am – 1:30pm

Poster Sessions

Exhibit Hall, Convention Center

Posters are located in Exhibit Hall on the first level of the 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 that attendees can move back and forth among sessions. In most cases, presentations should be done in twelve minutes, allowing three minutes for questions and answers and transition to the next speaker.

Poster Presentations

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

Speaker Ready Room

Hall B Office Convention Center

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

Wednesday, October 12	1:00pm – 5:00pm
Thursday, October 13	7:00am – 5:00pm
Friday, October 14	7:00am – 5:00pm
Saturday, October 15	7:00am – 3:30pm

Program Highlights

Don't Miss These Events

WEDNESDAY, October 12

Welcome Reception

5:00pm - 6:00pm

Convention Center, Exhibit Hall Foyer

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

THURSDAY, October 13

Celebration of Minorities in BME Luncheon*

12:00noon - 1:30pm

Convention Center, Ballroom C

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

This year's speaker is **Roderic I. Pettigrew, Ph.D., M.D.**, the first and current Director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB). Dr. Pettigrew is known for his pioneering research involving four-dimensional imaging of the heart using magnetic resonance (MRI). He has been elected to the Institute of Medicine, and as a Fellow in the American Heart Association, the American College of Cardiology, the American Institute for Medical and Biological Engineering, the International Society for Magnetic Resonance in Medicine, and the Biomedical Engineering Society.

This luncheon complements the Diversity Award lecture to be delivered on Saturday and the Women in BMES Networking Luncheon on Friday.

Celebrities of Minorities in BME Luncheon Supported by

Medtronic

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

Refreshment Breaks

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

Thursday morning & afternoon refreshment breaks are sponsored by Virginia Tech Wake Forest University

Friday morning refreshment break sponsored by Connecticut's Business Development Team

BMES Town Hall, Fellows Induction & Awards Ceremony

5:30pm – 7:00pm

Convention Center, Ballroom AB

Please join us for a dialogue with BMES President Richard Waugh and other leaders of the Society. The BMES Awards will also be presented. See page 39 for the award winners.

FRIDAY, October 14

Women in BMES Luncheon*

12:00noon - 1:30pm

Convention Center, Ballroom C

"I Never Have Enough Time... A Pro-active Approach to Work-Life Balance" Luncheon work-shop with networking opportunities

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

Woman in BMES Luncheon Supported by CLEMSON UNIVERSITY

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

SPECIAL EVENT

Science Museum

6:30pm - 9:30pm

250 Columbus Blvd Hartford—
one block from the Convention Center

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

BMES Career Development

Wednesday, October 12
3:00pm - 5:00pm
Convention Center, Exhibit Hall

Meet the Faculty Candidate Poster Session

This event will provide an opportunity for faculty, recruiters, and Department Chairs to speak directly with current graduate students and postdoctoral researchers who are seeking faculty positions. More than 120 faculty candidates will be presenting.

Thursday, October 13
4:00pm – 5:30pm
Convention Center, Ballroom C

BME Alumni Panel

BME alumni share their industry experiences and lessons learned to the audience.

5:45pm – 7:15pm
Convention Center, Ballroom C

Resume Writing Workshop

Students and early career alike can participate and take away writing tips from career professionals representatives.

Friday, October 14
1:00pm – 4:00pm
Convention Center, Exhibit Hall

Career Fair OPEN TO ALL ATTENDEES

Employers and candidates come together at The Biomedical Engineering Society (BMES) Career Fair. This event is designed to connect organizations looking to hire high-level people with candidates that can bring specialized knowledge and innovation to new product and process development, teaching/training, scientific research, critical resource management, and more. Many of these BMEs are at the cutting edge of such areas as high-speed electronics, sophisticated mathematical analysis, sensors, safety studies, and massive data storage and processing.

Career Counseling in the FASEB MARC Booth #409

The FASEB MARC Program will provide career counseling and resume critiquing in booth 409 in the exhibit hall during the BMES meeting. This service is free to you; therefore come by and sign-up for a session with either Dr. Howard Adams or Dr. Andrew Green.

Career Counseling Scheduling:
Thursday, October 13, 10:00am-4:30pm
Friday, October 14, 10:00am-4:30pm
Saturday, October 15, 10:00am-1:00pm

BMES Student Chapter Development Meeting

Friday, October 14
10:00am – 11:30am
Marriott, Ballroom C

This workshop is designed to provide information in how to charter and/or renew a BMES Student Chapter, and its benefits. Also it is an opportunity for interaction with the BMES staff and successful chapters providing examples of best practice, the place where the chapter members exchange ideas and generate new ones, as well setting chapter goals for the upcoming year.

BMES Student Chapter Leadership Meeting

Friday, October 14
1:30pm – 2:30pm
Marriott, Ballroom C

This workshop will be for those students that are interested in enhancing their leadership skills and/or their involvement with BMES at a national level. Various leadership methods and techniques will be discussed. Students' newly acquired leadership skills will then be applied to the development of community, a vision, and a plan of action for the BMES national student leadership.

Professional Development Workshop

Decrease Time to Market through Academic Collaborations

Saturday, October 15
10:30am - 12:30pm
Marriott, Capital Room

Join us for this workshop to discover the benefits universities provide to industry leaders from research to clinical trials. Hear from top universities on how they positioned themselves to be selected for collaborative projects. See how time to market may be reduced through academic resources. Learn about cutting-edge software solutions that can give you a competitive advantage. If you're an industry leader looking for new outsourcing opportunities or if you are affiliated with a college/university and are interested in exploring the possibilities with industry, then this workshop is for you!

REU / Summer Undergraduate Technical Sessions

Saturday, October 15
Convention Center, Room 26

There will be two Undergraduate Research platform sessions on Saturday, October 15 featuring eighteen oral presentations. See pages 157 and 161 for details. The presentations in these sessions were chosen from submissions of undergraduates during the summer of 2011. Over 300 posters will also be presented on Saturday morning from 9:30am to 1:00pm. See pages 134 - 212.

Whitaker International Fellows and Scholars Program: Funding Opportunity for Young Biomedical Engineers

Thursday, October 13
4:00pm - 5:30pm
Convention Center, Room 12

Initially funded by the Whitaker Foundation, the Whitaker Fellows and Scholars Program is managed by the Institute of International Education (IIE) and supports international collaboration in the growing field of biomedical engineering. For all levels of emerging bioengineers, from graduating seniors to post-doctorate degree-holders in biomedical engineering, the Whitaker Program provides funding to U.S. citizens and permanent residents to undertake activities overseas directly related to the field. Past awards have included research in heart blood flow, improved prosthetic leg design, and development of affordable oral cancer screening tools. Projects are implemented worldwide, including countries like Australia, China, Kenya, Switzerland, the UK and Vietnam. The Whitaker Session will feature a panel of current and former Whitaker Program participants who will present their research projects, talk about their grant experience and offer application tips.

- **Mechanical Cues Induce Beta-Catenin Signaling Through a Wnt Independent, Mechanosensing Mechanism**
  Randall Platt, Whitaker International Fellow, 2010-11.
  UK, Imperial College of London
- **A Whitaker Scholar's Experiences in Immunobioengineering at EPFL in Switzerland**
  Evan Scott, Whitaker International Scholar, 2010-11,
  Switzerland, EPFL
- **Schlemm's Canal Endothelial Cell Biomechanics as a Basis for Elevated Intraocular Pressure in Glaucoma**
  Ryan Pedrigi, Whitaker International Scholar, 2009-10,
  UK, Imperial College London
- **Investigating Fibronectin Conformation Within 3D Tissue Models**
  Wes Legant, Whitaker International Fellow, 2010-11,
  Switzerland, ETH
- **A Histological, Optical, and Mechanical Examination of Fiber Orientation and Response to Loading in Carotid Artery Tissue**
  Lucas H. Timmins, Ph.D., Whitaker International Fellow, 2006-07
  UK, Queen Mary, University of London

Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Grand Meeting

Thursday, October 13
10:30am - 12noon
Marriott, Capital 1 Room

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. In addition, we will also be conducting several development workshops that focusing on areas of chapter management, leadership and professional development. (Attendance is mandatory for all AEMB members).

Alpha Eta Mu Beta Annual Banquet

Thursday, October 13
12:30apm - 2:00pm
Marriott, Capital 1 Room

Session Co-Chairs : Alicia Fernandez and Stefanie Gonzalez

The Annual AEMB banquet will be held at City Steam Brewery Café (942 Main Street, Hartford, CT 06103). We are delighted to have Ken Horner, husband of the late Patricia I Horner as our distinguished guest of honor. Ken has been very supportive of AEMB and Pat's role in leading AEMB since its beginning. We are also honored to have Dr. Jerry Collins as our distinguished banquet key note speaker. This session is open to all AEMB student and faculty members.

Alpha Eta Mu Beta Annual Ethics Session: The Role of Wonder in the Life of the Engineer : Curiosity and Professional Humility

Thursday, October 13
2:30pm - 4:00pm
Marriott, Capital 1 Room

Session Co-Chairs: David Smith, PhD and Stephanie Naufel, MS

The significance of ethics in driving key engineering decisions that shape the biomedical and biotechnology fields every day is one that merits true attention. Indeed, the ethically-conscious engineer must properly cultivate his or her innate curiosity to innovate with sound judgment and informed decision-making. But what are the necessary steps to bring about such awareness, and what is the role of professional humility? The goal of this session is to provide students, professionals, and educators with a framework to understand how ethics drive the field of biomedical engineering, and to discuss its impact on human dynamics in academics, industry and society as a

whole. This session further examines the role of professional humility and its influence on creating engineers who understand contemporary challenges, recognize limitations in the field, and who listen and respect the contributions of others.

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. David Smith, Director of the Yale Interdisciplinary Bioethics Center, as the distinguished ethics speaker. Dr. Smith has over 40 years of experience in the field of ethics, and has deliberated ethics education, care for the dying, research ethics, ethics and corporate responsibility, and ethics in genetic testing. An accomplished professional in the field, Dr. Smith is the author of over 13 books, numerous papers, and is the recipient of several grants that specifically examine various aspects of bioethics.

AEMB Special Session: Postharvest Intervention to Minimize Losses on Horticulture Crops in Sub-Saharan African Countries: A Case Study

Friday, October 14
11:00am - 12noon
Marriott, Capital 1

Session Co-Chairs: Jerry C. Collins, PhD, Lamin S. Kassama, PhD and Dominic E. Nathan, PhD.

The ability to maintain reliable supply of food to Sub-Saharan African (SSA) regions is a significant challenge. The lack of appropriate infrastructure to support good postharvest management has lead to significant losses (40-80%) and waste. This has led to an increase in poverty and hunger in the region. In addition, change in climate, political instability and living habits have made matters worse. Such an event presents itself as an ethical challenge to bioengineers and others in the field, who are endowed with the technical knowledge to assist in alleviating the human suffering that threatens to plunge the developing world into chaos. The central question is how do we confront and contribute to providing innovative and sustainable solutions appropriate to these SSA regions? This session defines the problem specifically in terms of a bioengineering context and engages students and faculty to actively determine how bioengineers can provide solutions to compliment current relief efforts.

This case study presented in this session is real and relevant. This is part of a larger research initiative on using real-world case studies as pedagogical tools in biomedical and bioengineering education. This is an inter-institution collaborative effort focused on curriculum development, teaching and assessment methods that encompasses a large but related group of disciplines within the biomedical and bioengineering fields.

Student Session: How Public Policy and Funding Affect You (Co-sponsored by AEMB and AIMBE)

Friday, October 14
2:00pm - 3:00pm
Marriott, Capital 1 Room

Session Co-Chairs: Jennifer Ayers, Sean Gallagher and Teresa Murray

How does government funding impact biomedical research? How does this affect public health? Moreover, how can you influence policy-making? Find the answers at this informative session co-hosted by Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, and the American Institute for Medical and Biological Engineering (AIMBE). AIMBE is the leading voice for public policy supporting medical and biological engineering innovation to improve public health. During this session, we will demonstrate how advocacy for the profession and the field can have important personal impact and ensure public policy continues to support our work. Furthermore, you will learn about the different types of government funding, how levels have changed, what impact that will have on our field and what you can do to influence policy-makers. 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, AMIBE. AIMBE represents the top 2% of medical and biological engineers in the field, biomedical and bioengineering university programs through the US, industry and 18 professional societies. We play a critical role in advancing public policy for medical and biological engineering by meeting regularly with key administration officials, Congress, and monitoring trends in public policy that may impact the field. In total we reach nearly 50,000 individuals who are leading the way towards improved medical and biological engineering interventions for human health and well-being.

2011 BMES Awards Recipients

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

Robert A. Pritkzer Distinguished

Michael L. Shuler, PhD
Cornell University

Distinguished Lecture

Roderic Pettigrew, PhD, MD
National Institute of Biomedical Imaging and Bioengineering

Rita Schaffer Young Investigator Lecture

Jordan Green, PhD
Johns Hopkins University

Diversity Lecture

Cato Laurencin, MD, PhD
University of Connecticut Health Center

Distinguished Services

Kyriacos A. Athanasiou, PhD
University of California, Irvine

BMES Extended Abstract Award Winners: Graduate Student

Eline Boghaert
Princeton University

Jamie Brugnano
Purdue University

Xiaoyue Chen
Cornell University

Benjamen Filas
Washington University

Akhilesh Gaharwar
Purdue University

Priyaveena Puvanakrishnan
University of Texas, Austin

Erik Taylor
Brown University

Ying Wang
University of California, Davis

Undergraduate Students

Elissa Leonard
Harvey Mudd College

Cecillia Lui
Princeton University

Kevin Mohsenian
University of Minnesota

Sophia Pilipchuk
Illinois Institute of Technology

Ada Tsoi
Stony Brook University

ADDITIONAL MEETINGS & HOSTED RECEPTIONS

Additional Meetings

BMES Board of Directors Meeting
Wednesday, October 12
8:30am – 4:30pm
Marriott, Ballroom A
Organizer: Richard Waugh

AIMBE Board of Directors Meeting
Wednesday, October 12
12:00noon - 5:00pm
Marriott, Capital 1 Room
Organizer: Katie Goodman

Council of Chairs of Biomedical Engineering and Bioengineering Meeting & Dinner
Wednesday, October 12
5:30pm - 9:30pm
The Old State House, 800 Main St., Hartford
Organizer: Don Peterson

ABME Editorial Board Dinner
Wednesday, October 12
7:30pm – 10:00pm
Marriott, Capital 2
Organizer: Michael Weston

BMES National Meetings Committee Meeting
Thursday, October 13
10:00am - 12:00noon
Convention Center, Hall A Office
Organizer: David Vorp

CVET Editorial Board Lunch
Thursday, October 13
12:00noon - 2:00pm
Marriott, Conference Room 5
Organizer: Michael Weston

2012 BMES Annual Meeting Committee Meeting
Friday, October 14
9:30am - 11:00am
Hall A Office
Organizer: Hanjoong Jo

AIMBE Academic Council Meeting
Thursday, October 13
1:30pm - 4:30pm
Marriott, Capital 3 Room
Organizer: Katie Goodman

2012-2013 BMES Orientation & Board of Directors Meeting
Saturday, October 15
10:00am – 2:30pm
Marriott, Ballroom A
Organizer: Richard Waugh

Hosted Receptions
(by invitation only)
Thursday, October 13

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

Boston University
Marriott, Ballroom E

Case Western Reserve University
Convention Center, Room 12/13

The City College of New York
Marriott, Capital 3 Room

Cornell University
Convention Center The Landing

Georgia Tech & Emory University
Marriott, Private Dining Room (Vivo Restaurant)

Johns Hopkins University
Convention Center, Room 17

International Journal of Nanomedicine
Marriott, Conference Room 4

Marquette University
Marriott, Capital 2 Room

Purdue University
Convention Center, Room 14

Rensselaer Polytechnic Institute
Marriott, Capital 1 Room

Rice University
Convention Center, Room 11

University of California, Berkeley
Convention Center, Room 16

University of California San Diego
Marriott, Ballroom A

University of Maryland
Convention Center, Art Gallery

University of Pennsylvania
Convention Center, Room 15

University of Pittsburgh
Marriott, Ballroom B

University of Texas Austin
Marriott, Ballroom C

University of Washington
Marriott, Conference Room 7

Vanderbilt University
Marriott, Ballroom D

Whitaker International Program Alumni and Grantees
Marriott, Conference Room 5

Whitaker International Fellows And Scholars Program

Grants For Biomedical Engineering Study or Research Abroad

The **Whitaker Program** provides young biomedical engineers the opportunity to expand their geographic and academic horizons.

Potential activities to pursue overseas include:

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

For more information, including program details, application requirements, and the online application, visit our website.

ACTIVITIES

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

Activities could include:

- **After BS:** Pursuing an academic year of study or research that leads into graduate study in BME, Business or another field with the possible ability to transfer credit toward an advanced degree.
- **During Graduate Studies:** Conducting study or research at an overseas institution.
- **Internship:** Performing in-depth work in industry or policy-making (related to BME).
- **During/After Ph.D:** Engaging in a culminating experience by conducting research to foster career opportunities and/or link the U.S. and international BME communities.
- **Post-Doctoral:** Pursuing pre-professional post-doctoral work at a leading overseas institution.

Phone: +212-984-5442

www.whitaker.org

INSTITUTE OF INTERNATIONAL EDUCATION

Institute of International Education, 809 United Nations Plaza, New York, NY 10017
whitaker@iie.org

Biomedical Engineering Society's Annual Meeting Clinical Track

The Biomedical Engineering Society's Annual Meeting Clinical Track is jointly sponsored by the Warren Alpert Medical School of Brown University and the Biomedical Engineering Society (BMES).

The Alpert Medical School, an accredited provider by the Accreditation Council for Continuing Medical Education, is committed to presenting CME activities that promote quality improvements in healthcare and are that are independent of control of commercial interests.

Platform Sessions and specific talks approved for *American Medical Association (AMA) PRA Category 1 Credit* are identified with the following symbol. CME

If you are a clinician and would like to submit for CME credit, please stop by the BMES registration desk for the complete packet of information.

CME ACCREDITATION

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the Warren Alpert Medical School of Brown University and the Biomedical Engineering Society. The Warren Alpert Medical School of Brown University is accredited by the ACCME to provide continuing medical education for physicians.

BROWN
Alpert Medical School

CREDIT DESIGNATION

Physicians: The Warren Alpert Medical School of Brown University designates this live activity for a maximum of 18.5 *AMA PRA Category 1 Credits.*™ Physicians should only claim credit commensurate with the extent of their participation in the activity.

The following entire sessions have been approved for CME :

Thursday, October 13:

8:30am - 9:30am

PLENARY SESSION

Pritzker Distinguished Lecture

10:30am - 12noon

Novel Biomedical Imaging and Microscopy

1:30pm - 3:00pm

Orthopedic Imaging

4:00pm - 5:30pm

Clinical and Translational Research and Science in Biomedical Engineering

Friday, October 14:

8:30am - 9:30am

PLENARY SESSIONS

Distinguished Achievement Lecture

NIH NIBIB Lecture

10:30am - 12noon

Lasers in Medicine

Models and Practices of Commercialization and Entrepreneurship

Translational Biomedical Engineering: Research to Practice (R2P) - I

1:30pm - 3:00pm

Mechanobiology in the Lung

4:00pm - 5:30pm

Translational Biomedical Engineering: Research to Practice (R2P) - III

Saturday, October 15:

8:30am - 9:30am

PLENARY SESSIONS

Rita Schaffer Memorial - Young Investigator Lecture

Diversity Award Lecture

10:30am - 12noon

Neural Trauma and Repair - I

1:30pm - 3:00pm

Visualization Strategies at the Interface

3:15pm - 4:45pm

Prosthetics Engineering

Look for CME next to specific sessions that have been approved for CME credit.

Biomedical Engineering Education

Judy Cezeaux
WNEC

Biomedical Imaging & Optics

Fiorenzo Omenetto
Tufts University

Sergio Fantini
Tufts University

Cardiovascular Engineering

Joyce Wong
Boston University

Jeff Holmes
University of Virginia

Cellular and Molecular Engineering

Clark Hung
Columbia University

Kevin Costa
Mt. Sinai

Devices: Nano to Micro

Tarek Famy
Yale University

Darrel Irvine
Massachusetts Insitute of Technology

Drug Delivery Systems

Justin Hanes
Johns Hopkins/University of North Carolina

Suzie Pun
University of Washington

Neural Engineering

Lance Kam
Columbia University

Barclay Morrison
Columbia University

New Frontiers in Bioengineering

Guillermo Ameer
Northwestern University

Rebecca Carrier
Northeastern University

Orthopedic and Rehabilitation Engineering

David Kaplan
Tufts University

Catherine Kuo
Tufts University

Respiratory Engineering

Bela Suki
Boston University

Jason Bates
University of Vermont

Systems Biology, Bionformatics and Computational Biology

Ann Rundell
Purdue University

Yusheng Feng
University of Texas, San Antonio

Tissue Engineering

Ali Khademhosseini
MIT/Harvard University

Andrea Gobin
University of Louisville

Translational Biomedical Engineering

Donald Peterson
University of Connecticut

Joe Bronzino
BEACON

Undergraduate Research (REU)

Jiro Nagatomi
Clemson University

Rebecca Heise
Virginia Commonwealth University

ABSTRACT REVIEWERS

Thank you to our reviewers for their time and effort.

Biomedical Engineering Education and Outreach

Shivaun Archer
David Barnett
Julien Benchetrit
Paul Benkeser
Judy Cezeaux
Colin Drummond
Robert Gettens
Michele Grimm
Connie Hall
Eric Kennedy
Suzanne Olds
Arthur Ritter
Michael Rust
Youseph Yazdi

Biomedical Imaging and Optics

Randy Bartels
Bernard Choi
Michael Choma
Brian Chow
Heather Clark
Mark Cronin-Golomb
Luca Dal Negro
Xue Han
Elizabeth Hillman
Jeffrey Jacot
Evan Morris
Smita Sampath
Erik Shapiro
Siddhartha Sikdar
Hu Tao
Van Toi Vo

Cardiovascular Engineering

Gilda Barabino
Kristen Billiar
Lauren Black
Danny Bluestein
Naomi Chesler
Keith Gooch
Jeff Holmes
Brett Isenberg
Jeffrey Jacot
Deborah Leckband
Baruch Lieber
Elizabeth Lipke
Alison Marsden
Kara McCloskey
Kit Parker
Robert Peattie
Manu Platt
Anne Robertson
Michael Sacks
Craig Simmons
Michael Smith
Laura Suggs
Wei Sun
Joyce Wong

Cellular and Molecular Engineering

Fred Allen
Pen-hsiu Grace Chao
Kevin Costa
Eric Darling
C Dewey Jr
Eno Ebong
Adam Engler
Dan Fletcher
Jianping Fu
Guy Genin
Aaron Goldstein
Henry Hess
Hayden Huang
Clark Hung
Phil LeDuc
Jung-Chi Liao
Wendy Liu
Robert Mauck
Alisa Morss Clyne
David Odde
Alisha Sarang-Sieminski
Alexander Spector
Wei Tan
Sihong Wang
Eda Yildirim-Ayan

Devices: Nano to Micro

Jeffrey Borenstein
Xuanhong Cheng
Junsang Doh
Rebekah Drezek
Shyamsunder Erramilli
Tarek Fahmy
Rong Fan
Andre Gobin
Anjelica Gonzalez
Jongyoon Han
Darrell Irvine
Lance Kam
Roger Kamm
Benjamin Keselowsky
Ali Khadamhosseni
Daeyeon Lee
Shuang Liu
J. Christopher Love
Peter Michaely
SangJun Moon
Niren Murthy
Shashi Murthy
Andre Palmer
Ketul Popat
Mark Saltzman
Gudrun Schmidt
Melody Swartz
Anubhav Tripathi
Andrew Tsourkas

Drug Delivery Systems

Roger Adami
Guillermo Ameer
Debra Auguste
Jeremy Bartlett
Chris Bettinger
Edward Botchwey
Rebecca Carrier
Yupeng Chen
Joel Collier
James Cooper
Michelle Dawson
Craig Duvall
Jordan Green
Eric Grovender
Dean Ho
Pankaj Karande
Erin Lavik
Samir Mitragotri
Michael Perlman
Kaushal Rege
Joonil Seog
Stavroula Sofou
Millicent Sullivan
Horst von Recum
Jian Yang

Neural Engineering

Cameron Bass
Ravi Bellamkonda
Todd Coleman
Tracy Cui
D. Kacy Cullen
Andrew Dunn
Ryan Gilbert
Elizabeth Hillman
Lance Kam
Erin Lavik
Barclay Morrison
Kevin Otto
Kit Parker
Lucas Parra
David Schaffer
John Simeral
Deanna Thompson
Dustin Tyler
Bruce Wheeler
Beth Winkelstein

New Frontiers in Biomedical Engineering

Yupeng Chen
Kris Dahl
Mariah Hahn
Gang Han
Ali Khademhosseini
Hakho Lee
Mohammad Mofrad
Robert Nerem
Manu Platt
Amina Qutub
Cynthia Reinhart-King
Adrian Shieh
Dhananjay Tambe
Chenjie Xu

Orthopedic and Rehabilitation Engineering

Eben Alsberg
Hani Awad
Lawrence Bonassar
Edward Botchwey
David Corr
Irene Georgakoudi
Mark Grinstaff
Christopher Jacobs
Elizabeth Loboa
Helen Lu
Robert Mauck
William Murphy
Yi-Xian Qin
Johnna Temenoff
Sara Wilson
Pamela Yelick

Respiratory Engineering

Jason Bates
Konstantin Birukov
Lauren Black
Donald Gaver
Samir Ghadiali
Robb Glenny
David Kaczka
Kenneth Lutchen
Geoffrey Maksym
Susan Marguiles
Wayne Mitzner
Brett Simon
Michael Smith
Laura Suggs
Bela Suki
Daniel Tschumperlin
Jose Venegas
Christopher Waters
Tilo Winkler

Systems Biology Bioinformatics and Computational Bioengineering

Ioannis Androulakis
Yusheng Feng
Melissa Gardner
Brian Helmke
Oleg Igoshin
Daniel Kamei
John LaDisa
Mohammad Mofrad
Jason Papin
Matteo Pellegrini
Nathan Price
Ravi Radhakrishnan
Sandra Rugonyi
Ann Rundell
Michael Smith

Tissue Engineering

Patrick Alford
Julia Babensee
Ravi Bellamkonda
Chris Bettinger
Jeffrey Borenstein
Xudong Cao
Naomi Chesler
Karen Christman
Peter Crapo
Guohao Dai
Antonio D'Amore
Utkan Demirci
George Engelmayr
Claudia Fischbach-Teschl
Hermann Frieboes
Keith Gooch
Jianjun Guan
Mariah Hahn
Elizabeth Hedberg-Dirk
Yi Hong
Brett Isenberg
Esmaiel Jabbari
Ehsan Jabbarzadeh
Jeffrey Jacot
Sha Jin
Shiva Kotha
Nic Leipzig
Jun Liao
Elizabeth Lipke
Kara McCloskey
Todd McDevitt
Peter McFetridge
Angel Mercado
William Murphy
Ashwin Nair
Kytai Nguyen
Raquel Perez-Castillejos
Shelly Peyton
Milica Radisic
Anne Robertson
Michael Sacks
Alisha Sarang-Sieminski
Molly Shoichet
Patricia Soucy
Lakeisha Taite
Liping Tang
Sarah Tao
Mark Ungrin
Shyni Varghese
Scott Verbridge
Zhewei Xie
Jian Yang
Yunzhi Yang
Kaiming Ye
Kelvin Yeung
Lijie Zhang
Jun Zhou

Translational Biomedical Engineering

Joseph Bronzino
Larry McIntire
Donald Peterson

Undergraduate Research

Frank Alexis
Li Cao
Kevin Champaigne
Raffaella De Vita
Delphine Dean
Sandy Deitch
John DesJardins
Eno Ebong
Jordan Green
Rebecca Heise
Marian Kennedy
David Kwartowitz
Spencer Lake
Jeoungsoo Lee
Brittany McGowan
Jiro Nagatomi
Shawn Olsen
Devanathan Raghavan
Scott Sell
Charles Taylor
Jonathan Vande Geest
Patricia Wolfe
Scott Wood
Cassandra Wright-Walker

Awards

Jennifer Elisseeff
Aaron Goldstein
Daniel Hammer
Larry McIntire
W. David Merryman
Kristina Ropella
Shelly Sakiyama-Elbert
Chris Siedlecki
Scott Simon

PROGRAM

POSTER SESSION **ThA**

THURSDAY, OCTOBER 13
TODAY'S HIGHLIGHTS

PLENARY SESSION CME
8:00am - 9:30am
Ballroom, Convention Center

Robert A. Pritzker Distinguished Lecture
Michael L. Shuler, PhD
Cornell University

EXHIBIT HALL OPEN 9:30am - 5:00pm
Exhibit Hall, Convention Center

POSTER SESSION Thurs A 9:30am - 1:00pm
Exhibit Hall, Convention Center

PLATFORM SESSIONS Thurs-1 10:30am - 12:00noon
See pages 60-64, Convention Center

Celebration of Minorities in BME Luncheon 12:00noon - 1:30pm
Additional ticket purchase required
Convention Center, Ballroom C

PLATFORM SESSIONS Thurs-2 1:30pm - 3:00pm
See pages 77-81, Convention Center

POSTER SESSION Thurs B 1:30pm - 5:00pm
Exhibit Hall, Convention Center

PLATFORM SESSIONS Thurs-3 4:00pm - 5:30pm
See pages 82-87, Convention Center

CAREER ALUMNI PANEL 4:00pm - 5:30pm
Ballroom C, Convention Center

RESUME WRITING WORKSHOP 5:45pm - 7:15pm
Ballroom C, Convention Center

BMES Town Hall & Award Ceremony 5:45pm - 7:15pm

Hosted Receptions
Invitation only

Thursday, October 13, 2011
9:30AM - 1:00PM
POSTER SESSION – THU- A

Track: Cardiovascular Engineering
Cardiac Electrophysiology

PS-Thurs-A-1
Dauricine Suppresses Early After Depolarizations and Torsade de Pointes in Rabbit Hearts with Long QT2 Syndrome
A. PARIKH[1,2], X.Y. YANG[3], F.-D. ZENG[3] AND G. SALAMA [2]
[1] Department of Bioengineering , University of Pittsburgh,Pittsburgh, PA, [2]Department of Medicine, Cardiovascular Institute, University of Pittsburgh, PA, [3]Department of Pharmacology, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

PS-Thurs-A-2
Temporal Evolution of Motor Evoked Potentials in Post Cardiac Arrest Rats
X. JIA[1], Y. MA[1], R. GEOCADIN[1], AND N. V. THAKOR[1]
[1]Johns Hopkins University School of Medicine, Baltimore, MD

PS-Thurs-A-3
Hysteresis in Restitution of Action Potential Duration in a Human Ventricular Myocyte Model
A. AGARWAL[1], AND A. PATWARDHAN[1]
[1]University of Kentucky, Lexington, KY

PS-Thurs-A-4
Adaptive Mesh Refinement for Modeling Electric Propagation in a Realistic Heart
M. A. FUNK[1], AND K. T. NG[1]
[1]New Mexico State University, Las Cruces, NM

PS-Thurs-A-5
Effects of Phase Variation on Formation of Discordant Alternans
L. JING[1], S. CHOURASIA[1], A. AGARWAL[1], AND A. PATWARDHAN[1]
[1]University of Kentucky, Lexington, KY

Track: Cardiovascular Engineering
Cardiac Structure and Function

PS-Thurs-A-6
Low Order Dynamical Model of the Left Ventricle
M. J. MOULTON[1], AND T. W. SECOMB[1]
[1]University of Arizona, Tucson, AZ

PS-Thurs-A-7
Surface Deformation Analysis of the Mouse Heart via Computer Aided Speckle Interferometry
R. HARTNETT[1], P. SWASZEK[1], AND F. VETTER[1]
[1]University of Rhode Island, Kingston, RI

PS-Thurs-A-8
Investigation of the Collagen Structure of Right-Ventricular Myocardium
D. VALDEZ-JASSO[1],H. C. HUNTER[1], M. A. SIMON[1], AND M. S. SACKS[1]
[1]University of Pittsburgh, Pittsburgh, PA

Track: Cardiovascular Engineering

Cardiovascular Fluid Dynamics

PS-Thurs-A-9
Quantification of Variation of Blood Pressure Dynamics During Sleep Apnea
R. Alex[1], D. E. Watenpaugh[2], A. Bashabonyina[1], G. Bhave[1], M. Al-Abed[1], S. Iyer[1], E. Altuwaijri[1], R. Zhang[3], and K. Behbehani[1]
[1]University of Texas at Arlington, Arlington, TX, [2]Sleep Consultants Inc., Fort Worth, TX, [3]University of Texas Southwestern Medical Center at Dallas, Dallas, TX

PS-Thurs-A-10
Comparative Study of the Hemodynamics in Different Anastomotic Configurations of Arteriovenous Fistulae
P. McGah[1], D. Leotta[1], K. Beach[1], J. Riley[1], and A. Aliseda[1]
[1]University of Washington, Seattle, WA

PS-Thurs-A-11
The Effects Anatomical Variations Have on Collateral Flows within a Realistic Circle of Willis Model
P. Fahy[1], P. Delassus[1], P. O Flynn[1], and L. Morris[1]
[1]Galway Mayo Institute Of Technology (GMIT), Galway, Ireland

PS-Thurs-A-12
The Importance of Extensional Stresses in Hemolysis
L. Down[1,2], D. Papavassiliou[2], and E. O'Rear[1,2]
[1]University of Oklahoma Bioengineering Center, Norman, OK, [2]University of Oklahoma School of Chemical, Biological and Materials Engineering, Norman

PS-Thurs-A-13
Assessment of Surgical Planning Accuracy: Comparing Virtual Models to Post-Operative Anatomies
C. Swanson[1], C. M. Haggerty[1], J. Rossignac[1], K. R. Kanter[2], M. Fogel[3], and A. Yoganathan[1]
[1]Georgia Tech, Atlanta, GA, [2]Children's Hospital of Atlanta, Atlanta, GA, [3]Children's Hospital of Philadelphia, Philadelphia, PA

PS-Thurs-A-14
On the Relation Between Left Ventricular Wall Vibrations and Poststenotic Coronary Flow Instabilities
P. McGah[1], K. Beach[1], and A. Aliseda[1]
[1]University of Washington, Seattle, WA

PS-Thurs-A-15
The Effect of Flow on Microparticle (MP) Transport to Glass Surfaces
Y-H. Lee[1], M. Francis-Sedlak[1], A. Fogelson[2], and V. Turitto[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Utah, Salt Lake City, UT

PS-Thurs-A-16
Fluid Mechanical Analysis of Surgically Reconstructed Aortas
L. G. Bracaglia[1], C. M. Haggerty[1], M. Restrepo[1], M. A. Fogel[2], and A. Yoganathan[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Hospital of Philadelphia, Philadelphia, PA

PS-Thurs-A-17
The Effects of Implantation Orientation of Bi-leaflet Mechanical Heart Valves in Patient-Specific Left Heart Anatomy
T. B. Le[1], and F. Sotiropoulos[2]
[1]University of Minnesota, Saint Paul, MN, [2]University of Minnesota, Minneapolis, MN

PS-Thurs-A-18
Effect of Geometry on Particle Flux Distribution at Bifurcations in Low Reynold's Flow
A. Kadam[1], and M. D. Frame[1]
[1]Stony Brook University, Stony Brook, NY

PS-Thurs-A-19
Effects of Plasma Viscosity on Erythrocyte Cell Free Layer Width in Arterioles After Moderate Hemodilution
O. Yalcin[1], M. Jivani[1], P. Cabrales[1], and P. Johnson [1]
[1]University of California, San Diego, La Jolla, CA

PS-Thurs-A-20
Pulsatile Flow Model of the Arteriovenous Vascular Access Fistula with Nonlinear Elements
V. S. Bhatnagar[1], W. D. Paulson[2], and S. A. Jones[3]
[1]Louisiana Tech University, Ruston, LA, [2]Medical College of Georgia, Augusta, GA, [3]Louisiana Tech University, Ruston, LA

PS-Thurs-A-21
MOVED TO PS-FRI-B–31

Track: Cellular and Molecular Engineering

Cell Adhesion

PS-Thurs-A-22
Immobilized SDF-1 Modulates Selectin-Mediated Capture of Cancer Cells Under Flow
E. A. Hedges[1], A. Hughes[1], J. L. Liesveld[2], and M. R. King[1]
[1]Cornell University, Ithaca, NY, [2]University of Rochester School of Medicine and Dentistry, Rochester, NY

PS-Thurs-A-23
Lubricin as a Novel Protein Coating to Reduce Bacteria Adhesion and Proliferation
G. E. Aninwene II[1], E. N. Taylor[1], A. Mei[1], G. D. Jay[1,2], and T. J. Webster[1]
[1]Brown University, Providence, RI, [2]Brown University School of Medicine, Providence, RI

PS-Thurs-A-24
Strengthening of the P-selectin: PSGL-1 Interaction in Acidic pH
T. Cao[1], T. Takatani[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

PS-Thurs-A-25
Cell Adhesive Area and Cell Spreading Area: Two Distinct Cues that Regulate Cell Adhesion Strength
K. Elineni[1], and N. Gallant[1]
[1]University of South Florida, Tampa, FL

PS-Thurs-A-26
Vinculin Binding to Actin Filaments: A Molecular Dynamics Study
J. Golji[1], J. Lam[1], and M. R. Mofrad[1]
[1]University of California, Berkeley, CA

PS-Thurs-A-27
Specific 1,3 FTs Regulating Selectin Binding in Leukocytes: Role of FT-IX in E-selectin Ligands
A. Buffone, Jr.[1], N. Mondal[1], K. P. McHugh[1], and S. Neelamegham[1]
[1]State University of New York at Buffalo, Buffalo, NY

PS-Thurs-A-28
Cell Junctions and Cytoskeleton Regulate Cell-Cell Adhesion Strength
Q. Wei[1], D. Reidler[1], and H. Huang[1]
[1]Columbia University, New York, NY

PS-Thurs-A-29
Chemomechanics of the BCAM/Lu-laminin Complex in Sickle Cell Disease: A Murine Model
J. L. Maciaszek[1], and G. Lykotrafitis[1]
[1]University of Connecticut, Storrs, CT

See page 17 for Poster floor plan

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-A-30
JNK Phosphorylation Regulates Rigidity-dependent Cross Talk between Focal Adhesions and Adherent Junctions
H. You[1], A. Ranganathan[1], and S. T. Andreadis[1]
[1]*University at Buffalo, the State University of New York, Amherst, NY*

PS-Thurs-A-31
A Micropatterning and Image Processing Approach to Simplify Measurement of Cellular Traction Forces
S. Polio[1], K. E. Rothenberg[1], D. Stamenovic[1], and M. L. Smith[1]
[1]*Boston University, Boston, MA*

PS-Thurs-A-32
Nanofibrous Architectures for Prevention of Bacterial Infection on Biomedical Implants: Effects of Nanofiber Separation Distance and Substrate Material
M. Kargar[1], J. Saucke[1], A. Nain[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-Thurs-A-33
Breast Cancer Cells Express a Novel Molecule (Mac-2bp) and CD44 as E-selectin Ligands
V. S. Shirure[1], T. Liu[1], and M. M. Burdick[1]
[1]*Ohio University, Athens, OH*

PS-Thurs-A-34
Factor Xa Activity as an Indicator of Adherent TF-Bearing Microparticles
C. L. Hall[1]
[1]*The College of New Jersey, Ewing, NJ*

PS-Thurs-A-35
Endothelial Cell Identification Using PEG-ylated Microfluidic Channels
D. Vickers[1], E. Chory[1], and S. Murthy[1]
[1]*Northeastern University, Boston, MA*

Track: Cellular and Molecular Engineering

Cellular Engineering & Modeling

PS-Thurs-A-36
Microtubule Assembly Dynamics *In Vivo* in the Presence of Taxol: from the Nanoscale to the Microscale
B. Castle[1], J. Bernens[1], and D. Odde[1]
[1]*University of Minnesota, Minneapolis, MN*

PS-Thurs-A-37
Myosin II Dependent Differential Bacterial Invasion in Normal and Cancer Hepatocytes
J. Hong[1], M. Kim[1], and J. H. Shin[1]
[1]*KAIST, Daejeon, Korea, Republic of*

PS-Thurs-A-38
The Effect of pAAV/IGF-I on Chondrocyte Matrix Production
I. N. Aguilar[1], S. B. Trippel[2], and L. J. Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Indiana University School of Medicine, Indianapolis, IN*

PS-Thurs-A-39
Two-Component Coarse-Grain Model for Erythrocyte Membrane
H. Li[1], and G. Lykotrafitis[1]
[1]*University of Connecticut, Storrs, CT*

PS-Thurs-A-40
DOPA Decarboxylase Inhibition for Levodopa Cell Assembly via Selective Membrane Permeability
B. W. Parcher[1], and T. Desai[1]
[1]*University of California, San Francisco, San Francisco, CA*

PS-Thurs-A-41
Microtubule Length Regulation by Depolymerizing Kinesins
M. K. Gardner[1,2], M. Zanic[2], and J. Howard[2]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany*

PS-Thurs-A-42
Imbalanced Oncogenic Signaling: Analogies Between Structurally Distinct EGFR Mutants of Relevance to Lung and Brain Cancers
J. M. Hall[1], C. M. Furcht[1], and M. J. Lazzara[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS-Thurs-A-43
Modeling the Role of Hydrophobic Structural Coupling in Cellular Biomechanics
C. Mihai[1], J. Carrier[2], O. Butt[3], N. Roman[4], A. Stefan[5], A. Velea[6], and N. I. Moldovan[7]
[1]*Department of Biophysics, University of Bucharest, Bucharest, Romania,* [2]*Department of Computer Sciences, Ohio State University, Columbus, OH,* [3]*Department of Biomedical Engineering, Ohio State University, Columbus, OH,* [4]*Department of Mathematics, Ohio State University, Lima, OH,* [5]*Department of Biomedical Engineering, Lawrence Technological University, Southfield, MI,* [6]*National Institute of Physics and Engineering of Materials, Bucharest, Romania,* [7]*Davis Heart and Lung Research Institute, Department of Internal Medicine, Ohio State University, Columbus, OH*

PS-Thurs-A-44
Stochastic Modeling of the Insulin Sensitivity of Differentiating Adipocytes
N. Shimon[1], and A. Gefen[1]
[1]*Tel Aviv university, Tel Aviv, Israel*

PS-Thurs-A-45
Platelets Collisions: A Key Event in the Initiation of Micro Thrombi
W. Wang[1], N. Mody[1], and M. R. King[1]
[1]*Cornell University, Ithaca, NY*

PS-Thurs-A-46
The Effects of ECM Fibers on Cellular Stress Transmission
X. Ma[1], M. Weber[1], M. Stevenson[1], S. N. Ghadiali[1], K. J. Gooch[1], and R. T. Hart[1]
[1]*The Ohio State University, Columbus, OH*

PS-Thurs-A-47
Theoretical Modeling of Intra- and Inter-Cellular Spatiotemporal Calcium Patters in Vascular Endothelial and Smooth Muscle Cells
A. Kapela[1], J. Parikh[1], S. Nagaraja[1], and N. M. Tsoukias[1]
[1]*Florida International University, Miami, FL*

PS-Thurs-A-48
Towards a Computer Simulation Platform for the Glutathione Redox Cycle in an Alzheimer's Transgenic Mouse Model
C. Zhang[1], C-C. Kuo[1], A. W. Chiu[1], and J. Feng[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-Thurs-A-49
Synuclein, a Parkinson's Protein that Remodels the Membrane: From Dynamics to Mechanics
A. R. Braun[1], and J. N. Sachs[2]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Universtity of Minnesota, Minneapolis, MN*

Track: Cellular and Molecular Engineering

Cellular and Subcellular Imaging

PS-Thurs-A-50
Detect FAK Activations at Membrane Microdomains by FRET
J. Seong[1], M. Ouyang[1], T. Kim[1], S. Chien[2], and Y. Wang[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of California, San Diego, San Diego, CA

PS-Thurs-A-51
Efficient Self-Assembly of DNA-Conjugated Antibody Complexes for High-Bandwidth *In Situ* Marker Analyses
R. M. Schweller[1], A. R. Rogers[1], D. Y. Duose[1], J. Zimak[1], and M. R. Diehl[1]
[1]Rice University, Houston, TX

PS-Thurs-A-52
Multiphoton Microscopy Reveals Flawed Pro-Angiogenic Signaling In Breast Tumor Endothelial Cells
J. Lapeira Soto[1], K. S. Madden[1], and E. B. Brown III[1]
[1]University of Rochester, Rochester, NY

PS-Thurs-A-53
Novel Observation of Live T cell Membrane Organization at the Single Molecular Level Using Dual-Color Photoactivated Localization Microscopy
K-H. Roh[1,2], B. F. Lillemeier[3], and M. M. Davis[1,2]
[1]Stanford University, Palo Alto, CA, [2]Howard Hughes Medical Institute, Palo Alto, [3]Salk Institute, San Diego, CA

PS-Thurs-A-54
Quantitative Analysis Of Flow-Induced Sub-Cellular Movement Of Endothelial Glucocorticoid Receptor
A. Nayebosadri[1], and J. Y. Ji[2]
[1]Purdue University, West Lafayette, IN, [2]Indiana University Purdue University Indianapolis, Indianapolis, IN

PS-Thurs-A-55
Advanced Analysis of Stem/Progenitor Cell Preparations for Optimization of Therapy
M. Anghelina[1], D. Jones[1], C. Kobe[1], E. Ramadan[1], L. Moldovan[1], T. George[2], and N. I. Moldovan[1]
[1]Davis Heart and Lung Research Institute, Ohio State University, Columbus, OH, [2]Amnis Corporation, Seattle, WA

PS–Thurs–A-56
Microinjection of Quantum Dot Fluorescent Protein FRET Probe Measures Changes in Intracellular pH
D. C. Sotto[1], and G. Bao[1]
[1]Georgia Institute of Technology, Atlanta, GA

PS-Thurs-A-57
Single Molecule Imaging of Prestin Diffusion after Cholesterol Depletion
R. Kamar[1], and R. M. Raphael[1]
[1]Rice University, Houston, TX

PS-Thurs-A-58
Multicolor Cell Staining for Cancer Molecular Characterization
P. Zrazhevskiy[1], and X. Gao[1]
[1]University of Washington, Seattle, WA

Track: Devices: Nano to Micro

Biomems and Nanotech for Cellular Engineering

PS-Thurs-A-59
Novel Combination of Total Internal Reflection Fluorescent Imaging with Transparent Electrochemical Electrodes to Record Exocytosis of Single Vesicles
X. Liu[1], and K. D. Gillis[1]
[1]University of Missouri-Columbia, Columbia, MO

PS-Thurs-A-60
Microwell Arrays for Dynamically Tracking the Functional Activity of Individual Natural Killer Cells
Y. J. Yamanaka[1], M. Sips[2], G. Alter[2], and J. C. Love[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]The Ragon Institute of MGH, MIT, and Harvard, Boston, MA

PS-Thurs-A-61
Assessing Cellular Neurite Guidance Cues Using Microwells
S. Chen[1], and M. M. Maharbiz[1]
[1]University of California, Berkeley, CA

PS-Thurs-A-62
Profiling the Secretome of Glioma Cells by Spotbarcode Cytometry
J. Wang[1], D. Tham[1], H. Ahmad[1], and J. R. Heath[1]
[1]California Institute of Technology, Pasadena, CA

PS-Thurs-A-63
Combined Experimental and Mathematical Approach to Study Microfabrication-Based Cell Migration
S. Sarkar[1], B. L. Bustard[1], J. F. Welter[1], and H. Baskaran[1]
[1]Case Western Reserve University, Cleveland, OH

PS-Thurs-A-64
Electrochemical Measurement of Electroporation-induced Chloride-stimulated Exocytosis on Microchips
J. Ghosh[1,2], X. Liu[1,2], and K. D. Gillis[1,2]
[1]University of Missouri, Columbia, MO, [2]Dalton Cardiovascular Research Center, Columbia, MO

PS-Thurs-A-65
Design, Testing and Analysis of a Novel Microfluidic Flow Device that Assays the Mechanism and Dynamics of Platelet Adhesion and Aggregation
N. Mondal[1], K. W. Oh[1], and S. Neelameghan[1]
[1]State University of New York at Buffalo, Buffalo, NY

PS-Thurs-A-66
Dielectrophoretic Spheroid Formation in High Conductive Medium
E. A. Henslee[1], H. Fatoyinbo[1], M. P. Hughes[1], and F. H. Labeed[1]
[1]University of Surrey, Guildford, United Kingdom

PS-Thurs-A-67
Transport Characteristics of Bilayer Device for Cell Culture and Tissue Development
N. K. Inamdar[1], L. G. Griffith[2], and J. T. Borenstein[1]
[1]Draper Laboratory, Cambridge, MA, [2]MIT, Cambridge, MA

PS-Thurs-A-68
A Novel Multiplexing Approach For Addressing Electrode Arrays With Reduced Connections
J. Yao[1,2], and K. Gillis[1,2]
[1]University of Missouri, Columbia, MO, [2]Dalton Cardiovascular Research Center, Columbia, MO

PS-Thurs-A-69
Multi-scale Multi-object Bio-patterning
S. Zhao[1], Y. Li[1], A. Revzin[1], and T. Pan[1]
[1]University of California, Davis, CA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-A-70
Microfluidic Co-culture System to Study Soluble Factor Signaling in Epithelial Ovarian Cancer
G. J. Czaplewski[1], and P. K. Kreeger[1]
[1]University of Wisconsin-Madison, Madison, WI

PS-Thurs-A-71
Cellular Sensing and Responses to Nanotopography
W. Chen[1], Y. Sun[1], and J. Fu[2]
[1]University of Michigan, Ann Arbor, MI

PS-Thurs-A-72
Live Cell Array for Real Time Monitoring of Pathway Activation During Myogenic Differentiation of Mesenchymal Stem Cells
J. Moharil[1], P. Lei[1], J. Tian[1], and S. T. Andreadis[1,2]
[1]University at Buffalo-SUNY, Amherst, NY, [2]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

PS-Thurs-A-73
A Novel *In Vitro* Microfluidic Blood-Brain Barrier Model
B. Prabhakarpandian[1], M-C. Shen[1], J. Nichols[1], I. Mills[1], M. Aschner[2], and K. Pant[1]
[1]CFD Research Corporation, Huntsville, AL, [2]Vanderbilt University Medical Center, Nashville, TN

Track: Devices: Nano to Micro

Biosensors, Bio-Interfaces and Implantable Devices

PS-Thurs-A-74
An Electro-Deposited IrOx Thin Film pH Sensor
C. M. Nguyen[1], H. Cao[1], W. D. Huang[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS-Thurs-A-75
Microfluidic Human Blood Plasma Separation
R. Zhong[1], N. Wu[1], and Y. Liu[1]
[1]West Virginia University, Morgantown, WV

PS-Thurs-A-76
Direct Printing of Frequency Tunable RFID Antennas on Shrinkable Substrates
M. Yang[1], H. Tao[1], M. Khine[2], and F. Omenetto[1]
[1]Tufts University, Medford, MA, [2]University of California, Irvine, Irvine, CA

PS-Thurs-A-77
Development of Implantable Single Component Resonant Circuits for Wireless Force Sensing
R. A. Wachs[1], K. P. Cole[1], D. L. Fiorella[1], M. Alley[1], and E. H. Ledet[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-Thurs-A-78
Electrochemical Detection of Pyocyanin for Single Cell Studies
T. A. Webster[1], A. P. Fusco[1], C-W. Kuo[1], and E. D. Goluch[1]
[1]Northeastern University, Boston, MA

PS-Thurs-A-79
Neurons as Biosensors: Examining Toxicity with Fluorescence
H. P. Kutosky[1], R. K. Willits[2], S. D. Minteer[1], and A. B. Harkins[1]
[1]Saint Louis University, St. Louis, MO, [2]University of Akron, Akron, OH

PS-Thurs-A-80
Single-molecule Discrimination of Thymine-Mercury-Thymine Complex in a Nanopore Sensor for Ultrasensitive Detection of Contaminating Mercury (II) Ion
I. Kang[1], C. Reagan[1], and L-Q. A. Gu[1]
[1]University of Missouri, Columbia, MO

PS-Thurs-A-81
Colorimetric Determination of Oxygen Tension within Tissue Engineering Scaffolds
P. Bhagwat[1], J. Stukel[2], C-S. Kim[1], and D. Henthorn[2]
[1]Missouri University of Science and Technology, Rolla, MO, [2]Saint Louis University, Saint Louis, MO

PS-Thurs-A-82
A Wireless and Batteryless Data Acquisition System for Biomedical Implants
V. Landge[1], H. Cao[1], S. Thakar[1], M. Sheth[1], Y-S. Seo[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS-Thurs-A-83
Synthesis of Pt Nanoflower/Polyaniline Composite Nanofibers and Their Application in the Enzymatic Detection of Urea
W. Jia[1], L. Su[1], and Y. Lei[1]
[1]University of Connecticut, Storrs, CT

PS-Thurs-A-84
Glucose Biosensor Based on Modified Electrode of Polypyrrole-Glucose Oxidas-Modified Multi-Walled Carbon Nanotubes
D. M. savani[1], A. Santiago[1], P. Patra[1], and D. Burton[1]
[1]Universiy of Bridgeport, Bridgeport, CT

PS-Thurs-A-85
Copper Nanowires-based Ultrasensitive Non-enzymatic Sensor for Blood Glucose Monitoring
L. Su[1], Y. Zhang[1,2], D. Manuzzi[1], C. Hou[2], D. Huo[2], and Y. Lei[1]
[1]University of Connecticut, Storrs, CT, [2]Chongqing University, Chongqing, China, People's Republic of

PS-Thurs-A-86
Immobilization of Hyaluronic Acid on Surface Enhanced Raman Scattering Substrates Functionalized with Cysteamine
M. A. Figueroa[1], J. Patel[1], K. Pourrezaei[1], and S. Tyagi[1]
[1]Drexel University, Philadelphia, PA

PS-Thurs-A-87
Impact of Structural Factors on Thermal Sensitivity of Nanocarbon Composites.
E. S. Kirkor[1,2], A. D. Schricker[1], A. Scheeline[1,3], and S. K. Sinha[1,2]
[1]Anchor Science LLC, Branford, CT, [2]University of New Haven, West Haven, CT, [3]University of Illinois, Urbana, IL

PS-Thurs-A-88
A Novel Approach for Wireless Communication of *In Vivo* Data from Freely Moving Research Animals
A. Gailey[1], K. Berberian[1], B. N. Kim[1], M. Lindau[1], and M. G. Kaplitt[2]
[1]Cornell University, Ithaca, NY, [2]Cornell Weill Medical College, New York, NY

PS-Thurs-A-89
Effect of Hydrodynamic Focusing on Increased Sensitivity of Thermoelectric Method for DNA Sequencing
G. G. Nestorova[1], V. L. Kopparthy[1], S. M. Tangutooru[1], R. Gumma[1], and E. J. Guilbeau[1]
[1]Louisiana Tech University, Ruston, LA

PS-Thurs-A-90
Enhancing In-Field Detection of Bioterrorism Agents Using Aqueous Two-Phase Systems
F. Mashayekhi[1], R. Y. Chiu[1], A. M. Le[1], P. M. Nafisi[1], B. M. Wu[1], and D. T. Kamei[1]
[1]University of California, Los Angeles, CA

PS-Thurs-A-91
Electromagnetic Sensor for Monitoring Blood Coagulation in Brain Phantom
M. A. Kandadai[1], J. Korfhagen[1], J. F. Clark[1], G. J. Shaw[1], and O. A. Adeoye[1]
[1]University of Cincinnati, Cincinnati, OH

PS-Thurs-A-92
Optofluidic Microdevice for Glucose Monitoring Fabricated from Dry Film Photoresist
Z. Gao[1], C-S. Kim[1], and D. Henthorn[2]
[1]Missouri University of Science and Technology, Rolla, MO, [2]Saint Louis University, Saint Louis, MO

PS-Thurs-A-93
Fabrication of Cost Effective Electrode Arrays for Micro Coulter Cell Counters
S. Cho[1], A. Zhang[1], and E. Saldivar[1]
[1]West Wireless Health Institute, La Jolla, CA

PS-Thurs-A-94
Intermediate Frequency Electrical Modeling Study of DNA Detecting Nanobiosensor
V. U. Desai[1], S. K. Sinha[1], B. Steber[1], E. Sapi[1], and B. Aliane[1]
[1]University of New Haven, West Haven, CT

Track: Devices: Nano to Micro

Nano to Micro Fluidic Technologies

PS-Thurs-A-95
A Rotary Planar Peristaltic Micropump for Microfluidics
L. T. Hoang[1], P. A. Gould[1], S. Darby[1], M. Moore[1], K. T. Seale[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS-Thurs-A-96
Isolation of Breast Cancer Cells based on Metastatic Phase Using Contactless Dielectrophoresis
A. D. Rojas[1], E. Schmelz[1], and R. V. Davalos[1]
[1]Virginia Tech, Blacksburg, VA

PS-Thurs-A-97
On Chip Membranes for Physiologically Realistic Microfluidic Models of the Gastrointestinal Tract
M. B. Esch[1], J. Yang[1], J. H. Sung[1], J. C. March[1], and M. L. Shuler[1]
[1]Cornell University, Ithaca, NY

PS-Thurs-A-98
Effect of Particle Shape on Inertial Focusing
M. Masaeli[1,2], E. Sollier[1,2], H. Amini[1,2], S. C. Hur[1,2], N. Doshi[3], S. Mitragotri[3], and D. Di Carlo[1,2]
[1]University of California Los Angeles, Los Angeles, CA, [2]California NanoSystems Institute, Los Angeles, [3]University of California Santa Barbara, Santa Barbara, CA

PS-Thurs-A-99
Computational Models of Interactions Between Light and Photocatalytic Thin Film Devices
A. E. Perrin[1,2], S. M. Mijailovich[1,2], P. M. Martin[1,2], and R. J. Gilbert[1,2]
[1]Steward St. Elizabeth's Medical Center, Brighton, MA, [2]Tufts School of Medicine, Boston, MA

PS-Thurs-A-100
A Biopolymer System for Gentle and Efficient Cell Recovery from Microfluidic Cell Capture Devices
A. Shah[1], J. Ciciliano[2], S. Maheswaran[2], D. Haber[3], and M. Toner[2]
[1]Harvard-MIT Division of HST, Charlestown, MA, [2]MGH, Charlestown, MA, [3]MGH/HHMI, Charlestown, MA

PS-Thurs-A-101
Frequency Discretization in a Dielectrophoretic Trapping Array for Neural Stem/Progenitor Cell and Neuron Sorting
J. L. Prieto[1], J. Lu[1], J. L. Nourse[1], L. A. Flanagan[1], and A. P. Lee[1]
[1]University of California Irvine, Irvine, CA

PS-Thurs-A-102
Development of a Three Dimensional Contactless Dielectrophoresis Platform
M. B. Sano[1], and R. V. Davalos[1]
[1]Virginia Tech Wake Forest School of Biomedical Engineering, Blacksburg, VA

PS-Thurs-A-103
Superior Screening Technology for Medicines Quality Control n Low-Resource Countries
D. Desai[1], P. Vermilion[1], N. Ouhib[1], M. Duffy[1], P. Lukulay[2], and M. Zaman[1]
[1]Boston University, Boston, MA, [2]United States Pharmacopeia, Rockville, MD

PS-Thurs-A-104
Pillar-induced Mixing in Microchannels
H. Amini[1,2], and D. Di Carlo[1,2]
[1]University of California, Los Angeles (UCLA), Los Angeles, CA, [2]California NanoSystems Institute (CNSI), Los Angeles, CA

PS-Thurs-A-105
Pressure Differential Trapping Mechanism for Suspended Micro-particles in Micro-fluidic Devices
A. O. Cruz-Diaz[1], and R. E. Diaz-Rivera[1]
[1]University of Puerto Rico Mayaguez Campus, Mayaguez, Puerto Rico

PS-Thurs-A-106
Artificial Microfluidic Vessels to Study Stem cell Mechanobiology
J. Zhou[1], and L. Niklason[1,2]
[1]Yale School of Medicine, New Haven, CT, [2]Yale University, New Haven, CT

PS-Thurs-A-107
A Self-Pumping Membrane
I-K. Jun[1], and H. Hess[1]
[1]Columbia University, New York, NY

PS-Thurs-A-108
Calibration-Free, Microliter per Minute Flow Sensor for Lab-on-a-Chip Applications
J. M. Lippmann[1], and A. P. Pisano[2]
[1]State University of New York at Buffalo, USA, Buffalo, NY, [2]University of California, Berkeley, Berkeley, CA

PS-Thurs-A-109
Towards Precise Control of the Mechanical and Chemical Milieu of Cells at Length and Time Scales Relevant for Emergent Subcellular Structure and Function
J. Zhang[1], Y. Wang[1], J. Parent[1], and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH

PS-Thurs-A-110
Serpentine Microfluidic Structures Combined with Nanostructured Quartz (1x1 in2) as CD4+ T cell Separation and Counting Devices
S-K. Lee[1,2], D-J. Kim[2], Y. Wu[1], Y. Liu[1], and R. Fan[1]
[1]Yale University, New Haven, CT, [2]Chonbuk National University, Jeonju, Korea, Republic of

PS-Thurs-A-111
PEG-DA Hydrogel Microfluidic Devices for Study of Cellular Dynamics under Customizable Chemical Gradient Fields
M. A. Traore[1], E. Acome[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

PS-Thurs-A-112
Combining 4D Imaging with Microfluidics to Study Innate Cell Migration *In Vitro*
C. E. Petrie Aronin[1], N. Y. Morgan[1], and R. N. Germain[1]
[1]NIH, Bethesda, MD

PS-Thurs-A-113
Microfluidic Devices for Functional Phenotyping of Human Donors
T. V. Colace[1], and S. L. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-Thurs-A-114
Numerical and Experimental Validation of a Computational Program to Analyze Transport in Micromixers
K. L. Hamlington[1], Y-Y. Kwan[1], H. Fujioka[1], and D. P. Gaver III[1]
[1]*Tulane University, New Orleans, LA*

PS-Thurs-A-115
Stiffness-dependent Separation of Human Cells in a Microfluidic Device
G. Wang[1], C. Henegar[1], W. Mao[1], A. Alexeev[1], and T. Sulchek[1]
[1]*Georgia Tech, Atlanta, GA*

PS-Thurs-A-116
3-D Numerical Simulation of Lateral Migration and Deformation of Leukocytes in Microfluidic Flow
H. Lan[1], and D. B. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

PS-Thurs-A-117
Flow of Blood Cells Through Micro-scale Constricted Geometries; Micro-PIV Studies
V. Somashekar[1], M. Olsen[2], K. Chandran[1], and H. S. Udaykumar[1]
[1]*University of Iowa, Iowa City, IA,* [2]*Iowa State University, Ames, IA*

PS-Thurs-A-118
Microfluidic Capture of Corneal Progenitor Cells from Primary Cultures of Human Corneal Stromal Cells
B. Zhu[1], S. A. Melotti[2], J. W. Ruberti[2], and S. K. Murthy[1]
[1]*Chemical Engineering Northeastern University, Boston, MA,* [2]*Mechanical and Industrial Engineering Northeastern University, Boston, MA*

PS-Thurs-A-119
Migration Characteristics of Prostate Cancer Cells in Response to Epidermal Growth Factor (EGF)
S. Rao[1], U. Tata[1], K. C. Pabba[1], K. Pokhrel[1], A. Sharma[1], V. Lin[2], and J-C. Chiao[1]
[1]*UT Arlington, Arlington, TX,* [2]*UTSW Medical Center at Dallas, Dallas, TX*

Track: Drug Delivery Systems

Drug Delivery in Tissue Engineering

PS-Thurs-A-120
Magnetic Nanoparticle Uptake by Osteioblast Under the Influence of a Magnetic Field
N. L. Tran[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

PS-Thurs-A-121
Vascular Endothelial Growth Factor Release From Self-Assembled Monolayers on Hydroxypatite
K. D. Solomon[1,2], and J. L. Ong[1,2]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*UTSA-UTHSCSA Joint Graduate Program in Biomedical Engineering, San Antonio, TX*

PS-Thurs-A-122
Directed Control of Mesenchymal Stem Cells and Connexin43 Mimetic Peptide for Use in Regenerative Medicine.
K. B. Moore[1], W. Zhang[1], X. He[1], and J. Potts[2]
[1]*University of South Carolina, Columbia, SC,* [2]*University of South Carolina School of Medicine, Columbia, SC*

PS-Thurs-A-123
Directed Blood Vessel Growth Using Microfiber Patches Assembled Through *In Situ* Electrospinnning and Electrospraying
R. J. DeVolder[1,2], H. Bae[3], J. Lee[3], and H. Kong[1,2]
[1]*Univeristy of Illinois, Urbana, IL,* [2]*Institute of Genomic Biology, Urbana,* [3]*Chung-Ang University, Seoul, Korea, Republic of*

PS-Thurs-A-124
The Effects of Hydrogel Chemical and Physical Properties on Protein Release from 3D Photopolymerizable Networks
S. Liong[1], M. Keeney[1], L-H. Han[1], and F. Yang[1]
[1]*Stanford University, Stanford, CA*

PS-Thurs-A-125
Effects of Surfactants on Properties of PLGA Nanoparticles
J. U. Menon[1], S. Kona[1], F. Desai[1], A. Wadajkar[1], and K. T. Nguyen[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-Thurs-A-126
Poly(ethylene glycol) Microgels as Drug Delivery Vehicles
S. Thompson[1], B. Scott[2], and R. Willits[1]
[1]*University of Akron, Akron, OH,* [2]*Saint Louis University, Saint Louis, MO*

PS-Thurs-A-127
Synthesis and Characterization of a Bi-layered, Nanofibrous Scaffold for Drug Delivery Applications
P. S. Samuel[1], A. Thukral[1], and J. A. Cooper, Jr.[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS-Thurs-A-128
Interplay of Matrix Rigidity and Cell Population for Non-viral BMP-gene Delivery
C. Chu[1], and H. Kong[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS-Thurs-A-129
PLGA-Nanoporous Silicon Composite Microspheres for Enhanced Loading and Controlled Release of Osteogenic Factors: *In vitro* and *In vivo* Characterization
D. Fan[1], M. B. Murphy[1], I. Yazdi[2,3], X. Liu[1], M. Ferrari[1], and E. Tasciotti[1]
[1]*The Methodist Hospital Research Institute, Houston, TX,* [2]*The University of Houston, Houston,* [3]*The Methodist Hospital Research Institute, Houston*

PS-Thurs-A-130
Modeling of Release of Bioactive Molecules from Nanofiber Meshes
C. Erisken[1], X. Zhang[1], A. Villain[1], N. M. Lee[1], and H. H. Lu[1]
[1]*Columbia University, New York, NY*

PS-Thurs-A-131
Functionalized Photocrosslinked Dextran Hydrogels for Sustained, Localized Delivery of siRNA
K. M. Nguyen[1], and E. Alsberg[2]
[1]*Case Western Reverse University, Cleveland, OH,* [2]*Case Western Reserve University, Cleveland, OH*

PS-Thurs-A-132
Stimuli-Responsive Microspheres for Sustained Protein Delivery to Ischemic Environments
R. V. Joshi[1], and C. L. Duvall[1]
[1]*Vanderbilt University, Nashville, TN*

Track: Neural Engineering

Cellular and Molecular Neurophysiology

PS-Thurs-A-133
Immuno Microbiosensor for In Vitro Diagnosis of Alzheimer's Disease
C. Li[1], and S. Prabhulkar[1]
[1]*Florida International University, Miami, FL*

PS-Thurs-A-134
Helix Aspersa Neuronal Process Growth in Culture
A. Deverakonda[1], S. Ramachandruni[1], and N. Peixoto[1]
[1]*George Mason University, Fairfax, VA*

PS-Thurs-A-135
Transport of mRNA in the Projections of Maturing Hippocampal Neurons
G. J. Dave[1], J. Love[1], J. Chetta[1], and S. B. Shah[1]
[1]University of Maryland, College Park, MD

PS-Thurs-A-136
Plastic Effects Of Electrical Stimulation On Slow Waves Activity: A Computational Study
D. Reato[1], M. Bikson[1], and L. C. Parra[1]
[1]The City College of New York, New York, NY

PS-Thurs-A-137
Acute Stress Disrupts Emotional Memories
J. H. Blaise[1], and M. Sunay[1]
[1]Trinity College, Hartford, CT

PS-Thurs-A-138
Suppression of Hyperactivity in the Hippocampus using Targeted Optogenetic Stimulation
T. P. Ladas[1], L. Gonzalez-Reyes[1], and D. M. Durand[1]
[1]Case Western Reserve University, Cleveland, OH

Track: Neural Engineering

Neural Electrode Tissue Interface

PS-Thurs-A-139
Neurotoxicity of Serum: Blood-Brain Barrier Breakdown and Neuronal Loss around Neural Electrodes
G. Goyal[1], and Y. Zhong[1]
[1]Drexel University, Philadelphia, PA

PS-Thurs-A-140
Flexible Probes for Neural Activity Recording
E. Ismailova[1], T. Doublet[2,3], D. Khodagholy[1], P. Quilichini[2], A. Ghestem[2], S. Yoon Yang[4], C. Bernard[2], and G. G. Malliaras[1]
[1]EMSE/CMP, Gardanne, France, [2]INSERM U 751, Marseille, France, [3]Microvitae Technologies, Gardanne, France, [4]Cornell University, Ithaca, NY

PS-Thurs-A-141
Quantitative Assessment of Effects of Poly(ethylene Glycol) on Responses of Primary Cortical Cells to Microwire *In Vitro*
S. Sommakia[1], J. L. Rickus[1], and K. J. Otto[1]
[1]Purdue University, West Lafayette, IN

PS-Thurs-A-142
Recent Insights Gathered Through Imaging the Intact Neural Electrode-Tissue Interface
A. J. Woolley[1], H. A. Desai[1], and K. J. Otto[1]
[1]Purdue University, West Lafayette, IN

PS-Thurs-A-143
Neurotrophic Electrodes as Reliable Central Nervous System Interfaces
R. S. Oakes[1], and M. Tabib-Azar[1]
[1]University of Utah, Salt Lake City, UT

PS-Thurs-A-144
Novel 3D Stacking Approach for MEMS Microelectrodes to Create High Density Neural Interfaces
J. Sutanto[1], R. Korb[1], M. Okandan[2], M. Baker[2], and J. Muthuswamy[1]
[1]Arizona State University, Tempe, AZ, [2]Sandia National Laboratory, Albuquerque, NM

PS-Thurs-A-145
A Current-Limited Low-Voltage Design For Transcranial Direct Current Stimulation
A. Rahman[1], C. Hahn[1], L. C. Oliveira[1], and M. Bikson[1]
[1]City College of New York, CUNY, New York, NY

PS-Thurs-A-146
Flexible Neural Electrode Arrays
V. Tolosa[1], A. Tooker[1], K. Shah[1], T. DeLima[1], H. Sheth[1], M. Shusteff[1], and S. Pannu[1]
[1]Lawrence Livermore National Laboratory, Livermore, CA

Track: Neural Engineering

Neural Engineering Technology I

PS-Thurs-A-147
Autonomic Function Assessment in Epileptic Patients Using Kernel Method
A. K. Kamal[1]
[1]TTU, Cookeville, TN

PS-Thurs-A-148
Logarithmic ISI Distributions Enable Robust Neuronal Information Estimates
A. Dorval[1]
[1]University of Utah, Salt Lake City, UT

PS-Thurs-A-149
High-density Surface EMG Denoising with Spectrum Interpolation and Empirical Mode Decomposition
X. Zhang[1], and P. Zhou[1]
[1]Rehabilitation Institute of Chicago, Chicago, IL

PS-Thurs-A-150
Multi-Neural Chip Reader System for Parallel Neural Activity Monitoring of Cultured Neuronal Networks
J. Myoung[1], M. J. Jang[1], and Y. Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

PS-Thurs-A-151
On Low Frequency Entrainment Using Auditory Steady State Responses
R. Palaniappan[1]
[1]University of Essex, Colchester, United Kingdom

PS-Thurs-A-152
Motor Unit Discrimination in ALS Using Single Channel Surface EMG
Q. Li[1], P. Barkhaus[2], and P. Zhou[3]
[1]Southwest University of Science and Technology, Mianyang, China, People's Republic of, [2]Medical College of Wisconsin, Milwaukee, WI, [3]Rehabilitation Institute of Chicago, Chicago, IL

PS-Thurs-A-153
A Digital Wireless System for Closed-loop Inhibition of Nociceptive Signals
C. Zuo[1,2], Y. Wang[1,2], C. Hagains[1], A. L. Li[1], X. F. Yang[2], Y. B. Peng[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX, [2]Huazhong University of Science and Technology, Wuhan, China, People's Republic of

PS-Thurs-A-154
Design of a Novel Low-Cost MEA for High-Content/High-Throughput Experiments with Excitable Cells
H. Charkhkar[1], G. L. Knaack[1], G. P. Pollack[2], R. Robbins[2], B. E. Gnade[2], J. J. Pancrazio[1], and E. W. Keefer[3]
[1]George Mason University, Fairfax, VA, [2]Univ. of Texas at Dallas, Richardson, TX, [3]Plexon Inc., Dallas, TX

PS-Thurs-A-155
Computational Modeling of Pedunculopontine Nucleus Deep Brain Stimulation
K. Mohsenian[1], and M. Johnson[1]
[1]University of Minnesota, Minneapolis, MN

PS-Thurs-A-156
Probabilistic Model Predicting Retinal Ganglion Cell Responses to Natural Images
N. Ivzan[1], and N. M. Grzywacz[1]
[1]Department of Biomedical Engineering, University of Southern California, Los Angeles, CA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Neural Engineering

Neural Trauma and Repair

PS-Thurs-A-157
Controlling Neurosphere-Derived Neuronal Precursor Cell Proliferation on Compliant Substrates
M. L. Previtera[1], M. Hui[1], S. Parikh[1], D. Verma[1], R. Schloss[1], and N. Langrana[1]
[1]*Rutgers University, Piscataway, NJ*

PS-Thurs-A-158
Development of *In Situ* Forming Alginate Hydrogel Blends using Cerebrospinal Fluid for Spinal Cord Repair
C. A. McKay[1], and R. J. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS-Thurs-A-159
Architecture and Histology of The Sub Arachnoid Space Trabeculae in The Brain
P. Saboori[1], and A. Sadegh[1]
[1]*City University of New York, City College, New York, NY*

PS-Thurs-A-160
Investigation of Effective Mass Differences for Helmet to Helmet Impacts in Football: Role of the Neck and Implications on Injury
R. W. Daniel II[1], S. Rowson[1], S. Duma[1], J. Mihalik[2], and K. Guskiewicz[2]
[1]*Virginia Tech Wake Forest University, Blacksburg, VA,* [2]*University of North Carolina, Chapel Hill, NC*

PS-Thurs-A-161
An Implemented Method of Quantifying Beading Intensity in Cultured Neurons
R. M. Dastgheyb[1], G. Gallo[2], and K. Barbee[1]
[1]*Drexel University, Philadelphia, PA,* [2]*Drexel University College of Medicine, Philadelphia, PA*

PS-Thurs-A-162
Engineering the Astrocytic Response Using Extracellular Matrix Coated PLLA Electrospun Fibers
J. M. Zuidema[1], and R. J. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS-Thurs-A-163
Quantitative Analysis of Porcine Brain Microstructure via Interruption Testing
M. T. Begonia[1], R. Prabhu[1,2], M. F. Horstemeyer[1,2], J. Liao[1], and L. N. Williams[1]
[1]*Mississippi State University, Starkville, MS,* [2]*Center for Advanced Vehicular Systems (CAVS), Starkville, MS*

PS-Thurs-A-164
Short-Term Exposure to Magnesium Ions Supports Increased Neural Stem Cells *In Vitro*
T. Hopkins[1], J. Kuhlmann[1], J. Vennemeyer[1], and S. K. Pixley[1]
[1]*University of Cincinnati, Cincinnati, OH*

PS-Thurs-A-165
A Novel Internal Fixator Device for Peripheral Nerve Regeneration
T-H. Chuang[1], R. Wilson[2], and S. Shah[1]
[1]*University of Maryland at College Park, College Park, MD,* [2]*Case Western Reserve University, Cleveland, OH*

PS-Thurs-A-166
Deficiencies in Mechanical Properties of Peripheral Nerves in Fibrillin-2 Knockout Mice
D. Redmond-White[1], R. Stahl[2], D. Carey[2], and D. Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA,* [2]*Weis Center for Research, Geisinger Medical Center, Danville, PA*

PS-Thurs-A-167
Syngeneic Stem Cells from Olfactory Mucosa Induce Functional Improvement in Brain Injured Inbred Rats
S. Kumaran[1], C. Kreipke[1], J. M. Cavanaugh[1], C. Lima[2], J. M. Meythaler[1], and J. D. Peduzzi[1]
[1]*Wayne State University, Detroit, MI,* [2]*Hospital Egas Moniz, Lisbon, Portugal*

PS-Thurs-A-168
Biomaterials for the Prevention of Post-Surgical Adhesions in Neurosurgery
D. Verma[1], N. Kulkarni[1], V. Shah[1], M. Previtera[1], R. Schloss[1], and N. Langrana[1]
[1]*Rutgers University, Piscataway, NJ*

PS-Thurs-A-169
Encapsulated Mesenchymal Stromal Cells Prevent Degradation in an Organotypic Model of Traumatic Brain Injury
J-P. Dolle[1], J. Barminko[1], S. Veruva[1], C. Moure[1], R. Schloss[1], and M. L. Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

PS-Thurs-A-170
Changes in Electrophysiological Function after Controlled Deformation of Hippocampal Slice Cultures
W. Kang[1], Z. Yu[1], and B. Morrison III[1]
[1]*Columbia University, New York, NY*

PS-Thurs-A-171
Age and Direction Dependent Viscoelastic Mechanical Properties of the Rat Brain
J. D. Finan[1], B. S. Elkin[1], and B. Morrison III[1]
[1]*Columbia University, New York, NY*

PS-Thurs-A-172
Novel Device Design for Rapid Testing of Brain Injuries Related to Shock Wave Exposure
C. E. Hampton[1], B. A. Mathie[1], and P. J. VandeVord[1]
[1]*Wayne State University, Detroit, MI*

PS-Thurs-A-173
The Cell Microenvironment May Potentiate Neuronal Mild Traumatic Brain Injury
M. A. Hemphill[1], B. E. Dabiri[1], J. A. Goss[1], P. W. Alford[1], and K. K. Parker[1]
[1]*Disease Biophysics Group, Harvard University, Cambridge, MA*

PS-Thurs-A-174
The Effects of Impulsive Pressurization on Human Neuronal Cell Viability and Neurite Length
J. Lee[1], M. Nienaber[1], R. Feng[1], and J. Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

PS-Thurs-A-175
Blast-Sensitive Photonic Nanocrystals: A Colorimetric Dosimeter for Blast Traumatic Brain Injury
D. Cullen[1], K. D. Browne[1], Y. Xu[1], J. A. Wolf[1], S. Yang[1], M. Chavko[2], and D. H. Smith[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Naval Medical Research Center, Silver Spring, MD*

Track: Biomedical Imaging and Optics

Novel Biomedical Imaging and Microscopy

PS-Thurs-A-176
Monitoring the Relative Phase of Oscillations of Cerebral Oxy-hemoglobin and Deoxy-hemoglobin Concentrations During Sleep in Human Subjects
M. L. Pierro[1], A. Sassaroli[1], P. R. Bergethon[2], and S. Fantini[1]
[1]Tufts, Medford, MA, [2]Boston University School of Medicine, Boston, MA

PS-Thurs-A-177
Comparison of Localization Algorithms for Three-Dimensional Super-Resolution Microscopy
E. B. Kromann[1,2], M. F. Juette[1,3], and J. Bewersdorf[1]
[1]Yale University, New Haven, CT, [2]The Technical University of Denmark, Kgs. Lyngby, Denmark, [3]University of Heidelberg, Heidelberg, Germany

PS-Thurs-A-178
Probing Sepsis and Acute Inflammation Using ICAM-1 Specific mSPIO Nanoparticles
R. Wong[1,2], X. Chen[1], T. Liu[1], Y. A. Wang[3], Y. Wang[1,2], and M. Jin[1]
[1]Cornell University, Ithaca, NY, [2]Cornell University Weill Medical College, New York, [3]Ocean Nanotech LLC, Fayetteville, AR

PS-Thurs-A-179
Determining Fatty Acids Ratios in Single Cellular Lipid Droplets with CARS Microscopy, Raman Spectroscopy and PLSR
I. W. Schie[1], J. Wu[2], and T. Huser[3]
[1]University of California, Davis, Sacramento, CA, [2]University of California, Davis, Sacramento, [3]Univresity of California, Davis, Sacramento, CA

PS-Thurs-A-180
Field-Portable Reflection and Transmission Microscope
G. Biener[1], A. Greenbaum[1], S. O. Isikman[1], K. Lee[1], D. Tseng[1], and A. Ozcan[1]
[1]University of California Los Angeles, Los Angeles, CA

PS-Thurs-A-181
Can We Solve Radiative Transfer Equation as Fast as Diffusion Approximation?
L. Phan[1], and H. Gao[2]
[1]Western Digital, Irvine, CA, [2]UCLA, Los Angeles, CA

PS-Thurs-A-182
Hybrid True-color Micro-CT System Design and Image Reconstruction
G. Wang[1], Q. Xu[2,3], and H. Yu[2]
[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest University Health Sciences, Winston-Salem, NC, [3]Xi'an Jiaotong University, Xi'an, China, People's Republic of

PS-Thurs-A-183
A Novel Prototype Hybrid Probe for *In Vivo* Ovary Evaluation
Y. Yang[1], T. Wang[1], and Q. Zhu[1]
[1]University of Connecticut, Storrs, CT

PS-Thurs-A-184
In Vivo Measurement of Retinal Venous Pulsatility Using Infrared Imaging
M. Golzan[1], A. Avolio[1], and S. L. Graham[1]
[1]Macquarie University, Sydney, Australia

PS-Thurs-A-185
Biocompatible and pH Sensitive PLGA Encapsulated MnO Nanocrystals for Molecular and Cellular MRI
M. F. Bennewitz[1], M. N. Nkansah[1], G. Ulas[1], G. W. Brudvig[1], and E. M. Shapiro[1]
[1]Yale University, New Haven, CT

Track: Systems Biology, Bioinformatics and Computational Bioengineering

Methodology and Techniques Supporting Computational Bioengineering and Bioinformatics

PS-Thurs-A-186
Methods in Agent Based Modeling of Reaction-Diffusion Systems: Application in Nucleocytoplasmic Transport and Beyond
M. Azimi[1], Y. Jamali[1], and M. R. Mofrad[1]
[1]University of California, Berkeley, CA

PS-Thurs-A-187
Identifying Perturbed Pathways in Glioblastoma through Network Reconstruction and Analysis
J. A. Eddy[1], and N. D. Price[1]
[1]University of Illinois, Urbana, IL

PS-Thurs-A-188
Leveraging Modeling Approaches: Reaction Networks and Rules
M. L. Blinov[1], J. C. Schaff[1], and I. I. Moraru[1]
[1]University of Connecticut Health Center, Farmington, CT

PS-Thurs-A-189
Meta-Analysis of Maximal Aerobic Capacity and the Influence of Age, Sex, and Training Status
T. J. Malkinson[1]
[1]SAIT Polytechnic, Calgary, AB, Canada

PS-Thurs-A-190
Assessment of Autonomic Function in Alzheimer Patients
A. K. Kamal[1], and A. Karim[1]
[1]Tennessee Tech University, Cookeville, TN

PS-Thurs-A-191
Mobile Virtual Reality System for Cardiovascular CFD Analysis
D. J. Quam[1], L. M. Ellwein[1], H. Otake[2,3], R. Q. Migrino[4,5], and J. F. LaDisa[1,5]
[1]Marquette University, Milwaukee, WI, [2]Stanford University, Palo Alto, CA, [3]Seoul National University College of Medicine, Seoul, Korea, Republic of, [4]Phoenix VA Healthcare System, Phoenix, AZ, [5]Medical College of Wisconsin, Milwaukee, WI

PS-Thurs-A-192
University of Rochester Database for the Analysis of Seizure Detection Algorithms (UR DASDA)
G. M. Hartnett[1], Z. Milstone[1], C. M. O'Connell[1], G. W. Yee[1], A. Hagar[1], B. Schwartz[1], S. Erickson[1], R. Heisig[1], M. J. Berg[1], J. L. Burchfiel[1], and L. H. Carney[1]
[1]University of Rochester, Rochester, NY

PS-Thurs-A-193
Strong Features Built From Haar Like Features for Abdominal Aortic Aneurysm Centerline Detection
H. zhang[1], and E. Finol[1]
[1]Institute for Complex Engineered Systems, Pittsburgh, PA

PS-Thurs-A-194
Experiment Design via Multiple Model Control with Normalization
J. Perley[1], V. Dinh[1], J. Mikolajczak[1], G. Buzzard[1], M. Harrison[1], and A. Rundell[1]
[1]Purdue University, West Lafayette, IN

PS-Thurs-A-195
Identifying the Identifiable Parameter Subset in Complex Biological Processes
S. M. Pearce[1], G. T. Buzzard[1], and A. E. Rundell[1]
[1]Purdue University, West Lafayette, IN

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-A-196
Tracking OMTC Microbeads: Comparison of the Center of Mass and a Curve Fitting Algorithm
E. M. Redoschi[1], A. S. Freitas[1], and A. M. Alencar[2]
[1]Escola Politécnica, Universidade de São Paulo, São Paulo, Brazil, [2]Instituto de Física, Universidade de São Paulo, São Paulo, Brazil

PS-Thurs-A-197
Constrained Fuzzy Logic for Quantitative Modeling of Biological Networks
M. K. Morris[1,2], J. Saez-Rodriguez[3], D. C. Clarke[1,2], P. K. Sorger[2,4], and D. A. Lauffenburger[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Cell Decision Process Center, Cambridge, [3]European Bioinformatics Institute, Hinxton, United Kingdom, [4]Harvard Medical School Department of Systems Biology, Boston, MA

Track: Systems Biology, Bioinformatics and Computational Bioengineering

Multi-Scale and Multiphysics Modeling

PS-Thurs-A-198
Tools for Multi-scale Cell-to-organ Modeling and Analysis Using Deformable 3D Atlases
J. Carson[1], I. Kakadiaris[2], and T. Ju[3]
[1]Pacific Northwest National Lab, Richland, WA, [2]University of Houston, Houston, TX, [3]Washington University in St. Louis, St. Louis, MO

PS-Thurs-A-199
Collagen Type I Telopeptides Mediate Mechanical Response in Native Collagen Crosslinks
A. L. Kwansa[1], and J. W. Freeman[1]
[1]Virginia Polytechnic Institute & State University (Virginia Tech), Blacksburg, VA

PS-Thurs-A-200
Finite Element Modeling of Tympanic Membrane Surface Vibration in Chinchilla Ear
X. Guan[1], X. Zhang[1], W. Young[2], and R. Gan[1]
[1]University of Oklahoma, Norman, OK, [2]University of Texas at Dallas, Richardson, TX

PS-Thurs-A-201
A Mechanical Model for the Relationship Between Jaw Imbalance and Arm Strength Loss
V. Vovantoi[1], M. Le[1], N. Dang[1], and V. Nguyen[1]
[1]International University of VNU-HCM, Ho Chi Minh, Vietnam

PS-Thurs-A-202
Multijoint Control of the Lower Extremity during Landings with Different Degrees of Hip External Rotation
A. M. Zaferiou[1], and J. L. McNitt-Gray[1]
[1]University of Southern California, Los Angeles, CA

PS-Thurs-A-203
Biphasic Finite Element Modeling of Soft Tissue Contact Using Augmented Lagrangian Method
H. Guo[1], and R. L. Spilker[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-Thurs-A-204
Timing Transponder and GPS Applications for Endurance Athletics
T. J. Malkinson[1]
[1]SAIT Polytechnic, Calgary, AB, Canada

PS-Thurs-A-205
Validation Study of a Lower Extremity Musculoskeletal Model for Drop Landing and Stop Jump Tasks
J. S. Akins[1], and T. C. Sell[1]
[1]Neuromuscular Research Laboratory, University of Pittsburgh, Pittsburgh, PA

PS-Thurs-A-206
Varying the Frequency Step in Acoustic Reflectometry
E. R. Vazquez Ceron[1], J. H. Pierluissi[2], E. M. Rodriguez[1], V. R. Barrales Guadarrama[1], and R. Barrales Guadarrama[1]
[1]Universidad Autonoma Metropolitana, Mexico D.F., Mexico, [2]The University of Texas at El Paso, El Paso, TX

PS-Thurs-A-207
A Virtual Reality System for Diagnosing and Analyzing the Effectiveness of Treatment Methods for Schizophrenia
J. T. Ash[1], J. M. Hughes[1], and T. V. Papathomas[1]
[1]Rutgers University, Piscataway, NJ

PS-Thurs-A-208
An Evaluation of the Effects of Mass Scaling on Regional and Global Finite Element Human Body Models
N. A. Vavalle[1,2], D. P. Moreno[1,2], F. S. Gayzik[1,2], and J. D. Stitzel[1,2]
[1]Virginia Tech Wake Forest Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

PS-Thurs-A-209
Shape Efects in the Selective Thermal Ablation of Tumor Tissues with Superparamagnetic Nanoparticles
A. Cervadoro[1], S. Sarangi[2], A. Brazdeikis[2], and P. Decuzzi[1]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]University of Houston, Houston, TX[1]University of Oklahoma, Norman, OK, [2]University of Texas at Dallas, Richardson, TX

PS-Thurs-A-210
A Model for Intramuscular Fluid Pressure in a Fusiform Skeletal Muscle During Contraction and Stretch
L. Causey[1], S. Weinbaum[1], and S. Cowin[1]
[1]The City College of New York, New York, NY

PS-Thurs-A-211
Tendon Transfer of Biarticular Muscles Reduces Balance Recovery: A Computer Simulation Study
A. E. Clark[1], A. Seth[2], and J. A. Reinbolt[1]
[1]The University of Tennessee Knoxville, Knoxville, TN, [2]Stanford University, Stanford, CA

PS-Thurs-A-212
Multi-scale Mathematical Modeling to Support Drug Development
D. A. Nordsletten[1], B. Y. Yankama[2], R. Umeton[3], V. S. Ayyadurai[2], and C. F. Dewey, Jr.[2]
[1]King's College, U. London, London, United Kingdom, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]Sapienza University, Rome, Italy

Track: Tissue Engineering

Bioinspired Materials

PS-Thurs-A-213
Engineered Basal Lamina Membrane for Biomedical Applications
D. Tamuly[1], S. Banda[1], S. Vasudevan[1], P. Abhyankar[1], S. Pandey[1], and Y-T. Kim[1]
[1]University of Texas at Arlington, Arlington, TX

PS-Thurs-A-214
Strain Dependent Molecular Changes in Protein nanoFabrics
L. F. Deravi[1], P. W. Alford[1], B. E. Dabiri[1], A. Grosberg[1], and K. K. Parker[1]
[1]Disease Biophysics Group, Harvard University, Cambridge, MA

Track: Tissue Engineering

Bioreactors and Bioprocessing in Tissue Engineering

PS-Thurs-A-215
Perfusion Bioreactor Accelerates Cryoprotective Agent Permeation into Porcine Articular Cartilage
W. H. Dahl[1], K. G. BrockBank[2], E. D. Greene[2], and T. M. Wick[1]
[1]The University of Alabama at Birmingham, Birmingham, AL, [2]Cell and Tissue Systems, Inc., Charleston, SC

PS-Thurs-A-216
Application of Novel Materials and Bone Morphogenetic Protein-7 in Bioartificial Kidneys
F. Tasnim[1], M. Ni[1], M. S. Ibrahim[1], Y. O. Zay[1], J. Y. Ying[1], and D. Zink[1]
[1]Institute of Bioengineering and Nanotechnology, Singapore, Singapore

PS-Thurs-A-217
Scaffold-free Tissue Engineered Cartilage using Through-thickness Perfusion
E. Gilbert[1], and S. Elder[1]
[1]Mississippi State University, Starkville, MS

PS-Thurs-A-218
Bioreactor Design for Characterization of Effect of Nonchemical Signals on Rabbit Corneal Fibroblasts
E. K. Leonard[1], and E. J. Orwin[1]
[1]Harvey Mudd College, Claremont, CA

PS-Thurs-A-219
Electrospun Scaffolds That Mimic the Native Microstructure of Arteries
W-C. Chao[1], H-Y. Tuan-Mu[1], and J-J. Hu[1]
[1]Department of Biomedical Engineering, National Cheng Kung University, Tainan, Taiwan

PS-Thurs-A-220
Optimizing Oxygen Delivery to a Novel Liver Bioreactor: a Direct 3D Simulation Approach
G. Shi[1], and R. Coger[1]
[1]University of North Carolina at Charlotte, Charlotte, NC

Track: Tissue Engineering

Cell-Biomaterial Interfaces

PS-Thurs-A-221
Engineering Bioadhesive Polyvinyl Alcohol Hydrogels for Aneurysm Treatment
M. Rafat[1], L. Rotenstein[1], J-O. You[1], and D. T. Auguste[1]
[1]Harvard University, Cambridge, MA

PS-Thurs-A-222
Broad Application of a Heptaglutamate Bone-Binding Domain to Functionalize Hydroxyapatite-containing Biomaterials
B. K. Culpepper[1], S. L. Bellis[1], and A. A. Sawyer[2]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Freelance science editor, Singapore, Singapore

PS-Thurs-A-223
Micropatterned Hydrogel Substrates of Tunable Stiffness for Cell Migration Studies
J. M. Charest[1], C. M. Kraning-Rush[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

PS-Thurs-A-224
PLA and PLA-Ionomeric Thin Films Influence Osteoblast Cell Differentiation
C. T. Gomillion[1], R. K. Lakhman[2], R. M. Kasi[2], R. A. Weiss[3], L. T. Kuhn[1], and A. J. Goldberg[1]
[1]Department of Reconstructive Sciences, University of Connecticut Health Center, Farmington, CT, [2]Institute of Materials Science, University of Connecticut, Storrs, CT, [3]Department of Polymer Engineering, University of Akron, Akron, OH

PS-Thurs-A-225
Hydrogel Functionalization with Nucleic Acid Aptamers for Cell Adhesion
N. Chen[1], Z. Zhang[1], L. Li[1], and Y. Wang[1]
[1]University of Connecticut, Storrs, CT

PS-Thurs-A-226
Changes in Cytoskeletal Networks and Nuclear Structures at the Cell-Carbon Nanotube Interface
N. G. Durmus[1], J. R. Pietruska[1], R. H. Hurt[1], and A. B. Kane[1]
[1]Brown University, Providence, RI

PS-Thurs-A-227
Osteoblast Adhesion and Migration to Surfaces is Predicted by Microcracks
Y. Shu[1], M. Baumann[1], E. Case[1], and L. McCabe[1]
[1]Michigan State University, East Lansing, MI

PS-Thurs-A-228
Combinatorial Development of Biomaterials for Improved Human Pluripotent Stem Cell Culture
Y. Mei[1], K. Saha[2], R. Langer[1], R. Jaenisch[2], and D. G. Anderson[1]
[1]MIT, Cambridge, MA, [2]Whitehead Institute for Biomedical Research, Cambridge, MA

PS-Thurs-A-229
The Effects of of and Poly (Vinylidene Fluoride) Polymorphs with Varying Surface Topographies on Cell Attachment and Proliferation
Y. Low[1], M. Natarajan[1], F. Boey[1], and K. Ng[1]
[1]Nanyang Technological University, Singapore, Singapore

PS-Thurs-A-230
VEGF in PEG Hydrogels Up-regulates Angiogenic Pathways in Endothelial Cells
A. Porter[1], C. Klinge[1], and A. Gobin[1]
[1]University of Louisville, Louisville, KY

PS-Thurs-A-231
ECM Evaluation of MC3T3-E1 Cells Cultured on Ti alloys using Electrochemical Techniques
J. A. Bueno-Vera[1], I. de Jesus[1], and P. Sundaram[1]
[1]University of Puerto Rico Mayaguez Campus, Mayaguez, Puerto Rico

PS-Thurs-A-232
The Effects of Collagen Thin Films upon Osteogenic Differentiation Illuminated by pOBCol2.3GFP Cells
T. L. Estus[1], A. J. Goldberg[1], and L. T. Kuhn[1]
[1]University of Connecticut, Farmington, CT

PS-Thurs-A-233
Electrospun Polymeric Nanofibers for Controlling the Cellular Modulators of MAPK Signaling in Differentiating Osteoblast Cells.
T. Ozdemir[1], and J. L. Brown[2]
[1]Penn State University, State College, PA, [2]Penn State University, University Park, PA

PS-Thurs-A-234
Control of Alginate-Encapsulated Mesenchymal Stromal Cells Using Magnetic Nanoparticles
A. Gray[1], J. Barminko[1], T. Maguire[1], R. Schloss[1], and M. Yarmush[1]
[1]Rutgers University, Piscataway, NJ

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-A-235
Engineering CSS-coated PCL Electrospun Scaffolds for Antibody Immobilization and Cell Capture
C. Cohn[1], Z. Zha[1], W. Teng[1], S. Leung[1], and X. Wu[1]
[1]*University of Arizona, Tucson, AZ*

PS-Thurs-A-236
The Effects of Titanium Nanopography in Osseointegration
P. Santiago[1], P. Sundaram[1]and N. Diffoot-Carlo[1]
[1]*University of Puerto Rico, Mayaguez, PR*

PS-Thurs-A-237
Development and Characterization of Novel Hybrid Scaffolds for Tissue Engineered Cartilage Interface Studies
B. R. Mintz[1], and J. A. Cooper Jr.[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS-Thurs-A-238
Cryogenic Electrospun Silk Scaffold for In Vitro Mucosal Modeling
A. A. Bulysheva[1], G. L. Bowlin[1], and W. A. Yeudall[1]
[1]*Virginia Commonwealth University, Richmond, VA*

PLATFORM SESSIONS
Th-1

Thursday, October 13, 2011

10:30AM - 12:00PM

PLATFORM SESSION –THU – 1

Track: Translational Biomedical Engineering – OP- Thurs-1-1

Education and Promotion of Translational Biomedical Engineering I

Chair: Paul G. Yock

Convention Center – Room 11

Entrepreneurship and Product Development in Biomedical Engineering Programs – This session will feature a lively panel of faculty who lead BME programs and courses that have created environments that provide substantial experiential learning opportunities to support student engagement in translation and commercialization of biomedical innovations. Panelists will discuss emerging best practices in innovation, design, technology transfer and entrepreneurship in biomedical engineering education. This session is sponsored by the National Collegiate Inventors and Innovators Alliance (NCIIA).

Panelists include:

- Paul G. Yock, Martha Meier Weiland Professor of Medicine and Director of Biodesign, Stanford University
- Yousef Yazdi, Director of the Center for Bioengineering Innovation and Design (CBID), Johns Hopkins University
- Aileen Huang-Saad, Assistant Director of Academic Programs, College of Engineering Center for Entrepreneurship, University of Michigan
- Andrew DiMeo, Senior Design Director and Assistant Professor UNC/NCSU Joint Department of Biomedical Engineering

Track: Drug Delivery Systems – OP- Thurs-1-2

New Concepts and Applications in Drug Delivery

Chairs: Jeffrey Capadona, Suzie Pun

Convention Center – Room 12

10:30AM Thurs-1-2-A

Controlled Release of IGF-1 from a Biodegradable Matrix Improves Functional Recovery of Skeletal Muscle from Ischemia/Reperfusion

D. W. Hammers[1], C. T. Drinnan[1], R. P. Farrar[1], and L. J. Suggs[1]

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

10:45AM Thurs-1-2-B

Delivery of siRNA Nanoparticles for HSV-2 Inhibition

J. M. Steinbach[1], C. E. Weller[1], and W. M. Saltzman[1]

[1]Yale University, New Haven, CT

11:00AM Thurs-1-2-C

Characterizing Intracellular Delivery of an MK2 Inhibitor Using Cell Penetrating Peptides

J. Brugnano[1], and A. Panitch[1]

[1]Purdue University, West Lafayette, IN

11:15AM Thurs-1-2-D

A Novel Securable Hyaluronic Acid-Silk Hydrogel Composite for Controlled Drug Release

R. Elia[1], D. R. Newhide[1], P. D. Pedevillano[1], G. R. Reiss[2], M. A. Firpo[3], E. W. Hsu[3], D. L. Kaplan[1], G. D. Prestwich[3], and R. A. Peattie[1]

[1]Tufts University, Medford, MA, [2]Columbia University Medical Center, New York, NY, [3]University of Utah, Salt Lake City, UT

11:30AM Thurs-1-2-E

Engineering a Food-grade Bacterium as an Oral Delivery Vehicle for Glucoregulatory Proteins

D. T. Ng[1], and C. A. Sarkar[1]

[1]University of Pennsylvania, Philadelphia, PA

11:45AM Thurs-1-2-F

Evaluation of Polysaccharide-Modified Complexation Hydrogels for Oral Protein Delivery

M. A. Phillips[1], and N. A. Peppas[1,2]

[1]University of Texas at Austin, Austin, TX, [2]University of Texas at Austin, Austin

Track: Drug Delivery Systems – OP- Thurs-1-3

Nanotechnology Solutions to Drug Delivery - I

Chairs: Dean Ho, Jian Yang

Convention Center – Room 13

10:30AM Thurs-1-3-A

Targeted and Selective Antimicrobial Delivery System

A. T. Qureshi[1], J. A. Hobden[2], P. B. Savage[3], and D. J. Hayes[1]

[1]Louisiana State University and Louisiana Agricultural Center, Baton Rouge, LA, [2]Louisiana Health Sciences Center, New Orleans, LA, [3]Brigham Young University, Provo, UT

10:45AM Thurs-1-3-B

Superparamagnetic Iron Oxide Nanoparticles That Decrease Infection Under External Control

E. N. Taylor[1], and T. J. Webster[1]

[1]Brown University, Providence, RI

11:00AM Thurs-1-3-C

Design of Anesthetic Nanoparticle-Based Delivery Systems for Short Term Pain Management

B. D. Ulery[1], L. S. Nair[1], and C. T. Laurencin[1]

[1]University of Connecticut Health Center, Farmington, CT

11:15AM Thurs-1-3-D

Controlled Chemotherapeutic Delivery via Thermally Responsive Polymer-nanoshell Composites

L. Strong[1], M. Bikram[1], S. Sershen[1], and J. West[1]

[1]Rice University, Houston, TX

11:30AM Thurs-1-3-E

Gold Nanoparticle Based Molecular Activated Stealth Chemotherapy

A. Y. Lin[1], J. K. Young[1], L. Luo[1], L. C. Kennedy[1], and R. A. Drezek[1]

[1]Rice University, Houston, TX

11:45AM Thurs-1-3-F

Multifunctional Nanodiamond Drug Delivery Platforms for Cancer Treatment

E. K. Chow[1], L. K. Moore[2], X-Q. Zhang[2], M. Chen[2], R. Lam[2], E. Robinson[2], E. Osawa[3], and D. Ho[2,4]

[1]University of California, San Francisco, San Francisco, CA, [2]Northwestern University, Evanston, IL, [3]NanoCarbon Research Institute, Nagano, Japan, [4]Robert H, Lurie Comprehensive Cancer Center, Chicago

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Systems Biology, Bioinformatics and Computational Bioengineering – OP- Thurs-1-4

High Throughput Genomics and Computational Proteomics

Chairs: Jason Papin, Matteo Pellegrini

Convention Center – Room 14

10:30AM Thurs-1-4-A

Metabolic Network Reconstruction and Genome-scale Model of Butanol-producing Strain Clostridium beijerinckii NCIMB 8052

C. B. Milne[1], J. A. Eddy[1], H. P. Blaschek[1], and N. D. Price[1]

[1]*University of Illinois, Urbana-Champaign, Urbana, IL*

10:45AM Thurs-1-4-B

Evaluation of Normalization Methods in microRNA-Seq Data

L. Garmire[1], and S. Subramaniam[1]

[1]*University of California San Diego,, La Jolla, CA*

11:00AM Thurs-1-4-C

Systems Analysis of Epithelial Cell Response to *Clostridium difficile* Toxins

K. D'Auria[1], G. Donato[1], M. Gray[1], G. Kolling[1], C. Warren[1], E. Hewlett[1], and J. Papin[1]

[1]*University of Virginia, Charlottesville, VA*

11:15AM Thurs-1-4-D

A Systems Approach to Identifying the Global Effects of Genetic Mutations on Cancer Metabolism

E. M. Blais[1], R. W. Tilghman[1], D. Walters[1], T. W. Bauer[1], J. T. Parsons[1], and J. A. Papin[1]

[1]*University of Virginia, Charlottesville, VA*

11:30AM Thurs-1-4-E

Analyzing DNA Methylation Profiles in Mice Using Reduced Representation Bisulfite Sequencing (RRBS)

P-Y. Chen[1], A. K. Ganguly[1], L. Rubbi[1], S. Devaskar[1], and M. Pellegrini[1]

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

11:45AM Thurs-1-4-F

Robust Clustering of ERBB Phosphorylation Dynamics Predicts Protein Macromolecular Complex Formation and Reveals a Role for Novel Components of the ERBB Network

K. Naegle[1], F. M. White[1], D. A. Lauffenburger[1], and M. B. Yaffe[1]

[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Neural Engineering – OP- Thurs-1-5

Cellular and Molecular Neurophysiology

Chairs: Lance Kam, David Schaffer

Convention Center – Room 15

10:30AM Thurs-1-5-A

Mapping Calcium-activated Potassium Channels (SK) in Living Neurons Using Single Molecule Force Spectroscopy

J. L. Maciaszek[1], A. Tzingounis[1], and G. Lykotrafitis[1]

[1]*University of Connecticut, Storrs, CT*

10:45AM Thurs-1-5-B

Synaptic Pathway-Dependent Effects of DC Electric-Fields In Rat Cortical Brain Slices

A. Rahman[1], D. Reato[1], L. C. Parra[1], and M. Bikson[1]

[1]*City College of New York, CUNY, New York, NY*

11:00AM Thurs-1-5-C

Multicompartmentalized Microfluidic Primary Culture Platform for the Study of Fast Axonal Transport in Neurons

H. Caicedo[1], T. Sarma[1], G. Pigino[1], and S. Brady[1]

[1]*University of Illinois at Chicago, Chicago, IL*

11:15AM Thurs-1-5-D

Spinal Neuronal Hyperexcitability is Induced Within 1 Day of a Painful Facet Joint Injury

N. Crosby[1], and B. A. Winkelstein[1]

[1]*University of Pennsylvania, Philadelphia, PA*

11:30AM Thurs-1-5-E

Migration of Microglia Is Modulated by Amyloid Beta during the Progression of Alzheimer Disease

H. Cho[1,2], E. Hudry[1], M. Toner[1,2], H. T. Bradley[1], and D. Irimia[1,2]

[1]*Massachusetts General Hospital, Charlestown, MA,* [2]*Harvard Medical School, Charlestown, MA*

11:45AM Thurs-1-5-F

Very-low Carbohydrate Diet Reduces Long-Term Potentiation n the Dentate Gyrus of Freely-behaving Rats

D. N. Ruskin[1], J. L. Koranda[2], S. A. Masino[1], and J. H. Blaise[1]

[1]*Trinity College, Hartford, CT,* [2]*University of Chicago, Chicago, IL*

Track: Orthopedic and Rehabilitation Engineering – OP- Thurs-1-6

Orthopedic Bioengineering

Chairs: Lawrence Bonassar, Pamela Yelick

Convention Center – Room 16

10:30AM Thurs-1-6-A

Enzyme-Sensitive Adhesives for On-Demand Separation in 3D Co-Culture Platforms

S. K. Hamilton[1], N. C. Bloodworth[1], C. S. Massad[1], T. M. Hammoudi[1], H. Lu[1], and J. S. Temenoff[1,2]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

10:45AM Thurs-1-6-B CME

Analysis of Bone Ongrowth and Ingrowth of Retrieved Porous Tantalum-Coated Tibial Trays

J. A. Hanzlik[1], D. W. MacDonald[1], J. S. Day[1,2], G. R. Klein[3], H. B. Levine[3], M. A. Hartzband[3], C. M. Rimnac[4], J. Parvizi[5], and S. M. Kurtz[1,2]

[1]*Drexel University, Philadelphia, PA,* [2]*Exponent Inc, Philadelphia,* [3]*Hartzband Center for Hip & Knee Replacement, Paramus, NJ,* [4]*Case Western Reserve University and University Hospitals Case Medical Center, Cleveland, OH,* [5]*Rothman Institute, Philadelphia, PA*

11:00AM Thurs-1-6-C

Injury Risk from Repeated Axial Loading in the Lumbar Spine

A. L. Schmidt[1], C. R. Bass[1], K. A. Lyons[1], G. Paskoff[2], and B. Shender[2]

[1]*Duke University, Durham, NC,* [2]*NAVAIR, Patuxent River, MD*

11:15AM Thurs-1-6-D

Inadequate Bone Compensatory Approaches to Diet-Induced Obesity

A. Tsoi[1], M. Botros[1], E. Fievisohn[1], M. Chan[1], and C. Rubin[1]

[1]*Stony Brook University, Stony Brook, NY*

11:30AM Thurs-1-6-E

Bone Tissue Quality Determination of Mice Through Novel Reference Point Indentation Technique

M. Lendhey[1], J. Basta-Pliakic[1], O. Kennedy[1], D. Brimer[2], and M. Schaffler[1]

[1]*TheCity College of CUNY, New York, NY,* [2]*Active Life Scientific Inc.,Santa Barbara, CA*

11:45AM Thurs-1-6-F CME

Partial Preservation and Restoration of Bone Lost to Disuse with Bisphosphonate and Remobilization

P. E. Palacio Mancheno[1], D. Bajaj[2], M. B. Schaffler[1], L. Cardoso[1], and J. C. Fritton[2]

[1]*City College of New York, New York, NY,* [2]*New Jersey Medical School / University of Medicine & Dentistry of New Jersey, Newark, NJ*

PLATFORM SESSIONS Th-1

Track: Biomedical Imaging and Optics – OP-Thurs-1-7

Novel Biomedical Imaging and Microscopy

Chairs: Michael Choma, Elizabeth Hillman

Convention Center – Room 17

10:30AM Thurs-1-7-A CME
Optical Sensing of Cell Nano-Architecture During Early Carcinogenesis: Implications to Colorectal Cancer Screening
D. Damania[1], H. Subramanian[1], Y. Zhu[1], L. Cherkezyan[1], Y. Stypula[1], M. Delacruz[2], C. A. White[1], P. Pradhan[1], H. K. Roy[2], and V. Backman[1]
[1]Northwestern University, Evanston, IL, [2]Northshore University Healthsystem, Evanston, IL

10:45AM Thurs-1-7-B CME
Real-time Optical-Sectioning Microscopy for Guiding Brain umor Resection Using Molecular Probes
S. Y. Leigh[1], D. Wang[1], M. J. Mandella[2], O. Solgaard[2], C. H. Contag[2], and J. T. Liu[1]
[1]Stony Brook University, Stony Brook, NY, [2]Stanford University, Stanford, CA

11:00AM Thurs-1-7-C CME
Lensless Optical Tomography On a Chip
S. O. Isikman[1], W. Bishara[1], S. Mavandadi[1], F. W. Yu[1], S. Feng[1], R. Lau[1], and A. Ozcan[1]
[1]University of California, Los Angeles, CA

11:15AM Thurs-1-7-D CME
Photothermal Optical Coherence Tomography with Gold Nanorod Contrast Agents
J. Tucker - Schwartz[1], T. Meyer[1], C. Duvall[1], and M. Skala[1]
[1]Vanderbilt University, Nashville, TN

11:30AM Thurs-1-7-E CME
Microfluidic Phenotyping of Cilia-Driven Fluid Flow Using Optical Coherence Tomography-Based Particle Tracking Velocimetry
S. Jonas[1], D. Bhattacharya[1], M. K. Khokha[1], and M. A. Choma[1]
[1]Yale University, New Haven, CT

11:45AM Thurs-1-7-F CME
In Vivo Imaging of NIR FRET in Small Animals using Time-resolved Fluorescence Molecular Tomography
V. Venugopal[1], R. Waniewski[1], M. Barroso[2], and X. Intes[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Albany Medical College, Albany, NY

Track: New Frontiers in Biomedical Engineering – OP-Thurs-1-8

Immunonobioengineering and Regenerative Medicine

Chairs: Yupeng Chen, Frank Marini

Convention Center – Room 21

10:30AM Thurs-1-8-A
Enzyme-free Method for Amplifying Detection of Cytokines Released by Single Immune Cells *Ex Vivo*
J. Choi[1], K. R. Love[1], Y. Gong[1], T. M. Gierahn[1], and J. Love[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

10:45AM Thurs-1-8-B
Stimulation of CD8+ T-cell Responses by Mucosal Vaccination Via Toll-Like Receptor Agonist-Carrying Nanoparticles
A. V. Li[1], M. Yen[1], J. Velazquez[1], J. Elkhader[1], and D. J. Irvine[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD

11:00AM Thurs-1-8-C
Identification of Therapeutic Agent that Expands Muscle Stem Cells in Bioengineered Niche Platform
B. D. Cosgrove[1], P. M. Gilbert[1], and H. M. Blau[1]
[1]Stanford University School of Medicine, Stanford, CA

11:15AM Thurs-1-8-D
Engineered *In Vivo* Erythrocyte-Binding Antigen Induces Immune Tolerance
S. Kontos[1], K. Y. Dane[1], and J. A. Hubbell[1,2]
[1]Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, [2]University of Miami Miller School of Medicine, Miami, FL

11:30AM Thurs-1-8-E
Poly(propylene) Sulfide Nanoparticles for Immunomodulating the Tumor Microenvironment
I. C. Kourtis[1], H. Sachiko[1], S. Kontos[1], J. A. Hubbell[1], and M. A. Swartz[1]
[1]École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

11:45AM Thurs-1-8-F
Mechanosensitive Costimulation of T Lymphocytes
E. Judokusumo[1], E. Tabdanov[1], M. Dreyer[1], B. Aguilar[1], and L. Kam[1]
[1]Columbia University in the City of New York, New York, NY

Track: Tissue Engineering – OP-Thurs-1-9

Host Response to Biomaterials

Chairs: Julie Babensee, Lijie Zhang

Convention Center – Room 22

10:30AM Thurs-1-9-A
Polymethacrylates Mediated Differential Dendritic Cell Phenotype Through Distinct Transcription Factor Activation Profiles
P. Kou[1], R. Patel[1], N. Pallassana[2], B. Cunningham[2], J. Kohn[2], and J. E. Babensee[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Rutgers University, Piscataway, NJ

10:45AM Thurs-1-9-B
Examining the Effects of Early Stage Inflammation on Implantable Glucose Sensor Performance
M. T. Novak[1], F. Yuan[1], and W. M. Reichert[1]
[1]Duke University, Durham, NC

11:00AM Thurs-1-9-C
Macrophages Potentially Promote Stable Vascularization of Engineered Tissue Constructs
C-W. Hsu[1], R. A. Poché[1], J. E. Saik[2], T. J. Vadakkan[1], J. L. West[2], and M. E. Dickinson[1]
[1]Baylor College of Medicine, Houston, TX, [2]Rice University, Houston, TX

11:15AM Thurs-1-9-D CME
Spatiotemporal Effects of a Controlled-release Anti-inflammatory Drug on Host Response
T. T. Dang[1], K. M. Bratlie[1,2], S. R. Bogatyrev[1,2], X. Y. Chen[1], R. Langer[1], and D. G. Anderson[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Children's Hospital Boston, Boston, MA

11:30AM Thurs-1-9-E
Evaluation of Macroporous Scaffolds and MSCs on Engraftmentin a Nonhuman Primate Model
C. L. Stabler[1], S. Sukert[1], A. Rabassa[1], M. A. Willman[1], E. Pedraza[1], N. Kenyon[1], C. Ricordi[1], D. M. Berman[1], and N. S. Kenyon[1]
[1]University of Miami, Miami, FL

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

11:45AM Thurs-1-9-F
Inflammatory Response-mediated Regulation of Angiogenesis in Bioactive Hydrogels
A. L. Zachman[1], C. M. Bronikowski[1], O. Ortiz[2], K. Zienkiewicz[1], S. W. Crowder[1], S. A. Guelcher[1], J. Kohn[2], H. Kleinman[3], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN, [2]Rutgers University, Piscataway, NJ, [3]National Institute of Health, Bethesda, MD

Track: Tissue Engineering – OP-Thurs-1-10

Cardiovascular Tissue Engineering - I

Chairs: Karen Christman, Yi Hong
Convention Center – Room 23

10:30AM Thurs-1-10-A
Directed Alignment in 3D Micropatterned Cardiac Tissue Improves Morphology and Contractile Function
J. W. Nichol[1,2], S. Yamanlar[1,3], C. B. Hutson[1,3], S. Al-Haque[3,4], H. Bae[1,3], Y. C. Chen[1,3], L. Nguyen[1,3], M. Nikkhah[1,3], P. Zorlutuna[1,3], D. M. Cropek[5], and A. Khademhosseini[1,3]
[1]Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, [2]Endicott College, Beverly, MA, [3]Harvard Medical School, Brigham and Women's Hospital, Cambridge, MA, [4]University of Toronto, Toronto, Canada, [5]US Army Corps of Engineers, Champaign, IL

10:45AM Thurs-1-10-B
The Effect of Varying Frequency of Mechanical Stimulation on Engineered Myocardium Twitch Force
K. Y. Ye[1], and L. D. Black[1]
[1]Tufts University, Medford, MA

11:00AM Thurs-1-10-C
Long-Term Remodeling of a Tissue Engineered Pulmonary Arterial Conduit
C. E. Eckert[1], D. Gottlieb[2], J. E. Mayer[2], and M. Sacks[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Children's Hospital Boston, Boston, MA

11:15AM Thurs-1-10-D CME
Antigen Removal Does Not Compromise Xenograft Properties or Correlate to Histological Acellularity
M. L. Wong[1], and L. G. Griffiths[1]
[1]University of California, Davis, Davis, CA

11:30AM Thurs-1-10-E
Stiffness Mediated Cardiac Differentiation of Human Mesenchymal Stem Cells in an Injectable Hydrogel
Z. Li[1], X. Guo[1], and J. Guan[2]
[1]Ohio State University, Columbus, OH, [2]Ohio State University, Columbus, OH

11:45AM Thurs-1-10-F
Therapeutic Cardiac Patch with Delivery and Differentiation of Embryonic Stem Cells
M. K. Gupta[1], D. K. Jung[1], J. M. Walthall[1], R. Venkataraman[1], S. W. Crowder,[1], S. S. Yu[1], F. J. Baudenbacher[1], A. K. Hatzopoulos[1], and H. J. Sung[1]
[1]Vanderbilt University, Nashville, TN

Track: Devices: Nano to Micro – OP-Thurs-1-1*

Micro and Nanostructured Biomaterials - I

Chairs: Hojae Bae, Deok-Ho Kim
Convention Center – Room 24

10:30AM Thurs-1-11-A
Cell-Derived, Biomimetic Micropatterning Using Image Guided Laser Scanning Lithography
J. H. Slater[1], J. C. Culver[2], M. E. Dickinson[2], and J. L. West[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

10:45AM Thurs-1-11-B
Transparent, Elastomeric and Tough Bio-Nanocomposite Hydrogels from Poly(ethylene glycol) and Silicate Nanoparticles
A. K. Gaharwar[1], C. P. Rivera[1], C-J. Wu[1], and G. Schmidt[1]
[1]Purdue University, West Lafayette, IN

11:00AM Thurs-1-11-C
Halloysite Nanotube Coating Applications for Enhanced Capture and Reprogramming of Circulating Tumor Cells
A. D. Hughes[1], J. C. Mattison[1], K. Rana[1], B. Greene[2], and M. R. King[1]
[1]Cornell University, Ithaca, NY, [2]BioCytics, Inc., Huntersville, NC

11:15AM Thurs-1-11-D CME
Reducing Infection on Nanomodified Endotracheal Tubes: A Dynamic Analysis
M. Machado[1], K. M. Tarquinio[2], and T. J. Webster[1]
[1]Brown University, Providence, RI, [2]Rhode Island Hospital, Providence, RI

11:30AM Thurs-1-11-E
Selenium Nanoclusters for the Prevention of Polyvinyl Chloride-related Infections
J. F. Ramos[1], P. A. Tran[2], and T. J. Webster[1]
[1]Brown University, Providence, RI, [2]Rhode Island Hospital, Providence, RI

11:45AM Thurs-1-11-F
Micro-patterned Homodynamic Niches for Endothelial Regulation of Coagulation on Prosthetic Cardiovascular Devices
C. Frendl[1], S. Tucker[1], A. Garcia[2]andJ. Butcher[1]
[1]Cornell University, Ithaca, NY, [2]Georgia Institute of Technology, Atlanta, GA

**Supported by an unrestricted educational grant from Boston Scientific*

Track: Cardiovascular Engineering – OP-Thurs-1-12

Cardiovascular Mechanotransduction - I

Chairs: Deborah Leckband, Michael Smith
Convention Center – Room 25

10:30AM Thurs-1-12-A
Effects of Changing Flow Direction on Endothelial Cells Studied by a Novel *In Vitro* Flow System
C. Wang[1], and M. Schwartz[1,2]
[1]University of Virginia, Charlottesville, VA, [2]Yale University, New Haven, CT

10:45AM Thurs-1-12-B
Endothelial Glycocalyx Visualization and Mechanotransduction via Heparan Sulfate and Glypican-1
E. E. Ebong[1,2], D. C. Spray[2], and J. M. Tarbell[1]
[1]City College of New York, New York, NY, [2]Albert Einstein College of Medicine, Bronx, NY

11:00AM Thurs-1-12-C
Fibronectin Assembly Regulates Structural Dynamics and Cell Migration Under Shear Stress
R. E. Evans[1], and B. P. Helmke[1]
[1]University of Virginia, Charlottesville, VA

11:15AM Thurs-1-12-D CME
Laser Speckle Flowmetry for Measuring Hemodynamic Changes Throughout Large Microvascular Networks
J. K. Meisner[1], S. Sumer[1], J. Song[1], and R. J. Price[1]
[1]University of Virginia, Charlottesville, VA

11:30AM Thurs-1-12-E
Multiscale Structural and Functional Adaptation to Extrinsic Cyclic Loading in Engineered Cardiac Tissue
M. L. McCain[1], S. P. Sheehy[1], J. A. Goss[1], and K. K. Parker[1]
[1]Disease Biophysics Group, Harvard University, Cambridge, MA

11:45AM Thurs-1-12-F
Effects of Shear Stress on the Forces Across Endothelial Junction Molecules VE-cadherin and PECAM-1
D. E. Conway[1], and M. A. Schwartz[1]
[1]*University of Virginia, Charlottesville, VA*

Track: Cardiovascular Engineering – OP-Thurs-1-13

Cardiovascular Modeling and Measurement - I

Chairs: Kristen Billiar, Lauren Black
Convention Center – Room 26

10:30AM Thurs-1-13-A CME
Mechanical Flow Restoration in Acute Ischemic Stroke: A Model System of Cerebrovascular Occlusion
J. Y. Chueh[1], A. K. Wakhloo[1], and M. J. Gounis[1]
[1]*University of Massachusetts Medical School, Worcester, MA*

10:45AM Thurs-1-13-B
Cohesive Zone Modeling of Abdominal Aortic Aneurysm Rupture
É. O Máirtín[1], and P. McGarry[1]
[1]*National University of Ireland, Galway, Galway, Ireland*

11:00AM Thurs-1-13-C CME
Frequency-dependent Electrochemical Impedance Analysis for Sensitive and Specific Characterization of Rupture-prone Atherosclerotic Lesions
F. Yu[1], X. Dai[1], and T. Hsiai[1]
[1]*University of Southern California, Los Angeles, CA*

11:15AM Thurs-1-13-D
A 3D Microstructual Artery Model with Collagen Fiber Orientation
H. P. Wagner[1], Q. Wu[1], A. Yeh[1], and J. Humphrey[2]
[1]*Texas A&M University, College Station, TX,* [2]*Yale University, New Haven, CT*

11:30AM Thurs-1-13-E
MEA-based Cardiac Muscle Fiber Model to Measure Electrical Conduction Across the Laser-patterned Stem Cells Bridge
Z. Ma[1], H. Yang[1], Q. Liu[1,2], J. X. Yun[1], and B. Z. Gao[1]
[1]*Clemson University, Clemson, SC,* [2]*Jinan University, Guangzhou, China, People's Republic of*

11:45AM Thurs-1-13-F CME
Estimation of Platelet Adhesion Potential in the Left Coronary Artery
D. A. Rubenstein[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

Track: Respiratory Engineering – OP-Thurs-1-14

Multiscale Behavior in the Lung

Chairs: Robb Glenny, Tilo Winker
Convention Center – Room 27

10:30AM Thurs-1-14-A
Emergence of Matched Airway and Vascular Trees from Fractal Rules
R. W. Glenny[1]
[1]*University of Washington, Seattle, WA*

10:45AM Thurs-1-14-B
Loss of Fractal Scaling in CT Images of Patients with Lymphangioleiomyomatosis
H. Parameswaran[1], S. D. Amin[1], G. Finlay[2], and B. Suki[1]
[1]*Boston University, Boston, MA,* [2]*Tufts Medical Center, Boston, MA*

11:00AM Thurs-1-14-C
Multiscale Deposition of Aerosols in Real vs. Model Airway Tree Geometry
T. Gengenbach[1], V. Heuveline[1], A. Soualah[2], B. Sapoval[2], J. B. Grotberg[3], and M. Filoche[2]
[1]*Karlsruhe Institute of Technology, Karlsruhe, Germany,* [2]*Ecole Polytechnique, Palaiseau, France,* [3]*University of Michigan, Ann Arbor, MI*

11:15AM Thurs-1-14-D
A Multiscale Bidirectionally Coupled Model of The Rodent Respiratory System
S. Kabilan[1], A. P. Kuprat[1], K. R. Minard[1], R. E. Jacob[1], J. P. Carson[1], M. P. Hlastala[2], R. A. Corley[1], and D. R. Einstein[1]
[1]*Pacific Northwest National Laboratory, Richland, WA,* [2]*University of Washington, Seattle, WA*

11:30AM Thurs-1-14-E
Modeling and Quantifying Heterogeneity of Airway Narrowing and the Contribution to Lung Mechanics
D. Leary[1], A. Braune[2], T. Winkler[2], and G. Maksym[1]
[1]*Dalhousie, Halifax, NS, Canada,* [2]*Massachusetts General Hospital and Harvard Medical School, Boston, MA*

11:45AM Thurs-1-13-F
Emergent Behavior in Pulmonary Multiscale Models
T. Winkler[1]
[1]*Massachusetts General Hospital and Harvard Medical School, Boston, MA*

Track: Cellular and Molecular Engineering – OP-Thurs-1-15

Symposium in Honor of Shu Chien's Birthday - I

Chairs: Song Li, Geert W. Schmid-Schonbein
Marriott – Ballroom B

10:30AM Thurs-1-15-A
Proteolytic Receptor Cleavage and Failure in Mechanotransduction in the Metabolic Syndrome
G. W. Schmid-Schönbein[1], and A. Chen[1]
[1]*UCSD, La Jolla, CA*

10:45AM Thurs-1-15-B
From a Proteomic-scale method that probes Conformation to Nuclear Mechanobiology of Stem Cells
D. E. Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA*

11:10AM Thurs-1-15-C
The Role of the Glycocalyx in Mechanotransduction
J. M. Tarbell[1], E. Ebong[1], M. Nikmanesh[1], and Z. Shi[1]
[1]*City College / CUNY, New York, NY*

11:35AM Thurs-1-15-D
Mechanobiology of Vascular Stem Cells
Z. Tang[1], A. Wang[1], R. Diop[1], X. Li[1], and S. Li[1]
[1]*University of California, Berkeley, Berkeley, CA*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Thursday, October 13, 2011

1:30PM - 5:00PM

POSTER SESSION – THU- B

POSTER SESSION **ThB**

Track: Cardiovascular Engineering

Cardiovascular Mechanotransduction

PS-Thurs-B-1

Anisotropy Promotes a Mature Gene Expression Profile in Cultured Neonatal Rat Ventricular Myocytes

S. P. Sheehy[1], P. Qin[2], E. Gordon[2], A. Grosberg[1], L. Yoon[3], J. G. Falls[3], J. Goss[1], T. Pipes[2], X. Xu[2], R. Willette[2], E. Hu[2], and K. K. Parker[1]

[1]*Disease Biophysics Group, Wyss Institute for Biologically-Inspired Engineering, Harvard University, Cambridge, MA,* [2]*Glaxo Smith Kline, Philadelphia, PA,* [3]*Glaxo Smith Kline, Research Triangle Park, NC*

PS-Thurs-B-2

Variability on Stretch Rescues the Mitochondrial Respiratory Chain in Bovine Smooth Muscle Cells

N. Martinez[1], E. Bartolák-Suki[1], and B. Suki[1]

[1]*Boston University, Boston, MA*

PS-Thurs-B-3

Endothelial ILK in a Novel Smad2 Dependent Mechanosensitive Signaling Pathway

R. D. Shepherd[1], J. Deng[1], M. P. Walsh[1], and K. D. Rinker[1]

[1]*University of Calgary, Calgary, AB, Canada*

PS-Thurs-B-4

Syndecan-1 Mediates Endothelial Cell Mechanotransduction in Response to Shear Stress

P. Voyvodic[1], and A. Baker[1]

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

PS-Thurs-B-5

Substrate Stiffness Promotes Vascular Smooth Muscle Cell Podosome Formation

J. Huynh[1], and C. A. Reinhart-King[1]

[1]*Cornell University, Ithaca, NY*

PS-Thurs-B-6

Shear Stress Regulates Expression of DAPK in Suppressing TNFα-Induced Endothelial Apoptosis

K. Rennier[1], and J. Y. Ji[1]

[1]*Indiana University Purdue University Indianapolis, Indianapolis, IN*

PS-Thurs-B-7

Heparan Sulfate Proteoglycan Mediates Shear Stress-induced Endothelial Gene Expression in Mouse Embryonic Stem Cell-Derived Endothelial Cells

M. Nikmanesh[1], Z-D. Shi[1], and J. M. Tarbell[2]

[1]*The City College of New York/CUNY, New York, NY,* [2]*The City College of New York/CUNY, New York*

PS-Thurs-B-8

Leukocyte Sensitivity to Fluid Flow Stimulation Depends on Membrane Cholesterol-Dependent Fluidity

X. Zhang[1], J. Hurng[2], D. Rateri[1], A. Daugherty[1], and H. Shin[1]

[1]*University of Kentucky, Lexington, KY,* [2]*University of California San Diego, La Jolla, CA*

PS-Thurs-B-9

Variable Stretch Regulates NF B Translocation in Cultured Aortic Smooth Muscle Cells

S. Mitra[1], B. Suki[1], and E. Bartolák-Suki[1]

[1]*Boston University, Boston, MA*

PS-Thurs-B-10

Decoupling of Hemodynamic Parameters *In Vitro* to Determine Their Effect on Vascular Cell Dysfunctions

L. Hofmeister[1], C. Augusty[1], A. Boone[1], I. Baird[1], D. K. Jung[1], J. Edd[1], and H-J. Sung[1]

[1]*Vanderbilt University, Nashville, TN*

PS-Thurs-B-11

Incorrect Stent Sizing Promotes Intimal Hyperplasia: Role of Endothelial Shear Stress and Intramural Wall Stress

H. Y. Chen[1], I. D. Moussa[2], D. L. Bhatt[3], and G. S. Kassab[4]

[1]*Purdue University, Indianapolis, IN,* [2]*Weill Cornell Medical Center, New York, NY,* [3]*Harvard Medical School, Boston, MA,* [4]*IU-Purdue, Indianapolis, IN*

Track: Cardiovascular Engineering

Heart Valve Structure and Function

PS-Thurs-B-12

Bioresorbable Acellular Xenograft for Tissue Engineered Mitral and Tricuspid Valve Repair

M. W. Gerdisch[1], and L. Aklog[2]

[1]*St, Francis Heart Center, Indianapolis, IN,* [2]*St. Joseph's Hospital and Medical Center, Phoenix, AZ*

PS-Thurs-B-13

Vortex Instability of Transmitral Flow

A. Falahatpisheh[1,2], and A. Kheradvar[1,2]

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

PS-Thurs-B-14

Mechanical Properties of Sclerotic Aortic Valve Leaflets

O. Chebotarev[1], K. L. Sider[1], and C. A. Simmons[1]

[1]*University of Toronto, Toronto, ON, Canada*

PS-Thurs-B-15

Comparison of Aortic Valve Mechanical Properties between Human and Common Animal Models

C. Martin[1], T. Pham[1], and W. Sun[1]

[1]*University of Connecticut, Storrs, CT*

PS-Thurs-B-16

Quantification of Structural Compliance of Aged Human and Porcine Aortic Root

K. Li[1], Q. Wang[1], and W. Sun[1]

[1]*University of Connecticut, Storrs, CT*

PS-Thurs-B-17

Assessment of Aortic Root Geometry from 64-slice MDCT Images: A Comparison of Methods

G. A. Book[1,2], S. Ortiz[1], Q. Wang[1], C. Primiano[3], and W. Sun[1]

[1]*University of Connecticut, Storrs, CT,* [2]*Hartford Hospital, Hartford,* [3]*Hartford Hospital, Hartford, CT*

PS-Thurs-B-18

Computational Fluid Dynamics Study of Transcatheter Aortic Valve Replacement: Impact of Deployed Device Orientation and Height

E. M. Sirois[1], Q. Wang[1], S. Kodali[2], and W. Sun[1]

[1]*University of Connecticut, Storrs, CT,* [2]*Columbia University, New York, NY*

PS-Thurs-B-19

Fiber Pattern in Heart Valve Leaflet Material Controls Valve Shape and Stresses

P. E. Hammer[1,2], R. D. Howe[2], and P. J. del Nido[1]

[1]*Children's Hospital, Boston, MA,* [2]*Harvard School of Engineering and Applied Sciences, Cambridge, MA*

POSTER SESSION ThB

PS-Thurs-B-20
Effect of Gold Nanorods and Sample Preparation Methods on Mechanical Properties of Porcine Heart Valves
H. L'Ecuyer[1], S. Deitch[1], E. Goldsmith[2], and D. Dean[1]
[1]Clemson University, Clemson, SC, [2]University of South Carolina, Columbia, SC

PS-Thurs-B-21
The Influence of Cyclic Pressure on the Biomechanical Properties of Aortic Valves
V. Myles[1], J. Warnock[1], and J. Liao[1]
[1]Mississippi State University, Mississippi State, MS

PS-Thurs-B-22
Characterization of Collagen Fiber Orientation by Multiphoton Imaging in Loading-Unloading Phases
S. Alavi[1,2], E. Botvinick[1,2], and A. Kheradvar[1,2]
[1]University of California, Irvine, Irvine, CA, [2]The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

PS-Thurs-B-23
Effect of Asymmetric Mitral Valve Geometry on the Mitral Valve Dynamics
Y. Rim[1], D. D. McPherson[1], K. B. Chandran[2], and H. Kim[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]The University of Iowa, Iowa City, IA

PS-Thurs-B-24
GPCR Targeted Control of TGF-(β)1 Signaling in AVICs
J. D. Hutcheson[1], and W. D. Merryman[1]
[1]Vanderbilt University, Nashville, TN

PS-Thurs-B-25
eNOS-Phosphorylation Regulates Myocardial Perfusion and the Outcome of Ischemic Postconditioning
T. Pong[1,2], M. Scherrer-Crosbie[1,3], and P. L. Huang[1,3]
[1]Massachusetts General Hospital, Boston, MA, [2]Harvard-MIT, Cambridge, [3]Harvard Medical School, Boston

Track: Cellular and Molecular Engineering

Mechanotransduction & Mechanobiology

PS-Thurs-B-26
Vinculin Phosphorylation and Activation
J. Golji[1], T. Wendorff[1], and M. R. Mofrad[1]
[1]University of California, Berkeley, CA

PS-Thurs-B-27
The Initial Orientation of Endothelial Cells Affects Rhogtpases Activation Induced by Fluid Shear Stress
K. Nishio[1], Y. Ueki[1,2], N. Sakamoto[1], and M. Sato[1,3]
[1]Department of Bioengineering and Robotics, Graduate School of Engineering, Tohoku University, Miyagi, Japan, [2]Hitachi Research Laboratory, Hitachi, Ltd., Ibaraki, Japan, [3]Department of Biomedical Engineering, Graduate School of Bioengineering, Tohoku University, Miyagi, Japan

PS-Thurs-B-28
Elevations in Pulse Rate Attenuate the Atheroprotective Effects of Pulsatile Shear Stress: A New Insight into the Effects of Arrhythmias on Endothelial Responses
N. Jen[1], R. Li[1], B. Chan[1], C. Chen[1], J. Lee[1], J. Mung[1], J. Yen[1], M. Hamdan[2], and T. Hsiai[1]
[1]University of Southern California, Los Angeles, CA, [2]University of Utah School of Medicine, Salt Lake City, UT

PS-Thurs-B-29
MOVED TO ORAL OP-Fri-2-1

PS-Thurs-B-30
Endothelial Cell Behavior is Modulated by 3D Extracellular Matrix Stiffening via Non-enzymatic Glycation
B. N. Mason[1], L. J. Bonassar[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

PS-Thurs-B-31
How Deeply Cells Feel: Microenvironmental Signals to Nuclear Readouts
A. Buxboim[1], E. C. Eckels[1], and D. E. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-Thurs-B-32
Transglutaminase Linked Collagen Promotes Integrin-Mediated Mechanotransduction in Prostate Cancer
J. Srivastava[1,2], and M. Zaman[3]
[1]University of Texas at Austin, Brookline, MA, [2]Boston University, Boston, [3]Boston University, Boston, MA

PS-Thurs-B-33
Matrix Stiffness Alters Cell-Cell and Cell-Matrix Interactions During Tissue Assembly
J. P. Califano[1], C. R. Montague[1], A. Starchenko[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

PS-Thurs-B-34
Hypoxia-Reoxygenation Induces Mitochondrial Removal by Autophagy in Endothelial Cells
A. C. Santoso[1], R. J. Giedt[1], M. Praetorius-Ibba[2], and B. R. Alevriadou[1]
[1]Department of Biomedical Engineering and The Davis Heart and Lung Inst., The Ohio State University, Columbus, OH, [2]Department of Cellular and Molecular Biochemistry, The Ohio State University, Columbus, OH

PS-Thurs-B-35
Cyclic Tensile Stress Induced Migration and Invasion Properties of MCF10A
H. Han[1], M. Kim[1], and J. H. Shin[1]
[1]Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

PS-Thurs-B-36
Lipid Bilayer as Mechanosensor
M. Chachisvilis[1]
[1]La Jolla Bioengineering Institute, San Diego, CA

PS-Thurs-B-37
Gene Expression of Endothelial Cells in Response to Hemodynamic Conditions Mimicking Arterial Bifurcation
N. Sakamoto[1], T. Okumura[1], M. Kanzaki[1], and M. Sato[1]
[1]Tohoku University, Sendai, Japan

PS-Thurs-B-38
Prolonged Application of High Fluid Shear to Chondrocytes Recapitulates Gene Expression Profiles Associated with Osteoarthritis
F. Zhu[1], P. Wang[1], N. Lee[2], M. Goldring[3], and K. Konstantopoulos[1]
[1]The Johns Hopkins University, Baltimore, MD, [2]The George Washington University, Washington, D.C., DC, [3]Hospital for Special Surgery, New York, NY

PS-Thurs-B-39
Matrix Compliance Regulates Epithelial-Mesenchymal Transition
K. Lee[1], Q. K. Chen[1], C. Lui[1], E. W. Gomez[1], D. C. Radisky[2], and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ, [2]Mayo Clinic Cancer Center, Jacksonville, FL

PS-Thurs-B-40
Effects of Hypoxia and of Elevated Pressure on Retinal Cell Proliferation
R. E. Coronado[1], M. E. Wechsler[1], K. L. Lovelady[1], T. Q. Duong[2], and R. Bizios[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-B-41
Mechanical Force Transmission Through the Cellular Cytoskeleton
Y. Hwang[1], and A. Barakat[1]
[1]Ecole Polytechnique, Palaiseau, France

PS-Thurs-B-42
The Conformational Transition of Actin Binding Domains in Alpha-Actinin
H. Shams[1], J. Golji[1], and M. R. Mofrad[1]
[1]University of California, Berkeley, CA

PS-Thurs-B-43
Tumor Cell Invasion and Role of ECM Presentation, Topology and Mechanical Properties
L. Cassereau[1], J. Lopez[2], I. Acerbi[2], J. Lakins[2], Q. Shi[3], J. Liphardt[3], and V. Weaver[2]
[1]UCSF/UC Berkeley, San Francisco, CA, [2]UCSF, San Francisco, CA, [3]UC Berkeley, Berkeley, CA

PS-Thurs-B-44
Simulated Mechanical Stress Using PGE2 Causes Pericytes to Express Osteogenic Markers
R. A. Washington[1], V. H. Harper[1], S. Silva[1], A. Deb Roy[1], and L. Aggison[1]
[1]University of Connecticut, Storrs, CT

PS-Thurs-B-45
Atmospheric Pressure Plasma Induced Mesenchymal-Epithelial Transition (MET) like Phenotypic Changes in Human Dermal Fibroblasts
B. Gweon[1], M. Kim[1], H. Kim[1], S. Kim[1], W. Choe[1], and J. H. Shin[1]
[1]Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

PS-Thurs-B-46
Deformation of Stereocilia Membrane: Implications for the Mechanoelectrical Transduction Channel
R. J. Powers[1], S. Roy[1], E. Atilgan[2], W. E. Brownell[3], S. X. Sun[1], P. G. Gillespie[4], and A. A. Spector[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Columbia University, New York, NY, [3]Baylor College of Medicine, Houston, TX, [4]Oregon Health&Science University, Portland, OR

PS-Thurs-B-47
The Effect of Substrate Stiffness on Endothelial Mechanotransduction Under Fluid Shear Stress
M. Mavi[1], P. Tao[1], and J. Ji[1]
[1]Indiana University Purdue University Indianapolis, Indianapolis, IN

PS-Thurs-B-48
Human Umbilical Vein Endothelial Cells Respond to Substrate Stiffness by Spreading Less and by Exerting Variable Traction Forces on Elastic Surface
J. Wang[1], M. Deng[2], S. K. Shaw[2], and J. X. Tang[3]
[1]Brown University, Providence, RI, [2]Women and Infants Hospital, Providence, RI, [3]Brown University, providence, RI

PS-Thurs-B-49
On the Interactions Between Vinculin and PIP2
A. Al-Zireeni[1], J. Golji[1], and M. R. Mofrad[1]
[1]University of California, Berkeley, CA

Track: Cellular and Molecular Engineering

Molecular Engineering

PS-Thurs-B-50
Single-Molecule Enzyme Chemotaxis
P. J. Butler[1], S. Sengupta[1], H. Muddana[2], T. Tabouillot[3], and A. Sen[1]
[1]Penn State University, University Park, PA, [2]University of California San Diego, La Jolla, CA, [3]University of Michigan, Ann Arbor, MI

PS-Thurs-B-51
High-Throughput Screening of Transcription Factor Activity
A. M. Kabadi[1], and C. A. Gersbach[1]
[1]Duke University, Durham, NC

PS-Thurs-B-52
Engineered ErbB Receptor Ligands: Useful Approach to Targeted Chemotherapeutics
E. Kurtagic[1], S. M. Jay[1,2], L. M. Alvarez[1], R. T. Lee[2,3], and L. G. Griffith[1,3]
[1]MIT, Cambridge, MA, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, [3]Harvard Stem Cell Institute, Cambridge, MA

PS-Thurs-B-53
Novel Technique To Study DARPin-Target Binding Using Single-Molecule Force Spectroscopy
L-L. Cheung[1], M. Kanwar[1], M. Ostermeier[1], and K. Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD

PS-Thurs-B-54
Gene Therapy for Duchenne Muscular Dystrophy: Gene Editing of Dystrophin by Synthetic Enzymes.
D. G. Ousterout[1], M. T. Brown[1], P. Perez-Pinera[1], and C. A. Gersbach[1]
[1]Duke University, Durham, NC

PS-Thurs-B-55
Computer-aided Engineering of Myosin VI to Alter the Locking Mechanism of the Converter
Y. Zhang[1], and J-C. Liao[1]
[1]Columbia University, New York, NY

PS-Thurs-B-56
Real Time Dynamic Study of Cytochrome-c Release in Human Lung Cancer Cells
S. S. Piracha[1], S. Wang[1], Z. Korkut[1], and X. Jiang[2]
[1]City College of New York, New York, NY, [2]Memorial Sloan Kettering Cancer Center, New York, NY

PS-Thurs-B-57
Recombinant Silk Fibronectin Fragment Fusion Peptides for Growth Factor Binding to Silk Fibroin Hydrogel for Engineering Extracellular Matrices
A. M. Hopkins[1], F. Tortelli[2], D. L. Kaplan[1], and J. A. Hubbell[2]
[1]Tufts University, Medford, MA, [2]École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

PS-Thurs-B-58
Streamlined Protocol for mRNA Display
P. A. Barendt[1], C. N. McQuade[1], and C. A. Sarkar[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-Thurs-B-59
Development of FRET-based High-Throughput Screening to Discover Small Chemical Inhibitors of the SUMOylation Pathway
Y. Song[1], V. Madahar[1], Y. Liu[1], and J. Liao[1]
[1]University of California, Riverside, Riverside, CA

PS-Thurs-B-60
Mechanical Coupling of the Motor Protein Ncd in the Microtubule Minus-end Directed Motion
S. K. Lakkaraju[1], and W. Hwang[1]
[1]Texas A&M University, College Station, TX

PS-Thurs-B-61
Visualizing PDGFR Activity in Live Cells at Subcellular Level
M. Huang[1], and Y. Wang[1]
[1]University of Illinois, Urbana, IL

PS-Thurs-B-62
Mechanistic Inhibition of Alzheimer's-associated Aggregation by Gold Nanoparticles
K. A. Wilson[1], J. Lim[1], K. Jackson[2], R. Mahtab[2], and M. Moss[1]
[1]University of South Carolina, Columbia, SC, [2]South Carolina State University, Orangeburg, SC

PS-Thurs-B-63
Targeted Engineering of DNA-binding Proteins
C. Bach[1], H. Bajwa[1], K. Erodula[2], J. Pallis[1], P. Patra[1], and W. Sherman[3]
[1]University of Bridgeport, Bridgeport, CT, [2]GE, Hamden, CT, [3]Brookhaven National Laboratory, Upton, NY

POSTER SESSION ThB

Track: Devices: Nano to Micro

Drug Delivery Technologies: Nano to Micro Devices

PS-Thurs-B-64
CANCELED BY AUTHOR

PS-Thurs-B-65
Porous Silicon Films with Tunable Diffusion Coefficients for Controlled Drug Release
J. W. Mares[1], and S. M. Weiss[1]
[1]Vanderbilt University, Nashville, TN

PS-Thurs-B-66
Silk as an Alternative Biomaterial for Microneedles System
W. K. Raja[1], K. Tsioris[1], E. M. Pritchard[1], B. Panilaitis[1], F. G. Omenetto[1], and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

PS-Thurs-B-67
Multifunctional Microbubbles Fabricated by Co-axial Electro-hydrodynamic Technique for Drug Delivery
L. Zhang[1], Y. Wu[1], F. Wang[1], J. Lee[1], C. J. Roberts[1], and R. Xu[1]
[1]The Ohio State University, Columbus, OH

PS-Thurs-B-68
Improved Tumor Targeting of Polymer-based Nanovesicles using Polymer-Lipid Blends
Z. Cheng[1], D. R. Elias[2], N. P. Kamat[3], E. D. Johnston[3], A. Poloukhtine[4], V. Popik[5], D. A. Hammer[6], and A. Tsourkas[3]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Pennsylvania, Philadelphia, PA, [3]university of Pennsylvania, Philadelphia, PA, [4]University of Georgia, Athens, GA, [5]University of Georgia, Athens, GA, [6]university of Pennsylvania, Philadelphia, PA

Track: Devices: Nano to Micro

Emerging Concept of Medical Micro Devices

PS-Thurs-B-69
Engineering Protein-based Dumbbell Architectures for Shear Sensing
Z. Botyanszki[1,2], N. Korin[2], and N. Joshi[1,2]
[1]Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering, Boston, MA

Track: Drug Delivery Systems

Nanotechnology Solutions to Drug Delivery Challenges

PS-Thurs-B-70
Poly DL-Lactic—co-Glycolic Acid Nanoparticles as Nano-Carriers to Prolong Antibiotic Activities
M. N. DeSilva[1], W. W. Zhao[2], K. Whang[2], S. T. Schultz[1], and L. Chu[2]
[1]Naval Medical Research Unit San Antonio, Fort Sam Houston, TX, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX

PS-Thurs-B-71
Nanoengineering Approach to Reverse Cardiovascular Collapse from Hemorrhagic Shock
P. Cabrales[1]
[1]University of California, San Diego, La Jolla, CA

PS-Thurs-B-72
Modeling of Tumor Response to Nanotherapeutics
H. Frieboes[1], M. Wu[2], and J. Lowengrub[2]
[1]University of Louisville, Louisville, KY, [2]University of California, Irvine, CA

PS-Thurs-B-73
Porous Silicon Nanoneedles for the Intracellular Delivery of Heterogeneous Payloads
E. De Rosa[1], C. Chiappini[2], M. Ferrari[1], X. Liu[1], and E. Tasciotti[1]
[1]The Methodist Hospital, Houston, TX, [2]University of Texas, Austin, TX

PS-Thurs-B-74
20-100 kHz Ultrasound-mediated, Non-invasive Transdermal Drug Delivery with Liposomes
A. Nguyen[1], E. Papazoglou[2], Y. Sunny[2], C. Bawiec[2], J. Samuels[2], and P. A. Lewin[2]
[1]Drexel University, Cherry Hill, NJ, [2]Drexel University, Philadelphia, PA

PS-Thurs-B-75
Dual-Sensitive Multi-Functional Magnetic Nanoparticles for Cancer Therapy
H. Homayoni[1], and K. T. Nguyen[1]
[1]Joint Program, University of Texas (at Arlington, and Southwestern Medical Center at Dallas), Arlington-Dallas, TX

PS-Thurs-B-76
Formulation of Curcumin-modified Chitosan Nanoparticles for Prolonged Systemic Bioavailability
M. G. O'Toole[1], P. S. Soucy[1], B. H. Totten[1], P. J. Hoblitzell[1], R. S. Keynton[1], W. D. Ehringer[1], and A. S. Gobin[1]
[1]University of Louisville, Louisville, KY

PS-Thurs-B-77
TAT Peptide-Conjugated Poly(Lactic-co-Glycolic Acid) Nanoparticles For Delivery of Paclitaxel to Multidrug-Resistant Cancer Cells
E. Gullotti[1], and Y. Yeo[1]
[1]Purdue University, West Lafayette, IN

PS-Thurs-B-78
Size and Shape Effects in the Adhesion Propensity of Mesoporous Silicon Particles
G. Adriani[1,2], H. Huang[2], G. Pascazio[1], M. Ferrari[2], X. Liu[2], and P. Decuzzi[2]
[1]Politecnico di Bari, Bari, Italy, [2]The Methodist Hospital Research Institute, Houston, TX

PS-Thurs-B-79
A Systems Approach to Engineering Cancer Nanotechnologies
J. Park[1]
[1]KAIST, Daejeon, Korea, Republic of

PS-Thurs-B-80
Effects of Electrospinning on Retention of Functionality of Pertussis Toxin
D. Karatas[1], K. M. Sawicka[1], and S. R. Simon[1]
[1]Stony Brook University, Stony Brook, NY

PS-Thurs-B-81
Natural Tea-chitosan Nanoparticle System for Drug Delivery
S. Yi[1], L. Xia[1], S. Lenaghan[1], Z. Lejeune[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

PS-Thurs-B-82
The Unique Voyage of Nanoparticles in Blood Circulation
R. Toy[1], E. Hayden[1], C. Shoup[1], H. Baskaran[1], and E. Karathanasis[1]
[1]Case Western Reserve University, Cleveland, OH

PS-Thurs-B-83
pH/Thermosensitive Liposomes Modified with Poly(N-isopropylacrylamide-co-propylacrylic acid) Copolymers for Focused Ultrasound-triggered Release of Doxorubicin.
T. Ta[1], A. J. Convertine[2], C. R. Reyes[1], P. S. Stayton[2], and T. M. Porter[1]
[1]Boston University, Boston, MA, [2]University of Washington, Seattle, WA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-B-84
Study of Virucidal Action by Gold Nanoassemblies of Peptide Triazole Inhibitors Targeting Env gp120 of HIV-1
A. Rosemary Bastian[1], K. Kantharaju[1], K. McFadden[1], C. Duffy[1], S. Rajagopal[1], M. Contarino[1], E. Papzoglou[1], and I. Chaiken[1]
[1]*Drexel University, Philadelphia, PA*

Track: Drug Delivery Systems

New Concepts and Applications in Drug Delivery

PS-Thurs-B-85
Oral Delivery Of Microencapsulated Lipidoid Nanoparticles Containing Platinum Drugs For Colon Cancer Therapy
A. M. Urbanska[1], E. D. Karagiannis[1], R. S. Langer[1], and D. G. Anderson[1,2]
[1]*MIT, Cambridge, MA,* [2]*Harvard, Cambridge, MA*

PS-Thurs-B-86
pH-Sensitive Hydrogels for Encapsulation and Controlled Release of Antibody-Coated Nanocarriers for Oral Drug Delivery.
R. Ghaffarian[1], A. Bagal[1], S. R. Raghavan[1], and S. Muro[1,2]
[1]*University of Maryland, College Park, College Park, MD,* [2]*Institute for Bioscience and Biotechnology Research, College Park*

PS-Thurs-B-87
Nanomaterials for Oral Delivery and Prolonged Retention of Protein Drugs in Colon
P. Blichmann[1], P. Kocherginskaya[2], B. Zdyrko[1], I. Luzinov[1], and A. Vertegel[1]
[1]*Clemson University, Clemson, SC,* [2]*Moscow State University, Moscow, Russian Federation*

PS-Thurs-B-88
Impact of Food-associated Stimuli on Barrier Properties of Gastrointestinal Mucus to Particle Transport
H. M. Yildiz[1], and R. L. Carrier[1]
[1]*Northeastern University, Boston, MA*

PS-Thurs-B-89
Quantitative Analysis of MicroRNA 29b Induced Cancer Cell Apoptosis
X. Wang[1]
[1]*The Ohio State University, Columbus, OH*

PS-Thurs-B-90
Bacterial Motility Governs the Location and Extent of Bacterial Accumulation in Tumors *In Vitro*
B. J. Toley[1], and N. S. Forbes[1]
[1]*Univ of Massachusetts Amherst, Amherst, MA*

PS-Thurs-B-91
Multimodal PLGA Nanoparticles for Drug Delivery and Quantitative, Noninvasive Imaging with Positron Emission Tomography
R. W. Sirianni[1], M-Q. Zheng[1], T. Patel[1], J. Zhou[2], W. Saltzman[2], H. Huang[1], and R. E. Carson[1]
[1]*Yale School of Medicine, New Haven, CT,* [2]*Yale University, New Haven, CT*

PS-Thurs-B-92
Predicting the Outcome of Drug Treatments: A Machine Learning Approach for Analysis of Drug Delivery
Y. Li[1], S. Lenaghan[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

PS-Thurs-B-93
CANCELED BY AUTHOR

PS-Thurs-B-94
Antiretroviral Drug Delivery Pouch for Children Born at Home to HIV+ Mothers
R. A. Malkin[1]
[1]*Duke University, Durham, NC*

PS-Thurs-B-95
Optimization of Chitosan Particles for Immunotherapy
B. Koppolu[1,2], and D. A. Zaharoff[1,2]
[1]*Biomedical Engineering Program, University of Arkansas, Fayetteville, AR,* [2]*Department of Biological Engineering, University of Arkansas, Fayetteville, AR*

PS-Thurs-B-96
In Vitro Evaluation of a Dexamethasone Coating to Improve the Mass Transport of Chronically Implanted Glucose Sensors
S. G. Vallejo-Heligon[1], and W. M. Reichert[1]
[1]*Duke University, Durham, NC*

PS-Thurs-B-97
Abdominal Aortic Aneurysm Repair by Pentagalloyl Glucose (PGG) Microparticle Delivery
A. Sinha[1], and N. Vyavahare[1]
[1]*Clemson University, Clemson, SC*

POSTER SESSION **ThB**

Track: Drug Delivery Systems

Novel Materials and Self Assembly: Cancer Applications

PS-Thurs-B-98
Self-assembled Nanoplatform for Inflammation-targeted Chemotherapy Using Affinity-regulated Molecular Interactions
S. Park[1], S. Kang[1], X. Chen[1], J. Munir[1], A. Bogorad[1], A. Veach[1], J-Y. Kim[2], and M. Jin[1]
[1]*Cornell University, Ithaca, NY,* [2]*Kangwon National University, Samcheok, Korea, Republic of*

PS-Thurs-B-99
Engineering Viral Nanoparticles for Applications in Medicine: Shape Matters – Comparing Nanorods and Spheres Side by Side
S. Shukla[1], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS-Thurs-B-100
Nanoparticles and Thermally Responsive Polymer for Hyperthermia and Sustained Drug Delivery
M. C. Liu[1], S. Wang[1], and K. A. Kang[2]
[1]*Dupont Manual High School, Louisville, KY,* [2]*University of Louisville, Louisville, KY*

PS-Thurs-B-101
Curcumin Uptake and Effects on Gamma Irradiated Cells
P. S. Soucy[1], I. M. Jain[1], B. H. Totten[1], M. G. O'Toole[1], P. Hoblitzel[1], R. Keynton[1], W. D. Ehringer[1], and A. S. Gobin[1]
[1]*University of Louisville, Louisville, KY*

PS-Thurs-B-102
Synthesis and Characterization of pH Sensitive Disulfide Cross-linked Polymer Vector for the Delivery of Genes to MCF-7 Breast Cancer Cells
I. Bacalocostantis[1], M. S. Kang[1], A. S. Goodley[1], S. Muro[1,2], and P. Kofinas[1]
[1]*University of Maryland, College Park, MD,* [2]*Institute for Bioscience and Biotechnology Research (IBBR) University of Maryland, College Park, MD*

PS-Thurs-B-103
Hydrophobic-Hydrophilic Interpenetrating Networks for Oral Chemotherapeutic Delivery
C. Schoener[1], and N. Peppas[1]
[1]*University of Texas at Austin, Austin, TX*

PS-Thurs-B-104
Enhancing Suicide Gene Therapy by Polymeric Micellar Nanoparticles
J. Wang[1], J-I. Hsu[1], and C-A. Peng[1]
[1]*Michigan Technological University, Houghton, MI*

POSTER SESSION ThB

PS-Thurs-B-105
Hydrophobic Nanoparticles Encapsulated in Hydrophilic Hydrogel for Oral Delivery of Chemotherapeutics
H. Hutson[1], C. Schoener[1], and N. Peppas[1]
[1]*University of Texas at Austin, Austin, TX*

PS-Thurs-B-106
Salmonella Targets Tumor Regions of Low Vascular Density and at Short Distances to Blood Vessel
M. Zhang[1], and N. S. Forbes[1]
[1]*Univ. of Massachusetts-Amherst, Amherst, MA*

Track: Neural Engineering

Engineering the Neural Environment

PS-Thurs-B-107
Effect of L1 Grafted Collagen on Mouse ESC Differentiation
G. Monteiro[1], H. A. Shih[1], and D. Shreiber[1]
[1]*Rutgers University, New Brunswick, NJ*

PS-Thurs-B-108
Traumatic Brain Injury Biomarker Discovery Using Mass Spectrometry Imaging of 3D Neural Cultures
D. Olivero[1], and M. LaPlaca[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-Thurs-B-109
Ascertaining Network Connections in a Computational Model
F. W. Hamilton[1], T. Berry[1], T. Sauer[1], and N. Peixoto[1]
[1]*George Mason University, Fairfax, VA*

PS-Thurs-B-110
Neuronal Cell Patterning Using Micro-Contact Printing
I. Poudel[1], J. Lee[1], and J. Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

Track: Neural Engineering

Neural Engineering Technology II

PS-Thurs-B-111
Conducting Polymer Electrodes for Human Electrophysiological Recordings
P. Leleux[1,2], P. Chauvel[2], C. Bénar[2], T. Hervé[3], J-M. Badier[2], and G. G. Malliaras[1]
[1]*Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan,* [2]*INSERM U-751 Epilepsie et Cognition, Marseille cedex 05, France, Metropolitan,* [3]*Microvitae Technologies, Gardanne, France, Metropolitan*

PS-Thurs-B-112
High-Density Peripheral Nerve Resonant Stimulation System
J. M. Starobin[1], V. Varadarajan[1], and S. Aravamudhan[2]
[1]*The University of North Carolina at Greensboro, Greensboro, NC,* [2]*North Carolina A&T State University and University of North Carolina at Greensboro, Greensboro, NC*

PS-Thurs-B-113
Electrochemical Deposition of Polydopamine Films for Site-Selective Biofuntionalization
K. Kang[1], S. Lee[1], I. S. Choi[1], and Y. Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

PS-Thurs-B-114
A Progress Report on Flexible Neurotransmitters Sensors
H. Cao[1], C. M. Nguyen[1], A-L. Li[1], Y. Peng[1], and J-C. Chiao[1]
[1]*UT Arlington, Arlington, TX*

PS-Thurs-B-115
Binding Affinity and Neurite Generation Characterization of Neuroblastoma Cells on a Functionalized Graphene Substrate
B. A. Mathie[1], J. Yang[1], M. M-C. Cheng[1], and P. VandeVord[1]
[1]*Wayne State University, Detroit, MI*

PS-Thurs-B-116
Local Microglia Cell Ablation at the Cortical Tissue-Electrode Interface
J. Nguyen[1,2], M. Ravikumar[3], S. Selkirk[3], and J. Capadona[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Louis Stokes VA Medical Center, Cleveland,* [3]*Louis Stokes VA Medical Center, Cleveland, OH*

Track: Orthopedic and Rehabilitation Engineering

Orthopedic Biomaterials

PS-Thurs-B-117
Injectable, Nanospheres Containing, Two-solution Bone Cements (-TSBC) with Bioactive Strontium-hydroxyapatite (SrHA) Microspheres
S. H. Jariwala[1], and J. M. Hasenwinkel[1]
[1]*Syracuse University, Syracuse, NY*

PS-Thurs-B-118
Microencapsulation of Octylcyanoacrylate for Applications as the Healing Agent in a Self-healing Bone Cement
A. Brochu[1], W. Chyan[1], and W. Reichert[1]
[1]*Duke University, Durham, NC*

PS-Thurs-B-119
Biomechanical Properties of Bovine Intervertebral Discs Under Combined Compressive and Torsional Loadings
J. A. Mojica-Santiago[1], and P. A. Sundaram[1]
[1]*University of Puerto Rico Mayaguez Campus, Mayaguez, PR*

PS-Thurs-B-120
Unique Surface Structures Resulting from the Double Anodization of Titanium-based Pedicle Screws
A. P. Ross[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

PS-Thurs-B-121
Distal Clavicle Fracture Repair Techniques: a Biomechanical Comparison
M. Roesch[1], B. Lewis[1], G. Jones[1], J. Bishop[1], and A. S. Litsky[1]
[1]*Ohio State University, Columbus, OH*

PS-Thurs-B-122
Development of Nanostructured Coatings for Controlling the Biodegradation of Magnesium Implants
M. Iskandar[1], I. Johnson[1], A. Aslani[2], and H. Liu[1]
[1]*University of California, Riverside, Riverside, CA,* [2]*Spire Biomedical, Inc, Bedford, MA*

PS-Thurs-B-123
An Integrated Bi-layered Scaffold for Osteochondral Tissue Engineering
A. Galperin[1], R. A. Oldinski[1], S. J. Florczyk[1], J. D. Bryers[1], M. Zhang[1], and B. D. Ratner[1]
[1]*University of Washington, Seattle, WA*

PS-Thurs-B-124
Osteoblast Cell Responses to Degraded Self-assembled Materials Containing Hydroxyapatite Composites
L. Sun[1], H. Fenniri[2,3], and T. J. Webster[1]
[1]*Brown University, Providence, RI,* [2]*University of Alberta, Edmonton, Canada,* [3]*National Research Council, Edmonton, Canada*

PS-Thurs-B-125
Induction and Cleavage of Fluorescent Non-enzymatic Glycation Crosslinks in the Components of the Extracellular Matrix
L. Chen[1], A. D. Sharan[2], and S. Y. Tang[1]
[1]*University of California, San Francisco, San Francisco, CA,* [2]*Albert Einstein College of Medicine, New York City, NY*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-B-126
Surface of Magnesium Yttrium Alloys Regulates the Degradation and Cell Adhesion
I. Johnson[1], D. Perchy[2], A. Roy[2], P. Kumta[2], and H. Liu[1]
[1]University of California at Riverside, Riverside, CA, [2]University of Pittsburgh, Pittsburgh, PA

PS-Thurs-B-127
CANCELED BY AUTHOR

Track: Orthopedic and Rehabilitation Engineering

Orthopedic Tissue Biomechanics

PS-Thurs-B-128
Biomechanical Human Factors Analysis In Helicopter Crashes
D. J. Strickland[1,2], S. Kumar[1], C. Underwood[1], J. Burton[3], and P. Lewis[3]
[1]Safety Research Institute, Hoschton, GA, [2]Gainesville State College, Oakwood, GA, [3]Burton and Associates, Alpharetta, GA

PS-Thurs-B-129
Biomechanics of Head-Neck Injuries In Heavy Truck Motor Vehicle Accidents
D. J. Strickland[1,2], S. Kumar[1], K. Friedman[3], J. Hutchinson[3], and D. Mobrem[3]
[1]Safety Research Institute, Hoschton, GA, [2]Gainesville State College, Oakwood, GA, [3]Friedman Research Corporation, Austin, TX

PS-Thurs-B-130
An Annular Tear Model and the Effect on Intradiscal Pressure
R. Cardin[1], and J. G. Bledsoe[1]
[1]Saint Louis University, St Louis, MO

PS-Thurs-B-131
New Method for Performance Analysis of Pedicle Screw Designs
A. Valdevit[1], J. Goldstein[2], J. Turner[3], and A. Ritter[1]
[1]The Stevens Institute of Technology, Hoboken, NJ, [2]NYU Langone Medical Center, New York, NY, [3]Medtonic Spinal and Biologics Business, Memphis, TN

PS-Thurs-B-132
Mechanically Overloaded Collagen Fibrils Contain Frequent Regions of Denatured Collagen
S. P. Veres[1], and J. M. Lee[1]
[1]Dalhousie University, Halifax, NS, Canada

PS-Thurs-B-133
Rate Dependent Effects of Chronic Cyclic Loading on the Lumbar Spine in an *In-Vivo* Animal Model
S. E. Linley[1], G. Sanders[2], S. McCallum[1], E. Brule[1], E. Leimer[1], E. Puzas[3], G. Sowa[4], J. Lotz[5], J. Vanderzanden[6], J. Glennon[7], J. Lawrence[6], D. DiRisio[6], and E. Ledet[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Union College, Schenectady, NY, [3]University of Rochester, Rochester, NY, [4]University of Pittsburgh, Pittsburgh, PA, [5]UCSF, San Francisco, CA, [6]Albany Medical College, Albany, NY, [7]Veterinary Specialty Surgical Associates, Pattersonville, NY

PS-Thurs-B-134
Dynamic Viscoelastic Properties of Porcine Patellar Tendon: Study of Frequency, Loading, and Regional Dependency
S. S. Patnaik[1], B. Weed[1], T. C. Young[1], J. Liao[1,2], and L. N. Williams[1,2]
[1]Mississippi State University, Mississippi State, MS, [2]Center for Advanced Vehicular Systems (CAVS), Mississippi State University, Mississippi State, MS

PS-Thurs-B-135
Stability of the Proximal Interphalangeal Joint in the Finger: An In Vitro Kinematic Study
P. Caravaggi[1], L. Chen[1], L. Uko[1], B. Shamian[1], and J. Capo[1]
[1]UMDNJ, Newark, NJ

PS-Thurs-B-136
Application of a Non-Linear Viscoelastic Model to the Relaxation of Ligaments
F. M. Davis[1], and R. DeVita[1]
[1]Virginia Tech, Blacksburg, VA

PS-Thurs-B-137
Simulation and Evaluation of Constitutive Models for Human Flesh in Uniaxial Tension and Dynamic Compression
F. S. Gayzik[1,2], D. P. Moreno[1,2], N. A. Vavalle[1,2], and J. D. Stitzel[1,2]
[1]Virginia Tech Wake Forest Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

PS-Thurs-B-138
Detecting Mechanical Signatures of Enzymatically Induced Structural Changes in Articular Cartilage
D. J. Griffin[1], M. R. Buckley[1], J. Silverberg[1], D. Sevenler[1], I. Cohen[1], and L. J. Bonassar[1]
[1]Cornell University, Ithaca, NY

PS-Thurs-B-139
The Characterization of Local Microstructure of the Human Calcaneus
M. F. Souzanchi[1], P. E. Palacio Mancheno[2], Y. A. Borisov[2], L. Cardoso[2], and S. C. Cowin[2]
[1]the City College of The City University of New York, New York, NY, [2]the City College of the City University of New York, New York, NY

PS-Thurs-B-140
In Vitro Evidence of Fast and Slow Wave Propagation in the Human Calcaneus
P. E. Palacio Mancheno[1], Y. A. Borisov[1], M. F. Souzanchi[1], S. C. Cowin[1], and L. Cardoso[1]
[1]The City College of New York, New York, NY

PS-Thurs-B-141
Determination of the Lacunar Canalicular Permeability Using Cyclic Loading
M. Benalla[1], L. Cardoso[2], and S. C. Cowin[3]
[1]CCNY, Bronx, NY, [2]CCNY, New York, NY, [3]CCNY, New York

PS-Thurs-B-142
Compressive Properties of PMMA due to Release of Multiple Antibiotics over Extended Time Periods
M. Musib[1], K. Chakote[1], W. Hayes[1], V. Rasquinha[1], and S. Saha[1]
[1]State University of New York, Brooklyn, NY

PS-Thurs-B-143
Numerical Simulation of Poroelastic Wave Propagation in Human Calcaneum
Y. A. Borisov[1], P. E. Palacio Mancheno[2], M. F. Souzanchi[3], S. C. Cowin[3], and L. Cardoso[3]
[1]The City College of New York, new York, NY, [2]City College of New York, New York City, NY, [3]The City College of New York, New York, NY

PS-Thurs-B-144
Evaluation of Injury Causation in Motorcycle-Barrier Crashes: A Clinical Study
A. Daniello[1], J. Stitzel[2], and H. C. Gabler[1]
[1]Virginia Tech Wake Forest University School of Biomedical Engineering and Sciences, Blacksburg, VA, [2]Virginia Tech Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC

PS-Thurs-B-145
Comparisons of Real-World Knee-Thigh-Hip Injuries and Anthropomorphic Test Device Risks
K. L. Loftis[1], and J. D. Stitzel[1]
[1]VT-WFU Center for Injury Biomechanics, Winston-Salem, NC

PS-Thurs-B-146
Knee Kinematics Tracking Using A-Mode Ultrasound: Simulation and Feasibility Study
R. Tadross[1], and M. R. Mahfouz[1]
[1]University of Tennessee, Knoxville, TN

PS-Thurs-B-147
Combined Effects of Glucocorticoids and TNF-alpha on Murine Bone Strength and Quality
J. Inzana[1], M. Takahata[1], S. Juneja[1], E. Schwarz[1], and H. Awad[1]
[1]University of Rochester, Rochester, NY

POSTER SESSION ThB

PS-Thurs-B-148
Effect of Water Loss on the Progressive Post-Yield Behavior of Bone in Tension
B. Giri[1], J. Samuel[1], and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-Thurs-B-149
Dimensional (Size) Effect on Determination of Bone Toughness Using a Nanoscratch Test
R. Hansberger[1], A. Islam[1], and X. Wang[1]
[1]*UTSA, San Antonio, TX*

PS-Thurs-B-150
Compressive and Tensile Stiffness of a Cervical Motion Segment with Incomplete Fibers in Annulus
M. Hussain[1]
[1]*Logan University, Chesterfield, MO*

PS-Thurs-B-151
PGE2 Mediates Mechanical Stimulus in Osteoblasts: Changes in Cell Morphology and Stress Distribution
A. Deb Roy[1], R. H. Knapp[1], K. A. Burkhart[1], and R. A. Washington[1]
[1]*University of Connecticut, Storrs, CT*

PS-Thurs-B-152
Inhibition of SDF-1/CXCR4 Signaling Attenuates Load-Induced Periosteal Bone Formation in Mice
S. Temiyasathit[1], P. Leucht[2], V. Ramachandran[1], C. R. Jacobs[3], J. A. Helms[2], and A. B. Castillo[1]
[1]*VA Palo Alto Health Care System, Palo Alto, CA,* [2]*Stanford University, Stanford, CA,* [3]*Columbia University, New York, NY*

Track: Systems Biology, Bioinformatics and Computational Bioengineering

Genomics, Transcriptomics and Computational Proteomics

PS-Thurs-B-153
Metabolic Systems Analysis of Virulence in the Drug-resistant Pathogen Pseudomonas aeruginosa
J. A. Bartell[1], M. A. Oberhardt[2], J. B. Goldberg[1], and J. A. Papin[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Tel Aviv University, Tel Aviv, Israel*

PS-Thurs-B-154
Modeling Peripheral Clock Gene Entrainment By Cortisol
P. D. Mavroudis[1], J. D. Scheff[1], S. E. Calvano[2], S. F. Lowry[2], and I. P. Androulakis[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ*

PS-Thurs-B-155
MOVED TO PLATFORM SESSION - OP – FRI – 3- 4E

PS-Thurs-B-156
Principal Oscillation Patterns of Genome-wide Gene Expression
D. Wang[1], M. K. Markey[1,2], and A. Arapostathis[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas M. D. Anderson Cancer Center, Houston, TX*

PS-Thurs-B-157
Are You Sure in Sequence Information Reception?
M. R. Mofrad[1] E. G. Aznakayev[2], and D. E. Aznakayeva[2]
[1]*University of California, Berkeley, CA,* [2]*National Aviation University, Kiev, Ukraine*

PS-Thurs-B-158
On-chip Gene Synthesis and Its Application in DNA Nanostructure Formation and Protein Expression
I. Saaem[1], and J. Tian[1]
[1]*Duke University, Durham, NC*

PS-Thurs-B-159
Imputing Linkage Disequilibrium for Genome-Wide Association Studies
S. Zahid[1], H. Huang[1], and J. Bader[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS-Thurs-B-160
Brain Transcriptional Regulatory Network Predicts Social Behavior-Specific Gene Expression
S. Chandrasekaran[1], S. Ament[1], J. eddy[1], S. Rodriguez-Zas[1], B. Schatz[1], N. D. Price[1], and G. Robinson[1]
[1]*UIUC, Urbana, IL*

PS-Thurs-B-161
A Novel *In Silico* Methodology for Drug Discovery
R. R. Vallabhajosyula[1], B. Prabhakarpandian[1], and K. Pant[1]
[1]*CFD Research Corp, Huntsville, AL*

PS-Thurs-B-162
Exploring the Feasibility of Next-Generation Sequencing and Microarray Meta-Analysis
P-Y. Wu[1], J. H. Phan[2], and M. D. Wang[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

PS-Thurs-B-163
Modeling Transcriptional Responses to Ultradian Glucocorticoid Rhythms
J. D. Scheff[1], A. K. Kosmides[1], S. E. Calvano[2], S. F. Lowry[2], and I. P. Androulakis[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ*

PS-Thurs-B-164
Bioinformatic Analysis of the Relationship Between VEGF and Notch Protein Families
C. G. Rivera[1], S. Mellberg[2], L. Claesson-Welsh[2], J. S. Bader[1], and A. S. Popel[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Uppsala University, Uppsala, Sweden*

PS-Thurs-B-165
Permutational Segment Mutations for Deep Local Characterization of sRNA-mRNA Interaction
K. Jain[1], R. Wartell[1], and T. Updegrove[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-Thurs-B-166
Comparison of Similarity Measures for Colocalization Studies in Tissue Imaging Mass Spectrometry
C. Kaddi[1], R. M. Parry[1], Y. Chen[1], M. C. Sullards[1], A. H. Merrill[1], and M. D. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Systems Biology, Bioinformatics and Computational Bioengineering

Mathematical and Computational Models of Cellular and Molecular Processes: Cell Signaling and Mechanics

PS-Thurs-B-167
Characterization of Temporal Effects of Endothelial Sprouting by Statistical Model
W. W. Yuen[1], N. R. Du[1], D. Shvartsman[1], P. R. Arany[1], H. Lam[2], and D. J. Mooney[1]
[1]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA,* [2]*Mathematics & Statistics, Boston University, Boston, MA*

PS-Thurs-B-168
Calibration and Validation of Particle-Based Model for Tissue Morphogenesis
E. D. Jerkins[1], and S. R. Lubkin[1]
[1]*North Carolina State University, Raleigh, NC*

PS-Thurs-B-169
Analysis of the Molecular Network Regulating TGF Beta Induced Epithelial-Mesenchymal Transition
R. A. Gould[1], A. Chakrabarti[1], J. D. Varner[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

PS-Thurs-B-170
Limitations To Fat Metabolism During Exercise: Role of Adipose Tissue
N. Lai[1], X. Yan[2], and G. Saidel[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*East China University of Science and Technology, Shanghai, China, People's Republic of*

PS-Thurs-B-171
Analysis of Biopterin availability for eNOS based NO and Superoxide Production
S. Kar[1], B. K. Bhandar[1], and M. Kavdia[1]
[1]*Wayne State University, Detroit, MI*

PS-Thurs-B-172
Analysis of Metabolic Impairment of Skeletal Muscle Related to Fatigue
J. R. Spires[1], N. Lai[1], and G. Saidel[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS-Thurs-B-173
Leukocyte Motion Quantization and Metabolic Profiling for Dual Indication of Multiple Toxin Response
A. Garza[1], C. Marasco[1], C. Goodwin[1], J. Enders[1], K. Seale[1], J. McLean[1], and J. Wikswo[1]
[1]*Vanderbilt University, Nashville, TN*

PS-Thurs-B-174
The Role of Spatial Organization in Protein Scaffold-Mediated Signaling Cascades
O. Idan[1], J. H. Blanchet[1], and H. Hess[1]
[1]*Columbia University, New York, NY*

PS-Thurs-B-175
Experimental Puzzles Solved via Integrin Clustering Model
D. Lepzelter[1], M. Zaman[1], and O. Bates[1]
[1]*Boston University, Boston, MA*

PS-Thurs-B-176
Population Based Model of Human Embryonic Stem Cell Differentiation During Endoderm Induction
K. Task[1], M. Jaramillo[1], and I. Banerjee[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS-Thurs-B-177
Quantitative Analysis of Human Monocyte Differentiation
K-Y. Park[1], and M. O. Platt[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA*

PS-Thurs-B-178
Comparing Elastic Modulii of Femurs from Genetically Modified Mice using a Correction Factor Method
M. Buechel[1], E. Roan[1], Z. Xiao[2], and N. Qui[2]
[1]*The University of Memphis, Memphis, TN,* [2]*University of Tennessee Health Science Center, Memphis, TN*

PS-Thurs-B-179
Computational and Experimental Analyses of Palmitate-Binding on the IRE1 protein
H. Cho[1], L. Fang[1], L. Pillow[1], P. Palasuberniam[1], C. Bush[1], M. Feig[1], and C. Chan[1]
[1]*Michigan State University, East Lansing, MI*

Track: Tissue Engineering

Cardiovascular Tissue Engineering

PS-Thurs-B-180
Gap Junction Formation in Human Amniotic Fluid Cells Modulated by Co-culture with Cardiomyocytes
J. J. Petsche[1], O. M. Benavides[1], K. J. Moise[2,3], A. Johnson[2,3], and J. G. Jacot[1,3]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX,* [3]*Texas Children's Hospital, Houston, TX*

PS-Thurs-B-181
Microtemplated Fibrin Scaffolds for Pre-Vascularized Cardiac Tissue Engineering Applications
K. S. Thomson[1], F. S. Korte[1], C. M. Giachelli[1], B. D. Ratner[1], M. Scatena[1], and M. Regnier[1]
[1]*University of Washington, Seattle, WA*

PS-Thurs-B-182
Polymers Stabilize Engineered Human Microvessels *In Vitro*
A. D. Leung[1], K. Wong[1], and J. Tien[1]
[1]*Boston University, Boston, MA*

PS-Thurs-B-183
A Novel Ovine *ex-vivo* Arteriovenous Shunt Model for the Test of Vascular Implantability
H. Peng[1], E. M. Schlaich[2], S. Row[2], S. T. Andreadis[2,3], and D. D. Swartz[4]
[1]*University at Buffalo, Buffalo, NY, University at Buffalo, Buffalo, NY,* [3]*Center of Excellence, Buffalo, NY,* [4]*Children's Hospital, Buffalo, NY*

PS-Thurs-B-184
In Vivo Remodeling of Fibrin-based Tissue-engineered Arteries
Z. Syedain[1], P. Ariza[1], L. Meier[1], S. Johnson[1], E. Braunlin[1], J. Osborn[1], and R. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

PS-Thurs-B-185
Alginate-based Muscular Thin Films for *In Vitro* Cardiac Contractility Assays
Y. Farouz[1,2], A. Agarwal[1], M. L. McCain[1], and K. K. Parker[1]
[1]*Disease Biophysics Group, Harvard University, Cambridge, MA,* [2]*Ecole Polytechnique ParisTech, Palaiseau, France*

PS-Thurs-B-186
Valvulogenic Differentiation and Engineered Tissue Formation on Microfabricated Poly(glycerol Sebacate) Scaffolds
N. Masoumi[1], K. L. Johnson[1], J. T. Zugates[1], and G. C. Engelmayr[1]
[1]*Penn State University, University Park, PA*

POSTER SESSION ThB

PS-Thurs-B-187
Optimization of a Novel Small Diameter Vascular Graft: Synthesis, Seeding, and Conditioning
J. Arenas-Herrera[1], H. Ahn[1], S. Baker[2], T. Hill[3], C. M. Hwang[1], A. Atala[1], J. J. Yoo[1], and S. Lee[1]
[1]Wake Forest School of Medicine, Winston Salem, NC, [2]Wake Forest University, Winston Salem, NC, [3]Virginia Tech/Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC

PS-Thurs-B-188
Tissue Engineering an Impedance Pump from Biological Building Blocks
H. Azizgolshani[1], and M. Gharib[1]
[1]California Institute of Technology, Pasadena, CA

PS-Thurs-B-189
Adaptation of Vascular Network Formation Assay to Reconfigurable Culture Platform
D. J. Li[1], D. Dey[1], G. R. Evans[1], and E. E. Hui[1]
[1]University of California, Irvine, CA

PS-Thurs-B-190
Comparative Analysis of Biodegradation Kinetics of Polymer Foams
C. LeBlon[1], and S. Jedlicka[1]
[1]Lehigh University, Bethlehem, PA

PS-Thurs-B-191
Hyaluronic Acid-Heparin Hydrogels to Enhance Endothelialization
G. Camci-Unal[1,2], and A. Khademhosseini[1,2]
[1]Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge

PS-Thurs-B-192
MSC-mediated Cardiomyocyte Proliferation: A Potential Mechanism for Cardiac Regeneration
G. Gaudette[1], E. J. Burford[1], K. Minn[1], and A. Clemente[1]
[1]Worcester Polytechnic Institute, Worcester, MA

PS-Thurs-B-193
Characterization of Inner Layer Material for Intimal Layer Substitution in a Novel Vascular Composite Graft
J. D. Banik[1], L. Duan[1], N. Schiele[1], D. T. Corr[1], and J. A. Cooper[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-Thurs-B-194
Controlling Differentiation of Mouse Embryonic Stem Cells Through Combinatorial Effects of Shear Stress, Matrices, and Soluble Factors
D. Y. Kim[1], L. O. Cruz[1], and G. Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-Thurs-B-195
Controlling Endothelial Differentiation from Human Pluripotent Stem Cells
S. Kusuma[1], S. Tan[1], P. Mali[1], L. Cheng[1], and S. Gerecht[1]
[1]Johns Hopkins University, Baltimore, MD

Track: Tissue Engineering

Novel Biomaterials and Scaffolds

PS-Thurs-B-196
Optimization of the 'Click' Reaction for Therapeutic Cell Encapsulation Utilizing RIN-5F Cells
J. Breger[1,2], B. Fisher[2], I. Isayeva[2], L. Baeva[2], R. Samy[2], S. Pollack[2], and N. Wang[1]
[1]University of Maryland, College Park, College Park, MD, [2]Food and Drug Administration, Silver Spring, MD

PS-Thurs-B-197
The Effect of Primary Amines, Overall Charge, and Ligand Targeting on the Effectiveness of Poly(ethylenimine)-Hyaluronic Acid Conjugates as Gene Therapy Agents
C. J. Needham[1], S. Chew[1], A. K. Williams[1], F. K. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

PS-Thurs-B-198
Gelatin—based Injectable Gels for the Three Dimensional Culture of Osteoblasts
A. A. Amini[1], and L. S. Nair[1]
[1]University of Connecticut Health Center, Farmington, CT

PS-Thurs-B-199
Surface Chemical Characterization of Adhesive Nano-domains in Diblock Copolymer Foams
S. Chirasatitsin[1], P. Viswanathan[2], G. Battaglia[2], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA, [2]The University of Sheffield, Sheffield, United Kingdom

PS-Thurs-B-200
In Vivo Cartilage Tissue Engineering with Lysozyme Susceptible Bacterial Cellulose as a Scaffold
V. Yadav[1], L. Sun[1], B. Panilaitis[1], and D. Kaplan[1]
[1]Tufts University, Medford, MA

PS-Thurs-B-201
Citric Acid-based Biodegradable Injectable Elastomeric Composites for Osteonecrosis Treatment
M. Palmer[1], D. Gyawali[1], H. Kim[2], and J. Yang[1]
[1]University of Texas at Arlington, Arlington, TX, [2]Scottish Rite Hospital for Children, Sarah M. and Charles E. Seay Center for Musculoskeletal Research, Dallas, TX

PS-Thurs-B-202
Laser Machined Trilayer Scaffolds for Blood Vessel Engineering
C. Lee[1], Y. Lim[1], D. Farson[1], H. Powell[1], and J. Lannutti[1]
[1]The Ohio State University, Columbus, OH

PS-Thurs-B-203
Novel Mechanically Competent Polysaccharide Scaffolds for Bone Tissue Engineering
U. Toti[1], A. Aravamudhan[1], M. Deng[1], C. Laurencin[1], and S. Kumbar[1]
[1]UConn Health Center, Farmington, CT

PS-Thurs-B-204
Synthetic Surface for Human iPS Cell Expansion in Defined Medium
H. Yao[1], S. Jin[1], K. Ye[1], and Z. Melkoumian[2]
[1]University of Arkansas, Fayetteville, AR, [2]Corning Incorporated, New York, NY

PS-Thurs-B-205
Highly Elastic and Aligned Polyurethane Fiber Scaffolds for Tissue Engineering
J. Wang[1], K. Sheets[1], and A. S. Nain[1]
[1]Virginia Tech, Blacksburg, VA

PS-Thurs-B-206
Micro-CT Assessment of Magnesium Screws *In-Vivo* in the Rabbit Mandible
S. E. Henderson[1], A. J. Almarza[1], W. L. Chung[1], and P. N. Kumta[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS-Thurs-B-207
Creating Angiogenic Growth Factor Gradient in Tissue Constructs to Stimulate Angiogenesis
X. Guo[1], Z. Li[1], and J. Guan[1]
[1]The Ohio State University, Columbus, OH

PS-Thurs-B-208
The Design of Detachable Nanoporous Polyelectrolyte Multilayer Films for Applications in Hepatic Tissue Engineering
A. L. Larkin[1], R. M. Parham[1], and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS-Thurs-B-209
Novel pH-responsive Scaffolds with Self-Actuating Oxygen Transport
J-O. You[1], D. Almeda[1], M. Rafat[1], and D. Auguste[1]
[1]*Harvard University, Cambridge, MA*

PS-Thurs-B-210
A Novel Three-Dimensional (3-D) Scaffold Enhancing Human MCF-10A Mammary Epithelial Cell Proliferation and Inducing 3-D Growth
H. P. Hanni[1], R. E. Kast[1], M. A. Brusatori[1], and G. W. Auner[1]
[1]*Wayne State University, Detroit, MI*

PS-Thurs-B-211
Drainage of Vascularized Microfluidic Fibrin Scaffolds
K. Wong[1], and J. Tien[1]
[1]*Boston University, Boston, MA*

PS-Thurs-B-212
Deep Grooved Fibers for Long Bone Regeneration: the Effect of Scaffold Cross-Sectional Geometry
S. Stewart-Clark[1,2], V. Tran[1,2], and X. Wen[1,2]
[1]*Clemson University, Charleston, SC,* [2]*Medical University of South Carolina, Charleston, SC*

PS-Thurs-B-213
Crosslinking of Dermis-Derived Hydrogels Increases Stiffness and Resistance to Degradation
S. Pilipchuk[1], M. Vaicik[1], J. Larson[1], and E. M. Brey[1,2]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Hines Veterans Administration Hospital, Hines, IL*

PS-Thurs-B-214
Active Cell Culture: A 3D Programmable Shape-Memory Scaffold
L-F. Tseng[1,2], P. T. Mather[1,2], and J. H. Henderson[1,2]
[1]*Syracuse University, Syracuse, NY,* [2]*Syracuse Biomaterials Institute, Syracuse, NY*

PS-Thurs-B-215
Fabrication of Hydrogels with Elasticity Changeable by Alkaline Phosphatase
H. Toda[1], M. Yamamoto[1], and Y. Tabata[1]
[1]*Kyoto University, Kyoto, Japan*

PS-Thurs-B-216
Controlled Chemistry for Studying Combined effects of ECM proteins on Cell Response
A. K. Chen[1], F. Delrio[1], A. Peterson[1], K-H. Chung[1], K. Bhadriraju[1], and A. L. Plant[1]
[1]*NIST, Gaithersburg, MD*

PS-Thurs-B-217
Microencapsulation Of Octyl Cyanoacrylate For Self-Healing Bone Cement
V. D. Gandham[1], A. B. Brochu[1], and W. M. Reichert[1]
[1]*Duke University, Durham, NC*

PS-Thurs-B-218
Designing Fibrin Microthreads with Tunable Structural Properties for Skeletal Muscle Regeneration
J. M. Grasman[1,2], T. Dominko[1,2], R. L. Page[1,2], and G. D. Pins[1,2]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Bioengineering Institute, Worcester, MA*

PS-Thurs-B-219
Creation of Porous PLA Nanofibers Doped with Tricalcium Phosphate for Bone Tissue Engineering Applications
M. Mohiti-Asli[1], B. Pourdeyhimi[1], and E. G. Loboa[1,2]
[1]*North Carolina State University, Raleigh, NC,* [2]*University of North Carolina, Chapel Hill, NC*

PS-Thurs-B-220
Extracellular Matrix-coated Microbeads Deployed in Alginate Hydrogels for Bone Formation
A. Bhat[1], A. Hoch[1], M. Decaris[1], and K. Leach[1]
[1]*University of California, Davis, Davis, CA*

PS-Thurs-B-221
Engineering the Rate of Degradation of Fumarate-based Polyesters
K. N. Cicotte[1,2], S. M. Dirk[2], and E. L. Hedberg-Dirk[1]
[1]*University of New Mexico, Albuquerque, NM,* [2]*Sandia National Laboratories, Albuquerque, NM*

PS-Thurs-B-222
Perfluorocarbon Addition and Its Effect on the Transport of Biomolecules in Alginate Hydrogels
W. L. Stoppel[1], J. C. White[1], S. R. Bhatia[1], and S. C. Roberts[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

PS-Thurs-B-223
Evaluation of a Composite Tissue Scaffold for Healing of Chronic Wounds
M. Cozad[1], S. Bachman[1], and S. Grant[1]
[1]*University of Missouri, Columbia, MO*

PS-Thurs-B-224
Mechanical Optimization of a PEGDA-based Keratoprothesis
A. Zellander[1], M. Makhsous[2], and M. Cho[1]
[1]*University of Illinois, Chicago, IL,* [2]*Northwestern University, Chicago, IL*

PS-Thurs-B-225
Oxygen Release from Particulate Oxygen Generating Substances (POGS) and Its Effect on the Viability of Encapsulated Human Islets
J. P. McQuilling[1,2], R. A. Pareta[2], C. Childers[2], B. Harrison[2], A. C. Farney[2], and E. C. Opara[2]
[1]*Virginia Tech Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC*

PS-Thurs-B-226
Influence of Hydrolysis on the Properties of Poly(ethylene glycol)-based Degradable Hydrogels
S. Kocagoz[1], Y. Chiu[1], J. Larson[1], and E. Brey[1,2]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Department of Research, Hines V.A. Hospital, Hines, IL*

PS-Thurs-B-227
Porosity Dependence of the Weibull Modulus, Fracture Strength and Elastic Modulus for Hydroxyapatite and Other Brittle Materials
X. Fan[1], E. D. Case[1], F. Ren[2], Y. Shu[1], and M. J. Baumann[1]
[1]*Michigan State University, East Lansing, MI,* [2]*Oak Ridge National Laboratory, Oak Ridge, TN*

PS-Thurs-B-228
Application of Parafilm¢ç as Culture Substrate for Neurobiological Studies and Neuron Based Biochips
S. Yoo[1], and Y. Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

PS-Thurs-B-229
Incorporating Inducible Molecules for Engineering Genetically Interactive Materials
T. Deans[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS-Thurs-B-230
In Vitro Characterization of Bioactivity on Polycaprolactone- Demineralized Bone Matrix Scaffolds for Bone Tissue Engineering
T. Moloye[1], and C. Batich[1]
[1]*University of Florida, Gainesville, FL*

PS-Thurs-B-231
A Novel Method for Electrospinning Long Fibers using Poly (glycerol-dodecanoate)
X. Dai[1], K. Kathiria[1], and Y-C. Huang[1]
[1]*Florida International University, Miami, FL*

POSTER SESSION ThB

PS-Thurs-B-232

Enhanced Angiogenesis of Omentum Pouch Transplanted with Alginate Microcapsules Containing FGF-1

J. P. McQuilling[1,2], J. Arenas-Herrera[3], C. Childers[3], R. A. Pareta[3], O. Khanna[4], E. M. Brey[4], H. P. Greisler[5,6], A. C. Farney[2,3], and E. C. Opara[3]

[1]Virginia Tech Wake Forest University, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, [3]Wake Forest School of Medicine, Winston-Salem, NC, [4]Illinois Institute of Technology, Chicago, IL, [5]Hines VA Hospital, Hines, IL, [6]Loyola University Medical center, Maywood, NC

PS-Thurs-B-233

Carbon Nanotubes Composite Scaffolds for Bone Tissue Engineering: Mechanical and *In Vivo* Investigation

P. E. Mikael[1], and S. Nukavarapu[1]

[1]University of Connecticut, Farmington, CT

PS-Thurs-B-234

Optimizing Spinneret-to-Collector Distance and Solvent Concentration Maximizes Alignment of Electrospun Poly-L-Lactide Nanofibers

S. J. Tuck[1], M. K. Leach[1], and J. M. Corey[1,2]

[1]The University of Michigan, Ann Arbor, MI, [2]GRECC VA Ann Arbor Healthcare Center, Ann Arbor, MI

PS-Thurs-B-235

Layered, Three-dimensional Tissue Structures Created with Electrospun Polymer Nanofibers and Live-cell Spraying

J. T. Seil[1], and T. J. Webster[1]

[1]Brown University, Providence, RI

PS-Thurs-B-236

Using Growth Factor Conditioning to Modify the Properties of a Cell Derived Extracellular Matrix Biomaterial

J. Wolchok[1], and P. Tresco[1]

[1]University of Utah, Salt Lake City, UT

PS-Thurs-B-237

Micro-molded Thermoresponsive Polymer Platform for Culture and Release of Aligned Cell Sheets

K. Elineni[1], S. J. DuPont[1], R. Toomey[1], and N. D. Gallant[1]

[1]University of South Florida, Tampa, FL

PS - Thurs - B - 238

In situ Re-endothelization via Multifunctional Urethane-doped Polyester (UPE) Nano-Scaffolds

L-C. Su[1], Y-T. Tsai[2], R. Train[2], L. Tang[2], J. Yang[2], and K. Nguyen[21]

University of Texas at Arlington, Arlington, TX, [2]University of Texas at Arlington, Arlington, TX

PS = Poster Session
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Thursday, October 13, 2011

1:30PM - 3:00PM

PLATFORM SESSION –THU – 2

Track: Translational Biomedical Engineering – OP-Thurs-2-1

Education and Promotion of Translational Biomedical Engineering II

Chair: Phil Weilerstein

Convention Center – Room 11

Student Engagement in Translation and Commercialization – A panel of student innovators who launched technologies and products will discuss the process of translating research innovations to commercially viable products and businesses as university students. Speakers will include BMEidea competition award winning innovators and others who led the translation of breakthrough technologies to successful commercial outcomes. Speakers will address the development of research based ideas from science to commercially viable innovations with impact on healthcare delivery, the personal development that they experienced in doing so and the factors in the educational environment that supported their success. This session is sponsored by the National Collegiate Inventors and Innovators Alliance (NCIIA). Panelists include:

- Phil Weilerstein, Executive Director, National Collegiate Inventors and Innovators Alliance (NCIIA)
- Matthew Callighan, Founder, One Breath
- Brian Mullen, Founder and CEO, Therapeutic Systems
- Gerard Cote, Professor and Department Head, Biomedical Engineering, Texas A&M University

Track: Drug Delivery Systems – OP-Thurs-2-2

Drug Delivery in Tissue Engineering

Chairs: Debra Auguste, Erin Lavik

Convention Center – Room 12

1:30PM Thurs-2-2-A

A Versatile Layer-by-Layered Assembly for Controlled Delivery of Multiple Biomolecules

M. Keeney[1], R. Lee[1], M. Mathur[1], L. Seitz[1], and F. Yang[1]

[1]*Stanford University, Stanford, CA*

1:45PM Thurs-2-2-B

Genetically Engineered TGF-β1 That Binds to Fibrin and Enhances the Function of Vascular Grafts with MSC Derived Smooth Muscle Progenitor Cells

M-S. Liang[1], and S. T. Andreadis[1,2]

[1]*State University of New York at Buffalo, Amherst, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

2:00PM Thurs-2-2-C

Drug-Eluting Nanofibrous Patches Demonstrate Importance of Release Kinetics in Spinal Cord Repair

T. L. Downing[1], A. Wang[2], Z-Q. Yan[3], A. Lee[2], and S. Li[1]

[1]*UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA,* [2]*University of California, Berkeley, Berkeley, CA,* [3]*Shanghai Jiao Tong University, Shanghai, China, People's Republic of*

2:15PM Thurs-2-2-D

Affinity Hydrogel for Controlled Protein Release: Tuning the Binding Capability of Aptamers

M. R. Battig[1], B. Soontornworajit[1], and Y. Wang[1]

[1]*University of Connecticut, Storrs, CT*

2:30PM Thurs-2-2 -E

Injectable, Biodegradable and Flexible Hydrogel Capable of Delivering Angiogenic Growth Factor and Stem Cells

Z. Li[1], X. Guo[1], and J. Guan[2]

[1]*Ohio State University, Columbus, OH,* [2]*Ohio State University, Columbus, OH*

2:45PM Thurs-2-2-F

Drug Eluting Biomaterials for Localized and Sustained Suppression of Inflammation in an Islet Transplant Site

J. D. Weaver[1], E. Y. Song[1], A. Pileggi[1], C. Ricordi[1], P. Buchwald[1], and C. L. Stabler[1]

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

PLATFORM SESSIONS **Th-2**

Track: Drug Delivery Systems – OP-Thurs-2-3

Nanotechnology Solutions to Drug Delivery - II

Chairs: Chris Bettinger, Horst von Recum

Convention Center – Room 13

1:30PM Thurs-2-3-A

Liposomal and Nanotube Delivery of Doxorubicin to Tumor Cells Under Shear

C. S. Chen[1], M. J. Mitchell[1], A. D. Hughes[1], V. Ponmudi[1], and M. R. King[1]

[1]*Cornell University, Ithaca, NY*

1:45PM Thurs-2-3-B

Treatment of Glioblastoma with Doxorubicin & Anti-invasive Imipramine Blue Yields Complete Survival

J. M. Munson[1], R. Khan[1], J. Arbiser[2], and R. V. Bellamkonda[1]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

2:00PM Thurs-2-3-C

Engineered Outer Membrane Vesicle Vaccines Can Induce Robust and Strain-Variable Immune Responses

J. Rosenthal[1], J. C-J. Huang[1], A. Doody[1], S. Mendez[1,2], M. DeLisa[1], and D. Putnam[1]

[1]*Cornell University, Ithaca, NY,* [2]*Baker Institute for Animal Health, Ithaca, NY*

2:15PM Thurs-2-3-D

Hierarchical Nanostructured Polymer Films Enhance Protein, Antibody, and Drug Permeability *in vitro* and *In Vivo*

K. R. Kam[1,2], K. E. Fischer[1,2], S. M. Bock[3,4], J. Ollerenshaw[4], I. V. Schumacher[4], R. Ross[4], and T. A. Desai[1,2]

[1]*University of California, San Francisco, San Francisco, CA,* [2]*University of California, Berkeley, Berkeley, CA,* [3]*Georgia Institute of Technology, Atlanta, GA,* [4]*Kimberly-Clark, Atlanta, GA*

2:30PM Thurs-2-3-E

Serum-Stable Polymeric Nanoparticles for Management of Atherosclerosis via Scavenger Receptor Blocking

A. W. York[1], D. R. Lewis[1], K. R. Zablocki[1], L. Gu[1], K. E. Uhrich[1], R. K. Prud'homme[2], and P. V. Moghe[1]

[1]*Rutgers University, Piscataway, NJ,* [2]*Princeton University, Princeton, NJ*

2:45PM Thurs-2-3-F

Temperature-Responsive Interpenetrating Polymer Network Nanogels and Nanocomposites

B. V. Slaughter[1], and N. A. Peppas[1]

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

PLATFORM SESSIONS Th-2

Track: Systems Biology, Bioinformatics and Computational Bioengineering – OP-Thurs-2-4

Image-based Modeling and Characterization for Biomedicine

Chairs: Brian P. Helmke, Melissa Klein Gardner

Convention Center – Room 14

1:30PM Thurs-2-4-A

In-Vivo MRI-Based Models Of Infarcted Hearts Successfully Predict Optimal Ablation Site

H. J. Arevalo[1], C. Park[1], R. Blake[1], H. Halperin[1], and N. Trayanova[1]

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

1:45PM Thurs-2-4-B

Biological Interpretation of Image Biomarkers for Cancer Diagnosis

S. Kothari[1], M. D. Wang[2], and J. H. Phan[2]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

2:00PM Thurs-2-4-C

AAAVASC: A novel Integrated Approach for Image Based Modeling Toward Individualized AAA Rupture Risk Assessment

S. S. Raut[1], J. Shum[1], S. Chandra[2], A. Jana[3], P. Liu[4], K. Lee[1], E. S. Di Martino[5], T. C. Doehring[6], and E. A. Finol[1]

[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*University of Notre Dame, South Bend, IN,* [3]*Pittsburgh Supercomputing Center, Pittsburgh, PA,* [4]*Rex Medical, Conshohocken, PA,* [5]*University of Calgary, Calgary, AB, Canada,* [6]*Drexel University, Philadelphia, PA*

2:15PM Thurs-2-4-D

Quantifying Rib Morphology Across Ages and Genders Using Image Segmentation and Registration Techniques

A. A. Weaver[1], C. Nguyen[1], C. L. Wyatt[2], and J. D. Stitzel[1]

[1]*Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,* [2]*Virginia Tech, Blacksburg, VA*

2:30PM Thurs-2-4-E

Blood Clot Structure and Integrity as a Function of Intra-Thrombus Chemo-Transport and Local Stress Mechanics: Modeling Based On *In-Vivo* Imaging Under Flow

R. S. Voronov[1], T. J. Stalker[2], L. F. Brass[2], and S. L. Diamond[1]

[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Pennsylvania School of Medicine, Philadelphia, PA*

2:45PM Thurs-2-4-F

Mechanical Characterization of Multi-Layered Biological Samples using Atomic Force Microscopy

J. Dias[1], D. Gonzalez[1], and N. Ziebarth[1]

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

Track: Neural Engineering – OP-Thurs-2-5

Engineering the Neural Environment

Chairs: Ryan Gilbert, Erin Lavik

Convention Center – Room 15

1:30PM Thurs-2-5-A

Gradient-Engineered Synapse Formation in 3D Neural Cell Cultures

A. Kunze[1], A. Valero[1], and P. Renaud[1]

[1]*EPFL, Lausanne, Switzerland*

1:45PM Thurs-2-5-B

Neuronal Extracellular Matrix Synthesis and Deposition: Effects of Culture Dimensionality

S. Balasubramanian[1], N. Vadala[1], and J. B. Leach[1]

[1]*University of Maryland Baltimore County, Baltimore, MD*

2:00PM Thurs-2-5-C

Guiding Neurites in Real-time with *In Situ* Multiphoton Photofabricated Topographies

M. Ali[1], and J. B. Shear[1]

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

2:15PM Thurs-2-5-D

Multi-Protein Nanoarrays to Study Axonal Preference

S. G. Ricoult[1], J. P. Correia[1], T. E. Kennedy[1], and D. Juncker[1]

[1]*McGill University, Montreal, QC, Canada*

2:30PM Thurs-2-5 -E

Intervertebral Disc Annular Yield May Play a Role in Lumbar Spine Segmental Instability

S. M. Gonzalez[1,2], J. L. Baisden[1], and B. D. Stemper[1]

[1]Medical College of Wisconsin, Milwaukee, WI, [2]Milwaukee School of Engineering, Milwaukee, WI

2:45PM Thurs-2-5-F

Mechanical Induction of SH-SY5Y Cell Neurogenesis

S. Higgins[1], J. Lee[1], and J. Lim[1]

[1]*University of Nebraska-Lincoln, Lincoln, NE*

Track: Orthopedic and Rehabilitation Engineering – OP-Thurs-2-6

Orthopedic Imaging

Chairs: Hani Awad, Irene Georgakoudi, Mark Grinstaff

Convention Center – Room 16

1:30PM Thurs-2-6-A

Imaging of Angiogenic and Osteoblastic Parameters in a Model of Osteoarthritis (CME)

J. P. Dyke[1], M. Synan[1], P. Ezell[1], D. Ballon[1], and R. K. Aaron[2]

[1]*Weill Cornell Medical College, New York, NY,* [2]*Brown Medical School, Providence, RI*

1:45PM Thurs-2-6-B

A Method for Ultra-high Resolution Assessment of Cartilage Thickness in Small Animal Joints *ex vivo* (CME)

X. I. Gu[1,2], D. J. Leong[1,2], P. Palacio[1], N. Maldonado[1], E. Williams[1], H. B. Sun[1,2], and L. Cardoso[1]

[1]*City University of New York, New York, NY,* [2]*Mount Sinai School of Medicine, NY*

2:00PM Thurs-2-6-C

Noninvasive Optical Monitoring of Bone Quality in an Arthritic Mouse Model (CME)

M. Takahata[1,2], J. Maher[1], J. Inzana[1], A. Berger[1], and H. Awad[1]

[1]*University of Rochester, Rochester, NY,* [2]*University of Rochester, Rochester, NY*

2:15PM Thurs-2-6-D

Hip Joint Morphology Characterization in Femoroacetabular Impingement and Normal Patients (CME)

J. Urban[1], A. A. Weaver[1], L. C. Rucker[1], K. Theivendran[2], and J. D. Stitzel[1]

[1]*Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,* [2]*Royal Orthopedic Hospital, Birmingham, United Kingdom*

2:30PM Thurs-2-6 E

Attenuation of Transverse Ultrasound in Direct and Circumferential Pathways in Cortical Bones: Simulation and Phantom Studies (CME)

L. Lin[1], J. Cheng[1], and Y-X. Qin[1]

[1]*Stony Brook University, Stony Brook, NY*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

2:45PM Thurs-2-6-F
A Cationic Contrast Agent for Enhanced Quantitative Computed Tomography of Cartilage
R. C. Stewart[1], P. Bansal[1], B. Snyder[2], and M. Grinstaff[1]
[1]*Boston University, Boston, MA,* [2]*Beth Israel Deaconess Medical Center, Boston, MA*

Track: Biomedical Imaging and Optics – OP-Thurs-2-7

Imaging in the Enhancement or Assessment of Therapeutic Delivery

Chairs: Mark Cronin-Golomb, Smita Sampath
Convention Center – Room 17

1:30PM Thurs-2-7-A
Assessment of Early Diastolic Function in Left Ventricle Using MRI- *Invited*
Z. Zhang[1], B. A. Lin[1], D. P. Dione[1], P. B. Brown[1], A. J. Sinusas[1], and S. Sampath[1]
[1]*Yale University School of Medicine, New Haven, CT*

2:00PM Thurs-2-7-B
Quantification of Engineered Adipose Tissue Development Using Multi-Photon Microscopy
K. P. Quinn[1], E. Bellas[1], N. Fourligas[1], D. L. Kaplan[1], and I. Georgakoudi[1]
[1]*Tufts University, Medford, MA*

2:15PM Thurs-2-7-C
Comparing Carbon Nanotubes to Nanohorns as Therapeutic Platforms using Quantum Dot Imaging
K. Zimmermann[1], J. Zhang[1], H. C. Dorn[1], T. E. Long[1], M. N. Rylander[1], and C. G. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

2:30PM Thurs-2-7-D
Fluoroscopic Imaging for Validation and Correction of Patient-Specific Radiation Therapy Treatment Target Margins for Mobile Tumors
K. T. Malinowski[1,2], R. George[2], S. Dieterich[3], and W. D. D'Souza[1,2]
[1]*University of Maryland, College Park, MD,* [2]*University of Maryland School of Medicine, Baltimore, MD,* [3]*Stanford University Cancer Center, Stanford, CA*

2:45PM Thurs-2-7-E
Mechanical and Microscopic Characterization of Engineered Tissue Growth and Remodeling
Y. Bai[1], J. D. Humphrey[2], and A. T. Yeh[1]
[1]*Nonlinear Optical Microscopy, College Station, TX,* [2]*Biomedical Engineering, New Haven, CT*

Track: New Frontiers in Biomedical Engineering – OP-Thurs-2-8

Bridging Medicine and Materials and Biomedical Imaging

Chairs: Gang Han, Hakho Lee
Convention Center – Room 21

1:30PM Thurs-2-8-A
Multiplexed Magnetic Labeling Amplification Using Oligonucleotide Hybridization
M. Liong[1], C. Tassa[1], S. Y. Shaw[1], H. Lee[1], and R. Weissleder[1]
[1]*Massachusetts General Hospital, Boston, MA*

1:45PM Thurs-2-8-B
Enhanced T2 Shortening by Polymeric Entrapment and Cellular Internalization of MRI Contrast Agents
C. Xu[1], D. Miranda-Nieves[2], I. Roes[1], J. A. Ankrum[2,3], M. Nahrendorf[4], and J. M. Karp[1]
[1]*Brigham and Women's Hospital, Cambridge, MA,* [2]*MIT, Cambridge, MA,* [3]*Harvard, Cambridge, MA,* [4]*Massachusetts General Hospital, Boston, MA*

2:00PM Thurs-2-8-C
Rescue of Marrow Failure by Stem Cell Delivery into Microfabricated Biomaterial Implants
J. Lee[1,2], M. Li[1,2], J. Milwid[1,3], R. Weissleder[1], M. Yarmush[1,2], and B. Parekkadan[1,2]
[1]*Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [2]*Shriners Hospital for Children, Boston,* [3]*Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge*

2:15PM Thurs-2-8-D
Inflamed Leukocyte-mimetic Nanoparticles for Molecular Imaging of Tumor and Tumor Vasculature
X. Chen[1], R. Wong[1,2], I. Khalidov[2], A. Wang[3], J. Leelawattanachai[1], Y. Wang[1,2], and M. Jin[1,2]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York,* [3]*Ocean Nanotech, LLC, Springdale, AR*

2:30PM Thurs-2-8 -E
Nondestructive Real-Time Imaging of Endothelial Cell Vessel-Like Formation Through a Tissue Engineered Scaffold
B. M. Whited[1], M. Hofmann[1], Y. Xu[1], and M. N. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

2:45PM Thurs-2-8-F
Evaluation of Photothermal Ablation of Cancer Cells by Using Chitosan Coates Gold Nanoparticles via Flow Cytometry Technique
G. Zhang[1], D. Patel[1], D. Stephens[1], R. Estrada[1], and A. M. Gobin[1]
[1]*University of Louisville, Louisville, KY*

Track: Tissue Engineering – OP-Thurs-2-9

Musculoskeletal Tissue Engineering - I

Chairs: Esmaiel Jabbari, Peter Yang
Convention Center – Room 22

1:30PM Thurs-2-9-A
Physiologic and Genetic Comparison Between Primary Human Skeletal Myoblasts and the C2C12 Cell Line
C. S. Cheng[1], Y. El-Abd[1], Y-E. Hyun[1], R. Hughes[1], W. E. Kraus[1], and G. A. Truskey[1]
[1]*Duke University, Durham, NC*

1:45PM Thurs-2-9-B
The Effect of Loading and Culture Duration on Anatomically Shaped Tissue-Engineered Menisci
J. L. Puetzer[1], J. J. Ballyns[1], and L. J. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

2:00PM Thurs-2-9-C
Enhancing Cranial Allograft Integration Through Local FTY720 Delivery
T. Wang[1], C. S. Huang[1], D. A. Barker[1], S. S. Tholpady[1], and E. A. Botchwey[1]
[1]*University of Virginia, Charlottesville, VA*

2:15PM Thurs-2-9-D
Transient Hypoxia Enhances Matrix Synthesis and Mechanical Properties of Engineered Cartilage
S. Yodmuang[1], and G. V. Novakovic[1]
[1]*Columbia University, New York, NY*

2:30PM Thurs-2-9-E
In Vivo Tibial Compression Increases Bone Mass in a Breast Cancer Metastasis Model
M. Lynch[1], S. Pathi[1], K. Dent[1], D. Brooks[1], M. van der Meulen[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

2:45PM Thurs-2-9-F
Collagen Surface Localization of Tissue Engineered Menisci Treated with IGF-I
S. Park[1], B. Brown[1], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY

Track: Tissue Engineering – OP-Thurs-2-10

Cardiovascular Tissue Engineering - II

Chairs: Mariah Hahn, Jeff Jacot
Convention Center – Room 23

PLATFORM SESSIONS **Th-2**

1:30PM Thurs-2-10-A
Creation Of Perfused, Transplantable Vascular Constructs In 24 Hours Using Human Postnatal Cells
P. Allen[1,2], K-T. Kang[2,3], and J. Bischoff[2,3]
[1]Boston University, Boston, MA, [2]Children's Hospital Boston, Boston, MA, [3]Harvard Medical School, Boston, MA

1:45PM Thurs-2-10-B
Bioactive Nanofibrous Grafts for *In Situ* Vascular Tissue Engineering
J. J. Henry[1], N. Derugin[2], and S. Li[1]
[1]University of California, Berkeley, Berkeley, CA, [2]University of California, San Francisco, San Francisco, CA

2:00PM Thurs-2-10-C
Biological Response of Mesenchymal Stem Cells to Direct Coculture with Cord-Blood Derived Endothelial Cells and Fluid Shear Stress in Coculture
S. J. Bolger[1], L. Cao[1], and G. A. Truskey[1]
[1]Duke University, Durham, NC

2:15PM Thurs-2-10-D
Endothelial Cells from Embryonic Stem Cells in Chemically Defined Medium
K. E. McCloskey[1], and A. Blancas[1]
[1]UC, Merced, Merced, CA

2:30PM Thurs-2-10-E
Smooth Muscle Cells Enhances Early Functional Remodeling of Tissue Engineered Sheep Arterio-Venous Fistula Grafts
M. Machingal[1], L. P. Neff[1], J. Arenas-Herrera[1], B. W. Bernish[1], S. Soker[1], M. E. Van Dyke[1], R. Geary[1], and G. Christ[1]
[1]Wake Forest University Health Science, Winston Salem, NC

2:45PM Thurs-2-10-F
Development of a Small Diameter Vascular Graft Using the Amniotic Membrane
J. A. Brennan[1], and M. U. Nollert[1]
[1]University of Oklahoma, Norman, OK

Track: Devices: Nano to Micro – OP-Thurs-2-11*

Micro and Nanostructured Biomaterials - II

Chairs: Ali Khadamhosseni
Convention Center – Room 24

1:30PM Thurs-2-11-A
Osteogenic Differentiation of Human Mesenchymal Stem Cells on Silicate Cross-linked Poly(ethylene Oxide)
V. Kishore[1], A. K. Gaharwar[1], W. Pavalko[1], O. Akkus[1], and G. Schmidt[1]
[1]Purdue University, West Lafayette, IN

1:45PM Thurs-2-11-B
In Vivo and *In Vitro* Nanoparticle Uptake by Endothelial Cells
A. L. Doiron[1], S. Jiang[1], K. Yaehne[1], R. D. Shepherd[1], S. Childs[1], D. T. Cramb[1], and K. D. Rinker[1]
[1]University of Calgary, Calgary, AB, Canada

2:00PM Thurs-2-11-C
Microstructural Analysis of Insect Tracheal Tubes Toward Microfluidic Applications
M. R. Webster[1], R. De Vita[1], J. Twigg[1], and J. Socha[1]
[1]Virginia Tech, Blacksburg, VA

2:15PM Thurs-2-11-D
Quantifying Shifts in the Plasmonic Spectra of Metallic Nanoparticles Following Cellular Uptake
A. L. Chen[1], and R. Drezek[1]
[1]Rice University, Houston, TX

2:30PM Thurs-2-11 -E
Single Wall Carbon Nanotubes Enter Cells: Uptake, Sub-cellular Localization and Targeting
B. D. Holt[1], P. N. Yaron[1], P. A. Short[1], M. Lösche[1], M. F. Islam[1], and K. N. Dahl[1]
[1]Carnegie Mellon University, Pittsburgh, PA

2:45PM Thurs-2-11-F
Development of Novel Multi-Layer Microparticles for Cell Isolation and Enrichment
A. S. Wadajkar[1,2], B. Koppolu[1,2], Z. Bhavsar[1,2], and K. T. Nguyen[1,2]
[1]University of Texas, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas

*Supported by an unrestricted educational grant from Boston Scientific Defining tomorrow, today.

Track: Cardiovascular Engineering- OP-Thurs-2-12

Cardiovascular Mechanotransduction - II

Chairs: Deborah Leckband, Michael Smith
Convention Center – Room 25

1:30PM Thurs-2-12-A
Effect of Mechanical Strain on Contractile Functions of Shape-Controlled Single Cardiac Myocytes
H. Lee[1], H. Jin[1], M. L. McCain[1], and K. K. Parker[1]
[1]Disease Biophysics Group, Harvard University, Cambridge, MA

1:45PM Thurs-2-12-B
Myocyte Intercellular Adhesion Signaling and Mechanics are Contractility Dependent
A. Chopra[1], A. Patel[2], V. Lin[3], P. A. Janmey[4], and J. Y. Kresh[3]
[1]Drexel University, Philadelphia, PA, [2]Drexel University College of Medicine, Philadelphia, PA, [3]Drexel University College of Medicine, Philadelphia, PA, India, [4]University of Pennsylvania, Philadelphia, PA, India

2:00PM Thurs-2-12-C
Effect of Mechanical Stress on Cardiac Muscle Excitation-Contraction Coupling
H. Han[1], D. Yu[1], E. Leon[1], L. Izu[1], T. Pan[1], K. Lam[1], and Y. Chen-Izu[1]
[1]UCDavis, Davis, CA

2:15PM Thurs-2-12-D
Microfabricated Platforms to Measure Forces from Engineered Cardiac Microtissues
T. Boudou[1], W. R. Legant[1], N. Thavandiran[2], M. A. Borochin[1], A. Mu[3], K. B. Margulies[3], M. Radisic[2], P. W. Zandstra[2], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Toronto, Toronto, ON, Canada, [3]Temple University Medical School, Philadelphia, PA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

2:30PM Thurs-2-12 -E
Identifying the Molecular Mechanism of Cardiac Aging via *In Situ* Measurements of Drosophila Myocardial Stiffness
G. KAUSHIK[1], M. NISHIMURA[2], A. CAMMARATO[2], R. BODMER[2], AND A. J. ENGLER[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Sanford-Burnham Medical Research Institute, La Jolla, CA*

2:45PM Thurs-2-12-F
Substrate Stiffness and Cell Cell Interactions Regulate Vascular Smooth Muscle Cell Behavior in an ECM Dependent Manner
O. V. SAZONOVA[1], J. HERRMANN[1], J. WONG[1], AND M. NUGENT[1]
[1]*Boston University, Boston, MA*

Track: Cardiovascular Engineering- OP-Thurs-2-13

Cardiovascular Modeling and Measurement - II

Chairs: Kristen Billiar, Lauren Black
Convention Center – Room 26

1:30PM Thurs-2-13-A
3D Analysis of Microcalcifications in Human Vulnerable Plaques
N. MALDONADO[1], A. KELLY[1], L. CARDOSO[1], AND S. WEINBAUM[1]
[1]*City College of New York, New York, NY*

1:45PM Thurs-2-13-B
Variations of Myocardium Wall Radial Strain on the Outflow Tract of HH18 Chicken Embryos Based on 4D Optical Coherence Tomography Data
X. YIN[1], A. LIU[1], R. K. WANG[2], K. L. THORNBURG[1], AND S. RUGONYI[1]
[1]*Oregon Health & Science University, Portland, OR,* [2]*University of Washington, Seattle, WA*

2:00PM Thurs-2-13-C
A Dynamic Definition of Ventricular Elastance
J. L. PALLADINO[1], AND A. NOORDERGRAAF[2]
[1]*Trinity College, Hartford, CT,* [2]*University of Pennsylvania, Philadelphia, PA*

2:15PM Thurs-2-13-D
High Resolution Experimental And Computational Study Of Flow Through A Bi-Leaflet Mechanical Heart Valve (BMHV) In A Model Left Ventricle
B. CHAFFINS[1], T. LE[2], L. MIRABELLA[1], A. SANTHANAKRISHNAN[1], N. SAIKRISHNAN[1], F. SOTIROPOULOS[2], AND A. YOGANATHAN[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Minnesota, Minneapolis, MN*

2:30PM Thurs-2-13-E
In Vitro Quantification of Full Surface Strain Fields in Mouse Abdominal Aortic Aneurysm
Y-U. LEE[1], M. COLLINS[2], K. GENOVESE[3], AND J. D. HUMPHREY[1]
[1]*Yale University, New Haven, CT,* [2]*Texas A&M University, College Station, TX,* [3]*Universita` degli Studi della Basilicata, Potenza, Italy*

2:45PM Thurs-2-13-F
Aortic Stiffness Estimation via Pulse Wave Imaging in Patient-Specific Simulated and Silicone Phantoms
D. SHAHMIRZADI[1], R. LI[1], AND E. E. KONOFAGOU[1]
[1]*Columbia University, New York, NY*

Track: Respiratory Engineering – OP-Thurs-2-14

Computational Modeling in the Lung

Chairs: Geoffrey Maksym, Jose Venegas
Convention Center – Room 27

1:30PM Thurs-2-14-A
Lagrangian Transport Analysis of Microfluidic Experimental and Computational Pulsatile Airway Reopening Models
B. J. SMITH[1], S. LUKENS[2], E. YAMAGUCHI[1], AND D. P. GAVER III[1]
[1]*Tulane University, New Orleans, LA,* [2]*University of Pittsburgh, Pittsburgh, PA*

1:45PM Thurs-2-14-B
Imaged-based Finite Element Modeling of Lung Epithelial Cell Deformation during Airway Reopening
X. CHEN[1], AND S. GHADIALI[1]
[1]*The Ohio State University, Columbus, OH*

2:00PM Thurs-2-14-C
The Prevalence of Pendelluft During Heterogeneous Bronchoconstriction
E. E. GREENBLATT[1,2], AND T. WINKLER[3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Massachusetts General Hospital, Boston,* [3]*Massachusetts General Hospital & Harvard Medical School, Boston, MA*

2:15PM Thurs-2-14-D
Robustness and Optimality of the Human Tracheobronchial Tree
M. FILOCHE[1,2], M. FLORENS[2], AND B. SAPOVAL[1,2]
[1]*Ecole Polytechnique, Palaiseau, France,* [2]*ENS Cachan, Cachan, France*

2:30PM Thurs-2-14 -E
Image-guided Stochastic Modeling of the Lung-Influence of Patchy Ventilation on Impedance Variability in Asthma
D. LEARY[1], G. PARRAGA[2], AND G. MAKSYM[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*Robarts Research Institute, London, ON, Canada*

2:45PM Thurs-2-14-F
Modeling the Effects of Airway Contraction on Parenchymal Mechanics
B. MA[1], AND J. H. BATES[1]
[1]*University of Vermont, Burlington, VT*

Track: Cellular and Molecular Engineering – OP-Thurs-2-15

Symposium in Honor of Shu Chien's Birthday - II

Chairs: Song Li, Geert W. Schmid-Schonbein
Marriott – Ballroom B

1:30PM Thurs-2-15-A
Going Against the Flow: Mechanotransduction in the Interstitium
R. D. KAMM[1], V. VICKERMAN[1], AND W. POLACHECK[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:00PM Thurs-2-15-B
Probing Mechanisms of Mechano-Sensitive Differentiation in Mesenchymal Stem Cells
A. J. ENGLER[1], Y. S. CHOI[1], AND L. VINCENT[1]
[1]*UC San Diego, La Jolla, CA*

2:30PM Thurs-2–15-C
Molecular Imaging of Mechanotransduction in Live Cells
Y. WANG[1]
[1]*University of Illinois, Urbana-Champaign, Urbana, IL*

Thursday, October 13, 2011

4:00PM - 5:30PM

PLATFORM SESSION – THU –3

PLATFORM SESSIONS Th-3

Track: Cellular and Molecular Engineering – OP-Thurs-3-1

Cell Mechanics-I

Chairs: Phil LeDuc, Alisha Sarang-Sieminski

Convention Center–Room 11

4:00PM Thurs-3-1-A

Bio-Active Gold Nanoparticles Affect Human Cell Mechanics

T. Novellino[1], A. Zaske[2], M. Zhong[1], S. Cristina[3], M. Ferrari[1,4], and P. Decuzzi[1,5]

[1]*The Methodist Hospital Research Institute, Houston, TX,* [2]*The University of Texas Health Science Center, Houston, TX,* [3]*Biomedical Campus University, Rome, Italy,* [4]*MD Anderson Cancer Center, Houston, TX,* [5]*University of Magna Graecia, Catanzaro, Italy*

4:15PM Thurs-3-1-B

Effects of Cholesterol on Plasma Membrane Mechanics

N. Khatibzadeh[1], S. Gupta[1], B. Farrell[2], W. Brownell[2], and B. Anvari[1]

[1]*University of California, Riverside, Riverside, CA,* [2]*Baylor College of Medicine, Houston, TX*

4:30PM Thurs-3-1-C

Strain Measurement in Stress Fiber of Living Endothelial Cell Subjected to Shear Stress

M. Sato[1], Y. Ueki[1,2], Y. Uda[1], and N. Sakamoto[1]

[1]*Tohoku University, Sendai, Japan,* [2]*Hitachi Ltd., Hitachi-naka, Japan*

4:45PM Thurs-3-1-D

Hydrodynamic Interactions Significantly Alter F-actin Network Dynamics

R. Karimi[1,2], M-R. Alam[1], and M. R. Mofrad[1]

[1]*University of California, Berkeley, CA,* [2]*MIT, Cambridge, MA*

5:00PM Thurs-3-1-E

Cell Reorientation is Linked to Traction Realignment and Cytoskeletal Fluidization

R. Krishnan[1], A. L. Iordan[1,2], E. Peruski[2], A. P. Pirentis[2], J. P. Butler[1], J. J. Fredberg[1], and D. Stamenovic[2]

[1]*Harvard School of Public Health, Boston, MA,* [2]*Boston University, Boston, MA*

5:15PM Thurs-3-1-F

Interstitial Flow Influences Tumor Cell Migration Through Competing Mechanisms

W. J. Polacheck[1], and R. D. Kamm[1]

[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Translational Biomedical Engineering – OP-Thurs-3-2

Clinical and Translational Research and Science in Biomedical Engineering

Chairs: Joseph D. Bronzino, Donald R. Peterson

Convention Center–Room 27

4:00PM Thurs-3-2-A

Paper Based Point-of-Care Testing Strips for Pathogen Detection (CME)

C-Z. Li[1], K. Vandenberg[2], and E. Almeide[3]

[1]*Florida International University, Miami, FL,* [2]*Florida International University, Miami, FL,* [3]*BIOSENSOR USA Corp., Doral, FL*

4:15PM Thurs-3-2-B

Optical Molecular Imaging for Detecting Changes in Extracellular pH in Oral Neoplasia (CME)

Z. Luo[1], M. Loja[1], D. Farwell[1], Q. C. Luu[1], P. J. Donald[1], R. Gandour-Edwards[1], and N. Nitin[1]

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

4:30PM Thurs-3-2-C

Biofilm Quantification on Nano-Modified Endotracheal Tubes (CME)

K. M. Tarquinio[1,2], E. Smith[3], and T. J. Webster[2]

[1]*Rhode Island Hospital, Hasbro Children's Hospital, Providence, RI,* [2]*Brown University, Providence, RI,* [3]*Rhode Island Hospital, Providence, RI*

4:45PM Thurs-3-2-D

Wearable Ultrasound Therapy for Self Pain Management (CME)

G. K. Lewis[1], S. Guarino[1], and R. Ortiz[2,3]

[1]*Cornell University, Ithaca, NY,* [2]*Cayuga Medical Center, Ithaca, NY,* [3]*Medical Pain Consultants, Dryden, NY*

5:00PM Thurs-3-2-E

Fostering a Culture of Translational Research (CME)

C. K. Drummond[1], A. Hdeib[2], and J. L. Duerk[1]

[1]*Case Western Reserve University, Cleveland, OH,* [2]*University Hospitals Case Medical Center, Cleveland, OH*

5:15PM Thurs-3-2-F

The Flexible Axial Stimulation (FAST) Intramedullary Nail-Case Study from Idea to Preclinical Study (CME)

H. Dailey[1], C. Daly[1], J. Galbraith[2], M.L Cronin[3], and J. Harty[2,4]

[1]*Medical Engineering Design and Innovation Centre, Department of Biomedical Engineering, Cork Institute of Technology, Cork, Ireland,* [2]*Department of Trauma and Orthopaedic Surgery, Cork University Hospital, Wilton, Cork, Ireland,* [3]*Department of Anatomy, University College Cork, Cork, Ireland,* [4]*Department of Surgery, University College Cork, Cork, Ireland*

Track: Drug Delivery Systems – OP-Thurs-3-3

Novel Materials and Self Assembly: Cancer Applications

Chairs: Craig Duvall, Stavroula Sofou

Convention Center–Room 13

4:00PM Thurs-3-3-A

Modular Designed Thermoreversible Hydrogels with Controlled Swelling

D. Overstreet[1], R. McLemore[1,2], and B. Vernon[1]

[1]*Arizona State University, Tempe, AZ,* [2]*Banner Good Samaritan Medical Center, Phoenix, AZ*

4:15PM Thurs-3-3-B

CD8+ T cell Cross-Priming with Polymersome Encapsulated Antigen

E. A. Scott[1], A. Stano[1], M. Gillard[1], M. A. Swartz[1], and J. A. Hubbell[1]

[1]*Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*

4:30PM Thurs-3-3-C

Doxorubicin Loaded Silk Films for Local Breast Cancer Therapy

P. F. Seib[1], and D. L. Kaplan[1]

[1]*Tufts University, Medford, MA*

4:45PM Thurs-3-3-D

Smart Packaging: A Novel Thermo-Responsive Chitosan-Niosome System for Localized Drug Delivery

E. Williams[1], M. Wiranowska[1], R. Toomey[1], and N. Alcantar[1]

[1]*University of South Florida, Tampa, FL*

5:00PM Thurs-3-3-E

Capture and Neutralization of Circulating Cancer Cells: Immobilized TRAIL Treatment Combined with Aspirin

K. Rana[1], C. A. Reinhart-King[1], and M. R. King[1]

[1]*Cornell University, Ithaca, NY*

PS = Poster Session
OP = Oral Presentation
(CME) = Credit approved

5:15PM Thurs-3-3-F
Targeted Drug Delivery via Cellulose Nanocrystals, a Novel Biomaterial
K. R. Colacino[1], S. Dong[1], M. Roman[1], and Y. Lee[1]
[1]*Virginia Tech, Blacksburg, VA*

5:30PM Thurs-3-3-G
Biodegradable Polymersomes for the *In Vitro* Delivery of Gemcitabine to Panc-1 Cells
N. Sood,[1] W. T. Jenkins,[2] X. Yang,[2] N. N. Shah,[3] J. S. Katz,[4] C. J. Koch,[2] P. R. Frail,[5] M. J. Therien,[6] D. A. Hammer,[1,4] S. M. Evans[2]
[1] *Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, USA* [2] *Department of Radiation Oncology, University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA, USA,* [3] *Department of Neuroscience, University of Miami, Coral Gables, FL, USA,* [4] *Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, USA,*[5] *Department of Chemistry, University of Pennsylvania, Philadelphia, PA, USA,* [6] *Department of Chemistry, Duke University, Durham, NC, USA*

Track: Systems Biology, Bioinformatics and Computational Bioengineering – OP-Thurs-3-4

Mathematical and Computational Models of Cellular and Molecular Processes

Chairs: Oleg Igoshin, Dan Kamei
Convention Center–Room 14

4:00PM Thurs-3-4-A
Computational Modeling of Cathepsin Proteolytic Activity Reveals Novel Mechanisms of Interactive Degradation
Z. Barry[1], and M. Platt[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

4:15PM Thurs-3-4-B
Predicting Cellular Phenotype Through Integrative Modeling of Genome-scale Metabolic and Regulatory Networks
S. Chandrasekaran[1], A. Ghosh[1], and N. D. Price[1]
[1]*UIUC, Urbana, IL*

4:30PM Thurs-3-4-C
Comparative Analysis of Graded Virulence in Multiple Burkholderia strains
J. A. Bartell[1], J. J. Varga[1], J. B. Goldberg[1], and J. A. Papin[1]
[1]*University of Virginia, Charlottesville, VA*

4:45PM Thurs-3-4-D
Computational Modeling of Coupled Signaling by TGF-β BMP
D. Nicklas[1], and L. Saiz[1]
[1]*University of California, Davis, CA*

5:00PM Thurs-3-4-E
Receptor Modifications Control VEGFR2 Endocytosis and Endocytic Trafficking: Insights From a Computational Model
G. Liu[1], F. Mac Gabhann[1], and A. S. Popel[1]
[1]*Johns Hopkins University, Baltimore, MD*

5:15PM Thurs-3-4-F
Mechanistic Models of State-dependent Drug Binding During the Mouse Action Potential
Q. Zhou[1], G. C. Bett[1], and R. L. Rasmusson[1]
[1]*University at Buffalo, Buffalo, NY*

Track: Neural Engineering – OP-Thurs-3-5

Neural Electrode Tissue Interface

Chairs: Ravi Bellamkonda, Tracy Cui
Convention Center–Room 15

4:00PM Thurs-3-5-A
Implantable Neural Microthread Electrodes Probe at Mechanisms Behind Chronic Electrode Failure
T. D. Kozai[1], N. B. Langhals[1], P. R. Patel[1], X. Deng[1], H. Zhang[1], K. L. Smith[2], J. Lahann[1], N. A. Kotov[1], F. Hooi[1], A. K. Majewska[3], E. B. Brown[3], and D. R. Kipke[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Wadsworth Center, Albany, NY,* [3]*University of Rochester, Rochester, NY*

4:15PM Thurs-3-5-B
Molecular Approaches to Study and Modulate Neurodegeneration at the Brain-Neural Prostheses Interface
M. Ravikumar[1], J. R. Capadona[1]
[1]*Case Western Reserve University, Cleveland, OH*

4:30PM Thurs-3-5-C
Mechanics of the Brain Tissue-Microelectrode Interface in Neural Prostheses
A. Sridharan[1], and J. Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

4:45PM Thurs-3-5-D
Electrochemical Properties of Chronically Implanted Sputtered Iridium Oxide (SIROF) Microelectrodes
S. Kane[1], S. Cogan[2], D. McCreery[3], and J. Ehrlich[2]
[1]*EIC Laboratories, Norwood, MA,* [2]*EIC Laboratories, Norwood,* [3]*HMRI, Pasadena, CA*

5:00PM Thurs-3-5-E CME
In Vivo Effects of L1 Coating on Inflammation and Neuronal Health at the Electrode/Tissue Interface
C. L. Kolarcik[1], D. Bourbeau[1], E. Azemi[1], E. Rost[1], L. Zhang[1], C. F. Lagenaur[1], D. J. Weber[1], and X. T. Cui[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

5:15PM Thurs-3-5-F
Spike Activity Recorded from Regenerative Peripheral Nerve Interfaces Despite Immature Myelination
V. Desai[1], J. Seifert[1], Y-T. Kim[1] and M. Romero[1]
[1]*University of Texas at Arlington, Arlington, TX*

Track: Orthopedic and Rehabilitation Engineering – OP-Thurs-3-6

Orthopedic Biomaterials

Chairs: Eben Alsberg, William Murphy
Convention Center–Room 16

4:00PM Thurs-3-6-A CME
Short and Long Term Growth Factor Release from Biofunctionalized Bone Allograft
F. Sharmin[1], D. Adams[2], J. Lieberman[2], and Y. M. Khan[2]
[1]*University of Connecticut, Storrs, CT,* [2]*University of Connecticut Health Center, Farmington, CT*

4:15PM Thurs-3-6-B CME
Ribose Minimizes GAG Loss and Maintains Compressive Stiffness in Cartilage During Decellularization
S. V. Eleswarapu[1], and K. A. Athanasiou[2]
[1]*Rice University, Houston, TX,* [2]*University of California, Davis, CA*

4:30PM Thurs-3-6-C
A Gene Therapy Approach to Critical Size Defect Repair
C. Simpson[1], C. Sonnet[2], Z. Lazard[2], R. Olabisi[1], K. Sullivan[2], E. Olmsted-Davis[2], and J. West[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

4:45PM Thurs-3-6-D
Controlled BMP-2 Delivery Using Chondroitin Sulfate-blood Hydrogel for Musculoskeletal Application
J. A. Simson[1], Q. Lu[1], E. Vanderploeg[2], I. Strehin[3], and J. Elisseeff[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Pfizer Inc., Somerville, MA, [3]Northwestern University, Evanston, IL

5:00PM Thurs-3-6-E
Composite PDLA/PCL Nanofiber-Injectable Chitosan Gel Scaffold for Osteochondral Regeneration
Z. Cui[1], L. Wright[2], J. W. Freeman[3], H. M. Drissi[1], and L. Nair[4]
[1]University of Connecticut Health Center, Farmington, CT, [2]Virgina Tech, Blacksburg, VA, [3]Virginia Tech, Blacksburg, VA, [4]University of Connecticut Health Center, Farmington, CT

5:15PM Thurs-3-6-F
Tough Fiber-Reinforced Hydrogels as Potential Cartilage Replacements
P. Calvert[1], A. Agrawal[1], and V. Chalivendra[1]
[1]UMass Dartmouth, N Dartmouth, MA

PLATFORM SESSIONS **Th-3**

Track: Biomedical Imaging and Optics – OP-Thurs-3-7

Imaging with Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroimaging

Chairs: Chi Liu, Evan Morris, Siddartha Sikdar
Convention Center–Room 17

4:00PM Thurs-3-7-A
Extreme Cardiac Imaging-an Overview-*Invited* CME
F. Jansen[1]
[1]GE Global Research, Niskayuna, NY

4:30PM Thurs-3-7-B
Differences in Appetite-Related Brain Activity with High and Low Calorie Food in Pre-Pubescent Girls
S. Tsao[1], T. Adam[1], D. H. Hwang[1], M. I. Goran[1], and M. Singh[1]
[1]University of Southern California, Los Angeles, CA

4:45PM Thurs-3-7-C
Multi-Parameter Characterization of Circulating Tumor Cells Isolated from Cancer Patients using a Microfluidic Vortex Generator
S. L. Stott[1], S. M. Rothenberg[1], D. T. Miyamoto[1], R. J. Lee[1], L. V. Sequist[1], S. Maheswaran[1], D. A. Haber[1], and M. Toner[1]
[1]Massachusetts General Hospital, Charlestown, MA

5:00PM Thurs-3-7-D
MRI Detection of Immune Cell Infiltration in Focal Cortical Stroke in Rats using MPIOs
K. S. Tang[1], D. Granot[1], S. Quinn[1], B. Ganganna[1], and E. M. Shapiro[1]
[1]Yale University, New Haven, CT

5:15PM Thurs-3-7-E
Novel Core-shell Magnetic Nanoparticles as Highly Efficient Contrasting Agents for Magnetic Resonance Detection
H. Shao[1,2], T-J. Yoon[1,2], R. Weissleder[1,2], and H. Lee[1,2]
[1]Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital, Boston, MA

Track: New Frontiers in Biomedical Engineering – OP-Thurs-3-8

Bioengineering and Physical Sciences of Cancer

Chairs: Cynthia Reinhart-King, Adrian Shieh
Convention Center–Room 21

4:00PM Thurs-3-8-A
The Role of Force Generation and MMP Activity in 3D Cancer Cell Migration and Metastasis
C. M. Kraning-Rush[1], S. P. Carey[1], J. M. Charest[1], A. Starchenko[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

4:15PM Thurs-3-8-B
Host Epithelial Geometry Regulates Breast Cancer Cell Invasiveness
E. Boghaert[1], D. C. Radisky[2], and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ, [2]Mayo Clinic Cancer Center, Jacksonville, FL

4:30PM Thurs-3-8-C
Tyrosine Phosphatase Dysregulation Mediates EGF Sensitivity in MenaINVPositive Breast Cancer Cells
S. Alford[1], J. Condeelis[2], F. Gertler[1], and D. Lauffenburger[1]
[1]MIT, Cambridge, MA, [2]Albert Einstein College of Medicine, Bronx, New York City, NY

4:45PM Thurs-3-8-D
Breast Cancer Associated-Adipose Derived Stem Cells Promote Tumor Growth, Stiffening, and Vascularization
E. M. Chandler[1], B. Seo[1], J. Califano[1], J. Lee[1], D. Tims[1], J. Wang[1], L. Cheng[1], M. Buckley[1], I. Cohen[1], A. Nikitin[1], C. Reinhart-King[1], and C. Fischbach[1]
[1]Cornell University, Ithaca, NY

5:00PM Thurs-3-8-E
Tumor Associated Lymphatic Vessels: New targets for Cancer Immunotherapy?
A. W. Lund[1], F. Duraes[2], V. Raghavan[1], S. Hirosue[1], S. Hugues[2], and M. A. Swartz[1]
[1]Swiss Federal Institute of Technology, Lausanne, Switzerland, [2]University of Geneva Medical School, Geneva, Switzerland

5:15PM Thurs-3-8-F
Differential Adhesion and Recruitment Mechanisms of Breast Cancer Cells to E-selectin under Flow
Y. Geng[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Tissue Engineering – OP-Thurs-3-9

Musculoskeletal Tissue Engineering-II

Chairs: Johnna Temenoff, Pam Yelick

Convention Center–Room 22

4:00PM Thurs-3-9-A
Delivery of S1P Receptor-Targeted Drugs Enhances Bone Regeneration in a Cranial Defect

S. A. Tanner[1], D. A. Barker[1], and E. A. Botchwey[1]

[1]*University of Virginia, Charlottesville, VA*

4:15PM Thurs-3-9-B
Effect of the Scaffold Architecture on Osteogenic Differentiation of Human Embryonic Stem Cells

I. Marcos-Campos[1], D. Marolt[1,2], P. Petridis[1], S. Bhumiratana[1], X. E. Guo[1], and G. Vunjiak-Novakovic[1]

[1]*Columbia University, New York, NY,* [2]*The New York Stem Cell Foundation, New York, NY*

4:30PM Thurs-3-9-C
Optimization of TMAO Concentration for Improved Collagen Production in Engineered Articular Cartilage

G. D. O'Connell[1], N. Dunleavy[1], M. A. Carapezza[1], G. A. Ateshian[1], and C. T. Hung[1]

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

4:45PM Thurs-3-9-D
Effects of Mechanical Stimulation on Tissue Engineered Intervertebral Discs

R. I. Mozia[1], A. James[2], R. Hartl[2], and L. Bonassar[1]

[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York City, NY*

5:00PM Thurs-3-9-E
Electrospun Mineralized Chitosan Scaffolds as a Bioactive Aide in the Osseo-Integration of Autograft Substitutes

A. Katsman[1], M. Frohbergh[2], N. Johanson[1], and P. Lelkes[2]

[1]*Drexel University College of Medicine, Philadelphia, PA,* [2]*Drexel University, Philadelphia, PA*

5:15PM Thurs-3-9-F
Evaluating the Effects of FTY720 in Comparison with BMP-2 on Critical Size Cranial Defect Healing

A. Das[1], D. Barker[1], and E. Botchwey[1]

[1]*UVA, Charlottesville, VA*

Track: Tissue Engineering – OP-Thurs-3-10

Bioinspired Materials

Chairs: Andrea Gobin, Lakeisha Taite

Convention Center–Room 23

4:00PM Thurs-3-10-A
Synthesis and Optimization of an ECM-Hydrogel for Chondrocyte Biosynthesis and Cartilage Repair

M. R. Solomon[1], and H. H. Lu[1]

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

4:30PM Thurs-3-10-B
Image-Guided Patterning of Hydrogel Scaffolds to Mimic Neurovascular Structural Relationships in the Neural Stem Cell Niche

J. C. Culver[1], J. C. Hoffmann[2], R. A. Poché[1], J. L. West[2], and M. E. Dickinson[1]

[1]*Baylor College of Medicine, Houston, TX,* [2]*Rice University, Houston, TX*

4:45PM Thurs-3-10-C
The Evaluation of a GAG Mimic for Cartilage Tissue Engineering Applications

G. Portocarrero[1], B. Joshi[1], A. Bakhtina[1], G. Collins[1], and T. Livingston Arinzeh[1]

[1]*New Jersey Institute of Technology, Newark, NJ*

5:00PM Thurs-3-10-D
Biologically Inspired Nanobiomaterials for Orthopedic Tissue Engineering and Regenerative Medicine

L. Zhang[1,2], J. D. Lee[1], J. R. O'Brien[1], and H. Fenniri[3]

[1]*The George Washington University, Washington, DC,* [2]*Institute for Biomedical Engineering, The George Washington University, Washington, DC,* [3]*University of Alberta, Edmonton, AB, Canada*

5:15PM Thurs-3-10-E
Effect of Glutamic Acidic Peptide Modification of Aligned Electrospun PLGA Nanofibers on Calcium-Phosphate Deposition

O. Karaman[1], A. Kumar[1], X. He[1], and E. Jabbari[1]

[1]*University of South Carolina, Columbia, SC*

Track: Devices: Nano to Micro – OP-Thurs-3-11*

Medical Diagnostics: Nano to Micro Devices-I

Chairs: Andre Gobin

Convention Center–Room 24

4:00PM Thurs-3-11-A
Nanoparticle-Chaperoned 'Synthetic Biomarkers' for Advanced Functional Diagnostics

G. A. Kwong[1], G. von Maltzahn[1], G. Murugappan[1], O. Abudayyeh[1], S. Mo[1], D. Sverdlo[2], I. Papayannopoulos[1], Y. Popov[2], D. Schuppan[2], and S. Bhatia[1,3]

[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Beth Israel Deaconess Medical Center, Boston, MA,* [3]*Howard Hughes Medical Institute, Cambridge, MA*

4:15PM Thurs-3-11-B CME
Micro Magnetic Resonance Relaxometry for Label-free Rapid Malaria Diagnosis

W. K. Peng[1], and J. Han[2,3]

[1]*Singapore-Massachusetts of Institute Technology Alliance for Research and Technology, [3] Science Drive [2], Singapore,* [2]*Massachusetts Institute of Technology, Cambridge, MA,* [3]*Massachusetts Institute of Technology, Cambridge*

4:30PM Thurs-3-11-C CME
IRIS-MALDI for High-Throughput Protein Arrays: Prospectus for Clinical Analysis of Cancer Markers

V. N. Bhatia[1], J. Anding[1], M. E. McComb[2], C. E. Costello[2], and B. B. Goldberg[1]

[1]*Boston University, Boston, MA,* [2]*Boston University School of Medicine, Boston, MA*

4:45PM Thurs-3-11-D
Protein-G Based Surface Chemistry for HIV Detection On-chip

S. Wang[1], M. Esfahani[1], U. A. Gurkan[1], D. R. Kuritzkes[2], and U. Demirci[1,3]

[1]*Harvard Medical School, Bio-Acoustic MEMS laboratory, Center for Biomedical Engineering, BWH, Cambridge, MA,* [2]*Harvard Medical School, Infectious Disease/Partners AIDS Research Center, BWH, Cambridge, MA,* [3]*Harvard-MIT Health Sciences and Technology, Cambridge, MA*

5:00PM Thurs-3-11-E
High Content Single Cell Secretome Measurement Using a Multiplexed Sub-nanoliter Immunoassay Array

Y. Lu[1], J. Wang[1], E. Perry[1], and R. Fan[1]

[1]*Yale university, New Haven, CT*

5:15PM Thurs-3-11-F
Miniaturized Magnetic Resonance for Point-of-Care Diagnostics

D. Issadore[1], C. Min[1], M. Liong[1], J. Chung[1], R. Weissleder[1], and H. Lee[1]

[1]*Massachusetts General Hospital, Boston, MA*

**Supported by an unrestricted educational grant from* Boston Scientific *Defining tomorrow, today.*

PLATFORM SESSIONS **Th-3**

Track: Cardiovascular Engineering – OP-Thurs-3-12

Cardiovascular Tissue Engineering - III

Chairs: Keith Gooch, Brett Isenberg

Convention Center–Room 25

4:00PM Thurs-3-12-A
ECM Hybrid Scaffolds for Cardiac Tissue Engineering
M. R. Badrossamay[1], R. Exilus[1], J. A. Goss[1], M. L. McCain[1], and K. K. Parker[1]
[1]Disease Biophysics Group, Harvard University, Cambridge, MA

4:15PM Thurs-3-12-B
Effect of Thermosensitive Hydrogel Injection on Mechanical and Ultrastructural Properties of Porcine Myocardium
B. Wang[1], R. Bertucci[1], Z. Li[2], L. Williams[1], J. Guan[2], and J. Liao[1]
[1]Mississippi State University, Starkville, MS, [2]Ohio State University, Columbus, OH

4:30PM Thurs-3-12-C
Oriented Capillary Structures for Cardiac Tissue Engineering
L. L. Chiu[1], Y. Liang[1], and M. Radisic[1]
[1]University of Toronto, Toronto, ON, Canada

4:45PM Thurs-3-12-D
A "Layer By Layer" Approach to Engineer Vascular Tissues
S. Amensag[1], and P. McFetridge[2]
[1]University of Florida, Gainesville, FL, [2]University of Florida, Gainesville, FL

5:00PM Thurs-3-12-E
Improved Endothelialization via Optimization of Hyaluronic Acid Modification of Polyurethanes
A. Ruiz[1], J. Cheadle[1], and K. S. Masters[1]
[1]University of Wisconsin Madison, Madison, WI

5:15PM Thurs-3-12-F
Multilayer Hydrogel-electrospun Mesh Vascular Grafts
D. J. Munoz[1], V. Guiza[1], S. Sant[2], A. Khademhosseini[2], and M. S. Hahn[1]
[1]Texas A&M University, College Station, TX, [2]MIT-Harvard HST, Boston, MA

Track: Cardiovascular Engineering – OP-Thurs-3-13

Cardiovascular Growth and Remodeling

Chairs: Manu Platt, Michael Sacks

Convention Center–Room 26

4:00PM Thurs-3-13-A
The Evolution of Vulnerable Plaques in Human Coronary Arteries Using High Contrast Micro-CT Imaging
A. A. Kelly[1], N. Maldonado[1], L. Cardoso[1], and S. Weinbaum[1]
[1]The City College of New York, New York, NY

4:15PM Thurs-3-13-B
Hypertension Induced Remodeling of Muscular and Elastic Arteries in a Mini-Pig Coarctation Model
H. N. Hayenga[1], B. A. Hallmark[1], J-J. Hu[2], C. A. Meyer[1], M. W. Miller[1], T. W. Fossum[1], E. Wilson[1], and J. D. Humphrey[3]
[1]Texas A&M University, College Station, TX, [2]National Cheng Kung University, Tainan, Taiwan, [3]Yale University, New Haven, CT

4:30PM Thurs-3-13-C
Agent-Based Model of Fibroblast-Mediated Collagen Deposition and Alignment in Myocardial Infarcts
A. D. Rouillard[1], and J. W. Holmes[1]
[1]University of Virginia, Charlottesville, VA

4:45PM Thurs-3-13-D
The Importance of Initial Conditions on AAA Growth and Properties: Toward Patient Specificity via Growth and Remodeling
J. S. Wilson[1], S. Baek[2], and J. D. Humphrey[1]
[1]Yale University, New Haven, CT, [2]Michigan State University, East Lansing, MI

5:00PM Thurs-3-13-E
Heparan Sulfate Incidence and Regrowth Rate in Atheroprotective Flow Profiles
K. Adams[1], and C. Dewey[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

5:15PM Thurs-3-13-F
Arterial pO_2 Stimulates Pathological Remodeling in Human Saphenous Veins via an eNOS- and Superoxide-dependent Pathway
B. Joddar[1], M. S. Firstenberg[1], and K. J. Gooch[2]
[1]The Ohio State University, Columbus, OH, [2]Ohio State, Columbus, OH

OP- Thurs-3-14

Whitaker International Fellows and Scholars Program: Funding Opportunity for Young Biomedical Engineers

Convention Center, Room 12

Initially funded by the Whitaker Foundation, the Whitaker Fellows and Scholars Program is managed by the Institute of International Education (IIE) and supports international collaboration in the growing field of biomedical engineering. For all levels of emerging bioengineers, from graduating seniors to post-doctorate degree-holders in biomedical engineering, the Whitaker Program provides funding to U.S. citizens and permanent residents to undertake activities overseas directly related to the field. Past awards have included research in heart blood flow, improved prosthetic leg design, and development of affordable oral cancer screening tools. Projects are implemented worldwide, including countries like Australia, China, Kenya, Switzerland, the UK and Vietnam. The Whitaker Session will feature a panel of current and former Whitaker Program participants who will present their research projects, talk about their grant experience and offer application tips.

- **Mechanical Cues Induce Beta-Catenin Signaling Through a Wnt Independent, Mechanosensing Mechanism**
  Randall Platt, Whitaker International Fellow, 2010-11.
  UK, Imperial College of London
- **A Whitaker Scholar's Experiences in Immunobioengineering at EPFL in Switzerland**
  Evan Scott, Whitaker International Scholar, 2010-11,
  Switzerland, EPFL
- **Schlemm's Canal Endothelial Cell Biomechanics as a Basis for Elevated Intraocular Pressure in Glaucoma**
  Ryan Pedrigi, Whitaker International Scholar, 2009-10,
  UK, Imperial College London
- **Investigating Fibronectin Conformation Within 3D Tissue Models**
  Wes Legant, Whitaker International Fellow, 2010-11,
  Switzerland, ETH
- **A Histological, Optical, and Mechanical Examination of Fiber Orientation and Response to Loading in Carotid Artery Tissue**
  Lucas H. Timmins, Ph.D., Whitaker International Fellow, 2006-07
  UK, Queen Mary, University of London

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

OP-Thurs-3-15

International Journal of Nanomedicine Symposium

Chair: Thomas Webster

Marriott, Ballroom B

4:00PM Thurs - 3–15 – A

International Journal of Nanomedicine Early Career Award: Nanomedicine Formulations for Combination Therapies

TWAN LAMMERS

Department of Pharmaceutics, Utrecht University, The Netherlands

4:30PM Thurs - 3–15 – B

International Journal of Nanomedicine Merit Award: Nanomaterials for Implants and Medicine

HUINAN LIU,

Department of Bioengineering, University of California at Riverside, Riverside, CA, USA

5:00PM Thurs - 3– 15 – C

International Journal of Nanomedicine Distinguished Career Award: Nanomedicine: Next Generation Diagnostics and Therapeutics

JAMES LEARY

Department of Basic Medical Sciences and Biomedical Engineering, Purdue University, West Lafayette, IN, USA

FRIDAY, OCTOBER 14

TODAY'S HIGHLIGHTS

PLENARY SESSION

8:00am - 9:30am

Ballroom, Convention Center

Distinguished Achievement Lecture CME

THE CRITICAL ROLES OF CONVERGENCE SCIENCE AND TECHNOLOGICAL INNOVATION IN TOMORROW'S HEALTHCARE

Roderic Pettigrew, PhD, MD
National Institute of Biomedical Imaging and Bioengineering

NIH – NBIB Lecture CME

ROBOTICS AND SENSORY MOTOR RESTORATION

David Reinskensmeyer, PhD

POSTER SESSION **FriA**

EXHIBIT HALL OPEN Exhibit Hall, Convention Center	9:30am - 5:00pm
POSTER SESSION Fri A Exhibit Hall, Convention Center	9:30am - 1:00pm
PLATFORM SESSIONS Fri-1 See pages 100-105, Convention Center	10:30am - 12:00noon
WOMEN IN BMES Luncheon Ballroom C, Convention Center	12:00noon - 1:30pm
CAREER FAIR Exhibit Hall, Convention Center	1:00pm - 5:00pm
PLATFORM SESSIONS Fri-2 See pages 118-122, Convention Center	1:30pm - 3:00pm
POSTER SESSION Fri B Exhibit Hal, Convention Center	1:30pm - 5:00pm
PLATFORM SESSION Fri-3 See pages 123-127, Convention Center	4:00pm - 5:30pm
SPECIAL EVENT Connecticut Science Museum	6:30pm - 9:30pm

Friday, October 14, 2011

9:30AM - 1:00PM

POSTER SESSION – FRI - A

Track: Cardiovascular Engineering

Cardiovascular Tissue Engineering

PS – Fri – A - 1

Stabilizing Microvessels: Separating Paracrine from Contact-Dependent Effects of Pericytes

J. W. Andrejecsk[1], M. Trivellas[1], J. S. Pober[1], and W. M. Saltzman[1]

[1]Yale University, New Haven, CT

PS – Fri – A – 2

Carbon Nanofibers for Myocardial Tissue Engineering Applications

D. Stout[1], B. Basu[2], and T. J. Webster[1]

[1]Brown University, Providence, RI, [2]India Institute of Technology, Kanpur, Kanpur, India

PS – Fri – A – 3

Aggressive Nutrient Gradients for Enhanced Cell Migration of Engineered Vascular Scaffolds

Z. Tosun[1], and P. McFetridge[1]

[1]University of Florida, Gainesville, FL

PS – Fri – A – 4

Valvular Interstitial Cell-seeded Microfibrous PGS-PCL Scaffolds for Heart Valve Tissue Engineering

S. Sant[1,2], D. Iyer[1,2], A. Kashyap[1,2], K. Shapero[3], J. Bischoff[3], and A. Khademhosseini[1,2]

[1]Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, [3]Vascular Biology Program, Children's Hospital, Boston, MA

PS – Fri – A – 5

A Hybrid Self-Regenerative Engineered Tissue for Heart Valve Leaflets

S. Alavi[1,2], and A. Kheradvar[1,2]

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

PS – Fri – A – 6

Injectable Biomimetic Materials Using Carbon Nanofibers For Cardiovascular Applications

X. Meng[1], D. Stout[1], and T. Webster[1]

[1]Brown University, Providence, RI

PS – Fri – A – 7

Multi-Scale Structural-Mechanical Coupling Between Scaffold and Cardiomyocytes Embedded in Collagen for Cardiac Tissue Engineering

A. Jean[1], S. R. Bass[1], R. Wilusz[2], F. Guilak[2], and G. C. Engelmayr[1]

[1]The Pennsylvania State University, University Park, PA, [2]Duke University, Durham, NC

PS – Fri – A – 8

The Study of Time Varying Effects in the Dynamic Culture of Engineered Heart Valves

M. Salinas[1], R. Lange[2], D. Schmidt[3], and S. Ramaswamy[1]

[1]Florida International University, Miami, FL, [2]Applied Sciences Corporation, Pittsburgh, PA, [3]University of Pittsburgh, Pittsburgh, PA

PS – Fri – A – 9

Direct Co-Culture of Endothelial Progenitor Cells with Mesenchymal Stem Cells on Nanograted Surfaces

C. E. Fernandez[1], F. Zhao[1], K. W. Leong[1], and W. M. Reichert[1]

[1]Duke University, Durham, NC

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – A – 10
Initial Polymer Molecular Weight Distribution Controls By-product Fate From Erodible Endovascular Scaffolds
J. FERDOUS[1], AND T. SHAZLY[1]
[1]*University of South Carolina, Columbia, SC*

Track: Cardiovascular Engineering

Cardiovascular Growth and Remodeling

PS – Fri – A – 11
Arterial Buckling Promotes NF-kB Activation that Associates with Cell Proliferation in Porcine Carotid Arteries Perfused *Ex Vivo*
Y. XIAO[1], Y. ZHAO[1], D. HAYMAN[1], AND H-C. HAN[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS – Fri – A – 12
A Three-Dimensional Description of Arterial Growth and Remodeling
I. KARSAJ[1], J. SORIC[1], AND J. D. HUMPHREY[2]
[1]*University of Zagreb, Zagreb, Croatia,* [2]*Yale University, New Haven, CT*

PS – Fri – A – 13
A Feedback Control Model of the Glomerular Capillary Wall
S. HUNT[1], K. DORFMAN[1], Y. SEGAL[1,2], AND V. BAROCAS[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Veterans Affairs Health Care System, Minneapolis, MN*

PS – Fri – A – 14
Altered Intracardiac Flow Patterns in the Left Atrial Ligated Chick Embryo
N. C. TESLOVICH[1], W. J. KOWALSKI[1], J. P. TINNEY[2], B. B. KELLER[2], AND K. PEKKAN[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Cardiovascular Innovation Institute, University of Louisville, Louisville, KY*

PS – Fri – A – 15
Accelerated Arteriogenesis In Collateral Arterial Segments Exposed To Flow Reversal After Femoral Arterial Ligation
J. K. MEISNER[1], J. NIU[1], AND R. J. PRICE[1]
[1]UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA

PS – Fri – A – 16
Regulating Calcitonin-like Receptor Signaling through Transmembrane Domain Interactions
P-C. SU[1], W. SI[1], J. K. WU[2], AND B. W. BERGER[1]
[1]*Lehigh University, Bethlehem, PA,* [2]*Lehigh Valley Hospital, Allentown, PA*

PS – Fri – A – 17
Tissue Remodeling in Sickle Cell Disease
P. M. KEEGAN[1], AND M. PLATT[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – A – 18
Ascending Aortic Aneurismal Tissue Variations With Valve Type
E. WENER[1]
[1]*McGill University, Montreal, QC, Canada*

PS – Fri – A – 19
Mechanical Properties of Fetal TGFβ2 Null Mouse Atrioventricular Valves
P. R. BUSKOHL[1], M. J. SUN[1], S. KASHYAP[1], AND J. T. BUTCHER[1]
[1]*Cornell University, Ithaca, NY*

Track: Devices: Nano to Micro

Medical Diagnostics: Nano to Micro Devices

PS – Fri – A –20
A Detailed Study of the Nano-Porous Membranes with Applications in the Enhanced Detection of Cardiovascular Biomarker Proteins
P. FEIKERT[1]
[1]*Wichita State University, Wichita, KS*

PS – Fri – A –21
A Lateral Flow Integrated Barcode Blood Chip for Multiplexed Detection of Gliobastoma Multiforme Biomarkers in Blood
J. WANG[1], A. SUTHERLAND[1], AND J. R. HEATH[1]
[1]*NanoSystems Biology Cancer Center, Kavli Nanoscience Institute, Division of Chemistry and Chemical E, Pasadena, CA*

PS – Fri – A –22
Wireless Recording of Multiple Physiological Parameters
Y-S. SEO[1], M. D. SHETH[1], H. CAO[1], W-D. HUANG[1], AND J-C. CHIAO[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS – Fri – A –23
Performance of a Wirelessly Rechargeable Pacemaker for Gastric Stimulation
S. DEB[1], T. ABELL[2], C. LAHR[2], S. J. TANG[2], S. RAO[1], AND J-C. CHIAO[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Mississippi Medical Center, Jackson, MS*

PS – Fri – A –24
A Label-Free CD4+ T-Lymphocyte Counting Microfluidic Chip for Portable Point of Care Testing
U. A. GURKAN[1], S. MOON[1,2], J. BLANDER[3], W. W. FAWZI[4], S. ABOUD[5], F. MUGUSI[5], D. R. KURITZKES[1], AND U. DEMIRCI[1]
[1]*Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA,* [2]*Daegu Gyeongbuk Institute of Science & Technology, Daegu, Korea, Republic of,* [3]*Harvard Medical School, Boston, MA,* [4]*Harvard School of Public Health, Boston, MA,* [5]*Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania*

PS – Fri – A –25
Magnetic Nanoparticle Enhanced Nano-SPR Multiplex Biosensor
J. P. CASAS[1], M. VENKATARAMASUBRAMANI[1], W. H. SHI[1], AND L. TANG[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS – Fri – A –26
Gold Enhanced ELISA for Ultra-Sensitive Detection
D. N. PATEL[1], Z. CLEMANS[1], K. JAMES[1], D. STEPHENS[1], AND A. M. GOBIN[1]
[1]*University of Louisville, Louisville, KY*

PS – Fri – A –27
Functionalized Microelectrodes for Electrochemical Measurement within Disposable Microfluidic Devices
S. W. COOKSON[1], AND E. SALDIVAR[1]
[1]*West Wireless Health Institute, La Jolla, CA*

PS – Fri – A –28
Facile and Chemoselective Fabrication of High Density Peptide Microarray by Click Chemistry in One Step
Y. ZHAO[1], Y. LIU[1], Y. SONG[1], AND J. LIAO[1]
[1]*University of California at Riverside, Riverside, CA*

PS – Fri – A –29
Dielectrophoretic Characterization of of Mycobacteriaand Prostate Cancer Cells
C. HUANG[1], S. ARASANIPALAI[1], B. G. HAWKINS[1], AND B. J. KIRBY[1]
[1]*Cornell University, Ithaca, NY*

POSTER SESSION **FriA**

See page 17 for Poster floor plan

PS – Fri – A –30
High Throughput Diagnostic Device for On-chip Capture and Analysis of Circulating Tumor Cells
J. Chung[1], H. Shao[1], R. Weissleder[1], and H. Lee[1]
[1]MGH / Harvard Medical School, Boston, MA

PS – Fri – A –31
Flexible Multielectrode Array for Surface EMG Recordings From Facial Muscles
C. Metallo[1], and B. Trimmer[2]
[1]Tufts University School of Medicine, Boston, MA, [2]Tufts University, Medford, MA

PS – Fri – A –32
Million-Cell FISH Array for Large-Scale Genetic Characterization of Cancers
L. Jiang[1], and J. Guan[1]
[1]Florida State University, Tallahassee, FL

PS – Fri – A –33
Electrochemical Gas Sensor Array Platform for Lung Cancer Profiling
Q. Yan[1,2], H. Sun[1,3], and F. F. Chen[1]
[1]Lawrence Berkeley National Laboratory, Berkeley, CA, [2]Beijing University of Posts and Telecommunications, Beijing, China, People's Republic of, [3]Zhejiang University, Zhejiang, China, People's Republic of

POSTER SESSION **FriA**

PS – Fri – A –34
Nanomonitors for Cardiac Disease Diagnosis
S. M. Brandigampala[1]
[1]Wichita State University, Wichita, KS

PS – Fri – A –35
Dynamic Staining Breaks Century-Old Traditions of Bioanalyses
V. Nunez[1], S. Upadhyayula[1], S. Gupta[1], J. Avesar[1], and V. I. Vullev[1]
[1]University of California, Riverside, Riverside, CA

PS – Fri – A –36
Self Contained Paper Driven Bead Based Diagnostics Device
J. Chou[1]
[1]Rice University, Houston, TX

PS – Fri – A –37
Guided Tumor Cell Migration on Microscale Mimics of Contact Guidance Cues
D. Gallego Perez[1], N. Higuita Castro[1], L. Denning[1], J. DeJesus[1], K. Dahl[1], A. Sarkar[2], and D. Hansford[1]
[1]The Ohio State University, Columbus, OH, [2]The Ohio State University, Columbus

PS – Fri – A –38
Isothermal Nucleic Acid Amplification Assays to Detect Genomic Sequences of Mycobacterium tuberculosis
M. A. Garretson[1,2], T. Ferguson[3], I. Tolstorukov[2], and A. Niemz[2]
[1]Bard College at Simon's Rock, Great Barrington, MA, [2]Keck Graduate Institute, Claremont, CA, [3]Claremont Biosolutions, Claremont, CA

PS – Fri – A –39
Clinical Applications of High-Throughput Single-Cell Deformability Measurements
D. R. Gossett[1], H. T. Tse[1], S. Lee[1], O. Adeyiga[1], O. Yang[1], A. T. Clark[1], and D. Di Carlo[1]
[1]University of California Los Angeles, Los Angeles, CA

PS – Fri – A –40
A Low-Power, Multi-Channel Sensing System for Monitoring Patients
M. Sheth[1], H. Cao[1], S. K. Thakar[1], Y-S. Seo[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Devices: Nano to Micro

Micro and Nanostructured Biomaterials

PS – Fri – A – 41
Adsorption of Proteins onto PDMS-Like Nanofilms to Promote Mammalian Cell Adhesion
R. E. Coronado[1], K. Y. Chumbimuni-Torres[1], A. M. Mfuh[1], M. F. Silva[2], G. R. Negrete[1], R. Bizios[1], and C. D. Garcia[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]National University of Cuyo, Mendoza, Argentina

PS – Fri – A – 42
Green Microfluidics Made of Corn Proteins
A. Hsiao[1], J. Luecha[1], L. Liu[1], and J. Kokini[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PS – Fri – A – 43
Self-Assembled Organic Microwires as a New Biosensor Platform
N. Hsu[1], P. Latterman[1], M. Tong[1], C. Tran[1], A. Wu[1], M. Ziv[1], and H. Tsutsui[1]
[1]University of California, Los Angeles, Los Angeles, CA

PS – Fri – A – 44
Self-Assembled Virus Templates for Surface Enhanced Raman Spectroscopy
A. L-H. Fu[1], A. Brown[2], W. W. Yu[1], I. M. White[1], J. N. Culver[2], and P. Kofinas[1]
[1]University of Maryland, College Park, MD, [2]Institute for Bioscience and Biotechnology Research, College Park, MD

PS – Fri – A – 45
Nanofabrication of Very Large Scale Integration (VLSI) Circuits using Magnetotactic Bacteria
I. G. Macwan[1], S. Patel[1], A. Aphale[1], S. Bhosale[1], J. Rho[1], and P. Patra[1]
[1]University of Bridgeport, Bridgeport, CT

PS – Fri – A – 46
On-Demand Enzymatic Function: Entrapment Procedures Utilizing Hydrolysable Crosslinker PEGDA
A. M. Mariani[1], S. Jammula[1], and P. Kofinas[1]
[1]University of Maryland, College Park, College Park, MD

PS – Fri – A – 47
Portable Nanoimprinting of Silk Fibroin Films
A. N. Mitropoulos[1], M. Paquette[1], and F. Omenetto[1]
[1]Tufts University, Medford, MA

PS – Fri – A – 48
Independently Controlling Protein Dot Size and Spacing in Particle Lithography
Z. R. Taylor[1], J. C. Keay[1], M. B. Johnson[1], and D. W. Schmidtke[1]
[1]University of Oklahoma, Norman, OK

PS – Fri – A – 49
Modeling Cooperative Self-Assembly
S. He[1], A. Lam[1], Y. Jeune-Smith[2], and H. Hess[1]
[1]Columbia University, New York, NY, [2]University of Florida, Gainesville, FL

PS – Fri – A – 50
Novel Method of Shear Induced Fibronectin Fibrillogenesis by Rotary Jet-Spinning
H. A. McIlwee[1], M. R. Badrossamay[1], P. Mellado[1], J. A. Goss[1], and K. K. Parker[1]
[1]Disease Biophysics Group, Harvard University, Cambridge, MA

PS – Fri – A – 51
Modularity in Micropattern Engineering to Affect Cell Motility
K. Kushiro[1], and A. R. Asthagiri[1]
[1]Northeastern University, Boston, MA

PS – Fri – A – 52
Rational Design of a Macroscale Linear Force Transducer Based on Molecular Filament-Arrays
R. R. Agayan[1], R. Tucker[2], and H. Hess[1]
[1]Columbia University, New York, NY, [2]University of California, San Francisco, San Francisco, CA

PS – Fri – A – 53
Using AFM to Assess the Effect of Microbial Activity on Soil Electrical Properties
R. Chen[1], N. Hao[1], D. Ntarlagiannis[2], S. Moysey[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC,* [2]*Rutgers University, Newark, NJ*

PS – Fri – A – 54
Real-Time Monitoring of Cell Stretching and Migration on Aligned Fibrous Scaffolds
K. Sheets[1], J. Wang[1], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Drug Delivery Systems

Nucleic Acid Delivery

PS – Fri – A – 55
Designing a Molecular Beacon Based Selection of Cells Expressing a Targeted Gene Correction
B. Scott[1], B. Wile[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – A – 56
Non-viral Gene Delivery for Human Microvasculature and Macrovasculature
R. B. Shmueli[1], J. C. Sunshine[1], Z. Xu[1], E. Duh[1], and J. J. Green[1]
[1]*Johns Hopkins School of Medicine, Baltimore, MD*

PS – Fri – A – 57
Poly(ββ-amino ester)s Exhibit an Optimal Molecular Weight for Plasmid DNA Delivery
A. A. Eltoukhy[1], D. J. Siegwart[1], J. S. Rajan[1], R. S. Langer[1], and D. G. Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

PS – Fri – A – 58
Nano-Gold/Degradable Polymer Hybrid Nanoparticles for Co-Delivery of DNA and siRNA
C. J. Bishop[1], J. C. Sunshine[1], and J. J. Green[1]
[1]Johns Hopkins University, Baltimore, MD

PS – Fri – A – 59
Cathepsin B-Sensitive Polymers for Compartment-Specific Degradation and Nucleic Acid Release
D. S. Chu[1], R. N. Johnson[1], and S. H. Pun[1]
[1]*University of Washington, Seattle, WA*

PS – Fri – A – 60
Octa-functional PLGA Nanoparticles for Targeted and Efficient siRNA Delivery to Tumors
J. Zhou[1], T. Patel[1], M. Fu[1], J. Bertram[1], and W. M. Saltzman[1]
[1]*Yale University, New Haven, CT*

PS – Fri – A – 61
HPMA-co-oligolysine-oligohistidine Copolymers for Nucleic Acid Delivery
J. Shi[1], R. Johnson[1], and S. Pun[1]
[1]*University of Washington, Seattle, WA*

PS – Fri – A – 62
A Transferrin Variant Conjugated to Polyethyleneimine Improves Transfection Efficiency
C. T. Ying[1], R. Y. Chiu[1], D. S. Quinlan[1], A. B. Mason[2], and D. T. Kamei[1]
[1]*UCLA, Los Angeles, CA,* [2]*University of Vermont, Burlington, VT*

PS – Fri – A – 63
A Novel Tumor Vascular Network for Screening Drug Delivery Systems
B. Prabhakarpandian[1], M-C. Shen[1], J. Nichols[1], I. Mills[1], M. Matar[2], J. Fewell[2], K. Anwer[2], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*EGEN, Inc., Huntsville, AL*

PS – Fri – A – 64
Creating and Selecting Aptamers using Cell-SELEX Through a Novel System — Yeast Surface Display
H-W. Meng[1], X. Hu[1], X. Chen[1], Y. Toyoda[1], and M. Jin[1]
[1]*Cornell University, Ithaca, NY*

PS – Fri – A – 65
Direct Measurements of Mechanical Properties of Condensed DNA Using Optical Tweezers
A. Lee[1], A. Karcz[1], C. Tie[1], S. Sucayan[1], J. Mixson[2], J. Kahn[1], and J. Seog[1]
[1]*University of Maryland, College Park, MD,* [2]*University of Maryland, Baltimore, MD*

PS – Fri – A – 66
Zein: A Natural Protein for Polymeric Gene Delivery
M. C. Regier[1], T. Borcyk[1], J. Mills[1], Y. Yang[1], and A. K. Pannier[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

PS – Fri – A – 67
Targeted Gastrointestinal Tract Therapy through Sonoporation
J. Tlaxca[1], J. Rychak[2], A. Klibanov[1], C. Burke[1], R. Price[1], and M. Lawrence[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Targeson, Inc., San Diego, CA*

Track: Drug Delivery Systems

Targeted Drug Delivery

PS – Fri – A – 68
Development of a Dual-receptor Targeted Drug Delivery System for Treating Vascular Disease
G. Lamberti[1], M. Kiani[1], and B. Wang[1]
[1]*Temple University, Philadelphia, PA*

PS – Fri – A – 69
A Novel Application of Cellulose Nanocrystals for Targeted Drug Delivery to Brain Tumor Cells
H. J. Cho[1], S. Dong[1], M. Roman[1], and Y. W. Lee[1,2]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA,* [2]*Virginia Polytechnic Institute and State University, Blacksburg*

PS – Fri – A – 70
Heterogeneous Liposome Membranes with pH-Triggered Permeability Enhance the *In Vitro* Antitumor Activity of Folate-Receptor Targeted Liposomal Doxorubicin
E. Mamasheva[1], S. Sofou[2], and A. Bandekar[2]
[1]*Polytechnic Institute of NYU, Brooklyn, NY,* [2]*Rutgers University, Piscataway, NJ*

PS – Fri – A – 71
Triggered Targeting of Liposomal Chemotherapy *In Vivo* Controls Tumor Growth and Potential Toxicities
A. Bandekar[1], and S. Sofou[1]
[1]*Rutgers University, Piscataway, NJ*

PS – Fri – A – 72
Engineering Viral Nanoparticles for Applications in Medicine: Loading the Interior Cavity of VNPS with Drugs and Imaging Moieties
A. Wen[1], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Fri – A – 73
Nitric Oxide Induces Chemosensitivity to Carmustine in Human Glioblastoma Cells
S. Safdar[1], and L. J. Taite[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – A – 74
Quorum Sensing Salmonella Form Colonies and Selectively Trigger Protein Expression in Therapeutically Resistant Tumor Tissue
C. A. Swofford[1], and N. S. Forbes[1]
[1]University of Massachusetts Amherst, Amherst, MA

PS – Fri – A – 75
Microbubbles for Diagnosis and Treatment of Cancer and Atherosclerosis
S. L. Santimano[1,2], A. S. Wadajkar[1,2], R. Patil[1,2], Y. Liu[1,2], K. T. Nguyen[1,2], and B. Yuan[1,2]
1University of Texas, Arlington, TX, 2University of Texas Southwestern Medical Center, Dallas, TX

PS – Fri – A – 76
Fabrication of Drug-loaded Polymeric Particles Coated with Calcium Phosphate and Functionalized with Bisphosphonate Moieties for Enhanced Bone Targeting
K. Bastari[1], Y. Khung[1], S. Venkatraman[1], and S. Loo[1]
[1]Nanyang Technological University, Singapore, Singapore

PS – Fri – A – 77
Targeted Enzyme Prodrug Therapy to Breast Tumor Vasculature
B. Van Rite[1], M. Cherry[2], C. Kurkjian[2], V. Sikavitsas[1], and R. Harrison[1]
[1]University of Oklahoma, Norman, OK, [2]University of Oklahoma Health Sciences Center, Oklahoma City, OK

PS – Fri – A – 78
In Vitro Characterization of Docetaxel Loaded Microbubbles for Ultrasound Triggered Drug Delivery
M. Cochran[1], J. Eisenbrey[1], T. Bustamante[2], and M. Wheatley[1]
[1]Drexel University, Philadelphia, PA, [2]University of Marquette, Milwaukee, WI

PS – Fri – A – 79
Incorporation of Different Drugs in PLA Electrospun Nanofibers for Drug Delivery Applications
M. Mohiti-Asli[1], S. Saha[1,2], B. Pourdeyhimi[1], and E. G. Loboa[1,2]
[1]North Carolina State University, Raleigh, NC, [2]University of North Carolina, Chapel Hill, NC

PS – Fri – A – 80
Amphiphilic Diblock Polymer Micelles for Oxidation-dependent Drug Delivery
M. K. Gupta[1], and C. L. Duvall[1]
[1]Vanderbilt University, Nashville, TN

PS – Fri – A – 81
Novel Strategy of Selecting Human Single-Chain Antibodies Against Tumor Surface Antigen and Its Applications to Treat Thyroid Cancer Patients
J. Leelawattanachai[1], X. Gu[1], P. Michael[1], E. Casey[1], S. Park[1], J. Munir[1], and M. M. Jin[1]
[1]Cornell University, Ithaca, NY

PS – Fri – A – 82
Laser-triggered Au-NPs Coated PHB Granules for Targeted Drug Release
C. Bardliving[1], D. Rey[1], D. Kirui[1], and C. Batt[1]
[1]Cornell University, Ithaca, NY

PS – Fri – A – 83
A Composite Hybrid Nanoparticle to Overcome Intracellular Barriers in Drug Delivery
S. Khaled[1], A. Parodi[1], B. Brown[1,2], and E. Tasciotti[1]
[1]The Methodist Research Institute, Houston, TX, [2]University of Texas Health Science Center, Houston, TX

Track: Neural Engineering

Neural Tissue Engineering

PS – Fri – A – 84
Micropatterning Neuronal Networks on Nanofibers Platform
V. Malkoc[1], D. Gallego-Perez[1], J. Johnson[1], J. J. Lannutti[1], and D. J. Hansford[1]
[1]The Ohio State University, Columbus, OH

PS – Fri – A – 85
Single Walled Carbon Nanotube Inclusion in 3D Composite Hydrogels Does Not Affect Neurite Outgrowth
A. L. McGregor[1], K. W. Keating[1], A. N. Koppes[1], and D. M. Thompson[1]
[1]Rensselaer Polytechnic Institute & Center for Biotechnology and Interdisciplinary Studies, Troy, NY

PS – Fri – A – 86
Exogenous Electrical Stimulation of Non-Neural Support Cells Increases Migration in 3D Hydrogels
A. N. Koppes[1], A. L. Nordberg[1], G. Paolillo[1], H. Darwish[1], and D. M. Thompson[1]
[1]Rensselaer Polytechnic Institute and Center for Biotechnology and Interdisciplinary Studies, Troy, NY

PS – Fri – A – 87
Hydrolytically Degradable Affinity PEG Hydrogel Scaffolds for Neural Stem Cell Delivery
Y. Wei[1], and J. B. Leach[1]
[1]University of Maryland, Baltimore County, Baltimore, MD

PS – Fri – A – 88
An Automated Algorithm for the Quantitative Analysis of Nerve Cell Alignment on Anisotropic Silk Films
A. R. Nectow[1], M. E. Kilmer[1], and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

PS – Fri – A – 89
Instructive Glycomimetic Functionalized Scaffolds for Peripheral Nerve Injury
S. N. Masand[1], M. Schachner[1], and D. I. Shreiber[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

PS – Fri – A – 90
A Matlab-Based Algorithm for Automatic Tracing of Confluent Neuronal Images
J. A. Mitchel[1], and D. Hoffman-Kim[1]
[1]Brown University, Providence, RI

Track: Neural Engineering

Prosthetics Engineering

PS – Fri – A – 91
Wavelet-Based Brain Feature Determination Using Functional Near-Infrared Spectroscopy
H. T. Nguyen[1], and V. Vo[1]
[1]International University of VNU-HCM, Ho Chi Minh, Vietnam

PS – Fri – A – 92
Ultra-High Photosensitivity Nanowire Arrays for Retinal Prosthesis
M. L. Khraiche[1], G. A. Silva[2], G. Cauwenberghs[2], W. Freeman[3], D. Wang[2], and Y. Lo[2]
[1]UCSD, La Jolla, CA, [2]UCSD, La Jolla, CA, [3]Jacobs Retina Center, La Jolla, CA

PS – Fri – A – 93
An Approach for Identifying Posturo-Locomotion-Manual Events Using Wavelet Denoising Technique and Three Wireless IMU
R. Soangra[1], and T. E. Lockhart[1]
[1]Virginia Tech, Blacksburg, VA

POSTER SESSION FriA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – A – 94
Targeting Deep Brain Regions with Optimized Multielectrode Transcranial Direct Current Stimulation
J. Dmochowski[1], M. Bikson[2], and L. C. Parra[2]
[1]CCNY, New York, NY, [2]City College of New York, New York, NY

PS – Fri – A – 95
Dual-Sided Macro-Sieve Electrodes Enable Selective Activation of Motor Axons and Distal Musculature
M. R. MacEwan[1], E. Zellmer[1], and D. Moran[1]
[1]Washington University, Saint Louis, MO

PS – Fri – A – 96
Plantarflexion Torque Variability in Extended and Flexed Knee Positions
E. M. Mello[1], F. H. Magalhães[1], and A. F. Kohn[1]
[1]University of Sao Paulo, Sao Paulo, Brazil

PS – Fri – A – 97
Application of a Web-based Simulator to a Study of Neuromuscular Training in Humans
L. A. Elias[1], V. M. Chaud[1], R. N. Watanabe[1], and A. F. Kohn[1]
[1]University of São Paulo, São Paulo, Brazil

PS – Fri – A – 98
Comparison of Mechanical- and EMG-based Estimates of Trunk Reflexes to Sudden Perturbations
B. Hendershot[1], B. Bazrgari[2], M. A. Nussbaum[1], and M. L. Madigan[1]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Virginia Tech, Blacksburg, VA, [2]Department of Industrial and Systems Engineering, Virginia Tech, Blacksburg, VA

PS – Fri – A – 99
Probabilistic Models of Peripheral Axon Activation
E. J. Peterson[1], and D. J. Tyler[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

PS – Fri – A – 100
10 Hz Non-Invasive Electrical Stimulation May Modulate Visual Attention
J. K. Rice[1], and L. Parra[2]
[1]City College of New York, Brooklyn, NY, [2]City College of New York, New York, NY

PS – Fri – A – 101
Nonlinear Feedforward-Feedback Control of an Uncertain, Time-delayed 2DOF Musculoskeletal Arm Model
P. Cooman[1], and R. F. Kirsch[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA, Cleveland, OH

PS – Fri – A – 102
Calcium Channel Dynamics Limit Synaptic Release in Response to Prosthetic Stimulation with Sinusoidal Waveforms
D. K. Freeman[1,2], J. S. Jeng[1,2], S. K. Kelly[2,3], E. Hartveit[4], and S. I. Fried[2,5]
[1]Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Boston VA Healthcare System, Boston, [3]Massachusetts Institute of Technology, Cambridge, MA, [4]University of Bergen, Bergen, Norway, [5]Massachusetts General Hospital and Harvard Medical School, Boston, MA

PS – Fri – A – 103
Molecular Profile of Regenerated Peripheral Nerve Responses to Chronic Multi-electrode Arrays
T. Musa[1], M. Romero-Ortega[1], and E. W. Keefer[2]
[1]University of Texas at Arlington, Arlington, TX, [2]Plexon Inc, Dallas, TX

PS – Fri – A – 104
Factors Affecting the Reliability by Which Spikes are Generated in Response to High Rates of Stimulation
S. Fried[1,2], C. Cai[3], Q. Ren[3], and J. Rizzo[4]
[1]Mass General Hospital, Boston, MA, [2]VA Boston Healthcare System, Boston, [3]Shanghai Jiaotong University, Shanghai, China, People's Republic of, [4]MEEI, Boston, MA

Track: New Frontiers in Biomedical Engineering

Bioengineering & Physical Sciences of Cancer & System Biology

PS – Fri – A – 105
Stiffness Sensing as a Metastatic Indicator
D. Ryman[1], Y. Ebata[2], A. Crosby[1], and S. Peyton[1]
[1]University of Massachusetts, Amherst, Amherst, MA, [2]University of Massachusetts Amherst, Amherst, MA

PS – Fri – A – 106
Primary Cilia Mechanotransduction in Lung Adenocarcinoma Cells
S. Patel[1], and R. L. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

PS – Fri – A – 107
Breast Cancer Cell Chemotaxis using a 3D Microfluidic *In Vitro* Model
B. Kim[1], P. Hannanta-anan[1], M. A. Swartz[2], and M. Wu[1]
[1]Cornell University, Ithaca, NY, [2]Ecole Polytechnique Federal de Lausanne, Lausanne, Switzerland

PS – Fri – A – 108
Photodynamic Therapy Using Targeted Single-Walled Carbon Nanotubes for Cancer Treatment
L. F. Neves[1], D. E. Resasco[1], and R. G. Harrison[1]
[1]University of Oklahoma, Norman, OK

PS – Fri – A – 109
Pilot Study on Irreversible Electroporation with High Frequency Pulse Trains
C. B. Arena[1], M. B. Sano[1], J. H. Rossmeisl, Jr.[2], M. N. Rylander[1], and R. V. Davalos[1]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA

PS – Fri – A – 110
Novel Surfaces for the *In Vitro* Study of Endothelial and Cancer Cell Interactions
L. Dickinson[1], and S. Gerecht[1]
[1]Johns Hopkins University, Baltimore, MD

PS – Fri – A – 111
Role of Beta-catenin Gene Expression in the Regulation of Colon Cancer Cell Adhesion
S. Agastin[1], Y. Geng[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

PS – Fri – A – 112
Supplementation of MCF-7 Cells with Fatty Acids Increases the Effectiveness of Tamoxifen *In Vitro*
C. T. Gomillion[1,2], and K. J. Burg[1]
[1]Institute for Biological Interfaces of Engineering & Dept. of Bioengineering, Clemson University, Clemson, SC, [2]Department of Reconstructive Sciences, University of Connecticut Health Center, Farmington, CT

PS – Fri – A – 113
Ex Vivo Study of Ethanol Enhanced Cavitation Activity in Tissue Exposed to High Intensity Focused Ultrasound
C. Chen[1], D. B. Khismatullin[1], Y. Liu[2], S. Maruvada[2], and M. Myers[2]
[1]Tulane University, New Orleans, LA, [2]Devices and Radiological Health, U.S. Food and Drug Administration, Silver Spring, MD

PS – Fri – A – 114
Changes in Cell Physical Properties Provide the Force Driving Uncontrolled Growth of Cancer Cells
P. Katira[1], M. Zaman[2], and R. Bonnecaze[1]
[1]The University of Texas at Austin, Austin, TX, [2]Boston University, Boston, MA

PS – Fri – A – 115

Primary Tumor-Initiating Cells Overcome Matrix Limitations On Spreading, Motility, and Proliferation

S. Y. Wong[1,2], T. A. Ulrich[1,2], L. P. Deleyrolle[3,4], B. A. Reynolds[3,4], and S. Kumar[1,2]

[1]University of California, Berkeley, Berkeley, CA, [2]UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, [3]McKnight Brain Institute, University of Florida, Gainesville, FL, [4]Queensland Brain Institute, University of Queensland, Brisbane, Australia

PS – Fri – A – 116

Computational Modeling of Cancer Cell Migration and Detachment During Oncogenic EMT

R. E. Zielinski[1], C. Mihai[1], and S. N. Ghadiali[1,2]

[1]The Ohio State University, Columbus, OH, [2]Dorothy M. Davis Heart and Lung Research Institute, Columbus, OH

PS – Fri – A – 117

The Effect of Shape on the Pharmacokinetics and Biodistribution of Iron Oxide Nanoparticles

R. Toy[1], E. Tran[1], A. Camann[1], J. Pansky[1], C. Shoup[1], D. Zhou[1], H. Chu[1], P. M. Peiris[1], and E. Karathanasis[1]

[1]Case Western Reserve University, Cleveland, OH

PS – Fri – A – 118

Analysis of Bone-Matrix Proteins Using Nanoscale-Size Bone Samples and Proteomics Methodology

G. Sroga[1], and D. Vashishth[1]

[1]Rensselaer Polytechnic Institute, Troy, NY

PS – Fri – A – 119

Correlation of Shear Stress and Angiogenesis Using μPIV Flow Diagnostics in an *In Vitro* Tumor Model

C. F. Buchanan[1], E. E. Voigt[1], C. S. Szot[1], P. P. Vlachos[1], J. W. Freeman[1], and M. N. Rylander[1]

[1]Virginia Tech, Blacksburg, VA

PS – Fri – A – 120

Diversity in Mycobacteria Through Asymmetric Growth and Division

B. Aldridge[1], M. Fernandez-Suarez[1,2], D. Heller[1], D. Irimia[3], M. Toner[3], and S. Fortune[1]

[1]Harvard School of Public Health, Boston, MA, [2]Massachusetts General Hospital, Boston, [3]Massachusetts General Hospital, Boston, MA

PS – Fri – A – 121

Functional Assays of Drug-Target Engagement on High Purity CTCs Correlate with Patient Progression

B. Kirby[1], E. Pratt[1], S. Santana[1], J. Smith[1], J. Gleghorn[2], H. Liu[3], N. Bander[3], M. Jodari-Karimi[3], M. Loftus[3], D. Nanus[3], and P. Giannakakou[3]

[1]Cornell University, Ithaca, NY, [2]Princeton University, Princeton, NJ, [3]Weill Cornell Medical College, New York, NY

PS – Fri – A – 122

A Microfluidic Device To Control Interstitial Pressures Within Engineered Tumors

J. Tien[1], K. Lee[2], and C. M. Nelson[2]

[1]Boston University, Boston, MA, [2]Princeton University, Princeton, NJ

PS – Fri – A – 123

Methods Towards Elucidating Real-time α-factorInduced Yeast Peptide Secretion

A. Kole[1], E. L. Curtis[1], C. C. Marasco[1], C. R. Goodwin[1], J. R. Enders[1], T. R. Graham[1], P. A. Weil[1], K. T. Seale[1], J. A. McLean[1], and J. P. Wikswo[1]

[1]Vanderbilt University, Nashville, TN

PS – Fri – A – 124

Universal Vitrification of Rare Cancer Cells from Different Origins by Ultra-fast Cooling

Y. Heo[1], S. Nagrath[1], A. L. Moore[1], I. Malinowska[2], M. Zenali[1], D. Kwiatkowski[2], and M. Toner[1]

[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – A – 125

Dynamic Conductivity Changes due to Irreversible Electroporation for Treatment Planning

P. A. Garcia[1], R. E. Neal, II[1], C. B. Arena[1], and R. V. Davalos[1]

[1]Virginia Tech - Wake Forest University, Blacksburg, VA

PS – Fri – A – 126

Tumor Targeting of Single-Walled Carbon Nanotubes Using the F3 Peptide

W. Prickett[1], D. Resasco[1], and R. Harrison[1]

[1]University of Oklahoma, Norman, OK

PS – Fri – A – 127

High-throughput Multiplexed Cell Sorting for Study of Complex Cellular Systems

C. E. Probst[1], P. Zrazhevskiy[1], and X. Gao[1]

[1]University of Washington, Seattle, WA

PS – Fri – A – 128

Computational Analysis of Dynamic Responses by Individual T cells

N. Bagheri[1], Q. Han[1], D. A. Lauffenburger[1], and J. C. Love[1]

[1]MIT, Cambridge, MA

PS – Fri – A – 129

Role of Cellular Mechanics and Substrate Compliance in Oncogenic Epithelial to Mesenchymal Transition

C. Mihai[1], L. I. Volakis[1], R. Li[1], D. A. Kniss[1], and S. Ghadiali[1]

[1]The Ohio State University, Columbus, OH

PS – Fri – A – 130

Multiplex Cathepsin Zymography Captures Stage-specific Activity Profiles of Cathepsins K, L, and S in Human Breast, Lung, and Cervical Tumors

B. Chen[1], and M. O. Platt[1]

[1]Georgia Institute of Technology, Atlanta, GA

PS – Fri – A – 131

In Vitro Assessment of Lipid-Polymer Hybrid Melanosomes in Human Neonatal Epidermal Melanocytes

L. Quattrochi[1], D. Y. Cho[1], N. Chavez[1], Z. Pfeiffer[1], E. Oancea[1], and E. Mathiowitz[1]

[1]Brown University, Providence, RI

PS – Fri – A – 132

Kinetic Imaging of Collagen Type I Fibrillogenesis — Effect of Proteoglycans at Physiological Levels.

G. E. Tilburey[1], B. Sama[1], and J. Ruberti[1]

[1]Northeastern University, Boston, MA

PS – Fri – A – 133

Nanometer Resolution Analysis of Tau Induced Axonal Transport Defects in a Neurodegeneration Model

M. Qiu[1], Y. Yu[1], and G. Yang[1]

[1]Carnegie Mellon University, Pittsburgh, PA

Track: Biomedical Imaging and Optics

Imaging in the Enhancement or Assessment of Therapeutic Delivery

PS – Fri – A – 134

Automatic Segmentation of Blood Vessel in the presence of Fibrosis in Volumetric Lung CT Images

S. T. Govindarajan[1], S. Chandrasekharan[1], and W. G. O'Dell[1,2]

[1]University of Rochester, Rochester, NY, [2]University of Florida, Gainesville, FL

PS – Fri – A – 135

Gadolinium-Catalyzed Carbon Nanotubes as Advanced Magnetic Resonance Imaging Nanoprobes

P. K. Avti[1], Y. Talukdar[1], E. D. Caparelli[1], K. R. Shroyer[2], and B. Sitharaman[1]

[1]Stony Brook University, Stony Brook, NY, [2]Stony Brook University Medical Center, Stony Brook, NY

PS – Fri – A – 136
Ultrasonic Beam Profile Validation of Custom Therapeutic Transducers
E. M. Li[1]
[1]Cornell University, Ithaca, NY

PS – Fri – A – 137
A Web Interface for the Quantification of Microtubule Dynamics
K. Y. Kong[1], A. I. Marcus[2], P. Giaanakakou[3], and M. D. Wang[4]
[1]Georgia Tech, Atlanta, [2]Winship Cancer Institute, Atlanta, GA, [3]Cornell University, New York, NY, [4]Georgia Institute of Technology, Atlanta, GA

PS – Fri – A – 138
Radiofrequency-Triggered Release of Chemotherapy from Multi-Component Nano-Chains
P. M. Peiris[1], R. Pham[1], E. Schmidt[1], A. Mayer[1], M. Calabrese[1], E. Tran[1], R. Toy[1], and E. Karathanasis[1]
[1]Case Western Reserve University, Cleveland, OH

PS – Fri – A – 139
Spatial Cancer Viability Response to Photothermal Therapy in Tissue Phantoms
J. Whitney[1], A. P. Rodgers[1], S. Hopkins[1], D. Geohegan[2], and N. Rylander[1]
[1]Virginia Tech, Blacksburg, VA, [2]Oak Ridge National Laboratory, Oak Ridge, TN

PS – Fri – A – 140
Microbubble-mediated Ultrasound Therapy for Improved Chemotherapeutic Delivery
A. G. Sorace[1], J. M. Warram[1], H. Umphrey[1], and K. Hoyt[1]
[1]University of Alabama at Birmingham, Birmingham, AL

PS – Fri – A – 141
Photoacoustic Detection of Metastatic Melanoma Cells in Whole Blood Isolated using Two-Phase Flow
K. D. Rood[1], C. M. O'Brien[1], T. Q. DeSouza[1], and J. A. Viator[1]
[1]University of Missouri - Columbia, Columbia, MO

PS – Fri – A – 142
Optical Tactile Imaging System for Quantification and Display of Breast Tumors
C-H. Won[1], J-H. Lee[1], K. Reilly[2], and D. Caroline[2]
[1]Temple University, Philadelphia, PA, [2]Temple University Hospital, Philadelphia, PA

PS – Fri – A – 143
Total Internal Reflection Photoacoustic Detection Spectroscopy
A. Sudduth[1], B. Goldschmidt[1], E. Samson[1], P. Whiteside[1], and J. Viator[1]
[1]University of Missouri-Columbia, Columbia, MO

PS – Fri – A – 144
Measurement of Solute Transport in Peritoneal Membrane of Living Rat Using Fiberoptic-based Fluorescence Photobleaching Technique
D. Lee[1], E. Shin[2], J. C. Kim[3], K-H. Oh[2], and J. K. Kim[1]
[1]Kookmin University, Seoul, Korea, Republic of, [2]Seoul National University Hospital, Seoul, Korea, Republic of, [3]Seoul National University, Seoul, Korea, Republic of

PS – Fri – A – 145
Enhancing the Sensitivity of Dynamic Label-free Detection of Low-molecular Weight Targets
S. Ahn[1], D. Freedman[1], P. Massari[2], M. S. Ünlü[1], and M. Cabodi[1]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA

PS – Fri – A – 146
Total Internal Reflection Photoacoustic Flowmetry System for Early Metastatic Melanoma Detection
R. H. Conley[1], C. M. O'Brien[1], and J. A. Viator[1]
[1]University of Missouri-Columbia, Columbia, MO

PS – Fri – A – 147
Modeling Interstitial Water and Light Biotransport During Local Tissue Indentation with Optical Clearing Devices
W. C. Vogt[1], H. Shen[1], G. Wang[1], and C. G. Rylander[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS – Fri – A – 148
Characterization of Particle Brightness Distributions Using Fluorescence Cumulant Analysis
E. Olson[1], N. Benkhedah[2], and M. J. Levene[1]
[1]Yale University, New Haven, CT, [2]German Cancer Research Center, Heidelberg, Germany

PS – Fri – A – 149
Aggregation Profile Dynamics for Concanavalin A/Glycosylated Dendrimer Glucose Sensing Chemistry
B. M. Cummins[1], J. Lim[2], E. E. Simanek[2], M. V. Pishko[1], and G. L. Cote[1]
[1]Texas A&M University, College Station, TX, [2]Texas Christian University, Fort Worth, TX

PS – Fri – A – 150
Ear Image Analysis from a Digital Video Otoscope Prototype using Laser
L. Cheng[1], J. Liu[1], C. Roehm[2], and T. Valdez[3]
[1]Trinity College, Hartford, CT, [2]University of Connecticut Health Center, Farmington, CT, [3]Connecticut Children's Medical Center, Hartford, CT

PS – Fri – A – 151
Dimensional Changes of a Thermoresponsive Biosensor Membrane via Optical Tomography and Microscopy
A. Abraham[1], R. Fei[1], R. Shelton[1], B. Applegate[1], M. Grunlan[1], and G. Cote[1]
[1]Texas A&M University, College Station, TX

PS – Fri – A –152
High Resolution Optical Molecular Imaging of Changes in Cancer Cell Metabolism in Response to Therapy
Z. Luo[1], R. V. Tikekar[1], K. M. Samadzadeh[1], and N. Nitin[1]
[1]University of California-Davis, Davis, CA

PS – Fri – A – 153
Binding Kinetics of Human Embryotic Kidney Cells (HEK293) with Surface Proteins Expressed on Treated and Untreated Gold Surfaces
N. I. Draper[1], K. L. Loken[1], S. B. Prince[1], B. J. Draper[1], J. Lin[1], T. A. Gilbertson[1], and A. Zhou[1]
[1]Utah State University, Logan, UT

Track: Biomedical Imaging and Optics

Imaging with Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroimaging

PS – Fri – A – 154
Specific Chemotaxis of Magnetically Labeled Mesenchymal Stem Cells Towards Glioma
M. F. Bennewitz[1], K. S. Tang[1], E. A. Markakis[1], and E. M. Shapiro[1]
[1]Yale University, New Haven, CT

PS – Fri – A – 155
Respiratory Motion Correction for Abdominal Dynamic Contrast Enhanced Magnetic Resonance Imaging
B. J. Davis[1], J. Bieszczad[1], J. R. Gagne[1], and D. B. Kynor[1]
[1]Creare, Inc., Hanover, NH

PS – Fri – A – 156
Epicardial Fat Image Navigator for Direct Cardiac Motion Tracking with Applications in a Prospectively Gated Free-Breathing 3D SSFP Coronary MRA Sequence
K. Kawaji[1,2], P. Spincemaille[2], T. D. Nguyen[2], M. Agrawal[2], M. R. Prince[2], and Y. Wang[1,2]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

PS – Fri – A – 157

Developing Fluorescent Molecular Contrast Agents for Microscopy-guided Brain Tumor Resection

D. Wang[1], S. Y. Leigh[1], F. V. Cochran[2], H. Haeberle[2], C. H. Contag[2], and J. T. Liu[1]

[1]Stony Brook University, Stony Brook, NY, [2]Stanford University, Stanford, CA

PS – Fri – A – 158

Obtaining Three Dimensional Vasculature and Blood Flow in the Rat Brain for Computational Fluid Dynamics Analysis

N. Liaw[1,2], C. Ionita[1], J. A. Spernyak[3], H. Meng[1], and J. Kolega[1]

[1]State University of New York at Buffalo, Buffalo, NY, [2]State University of New York at Buffalo, Buffalo, [3]Roswell Park Cancer Institute, Buffalo, NY

PS – Fri – A – 159

High Resolution Optical Molecular Imaging of Changes in Choline Metabolism

Z. Luo[1], M. Loja[1], D. Farwell[1], Q. C. Luu[1], P. J. Donald[1], R. Gandour-Edwards[1], and N. Nitin[1]

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

POSTER SESSION **FriA**

PS – Fri – A – 160

Robust Registration of Brain MRI with Missing Correspondences

N. Chitphakdithai[1], V. L. Chiang[2], K. P. Vives[2], and J. S. Duncan[1]

[1]Yale University, New Haven, CT, [2]Yale School of Medicine, New Haven, CT

PS – Fri – A – 161

High Frequency Ultrasound and Optical Calcium Mapping to Assess Electrical-mechanical Coupling of Regenerating Zebrafish Heart

F. Yu[1], F. Chen[2], K. Shung[1], and T. Hsiai[1]

[1]University of Southern California, Los Angeles, CA, [2]University of California, Los Angeles, Los Angeles, CA

PS – Fri – A – 162

Distinct Mechanisms Regulating Calcium Signals at the Plasma Membrane and Endoplasmic Reticulum in response to Mechanical Stimulation

T-J. Kim[1], C. Joo[2], J. Seong[1], J. Sun[3], N. Wang[4], T. Ha[2], and Y. Wang[1,5]

[1]Neuroscience Program, Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, [2]Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, [3]Department of Molecular & Integrative Physiology, University of Illinois at Urbana-Champaign, Urbana, IL, [4]Department of Mechanical Engineering and Science, University of Illinois at Urbana-Champaign, Urbana, IL, [5]Department of Bioengineering, Center for Biophysics and Computational Biology, Urbana, IL

PS – Fri – A – 163

Development and Assessment of a Novel Bioreactor for OCT Imaging of Bioengineered Blood Vessel

A. A. Gurjarpadhye[1], and C. G. Rylander[1]

[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS – Fri – A – 164

Electromagnetically Guided Hybrid Imaging System for Endoscopic Ultrasound Tumor Biopsy Procedures

L. Gruionu[1], A. Saftoiu[2], A. Iordache[2], A-M. Ioncică[2], D. Burtea[2], and G. Gruionu[3]

[1]Medinsys, Ltd., Craiova, Dolj, Romania, [2]University of Medicine and Pharmacy Craiova, Craiova, Romania, [3]Indiana University School of Medicine, Indianapolis, IN

PS – Fri – A – 165

Automatic Technique for Diagnosis of Left Ventricular Ischemia Using Short Axis Cardiac MRI Perfusion and Function Testing

P. G. Menon[1], M. Doyle[2], and R. W. Biederman[2]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]The Gerald McGinnis Cardiovascular Institute, Allegheny General Hospital, Pittsburgh, PA

PS – Fri – A – 166

Accelerating Cardiac MRI via PRISM

H. Gao[1], Y. Lin[2], C. Ahn[3], and O. Nalcioglu[2]

[1]UCLA, Los Angeles, CA, [2]UC,Irvine, Irvine, CA, [3]Kwangwoon University, Seoul, Korea, Republic of

PS – Fri – A – 167

Intraocular Pressure during High Speed Projectile Impacts to the Eye

V. D. Alphonse[1], J. A. Bisplinghoff[1], D. M. Senge[1], C. McNally[1], and S. M. Duma[1]

[1]Virginia Tech, Blacksburg, VA

PS – Fri – A – 168

A Comprehensive Tale from Cancer Cells to Lesions: *In Vivo* CT Microscopy of Tumor Vasculature

R. Toy[1], A. Camann[1], E. Hayden[1], E. Tran[1], J. Pansky[1], Z. Berman[1], K. Ghaghada[2], and E. Karathanasis[1]

[1]Case Western Reserve University, Cleveland, OH, [2]University of Texas Health Science Center at Houston, Houston, TX

PS – Fri – A – 169

Completeness Map Module for CatSim Environment

B. Liu[1], J. Bennett[2], H. Yu[1], and G. Wang[2]

[1]Wake Forest University Health Sciences, Winston-Salem, NC, [2]Virginia Tech, Blacksburg, VA

PS – Fri – A – 170

Cytotoxicity Effects of Diesel Exhaust Particles on Single Human Lung Carcinoma Epithelial Cells (A549)

Y. Wu[1], G. D. McEwen[1], M. Tang[1], T. Yu[1], A. Zhou[1], and T. A. Gilbertson[1]

[1]Utah State University, Logan, UT

PS – Fri – A – 171

How to Accelerate Magnetic Cell Labeling Using MPIOs? Be Positive!

K. S. Tang[1], and E. M. Shapiro[1]

[1]Yale University, New Haven, CT

PS – Fri – A – 172

Magnetic Cellulose Particles as Relaxation Switches for Environmentally Sensitive MRI

M. K. Nkansah[1], and E. Shapiro[1,2]

[1]Yale University, New Haven, CT, [2]Yale University School of Medicine, New Haven, CT

PS – Fri – A – 173

Optical Cryoimaging of Kidney Mitochondrial Redox State and the Effect of BCL-2 Family Expression

R. Sepehr[1], K. Staniszewski[1], M. Ranji[1], and S. Maleki[1]

[1]Biophotonics lab, Electrical Engineering, University of Wisconsin Milwaukee, Milwaukee, WI

Track: Orthopedic and Rehabilitation Engineering

Orthopedic Bioengineering and Imaging

PS – Fri – A – 174

Effects of Focused Ultrasound on Cell Viability in Its Application to Articular Cartilage Engineering

A. B. Nover[1], G. D. O'Connell[1], G. A. Ateshian[1], E. G. Lima[2], E. E. Konofagou[1], and C. T. Hung[1]

[1]Columbia University, New York, NY, [2]The Cooper Union, New York, NY

PS – Fri – A – 175

Effect of Mechanically Induced Malocclusion on Rabbit Temporomandibular Joint Kinematics

S. E. Henderson[1], A. J. Almarza[1], S. Tashman[1], and A. L. McCarty[1]

[1]University of Pittsburgh, Pittsburgh, PA

PS – Fri – A – 176

Surface Free Energy-driven Spreading and Migration of Osteoblasts on Nanocrystalline Diamond

L. Yang[1], M. Sihlabela[1], B. W. Sheldon[1], and T. J. Webster[1]

[1]Brown University, Providence, RI

PS – Fri – A – 177

The State of Comparative Effectiveness Research in the Implant-focused Spine Biomechanics Literature

N. Ray[1,2], J. Dubin[1], M. Hills[1,2], J. Liu[1,2], L. Bero[2], and J. Buckley[1,2]

[1]St. Mary's Medical Center, San Francisco, CA, [2]University of California, San Francisco, San Francisco, CA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – A – 178
Glenohumeral Kinematics for Healthy and Osteoarthritic Shoulders
B. Meccia[1], E. Spencer[2], S. Zingde[1], R. Komistek[1], and M. Mahfouz[1]
[1]University of Tennessee Knoxville, Knoxville, TN, [2]St. Mary's Hospital, Knoxville, TN

PS – Fri – A – 179
Real-Time Automatic Reconstruction of Patient-Specific 3D Knee Model Using Ultrasound RF Signals
R. Tadross[1], and M. R. Mahfouz[1]
[1]University of Tennessee, Knoxville, TN

PS – Fri – A – 180
Acetabular Rim Profile Measurement in Femoroacetabular Impingement Patients
J. Urban[1], A. Weaver[1], K. Theivendran[2], and J. Stitzel[1]
[1]Virginia Tech - Wake Forest University, Winston-Salem, NC, [2]Royal Orthopedic Hospital, Birmingham, BC, United Kingdom

PS – Fri – A – 181
Following a Lumbar Fusion, Do Adjacent Segments Increase in Overall Motion?
J. W. Mitchell[1], J. S. Cheng[2], C. B. Carr[1], A. Sharma[1], M. R. Mahfouz[1], and R. D. Komistek[1]
[1]University of Tennessee, Knoxville, TN, [2]Vanderbilt University Medical Center, Nashville, TN

PS – Fri – A – 182
Differences in Osteocyte Volume, Blood Vessel Cross-sectional Area, and Porosity in Human and Bovine Bone
R. H. Knapp[1], A. Deb Roy[1], F. DeCarlo[2], and S. P. Kotha[1,3]
[1]University of Connecticut, Storrs, CT, [2]Argonne National Laboratory, Chicago, IL, [3]Rensselaer Polytechnic Institute, Troy, CT

Track: Orthopedic and Rehabilitation Engineering

Rehabilitation Engineering

PS – Fri – A – 183
Multi-Label Classification for the Analysis of Human Motion Quality during Exercises for Knee Osteoarthritis
P. E. Taylor[1], G. J. Almeida[2], J. K. Hodgins[1], and T. Kanade[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

PS – Fri – A – 184
Training Contingency Awareness Through an Interactive Augmented Environment
R. Zhang[1,2], and T. Chau[1,2]
[1]University of Toronto, Toronto, ON, Canada, [2]Holland Bloorview Kids Rehabilitation Hospital, Toronto, ON, Canada

PS – Fri – A – 185
Effects of Orthotics on Dynamic Stability in the Elderly
T. E. Lockhart[1], H. Yeoh[1], R. Soangra[1], C. Haynes[1], and P. G. Brolinson[2]
[1]Virginia Tech, Blacksburg, VA, [2]Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA

PS – Fri – A – 186
Experimental Stimulation of Skeletal Muscle Co-contraction in Feedback Control
P. Jaramillo[1], B. Koo[1], and A. Leonessa[1]
[1]Virginia Tech, Blacksburg, VA

PS – Fri – A – 187
Weakened Trunk Muscles Influence Knee Valgus Moments Associated with ACL Injury
K. Morgan[1], C. J. Donnelly[2], and J. Reinbolt[1]
[1]University of Tennessee, Knoxville, TN, [2]University of Western Australia, Perth, Australia

PS – Fri – A – 188
Quantitative Analysis of Muscle Activations and Real-time Simulations for Two Pitching Motions: Overhand Pitching and Sidearm Pitching
D. Jeong[1], and K. Lee[1]
[1]Case Western Reserve University, Cleveland, OH

PS – Fri – A – 189
Preliminary Modeling of the Prosthetic Socket Pseudo-Joint
M. Wernke[1], D. Lura[1], S. Carey[1], S. Phillips[2], and R. Dubey[1]
[1]University of South Florida, Tampa, FL, [2]Veterans Affairs, Tampa, FL

PS – Fri – A – 190
Motion Analysis of an Overhand Fly Cast: A Case Study of Pro vs. Amateur Casing Techniques
T. N. Jones[1], D. McCleaf[1], T. Bevins[1], and K. R. Csavina[1]
[1]Florida Gulf Coast University, Fort Myers, FL

PS – Fri – A – 191
Effect of an Unconstrained Total Shoulder Arthroplasty on Glenohumeral Translation
R. J. Patel[1], D. Choi[2], T. Wright[1,2], and Y. Gao[1]
[1]Cornell University, Ithaca, NY, [2]Hospital for Special Surgery, New York, NY

PS – Fri – A – 192
Obese Individuals Exhibit Increased Time to Postural Stabilization After a Perturbation Similar to a Trip
S. L. Matrangola[1], and M. L. Madigan[1]
[1]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Blacksburg, VA

Track: Respiratory Engineering

Computational Modeling in the Lung

PS – Fri – A – 193
A New Calculation of the Oxygen Diffusion Conductance in the Acinar Capillaries
G. Arbia[1], B. Sapoval[2], M. Filoche[1], and A. Foucquier[1]
[1]Ecole Polytechnique, Palaiseau, France, [2]Ecole polytechnique, Palaiseau, France

PS – Fri – A – 194
Computational Modeling of Inhibitory Gradients in Lung Development
J. P. Gleghorn[1], J. Kwak[1], A. L. Pavlovich[1], and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ

PS – Fri – A – 195
A First Principle Calculation of Oxygen Consumption in Strong Exercise
A. Foucquier[1], M. Filoche[1,2], and B. Sapoval[1,2]
[1]Ecole Polytechnique, Palaiseau, France, [2]ENS Cachan, Cachan, France

PS – Fri – A – 196
Numerical Simulations of High Frequency Respiratory Flows in a 3D Lung Bifurcation Model
Z. Chen[1], S. Parameswaran[1], Y. Hu[1], and Z. He[1]
[1]Texas Tech University, Lubbock, TX

PS – Fri – A – 197
Hybrid CFD-PBPK Models for Soluble Gas Uptake in Full Respiratory Systems of Rats, Monkeys, and Humans
S. Kabilan[1], A. P. Kuprat[1], D. R. Einstein[1], K. R. Minard[1], R. E. Jacob[1], J. P. Carson[1], and R. A. Corley[1]
[1]Pacific Northwest National Laboratory, Richland, WA

PS – Fri – A – 198
Pressure Loss in an Asymmetric Bifurcation of the Human Lung Airway
M-Y. Kang[1], J. Hwang[1], S-K. Lee[1], and J-W. Lee[1]
[1]Pohang University of Science and Technology, Pohang, Korea, Republic of

PS – Fri – A – 199
Inter-lobar Variability of Morphological Parameters in the Human Airway Tree
J. Hwang[1], and J. Lee[1]
[1]POSTECH, Pohang, Korea, Republic of

PS – Fri – A – 200
Calculation of the Airway Pressure Distribution During the Insufflation Phase of Xenon Anesthesia
I. KATZ[1,2]
[1]Air Liquide Santé International, Jouy-en-Josas CEDEX, France, [2]Lafayette College, Easton, PA

PS – Fri – A – 201
Quantitative Analysis of Respiratory Airspace Using High Resolution Three- dimensional Tomography
J. HWANG[1], AND J. LEE[1]
[1]POSTECH, Pohang, Korea, Republic of

PS – Fri – A – 202
A Computational Investigation of Surfactant Transport During Pulsatile Airway Reopening
J. E. PILLERT[1], H. FUJIOKA[1], D. H. HALPERN[2], AND D. P. GAVER III[1]
[1]Tulane University, New Orleans, LA, [2]University of Alabama, Tuscaloosa, AL

PS – Fri – A – 203
Finite Element Modeling of Stress Transmission in Fibrotic and Non-Fibrotic Lung Tissue
M. WEBER[1], F. SHEER[2], C. BARAN[3,4], K. GOOCH[1,4], AND S. GHADIALI[1,4]
[1]Department of Biomedical Engineering, The Ohio State University, Columbus, OH, [2]Department of Mechanical Engineering, The Ohio State University, Columbus, OH, [3]The Collage of Medicine (Internal Medicine), The Ohio State University, Columbus, OH, [4]Dorothy M Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH

POSTER SESSION **FriA**

PS – Fri – A – 204
Stress Analysis During Post Closure Filling Flow in an Airway Model
C-F. TAI[1], D. HALPERN[2], AND J. B. GROTBERG[1]
[1]University of Michigan, Ann Arbor, MI, [2]University of Alabama, Tuscaloosa, AL

PS – Fri – A – 205
Transient Displacement of Mucus Plugs in Airways
P. ZAMANKHAN[1], B. HELENBROOK[2], S. TAKAYAMA[1], AND J. GROTBERG[1]
[1]University of Michigan, Ann Arbor, MI, [2]Clarkson University, Potsdam, NY

PS – Fri – A – 206
Alveolar Membrane Strain Distribution Near Deformed Lung Airways
H. FUJIOKA[1], D. HALPERN[2], AND D. P. GAVER[1]
[1]Tulane University, New Orleans, LA, [2]University of Alabama, Tuscaloosa, AL

PS – Fri – A – 207
Particle Deposition in a Subject-specific Tracheobronchial Airways using Experimental and Computational Approaches
S. HYUN[1], AND C. S. KIM[2]
[1]Mercer University, Macon, GA, [2]US EPA, Chapel Hill, NC

PS – Fri – A – 208
Ozone Transport and Uptake in Anatomically-Accurate Models of the Respiratory Tract
B. KESHAVARZI[1], J. ULTMAN[2], AND A. BORHAN[2]
[1]The Pennsylvania State University, University Park, PA, [2]The Pennsylvania State University, University Park, PA

PS – Fri – A – 209
Effect of Symmetric vs. Asymmetric Tree Geometry and Airway Size on the Emergence of Ventilation Defects
A. BRAUNE[1], D. LEARY[2], G. N. MAKSYM[2], AND T. WINKLER[1]
[1]Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Dalhousie University, Halifax, NC, Canada

Track: Respiratory Engineering

Mechanistic Bases of Lung Disease from Cells to System

PS – Fri – A – 210
Physical Mechanisms Regulating Endothelial Barrier Integrity
R. KRISHNAN[1], C. HARDIN[2], K. RAJENDRAN[1], D. TAMBE[1], G. MANOMOHAN[1], R. MARTINELLI[3], L. VARGHESE[3], J. BUTLER[1], J. FREDBERG[1], AND C. CARMAN[3]
[1]Harvard School of Public Health, Boston, MA, [2]Massachusetts General Hospital, Boston, MA, [3]CVBR, Beth Israel Deconess Medical Center, Boston, MA

PS – Fri – A – 211
Effect of Tidal Volume and Positive End-Expiratory Pressure on Airway Closure in Normal Lungs Assessed with Positron Emission Tomography
T. J. WELLMAN[1], T. WINKLER[2], G. MUSCH[2], R. S. HARRIS[2], J. VENEGAS[2], AND M. F. VIDAL MELO[2]
[1]Boston University, Boston, MA, [2]Massachusetts General Hospital, Boston, MA

PS – Fri – A – 212
Cyclic-Stretch Induced Oxidative Stress Increases Alveolar Epithelial Permeability
N. DAVIDOVICH[1], G. G. LAWRENCE[1], B. C. DIPAOLO[1], AND S. S. MARGULIES[1]
[1]University of Pennsylvania, Philadelphia, PA

PS – Fri – A – 213
The Effect of Epithelial Cell Laser Ablation on Small Airway Constriction
J. ZHOU[1], M. B. ALVAREZ-ELIZONDO[1], E. BOTVINICK[1], AND S. C. GEORGE[1]
[1]University of California, Irvine, Irvine, CA

PS – Fri – A – 214
Secretory Group V Phospholipase A2 as Coordinator of Lung Systemic Response to Pathologic Mechanical Ventilation
N. M. MUÑOZ[1], A. Y. MELITON[1], L. N. MELITON[1], A. A. BIRUKOVA[1], A. R. LEFF[1], AND K. G. BIRUKOV[1]
[1]The University of Chicago, Chicago, IL

PS – Fri – A – 215
Central Role for Metallothionein (MT) in Zn Dependent Nitric Oxide (NO) Mediated Resistance to LPS-induced Apoptosis in Sheep Pulmonary Artery Endothelial Cells (SPAEC)
K. THAMBIAYYA[1], AND B. R. PITT[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS – Fri – A – 216
Lung Location Relative to Crush from Crash Data in the Crash Injury Research and Engineering Network Database
K. A. DANELSON[1,2], D. P. MORENO[1,2], F. S. GAYZIK[1,2], AND J. D. STITZEL[1,2]
[1]Wake Forest University School of Medicine, Winston Salem, NC, [2]Virginia Tech/Wake Forest University SBES, Winston-Salem, NC

PS – Fri – A – 217
Effect of Bi-level Positive Airway Pressure on Respiratory Variability during Sleep in those with and without Asthma
L. M. CAMPANA[1], R. L. OWENS[2], B. SUKI[1], AND A. MALHOTRA[2]
[1]Boston University, Boston, MA, [2]Brigham and Women's Hospital, Boston, MA

PS – Fri – A – 218
The Effect of Deep Inspiration on Lung Elasticity and Morphometry
M. V. SZABARI[1,2], S. SATO[3], H. PARAMESWARAN[1], E. BARTOLÁK-SUKI[1], Z. HANTOS[2], AND B. SUKI[1]
[1]Boston University, Boston, MA, [2]University of Szeged, Szeged, Hungary, [3]Kyoto University Hospital, Kyoto, Japan

PS – Fri – A – 219
Effects of a Liposomal Contrast Agent on CT Image Registration in the Injured Lung
D. W. KACZKA[1,2], D. CHON[1,2], B. A. SIMON[1,2], K. B. GHAGHADA[3], A. ANNAPRAGADA[3], Y. YIN[4], AND E. A. HOFFMAN[4]
[1]Harvard Medical School, Boston, MA, [2]Beth Israel Deaconess Medical Center, Boston, MA, [3]The University of Texas Health Science Center at Houston, Houston, TX, [4]The University of Iowa, Iowa City, IA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – A – 220
A Simple Device to Evaluate the Respiratory Resistance in Children
J. Vossoughi[1], and A. Johnson[2]
[1]University of Maryland, Olney, MD, [2]University of Maryland, College Park, MD

PS – Fri – A – 221
Continuous Variations in Sniffing and Basal Respiratory Frequencies of Rats Over a 16 Hour Period
W. McKinney[1], J. Reynolds[1], and D. Frazer[1]
[1]CDC / NIOSH, Morgantown, WV

PS – Fri – A – 222
A Portable Breathing Rate Monitor Using Respiratory Inductive Plethysmography for Developing Countries
H. T. Ngo[1], C. V. Nguyen[1], T. H. Nguyen[1], and V. Vo[1]
[1]International University of VNU-HCM, Ho Chi Minh, Vietnam

PS – Fri – A – 223
Regional Lung Mechanics of Rabbit Scoliosis Model
J. C. Olson[1,2], R. Castillo[3], E. Castillo[3], T. Guerrero[3], and B. D. Snyder[2,4]
[1]Boston University, Boston, MA, [2]Beth Israel Deaconess Medical Center, Boston, MA, [3]MD Anderson Cancer Center, Houston, TX, [4]Children's Hospital, Boston, MA

PS – Fri – A – 224
Impact of the Correlation in Pathway Resistance to Lung Tissue Properties on Estimates of Heterogeneity
S. Amin[1], and B. Suki[1]
[1]Boston University, Boston, MA

Track: Tissue Engineering

Engineered Tissue Models for Drug Discovery and Disease

PS – Fri – A – 225
Comparison of Gold Nanoparticle Intracellularization by Primary Hepatic Cell Types Reveal Diverse Trends
C. J. Detzel[1], and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

PS – Fri – A – 226
The Development of a Fibrin Gel Based Engineered Myocardium Model of Myocardial Infarction
K. E. Sullivan[1], K. Y. Ye[1], and L. D. Black[1]
[1]Tufts University, Medford, MA

PS – Fri – A – 227
A 3D Tissue Model of Human Kidney for the Study of Disease Progression
T. M. DesRochers[1], B. Subramanian[1], W-C. Ko[1], and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

PS – Fri – A – 228
Matrix Physicochemical Cues as Chemotherapeutic Protective Agents in Hepatocellular Carcinoma
T. V. Nguyen[1], and S. R. Peyton[1]
[1]University of Massachusetts-Amherst, Amherst, MA

PS – Fri – A – 229
Bioheat Transfer Modeling of Bovine Liver with Embedded Vasculature under RF Ablation and it Experimental Validation
C. A. Acosta Berlinghieri[1] , Jun Zhou[1], [2], Richard Canty[1], David Fuentes Ph.D[3], Yusheng Feng Ph.D[1]
[1]Computational Bioengineering and Control Lab, The University of Texas at San Antonio
[2]Department of Mechanical Engineering, The University of Texas at Austin
[3]Department of Imaging Physics, The University of Texas M.D Anderson Cancer Center

PS – Fri – A – 230
Assembly of a Layered Lung Co-culture Model Using Magnetic Levitation
H. Tseng[1], R. M. Raphael[1,2], T. C. Killian[1,2], and G. R. Souza[2]
[1]Rice University, Houston, TX, [2]Nano[3]D Biosciences, Houston, TX

Track: Tissue Engineering

Neural Tissue Engineering

PS – Fri – A – 231
Differentiation of Neural Stem Cells in 3D Fast-Macroporous Photopolymerizable Hydrogel Scaffolds
H. Li[1], and N. D. Leipzig[1]
[1]University of Akron, Akron, OH

PS – Fri – A – 232
Effects of Growth Factors on Schwann Cell Differentiation
N. J. Jesuraj[1], and S. Sakiyama-Elbert[1]
[1]Washington University in St. Louis, St. Louis, MO

PS – Fri – A – 233
Geometry-induced Neuronal Differentiation of Adult Neural Stem Cells
S. Bakhru[1], and A. S. Nain[2]
[1]Brown University, Providence, RI, [2]Virginia Tech, Blacksburg, VA

PS – Fri – A – 234
Development of a Linearly Aligned Porous Chitosan-Alginate Scaffold for Neural Tissue Engineering
N. L. Francis[1], P. M. Hunger[1], A. Donius[1], B. Riblett[1], U. G. Wegst[1], and M. A. Wheatley[1]
[1]Drexel University, Philadelphia, PA

PS – Fri – A – 235
Spatial Axon Guidance Utilizing Covalently Bound Attractive and Repulsive Fusion Proteins
A. M. McCormick[1], E. J. Endrizzi[1], and N. D. Leipzig[1]
[1]The University of Akron, Akron, OH

PS – Fri – A – 236
Sensitivity of High-Throughput Arrays to Detect Cellular Metrics in 3D Biomaterials for PNS Repair
C. M. Dumont[1], P. Karande[1], and D. M. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS – Fri – A – 237
Evaluation of Collagen/Chitosan Composite Matrices for the Treatment of Traumatic Brain Injury
K. Schunter[1], C. Kneen[1], H. Ham[1], J. Witte[1], M. Jimenez[1], K. Crawford[1], and E. Orwin[1]
[1]Harvey Mudd College, Claremont, CA

PS – Fri – A – 238
Regulating Human Neural Stem Cell Biological Activity by Small Molecules -Thiolated ManNAc Analogs
J. Du[1], H. Kim[1], E. Tan[1], R. Bhattacharya[1], F. A. Espinoza[1], and K. J. Yarema[1]
[1]The Johns Hopkins University, Baltimore, MD

Friday, October 14, 2011

10:30AM - 12:00PM

PLATFORM SESSION – FRI – 1

Track: Cellular and Molecular Engineering - OP - Fri - 1 - 1

Mechanotransduction & Mechanobiology - I

Chairs: Robert Mauck, Nadine Chahine

Convention Center – Room 11

10:30AM Fri - 1 –1 – A

Shear Stress Modulates RAGE-induced Inflammation in a Model of Diabetes-induced Metabolic Stress

J. S. DeVerse[1], K. Bailey[1], K. Jackson[1], and A. Passerini[1]

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

10:45AM Fri - 1 –1 – B

Shear-Induced Resistance to Neutrophil Activation via the Formyl Peptide Receptor

M. J. Mitchell[1], and M. R. King[1]

[1]*Cornell University, Ithaca, NY*

11:00AM Fri - 1 –1 – C

Effects of Fluid Shear on Cardiac Myocytes Expressing Disease-Causing Plakoglobin Mutations

V. Hariharan[1], A. Asimaki[2], J. E. Saffitz[2], and H. Huang[1]

[1]*Columbia University, New York, NY,* [2]*Beth Israel Deaconess Medical Center, Boston, MA*

11:15AM Fri - 1 –1 – D

Nuclear Rheological Response in Cells Under Fluid Shear Stress

E. A. Booth-Gauthier[1], and K. N. Dahl[1]

[1]*Carnegie Mellon University, Pittsburgh, PA*

11:30AM Fri - 1 –1 – E

Mitochondrial Changes in Endothelial Cells Due to Mechanochemical Stimuli

R. J. Giedt[1], C. Yang[1], J. L. Zweier[1], A. Matzavinos[2], and B. R. Alevriadou[1]

[1]*Department of Biomedical Engineering and Davis Heart and Lung Research Inst., Ohio State University, Columbus, OH,* [2]*Department of Mathematics, Iowa State University, Ames, IA*

11:45AM Fri - 1 –1 – F

Combinatorial Effects of Fluid Shear Stress and Electric Field on Dermal Fibroblast Migration

S. Song[1], H. Han[1], J. Kim[1], U. Ko[1], and J. H. Shin[1]

[1]*Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of*

Track: Cellular and Molecular Engineering - OP - Fri - 1 - 2

Cell-Cell Interactions

Chairs: Alisa Morss Clyne, Adam Engler

Convention Center – Room 12

10:30AM Fri - 1 –2 – A

Inter-Cellular Cytoskeleton Mechanical Bi-Modality Provides Understanding of Cell-Cell Adhesion Development and Stability on the Example of Immune Synapse

E. Tabdanov[1], A. Gondarenko[1], R. Kerslake[1], and L. Kam[1]

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

10:45AM Fri - 1 –2 – B

Micropatterned Mammalian Cells Exhibit Phenotype-Specific Left-Right Asymmetry

L. Q. Wan[1], K. Ronaldson[1], M. Park[1], G. Taylor[1], Y. Zhang[1], J. Gimble[2], and G. Vunjak-Novakovic[1]

[1]*Columbia University, New York, NY,* [2]*Pennington Biomedical Research Center, Baton Rouge, LA*

11:00AM Fri - 1 –2– C

Mechanisms of Skeletal Muscle Differentiation via Organized Co-culture Technology

N. Rao[1], K. Spencer[2], E. Hui[2], and K. L. Christman[1]

[1]*University of California: San Diego, La Jolla, CA,* [2]*University of California: Irvine, Irvine, CA*

11:15AM Fri - 1 –2 – D

Divergent Roles of CD44 and Carcinoembryonic Antigen in Colon Carcinoma Metastasis

M. Dallas[1], G. Liu[2], S. Thomas[3], D. Huso[2], and K. Konstantopoulos[1]

[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins Medical Institutions, Baltimore, MD,* [3]*Ecole Polytechnique de Lausanne, Lausanne, Switzerland*

11:30AM Fri - 1 –2 – E

Novel *In Vitro* and *In Silico* Assay System to Evaluate Skin Sensitization Potential of Chemicals

S. Lee[1], D. X. Dong[1], N. Sharma[1], R. Jindal[1], L. Li[1], B. Mitra[1], T. Maguire[1], R. Schloss[1], and M. Yarmush[1]

[1]*Rutgers University, Piscataway, NJ*

11:45AM Fri - 1 –2 – F

Local Matrix Alignment During Microvascular Network Formation

J. Higgins[1], C. M. McLeod[1], Y. A. Miroshnikova[2], and A. L. Sarang-Sieminski[1]

[1]*Franklin W. Olin College of Engineering, Needham, MA,* [2]*UCSF & UCB, San Francisco, CA*

Track: Drug Delivery Systems - OP - Fri - 1 - 3

Novel Materials and Self Assembling Systems

Chairs: Joel Collier, Pankash Karande

Convention Center – Room 13

10:30AM Fri - 1 –3 – A

DNA Origami for Cell Delivery - The Effect of Particle Shape on Cell Internalization

F. Graf[1,2], C. Lin[1,2], D. Ingber[3,4], and W. Shih[1,2]

[1]*Harvard Medical School, Boston, MA,* [2]*Dana-Farber Cancer Institute, Boston, MA,* [3]*Wyss Institute for Biologically Inspired Engineering, Boston, MA,* [4]*Children's Hospital Boston, Boston, MA*

10:45AM Fri - 1 –3 – B

Engineering Viral Nanoparticles for Applications in Medicine: Bioconjugate Chemistry and Functionalization of Brome Mosaic Virus

I. Yildiz[1], and N. F. Steinmetz[1]

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

11:00AM Fri - 1 –3– C

Bio-Inspired Green Nanomedicines: Engineering Viral Nanoparticles for Applications in Medicine

N. F. Steinmetz[1]

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

11:15AM Fri - 1 –3 – D

Dihydroxyacetone and Lactic Acid Poly(carbonate-ester)s as Potential Biomaterials

J. Weiser[1], P. Zawaneh[2], and D. Putnam[1]

[1]*Cornell University, Ithaca, NY,* [2]*Millennium: The Takeda Oncology Company, Cambridge, MA*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

11:30AM Fri - 1 –3 – E
Self-assembly of Fluorinated Dendrimer-based Nanoparticles for Drug Delivery
S. Liu[1], and T. Fahmy[1]
[1]*Yale University, New Haven, CT*

11:45AM Fri - 1 –3 – F
Tunable Temperature-dependent Properties of Alginate-Pluronic F68 Composite Hydrogels with High Mechanical Strength
J. C. White[1], and S. R. Bhatia[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Fri - 1 - 4

Methodology and Applications in Computational Bioengineering and Bioinformatics

Chairs: Ioannis P. Androulakis, Yusheng Feng
Convention Center – Room 14

10:30AM Fri - 1 –4 – A
Inferring Defined Cellular Subpopulations From Stochastic Transcriptional Profiles
S. S. Bajikar[1], A. Kowarsch[2], C. Dargatz[2], F. J. Theis[2], and K. A. Janes[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Helmholtz Center, Munich, Germany*

10:45AM Fri - 1 –4 – B
Bioinformatics Analysis of Control Mechanisms of Inflammatory Response
M. A. Orman[1], Q. Yang[1], F. Berthiaume[1], M. G. Ierapetritou[1], and I. P. Androulakis[1]
[1]*Rutgers University, Piscataway, NJ*

11:00AM Fri - 1 –4– C
Statistical Analysis of Multiplexed Bead-Based Flow Cytometric Immunoassays Using Mixed-Effects Modeling
D. C. Clarke[1], and D. A. Lauffenburger[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

11:15AM Fri - 1 –4 – D
SHREDing a Biochemical Network into Functional Modules
G. V. Sridharan[1], S. Hassoun[1], and K. Lee[1]
[1]*Tufts University, Medford, MA*

11:30AM Fri - 1 –4 – E
Global Protein Interaction Network of Angiogenesis and Implications for Drug Target Design
L-H. Chu[1], C. Rivera[1], and A. Popel[1]
[1]*Johns Hopkins University, Baltimore, MD*

11:45AM Fri - 1 –4 – F
Reverse Engineering Metabolic Pathway Regulation Using A Modern Controls Approach
C. F. Quo[1], R. A. Moffitt[1], C. Kaddi[1], A. H. Merrill[2], and M. D. Wang[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*Georgia Institute of Technology, Atlanta, GA*

Track: Neural Engineering - OP - Fri - 1 - 5

Neural Engineering Technology - I

Chairs: Andrew Dunn, Bruce Wheeler
Convention Center – Room 15

10:30AM Fri - 1 –5 – A
Implantable Wireless System for Multi-channel, Multi-polar Electrical Stimulation through High Impedance Neural Interfaces
E. Zellmer[1], M. R. MacEwan[1], N. Katta[1], and D. Moran[1]
[1]*Washington University, Saint Louis, MO*

10:45AM Fri - 1 –5 – B
Neural Stimulation at Single-Cell Resolution on an Active CMOS Microarray
N. Lei[1], S. Ramakrishnan[1], P. Shi[2], J. Orcutt[2], L. Kam[1], and K. Shepard[1]
[1]*Columbia University, New York, NY,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

11:00AM Fri - 1 –5– C
Quantitative Investigation of the Interfacial Capabilities of Regenerative Macro-Sieve Electrodes
E. Zellmer[1], M. R. MacEwan[1], and D. Moran[1]
[1]*Washington University, Saint Louis, MO*

11:15AM Fri - 1 –5 – D
Neuronal Imaging During Stimulus-evoked *C. elegans* Behaviors in Microfluidic Arenas
D. R. Albrecht[1], J. Larsch[1], A. Gordus[1], and C. Bargmann[1]
[1]*The Rockefeller University, New York, NY*

11:30AM Fri - 1 –5 – E
Geometric Effect of Surface Micropatterns on Neuritogenesis and Axonal Protrusion
M. J. Jang[1], and Y. Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

11:45AM Fri - 1 –5 – F
Development of an *In Vitro* Blood-Brain Barrier Model
D. M. Wuest[1], and K. H. Lee[1]
[1]*University of Delaware, Newark, DE*

Track: Orthopedic and Rehabilitation Engineering - OP - Fri - 1 - 6

Orthopedic Tissue Kinematics and Biomechanics

Chairs: David Corr, Yi-Xian Qin

Convention Center – Room 16

10:30AM Fri - 1 –6 – A
Kinematics of Relaxed Volunteers, Braced Volunteers, and Frontal ATD in Low-Speed Frontal Sled Tests
S. M. Beeman[1], A. R. Kemper[1], M. L. Madigan[1], and S. M. Duma[1]
[1]*Virginia Tech, Blacksburg, VA*

10:45AM Fri - 1 –6 – B
Effect of Pre-Impact Bracing on Chest Compression of Human Occupants in Low-Speed Frontal Sled Tests
A. R. Kemper[1], S. M. Beeman[1], and S. M. Duma[1]
[1]*Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA*

11:00AM Fri - 1 –6– C
Quantification of Viscoelastic Properties of Healthy and Symptomatic Muscle Tissue Via Ultrasonic Elastrography
J. J. Ballyns[1], P. Otto[1], J. Hammond[2], J. P. Shah[2], T. Gebreab[2], L. H. Gerber[1,2], and S. Sikdar[1]
[1]George Mason University, Fairfax, VA, [2]National Institutes of Health, Bethesda, MD

11:15AM Fri - 1 –6 – D
Massage-Like Loading Enhances Recovery of Muscle Mechanical Properties Following Eccentric Exercise
C. Haas[1], Y. Zhao[1], T. A. Butterfield[2], and T. M. Best[1]
[1]The Ohio State University, Columbus, OH, [2]University of Kentucky, Lexington, KY

11:30AM Fri - 1 –6 – E
An *In Vivo*/*In Vitro* Active/Passive Simulator to Quantify 3D Kinematics of the Thoracolumbar Spine
E. Ledet[1], and K. Elsabee[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

11:45AM Fri - 1 –6 – F
Factors that Affect Loading in the Spine *In Vivo* As Measured with a Novel Force-Sensing Implant
E. H. Ledet[1], C. W. Helder[1], M. B. Grabowsky[1], R. A. Wachs[1], E. Leimer[1], K. Cole[1], A. Dubin[2], and J. C. Glennon[2]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Albany Medical College, Albany, NY

PLATFORM SESSIONS
Fri-1

Track: Biomedical Imaging and Optics - OP - Fri - 1 - 7

Lasers in Medicine

Chairs: Randy Bartels, Bernard Choi
Convention Center – Room 17

10:30AM Fri - 1 –7 – A
Differential Multiphoton Microscopy- *Invited* CME
J. Squier1
[1]Colorado School of Mines, Golden, CO

11:00AM Fri - 1 –7 – B
Real-time Laser Speckle Imaging During Port Wine Stain Therapy CME
O. Yang[1], B. Yang[1], K. Kelly[1], J. Nelson[1], and B. Choi[1]
[1]University of California, Irvine, Irvine, CA

11:15AM Fri - 1 –7– C
Optical Histology of Microvasculature in Thick Tissue Sections of the Brain CME
A. Moy[1,2], and B. Choi[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Beckman Laser Institute, Irvine, CA

11:30AM Fri - 1 –7 – D
Comparison of Registration Methods for Line-Scanning Laser Ophthalmoscope Images from Optical Coherence Tomography CME
S. Liu[1], D. Ho[1], K. Sung[1], A. Datta[1], T. E. Milner[1], H. G. Rylander III[1], and M. K. Markey[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas M. D. Anderson Cancer Center, Houston, TX

11:45AM Fri - 1 –7 – E
Fluorescence Laminar Optical Tomography of Tissue Engineered Vascular Construct CME
L. Zhao[1], V. K. Lee[1], G. Dai[1], and X. Intes[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

Track: New Frontiers in Biomedical Engineering - OP - Fri - 1 - 8

Integrated Cellular Systems - I

Chairs: Robert Nerem, Krystyn Van Vliet
Convention Center – Room 21

10:30AM Fri - 1 –8 – A
Synthetic Biology: From Parts to Modules to Therapeutic Systems
R. Weiss[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

10:45AM Fri - 1 –8 – B
Engineering Functional Cardiac Myocytes from Human Pluripotent Stem Cells
S. P. Palecek[1]
[1]University of Wisconsin - Madison, Madison, WI

11:00AM Fri - 1 –8– C
Integration of Endogenous and Exogenous Matrix Properties in Mediating Endothelial Cell Connectivity
J. P. Califano[1], J. Charest[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

11:15AM Fri - 1 –8 – D
Microscale Manipulation of Cells and Their Environment for Cell Sorting and Stem Cell Biology
J. Voldman[1]
[1]MIT, Cambridge, MA

11:30AM Fri - 1 –8 – E
Integrated Neural Systems: Understanding and Controlling Behaviors of Neuron Clusters
M. U. Gillette[1], L. J. Millet[1], A. Jain[1], R. Iyer[1], and S. C. Liu[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

11:45AM Fri - 1 –8 – F
On The Activation Trajectory of Alpha-Actinin
H. Shams[1], J. Golji[1], and M. R. Mofrad[1]
[1]University of California, Berkeley, CA

Track: Tissue Engineering - OP - Fri - 1 - 9

Nano- and Micro- Engineering in Tissue Engineering

Chairs: Jeff Borenstein, Elizabeth Dirk
Convention Center – Room 22

10:30AM Fri - 1 –9 – A
In Vitro Model of the Neurovascular Unit on a Chip
A. Achyuta[1], S. Sundaram[1], and A. Taylor[1]
[1]Draper Laboratory, Tampa, FL

10:45AM Fri - 1 –9 – B
High Cell Aspect Ratio Alters Stem Cell Traction Stresses and Lineage
L. Vincent[1], T. Yong[2], J. del Alamo[1], L. Tan[2], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA, [2]Nangyang Technical University, Singapore, Singapore

11:00AM Fri - 1 –9– C
Engineering the Microenvironment of Embryoid Bodies via Heparin-modified Gelatin Microparticle Incorporation
K. A. Hammersmith[1], A. Bratt-Leal[1], and T. C. McDevitt[1]
[1]Georgia Institute of Technology, Atlanta, GA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

11:15AM Fri - 1 –9 – D
Central Role of Macrophages in Controlling Long Term Continuous Glucose Monitoring *in Vivo*
U. Klueh[1], Y. Qiao[1], and D. L. Kreutzer[1]
[1]*University of Connecticut, School of Medicine, Farmington, CT*

11:30AM Fri - 1 –9 – E
Ultrahigh Permeability Substrates Induce 3-D Tissue Formation by Multiple Cell Types
J. McGrath[1], and B. Nehilla[1]
[1]*University of Rochester, Rochester, NY*

11:45AM Fri - 1 –9 – F
Micro/Nanoengineering Hormone-Expressing Islet-Like Tissue Subunits
D. Gallego Perez[1], N. Higuita Castro[1], R. K. Reen[1], M. Palacio Ochoa[1], S. Sharma[1], L. J. Lee[1], J. J. Lannutti[1], D. J. Hansford[1], and K. J. Gooch[1]
[1]*The Ohio State University, Columbus, OH*

Track: Tissue Engineering - OP - Fri - 1 - 10

Bioreactors and Bioprocessing in Tissue Engineering

Chairs: Mehmet Dokmeci, Milica Radisic
Convention Center – Room 23

10:30AM Fri - 1 –10 – A
A Novel Physiological Strain Rate Bioreactor for Engineered Heart Valve Mechanobiology
N. Masoumi[1], K. L. Johnson[1], G. Lee[1], J. Liang[2], and G. C. Engelmayr[1]
[1]*Penn State University, University Park, PA,* [2]*Penn State University, University Park, PA*

10:45AM Fri - 1 –10 – B CME
Guided Commitment And Bioprocessing Of Human Pluripotent Stem Cells for Cardiac Cell Therapy
A. Parikh[1], D. Jing[1], and E. S. Tzanakakis[1]
[1]*SUNY-Buffalo, Buffalo, NY*

11:00AM Fri - 1 –10 – C
Computational Design of Perfusion Systems for Engineered Tissues
J. G. Truslow[1], and J. Tien[1]
[1]*Boston University, Boston, MA*

11:15AM Fri - 1 –10 – D
Design a Bioreactor with Coordinated Mechanical and Electrical Stimulations
B. Wang[1], C. Esteban-Perez[1], A. White[2], F. To[1], A. L. Curry[2], and J. Liao[1]
[1]*Mississippi State University, Starkville, MS,* [2]*University of Memphis, Memphis, TN*

11:30AM Fri - 1 –10 – E
A Novel Approach to Study ECM Remodeling and Deposition of Tissue- Engineered Vessels in a Mechanically Controlled Environment
A. H. Huang[1], Y. Bai[2], H. Wagner[2], A. T. Yeh[2], J. D. Humphrey[1], and L. E. Niklason[1,3]
[1]*Yale School of Engineering & Applied Science, New Haven, CT,* [2]*Texas A&M College of Engineering, College Station, TX,* [3]*Yale School of Medicine, New Haven, CT*

11:45AM Fri - 1 –10 – F
The Role of Bioreactor Stimulation Frequency and Duration on an Engineered Tendon Tissue Construct
B. Engebretson[1], W. Yates[1], and V. Sikavitsas[1]
[1]*University of Oklahoma, Norman, OK*

Track: Devices: Nano to Micro - OP - Fri - 1 - 11*

Medical Diagnostics: Nano to Micro Devices - II

Chairs: Andre Gobin
Convention Center – Room 24

10:30AM Fri - 1 –11 – A
Optimization of a Biomimetic Rare Blood Cell Separating Device on a Microfluidic Platform
A. Jain[1,2], and L. Munn[1]
[1]*Massachusetts General Hospital, Charlestown, MA,* [2]*Boston University, Boston, MA*

10:45AM Fri - 1 –11 – B
Microfluidic Cell Immunophenotyping and Biomarker Detection for the Diagnosis of Ocular Diseases
J. V. Green[1], and S. K. Murthy[1]
[1]*Northeastern University, Boston, MA*

11:00AM Fri - 1 –11 – C
High-Sensitivity Multiplexed Immunoassay on Threads
G. Zhou[1,2], X. Mao[1,2], and D. Juncker[1,2]
[1]*McGill University, Montreal, QC, Canada,* [2]*Genome Quebec Innovation Centre, Montreal, Canada*

11:15AM Fri - 1 –11 – D
Micromagnetic-Microfluidic Device for Isolation and Detection of Rare Pathogens using a Broad Spectrum Opsonin
R. M. Cooper[1,2], D. Leslie[3], K. Domansky[3], M. Super[3], C. Yung[2,3], S. Workman[3], and D. Ingber[2,3]
[1]*MIT, Boston, MA,* [2]*Children's Hospital Boston, Boston,* [3]*Harvard University, Boston, MA*

11:30AM Fri - 1 –11 – E
Enhancing Point-of-Care Infectious Disease Diagnostics With a Microfluidic Dialysis Device
N. T. Ho[1], J. Y. Zhang[1], M. Cabodi[1], and C. M. Klapperich[1]
[1]*Boston University, Boston, MA*

11:45AM Fri - 1 –11 – F
A Simple Method to Amplify RNA Targets
S. McCalla[1], A. Sarma[2], C. Ong[1], and A. Tripathi[1]
[1]*Brown University, Providence, RI,* [2]*Harvard University, Cambridge, MA*

**Supported by an unrestricted educational grant from* Boston Scientific *Defining tomorrow, today.*

Track: Cardiovascular Engineering- OP - Fri - 1 - 12

Valve Mechanobiology/Tissue Engineering

Chairs: Craig Simmons, Wei Sun
Convention Center – Room 25

10:30AM Fri - 1 –12 – A CME
Effects of Decellularization on the Viscoelastic Behavior of the Pulmonary Valve Leaflet
G. Converse[1], M. Armstrong[1], E. Buse[1], R. Quinn[1], G. Lofland[1], S. Hilbert[1], and R. Hopkins[1]
[1]*Children's Mercy Hospital, Kansas City, MO*

10:45AM Fri - 1 –12 – B
Focal, Layer-Specific Tissue Properties in Early Porcine Calcific Aortic Valve Disease
K. L. Sider[1], and C. A. Simmons[1]
[1]*University of Toronto, Toronto, ON, Canada*

11:00AM Fri - 1 –12 – C
Inflammatory Microenvironments Induce Calcification Through Disruption of eNOS Signaling in Valve Endothelial Cells
J. M. Richards[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

11:15AM Fri - 1 –12 – D
Biomechanical Characterizations of Acellular Mitral Valve Scaffolds
B. Wang[1], B. Brazile[1], D. McCallum[1], L. Williams[1], and J. Liao[1]
[1]*Mississippi State University, Starkville, MS*

11:30AM Fri - 1 –12 – E
Oscillatory Shear Stress Downregulates eNOS and Notch1 in Valve Endothelial Cells and Correlates with Inflammation and Mesenchymal Transformation
G. J. Mahler[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

11:45AM Fri - 1 –12 – F
Calcific Nodule Morphogenesis by Aortic Valve Interstitial Cells is Strain Dependent
J. Chen[1], C. I. Fisher[1], M. K. Sewell-Loftin[1], and W. D. Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

Track: Cardiovascular Engineering- OP - Fri - 1 - 13

Vascular Permeability, Microvasculature, and Angiogenesis - 1

Chairs: Rob Peattie, Laura Suggs
Convention Center – Room 26

PLATFORM SESSIONS
Fri-1

10:30AM Fri - 1 –13 – A
Capacity of Cardiac Fibroblasts to Serve as Support Cells for Vascularization of Engineered Myocardium
R. L. Twardowski[1], and L. D. Black[1]
[1]*Tufts University, Medford, MA*

10:45AM Fri - 1 –13 – B
Quantification of VEGF Receptor Expression in Hindlimb Skeletal Muscle Under Normal and Ischemic States
P. I. Imoukhuede[1], A. O. Dokun[2], B. H. Annex[2], and A. S. Popel[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Virginia, Charlottesville, VA*

11:00AM Fri - 1 –13 – C
The Permeability to Albumin of Blood-Derived Endothelial Cells
T. M. Cheung[1], M. P. Ganatra[1], and G. A. Truskey[1]
[1]*Duke University, Durham, NC*

11:15AM Fri - 1 –13 – D CME
Validating the Utility of 3D Quantification with Pro-angiogenic Fibrin Gels
J. Rytlewski[1], and L. J. Suggs[1]
[1]*University of Texas at Austin, Austin, TX*

11:30AM Fri - 1 –13 – E
Permeability of the Blood-Brain Barrier to Therapeutic Antibodies
L. Shi[1], and B. M. Fu[1]
[1]*Department of Biomedical Engineering, City College of New York, New York, NY*

11:45AM Fri - 1 –13 – F
Endothelial Surface Glycocalyx in Mammalian Blood Vessels
W-Y. Yen[1], B. Cai[1], M. Zeng[1], J. M. Tarbell[1], and B. M. Fu[1]
[1]*Department of Biomedical Engineering, The City College of New York, New York, NY*

Track: Respiratory Engineering - OP - Fri - 1 - 14

Mechanistic Bases of Lung Disease from Cells to System

Chairs: Susan Margulies, Brett Simon
Convention Center – Room 27

10:30AM Fri - 1 –14 – A
Stretch Induces Expression of Lung Protective Metallothionein Through a Zinc/MTF1 Dependent Pathway
F. Boudreault[1], M. Pinilla-Vera[2], A. Kho[3], J. A. Englert[2], R. M. Baron[2], and D. J. Tschumperlin[1]
[1]*Harvard School of Public Health, Boston, MA,* [2]*Brigham and Women's Hospital, Boston, MA,* [3]*Children's Hospital Boston, Boston, MA*

10:45AM Fri - 1 –14 – B CME
Pulmonary Contusion Identification using Computed Tomography in Injured Occupants of Motor Vehicle Crashes
K. A. Danelson[1,2], A. B. Thompson[1,2], A. A. Weaver[1,2], C. Chiles[2], and J. D. Stitzel[1,2]
[1]*Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC,* [2]*Wake Forest University School of Medicine, Winston Salem, NC*

11:00AM Fri - 1 –14 – C
Hyperoxia Increased the Elastic Modulus of Alveolar Epithelial Cells
E. Roan[1], K. Wilhelm[2], A. Bada[1], V. Gorantla[2], P. S. Makena[2], S. E. Sinclair[2], and C. M. Waters[2]
[1]*University of Memphis, Memphis, TN,* [2]*University of Tennessee Health Science Center, Memphis, TN*

11:15AM Fri - 1 –14 – D
The Role of TLR-4 in Ventilator-Induced Lung Injury
G. B. Allen[1], K. Tetenev[1], J. von Reyn[1], and J. H. Bates[1]
[1]*University of Vermont, Burlington, VT*

11:30AM Fri - 1 –14 – E
Contribution of Proteoglycans to Lung Elasticity in an Elastase-induced Mouse Model of Emphysema
A. Takahashi[1], A. Majumdar[1], H. Parameswaran[1], E. Bartolák-Suki[1], and B. Suki[1]
[1]*Boston university, Boston, MA*

11:45AM Fri - 1 –14 – F
Bronchoconstriction Changes the Vertical Dependency in Regional Lung Inflation
C. Wongviriyawong[1,2], M. Kone[1], T. Winkler[1], R. S. Harris[1], and J. G. Venegas[1]
[1]*Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [2]*MIT, Cambridge, MA*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Translational Biomedical Engineering
- OP - Fri - 1- 15

Models and Practices of Commercialization and Entrepreneurship CME

Chair: Mostafa Analoui
Marriott – Ballroom A

Nanomedicine: Clinical Translation, Regulatory, and Investment Perspectives – Nanotechnology is impacting a wide range of sectors from energy, defense, materials, to life sciences. Nanotechnology applications in life sciences have brought together set of key sectors and as well as challenges. This session is designed to offer a series of unique views from three different, yet inter-related perspectives. Presenters will be sharing key activities within each of their respective institutions and companies, representing academic research, emerging biotech and clinical translation of therapeutic and diagnostic products, regulatory views and landscape in the business, federal and venture investment. In this panel discussion, key clinical science, business, and regulatory leaders will be discussing their current state of affairs, key challenges for moving forward, and the future trends. This session will conclude with a Q&A session providing opportunity for direct interaction between attendees and panelists. Panelists include:

- **Mostafa Analoui,** Head of Healthcare and Life Sciences
  The Livingston Group
- **Rutledge Ellis-Behnke**, Director
  Nanomedicine Translational Think Tank
- **Augenklinik Mannheim**
  Ruprecht-Karls-University Heidelberg, Germany
- **Edith Mathiowitz**, Professor of Medical Science and Engineering Director of Biotechnology Graduate Program
  Brown University
- **Anthony Green**, Vice President, Technology Commercialization Group: Life Sciences, and the Ben Franklin Director,
  The Nanotechnology Institute
- **Don Skerrett**, CEO, NanoScan Imaging
- **Esmaeil Jabbari**, Professor of Chemical and Biomedical Engineering, Director of Biomimetic Materials and Tissue Engineering Laboratory
  University of South Carolina
- **Nick Wachtel,** Senior Associate, Lux Capital Management
- **Thomas J. Webster**, Associate Professor, School of Engineering and Department of Orthopaedics
  Brown University; Founder, Nanovis; Founder, Axena; Founder, NanoVault; Founder, Axena; Founder, NanoFe

Track: Translational Biomedical Engineering
- OP - Fri - 1- 16

Translational Biomedical Engineering: Research to Practice (R2P) - Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare CME

Chair: Gualberto Ruano
Marriott – Ballroom B

Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare – One of the promises of the Human Genome Project is individualization of patient care based on highly heterogeneous innate metabolic factors determined by DNA typing of gene polymorphisms. The practice of DNA-guided medicine requires the translation of such gene polymorphism into clinical decision support for personalized healthcare. Pharmacogenetics serves as the foundation for the most clinically advanced application of DNA-guided medicine. Located at Hartford Hospital, the Laboratory of Personalized Health (LPH), performs clinical DNA typing for pharmacogenetic case referrals and provided web-based decision support tools via its Portal of Personalized Health. Operational since October 2005, LPH has already diagnosed drug metabolism capacities for nearly 3000 patients referred by physicians at throughout Connecticut through a partnership wit Clinical Laboratory Partners. The hepatic cytochrome P450 (CYP450) isoenzymes CYP2D6, CYP2C9, and CYP2C19 metabolize, inactivate many drugs (including antidepressants, antipsychotics, anticoagulants, antiplatelets, and analgesics) and also activate pro-drugs (e.g. codeine into morphine) into their active metabolites. These isoenzymes are highly polymorphic in gene sequence and protein structure. Their resultant variable biochemical properties substantially alter individual patient drug response. Inherited common variations in DNA result in extremes of enzymatic activity with resultant highly deficient or ultra rapid drug metabolism. DNA typing is valuable in the diagnosis of patients refractive to psychotropic therapy or prone to recurrent side effects. Therapy can be directed to drugs whose primary metabolic pathway is least deficient or normal in an individual patient. The evolutionary synergy of energy conservation and detoxification with appetite and food seeking behaviors has led to unexpected interactions in drug responses. Pharmacogenetics research suggests that drug responses in cardiometabolic and neuroendocrine axes may lead to the desired efficacy in one axis but undesired side effects in the other. Examples will be presented on the cardiometabolic side effects of psychiatric medications and the neuroendocrine side effects of lipid-lowering and diabetic drugs. Panelists include:

- **Gualberto Ruano,** President and CEO, Genomas Inc., Director of Genetics Research, Hartford Hospital
- **Greg Makowski**, Clinical Laboratory Partners
- **John Goethe**, Institute of Living
- **Paul Thompson**, Hartford Hospital

Friday, October 14, 2011

1:30PM - 5:00PM

POSTER SESSION – FRI - B

Track: Cardiovascular Engineering

Cardiovascular Modeling and Measurement

PS – Fri – B - 1

Quantitative Comparison of Fetal Heart Variability in Different Delivery Modes Using Approximate Entropy

J. LIM[1], J. SONG[2], J. C. SHIN[3], R. TAFRESHI[1], AND I. PARK[3]

[1]Texas A&M University of Qatar, Doha, Qatar, [2]Scott & White Hospitals and Texas A&M Health Science Center, Temple, TX, [3]The Catholic University of Korea, Seoul, Korea, Republic of

PS – Fri – B - 2

Quantitative Investigations of Characteristics of ECG Signals in Myocardial Infarction

J. LIM[1], R. TAFRESHI[1], AND J. SONG[2]

[1]Texas A&M University of Qatar, Doha, Qatar, [2]Scott & White Hospitals and Texas A&M Health Science Center, Temple, TX

PS – Fri – B – 3

Valve Thin Films – A Novel Assay for the Testing of Cardiac Valve Function

K. BALACHANDRAN[1], P. W. ALFORD[2], AND K. K. PARKER[1]

[1]Disease Biophysics Group, Harvard University, Cambridge, MA, [2]University of Minnesota, Minneapolis, MN

POSTER SESSION **FriB**

PS – Fri – B – 4

Synthetic Composite Materials Emulating Patient Abdominal Aortic Aneurysm Wall Material Properties

C. M. MARGOSSIAN[1], E. GOLDEN[1], F. PANCHERI[1], M. D. IAFRATI[2], L. DORFMANN[1], AND R. A. PEATTIE[1]

[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

PS – Fri – B – 5

Using MRI Velocimetry Data to Develop Fluid-Structure Models of Abdominal Aortic Aneurysms

A. D. SURESH[1], G. MIHAI[1], S. RAJAGOPALAN[1], O. P. SIMONETTI[1], AND S. N. GHADIALI[1]

[1]The Ohio State University, Columbus, OH

PS – Fri – B – 6

Biomechanical Response of Abdominal Aortic Aneurysm Tissues Based on Planar Biaxial Testing

F. Q. PANCHERI[1], C. M. MARGOSSIAN[1], W. LIN[1], M. D. IAFRATI[2], L. DORFMANN[1], AND R. A. PEATTIE[1]

[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

PS – Fri – B – 7

Decision Tree Model for Risk Prognosis of Patients on Continuous-Flow Left Ventricular Assist Device

Y. WANG[1], S. R. CLEMENTS[2], A. FERREIRA[1,3], T. A. SNYDER[2], J. W. LONG[2], AND J. F. ANTAKI[1]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]INTEGRIS Advanced Cardiac Care, Oklahoma City, OK, [3]Federal University of Maranhao, Sao Luis, Brazil

PS – Fri – B – 8

Human Platelet Convection Around a Developing Thrombus *In Vivo*

W. WANG[1], J. P. LINDSEY II[1], J. CHEN[2], J. B. FREUND[3], T. G. DIACOVO[2], AND M. R. KING[1]

[1]Cornell University, Ithaca, NY, [2]Columbia University Medical Center, New York, NY, [3]University of Illinois, Urbana Champaign, Urbana Champaign, IL

PS – Fri – B – 9

The *In Vitro* Adult Rat Cardiomyocytes End-to-End Aligned Model Achieved by Laser-Guided Micropatterning Technique

A. H. YANG[1], Z. MA[1], H. LIU[1], T. K. BORG[2], AND B. Z. GAO[1]

[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

PS – Fri – B– 10

Balance-Point Approach to Characterize Regulation of Microvascular, Lymphatic, and Interstitial Pressures

R. M. DONGAONKAR[1], G. A. LAINE[1], R. H. STEWART[1], AND C. M. QUICK[1]

[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

PS – Fri – B– 11

Homogenization Theory Analysis of Patient-based Abdominal Aortic Aneurysm Wall Stress

W. LIN[1], F. Q. PANCHERI[1], M. D. IAFRATI[2], L. DORFMANN[1], AND R. A. PEATTIE[1]

[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

PS – Fri – B– 12

A Fully Automated Mock Loop With Corresponding Simulink Simscape Model Connected to PhysioBank Data.

C. E. TAYLOR[1], AND G. E. MILLER[1]

[1]Virginia Commonwealth University, Richmond, VA

PS – Fri – B– 13

Element Free Bioelectric Field Modeling for Inhomogeneous Anisotropic Cardiac Tissues

I. STURDEVANT[1], AND K. T. NG[1]

[1]New Mexico State University, Las Cruces, NM

PS – Fri – B– 14

Decision Tree Models for the Assessment of Aortic Aneurysm Rupture Risk

J. SHUM[1], E. S. DIMARTINO[2], S. MULUK[3], AND E. A. FINOL[1]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]Univeristy of Calgary, Calgary, Canada, [3]Allegheny General Hospital, Pittsburgh, PA

PS – Fri – B– 15

Collagenase Resistant Mice Have Normal Cardiopulmonary Function as Assessed by Pressure-volume Loops

L. TIAN[1], T. HACKER[1], AND N. CHESLER[1]

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

PS – Fri – B– 16

Computational Modeling of Interactions Between Myofibroblasts and Cardiomyocytes in Bioartificial Tissue Constructs

T. ABNEY[1], E. ELSON[1], T. WAKATSUKI[2], AND G. GENIN[1]

[1]Washington University, St. Louis, MO, [2]Medical College of Wisconsin, Milwaukee, WI

PS – Fri – B– 17

Mechanical Characterization of Thrombus From Acute Ischemic Stroke

G. M. SIEWIOREK[1], W. R. BARONE[2], S. D. ABRAMOWITCH[2], AND E. A. FINOL[1]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

PS – Fri – B– 18

Mathematical Modeling of Nanoparticle Transport and Adhesion in the Authentic Vasculature

S. S. HOSSAIN[1,2], T. J. HUGHES[2], M. FERRARI[1], AND P. DECUZZI[1]

[1]The Methodist Hospital Research Institute, Houston, TX, [2]The University of Texas at Austin, Austin, TX

PS – Fri – B– 19

Increased Pulse Wave Velocity Does Not Cause Increased Aortic Pulse Pressure

M. W. MOHIUDDIN[1], G. A. LAINE[1], AND C. M. QUICK[1]

[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

PS – Fri – B – 20

Oxygen and Carbon Dioxide Diffusion Modeling in the Neonates with Hypoplastic Left Heart Syndrome (HLHS)

A. JALALI[1], AND C. NATARAJ[1]

[1]Villanova University, Villanova, PA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Cardiovascular Engineering

Cardiovascular Stents and Devices

PS – Fri – B – 21
Computational Fluid Dynamics Based Characterization of Pediatric Outflow Cannula Jets for Better Hemodynamic Performance
P. G. Menon[1], D. R. Trumble[2], A. Undar[3], and K. Pekkan[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Allegheny General Hospital, Pittsburgh, PA,* [3]*Penn State Milton S. Hershey Medical Center, Hershey, PA*

PS – Fri – B – 22
Arterial Wall Transport for Drug-eluting Stents: Effect of Drug Reaction Kinetics
F. Bozsak[1], J-M. Chomaz[1], and A. I. Barakat[1,2]
[1]*Ecole Polytechnique, Palaiseau Cedex, France,* [2]*University of California, Davis, Davis, CA*

PS – Fri – B – 23
Drug Delivery from Rough Surfaces for Cardiovascular Stent Applications
S. E. Stoebner[1], and G. Mani[1]
[1]*University of South Dakota, Sioux Falls, SD*

PS – Fri – B – 24
Stent Strut Profile Streamlining Reduces Fibrin Deposition in the Peristrut Region
J. M. Jiménez[1], A. H. Kaakour[1], and P. F. Davies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS – Fri – B – 25
Thrombogenic Optimization of a Novel Trileaflet Polymeric Prosthetic Heart Valve
T. E. Claiborne[1], M. Xenos[1], J. Sheriff[1], Y. Kato[2], L. Pinchuk[2], J. Jesty[1], S. Einav[1], and D. Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Innovia LLC, Miami, FL*

PS – Fri – B – 26
Diffusion Studies Across Biodegradable Alginate Stents
S. Djomehri[1], S. Darbha[1], M. Mobed-Miremadi[1], and M. Keralapura[1]
[1]*San José State University, San Jose, CA*

PS – Fri – B – 27
Tether-free Existence with the Free-range Resonant Electrical Energy Delivery (FREE-D) System for Ventricular Assist Device (VAD) Recipients
B. Waters[1], A. P. Sample[1], P. Bonde[2], and J. R. Smith[1]
[1]*University of Washington, Seattle, WA,* [2]*University of Pittsburgh Medical Center, Pittsburgh, PA*

PS – Fri – B – 28
Flow Modulation Algorithms for Intra-Aortic Rotary Blood Pumps to Reduce Coronary Steal
M. Ising[1], S. C. Koenig[1], M. A. Sobieski[1], M. S. Slaughter[1], and G. A. Giridharan[1]
[1]*University of Louisville, Louisville, KY*

PS – Fri – B – 29
Effect of Bifurcation Stenting on Endothelial Shear Stress: Role of SB Diameter, Angle and Lesion
H. Y. Chen[1], I. D. Moussa[2], C. Davidson[3], and G. S. Kassab[4]
[1]*Purdue University, Indianapolis, IN,* [2]*Weill Cornell Medical Center, New York, NY,* [3]*Northwestern University, Chicago, IL,* [4]*IU-Purdue, Indianapolis, IN*

PS – Fri – B – 30
Fault Detection Algorithm for Rotary Ventricular Assist Devices
K. G. Soucy[1], S. C. Koenig[1], M. A. Sobieski[1], M. S. Slaughter[1], and G. A. Giridharan[1]
[1]*University of Louisville, Louisville, KY*

PS – Fri – B – 31
Effects of Degree of Stenosis on the Wall Shear Stress in Stenosed Coronary Artery Bifurcation
M. Molavi Zarandi[1], R. Mongrain[1], and O. F. Bertrand[2]
[1]*McGill University, Montreal, QC, Canada,* [2]*Laval University, Quebec City, QC, Canada*

Track: Cellular and Molecular Engineering

Cell Mechanics

PS – Fri – B – 32
Mechanical Properties of the Prestressed Nucleus in Cardiac Myocytes
H. Lee[1], W. J. Adams[1], P. W. Alford[1], A. W. Feinberg[1], S. P. Sheehy[1], J. A. Goss[1], and K. K. Parker[1]
[1]*Disease Biophysics Group, Harvard University, Cambridge, MA*

PS – Fri – B – 33
Cooperativity Between Integrins CD11c/CD18 and VLA-4 Supports Monocyte Arrest on VCAM-1.
G. A. Foster[1], R. M. Gower[1], and S. I. Simon[1]
[1]*University of California Davis, Davis, CA*

PS – Fri – B – 34
Spatiotemporal Patterns of Contractility Cause Interspecies Differences in Early Brain Morphology
B. A. Filas[1], A. Oltean[1], D. C. Beebe[1], R. J. Okamoto[1], P. V. Bayly[1], and L. A. Taber[1]
[1]*Washington University, St. Louis, MO*

PS – Fri – B – 35
Phenotyping of Endothelial Cells via Receptor Expression Changes in Microfluidic Channels
D. Vickers[1], and S. Murthy[1]
[1]*Northeastern University, Boston, MA*

PS – Fri – B – 36
Contribution of Stress Fiber Remodeling to the Response of Cells to Micropipette Aspiration
W. H. Ronan[1], N. H. Reynolds[1], and J. P. McGarry[1]
[1]*National University of Ireland, Galway, Ireland*

PS – Fri – B – 37
Mechano-Regulation of Pore Formation in Schlemm's Canal Endothelial Cells Perfused *In Vitro*
R. M. Pedrigi[1], S. T. Braakman[1], C. R. Ethier[1], W. D. Stamer[2], and D. R. Overby[1]
[1]*Imperial College London, London, United Kingdom,* [2]*University of Arizona, Tucson, AZ*

PS – Fri – B – 38
Effect of Dynamic Shear Stress on Platelet Microparticle Generation
W. Yin[1], F. Roue[1], and D. A. Rubenstein[1]
[1]*Oklahoma State University, Stillwater, OK*

PS – Fri – B – 39
Measuring the Modulus and Thickness of the Endothelial Glycocalyx with AFM
G. A. Marsh[1], and R. E. Waugh[1]
[1]*University of Rochester, Rochester, NY*

PS – Fri – B – 40
Differential Mechanical Response of Human and Murine Mesenchymal Stem Cells: Therapeutic Implications
D. McGrail[1], D. Ghosh[1], and M. Dawson[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – B – 41
Extracellular Mechanical Perturbations on Cytoskeletal Dynamics of Mitotic Hela Cells
M-T. Wei[1], D. Vavylonis[1], and H. Ou-Yang[1]
[1]*Lehigh University, Bethlehem, PA*

POSTER SESSION **FriB**

PS – Fri – B – 42
Effects of Dynein on Microtubule Mechanics and Centrosome Positioning
J. Wu[1], G. Misra[2], R. J. Russell[1], A. J. Ladd[1], T. P. Lele[1], and R. B. Dickinson[1]
[1]*University of Florida, Gainesville, FL,* [2]*Stanford University, Stanford, CA*

PS – Fri – B – 43
Toward the Development of New Strategies for the Delivery of MSC-Based Therapeutics
D. Ghosh[1], D. McGrail[1], and M. Dawson[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – B – 44
A Computational Model of Axonal Microtubule Bundles Under Uniaxial Tension
S. Peter[1], and M. R. Mofrad[1]
[1]*University of California, Berkeley, CA*

PS – Fri – B – 45
ECM Micro-Patterning on Hydro-Gels to Study the Effect of Confinement on Cancer Metastasis
X. Tang[1], M. Y. Ali[1], and T. A. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS – Fri – B – 46
Cell Sorting: Exploiting Elastic and Viscoelastic Properties
N. R. Labriola[1], and E. M. Darling[1]
[1]*Brown University, Providence, RI*

PS – Fri – B – 47
Incorporation of Fluorescent Actin Monomers in Living Cells using Inkjet Printing for Cellular Biomechanics Studies
S. Shuford[1], A. Owczarczak[1], S. T. Wood[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

PS – Fri – B – 48
The Mechanism of Alpha-Actinin Binding to F-actin
H. Shams[1], J. Golji[1], and M. R. Mofrad[1]
[1]*University of California, Berkeley, CA*

PS – Fri – B – 49
The Effect Of Force Rate On The Energetics Of Membrane Tether Formation
D. Stark[1,2], P. Borden[1], T. Killian[1], and R. Raphael[1]
[1]*Rice University, Houston, TX,* [2]*Rice University, Houston*

PS – Fri – B – 50
Oscillatory Dynamics of Single Platelet Contraction
D. R. Myers[1,2], Z. Peng[1,2], O. Chaudhuri[3], D. Fletcher[4], T. Sulchek[1], and W. A. Lam[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA,* [3]*Harvard University, Cambridge, MA,* [4]*University of California, Berkeley, Berkeley, CA*

PS – Fri – B – 51
Application of Cell-Specific Finite Element Modeling to Evaluate Cytoplasmic Stiffness of Myoblasts
A. Gefen[1], C. Oomens[2], and N. Slomka[1]
[1]*Tel-Aviv University, Tel-Aviv, Israel,* [2]*Eindhoven University of Technology, Eindhoven, Netherlands*

PS – Fri – B – 52
Probing Tumor Cells via Composite Polymer Systems with Control of Local Substrate Elasticity
S-Y. Chou[1], T. R. Cassino[2], S. L. Brower[2], L. Sakhamuri[2], and P. R. LeDuc[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Precision Therapeutics, Pittsburgh, PA*

Track: Cellular and Molecular Engineering

Cell Motility

PS – Fri – B – 53
Scratch Assay on Nanogrooved Substrate: A Novel Anisotropic Model to Study Wound Healing *In Vitro*
Q. R. Youmans[1], P. Backeris[1], E. U. Azeloglu[1], and K. D. Costa[1]
[1]*Mount Sinai School of Medicine, New York, NY*

PS – Fri – B – 54
A Microfluidic Approach to Study the Effect of Growth Factors on PC3 Cell Migration
U. Tata[1], S. Rao[1], K. T. Nguyen[1], V. K. Lin[2], and J-C. Chiao[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

PS – Fri – B – 55
Determining the Metastatic Potential of A375 Melanoma Cells via Migratory Patterns Using Microbubbles in PDMS
U. Giang[1], L. Xu[2], and L. A. Delouise[2,3]
[1]*University of Rochester, Rochester, NY,* [2]*University of Rochester Medical Center, Rochester, NY,* [3]*University of Rochester, Rochester*

PS – Fri – B – 56
Focal Adhesion Maturation and Dynamics Regulate Variability in Migration Response to EGF Stimulation
Y. Hou[1], and I. Schneider[1]
[1]*Iowa State University, Ames, IA*

PS – Fri – B – 57
Cellular Dynamics on Aligned Fibrous Scaffolds of Tunable Stiffness
S. Wunsch[1], K. Sheets[1], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA*

PS – Fri – B – 58
Defined Concentration Gradients Modulate Tumor Cell Migration in a Microfluidic System
C. Kothapalli[1], V. Dudu[1], and M. Vazquez[1]
[1]*The City College of New York, New York, NY*

PS – Fri – B – 59
Correlation of Membrane Patches in Extending and Retracting Neurons and Schwann Cells
J. M. Love[1], G. Dave[1], J. Chetta[1], and S. Shah[1]
[1]*University of Maryland, College Park, MD, College Park, MD*

PS – Fri – B – 60
Molecular Genetic Mechanisms of Glia Migration
C. Beck[1], C. Ngnabeuye[1], T. Venkatesh[1], and M. Vazquez[1]
[1]*The City College of New York, New York, NY*

PS – Fri – B – 61
Analysis of Area Coverage by Migrating Fibroblasts in Cultures Containing Mechanically-Damaged Sites
G. Topman[1], O. Sharabani-Yosef[1], and A. Gefen[1]
[1]*Tel Aviv University, Tel Aviv, Israel*

PS – Fri – B – 62
Kinematics of Individual Fibroblasts Cultured in Monolayers When Migrating Into a Damaged Region
N. Metoki[1], A. Roy[1], O. Sharabani[1], G. Topman[1], and A. Gefen[1]
[1]*Tel Aviv University, Tel Aviv, Israel*

POSTER SESSION FriB

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Cellular and Molecular Engineering

Cell-Cell Interactions

PS – Fri – B – 63
Nonmyocytes Regulate Myocytes Maturation and Contractility Through Functional Gap Junction
Y. Duan[1], J. Dhuldhoya[1], I. Marcos[1], L. Q. Wan[1], and G. Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

PS – Fri – B – 64
Large-Scale Spatial Analysis of Patterned Neuron Populations
L. J. Millet[1], M. B. Collens[1], and R. Bashir[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS – Fri – B – 65
Reverting Antibiotic Tolerance of Bacterial Persister Cells
J. Pan[1], S. Hou[1], and D. Ren[1]
[1]*Syracuse University, Syracuse, NY*

PS – Fri – B – 66
Maturation of Elastin Fibers is Dependent on the Alpha V Beta 3 Integrin
D. Patel[1], S. Vandromme[1], and L. Taite[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – B – 67
Controlled Initiation of Cell-Cell Interactions by MultiStep Microscope Projection Photolithography Based on a Bio-Friendly Photoresist
J-C. Choi[1], and J. Doh[1]
[1]*POSTECH, Pohang, Gyeongbuk, Korea, Republic of*

PS – Fri – B – 68
Microfluidic Studies of Cancer Intravasation: Visualizing Tumor Cell Dynamics and Endothelial Permeability
I. K. Zervantonakis[1], S. Chung[2], J. L. Charest[3], and R. D. Kamm[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Korea University, Seoul, Korea, Republic of,* [3]*Draper Laboratories, Cambridge, MA*

PS – Fri – B – 69
Inference of Human Immune Cell-Cell Communication from Single and Multi-Cell Cytokine Expression
K. F. Benedict[1,2], J. Choi[1], D. A. Lauffenburger[1], and J. C. Love[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*The Ragon Institute, Charlestown, MA*

PS – Fri – B – 70
Differential Requirement for Talin-1 and Kindlin-3 in LFA-1-Dependent Neutrophil Rolling and Arrest
C. T. Lefort[1], B. G. Petrich[2], M. Moser[3], R. Fassler[3], M. H. Ginsberg[2], and K. Ley[1]
[1]*La Jolla Institute for Allergy and Immunology, La Jolla, CA,* [2]*University of California San Diego, La Jolla, CA,* [3]*Max Planck Institute of Biochemistry, Martinsreid, Germany*

PS – Fri – B – 71
AI-2 Analogs and Antibiotics a Synergistic Approach to Reduce *E. coli* Biofilms in a Microfluidic Setting
V. Roy[1,2], M. T. Meyer[1,2], H. O. Sintim[1,3], R. Ghodssi[1,4], and W. E. Bentley[1,2]
[1]*University of Maryland College Park, College Park, MD,* [2]*Fischell Department of Bioengineering, College Park, MD,* [3]*Department of Chemistry and Biochemistry, College Park, MD,* [4]*Institute of Systems Research, College Park, MD*

Track: Biomedical Engineering Education and Outreach

Global Health

PS – Fri – B – 72
Low-Cost, Reliable Device to Measure Oxygen Output from Oxygen Concentrators in Developing World Hospitals
D. Dorfman[1], S. J. Brown[1], S. R. Gangidi[1], J. Shah[1], D. Shin[1], A. Chang[1], A. Contag[1], C. Neoh[1], J. Lin[1], M. Dhar[1], and F. Jivan[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS – Fri – B – 73
Heated Humidified Air For Hypothermic Resuscitation
G. Ng[1], W. Galvez[1], M. Hadidi[1], A. Mendez[1], D. Shendi[1], and V. Hazelwood[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

PS – Fri – B – 74
A Novel Bubble CPAP Device for Low Resource Settings
J. Brown[1], H. Machen[2], R. Richards-Kortum[1], and M. Oden[1]
1Rice University, Houston, TX, 2Texas Children's Hospital, Houston, TX

PS – Fri – B – 75
The Global Focus Microscope: A Portable, Battery-Operated, Low-Cost, Bright Field and Fluorescence Microscope
J. Brown[1]
[1]*Rice University, Houston, TX*

PS – Fri – B – 76
EWH-Duke Summer Institute Training Yields Annual Improvements in Equipment Repair
M. D. Beard[1], R. Malkin[2], and L. Henderson[2]
[1]*Engineering World Health, Durham, NC,* [2]*Duke University, Durham, NC*

PS – Fri – B – 77
A Structured Methodology for Context-Driven Design of Biomedical Devices
R. Dzombak[1], P. J. Butler[1], and K. Mehta[1]
[1]*The Pennsylvania State University, University Park, PA*

Track: Biomedical Engineering Education and Outreach

K-12 Outreach

PS – Fri – B – 78
Design of a Human Circulation Museum Exhibit to Enhance Cardiovascular Health Literacy in Children
C. Seaman[1], W. Garrahan[1], and P. Sucosky[1]
[1]*University of Notre Dame, Notre Dame, IN*

PS – Fri – B – 79
Bringing Polymer Science To The Classroom: An Inquiry-Based Approach
J. P. Califano[1], J. M. Henkel[2], M. McNall[2], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY,* [2]*Eagle Hill Middle School, Manlius, NY*

PS – Fri – B – 80
Evaluation of an Inquiry-Based After School STEM Mentorship Program for Middle School Youth
S. A. Olds[1], M. Kennedy[1], D. Grosshandler[2], and R. Daugherty[1]
[1]*Northwestern University, Evanston, IL,* [2]*University of Illinois at Chicago, Chicago, IL*

PS – Fri – B – 81
Improving Arizona STEM Education - Summer 2010 Teacher Workshop Series
C. Cohn[1], S. Leung[1], and X. Wu[1]
[1]*University of Arizona, Tucson, AZ*

POSTER SESSION **FriB**

PS – Fri – B – 82
Bringing Biomedical Research to the Classroom
M. Goff[1], Y. Geng[1], E. Wayne[1], E. Howell[1], and L. Bonassar[1]
[1]*Cornell, Ithaca, NY*

PS – Fri – B – 83
An Inquiry Based Approach to Teaching the use of Polymers for Tissue Engineering
E. M. Chandler[1], A. Phinney-Foreman[2], S. Archer[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY,* [2]*Waverly High School, Waverly, NY*

PS – Fri – B – 84
Introducing Engineering Concepts in Elementary School Classrooms: Problem Based Learning Techniques
M. Machado[1], G. E. Aninwene[2], and K. Haberstroh[2]
[1]*Brown University, Warwick, RI,* [2]*Brown University, Providence, RI*

Track: Biomedical Engineering Education and Outreach

Pedagogical Innovations in Biomedical Engineering

PS – Fri – B – 85
Sharing Best Design Teaching Practices
A. Shoukas[1], and R. H. Allen[1]
[1]*Johns Hopkins University, Baltimore, MD*

POSTER SESSION FriB

PS – Fri – B – 86
Use of Active Learning to Teach BME Specific Professional Design Skills in Support of Capstone Design
J. Brugnano[1], M. Pool[1], A. Sieving[1], S. Voytik-Harbin[1], and A. Rundell[1]
[1]*Purdue University, West Lafayette, IN*

PS – Fri – B – 87
Teaching Ethics of Biomedical Engineering Innovation
F. Mac Gabhann[1], E. A. Logsdon[1], E. Rice[1], and Y. Yazdi[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS – Fri – B – 88
Assessing Adaptive Expertise in Physiology with Online Challenge -based Learning
R. Nelson[1]and N. Chesler[1]
[1]*University of Wisconsin-Madison, Madison, WI*

PS – Fri – B – 89
Multi Campus Reverse Engineering Endeavor: The Twin Coil Dialysis Project
P. Fagette[1], and C. Hall[2]
[1]*Temple University, Philadelphia, PA,* [2]*The College of New Jersey, Ewing, NJ*

PS – Fri – B – 90
Development of a New Undergraduate Program in Biomedical Engineering
S. S. Rhodes[1], and C. R. Standridge[1]
[1]*Grand Valley State University, Grand Rapids, MI*

PS – Fri – B – 91
Senior Design Capstone Project: Expanding on the Basics
S. Rowson[1], and S. M. Duma[1]
[1]*Virginia Tech, Blacksburg, VA*

PS – Fri – B – 92
A Discussion Platform for Promoting Critical and Creative Thinking Among Early Career Scientists
E. Wayne[1], D. Infanger[1], G. Gakhar[2], P. Doerschuk[1], and M. Shuler[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

Track: New Frontiers in Biomedical Engineering

Bridging Medicine and Materials and Biomedical Imaging

PS – Fri – B – 93
Nanoparticles as a Filler to Enhance Mechanical Properties of Silicone Gel For Medical Applications
L. Xia[1], Y. Chen[1], S. Yi[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

PS – Fri – B – 94
Analysis of Codebook Construction Strategies in the Bag-of-features Method for Histopathological Image Classification
S. H. Raza[1], R. M. Parry[1,2], A. N. Young[2], and M. D. Wang[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

PS – Fri – B – 95
Correlation of *In Vivo* and *In Vitro* Degradation Profiles for Bio-Absorbable Polymer Implants
A. Kumar[1], and E. Vailhe[1]
[1]*Ethicon Inc, Somerville, NJ*

PS – Fri – B – 96
Wide-field Fluorescent Microscopy on a Cell-phone
H. Zhu[1], O. Yaglidere[1], T-W. Su[1], D. Tseng[1], and A. Ozcan[1]
[1]*University of California Los Angeles, Los Angeles, CA*

PS – Fri – B – 97
Quantitative Testing of Robust Dry Reagent Storage with Filter Paper
G. Wu[1], and M. Zaman[1]
[1]*Boston University, Boston, MA*

PS – Fri – B – 98
Assembly of Linear Nano-chains from Iron Oxide Nanospheres with Asymmetric Surface Chemistry
P. M. Peiris[1], E. Schmidt[1], M. Calabrese[1], A. Mayer[1], C. Shoup[1], D. Zhou[1], R. Pham[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Fri – B – 99
Fabrication of Silk Films via Electrogelation
J. E. Bressner[1], G. Qin[1], L. E. Klinker[1], Y. Zhang[1], D. L. Kaplan[1], and F. G. Omenetto[1]
[1]*Tufts University, Medford, MA*

PS – Fri – B – 100
Manufacturing Polymeric Products With Controlled Biodegradation Characteristics
Q. Li[1], B. Bekisli[1], S. S. Jedlicka[1], and J. P. Coulter[1]
[1]*Lehigh University, Bethlehem, PA*

PS – Fri – B – 101
Bacterial Ablation Using Polymer and Carbon Nanotubes
N. Levi-Polyachenko[1], A. Braden[1], T. Rosenbalm[1], E. Martin[1], T. Smith[1], B. Smith[1], W. D. Wagner[1], L. Webb[1], D. L. Carroll[1], M. Morykwas[1], and L. Argenta[1]
[1]*Wake Forest Health Sciences, Winston-Salem, NC*

PS – Fri – B – 102
Electrochemical Inhibition of *Pseudomonas aeruginosa* Persister Cells
T. H. Niepa[1], J. Gilbert[1], and D. Ren[1]
[1]*Syracuse University, Syracuse, NY*

PS – Fri – B – 103
Conditioning of the Cellular Microenvironment by HaCaT Cells Cultured in Microbubbles Formed in Polydimethylsiloxane
S. Chandrasekaran[1], U-B. Giang[1], L. Delouise[1,2], and M. King[3]
[1]*University of Rochester, Rochester, NY,* [2]*University of Rochester Medical Center, Rochester,* [3]*Cornell University, Ithaca, NY*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – B – 104
Development of a Compliant Hydrogel-Based Surgical Adhesive for Urological Applications
B. Fleishman[1], J. Nagatomi[1], and K. Webb[1]
[1]*Clemson University, Clemson, SC*

PS – Fri – B – 105
Modulation of PC3 Cell Growth on Titanium Surfaces with Altered Surface Roughness and Electric Current
P. Hentosh[1], H. R. Phadke[1], H. P. Bao[1], and S. B. Knisley[1]
[1]*Old Dominion University, Norfolk, VA*

PS – Fri – B – 106
Mechanism Study of PEG-based Polymeric Therapeutics for Cell Membrane Wounds
J-Y. Wang[1], J. Marks[1], and K. C. Lee[1]
[1]*The University of Chicago, Chicago, IL*

Track: New Frontiers in Biomedical Engineering

Cellular Mechanics & Computational Bioengineering

PS – Fri – B – 107
A Middle Ear Pressure Exchange Model For Comfort Prediction During Flights
L. P. De Paula[1], and J. I. Yanagihara[1]
[1]*University of Sao Paulo, Sao Paulo, Brazil*

PS – Fri – B – 108
Regulation of Endoderm Commitment in Embryonic Stem Cells by Fibrillar Fibronectin Promotes Higher Adhesion Strength
A. Fuhrmann[1], H. Taylor-Weiner[1], J. R. Tuler[1], and A. J. Engler[1]
[1]*UC San Diego, La Jolla, CA*

PS – Fri – B – 109
Gradients in Matrix Rigidity Guide Stem Cell Migration by Polarizing the Cytoskeleton
M. Raab[1], and D. Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS – Fri – B – 110
Regulation of Molecular Tension in Dynamic Focal Adhesions
B. D. Hoffman[1], C. Grashoff[2], and M. A. Schwartz[1]
[1]*University of Virginia, Charlottesville, VA, [2]Max Planck Institute of Biochemistry, Martinsried, Germany*

PS – Fri – B – 111
Analyzing the Differentiation of Pluripotent Stem Cells in 3D Environments via Rules Based Computational Modeling
D. White[1], and M. Kinney[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Fri – B – 112
Meshfree and Digital Imaging Analysis of the Deformation in Tissue Phantom Elastography
H. Ajabi Naeeni[1], M. Haghpanahi[2], and H. Pirali[2]
[1]*Science & Research Branch, Islamic Azad University, Tehran, Iran, [2]Iran University of Science and Technology, Tehran, Iran*

PS – Fri – B – 113
Mapping 3D Cellular Traction in Real Time Using a Fluorescent Microscope
M. S. Hall[1], R. Long[1], C. Roh[1], B. J. Kim[1], C-Y. Hui[1], and M. Wu[1]
[1]*Cornell University, Ithaca, NY*

PS – Fri – B – 114
Poroviscoelastic Finite Element Model of Perfused Liver Tissue: Effect of Fluid Input Geometry on Interstitial Fluid Pressure
E. C. Moran[1,2], N. A. Vavalle[1,2], S. Raghunathan[1,2], and J. L. Sparks[1,2]
[1]*Wake Forest University, Winston-Salem, NC, [2]Virginia Tech- Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC*

PS – Fri – B – 115
Single Molecule Binding of CD44 to P-selectin versus Fibrin Probed Using Force Spectroscopy
P. S. Raman[1], C. S. Alves[1], D. Wirtz[1], and K. Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS – Fri – B – 116
Mapping of Mechanical Stresses Within Three-Dimensional Epithelial Tissues
N. Gjorevski[1], and C. M. Nelson[1]
[1]*Princeton University, Princeton, NJ*

PS – Fri – B – 117
Coordinate and Differential Modulation of Cell-Cell and Cell-ECM Traction Forces
V. Maruthamuthu[1], B. Sabass[2,3], U. Schwarz[2], and M. L. Gardel[1]
[1]*University of Chicago, Chicago, IL, [2]University of Heidelberg, Heidelberg, Germany, [3]University of Stuttgart, Stuttgart, Germany*

PS – Fri – B – 118
Reaction-Diffusion Processes Alter Structure and Affect Metabolic Control in Healthy and Diseased Muscle
B. Pathi[1], S. K. Dasika[1], B. R. Locke[1], and S. T. Kinsey[2]
[1]*Florida State University, Tallahassee, FL, [2]University of North Carolina Wilmington, Wilmington, NC*

PS – Fri – B – 119
Examining Cell Mechanics and Structure through a Minimal Coarse-Grained Monte Carlo Model
J. Kang[1], R. L. Steward[1], Y. Kim[1], P. R. LeDuc[1], K. M. Puskar[2], and R. S. Schwartz[1]
[1]*Carnegie Mellon University, Pittsburgh, PA, [2]California State Polytechnic University, Pomona, Pomona, CA*

PS – Fri – B – 120
Ice-Free Cryopreservation of Spin-Dried Mammalian Cells Using Trehalose
N. Chakraborty[1,2], M. A. Menze[3], S. C. Hand[4], and M. Toner[1,2]
[1]*Center for Engineering in Medicine, Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital, Charlestown, MA, [3]Eastern Illinois University, Charleston, IL, [4]Louisiana State University, Baton Rouge, LA*

PS – Fri – B – 121
Contribution of Unfolding and Intermolecular Architecture to Fibronectin Fiber Extensibility
M. Bradshaw[1], and M. L. Smith[1]
[1]*Boston University, Boston, MA*

PS – Fri – B – 122
Principal Component Analysis of HRV and ECG R-Peaks for Detection of Sleep Disordered Breathing
M. Al-Abed[1], M. Manry[1], J. E. Burk[2], and K. Behbehani[1]
[1]*University of Texas at Arlington, Arlington, TX, [2]Sleep Consultants, Inc., Fort Worth, TX*

PS – Fri – B – 123
Using Synthetic Protein Scaffold to Study Asymmetric Cell Fate Decision
J. Li[1], P. Bu[1], K. Chen[1], and X. Shen[1]
[1]*Cornell University, Ithaca, NY*

PS – Fri – B – 124
Strain Stiffening Induced by Molecular Motors in Active Crosslinked Biopolymer Networks
V. B. Shenoy[1], and P. Chen[1]
[1]*Brown University, Providence, RI*

Track: New Frontiers in Biomedical Engineering

Immunobioengineering and Regenerative Medicine

PS – Fri – B – 125
Enhanced Potency of Molecular Adjuvants in Lymphoid Organs via Intra-lymph Node Controlled Release
C. M. Jewell[1,2], and D. J. Irvine[1,3]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Ragon Institute of MGH, MIT, and Harvard, Charlestown, MA, [3]Howard Hughes Medical Institute, Chevy Chase, MD

PS – Fri – B – 126
Phage-displayed Peptide for Specific Targeting of M2 Macrophages
M. Cieslewicz[1], M. Zavaljevski[1], J. Tang[1], E. Raines[1], and S. Pun[1]
[1]University of Washington, Seattle, WA

PS – Fri – B – 127
The Osteogenic Differentiation of Mesenchymal Stem Cells on Piezoelectric Scaffolds
S. M. Damaraju[1], S. Wu[1], M. Jaffe[1], and T. L. Arinzeh[1]
[1]New Jersey Institute of Technology, Newark, NJ

PS – Fri – B – 128
Self-Assembling Adjuvants Carrying Whole Protein Antigens: Influence of MHC Haplotype and TLR-4 Signaling
G. A. Hudalla[1], and J. H. Collier[1]
[1]University of Chicago, Chicago, IL

POSTER SESSION FriB

PS – Fri – B – 129
Biomaterial Based Strategy for Stem Cell Transplantation into the Brain
M. Cooke[1], Y. Wang[1], C. Morshead[1], and M. Shoichet[1]
[1]University of Toronto, Toronto, ON, Canada

PS – Fri – B – 130
Optimized Wound Creation in a Deep Partial Thickness Porcine Burn Model
C. V. Gaines[1], D. Poranki[1], and M. Van Dyke[1]
[1]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC

PS – Fri – B – 131
In Vivo Tracking of Macrophage Nanodelivery Vectors for Cancer Vaccine Prevention and Therapy
C. H. Loo[1], G. Qin[1], I. M. Meraz[1], J. DeLaCerda[2], L. A. Diaz[1], K. C. Li[1], and R. E. Serda[1]
[1]The Methodist Hospital Research Institute, Houston, TX, [2]The University of Texas MD Anderson Cancer Center, Houston, TX

PS – Fri – B – 132
An Injectable, Synthetic Immune Center for Cancer Vaccines: Efficient Delivery of Tumor-Antigens and Immune-Modulatory Nucleic Acids to Dendritic Cells
E. Dawson[1], J. Leleux[1], N. A. Peppas[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

PS – Fri – B – 133
A Novel Experimental Approach to Study the Dynamic Response of Individual Human T Cells
Q. Han[1], N. Bagheri[1], D. Lauffenburger[1], and J. Love[1]
[1]MIT, Cambridge, MA

PS – Fri – B – 134
Naringin Coated Membranes Inhibit MMP-1- Dependent Inflammation in Human Monocytes
S. Stewart-Clark[1,2], V. Tran[1,2], and X. Wen[1,2]
[1]Clemson University, Charleston, SC, [2]Medical University of South Carolina, Charleston, SC

PS – Fri – B – 135
Mechanical Regulation of Mammary Progenitor Cell Differentiation
C. Lui[1], and C. M. Nelson[1]
[1]Princeton University, Princeton, NJ

PS – Fri – B – 136
Micropatterning of pMHC and CD86 for Spatially-Resolved Costimulation of T Lymphocytes
H. Chen[1], E. Judokusumo[1], K. Bashour[1], M. Dustin[2], and L. Kam[1]
[1]Columbia University, New York, NY, [2]New York University School of Medicine, New York, NY

PS – Fri – B – 137
Selection of Induced Pluripotent Cells Cells By Detecting mRNA Using Molecular Beacons
B. M. Wile[1,2], K. Ban[3], Y-S. Yoon[3], and G. Bao[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, [3]Emory University, Atlanta, GA

PS – Fri – B – 138
High-Throughput Sequencing of the Antibody Repertoire
N. Jiang[1], J. A. Weinstein[2], J. He[2], L. Penland[2], D. S. Fisher[2], and S. R. Quake[2]
[1]Stanford University, Stanford, [2]Stanford University, Stanford, CA

PS – Fri – B – 139
CANCELED BY AUTHOR

PS – Fri – B – 140
Enhancing Lymphatic Transport of Nanoparticles Using Complement Anaphylatoxin C5a
S. Raghunathan[1], W. Kilarski[1], J. A. Hubbell[1], and M. A. Swartz[1]
[1]Ecole polytechnique federale de lausanne, Lausanne, Switzerland

PS – Fri – B – 141
Fibrillar Fibronectin Matrices Engineered with Time-Dependent Mechanical Properties to Promote Stem Cell Specification
H. Taylor-Weiner[1], A. Fuhrmann[1], and A. J. Engler[1]
[1]University of California, San Diego, La Jolla, CA

PS – Fri – B – 142
Engraftment of Human Airway Epithelial Cells in Mouse Lungs towards a Cell-based Therapy for Cystic Fibrosis
L. Gui[1], and L. E. Niklason[1]
[1]Yale University, New Haven, CT

PS – Fri – B – 143
Long Term Engraftment of Mesenchymal Stem Cells in Irradiated Tissues via Aortic Arch Injection
P. Lin[1], D. Correa[1], T. J. Kean[2], J. E. Dennis[2], and A. I. Caplan[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Benaroya Research Institute, Seattle, WA

Track: Biomedical Imaging and Optics

Lasers in Medicine

PS – Fri – B – 144
Novel Fluorescent Particles for *In Vivo* Imaging of Physiological Concentrations
M. Dubach[1], J. Marron[2], K. Gleason[2], and H. Clark[1]
[1]Northeastern University, Boston, MA, [2]MIT, Cambridge, MA

PS – Fri – B – 145
Excitation Frequency and Temperature Dependence of Lipid Coated NaYF4:Er3+/Yb3+Nanoparticle Emission
C. F. Gainer[1], G. S. Joshua[1], C. De Silva[1], and M. Romanowski[1]
[1]University of Arizona, Tucson, AZ

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – B – 146
Covalent Coupling of Anti-EGFR to PEGylated ICG-loaded Nanocapsules and Uptake by Cancer Cells
B. Bahmani[1], S. Gupta[1], V. Vullev[1], and B. Anvari[1]
[1]*University of California, Riverside, Riverside, CA*

PS – Fri – B – 147
Development of a Thermally Programmable Biomaterial Substrate for Cell Cultures
B. O'Donoghue[1], and H. Tao[1]
[1]*Tufts University, Medford, MA*

PS – Fri – B – 148
Optical Imaging and Early Identification of Deep Tissue Injury
R. Moza[1], J. Melendez[2], and J. M. DiMaio[1]
[1]*UT Southwestern Medical Center, Dallas, TX,* [2]*Spectral MD, Dallas, TX*

PS – Fri – B – 149
A Novel 2D Color Map for Interactive Segmentation of Stained Tissue Images
Q. Chaudry[1], Y. Sharma[1], S. H. Raza[1], and M. D. Wang[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

Track: Biomedical Imaging and Optics

Nanotechnology for Biomedical Optics

PS – Fri – B – 150
Graphene based MRI Contrast agents: Synthesis, Characterization and *In vitro* MRI
B. Paratala[1], B. Sitharaman[1], and E. D. Caparelli[2,3]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Brookhaven National Laboratory, Upton, NY,* [3]*Stony Brook University (SUNY), Stony Brook, NY*

PS – Fri – B – 151
Tunable Polymerized Shell Microbubbles as Molecular Imaging Ultrasound Contrast Agents
Y. Park[1], A. C. Luce[1], R. D. Whitaker[1], B. Amin[1], M. Cabodi[1], R. O. Cleveland[1], J. O. Nagy[2], and J. Y. Wong[1]
[1]*Boston University, Boston, MA,* [2]*Nanovalent Pharmaceuticals, Inc., Bozeman, MT*

PS – Fri – B – 152
Iron Oxide Labeling of Three Different Cell Populations: Relevant to Tissue Engineered Heart Valves
C. Martinez[1], A. Henao[1], K. Padgett[2], D. Pelaez[2], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL,* [2]*University of Miami, Miami, FL*

PS – Fri – B – 153
Targeted Biodegradable Nanoparticles for Non-Invasive MR Imaging of Macrophages.
R. Ragheb[1], A. Bandyophadyay[1], Q. Wang[2], H. Chahboune[1], J. Criscione[1], H. Ezaldein[1], and T. Fahmy[1]
[1]*Yale University, New Haven, CT,* [2]*University of Connecticut, Storrs, CT*

PS – Fri – B – 154
Fluorescent Nanoprobe for Early Detection of Esophageal Cancer
L. W-G. Chan[1], L. Y. Lin[1], J. Hwang[1], and S. H. Pun[1]
[1]*University of Washington, Seattle, WA*

PS – Fri – B – 155
Highly Sensitive, Optical Contrast Agent with Gold Nanoparticles and Hollow Gold Nanospheres
J. Wang[1], M. Nantz[1], S. Achilefu[2], J. Z. Zhang[3], and K. A. Kang[1]
[1]*University of Louisville, Louisville, KY,* [2]*Washington University, St. Louis, MO,* [3]*University of California, Santa Cruz, Santa Cruz, CA*

PS – Fri – B – 156
Photo-physical Properties of Europium Catalyzed Single Walled Carbon Nanotubes
B. Sitharaman[1], A. Rengaraj Sugumaran[1], and P. K. Avti[1]
[1]*Stony Brook University, Stony Brook, NY*

PS – Fri – B – 157
Manipulation of Silk Film Refractive Index through Doping and Annealing Treatments
Y. Zhang[1], J. Bressner[1], G. Qin[1], D. L. Kaplan[1], and F. G. Omenetto[1]
[1]*Tufts University, Medford, MA*

PS – Fri – B – 158
Benchtop Validation of Contrast Enhanced Ultrasound and Fluorescence Imaging in Cholecystectomy
R. Qin[1], S. Melvin[1], and R. Xu[1]
[1]*The Ohio State University, Columbus, OH*

PS – Fri – B – 159
Ex Vivo Validation Studies of an Implantable Perfusion and Oxygenation Sensor
T. J. Akl[1], W. Xu[2,3], M. N. Ericson[4], M. A. Wilson[2,3], and G. L. Coté[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, PA,* [4]*Oak Ridge National Laboratory, Oak Ridge, TN*

PS – Fri – B – 160
The Diagnostic Utility of Fourier-Based Metrics for Assessing Cellular Organization
J. Xylas[1], K. Quinn[1], M. Hunter[1], and I. Georgakoudi[1]
[1]*Tufts University, Medford, MA*

PS – Fri – B – 161
Using Photonic Crystal Enhanced Fluorescence to Improve the Sensitivity of Two-Color DNA Microarrays
S. George[1], A. Pokhriyal[1], S. Jones[1], M. Lu[2], L. Vodkin[1], and B. Cunningham[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*SRU Biosystems, Urbana, IL*

PS – Fri – B – 162
Direct Enumeration of Dilute Bio-Nanoparticles in an Optical Trap
Y. Hu[1], D. H. Ou-Yang[1], and X. Cheng[1]
[1]*Lehigh University, Bethlehem, PA*

Track: Biomedical Imaging and Optics

Optical Diagnostics, Sensing and Devices

PS – Fri – B – 163
Near-Infrared IR820-Chitosan Conjugate: *In Vitro* Studies
S. Srinivasan[1], R. Manchanda[1], A. Fernandez-Fernandez[1], T. Lei[1], and A. McGoron[1]
[1]*Florida International University, Miami, FL*

PS – Fri – B – 164
Size Stable Solid Lipid Nanoparticles for Detection of Amyloid Plaques using Positron Emission Tomography and Magnetic Resonance Imaging
E. Andreozzi[1], A. Louie[1], and M. Dhenain[2]
[1]*University of California, Davis, Davis, CA,* [2]*Atomic Energy Commission (CEA) - Institute of Biomedical Imaging (I²BM), Fontenay aux Roses, France*

PS – Fri – B – 165
Optical Pacing Combined with Optical Coherence Tomography for Studying the Developing Heart
S. Gu[1], M. Watanabe[1], A. M. Rollins[1], and M. W. Jenkins[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Fri – B – 166
Regenerative Elastography of Mesenchymal Based Constructs
E. T. Curtis[1], S. Zhang[1], and S. F. Othman[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

POSTER SESSION **FriB**

PS – Fri – B – 167
Dual-modality, Dual-functional Nanoemulsions for Cellular and Molecular Imaging
J. U. Menon[1], P. K. Gulaka[2], T. Darjazanie[1], S. Geethanath[2], and V. D. Kodibagkar[1,2]
[1]UT Southwestern Medical Center at Dallas, Dallas, TX, [2]UT Arlington/ UT Southwestern Medical Center at Dallas, Dallas, TX

PS – Fri – B – 168
Clinically-viable Magnetic PLGA Particles for MRI-based Cell Tracking
M. K. Nkansah[1], D. Granot[2], K. Tang[1], M. Bennewitz[1], and E. Shapiro[1,2]
[1]Yale University, New Haven, CT, [2]Yale University School of Medicine, New Haven, CT

PS – Fri – B – 169
Compact and Cost-effective Lensfree Reflection Microscopy On a Chip
M. Lee[1], and A. Ozcan[1,2]
[1]University of California, Los Angeles, Los Angeles, CA, [2]California NanoSystems Institute (CNSI), University of California, Los Angeles, CA

PS – Fri – B – 170
Iterative Method for X-ray Differential Phase-contrast Computed Tomography
W. Cong[1], A. Momose[2], and G. Wang[1]
[1]Virginia Tech, Blacksburg, VA, [2]The University of Tokyo, Tokyo, Japan

Track: Respiratory Engineering

Mechanistic Basis of Obstructive and Restrictive Lung Diseases

POSTER SESSION **FriB**

PS – Fri – B – 171
Bronchodilatory Induced Changes in Airway Reactance nd Its Variation in Asthma
S. A. Bhatawadekar[1], P. Hernandez[1], C. McParland[1], S. Fulton[2], and G. N. Maksym[1]
[1]Dalhousie University, Halifax, NS, Canada, [2]QE-II Health Sciences Centre, Halifax, NS, Canada

PS – Fri – B – 172
Modeling of Pulmonary Diseases in Flow-volume Loops imulations
M. Florens[1], T. Similowski[2,3], C. Straus[2,3], and M. Filoche[1,4]
[1]ENS Cachan, Cachan, France, [2]Université Paris 6, Paris, France, [3]Hôpital Pitié-Salpêtrière, Paris, France, [4]Ecole Polytechnique, Palaiseau, France

PS – Fri – B – 173
Impact of Constriction Time on the Bronchodilatory Effect of Breathing-Like Fluctuations
B. C. Harvey[1], A. S. LaPrad[1], and K. R. Lutchen[1]
[1]Boston University, Boston, MA

PS – Fri – B – 174
The Influence of a Change in Lung Volume on the Extent of Airway Narrowing Following Methacholine
V. Kelly[1], C. Wongviriyawong[1,2], T. Winkler[1], S. Harris[1], and J. Venegas[1,2]
[1]Massachusetts General Hospital, Boston, MA, [2]Massachusetts Institute of Technology, Cambridge, MA

PS – Fri – B – 175
Assessing the Stiffness of Fibrotic Airways
J. H. Bates[1], J. van der Velden[1], M. Aliyeva[1], and Y. M. Janssen-Heininger[1]
[1]University of Vermont, Burlington, VT

PS – Fri – B – 176
Effects of Methacholine Diffusivity Across the Airway Wall on Airways Responsiveness
J. H. Bates[1], C. A. Stevenson[1], M. Aliyeva[1], and L. K. Lundblad[1]
[1]University of Vermont, Burlington, VT

Track: Respiratory Engineering

Mechanobiology, Tissue Engineering and Microfluidics

PS – Fri – B – 177
Mechanical Forces Enhance Load Transfer and Lung Tissue Degradation During Collagenase Digestion
E. Yi[1], S. Sato[1], A. Majumdar[1], E. Bartolak-Suki[1], and B. Suki[1]
[1]Boston University, Boston, MA

PS – Fri – B – 178
Invasion of Non-Small Cell Lung Cancer Cells is Mediated by Vimentin Intermediate Filaments
M. Kidd[1], M. Rogel[1], and K. M. Ridge[1]
[1]Northwestern University, Chicago, IL

PS – Fri – B – 179
Targeting Actin Cytokeleton to Reduce Cell Injury During Airway Reopening
N. Higuita-Castro[1], C. Mihai[1], D. J. Hansford[1], and S. N. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

PS – Fri – B – 180
Effects of Yield Stress on Mucus Clearance: An Experimental Study
Y. Hu[1], S. Bian[1], and J. B. Grotberg[1]
[1]University of Michigan, Ann Arbor, MI

PS – Fri – B – 181
Studying Flow Control Mechanisms in an Insect Respiratory System
A. Salmanzadeh[1], H. Pendar[1], J. J. Socha[2], M. A. Stremler[1], and R. V. Davalos[1]
[1]Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA, [2]Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

Track: Respiratory Engineering

Multiscale Behavior in the Lung

PS – Fri – B – 182
Dynamic Strain Transitions in Mucus may Hint at Mechanism behind Successful Mucociliary Transport
J. A. Cribb[1], P. Vasquez[1], M. G. Forest[1], P. Moore[2], S. Norris[3], S. Shah[4], and R. Superfine[1]
[1]Univ. of North Carolina, Chapel Hill, NC, [2]Boston University, Boston, MA, [3]Univeristy of Michigan, Ann Arbor, MI, [4]UCLA, Los Angeles, CA

PS – Fri – B – 183
Is the Whole More Than the Sum of Its Parts? A Constituent Based Material Model for Lung Parenchyma.
S. M. Rausch[1], O. Pack[2], C. Martin[2], S. Uhlig[2], and W. A. Wall[1]
[1]Technische Universität München, Garching, Germany, [2]UK Aachen, Aachen, Germany

PS – Fri – B – 184
Effect of Lateral Mixing in the Conducting Zone on Oxygen Distribution in the Human Lung
M-Y. Kang[1], J. Hwang[1], S-K. Lee[1], and J-W. Lee[1]
[1]Pohang University of Science and Technology, Pohang, Korea, Republic of

PS – Fri – B – 185
Temporal Evolution of the Phenotype of Allergic Airways Hyperresponsiveness and Airway Inflammation
L. K. Lundblad[1], J. H. Bates[1], E. Riesenfeld[1], and M. E. Poynter[1]
[1]University of Vermont, Burlington, VT

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Fri – B – 186
An Analytical Model of the Mechanical Failure of Fibrous Extracellular Matrix
A. Majumdar[1], and B. Suki[1]
[1]*Boston University, Boston, MA*

PS – Fri – B – 187
A Deep Breath After a Few Short Ones Increases the Rate of Pulmonary Surfactant Adsorption to The Air-Water Interface
P. Boloori Zadeh[1], M. R. Silva[1], and A. Gouldstone[1]
[1]*Northeastern University, Boston, MA*

Track: Systems Biology, Bioinformatics and Computational Bioengineering

Mathematical and Computational Models of Cellular and Molecular Processes: Electrophysiology

PS – Fri – B – 188
Fingertip Bio-impedance Identification for Improvement of Electro-tactile Preference
C. Shelton[1], Y. Shen[1], and J. Gregory[2]
[1]*University of Nevada, Reno, Reno, NV,* [2]*Michigan State University, Lansing, MI*

PS – Fri – B – 189
Experimental Determination of Electroporation Conductivity Change for Cancer Treatment Planning
R. E. Neal[1], P. A. Garcia[1], C. B. Arena[1], J. Robertson[2], and R. V. Davalos[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA*

PS – Fri – B – 190
Glutamate Receptor Dynamics in Coupled Oscillator Model: A Preliminary Analysis of Network Complexity
S. Ramezani[1], and A. W. Chiu[1]
[1]*Louisiana Tech University, Ruston, LA*

PS – Fri – B – 191
A Computer Model of Mouse Ventricular Action Potential with Markov Models of Major K+Currents
Q. Zhou[1], G. C. Bett[1], and R. L. Rasmusson[1]
[1]*University at Buffalo, Buffalo, NY*

PS – Fri – B – 192
Local Control of Cardiomyocyte Excitation Contraction Coupling: A Role for Synchronous Transitions in Engineered Cells
F. S. Pasqualini[1,2], H. Lee[1], M. L. McCain[1], H. Jin[1], J. Dyson[2], and K. K. Parker[1]
[1]*Disease Biophysics Group, Harvard University, Cambridge, MA,* [2]*Department of Physics and Material Engineering, Universita' Politecnica delle Marche, Ancona, Italy*

PS – Fri – B – 193
Modeling Zn Protein Simulations with A Polarizable Potential: Applications to Structural Analysis and Binding Affinity Calculation
J. ZHANG[1], J. C. Wu[1], and P. Ren[1]
[1]*The University of Texas at Austin, Austin, TX*

PS – Fri – B – 194
Computational Model of Marginal Cell Ion Transport Under Energetic Depletion
M. Thielk[1], B. Chang[2], and R. Raphael[3]
[1]*Univ California Berkeley, Berkeley, CA,* [2]*Northwestern University, Evanston, IL,* [3]*Rice University, Houston, TX*

Track: Tissue Engineering

Host Response to Biomaterials

PS – Fri – B – 193
Electrospun Fibrous PCL Scaffolds for Tracheal Defect Repair: A Preliminary *In Vivo* Study
L. Ott[1], R. Weatherly[2,3], and M. Detamore[1,4]
[1]*University of Kansas, Lawrence, KS,* [2]*Children's Mercy Hospital, Kansas City, MO,* [3]*The University of Missouri, Kansas City School of Medicine, Kansas City,* [4]*University of Kansas, Lawrence, KS*

PS – Fri – B – 196
Effect of Co-Culture on Immunogenicity of a Tissue Engineered Construct
S. Alavi[1,2], L. Nazemi[1,2], W. Liu[1,2], and A. Kheradvar[1,2]
[1]*University of California, Irvine, Irvine, CA,* [2]*The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA*

PS – Fri – B – 197
Macrophage Phenotype Predicts Tissue Remodeling Outcome Following Implantation of Biologic Scaffolds
B. N. Brown[1], R. Londono[2], K. A. Kukla[2], M. T. Wolf[2], K. A. Daly[2], S. Tottey[2], and S. F. Badylak[2]
[1]*Cornell University, Ithaca, NY,* [2]*University of Pittsburgh, Pittsburgh, PA*

PS – Fri – B – 198
Macrophage Activation Through Oxidative Response to Biodegradable Polyurethane Scaffolds with Functional Peptides
A. L. Zachman[1], J. Page[2], C. M. Bronikowski[2], S. A. Guelcher[2], and H-J. Sung[2]
[1]*Vanderbilt, Nashville, TN,* [2]*Vanderbilt University, Nashville, TN*

PS – Fri – B – 199
Nanoscale Study of Bacterial Biofilm Formation on Hydrogels
S. L. Bastian[1], S. K. Sinha[1], E. T. Sapi[1], A. Aphale[2], and P. Patra[2]
[1]*University of New Haven, West Haven, CT,* [2]*University of Bridgeport, Bridgeport, CT*

Track: Tissue Engineering

Musculoskeletal Tissue Engineering

PS – Fri – B – 200
Inhibition of TRPV1 in Osteogenic Differentiated hMSCs Increases Mineralization
A. E. Thurber[1], S. Sundelacruz[1], M. Levin[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA*

PS – Fri – B – 201
TMJ Disc Tissue Engineering with Biodegradable Anisotropic Polymer Scaffolds
A.Mathema[1], K. Gotrala[1], and D. K. Mills[1]
[1]*Louisiana Tech University, Ruston, LA*

PS – Fri – B – 202
Increasing Tensile Properties of Engineered TMJ Fibrocartilage Using a Catabolic, Biophysical Stimulus
R. F. MacBarb[1], and K. A. Athanasiou[1]
[1]*University of California, Davis, Davis, CA*

PS – Fri – B – 203
Design of 3D Cross-linked Scaffold for Ligament Tissue Engineering
P. Thayer[1], and A. Goldstein[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

PS – Fri – B – 204
High Porosity PolyHIPEs as Injectable Bone Grafts
J. L. Holm[1], R. Moglia[1], and E. Cosgriff-Hernandez[1]
[1]*Texas A&M University, College Station, TX*

POSTER SESSION Fri B 1:30PM – 5:00PM

PS – Fri – B – 205
Human Adipose Derived Stem Cell Seeding, Migration, and Proliferation in a Needle Punched Porous Human Allograft Meniscus
A. Charoenpanich[1], J. T. Spang MD[2], and E. G. Loboa PhD[1]
[1]UNC-Chapel Hill and NC State University, Raleigh, NC, [2]University of North Carolina, Chapel Hill, NC

PS – Fri – B – 206
Expand Pig BMSC *In Vitro* and Use FGF2 to Enhance Osteogenic Differentiation
B. Tee[1], S. R. Mallery[1], H. Fields[1], and Z. Sun[1]
[1]The Ohio State University, Columbus, OH

PS – Fri – B – 207
Age Impacts Extracellular Matrix Production by Chondrocytes in a Degradable Hydrogel System
S. Skaalure[1], and S. Bryant[1]
[1]University of Colorado, Boulder, CO

PS – Fri – B – 208
Repair of Defects in Rat Tail Intervertebral Discs Using High Density Collagen Gels
B. Borde[1], A. James[2], R. Hartl[2], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

PS – Fri – B – 209
Hexosamine Analog Inhibits IL-1β Related Changes in Bovine Chondrocytes
J. M. Coburn[1], L. Wo[1], K. J. Yarema[1], and J. H. Elisseeff[1]
[1]Johns Hopkins University, Baltimore, MD

PS – Fri – B – 210
Use of a Novel Phospholipid Stimulus for Knee Meniscus Fibrocartilage Tissue Engineering
P. Hadidi[1], and K. A. Athanasiou[1]
[1]University of California, Davis, CA

PS – Fri – B – 211
3-D Followed by 2-D Chondrogenesis of hESCs Results in Enhanced Cartilage Tissue Engineering
V. P. Willard[1], J. Sanchez-Adams[1], and K. A. Athanasiou[2]
[1]Rice University, Houston, TX, [2]University of California Davis, Davis, CA

PS – Fri – B – 212
The Effect of BMP-2 Peptide Concentration on the Short Term Osteogenic Protein Production of MC3T3 Cells
A. Almarza[1], M. Maropis[1], P. Kamelin[1], and C. Hagandora[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS – Fri – B – 213
Polyacrylic Acid/Polyvinyl Alcohol, Poly(e-caprolactone), and Multi-walled Carbon Nanotube Scaffolds
K. M. Fischer[1], D. Flagg[1], and J. W. Freeman[1]
[1]Virginia Tech, Blacksburg, VA

PS – Fri – B – 214
Synergistic Effects of Mechanical and Soluble Cues on Embryonic Tendon Cell Gene Expression
V. G. Finley[1], J. P. Brown[1], and C. K. Kuo[1]
[1]Tufts University, Medford, MA

PS – Fri – B – 215
Mechanical Behavior and Failure of Scaffold Free Tissue Engineered Cartilage
M. Motavalli[1], G. A. Whitney[1], J. Dennis[2], and J. M. Mansour[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Benaroya Research Institute, Seattle, WA

PS – Fri – B – 216
Alignment of Mesenchymal Stem Cells in 3D Hydrogel with Cyclic Stretch
B. D. Riehl[1], J. Lee[1], and J. Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

PS – Fri – B – 217
Annulus Fibrosus Cells as a Potential Cell Source for Nucleus Pulposus Tissue Engineering
A. S. Luengo[1], and G. D. O'Connell[1]
[1]Columbia University, New York, NY

PS – Fri – B – 218
Investigation of Hydrogel-Nanofiber Composite for Cartilage Regeneration
L. D. Wright[1], Z. Cui[2], L. S. Nair[2], and J. W. Freeman[1]
[1]Virginia Tech, Blacksburg, VA, [2]University of Connecticut, Farmington, CT

PS – Fri – B – 219
The Effect of Magnesium Ion Concentration on the Fibrocartilage Regeneration Potential of Goat Costal Chondrocytes
C. Hagandora[1], M. Tudares[1], and A. Almarza[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS – Fri – B – 220
Cellular Displacement from Acoustic Radiation Force: Using Ultrasound to Induce Mechanical Loading
J. Veronick[1], V. Palumbo[1], S. Frazee[1], B. Huey[1], and Y. M. Khan[2]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

PS – Fri – B – 221
Expansion and Three-Dimensional Chondroinduction of Dermis Derived Cells
J. Sanchez-Adams[1], and K. A. Athanasiou[2]
[1]Rice University, Davis, CA, [2]UC Davis, Davis, CA

PS – Fri – B – 222
Acoustic Homogeneity as a Quality Measure in Tissue Engineered Cartilage
M. Citak[1], H. Baskaran[1], A. I. Caplan[1], J. M. Mansour[1], and J. F. Welter[1]
[1]Case Western Reserve University, Cleveland, OH

PS – Fri – B – 223
Hydroxyapatite Nanoparticles Improve Retention of Tissue Engineered Cartilage Constructs
R. Dua[1], J. Centeno[1], and S. Ramaswamy[1]
[1]Florida International University, Miami, FL

PS – Fri – B – 224
Induction of Chondrogenic Differentiation and Matrix Elaboration by Human MSCs Encapsulated in Photocrosslinked Carboxymethylcellulose Hydrogels Supplemented with TGF-β_3
M. S. Gupta[1], E. S. Cooper[1], and S. B. Nicoll[1]
[1]The City College of New York, New York, NY

PS – Fri – B – 225
Electrospun 3-D Scaffolds with Dual Structural Organization for Bone Tissue Engineering
T. Andric[1], K. E. Degen[2], and J. W. Freeman[1]
[1]Virginia Tech, Blacksburg, VA, [2]University of Virginia, Charlottesville, VA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Tissue Engineering

Nano- and Micro- Engineering in Tissue Engineering

PS – Fri – B – 226

A Novel Nanoporous Poly ε-caprolactone Scaffold Supports Native-Like Retinal Pigment Epithelium

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

[1]The Charles Stark Draper Laboratory, Inc., Cambridge, MA, [2]Schepens Eye Research Institute, Harvard Medical School, Boston, [3]Schepens Eye Research Institute, Harvard Medical School, Boston, MA

PS – Fri – B – 227

Micromolded Elastomeric Scaffolds for Cardiac Tissue Engineering

R. A. Neal[1], H. Park[1], M. D. Guillemette[1], J. C. Hsiao[2], S. R. Jain[1], and L. E. Freed[1,2]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Charles Stark Draper Laboratory, Cambridge, MA

PS – Fri – B – 228

3D *In Vitro* Microenvironment Containing Perfused Human Capillaries

M. L. Moya[1], Y-H. Hsu[1], C. C. Hughes[1], A. P. Lee[1], and S. C. George[1]

[1]University of California, Irvine, Irvine, CA

PS – Fri – B – 229

Engineering Collagen Structure in Multiphase Tissues

B. M. Gillette[1], N. S. Rossen[2], N. Das[1], D. Leong[1], M. Wang[1], A. Dugar[1], and S. K. Sia[1]

[1]Columbia University, New York, NY, [2]Copenhagen University, Copenhagen, Denmark

PS – Fri – B – 230

Microscale Guidance Effect on Stem Cell Based Chondrogenesis for Cartilage Repair

C-L. Chou[1], A. L. Rivera[1], A. Caplan[1], V. Goldberg[1], J. F. Welter[1], and H. Baskaran[1]

[1]Case Western Reserve University, Cleveland, OH

PS – Fri – B – 231

Biomechanical Response of Human Liver and Spleen Parenchyma in Uniaxial Unconfined Compression

A. R. Kemper[1], A. C. Santago[2], J. L. Sparks[2], J. D. Stitzel[3], and S. M. Duma[1]

[1]Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA, [2]Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Winston Salem, NC, [3]Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Winston Salem, NC

PS – Fri – B – 232

Fabricating Vascular Inspired Microfluidic Channels

M. E. Wilson[1], N. Kota[1], O. B. Ozdoganlar[1], P. R. LeDuc[1], D. B. Stolz[2], and Y. Wang[2]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

PS – Fri – B – 233

Phospholipid Surface Modified Microporous Biopolymer-Microglial Cell Implants For Spinal Cord Repair

E. P. Goldberg[1], W. J. Streit[2], J. Malleck[3], and J. B. Stopek[3]

[1]University of Florida, Mt Dora, FL, [2]University of Florida, Gainesvile, FL, [3]University of Florida, Gainesville, FL

PS – Fri – B – 234

The Mechanical Properties of Single, Electrospun Nanofibers

S. Baker[1], C. Carlisle[1], J. Sigley[1], J. Stitzel[2], J. Berry[3], K. Bonin[1], and M. Guthold[1]

[1]Wake Forest University, Winston-Salem, NC, [2]Wake Forest University Health Sciences, Winston-Salem, NC, [3]University of Alabama at Birmingham, Birmingham, AL

PS – Fri – B – 235

Conformally Coated Thermo-responsive Poly(dimethylsiloxane) Devices for Formation of Harvestable Tissue Units

H. Tekin[1], T. Tsinman[2], G. Ozaydin-Ince[3], K. K. Gleason[3], M. C. Demirel[4], R. Langer*[5,6], and A. Khademhosseini*[6,7]

[1]Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, [2]Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, [3]Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, [4]Pennsylvania State University, University Park, PA, [5]David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, [6]Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, [7]Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Boston, MA

PS – Fri – B – 236

Design, Fabrication, and Validation of a Microscale Impinging Jet Bioreactor for Engineered Cartilage

S. M. Goldman[1], and G. A. Barabino[1]

[1]Georgia Institute of Technology, Atlanta, GA

PS – Fri – B – 237

Fabrication of High Channel Density 3D Microfluidic Networks for Artificial Vascular Systems

L. M. Bellan[1], T. Kniazeva[2], E. Kim[2], R. Langer[1], D. Cropek[3], and J. Borenstein[2]

[1]MIT, Cambridge, MA, [2]Draper Laboratory, Cambridge, MA, [3]ERDC-CERL, Champaign, IL

PS – Fri – B – 238

A Novel One Step Synthesis of Mesoporous Silica Nanorods for Drug Delivery and Tissue Engineering

C. Smid[1,2], S. Dietz[3], L. Isenhart[3], T. Hu[3], and E. Tasciotti[3]

[1]University of Texas at Austin, Austin, TX, [2]The Methodist Hospital Research Institute, Houston, [3]The Methodist Hospital Research Institute, Houston, TX

PS – Fri – B – 239

A Novel Method for Electrospinning Long Fibers using Poly (glycerol-dodecanoate)

X. Dai[1], K. Kathiria[1], and Y-C. Huang[1]

[1]Florida International University, Miami, FL

Friday, October 14, 2011

1:30PM - 3:00PM

PLATFORM SESSION – FRI – 2

Track: Cellular and Molecular Engineering - OP - Fri - 2 - 1

Mechanotransduction & Mechanobiology - II

Chairs: C. Forbes Dewey Jr., Eno Essien Ebong

Convention Center – Room 11

1:30PM Fri - 2–1 – A

Osteocyte Network Activation by Localized picoNewton Loading

D. Wu[1], D. C. Spray[2], and S. Weinbaum[1]

[1]The City College of New York, New York, NY, [2]Albert Einstein College of Medicine, Bronx, NY

1:45PM Fri - 2–1 – B

siRNA-Mediated Knockdown of Vincum Modulates MAPK1 Activation and Stiffness-Based Stem Cell Differentiation

A. W. Holle[1], D. Vijayraghavan[1], X. Tang[1], J. Del Alamo[1], and A. J. Engler[1]

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

2:00PM Fri - 2–1 – C

Mechanical Stimulation Modulates Local and Global Vesicle Dynamics in Neurons

W. Ahmed[1], T. Li[2], S. Rubakhin[3], A. Chiba[2], J. Sweedler[3], and T. Saif[1]

[1]University of Illinois, Urbana, IL, [2]University of Miami, Coral Gables, FL, [3]Beckman Institute for Advanced Science and Technology, Urbana, IL

2:15PM Fri - 2–1 – D

Molecular Insight into the Antagonistic Effects of Binding Partners Toll-like Receptor 4 and Caveolin-1

P. Wang[1], F. Zhu[1], Z. Tong[1], and K. Konstantopoulos[1]

[1]The Johns Hopkins University, Baltimore, MD

2:30PM Fri - 2–1 – E

Fluorescence/Föster Resonance Energy Transfer Based von Willebrand Factor A2 Domain Proteins That Quantify Plasma ADAMTS13 Activity and Structural Changes

K. M. Dayananda[1], S. Gogia[1], and S. Neelamegham[1]

[1]State University of New York at Buffalo, Buffalo, NY

2:45PM Fri - 2–1 – F

Regulation of Growth Factor-Dependent Tumor Cell Proliferation by Extracellular Matrix Mechanics

V. Umesh[1,2], T. Ulrich[1,2], and S. Kumar[1,2]

[1]University of California, Berkeley, CA, [2]UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA

Track: Cellular and Molecular Engineering - OP - Fri - 2 - 2

Cellular and Subcellular Imaging

Chairs: X. Edward Guo, Jung-Chi Liao

Convention Center – Room 12

1:30PM Fri - 2–2 – A

Functional Microscale Cell-based Assays for Measuring NF-kB Signal Transduction in Multiple Myeloma Cells

E. Young[1], C. Pak[1], S. Miyamoto[1], and D. Beebe[1]

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

1:45PM Fri - 2–2 – B

Live-Cell Imaging of Osteogenic mRNA during Stem Cell Differentiation

H. V. Desai[1], and E. M. Darling[1]

[1]Brown University, Providence, RI

2:00PM Fri - 2–2 – C

Investigating Dorsal Ruffles in Cells by Varying Substrate Stiffness

Y. Zeng[1,2], P. R. LeDuc[1], and K-H. Chiam[2]

*[1]Carnegie Mellon University, Pittsburgh, PA, [2]A*STAR Institute of High Performance Computing, Singapore, Singapore*

2:15PM Fri - 2–2 – D

A Quantitative Method to Analyze the Ultrastructure of Articular Cartilage

R. Stefani[1], R. K. Aaron[2], and B. Bilgen[2]

[1]Rhode Island Hospital, Providence, RI, [2]Brown University and Providence VA Medical Center, Providence, RI

2:30PM Fri - 2–2 – E

Optical Toxin Biosensors Based on FRET

L-J. Lin[1], J. M. Grimme[2], D. M. Cropek[2], and Y. Wang[1]

[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]U.S. Army Corps of Engineers, Champaign, IL

2:45PM Fri - 2–2 – F

Neutrophils Roll on P-selectin at High Shear Stress by Extending "Sling Shot" Tethers in Front

P. Sundd[1], E. Koltsova[1], E. Gutierrez[2], A. Groisman[2], and K. Ley[1]

[1]La Jolla Institute for Allergy and Immunology, La Jolla, CA, [2]University of California San Diego, La Jolla, CA

Track: Drug Delivery Systems - OP - Fri - 2 - 3

Nucleic Acid Delivery - I

Chairs: Craig Duvall, Kaushal Rege

Convention Center – Room 13

1:30PM Fri - 2–3 – A

Membrane Binding of Plasmid DNA and Endocytic Pathways are Involved in Electrotransfection of Mammalian Cells

M. Wu[1], and F. Yuan[1]

[1]Duke University, Durham, NC

1:45PM Fri - 2– 3 – B

Enhancement of Transfection Efficiency with Substrate Topography: Reverse Transfection and siRNA

A. F. Adler[1], A. T. Speidel[1], N. Christoforou[1], K. Kolind[2], M. Foss[2], and K. W. Leong[1]

[1]Duke University, Durham, NC, [2]Aarhus University, Aarhus C, Denmark

2:00PM Fri - 2–3 – C

Polymeric Gene Delivery to Human Brain Tumor Stem Cell Neurospheres

S. Y. Tzeng[1], N. Young[1], H. Guerrero-Cazares[1], A. Quinones-Hinojosa[1], and J. J. Green[1]

[1]Johns Hopkins University, Baltimore, MD

2:15PM Fri - 2–3 – D

Self-assembly of Bioreducible Nucleic Acid Nanocomplexes with Microfluidics

C. L. Grigsby[1], Y-P. Ho[1], C. Lin[2], J. F. Engbersen[2], and K. W. Leong[1]

[1]Duke University, Durham, NC, [2]University of Twente, Enschede, Netherlands

2:30PM Fri - 2–3 – E

HPMA-Oligolysine Polymer-Coated Adenovirus Improves Transduction in CAR Negative Cell Lines

C. K. Wang[1], R. N. Johnson[1], D. S. Chu[1], J. G. Schellinger[1], A. Lieber[1], and S. H. Pun[1]

[1]University of Washington, Seattle, WA

PLATFORM SESSIONS Fri-2

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

2:45PM Fri - 2– 3 – F
Facile Self-Assembly of Virus-Like Particles for Efficient Targeted Delivery of Nucleic Acids
S. Kang[1], and M. M. Jin[1]
[1]*Cornell University, Ithaca, NY*

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Fri - 2 - 4

Model-based Experiment Design and Computer Model Validation

Chairs: Nathan D. Price
Convention Center – Room 14

1:30PM Fri - 2–4 – A
Investigating Redox Regulation of Early TGF Signaling by Computational Modeling
A. F. Prasanphanich[1], and M. L. Kemp[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

1:45PM Fri - 2– 4 – B
The Inoculum Effect and Band-Pass Bacterial Response to Periodic Antibiotic Treatment
C. Tan[1,2], R. P. Smith[1], M. Kuehn[1], and L. You[1]
[1]*Duke University, Durham, NC,* [2]*Carnegie Mellon University, Pittsburgh, PA*

2:00PM Fri - 2–4 – C
Measuring *Ex-Vivo* Spatial Gradients of Tumor Necrosis Factor- during M. tuberculosis Infection
N. A. Cilfone[1] and J. Linderman[1]
[1]*University of Michigan, Ann Arbor, MI*

2:15PM Fri - 2–4 – D
Variations in Behaviors and Fates of Individual Endothelial Cells During the Morphogenesis of Human Microvascular Tissue
H. Parsa[1], and S. Sia[1]
[1]*Columbia University, New York, NY*

2:30PM Fri - 2–4 – E
Cell State Transition Dynamics in Angiogenesis: Experimental Results and Computational Modeling
T. Rimchala[1], R. D. Kamm[1], and D. Lauffenburger[1]
[1]*MIT, Cambridge, MA*

2:45PM Fri - 2–4 – F
Validation of the Mass Distribution of a Full Body Finite Element Model
A. B. Thompson[1,2], A. C. Rhyne[1,2], D. P. Moreno[1,2], F. S. Gayzik[1,2], and J. D. Stitzel[1,2]
[1]*Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC,* [2]*Wake Forest University School of Medicine, Winston Salem, NC*

Track: Neural Engineering - OP - Fri - 2 - 5

Neural Engineering Technology - II

Chairs: Lucas Parra, John Simeral, Elizabeth Hillman
Convention Center – Room 15

1:30PM Fri - 2–5 – A
Cytotoxic Effects of Iron Oxide Nanoparticles on Primary Neuron and Astrocyte Cultures
Y. Yuan[1], C. J. Rivet[1], R. J. Gilbert[1], and D. Borca Tasciuc[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

1:45PM Fri - 2– 5 – B
Intracranial Implants Induce BBB Opening to Micro and Nanoscale Particles.
A. J. Sawyer[1], and T. Kyriakides[1]
[1]*Yale University, New Haven, CT*

2:00PM Fri - 2–5 – C CME
Modulation of Neural Degeneration at the Cortical-Tissue Device Interface through Molecular Control of the Inflammatory Response
K. Potter[1,2], and J. R. Capadona[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*L. Stokes Cleveland Department of Veteran's Affairs Medical Center, Cleveland*

2:15PM Fri - 2–5 – D
Smart Catheter Intracortical Electrodes for Continuous Monitoring of Cerebral Electrophysiology
C. Li[1], J. Hartings[2], and R. Narayan[3]
[1]*Feinstein Institute for Medical Research, Manhasset, NY,* [2]*University of Cincinnati, Cincinnati, OH,* [3]*Hofstra North Shore LIJ School of Medicine, Manhasset, NY*

2:30PM Fri - 2–5 – E
Biohybridized Neural Tissue Engineered Constructs for Electrical Interface with Peripheral Nerve
J. A. Wolf[1], N. Kameswaran[1], I. Chen[1], K. D. Browne[1], D. H. Smith[1], and D. Cullen[1]
[1]*University of Pennsylvania, Philadelphia, PA*

2:45PM Fri - 2–5 – F
Force Required to Insert Probes into the Epineurial and Perineurial Membranes
S. S. Koppaka[1], and D. J. Tyler[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Louis-Stokes, Cleveland, OH*

Track: Orthopedic and Rehabilitation Engineering - OP - Fri - 2 - 6

Orthopedic Tissue Biomechanics - I

Chairs: Christopher Jacobs, Johnna Temenoff
Convention Center – Room 16

1:30PM Fri - 2–6 – A
Mechanical Role of Glycosaminoglycans in the Knee Meniscus
J. Sanchez-Adams[1], and K. A. Athanasiou[2]
[1]*Rice University, Davis, CA,* [2]*UC Davis, Davis, CA*

1:45PM Fri - 2– 6 – B
Collagen Crosslinking Contributes Significantly to the Mechanical Properties of Developing Tendon
J. E. Marturano[1], and C. K. Kuo[1]
[1]*Tufts University, Medford, MA*

2:00PM Fri - 2–6 – C CME
The Role of Lubricin and Boundary Lubrication in the Prevention of Chondrocyte Apoptosis
K. Waller[1], L. X. Zhang[2], K. A. Elsaid[3], B. Fleming[2,4], K. Aslani[2], and G. D. Jay[2,4]
[1]*Brown University, Providence, RI,* [2]*RI Hospital/Lifespan, Providence, RI,* [3]*Massachusetts College of Pharmacy, Boston, MA,* [4]*Brown University, Providence, RI*

2:15PM Fri - 2–6 – D
Evaluation of the Mechanical Role of Non-Fibrillar Matrix in Collagen Gel Tissue Analogs Using a Coupled Fiber-Matrix Microscale Model
S. P. Lake[1], M. F. Hadi[1], and V. H. Barocas[1]
[1]*University of Minnesota, Minneapolis, MN*

2:30PM Fri - 2–6 – E
Prevention of Early Articular Cartilage Surface Damage and Frictional Changes in a Rat Model of OA
N. Galley[1], M. Rivera-Bermudez[2], T. Blanchet[2], C. Flannery[2], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Pfizer, Cambridge, MA

2:45PM Fri - 2–6 – F
Dynamic Properties of Infected Tissue - Round Window Membrane of Guinea Pig Otitis Media Model
R. Z. Gan[1], D. Nakmali[1], X. Zhang[1], and X. Guan[1]
[1]University of Oklahoma, Norman, OK

Track: Biomedical Imaging and Optics - OP - Fri - 2 - 7

Nanotechnology for Biomedical Optics

Chairs: Heather Clark, Luca Dal Negro
Convention Center – Room 17

1:30PM Fri - 2–7 – A
Imaging Single Molecule Dynamics Inside Living Cells with Semiconductor Quantum Dots
A. M. Smith[1], M. C. Mancini[2], and S. Nie[1,2]
[1]Emory University, Atlanta, GA, [2]Georgia Tech, Atlanta, GA

2:00PM Fri - 2–7 – B
Silica-Coated Gold Nanorods as Contrast Agents for Multiplex Photoacoustic Imaging of Cancer
C. L. Bayer[1], Y-S. Chen[1], I. M. Graf[1], G. Luke[1], K. Sokolov[2], and S. Y. Emelianov[1]
[1]The University of Texas at Austin, Austin, TX, [2]M.D. Anderson Cancer Center, Houston, TX

2:15PM Fri - 2–7 – C
Targeted Gold Nanorods as Probes for EGFR-overexpression in Squamous Cell Carcinomas
P. Puvanakrishnan[1], P. Diagaradjane[2], J. Schwartz[3], S. Krishnan[2], and J. W. Tunnell[1]
[1]The University of Texas at Austin, Austin, TX, [2]The UT MD Anderson Cancer Center, Houston, TX, [3]Nanospectra Biosciences Inc, Houston, TX

2:30PM Fri - 2–7 – D
Using the Design of Nature's Own Nanoparticles as a Template to Create Multifunctional Probes - *Invited*
W. Mulder[1]
[1]Mount Sinai School of Medicine, New York, NY

Track: New Frontiers in Biomedical Engineering - OP - Fri - 2 - 8

Integrated Cellular Systems - II

Chairs: Robert Nerem, Krystyn Van Vliet
Convention Center – Room 21

1:30PM Fri - 2–8 – A
Probing the Morphogenetic Response of a Xenopus Tissue to Dynamic Stimulation of Extracellular ATP
Y. Kim[1], P. R. LeDuc[1], W. C. Messner[1], and L. A. Davidson[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

1:45PM Fri - 2– 8 – B
Engineering the 3D Microenvironment of Pluripotent Stem Cells
A. Bratt-Leal[1], M. Kinney[1], K. Hammersmith[1], K. Kepple[1], and T. C. McDevitt[1,2]
[1]Georgia Tech/Emory, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

2:00PM Fri - 2–8 – C
A Microfluidic Bioreactor for Formation of Cell Monolayer and the Resistance Measurement
Z. Huang[1], V. Pongrakhananon[1], Y. Rojanasakul[1], and Y. Liu[1]
[1]West Virginia University, Morgantown, WV

2:15PM Fri - 2–8 – D
Upconversion Luminescent Nanoparticles for Traceable Gene Delivery
A. Kutikov[1], J. Shen[1], and G. Han[1]
[1]University of Massachusetts-Medical School, Worcester, MA

2:30PM Fri - 2–8 – E
Engineering Vaccines to Coordinate the Immune Response
D. J. Irvine[1,2]
[1]MIT, Cambridge, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD

2:45PM Fri - 2–8 – F
Mechanical Compression Alters Normal Mammary Acinus Morphology and Promotes Invasion in 3D Cultures
T. Sodunke[1,2], J. Tse[1,3], and L. Munn[1,2]
[1]Mass General Hospital, Charlestown, MA, [2]Harvard Medical School, Boston, [3]MIT, Cambridge, MA

Track: Tissue Engineering - OP - Fri - 2 - 9

Novel Biomaterials and Scaffolds - I

Chairs: Christopher Bettinger, Jian Yang
Convention Center – Room 22

1:30PM Fri - 2–9 – A
Pore Forming Injectable Hydrogels for Therapeutic Stem Cell Deployment
N. Huebsch[1,2], K. Lee[1], C. Madl[1], M. Xu[1], X. Zhao[1], O. Chaudhuri[1], and D. J. Mooney[1,3]
[1]Harvard University, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge, [3]Wyss Institute for Biologically Inspired Engineering, Boston, MA

1:45PM Fri - 2– 9 – B
Independent control Stiffness and Permeability of a Cell-Encapsulating Hydrogel for Tissue Engineering; Integration of bio-inspired Material Chemistry and Microfabrication
J. Jeong[1], V. Chan[1], C. Cha[1], P. Zorlutuna[1], C. Sukotjo[2], R. Bashir[1], and H. Kong[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Illinois at Chicago, Chicago, IL

2:00PM Fri - 2–9 – C
Electrospun Chitosan Nanofibers for Growth Factor Delivery and Mesenchymal Stem Cell Activation
J. Almodovar[1], S. Bacon[1], F. Zomer Volpato[2], C. Migliaresi[2], J. Kisiday[1], and M. Kipper[1]
[1]Colorado State University, Fort Collins, CO, [2]University of Trento, Trento, Italy

2:15PM Fri - 2–9 – D
Removal of Polyglycolic-acid Fibers in Co-electrospun Composite Scaffolds Enhances Cell Infiltration
B. L-P. Lee[1,2], Z. Yan[1], and S. Li[1,2]
[1]University of California at Berkeley, Berkeley, CA, [2]University of California at San Francisco, San Francisco, CA

2:30PM Fri - 2–9 – E
Novel Elastin-Based Peptides as ECM Templates Within Biomimetic Hydrogels
D. Patel[1], R. Menon[1], and L. Taite[1]
[1]Georgia Institute of Technology, Atlanta, GA

PLATFORM SESSIONS
Fri-2

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

2:45PM Fri - 2–9 – F
In Vivo Application of Dynamic Hyaluronic Acid Material for Myocardial Infarction Therapy
J. L. Young[1], J. Schaefer[1], J. Tuler[1], P. Schup-Magoffin[1], K. Christman[1], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA*

Track: Tissue Engineering - OP - Fri - 2 - 10

Cell-Biomaterial Interface

Chairs: Ehsan Jabbarzadeh, Shiva Kotha
Convention Center – Room 23

1:30PM Fri - 2–10 – A
Characterization of RPE Cells on Hydrogel Mimic of Bruch's Membrane
Z. Clemans[1], A. Gobin[1], and T. Tezel[1,2]
[1]*University of Louisville, Louisville, KY,* [2]*Lion's Eye Center, Louisville, KY*

1:45PM Fri - 2– 10 – B
Electrospun Scaffold Architecture Controls Insulinoma Clustering, Viability and Insulin Production
B. N. Blackstone[1], A. F. Palmer[1], H. R. Rilo[2], and H. M. Powell[1]
[1]*The Ohio State University, Columbus, OH,* [2]*University of Arizona, Tucson, AZ*

2:00PM Fri - 2–10 – C
Dynamics of Circulating Tumor Microemboli Adhesion to E-selectin Surfaces under Flow: Effect of Fibrin Polymerization
A. M. de Guillebon[1], Y. Geng[1], and M. R. King[1]
[1]*Cornell University, Ithaca, NY*

2:15PM Fri - 2–10 – D
Colonization of Electrospun Scaffolds with Progenitor Cells for Tissue Engineering of Peri-Implant Space
P. Lu[1], J. Thomas[1], M. Anghelina[1], D. Jones[1], L. Moldovan[1], J. Guan[2], J. Lannutti[2], and N. I. Moldovan[1]
[1]*Davis Heart and Lung Research Institute, Ohio State University, Columbus, OH,* [2]*Department of Materials Sciences, College of Engineering, Ohio State University, Columbus, OH*

2:30PM Fri - 2–10 – E
Tunable Brain-Mimetic Matrices for Studying Tumor Mechanobiology and Invasion
Y. Kim[1,2], B. Ananthanarayanan[1], and S. Kumar[1,2]
[1]*University of California, Berkeley, CA,* [2]*UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA*

2:45PM Fri - 2–10 – F
Controlling the Fibrillar Architecture of 3D Collagen Gels: Effects on Cell Morphology and Migration
S. P. Carey[1], C. M. Kraning-Rush[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

Track: Devices: Nano to Micro - OP - Fri - 2 - 11*

Emerging Concept of Medical Micro Devices

Chairs: Christopher Love
Convention Center – Room 24

1:30PM Fri - 2–11 – A
Label-free, Cardiomyocyte Enrichment: A Biochemical and Microfabricated Approach
A. Hsieh[1], A. Sofla[1], and M. Radisic[1]
[1]*University of Toronto, Toronto, ON, Canada*

1:45PM Fri - 2– 11 – B
Saline Washing Improves the Ability of Stored RBCs to Perfuse an Artificial Microvascular Network
J. M. Burns[1], J. M. Sosa[1], O. Forouzan[1], and S. S. Shevkoplyas[1]
[1]*Tulane University, New Orleans, LA*

2:00PM Fri - 2–11 – C
Effects of Geometry on Motility of Microstructures Under Bacterial Propulsion
A. Sahari[1], D. Headen[1], M. Canter[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

2:15PM Fri - 2–11 – D
Aptamer-Functionalized Surface for Cell Separation
Z. Zhang[1], N. Chen[1], L. Li[1], and Y. Wang[1]
[1]*University of Connecticut, Storrs, CT*

2:30PM Fri - 2–11 – E
Fabrication of Multi-Functional Micro/Nanoparticles for Drug Delivery and Biomedical Imaging
P. Zhang[1], and J. Guan[1]
[1]*Florida State University, Tallahassee, FL*

2:45PM Fri - 2–11 – F
Single Cell Manipulation by a Magnetic Micro Robot
D. Keum[1], H. Lim[1], C. Moon[1], and S. Moon[1]
[1]*DGIST, Daegu, Korea, Republic of*

Track: Cardiovascular Engineering - OP - Fri - 2 - 12

Valve Mechanics

Chairs: Craig Simmons, Wei Sun
Convention Center – Room 25

1:30PM Fri - 2–12 – A
Biomechanical Interaction in Transcatheter Aortic Valve
Q. Wang[1], and W. Sun[1]
[1]*University of Connecticut, Storrs, CT*

1:45PM Fri - 2– 12 – B
Mitral Valve Leaflets Coaptation Mechanism
B. Gao[1], and Z. He[1]
[1]*Texas Tech Univ., Lubbock, TX*

2:00PM Fri - 2–12 – C
Prediction of the Degree of Hemodynamic Abnormality through a Calcifying Bicuspid Aortic Valve
S. Chandra[1], N. Rajamannan[2], and P. Sucosky[1]
[1]*University of Notre Dame, Notre Dame, IN,* [2]*Feinberg School of Medicine, Chicago, IL*

2:15PM Fri - 2–12 – D
Efficacy in Papillary Muscle Relocation in Relieving Mitral Leaflet Tethering
B. G. Chism[1], J-P. Rabbah[1], A. Siefert[1], N. Saikrishnan[1], and A. Yoganathan[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:30PM Fri - 2–12 – E
Structure and Thermal Stability of Heart Valve Chordae Tendinae: Association with Physiological Loading Conditions
S. M. Wells[1], S. P. Veres[1], C. M. Pierlot[1], P. L. Iles[1], K. M. Perryman[1], J. J. Shanahan[1], B. N. Wilkes[1], and R. A. Leslie[1]
[1]*Dalhousie University, Halifax, NS, Canada*

2:45PM Fri - 2–12 – F
Towards the Development of Meso and Micro-scale High Fidelity Models of the Mitral Valve
R. Amini[1], K. Koomalsingh[2], C. Carruthers[1], T. Shuto[2], R. C. Gorman[2], J. H. Gorman[2], and M. S. Sacks[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Gorman Cardiovascular Research Group, Glenolden, PA*

Track: Cardiovascular Engineering - OP - Fri - 2 - 13

Vascular Permeability, Microvasculature, and Angiogenesis - II

Chairs: Rob Peattie, Laura Suggs

Convention Center – Room 26

1:30PM Fri - 2–13 – A

Matrix-bound vs Diffusible VEGF Alters Endothelial VEGF-Receptor Expression and Cell-Cell Contact

E. A. Logsdon[1], and F. Mac Gabhann[1]

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

1:45PM Fri - 2– 13 – B

Non-viral Engineered Adipose-derived Stem Cells for Therapeutic Angiogenesis

L. R. Deveza[1], G. Imanbayev[1], J. Lee[1], J. Choi[1], J. Cooke[1], and F. Yang[1]

[1]*Stanford University School of Medicine, Stanford, CA*

2:00PM Fri - 2–13 – C

Active Transport Across Lymphatic Endothelium is Modulated by Transmural Flow

V. Triacca[1], S. Raghunathan[1], and M. A. Swartz[1]

[1]*École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

2:15PM Fri - 2–13 – D

Using *In Vivo* Phage Display to Identify Non-VEGF Mediated Tumor Angiogenic Proteins

M. E. Seaman[1], and K. A. Kelly[1]

[1]*University of Virginia, Charlottesville, VA*

2:30PM Fri - 2–13 – E

Preservation of the Microvascular Glycocalyx in Chronic Hyperglycemia

M. D. Savery[1], J. Jiang[1], and E. R. Damiano[1]

[1]*Boston University, Boston, MA*

2:45PM Fri - 2–13 – F

Syndecan-1 is Not an Essential Anchoring Protein for the Microvascular Glycocalyx

M. D. Savery[1], and E. R. Damiano[1]

[1]*Boston University, Boston, MA*

Track: Respiratory Engineering - OP - Fri - 2 - 14

Mechanobiology in the Lung

Chairs: Daniel Tschumperlin, Christopher Waters

Convention Center – Room 27

1:30PM Fri - 2–14 – A CME

miR-146a Regulates Mechanotransduction and Inflammation in Primary Lung Epithelial Cells

Y. Huang[1], M. Crawford[2], N. Higuita-Castro[1], P. Nana-Sinkam[2], and S. N. Ghadiali[1]

[1]*The Ohio State University, Columbus, OH,* [2]*Ohio State University Medical Center, Columbus, OH*

1:45PM Fri - 2– 14 – B CME

Inhibition of Cytoskeletal Tension Promotes Lung Fibroblast Proliferation and Spreading on Matrices of Physiological Compliance

A. Marinkovic[1], J. Mih[1], and D. J. Tschumperlin[1]

[1]*Harvard School of Public Health, Boston, MA*

2:00PM Fri - 2–14 – C CME

Vimentin is Required and Sufficient for Wound Repair of Alveolar Epithelial Cells

M. R. Rogel[1,2], P. N. Soni[1], A. Sitikov[1], and K. M. Ridge[1]

[1]*Northwestern University, Chicago, IL,* [2]*Northwestern University, Evanston, IL*

2:15PM Fri - 2–14– D CME

Changes in Alveolar Epithelial Cell Stiffness at the Onset of Migration

K. Wilhelm[1], E. Roan[2], A. Bada[2], and C. M. Waters[1]

[1]*University of Tennessee Health Science Center, Memphis, TN,* [2]*University of Memphis, Memphis, TN*

2:30PM Fri - 2–14 – E CME

Focal Adhesion Interactions of Smooth Muscle in Intact Airways Mimicking Tidal Breathing

E. Bartolak-Suki[1], A. S. LaPrade[1], B. Suki[1], and K. R. Lutchen[1]

[1]*Boston University, Boston, MA*

2:45PM Fri - 2–14 – F CME

Mechanotransduction in the Lung: Rho-Rac Crosstalk as a Paradigm for Novel Barrier Protective Strategies

K. G. Birukov[1], T. Wu[1], Y. Tian[1], and A. A. Birukova[1]

[1]*The University of Chicago, Chicago, IL*

Track: Translational Biomedical Engineering - OP - Fri - 2- 15

Translational Biomedical Engineering: Research to Practice (R2P) II

Chair: Michael Gara

Marriott – Ballroom B

Sponsored by Coulter Foundation – This session will feature three invited Principle Investigators, or BME Program Heads, from three of the ten institutions that received the Coulter Foundation Translational Partnership Award. Presenters will describe work done towards Program development, translational research, and all the lessons learned along the way. There will be ample time allowed for a Question/Answer period with the three panelists.

- Panelists – TBD

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Friday, October 14, 2011

4:00PM - 5:30PM

PLATFORM SESSION – FRI – 3

Track: Cellular and Molecular Engineering - OP - Fri - 3 - 1

Mechanotransduction & Mechanobiology - III

Chairs: Wei Tan, Sihong Wang

Convention Center – Room 11

4:00PM Fri - 3–1 – A

Primary Cilia Modulate Induction of Osteogenic Differentiation in Adipose-derived Stem Cells

J. C. Bodle[1], M. E. Phillips[2], C. D. Rubenstein[2], A. Charoepanich[1], S. H. Bernacki[1], and E. G. Loboa[1]

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

4:15PM Fri - 3– 1 – B

MLO-Y4 Osteocytes Respond to picoNewton Level Forces in a Polarized Manner

M. M. Thi[1], S. O. Suadicani[1], S. Weinbaum[2], and D. C. Spray[1]

[1]Albert Einstein College of Medicine, Bronx, NY, [2]City College of New York, New York, NY

4:30PM Fri - 3–1 – C

Vascular Smooth Muscle Cell Behavior is Jointly Regulated by Substrate Stiffness and Cell Cell Interactions

O. V. Sazonova[1], K. Lee[1], B. Isenberg[1], C. Rich[1], M. Nugent[1], and J. Wong[1]

[1]Boston University, Boston, MA

4:45PM Fri - 3–1– D

Dynamic Biomechanical Responses of Single Smooth Muscle Cells to Cell Stretch

J. Mann[1], R. Lam[1], S. Weng[1], Y. Sun[1], and J. Fu[1]

[1]University of Michigan, Ann Arbor, MI

5:00PM Fri - 3–1 – E

Tumor-Mediated Extracellular Matrix Stiffening at the Molecular and Cellular Scales

R. C. Andresen Eguiluz[1], K. C. Wang[1], B. Seo[1], E. Brooks[1], C. Fischbach-Teschl[1], and D. Gourdon[1]

[1]Cornell University, Ithaca, NY

5:15PM Fri - 3–1 – F

Physical Sciences Approach for Identifying Aggressiveness and Malignant Potential of Gliomas

Y. A. Miroshnikova[1], I. Acerbi[1], A. Persson[1], M. J. Paszek[1], G. Bergers[1], W. A. Weiss[1], and V. M. Weaver[1]

[1]UCSF, San Francisco, CA

Track: Cellular and Molecular Engineering - OP - Fri - 3 - 2

Cellular Engineering & Modeling

Chairs: Danny Bluestein, Pam Kreeger

Convention Center – Room 12

4:00PM Fri - 3–2 – A

Heterogeneity in Induced Lineage Commitment: A Single-Cell Perspective

T. M. Gibson[1], and C. A. Gersbach[1]

[1]Duke University, Durham, NC

4:15PM Fri - 3– 2 – B

Development of a Platelet Activation Model Incorporating Shear Loading Rates

J. Sheriff[1], M. Xenos[1], G. Girdhar[1], J. Jesty[2], and D. Bluestein[1]

[1]Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY, [2]Division of Hematology, School of Medicine, Stony Brook University, Stony Brook, NY

4:30PM Fri - 3–2 – C

Glycated Collagen Alters Endothelial Cell Plasminogen System Balance

A. M. Clyne[1]

[1]Drexel University, Philadelphia, PA

4:45PM Fri - 3–2 – D

Biomechanical Remodeling of Stem Cells: A Computational Approach to Elucidate Adipogenic Differentiation

A. Paul[1], S. Yahya[2], S. Sun[2], and M. Cho[3]

[1]Univeristy of Illinois at Chicago, Chicago, IL, [2]University of Illinois at Chicago, Chicago, IL, [3]University of Illinois, Chicago, IL

5:00PM Fri - 3–2 – E

Identification of a Multivariate ErbB Network Signature in Epithelial Ovarian Cancer

R. Prasasya[1], and P. K. Kreeger[1]

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

5:15PM Fri - 3–2 – F

Model Predictions of X-Ray Diffraction Patterns During Force Development in Skeletal Muscle

S. M. Mijailovich[1], B. Stojanovic[2], I. Stojanovic[3], R. J. Gilbert[1], and T. Irving[4]

[1]St. Elizabeth Med. Center, Boston, MA, [2]University of Kragujevac, Kragujevac, Serbia, [3]Boston University, Boston, MA, [4]Illinois Institute of Technology, Chicago, IL

Track: Drug Delivery Systems - OP - Fri - 3 - 3

Nucleic Acid Delivery - II

Chairs: Samir Mitragotri, Millicent O. Sullivan

Convention Center – Room 13

4:00PM Fri - 3–3 – A

Nanoparticle-Mediated Delivery of Anti-miRs to Inhibit Oncogenic MicroRNA in Solid Tumors

C. J. Cheng[1], and W. M. Saltzman[1]

[1]Yale University, New Haven, CT

4:15PM Fri - 3– 3 – B

Polyelectrolyte-Gold Nanorod Assemblies for Transgene Delivery

J. Ramos[1], and K. Rege[1]

[1]Arizona State University, Tempe, AZ

4:30PM Fri - 3–3 – C

Structure and Application of Nucleic Acid-Surfactant Films for Transfection in Human Cells

S. L. Perry[1], S. Gajria[2], T. Neumann[1], J. Weinstein[1], J. Ni[1], D. V. Schaffer[1], and M. V. Tirrell[1]

[1]University of California at Berkeley, Berkeley, CA, [2]University of California at Santa Barbara, Santa Barbara, CA

4:45PM Fri - 3–3 – D

Multifunctional Graft Copolymers Aid Liposomal Delivery of Antisense Oligonucleotides

L. Peddada[1], A. Joy[1], M. Costache[1], D. Devore[2], O. Garbuzenko[1], T. Minko[1], and C. Roth[1]

[1]Rutgers University, Piscataway, NJ, [2]U.S. Army Institute for Surgical Research, San Antonio, TX

5:00PM Fri - 3–3 – E
Directed Evolution of Virus Nanoparticles for Enhanced Nucleic Acid Delivery to Ovarian Carcinoma
K. McConnell[1], C. Dempsey[1], J. Judd[1], F. Wei[1], A. Sood[2], and J. Suh[1]
[1]*Rice University, Houston, TX,* [2]*MD Anderson Cancer Center, Houston, TX*

5:15PM Fri - 3–3 – F
Systematic Methodologies for Rational Identification of Peptide Ligands for the Delivery of Small Interfering RNAs
E. D. Karagiannis[1], A. M. Urbanska[1], R. S. Langer[1], and D. G. Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Fri - 3 - 4

Modeling, Simulation and Control in Personalized Medicine

Chairs: John F. LaDisa, Sandra Rugonyi
Convention Center – Room 14

4:00PM Fri - 3–4 – A
Engineering Transferrin-based Cancer Therapeutics Using Cell-Level Kinetic Modeling
D. J. Yoon[1], T. P. Nicolaides[2], D. Yin[2], A. B. Mason[3], W. A. Weiss[2], K. Bankiewicz[2], and D. T. Kamei[1]
[1]*UCLA, Los Angeles, CA,* [2]*UCSF, San Francisco, CA,* [3]*University of Vermont, Burlington, VT*

4:15PM Fri - 3– 4 – B
Computational Algorithm for Derivation of Unstressed Vascular Geometry from CT Image Based Models
S. Chandra[1], J. F. Rodriguez[2], and E. Finol[3]
[1]*University of Notre Dame, Notre Dame, IN,* [2]*Universidad de Zaragoza, Zaragoza, Spain,* [3]*Carnegie Mellon University, Pittsburgh, PA*

4:30PM Fri - 3–4 – C
A Platform for Dynamic Simulation and Control of Human Movement
M. B. Mansouri[1], and J. A. Reinbolt[1]
[1]*University of Tennessee, Knoxville, TN*

4:45PM Fri - 3–4 – D
Genetic Algorithm-Based Optimization of HIV-1 Treatment Using Elite Selection Strategy Variant
J. White[1], and R. Srivastava[1]
[1]*University of Connecticut, Storrs, CT*

5:00PM Fri - 3–4 – E
Computational Engineering of Recombinagenic Donor DNA for Genomic Reprogramming
F. Reza[1], and P. M. Glazer[1]
[1]*Yale University, New Haven, CT*

5:15PM Fri - 3–4 – F
Gender Classification From Fingerprint Using White Lines and Ridge Density
R. Tadross[1], M. Mahfouz[1], B. Caldwell[1], A. Badawi[1], and R. Jantz[1]
[1]*University of Tennessee, Knoxville, TN*

Track: Neural Engineering - OP - Fri - 3 - 5

Neural Tissue Engineering

Chairs: Deanna Thompson, Dustin Tyler
Convention Center – Room 15

4:00PM Fri - 3–5– A
Initial Electric Stimulation of Schwann Cells Promotes Sustained Increases in Neurite Outgrowth
A. N. Koppes[1], and D. M. Thompson[1]
[1]*Rensselaer Polytechnic Institute and Center for Biotechnology and Interdisciplinary Studies, Troy, NY*

4:15PM Fri - 3– 5 – B
The Role of Electrospun Fiber Density and YIGSR Fiber Doping in Axon Motility and Cell Migration on Aligned Topography
N. W. Zaccor[1], C. J. Rivet[1], and R. J. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

4:30PM Fri - 3–5 – C
In Vitro Models of Neurodegenerative Diseases with Engineered Amyloid Beta Plaques
L. F. Deravi[1], M. A. Hemphill[1], A. Grosberg[1], B. E. Dabiri[1], and K. K. Parker[1]
[1]*Disease Biophysics Group, Harvard University, Cambridge, MA*

4:45PM Fri - 3–5 – D
An *In Vitro* Transplant Model for Investigating Neural Stem Cell Engraftment
Y-T. Liu[1], L. Livi[1], J. Morgan[1], and D. Hoffman-Kim[1]
[1]*Brown University, Providence, RI*

5:00PM Fri - 3–5 – E
Tissue Engineered Model of the Inner Neural Retina
K. E. Kador[1,2], R. Montero[2,3], J. Hertz[1,2], E. Lavik[4], F. Andreopoulos[2,3], and J. L. Goldberg[1,2]
[1]*Bascom Palmer Eye Institute, Miami, FL,* [2]*University of Miami Miller School of Medicine, Miami, FL,* [3]*University of Miami, Coral Gables, FL,* [4]*Case Western Reserve University, Cleveland, OH*

5:15PM Fri - 3–5 – F
Optimized L1-Presenting Polymeric Scaffolds Enhance Neurite Outgrowth
J. F. Cherry[1], A. L. Carlson[1], J. Kohn[1], M. Schachner[1], and P. V. Moghe[1]
[1]*Rutgers University, Piscataway, NJ*

Track: Orthopedic and Rehabilitation Engineering - OP - Fri - 3 - 6

Orthopedic Tissue Biomechanics - II

Chairs: Edward Botchwey, Elizabeth Loboa, Helen Lu
Convention Center – Room 16

4:00PM Fri - 3–6 – A
Effects of Trabecular Level Glycation on Bone Fragility
L. Karim[1], and D. Vashishth[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

4:15PM Fri - 3– 6 – B
Stress Normalization to Compare Two Techniques of Femoral Neck Core Decompression
P. J. Brown[1,2], C. V. Sikes[3], S. Mannava[1,3], J. E. Lang[3], and J. D. Stitzel[1,2]
[1]*Wake Forest University School of Medicine, Winston Salem, NC,* [2]*Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston Salem, NC,* [3]*Wake Forest University Department of Orthopedic Surgery, Winston Salem, NC*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

4:30PM Fri - 3–6 – C
Vitamin D Deficiency Disturbs the Shear Strain Profile of the Growth Plate
D. Sevenler[1], M. Buckley[1], G. Kim[1], L. Bonassar[1], I. Cohen[1], and M. van der Meulen[1]
[1]*Cornell University, Ithaca, NY*

4:45PM Fri - 3–6 – D
Small Crack Matrix Damage Dominates Creep Process in Living Bone
Z. Seref-Ferlengez[1], O. Kennedy[1], J. Basta-Pljakic[1], S. Morgan[1], and M. B. Schaffler[1]
[1]*City College of New York, New York, NY*

5:00PM Fri - 3–6 – E
Characterization of Bone Microcrack Local Strain Environment Using Digital Volume Correlation
S. A. Wentzell[1], R. S. Nesbitt[1], J. Macione[1], R. Knapp[2], and S. Kotha[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*University of Connecticut, Storrs, CT*

5:15PM Fri - 3–6 – F
Dynamic Fluid Flow Stimulation Promotes *In Vivo* Mesenchymal Stem Cell Proliferation
M. Hu[1], R. Yeh[1], M. Lien[1], and Y-X. Qin[1]
[1]*Stony Brook University, Stony Brook, NY*

Track: Biomedical Imaging and Optics - OP - Fri - 3 - 7

Optogenetics

Chairs: Brian Chow, Xue Han
Convention Center – Room 17

4:00PM Fri - 3–7 – A
Single- and Multi-Unit Optoelectronic Devices for Optical Neuromodulation in Awake Behaving Animals from Rodents to Non-Human Primates- *Invited*
J. Wang[1], I. Ozden[1], F. Wagner[1], D. Borton[1], B. Brush[1], N. Agda[1], M. Diagne[2], R. Burwell[1], and A. Nurmikko[1]
[1]*Brown University, Providence, RI,* [2]*Connecticut College, New London, CT*

4:30PM Fri - 3– 7 – B
Neuroreceptor Imaging of Awake and Anesthetized Nonhuman Primates with Positron Emission Tomography
C. M. Sandiego[1], X. Jin[1], T. Mulnix[1], K. Fowles[1], D. Lee[1], L. A. Wells[2], E. A. Rabiner[2], G. V. Williams[1], K. Cosgrove[1], and R. E. Carson[1]
[1]*Yale University, New Haven, CT,* [2]*GSK Imperial College, London, United Kingdom*

4:45PM Fri - 3–7 – C
Optogenetic Circuit Mapping of Rhythmic Behaviors in *C. elegans*
C. Fang-Yen[1]
[1]*University of Pennsylvania, Philadelphia, PA*

5:00PM Fri - 3–7 – D
Engineering Molecular Technologies to Sense Neural Activity Non-invasively
M. G. Shapiro[1]
[1]*UC Berkeley, Boston, MA*

Track: New Frontiers in Biomedical Engineering - OP - Fri - 3 - 8

Systems Biology

Chairs: Manu Platt, Amina Qutub
Convention Center – Room 21

4:00PM Fri - 3–8 – A
Multiplicity of Feedback Loops in a Tuberculosis Stress-Response Network
A. Tiwari[1], G. Balazsi[2], and O. A. Igoshin[1]
[1]*Rice University, Houston, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

4:15PM Fri - 3– 8 – B
Chromatin Environment at the HIV-1 Promoter Sets the Threshold for Reactivation from Latency
K. Miller-Jenson[1,2], S. S. Dey[2], N. Pham[2], A. P. Arkin[2,3], and D. V. Schaffer[2,3]
[1]*Yale University, New Haven, CT,* [2]*University of California, Berkeley, CA,* [3]*Lawrence Berkeley National Laboratory, Berkeley, CA*

4:30PM Fri - 3–8 – C
Enzyme-targeted RNAi vs. Small-molecule Inhibition are Distinct Perturbations of Signaling Networks
K. J. Holmberg[1], C. B. Moyer[1], and K. A. Janes[1]
[1]*University of Virginia, Charlottesville, VA*

4:45PM Fri - 3–8 – D
Module-based Multiscale Simulation of Angiogenesis
G. Liu[1], A. A. Qutub[2], P. Vempati[1], F. Mac Gabhann[1], and A. S. Popel[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Rice University, Houston, TX*

5:00PM Fri - 3–8 – E
Bactericidal Antibiotics Induce Oxidative Stress in Mammalian Cells via Mitochondrial Dysfunction
S. Kalghatgi[1], J. Costello[1], C. Spina[2], and J. J. Collins[1]
[1]*Boston University, Boston, MA,* [2]*Boston University School of Medicine, Boston, MA*

5:15PM Fri - 3–8 – F
Characterizing Endothelial Cell Interactions by a Rule-Oriented Strategy Coupled to Experiments
B. Long[1], R. Rekhi[1], J. Jung[1], and A. Qutub[1]
[1]*Rice University, Houston, TX*

Track: Tissue Engineering - OP - Fri - 3 - 9

Novel Biomaterials and Scaffolds - II

Chairs: Eben Alsberg, Donald Elbert
Convention Center – Room 22

4:00PM Fri - 3–9 – A
Spatio-temporal Control Over Cell Attachment to PEG Hydrogels Using Caged RGD Peptides
D. L. Alge[1], and K. S. Anseth[1]
[1]*University of Colorado, Boulder, CO*

4:15PM Fri - 3– 9 – B
In Vitro and *In Vivo* Evaluation of Nerve Guidance Conduits Comprised of a Salicylic Acid Based Poly(anhydride-ester) and PLAA Blend
Y. S. Lee[1], J. Griffin[1], S. Masand[1], D. I. Shreiber[1], and K. E. Uhrich[1]
[1]*Rutgers University, Piscataway, NJ*

4:30PM Fri - 3–9 – C
Environmentally-Sensitive Scaffolds for Reactive Oxygen Species-Mediated Controlled Degradation & Release
S. S. Yu[1], R. L. Koblin[1], A. L. Zachman[1], L. H. Hofmeister[1], T. D. Giorgio[1], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN*

4:45PM Fri - 3–9 – D

Methylcellulose Hydrogels with Tunable Material Properties for Soft Tissue Filler Applications

D. M. Varma[1], G. T. Gold[1], M. S. Gupta[1], E. S. Cooper[1], S. S. Stalling[1], A. T. Reza[1], P. J. Taub[2], and S. B. Nicoll[1]

[1]The City College of New York, New York, NY, [2]The Mount Sinai Medical Center, New York, NY

5:00PM Fri - 3–9 – E

Polydopamine Coating for Biointegration

K. Jeong[1], L. Wang[2], C. F. Stefanescu[1], M. W. Lawlor[3], C. H. Dohlman[2], R. Langer[4], and D. S. Kohane[3]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Massachusetts Eye and Ear Infirmary, Boston, MA, [3]Children's Hospital Boston, Boston, MA, [4]Massachusetts Institute of Technology, Cambridge, MA

5:15PM Fri - 3–9 – F

A Degradable Poly(N-isopropyl acrylamide) Scaffold for Tissue Engineering Applications

A. Galperin[1], T. J. Long[1], and B. D. Ratner[1]

[1]University of Washington, Seattle, WA

Track: Tissue Engineering - OP - Fri - 3 - 10

Engineered Tissue Models for Drug Discovery and Disease

Chairs: Claudia Fischbach-Teschi, Hermann Frieboes

Convention Center – Room 23

4:00PM Fri - 3–10 – A

IL-8 Signaling in Breast Cancer Regulates Metastasis and is Modulated by Hydroxyapatite

S. P. Pathi[1], D. Lin[1], L. A. Estroff[1], and C. Fischbach[1]

[1]Cornell University, Ithaca, NY

4:15PM Fri - 3– 10 – B

Neovascularization within PEG Porous Hydrogel

Y-C. Chiu[1], S. Kocagöz[1], H. Engel[2], S-W. Kao[3], J. C. Larson[1], S. Gupta[1], M-H. Cheng[3], and E. M. Brey[1,4]

[1]Illinois Institute of Technology, Chicago, IL, [2]University of Heidelberg, Heidelberg, Germany, [3]Chang Gung Memorial Hospital, Taoyuan, Taiwan, [4]Hines Veterans Administration Hospital, Hines, IL

4:30PM Fri - 3–10 – C

A Novel *In Vitro* Model for Pathogen Detection Based on Organic Transistors Integrated With Living Cells

S. A. Tria[1], E. Lanzarini[1], L. Jimison[1], M. Nikolou[2], G. G. Malliaras[1], and R. M. Owens[1]

[1]Ecole Nationale Superieure des Mines de Saint Etienne, Gardanne, France, Metropolitan, [2]Cornell University, Ithaca, NY

4:45PM Fri - 3–10 – D

MDA-MB-231 Co-Culture Mediates Microvascular Endothelial Cell Proliferation and Neovessel Formation

C. S. Szot[1], C. F. Buchanan[1], J. W. Freeman[1], and M. N. Rylander[1]

[1]Virginia Tech-Wake Forest University, Blacksburg, VA

5:00PM Fri - 3–10 – E

RNAi-Mediated Knockdown of Metabolic Proteins in 3D Coculture of Adipocytes and Endothelial Cells

J. K. Sims-Wright[1], K. Choi[2], A. Jayaraman[2], and K. Lee[1]

[1]Tufts University, Medford, MA, [2]Texas A&M University, College Station, TX

5:15PM Fri - 3–10 – F

3D Ossified Bone Tissue Model for Evaluation of Drug-eluting Micropatterns

J-H. Lee[1,2], Y. Gu[1], H. Wang[1], and W. Y. Lee[1]

[1]Stevens Institute of Technology, Hoboken, NJ, [2]Columbia University, New York, NY

Track: Devices: Nano to Micro - OP - Fri - 3 - 11*

Drug Delivery Technologies: Nano to Micro Devices

Chairs: Niren Murthy

Convention Center – Room 24

4:00PMFri - 3–11 – A

HIV Mucosal Vaccination Through the Oral Cavity Using Microneedles

Y. Ma[1], S. Krebs[2], B. Sutton[2], N. L. Haigwood[2], and H. Gill[1]

[1]Texas Tech University, Lubbock, TX, [2]Oregon Health and Science University, Portland, OR

4:15PM Fri - 3– 11 – B

Implantable Microfluidic Device for Reciprocating Drug Delivery to Closed Fluid Spaces

E. E. Pararas[1], J. Fiering[1], M. J. Mescher[1], E. S. Kim[1], M. J. McKenna[2], S. G. Kujawa[2], W. F. Sewell[2], and J. T. Borenstein[1]

[1]Draper Laboratory, Cambridge, MA, [2]Massachusetts Eye and Ear Infirmary, Boston, MA

4:30PM Fri - 3–11 – C

Integrating Microneedles with a Microfluidic System for High-throughput Gene Correction in HSCs

D. Myers[1,2], Z. Peng[1,2], S-J. Paik[2], D. Yuan[2], V. Zarnitsyn[2], S. Park[2], M. Allen[2], S. Das[2], G. Bao[2], M. Prausnitz[2], and W. Lam[1,2]

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

4:45PM Fri - 3–11 – D

Synthesis of Biodegradable Micro and Nano(<100nm) Particles Using a Multiplexed Electrospray Process

B. Almería[1], T. M. Fahmy[1], and A. Gomez[1]

[1]Yale University, New Haven, CT

5:00PM Fri - 3–11 – E

Fiberoptic Microneedle Device: Simultaneous Co-Delivery of Fluid Agents and Laser Light

R. L. Hood[1], M. A. Kosoglu[1], and C. G. Rylander[1]

[1]Virginia Tech, Blacksburg, VA

5:15PM Fri - 3–11 – F

Microneedles Carrying Self-Releasing Polymer Multilayer Coatings for Rapid Transcutaneous Delivery and Controlled Release of Genetic Vaccine Components

P. C. DeMuth[1], Y. Min[1], B. Huang[1], P. T. Hammond[1,2], and D. J. Irvine[1,2]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Koch Institute for Integrative Cancer Research, Cambridge, MA

**Supported by an unrestricted educational grant from* Boston Scientific — Defining tomorrow, today.

Track: Cardiovascular Engineering - OP - Fri - 3 - 12

Vascular Structure and Function

Chairs: Naomi Chesler, Anne Robertson

Convention Center – Room 25

4:00PM Fri - 3–12 – A CME

Spatial Distribution and Temporal Variation of the Endothelial Glycocalyx *In Vitro*

K. Bai[1], and W. Wang[1]

[1]Queen Mary, University of London, London, United Kingdom

4:15PM Fri - 3– 12 – B

Characterization of Pressure-Diameter Relations of Lymphatic Vessels

E. Rahbar[1], J. E. Weimer[1], C. D. Bertram[2,3], M. J. Davis[4], and J. E. Moore Jr.[1]

[1]Texas A&M University, College Station, TX, [2]University of Sydney, New South Wales, Australia, [3]Ecole Polytechnique, [91128] Palaiseau cedex, France, [4]University of Missouri, Columbia, MO

PLATFORM SESSIONS
Fri-3

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

4:30PM Fri - 3–12 – C
Glycocalyx-like Coating of Decellularized Graphs
S. Dimitrievska[1], T. R. Kyriakides[1], S. Sundaram[1], M. J. Boyle[1], and L. E. Niklason[1]
[1]*Yale University, New Haven, CT*

4:45PM Fri - 3–12 – D
Role of Elastin in the Biaxial Mechanical Properties of Fibrillin-1 Deficient Carotid Arteries
J. Ferruzzi[1], and J. D. Humphrey[1]
[1]*Yale University, New Haven, CT*

5:00PM Fri - 3–12 – E
Flow Regulated Endothelial Glycocalyx Expression and Its Function as a Protective Barrier Against Leukocyte Adhesion
A. Koo[1], G. García-Cardeña[2], and C. Dewey[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Harvard Medical School, Boston, MA*

5:15PM Fri - 3–12 – F
Effects of Collagen Content & Cross-Linking on Large Pulmonary Artery Stiffening in Chronic Hypoxia
Z. Wang[1], and N. C. Chesler[1]
[1]*University of Wisconsin - Madison, Madison, WI*

Track: Cardiovascular Engineering - OP - Fri - 3 - 13

Cardiovascular Fluid Dynamics

Chairs: Gilda Barabino, Alison Marsden
Convention Center – Room 26

4:00PM Fri - 3–13 – A
Computational Modeling of Intercardiac Flows in Normal and Diseased Hearts
X. Zheng[1], V. Vedula[2], T. Abraham[2], and R. Mittal[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins University, Baltimore, MD*

4:15PM Fri - 3– 13 – B
Comparison of Normal and Pathological Hemodynamics in Coronary Artery Aneurysms Caused by Kawasaki Disease
A. Marsden[1], D. Sengupta[1], A. Kahn[1], and J. C. Burns[1]
[1]*UCSD, La Jolla, CA*

4:30PM Fri - 3–13 – C
Microcalcifications and Fibrous Cap Anisotropy Amplify Coronary Vulnerable Plaque Rupture Potential: Patient Based Fluid-Structure Interaction Studies
S. H. Rambhia[1], X. Liang[1], M. Xenos[1], Y. Alemu[1], N. Maldonado[2], A. Kelly[2], S. Einav[1], S. Weinbaum[2], L. Cardoso[2], and D. Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*The City College of The City University of New York, New York, NY*

4:45PM Fri - 3–13 – D
Biomechanical Factors in Coronary Vulnerable Plaques Risk of Rupture – IVUS Based Patient Specific Fluid Structure Interaction (FSI) Studies
X. Liang[1], M. Xenos[1], Y. Alemu[1], S. Rambhia[1], I. Lavi[2], S. Einav[1], L. Gruberg[1], and D. Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Tel Aviv University, Tel Aviv, Israel*

5:00PM Fri - 3–13 – E
Calcified Nodule Instability in Response to OxLDL and Monocytes under Shear Stress
R. Li[1], D. Mittelstein[1], R. Majumdar[1], K. Fang[1], Y. Tintut[2], L. Demer[2], and T. Hsiai[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*University of California Los Angeles, Los Angeles, CA*

5:15PM Fri - 3–13 – F
Development of a Novel Bioreactor to Apply Fluid Wall Shear Stress and Solid Stress With Variable Stress Phase Angle
R. A. Amaya[1], A. Pierides[1], and J. M. Tarbell[1]
[1]*The City College of New York, New York, NY*

Track: Translational Biomedical Engineering - OP - Fri - 3 - 14

Translational Biomedical Engineering: Research to Practice (R2P) III

Chairs: Larry McIntire, Donald R. Peterson
Convention Center – Room 27

4:00PM Fri - 3–14 – A
Effect of Hydrogen Sulfide Therapy on Neutrophil Adhesion and Tissue Infiltration During Ischemia-Reperfusion Injury (CME)
C. J. Ball[1], S. Chintalapani[1], A. J. Reiffel[2], J. A. Spector[2], and M. R. King[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

4:15PM Fri - 3– 14 – B
Translating Long Duration Human Movement Into Musculoskeletal Injury Prevention Strategies (CME)
M. J. Qadri[1], and D. R. Peterson[1]
[1]*University of Connecticut Health Center, Farmington, CT*

4:30PM Fri - 3–14 – C
Engineered Peptide Linkers for Post-Formulation Nanoparticle Functionalization and Cellular Targeting (CME)
H. Pan[1], J. Myerson[1], S. San Roman[1], L. Hu[1], K. Huo[1], S. Allen[1], G. Lanza[1], P. Schlesinger[1], and S. Wickline[1]
[1]*Washington University School of Medicine, St. Louis, MO*

4:45PM Fri - 3–14 – D
caREMOTE: A Cancer Reporting and Monitoring Telemedicine System for Domestic Care Environment (CME)
C. Cheng[1], T. H. Stokes[2], and M. D. Wang[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Institute of Technology and Emory University, Atlanta, GA*

5:00PM Fri - 3–14 – E
8 Channel 3T Neonatal MRI Volume Phased Array Receiver Built with Non-overlapping Capacitive Decoupling (CME)
N. Tian[1], S. Murphy[2], F. Robb[3], J. Barkovich[1], and D. Xu[1]
[1]*UCSF, San Francisco, CA,* [2]*CWRU, Cleveland, OH,* [3]*General Electric, Aurora, OH*

5:15PM Fri - 3–14 – F
Designing the Next Generation Adhesion Barrier: A Natural Polymer-based Film with Robust Handling Properties (CME)
S. Mayes[1], D. Peterson[2], S. V. Aguilar[1], J. Scott[1], J. Davis[1], C. Brown[3], B. Coopwood[3], D. Lopez[3], and C. Schmidt[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*Austin Brain and Spine, Seton Family Hospital, Austin, TX,* [3]*Seton Family Hospital, Austin, TX*

SATURDAY, OCTOBER 15

TODAY'S HIGHLIGHTS

PLENARY SESSION

8:00am - 9:30am
Ballroom, Convention Center

BMES 2011 Rita Schaffer Memorial Young Investigator Lecturer:
POLYMERIC NANOPARTICLES FOR CELL-SPECIFIC INTRACELLULAR DELIVERY
Jordan Green, PhD
John Hopkins University

Diversity Lecture:
WHAT I TEACH WHEN I MENTOR, WHAT I'VE LEARNED WHEN I'VE BEEN TAUGHT
Cato Laurencin, MD, PhD
University of Connecticut Health Center

EXHIBIT HALL OPEN

9:30am - 1:30pm
Exhibit Hall, Convention Center

POSTER SESSION A and B

9:30am - 1:00pm
Exhibit Hall 4, Convention Center

POSTER SESSION **SatA**

PLATFORM SESSIONS Sat-1

10:30am - 12:00noon
See pages 148-152, Convention Center

PLATFORM SESSIONS Sat-2

1:30pm - 3:00pm
See pages 153-157, Convention Center

PLATFORM SESSIONS Sat-3

3:45pm - 5:15pm
See pages 158-161, Convention Center

Saturday, October 15, 2011

9:30AM – 1:00PM
POSTER – SAT – A & B

Track: Cardiovascular Engineering

Vascular Permeability, Microvasculature, and Angiogenesis

PS – Sat – A – 1
Engineering Effective Revascularization Technologies for Ischemia in Diseased States
S. Das[1], and A. B. Baker[1]
[1]University of Texas, Austin, TX

PS – Sat – A – 2
A Quantitative Model Predicting Nascent Vessel Diameter in 3D *In Vitro* Angiogenesis
L. Wood[1], and H. Asada[1]
[1]MIT, Cambridge, MA

PS – Sat – A – 3
Reduced Blood Flow Rate Due to Vessel Leakiness and Compliance During Tumor Angiogenesis
P. Guo[1], B. Chen[2], and B. Fu[1]
[1]Departmet of Biomedical Engineering, The City College of New York, New York, NY, [2]Global Clinical Pharmacology, Johnson & Johnson Pharmaceutical Research & Development LLC, San Diego, CA

PS – Sat – A – 4
Adhesion of Tumor Cells to the Microvessel Wall Increases Its Permeability by Degrading The Endothelial Surface Glycocalyx
B. Cai[1], J. Fan[1], M. Zeng[1], and B. M. Fu[1]
[1]Department of Biomedical Engineering, City College of New York, New York, NY

PS – Sat – A – 5
Transport of Antibody and Nanoparticles across an *In Vitro* Blood-Brain Barrier
L. Zhang[1], J. Fan[1], J. M. Tarbell[1], and B. M. Fu[1]
[1]The City College of New York, New York, NY

PS – Sat – A – 6
Traffic of Leukocytes in Microfluidic Channels with Rectangular and Rounded Cross-Sections
X. Yang[1], O. Forouzan[1], J. M. Burns[1], and S. Shevkoplyas[1]
[1]Tulane University, New Orleans, LA

PS – Sat – A – 7
Transendothelial Transport: A Limiting Step in Adiponectin Action?
J. M. Rutkowski[1], and P. E. Scherer[1]
[1]UT Southwestern Medical Center, Dallas, TX

PS – Sat – A – 8
Paracrine Effects of VEGF-overexpressing Adipose-derived Stem Cells on Endothelial Cells
L. R. Deveza[1], J. Choi[1], G. Imanbayev[1], and F. Yang[1]
[1]Stanford University School of Medicine, Stanford, CA

PS – Sat – A – 9
Intravascular Free Hemoglobin Reduces NO Bioavailability in Sickle Cell Disease
P. Deonikar[1], and M. Kavdia[1]
[1]Wayne State University, Detroit, MI

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – A – 10
In Vitro Perfusion of Engineered Microvasculature
K. T. Morin[1], and R. T. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

PS – Sat – A – 11
Ensemble Analysis of Angiogenic Growth in Three-Dimensional Microfluidic Cell Cultures
W. A. Farahat[1], L. Wood[1], I. Zervantonakis[1], A. Schore[1], S. Ong[2], D. Neal[1], R. Kamm[1], and H. Asada[1]
[1]*MIT, Cambridge, MA,* [2]*Singapore-MIT Alliance for Research and Technology, Singapore, Singapore*

PS – Sat – A – 12
Development of an Automated Microfluidic Platform for Impedance Analysis of the Endothelium
V. Velasco[1], K. J. King[1], and S. J. Williams[1]
[1]*University of Louisville, Louisville, KY*

PS – Sat – A – 13
Coupling between Vascular Structural Remodeling and Local Hemodynamic and Metabolic Stimuli
G. Gruionu[1]
[1]*Indiana University School of Medicine, Indianapolis, IN*

Track: Cardiovascular Engineering

Vascular Structure and Function

PS – Sat – A – 14
The Inflammatory Potential of Triglyceride Rich Lipoproteins After a High-Fat Meal Correlates with subject Triglycerides and Waist Size
Y. I. Wang[1], J. Schulze[1], N. Raymond[1], T. Tomita[1], K. Tam[1], S. I. Simon[1], and A. G. Passerini[1]
[1]*University of California at Davis, Davis, CA*

PS – Sat – A – 15
A Cell-Free System for the Quantification of Platelet Aggregation on Histamine Stimulated Endothelial Cells
T. Brown[1], and D. B. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

PS – Sat – A – 16
Occurrence and Prevention of Vascular Desiccation During Endoscopic Vessel Harvesting for Coronary Artery Bypass Grafting
D. Ott[1], T. Culclasure[1], W. Hartz[2], and D. Kameh[2]
[1]*Mercer University, Macon, GA,* [2]*Florida Hospital Nicholson Center for Surgical Advancement, Celebration, FL*

PS – Sat – A – 17
Measurement of Vascular Conduit Bioelectrical Impedance of Used for Coronary Artery Bypass: A comparison of Dry Cold Versus Humidified Warmed Carbon Dioxide.
D. Ott[1], T. Culclasure[1], W. Hartz[2], and D. Kameh[2]
[1]*Mercer University, Macon, GA,* [2]*Florida Hospital Nicholson Center for Surgical Advancement, Celebration, FL*

PS – Sat – A – 18
A Novel Tracing Method Applied to Visible Human Project Cryo Slice Data to Build an Aortic Model.
C. E. Taylor[1], and G. E. Miller[1]
[1]*Virginia Commonwealth University, Richmond, VA*

PS – Sat – A – 19
Dietary Lipoproteins Modulate Endothelial VCAM-1 Expression via an IRF-1-Dependent Mechanism
K. Alkhoury[1], K. Tam[1], C. E. Radecke[1], A. G. Passerini[1], and S. I. Simon[1]
[1]*UC Davis, Davis, CA*

PS – Sat – A – 20
Erythrocyte Flux Distribution is Protected with Microvascular Preconditioning
M. D. Frame[1], and A. M. Dewar[1]
[1]*Stony Brook University, Stony Brook, NY*

PS – Sat – A – 21
A Whole Field Method for Analyzing Regional Strain in a Murine Model of Vein Graft Intimal Hyperplasia
J. T. Favreau[1], P. Yu[2], C. K. Ozaki[2], and G. R. Gaudette[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Brigham and Women's Hospital/Harvard Medical School, Boston, MA*

PS – Sat – A – 22
Biomechanical Characterization of Human Ascending Aorta Aneurysm
T. Pham[1], C. Martin[1], L. Ondere[2], J. Elefteriades[2], and W. Sun[1]
[1]*University of Connecticut, Storrs, CT,* [2]*Yale University, New Haven, CT*

PS – Sat – A – 23
Collagen Recruitment in the Rabbit Carotid Artery Wall
M. Hill[1], and A. Robertson[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS – Sat – A – 24
Infected Monocytes Modulate Vessel Wall Microenvironment in Atherosclerosis
S. J. Evani[1], N. Mareedu[1], A. K. Murthy[1], B. P. Arulanandam[1], and A. K. Ramasubramanian[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

Track: Tissue Engineering

Printing and Patterning in Tissue Engineering

PS – Sat – A – 25
3D Multicellular Patterning by Tissue Origami
G. J. Ye[1], J-O. You[1], and D. T. Auguste[1]
[1]*Harvard University, Cambridge, MA*

PS – Sat – A – 26
Three Dimensional Image Guided Patterning of Hydrogel Scaffolds via Two-Photon Laser Scanning Lithography
J. C. Hoffmann[1], J. C. Culver[2], R. A. Poche[2], M. E. Dickinson[2], and J. L. West[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

PS – Sat – A – 27
Fabrication of an *Ex Vivo* Hepatic Niche Through Photopatterning of Cell-Laden PEGDA Hydrogels
S. Higbee[1], M. Cuchiara[1], and J. West[1]
[1]*Rice University, Houston, TX*

PS – Sat – A – 28
Layer-by-Layer Control of Complex Tissue Structure Using Patterned Cell Sheets
C. Williams[1], A. Xie[2], M. Yamato[3], T. Okano[3], and J. Y. Wong[2]
[1]*Tufts University, Medford, MA,* [2]*Boston University, Boston, MA,* [3]*Tokyo Women's Medical University, Tokyo, Japan*

PS – Sat – A – 29
Spatially Printed Electrically Conductive Poly-Pyrrole (PPy) Ultra-Fine Fibers Embedded within 3D Poly-Caprolactone (PCL) Fiber Mesh Scaffolds
S. Jayaraman[1]
[1]*University of Oklahoma, Norman, OK*

POSTER SESSION **SatA**

See page 17 for Poster floor plan

PS – Sat – A – 30
Design and Fabrication of Microstructural Heterogeneity in Engineered Tissues Using 3D Printing
K. H. Kang[1], K. Yeh[1], L. A. Hockaday[1], J. Agarwal[1], P. Y-C. Cheung[1], L. Bonassar[1], C-C. Chu[1], and J. T. Butcher[1]
[1]Cornell University, Ithaca, NY

PS – Sat – A – 31
Rapid Printing of Vascular Channels for 3D Tissue Culture
J. S. Miller[1], M. T. Yang[1], B. Baker[1], D-H. T. Nguyen[1], R. Chaturvedi[1], E. Toro[1],D. M. Cohen[1], X. Yu[1], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA

PS – Sat – A – 32
Magnetic Printing for Tissue Engineering
F. Xu[1], Y. Sung[1], T. D. Finley[1], C-A. M. Wu[2], and U. Demirci[1,2]
[1]Harvard Medical School, Cambridge, MA, [2]Harvard-MIT HST, Cambridge, MA

PS – Sat – A – 33
Engineering Anisotropic Myotubes Using Micropatterned Extracellular Matrix Proteins
Y. Sun[1,2], A. Lee[1], and A. W. Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Beihang University, Beijing, China, People's Republic of

PS – Sat – A – 34
Computed Tomography Guided Tissue Engineering of Equine Upper Airway Cartilage
B. N. Brown[1], N. J. Siebenlist[1], J. Cheetham[1], J. W. Hermanson[1], N. G. Ducharme[1], and L. J. Bonassar[1]
[1]Cornell University, Ithaca, NY

PS – Sat – A – 35
Engineering of Multiphase Anisotropic Tissue Structures By Microdroplet Hydrogel Patterning
U. A. Gurkan[1], Y. Sung[1], F. Xu[1], and U. Demirci[1,2]
[1]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA,[2]Harvard-MIT Health Sciences and Technology, Cambridge, MA

PS – Sat – A – 36
Construction of Vascular Structure with Fluid Perfusion inside Three-Dimensional Hydrogels using Bio-Printing Technology
V. K. Lee[1], W. Lee[2], S-S. Yoo[3], and G. Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]KAIST, Deajeon, Korea, Republic of, [3]Harvard Medical School, Boston, MA

PS – Sat – A – 37
Inkjet Printing of Self-Assembling Biopolymer Gels and Cells
P. Calvert[1], S. Limem[1], M. in het Panhuis[2], D. McCallum[2], and D. Kaplan[3]
[1]UMass Dartmouth, N Dartmouth, MA, [2]University of Wollongong, Wollongong, Australia, [3]Tufts University, Medford, MA

PS – Sat – A – 38
Patterning Bone Formation With Mother of Pearl
R. M. Olabisi[1], M. Rowland[1], C. L. Franco[1], J. Hoffmann[1], and J. L. West[1]
[1]Rice University, Houston, TX

PS – Sat – A – 39
Photocrosslinkable Collagen-based Hydrogels for *In Situ* Material Modification
I. D. Gaudet[1], and D. I. Shreiber[1]
[1]Rutgers University, Piscataway, NJ

PS – Sat – A – 40
Three-Dimensional Printing of Collagen Hydrogels for Tissue Engineering
S. Y. Rhee[1], B. N. Brown[1], and L. J. Bonassar[1]
[1]Cornell University, Ithaca, NY

PS – Sat – A – 41
Viability of Microencapsulation of *E. coli* DHS for Urea Removal Using Inkjet Bio-Printing
Y. Shan[1], M. Mobed-Miremadi[1], and G. Selvaduray[1]
[1]San Jose State University, San Jose, CA

PS – Sat – A – 42
Influence of Geometry on the Differentiation of C2C12 Myoblasts
P. Bajaj[1], C. Wei[1], B. Reddy[1], and R. Bashir[1]
[1]University of Illinois - Urbana Champaign, Urbana, IL

PS – Sat – A – 43
A Facile Model to Study the Effect of Cellular Microniches on Keratinocyte Localization and Function
A. L. Clement[1], and G. D. Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

PS – Sat – A – 44
Direct-Writing Patterns of Cells Encapsulated in Hydrogel Microbeads
T. B. Phamduy[1], N. Abdul Raof[2], N. R. Schiele[1], D. T. Corr[1], Y. Xie[2], and D. B. Chrisey[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]University at Albany, State University of New York, Albany, NY

PS – Sat – A – 45
Using Focused Ultrasound for the Spatiotemporal Control of Gene Expression in Engineered Tissues
C. G. Wilson[1], F. Padilla[2], M. Zhang[2], N. Vilaboa[3], O. Kripfgans[2], J. B. Fowlkes[2], and R. T. Franceschi[1]
[1]University of Michigan School of Dentistry, Ann Arbor, MI, [2]University of Michigan Medical School, Ann Arbor, MI, [3]Hospital Universitario La Paz-IdiPAZ & CIBER-BBN, Madrid, Spain

PS – Sat – A – 46
Design of an Immunocompetent Human Skin Model
G. Singh[1], V. Lee[1], J. Trasatti[1], G. Dai[1], and P. Karande[1]
[1]RPI, Troy, NY

PS – Sat – A – 47
Optimisation of Polyethylene Glycol Diacrylate Concentration for Rapid Negative Dielectrophoretic Patterning on a Microarray Format
R. Abdallat[1,2], H. O. Fatoyinbo[1], M. P. Hughes[1], and F. H. Labeed[1]
[1]University of Surrey, Guildford,Surrey, United Kingdom, [2]The Hashemite University,
Zarqa, Jordan

PS – Sat – A – 48
Layer-by-Layer Biofabrication using Laser Printing and Electrospinning Enhances Cell Proliferation
S. Catros[1], A. Nandakumar[2], S. Ziane[3], L. Moroni[2], C. van Blitterswijk[2], J. Amedee[3], F. Guillemot[3], and J-C. Fricain[3]
[1]University of Connecticut School of Dental Medicine, Farmington, CT, [2]Department of Tissue Regeneration, Twente, Netherlands, [3]INSERM, Bordeaux, France

PS – Sat – A – 49
Spatial Patterning of Multiple Cell Types in Multifunctional Hydrogel Environments using Stereolithography
P. Zorlutuna[1], J. Jeong[1], H. Kong[1], and R. Bashir[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Track: Tissue Engineering

Stem Cells and Tissue Engineering

PS – Sat – A – 50
Effects of Surface Induced Alignment on Human Embryonic Stem Cells and Cardiomyocytes
A. Chen[1], D. Lieu[2], R. Li[3,4], and M. Khine[1]
[1]University of California, Irvine, Irvine, CA, [2]University of California, Davis, Davis, CA, [3]Mount Sinai School of Medicine, New York, NY, [4]The University of Hong Kong, Hong Kong, Hong Kong

PS – Sat – A – 51
Engineering the Stem Cell Niche for Hematopoietic Differentiation
D. A-C. Tsou[1], J. Liu[2], J. Chu[2], and S. Li[1,2]
[1]UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA, [2]UC Berkeley, Berkeley, CA

POSTER SESSION SatA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – A – 52
Mesenchymal Stem Cell Chondrogenesis and Coculture with Primary Zonal Chondrocytes
E. E. Coates[1], C. N. Riggin[1], and J. P. Fisher[1]
[1]*University of Maryland, College Park, MD*

PS – Sat – A – 53
Invasion of Human Adult Stem Cells into Decellularized Tissue Engineered Arteries
T. N. Huynh[1], S. Kren[1], D. Taylor[1], and R. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

PS – Sat – A – 54
Engineered Alginate Hydrogels for Selective Capture and Release of Endothelial Progenitor Cells from Blood for Tissue Engineering Applications
A. Hatch[1], and S. Murthy[1]
[1]*Northeastern University, Boston, MA*

PS – Sat – A – 55
Low Oxygen Tension Enhances Endodermal Differentiation of Murine Embryonic Stem Cells
P. Pimton[1], N. Sheth[1], A. Chopra[1], G. Johannes[1], A. Katsir[1], and P. Lelkes[1]
[1]*Drexel University, Philadelphia, PA*

PS – Sat – A – 56
Modulating Cytoskeletal Tension Regulates the Effects of Hypoxia on Adipogenesis of Mesenchymal Stem Cells
Z. A. Schiller[1], and C. K. Kuo[1]
[1]*Tufts University, Medford, MA*

PS – Sat – A – 57
Induced Pluripotent Stem Cell Derived Functional Smooth Muscle Cells for Vascular Tissue Engineering
. K. Bajpai[1], and S. T. Andreadis[1]
[1]*State University of New York at Buffalo, Amherst, NY*

PS – Sat – A – 58
Synthetic Hydrogels for a Feeder-Free Approach to Stem Cell Expansion
L. F. Charles[1], S. K. Atzet[2], T. I. Zarembinski[2], and L. T. Kuhn[1]
[1]*University of Connecticut Health Center, Farmington, CT,* [2]*Glycosan BioSystems, Salt Lake City, UT*

PS – Sat – A – 59
Scalable Production of Islet Cell Progeny From Human Pluripotent Stem Cells For Tissue Engineering
L. T. Lock[1], Y. Fan[1], J. Wu[1], S. G. Laychock[1], and E. S. Tzanakakis[1]
[1]*SUNY-Buffalo, Buffalo, NY*

PS – Sat – A – 60
Effects of Various Bone Morphogenetic Proteins on Human Mesenchymal Stem Cell Osteodifferentiation
C. M. Creecy[1], H. Talla[1], R. Gupta[1], A. K. Murthy[1], B. P. Arulanandam[1], and R. Bizios[1]
[1]*The University of Texas at San Antonio, San Antonio, TX*

PS – Sat – A – 61
Effects of Cell Priming on Synovium Derived Stem Cells for Cartilage Tissue Engineering
E. Alegre-Aguaron[1], S. R. Sampat[1], J. C. Bulinski[1], and C. T. Hung[1]
[1]*Columbia University, New York, NY*

PS – Sat – A – 62
Effect of Cytokines Associated with Polarized Macrophages on Human Mesenchymal Stem Cells
J. W. Kang[1], D. O. Freytes[1], and G. Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

PS – Sat – A – 63
Role of Hematopoietic Stem and Progenitor Cell Recruitment| in the Resolution of Wound Infection
M-H. Kim[1], J. L. Granick[1], N. J. Walker[1], D. L. Borjesson[1], F-R. E. Curry[1], L. S. Miller[2], and S. I. Simon[1]
[1]*UC Davis, Davis, CA,* [2]*UCLA, Los Angeles, CA*

PS – Sat – A – 64
Effects of Inflammatory Cytokines on Osteogenesis of Mesenchymal Stem Cells During Mild Heating
K. Sunderic[1], J. Chen[1], and S. Wang[1]
[1]*City College of the City University of New York, New York, NY*

PS – Sat – A – 65
Decellularization of Tissue-Engineered Valve Leaflets with Adult Stem Cell Recellularization
Z. Syedain[1], A. Bradee[1], and R. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

PS – Sat – A – 66
Adenoviral Mediated Gene Delivery to Human Umbilical Cord Mesenchymal Stem Cells for Inner Ear Hair Cell Differentiation
K. Devarajan[1], L. M. Forrest[1], H. Staecker[2], and M. S. Detamore[1]
[1]*University of Kansas, Lawrence, KS,* [2]*University of Kansas, School of Medicine, Kansas City, KS*

PS – Sat – A – 67
Real Time Imaging of Reporter Gene Expression in Differentiating Human Mesenchymal Stem Cells
J. F. Welter[1], L. Yuan[1], S. Lim[1], J. Molter[1], L. Duesler[1], A. I. Caplan[1], and Z. Lee[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Sat – A – 68
Tissue Engineering by *In Situ* Manipulation of Endogenous Stem and Progenitor Cells
A. O. Awojoodu[1], A. Das[1], K. R. Lynch[1], M. J. Laughlin[1], and E. A. Botchwey[1]
[1]*University of Virginia, Charlottesville, VA*

PS – Sat – A – 69
Mechanical Strain Modulates the Differentiation of Neural Crest Stem Cells into Smooth Muscle Lineage
X. Li[1,2], L. Yang[1], A. Wang[2], J. S. Chu[2], Y. Zhu[2], and S. Li[2]
[1]*Chongqing University, Chongqing, China, People's Republic of,* [2]*University of California, Berkeley, Berkeley, CA*

PS – Sat – A – 70
Addressing Cardiogenesis via a Multifactorial Strategy: Hypoxia, Extracellular Matrix Cues and Time
R. E. Horton[1], and D. T. Auguste[1]
[1]*Harvard University, Cambridge, MA*

PS – Sat – A – 71
Self-Assembling hADSC Sheets with TGFβ1-loaded Polymer Microspheres for Cartilage Tissue Engineering
P. N. Dang[1], L. D. Solorio[1], C. D. Dhami[1], and E. Alsberg[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Sat – A – 72
Antimicrobial Biocompatible Bioscaffolds for Orthopedic Applications
A. T. Qureshi[1], L. Terrell[1], W. T. Monroe[1], V. Dasa[2], M. E. Janes[3], J. Gimble[4], and D. J. Hayes[1]
[1]*Louisiana State University & Agricultural Center, Baton Rouge, LA,* [2]*Louisiana State University Health Science Center, New Orleans, LA,* [3]*Louisiana State University Agricultural Center, Baton Rouge, LA,* [4]*Louisiana State University System, Baton Rouge, LA*

PS – Sat – A – 73
Analysis of Mesenchymal Stem Cells Between Genders for Therapeutic Applications
O. S. Beane[1]and E. M. Darling[1]
[1]*Brown University, Providence, RI*

POSTER SESSION **SatA**

PS – Sat – A – 74
Smart Hydrogels for *In-Situ* Differentiationn of Human Embryonic Stem cell into Fully Vascularized Tissue
J. Zoldan[1], H. Epstein-Barash[2], A. Kusanagi[3], B. Chertok[1], A. Hayward[1], D. Anderson[1], D. Kohane[4], and R. Langer[1]
[1]MIT, Cambridge, MA, [2]Alnylam Pharmaceuticals, Cambridge, MA, [3]Shiga University, Otsu City, Japan, [4]Children's Hospital, Boston, MA

PS – Sat – A – 75
Development of an *In Vitro* Model to Target HIF1-alpha protein in Pancreatic beta Cells to Improve Engraftment in Patients with Type I Diabetes Mellitus
N. I. Nativ[1], T. Maguire[1], N. Sharma[1], R. A. Foty[2], R. Schloss[1], and M. L. Yarmush[1]
[1]Rutgers University, Piscataway, NJ, [2]UMDNJ, New Brunswick, NJ

PS – Sat – A – 76
Biomimetic Thymic Niche: Controlling Notch and MHC Signaling for T Cell Differentiation
M. Kim[1], J. Lin[2], T. Ooi[1], M. Mendoza[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX, [2]XBiotech, Austin, TX

PS – Sat – A – 77
Prescribed Seeding Conditions Alter Mesenchymal Stem Cell Shape and Fate
J. Zimmermann[1], and M. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH

PS – Sat – A – 78
MOVED TO PS-THURS-B-238

PS – Sat – A – 79
Proliferation and Metabolism of Human Pluripotent Stem Cell Growth on Membrane Substrates
L. Ramey[1], H. Yao[1], K. Ye[1], and S. Jin[1]
[1]University of Arkansas, Fayetteville, AR

PS – Sat – A – 80
Cyclic Strain and Microtopography Differentially affect Human Mesenchymal Stem Cells
G. Doroudian[1], A. Gang[1], M. Curtis[1], and B. Russell[1]
[1]UIC, Chicago, IL

POSTER SESSION **SatA**

PS – Sat – A – 81
Engineering Neural Tissue by Combining Induced Pluripotent Stem Cells with Fibrin Scaffolds
S. M. Willerth[1]
[1]University of Victoria, Victoria, BC, Canada

PS – Sat – A – 82
Neonatal and Adult Mesenchymal Stem Cells for Vascular Tissue Engineering: Effects of Nanog Overexpression on Proliferation and Myogenic Differentiation
J. Han[1], S. Liu[2], and S. T. Andreadis[1,3]
[1]University at Buffalo, The State University of New York, Amherst, NY, [2]Roswell Park Cancer Institute, Buffalo, NY, [3]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

PS – Sat – A – 83
Proteomic Analysis of Human Mesenchymal Stem Cell Aging during Serial Sub-culture
P. KC[1], J. Chen[1], and S. Wang[1]
[1]City College of the City University of New York, New York, NY

PS – Sat – A – 84
Critical Dosage Delivery of Reprogramming Factors for Successful iPSCs Generation
X. Wang[1]
[1]The Ohio State University, Columbus, OH

PS – Sat – A – 85
Study of Age-Dependent Metastatic Versus Normal Lineage Transition of Stem Cells Using Multiplex Polymer Matrix
S. W. Crowder[1], A. Palmer[1], J. Qiao[1], D. Chung[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – A – 86
Thermal Effects on Human Mesenchymal Stem Cell Osteogenesis via a Low-intensity Pulsed Ultrasound (LIPUS) System
J. Chen[1], A. R. Ahmed[1], and S. Wang[1]
[1]City College of the City University of New York, New York, NY

PS – Sat – A – 87
Retinoic Acid Inhibits BMP4-Induced C3H10T1/2 Cell Commitment to Adipocyte
J. Lee[1], J-H. Park[1], and J. Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

PS – Sat – A – 88
Single-cell Mechanical Properties as an Indicator of Stem Cell Differentiation Potential
V. C. Fonseca[1], R. D. Gonzalez-Cruz[1], and E. M. Darling[1]
[1]Brown University, Providence, RI

PS – Sat – A – 89
Growth of Kidney Stem Cells on Tissue-Specific Extracellular Matrix
J. O'Neill[1], D. O. Freytes[1], J. A. Oliver[1], and G. Vunjak-Novakovic[1]
[1]Columbia University, New York, NY

PS – Sat – A – 90
Role of Hypoxia in Osteogenic Differentiation of Encapsulated Stem Cells
S. Sahai[1], D. Sullivan[1], A. Williams[1], and J. Blanchette[1]
[1]University of South Carolina, Columbia, SC

PS – Sat – A – 91
Selective Capture and Release of Intestinal Progenitor Cells from Digested Rat Tissue
S. H. Kevlahan[1], R. L. Carrier[1], and S. K. Murthy[1]
[1]Northeastern University, Boston, MA

PS – Sat – A – 92
Controlling Stem Cell Differentiation Using Micro/Nano-Structured Synthetic Matrices
A. K. Jha[1], Z. Tong[1], S. Sant[2], A. Khademhosseini[2], and X. Jia[1]
[1]University of Delaware, Newark, DE, [2]Harvard Medical School, Boston, MA

PS – Sat – A – 93
Organoid Culture Reproducibly Expands Intestinal Crypts
D. M. Faulk[1,2], M. K. Fuller[3], S. J. Henning[3], and M. A. Helmrath[1]
[1]Cincinnati Children's Hospital Medical Center, Cincinnati, OH, [2]University of Pittsburgh, Pittsburgh, [3]University of North Carolina at Chapel Hill, Chapel Hill, NC

PS – Sat – A – 94
Engineering Tissue Scaffold Geometries to Deliver Mechanical Signals that Direct Cell Fate
M. Song[1], D. Dean[1], and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH

PS – Sat – A – 95
Evaluation of Non-Viral Gene Delivery Methods on Human Umbilical Cord Mesenchymal Stromal Cells
A. J. Mellott[1], Y. Lopez[2], E. Trevino[2], K. Devarajan[1], M. L. Weiss[2], and M. S. Detamore[1]
[1]University of Kansas, Lawrence, KS, [2]Kansas State University, Manhattan, KS

PS – Sat – A – 96
A Novel PEG-Fibrin Composite Scaffold to Direct Stem Cell Differentiation
P. B. Patterson[1], R. K. Kuntz Willits[1], and G. Zhang[1]
[1]University of Akron, Akron, OH

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Tissue Engineering

Tissue Engineering and Mechanobiology

PS – Sat – A – 97
The Enhancement of Lineage Specification of Human Embryonic Stem Cells by 3D Niches
W. Wang[1], S. Jin[1], and K. Ye[1]
[1]University of Arkansas, Fayetteville, AR

PS – Sat – A – 98
Differentiation and Tensile Elongation of Neural Stem Cells for Neural Tissue Engineering
A. E. Wilkinson[1], L. J. Kobelt[1], and N. D. Leipzig[1]
[1]The University of Akron, Akron, OH

PS – Sat – A – 99
Biomimetic Boundary Lubricants for Articular Cartilage
K. J. Samaroo[1], M. Tan[1], R. C. Andresen-Eguiluz[1], D. Gourdon[1], D. A. Putnam[1], and L. J. Bonassar[1]
[1]Cornell University, Ithaca, NY

PS – Sat – A – 100
Strain-stabilization—the Mechanochemistry of Individual Collagen Fibrils
B. P. Flynn[1], and J. W. Ruberti[1]
[1]Northeastern University, Boston, MA

PS – Sat – A – 101
An Image-Guided Tissue Engineering For Ear Reconstruction Treatment of Pediatric Microtia
S. Zhou[1], C. Chan[1], B. Brown[1], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY

PS – Sat – A – 102
Live, Long-Term, Dynamic Observation of Primary Human Corneal Fibroblast Culture Subjected to Uniaxial Strain
R. Zareian[1], J. A. Paten[1], S. A. Melotti[1], N. Saeidi[2], and J. W. Ruberti[1]
[1]Northeastern University, Boston, MA, [2]Harvard Medical School, Boston, MA

PS – Sat – A – 103
In Vitro Simulation of Maternal-to-Fetal Glucose Transfer Using a Tissue Engineered Placental Barrier Model
R. Levkovitz[1], A. Jaffa[2], Z. Gordon[2], U. Zaretzky[1], and D. Elad[1]
[1]Tel Aviv University, Tel Aviv, Israel, [2]Lis Maternity Hospital, Tel Aviv, Israel

PS – Sat – A – 104
Mechanotransduction of Osteoblast on Nanofibers: The Influence of Diameter on Zyxin Mechanosensing
D. Jaiswal[1], and J. L. Brown[1]
[1]The Pennsylvania State University, University Park, PA

PS – Sat – A – 105
Trabecular Meshwork Stiffness and Outflow Facility in *Ex Vivo* Perfused Porcine Eyes
L. J. Camras[1], P. Gonzalez[1], and F. Yuan[1]
[1]Duke University, Durham, NC

PS – Sat – A – 106
Evaluation of Cell-Material Interactions in Response to *In Vitro* Physiological Shear
C. L. Meaney[1,2], G. T. Carroll[1,2], A. J. Cloonan[1,2], and T. M. McGloughlin[1,2]
[1]Centre for Applied Biomedical Engineering Research (CABER), University of Limerick, Limerick, Ireland, [2]Materials and Surface Science Institute, University of Limerick, Limerick, Ireland

PS – Sat – A – 107
Combining Image Analysis with Rheometry for Viscoelastic Characterization of Irregularly Shaped Gels
H. A. Cirka[1], K. Billiar[1], S. A. Koehler[1], and W. Farr[2]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Worcester Polytechnic Institute, Worcester, MD

PS – Sat – A – 108
A Tissue Engineered Model of the Arterial Lining for Shear Stress Studies
D. Shav[1], R. Gottlieb[1], U. Zaretsky[1], S. Einav[1], and D. Elad[1]
[1]Tel-Aviv University, Tel Aviv, Israel

Track: Translational Biomedical Engineering

Clinical and Translational Research and Science in Biomedical Engineering

PS – Sat – A – 109
Synthetic Platelets to Augment Hemostasis in Internal Hemorrhage
A. Shoffstall[1], D. Campbell[1], L. Wu[1], K. Kelly[2], J. Ustin[2], and E. Lavik[1]
[1]Case Western Reserve University, Cleveland, OH, [2]MetroHealth Medical Center, Cleveland, OH

PS – Sat – A – 110
Mammographic Density, ECM Stiffness and Risk to Malignancy in Human Breast
I. Acerbi[1,2], A. Au[3], J. Lopez[1,2], Y-Y. Chen[1], S. Hwang[1], and V. M. Weaver[1,2]
[1]University of California, San Francisco, San Francisco, CA, [2]Center for Bioengineering and Tissue Regeneration, UCSF, San Francisco, [3]Cancer Center, University of California, San Francisco, San Francisco, CA

PS – Sat – A – 111
Biomechanical Characterization of the *In Vivo* Cornea using Dynamic Imaging during Air Puff Deformation
C. J. Roberts[1], A. S. Litsky[1], A. M. Mahmoud[1], I. Ramos[2], D. Caldas[2], R. Siqueira da Silva[2], and R. Ambrósio, Jr.[2]
[1]The Ohio State University, Columbus, OH, [2]Instituto de Olhos Renato Ambrósio, Rio de Janeiro, Brazil

PS – Sat – A – 112
Ultrasound Elasticity Measurements of the Brachial Artery for Determining AV Fistula Maturation
A. G. Sorace[1], K. Hoyt[1], M. L. Robbin[1], C. Abts[1], M. E. Lockhart[1], and M. Allon[1]
[1]University of Alabama at Birmingham, Birmingham, AL

PS – Sat – A – 113
Improved Measurements of Autonomic Nerve Activity with a Novel Electrode
A. Akingba[1], A. Mahmood[2], M. J-C. Shen[1], and P-S. Chen[1]
[1]IUPUI, Indianapolis, IN, [2]Purdue University, West Lafayette, IN

PS – Sat – A – 114
Finite Element Analysis of Focused Ultrasound Induced Hyperthermia for Mediating Drug Delivery
S. Wang[1], V. Zderic[1], and V. Frenkel[2]
[1]George Washington University, Washington, DC, [2]Catholic University of America, Washington, DC

PS – Sat – A – 115
Bioimpedance Changes in Soft Tissue Under Compression: A Finite-Element Model of the Bipolar Electrosurgical Procedure
R. E. Dodde[1], and A. J. Shih[1]
[1]University of Michigan, Ann Arbor, MI

PS – Sat – A – 116
Modeling the Influence of Stomach Contents on Alcohol Elimination Rate
S. M. Kusano[1], and H. C. Gabler[1]
[1]Virginia Tech-Wake Forest University: School of Biomedical Engineering and Sciences, Blacksburg, VA

PS – Sat – A – 117
CANCELED BY AUTHOR

POSTER SESSION **SatA**

Track: Translational Biomedical Engineering

Translational Biomedical Engineering: Research to Practice (R2P)

PS – Sat – A – 118

Developing Animal Models to Investigate Pathophysiological Changes Following Burn and/or Sepsis

M. A. Orman[1], J. Mattick[1], M. G. Ierapetritou[1], I. P. Androulakis[1], and F. Berthiaume[1]

[1]Rutgers University, Piscataway, NJ

PS – Sat – A – 119

Integrating Speech Enhancement with Active Hearing Protectors to Improve Communication

E. R. Bernstein[1], A. J. Brammer[1], G. Yu[1], M. G. Cherniack[1], and D. R. Peterson[1]

[1]University of Connecticut Health Center, Farmington, CT

PS – Sat – A – 120

Facial Versus Inspiratory Muscles Activity During Breastfeeding

A. Ratnovsky[1], Y. Nadlin Carmeli[2], U. Zaretzky[2], D. Mandel[3], S. Dolberg[3], and D. Elad[2]

[1]Afeka, Academic College of Engineering, Tel Aviv, Israel, [2]Tel Aviv University, Tel Aviv, Israel, [3]Lis Maternity & Dana Children's Hospitals, Tel Aviv, Israel

PS – Sat – A – 121

Development of a Novel Device for the Direct Reversal and Treatment of Cerebral Edema: Enhancing the Survivability of Water Intoxicated Murine

D. W. McBride[1], M. S. Hsu[1], B. H. Park[1], D. K. Binder[1,2], and V. G. J. Rodgers[1]

[1]University of California, Riverside, Riverside, CA, [2]Southern California Center for Neuroscience and Spine, Chapman Medical Center, Orange County, CA

PS – Sat – A – 122

Using Psychophysical Techniques to Compare Vestibular and Visual Inputs in the Detection of Translational Moves by Seated Subjects

A. W. Lauzon[1], C. J. Robinson[1,2], X. Dong[1], and L. L. Hamilton[1]

[1]Clarkson University, Potsdam, NY, [2]Syracuse VA Medical Center, Syracuse, NY

PS – Sat – A – 123

Reducing Biomechanical Exposures to Dental Professionals by Translating Lab and Clinical Research into Practice

T. Asaki[1], and D. R. Peterson[1]

[1]University of Connecticut Health Center, Farmington, CT

PS – Sat – A – 124

Deflection Measurement System for the Hybrid III Six-Year-Old Biofidelic Abdomen

T. S. Gregory[1], M. K. Howes[1], W. N. Hardy[1], A. M. Elhagediab[2], and S. W. Rouhana[3]

[1]Virginia Tech, Blacksburg, VA, [2]Safety Technology and Research Systems, Inc, Dearborn, MI, [3]Ford Motor Company, Dearborn, MI

POSTER SESSION **SatA**

Track: Translational Biomedical Engineering

The Translational Triad: Clinical, Industrial, and Academic Collaboration

PS – Sat – A – 125

Co-localization of Her2/neu, ER, PR, Ki67, and Cytokeratin on a Triple Positive Breast Cancer Patient

Z. Pang[1], J. Zubovits[2], K. Shaikh[1], D. Wang[2], A. Corwin[1], G. Clarke[2], S. Dinn[1], R. Filkins[1], and M. J. Yaffe[2,3]

[1]GE Global Research, Niskayuna, NY, [2]Sunnybrook Health Sciences Centre, Toronto, ON, Canada, [3]University of Toronto, Toronto, ON, Canada

PS – Sat – A – 126

A Low-Cost 3D Ultrasound System for Imaging of the Brachial Plexus for Regional Anesthesia

O. Bigdeli[1], M. Golden[1], K. B. Munir[1], T. Amarel[2], J. Yost[2], and J. H. McIsaac[3]

[1]University of Connecticut, Storrs, CT, [2]Hartford Hospital, Hartford, CT, [3]Univ. of CT/Hartford Hospital, Avon, CT

Track: Biomedical Engineering Education and Outreach

UNDERGRADUATE POSTERS

Biomedical Engineering Education

PS – Sat – A – 126

Design of a Humidity Regulator System for X-ray Scattering

P. Ghali[1], and L. Yang[2]

[1]New York Institute of Technology, New York, NY, [2]Brookhaven National Laboratory, Upton, NY

PS – Sat – A – 127

Frequency Analysis of the Esophagus Motility

P. Hajhosseini[1,2], A. Hosseini-Sianaki[3], M. Nikkhoo[4,5], and S. Jafarian-Kerman[6]

[1]Azad University Central Tehran Branch, Tehran, Iran, [2]Central Tehran Society of Mechanical Engineers, Tehran, Iran, [3]Ismalic Azad University Central Tehran Branch, Tehran, Iran, [4]Iran University of Science and Technology, Tehran, Iran, [5]Islamic Azad University Central Tehran Branch, Tehran, Iran, [6]Tehran University of Medical Sciences, Tehran, Iran

Track: Biomedical Imaging and Optics

UNDERGRADUATE POSTERS

Biomedical Imaging & Optics

PS – Sat – A – 128

Effect of Particle Diameter on Uptake of Polymeric ICG Loaded Nanocapsules by Human Spleen Macrophages In-Vitro

J. C. Tang[1], B. Bahmani[1], J. T. Crovisier[1], S. Gupta[1], and B. Anvari[1]

[1]UC Riverside, Riverside, CA

PS – Sat – A – 129

Volumetric Imaging of Epithelial Tissue via Chromatic Dispersion Confocal Microscopy

O. Carrasco-Zevallos[1], C. Olsovsky[1], R. Shelton[1], M. Saldua[1], K.Maitland[1], and B. Applegate[1]

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

PS – Sat – A – 130

Multiphoton and Fluorescence Lifetime Imaging of Cleared Mouse Organs

S. Vesuna[1], S. Parra[1], T. A. Murray[1], and M. Levene[1]

[1]Yale University, New Haven, CT

PS – Sat – A – 131

Quantifying Dynamic Changes of Ocular Surface Temperature in Dry Eye Patients

B. W. Dixon[1]

[1]University of Rochester, Rochester, NY

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – A – 132
Fluorescence Imaging of Nanoparticles in Optical Confinement
M. A. Goleb[1], and M. Lim[2]
[1]Lehigh University, Bethlehem, PA, [2]Carleton College, Northfield, MN

PS – Sat – A – 133
Effect of ICG Concentration on Fluorescence Quantum Yield of Polymeric Optical Nanoparticles
J. T. Crovisier[1], B. Bahmani[1], K. Thenkondar[1], S. Gupta[1], V. Vullev[1], and B. Anvari[1]
[1]University of California, Riverside, Riverside, CA

PS – Sat – A – 134
Trapping and Imaging of Ciliated Organisms in Mirrored Pyramidal Micro-wells
K. Qin[1], and C. Janetopoulos[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – A – 135
FCS Detection Sensitivity Improvement for Nanoparticle Counting
P. Soto[1], Y. Hu[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA

PS – Sat – A – 136
3T3 Fibroblasts Solving Mazes In Response To Growth Factor Concentration
A. Desai[1], K. Wall[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

PS – Sat – A – 137
Developing Molecularly Targeted Fluorescent Contrast Agents for Microscopic Image-guided Resection of Medulloblastoma
Y. Chen[1], D. Wang[1], S. Y. Leigh[1], F. V. Cochran[2], H. Haeberle[2], C. H. Contag[2], and J. T. Liu[1]
[1]SUNY StonyBrook University, StonyBrook, NY, [2]Stanford University, Stanford, CA

PS – Sat – A – 138
Use of Linear Motion Control to Increase the Scan Rate and Accuracy of a Hand-held Ultrasound Device
A. I. Nawroj[1], and S. Shrestha [1]
[1]Lafayette College, Easton, PA

PS – Sat – A – 139
Imprinting Multilayer X-ray Grating Structures onto an Epoxy Substrate
L. Wiles[1], S. K. Lynch[2], N. Y. Morgan[3], and H. H. Wen[2]
[1]Clemson University, Clemson, [2]NIH/NHLBI, Bethesda, MD, [3]NIH/NIBIB, Bethesda, MD

PS – Sat – A – 140
Algorithm for Determining the Length of Fluorescent Bead Movement Trails
J. S. Rottman-Yang[1], C. McNew[1], and E. LeBoeuf[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – A – 141
Feasibility Evaluation of A Novel Ultrasonic Method For Prosthetic Control
I. A. Hunt[1], A. J. Nelson[1], A. Al-Imran[1], J. J. Pancrazio[1], and S. Sikdar[1]
[1]George Mason University, Fairfax, VA

PS – Sat – A – 142
Effects of Drastic Changes in Hematocrit in Blood Velocity Profiles in Arterioles *In Vivo*
C-Y. Lee[1], S. Ranu[1], O. Yalcin[1], M. Jivani[1], P. Johnson [1], and P. Cabrales[1]
[1]University of California, San Diego, La Jolla, CA

PS – Sat – A – 143
Understanding Dynamics of Oxygenation and Blood Flow in the Upper Trapezius Muscle During Exercise
K. N. Mulpuri[1,2], N. S. Hussein[1], A. Eranki[1], and S. Sikdar[1]
[1]George Mason University, Fairfax, VA, [2]Dartmouth College, Hanover, NH

PS – Sat – A – 144
Waveguide-based Lensless Fluorescence Microscopy for Wide-Field On-Chip Imaging
D. G. Herman[1], Y. Suh[1], A. F. Coskun[1], I. Sencan[1], T-W. Su[1], and A. Ozcan[1]
[1]University of California, Los Angeles, Los Angeles, CA

PS – Sat – A – 145
Characterizing Light Polarization Effects Through Corneal Tissue Using Lasers
N. Woolsey[1], I. Ilev[2], and W. Calhoun[2]
[1]University of Connecticut, Storrs, CT, [2]CDRH, FDA, Silver Spring, MD

PS – Sat – A – 146
Individualized Radiation Dose Calculation for PET and Current-Modulated CT
J. Fazio[1], and R. Maass-Moreno[2]
[1]Western New England College, Springfield, MA, [2]National Institutes of Health, Bethesda, MD

PS – Sat – A – 147
Effect of Sterculic Acid on Neovessel Regression in a Laser-Induced CNV Model
S. Mattessich[1,2], I. R. Rodriguez[3], and J. Amaral[3]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]National Institute of Biomedical Imaging and Bioengineering, Bethesda, MD, [3]National Eye Institute, Bethesda, MD

PS – Sat – A – 148
Dye-Doped Silica Nanoparticles
M. M. Sidran[1], J. Blumling[2], and G. A. Silva[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of California, San Diego, La Jolla, CA

PS – Sat – A – 149
Design of Viral Based Optical Nanoparticles for Maximal Fluorescence Quantum Yield
G. Ico[1], P. Matsumura[1], S. Gupta[1], A. Rao[1] and B. Anvari[1]
[1]University of California, Riverside, Riverside, CA

PS – Sat – A – 150
Visualization of Functional Near Infrared Spectroscopy Data on 3D Brain Model
S. Handa[1,2], H. Ayaz[1], A. Curtin[1], P. A. Shewokis[1], and B. Onaral[1]
[1]Drexel University, Philadelphia, PA, [2]Netaji Subhas Institute of Technology, New Delhi, India

PS – Sat – A – 151
Analysis of Mechanical Properties of Individual Cells Using Acousto-optical Methods
R. Istfan[1], O. A'amar[1], and I. Bigio[1]
[1]Boston University, Boston, MA

POSTER SESSION **SatA**

Track: Cardiovascular Engineering
UNDERGRADUATE POSTERS

Cardiovascular Engineering

PS – Sat – A – 152
Microbioreactor for Controlled Oxygen and Shear Stress Environments in Endothelial Cell Cultures
R. Soman[1], E. Abaci[1], Q. Smith[1,2], and S. Gerecht[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of New Mexico, Albuquerque, NM

PS – Sat – A – 153
The Effects of Infarcted Cardiac Extracellular Environment on MSC Growth and Differentiation
K. M. Tang[1], J. I. Resnikoff[1], and L. D. Black[1]
[1]Tufts University, Medford, MA

PS – Sat – A – 154
Comparison of Morphological Characteristics Between Normal and Diseased Coronary Arteries
S. E. DeWitt[1], A. L. Fratino[1], and S. Hyun[1]
[1]*Mercer University, Macon, GA*

PS – Sat – A – 155
A Dynamic Model of Calcific Atherosclerotic Plaque Destabilization in Response to Monocytes- and Oxidized Lipids-Induced Matrix Metalloproteinases
D. R. Mittelstein[1]
[1]*University of Southern California, Los Angeles, CA*

PS – Sat – A – 156
Biomechanics of Early S-Looping
K. T. Chico[1], and A. Ramasubramanian[1]
[1]*Union College, Schenectady, NY*

PS – Sat – A – 157
PLGA Density Effects on Carbon Nanofiber Composites for Myocardial Tissue Engineering Applications
A. N. Santiago-Miranda[1], D. A. Stout[2], and T. J. Webster[2]
[1]*University of Puerto Rico, Mayagüez, PR,* [2]*Brown University, Providence, RI*

PS – Sat – A – 158
Spatial Variation in Cellular Composition of Intraluminal Thrombus from Abdominal Aortic Aneurys
M. P. Scanlon[1], J. Rao[1], D. A. Vorp[1], and M. Nair[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS – Sat – A – 159
Design, Fabrication, and Testing of a Microfluidic Device to Control Cell Culture Microenvironment
Q. B. Smith[1], H. E. Abaci[2], G. Drazer[2], and S. Gerecht[2]
[1]*University of New Mexico, Albuquerque, NM,* [2]*Johns Hopkins, Baltimore, MD*

PS – Sat – A – 160
Platelet Sensing of Microenvironmental Geometry Guides Adhesion and Spreading
A. Kita[1,2], R. Rounsevell[2], T. Seok[2], K. Yu[2], J. Huang[3], M. Wu[2], D. Fletcher[2], and W. Lam[1,4]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*University of California, Berkeley, Berkeley, CA,* [3]*University of California, San Francisco, San Francisco, CA,* [4]*Children's Healthcare of Atlanta and Emory University School of Medicine, Atlanta, GA*

PS – Sat – A – 161
Murray's Law: Wildtype and Eln+/- Mice
D. J. Hageman[1], and J. Wagenseil[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Saint Louis University, Saint Louis, MO*

PS – Sat – A – 162
Proline Analog Limits Hypertension and Right Ventricular Hypertrophy in Response to Chronic Hypoxia
D. A. Schreier[1], N. Chesler[1], and T. Hacker[1]
[1]*University of Wisconsin - Madison, Madison, WI*

PS – Sat – A – 163
Disturbed Flow Downregulates Endothelial Thrombomodulin
V. Prasad[1], J. M. Jiménez[1], and P. F. Davies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS – Sat – A – 164
Cardiovascular Responses to Cocaine are Mediated by the CNS in Conscious Rats
L. J. Youngs[1], and M. M. Knuepfer[2]
[1]*Milwaukee School of Engineering, Milwaukee, WI,* [2]*St. Louis University, St. Louis, MO*

PS – Sat – A – 165
Thermomechanical Properties of Branching Chordae Tendinae
B. Wilkes[1], and S. M. Wells[1]
[1]*Dalhousie University, Halifax, NS, Canada*

PS – Sat – A – 166
Immunofluorescence to Locate alpha1-and beta2-adrenergic Receptors in Small Arterioles
M. Ball[1,2], A. Baldwin[1], A. Dewar[1], and M. D. Frame[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*University of New Hampshire, Durham, NH*

PS – Sat – A – 167
Generalized Pressure Model of the Rabbit Left Ventricle
A. Marchidan[1], R. L. Zukus[1], and J. L. Palladino[1]
[1]*Trinity College, Hartford, CT*

PS – Sat – A – 168
Design of a Hydrodynamic Testing System for SPAC Technique-Based Valve Study
C. Gao[1], and J. Yeo[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*Nanyang Technological University, Singapore, Singapore*

PS – Sat – A – 169
Mouse Embryonic Stem Cell-Derived Vascular Cells Characteristics and Sub Phenotypes
R. Hatano[1], D. E. Glaser[1], and K. E. McCloskey[1]
[1]*University of California Merced, Merced, CA*

PS – Sat – A – 170
Development of a Novel Blood Analog with Physiological Shear-Thinning and Viscosity Characteristics
S. J. Warren[1], C. E. Taylor[1], and G. E. Miller[1]
[1]*Virginia Commonwealth Univ, Richmond, VA,*

PS – Sat – A – 171
Tumor Cell Arrest at Blood Vessel Intersections in Rat Mesentery
D. Shin[1], P. Guo[2], B. Cai[2], and B. M. Fu[2]
[1]*The City College of New York, Jericho, NY,* [2]*The City College of New York, New York, NY*

PS – Sat – A – 172
Atmospheric Pressure Plasma Induced Cell Cycle Arrest in Human Aortic Endothelial Cells
B. Gweon[1], H. Kim [1],W. Choe[1], and J. H. Shin[1]
[1]*Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of*

Track: Cellular and Molecular Engineering
UNDERGRADUATE POSTERS

Cellular & Molecular Engineering

PS – Sat – A – 173
Cellular Remodeling Under Chronic Oxidative Stress via Long Term, Low Level Application of Reactive Oxygen Species
W. Ni[1], and M. L. Kemp[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Sat – A – 174
Investigating TNF-α Regulation of mTOR via IKK-dependent Pathways
D. Mitra[1], and M. L. Kemp[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS – Sat – A – 175
Impact of Adhesion on Mesenchymal Stem Cell Retention in Lung Microvasculature following Systemic Infusion
J. P. Ruiz[1,2], J. Phillips[2], D. Sarkar[2], R. Sridharan[2], S. Kumar[2], L. Zhang[2], W. Zhao[2], H. Chen[2], A. Carlson[2], C. Lin[2], and J. Karp[2]
[1]*University of Miami, Coral Gables, FL,* [2]*Harvard Medical School, Cambridge, MA*

POSTER SESSION **SatA**

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – A – 176
Ultra-low Glucose, High Glucose, and Glycated Collagen Alters Endothelial Cell Adhesion
S. M. Cicalese[1], S. F. Kemeny[1], and A. M. Clyne[1]
[1]*Drexel University, Philadelphia, PA*

PS – Sat – A – 177
Effects of Substoichiometric Taxol Concentrations on Microtubule Dynamics
A. K. Gadok[1], S. McCubbin[1], and A. J. Hunt[1]
[1]*University of Michigan, Ann Arbor, MI*

PS – Sat – A – 178
Hydrogen Sulfide-releasing Aspirin Inhibits the Growth of Colon Cancer Cells and Induces the Phase II Enzyme NQ01
T. C. Le[1]
[1]*New York Institute of Technology, New York, NY*

PS – Sat – A – 179
Investigating Breast Cancer Metastatic Site Preference Utilizing Engineered Metastatic Microenvironments
E. Dandley[1], S. Rudina[2], S. Alford[2], and S. Peyton[1]
[1]*University of Massachusetts, Amherst, Amherst, MA,* [2]*Massachusetts Institute of Technology, Boston, MA*

PS – Sat – A – 180
The Effect of Nucleotide Binding Pocket Geometry and Rigidity on Nucleotide Selectivity of RB69 DNA Polymerase
O. Zayyad[1], and W. Konigsberg[1]
[1]*Yale University, New Haven, CT*

PS – Sat – A – 181
Biophysical Effects of Extracellular Matrix on Matrix Modeling and Microvascular Network Formation
R. Liu[1,2], L. K. Park[2], and A. L. Sarang-Sieminski[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Franklin W. Olin College of Engineering, Needham, MA*

PS – Sat – A – 182
A Study on the Cytotoxicity of Silver Nanoparticles using a Supported Lipid Bilayer
S. L. Barrena[1], S. M. D'Angelo[2], and T. A. Camesano[2]
[1]*University of Rhode Island, Kingston, RI,* [2]*Worcester Polytechnic Institute, Worcester, MA*

PS – Sat – A – 183
Nano Surface Modification of Intraocular Lenses to Promote Mucin and Lubricin Adhesion
D. Hall[1], G. E. Aninwene[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

PS – Sat – A – 184
Molecular Modification of Non-steroidal Anti-inflammatory Drug (NSAID) Structure for Enhanced Anti-cancer Activity
A. S. Haq[1], K. Munawar[1], N. Nath[1] and M. Chattopadhyay[2]
[1]*New York Institute of Technology, New York, NY,* [2]*City University of New York Medical School, New York, NY*

PS – Sat – A – 185
STING Dimerization and Relocation is Critical for Innate Immune Sensing of Cyclic Dinucleotides
H. Tam[1], K. Sotelo-Troha[2], D. L. Burdette[2], and R. E. Vance[2]
[1]*Rose Hulman Institute of Technology, Terre Haute, IN,* [2]*University of California, Berkeley, Berkeley, CA*

PS – Sat – A – 186
A High-throughput Assay for Endogenous MAPK-specific Phosphatase Activity
A. K. Bose[1], and K. A. Janes[1]
[1]*University of Virginia, Charlottesville, VA*

PS – Sat – A – 187
Atherosclerotic Plaque Rupture and Thrombosis Formation: An Investigation Using Agent-Based Modeling Approach
H. Karim[1], and L. Zhou[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS – Sat – A – 188
Effect of Embryoid Body Size on Differentiation of iPS Cells into Neuroectodermal-Lineage Ocular Cells
O. A. Creasey[1,2], A. Muniz[3], M. L. Plamper[3], and H-C. H. Wang[3]
[1]*Pittsburgh Tissue Engineering Initiative, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*US Army Institute of Surgical Research, San Antonio, TX*

PS – Sat – A – 189
Assessment of Procoagulant Characteristics of THP-1 Derived Microparticles
M. Calt[1], R. Lamba[1], and C. L. Hall[1]
[1]*The College of New Jersey, Ewing, NJ*

PS – Sat – A – 190
The Role of RASSF1A in Apoptosis of T Lymphocytes
J. Burger[1], J. Perera[1], S. Aznavoorian-Cheshire[1], and J. C. Pratt[1]
[1]*Franklin W. Olin College of Engineering, Needham, MA*

PS – Sat – A – 191
Control of Stem Cell Differentiation using Small Molecule Drug
J. E. Anderson[1], J. A. Ostrowski[1], E. Bordt[1], J. D. Piganelli[2], and B. M. Deasy[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of Pittsburgh School of Medicine, Pittsburgh, PA*

PS – Sat – A – 192
Confidence Intervals in Fluorescence Fluctuation Analysis
X. Rong[1], K. M. Pryse[1], J. Whisler[1], A. Melnykov[1], W. B. McConnaughey[1], G. M. Genin[1], and E. L. Elson[1]
[1]*Washington University in St. Louis, St. Louis, MO*

PS – Sat – A – 193
AFM Adhesion Mapping Suggests Human Erythrocytes to be More Hydrophobic than Chimpanzee Erythrocytes
S. S. Shroff[1], L. Davies[2], F. T. Arce[2], S. Ramachandran[2], A. Varki[2], and R. Lal[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of California, San Diego, La Jolla, CA*

PS – Sat – A – 194
Determining the Transient Electrostatic Properties of Endothelial and Mucosal Cells Using Normal Streaming Potential Measurements
N. Bansal[1], P. Vandrangi[1], P. Jreij[1], T. Rajapaksa[1], D. D. Lo[1], and V. G. Rodgers[1]
[1]*University of California, Riverside, Riverside, CA*

PS – Sat – A – 195
Effects of Various Collagen Concentrations on Hydrogel Mechanical Properties and Cell Functions
K. L. Lovelady[1], J. D. Ruiz[1], T. T. Yuan[1], and R. Bizios[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS – Sat – A – 196
Enhancing β Islet Engraftment in Type 1 Diabetes via Hypoxia-Mediated HIF1α Pathway Regulation
M. Taddesse[1], N. Nativ[1], R. Schloss[1], and M. Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

PS – Sat – A – 197
The Effects of Stiffness and TGF-$^{\beta}$ on Fibroblast Cells in a 3D Micro-Environment
K. Findley[1], M. Kural[2], and K. Billiar[2]
[1]*Vanderbilt University, Nashville, TN,* [2]*Worcester Polytechnic Institute, Worcester, MA*

POSTER SESSION **SatA**

Track: Devices: Nano to Micro
UNDERGRADUATE POSTERS

Devices: Nano to Micro

PS – Sat – B – 1
Extending the Shelf-Life of PCR Mixtures for Lab-on-a-Chip Applications
S. E. Haywood[1], and N. Crews[1]
[1]Louisiana Tech University, Ruston, LA

PS – Sat – B – 2
Study of the Fundamental Chemical and Physical Interactions Between Advanced Nanoparticles
A. Washispack[1], A. Samant[1], and A. Malshe[1]
[1]University of Arkansas, Fayetteville, AR

PS – Sat – B – 3
"Proximity Activated" Smart Nanoparticle for the Delivery of siRNA to Metastatic Tumor Cells
T. Werfel[1], H. Li[2], C. Nelson[2], and C. Duvall[2]
[1]Murray State University, Murray, KY, [2]Vanderbilt University, Nashville, TN

PS – Sat – B – 4
Synthesis of Oxidized Alginate Microbeads
J. Ungerleider[1,2], O. Khanna[2], and E. M. Brey[2]
[1]University of Virginia, Charlottesville, VA, [2]Illinois Institute of Technology, Chicago, IL

PS – Sat – B – 5
Magnetic Nanoparticles Coated with Antibiotics to Treat Bacterial Infections on Medical Implants
T. Tseng[1], K. Leuba[2], E. Taylor[2], and T. Webster[2]
[1]Duke University, Durham, NC, [2]Brown University, Providence, RI

PS – Sat – B – 6
Towards Designing a Muco-Specific Platform for the Treatment of *Helicobacter Pylori*
Y. Chauhan[1], E. Quijano[1], and T. Fahmy[2]
[1]Yale University, New Haven, CT, [2]Yale School of Engineering and Applied Sciences, New Haven, CT

PS – Sat – B – 7
Capture of Circulating Tumor Cells Using a Microfluidic Chip with Wavy Surface
D. DePietro[1], Y. Liu[1], S. Yang[2], C-M. Chen[2], A. Thomas[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA, [2]University of Pennsylvania, Philadelphia, PA

PS – Sat – B – 8
A Comparative Analysis of Quantum Dots to Fluorescent Dyes in a Microfluidic Immunoassay Device
I. Johnston[1], R. Gupte[1], and J. Zahn[1]
[1]Rutgers University, Piscataway, NJ

PS – Sat – B – 9
Analysis of 3D Bubble Dynamics Relevant to Cell Manipulation in Microfluidics
D. K. Piech[1], G. N. Sankin[1], and P. Zhong[1]
[1]Duke University, Durham, NC

PS – Sat – B – 10
Functionalization of Gold Nanorods with Thermoresponsive PolyNIPAAm to Improve Photothermal Ablation
T. A. Meyer[1], J. W. Stone[2], and C. L. Duvall[1]
[1]Vanderbilt University, Nashville, TN, [2]Armstrong Atlantic State University, Savannah, GA

PS – Sat – B – 11
Design and Fabrication of a Continuous Microfluidic Formulator Device
W. J. Matloff[1], K. Seale[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – B – 12
Microwave Absorption and Surface Enhanced Raman Scattering in Silver Nanoparticles
S. Schraer[1], M. Figueroa[2], K. Pourrezaei[2], and S. Tyagi[2]
[1]Villanova University, Villanova, PA, [2]Drexel University, Philadelphia, PA

PS – Sat – B – 13
Design and Calibration of a Microfluidics-Based Viscometer
S. Bray[1], S. Cho[1], A. Zhang[1], and E. Saldivar[1]
[1]West Wireless Health Institute, La Jolla, CA

PS – Sat – B – 14
Microrocket-Enabled Capture and Isolation of Pancreatic Cancer Cells
D. Kang[1], D. Kagan[1], S. Balasubramanian[1], and J. Wang[1]
[1]University of California, San Diego, La Jolla, CA

PS – Sat – B – 15
Ratiometric Optofluidic Device for Glucose Monitoring
A. Van[1], and D. Henthorn[2]
[1]Texas A&M, College Station, TX, [2]Saint Louis University, Saint Louis, MO

PS – Sat – B – 16
Microdevice for the Examination of Cells at Varying Oxygen Tensions
J. Stukel[1], L. Vandiver[1], and D. Henthorn[1]
[1]Saint Louis University, Saint Louis, MO

PS – Sat – B – 17
Lab-On-A-Chip Detection of 1,5 Anhydroglucitol in Whole Blood
B. Minden-Birkenmaier[1], and D. Henthorn[1]
[1]Saint Louis University, Saint Louis, MO

PS – Sat – B – 18
A Modular, Portable and Electrically-Independent Flash Sterilizer
J. C-H. Lien[1], H. Chien[1], J. M. Sosa[1], and M. J. Altenberg[1]
[1]Tulane University, New Orleans, LA

PS – Sat – B – 19
Modification of PerMX Substrate Materials for Enhanced Biocompatibility
E. Kreienkamp[1], G. Espinosa[1], M. Tulley[1], and D. Henthorn[1]
[1]Saint Louis University, Saint Louis, MO

PS – Sat – B –20
Quorum Sensing Based Actuation Regulation For Bacteria-Powered MicroRobots (BacteriaBots)
M. A. Canter[1], A. Sahari[1], C. Gilbert[1], B. Scharf[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

Track: Drug Delivery Systems
UNDERGRADUATE POSTERS

Drug Delivery Systems

PS – Sat – B –21
Thermo-Sensitive Gels with Heatable Nanoparticles for Dual Hyperthermia and Drug Delivery Systems
D. Y. Peng[1], H. Jans[2], J. Trekker[2], A. D'Hollander[2], L. Lagae[2], and J. J. Green[3]
[1]Johns Hopkins University, Baltimore, MD, [2]IMEC, Leuven, Belgium, [3]Johns Hopkins University School of Medicine, Baltimore, MD

PS – Sat – B –22
Polymer Micelles for Combination Delivery of Iron Oxide and Doxorubicin to Cancer Tumors
Y. E. Beabout[1,2]
[1]University of Kentucky, Lexington, KY, [2]University of Southern Indiana, Evansville, IN

POSTER SESSION **SatB**

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – B –23
The Effect of the Application of Ultrasound on the Hydraulic Conductivity of a Porous Medium
R. Khullar[1], W. L. Olbricht[1], and G. K. Lewis[1]
[1]*Cornell University, Ithaca, NY*

PS – Sat – B –24
Ultrasound Enhanced Transdermal Drug Delivery from Engineered Hydrogel Discs
J. S-J. Deng[1], and L. Lavrov[1]
[1]*Cornell University, Ithaca, NY*

PS – Sat – B –25
Chitosan/Interleukin-12 Neoadjuvant Therapy for Contro of Breast Cancer Metastasis
J. Vo[1], and D. A. Zaharoff[1]
[1]*University of Arkansas, Fayetteville, AR*

PS – Sat – B –26
Thermally-Responsive Depots for Local Delivery of Anti-Inflammatory Drugs to Treat IVD Pathologies
D. Qu[1], S. M. Sinclair[1], D. L. Nettles[1], and L. A. Setton[1,2]
[1]*Duke University, Department of Biomedical Engineering, Durham, NC,* [2]*Duke University, Department of Surgery, Division of Orthopaedic Surgery, Durham, NC*

PS – Sat – B –27
Synergistic Drug Combinations for Cancer Therapy Research
K. Keith[1], M. Collier[1], R. Lewis[1], W. Gordon[1], T. Moore[1], and F. Alexis[1]
[1]*Clemson University, Clemson, SC*

PS – Sat – B –28
Gold-decorated Vehicles for Application in Targeted Photo-triggered Drug Release
M. Dzuricky[1], A. Sen Gupta[1], C. Modery[1], G. Kaur[2], and T. Navran[3]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Hathaway Brown, Cleveland, OH,* [3]*Solon High School, Solon, OH*

PS – Sat – B –29
Bacteriophages and Magnetic Nanoparticles as a Therapy for Bacterial Infection on Implants
K. D. Leuba[1], E. N. Taylor[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

PS – Sat – B –30
Cyclodextrin-based Delivery of Paclitaxel for AV Fistulae Failure
A. M. Dede[1,2]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Case Western ReserveUniversity, Cleveland, OH*

PS – Sat – B –31
Polyelectrolyte Multilayer Mediated Gene Therapy for Modulating the Brain Foreign Body Response
A. J. Sawyer[1], S. Correa[1], and T. R. Kyriakides[1]
[1]*Yale University, New Haven, CT*

PS – Sat – B –32
Sustained Release of Moxifloxacin from PLGA-Based Microparticles Encapsulated in Bioadhesives
A. H. Aly[1], Q. Guo[1], O. Schein[1], and J. Elisseeff[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS – Sat – B –33
Release of Antibiotics from Affinity-Based Cyclodextrin Hydrogels Using Molecular Imprinting
D. Juric;[1], T. Thatiparti[1], and H. von Recum[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Sat – B –34
Creation of a Mammalian Promoter Library for Identification of Cell-specific DNA Nuclear Targeting Sequences
T. Kobee[1], L. Gottfried[1], and D. Dean[1]
[1]*University of Rochester, Rochester, NY*

PS – Sat – B –35
Efficient Encapsulation and Controlled Release of siRNA Using pH-Sensitive Nanocarriers
T. T. Ho[1], J-O. You[1], and D. Auguste[1]
[1]*Harvard University, Cambridge, MA*

PS – Sat – B –36
Poly(lactone-ɯ-hydroxyaminoesters) as Potential Vectors for Gene Delivery
E. Quijano[1], R. J. Fields[1], Z. Jiang[1], and M. W. Saltzman[1]
[1]*Yale University, New Haven, CT*

PS – Sat – B –37
PLA/PGA as a Retinoid Delivery Device for Treatment of Leber's Congenital Amaurosis
C. Pearson[1], M. Baumann[1], S. Petersen-Jones[1], and D. Thompson[2]
[1]*Michigan State University, East Lansing, MI,* [2]*University of Michigan, Ann Arbor, MI*

PS – Sat – B –38
Reduction of Amyloid-β Fibril Formation in Alzheimer's Disease by Green Tea Catechin
S. E. Chastain[1], and M. A. Moss, Ph. D[2]
[1]*Newberry College, Newberry, SC,* [2]*University of South Carolina, Columbia, SC*

PS – Sat – B –39
Development of a Thermoresponsive Core-Shell Nanoparticle System for Targeted Drug Delivery
F. Knight[1], J. Brugnano[1], A. Kosinski[1], and A. Panitch[1]
[1]*Purdue University, West Lafayette, IN*

PS – Sat – B –40
Effects of Liposome Size and Surface Modification on Cancer Cell Targeting and Macrophage Association
M. K. Sempkowski[1,2], A. Bandekar[1], and S. Sofou[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*The College of New Jersey, Ewing, NJ*

PS – Sat – B –41
Steroid Delivery From Functionalized Nanoparticles
R. Ositelu[1], A. Shoffstall[2], K. Atkins[2], R. Groynom[2], L. Wu[2], and E. Lavik[2]
[1]*Washington University in St. Louis, St. Louis, MO,* [2]*Case Western Reserve University, Cleveland, OH*

PS – Sat – B –42
Lipid Based Drug Delivery Vehicles for Delivering Unstable Proteins
T. Howell[1], X. Lu[1], and S. Sakiyama-Elbert[1]
[1]*Washington University in St. Louis, St. Louis, MO*

PS – Sat – B –43
RGD Conjugated Polyaminoamine Dendrimer Displays Targeted Delivery to $\alpha_V\beta_3$ Integrin Positive Cells and Occurs via Caveolae-mediated Pathways
J. R. Becraft[1], M. E. Hwang[1], and D. Pack[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS – Sat – B –44
Plasma Modified Microparticles for Delivery of Proteins
M. P. Mendoza[1], E. Dawson[1], and K. Roy[1]
[1]*University of Texas at Austin, Austin, TX*

PS – Sat – B –45
Biodegradable Tissue Scaffolds for Cell and siRNA Delivery
J. Shannon[1], C. Nelson[1], S. Guelcher[1], and C. Duvall[1]
[1]*Vanderbilt University, Nashville, TN*

PS – Sat – B –46
Optimization of a PEI/DNA Microbubble System for Gene Delivery
D. Santiesteban[1], Y. Wang[1], and M. Lawrence[1]
[1]*University of Virginia, Charlottesville, VA*

PS – Sat – B –47
Drug Loading of Naproxen Sodium on the Degradation Characteristics of Polycaprolactone
J. M. Benjamin[1], B. Ferraro[1], and J. A. Cooper Jr.[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

Track: Neural Engineering
UNDERGRADUATE POSTERS

Neural Engineering

PS – Sat – B –48
Characterization of Cells Derived from Primary, Secondary, and Tertiary Neurospheres
M. R. Newman[1], K. S. Ellison[2], C. M. Dumont[2], and D. M. Thompson[2]
[1]*Rensselaer Polytechnic Institute, Parish, NY,* [2]*Rensselaer Polytechnic Institute, Troy, NY*

PS – Sat – B –49
Behavioral Analysis of Rats During a Two Bit Learning Task
R. Austin[1]
[1]*Arizona State University, Phoenix, AZ*

PS – Sat – B –50
Processing and Angular Resolution of the Electro-Oculogram Derivative
S. Choi[1], N. Peixoto[1], and J. J. Pancrazio[1]
[1]*George Mason University, Fairfax, VA*

PS – Sat – B –51
An *In Vitro* Approach to Studying Blast Traumatic Brain Injury (bTBI)
C. F. Rondinelli[1], M. A. Hemphill[1], J. A. Goss[1], C. DiTonno[2], G. Collins[2], J. W. Ruberti[2], and K. K. Parker[1]
[1]*Harvard University, Cambridge, MA,* [2]*Northeastern University, Boston, MA*

PS – Sat – B –52
Haptic Size Discrimination
E. H. Mougharbel[1], C. Pierce[1], D. Frear[1], and S. Helms Tillery[1]
[1]*Arizona State University, Tempe, AZ*

PS – Sat – B –53
The Effects of Saclofen Infusion within the Globus Pallidus on Rat Sleep Behavior
M. C. Harless[1], M. Roffler[2], D. Barnett[2], and A. M. Anch[2]
[1]*Northeastern University, Boston, MA,* [2]*Saint Louis University, Saint Louis, MO*

PS – Sat – B –54
Kainic Acid Induced Seizures in Rats: a Computational Model
J. M. Scott[1,2]
[1]*Washington State University, Pullman, WA,* [2]*Illinois Institute of Technology, Chicago, IL*

PS – Sat – B –55
In Vitro Blood-brain Barrier Model to Investigate Nano Ferrofluid Accumulation in the Brain
D. Hoff[1], D. Stout[1], S. Nayar[2], and T. Webster[1]
[1]*Brown University, Providence, RI,* [2]*National Metallurgical Laboratory, Jamshedpur, India*

PS – Sat – B –56
Novel Process to Fabricate Raised Polymer Electrodes for Electroencephalography
F. O'Connell[1], P. Leleux[1], D. Khodagholy[1], and G. G. Malliaras[1]
[1]*Ecole Nationale Superieure des Mines de Saint-Etienne, Gardanne, France*

PS – Sat – B –57
Laser Generated Shock Wave Modification of Neural Networks
E. Miller[1], B. Riggs[1], C. Rivet[1], R. Gilbert[1], T. Phamduy[1], and D. Chrisey[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS – Sat – B –58
Laser Patterned Neuronal Biochip or Developmental Neurotoxicity Study
A. M. Sturgeon[1], L. Wei[1], and B. Z. Gao[1]
[1]*Clemson University, Clemson, SC*

PS – Sat – B –59
Experimental Design for P300-Based BCI Speller Implementation
C. F. Angeloni[1], V. L. Corbit[1], D. A. Salter[1], and T. P. Lorence[1]
[1]*Lafayette College, Easton, PA*

PS – Sat – B –60
The Effects of Non-homogeneous and Anisotropic Conductivity Properties on the Performance of ICA
T. Harvey[1], D. Dean[1], and B. C. Dean[1]
[1]*Clemson University, Clemson, SC*

PS – Sat – B –61
Correcting Spatial Resolution of *In Vitro* Microelectrode Array Recordings with Calcium Fluorescent Imaging
S. Damle[1], M. Khraiche[1], F. Broccard[1], C. MacDonald[1], and G. Silva[1]
[1]*University of California San Diego, La Jolla, CA*

PS – Sat – B –62
The Effect of Working Memory Loads on Eye Blink Probability
A. Clavel[1], H-C. Leung[2], and B. Blankson[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Stony Brook University, Stony Brook*

PS – Sat – B –63
Imipramine Blue Reduces Invasion and Tumor Formation in Glioblastoma Neurospheres
S. A. Rowson[1], J. Munson[1], R. Bellamkonda[1], and J. Arbiser[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory, Atlanta, GA*

PS – Sat – B –64
A Behavioral Approach to Neuron Modeling
F. G. Hutchison[1], and Y. Yuan[1]
[1]*Lafayette College, Easton, PA*

PS – Sat – B –65
The Role of Pulse Rate in lowering Detection Thresholds for Auditory Cortex Prostheses
O. B. Regele[1], A. Koivuniemi[1], and K. Otto[1]
[1]*Purdue University, West Lafayette, IN*

PS – Sat – B –66
A Memory Game Using a Brain-Computer Interface with P300 Signal to Improve User Performance
D. A. Salter[1], T. P. Lorence[1], C. F. Angeloni[1], and V. L. Corbit[1]
[1]*Lafayette College, Easton, PA*

PS – Sat – B –67
P300 based EEG-BCI for Spatial Navigation
A. Curtin[1], H. Ayaz[1], P. A. Shewokis[1], and B. Onaral[1]
[1]*Drexel University, Philadelphia, PA*

PS – Sat – B –68
Kainic Acid Induced Epileptic Seizures in a Network Model of the Hippocampus and Anterior Thalamus
J. M. Scott[1], and D. J. Mogul[2]
[1]*Washington State University, Pullman, WA,* [2]*Illinois Institute of Technology, Chicago, IL*

PS – Sat – B –69
Characterizing the Mechanical Properties of Chicken Embryo Spinal Cord Tissue under Quasi-static and Stress-relaxation Conditions
V. Patel[1], D. Shreiber[2], and J. Galaro[1]
[1]*Rutgers University, New Brunswick, NJ,* [2]*Rutgers University, Piscataway, NJ*

PS – Sat – B –70
Quantification of Tissue Response to a Novel Bimorphic Neural Probe
M. Cong[1], and M. Han[2]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*Huntington Medical Research Institutes, Pasadena, CA*

POSTER SESSION **SatB**

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – B –71
The Study of the Site of action of GDNF in Enhancing Regeneration After Injury Utilizing *In Vitro* Microfluidic Platforms
D. Paredes[1], and N. Thakor[2]
[1]*University of Puerto Rico-Mayaguez, Guaynabo, PR, Puerto Rico,* [2]*Johns Hopkins School of Medicine, Baltimore, MD, United States Minor Outlying Islands*

PS – Sat – B –72
ThinkTank: A Brain Computer Interface Game
M. N. Baykal[1,2], H. Ayaz[1], and P. A. Shewokis[1]
[1]*Drexel University, Philadelphia, PA,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS – Sat – B –73
Synchronization in Coupled Neural Networks
B. Wooley[1], G. Cauwenberghs[2], and F. Broccard[2]
[1]*George Mason University, Fairfax, VA,* [2]*University of California San Diego, La Jolla, CA*

PS – Sat – B –74
Effects of Probe Tip Geometry on Insertion Force in Development of Implantable Microelectrode Arrays
C. X. Wang[1,2], and M. Han[1]
[1]*Huntington Medical Research Institute, Pasadena, CA,* [2]*University of California, Berkeley, Berkeley*

Track: New Frontiers in Biomedical Engineering
UNDERGRADUATE POSTERS

New Frontiers in Biomedical Engineering

PS – Sat – B –75
Computer Aided Histological Analysis of Vasculature Proximal to an Implanted Oxygen Sensor
A. Chaudhari[1], L. Kumosa[1], and D. Gough[1]
[1]*University of California San Diego, La Jolla, CA*

PS – Sat – B –76
Spontaneous Differentiation of Human Embryonic Stem Cells Using Biomimetic Multi-Scale Wrinkled Substrates
C. Nguyen[1], A. Chen[1], and M. Khine[1]
[1]*University of California, Irvine, Irvine, CA*

PS – Sat – B –77
Immunization Regimen Plays a Critical Role in CD8 T Cell Response: Toward Improved Biomaterial-based Vaccination
S. C. Bustamante Lopez[1], C. M. Jewell[1,2], and D. J. Irvine[1,3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Ragon Institute of MGH, MIT, and Harvard, Charlestown, MA,* [3]*Howard Hughes Medical Institute, Chevy Chase, MD*

PS – Sat – B –78
How Does Degradation of Magnesium Implants Affect Stem Cell Proliferation *In Vitro*?
S. Garcia[1,2], C. G. Liew[2], and H. Liu[2]
[1]*California State University San Bernardino, San Bernardino, CA,* [2]*University of California Riverside, Riverside, CA*

PS – Sat – B –79
Advancing Tissue Engineering Through a Mechanical Characterization of the Insect Tracheal System
W. R. Becker[1], M. R. Webster[1], and R. De Vita[1]
[1]*Virginia Tech, Blacksburg, VA*

hPS – Sat – B –80
Antimicrobial Properties of Chrysophsin-1 Immobilized on a Surface
C. Fahey[1], A. Morrison[2], I. Ivanov[2], and T. A. Camesano[2]
[1]*The George Washington University, Washington, DC,* [2]*Worcester Polytechnic Institute, Worcester, MA*

PS – Sat – B –81
Characterization of Complex Amine Polymer Systems Using Advanced Mass Spectrometry Techniques
N. W. Kwiecien[1], A. K. Chakraborty[1], C. Goodwin[1], and D. Hercules[1]
[1]*Vanderbilt University, Nashville, TN*

PS – Sat – B –82
CRISPR-mediated Control of Prokaryotic Gene Expression
M. Grade[1], K. Standage-Beier[1], D. Garry[1], N. Patel[1], E. Ward[1], J. Flay[1], K. Dyson[1], and R. Acuna[1]
[1]*Arizona State University, Tempe, AZ*

PS – Sat – B –83
Influence of Water Content on Quasi-static Compressive Properties of Porcine Lungs Tissue
M. Rougeau[1], S. Patnaik[1], R. Gilbrech[1], C. Young[1], R. Prabhu[1], J. Liao[1], and L. N. Williams[1]
[1]*Mississippi State University, Mississippi State, MS*

PS – Sat – B –84
The Optimization of Cardiac Differentiation from Human Embryonic Stem Cells Using the Design of Experiment Methodology
J. Go[1], A. Chen[1], and M. Khine[1]
[1]*University of California-Irvine, Irvine, CA*

PS – Sat – B –85
A Novel Ultrasound Treatment for Deep Vein Thrombosis Using Time Reversal Acoustics
S. Koltz[1]
[1]*Cornell University, Ithaca, NY*

PS – Sat – B –86
A Low-cost and Unobtrusive System to Measure Emotional Arousal
N. Rahimi[1], M. A. Mastro[1], T. Nakra[1], and B. Busha[1]
[1]*The College of New Jersey, Ewing, NJ*

PS – Sat – B –87
Microfluidic Bio-inspiration: How Cockroach Tracheal Tubes Collapse Under Pressure
D. Beringer[1], and J. Socha[1]
[1]*Virginia Tech, Blacksburg, VA*

PS – Sat – B –88
Biomechanical Properties of the Decellularized Human Amnion
D. Koback[1], A. Borazjani[1], S. Patnaik[1], K. King[1], B. Wang[1], L. N. Williams[1], and J. Liao[11]
Mississippi State University, Mississippi State, MS

PS – Sat – B –89
Mouse Model for Dengue 1 - Induced Lethal Disease and Increased Viremia
A. Alvarez[1], and S. Shresta[1]
[1]*La Jolla Institute for Allergy and Immunology, La Jolla, CA*

PS – Sat – B –90
A Method for Assessing Biomechanical Properties and Failure Mechanisms of Various Suture Techniques
A. Arshad[1,2], A. Borazjani[1,3], S. Patnaik[1], B. C. Weed[1], and J. Liao[1]
[1]*Mississippi State University, Mississippi State, MS,* [2]*University of South Alabama, Mobile, AL,* [3]*Cleveland Clinic Lerner Research Institute, Cleveland, OH*

PS – Sat – B –91
Analysis of Evolved Neural Network Topologies with Lesions Through the Genealogy
C. G. Sinks[1], and Y. Choe[2]
[1]*University of Missouri, Columbia, MO,* [2]*Texas A & M, College Station, TX*

PS – Sat – B –92
Immuno-DNA-Directed Cell Assembly: Towards de Novo Construction of Stem Cell Niches
A. Shomorony[1]
[1]*Yale University, New Haven, CT*

POSTER SESSION **SatB**

Track: Orthopedic and Rehabilitation Engineering
UNDERGRADUATE POSTERS

Orthopedic & Rehabilitation Engineering

PS – Sat – B –93
Pacemaker Waveform for Rapid Entrainment of Smooth Oscillators
V. T. Dahlen[1,2], and I. Z. Kiss[2]
[1]University of Iowa, Iowa City, IA, [2]Saint Louis University, St. Louis, MO

PS – Sat – B –94
Electromyographic Responses to Rotational and Translational Perturbations
E. M. Schnellinger[1], J. L. Roche[2], and M. S. Redfern[2]
[1]University of Rochester, Rochester, NY, [2]University of Pittsburgh, Pittsburgh, PA

PS – Sat – B –95
Low Intensity Vibration Reduces Bone Loss in Obese Mice by Attenuating Osteoclast Development
M. Cheung[1], K. Kawatra[1,2], A. H. Tsoi[1], M. E. Chan[1], and C. T. Rubin[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Minnesota, Minneapolis, MN

PS – Sat – B –96
Low Intensity Vibrations Attenuate Adverse Effects of Obesity on B-Cell Lymphopoiesis & Maturation
K. Kawatra[1,2], M. Cheung[1], M. E. Chan[1], D. Green[1], B. Adler[1], and C. T. Rubin[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Minnesota, Minneapolis, MN

PS – Sat – B –97
Sensitivity of Wheelchair Propulsion Kinetics to Increased Physiological Demands.
J. H. Bryant[1], M. S. Nash, PhD.[1], and R. E. Cowan, PhD.[1]
[1]The Miami Project to Cure Paralysis, Miami, FL

PS – Sat – B –98
Effect of Age and Exercise on the Viscoelastic Properties of Rat Tail Tendon
A. S. LaCroix[1], S. Duenwald-Kuehl[1], S. Brickson[1], R. Lakes[1], and R. Vanderby Jr.[1]
[1]University of Wisconsin-Madison, Madison, WI

PS – Sat – B –99
Electrospun Thin Films for Biodegradable Magnesium Implants
C. A. Gardner[1]
[1]NC State University, Raleigh, NC

PS – Sat – B –100
Finite Element Analysis of Low Intensity Pulsed Ultrasound Treatment on Hind Limb Suspend Mice
D. Hwang[1], S. Uddin[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

PS – Sat – B –101
Strain Dependence of Articular Cartilage Tensile Modulus Following GAG Depletion
B. Berg-Johansen[1], Q. Nguyen[2], A. Chen[2], S. Hazelwood[1], S. Klisch[1], and R. Sah[2]
[1]California Polytechnic State University, San Luis Obispo, CA, [2]University of California, San Diego, La Jolla, CA

PS – Sat – B –102
Improving Clinical Measures of Balance using Kinect for Xbox 360
E. Balaban[1], and K. Bieryla[1]
[1]Bucknell University, Lewisburg, PA

PS – Sat – B –103
Biomechanical Analysis of Blindfolded Human Response to Large Anterior Motion on a Sliding Platform
F. S. Hemsing[1], and C. Robinson[1]
[1]Clarkson University, Potsdam, NY

PS – Sat – B –104
Effect of Collagen Organization on Tensile Strength Loss in ACL Grafts Post-Reconstruction Surgery
A. Chandramani[1], M. Costales[1], B. Garbus[1], J. Hartstein[1], K. Heffner[1], R. Jain[1], K. Klein[1], A. McDonnell[1], P. Patel[1], V. Stefanelli[1], J. Wang[1], T. Zhang[1], H. Kim[1], A. Hsieh[1], and C. Bennett[1]
[1]University of Maryland, College Park, MD

PS – Sat – B –105
Increase in Bone Marrow Adiposity as Caused by Irradiation is Mitigated by Low Intensity Vibration
J. Lennon[1], D. Green[2], M. E. Chan[2], and C. T. Rubin[2]
[1]Stony Brook University, West Babylon, NY, [2]Stony Brook University, Stony Brook, NY

PS – Sat – B –106
Design Criteria for Preventing Friction-induced Squeak of Ceramic-on-Ceramic Hip Implants
M. A. Sidebottom[1], and M. Paliwal[1]
[1]The College of New Jersey, Ewing, NJ

PS – Sat – B –107
In Vitro Biomechanical Analysis of Repeated Dislocation/Reduction in Constrained Hip Arthroplasty
J. C. Ivester[1], M. Finn[2], F. R. Voss[2], K. A. Rusaw[1], R. J. Rusly[1], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC, [2]University of South Carolina, Columbia, SC

PS – Sat – B –108
The Effects of Water Content on the Mechanics and Microstructure of Bone
A. O. Oje[1], N. Lee[1], S. Patnaik[1], J. Liao[1], and L. N. Williams[1]
[1]Mississippi State University, Starkville, MS

PS – Sat – B –109
Biomechanical Assessment of Tibial Component Slope in Unicompartmental Knee Arthroplasty
D. Archer[1], A. Kingman[1], K. Hughes[1], S. Small[2], R. Rogge[1,2], M. Berend[2], and M. Ritter[2]
[1]Rose-Hulman Institute of Technology, Terre Haute, IN, [2]JRSI Foundation, Inc., Mooresville, IN

PS – Sat – B –110
Tensile Properties of the Extensor Hood in Support of a Finite Element Model
K. Traylor[1], and D. Kamper[1,2]
[1]Illinois Institute of Technology, Chicago, IL, [2]Rehabilitation Institute of Chicago, Chicago, IL

PS – Sat – B –111
Implant Alignment Reproducibility in a Reverse Shoulder Arthroplasty Micromotion Study
W. D. Simpson III[1], A. D. Bries[2], S. J. Tolan[2], M. K. Harman[1], R. J. Hawkins[2], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Steadman Hawkins Clinic of the Carolinas, Greenville, SC

PS – Sat – B –112
Design of an Anatomical Cervical Orthosis Testing Apparatus and Preliminary Results
R. M. Halsey[1], K. M. Harfmann[1], E. Nuwass[2], D. B. Ellegala[3], J. S. Nicholas[3], J. D. DesJardins[1], and D. Dean[1]
[1]Clemson University, Clemson, SC, [2]Haydom Hospital, Haydom, Tanzania, [3]Medical University of South Carolina, Charleston, SC

PS – Sat – B –113
The Effect of Proton-Source Radiation on the Wear Properties of UHMWPE
J. H. Ball[1], K. Norasak[1], E. Lucas[1], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC

PS – Sat – B –114
Friction Testing of Stainless Steel Micropatterned Surfaces for Orthopaedic Bearing Surfaces
C. J. Eljach[1], N. Mitchell[1], B. Lodge[1], J. Sharp[1], M. Kennedy[1], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC

POSTER SESSION SatB

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – B – 115
Biomechanical Testing of PRP Augmented Microfracture in Cartilage Regeneration in a Lapine Model
M. C. Ware[1], J. J. Rodrigo[2], S. A. Bielby[1], A. B. Anderson[3], D. Wyland[2], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Steadman Hawkins Clinic of the Carolinas, Greenville, SC, [3]The Hawkins Foundation, Greenville, SC

Track: Systems Biology, Bioinformatics and Computational Bioengineering
UNDERGRADUATE POSTERS

Systems Biology, Bioinformatics & Computational Bioengineering

PS – Sat – B – 116
Cardiac Cell Sensitivity to Optogenetic Stimulation: A Computer Modeling Study
J. C. Williams[1], X. Chen[1], J. Xu[1], and E. Entcheva[1]
[1]Stony Brook University, Stony Brook, NY

PS – Sat – B – 117
Discrete Logic Models Discriminate Between Mechanisms of HIV Protein-Induced Dysregulation of the T Cell Signaling Network
R. Amezquita[1], Q. Xue[2], and K. Miller-Jensen[2]
[1]University of California, San Diego, La Jolla, CA, [2]Yale University, New Haven, CT

PS – Sat – B – 118
Network Architectures of Antibiotic Resistance
P. Jensen[1], K. E. Estep[1], and J. Papin[1]
[1]University of Virginia, Charlottesville, VA

PS – Sat – B – 119
Single-cell JunD and TGFBR3 Expression in Krt5-positive Basal-like Breast Cancer.
L. Jamal[1], C-C. Wang[1], K. A. Atkins[1], and K. A. Janes[1]
[1]University of Virginia, Charlottesville, VA

PS – Sat – B – 120
Structural Adaptation of Microvessels in Disease States
L. Little[1], J. Park[1], E. F. Threlkeld[1], P. Varin[1], J. B. Geddes[1], and A. Sarang-Sieminski[1]
[1]Franklin W. Olin College of Engineering, Needham, MA

PS – Sat – B – 121
A Microfluidic Platform for High Throughput Genealogy Tracking
E. M. Werner[1], K. Eck[2], H. Tidwell[3], Y. Zhou[1], I. Nemenman[4], and J. P. Wikswo[1]
[1]Vanderbilt University, Nashville, TN, [2]Mercer University, Macon, GA, [3]Montgomery Bell Academy, Nashville, TN, [4]Emory University, Atlanta, GA

PS – Sat – B – 122
Computational Modeling of VEGF and sFlt-1 to Simulate Pre-eclampsia
M. S. Shah[1], E. A. Logsdon[1], and F. Mac Gabhann[1]
[1]Johns Hopkins University, Baltimore, MD

PS – Sat – B – 123
Quantitation of Single Cell Calcium Signaling During T-Cell Activation
R. Harvey[1], C. Marasco[1], K. Seale[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – B – 124
Reconstructing Patient-Specific Models of the Dyssynchronous Failing Heart using CT and DTMR Images
J. A. Mojica-Santiago[1], C. A. Villongco[2,3], M. J. Gonzales[2,3], D. E. Krummen[4,5], L. R. Frank[6], and A. D. McCulloch[2,4]
[1]University of Puerto Rico Mayaguez Campus, Mayaguez, PR, [2]Department of Bioengineering, UCSD, La Jolla, CA, [3]Cardiac Biomedical Science and Engineering Research Center, UCSD, La Jolla, CA, [4]Department of Medicine, UCSD School of Medicine, La Jolla, CA, [5]Veterans Administration San Diego Health Care System, San Diego, CA, [6]Department of Radiology, UCSD School of Medicine, La Jolla, CA

PS – Sat – B – 125
Quantitative Dissection of Ras Signaling: The Contributions of Mutation, Isoform, Expression Level, Amplification, and Loss of Heterozygosity to Mutant Signaling
C. Poling[1], and E. Stites[1]
[1]Translational Genomics Research Institute, Scottsdale, AZ

PS – Sat – B – 126
Profiling Physiologic States of Peripheral Blood Mononuclear Cells to Determine Clinical Biomarkers
J. S. Brady[1], K. Seale[1], P. Norris[2], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University School of Medicine, Nashville, TN

PS – Sat – B – 127
Control of the GAL Network in *S. cerevisiae* for Use in Biological Control Theory
K. Roth[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – B – 128
Towards Formation of Uniform Embryoid Bodies within Microdroplets
C. Allamneni[1], S. Faley[1], K. Seale[1], and A. Hatzopoulos[1]
[1]Vanderbilt University, Nashville, TN

PS – Sat – B – 129
PLX-4720 Induces Distinct Single Cell Responses within a Melanoma Cell Line Population
R. Feroze[1,2], D. Tyson[3], and V. Quaranta[3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]NCI-ICBP Summer Program, Vanderbilt University, Nashville, TN, [3]Vanderbilt University, Nashville, TN

PS – Sat – B – 130
Non-destructive Methods for Monitoring Membrane-bound Molecules in *Saccharomyces cerevisiae*
E. L. Curtis[1], A. Kole[1], C. Marasco[1,2], C. Goodwin[1,2], J. Enders[1,2], T. Graham[3], K. Seale[1,2], J. Mclean[2,4], and J. Wikswo[2,5]
[1]The Searle Systems Biology and Bioengineering Undergraduate Research Experience, Nashville, TN, [2]Vanderbilt Institute for Integrative Biosystems Research, Nashville, TN, [3]Department of Biological Sciences, Vanderbilt University, Nashville, TN, [4]Department of Chemistry, Vanderbilt University, Nashville, TN, [5]Department of Biomedical Engineering, Vanderbilt University, Nashville, TN

PS – Sat – B – 131
Normal and Shear Force Sensing for Human Finger Tips
L. Kwiatkowski[1], S. Conover[1], A. Eid[1], and M. Kagehiro[1]
[1]Illinois Institute of Technology, Chicago, IL

PS – Sat – B – 132
DC Motor Enabled Rotary Planar Peristaltic Micropump
D. J. Hall[1,2], P. Gould[1,2], L. Hoang[1,2], K. Seale[1,3], and J. Wikswo[1,3]
[1]Vanderbilt University, Nashville, TN, [2]Systems Biology and Bioengineering Undergraduate Research Experience, Nashville, TN, [3]Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN

PS – Sat – B – 133
Computational Efficiencies of Stochastic Algorithms
A. Broido[1,2], K. Gayvert[2,3], and K. G. Link[2,4]
[1]Boston College, Chestnut Hill, MA, [2]North Carolina State University, Raleigh, NC, [3]State University of New York at Geneseo, Geneseo, NY, [4]Bryn Mawr College, Bryn Mawr, PA

PS – Sat – B – 134
Development of Sham Atherosclerotic Arteries for Verification of Computational Models
T. M. Erhard[1], P. A. Osei[1], D. M. Ebenstein[1], and C. M. Buffinton[1]
[1]*Bucknell University, Lewisburg, PA*

PS – Sat – B – 135
Using the Gene Expression Dynamics Investigator (GEDI) for Analysis of Time Series Metabolomics Data
K. Osborne[1], K. Brinsfield[2], K. Drake[3], C. Goodwin[1,2], K. Seale[1], and J. Wikswo[3]
[1]*Searle-Systems Biology and Bioengineering Undergraduate Research Experience, Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University, Nashville, TN,* [3]*Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt University, Nashville, TN*

PS – Sat – B – 136
A Network Driven Approach for Quantifying Clustering Variability of Experimental Data
N. D. Jimenez[1], K. Naegle[1], and D. Lauffenburger[1]
[1]*MIT, Cambridge, MA*

Track: Tissue Engineering
UNDERGRADUATE POSTERS

Tissue Engineering

PS – Sat – B – 137
Effect of Chemically Crosslinked Fibrin Gel Substrate on the Differentiation of Mouse C2C12 Myoblasts
R. A. Sharpe[1], T. Bas[1], J. M. Grasman[1], G. D. Pins[1,2], and R. L. Page[1,2]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Bioengineering Institute, Worcester, MA*

PS – Sat – B – 138
Modifying Seeding Well Dimensions Reduces the Cell Number Required for Tissue Ring Aggregation
J. M. Mann[1], T. Gwyther[1], and M. Rolle[2]
[1]*Worcester Polytechnic Institute, Worcester Polytechnic Institute, MA,* [2]*Worcester Polytechnic Institute, Worcester, MA*

PS – Sat – B – 139
Terminal Sterilization of Composite Alginate Hydrogels
S. Horava[1], W. L. Stoppel[1], J. C. White[1], S. R. Bhatia[1], and S. C. Roberts[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

PS – Sat – B – 140
Coating of Electrospun Polyacrylonitrile Fibres with Collagens for Tissue Engineering
K. Briggs[1,2], Y. B. Truong[2], J. Ramshaw[2], V. Glattauer[2], and S. Zappe[1]
[1]*Carnegie Mellon University, Pittsburgh,* [2]*CSIRO, Clayton, Australia*

PS – Sat – B – 141
Magnetically Prepared SWCNT and Nano-hydroxyapatite Composite Hydrogels for Bone Tissue Engineering
O. Im[1], and L. G. Zhang[2]
[1]*Duke University, Durham, NC,* [2]*The George Washington University, Washington, DC*

PS – Sat – B – 142
Tuning Recovery Kinetics of a Shape Memory Polymer for Active Cell Culture
D. L. Jones[1], R. M. Baker[1], P. T. Mather[1], and J. H. Henderson[1]
[1]*Syracuse University, Syracuse, NY*

PS – Sat – B – 143
Role of Hemorheological Parameters and Asymmetric Dimethylarginine (ADMA) in End Stage Renal Disease (ESRD) and Chronic Renal Disease (CRD) Patients
S. Menezes[1], E. Beltran[1], L. R. Girijala[1], and P. Dhar[1]
[1]*Illinois Institute of Technology, Chicago, IL*

PS – Sat – B – 144
The Influence of Hyaluronic Acid on Chondrogenic Differentiation of Primary Mesenchymal Stem Cells Embedded in Photocrosslinked Alginate
C. N. Riggin[1], E. E. Coates[1], and J. P. Fisher[1]
[1]*University of Maryland, College Park, MD*

PS – Sat – B – 145
Mechanical Properties of Tissue Engineered Vascular Grafts from the Amniotic Membrane
B. T. Smith[1], J. Brennan[1], and M. Nollert[1]
[1]*University of Oklahoma, Norman, OK*

PS – Sat – B – 146
Characterization of Integrin Expression of DRGs in Laminin and Collagen
A. A. Throm[1], and R. K. Willits[2]
[1]*University of Evansville, Evansville, IN,* [2]*The University of Akron, Akron, OH*

PS – Sat – B – 147
Effects off Fibroblast Conditioned Media on Sskeletal Myogenesis
D. P. Stewart[1], N. Rao[1], and K. Christman[1]
[1]*University of California - San Diego, La Jolla, CA*

PS – Sat – B – 148
Investigation of Lamellar Unit Development in Mouse Arteries
V. Mathur[1], C. Ball[2], V. Le[1], R. Knutsen[2], R. Mecham[2], and J. Wagenseil[1]
[1]*St. Louis University, St. Louis, MO,* [2]*Washington University, St. Louis, MO*

PS – Sat – B – 149
Patterning of siRNA cues Within Hydrogels to Spatially Control Mesenchymal Stem Cell Differentiation
D. S. Reynolds[1], and D. S. Benoit[1,2]
[1]*University of Rochester, Rochester, NY,* [2]*University of Rochester Medical Center, Rochester, NY*

PS – Sat – B – 150
The Role of Nanofiber Architecture in NF-kappa B Signaling
C. Hong[1], and J. Brown[2]
[1]*Penn State University, State College, PA,* [2]*Penn State University, University park, PA*

PS – Sat – B – 151
Surface Modification of Magnesium based Implant Material with Chitosan Biopolymer
J. Delva[1], C. Mahoney[1], S. Turner[1], and N. Bhattarai[1]
[1]*North Carolina A&T State University, Greensboro, NC*

PS – Sat – B – 152
Effect of Verapamil and Atorvastatin on Endothelial Cell Viability
H. J. Warner[1], G. J. Ye[2], M. Rafat[2], and D. T. Auguste[2]
[1]*Clemson University, Clemson, SC,* [2]*Harvard University, Cambridge, MA*

PS – Sat – B – 153
Graphite Oxide Nanoparticles Larger than 20nm in Diameter are Biocompatible with Mouse Embryonic Stem Cells
G. Y. Do[1], I-N. E. Wang[1], J. Robinson[1], G. Hong[1], D. Gould[1], H. Dai[1], and P. C. Yang[1]
[1]*Stanford University, Stanford, CA*

PS – Sat – B – 154
ZO-1 Expression of Retinal Pigment Epithelium on Poly(ethylene glycol)-diacrylate Hydrogels
K. Holley[1], P. Soucy[1], T. Tezel[1], and A. S. Gobin[1]
[1]*University of Louisville, Louisville, KY*

PS – Sat – B – 155
Quantitative Analysis of Motility of Human Pluripotent Stem Cells on Various Surfaces
K. Peterson[1], H. Yao[1], W. Wang[1], Z. Melkoumian[1], K. Ye[1], and S. Jin[1]
[1]*University of Arkansas, Fayetteville, AR*

POSTER SESSION **SatB**

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – B – 156
Effects of Three-Dimensional Dynamic Flow on Growth and Differentiation of Porcine Dental Pulp Stem Cells
J. Wood[1], L. Datko[1], M. Kennedy[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

PS – Sat – B – 157
Quantification of FGF-2, VEGF, & GAGs in MatriStem MicroMatrix UBM Biomaterial
K. A. Kentner[1], and A. D. Janis[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*ACell Inc, Columbia, MD*

PS – Sat – B – 158
Determining Mechanical Contributions of Elastin and Collagen in WT and Eln+/- Mouse Arteries
K. Shah[1], E. Marin[1], and J. Wagenseil[1]
[1]*Saint Louis University, St. Louis, MO*

PS – Sat – B – 159
Soft Tissue Remodeling Following Digit Amputation and Treatment with ECM Degradation Products
B. F. Siu[1,2], V. Agrawal[1,2], H. Chao[3,4], K. K. Hirschi[3,4], E. Raborn[3,4], S. A. Johnson[1,2], S. Tottey[1,2], C. J. Medberry[1,2], and S. F. Badylak[1,2]
[1]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*Center for Cell and Gene Therapy, Houston, TX,* [4]*Baylor College of Medicine, Houston, TX*

PS – Sat – B – 160
Vessel Formation in an Extracellular Matrix Derived Scaffold in a Rat Hindlimb Ischemia Model
A. J. Monteforte[1], J. A. DeQuach[1], D. Hu[1], and K. L. Christman[1]
[1]*University of California, San Diego, La Jolla, CA*

PS – Sat – B – 161
The Effects of Substrate Stiffness Without Growth Factors on the Growth and Development of Rat Bone Marrow Stem Cells
H. T. Vo[1], L. Datko[2], M. D. Cupelli[2], and D. Dean[2]
[1]*Governer's School for Science and Mathematics, Hartsville, SC,* [2]*Clemson University, Clemson, SC*

PS – Sat – B – 162
Strain-To-Failure of Extracellular Matrix Protein Nanofibers
G. Diamond[1], W. Littlefield[1], J. Szymanski[1], and A. W. Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

PS – Sat – B – 163
Methacrylation Methods of Hyaluronic Acid Based Biomaterials Alter Wound Healing Capabilities
J. J. Davis[1], S. Mayes[2] and C. Schmidt[2]
[1]*The University of Texas at Austin, Hutto, TX,* [2]*The University of Texas at Austin, Austin, TX*

PS – Sat – B – 164
The Effect of Surface Modifications on Apatite Formation on Aligned PLGA Nanofibers
L. Pruzinsky[1,2], O. Karaman[2], and E. Jabbari[2]
[1]*University of Connecticut, Storrs, CT,* [2]*University of South Carolina, Columbia, SC*

PS – Sat – B – 165
In Vitro High Throughput Screening System for Defatting Steatotic Liver Cells
S. A. Ghodbane[1,2], A. J. So[2], N. I. Nativ[2], G. Yarmush[2], J. Barminko[2], T. Maguire[2], F. Berthiaume[2], R. Schloss[2], and M. L. Yarmush[2]
[1]*The College of New Jersey, Ewing, NJ,* [2]*Rutgers University, Piscataway, NJ*

PS – Sat – B – 166
The Dependence of Tubulogenesis on Channel Pattern Geometry for the Application of Artificial Vasculature
M. Knight[1], B. Riggs[2], T. Phamduy[2], V. Lee[2], M. Horne[2], D. Chrisey[2], G. Dai[2], and R. Gilbert[2]
[1]*Rensselaer Polytechnic Institute, Albany, NY,* [2]*Rensselaer Polytechnic Institute, Troy, NY*

PS – Sat – B – 167
3D Scaffolds with Various Pore Sizes for Co-culturing of Endothelial and Smooth Muscle Cells
B. Yang[1], J-O. You[2], and D. T. Auguste[2]
[1]*Simmons College, Boston, MA,* [2]*Harvard University, Cambridge, MA*

PS – Sat – B – 168
Male and Female Donor Variability of Mesenchymal Stem Cells Derived from Human Umbilical Cords
A. M. Witt[1], E. A. Bordt[1], R. C. Schugar[1], A. Usas[2], and B. M. Deasy[1,3]
[1]*Live Cell Imaging Lab, University of Pittsburgh, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*McGowan Institute of Regenerative Medicine, University of Pittsburgh, Pittsburgh*

PS – Sat – B – 169
Determining Protein Expression in Unconditioned and Conditioned Cell Sheets of Cardiomyocytes
K. C. Watson[1], E. L. Lee[1], and H. A. von Recum[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Sat – B – 170
Fabrication of Stiffness Variant Thin Layer Substrate using Nanotopography Backbone for Cell Sensing
S. Rowlinson[1], G. Ye[2], and D. Auguste[2]
[1]University of Miami, Coral Gables, FL, [2]Harvard University, Cambridge, MA

PS – Sat – B – 171
Human Mesenchymal Stem Cell Proliferation as a Function of Scaffold Position in a TPS Bioreactor
F. F. Fears[1], E. M. Geibel[2], A. B. Yeatts[2], and J. P. Fisher[2]
[1]*Harvard University, Cambridge, MA,* [2]*University of Maryland, College Park, MD*

PS – Sat – B – 172
Hydrogel Model of Mechanically-Heterogeneous Tissue Layers
L. Dlouhy[1], G. Kaushik[2], and A. Engler[2]
[1]*Texas A&M University, College Station, TX,* [2]*University of California, San Diego, La Jolla, CA*

PS – Sat – B – 173
A Polymer-Based Approach to Stimulate Notch Signaling *In Vitro*
N. Mehta[1], M. Kim[1], M. Mendoza[1], and K. Roy[1]
[1]*University of Texas at Austin, Austin, TX*

PS – Sat – B – 174
Non-Enzymatic Glycation (of Collagen I rich tissues) Affects Enzymatic Digestion of Interstitial Collagenase (MMP-1) and Trypsin
H. F. Mingo[1], R. S. Madhurapantula[2], J. Orgel[2], and O. A. Antipova[2]
[1]*Prairie View A&M University, Prairie View, TX,* [2]*Illinois Institute of Technology, Chicago, IL*

PS – Sat – B – 175
The Effects Of Static Axial Stretching On The Structural Properties Of Fibrin Microthreads
M. Dunphy[1,2], J. Grasman[1], and G. Pins[1]
[1]*Worcester Polytechnic Institue, Worcester, MA,* [2]*Clemson University, Clemson, SC*

PS – Sat – B – 176
Microfluidic Flow Gradient Device for Studying Endothelial Mechanotransduction
I. Baird[1], L. Hofmeister[1], K. T. Seale[1], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN*

PS – Sat – B – 177
Investigating Mechanical Gradients in Mussel Byssal Thread Fibers
N. Ko[1], and D. M. Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA*

PS – Sat – B – 178
Laminin Coats Collagen Fibers
J. A. Hammer[1], J. B. Papke[2], R. K. Willits[3], and A. B. Harkins[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Saint Louis University, St. Louis, MO,* [3]*University of Akron, Akron, OH*

PS – Sat – B – 179
Evaluation of Vascular Cells Grown on Materials for Bi-layered Tissue-Engineered Vascular Grafts
S. Agarwal[1], J. Banik[1], H. Baman[1], and J. A. Cooper Jr.[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS – Sat – B – 180
Controlling Folding In A Three-Dimensional Biodegradable Scaffold By Patterning Thin Polymer Sheets For *In Vivo* Tissue Regeneration
A. Mantzavinou[1,2], J. G. Ye[1], and D. T. Auguste[1]
[1]*Harvard School of Engineering and Applied Sciences, Cambridge, MA,* [2]*Harvard College, Cambridge, MA*

PS – Sat – B – 181
Stem Cell Mediated Cardiac Myocyte Proliferation: The Effect of hMSC Number on Colony Formation
K. J. Hansen[1,2], E. J. Burford[1], and G. R. Gaudette[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Washington State University, Pullman, WA*

PS – Sat – B – 182
Migration and Rolling of EPCs on PEG-peptide Copolymers
Y. Tian[1,2], W. Seeto[2], and E. Lipke[2]
[1]*Polytechnic Institute of NYU, Brooklyn, NY,* [2]*Auburn University, Auburn, AL*

PS – Sat – B – 183
Heart Valve Tissue Engineering: The Effects of Steady vs. Pulsatile Flow on Bone Marrow Derived Stem Cells
S. Van Gulden[1], M. Salinas[2], C. Martinez[2], and S. Ramaswamy[2]
[1]*Florida International University, Pembroke Pines, FL,* [2]*Florida International University, Miami, FL*

PS – Sat – B – 184
Differentiation of Mesenchymal Stromal Cells in a 3-dimensional Alginate Culture System
E. Pludwinski[1], J. Barminko[1], A. Chaise[1], R. Brown[1], T. Maguire[1], R. Schloss[1], and M. Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

Track: Translational Biomedical Engineering
UNDERGRADUATE POSTERS

Translational Biomedical Engineering

PS – Sat – B – 185
Wearable Therapeutic Ultrasound for Wound Healing of Venous Stasis Ulcers
E. Liu[1]
[1]*Cornell University, Ithaca, NY*

PS – Sat – B – 186
Mobile Healthcare: Design and Evaluation of Hydrogel Coupling for Wearable Ultrasound Therapy
L. Lavrov[1], and J. Deng[1]
[1]*Cornell University, Ithaca, NY*

PS – Sat – B – 187
A Method for Assessing Biomechanical Properties and Failure Mechanisms of Various Suture Techniques
A. Arshad[1], A. Borazjani[2], S. S. Patnaik[2], B. Weed[2], and J. Liao[2]
[1]*University of South Alabama, Mobile, AL,* [2]*Mississippi State University, Starkville, MS*

PS – Sat – B – 188
Disentrainment of Brain Dynamics in PNES
A. Roth[1], B. Krishnan[1], A. Faith[1], L. Tapsell[2], J. Sirven[2], and L. Iasemidis[1,2]
[1]*Arizona State University, Tempe, AZ,* [2]*Mayo Clinic, Phoenix, AZ*

PS – Sat – B – 189
Developing a Standardized CVC Procedure for Training to Reduce Complications
E. A. Thrailkill[1], J. D. Riggle[1], M. C. Wadman[2], B. McCrory[1], B. R. Lowndes[1], P. K. Carstens[2], and M. S. Hallbeck[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE,* [2]*University of Nebraska Medical Center, Omaha, NE*

PS – Sat – B – 190
Novel Device for Measuring Sub-Bandage Pressure
K. Desharnais[1], A. MacAlister[1], E. Kennedy[1], J. Tranquillo[1], D. Cavanagh[1], and M. Riedhammer[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Medical Center, Danville, PA*

PS – Sat – B – 191
A Novel Device to Collect Saliva from Children for DNA Analysis
N. M. Dold[1], N. J. Barnett[1], J. W. Baish[1], K. A. Bieryla[1], D. P. Cavanagh[1], G. S. Gerhard[2], and D. H. Ledbetter[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Clinic, Danville, PA*

PS – Sat – B – 192
Urinary Biomarkers In Infants Undergoing Cardiac Surgery
A. Abraham[1], M. Hazle[1], and N. B. Blatt[1]
[1]*University of Michigan, Ann Arbor, MI*

PS – Sat – B – 193
Label-Acquired Magnetorotation as a Novel Application of Magnetic Beads for Protein Detection
N. A. Shah[1], A. Hecht[2], and R. Kopelman[2]
[1]*University of Cincinnati, Cincinnati, OH,* [2]*University of Michigan, Ann Arbor, MI*

Track: Undergraduate Research
UNDERGRADUATE POSTERS

PS – Sat – B – 194
A New, Portable, Inexpensive, Bluetooth-Capable, Vital Signs Monitoring System
A. D. Herman[1], M. J. Ballintyn[1], D. Kaputa[1], J. Enderle[1], and C. Goliber[1]
[1]*University of Connecticut, Storrs, CT*

PS – Sat – B – 195
Engineering Viral Nanoparticles for Applications in Medicine: Therapeutic VNP Formulations for Applications in Photodynamic Cancer Therapy
M. Ryan[1], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Sat – B – 196
Coating Cortical Bone with Polyelectrolyte Multilayers Using the Polysaccharides Heparin and Chitosan
J. Mower[1], J. Almodovar[1], and M. Kipper[1]
[1]*Colorado State University, Fort Collins, CO*

PS – Sat – B – 197
Human Center of Pressure Responses to Subtle Sinusoidal Visual or Base-of-Support Movements
K. Kearns[1], and C. Robinson[1]
[1]*Clarkson University, Potsdam, NY*

PS – Sat – B – 198
Engineering Endothelial Cell Adhesion Using Cooperative Alginate Hydrogels
J. Hu[1], L. Rotenstein[1], M. Rafat[1], and D. Auguste[1]
[1]*Harvard University, Cambridge, MA*

PS – Sat – B – 199
A Model for Study of Structure-Function Relationships in Collagen/Fibrin Composites
T. Jones[1], H. Cirka[1], G. Pins[1], and K. Billiar[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

POSTER SESSION SatB

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

PS – Sat – B – 200
Design of Peptide Nucleic Acids for Site-Specific Gene Editing in Cystic Fibrosis
K. K. Anandalingam[1], N. A. McNeer[1], M. E. Egan[2], P. M. Glazer[2], and W. M. Saltzman[1]
[1]*Yale University, New Haven, CT,* [2]*Yale University School of Medicine, New Haven, CT*

PS – Sat – B – 201
The Effect of Mineral Microparticles on Dental Cell Differentiation
A. Farley[1], L. Datko[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

PS – Sat – B – 202
Absorption of Citrate-Coated Gold Nanoparticles by 3T3 Fibroblast Cells
N. Gilreath[1], L. Datko[2], D. Dean[2], and B. Glenn[2]
[1]*Governer's School for Science and Mathematics, Hartsville, SC,* [2]*Clemson University, Clemson, SC*

PS – Sat – B – 203
U-Tube Device for Extracting Small Numbers of Cells from Bulk Samples for Microfluidic Studies
K. Hockemeyer[1,2], J. Brady[1,3], K. Seale[1,3], and J. P. Wikswo[1,4]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt Institute for Integrative Biosystems Research and Education (VIIBRE), Nashville,* [3]*The Searle Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), Nashville, TN,* [4]*Vanderbilt Institute for Integrative Biosystems Research and Education (VIIBRE), Nashville, TN*

PS – Sat – B – 204
The Effect of Poly-a 2,8 Sialic Acid on the Morphologic and Genotypic Behaviors of Human Neural Stem Cells
C. L. Yama[1], S. Masand[1], and D. Shreiber[1]
[1]*Rutgers University, Piscataway, NJ*

PS – Sat – B – 205
Micropatterned Surfaces for the Control of Localization of Dictyostelium discoideum
L. Kolski[1], and C. Janetopoulos[1]
[1]*Vanderbilt University, Nashville, TN*

PS – Sat – B – 206
Targeted-Enzyme Complementation to Image Cancer Receptors
A. Verma[1], G. Ramamurthy[1], S. Chung[1], A-M. Broome[1], and J. P. Basilion[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS – Sat – B – 207
Fluorescent Staining and Image Analysis Optimization for Bone Marrow Stromal Cells Cultured on Magnesium Alloy
M. Foster[1], A. Brown[1], and C. Sfeir[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS – Sat – B – 208
Pure Uniaxial Stretch of Fibroblast-Populated Collagen gel
N-M. A. Anglin[1], M. H. Kural[1], and K. L. Billiar[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

PS – Sat – B – 209
A System for Controlled Study of Strain Gradients *in Vitro*
S. Robb[1], H. Cirka[2], and K. Billiar[2]
[1]*Robert Morris University, Moon Township, PA,* [2]*Worcester Polytechnic Institute, Worcester, MA*

PS – Sat – B – 210
Biomimetic Strategies in Hepatic Tissue Engineering
M. Green[1], S. Higbee[2], and J. West[2]
[1]*Morehouse College, Grovetown, GA,* [2]*Rice University, Houston, TX*

PS - Sat - B - 211
Effects of Electrical Stimulation on Functions of Bone Cells
M. E. Wechsler[1], C. M. Creecy[1], and R. Bizios[1]
[1]*The University of Texas at San Antonio, San Antonio, TX*

PS - Sat B - 212
Design and Implementation of a Digital Microfluidic Device with an SU-8 Dielectric
Samat Kabani[1], Junyu Lei[1], Brad Lubbers[2], and Franz Baudenbacher[2]
[1]*Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE),* [2]*Vanderbilt University, Biomedical Engineering, Nashville, TN, USA*

Saturday, October 15, 2011

10:30AM - 12:00PM

PLATFORM SESSION – SAT – 1

Track: Cellular and Molecular Engineering - OP - Sat - 1 - 1

Cell Motility - 1

Chairs: Jianping Fu, Andrea Gobin

Convention Center – Room 11

10:30AM Sat - 1 –1 – A

The Roles of N-cadherin in Three-Dimensional Cancer Cell Invasion

W. Shih[1], and S. Yamada[1]

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

10:45AM Sat - 1 –1 – B

Interstitial Flow and Fluid Shear Stress Affect Invasive and Metastatic Potentials of Tumor Cells

H. Qazi[1], and J. M. Tarbell[1]

[1]*The City College of New York, New York, NY*

11:00AM Sat - 1 –1 – C

Dissecting the Chemotactic Behavior of Dendritic Cells for immunotherapy

J. Teo[1], C. Nembrini[1], U. Haessler[1], and M. Swartz[1]

[1]*Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland*

11:15AM Sat - 1 –1 – D

Utilizing *In Vitro* Chemokine Gradients to Elucidate Lymphocyte Migration Mechanisms Within Lymph node Germinal Centers

C. S. Wallace[1], J. Chao[1], and W. M. Reichert[1]

[1]*Duke University, Durham, NC*

11:30AM Sat - 1 –1 – E

Cooperative Signaling in the Induction of Epithelial-Mesenchymal Transition

Q. K. Chen[1], K. Lee[1], C. Lui[1], D. C. Radisky[2], and C. M. Nelson[1]

[1]*Princeton University, Princeton, NJ,* [2]*Mayo Clinic, Jacksonville, FL*

11:45AM Sat - 1 –1 – F

Developing Nanofabricated Magnetic Field Concentrations for Biologically Inspired Directional Control of Swimming Magnetotactic Bacteria

L. M. Gonzalez[1], E. Zenkov[1], W. C. Ruder[2], S-Y. Chou[1], W. C. Messner[1], and P. R. LeDuc[1]

[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Boston University, Boston, MA*

Track: Cellular and Molecular Engineering - OP - Sat - 1 - 2

Molecular Engineering

Chairs: Henry Hess, David Odde

Convention Center – Room 12

10:30AM Sat - 1 –2 – A

Directing Receptor Interactions via Protein Engineering: Towards Enhanced Cardioprotective Therapy

S. M. Jay[1,2], J. F. Hawkins[1], E. Kurtagic[3], L. G. Griffith[3], and R. T. Lee[1]

[1]*Brigham and Women's Hospital, Cambridge, MA,* [2]*MIT, Cambridge,* [3]*MIT, Cambridge, MA*

10:45AM Sat - 1 –2 – B

Lentiviral Arrays for Quantitative Assessment of Genetic Pathways Affecting Stem Cell Differentiation

S. Alimperti[1], J. Tian[2], P. Lei[2], and S. Andreadis[2]

[1]*SUNY at Buffalo, North Tonawanda, NY,* [2]*SUNY at Buffalo, Amherst, NY*

11:00AM Sat - 1 –2 – C

Distinct Effects of Human and Salmon Thrombin on the Inflammatory Response of Mammalian Astrocytes

S. A. Oake[1], J. R. Smith[1], P. A. Janmey[1], and B. A. Winkelstein[1]

[1]*University of Pennsylvania, Philadelphia, PA*

11:15AM Sat - 1 –2 – D

Study of Glutathione Redox from Brain and Blood Sample in Alzheimer's Transgenic Mouse Model

C. Zhang[1], C. Rodriguez[2], M. Circu[2], J. Spaulding[1], T. Aw[2], and J. Feng[1]

[1]*Louisiana Tech University, Ruston, LA,* [2]*Louisiana State University Health Sciences Center, Shreveport, LA*

11:30AM Sat - 1 –2 – E

Vector Construction for Genetic Manipulation of Biogenic Nanoparticle Producing Bacteria

E. Zenkov[1], L. M. Gonzalez[1], W. C. Ruder[2], and P. R. LeDuc[1]

[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Boston University, Boston, MA*

11:45AM Sat - 1 –2 – F

ROCK Isoform Specific and Non-specific Regulation of Myofibroblast Phenotypes

B. G. Kelso[1], A. McQuade[1], and T. Wakatsuki[1]

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

Track: Drug Delivery Systems - OP - Sat - 1 - 3

Targeted Drug Delivery - 1

Chairs: James Cooper, Jordan Green

Convention Center – Room 13

10:30AM Sat - 1 –3 – A

Nanoimprint Lithography to Study Effect of Shape of Nanocarriers for Drug Delivery

R. Agarwal[1], M. C. Moore[1], V. Singh[1], S. Marshall[1], P. Jurney[1], L. Shi[1], S. V. Sreenivasan[1], and K. Roy[1]

[1]*university of Texas at Austin, Austin, TX*

10:45AM Sat - 1 –3 – B

A Novel Polyplex-Microbubble Hybrid for Improved Ultrasound-Mediated Plasmid DNA Delivery

S. R. Sirsi[1], S. L. Hernandez[2], L. Zielinski[2], H. Blomback[2], A. Koubaa[2], M. Synder[2], J. J. Kandel[2], D. J. Yamashiro[2], and M. A. Borden[1]

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

11:00AM Sat - 1 –3 – C

An Autocatalytic Drug Delivery Vehicle for Treating Cancer

N. Murthy[1,2]

[1]*Georgia Tech, Atlanta, GA,* [2]*Georgia Tech, Atlanta, GA*

11:15AM Sat - 1 –3 – D

Transferrin Mediated Drug Delivery to Brain

D. Chandra[1], and P. Karande[1]

[1]*Rensselaer Polytechnic Institute, Troy, NY*

11:30AM Sat - 1 –3 – E

Ultrasound-Assisted Brain Drug Delivery

G. K. Lewis[1], S. Guarion[1], A. Sarvazyan[2], and W. Olbricht[1]

[1]*Cornell University, Ithaca, NY,* [2]*Atrann Labs, West Trenton, NJ*

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

11:45AM Sat - 1 –3 – F
Skeletal Muscle Transfection via the Ultrasound-Microbubble-Targeted Delivery of Polyethyleneglycol (PEG)-Polyethylenimine (PEI) Nanocarriers: Influence of Microbubble Diameter and Acoustic Pressure
C. W. Burke[1], J. S. Suk[2], A. J. Kim[2], E. I. Alexander[1], A. L. Klibanov[1], J. Hanes[2], and R. J. Price[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*John Hopkins University, Baltimore, MD*

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Sat - 1 - 4

Multi-Scale and Multiphysics Modeling

Chairs: Mohammad R. Mofrad, Ravi Radhakrishnan
Convention Center – Room 14

10:30AM Sat - 1 –4 – A
Multiscale Damage Model for Collagen Gels
M. Hadi[1], E. Sander[2], and V. Barocas[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*University of Iowa, Iowa City, IA*

10:45AM Sat - 1 –4 – B
Biomechanical Characterization of Acute Otitis Media in Guinea Pig: Experimental Measurement and Finite Element Analysis
X. Zhang[1], X. Guan[1], C. Mowder[1], W. Young[2], and R. Z. Gan
[11]*University of Oklahoma, Norman, OK,* [2]*University of Texas at Dallas, Richardson, TX*

11:00AM Sat - 1 –4 – C
Multiscale Systems Biology for Patient-Specific Simulations of Thrombosis
M. H. Flamm[1], M. S. Chatterjee[1], T. Colace[1], and S. L. Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

11:15AM Sat - 1 –4 – D
Investigating the Presence of Diffusion Barriers During Macropincytosis Using Computational Methods
S-W. L. Chang[1], T. P. Welliver[1], J. A. Swanson[1], and J. J. Linderman[1]
[1]*University of Michigan, Ann Arbor, MI*

11:30AM Sat - 1 –4 – E
Computational Benchmarking of a State-of-the-Art Full Body Finite Element Model
D. P. Moreno[1,2], N. A. Vavalle[1,2], F. S. Gayzik[1,2], and J. D. Stitzel[1,2]
[1]*Virginia Tech – Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,* [2]*Wake Forest University School of Medicine, Winston-Salem, NC*

11:45AM Sat - 1 –4 – F
Finite Element Analysis of the Medial Meniscus During Rear End Low-Speed Collisions
D. J. Tichon[1], and D. R. Peterson[1]
[1]*University of Connecticut Health Center, Farmington, CT*

Track: Neural Engineering - OP - Sat - 1 - 5

Neural Trauma and Repair - I

Chairs: Dale Bass, Kacy Cullen
Convention Center – Room 15

10:30AM Sat - 1 –5 – A CME
Spinal PAR1 mRNA Expression Decreases Early After Painful Nerve Root Injury With Inflammation
J. Smith[1], S. Rothman[1], J. Black[1], and B. A. Winkelstein[1]
[1]*University of Pennsylvania, Philadelphia, PA*

10:45AM Sat - 1 –5 – B CME
Lumbar Puncture Delivery of Encapsulated Mesenchymal Stromal Cells Promotes Type II Immunotherapy in an Acute Model of Spinal Cord Injury
J. Barminko[1], J. H. Kim[1], X. Dong[1], A. Gray[1], R. Schloss[1], M. Grumet[1], and M. L. Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

11:00AM Sat - 1 –5 – C CME
Development of Injectable, Electrospun Fiber Hybrid Scaffolds for Directed Neural Regeneration
C. J. Rivet[1], and R. J. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

11:15AM Sat - 1 –5 – D CME
Variation in Temperature Affects Material Properties in *In Vivo* and *In Vitro* Porcine Brain: ARFI Imaging Study
C. A. Urbanczyk[1], M. L. Palmeri[1], N. M. Kloppenborg[1], N. C. Rouze[1], and C. R. Bass[1]
[1]*Duke University, Durham, NC*

11:30AM Sat - 1 –5– E CME
Rotational Head Acceleration and Velocity Associated with Concussion in Humans
S. Rowson[1], and S. M. Duma[1]
[1]*Virginia Tech, Blacksburg, VA*

11:45AM Sat - 1 –5 – F CME
Memantine and Estrogen Combination Therapy for Traumatic Brain Injury
M. R. Lamprecht[1], B. S. Elkin[1], and B. Morrison, III[1]
[1]*Columbia University, New York, NY*

Track: Orthopedic and Rehabilitation Engineering - OP - Sat - 1 - 6

Rehabilitation Engineering

Chairs: Hani Awad, Robert Mauck, Sarah Wilson
Convention Center – Room 16

10:30AM Sat - 1 –6 – A
Kinematic and Dynamic Gait Compensations in a Rat Joint Instability Model of Knee Osteoarthritis
K. D. Allen[1,2], B. A. Mata[3], M. A. Gabr[3], J. L. Huebner[3], V. B. Kraus[3], and L. A. Setton[3]
[1]*University of Florida, Gainesville, FL,* [2]*Duke University, Durham,* [3]*Duke University, Durham, NC*

10:45AM Sat - 1 –6 – B CME
A Kinematic and Kinetic Assessment of Multiple Baseball Pitching Techniques in College Aged Pitchers
M. J. Solomito[1], C. W. Nissen[1], and S. Ounpuu[1]
[1]*Connecticut Children's Medical Center, Farmington, CT*

11:00AM Sat - 1 –6 – C
In Vivo Biomechanics of Neural Mechanisms Influencing Stretching of the Muscle-Tendon Unit
T. L. Smith[1], P. Haubruck[2], K. R. Saul[3], W. F. Wiggins[1], J. D. Stitzel[3], B. P. Smith[1], C. J. Tuohy[1], and S. Mannava[1]
[1]*Wake Forest University School of Medicine, Winston Salem, NC,* [2]*University of Heidelberg School of Medicine, Heidelberg, Germany,* [3]*VT-WFU School of Biomedical Engineering and Sciences, Winston Salem, NC*

11:15AM Sat - 1 –6 – D
Wrist Kinetics and Ultrasound Measures of the Median Nerve during Computer Keyboarding
K. Toosi[1], and M. Boninger[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

11:30AM Sat - 1 –6– E
Step Kinematics of Rats Trained with Robotic Position Based Functional Electrical Stimulation
T. Chao[1], S. Askari[2], E. Partida[1], L. Conn[1], T. Lazzaretto[1], P. A. See[1], C. Chow[1], R. D. DeLeon[1], and D. S. Won[1]
[1]California State University, Los Angeles, CA, [2]University of Southern California, Los Angeles, CA

11:45AM Sat - 1 –6 – F
Biomechanical Assessment of the Rotational Aspect of the Spine in Patients with Scoliosis
M. J. Solomito[1,2], M. C. Lee[1], and D. R. Peterson[2]
[1]Connecticut Children's Medical Center, Farmington, CT, [2]University of Connecticut, Farmington, CT

Track: Biomedical Imaging and Optics - OP - Sat - 1 - 7

Optical Diagnostics, Sensing and Devices

Chairs: Erik Shapiro, Vo Van Toi
Convention Center – Room 17

10:30AM Sat - 1 –7 – A
Portable Lensless Pixel Super-Resolution Microscope for Telemedicine Applications
W. Bishara[1], U. Sikora[1], O. Mudanyali[1], T-W. Su[1], O. Yaglidere[1], S. Luckhart[2], and A. Ozcan[1,3]
[1]University of California, Los Angeles, CA, [2]University of California, Davis, CA, [3]California NanoSystems Institute, Los Angeles, CA

10:45AM Sat - 1 –7 – B
Lensfree Pixel-Super Resolution Microscopy using Wetting-films On a Chip
O. Mudanyali[1], W. Bishara[1], and A. Ozcan[1]
[1]UCLA, Los Angeles, CA

11:00AM Sat - 1 –7 – C
The Viability of Microprisms for Chronic *In-Vivo* Imaging
N. Gilfoy[1], R. N. Sachdev[1], and M. J. Levene[1]
[1]Yale University, New Haven, CT

11:15AM Sat - 1 –7 – D
Second Harmonic Holographic Imaging of Thick Fixed Muscle Tissue Slices
D. Smith[1], and R. Bartels[1]
[1]Colorado State University, Fort Collins, CO

11:30AM Sat - 1 –7– E
Near-IR Image-Guided Automated Venipuncture Device for Difficult Venous Access
A. I. Chen[1]
[1]Rutgers University, Holmdel, NJ

11:45AM Sat - 1 –7 – F
Clinical, Non-invasive *In Vivo* Diagnosis of Melanoma Skin Cancer using Multimodal Spectral Diagnosis (SD)
L. Lim[1], B. Nichols[1], N. Rajaram[1], J. S. Reichenberg[2], M. R. Migden[3], and J. W. Tunnell[1]
[1]University of Texas at Austin, Austin, TX, [2]University of Texas Southwestern Austin, Austin, TX, [3]University of Texas MD Anderson Cancer Center, Houston, TX

Track: New Frontiers in Biomedical Engineering - OP - Sat - 1 - 8

Cellular Mechanics & Computational Bioengineering- I

Chairs: Jeffrey Fredberg, Dhananjay Tambe
Convention Center – Room 21

10:30AM Sat - 1 –8 – A
Polymer Physics of Cytoskeletal and Extracellular Networks and Their Role in Mechanosensing
Q. Wen[1], F. J. Byfield[1], S-Y. Tee[1], and P. A. Janmey[1]
[1]University of Pennsylvania, Philadelphia, PA

11:00AM Sat - 1 –8 – B
Mechanoselective Intercellular Adhesion
D. Leckband[1], H. Tabdili[1], M. Langer[1], Q. Shi[1], and N. Wang[1]
[1]University of Illinois, Urbana, IL

11:15AM Sat - 1 –8 – C
Integration of Mechanical Signals Uncovers Non-linear Cell Structural Response
R. Steward Jr.[1], C-M. Cheng[2], and P. LeDuc[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Harvard University, Cambridge, MA

11:30AM Sat - 1 –8 – D
Mapping Large-Scale Protein Conformational Changes with Cysteine Shotgun-Mass Spectrometry
B. Chase[1], J. D. Pajerowski[2], J. Swift[1], D. Speicher[3], and D. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Merck, Whitehouse Station, NJ, [3]Wistar Institute, Philadelphia, PA

11:45AM Sat - 1 –8– E
Effect of Disease-causing Lamin A/C Mutations on Nuclear Structure and Mechanics
M. Zwerger[1], D. E. Jaalouk[1], M. L. Lombardi[1], P. Isermann[1,2], L. Wallrath[3], and J. Lammerding[1]
[1]Brigham and Women's Hospital/Harvard Medical School, Cambridge, MA, [2]Westfälische Wilhelms-Universität Münster, Münster, Germany, [3]University of Iowa, Iowa City, IA

Track: Tissue Engineering - OP - Sat - 1 - 9

Stem Cells and Tissue Engineering - I

Chairs: Todd McDevitt, Shelly Payton
Convention Center – Room 22

10:30AM Sat - 1 –9 – A
ECM Production by hESCs in Synthetic Fibrous Scaffolds Supports Self-Renewal and Differentiation
A. Carlson[1], C. A. Florek[1], J. J. Kim[1], J. Kohn[1], and P. V. Moghe[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

10:45AM Sat - 1 –9 – B
VEGF Induces Endothelial Differentiation of Amniotic Fluid Derived Stem Cells
O. M. Benavides[1], J. J. Petsche[1], K. J. Moise[2,3], A. Johnson[2,3], and J. G. Jacot[1,2]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX, [3]Baylor College of Medicine, Houston, TX

11:00AM Sat - 1 –9 – C
Neural Crest Stem Cells Undergo Specific Differentiation in Vascular and Neural Microenvironment During Regeneration
A. Wang[1], Z. Tang[1], Y. Zhu[1], Y. Li[1], and S. Li[1]
[1]UC Berkeley, Berkeley, CA

PLATFORM SESSIONS **Sat-1**

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

11:15AM Sat - 1 –9 – D
Perfusion-decellularization of Pancreatic Matrix- A Scaffold for Bio-engineered Pancreas
S. Goh[1], S. Bertera[2], and I. Banerjee[1,3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh School of Medicine, Pittsburgh, PA, [3]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

11:30AM Sat - 1 –9– E CME
Utilizing siRNA to Direct Mesenchymal Stem Cell Differentiation
M. Boutin[1], and D. S. Benoit[1]
[1]University of Rochester, Rochester, NY

11:45AM Sat - 1 –9 – F
Matrix Microarrays for Investigating Liver and Pancreas Specification of Stem Cells
D. Braga-Malta[1,2], N. E. Reticker-Flynn[1], E. Lehtola[1], C. Lobato da Silva[2], J. Sampaio Cabral[2], S. N. Bhatia[1,3], and G. H. Underhill[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Instituto Superior Técnico, Lisboa, Portugal, [3]The Howard Hughes Medical Institute, Cambridge, MA

Track: Devices: Nano to Micro - OP - Sat - 1 - 10*

Biomaterial Immunoengineering

Chairs: Tarek Fahmy, Darrel Irvine
Convention Center – Room 23

10:30AM Sat - 1 –10 – A
Novel Malaria Vaccine Nanoparticles Elicit Robust Humoral Responses Mediated by CD4 Helper T Cells
J. J. Moon[1], H. Suh[1], A. Yadava[2], and D. Irvine[1,3]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Walter Reed Army Institute of Research, Silver Spring, MD, [3]Howard Hughes Medical Institute, Chevy Chase, MD

10:45AM Sat - 1 –10 – B
Force Generation and Invasion of T Cells Into Micro Pillar Arrays
K. T. Bashour[1], S. Ghassemi[1], J. Hone[1], and L. Kam[1]
[1]Columbia University, New York, NY

11:00AM Sat - 1 –10 – C
Effects of Material Properties and Antigen Release Rate on Vaccination Efficacy
A. L. Siefert[1], S. L. Demento[2], A. Trivellas[1], and T. M. Fahmy[1]
[1]Yale University, New Haven, CT, [2]Unilever, Trumbull, CT

11:15AM Sat - 1 –10 – D
Immunostimulatory Effects of Gold Nanoparticle Mediated Photothermal Ablation
L. Kennedy[1], A. Bear[2,3], J. Young[1], J. Mattos Almeida[1], A. Foster[2,3], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]The Methodist Hospital and Texas Children's Hospital, Houston

11:30AM Sat - 1 –10 – E
Nanotopography Guided Migration of T Cells
K. Kwon[1], K-Y. Suh[2], and J. Doh[1]
[1]POSTECH, Pohang, Gyeongbuk, Korea, Republic of, [2]Seoul National University, Seoul, Korea, Republic of

11:45AM Sat - 1 –10 – F
Nanoparticle-based Cytokine Delivery to CD4 T Cells Induces TFHDifferentiation and Increased Antibody Responses
D. A. Christian[1], J. S. Silver[1], J. Park[2], T. M. Fahmy[2], and C. A. Hunter[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Yale University, New Haven, CT

Track: Devices: Nano to Micro - OP - Sat - 1 - 11*

Biosensors, Bio-Interfaces and Implantable Devices - I

Chairs: Shyamsunder Erramilli
Convention Center – Room 24

10:30AM Sat - 1 –11 – A
Amperometric Biosensor for Direct Ventricular CSF Lactate Detection
C. Li[1], and R. Narayan[2]
[1]Feinstein Institute for Medical Research, Manhasset, NY, [2]Hofstra North Shore LIJ School of Medicine, Manhasset, NY

10:45AM Sat - 1 –11 – B
Needle-Implantable Biosensing Platform Using Photovoltaic Powering and Optical Communication Links
R. Croce Jr.[1], S. Vaddiraju[1,2], L. Zuo[3], M. Roknshariki[3], K. Zhu[3], M. Gogna[1], P. Gogna[1], F. Papadimitrakopoulos[1], S. Islam[3], and F. Jain[1]
[1]University of Connecticut, Storrs, CT, [2]Biorasis Inc, Storrs, CT, [3]University of Tennessee, Knoxville, TN

11:00AM Sat - 1 –11 – C
Fabrication and Integration of Biomimetic Tactile Sensor Arrays with Force, Microvibration and Thermal Modalities
C-H. Lin[1,2], J. Fishel[1,2], Z. Su[1], and G. E. Loeb[1,2]
[1]USC, Los Angeles, CA, [2]Syntouch LLC, Los Angeles, CA

11:15AM Sat - 1 –11 – D
Simultaneous Detection of Two Cell-secreted Cytokines Using Electrochemical Microfluidic Aptamer-based Biosensor
Y. Liu[1], and A. Revzin[1]
[1]UC Davis, Davis, CA

11:30AM Sat - 1 –11 – E
Spatial Feature Extraction for a Biomimetic Tactile Sensor
Z. Su[1], C-H. Lin[1,2], Y. Li[1], and G. E. Loeb[1,2]
[1]University of Southern California, Los Angeles, CA, [2]Syntouch LLC, Los Angeles, CA

11:45AM Sat - 1 –11 – F
Highly Sensitive Continuous Flow Micro-calorimeter for Biological Applications
V. L. Kopparthy[1,2], S. M. Tangutooru[1,2], G. G. Nestorova[1,2], R. Gumma[1,2], and E. J. Guilbeau[1,2]
[1]Louisiana Tech University, Ruston, LA, [2]Center for Biomedical Engineering and Rehabilitation Science, Ruston, LA

Track: Cardiovascular Engineering - OP - Sat - 1 - 12

Cardiovascular Stents and Devices - I

Chairs: Danny Bluestein, Barry Lieber
Convention Center – Room 25

10:30AM Sat - 1 –12 – A
Influence of the Perfusion Technique on Performance Characteristics of a Machine Perfusion Device for Long-Term Preservation of Human Hearts
M. L. Cobert[1], M. Peltz[1], L. M. West[1], M. E. Merritt[2], and M. E. Jessen[1]
[1]University of Texas Southwestern Medical Center, Dallas, TX, [2]University of Texas Southwestern Medical Center Advanced Imaging Research Center, Dallas, TX

10:45AM Sat - 1 –12 – B
Minimally Invasive Delivery of a Conditioned Urinary Bladder Matrix Stent Device
T. M. McGloughlin[1,2], A. J. Cloonan[1,2], B. J. Doyle[1,2], and A. Callanan[1,2]
[1]Centre for Applied Biomedical Engineering Research, Limerick, Ireland, [2]Materials and Surface Science Institute, Limerick, Ireland

11:00AM Sat - 1 –12 – C
Computer Modeling for the Prediction of Thoracic Aortic Stent Graft Collapse
S. Pasta[1,2], O. Dur[3], J-S. Cho[4], K. Pekkan[3], and D. A. Vorp[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Fondazione RiMED, Palermo, Italy, [3]Carnegie Mellon University, Pittsburgh, PA, [4]University of Pittsburgh, Pittsburgh, PA

11:15AM Sat - 1 –12 – D
Post-Deployment Geometry of Braided Stents
C. Sadasivan[1], L. Peeling[1], D. J. Fiorella[1], H. H. Woo[1], and B. B. Lieber[1]
[1]Stony Brook University, Stony Brook, NY

11:30AM Sat - 1 –12 – E
Blood Derived Endothelial Progenitor Cells Prevent Thrombosis in a Large Animal Model
A. Jantzen[1], H. E. Achneck[1], F-H. Lin[1], W. O. Lane[1], and G. A. Truskey[1]
[1]Duke University, Durham, NC

11:45AM Sat - 1 –12 – F
Thrombogenicity Comparison of Rotary Blood Pumps: Micromed Heartassist 5 and Thoratec Heartmate II
W-C. Chiu[1], G. Girdhar[1], M. Xenos[1], Y. Alemu[1], J. Sheriff[1], B. Lynch[2], J. Jesty[3], M. Slepian[4], S. Einav[1], and D. Bluestein[1]
[1]Dept. of Biomedical Engineering, Stony Brook University, Stony Brook, NY, [2]MicroMed Cardiovascular Inc., Houston, TX, [3]Division of Hematology, School of Medicine, Stony Brook University, Stony Brook, NY, [4]Sarver Heart Center, University of Arizona, Tucson, AZ

Track: Translational Biomedical Engineering - OP - Sat - 1 - 13

Clinical and Translational Research and Science in Biomedical Engineering III

Chair: Davood Tashayyod
Convention Center – Room 26

Sponsored by Coulter Foundation – This session will serve as a companion to the previous Coulter Foundation session (on Friday) and will consist of another three invited Principle Investigators who have participated in the Coulter Translational Research Award program. This is a national competition which provides "gap" funding to reduce the risks in the technology and make it market ready. Awardees will make presentations on their projects and lessons learned about translational research. There will be ample time allowed for a Question/Answer period with the three panelists.

- Panelists – TBD

Track: Respiratory Engineering - OP - Sat - 1 - 14

Microfluidics and Tissue Engineering Constructs for the Lung

Chairs: Donald Gaver, Samir Ghadiali
Convention Center – Room 27

10:30AM Sat - 1 –14 – A
Development and Characterization of a 3D Microtissue Culture Model of Airway Smooth Muscle
A. R. West[1], N. Zaman[1], D. Cole[1], M. Walker[1], W. Legant[2], C. Chen[2], E. Cowley[1], and G. Maksym[1]
[1]Dalhousie University, Halifax, NS, Canada, [2]University of Pennsylvania, Philadelphia, PA

10:45AM Sat - 1 –14 – B
Development of Simultaneous μ-PIV/Shadowgraph Technique for Flow-field Analysis Near the Unsteady Pulsatiling Semi-infinite Bubble Tip Under the Influence of Pulmonary Surfactant
E. Yamaguchi[1], B. J. Smith[1], and D. P. Gaver[1]
[1]Tulane University, New Orleans, LA

11:00AM Sat - 1 –14 – C
Variable Stretch Increases mRNA Expression of Collagen and LOX in Lung Fibroblasts in a 3D Matrix
J. Imsirovic[1], C. Rich[2], J. Buczek-Thomas[2], M. Nugent[1,2], and B. Suki[1]
[1]Boston University College of Engineering, Boston, MA, [2]Boston University School of Medicine, Boston, MA

11:15AM Sat - 1 –14 – D
Mucus Clearance on a Chip: Clearance vs. Gravity
J. Carpenter[1], S. Lynch[1], S. Klystra[1], M. Millard[2], and R. Superfine[1]
[1]UNC, Chapel Hill, NC, [2]St Louis University, St Louis, MO

11:30AM Sat - 1 –14 – E
Effects of Decellularized Lung Matrix on a Type II Epithelium-Enriched Cell Population
E. A. Calle[1], K. C. Darwin[1], T. H. Petersen[2], and L. E. Niklason[1]
[1]Yale University, New Haven, CT, [2]Duke University, Durham, NC

11:45AM Sat - 1 –14 – F
A Microfluidics-Based Artificial Lung Device with High Oxygen Transfer Rates
T. Kniazeva[1], J. Hsiao[1], J. L. Charest[1], and J. T. Borenstein[1]
[1]Draper Laboratory, Cambridge, MA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Saturday, October 15, 2011

1:30PM - 3:00PM

PLATFORM SESSION – SAT – 2

Track: Cellular and Molecular Engineering - OP - Sat - 2 - 1

Cell Motility - II

Chairs: Sanjay Kumar, Maribel Vazquez

Convention Center – Room 11

1:30PM Sat - 2–1 – A

Endothelial Cells Enhance Migration of Meniscus Cells in a Three-Dimensional Hydrogel System

X. Yuan[1], G. M. Eng[1], D. E. Arkonac[1], C. T. Hung[1], and G. Vunjak-Novakovic[1]

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

1:45PM Sat - 2–1 – B

Cell Motility is Required for the Stabilization of Microtubules

A. D. Rape[1], W. Guo[1], and Y-L. Wang[1]

[1]*Carnegie Mellon University, Pittsburgh, PA*

2:00PM Sat - 2–1 – C

Simultaneous Investigation of Biophysical & Biochemical Cues on Directional Cell Motility

J. H. Slater[1], and J. L. West[1]

[1]*Rice University, Houston, TX*

2:15PM Sat - 2–1 – D

Transforming Growth Factor Enhances the Chemotactic Migration of Neonatal Cells of Glial Lineage

R. A. Able[1], C. Ngnabeuye[1], E. C. Holland[2], and M. Vazquez[1]

[1]*The City College of New York, New York, NY,* [2]*Memorial Sloan Kettering Cancer Center, New York, NY*

2:30PM Sat - 2–1 – E

Stiffness of the Nucleoskeleton Limits Cell Migration Through Tight Spaces

E. A. Booth-Gauthier[1], B. Ladoux[2], and K. Dahl[1]

[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Université Paris Diderot and CNRS, Paris, France*

2:45PM Sat - 2–1 – F

Collective Cell Guidance by Cooperative Intercellular Forces

D. T. Tambe[1], C. C. Hardin[2], T. E. Angelini[3], K. Rajendran[1], C. Y. Park[1], X. Serra-Picamal[4], E. H. Zhou[1], M. Zaman[5], D. A. Weitz[3], J. P. Butler[1], J. J. Fredberg[1], and X. Trepat[4]

[1]*Harvard School of Public Health, Boston, MA,* [2]*Massachusetts General Hospital, Boston, MA,* [3]*Harvard University, Cambridge, MA,* [4]*University of Barcelona, Barcelona, Spain,* [5]*Boston University, Boston, MA*

Track: Cellular and Molecular Engineering - OP - Sat - 2 - 2

Cell Mechanics - II

Chairs: Kevin Costa, Hayden Huang

Convention Center – Room 12

1:30PM Sat - 2–2 – A

Multiple Methods for Measuring Cell Mechanical Properties

J. Michaelson[1], and H. Huang[1]

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

1:45PM Sat - 2–2 – B

De-homogenized Elastic Properties of Heterogeneous Materials in AFM Indentation Experiments

J-J. Lee[1,2], E. U. Azeloglu[1], and K. D. Costa[1]

[1]*Mount Sinai School of Medicine, New York, NY,* [2]*The City College of New York, New York, NY*

2:00PM Sat - 2–2 – C

Indentation Analysis Method of Soft Bilayers Permits *In Situ* Measurements of Drosophila Myocardial Stiffness

G. Kaushik[1], A. Fuhrmann[1], A. Cammarato[2], and A. J. Engler[1]

[1]*University of California, San Diego, La Jolla, CA,* [2]*Sanford-Burnham Medical Research Institute, La Jolla, CA*

2:15PM Sat - 2–2 – D

Characterizing Mechanical Heterogeneity in Vascular Smooth Muscle Cells

S. Deitch[1], and D. Dean[1]

[1]*Clemson University, Clemson, SC*

2:30PM Sat - 2–2 – E

AFM Characterization of Endothelial Cell Cortex Stiffness

M. Johnson[1], R. Vargas-Pinto[1], and H. Gong[2]

[1]*Northwestern University, Evanston, IL,* [2]*Boston University School of Medicine, Boston, MA*

2:45PM Sat - 2–2– F

Cellular Mechanics in Response to Varying PLGA Scaffold Geometries

C. Ng[1], and A. S. Nain[1]

[1]*Virginia Tech, Blacksburg, VA*

Track: Drug Delivery Systems - OP - Sat - 2 - 3

Targeted Drug Delivery - II

Chairs: Edward Botchway, Eric Grovender

Convention Center – Room 13

1:30PM Sat - 2–3 – A

Implication of Particle-Cell Dynamics in Physiological Blood Flow on the Efficacy of Vascular-Targeted Drug Carriers

P. Charoenphol[1], and O. Eniola-Adefeso[2]

[1]*University of Michigan, Ann Arbor, MI,* [2]*Unversity of Michigan, Ann Arbor, MI*

1:45PM Sat - 2–3 – B

Synthesis and Characterization of Biodegradable Photostable Flourescent Polymer-Coated Magnetic Nanoparticles for Prostate Cancer Detection and Treatment

T. D. Kadapure[1,2], A. S. Wadajkar[1,2], Y. Zhang[1,2], W. Cui[2], J. Yang[1,2], and K. T. Nguyen[1,2]

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

2:00PM Sat - 2–3 – C

Investigation of Systemic Drug Delivery Applications for a Transferrin Variant

R. Y. Chiu[1], T. Tsuji[2], C. T. Liu[1], A. B. Mason[3], and D. T. Kamei[1]

[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*Nagoya University, Nagoya, Japan,* [3]*University of Vermont College of Medicine, Burlington, VT*

2:15PM Sat - 2–3 – D

Targeted Nucleic Acid Delivery to Neuronal Cells Using Tet1-modified HPMA-oligolysine Copolymers

D. S. Chu[1], R. N. Johnson[1], and S. H. Pun[1]

[1]*University of Washington, Seattle, WA*

2:30PM Sat - 2–3 – E

A New Platform to Investigate Nanoparticle Targeting to the Endothelium

B. Zern[1], A-M. Chacko[1], E. Simone[1], and V. Muzykantov[1]

[1]*University Of Pennsylvania, Philadelphia, PA*

2:45PM Sat - 2–3– F
Bioinspired Drug Delivery: Cooperative Adhesion via Temperature Responsive Antibody Organization
D. Almeda[1], J-O. You[1], and D. Auguste[1]
[1]Harvard University, Cambridge, MA

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Sat - 2 - 4

Engineering Therapeutics Through Simulation and Computation

Chairs: Sarah Noble, Ann Rundell, Jonathan Sachs
Convention Center – Room 14

1:30PM Sat - 2–4 – A
A New Method for Detection of Central Apnea in Premature Infants
H. Lee[1], B. Vergales[2], A. Paget-Brown[2], C. Rusin[2], J. R. Moorman[2], J. Kattwinkel[2], and J. Delos[1]
[1]College of William and Mary, Williamsburg, VA, [2]University of Virginia, Charlottesville, VA

1:45PM Sat - 2–4 – B
A Computational Approach to Estimating Brain Microvascular Blood Flows from Partial Two-Photon Microscopy Data
N. Cornelius[1], J. Sunwoo[1], P. Doerschuk[1], and C. Schaffer[1]
[1]Cornell University, Ithaca, NY

2:00PM Sat - 2–4 – C
Identification of a Novel Target for Breast Cancer by Exploring Gene Switches on a Genome Scale
M. Wu[1], L. Liu[1], and C. Chan[1]
[1]Michigan State University, East Lansing, MI

2:15PM Sat - 2–4 – D
Inter-cellular Signaling Network in Tumor Microenvironment: An Evolutionary Dynamics Modeling
Y. Wu[1], and R. Fan[1,2]
[1]Yale University, New Haven, CT, [2]Yale Cancer Center, New Haven, CT

2:30PM Sat - 2–4 – E
The Relationship Between Oscillator Model Parameters and Experimental Magnesium Concentration in Hippocampal Seizure Networks: A Preliminary Spike Train Analysis
W. Chen[1], D. O. Cahoy[1], J. G. Tasker[2], D. F. Barkard[1], and A. W. Chiu[1]
[1]Louisiana Tech University, Ruston, LA, [2]Tulane University, New Orleans, LA

2:45PM Sat - 2–4– F
Modeling of Heterogeneous Populations of Self-Renewing Embryonic Stem Cells
J. Wu[1], and E. S. Tzanakakis[1]
[1]SUNY-Buffalo, Buffalo, NY

PLATFORM SESSIONS **Sat-2**

Track: Neural Engineering - OP - Sat - 2 - 5

Neural Trauma and Repair - II

Chairs: Kit Parker, Beth Winkelstein
Convention Center – Room 15

1:30PM Sat - 2–5 – A
Blast-Induced Traumatic Brain Injury Model using Submerged Acute Rat Brain Tissue Slices
M. Sarntinoranont[1], S. J. Lee[1], J. Kwon[1], Y. Hong[1], M. A. King[1], D. F. Moore[2], and G. Subhash[1]
[1]University of Florida, Gainesville, FL, [2]Tulane University, New Orleans, LA

1:45PM Sat - 2–5 – B
Response of Organotypic Brain Slice Cultures Following Exposure to Short-Duration Overpressure
A. Kepsel[1], and P. J. VandeVord[1,2]
[1]Wayne State University, Detroit, MI, [2]Detroit VAMC, Detroit, MI

2:00PM Sat - 2–5 – C
Neural Cell Biophysical Responses in Blast-Induced Traumatic Brain Injury
C. J. Mietus[1], K. D. Browne[1], X. Meng[2], J. A. Wolf[1], D. H. Smith[1], S. Adeeb[3], U. Kawoos[3], A. Rosen[2], M. Chavko[3], and D. Cullen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Drexel University, Philadelphia, PA, [3]Naval Medical Research Center, Silver Spring, MD

2:15PM Sat - 2–5 – D CME
A Novel Method for Exposing Tissue Cultures to Blast Overpressure for Determining Injury Criteria
M. B. Panzer[1], C. R. Bass[1], B. P. Capehart[2,3], B. Morrison[4], and D. F. Meaney[5]
[1]Duke University, Durham, NC, [2]Duke University School of Medicine, Durham, NC, [3]Durham VA Medical Center, Durham, NC, [4]Columbia University, New York, NY, [5]University of Pennsylvania, Philadelphia, PA

2:30PM Sat - 2–5 – E CME
Blast Overpressure Induces Disruption of Brain Endothelial Monolayer Integrity
C. D. Hue[1], M. B. Panzer[2], C. R. Bass[2], D. F. Meaney[3], and B. Morrison III[1]
[1]Columbia University, New York, NY, [2]Duke University, Durham, NC, [3]University of Pennsylvania, Philadelphia, PA

2:45PM Sat - 2–5– F
Brain Injury Risk From Primary Blast
K. A. Rafaels[1], C. R. Bass[2], M. B. Panzer[2], R. S. Salzar[3], W. A. Woods[3], S. Feldman[3], T. Walilko[4], R. Kent[3], B. P. Capehart[5], J. K. Shridharani[2], and A. Toman[6]
[1]Army Research Laboratory, APG, MD, [2]Duke University, Durham, NC, [3]University of Virginia, Charlottesville, VA, [4]Applied Research Associates, Littleton, CO, [5]Durham VA Medical Center, Durham, NC, [6]Technical Support Working Group, Washington, DC

Track: Biomedical Engineering Education* and Outreach - OP - Sat - 2 - 6

K-12 Outreach

Chairs: Robert Gettens, Suzanne Olds
Convention Center – Room 16

1:30PM Sat - 2–6 – A
A Content/Design Model for K-12 Education: First Results with Bioengineering
C. M. Zwart[1], J. R. Ryan[1], J. E. Houston[1], M. K. Brenn[2], S. Mulhern[2], C. K. Pierce[1], W. Wang[1], D. H. Frakes[1], and T. G. Ganesh[1]
[1]Arizona State University, Tempe, AZ, [2]Kyrene School District, Phoenix, AZ

1:45PM Sat - 2–6 – B
Teaching K-12 STEM with Bioengineering Design
K. L. Billiar[1], T. Oliva[2], J. Hubelbank[3], and T. Camesano[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Forest Grove Middle School, Worcester, MA, [3]EvalConsult, Sudbury, MA

2:00PM Sat - 2–6 – C
An Engineering Outreach Activity for K-12 Students Involving Robotic Surgery
M. Rust[1], R. Gettens[1], R. Beach[1], and J. Cezeaux[1]
[1]Western New England College, Springfield, MA

2:15PM Sat - 2–6 – D
Novel High School Inquiry Exercise on Ionic Bonding and Tissue Engineering using Alginate Hydrogels
R. D. Bowles[1], J. Saroka[2], S. Archer[1], and L. J. Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Lansing High School, Ithaca, NY

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

2:30PM Sat - 2–6 – E
Altered Micro-Environmental Conditions Lead to Congenital Defects
R. A. Gould[1], P. R. Buskohl[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

2:45PM Sat - 2–6– F
Promoting Vehicle Safety and Science Initiative in Outreach Events with CIREN
K. L. Loftis[1,2], K. M. Kennedy[2], D. Joyner[2], and J. D. Stitzel[1,2]
[1]*VT-WFU Center for Injury Biomechanics, Winston-Salem, NC,* [2]*WF-VT Crash Injury Research and Engineering Network, Winston-Salem, NC*

*Supported by WHITAKER International Fellows and Scholars Program

Track: Biomedical Imaging and Optics - OP - Sat - 2 - 7

Visualization Strategies at the Interface

Chairs: Sergio Fantini, Fiorenzo Omenetto
Convention Center – Room 17

1:30PM Sat - 2–7 – A
3D Computational Imaging for Cell Dynamics Visualization and Cell Identification- *Invited*
B. Javidi[1], and A. Anand[2]
[1]*University of Connecticut, Storrs, CT,* [2]*MS University of Baroda, Vadodara, India*

2:00PM Sat - 2–7 – B
Engineering Protein Beacons for Live-cell Imaging of HIV-1 CA Protein
H. Shen[1], P. Spearman[2], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

2:15PM Sat - 2–7 – C
In Vivo Imaging of Stimulus-evoked Fast Intrinsic Optical Signals in Frog Retina
Q. Zhang[1], Y. Li[1], and X. Yao[1]
[1]*University of Alabama Birmingham, Birmingham, AL*

2:30PM Sat - 2–7 – D
Multispectral Imaging of Cutaneous Tissue Oxygen
J. Huang[1], E. Qin[1], J. Xu[1], C. Sen[1], R. Xu[1], D. Allen[2], and J. Hwang[2]
[1]*The Ohio State University, Columbus, OH,* [2]*National Institute of Standards and Technology, Gaithersburg, MD*

2:45PM Sat - 2–7 – E
Micro-Optic Lenses for *In Vivo* Mouse Brain Imaging: A Short, High-NA, Versatile Alternative
T. A. Murray[1], and M. J. Levene[1]
[1]*Yale University, New Haven, CT*

Track: New Frontiers in Biomedical Engineering - OP - Sat - 2 - 8

Cellular Mechanics & Computational Bioengineering- II

Chairs: Kris Dahl, Mohammed Mofrad
Convention Center – Room 21

1:30PM Sat - 2–8 – A
Nuclear Pore Complex: A Mysterious Gateway to the Nucleus
R. Moussavi-Baygi[1], R. Karimi[1], and M. R. Mofrad[1]
[1]*University of California, Berkeley, CA*

1:45PM Sat - 2–8 – B
How Dynein and Microtubules Rotate the Nucleus
J. Wu[1], K. C. Lee[1], R. B. Dickinson[1], and T. P. Lele[1]
[1]*University of Florida, Gainesville, FL*

2:00PM Sat - 2–8 – C
Dissecting the Active Gel Dynamics of the Microtubule Cytoskeleton in Living Cells
B. D. Hoffman[1], K. M. Van Ciitters[2], A. W. Lau[3], and J. C. Crocker[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*Florida Atlantic University, Boca Raton, FL*

2:15PM Sat - 2–8 – D
A Motor-Clutch Model for Substrate Stiffness Sensing: Parametric Analysis and Application to Glioma Cell Force Transmission
B. Bangasser[1], K. Opoku[1], E. Tuzel[2], C. Chan[1], B. Klank[1], S. Rosenfeld[3], and D. Odde[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Worcester Polytechnic Inst, Worcester, MA,* [3]*Columbia University, New York, NY*

2:30PM Sat - 2–8 – E
Quantification of Membrane Stress and Stress Fluctuations Using the Fluorescence Lifetime of an Embedded Lipophilic Molecular Rotor
P. J. Butler[1], H. S. Muddana[2], and T. Tabouillot[3]
[1]*Penn State University, University Park, PA,* [2]*University of California San Diego, La Jolla, CA,* [3]*University of Michigan, Ann Arbor, MI*

2:45PM Sat - 2–8– F
CD82 Tetraspanins Regulate IL-8 Secretion via Downstream NF-kappa B Signaling
P. Khanna[1], C-Y. Chung[2], G. P. Robertson[2], and C. Dong[1]
[1]*Pennsylvania State University, University Park, PA,* [2]*Pennsylvania State University Medical Center, Hershey, PA*

Track: Tissue Engineering - OP - Sat - 2 - 9

Stem Cells and Tissue Engineering - II

Chairs: Hojae Bae, Michelle Khine
Convention Center – Room 22

1:30PM Sat - 2–9 – A
IL-8 Signaling by Endothelial Cells Enhances Glioblastoma Stem Cell Migration and Growth
D. W. Infanger[1], B. S. Lopez[2], I. Ekladious[1], D. Gursel[3], J. A. Boockvar[3], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY,* [2]*Colorado State University, Fort Collins, CO,* [3]*Weill Cornell Medical College of Cornell University, New York City, NY*

1:45PM Sat - 2–9 – B
In Vitro and *In Vivo* Characterization of Bioactive Osteogenic Sponges with Mesenchymal Stem Cells, Nanoporous Silicon Enclosures, Peptide Amphiphiles and Platelet-rich Plasma for Accelerated Fracture Repair
M. B. Murphy[1], D. Blashki[2], R. M. Buchanan[1,3], D. Fan[1], E. DeRosa[1], R. Shah[4], S. I. Stupp[4], B. K. Weiner[1], P. J. Simmons[2], M. Ferrari[1], and E. Tasciotti[1]
[1]*The Methodist Hospital Research Institute, Houston, TX,* [2]*The University of Texas Health Science Center at Houston, Houston, TX,* [3]*The University of Texas at Austin, Austin, TX,* [4]*Northwestern University, Chicago, IL*

2:00PM Sat - 2–9 – C
Endothelial Cell ECM Produced Under Dynamic Conditions Promotes Neural Stem Cell Proliferation
K. S. Ellison[1], C. M. Zwolinski[1], M. R. Newman[1], N. DePaola[2], and D. M. Thompson[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Illinois Institute of Technology, Chicago, IL*

2:15PMSat - 2–9 – D
Role of Cell Microenvironment in Non-viral Gene Delivery
A. Dhaliwal[1], M. Maldonado[1], C. Lin[1], and T. Segura[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

2:30PM Sat - 2–9 – E
Characterization and Design of Hydrodynamic Culture Formats for Scalable Bioprocessing of Embryonic Stem Cells
M. A. KINNEY[1], J. L. WILSON[1], R. SAEED[1], B. ZAKHARIN[2], A. GLEZER[2], AND T. C. MCDEVITT[1,2]
[1]Georgia Institute of Technology & Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

2:45PM Sat - 2–9– F
Nanostructured Scaffolds For Regulating Osteogenic Differentiation Of Induced Pluripotent Stem Cells
K. E. HAMMERICK[1], F. K. KASPER[1], AND A. G. MIKOS[1]
[1]Rice University, Houston, TX

Track: Devices: Nano to Micro - OP - Sat - 2 - 10*

Nano to Micro Fluidic Technologies - I

Chairs: Rong Fan, Christopher Love
Convention Center – Room 23

1:30PM Sat - 2–10 – A
Clinical Microchips to Assess Multifunctionality of Single T Cells
R. FAN[1], C. MA[2], Y. LU[1], H. AHMAD[2], AND J. R. HEATH[2]
[1]Yale University, New Haven, CT, [2]California Institute of Technology, Pasadena, CA

1:45PM Sat - 2–10 – B
Two-dimensional Paper Network Format for Amplified Lateral Flow Assays
E. FU[1], T. LIANG[1], J. HOUGHTALING[1], S. RAMACHANDRAN[1], S. RAMSEY[2], B. LUTZ[1], AND P. YAGER[1]
[1]University of Washington, Seattle, WA, [2]Seattle BioMed, Seattle, WA

2:00PM Sat - 2–10 – C
Cancer Cell Isolation from Blood Using a High Throughput Contactless Dielectrophoresis (cDEP) Microfluidic Device
A. SALMANZADEH[1], H. SHAFIEE[1], M. A. STREMLER[1], AND R. V. DAVALOS[1]
[1]Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

2:15PM Sat - 2–10 – D
Inertial Focusing Streak Behavior In Alternating Dean Flows
J. MARTEL[1], AND M. TONER[2]
[1]Harvard University, Cambridge, MA, [2]Massachusetts General Hospital, Boston, MA

2:30PM Sat - 2–10 – E
A Microfabricated Device to Study Lymphatic-Mediated Tumor Metastasis
M. PISANO[1], G. MERNIER[1], K. BARBEE[2], P. RENAUD[1], AND M. A. SWARTZ[1]
[1]École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, [2]Drexel University, Philadelphia, PA

2:45PM Sat - 2–10– F
Resonant Fluidic Circuits for Sound-controlled Point-of-Care Diagnostics
R. H. PHILLIPS[1], R. SHAH[1], J. BROWNING[1], AND B. R. LUTZ[1]
[1]University of Washington, Seattle, WA

**Supported by an unrestricted educational grant from* Boston Scientific — Defining tomorrow, today.

Track: Devices: Nano to Micro - OP - Sat - 2 - 11

Biosensors, Bio-Interfaces and Implantable Devices - II

Chairs: Shyamsunder Erramilli
Convention Center – Room 24

1:30PM Sat - 2–11 – A
A Strain Sensor for Monitoring Bladder Volume
S. K. THAKAR[1], H. CAO[1], M. SHETH[1], M. OSENG[1], T. FU[2], AND J-C. CHIAO[1]
[1]University of Texas at Arlington, Arlington, TX, [2]Centennial High School, Frisco, TX

1:45PM Sat - 2–11 – B CME
Development of immunoFET Sensitive in Physiologic Salt for Monitoring Transplant Rejection Status
P. CASAL[1], X. WEN[1], S. GUPTA[1], T. NICHOLSON III[1], Y. WANG[1], W. LU[1], AND S. C. LEE[1]
[1]The Ohio State University, Columbus, OH

2:00PM Sat - 2–11 – C
Silk Based Stabilization and Immobilization of FRET Protein Glucose Nano Sensors
K. TSIORIS[1], D. KAPLAN[1], AND F. OMENETTO[1]
[1]Tufts University, Medford, MA

2:15PM Sat - 2–11 – D
Transcutaneous Energy Transfer by an Electric Field
Z. ABZUG[1], T. JOCHUM[1], AND P. WOLF[1]
[1]Duke University, Durham, NC

2:30PM Sat - 2–11 – E
Control of Cell Phenotype with Sub-Micron Level Vibrations
H. R. HOLMES[1], E. L. TAN[1], E. VLAISAVLJEVICH[1], W. PACES[1], K. G. ONG[1], AND R. M. RAJACHAR[1]
[1]Michigan Technological University, Houghton, MI

2:45PM Sat - 2–11– F
Evaluating The Effect of Antigen-Presenting Surface Charge on CD8+ T cell Response Using Biofunctionalized Carbon Nanotube Substrates
T. R. FADEL[1], N. LI[1], E. HONG[1], F. SHARP[1], M. LOOK[1], G. HALLER[1], L. PFEFFERLE[1], S. JUSTESEN[2], AND T. M. FAHMY[1]
[1]Yale University, New Haven, CT, [2]University of Copenhagen, Copenhagen, Denmark

Track: Cardiovascular Engineering - OP - Sat - 2 - 12

Cardiovascular Stents and Devices - II

Chairs: Danny Bluestein, Barry Lieber
Convention Center – Room 25

1:30PM Sat - 2–12 – A
In Vitro Quantification of Pore Spaces Left After Endovascular Coiling of Intracranial Aneurysms
C. SADASIVAN[1], R. DHOLAKIA[1], B. PATEL[1], J. BROWNSTEIN[1], M. S. ELHAMMADY[2], H. FARHAT[2], M. A. AZIZ-SULTAN[2], D. J. FIORELLA[1], H. H. WOO[1], AND B. B. LIEBER[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Miami, Miami, FL

1:45PM Sat - 2–12 – B
Drug Eluting Fully Bioresorbable Vascular Scaffold Development for the Treatment of Coronary Artery Disease
Y. WANG[1], AND X. MA[1]
[1]Abbott Vascular, Santa Clara, CA

2:00PM Sat - 2–12 – C
An Electrospun Biodegradable, Elastic Wrap With Paclitaxel Release for Arterial Vein Graft Applications
Y. HONG[1], Q. WANG[1], W. HE[1], L. SOLETTI[1], D. A. VORP[1], AND W. R. WAGNER[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

2:15PM Sat - 2–12 – D
Novel *In Vitro* Model to Elucidate Mechanisms of Acquired von Willebrand's Disease with LVAD Support
S. Dassanayaka[1], M. A. Sobieski[1], S. C. Koenig[1], S. C. D'Souza[1], and C. R. Bartoli[1]
[1]*University of Louisville, Louisville, KY*

2:30PM Sat - 2–12 – E
Acute Hemodynamic Responses to Partial vs. Full Unloading of the Heart with a Continuous-Flow LVAD
C. R. Bartoli[1], K. R. Brittain[1], M. Sobieski[1], G. A. Giridharan[1], W. Wead[1], R. D. Dowling[2], M. S. Slaughter[1], S. D. Prabhu[1], and S. C. Koenig[1]
[1]*University of Louisville, Louisville, KY,* [2]*SCR Inc., Louisville, KY*

2:45PM Sat - 2–12– F
Alterations in von Willebrand Factor and Platelets with Mechanical Circulatory Support
T. A. Snyder[1], D. A. Horstmanshof[1], A. Ghuloom[1], K. E. Nelson[1], and J. W. Long[1]
[1]*Integris Baptist Medical Center, Oklahoma City, OK*

Track: Undergraduate Research - OP - Sat - 2 - 13

Undergraduate Research - I

Chairs: Delphine Dean , Jiro Nagatomi
Convention Center – Room 26

1:30PM Sat - 2–13 – A
Tissue Phantom Testing of Fluorocoxib for Topical Delivery Using a Dual-Axis Confocal Microscope
A. Balasubramanian[1], H. Ra[2], C. H. Contag[2], L. J. Marnett[3], and M. J. Uddin[3]
[1]*Rice University, Houston, TX,* [2]*Stanford University School of Medicine, Stanford, CA,* [3]*Vanderbilt University School of Medicine, Nashville, TN*

1:40PM Sat - 2–13 – B
Detection of Dendritic Activity Using MRI
W. Jay[1], R. Wijesinghe[1], and B. Roth[2]
[1]*Ball State University, Muncie, IN,* [2]*Oakland University, Rochester, MI*

1:50PM Sat - 2–13 – C
Field Portable Reflection and Transmission Microscopy
O. Yaglidere[1], M. Lee[1], and A. Ozcan[1]
[1]*UCLA, Los Angeles, CA*

2:00PM Sat - 2–13 – D
Portable Lens-free Tomographic Microscope
U. Sikora[1], S. O. Isikman[1], W. Bishara[1], O. Yaglidere[1], J. Yeah[1], and A. Ozcan[1]
[1]*UCLA, Los Angeles, CA*

2:10PM Sat - 2–13 – E
OCTivat: Optical Coherence Tomography Image Visualization and Analysis Toolkit
G. C. Linderman[1], Z. Wang[1], H. G. Bezerra[2], M. A. Costa[2], and A. M. Rollins[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Harrington-McLaughlin Heart & Vascular Institute, University Hospitals Case Medical Center, Cleveland, OH*

2:20PM Sat - 2–13 – F
Nanofibrous Texturizing for Prevention of Bacterial Infection on Biomedical Implants
H. Barber[1], M. Kargar[1], J. Haught[1], A. Nain[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

2:30PM Sat - 2–13 – G
Detection of Waterborne Pathogens Using Electrochemical DNA Sensors for Resource Limited Settings

Saturday, October 15, 2011

3:15PM - 4:45PM
PLATFORM SESSION – SAT – 3

Track: Cellular and Molecular Engineering - OP - Sat - 3 - 1

Cell Adhesion

Chairs: Dennis Discher, Eda Yildirim-Ayan
Convention Center – Room 11

3:15PM Sat - 3–1 – A
Role of Microtubules in Focal Adhesion Turnover in Vascular Endothelial Cells Exposed to Shear Stress
S. Chubachi[1], N. Sakamoto[1], and M. Sato[1]
[1]Tohoku University, Sendai, Miyagi, Japan

3:30PM Sat - 3–1 – B
Nano-Manipulation of a Nascent Focal Adhesion Reveals Dynamic Mechanical Coupling to Membrane Rafts
D. E. Fuentes[1], and P. J. Butler[1]
[1]The Pennsylvania State University, University Park, PA

3:45PM Sat - 3–1 – C
High-throughput Analysis of Cell Adhesion via Parallel Manipulation of Individual Microbeads
Z. Peng[1,2], D. Myers[1,2], W. Chen[2], T. Sulchek[2], P. Hesketh[2], and W. Lam[1,2]
[1]Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

4:00PM Sat - 3–1 – D
Control of Fibronectin Conformation and Stiffness with a Conducting Polymer Surface
A. M. Wan[1], E. M. Chandler[1], D. Gourdon[1], C. Fischbach[1], G. G. Malliaras[2], and C. K. Ober[1]
[1]Cornell University, Ithaca, NY, [2]École Nationale Supérieure des Mines de Saint-Étienne, Gardanne, France

4:15PM Sat - 3–1 – E
Characterization of E-selectin Ligands on HNSCC cells
M. M. Burdick[1], J. R. Marshall[1], N. M. Reynolds[1], V. S. Shirure[1], J. V. Hawes[1], and S. M. Wood[1]
[1]Ohio University, Athens, OH

4:30PM Sat - 3–1– F
Diacylglycerol Kinase Zeta Negatively Regulates CXCR4-Stimulated T Lymphocyte Firm Arrest to ICAM-1 under Shear Flow
D. Lee[1], J. Kim[1], M. T. Beste[2], M. J. Riese[1], G. A. Koretzky[1], and D. A. Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Massachusetts Institute of Technology, Cambridge, MA

Track: Cellular and Molecular Engineering - OP - Sat - 3 - 2

Cell Mechanics - III

Chairs: Eric Darling, Alexander Spector
Convention Center – Room 12

3:15PM Sat - 3–2 – A
Stretch-Induced Cytoskeletal Remodeling in Three Dimensional Tissue Constructs
S-L. Lee[1], A. Nekouzadeh[1], K. M. Pryse[1], G. Genin[1], and E. Elson[1]
[1]Washington University in Saint Louis, Saint Louis, MO

3:30PM Sat - 3–2 – B
Cancer Cell Force Evolves Throughout the *In Vitro* Cancer Metastasis
X. Tang[1], T. B. Kuhlenschmidt[1], M. S. Kuhlenschmidt[2], and T. A. Saif[3]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]College of Veterinary Medicine, Urbana, IL, [3]College of Engineering, Urbana, IL

3:45PM Sat - 3–2 – C
Confocal Reflectance Microscopy: An Accessible and Adaptable Method to Examine 3D Cell Force Generation From Matrix Remodeling
S. P. Carey[1], C. M. Kraning-Rush[1], J. P. Califano[1], B. N. Mason[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

4:00PM Sat - 3–2 – D
Glycated Collagen Impairs Endothelial Cell Response To Cyclic Stretch
D. S. Figueroa[1], S. F. Kemeny[1], and A. M. Clyne[1]
[1]Drexel University, Philadelphia, PA

4:15PM Sat - 3–2 – E
Collagen IV and Mechanical Property of Human Cord Blood-Derived Endothelial Cells in Coculture with Mesenchymal Stem Cells
L. Cao[1], J. Li[1], and G. A. Truskey[1]
[1]Duke University, Durham, NC

4:30PM Sat - 3–2– F
Fully Three-dimensional Traction Force Microscopy: Quantification of Forces Exerted by Cells Encapsulated Within Three-dimensional Matrices
W. R. Legant[1], J. S. Miller[1], B. L. Blakely[1], D. M. Cohen[1], G. M. Genin[2], and C. S. Chen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Washington University in St. Louis, St. Louis, MO

Track: Neural Engineering - OP - Sat - 3 - 3

Prosthetics Engineering

Chairs: Todd Coleman, Robert Kirsch, Kevin Otto
Convention Center – Room 15

3:15PM Sat - 3–3 – A
On the Use of Pigs for Neuroprosthetic Device Development CME
D. A. Borton[1], N. Agha[1], M. Yin[1], J. Aceros[1], C. Bull[1], W. Patterson[1], A. Nurmikko[1], and J. Donoghue[1]
[1]Brown University, Providence, RI

3:30PM Sat - 3–3 – B
Development of Optically Communicated Intracortical Neural Recording System with Fiber Optics CME
S. Park[1], Y. K. Song[2], D. Borton[1], W. Patterson[1], M. Yin[1], J. Aceros[1], C. Bull[1], and A. V. Nurmikko[1]
[1]Brown University, Providence, RI, [2]Seoul National University, Suwonsi, Korea, Republic of

3:45PM Sat - 3–3 – C
Reach Direction and Orientation are Not Separately Controlled Channels in Macaque Cortex CME
G. Bodeen[1], J. Aguayo[1], and J. He[1]
[1]Arizona State University, Tempe, AZ

4:00PM Sat - 3–3 – Dw
BrainGate2 Desktop: Towards the Development of Viable Cortically-Controlled Communication Interfaces for Individuals with Locked-in Syndrome CME
D. Bacher[1], N. Y. Masse[2], B. Jarosiewicz[2,3], K. Tringale[1], J. D. Simeral[3,4], J. P. Donoghue[2,3], and L. R. Hochberg[5,6]
[1]Engineering, Brown University, Providence, RI, [2]Neuroscience, Brown University, Providence, RI, [3]Rehab R&D Service, Dept Veterans Affairs Med. Ctr., Providence, RI, [4]Engineering, Neuroscience, Brown University, Providence, RI, [5]Rehab R&D Service, Dept Veterans Affairs Med. Ctr.; Engineering, Brown University, Providence, RI, [6]Neurol., Massachusetts Gen. Hosp.; Neurol., Brigham & Women's, Spaulding Rehabil. Hosp., Harvard Med, Boston, MA

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CME = Credit approved

4:15PM Sat - 3–3 – E
EEG Correlates of the Zwicker Tone CME
P. DEGUZMAN[1], AND L. C. PARRA[1]
[1]*City College of New York, New York, NY*

4:30PM Sat - 3–3– F
EEG and Eye Tracking During Free-Viewing Visual Search CME
J. F. DIAS[1], AND L. C. PARRA[1]
[1]*City College of New York, New York, NY*

Track: Biomedical Engineering Education* and Outreach - OP - Sat - 3 - 4

Pedagogical Innovations in Biomedical Engineering

Chairs: Shivaun Archer, Eric Kennedy
Convention Center – Room 16

3:15PM Sat - 3–4 – A
Assessing the Impact of Cross-Disciplinary Biomedical Engineering Laboratories on Student Learning
J. D. GASSERT[1], O. IMAS[1], J. LAMACK[1], AND L. FENNIGKOH[1]
[1]*Milwaukee School of Engineering, Milwaukee, WI*

3:30PM Sat - 3–4 – B
Using Problem-Based Learning to Enhance Experimental Design Skills in a Biotransport Laboratory
M. POOL[1], T. EUSTAQUIO[1], S. JEWETT[1], R. MADANGOPAL[1], K. STUART[1], A. E. RUNDELL[1], AND A. PANITCH[1]
[1]*Purdue University, West Lafayette, IN*

3:45PM Sat - 3–4 – C
Sequenced Technical Writing Assignments Aid Problem Solving and Conceptual Learning in BME Labs
K. L. BILLIAR[1], AND L. D. HIGGINS[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

4:00PM Sat - 3–4 – D
A Tissue Engineering Interactive Workshop: Measuring Conceptual Knowledge and Interest
E. MCCAVE[1,2], AND K. BURG[1,2]
[1]*Clemson University, Clemson, SC,* [2]*Institute for Biological Interfaces of Engineering, Clemson, SC*

4:15PM Sat - 3–4 – E
Biomedical Equipment Technician (BMET) and Biomedical Technician's Assistant (BTA) curriculum in Rwanda
J. P. COOPER[1], M. FINLEY[2], AND R. MALKIN[2]
[1]*Engineering World Health, Durham, NC,* [2]*Duke University, Durham, NC*

4:30PM Sat - 3– 4 – F
Implementation of a One-Semester Graduate Course in BioDesign
C. K. DRUMMOND[1], S. BASU[2], G. WNEK[1], AND A. HDEIB[3]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cleveland Clinic Foundation, Cleveland, OH,* [3]*University Hospitals Case Medical Center, Cleveland, OH*

*Supported by WHITAKER International Fellows and Scholars Program

Track: Biomedical Imaging and Optics - OP - Sat - 3 - 5

Biomedical Optics Frontiers

Chairs: Sergio Fantini, Fiorenzo Omenetto
Convention Center – Room 17

3:15PM Sat - 3–5 – A
Myocardial Strain by Speckle Tracking Echocardiography: Current Applications and Future Directions- *Invited*
B. A. LIN[1]
[1]*Yale University, New Haven, CT*

3:45PM Sat - 3–5 – B
Two-photon Imaging Reveals Multiple Autofluorescence Sources in the Outer and Inner Retina
R. LU[1], Y. LI[1], AND X. YAO[1]
[1]UNIVERSITY OF ALABAMA BIRMINGHAM, BIRMINGHAM, AL

4:00PM Sat - 3–5 – C
Wide-field Lensless Fluorescent Microscopy
A. F. COSKUN[1], T-W. SU[1], I. SENCAN[1], AND A. OZCAN[1,2]
[1]*Univ of California Los Angeles, Los Angeles, CA,* [2]*California NanoSystems Institute, Los Angeles, CA*

4:15PM Sat - 3–5 – D
Novel Biomedical and Biological Applications using Lab-based Multi-scale CT System
K. SEN SHARMA[1], D. M. VASILESCU[2], A. S. KIZHAKKE PULIYAKOTE[2], E. A. HOFFMAN[2], T. ANDRIC[1], J. W. FREEMAN[1], C. MARKERT[3], J. D. SCHIFFBAUER[1], S. XIAO[1], H. YU[3], AND G. WANG[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA,* [2]*University of Iowa, Iowa City, IA,* [3]*Wake Forest University Health Sciences, Winston-Salem, NC*

4:30PM Sat - 3–5 – E
Visualization of Cardiac and Respiration-dependent Pulsatile Hemodynamics in Cerebral Microvessels
T. P. SANTISAKULTARM[1], N. R. CORNELIUS[1], N. NISHIMURA[1], P. C. DOERSCHUK[1], W. L. OLBRICHT[1], AND C. B. SCHAFFER[1]
[1]*Cornell University, Ithaca, NY*

Track:Tissue Engineering - OP - Sat - 3 - 6

Tissue Engineering and Mechanobiology

Chairs: Kaiming Ye, Jun Liao
Convention Center – Room 22

3:15PM Sat - 3–6 – A
Controlling Cardiac Differentiation of Stem Cells Via Changes in Stiffness and Composition of ECM
J. I. RESNIKOFF[1], C. WILLIAMS[1], AND L. D. BLACK[1]
[1]*Tufts University, Medford, MA*

3:30PM Sat - 3–6 – B
Fibronectin Assembly and Composite Matrix Remodeling Within a Micropatterned Model of Tissue Morphogenesis
W. R. LEGANT[1,2], C. S. CHEN[1], AND V. VOGEL[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Swiss Federal Institute of Technology Zurich (ETHZ), Zurich, Switzerland*

3:45PM Sat - 3–6 – C
AFM Characterization of Adhesive and Structural Properties of Thin Films of Mussel Foot Protein-1
R. SCHUR[1], H. SCHOPPER[1], AND D. GOURDON[1]
[1]*Cornell University, Ithaca, NY*

4:00PM Sat - 3–6 – D CME
Regeneration of Cartilage and Mineralized Tissue During Healing of Critically Sized Defects Following Treatment with Artificial Periosteum
S. R. Moore[1], U. Knothe[2], S. Milz[3]and M. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH, [3]Ludwig Maximillian University, Munich, Germany

4:15PM Sat - 3–6 – E
hMSCs Change Pattern of Mechanically Induced ATP Release During Chondrogenesis
I. I. Gadjanski[1], and G. Vunjak-Novakovic[1]
[1]Columbia University, NY, NY

4:30PM Sat - 3– 6 – F
Embryonic Ligament and Tendon Cell Response to Mechanical Loading Varies with Developmental Stage
J. P. Brown[1], V. Finley[1], and C. Kuo[1]
[1]Tufts University, Medford, MA

Track: Devices: Nano to Micro - OP - Sat - 3 - 7*

Nano to Micro Fluidic Technologies - II

Chairs: Rong Fan, Christopher Love
Convention Center – Room 23

3:15PM Sat - 3–7 – A
Three Dimensional Microfluidic System for Screening Anti-Metastatic Cancer Drugs
Y. K. Park[1,2], C. S. Khoon[3], T-Y. Tu[1], I. J. Clement[3], and R. D. Kamm[1,2]
[1]Singapore-MIT Alliance for Research and Technology Center, Singapore, Singapore, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]National University of Singapore, Singapore, Singapore

3:30PM Sat - 3–7 – B
Microfluidic Separation of Viruses from Blood Cells Based on Intrinsic Transport Processes
C. Zhao[1], and X. Cheng[1]
[1]Department of Materials Science and Engineering and Program of Bioengineering, Lehigh University, Bethlehem, PA

3:45PM Sat - 3–7 – C
Capture Amplification of Rare Circulating Tumor Cells
A. N. Hoang[1,2], A. Shah[3,4], S. L. Stott[1,2], and M. Toner[1,2]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, [2]Shriners Hospital for Children, Boston, MA, [3]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [4]Harvard-MIT Health Science Technology, Boston, MA

4:00PM Sat - 3–7 – D
Pluronic Additives: Advancing Droplets in Digital Microfluidics
S. Au[1,2], P. Kumar[3], and A. Wheeler[1,4]
[1]University of Toronto, Toronto, ON, Canada, [2]Donnelly Centre for Cellular and Biomolecular Research, Toronto, Canada, [3]Indian Institute of Technology Madras, Chennai, India, [4]University of Toronto, Toronto, Canada

4:15PM Sat - 3–7 – E
Nanoliter Droplet System for Cell Vitrification
X. Zhang[1], I. Khimji[1], L. Shao[1], H. Safaee[1], K. Desai[1], H. O. Keles[1], U. A. Gurkan[1], E. Kayaalp[2], A. Nureddin[1], R. M. Anchan[3], R. L. Maas[3], and U. Demirci[1,4]
[1]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [2]Jamaica Hospital Medical Center, Queen, NY, [3]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [4]Harvard-Massachusetts Institute of Technology Health Sciences and Technology, Cambridge, MA

w4:30PM Sat - 3– 7 – F
Magnetic Separation of CD4+ T Lymphocyte by Streptavidin Functionalized NiSi NWs
D. Kim[1], G. Kim[1], J. Seol[1], S. Lee[1], J. Hyung[1], M. Lee[1], and S. Lee[1]
[1]SPRC, Jeonju, Korea, Republic of

Track: Devices: Nano to Micro - OP - Sat - 3 - 8

Biomems and Nanotech for Cellular Engineering

Chairs: Utkan Demirci, Anjelica Gonzalez
Convention Center – Room 24

3:15PM Sat - 3–8 – A
Synergistic Regulation of Cell Function by Matrix Rigidity and Adhesive Pattern
S. Weng[1], and J. Fu[1]
[1]University of Michigan, Ann Arbor, MI

3:30PM Sat - 3–8 – B
Microfluidic Device for the Controlled Loading of Cryoprotectants to Ooocyte with Linear and Complex Profiles
Y. Heo[1], H-J. Lee[2], B. A. Hassell[1], D. Irimia[1], T. L. Toth[3], H. Elmoazzen[1], and M. Toner[1]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [2]Vincent Center for Reproductive Biology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, [3]Vincent Obstetrics and Gynecology Services, Massachusetts General Hospital, Harvard Medical School, Boston, MA

3:45PM Sat - 3–8 – C
Investigating Dendritic Filopodial Dynamics in Highly Controlled Microenvironments
A. Jain[1], L. J. Millet[1], and M. U. Gillette[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

4:00PM Sat - 3–8 – D
Microfluidic Based Random Cell Docking System for Planar Type Patch Clamp
H. Lim[1], D. Keum[1], B-C. Suh[1], and S. Moon[1]
[1]DGIST, Daegu, Korea, Republic of

4:15PM Sat - 3–8 – E
A Microfluidic - Layered Device for High Throughput Drug Screening
Z. Dereli Korkut[1], and S. Wang[1]
[1]City College of New York, New York, NY

4:30PM Sat - 3– 8 – F
Sorting of Cells from Micropatterned Surfaces Using Photochemical Reaction
D-S. Shin[1], J. Seo[1], and A. Revzin[1]
[1]University of California, Davis, CA

PS = Poster Session
OP = Oral Presentation
CME = Credit approved

Track: Cardiovascular Engineering - OP - Sat - 3 - 9

Cardiac Electrophysiology, Structure, Function

Chairs: Jeff Jacot, Kara McKloskey, Kit Parker

Convention Center – Room 25

3:15PM Sat - 3–9 – A

The Influence of Microscale Heterogeneity in the Collagen Network of Rabbit Ventricular Subepicardium on Action Potential Propagation

C. E. Bourgeois[1], and A. E. Pollard[1]

[1]*University of Alabama at Birmingham, Birmingham, AL*

3:30PM Sat - 3–9 – B

Retrieval Analysis of Implantable Pacemakers and Cardioverter-defibrillators

J. Hanzlik[1], J. D. Patel[1,2], J. Ochoa[3], B. B. Pavri[4], A. Greenspon[4], and S. M. Kurtz[1,2]

[1]*Drexel University, Philadelphia, PA,* [2]*Exponent Inc, Philadelphia,* [3]*Exponent Inc, Seattle, WA,* [4]*Thomas Jefferson University Hospital, Philadelphia, PA*

3:45PM Sat - 3–9 – C

Stereo Optical Mapping of Membrane Potential and Epicardial Deformation in Isolated Swine Hearts

G. S. Waits[1], and J. M. Rogers[1]

[1]*University of Alabama at Birmingham, Birmingham, AL*

4:00PM Sat - 3–9 – D

Direct Mechanical Ventricular Actuation Support in Severe Heart Failure and Fibrillation

B. A. Schmitt[1], K. M. Swartzmiller[1], D. B. Reynolds[1], R. J. Darner[1], and M. P. Anstadt[1]

[1]*Wright State University, Dayton, OH*

4:15PM Sat - 3–9 – E

Relaxin Reverses Cardiac Fibrosis in Aged Spontaneously Hypertensive Rats

J. L. Haney[1], W. Xiang[1], W. G. Witham[1], C. McTiernan[1], K. McGaffin[1], D. S. Schwartzman[1], and S. G. Shroff[1]

[1]*University of Pittsburgh, Pittsburgh, PA*

4:30PM Sat - 3– 9 – F

Heart on a Chip: Measuring Structure-Function Relationships of Cardiac Tissues

A. Grosberg[1], P. W. Alford[1], M. L. McCain[1], A. P. Nesmith[1], and K. K. Parker[1]

[1]*Disease Biophysics Group, Harvard University, Cambridge, MA*

Track: Undergraduate Research - OP - Sat - 3 - 10

Undergraduate Research - II

Chairs: Delphine Dean, Jiro Nagatomi

Convention Center – Room 26

3:15PM Sat - 3–10 – A

Do Age and Sex-Related Variations in Material Properties Predict Prevalence of Knee Osteoarthritis?

A. E. Morrell[1], J. Inzana[1], P. D. Funkenbusch[1], and A. L. Lerner[1]

[1]*University of Rochester, Rochester, NY*

3:25PM Sat - 3–10 – B

Spinal Metabotropic Glutamate Receptor-3 Increases Immediately Following Painful Facet Joint Injury

J. Black[1], C. Weisshaar[1], J. Elliott[2], and B. A. Winkelstein[1]

[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Northwestern University, Chicago, IL*

3:35PM Sat - 3–10 – C

Osteoblast and Fibroblast Response to Zirconia and Titania Polymer Hybrids

N. P. Thomas[1], N. Tran[1,2], J. Jarrell[2,3], R. Hayda[1,2], and C. T. Born[1,2]

[1]*Department of Orthopaedics, Rhode Island Hospital, Alpert Medical School of Brown University, Providence, RI,* [2]*Rhode Island Hospital, Providence, RI,* [3]*BioIntraface, Providence, RI*

3:45PM Sat - 3–10 – D

Engineering Viral Nanoparticles for Applications in Medicine: Developing CPMV as a Platform for Efficient Intracellular Delivery of Therapeutics

K. Chen[1], and N. F. Steinmetz[1]

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

3:55PM Sat - 3–10 – E

Engineering Viral Nanoparticles for Applications in Medicine: Bioconjugation of TMV and Its *In Vivo* Properties

N. Ayat[1], and N. F. Steinmetz[1]

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

4:05PM Sat - 3–10 – F

High-throughput Quantification of Angiogenic Receptors for Cancer Models

P. C. Li[1], P. Imoukhuede[1], and A. S. Popel[1]

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

4:15PM Sat - 3–10 – G

Enhancing Host Stem Cell Recruitment for *In Situ* Muscle Regeneration

J. T. DeLeon[1,2], I. K. Ko[1], S. J. Lee[1], J. J. Yoo[1], and A. Atala[1]

[1]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC,* [2]*Wake Forest University, Winston-Salem, NC*

4:25PM Sat - 3–10 – H

Direct Differentiation of Mouse Induced Pluripotent Stem Cells into Nucleus Pulposus-Like Cells

E. J. Lee[1], L. Jing[1], N. Christoforou[1], Y. Mou[1], K. W. Leong[1], L. A. Setton[1], and J. Chen[1]

[1]*Duke University, Durham, NC*

4:35PM Sat - 3–10 – I

Porous PDMS Anchor Design for Cell-Derived Vascular Tissue Tubes

K. S. Burnette[1], A. Z. Reidinger[2], and M. W. Rolle[2]

[1]*Mercer University, Lithonia, GA,* [2]*Worcester Polytechnic Institute, Worcester, MA*

AUTHOR INDEX

KEY TO PROGRAM CODES:

PS – Poster Session

OP – Oral Presentation

PS-Thurs-A-175 = Poster Session on Thursday in the A session (morning) – poster board 175

Thurs - A - Thursday morning - 10/13
Thurs - B - Thursday afternoon - 10/13
Fri - A - Friday morning - 10/14
Fri - B - Friday afternoon - 10/14
Sat - A - Saturday morning - 10/15
Sat - B - Saturday morning - 10/15

OP-Thurs-1-4B – Oral Presentation on 10/13 (Thursday) in the 4th session in the 1st platform time – 2nd presenter

Thurs-1 Thursday Platform Session 1 – 10:30am – 12noon
Thurs-2 Thursday Platform Session 2 – 1:30pm – 3:00pm
Thurs-3 Thursday Platform Session 3 – 4:00pm – 5:30pm
Fri-1 Friday Platform Session 1 – 10:30am – 12noon
Fri-2 Friday Platform Session 2 – 1:30pm – 3:00pm
Fri-3 Friday Platform Session 3 – 4:00pm – 5:30pm
Sat-1 Saturday Platform Session 1 – 10:30am – 12noon
Sat-2 Saturday Platform Session 2 – 1:30pm – 3:00pm
Sat-3 Saturday Platform Session 3 – 3:15pm – 4:45pm

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CONNECTICUT CONVENTION CENTER

Connecticut Convention Center

100 Columbus Boulevard

Hartford, CT 06103

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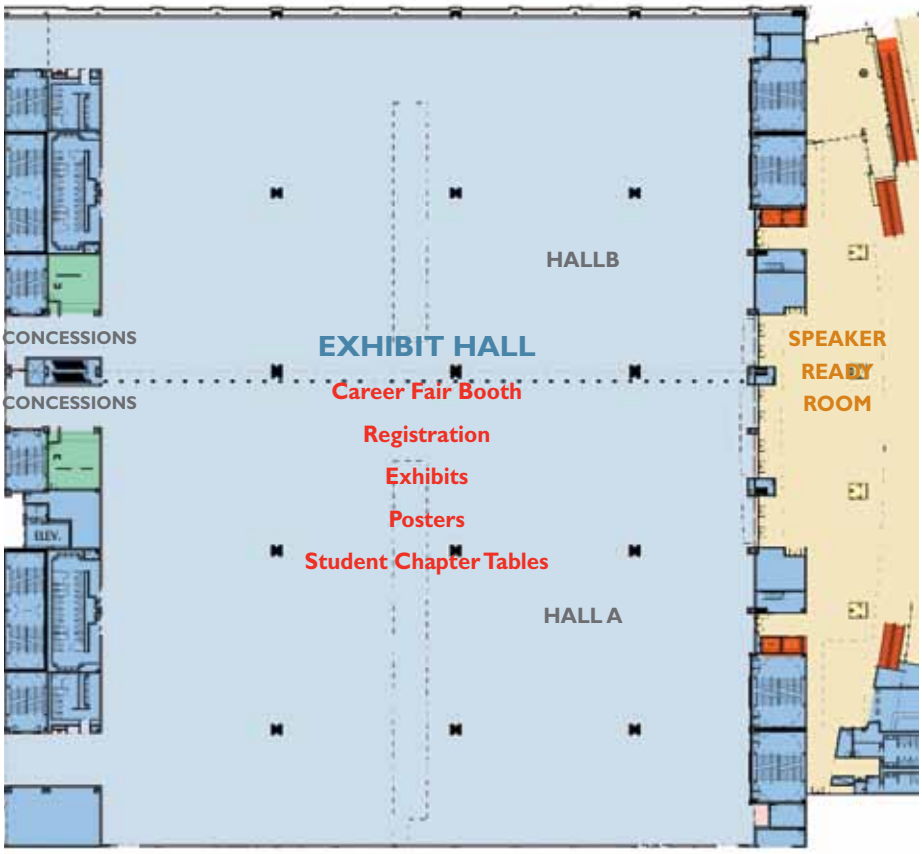
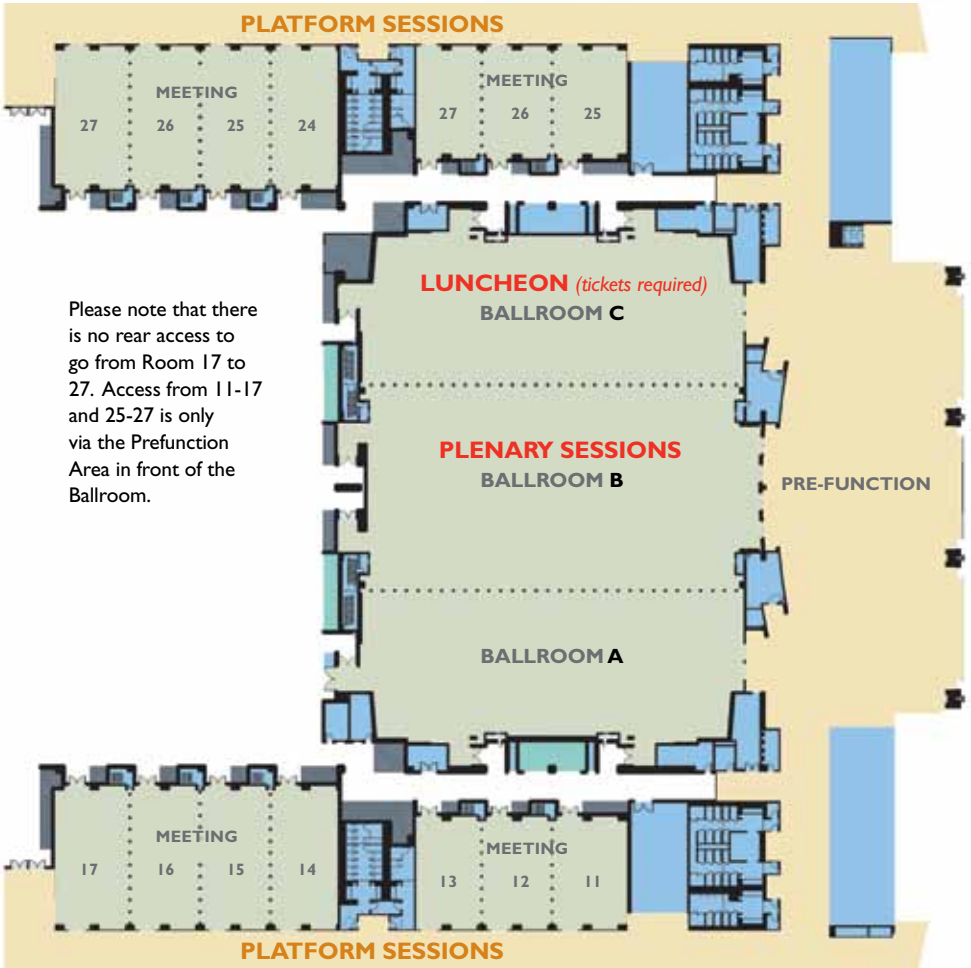
LEVEL 3
CONVENTION CENTER
EXHIBITION HALLS





Please note that there is no rear access to go from Room 17 to 27. Access from 11-17 and 25-27 is only via the Prefunction Area in front of the Ballroom.

LEVEL 3
CONVENTION CENTER
BALLROOM AND
MEETING SPACE

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Hartford, CT 06103

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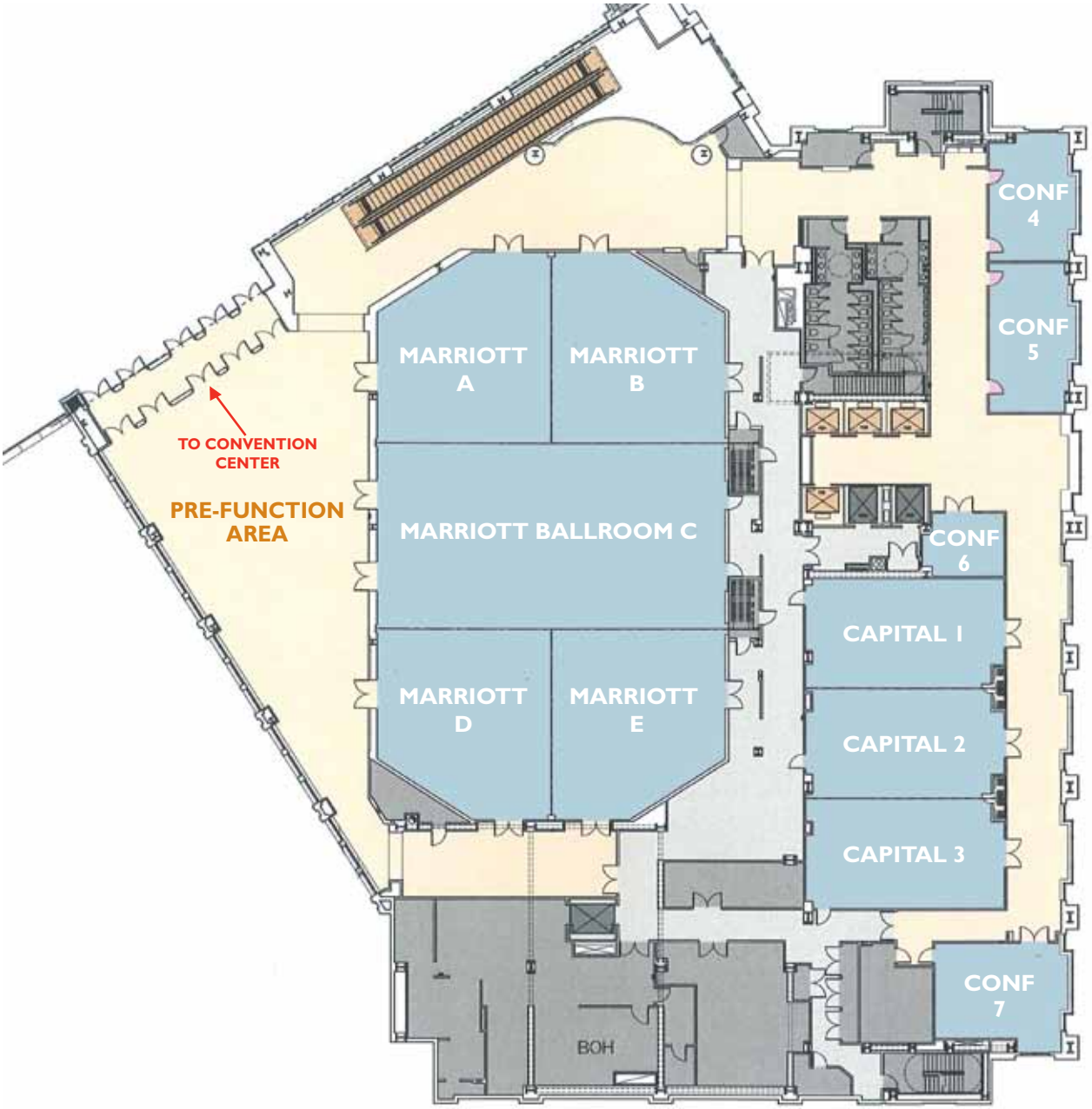


PROGRAM AT A GLANCE

Track	10:30am - 12:00noon	1:30pm - 3:00pm	4:00pm - 5:30pm
Clinician *Approved for American Medical Association (AMA) PRA Category 1 Credit. Please note that single talks within the platform sessions are also ACCME approved and are noted in the main program*	**Novel Biomedical Imaging and Microscopy** Room 17	**Orthopedic Imaging** Room 16	**Clinical and Translational Research and Science in Biomedical Engineering** Room 27
Biomedical Imaging & Optics	**Novel Biomedical Imaging and Microscopy** Room 17	**Imaging in the Enhancement or Assessment of Therapeutic Delivery** Room 17 **Bridging Medicine and Materials and Biomedical Imaging** Room 21 **Orthopedic Imaging** Room 16	**Imaging with Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroimaging** Room 17
Cardiovascular Engineering	**Cardiovascular Tissue Engineering – I** Room 23 **Cardiovascular Mechanotransduction – I** Room 25 **Cardiovascular Modeling and Measurement - I** Room 26	**Cardiovascular Tissue Engineering – II** Room 23 **Cardiovascular Mechanotransduction - II** Room 25 **Cardiovascular Modeling and Measurement - II** Room 26	**Cardiovascular Tissue Engineering - III** Room 25 **Cardiovascular Growth and Remodeling** Room 26
Cellular & Molecular Engineering	**Symposium in Honor of Shu Chien's Birthday – I** Marriott – Ballroom B	**Symposium in Honor of Shu Chien's Birthday – II** Marriott – Ballroom B	**Cell Mechanics - I** Room 11
Devices: Nano to Micro	**Micro and Nanostructured Biomaterials – I** Room 24	**Micro and Nanostructured Biomaterials – II** Room 24	**Medical Diagnostics: Nano to Micro Devices – I** Room 24
Drug Delivery Systems	**New Concepts and Applications in Drug Delivery** Room 12 **Nanotechnology Solutions to Drug Delivery – I** Room 13	**Drug Delivery in Tissue Engineering** Room 12 **Nanotechnology Solutions to Drug Delivery – II** Room 13	**Novel Materials and Self Assembly: Cancer Applications** Room 13
Neural Engineering	**Cellular and Molecular Neurophysiology** Room 14	**Engineering the Neural Environment** Room 15	**Neural Electrode Tissue Interface** Room 15
New Frontiers in Bioengineering	**Immunonobioengineering and Regenerative Medicine** Room 21	**Bridging Medicine and Materials and Biomedical Imaging** Room 21	**Bioengineering and Physical Sciences of Cancer** Room 21
Orthopedic & Rehabilitation Engineering	**Orthopedic Bioengineering** Room 16	**Orthopedic Imaging** Room 16	**Orthopedic Biomaterials** Room 16
Respiratory Engineering	**Multiscale Behavior in the Lung** Room 27	**Computational Modeling in the Lung** Room 27	
Systems Biology, Bioinformatics & Computational Biology	**High Throughput Genomics and Computational Proteomics** Room 14	**Image-based Modeling and Characterization for Biomedicine** Room 14	**Mathematical and Computational Models of Cellular and Molecular Processes** Room 14
Tissue Engineering	**Host Response to Biomaterials** Room 22 **Cardiovascular Tissue Engineering – I** Room 23	**Drug Delivery in Tissue Engineering** Room 12 **Musculoskeletal Tissue Engineering – I** Room 22 **Cardiovascular Tissue Engineering – II** Room 23	**Musculoskeletal Tissue Engineering – II** Room 22 **Bioinspired Materials** Room 23 **Cardiovascular Tissue Engineering - III** Room 25
Translational Engineering	**Education and Promotion of Translational Biomedical Engineering I** Room 11	**Education and Promotion of Translational Biomedical Engineering II** Room 11	**Clinical and Translational Research and Science in Biomedical Engineering** Room 27
Other			**Whitaker International Fellows and Scholars Program: Funding Opportunity for Young Biomedical Engineers** Room 12 **International Journal of Nanomedicine Symposium** Marriott – Ballroom B

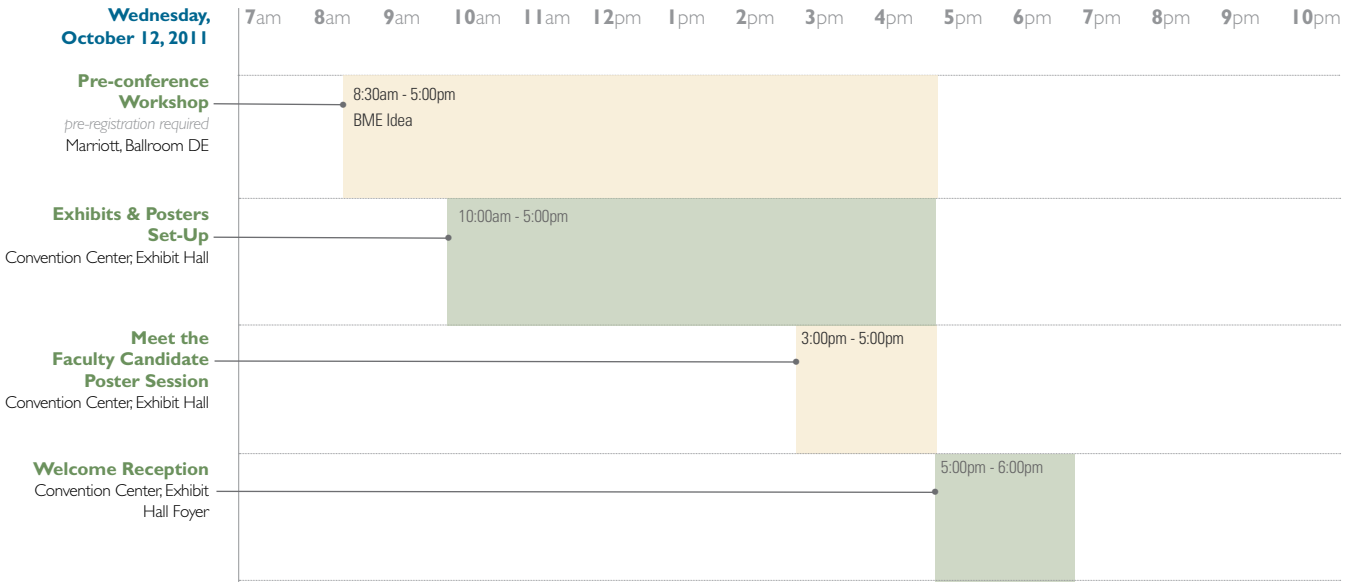
PROGRAM AT A GLANCE

FRIDAY | OCTOBER 14 | 2011

Track	10:30am - 12:00noon	1:30pm - 3:00pm	4:00pm - 5:30pm
Clinician *Approved for American Medical Association (AMA) PRA Category 1 Credit. Please note that single talks within the platform sessions are also ACCME approved and are noted in the main program*	**Lasers in Medicine** Room 17 **Models and Practices of Commercialization and Entrepreneurship** Marriott – Ballroom A **Translational Biomedical Engineering: Research to Practice (R2P) - Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare** Marriott - Ballroom B	**Mechanobiology in the Lung** Room 27	**Translational Biomedical Engineering: Research to Practice (R2P) - II** Room 27
Biomedical Imaging & Optics	**Lasers in Medicine** Room 17	**Nanotechnology for Biomedical Optics** Room 17 **Cellular and Subcellular Imaging** Room 12	**Optogenetics** Room 17
Cardiovascular Engineering	**Valve Mechanobiology/Tissue Engineering** Room 25 **Vascular Permeability, Microvasculature, and Angiogenesis - I** Room 26	**Valve Mechanics** Room 25 **Vascular Permeability, Microvasculature, and Angiogenesis - II** Room 26	**Vascular Structure and Function** Room 25 **Cardiovascular Fluid Dynamics** Room 26
Cellular & Molecular Engineering	**Mechanotransduction & Mechanobiology – I** Room 11 **Cell-Cell Interactions** Room 12	**Mechanotransduction & Mechanobiology – II** Room 11 **Cellular and Subcellular Imaging** Room 12	**Mechanotransduction & Mechanobiology – III** Room 11 **Cellular Engineering & Modeling** Room 12
Devices: Nano to Micro	**Medical Diagnostics: Nano to Micro Devices – II** Room 24	**Emerging Concept of Medical Micro Devices** Room 24	**Drug Delivery Technologies: Nano to Micro Devices** Room 24
Drug Delivery Systems	**Novel Materials and Self Assembling Systems** Room 13	**Nucleic Acid Delivery - I** Room 13	**Nucleic Acid Delivery – II** Room 13 **Drug Delivery Technologies: Nano to Micro Devices** Room 24
Neural Engineering	**Neural Engineering Technology – I** Room 15	**Neural Engineering Technology – II** Room 15	**Neural Tissue Engineering** Room 15
New Frontiers in Bioengineering	**Integrated Cellular Systems - I** Room 21	**Integrated Cellular Systems – II** Room 21	**Systems Biology** Room 21
Orthopedic & Rehabilitation Engineering	**Orthopedic Tissue Kinematics and Biomechanics** Room 16	**Orthopedic Tissue Biomechanics – I** Room 16	**Orthopedic Tissue Biomechanics – II** Room 16
Respiratory Engineering	**Mechanistic Bases of Lung Disease from Cells to System** Room 27	**Mechanobiology in the Lung** Room 27	
Systems Biology, Bioinformatics & Computational Biology	**Methodology and Applications in Computational Bioengineering and Bioinformatics** Room 14	**Model-based Experiment Design and Computer Model Validation** Room 14	**Modeling, Simulation and Control in Personalized Medicine** Room 14 **Systems Biology** Room 21
Tissue Engineering	**Nano- and Micro- Engineering in Tissue Engineering** Room 22 **Bioreactors and Bioprocessing in Tissue Engineering** Room 23 **Valve Mechanobiology/Tissue Engineering** Room 25	**Novel Biomaterials and Scaffolds – I** Room 22 **Cell-Biomaterial Interface** Room 23	**Neural Tissue Engineering** Room 15 **Novel Biomaterials and Scaffolds – II** Room 22 **Engineered Tissue Models for Drug Discovery and Disease** Room 23
Translational Engineering	**Models and Practices of Commercialization and Entrepreneurship** Marriott – Ballroom A **Translational Biomedical Engineering: Research to Practice (R2P) - Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare** Marriott - Ballroom B	**Translational Biomedical Engineering: Research to Practice (R2P) I - Coulter** Marriott – Ballroom B	**Translational Biomedical Engineering: Research to Practice (R2P) - II** Room 27

PROGRAM AT-A-GLANCE

Track	10:30am - 12:00noon	1:30pm - 3:00pm	3:15pm - 4:45pm
Clinician *Approved for American Medical Association (AMA) PRA Category 1 Credit. Please note that single talks within the platform sessions are also ACCME approved and are noted in the main program*	**Neural Trauma and Repair - I** Room 15	**Visualization Strategies at the Interface** Room 17	**Prosthetics Engineering** Room 15
Biomedical Engineering Education & Outreach		**K-12 Outreach** Room 16	**Pedagogical Innovations in Biomedical Engineering** Room 16
Biomedical Imaging & Optics	**Optical Diagnostics, Sensing and Devices** Room 17	**Visualization Strategies at the Interface** Room 17	**Biomedical Optics Frontiers** Room 17
Cardiovascular Engineering	**Cardiovascular Stents and Devices - I** Room 25	**Cardiovascular Stents and Devices – II** Room 25	**Cardiac Electrophysiology, Structure, Function** Room 25
Cellular & Molecular Engineering	**Cell Motility – I** Room 11 **Molecular Engineering** Room 12 **Cellular Mechanics & Computational Bioengineering- I** Room 21	**Cell Motility - II** Room 11 **Cell Mechanics – II** Room 12	**Cell Adhesion** Room 11 **Cell Mechanics - III** Room 12 **Biomems and Nanotech for Cellular Engineering** Room 24 **Tissue Engineering and Mechanobiology** Room 22
Devices: Nano to Micro	**Biomaterial Immunoengineering** Room 23 **Biosensors, Bio-Interfaces and Implantable Devices – I** Room 24 **Optical Diagnostics, Sensing and Devices** Room 17	**Nano to Micro Fluidic Technologies - I** Room 23 **Biosensors, Bio-Interfaces and Implantable Devices - II** Room 24	**Nano to Micro Fluidic Technologies – II** Room 23 **Biomems and Nanotech for Cellular Engineering** Room 24
Drug Delivery Systems	**Targeted Drug Delivery - I** Room 13	**Targeted Drug Delivery - II** Room 13	
Neural Engineering	**Neural Trauma and Repair - I** Room 15	**Neural Trauma and Repair – II** Room 15	**Prosthetics Engineering** Room 15
New Frontiers in Bioengineering	**Cellular Mechanics & Computational Bioengineering- I** Room 21	**Cellular Mechanics & Computational Bioengineering- II** Room 21	**Biomedical Optics Frontiers** Room 17
Orthopedic & Rehabilitation Engineering	**Rehabilitation Engineering** Room 16		
Respiratory Engineering	**Microfluidics and Tissue Engineering Constructs for the Lung** Room 27		
Systems Biology, Bioinformatics & Computational Biology	**Multi-Scale and Multiphysics Modeling** Room 14 **Cellular Mechanics & Computational Bioengineering- I** Room 21	**Engineering Therapeutics Through Simulation and Computation** Room 14 **Cellular Mechanics & Computational Bioengineering- II** Room 21	
Tissue Engineering	**Stem Cells and Tissue Engineering - I** Room 22 **Microfluidics and Tissue Engineering Constructs for the Lung** Room 27	**Stem Cells and Tissue Engineering - II** Room 22	**Tissue Engineering and Mechanobiology** Room 22
Translational Engineering	**Clinical and Translational Research and Science in Biomedical Engineering III** Room 11		
Undergraduate		**Undergraduate Research – I** Room 26	**Undergraduate Research – II** Room 26



Registration
Convention Center, Exhibit Hall
10:00am - 5:00pm

Speaker Ready Room
Hall B Office

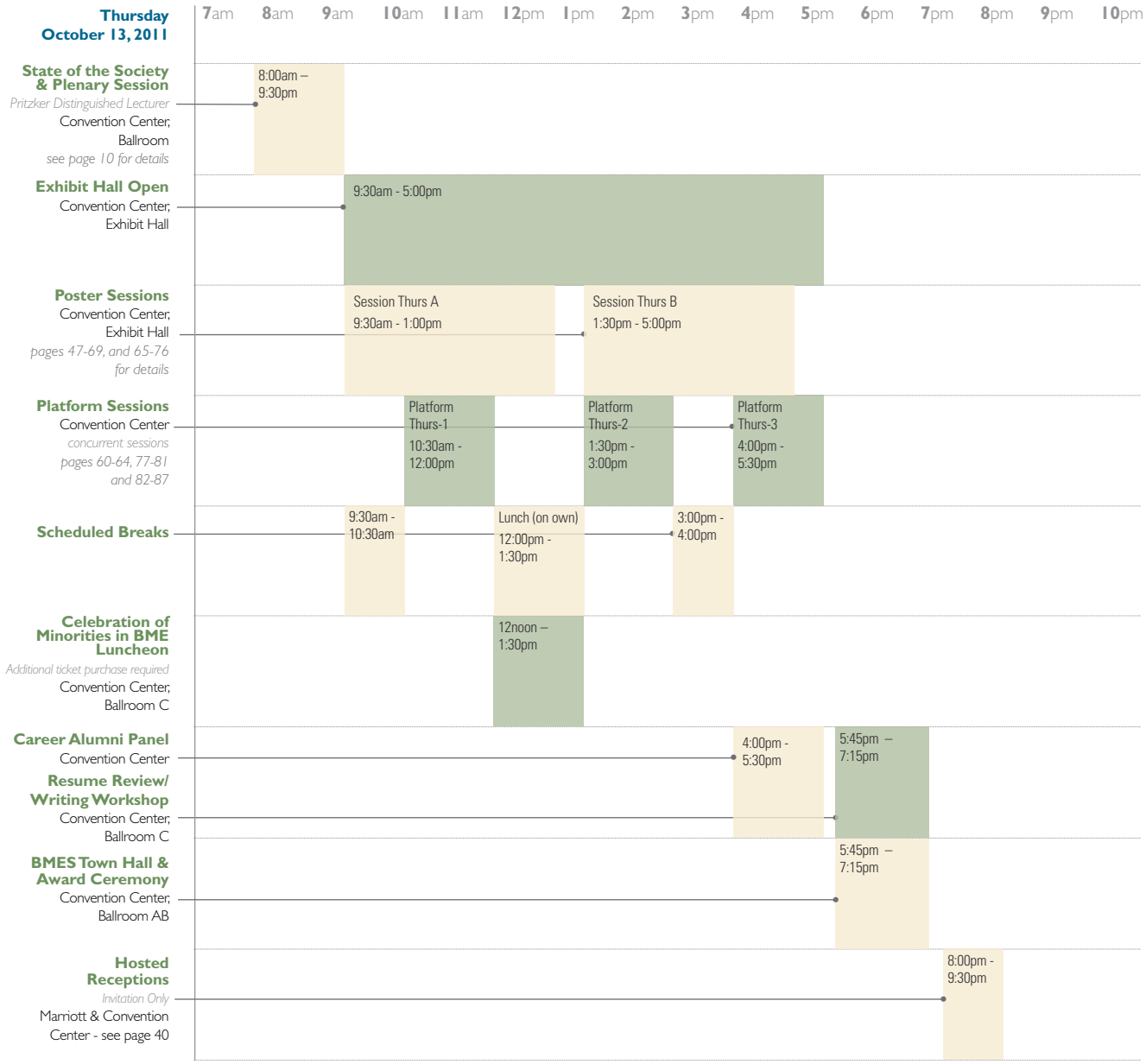
BMES Board of Directors Meeting
Marriott, Ballroom A
8:30am - 4:30pm

AIBME Board of Directors Meeting
Marriott, Capital 1 Room
12:00noon - 5:00pm

Council of Chairs Meeting
Marriott, Ballroom B
5:30pm - 7:30pm

Annals of BME Editorial Board Meeting
Marriott, Capital 2 Room
7:30pm - 10:30pm

SCHEDULE AT-A-GLANCE



Registration
Convention Center, Exhibit Hall
7:00am – 6:00pm

Speaker Ready Room
Hall B Office

Whitaker International Fellows and Scholars Program
Convention Center, Room 12
4:00pm - 5:30pm

CVET Editorial Board Lunch
Invitation Only
Marriott, Conference Room 5
12:00noon - 2:00pm

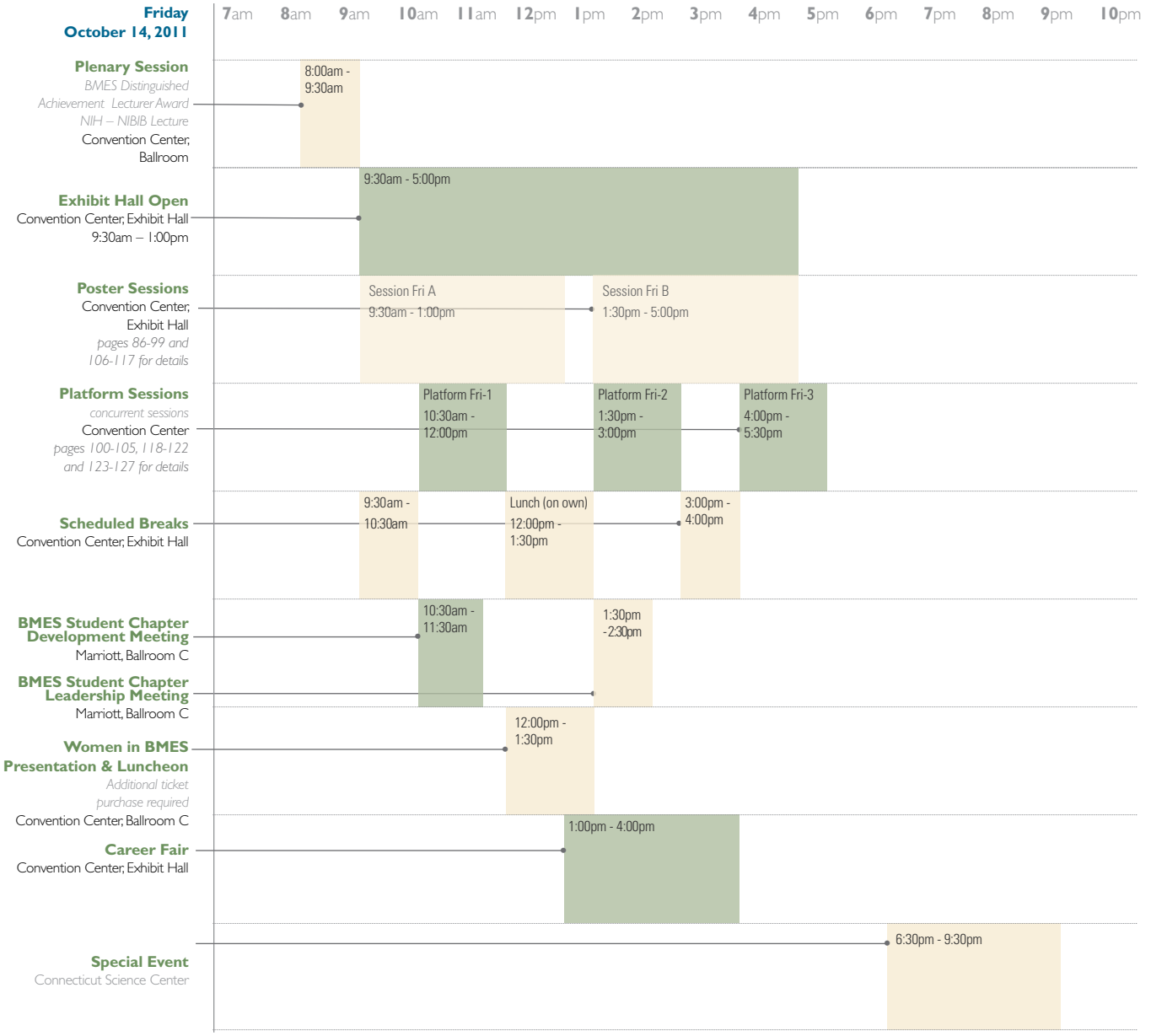
BMES National Meetings Committee Meeting
Convention Center Hall A Office
10:00am - 12:00noon

AEMB Annual Grand Meeting
Marriott, Capital 1 Room
10:30am - 12:00noon

AIMBE Academic Council Meeting
Invitation Only
Marriott, Capital 3 Room
1:30pm - 4:30pm

AEMB Special Session
Marriott, Capital 1 Room
2:30pm - 4:00pm

SCHEDULE AT A GLANCE



Registration
Convention Center,
Exhibit Hall
7:00am – 6:00pm

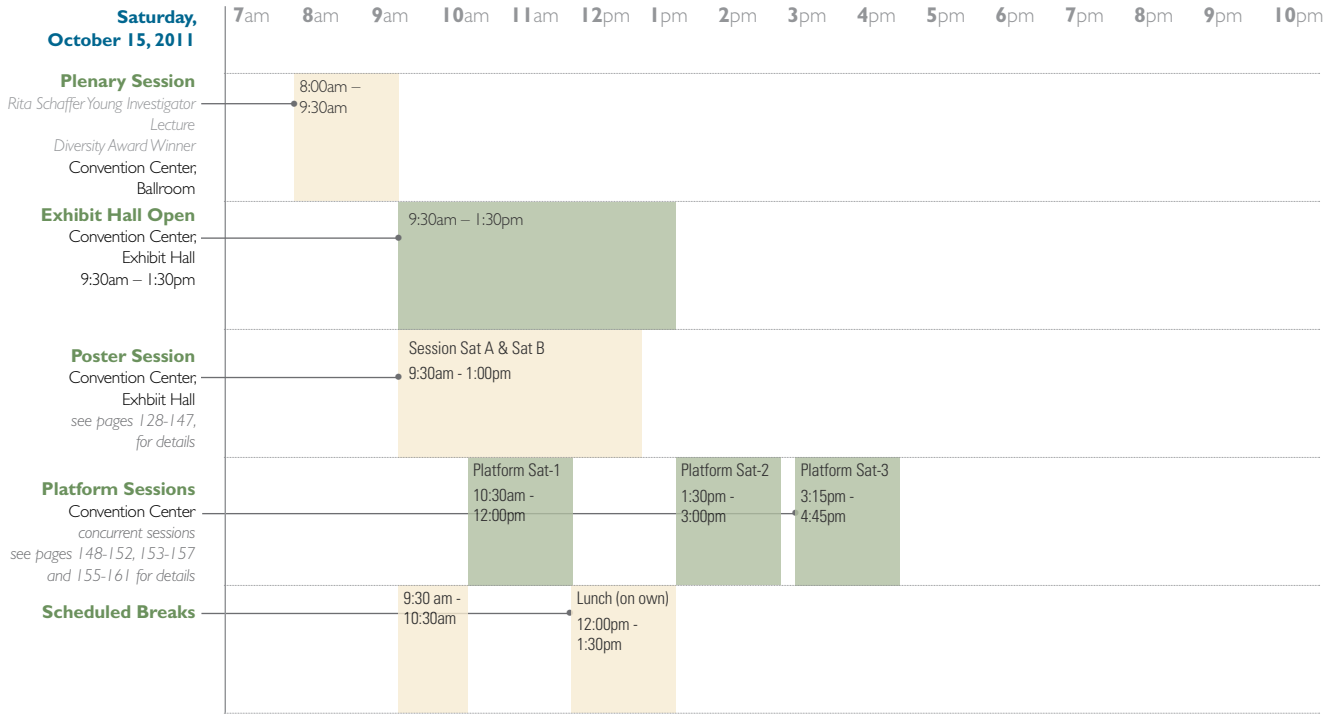
Speaker Ready Room
Hall B Office

AEMB Special Session
Marriott, Capital 1 Room
11:00am - 12noon

2011 BMES Annual Meeting Committee Meeting
9:30am - 11:00am
Convention Center,
Hall A Office

AEMB Public Policy Forum
Marriott, Capital 1 Room
2:00pm - 3:00pm

SCHEDULE AT A GLANCE



Registration
Convention Center, Exhibit Hall
7:00am – 2:00pm

Speaker Ready Room
Hall B Office

BMES Board of Directors Meeting
Marriott, Ballroom A
10:00am – 2:30pm

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