2017 BMES Annual Meeting
October 11–14, 2017
Phoenix Convention Center
Phoenix, Arizona

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UPCOMING WEBINARS

October 2017

How to Sustain a BMES Student Chapter (featuring 2017 Chapter Awardees)

November 15, 2017 @ 3:00 pm EST
Connecting Leaders in BME with Underrepresented Groups

December 11, 2017 @ 1:00 pm EST
Advanced Biomanufacturing SIG Webinar: Tissue Biofabrication

ARCHIVED WEBINARS

How to Engage Industry More Effectively with Local Chapters
Current Topics in BME ABET Accreditation
Launching a Start-Up from a University
Entrepreneurship and Innovation in Biomedical Engineering

Visit www.bmes.org/elearning to learn more, register and view available archive materials for all BMES member-only webinars.

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Available on the Mobile App (see ad on the right) at:
http://submissions.mirasmart.com/bmes2017/itinerary
Copies are also available at the Registration Desk.

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STATE OF ARIZONA SENATE PROCLAMATION

Whereas, Arizona’s bioscience industry is committed to discovering, developing and delivering innovative medicines, medical devices and healthcare technologies that make life better for people in Arizona and around the world; and

Whereas, Arizona’s private and university-based research centers, in collaboration with the life science companies, are working on new discoveries to improve health and the quality of life in Arizona and around the globe; and

Whereas, Arizona’s medical professionals and hospital systems are employing these innovations in the form of high-quality care and the development of partnerships in clinical trials that offer hope to our patients and the patients who travel to Arizona in search of better health; and

Whereas, the work of these researchers, inventors, and healthcare professionals is supported by Arizona investors and philanthropists who have a shared purpose for creating valuable products and services that improve health and make the delivery of healthcare more affordable to helping people healthier and offering solutions when cure is needed; and

Whereas, on October 11, 2017, the Arizona Bioscience Industry will celebrate Arizona’s community to recognize the achievements of those life science innovators and to drive growth in this discovery, development and delivery of life-saving and life-changing innovations here in Arizona; and

Whereas, on October 11, 2017, the Biomedical Engineering Society (BMES) will assemble 4,000 people from across the United States – academic researchers, students, industry professionals, government officials and innovators to share and communicate engineering advances and translational innovations focused on advancing human health and wellbeing; and

Whereas, Arizona’s life science and healthcare communities can leverage these opportunities within Arizona Bioscience Week to demonstrate to leaders at home and across the country the ways that Arizona innovators and Arizona innovation makes a better

Therefore, I hereby proclaim:

1. That the Members of the Senate recognize the individuals who have committed their lives and their careers to discovering, developing, and delivering life-saving innovations here in Arizona.

2. That the Members of the Senate recognize the importance of finding the causes of and cures for the diseases and health conditions that threaten the lives of our citizens.

3. That the Members of the Senate recognize the importance of the researches, developments and innovations that together make possible.

4. That the Members of the Senate recognize October 9 through 14, 2017 as Arizona Bioscience Week and encourage all citizens to learn more about how their fellow Arizonans are working to discover, develop and deliver the life changing and life-saving innovations that will benefit the people of Arizona today and for generations to come.

Done this 24th day of March, 2017

SIGNED: R. YAZDI Ask
President of the Senate

BMES 50th Anniversary 1968–2018

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#BMESfifty
Welcome to Phoenix and the 2017 Annual Meeting of the Biomedical Engineering Society (#BMES2017)! With this large number of attendees, sold-out exhibitor space and countless sponsors, this is an exciting time to be a part of BMES and the biomedical engineering community. As you navigate the BMES #BMES2017, I encourage you to use every opportunity to exchange ideas and information, network for professional development, take on new learning, and interact with old and new colleagues.

The theme of this year’s meeting is “Engineering personalized medicine and therapies.” Cleverly constructed by our co-chairs, Kevin Otto and Shelly Sakiyama-Elbert, and dedicated BMES staff, the scientific and professional development program reflects our individual and collective goals that our work, in research, education and in practice, should improve the health and well-being of others.

Over the next four days, give special attention to our impressive line-up of the keynote speakers. Things kick-off Thursday morning with Gordana Vunjak-Novakovic delivering the Robert A. Pritzker Distinguished Lecture. A BMES Fellow, Dr. Vunjak-Novakovic is a leading expert in engineering of human tissues for regenerative medicine, stem cell research and study of disease. BMES is delighted to collaborate with NIH to recognize the pioneering on CRISPR-Cas work of Dr. Feng Zhang, speaking as the NIBIB Lecturer on Thursday afternoon. On Friday, we have Bonnie Anderson, chairman and CEO of Veracyte, delivering the Wallace H. Coulter Award for Healthcare Innovation Award Lecture and Dr. Manu O. Platt, for the BMES Diversity Award Lecture. Stick around for Saturday morning to see Dr. Craig J. Goergen receive the Rita Schaffer Young Investigator Award, and deliver this important lecture.

Just a glance at our tracks shows how diverse is the research in the BME field, but also the breadth of our pursuits and interests. We have programs tailored to support education for our undergraduate and graduate engineering students, and even for visiting high school students who come with curiosity and questions. We have programming options for junior researchers trying to navigate the complex world of research funding, job applications, and career advancement. And the programming for career professionals in corporate and start-up sectors has grown exponentially in recent years, with sessions highlighting entrepreneurship, project management, regulatory developments, and engineering solutions for health care disparities, to name just a few. Look for programs hosted by our Special Interest Groups (SIGs) and affiliate bodies, including ABET.

When you walk around the meeting for the next four days, take note of the diversity of our attendees. With membership exceeding 45% women, we are already the most diverse discipline in engineering, and BMES has been committed to expanding both representation and inclusion. The NIH and NSF, as well as Coulter Minority Network, are supporting programming for and participation of diverse engineers in BME, and we can celebrate increased participation from industry representatives in meeting attendance and in our BMES leadership. From its inception, BMES has been committed to diversity and research, and we are partnering with these agencies and the National Society of Black Engineers to achieve our goals.

This year’s meeting also marks the kickoff of celebratory activities for the Society’s 50th Anniversary in 2018. Everyone attending this year’s meeting should take pride in the growth and strength of our community after 50 years of BMES. BMES is successful and now embraced by our national and professional community due to your efforts. The work you do in design, research, and product development, the time you spend mentoring and educating, and your volunteer work in supporting the Society locally and globally is why BMES remains relevant today. Make sure you stop by the BMES booth to get one of the 50th Anniversary giveaways and to participate in the sponsorship and contest opportunities.

I hope you will benefit from the many learning opportunities that we’ve designed for BMES #BMES2017, and the expert talks in all the platform sessions and poster presentations. The ambitious work being conducted across the entire field of BME, as well as that by our brilliantly creative students, will both energize you and leave you with new thinking.

Join me in thanking our Conference Co-Chairs Shelly Sakiyama-Elbert and Kevin Otto, BMES Staff, NSF, NIH, our sponsors and our meeting attendees. Let’s make it an enjoyable and productive meeting!
Welcome to the 2017 Annual Meeting of the Biomedical Engineering Society in Phoenix, Arizona. We are excited to host you in this rapidly growing bioscience and healthcare technology hub in the Valley of the Sun. Arizona is a land of opportunity for Bioscience and Health Care innovation. The state has invested over $1 billion in local biomedical research and development, including the Biodesign Institute at Arizona State University and the BIO5 Institute at the University of Arizona. We hope that you will take advantage of the local industry tours, which include Medtronic, Abbott, and Project C.U.R.E., as part of the BMES meeting. Enjoy your time in the 5th largest city in the United States and our largest state capitol.

This year’s meeting theme is Engineering Personalized Medicine and Therapies. To showcase this theme, our two plenary speakers will highlight cutting edge technologies in genome engineering and diagnostics. Feng Zheng, from MIT/Broad Institute, will deliver the BMES-NIBIB Plenary Lecture on Thursday evening. Dr. Zheng is well known for his role in developing optogenetics technology and for demonstrating that the CRISPR-Cas9 system could be used for genome editing of mammalian cells. The following morning Bonnie Anderson, Chair of the Board and CEO of Veracyte, will receive the Wallace H. Coulter Award for Healthcare Innovation and deliver a Plenary Lecture. Veracyte is a pioneering genome diagnostics company that focuses on reducing the diagnostic ambiguity in health care. Ms. Anderson co-founded the company in 2008, and their tests are now the standard of care for thyroid and lung cancer diagnosis. We are very excited and honored to host both of these leaders in biomedical engineering and we look forward to hearing their perspective on engineering personalized medicine and therapies.

We are excited to include several member initiated special sessions from the BMES community. These include topics on training such as: Training new leaders in healthcare innovation and Defining educational goals of bioengineering for the 21st Century on Thursday, as well as Curricular Innovation on Friday. We will also feature internationally focused sessions including the 5th US-Korea Joint BMES Workshop and the International Symposium on Biomedical Engineering. We will have several sessions on how to prepare research proposals for NSF including CAREER Awards and Graduate Research Fellowships.

We have an outstanding program for Students and Early Career Engineers that includes a pre-meeting orientation on Wed. afternoon and mentoring sessions. Thursday and Friday, there are sessions on networking and careers in academia, industry and entrepreneurship. Our Industry Committee has done a wonderful job putting together tours of local industry, as well as sessions on project management, validation of medical devices, and entrepreneurship. We have expanded the university receptions to Thursday and Friday night to accommodate more networking opportunities. Join us for the BMES Bash at the Arizona Science Center on Friday night. Enjoy some dessert, networking and over 300 interactive exhibits. The Science Center is just a short 6 minute walk from the Phoenix Convention Center.

In recognition of the diversity within BMES, we will have two celebration luncheons and a dessert banquet. All of these events welcome all BMES community members who wish to support diversity and all require a ticket. The Celebration of Minorities in BME Luncheon on Thursday features a keynote lecture by Antonio Garcia on creating more inclusive environments in engineering. On Friday, the Celebration of Women in BME Luncheon will feature a keynote by Christopher Loving on “moving from the urgent to the important”. On Wednesday evening, The LGBT Dessert Social will feature a talk from Naomi Chesler on Being an Ally.

Together with our 36 track chairs, who represent a diverse set of BMES members, we are excited to bring you a record number of 929 oral and 1899 poster presentations over the 4 days of the meeting. We are grateful for efforts of the track chairs in coordinating the review of a record number 3054 of abstracts. Thank you to the session chairs for helping to keep our many concurrent sessions running smoothly. We also have a record-breaking number of exhibitors (125) who will showcase the breadth and enthusiasm of biomedical engineering training and industry.

We are indebted to the tireless work of Debby Tucker behind the scenes to keep all the administrative aspects of the meeting running. Thank you also to Michele Ciapa and Lori Setton for their grant writing and funding raising efforts to support many of the special events throughout the meeting and to support our trainees.

We look forward to seeing you all in Phoenix and participating in what will be an outstanding meeting of Biomedical Engineers!
Gordana Vunjak-Novakovic, PhD
University Professor
The Mikati Foundation Professor of Biomedical Engineering and Medicine
Director, Laboratory for Stem Cells and Tissue Engineering
Columbia University in the City of New York
Thursday, October 12, 2017
10:15 am—11:30 am
North Ballroom BCD
Phoenix Convention Center

Engineering Human Tissues for Regenerative Medicine and Study of Disease

Tissue engineering is becoming increasingly successful with authentically representing the actual environmental milieu of the development, regeneration and disease. A classical paradigm of tissue engineering is related to the integrated use of human cells, biomaterial scaffolds (structural and logistic templates for tissue formation) and bio reactors (culture systems providing environmental control, molecular and physical signaling) in regenerative medicine. Living human tissues can be bioengineered from the autologous stem cells, and tailored to the patient and the medical condition being treated. More recently, the same principles are being successfully applied to the patient-specific “organs on a chip” platforms designed to recapitulate some aspects of human physiology. This talk will discuss some recent advances in regenerative engineering of whole organs (lung, heart, bone) and the modeling of systemic pathologies using functional human tissues grown in lab.

Gordana Vunjak-Novakovic is the University Professor (Columbia University highest rank held by only eight active professors), and The Mikati Foundation Professor of Biomedical Engineering and Medicine. She is a leading expert in engineering of human tissues for regenerative medicine, stem cell research and study of disease. With over 35,000 citations and h=109, she is one of the most highly cited individuals of all times, in all disciplines. She founded three biotech companies (epibone.com, tarabiosystems.com, eastriverbio.com). Among her recognitions, she is a Fellow of AAAS and BMES, and an elected member of the Academia Europaea, National Academy of Engineering, National Academy Medicine, and National Academy of Inventors.

Feng Zhang, PhD
W.M. Keck Center Development Professor of Biomedical Engineering
Department of Brain and Cognitive Sciences
Department of Biological Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts
Thursday, October 12, 2017
5:30 pm–6:30 pm
North Ballroom BCD
Phoenix Convention Center

From Microbial Immunity to Genome Editing

The microbial CRISPR-Cas adaptive immune systems provide archaea and bacteria with a programmable defense against invading nucleic acids. Several years ago, we and others reported that the effector module from Streptococcus pyogenes CRISPR-Cas9 (SpCas9) could be harnessed for genome editing. Following this work, we have discovered, characterized, and engineered additional Cas enzymes for use as molecular biology tools. These include a novel class of CRISPR-Cas systems that use RNA-guided RNases, such as Cas13a (C2c2) and Cas13b. Leveraging the natural properties of Cas13a, we developed a single-molecule nucleic acid sensing platform termed SHERLOCK, which can be used for rapid pathogen detection and genotyping. We are continuing to explore microbial diversity to identify novel enzymes and systems that could serve as the basis for development of additional molecular biology tools and applying these tools to tackle complex biological questions.

Feng Zhang obtained his A.B. degree in Chemistry and Physics from Harvard University and his Ph.D. degree from the Department of Bioengineering at Stanford University, where he worked in the lab of Karl Deisseroth on the development of optogenetics. In 2011, Zhang began his own lab at the Massachusetts Institute of Technology (MIT), pioneering the use of CRISPR-Cas systems as genome editing tools. He and his team successfully harnessed the RNA-guided nuclease Cas9 for mammalian genome editing. Following this, the Zhang lab has continued to expand and refine Cas-based approaches, helping to create a robust genome engineering toolbox that is accelerating research around the world. He is currently a Core Member of the Broad Institute of MIT and Harvard; an Investigator of the McGovern Institute for Brain Research at MIT; a James and Patricia Poitras Professor of Neuroscience, an Associate Professor in the Departments of Brain and Cognitive Sciences and Biological Engineering at MIT, and a New York Stem Cell Foundation-Robertson Investigator.
Bonnie Anderson
Chairman and Chief Executive Officer
Veracyte

Friday, October 13, 2017
10:15 am–11:15 am
North Ballroom BCD
Phoenix Convention Center

The Journey from an Idea to Transforming Patient Care with Genomic Diagnostics

Recent advances in our understanding of the human genome, along with new developments in sequencing technologies and data analytics, are fueling the imagination about what is possible in diagnosing, treating and preventing cancer and other diseases. Yet among the wealth of patient health data that can be extracted from the genome through diagnostic tests, what matters most to physicians, patients and health plans is finding clinically useful information that changes patient care and improves outcomes.

Using that simple framework, Bonnie Anderson founded Veracyte and, in less than 10 years, has built it into one of the most successful genomic diagnostics companies in the space today. Veracyte’s three commercialized tests have saved tens of thousands of patients from risky, expensive and often-unnecessary surgery just to get a diagnosis and collectively target a $2 billion market opportunity. The company is setting new standards for successfully obtaining health plan reimbursement for its tests—which has traditionally been the biggest hurdle to moving genomic tests into clinical use.

Bonnie will describe how she started Veracyte with just an idea and a business plan—rather than with a technology. During her 18 years at Beckman Coulter, she gained a unique perspective building a company that is uniquely transforming patient care.

Bonnie H. Anderson is Chief Executive Officer and Chairman of the Board of Veracyte, a pioneering genomic diagnostics company that is fundamentally improving patient care by reducing diagnostic uncertainty—without the need for risky, costly and often-unnecessary surgery. Her career spans over 30 years in regulated diagnostics and life science markets. Ms. Anderson cofounded Veracyte in 2008 and served as the company’s President and Chief Executive Officer until 2016, when she was also appointed Chairman of the Board. She took the company public in 2013 and has spearheaded Veracyte’s commercialization successes to date.

Prior to Veracyte, Ms. Anderson provided strategic consulting services to venture capital firms and early-stage businesses following 18 years in leadership positions at Beckman Coulter. She serves on the board of Castle Biosciences and on the steering committee for the Coalition for 21st Century Medicine and is a trustee emeritus of the Keck Graduate Institute of Applied Life Sciences. She graduated from Indiana University of Pennsylvania with a Bachelors of Science degree in Medical Technology and in 2012 was honored with a “Distinguished Alumni” award. In 2015, Fast Company magazine named Ms. Anderson to its “100 Most Creative People in Business” list. She was named one of the “Most Influential Women in Bay Area Business” (2013) and one of the “Bay Area’s Most Admired CEOs” (2014) by the San Francisco Business Times, and has also received the Silicon Valley Business Journals’ “Women of Influence” award (2013).

Bonnie will provide an overview of her journey with Veracyte, including how the wealth of diverse, hands-on experience she gained in her 18 years at Beckman Coulter prepared her to build and lead a company that is uniquely transforming patient care.

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The Wallace H. Coulter Award for Healthcare Innovation recognizes an outstanding individual who has demonstrated a lifetime commitment to and made major contributions to patient healthcare.

The Wallace H. Coulter Award for Healthcare Innovation recognizes an outstanding individual who has demonstrated a lifetime commitment to and made major contributions to patient healthcare.

The Danger of Acting Now

Dr. Platt’s lecture will address the fear of waiting for the perfect time to be impactful in diversity and inclusion. As a member of an underrepresented group, the opportunity for impact is magnified, as is the visibility, responsibility, perceived consequences of failure, and ultimately, the perceived danger of acting now. Sage professional mentors and family elders may advise “going along to get along” and “not making waves” to be successful. Dr. Platt will challenge this assumption of the “safe” path to success. Often, if you are the first or the only of a particular demographic category, the path is neither well paved, nor well lit, and GPS does not seem to recognize your location. Dr. Platt will discuss the power and the payoff of being unabashedly about identity, and being intentional in diversifying the workforce. Now, not waiting until it is safe.

Dr. Manu Platt earned his B.S. in Biology from Morehouse College in 2001 and Ph.D. from Georgia Tech/Emory joint program in biomedical engineering in 2006, and post-doctoral training at MIT. Then he returned to Georgia Tech/Emory in January 2009 to start his independent tenure track career, and was promoted and tenured in 2015. Dr. Platt’s research focuses on proteolytic mechanisms of tissue remodeling using experimental and computational approaches. These diseases of focus are health disparities in the U.S., but global health concerns: sickle cell disease, breast cancer, and HIV-mediated cardiovascular disease, which has taken him to South Africa and Ethiopia for to find solutions for low resource settings. His work has been funded by NH Director’s New Innovator Award, Internaional AIDS Society, Georgia Cancer Coalition, and the National Science Foundation, and he trains a diverse cadre of students and postdocs to complete this work. He is also a co-investigator and the Diversity Director for the NSF Science and Technology Center on Emergent Behaviors of Integrated Cellular Systems (EBICS), a joint center between Georgia Tech, MIT, and UIUC. Integrated with his research program are his mentoring goals of changing the look of the next generation of scientists and engineers to include all colors, genders, and backgrounds. Aligned with that goal, Dr. Platt, with Bob Nerem, co-founded and co-directs Project ENGAGE(Engaging the Next Generation At Georgia Tech in Engineering and S-science), a program for African-American high school students in the Atlanta Public School system, trained and paid well above minimum wage, to be researchers in Georgia Tech labs. Dr. Platt was named an Emerging Scholar by Diverse: Issues in Higher Education magazine in 2015 and chosen for “Atlanta 40 under 40” by the Atlanta Business Chronicle in 2016 for his activities at Georgia Tech and his outreach activities in the broader Atlanta community.

“Change will not come if we wait for some other person or some other time. We are the ones we have been waiting for; We are the change that we seek.” - Barack Obama
Small Animal Cardiovascular Imaging for Engineers

Cardiovascular disease is the leading cause of death and disability in the world. Non-invasive imaging has become vital for the detection and monitoring of disease progression, aiding in the development of therapeutics and devices. The research highlighted in this talk describes advancements at the interface of engineering and medicine in order to develop and use multiple imaging modalities to better understand cardiac and vascular disease. For example, conventional ultrasound measurements are commonly based on geometric assumptions from 2D images, often yielding inaccurate results with large variability. Because of this, we have developed a respiratory- and cardiac-gated 3D echocardiography technique to reconstruct ultrasound volumes. We imaged 1) the left ventricles of healthy and infarcted wild-type mice and 2) the abdominal aortas of hyperlipidemic mice with angiotensin II-induced dissecting aneurysms using a position-controlled ultrasound transducer. ECG-gated cine loops at 1000 frames-per-second were acquired at sequential positions and temporally concatenated, generating 4D datasets. Nonlinear image registration was then utilized to calculate deformation fields and project segmented masks across the cardiac cycle and from aneurysmal vessels. Volume renderings of left-ventricular masks yielded ejection fractions of 73±6% and stroke volumes of 31±6μL. In the abdominal aorta, Green-Lagrange circumferential cyclic strain decreased significantly from healthy to aneurysmal regions. The dissecting aneurysm datasets were also used to run detailed hemodynamic simulations over large portions of the abdominal vasculature that include small branching vessels. The results suggest that differences in morphology, kinematics, and hemodynamics play crucial roles in determining the evolution of both ischemic heart disease and dissecting abdominal aortic aneurysms.

Dr. Craig Goergen is the Principal Investigator of the Cardiovascular Imaging Research Laboratory at Purdue University. His work combines advanced engineering, imaging, and biological approaches to study a variety of cardiac and vascular diseases. With funding from the NIH, NSF, AHA, and industry, Dr. Goergen and his team are working to improve cardiovascular disease diagnosis, treatment, and prevention, ultimately providing patients with longer and more fulfilling lives. Dr. Goergen received a bachelor’s degree in biomedical engineering from Washington University in St. Louis and master’s and doctoral degrees in bioengineering from Stanford University. In graduate school, Dr. Goergen worked with the Biomedical Imaging Group at Genentech to study abdominal aortic aneurysm formation in multiple mouse models. His postdoctoral training in molecular optical imaging at Harvard Medical School focused on cardiac disease and left ventricular remodeling. He joined the faculty at Purdue University in December of 2012 and is passionate about research, education, and student mentorship.

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.
Congratulations the 2017 CMBE Young Innovators!

October 2017 issue, edited by Michael King, Alyssa Panitch, and Richard Waugh

See the Young Innovators present their work on Friday, October 13, 2017 at 1:15 and 3:30pm!

Become a 2018 CMBE Young Innovator! Next competition is underway. Accepted authors will be invited to present their work in a special two-part platform session at the 2018 BMES Annual Meeting. To be eligible, candidates must hold a position at the Assistant Professor level or equivalent. BMES non-members are eligible and welcome. Self nominations should include title with 250-word structured abstract, and a 2-page NIH-style biosketch, emailed to mike.king@vanderbilt.edu.

Key Dates for 2018 Young Innovators issue:
Nomination Deadline: November 10, 2017
Abstract Acceptance: December 15, 2017
Manuscript Submission: February 15, 2018
Print Publication: October 2018
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Email: lauren.maridje@asu.edu
Web: chs.asu.edu
The Department of Biomedical Informatics (BMI) upholds a strong partnership among academic researchers, clinical practitioners, and regional health care providers in the advancement of research and education in biomedical informatics. We offer a Bachelors, Masters and PhD in Biomedical Informatics, as well as a MAS in Health Informatics (100% Online).

Booth #315
Binghamton University Department of Biomedical Engineering
P.O. Box 6000
Binghamton, NY 13902
Phone: 607.777.5777
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44 Cummings Mall, Room 220
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Web: www.bu.edu/bme
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Brown University
171 Meeting Street, Box 883
Providence, RI 02912
Phone: 401-863-3262
Email: bme@brown.edu
Web: www.brown.edu/bme
The Center for Biomedical Engineering at Brown University features an interdisciplinary approach in three complementary research areas: Mechanobiology, Regenerative Engineering, and Neuroengineering. The program offers BS, MS, and PhD degrees and is distinguished by its research and strong collaborative connections between academic science/engineering, clinical medicine, and industry.

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

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Case Western Reserve University
10900 Euclid Avenue
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Phone: 216-368-4094
Email: bmedep@case.edu
Web: http://bme.case.edu/
The Department of Biomedical Engineering at Case Western Reserve University offers distinctive programs ranging from the B.S. degree through the Ph.D. degree, including our innovative M.D./Ph.D. degree, M.D./M.S. degree, and our Biomedical Entrepreneurship program. Case Western Reserve University’s research thrusts include: biomaterials and tissue engineering, neural engineering and neuroprostheses, biomedical imaging and sensing, transport and metabolic engineering, biomechanics, and targeted therapeutics.

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The City College of New York Biomedical Engineering
160 Convent Avenue
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Phone: 212-650-6707
Email: pcupid@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 #708
Clemson University
Department of Bioengineering
301 Rhodes Hall
Clemson, SC 29670
Phone: 864-656-7276
Email: mariam@clemson.edu
Web: www.clemson.edu/ces/bioe
With research labs, classrooms and innovation space for business partnerships at Clemson, Greenville, and Medical University of South Carolina, Clemson BIOE abounds with opportunities for personalized education, transformative research, networking with life sciences companies and investors and bold entrepreneurship that turns innovation into goods that are now improving health care in the US and abroad.

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Department of Biomedical Engineering
301 Engineering Terrace
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The Department of Biomedical Engineering at Columbia University offers biomedical engineering education and research through B.S., M.S., Ph.D., and M.D./Ph.D. degree programs. Our department provides a surprising mix of the intellectual atmosphere of an Ivy League institution and the sense of community of a small college enriched by the diversity of New York City.

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The Meinig School of 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 school has a close relationship with the Weill Cornell Medicine medical school and its associated hospitals in New York City, including an "Immersion Term", during which all BME Ph.D. students spend 7 weeks in a clinical experience at Weill Cornell Medicine. Cornell University is a comprehensive university with outstanding programs of teaching and research in all areas of human inquiry, which has its main campus at Ithaca in the beautiful Finger Lakes Region of upstate New York. The Meinig School has close collaborations with other departments on campus. For more information, please visit http://www.bme.cornell.edu/.

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Web: engineering.dartmouth.edu
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End
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Drexel University
School of Biomedical Engineering, Science & Health Systems
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Phone: 215-895-2307
Email: ftw22@drexel.edu
Web: biomedical.drexel.edu

The School of Biomedical Engineering, Science and Health Systems is a nationally recognized center of research and education. Areas of specialization include biomechanics, human performance, biomaterials, tissue engineering, biomedical imaging, bioinformatics and drug delivery. Multidisciplinary research is carried out through collaborations with clinical institutions in the Philadelphia area.

Booth '215
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Department of Biomedical Engineering
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Durham, NC 27708
Phone: 919-660-5131
Email: Kristen.rivers@duke.edu
Web: http://bme.duke.edu

The mission of the Department of Biomedical Engineering has its foundation in that of Duke University. We work closely with researchers, of various disciplines, to identify important problems that impact human health and solve them using our technical expertise. We engage motivated and talented students in the classroom, laboratory and clinic, imparting to them the spirit of our mission as we prepare them for future careers as effective, knowledgeable, and ethical leaders in corporate, professional, and academic communities.

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Biomedical Engineering
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Located in the Washington DC metropolitan area, George Mason University’s Department of Bioengineering offers unique research and educational experience with collaborative opportunities with nearby national laboratories, institutes, and clinical facilities. The BS program offers three concentrations: Biomedical Signals & Systems, Bioengineering in Healthcare Informatics, and Bioengineering Prehealth; it has grown very rapidly since its inception in 2010 to over 220 undergraduate students and earned accreditation from ABET in 2012. The Bioengineering PhD program started in Spring 2015, has already over 20 graduate students, and is currently accepting new applications from outstanding prospective students with full tuition and stipend support. The department has 16 primary faculty members with approximately $20M of active research in multidisciplinary areas of bioengineering ranging from biomaterials, biomechanics, biomedical imaging, nanomedicine, and neural engineering.

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Atlanta, GA 30332

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Email: gradstudies@bme.gatech.edu

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**Lehigh University Biome engineering**

111 Research Drive, Room D325

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The Marquette University and Medical College of Wisconsin Department of Biomedical Engineering features innovative programs in the following research areas: cardiovascular and pulmonary imaging; medical device innovation; analytics, informatics and software engineering; computational biology and systems biology; molecular systems and modeling; orthopedics and orthopaedic rehabilitation; neurosystems and neurorehabilitation.
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Department of Biomedical Engineering
Houghton, Michigan
www.mtu.edu/biomedical

Two Exceptional Institutions.
One Outstanding Educational Experience.

Located in the beautiful Upper Peninsula of Michigan, the Department of Biomedical Engineering at Michigan Technological University conducts world-class research at the interface of medicine, biology, and engineering, while educating the next generation of biomedical engineers by offering B.S., M.S., and Ph.D. degrees. The BME Department at MTU leverages the University’s strong and rich history of engineering education and research. We create the future of medicine.

Booth #317
Michigan Technological University
Department of Biomedical Engineering
1400 Townsend Drive
Houghton, MI 49931
Phone: 906-487-2772
Email: slsedar@mtu.edu
Web: www.mtu.edu/biomedical

Create the future...
of healthcare

Michigan Technological University
Department of Biomedical Engineering
Houghton, Michigan
www.mtu.edu/biomedical
Midwestern University
19555 N. 59th Avenue
Glendale, AZ 85383
Phone: 623-806-7658
Email: acarma@midwestern.edu
Web: www.mwuhi.com
Midwestern University Institute for Healthcare Innovation (IHI) was established in 2014 to facilitate clinical and translational research with Midwestern University Colleges of Veterinary Medicine, Osteopathic Medicine, Dental Medicine, Pharmacy, Optometry and Health Sciences. The IHI can assist external collaborators and industry sponsors in evaluating pharmaceuticals, biologics, diagnostics and devices by performing basic research, and human and veterinary studies. The IHI is staffed by personnel with industry research and clinical experience.

Mississippi State University
Biomedical Engineering
Degree Programs
• B.S. • M.S. • Ph.D.
Research Areas
• Biomechanics/Injury Biomechanics
• Bio-Inspired Design
• Cardiovascular Engineering
• Orthopedic Bioengineering
• Tissue Engineering and Regeneration
• Multiscale Modeling and Computational Simulation

Mississippi State University
College of Engineering
WE RING TRUE

Bethesda, MD 20892
109 Room 1C14
31 Center Drive
National Institutes of Health
National Institute of Biomedical Imaging and Bioengineering
Booth #103
National Science Foundation (NSF)
Division of Chemical, Bioengineering, Environmental, and Transport Systems (CBET)
2415 Eisenhower Avenue
Alexandria, VA 22314
Phone: 703-292-5111
Email: tbartle@nsf.gov
Web: www.nsf.gov
The NSF-Division of Chemical, Bioengineering, Environmental, and Transport Systems (CBET) supports innovative research and education primarily in the fields of chemical, mechanical, and civil/environmental engineering, and bioengineering. The CBET program director from the Engineering of Biomedical Systems and Disability and Rehabilitation Engineering programs will be available to answer questions about proposals, area for funding, time-limits and expectations while writing, and common author mistakes. Attendees can also gain tips on how to create and develop a proposal while incorporating key-features requested by NSF.

New Jersey Institute of Technology (NJIT)
Department of Biomedical Engineering
University Heights
Newark, NJ 07102
Phone: 973-596-5476
Email: rocha@njit.edu
Web: http://biomedical.njit.edu
NJIT’s Biomedical Engineering Department (BME) is among the top producers of BME degrees in the region with over 300 undergraduate, 100 master’s and 50 doctoral students. Our Ph.D. program is delivered jointly with the Graduate School of Biomedical Science at Rutgers New Jersey Medical School. In 2019, the National Research Council ranked our Ph.D. program 26 out of 76 nationally for curriculum quality and student accomplishments. Our popular master’s degree program can be customized providing you the opportunity to meet your academic and professional goals. Our undergraduate program is ABET accredited and attracts a diverse student body with the highest GPA and SAT scores at NJIT. We are a research-active department in areas of head injury biomechanics, neuro-rehabilitation, direct brain interfacing, biomedical imaging, neural signal processing, cellular/molecular tissue engineering and biomaterials.

Northern Arizona University
Doctoral Degree in Bioengineering
617 S. Beaver Street
Building 21, Box 4185
Flagstaff, AZ 86011
Phone: 928-523-0634
Email: megan.co@nau.edu
Web: www.nau.edu/cbi

Oregon State University
College of Engineering
Department of Biomedical Engineering
Booth #117
Oregon State University is home to the state’s only graduate program in bioengineering, with three tracks culminating in M.Eng., M.S., or Ph.D. degrees. Core curriculum areas include biomaterials, biomedical devices and instrumentation, human performance engineering, medical imaging, and systems and computational biology.

For more information, please visit cbee.oregonstate.edu. Phone: 541-737-5283 or email cbee@oregonstate.edu.

生物工程研究生项目与一个跨学科的研究经验
俄勒冈州立大学是俄勒冈州唯一提供生物工程研究生学位的大学，有三个专业方向分别授予工程硕士学位、工程学硕士学位或博士学位。核心课程包括生物材料、生物医学设备和仪器、人体工程学、医学成像、系统和计算生物学。

欲了解更多信息，请访问cbee.oregonstate.edu。电话：541-737-5283或电邮cbee@oregonstate.edu。
**Northwestern University**
2145 Sheridan Road
Evanston, IL 60201
Phone: 773-547-7899
Email: e.olds@northwestern.edu
Web: www.bme.northwestern.edu
With cutting-edge research in Biomaterials and Regenerative Medicine, Imaging and Biophotonics, and Neural Engineering and Rehabilitation, Northwestern University BME attracts top faculty and students alike. Research takes place on the main campus in Evanston and on the medical school campus in downtown Chicago.

**Booth #22/24**

**The Ohio State University Department of Biomedical Engineering**
270 Davis Hall
1080 Carmack Road
Columbus, OH 43210
Phone: 614-292-7152
Email: senitko.1@osu.edu
Web: www.bme.osu.edu
Offering B.S., M.S., Ph.D. and M.D./Ph.D. degrees with research programs in 7 different biomedical engineering domains in state-of-the-art facilities and with strong collaborations with the OSU Wexner Medical Center, Davis Heart and Lung Research Institute, Nationwide Children’s Hospital and the OSU Comprehensive Cancer Center featuring the 3rd largest Cancer Hospital in the nation.

**Booth #20**

**Oregon Health & Science University Department of Biomedical Engineering**
3105 SW Bond Avenue • CH13B
Portland, OR 97239
Phone: 503-418-9331
Email: radallic@ohsu.edu
Web: www.ohsu.edu/bme
The BME graduate curriculum is designed to provide both breadth and depth in human (patho)physiology and the use and development of measurement and data science and computational biology approaches to address unmet clinical needs. The curriculum is tailored for each student based upon their background, research direction and career goals.

**Booth #209**

**Oregon State University School of Chemical, Biological and Environmental Engineering**
105 SW 26th Street
Johnson Hall 117
Corvallis, OR 97331
Phone: 541-737-2491
Email: cbee-gradinfo@oregonstate.edu
Web: www.bioengineering.oregonstate.edu
Oregon State University’s offers M.Eng., M.S., and Ph.D. degrees via its new interdisciplinary graduate program in bioengineering administered by the School of Chemical, Biological, and Environmental Engineering. Faculty from across the university participate. The program provides broad exposure through coursework and seminars, as well as a focused research experience.

**New Faculty Opening**

**Biomedical Engineering Faculty Position, Systems Biology (Neural Regeneration and Tissue Engineering)**
The Penn State Department of Biomedical Engineering (College of Engineering) and Department of Neurosurgery (College of Medicine) jointly seek to co-hire, along with other Penn State interdisciplinary institutes, a full-time tenure-track or tenured faculty member starting 2018-19.

To Apply: http://tinyurl.com/yr63sel

**Penn State College of Engineering Biomedical Engineering**
www.bme.psu.edu

**Booth #520**

**The Pennsylvania State University**
205 Hallowell Building
University Park, PA 16802
Phone: 814-865-1407
Email: glm108@psu.edu
Web: www.bme.psu.edu
The Penn State Department of Biomedical Engineering and the Intercollege Graduate Degree Program in Bioengineering are proud to offer B.S., M.S. and Ph.D. degrees. Our mission is to educate students to become world-class engineers who contribute to biomedical engineering development through innovative solutions to problems in biotechnologies, medicine and the life sciences. The graduate program offers strong integration with many other graduate programs in four signature areas of expertise: imaging, instrumentation, engineered biomaterials and biomechanics, and quantitative cellular and systems engineering. We are continuing to grow our diverse faculty and clinical partnerships that distinguish us in biomedical entrepreneurship, regulatory science, and translational impact.

**Booth #217**

**Phoenix Analysis and Design Technologies**
7155 S. Research Drive
Suite 110
Tempe, AZ 85284
Phone: 480-813-4884
Email: john.williams@padtic.com
Web: http://www.padtinc.com/
Phoenix Analysis and Design Technologies is an engineering product and services company that focuses on helping customers who develop physical products by providing Numerical Simulation, Product Development, and 3D Printing solutions. Since its establishment in 1994, companies have relied on PADT because “We Make Innovation Work.”

**Booth #509/511**

**Purdue University**
Weldon School of Biomedical Engineering
206 l. Martin Jischke Drive
West Lafayette, IN 47907-2032
Phone: 765-494-2995
Email: Walid@BMEGrad.purdue.edu
Web: www.purdue.edu/bme
The Weldon School of Biomedical Engineering at Purdue recruits exceptional MS and PhD students for nationally-funded graduate programs in four signature areas of expertise: imaging, instrumentation, engineered biomaterials and biomechanics, and quantitative cellular and systems engineering. We are continuing to grow our diverse faculty and clinical partnerships that distinguish us in biomedical entrepreneurship, regulatory science, and translational impact.

**Booth #715**

**Rensselaer Polytechnic Institute**
110 8th Street
Troy, NY 12180
Phone: 518-276-6548
Email: bme@rpi.edu
Web: www.bme.rpi.edu
Rensselaer Polytechnic Institute is the nation’s oldest technological research university educating outstanding students, industry leaders and research scientists. Stop by and learn about graduate programs (MS and PhD) as well as opportunities for graduate students (NIH Pre-doctoral Training Program, NSF iCORE Ph.D. and Under-graduates (REU in Bioengineering and Biomanufacturing) (bme.rpi.edu).

**Booth #203**

**Rice University Department of Bioengineering**
6100 Main Street
Houston, TX 77005-1892
Phone: 713-348-5869
Email: bioengineering@rice.edu
Web: www.bioengineering.rice.edu
Rice University’s Department of Bioengineering is a top-tier teaching and research institution with graduate programs that lead to an MBE, PhD, or a joint MD/PhD with Baylor College of Medicine. Situated next to the Texas Medical Center, we offer education and research opportunities in biomaterials and drug delivery, biomedical imaging and diagnostics, cellular and biomolecular engineering, computational and theoretical bioengineering, systems and synthetic biology, and tissue engineering and biomechanics.

**Booths #820/822/824**

**Rutgers, The State University of New Jersey**
595 Taylor Road
Piscataway, NJ 08854
Phone: 848-445-4500
Email: sreiber@roe.rutgers.edu
Web: http://bme.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. The program offers a BS degree at the undergraduate level, and PhD, MS, and MEng degrees at the graduate level, which is also offered 100% online. The program also offers joint Masters of Business and Science (MBS) and MD/PhD degrees, as well as a certificate in Medical Device Design and Development.

**Booth #115**

**S-E-A, Ltd.**
7001 Buffalo Parkway
Houston, TX 77080
Phone: 281-872-6851
Email: a valdevit@sealimited.com
Web: www.sealimited.com
S-E-A is a multi-disciplined forensic, testing and evaluation team of licensed/registered professionals who are experts in their specialty. With services in biomechanical, materials, microscopy and medical visualization/illustration, S-E-A offers our clients laboratory services for pre-market/in-vitro evaluations along with the confidence of knowing S-E-A’s advanced analytical and testing tools are employed.
Sony Healthcare Solutions
1 Sony Drive, m32E
Park Ridge, NJ 07656
Phone: 201-930-1000
Email: Brian.Zimmer@sony.com
Web: www.sony.com/medical
Sony medical grade 4k 3D displays, recorders and content management system

Stevens Institute of Technology
1 Castle Point on Hudson
Hoboken, NJ 07030
Phone: 201-216-5000
Email: mgrey@stevens.edu
Web: www.stevens.edu

Stony Brook University
Biomedical Engineering Department
101 Bioengineering Building
Stony Brook, NY 11794-5281
Phone: 631-632-1480
Email: david.rubenstein@stonybrook.edu
Web: www.bme.stonybrook.edu
The mission of the BME department at Stony Brook University is to fully integrate the cutting edge of engineering and physical sciences with state-of-the-art biology to advance our understanding of biomedical problems, and to drive the development of therapeutics, diagnostics and medical devices. Areas of research expertise include biomechanics, bioelectricity, tissue engineering, bioinformatics, cellular and molecular bioengineering, and bioimaging.

Biomedical Engineering at Tufts University draws from core disciplines such as engineering, biology, computer science, physics, chemistry, and physiology and emphasizes an interdisciplinary approach to research and education. Strong emphasis is placed on interactions with faculty in Arts and Sciences and the professional schools. The Biomedical Engineering Resource Center (TERC) was initiated in August of 2004 as a Resource Center supported through the National Institutes of Health (NIH) 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 #205
Tulane University
Department of Biomedical Engineering
500 Loyola Avenue
New Orleans, LA 70118
Phone: 504-862-5897
Email: bioengineer@tulane.edu
Web: www.bmen.tulane.edu

Tulane’s Biomedical Engineering Department is located in the diverse cultural mecca of New Orleans and has been established since 1977. Degrees offered range from B.S. to Ph.D., and research includes biomechanics, biorobotics, regenerative medicine, biomaterials and devices. Collaboration with the School of Medicine and numerous other centers are available and abound.

Booth #202
The University of Akron
Department of Biomedical Engineering
The University of Akron offers BS, MS and PhD degree programs in Biomedical Engineering. BS, MS, and PhD degree programs in BME. These programs have an individualized curricular approach, designed in coordination with each student’s career plans. BME faculty are engaged in both basic and translational research areas, including, but not limited to, optics, microtechnology, biomaterials, biomechanics, and regenerative medicine.

Booths #414/416
The University of Alabama at Birmingham
1900 University Boulevard
Birmingham, AL 35233
Phone: 205-996-6736
Email: minosb@uab.edu
Web: www.uab.edu/bme

The BME department at The University of Alabama at Birmingham offers BS, MS, and PhD degrees. The MS program offers an optional Certificate in Life Sciences Entrepreneurship. The primary interdisciplinary research programs include tissue engineering, biomechanics, and cardiac electrophysiology. The department currently includes 20 primary and 60 secondary faculty members. UAB BME is ranked 4th in the U.S. in NIH funding to joint departments of biomedical engineering by the Blue Ridge Interdisciplinary research program.

Booth #211
The University of Arizona
Biomedical Engineering
2415 Stuart Hall
1700 E. University Blvd.
Tucson, AZ 85721
Phone: 520-621-9134
Email: bmen-info@email.arizona.edu
Web: www.bme.arizona.edu

The Biomedical Engineering Program at the University of Arizona 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 #101
University of Arkansas
Biomedical Engineering
206 West Dickson Street • Room 120
Fayetteville, AR 72701
Phone: 479-575-4786
Email: kkarsted@uark.edu
Web: www.biomedical-engineering.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 #412
University of California, Berkeley
305 Stanley Hall
Berkeley, CA 94720-1762
Phone: 510-642-5833
Email: bioeng@berkeley.edu
Web: http://bioeng.berkeley.edu/

The Department of Bioengineering at the University of California, Berkeley will be showcasing its novel research and academic programs, including the bachelor, Master of Engineering, Master of Translational Medicine, and PhD degrees. Come visit the UC Berkeley booth to speak with representatives and learn more about the department.

Booth #610
University of California, Davis
One Shields Ave, GBSF 2303
Davis, CA 95616
Phone: 530-752-1033
Email: bme@ucdavis.edu
Web: www.bme.ucdavis.edu

With 35 primary faculty and a graduate group of 64 faculty, BME at UC Davis combines exceptional teaching with state-of-the-art research to prepare students for careers in academics and industry. We are ABET accredited and home to a world-class medical imaging center and cutting edge 3D prototyping facility. One of our core values is the belief that biomedical engineers should learn by doing. At UC Davis we emphasize translation through our close relationships with clinicians, both at the UC Davis Medical Center and at the School of Veterinary Medicine. The success of our faculty at attracting funding generates many opportunities for graduate student research and partnerships with industry. We offer MS, and PhD degrees. Visit our website or drop by our booth to learn about our programs in bioinformatics, biomechanics, cellular and molecular systems imaging, synthetic biology, and tissue engineering and regenerative medicine. Keep up with the latest news by liking our Facebook page.
EXHIBITOR BOOTHS AND INFORMATION

Booth #184/186
University of California, Irvine
3120 Natural Sciences II
Irvine, CA 92697-7718
Phone: 949-824-3494
Email: bme@uci.edu
Web: www.eng.uci.edu/dept/bme

The goal of the UCI biomedical engineering program is to train students for faculty jobs in the biomedical and biotechnology industries, healthcare professions and academia. Located at a world-class research university deep in the heart of the nation’s biomedical device and technology capital, we are uniquely positioned to build upon our existing research strengths.

Booth #908
UC San Diego
9500 Gilman Drive
San Diego, CA 92093
Phone: 858-822-3441
Email: gmoreira@ucsd.edu
Web: http://bme.ucsd.edu/

Our unique interdisciplinary graduate program and ABET-accredited undergraduate program both combine building a solid fundamental foundation in biological sciences and engineering while, simultaneously, developing diverse communication skills for our students. Bioengineering Interdepartmental Graduate Program (BIG) provides additional training in analytical, computational and laboratory skills in the most advanced quantitative bioengineering research. The result is a rigorous, but exceptionally interactive and welcoming educational training for Bioengineering students leading towards B.S., M.S. and Ph.D. degrees.

Booth #25
University of California, Riverside
900 University Avenue
205 Materials Science and Engineering
Riverside, CA 92521
Phone: 951-827-4103
Email: big@engr.ucr.edu
Web: www.bioeng.ucr.edu

The mission of the Department of Bioengineering at the University of California, Riverside focuses on two inter-related themes:

1. Advancing bioengineering research, and,
2. Preparing future leadership in bioengineering and related fields.

Booth #105
University of Cincinnati
PO Box 210012
Cincinnati, OH 45221
Phone: 513-556-0988
Email: michelle.montoya@uc.edu
Web: www.uc.edu

The Bioengineering program at CU Denver welcomes undergraduate, master and PhD students. Our students learn and perform research or medical device design in world-class hospitals and clinical research labs. Our research focus areas: tissue engineering, neuroscience, assistive technology, biomedical device design, entrepreneurship, regulatory affairs and clinical imaging.

Booth #140
University of Chicago
Institute for Molecular Engineering
5640 South Ellis Avenue, ERC 299
Chicago, IL 60637
Phone: 773-834-2290
Email: bme@uchicago.edu
Web: http://ime.uchicago.edu

The IME PhD program equips students with engineering principles to analyze and design molecules for emerging applications, taking research beyond the boundaries of traditional engineering fields. Students work closely with faculty and peers in combining problem-solving skills with broad scientific expertise to build useful systems from the molecular level up.

Booth #106
University of Colorado Denver
Department of Bioengineering
12700 E. Montview Avenue
Suite 100
Aurora, CO 80045
Phone: 303-724-5893
Email: bioengineering@ucdenver.edu
Web: www.ucdenver.edu/bioengineering

The Bioengineering program at CU Denver welcomes undergraduate, master and PhD students. Our students learn and perform research or medical device design in world-class hospitals and clinical research labs. Our research focus areas: tissue engineering, neuroscience, assistive technology, biomedical device design, entrepreneurship, regulatory affairs and clinical imaging.

Booth #709
University of Florida
1275 Center Drive
Biomedical Sciences Building IG-56
Gainesville, FL 32611
Phone: 352-392-1222
Email: info@bme.ufl.edu
Web: www.bme.ufl.edu

The J. Crayton Pruitt Family Department of Biomedical Engineering at the University of Florida (UF BME) is dedicated to developing innovative and clinically translatable biomedical technologies, educating future generations of biomedical engineers, and cultivating leaders, by nurturing integration of engineering, science, and healthcare in a collaborative and dynamic educational and research environment. UF BME is one of only a few departments nationally to be co-located with a top-ranked medical school, veterinary school, and dental school, along with having a strong culture of entrepreneurship and commercialization.

Booth #1002
University of Georgia
School of Chemical, Materials and Biomedical Engineering
Driftmier Engineering Center
597 D.W. Brooks Drive
Athens, GA 30602
Phone: 706-542-0870
Email: james.warnock@uga.edu
Web: http://engineering.uga.edu/schools/cme

The newly formed School of Chemical, Materials and Biomedical Engineering at the University of Georgia is focused on translational research in the areas of bio-manufacturing, bio-based materials and Next-gen advanced therapeutics. The school offers several graduate programs, including PhD programs in Biochemical Engineering, Biomedical Engineering and Biological & Agricultural Engineering.

Booth #21
University of Illinois at Chicago
821 S. Morgan Street
Room 218
Chicago, IL 60607
Phone: 312-996-2335
Email: bico@uic.edu
Web: www.bico.uic.edu

One of the first degree granting and accredited Bioengineering programs in the nation, since 1965 UIC Bioengineering offers B.S., M.S., Ph.D., M.D./M.S. and M.D./Ph.D. programs that emphasize translational research and innovative training that can include clinical immersion and industry-linked interdisciplinary medical product development. The Richard and Loan Hill Department of Bioengineering is led by 30 core and more than 100 affiliate faculty who collaborate with researchers in five major academic medical centers in Chicago - including UIC, home of the largest medical school in the country.

Booth #15
University of Illinois at Chicago
821 S. Morgan Street
Room 218
Chicago, IL 60607
Phone: 312-996-2335
Email: bico@uic.edu
Web: www.bico.uic.edu

One of the first degree granting and accredited Bioengineering programs in the nation, since 1965 UIC Bioengineering offers B.S., M.S., Ph.D., M.D./M.S. and M.D./Ph.D. programs that emphasize translational research and innovative training that can include clinical immersion and industry-linked interdisciplinary medical product development. The Richard and Loan Hill Department of Bioengineering is led by 30 core and more than 100 affiliate faculty who collaborate with researchers in five major academic medical centers in Chicago - including UIC, home of the largest medical school in the country.
**Illinois University at Urbana-Champaign**

**Bioengineering**

Engineering for Life

**Bioengineering**

Booth #309

University of Illinois @ Urbana-Champaign Bioengineering

1204 W. Springfield Avenue

Urbana, IL 61801

Phone: 217-333-1676

Email: bioengineering@illinois.edu

Web: bioengineering.illinois.edu

With strengths in bioimaging at multi-scale; bio-micro and nanotechnology; computational and systems biology; molecular, cellular and tissue engineering; synthetic bioengineering; and research in BME education, the Department of Bioengineering at Illinois is addressing grand challenges in human health and sustainability. Come join a top-ranked engineering school and one of the fastest-growing, innovative bioengineering departments. We are committed to providing the best experience for our students and training future bioengineering leaders by incorporating diverse topics of science, engineering, technology and medicine into our teaching. We offer BS, MS, MSEng, and PhD degrees and are driving the development of the new Carle Illinois College of Medicine, one of the nation’s first engineering based medical schools, with its first cohort expected to begin in Fall 2018.

Booth #409

University of Illinois @ Urbana-Champaign Master of Engineering (Professional Master’s Program)

1204 W. Springfield Avenue

Urbana, IL 61801

Phone: 217-333-8163

Email: bioe-meng@illinois.edu

Web: www.bioemeng.illinois.edu

Illinois’ Master of Engineering in Bioengineering is a one-year, non-thesis degree program designed for industry-bound professionals who seek to advance their technical breadth and depth in fields related to bioengineering, while developing a big-picture business perspective. The program offers a choice from one of three transcriptable concentrations: bioinstrumentation (medical devices), computational genomics (big data genome sequencing) and general bioengineering. At Illinois, you’ll gain the hands-on experience, leadership ability, and unparalleled skills needed to be successful in your chosen career.

Booth #308

The University of Kansas

1520 West 15th Street

Lawrence, KS 66045

Phone: 785-864-5258

E-mail: bioe@ku.edu

Web: http://bioe.ksu.edu/

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

Booth #221

University of Kentucky Department of Biomedical Engineering

522 Robotics and Manufacturing Building

143 Graham Avenue

Lexington, KY 40506

Phone: 859-257-8101

Email: jennifer.hart@uky.edu

Web: www.bme.uky.edu

The Fischell Department of Bioengineering at UMD is committed to making a difference in human health care through education, research, and invention. We offer programs leading to the B.S., M.Eng., M.S., M.S./M.D., M.D./Ph.D. and Ph.D. degrees. This year, we welcomed four new faculty, while launching an Institute for Biomedical Devices, and the Center for Engineering Complex Tissues.

Booths #323/325

Fischell Department of Bioengineering

University of Maryland

8228 Paint Branch Drive

2330 Jeong H. Kim Engineering Building

College Park MD 20742

Phone: 301-405-8268

Email: bioe@umd.edu

Web: www.bme.umd.edu

The Fischell Department of Bioengineering at UMD is committed to making a difference in human health care through education, research, and invention. We offer programs leading to the B.S., M.Eng., M.S., M.S./M.D., M.D./Ph.D. and Ph.D. degrees. This year, we welcomed four new faculty, while launching an Institute for Biomedical Devices, and the Center for Engineering Complex Tissues.

Booths #323/225

University of Miami Department of Biomedical Engineering

1211 Memorial Drive

MEA 219

Coral Gables, FL 33146

Phone: 305-284-2445

Email: bme.coe@miami.edu

Web: www.miami.edu/bme

Our undergraduate and graduate programs leading to the B.S., 5 year B.S./M.S., M.S and Ph.D. degrees provide graduates with the analytical and design skills required to solve problems at the interface of engineering and life sciences. Special features of our program include small class size, very strong ties with the University of Miami Miller School of Medicine, high level of student-faculty interaction, and a high percentage of undergraduate student participation in research and professional activities. The research areas of our Faculty include imaging, optics and lasers; neural engineering, signals and instrumentation; and biomechanics, biomaterials and tissue engineering.
Booth #400
University of Michigan
Department of Biomedical Engineering
1125 Carl A. Gerstacker Building
2200 Bonitaell Blvd.
Ann Arbor, MI 48109-2099
Phone: 734-764-9588
E-mail: um-bme@umich.edu
Web: http://bme.umich.edu
U-M BME is celebrating over 50 years of U-M Bioengineering, 20 years as a department, and 5 years of partnership as a joint department between Michigan Engineering and the U-M Medical School, fostering collaboration between engineers and clinicians to solve challenges in healthcare. U-M BME is a leader in regenerative medicine, imaging & biophotonics, micro- and nanotech & molecular engineering, neural engineering, biomechanics, engineering education and computation & modeling. We reach across disciplines and translate technologies from the lab to patients and healthcare providers. Our newly reimagined curriculum and pioneering design program give students the tools necessary to invent the next generation solutions in healthcare and beyond.

Booths #515/517
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: b-mengp@umn.edu
Web: http://bme.umn.edu
The Department of Biomedical Engineering at the University of Minnesota is physically located at the intersection of the medical school, engineering, and physical sciences, and in the heart of Medical Alley (home to Medtronic, Boston Scientific, Abbott, plus 500 other FDA-registered medtech companies). Research conducted by the faculty spans the full spectrum, with particular depth in cardiovascular engineering, neural engineering, cell/tissue engineering, cancer bioengineering, and biomedical imaging/optics.

Booth #910
University of Missouri
Department of Biomedical Engineering
Columbia, MO 65211
Phone: 573-882-7044
E-mail: howardrb@missouri.edu
Web: http://bioengineering.missouri.edu/
The mission of the Department of Biomedical Engineering is to educate engineering leaders in the field of bioengineering. We offer both undergraduate and graduate degrees. Our emphasis on Biomedical Innovations is an interdisciplinary approach that exposes our students to cutting edge research opportunities. We are a Tier I research institution and member of the prestigious Association of American Universities.

Booth #111
University of Nebraska – Lincoln
114 Othmer Hall
P.O. Box 880642
Lincoln, NE 68588-0642
Phone: 402-472-3161
E-mail: engfrontdesk@unl.edu
Web: www.engineering.unl.edu/biomedical-engineering
The University of Nebraska – Lincoln (UNL) offers an inter-departmental and flexible curriculum for students interested in obtaining a PhD in engineering, with specialization in biomedical engineering. Collaboration occurs among students and faculty from many UNL engineering departments, as well as with the University of Nebraska Medical Center.

Booths #403/405
University of North Carolina
at Chapel Hill
137 MacNider Hall
Chapel Hill, NC 27599
Phone: 919-445-6051
E-mail: vberg@email.unc.edu
Web: www.bme.unc.edu
The Joint Department of Biomedical Engineering was founded in 2003 and is co-located at the University of North Carolina at Chapel Hill and NC State University. Linking the School of Medicine and College of Arts and Sciences at UNC-Ch to the College of Engineering at NC State, the graduate program offers joint MS and PhD degrees in Biomedical Engineering in five core research areas including Rehabilitation Engineering, Regenerative Medicine, Medical Imaging, Biomedical Microdevices and Pharmacoengineering. With over 30 tenured and tenure track core faculty members, our graduate program embraces interdisciplinary collaborations spanning the basic sciences through to clinical and translational applications.

Booth #1016
University of North Texas
Department of Biomedical Engineering
3940 North Elm Street B131
Denton, TX 76207
Phone: 940-565-3338
Email: vijay.vaidyanathan@unt.edu
Web: http://biomedical.engineering.unt.edu
50 YEARS OF BIOENGINEERING
20 YEARS OF BME
5 YEARS AS A JOINT DEPARTMENT
A CELEBRATION OF PAST, PRESENT AND FUTURE

WHAT WE DO HERE IMPROVES LIVES:
Begin with innovative research. Move the innovation from lab to patients. Launch companies to impact the world!

Come see how:
BME.UMICH.EDU
Ingenious in Translational Healthcare Technology

For questions, contact Cherie Hudson at cheriehudson@ou.edu or (405) 325-0789.

To learn about the multiple Stephenson Endowed Professorships and Stephenson Graduate Fellowships, contact Michael Detamore, director of the Stephenson School of Biomedical Engineering at detamore@ou.edu.

For more information visit sbme.ou.edu.
PhD in Biomedical Engineering

Offered by the Department of Bioengineering at The University of Texas at Dallas, the Biomedical Engineering PhD program has over 20 research faculty with more than $20M in active funding from the NIH, NSF, DARPA and industry partners.

PhD applicants are eligible to be selected for a Eugene McDermott Graduate Fellowship, which includes a generous stipend, tuition, and a $10,000 annual discretionary budget.

Application Deadline: December 1, 2017

For More Information: 972.883.5155
bmenadvising@utdallas.edu
be.utdallas.edu

THE ERIK JONSSON SCHOOL OF ENGINEERING AND COMPUTER SCIENCE
THE UNIVERSITY OF TEXAS AT DALLAS

EXHIBITOR BOOTHS AND INFORMATION

Booth '305
The University of Texas Arlington Bioengineering Department
500 UTA Blvd
Suite 226
Arlington, TX 76019
Phone: 817-229-2249
Email: cbcradfield@uta.edu
Web: www.uta.edu/bioengineering

The Bioengineering Department at The University of Texas Arlington offers several research and scholarship opportunities for students interested in Biomaterials & Regenerative Tissue Engineering, Biostatistics, Biomechanics, and Biomedical Imaging. Graduate students also have the option of earning a joint graduate degree with The University of Texas Southwest Medical Center at Dallas. Those interested in our programs are strongly encouraged to visit Booth 305 at the exhibit to learn more.

Booth '621/623
The University of Texas at Austin Department of Biomedical Engineering
107 W. Dean Keeton, C0800
Austin, TX 78712
Phone: 512-471-3604
Email: sbixby@mail.utexas.edu
Web: www.bme.utexas.edu

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

Booth '803
University of Vermont
33 Colchester Avenue
Burlington, VT 05405
Phone: 802-656-9544
Email: oldinski@uvm.edu
Web: www.uvm.edu

The Institute of Biomaterials & Biomedical Engineering (IBBME) at the University of Vermont is located in the heart of Canada’s largest health-care research network. We offer four graduate degrees in biomedical and clinical engineering. Our multidisciplinary approach across the disciplines of engineering, medicine and dentistry address global challenges in human health.

Booth '504
University of Virginia
P.O. Box 800759 UVA
Charlottesville, VA 22908
Phone: 434-924-5101
Email: bme-dept@virginia.edu
Web: http://bme.virginia.edu

Using our perspective as engineers, we make ground-breaking discoveries in fields like systems biology and biomedical data sciences, medical imaging, and cellular and tissue engineering. We are co-located in the medical school, and our department’s remarkable tendency toward collaboration reflects a culture of cooperation that has been essential to UVA going all the way back to Thomas Jefferson.
**Booth '801**

University of Washington Department of Bioengineering
3720 5th Avenue NE, #1107
Seattle, WA, 98105
Phone: 206-685-2000
Email: bioeng@uw.edu
Web: http://depts.washington.edu/bioe/index.html

University of Washington Bioengineering is a world leader in bioengineering, clinical applications, technology transfer, and service. Please visit booth 801 to discover how we are inventing the future of medicine. Our faculty and students are eager to talk to you!

**Booth '723**

University of Wisconsin-Madison Biomedical Engineering Department
1550 Engineering Drive
Madison, WI 53706
Phone: 608-263-4460
Email: info@bme.wisc.edu
Web: www.engr.wisc.edu/bme/bme.html

Please visit our booth to learn more about the B.S., M.S., and Ph.D. programs in Biomedical Engineering at the University of Wisconsin Madison. Staff, students, and faculty will be available to answer your questions and provide information on admissions, curriculum, and our world-class facilities and institution-wide research centers and institutes.

**Booths ‘609/611**

Vanderbilt University
5824 Stevenson Center Drive
Nashville, TN, 37235
Phone: 615-343-1099
Email: tina.shaw@vanderbilt.edu
Web: www.vanderbilt.edu

VU BME bridges Vanderbilt’s engineering, basic science departments, and a Top 10 School of Medicine, and is located in a vibrant, destination city. Research strengths include biomaterials and drug delivery, bioMEMS and organs-on-a-chip, biophotonics, image-based technologies and modeling, mechanobiology, and nanomedicine. VU BME stimulates high-impact research and provides unique educational opportunities, and in 2018 will be celebrating its 50th anniversary as a department.

**Booths ‘202/204**

Virginia Commonwealth University
401 W. Main Street
Richmond, VA 23284
Phone: 804-828-7958
Email: biomedicaleng@vcu.edu
Web: www.bimedical.vcu.edu

VCU Biomedical Engineering has strong ties with the VCU Schools of Medicine, Dentistry, and Pharmacy and Massey Cancer Center, and offers Bachelor’s, Master’s, and Doctoral degrees. Research specialties include mechanobiology, regenerative medicine, biomechanics, rehabilitation engineering, biomaterials and computational medicine. The department is actively recruiting junior and senior level faculty.

**Booths ‘600/601/602/603/604/605**

Virginia Tech-Wake Forest University School of Biomedical Engineering & Science
VT-WFU SBES: 317 Kelly Hall
325 Stanger Street
Mail Code 0298
Blacksburg, VA 24061
Phone: 540-231-8191
Email: kristine@vt.edu
Web: www.bees.vt.edu

The Virginia Tech – Wake Forest University School for Biomedical Engineering and Sciences offers MS, PhD, MD/PhD, and DVM/PhD degrees. We have 76 biomedical engineering faculty with active research programs in tissue engineering, biomedical imaging, biomechanics, nano-medicine, 8 & nanobiomedical engineering, neuroengineering, translational cancer research, cardiovascular engineering, and other emerging fields.

**Booths ‘508/510**

Washington University in St. Louis
One Brookings Drive
Box 1097
St. Louis, MO 63131
Phone: 314-935-6164
Email: teasdalek@wustl.edu
Web: http://bme.wustl.edu/

In partnership with our world-class medical school and as part of a $50M research enterprise in life sciences and biomedical research, the Department of Biomedical Engineering at Washington University is a gateway to interdisciplinary, basic science and translational research training at the BS, MS and PhD level. More than 90 research mentors support over 120 BME PhD students in studies of regenerative medicine, imaging, cell and molecular systems, cardiovascular, neural, orthopedic, and cancer engineering. With adjacency to the largest public park in the USA, and over 75,000 sq ft of state-of-the-art facilities, the BME Department at Washington University provides the ideal intellectual, physical and collaborative climate to pursue a BS, MS, MENG, MS/MA, PhD or MD/PhD degree.

**Booth ‘522**

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

The Biomedical Engineering Department at Wayne State University offers BS(including dual degree options with Mechanical Engineering and Electrical Engineering), Bridge Certificate in Injury Biomechanics, MS, PhD and MD/PhD degrees. It is involved in some of the most advanced research in the field. Our faculty have made significant contributions in automotive safety and the prevention of sports-related and military injuries. Ground-breaking research is also being conducted in the development of tissue-engineered nervous and heart valves as well as imaging techniques for improved diagnosis of brain injury and cancer. Our research has led to improvement in the standards of the automotive industry, better protective equipment for our soldiers and athletes, new techniques to repair damaged tissue and improved diagnostic imaging of trauma and disease.

**Booth ‘1008**

Woodrow Wilson National Fellowship Foundation
5 Vaught Drive
Suite 301
Princeton, NJ 08540
Phone: 609-945-7852
Email: ndbl@woodrow.org
Web: www.woodrow.org

Vanderbilt University Biomedical Engineering: 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.

**Booths ‘322/324**

Worcester Polytechnic Institute (WPI)
100 Institute Road
Worcester, MA 01609
Phone: 508-831-5301
Email: grad@wpi.edu
Web: www.grad.wpi.edu

Graduate students in WPI’s Biomedical Engineering (BME) Department collaborate with scientists and engineers across disciplines, seeking breakthroughs in injury and rehabilitative biomechanics, innovations in regenerative medicine and quantitative microscopy, and major steps forward in healthcare. Whether in the classroom or the lab, the focus is on making an impact and solving real-world problems. WPI’s BME graduates have gone on to rewarding careers in major medical and biomedical research centers across academia, government, and the medical device industry.

**Booth ‘321**

Yale University
Malone Engineering Center
55 Prospect Street
New Haven, CT 06511
Phone: 203-432-4262
Email: deanna.lomax@yale.edu
Web: www.seas.yale.edu/departments/biomedical-engineering

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.
Where innovation is a degree requirement.
The master's and doctoral programs in biomedical engineering at WPI produce leaders and entrepreneurs highly valued in today's workplace. Find your place here, among researchers who are uncovering innovative ways to improve lives.

Discover WPI—a premier technological university offering 50+ graduate programs in science, engineering, and business.
Meeting Location
Phoenix Convention Center
100 North 3rd Street
Phoenix, Arizona 85004
602.262.6225

Shoran Grand Phoenix Hotel
340 North 3rd Street
Phoenix, Arizona 85004
602.262.2500

Registration
Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the BMES BASH on Friday evening. BMES cancellation policy may be found on any registration form. Any applicable refunds will be issued post-meeting. Substitutions are permitted with written permission from the original registrant. Additional social event tickets including the Celebration of Minorities in BME Luncheon, and the Women in BME Luncheon are separate and above the original registrant. Additional social event tickets are non-transferable with written permission from the presenter. Although BMES has paid for WiFi throughout the convention center during the Annual Meeting, there will not be specific dedicated hard-wired internet access in the meeting rooms.

Sessions chairs should keep sessions on the listed schedule so attendees can move back and forth among sessions. In most cases, presentations should be done in two 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 are to be displayed all day on assigned day. Authors must be present during specified viewing with microphone. Each technical session room will be equipped with a PC-compatible computer with a USB port and Power-Point 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.

Program Highlights
Don’t Miss These Events!

Wednesday, October 11
Meet the Faculty Candidate Forum
3:30 pm–5:30 pm
Exhibit Hall 300 Level
The ‘Meet-the-Faculty Candidate’ poster session provides a great opportunity for faculty, recruiters, and Department Chairs to speak directly with recent PhD grads and post-doctoral researchers who are seeking faculty positions.

The BMES 2017 Annual Meeting Meet The Faculty Candidate Forum was only open to those who are actively on the market for the 2017–2018 recruiting cycle.

Candidates submitted for consideration in August. The accepted candidates’ CVs can be viewed at www.bmes.org.

Wednesday, October 11
Welcome Reception
5:30 pm–7:00 pm
300 Level Foyer
Light refreshments will be served. All registrants are invited to attend.

Welcome Reception sponsored by:

Wednesday, October 11
LGBT Dessert Social
8:00 pm–9:00 pm
Paradise Valley Room,
Sheraton Grand Phoenix Hotel

*additional registration and $10 ticket required
Naomi Chosler, PhD, Professor at the University of Wisconsin-Madison, and, Kelly Stevens, PhD, Assistant Professor at the University of Washington, will lead a conversation about “Being an Ally.” Speakers’ talk will be followed by dessert and a cash bar.

LGBT Social sponsored by:

Thursday, October 12
BMES State of the Society Address & Pritzker Award Lecture
10:15 am
North Ballroom BCD
Please join us for a dialogue with BMES President Lori Setton and other leaders of the Society.

Friday, October 13
BMES Dessert Party Bash at the Arizona Science Center
8:30 pm–11:00 pm
Join us for a Dessert Party this year to celebrate the 2017 BMES Annual Meeting. Cap off the evening with some dessert and networking.

Designated by renowned architect Antoine Predock, the Arizona Science Center is a unique landmark nestled in the picturesque setting of Heritage and Science Park where history and innovation collide.

The Arizona Science Center has over 300 hands-on, interactive exhibits that span four levels. Explore the human body, experience the forces of nature, be fascinated by physics, discover digital communications and investigate sustainability and renewable resources.

Don’t forget to turn your BMES BASH ticket in for a wristband at the information or registration booths before Friday afternoon.

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

Refreshment Breaks are sponsored by:

BMES Presenter Information
Platform Presentations
Each technical session room will be equipped with a PC-compatible computer with a USB port and Power-Point along with an LCD projector, screen and a lectern with microphone.

Poster Presentations
Posters will be presented Thursday, Friday and Saturday. Posters are to be displayed all day on assigned day. Authors must be present during specified viewing with microphone. Each technical session room will be equipped with a PC-compatible computer with a USB port and Power-Point along with an LCD projector, screen and a lectern with microphone.

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

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

Sessions chairs should keep sessions on the listed schedule so attendees can move back and forth among sessions. In most cases, presentations should be done in two 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 are to be displayed all day on assigned day. Authors must be present during specified viewing with authors as listed in the Scientific Program:

Thursday
9:30 am–10:15 am and 3:00 pm–3:45 pm
Friday
9:30 am–10:15 am and 2:45 pm–3:30 pm
Saturday
9:30 am–10:30 am

All posters will be in the Exhibit Hall 300 Level in the Phoenix Convention Center. Posters are numbered with a card corresponding to the numbers assigned in the program.

Speaker Ready Room
Registration Area, Exhibit Hall 300 Level of the Phoenix 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 11
1:00 pm – 5:00 pm
Thursday, October 12
7:00 am – 5:00 pm
Friday, October 13
7:00 am – 5:00 pm
Saturday, October 14
7:00 am – 2:30 pm

Program Highlights—Don’t Miss These Events!
Thursday, October 12

Celebration of Minorities in BME Luncheon®
11:45 am - 1:15 pm  West Ballroom A

*additional registration and $35 ticket required

This event is hosted by the BMES Diversity Committee to create a community and network within the Society fostering support and professional development of minorities in BMES at all levels. Everyone is invited to attend, as diversity only increases when all groups play a part. The luncheon complements the Diversity Award lecture and the Women in BME Luncheon on Friday.

Reframing the Engineering Academic Environment to Expand Opportunities for All Students

Antonio Garcia, PhD
Foundation Professor of Bioengineering, Associate Director, Hispanic Research Center Chair, Biological Design Graduate Program
Arizona State University

Engineering is a profession focused on enriching lives through the creation of new technology. In the U.S., there are many entrepreneurs, companies, programs, and educators that are actively promoting engineering's importance in our society and have made great strides in attracting young people to pursue engineering degrees. However, while the general public and students of all ages are fascinated by new technology and advances in engineering, enthusiasm for engineering as a career, especially among traditionally underrepresented groups, can be dampened by our educational system and culture at large. Should more programs promoting engineering be created? Will government and educational institutions need to continue to focus on deficit models or on ending disparities in order to enhance engineering as a profession available to all segments of society?

This talk is intended to generate a discussion on a different approach that is specifically aimed at maintaining enthusiasm for engineering across the higher education student population. For nearly three decades, my colleagues have been partnering with faculty and administrators to create a mentored environment intended to expand student opportunities within STEM. Recently, we have taken on the challenge of changing the current academic culture of a low context or individuated approach to defining a student’s ability or level of success through a new model called Context Diversity which encourages reframing academic cultures to meet the needs of all populations, and especially underrepresented groups.

The challenges before us are myriad and include the following: How can we promote change, especially in engineering education which has external constraints and considers itself as doing a great deal to promote diversity and the value of engineering? Can we create a high context or integrated approach to teaching and learning? Can we establish a flexible learning environment that appreciates multicontextuality and serves all students?

Dr. García is the Associate Director of the Hispanic Research Center, Foundation Professor of Bioengineering, and Director of the Biological Design Graduate Program in the Ira A. Fulton Schools of Engineering at Arizona State University where he has focused on surface and colloid chemistry for diagnostics, drug delivery, and biomolecule identification and purification. He obtained a doctorate in Chemical Engineering (College of Chemistry) from the University of California, Berkeley and a baccalaureate in Chemical Engineering from Rutgers University, New Brunswick.

Dr. García is very active in research and technology transfer as a professor of bioengineering while also working on education and human resource development as an administrator in the College of Humanities. As Associate Director, he has worked for 27 years on education and human resource projects aimed at improving math, science, and engineering education as well as meeting the demand for a skilled and diverse U.S. technological workforce.

His research work with colleagues in engineering and sciences on combining surface chemistry and fractal texturing in order to move water drops using light was featured in Science News (August 2004). Most recently, he has been developing nanoparticle technology, portable optothermal devices for drug delivery, and nanostructures for sensor development and diagnostics for Pre-Surveillance of infectious diseases. Some of his work has been featured on the covers of the journals Analyst (May 2007), Advanced Materials (November 2008), and Macromolecules Rapid Communications (February 2010). With colleagues from the UNED and UCM (Madrid, Spain) the work on digital magnetofluidics was also featured in ScienceDaily (2006), and the work on “nanowells” with colleagues from North Carolina State University was featured again in ScienceDaily (2008). Presently, he is working on several technology transfer projects in the U.S. and Mexico, that are slated to begin clinical investigations in 2017 and 2018.
**Receptions located at the Sheraton Grande Phoenix Hotel**

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**Additional Meetings**

Most of these meetings/events are invitation only. Please check with the organizer.

**Wednesday, October 11**

- BMES Board of Directors Meeting
  - 8:30 am–4:30 pm
  - Room 126C
  - Organizer: Lori Setton
- AIMBE Board of Directors Meeting Affiliate Event
  - 1:00 pm–4:00 pm
  - Room 127C
  - Organizer: Milan Yager
- AIMBE Academic Council Affiliate Event
  - 4:00 pm–5:00 pm
  - Room 127C
  - Organizer: Milan Yager
- Council of Chairs Dinner & Meeting Invitation Only
  - 6:30 pm–9:00 pm
  - Deer Valley Room Sheraton Grande Phoenix Hotel
  - Organizer: Robert Kirsch
- Industry Committee Planning Meeting Invitation Only
  - 7:30 pm–8:30 pm
  - Sheraton Grande Phoenix Hotel
  - Organizer: Ben Noe

**Thursday, October 12**

- Council of Industry Chapter Presidents–Invitation Only
  - 7:00 am–8:00 am
  - Room 126A
  - Organizer: Ben Noe
- Diversity Committee Meeting
  - 7:00 am–8:00 am
  - Room 127B
  - Organizer: Debra Augustine and Guillermo Ameer
- National Meetings Committee Meeting
  - 8:00 am–9:30 am
  - Room 126BC
  - Organizers: Cynthia Reinhart-King and Shelly Sakiyama-Elbert
- Student Affairs Committee
  - 8:30 am–9:30 am
  - Room 127C
  - Organizer: Art Ritter

**Thursday, October 12**

- Ethics Subcommittee Meeting
  - 9:30 am–10:30 am
  - Room 127A
  - Organizer: Subrata Saha
- 50th Anniversary Committee Meeting
  - 1:15 pm–3:00 pm
  - Room 127A
  - Organizer: Martine LaBerge

**Friday, October 13**

- Industry Advisory Board Invitation Only
  - 7:00 am–8:00 am
  - Room 126A
  - Organizer: Ben Noe
- Education Committee Meeting
  - 7:00 am–8:00 am
  - Room 127B
  - Organizer: Donald Gaver
- 2018 Annual Meeting Planning Committee Meeting
  - 8:00 am–10:00 am
  - Room 126BC
  - Organizer: John Tunnell and John Fisher
- International Committee
  - 8:00 am–9:00 am
  - Room 127C
  - Organizer: Damir Khismatullin
- Membership Committee Meeting
  - 3:00 pm–4:00 pm
  - Room 127C
  - Organizer: Kristen Billiar
- Design Competition Judges Meeting
  - 3:30 pm–4:30 pm
  - Room 126A
  - Organizer: Liz DaSilva

**Saturday, October 14**

- BMES Board of Directors Meeting
  - 12:30 pm–3:30 pm
  - Room 126BC
  - Organizer: Lori Setton

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**ADDITIONAL MEETINGS**

**Wednesday, October 11**

- BMES Board of Directors Meeting
  - 8:30 am–4:30 pm
  - Room 126C
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- AIMBE Board of Directors Meeting Affiliate Event
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**Thursday, October 12**

- Council of Industry Chapter Presidents–Invitation Only
  - 7:00 am–8:00 am
  - Room 126A
  - Organizer: Ben Noe
- Diversity Committee Meeting
  - 7:00 am–8:00 am
  - Room 127B
  - Organizer: Debra Augustine and Guillermo Ameer
- National Meetings Committee Meeting
  - 8:00 am–9:30 am
  - Room 126BC
  - Organizers: Cynthia Reinhart-King and Shelly Sakiyama-Elbert
- Student Affairs Committee
  - 8:30 am–9:30 am
  - Room 127C
  - Organizer: Art Ritter

**Thursday, October 12**

- Ethics Subcommittee Meeting
  - 9:30 am–10:30 am
  - Room 127A
  - Organizer: Subrata Saha
- 50th Anniversary Committee Meeting
  - 1:15 pm–3:00 pm
  - Room 127A
  - Organizer: Martine LaBerge

**Friday, October 13**

- Industry Advisory Board Invitation Only
  - 7:00 am–8:00 am
  - Room 126A
  - Organizer: Ben Noe
- Education Committee Meeting
  - 7:00 am–8:00 am
  - Room 127B
  - Organizer: Donald Gaver
- 2018 Annual Meeting Planning Committee Meeting
  - 8:00 am–10:00 am
  - Room 126BC
  - Organizer: John Tunnell and John Fisher
- International Committee
  - 8:00 am–9:00 am
  - Room 127C
  - Organizer: Damir Khismatullin
- Membership Committee Meeting
  - 3:00 pm–4:00 pm
  - Room 127C
  - Organizer: Kristen Billiar
- Design Competition Judges Meeting
  - 3:30 pm–4:30 pm
  - Room 126A
  - Organizer: Liz DaSilva

**Saturday, October 14**

- BMES Board of Directors Meeting
  - 12:30 pm–3:30 pm
  - Room 126BC
  - Organizer: Lori Setton
<table>
<thead>
<tr>
<th>Student and Early Career Programs</th>
<th>Programs take place in the Convention Center, unless otherwise noted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wednesday, October 11</strong></td>
<td></td>
</tr>
<tr>
<td>3:00 pm–4:30 pm</td>
<td>Room 129AB</td>
</tr>
<tr>
<td>Mentor Match-Up (pre-registration required)</td>
<td>The Mentor Match-Up program session connects mentors and mentees based on their common interests. This workshop provides members the opportunity to connect with a student member to help them in their professional development and to establish a mentor/mentee relationship beyond the annual meeting.</td>
</tr>
<tr>
<td>4:30 pm–5:30 pm</td>
<td>Room 129AB</td>
</tr>
</tbody>
</table>
| Perfecting the First-time Student and Early Career Attendee Experience | Welcome to your first BMES Annual Meeting! You are about to embark on a wonderful experience. Attend this special session designed for the First Time Student and Early Career Attendee, and hear how to take advantage of all that is offered. This session will provide you with information and insight to easily navigate the annual meeting in order for you to make the most out of your time in Phoenix.

**Thursday, October 12**

| 9:00 am–10:00 am                  | Room 124AB                                                  |
| Networking: A Required Life Skill in a Diverse 21st Century | To succeed in today’s competitive world, who you know can be as critical as what you know. Successfully networking—developing and utilizing contacts—is an essential skill. Networking involves: 1) making contacts, 2) establishing cordial relationships, and 3) foraging mutual bonds to share information, knowledge, and expertise. This session explores skills and techniques germane to successful networking.

| 1:00 pm–4:30 pm                  | Room 129AB                                                  |
| Coop/Intern and Industrial Relations Workshop—Part II (by invitation) | The industrial relations workshop is for BMES faculty, administrators and staff to collectively discuss challenges and share best practices for engaging industry and promoting students for hire (coop/ intern and full-time positions). The workshop includes an industry panel, an update on BMES industry activities, and group discussion time. Participants will work in groups based on geographical regions to foster regional collaboration and program engagement. |
| 1:15 pm–2:15 pm                  | Room 128AB                                                  |
| BMCE Careers in Academia         | Hear about the various career paths and opportunities in academia. Representatives from academia share their career paths, educational training, and suggestions for current students and recent graduates. |
| 2:30 pm–2:45 pm                  | Room 128AB                                                  |
| BMCE Careers in Industry I       | Explore the various industry options for BMCE professionals. Representatives from industry share their career paths, educational training, insight into the hiring market, and suggestions for current students and recent graduates. |
| 3:00 pm–4:30 pm                  | Exhibit Hall 300 Level                                      |
| Rapid Resume Review              | Experienced BMCE professionals will review an electronic or hard copy of your resume and work with you to make improvements. |
| 4:00 pm–5:15 pm                  | Room 124AB                                                  |
| BMCE Entrepreneurship Careers    | Entrepreneurs discuss the translational path, how to take an idea from concept to commercial product, resources available to students interested in translating their technologies both within and outside the university, and licensing and start-up options. |
| 4:00 pm–5:15 pm                  | Room 128AB                                                  |
| BMCE Alternative Careers         | BMCE alumni and representatives share their career paths, educational training, and insight into working in the government, law, healthcare information technology and medicine. Suggestions for current students and recent graduates who want to pursue these career paths will be presented. |

| **Friday, October 13**            |                                                             |
| 8:30 am–9:30 am                  | Room 128AB                                                  |
| BMES Student Chapter Session—Outstanding Chapter Best Practices | Outstanding Student Chapter awardee University of California, San Diego will provide their chapter best-practices along with the Commendable Achievement awardee Arizona State University. During this workshop each chapter will have the opportunity to present their chapter’s goals and accomplishments. This will allow new and current student chapters an opportunity to ask questions, exchange ideas and implement new goals for their upcoming year. |
| 9:30 am–10:45 am                  | Room 128AB                                                  |
| BMES Student Chapter Session—Mentoring, Outreach and Chapter-Industry Best Practices | Outstanding Mentoring awardee Clemson University will provide their chapter best-practices along with the Outreach Program awardee University of Pennsylvania; each will discuss their goals and the success of their programs. Following their presentations Chapter-Industry awardee University of Maryland will present their chapter-industry best practices. During this workshop, students will have the opportunity to ask questions, exchange ideas and implement new goals for their upcoming year. |
| 9:00 am–10:00 am                  | Room 124AB                                                  |
| Graduate School Part I: Navigating the Graduate School Application/Financial Aid Process | Advanced degree level training has emerged as a key requirement for garnering positions of leadership in academia, government, and industry and for careering in today’s workplace. Beyond this, an advanced degree signals scholarship, maturity, and the capacity to do rigorous work. All attributes that can provide an edge in today’s world. This session is designed to provide information on strategies germane to: 1) developing and implementing a successful graduate school admission application; and 2) securing graduate student financial aid support. |
| 1:15 pm–2:15 pm                  | Room 124AB                                                  |
| BMES Undergraduate Student Design Competition | This competition allows each design team to orally present their projects and students to ask questions after each presentation. Upon completion of all presentations, the judges will select and announce the top 3 winners. Winners will receive first, second and third prize place money during the awards ceremony on Saturday, October 14th at the plenary session. |
| 2:45 pm–4:00 pm                  | Room 124AB                                                  |
| BMES Careers in Industry II      | Explore the various industry options for BMES professionals. Representatives from industry share their career paths, educational training, insight into the hiring market, and suggestions for current students and recent graduates. |

| **Student Chapter Tables**        |                                                             |
| Alpha Eta Mu Beta, The National Biomedical Engineering Honor Society | San José State University
University of California, San Diego
University of Maryland
University of Oklahoma
University of Southern California |
Alpha Eta Mu Beta (AEMB) Programs
Thursday, October 12

1:00 pm–3:00 pm Room 123

Alpha Eta Mu Beta, Mentoring for Innovative Design Solutions (MINDS) Workshop
Session Co-chairs: Teresa A. Murray, PhD, Alicia Fernandez-Fernandez, PhD, DPT, Marcia A. Pool, PhD, Kerri A. Green, MS, Jeffrey LaMack, PhD, Bhavit Bora, MS and Walter Lee Murlee, PhD and Dominic E. Nathan PhD.
Participation in this workshop is by invitation after successfully competing for a spot on a design team to address this year's design/research topic (please see http://www.alphamubeta.org/ for application instructions). Students will work in teams of 4 based on similar interests. Each team will have a mentor who will assist the team in creating a potentially marketable innovation. The mentor will help students incorporate key design considerations, including (i) market considerations for commercialization, (ii) design development and testing, (iii) quality control, (iv) regulatory strategy, and (v) intellectual property protection. After the workshop, students will meet virtually (e.g., via Skype) for up to 8 months to further refine their innovation. They will also be required to produce a more extensive presentation of their product, such as a video for a Kickstarter campaign, or a PowerPoint presentation for a group of potential investors. We will alert participants about opportunities for design contests, investment, and grant programs to further promote and develop their innovations. This program requires an 8 month commitment.

4:00 pm–5:00 pm Room 123

Alpha Eta Mu Beta Annual Grand Meeting
School Co-chairs: Teresa A. Murray PhD, Bahar Dhowan, Sara Mohamed, Lauren Pruett, Shyanthi Syrignal, Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS and Marcia A. Pool, PhD, Dominic E. Nathan PhD.
At this annual grand meeting, members representing chapters nationwide will come together to discuss important contemporary events relating to AEMB. (Attendance is mandatory for all AEMB members). If you would like to learn more about AEMB or start a new chapter at your school, please consider attending this session and speaking to any of the national officers, or stop by our table for more information.

Friday, October 13

9:00 am–10:15 am Room 123

Charting the Landscape of For-Profit Stem Cell Clinics in the US
Session Co-chairs: Emma Frow, PhD, Sara Mohamed, Bahar Dhowan, Dominic E. Nathan, PhD
For decades, stem cell researchers and bioengineers have been enthusiastic about the therapeutic promise of stem cells. They argue that the capacity of stem cells to self-renew and differentiate into different cell types can help replenish damaged or necrotic tissues, and therefore holds great clinical potential for a wide range of medical conditions. This promise has found strong support in the public sphere, helping to underpin significant public investments in stem cell research. In practice, the development and successful translation of stem cell therapies into the market has proven challenging. In the US, this translational gap is being colonized by for-profit clinics offering stem cell treatments that have not been reviewed or even submitted to the US Food and Drug Administration (FDA) for regulatory approval. The growth of these clinics has been a quick and recent development. The exact number is unclear; one estimate in 2014 suggested over 100 US-based clinics, but a recent study has identified 570 in the US. There is active debate underway about the legitimacy of the stem cell treatments offered by these for-profit clinics and bioethics petitioning the FDA to take action. They portray these clinics as snake oil merchants, offering unproven treatments that are, at best, ineffective but expensive for patients and, at worst, dangerous procedures that put patient health and safety at risk. Many of the for-profit clinics openly acknowledge in their marketing materials that their treatments have not been approved by the FDA. Moreover, they often suggest that FDA approval is not needed for the types of treatments they offer. They argue that the research community has been too slow in developing effective stem cell treatments for patients, and that the traditional research and clinical translation process is too bureaucratic to facilitate real innovation in stem cell therapies. For its part, the FDA has not taken a clear stance regarding for-profit stem cell clinics. Over the past few years, it has investigated a small number of these clinics, but does not seem to be taking systematic action. This emerging landscape of unregulated stem cell treatments is raising serious challenges to existing modes of clinical practice, scientific methodology, and jurisdiction over medical treatments. It raises timely and important questions for us to discuss, for example about patient rights, the politics of expertise in the face of uncertain knowledge, and professional responsibility in contemporary biomedicine.

1:30 pm–2:45 pm Room 123

How to Advocate for Biomedical Research Funding: Alpha Eta Mu Beta Public Policy Session
Session Co-chairs: Teresa A. Murray, PhD
Discover three secrets to making a winning case for federal funding for medical and biological research. Learn practical steps to successfully getting your point across to a member of Congress. Find out how to brand your university lab as a leader in the race to cure cancer, reverse neurodegeneration, or other important field of biomedical research. Arm yourself with the strategies for changing today’s policy landscape; it might provide the key to funding for your next discovery.

Long-time Washington political insider, former lobbyist and Administration appointee, and the Executive Director of the American Institute for Medical and Biological Engineering, Milan Yager, will explain Congressional funding of biomedical research. We will have a lively discussion after the presentation. We particularly encourage students and early career members to participate, but all are welcome to attend.

11:30 am–1:00 pm Room 123

Marjole’s Sports Grill
24 North 2nd Street
Phoenix, AZ 85004

Alpha Eta Mu Beta Reception
Session Co-chairs: Dominic E. Nathan PhD, Bahar Dhowan, Sara Mohamed, Lauren Pruett, Shyanthi Syrignal, Teresa A. Murray PhD, Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS and Marcia A. Pool, PhD.
The Annual AEMB reception will be held at the convention center. Now charters and national awards will be presented at this session. Furthermore, this session will serve as a networking opportunity to meet with other fellow members from AEMB chapters, representatives from industry and academia. This session is open to all AEMB student and faculty members. For tickets, please contact aembbeta@alphamubeta.org
Congratulations to the following Award Winners:

**Robert A. Pritzker**

**Distinguished Lecture Award**
Presented at the Thursday morning plenary session at 10:15 am in the North Building, Ballroom BCD

**Gordana Vunjak-Novakovic, PhD**
Columbia University

**The Wallace H. Coulter Award for Healthcare Innovation**
Presented at the Friday morning plenary session at 10:15 am in the North Building, Ballroom BCD

**Bonnie H. Anderson**
Chairman and CEO, Varian

**Diversity Lecture Award**
Presented at the Friday evening plenary session at 5:15 pm in the North Building, Ballroom BCD

**Manu O. Platt, PhD**
Georgia Institute of Technology & Emory University
School of Medicine

**Rita Schaffer Young Investigator Award**
Presented at the Saturday morning plenary session at 10:30 am in the North Building, Ballroom BCD

**Craig J. Goergen, PhD**
Purdue University

**BMES Extended Abstracts: Design and Research Awards**
Presented at the Friday evening plenary session at 5:15 pm in the North Building, Ballroom BCD

**Graduate Students**

**Ziye Dong**
Texas Tech University

**Taylor Kavanaugh**
Valdosta State University

**Yiqiu Xia**
Pennsylvania State University

**Megan Sperry**
University of Pennsylvania

**Chrisy O’Keefe**
Johns Hopkins University

**Undergraduate Students**

**Karen Xu**
Duke University

**Dora Obodo**
George Mason University

**Jane Wei**
Cornell University

**Jodi Finlay**
University of Illinois at Chicago

**Rosa Hamalainen**
Stanford University

**Patrick Mannion**
Colorado State University

**BMES Student Chapter Awards**
Presented at the Saturday morning plenary session at 10:30 am in the North Building, Ballroom BCD

**University of California, San Diego**

**2017 Outstanding Achievement Award**

**Arizona State University**

**2017 Outstanding Outreach Program Award**

**Clemson University**

**2017 Outstanding Mentoring Program Award**

**University of Maryland**

**2017 Outstanding Chapter Industry Program Award**

**BMES Journal Paper Awards**
Presented at the Friday evening plenary session at 5:15 pm in the North Building, Ballroom BCD

**Annals of Biomedical Engineering (ABME)**
The Annals of Biomedical Engineering, the BMES flagship journal, offers an Editor’s Choice Award and a Most Cited Article Award. This year’s awards go to:

**Editor’s Choice Award**

**In Vivo Evaluation of Wearable Head Impact Sensors**

Lyndia C. Wu, Vaibhav Nangia, Kevin Bui, Bradley Hammoor, Mehmet Kurt, Fideli Hernandez, Calvin Kuo, David B. Camarillo.

**Most Cited**

David Clemens, Kimberly K. Lennox, Roland R. Kaunas, Akhlesh K. Gaharwar.

**Award of Editorial Excellence**

Jennifer L. West, PhD
Annals of Biomedical Engineering

**Cardiovascular Engineering and Technology**

Most Downloaded
Crossing Total Occlusions: Navigating Towards Recanalization
Authors: Aimée Sales, Evelyn Regar, Jenny Dankelman, Paul Breedveld

**Most Cited**

Mitril Valve Patient-Specific Finite Element Modeling from Cardiac MRI: Application to an Annuloplasty Procedure
Authors: Marco Stavanello, Francesco Maffessanti, Carlo A. Conti, Emiliano Votta, Alica Arnoldi, Massimo Lombardi, Oberdan Parodi, Enrico G. Caiani, Alberto Redaelli

**Cellular and Molecular Bioengineering**

Most Downloaded
Fibronectin Mechanobiology Regulates Tumorigenesis
Karim Wang, Bo Ri Seo, Claudia Fischbach, Delphine Gourdon
CMBE Volume 9, Issue 1, pp 1-11 (2016)

**Editor’s Choice Award**

Targeted Programming of the Lymph Node Environment Causes Evolution of Local and Systemic Immunity
James I. Andorka, Joshua M. Gammon, Lisa H. Tostanoski, Qin Zeng, Christopher M. Jewell
CMBE Volume 9, Issue 3, pp 418-432 (2016)

Congratulations to all the 2017 BMES Career Development Award, BMES-NSBE (National Society of Black Engineers) Travel Award, and BMES Student Travel Award winners. You may pick up your award check at registration.

**CONGRATULATIONS!**

**BMES 2017 CLASS OF FELLOWS**

BMES Fellow status is a distinguished honor awarded to members with outstanding qualifications and experience, who have demonstrated exceptional achievement in the field of biomedical engineering. Recipients have also maintained a consistent record of membership and participation within the Society.

**FELLOW RECIPIENTS**

**Treena Livingston Arinzeh, PhD**

**Stefan M. Duma, PhD**

**David F. Meaney, PhD**

**Gang Bao, PhD**

**Andrew K. Dunn, PhD**

**Ellis Meng, PhD**

**Danny Bluetsien, PhD**

**C. Ross Ethier, PhD**

**Michael I. Miller, PhD**

**Thomas Boland, PhD**

**Robert D. Frisina, PhD**

**Cynthia Reinhart-King, PhD**

**Stephen A. Boppard, MD, PhD**

**Steven Carl George, MD, PhD**

**Martin L. Yarmush, MD, PhD**

**Juan Carlos Briceño Triana, PhD**

**Bin He, PhD**

**Fan Yuan, PhD**

**Michael S. Detamore, PhD**

**Andre Levchenko, PhD**

Fellows will receive Awards at the plenary session on Thursday, October 12, 2017 at 5:30pm in North Building, Ballroom BCD.

Fellows who have demonstrated exceptional achievement in the field of biomedical engineering.

Recipients have also maintained a consistent record of membership and participation within the Society.
Industry Programs

Wednesday, October 11
12:30 pm–3:30 pm  Departure from Convention Center (CC)
Industry Tours
Pre-registration required
7:30 pm–8:30 pm Sheraton Grand Phoenix, Laveen A Room
Industry and Clinical Committee Meeting
By Invitation Only

Thursday, October 12
7:00 am–9:00 am The Duce
Industry and Clinical Mixer
Ticket Purchase Required
Chair: Christopher Basciano, BD
See page 85
8:00 am–10:00 am Room 125AB
BMES Industry Advisory Board
By Invitation Only
See page 166
1:00 pm–2:00 pm Room 125AB
BMES Special Interest Group Overview
Chair: Christopher Basciano, BD
See page 85
2:00 pm–5:00 pm Room 125AB
Entrepreneur Workshop
Ticket Purchase Required
Chair: Clark Wilson, Merchant and Gould P.C.
See page 95

Friday, October 13
7:00 am–8:00 am Room 126A
BMES Industry Advisory Board
By Invitation Only
See page 85
8:00 am–10:00 am Room 125AB
Tech Transfer Innovation Challenge
Chair: Stephanie Mansfield, Brooks Kushman P.C.
See page 157
1:00 pm–3:00 pm Room 125AB
Clinical Innovators Spotlight
Co-chairs: Jonathan Gunn, Briteseed, and Omid Veeshal, Sigilon
See page 166
3:00 pm–5:00 pm Room 125AB
Investment Pitches and Partnering
Chair: Clark Wilson, Merchant and Gould P.C.
See page 175

Special Sessions

Thursday, October 12
8:00 am–9:30 am Room 122B
Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine
Chair: Jennifer Amos, Jeffrey Garanich
See page 85
1:30 pm–3:00 pm Room 122C
ABET Criteria Workshop
See page 93
1:30 pm–3:00 pm Room 121ABC
NIH Funding Panel Session
See page 94
1:30 pm–3:00 pm Room 122B
Defining Educational Goals of Bioengineering in the 21st century
Chair: Jennifer Amos
See page 94
2:30 pm–5:30 pm Room 122A
The 5th US-Korea Joint BMES Workshop
Chair: Hanjoong Jo, PhD
See page 94
3:45 pm–5:15 pm Room 122C
Vascular Mechanobiology and Nanotherapeutics
Chair: Rita Alevriadou
See page 103
3:45 pm–5:15 pm Room 121ABC
2017 DEBUT Awards Presentation
Chair: Zeynep Erim
See page 229
3:45 pm–5:15 pm Room 122B
Engineering Solutions to Address Healthcare Disparities
Chair: Gilda Barabino
See page 103

Friday, October 13
8:00 am–9:30 am Room 122C
Career Options for the BME Graduate Students and Postdoctoral Fellows
Chair: Rita Alevriadou
See page 157
1:15 pm–2:45 pm Room 122C
Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings
Chair: Terry Johnson
See page 166
1:15 pm–2:45 pm Room 122A
Minisymposium on International Research Collaborations and Funding Opportunities in Biomedical Engineering
Chair: Damir Khismatullin
See page 166
1:30 pm–4:30 pm Room 121ABC
BMES-NSF Special Session on CAREER and UNSOLICITED Awards
Chair: Michele Grimm
*additional registration and $10 ticket required
See page 166
3:30 pm–5:00 pm Room 122A
Symposium in honor of Dr. and Mrs. Athanasiou
Chair: Michael Dotanmore
See page 175

Saturday, October 14
8:00 am–9:30 am Room 121ABC
BMES-NSF Special Session on Graduate Research Fellowships Program
Chair: Michele Grimm
See page 229
Thank you to our Reviewers for their Time and Effort

Orthopedic and Rehabilitation Engineering

Respiratory Biomedical Engineering

2017 PROGRAM
THURSDAY’S SCHEDULE HIGHLIGHTS

PLATFORM SESSIONS—THURS—1
8:00 am—9:30 am  Convention Center
See pages 77–85
Special Session
8:00 am—9:30 am  Room 122B
Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine
Industry Session
8:00 am—9:00 am  Room 125AB
Principles of Project Management
Exhibit Hall Open
9:30 am—5:00 pm  Convention Center
Exhibition Hall
PLATEFORM SESSIONS—THURS—2
1:30 pm–3:00 pm  Convention Center
See pages 86–92
Special Sessions
1:30 pm–3:00 pm  Room 125AB
ABET Criteria Workshop
1:30 pm–3:00 pm  Room 121B
NIH Funding Panel Session
1:30 pm–3:00 pm  Room 122B
Defining Educational Goals of Bioengineering in the 21st Century
Industry Session
2:00 pm–5:00 pm  Room 125AB
Entrepreneur Workshop (Ticket Purchase Required)
Special Session
2:30 pm–5:30 pm  Room 122A
The 5th US-Korea Joint BMES Workshop
Poster Viewing with Authors & Refreshment Break
3:00 pm–3:45 pm  300 Level Exhibition Hall
Poster Viewing with Authors & Refreshment Break
9:30 am—10:15 am  300 Level Exhibition Hall
Plenary Session
10:15 am—11:15 am  North Ballroom BCD
State of Society
Lori Sottos
Pritzker Lecture
Gordana Vunjak-Novakovic, PhD
Engineering Human Tissues for Regenerative Medicine and Study of Disease
Celebration of Minorities in BME Luncheon
11:45 am–1:15 pm  West Ballroom
Industry Session
1:00 pm–2:00 pm  Room 125AB
BMES Special Interest Group Overview
Hosted Receptions–Sheraton Grand Phoenix
7:00 pm–9:00 pm  The Duce
(Ticket Purchase Required)

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs–1–1
Room 224A
Track: Biomaterials
Biomaterials for Immunoeengineering I
Chair: Angela Pannier, Evan Scott
8:00 am
Expansion of T Cells via Poly(Dimethyl Siloxane)-Based Fibrous Meshes with Tunable Rigidities
Alex Deng1, Daniella Bogdanovic2, Stacey M. Fernandes1, Jennifer R. Brown1, Helen H. Lu1, and Lance C. Kam1
1Columbia University, New York, NY, 2Dana Farber Cancer Institute, Harvard Medical School, Boston, MA
8:15 am
In Vitro Platform for Characterization of a Immunological Responses to Encapsulated Cells Anthony Fray1; Ting J., Ethan Yang1; Allison Bayner1, and Cheyne Stabler1
University of Florida, Gainesville, FL, University of Miami, Miami, FL
8:30 am
Combined Cancer Chemoimmunotherapy for Elimination of Established Tumors James Moon1, Rui Kuai1, Weminmin Yuen1, Yao Xu1, Yuchun Fan1, and Anna Schrinderman1
University of Michigan, Ann Arbor, MI
8:45 am
Alpha-helical Peptide Nanofibers as Non-inflammatorly Self-adjuvanting Vaccines Yanyan Wu1 and Joel Coller1
Duke University, Durham, NC
9:00 am
Modified Chitosan-Zein Nano-in Microparticles For Oral DNA Vaccination Eric Fan1, Austin Holman1, Anna Lampe1, Amanda Ramee-Taylor1, Deborah Brown1, and Angela Pannier1
University of Nebraska-Lincoln, Lincoln, NE
9:15 am
Targeted Extracellular Indoleamine 2,3-Dioxygenase Suppresses Immune Responses In Vitro and In Vivo Evelyn Brechi-Sanchez1, Azadeh-Hassanabadi2, Kevin Kaanders3, Antonietta Restuccia4, Margaret Feltis1, Mark Waller5, Fernanda Rocha1, Shannon Wallet1, Gregory Hudalla6, and Benjamin Kasetsuwy7
University of Florida, Gainesville, FL

*Biomaterials Track sponsored by:

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Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs–1–2
Room 224B
Track: Biomaterials
3D Printing and Advanced Biomaterial Manufacturing I
Chair: Donald Griffin, Adam Feinberg
8:00 am
Patient-Specific 3D-Printed Molds for the Fabrication of Cryogel Scaffolds in the Treatment of Pediatric Cleft-Craniofacial Defects Alexas Melkon1, Katharina Hsien1, Alexander Lee1, Scott Selt1, and Andrew Hall1
1Saint Louis University, Saint Louis, MO, 2Saint Louis University School of Medicine, Saint Louis, MO
8:15 am
Mass Production of Shaped Particles Through Vortex Ring Freezing Duy An1, Dan Lu1, and Myung Mu1
Cornell University, Ithaca, NY
8:30 am
Designing Shear-thinning Nanoengineered Ink for 3D Bioprinting Charles Peak1, Jean Stemp1, and Ashleigh Gharbaran1
Texas A&M University, College Station, TX
8:45 am
Mechanically Functional 3D-Printed Bioreasorbable Vascular Scaffolds Banu Aka1, Henry Oliver Ware1, Adam C Farsheed1, Chongwen Duan1, Xianglan Che1, Chang Sui1, and Guillermo Amato1
Northwestern University, Evanston, IL
9:00 am
Fabrication of 3D Fiber-Collagen Ladder Collagen Composites using 3D Near-Field Electrospinning Pouni Fatath1, Jordan Dizer1, and Justin Brown1
1Pennsylvania State University, University Park, PA, 2Pennsylvania State University, University Park, PA
9:15 am
3D Printing Bioactive PLGA Cartilaginous Scaffolds Ting Guo1, Casey Lim1, and John Fisher1
University of Maryland, College Park, MD

*Biomaterials Track sponsored by:

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PLATEFORM SESSIONS—THURS—1–8:00 AM–9:30 AM
Thursday, October 12 | 8:00 am—9:30 am | Platform Session 1

8:45 am How Endothelialization Enhances Solute Drainage in Engineered Lymphatics
Joes Tiere, Rebecca Thompson, Emily Megele, Tyler Ryan, Brent Coleman, Gabrielle Price, and Keith Wong
Boston University, Boston, MA

9:00 am The Influence of Graft Alignment On Recovery From Muscle Injury
John Kim, Benjamin Kasavina, Sydney Sopradi, Grady Dunlap, Tyrone Washington, and Jeffrey Woloch
University of Arkansas, Fayetteville, AR

9:15 am In Vitro 3D System Replicates Tumor-Stroma Crosstalk In Pancreatic Cancer
Andrea Rubiano, Steven Hughes, and Chelsey Simmons
University of Florida, Gainesville, FL

OP-Thurs-1-8 Room 222A

Tracks: Stem Cell Engineering, Cellular and Molecular Bioengineering
Engineering Stem Cell Differentiation and Dedifferentiation
Chairs: Yuping (Leo) Lei, Stephanie Wilther

8:00 am Notch Signaling Coordinates with Cell Contractility to Drive Bilary Differentiation of Liver Progenitor Cells
Kein Kiyasu, Ian Berg, and Gregory Underhill
University of Illinois at Urbana-Champaign, Urbana, IL

8:30 am Stem Cell Mechanotransduction, Differentiation and Migration on Linear Stiffness Gradient Hydrogels
William Hadfield, Jennifer Young, Andrew Holle, Joachim Spath, Adam Eminger, and Todd Misek
Sydney Medical School, Sydney, Australia, Max Planck Institute for Intelligent Systems, Stuttgart, Germany, University of California, San Diego, San Diego, CA, University of Western Australia, Perth, Australia

8:45 am Optical Control of Gene Expression for Neuronal Fate Specification
Monica Setten-Grafals, Nathan Blank, Kylie Smith, Marie-Claude Senut, Brian Green, and Eric Purcell
Michigan State University, East Lansing, MI

9:00 am Engineering Neural Tissue Using the Novel Functionalized Transcription Factor iASCL1
Meghan Robinson, Sarah Douglas, Ranajit Vaidyanathan, and Stephanie Wilther
University of Victoria, Victoria, BC, Canada, Progen Biotech, Richmond, BC, Canada

9:15 am Progenitor T-cell Differentiation from Stem Cells Using Niche Engineering
Shreya Shukl, Roger Y. Ting, Matthew A. Langley, Jastaranpreet Singh, John M. Edgar, Mahmood Mohtashami, Molly S. Shoichet, Juan Carlos Zúñiga-Pflücker, and Peter W. Zandstra
University of Toronto, Toronto, ON, Canada

OP-Thurs-1-9 Room 222B

Tracks: Biomechanics, Cellular and Molecular Bioengineering
Substrate Effects in Mechanobiology
Chairs: Jia-Wen Shin, Esther Gomez

8:00 am DNA Damage in Constricted Migration Impairs Differentiation
Luis Cotman, Jereme Irani, Yuriko Yie, and Dennis Discher
University of Pennsylvania, Philadelphia, PA

8:15 am Modeling the Two-way Feedback Between Contractility and Matrix Realignment Reveals a Non-linear Mode of Cancer Cell Invasion
Babawale Abdulmolouka, Marie Wiesehahn, and Vivek Shenoy
University of Pennsylvania, Philadelphia, PA, The Wistar Institute, Philadelphia, PA

8:30 am Nanoферобиотаноскетизатор для измерения диаметра всех аномалий и антагонистов в ососклатах
Danaew Brasher and Justin Brown
The Pennsylvania State University, University Park, PA

8:45 am Fluid Flow Increases Expression of WNT/β-catenin Agonists and Antagonists in Osteocytes
Yu Zhang, Christopher Brunckhorst, Rene Olivoes-Nascere, and Penny Donoughal
Virginia Commonwealth University, Richmond, VA

9:00 am Investigating Valve Intertitial Cell Mechanics Using A Synthetic Poly(ethylene glycol) Hydrogel
Alex Khang, Andrea Gonzalez-Rodriguez, Megan Schroeder, Kristi Anseth, and Michael Sacks
University of Colorado at Austin, Austin, TX, The University of Colorado at Boulder, Boulder, CO

9:15 am Matrix Tension Directs Cell Migration Through Minimizing Cellular Energy Requirement
Matthew Zawislack, Joes Tiere, Frances Bonde, Zachary Goldblatt, Adam Munir, and Cynthia Reinberg
Cornell University, Ithaca, NY, Vanderbilt University, Nashville, TN

Thursday, October 12 | 8:00 am—9:30 am | Platform Session 1

8:00 am A Textile Dressing for Temporal and Dosage Controlled Drug Delivery
Prerna Mostafal, Gita Kane, Giorgio Gatto, Abuk Khalilpour, Mahnazhabib Nabeinaya, Sameer Syntak, Dennis P. Ong, Ali Taramoli, and Ali Khademhosseini
Harvard-MIT Division of Health Science and Technology, Medford, MA, Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, Harvard MIT Division of Health Science and Technology, Cambridge, MA, Tufts University, Medford, MA, Harvard Medical School, Boston, MA, Harvard Medical School, Cambridge, MA

8:30 am Consumer Wearable Devices Reveal Health Status Through Individual Activity Habits and Physiological Responses to Exercise
Jaslynn Dunn, Ryan Runger, Axia Li, Davis Salo, and Michael Snyder
Stanford University, Palo Alto, CA

8:45 am Pressure Validation of Navy SEAL Personal Flightation
Christian P6eck, Siddhant Bhalia, Sydney Jacobson, John Martinat, Mark Youssef, Michael Marnell, and Marissa Gray
Stevens Institute of Technology, Hoboken, NJ

9:00 am Wearable Formaldehyde Sensor for Pediatric Asthma Study
Quan Dong, Barcinh Lin, and Zhenyu Li
The George Washington University, Washington, DC

9:15 am Kick: A Smarter Watch for Overcoming Drug Addiction
Orlando Holmes and Jacqueline Lmer
Purdue University, West Lafayette, IN

OP-Thurs-1-10 Room 223

Tracks: Devices Technologies and Biomedical Robotics
Wearable Sensors I
Chairs: Marissa Gray, Alessandro Belfiore

8:00 am A Gigapixel-scale Microscope to Monitor the Behavior and Neural Activity of Model Organisms roaming within a 3D context
Alina Burger, Rainer Termier, and Andreas Mandl
Charite Berlin/Duke University, Berlin, Germany

8:45 am Advanced Techniques for Characterizing Rodent Brains With Diffusion MRI
Lai Dol, Adam Bernstein, Pradyumna Bhandarkar, Gene Alexander, Carol Barnes, and Theodore Torday
University of Arizona, Tucson, AZ

9:00 am Graph-Based Semi-Supervised Learning Outperforms Supervised Learning Algorithms in a small fMRI Dataset
Fatemeh Mokhtari, Yingying Zhu, Jonathan Burdette, Guorong Wu, Jake Rayiek, and Paul Laurienti
Virginia Tech–Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC, University of North Carolina at Chapel Hill, Chapel Hill, NC, Wake Forest School of Medicine, Winston Salem, NC, Wake Forest University, Winston Salem, NC

9:15 am Conductivity Tensor Reconstruction Using DT-MRI In-Vivo Imaging in a Human TACS
Recipient
Munsh Chauhan, Aprinda Indahlastari, Aditya Kumar Kasadrunhi, Christophasee Fat, Bakti Musa, Kevin Castellano, Thomas Mareci, and Rosalind Sadler
Arizona State University, Tempe, AZ, University of Florida, Gainesville, FL

OP-Thurs-1-11 Room 225A

Tracks: Biomedical Imaging and Optics, Neural Engineering
Imaging in Neuroscience and Brain Initiatives
Chair: Justin Williams, Andrew Dunn

8:00 am Accelerated Brain Perfusion Imaging via Spatio-Temporal Super-Resolution
Yao Xiao and Ruogu Fang
University of Arizona, Tucson, AZ

8:15 am Wide-field Fast-scanning Photocoustic Microscopy of Brain Functions in Action
Jinjie Yao
University of North Carolina at Chapel Hill, Chapel Hill, NC

8:45 am A Method for Directly Comparing the Therapeutic Effects of Drug-loaded Nanoparticles Targeting Internalizing and Non-internalizing Surface Receptors
Sriram Kari and Tonk Fahmy
Yale University, New Haven, CT

8:30 am Neutrophil Elastase Responsive Nano-in-Micro Multi Stage Particles for Pulmonary Delivery
Jasselyn Mejías, Osric Forrest, Rabindra Tirouvanziam, Multi Stage Particles for Pulmonary Delivery
University of Delaware Biomedical Engineering, Newark, DE, University of Delaware, Newark, DE

8:15 am In-Vivo and In-Situ Brain Imaging in the Mouse Brain With Diffusion MRI
Rajiv R. Varma, Shreya Shukla, and Vivek Shenoy
University of Texas at Austin, Austin, TX, The University of Texas at Austin, Austin, TX, The University of Texas at Austin, Austin, TX, The University of Texas at Austin, Austin, TX

8:45 am Advanced Techniques for Characterizing Rodent Brains With Diffusion MRI
Lai Dol, Adam Bernstein, Pradyumna Bhandarkar, Gene Alexander, Carol Barnes, and Theodore Torday
University of Arizona, Tucson, AZ

9:00 am Graph-Based Semi-Supervised Learning Outperforms Supervised Learning Algorithms in a small fMRI Dataset
Fatemeh Mokhtari, Yingying Zhu, Jonathan Burdette, Guorong Wu, Jake Rayiek, and Paul Laurienti
Virginia Tech–Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC, University of North Carolina at Chapel Hill, Chapel Hill, NC, Wake Forest School of Medicine, Winston Salem, NC, Wake Forest University, Winston Salem, NC

9:15 am Conductivity Tensor Reconstruction Using DT-MRI In-Vivo Imaging in a Human TACS
Recipient
Munsh Chauhan, Aprinda Indahlastari, Aditya Kumar Kasadrunhi, Christophasee Fat, Bakti Musa, Kevin Castellano, Thomas Mareci, and Rosalind Sadler
Arizona State University, Tempe, AZ, University of Florida, Gainesville, FL

OP-Thurs-1-12 Room 225B

Tracks: Drug Delivery & Intelligent Systems
Targeted or Responsive Delivery Systems
Chairs: Ankur Singh, Sarah Stabenfeldt

8:00 am Multivalent Binding of Antibody-Functionalized Nanoparticles Enhances Wnt Signaling Inhibition in Triple Negative Breast Cancer Cells
Rachel Riley and Emily Day
University of Delaware Biomedical Engineering, Newark, DE, University of Delaware, Newark, DE

8:15 am A Method for Directly Comparing the Therapeutic Effects of Drug-loaded Nanoparticles Targeting Internalizing and Non-internalizing Surface Receptors
Sriram Kari and Tonk Fahmy
Yale University, New Haven, CT

8:30 am Neutrophil Elastase Responsive Nano-in-Micro Multi Stage Particles for Pulmonary Delivery
Jasselyn Mejías, Osric Forrest, Rabindra Tirouvanziam, Multi Stage Particles for Pulmonary Delivery
University of Delaware Biomedical Engineering, Newark, DE, University of Delaware, Newark, DE
Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

8:45 am Shear-Targeted Anti-Thrombotic Drug Delivery Using DNA-Oligo Nano-Carriers
Chen Rolman1, Roya Sh2, Michael Elfar3, Haidar Sweam3, and Darrel Bleslant3
Stony Brook University, Stony Brook, NY, New York, NY
9:00 am In Vivo Efficacy of Targeted Antithrombotic Prodrug Polymers Against Francisella Infections
Daniel Ratner1,2,3
University of Washington, Seattle, WA
9:15 am Orally Deliverable Poly(bile acid) Nanocarriers with High Pancreatic Bioavailability for Treatment of Type 1 Diabetes
Jung Seok Lee1, Patrick Han2, Shihan Khan3, and Tarek Fahmy4
Yale University, New Haven, CT

OP-Thurs-1-13 Room 228A
Track: Translational Biomedical Engineering
Translational Biomedical Engineering
Chair: Thomas Everett, Colin Drummond
8:00 am Electrical Impedance Sensing Biopsy Needle for Real-time Prostate Cancer Detection
Alicia Everett1, Jason Pettis2, Elias Hyam3, and Ryan Helzer4
Dartmouth College, Hanover, NH, Dartmouth Hitchcock Medical Center, Lebanon, NH
8:15 am 3D-Printed Breast Cancer Models for Toxicological Screening
Salvador Flores Torres1, Tao Jiang2, Jacqueline Kort Mascarenhas3, Joyce Jiang4, and Joseph M Kressal2
McGill University, Montreal, QC, Canada
8:30 am Quantifying Oxygen-Dependent Blood Flow in Sickle Cell Trait in a Microfluidic Platform
Xinna Liu1, John Higgins2, and David Wood1
University of Minnesota, Minneapolis, MN, Massachusetts General Hospital, Boston, MA, 3Harvard Medical School, Boston, MA
8:45 am Hollow Microcarrier for Large Scale Culture of Anchorage-dependent Cells in a Stirred Bioreactor
Ashkan Hejraghazaleh1, Aylin Arican2, Pinar Zorlutuna3, and Kidong Park1
Louisiana State University, Baton Rouge, LA, 2University of Notre Dame, Notre Dame, IN
9:00 am Ex Vivo Perfusion of Non-Transplanted Human Organs: A New Platform for Quantiative Pre-Clinical Evaluation of Targeted Nanomedicine
Gregory Tipton1, Sarah Hasgadd2, Nancy Kirsels-Smith3, Jaya Cui4, Aleksandra Pontofreto-Osorio5, Deshka Deep6, Eric Seng7, Jenna Dufort8, Rafael Al Lami9,1, Andrew Bradley8, Koushir Saberi10, Parry11, John Bradley8, Michael Nicholson4, W. Mark Saltm4, and Jordan Poller11
Yale University, New Haven, CT, University of Cambridge, Cambridge, United Kingdom

8:45 am Image-guided LED Based Photothermal Therapy System for Early Oral Cancer Lesions in Global Health Setting
Hua Liu1, Arash Mohsen, Sivakshra Mandal1, Tasyata Hsain, and Jonathan Celli2
University of Massachusetts Boston, Boston, MA, 2Harvard Medical School, Boston, MA
OP-Thurs-1-14 Room 228B
Track: Cancer Technologies
Cancer Immunomodulation
Chair: Biju Parekkadan, Keyua Shan
8:30 am Eluting ImmunoGene Cell Death Using Russian Blue Nanoparticle-Based Photothermal Therapy and the Implications for Cancer Therapy
Elizabeth Sweeney1, Jukura Ceno-Mayoa, Rachel Burga, and Roshan Fernando1
Children’s National Health System, Washington, DC
8:15 am Biomimetic Biodegradable Artificial Presenting Cells for Enhanced “Off-The-Shelf” Melanoma Immunotherapy
Randall Meyer1, John Hickey1, Alyssa Kosmides1, Kelly Rhodes1, Allison Bankowski1, Jonathan Schmale1, and Jordan Green2
Johns Hopkins University, Baltimore, MD
8:30 am Synthetic Nanoparticle Antibodies for Target Cell Depletion: A Flexible New Tool for Cancer Immunotherapy
Jaying Liu1, Shohin Gosh-Choudhury1, Pallab Poddar1, Randall Toy1, and Krishnendu Roy1,2
1Georgia Institute of Technology, Atlanta, GA, 2Koch Institute for Integrative Cancer Research, Cambridge, MA, 3Howard Hughes Medical Institute, Chevy Chase, MD
9:00 am Intratumoral Activation of Dendritic Cells Promotes Systemic Anti-tumor Immunity
Lauren Milling1,2, Nitesha Bennett3, Talar Toketlian4, Nikki Thar1, and Darrel Irvine5
1Massachusetts Institute of Technology, Cambridge, MA, 2Koch Institute for Integrative Cancer Research, Cambridge, MA, 3Howard Hughes Medical Institute, Chevy Chase, MD
9:15 am Recombinase-Based Genetic Circuits for Adoptive T Cell Therapy
Derek Chaloupk1, and Wilson Wong1
Boston University, Boston, MA
OP-Thurs-1-15 Room 227C
Track: Cancer Technologies
Cancer Mechanobiology I
Chair: Ian Wong, Maureen Lynch
8:00 am Nuclear Deformability and Expression of Lamin A/C as Predictors of Metastatic Potential in Breast Cancer Cells
Emily Bell1, Pragya Shail1, Alexandra McGregor1, Phillip Isermann2, Dongguan Kim1, Marcus Smolka1, and Jan Lemminger1
Cornell University, Ithaca, NY
8:15 am Induction of Malignant Phenotypes by Enhanced Matrix Stiffness is Mediated by Broad Changes in the Epigenome
Ryan Stowers1, Johnny Israelski1, Ormer Hazen1, Michael Snyder2, Anshul Kundaje3, and Ovi Choudhuri1
Stanford University, Stanford, CA
8:30 am Cancer-Associated Fibroblast Mechno-transduction Drives Blood Vessel Growth in 3D In vitro Assay
MK. Nafee Louli1, Samantha Van Houw3, B. Taylor Hughes4, Elizabeth Crist5, Sofia Joss6, Gregory Langmore1,2, and Steven George3
Washington University in St. Louis, St. Louis, MO, Washington University School of Medicine in St. Louis, St. Louis, MO
8:45 am Dynamically Stiffening Hydrogels Promote Malignant Transformation via Collective Mechanical Signaling
Matthew Gondop1, Jesse Placek1, Aditya Kumar1, Deawhen Kim2, Laurent Fett1, Jing Yang3, and Adam Engler4
University of California, San Diego, La Jolla, CA
9:00 am Solid Stress and Elastic Energy as Measures of Tumor Malignant Transformation
Hedi Nal1, Hao Li2, Cao Se2, Meechan Datta1, Dennis Jone1, Nuh Rabiei1,2, Jose Inzunza1, Vikash Chauhan1, Keewon Jung1, John Martin1, Vasileios Astakos2,3, Tom Padera2, Dai Fukumura2, Yuexin Boucher2, Frederick Lieberman1, Jallad1, James Bash2, Lance Moun2, and Roleh Yar2
Kidney Research Institute, Boston, MA, 3Huntsman Cancer Institute, Salt Lake City, UT
9:15 am Protein-Crystal Interface Mediates Adhesion and Proangiogenic Secretion of Breast Cancer Cells
Fei Wu1,2, Roxy Chua1, Maryam Asadishekari1, Claudia Fischerbach1, Laura Estru1,3, and Delphine Gourdon1,2
1Cornell University, Ithaca, NY, 2Rubin School of Medicine at Mount Sinai, New York, NY, 3University of Ottawa, Ottawa, ON, Canada, 4Kavli Institute at Cornell for Nanoscale Science, Ithaca, NY

OP-Thurs-1-16 Room 226A
Track: Bioinformatics, Computational and Systems Biology
Genomics, Proteomics, and Metabolites
Chair: Rajib Sarkar, Sriman Chandrashekeran
8:00 am Time Varying Causal Network Reconstruction of Mouse Cell Cycle using Temporal Gene Expression Data
Maryam Mohamadi-Shirazi1, Masi Mouyoi2, Gerald Paut3, Eugene Ke4, Indra Verma5, and Shashikant Subramaniam1
University of California, San Diego, La Jolla, CA, 2Salk Institute for Biological Studies, La Jolla, CA, 3University of Virginia, Charlottesville, VA
8:15 am Genome Scale Metabolic Models use Multiple Omics Data to Predict and Characterize Hepatocyte Toxicity
Kristopher Raesi1, Edik Bial1, Bonnie Dougherty1, Glynn Kolling1, Anders Wallgard2, and Jason Papadim2
University of Virginia, Charlottesville, VA, 2Department of Defense Biotechnology High Performance Computing Software Applications Institute, Fort Detrick, MD
8:30 am A DNA-Encoding Strategy for Integrated Single-Cell Transcriptionomics and Proteomics
Alexander Xu1, Sarah Jarzynski1, Justin Tanaka1, Kelly Clay2, and James Heath1
1California Institute of Technology, Pasadena, CA
8:45 am Peripheral Blood Proteome of IFP Differs from Normal and Gives Insight into Immunological Processes
Katy Norman1, David O’Dwyer2, Meng Xie1, Stephen Gurzyk1, Shanna Ashley1, Eric White1, Karen Fishbach1, Fernando Martinez1, Susan Murray1, Bethany Moore2, and Kelly Arnold1
University of Michigan, Ann Arbor, MI, 1Weill Cornell Medical College, New York, NY, 2New York Presbyterian, New York, NY
9:00 am Fatty Acid Uptake Drives Production of an Inflammation-Th17 Cytokine Signature in Type 2 Diabetes
Elizabeth Proctor1, Dequina Nicholas1, Forum Rawal1, Leonid Korsun-schendler1, Charles Hubl2, Carine Apovian1, Barbara Corkey2, Douglas Lauffenburger3, and Barbara Nikolaiczky4
1University of Massachusetts Medical School, Worcester, MA, 2Boston University, Boston, MA, 3Boston Medical Center, Boston, MA
9:15 am Antibiotic Resistant Pseudomonas aeruginosa Exhibits Differential Metabolic Profiles
Laure J Dhupur1, Philip Yan2, and Jason Papadim1
1University of Virginia, Charlottesville, VA
Thursday, October 12 | 1:30 pm—3:00 pm | Platform Session 2

**Track: Biomaterials**

**Bioactive Materials for Immunostimulation II**

Chair: Christopher Jewell, John Wilson

**1:30 pm**

Mechanism of Adjuvant Action of Supramolecular Peptide Nanofibers

Jai Rudr1, Archana Khur1, and Chinnaswamy Jagannath1

*University of Texas Medical Branch, Galveston, TX, 2University of Texas and MSC Recruitment through Macrophage Hydrophilic Titanium Instructs T-cell Populations

**1:45 pm**

3-Dimensional Additively Manufactured Ti6Al4V Constructs Enhance Osteoblastic Response

Michael Barger1, Sharon Hyzy1, Barbara Bryan1, and Zo Schmachtenberg1

*Virginia Commonwealth University, Richmond, VA, 2Georgia Institute of Technology, Atlanta, GA, 3University of Texas Health Science Center at San Antonio, San Antonio, TX

**2:00 pm**

Biophysical Response of T Cell Activation to Substrate Rigidity

Dennis Jinglun Yuan1 and Lance Kam1

*University of Oklahoma, Norman, OK

**2:15 pm**

Hydrophilic Titanium Instructs T-cell Populations

Rajiv Allen1, Jeff Sjv1, and Jamal Lewis1

*UC Davis, Davis, CA

**2:30 pm**

A STING-Activating Nanovaccine for Cancer Immunotherapy

Guo1, Salvador Flores Torres1, Jacqueline Kort Mascort1, Joel Grant1, Daniel Meador1, Meghan Hefferon1, Bruce Corliss1, and Kyle Lampar1

*1Virginia Commonwealth University, Richmond, VA

**2:45 pm**

The Composition of Alginate/Gelatin Composite Hydrogel Bioinks Direct the Formation of Tumor Spheroids

Tao Jiang1, Jose Gil Murguia-Lopez1, Mawre Malooy Baracus1, Kevin Gu1, Sakeder Flores Torres1, Jacqueline Kant Massrot1, Joel Grant1, Sanwath Jayakumara1, Antonio De Leon-Rodriguez1, and Joseph Matthew Kowalski1

*McGill University, Montreal, QC, Canada, 2Instituto Potosino de Investigacion Tecnológica y Agropecuaria (IPITA), San Luis Potosi, Mexico, 3École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

**3:00 pm**

Development of Complex 3D-printed Microchannels within Biodegradable Hydrogels

Kwanghoon Song1, Christopher Highley1, Andrew Rouff1, and Jason Burdick1

*University of Pennsylvania, Philadelphia, PA

**3:15 pm**

Development of 3D Bioprinting with an Engineering Elastin

Daniel Meador1, Meghan Hefferon1, Bruce Corliss1, Edi Mece1, Michaela Rikard1, Shannon Razer1, and Kyle Lampar1

*University of Virginia, Charlottesville, VA

**3:30 pm**

Direct 3D Bioprinting of Vascular Network with Smooth Muscle and Endothelium

Hallie Cal1 and Carly Grace Zhang1

*The George Washington University, Washington, DC

**3:45 pm**

A Multi-scale Submodeling Technique to Enhance the Spatial Resolution of Simulated Brain Responses

Wei Zhou1 and Songjie Ji1

*Worcester Polytechnic Institute, Worcester, MA

**4:00 pm**

Engineering Human Myocardium Expressing Mutant Desmoplakin (R451G) Like Protein (ELP)

Daniel Meador1, Meghan Hefferon1, Bruce Corliss1, Edi Mece1, Michaela Rikard1, Shannon Razer1, and Kyle Lampar1

*University of Virginia, Charlottesville, VA

**4:15 pm**

Quantifying 3D Whole Brain Deformation Using Sonomicrometry During Dynamic Head Rotation and Preliminary Assessment of Brain Finite Element Models

Abhmed Alshareef1, 2Sebastian Giudice1, 3Jason Forman1, and Matthew B. Pancer1

*1Penn State University, University Park, PA

**4:30 pm**

Cardiac Electrophysiology and Cardiac Electrophysiology

Chair: Abhijit Patwardhan, Markad Kamath

**1:30 pm**

Measurement of Conduction Velocity in Engineered Human Myocardium Expressing Mutant Desmoplakin (R451G)

Ronald Hig1 and Stuart Campbell1

*Yale, New Haven, CT

**1:45 pm**

Human Cardiac Tissue Slices - A Novel Platform to Test Cardiotoxicity Of Cancer Drugs.

Sharon George1, Stefan Osvet1, Tatiana Efimova1, and Igor Elmasov1

*1The George Washington University, Washington, DC

**2:00 pm**

Electrophysiological Effects of Sympathetic Stimulation in Human Organotypic Cardiac Tissue Slices

Jaclyn Brennan1, Chasay Kang1, John Qiao1, and Igor Elmasov1

*1The George Washington University, Washington, DC

**2:15 pm**

Fiber Orientation and Structural Model of Tendon-to-Bone Insertion

Serjey Kuznetsov1, John Qiao1, Christopher Cornish1, and Hsiao-Ying Shidoie Huang1

*1North Carolina State University, Raleigh, NC

**2:30 pm**

An Augmented Iterative Method for Identifying a Stress-free Reference Configuration in Image-based Biomechanical Modeling

Manuell Rausch1, Martin Genre1, and Jay Humphrey1

*1University of Texas at Austin, Austin, TX, 2Universite Paris-Saclay, Paris, France, 3Yale University, New Haven, CT

**2:45 pm**

CFD Analysis of Avian Embryonic Heart With Ultrasound Imaging

Shabnur Hui1, Germasere An Y Tan2, Toan Jin Foo1, Phan Thi Nhan1, and Choon Hwai Yap1

*1National University of Singapore, Singapore, Singapore
Thursday, October 12 | 1:30 pm – 3:00 pm | Platform Session 2

**OP-Thurs-2-10**  Room 223

**Track: Device Technologies and Biomedical Robotics**

**Wearable Sensors II**

*Chairs: Reeca Burns, Ruya Li*

1:30 pm

The Design and Application of an Anthropomorphic Biosensor to Aid in Detecting Spacesuit Fit and Body Position

Reeca Burns, Jessica Aldrich, Jacob Griffith, Bernardo Villafana, and Kim Cluff

*Wichita State University, Wichita, KS*

2:00 pm

Detection of Intracranial Fluid Volume Shifts By a Non-invasive Electromagnetic Skin Patch Sensor

Jacob Griffith, Brandon Eckerman, Jessica Aldrich, Ryan Becker, Ryan Arntz, and Kim Cluff

*Wichita State University, Wichita, KS*

2:15 pm

Improving Gait Symmetry in Post-Stroke Patients via Biofeedback Device

Katherine Ledfelt, I Hung Shiao, Paruladita Marayong, and Vennila Krishnam

*California State University, Long Beach, Long Beach, CA*

2:30 pm

Wearable Sweat Alcohol Sensor

Bashen Li, Guan Dong, and Zhenyu Li

*The George Washington University, Washington, DC*

2:45 pm

Electrical Double Layer Modulated Flexible Biosensor for Sweat Based Alcohol Sensing

Ashleisha Bhide, Sriram Muthukumar, and Shalini Prasad

*Biosensor for Sweat Based Alcohol Sensing*

1:30 pm

Modular Programming of TLR Signaling Using Immunolyte Polymethylene Multilayers Assembled Entirely from Tumor Antigens and TLR Agonists

Qin Zheng and Christopher Jewell

*University of Maryland, College Park, College park, MD*

1:45 pm

Developing Lymph Node Targeting Amphiphile-Vaccines That Promote Mucosal Immune Protection Against HIV

Brittany Hartwell, Tyson Moyer, Kelly Myazakian, and Darrell Inna

*Massachusetts Institute of Technology, Cambridge, MA*

2:00 pm

Cardiac OCT Atlas

Qiongyu Guo, Yongyang Huang, Steven Titus, Molly Boutin, Tumor Spheroids Using Optical Coherence Tomography

*University of Pennsylvania, Philadelphia, PA*

2:45 pm

Engineered Galectin-1 for Immunomodulation

Margarita Portes and Gregory Kibula

*University of Florida, Gainesville, FL*

**OP-Thurs-2-12**  Room 225B

**Track: Drug Delivery & Intelligent Systems**

**Delivery Systems for Proteins and Vaccines**

*Chairs: Jas Rodda, Yann Leung*

1:30 pm

18F-EPS PET Imaging Can Detect Hypoxia in the TMJ That Later Exhibit Cartilage Degradation

Megan Sparay, Vanessa Moody, Jessie Frank, Eric Granquist, and Beth Winkelman

*University of Pennsylvania, Philadelphia, PA*

1:45 pm

A Computational Model of a Dynamically Contracting Airway

Jason H.T. Bates and Vignesh Rajendra

*University of Illinois, Urbana, Illinois*

2:00 pm

A Multiscale Computational Model of Pulmonary Airway Acoustics

Brian Henry and Thomas Royaton

*University of Illinois at Chicago, Chicago, IL*

2:45 pm

Understanding Resistance to EGFR-Targeted Therapy in an Engineered Hypoxic Tumor Model

Yuting Jiang, Yang Jin Lee, Bethany L. Johnson, and Kayse Shelt

*Department of Biomedical Engineering, University of Southern California, Los Angeles, CA*

**OP-Thurs-2-14**  Room 228B

**Track: Cancer Technologies**

**Tumor Microenvironment I**

*Chairs: Jennifer Munson, Scott Varbrud*

1:30 pm

Tissue ImplatableSpirometry Chambers for In Vivo Tumor Dynamics Analysis

Gabriel Grosko, Shweta Banerjee, Neel Maitra, Mona Onita Lenso, Lucia Gazzoni, Pierga Huang, and Lanush Muni

*Harvard Medical School and Massachusetts General Hospital, Boston, MA*

**BMES 2017 | Phoenix**
Implications of Ultra-Low Dose LPS on Vascular Sprouting Dynamics in the Tumor Microenvironment
Megan Can+, Liu Li+, and Scott Verbridge
Virginia Polytechnic Institute and State University, Blacksburg, VA

OP-Thurs-2-16
Room 226A

OP-Thurs-2-17
Room 226B

Track: Neural Engineering

Oral Session: Neural Injury and Disease Model Systems
Chair: David McKinney, Biomimetics
1:30 pm

Corical-subcortical Network Dynamics in Parkinson's Disease
Kavan O’Neill1, Cory Barton1, Denise Osewal1, Zaman Mirzadeh1, Francisco Porcar1, and Bradley Greger1
1:30 pm

Arizona State University, Tempe, AZ; Barrow Neurological Institute, Phoenix, AZ

1:45 pm

Interictal Localization of the Epileptogenic Focus by High and Low Frequency GPDC Analysis of iEEG
Omar Alkarmi1, Diana Piazza2, Christopher Mondragon1, Bharat Karunam1, Sandipan Pal1, and Leon lasztidka1
1:45 pm

Louisiana Tech University, Ruston, LA; University of Alabama, Birmingham, AL

2:00 pm

Modulation of Neural Activity in Sleep in C. elegans
Daniel LaVillette1, You Lien Chen1, William Schaefer2, and Dirk Albrecht2
2:00 pm

1:45 pm

Worcester Polytechnic Institute, Worcester, MA; MRIC Laboratory of Molecular Biology, Cambridge, United Kingdom

2:15 pm

In Vivo Model for Traumatic Brain Injuries
Volha Liaudanskaya1, Grace G Ingalls1, Alison M Brack1, Sevda Lule2, Volha Liaudanskaya1, Grace G Ingalls1, Alison M Brack1, Sevda Lule2, Veronique de Courten2, and Mark J. Hinds3
2:15 pm

Worcester Polytechnic Institute, Worcester, MA; 1The John P. Roby Laboratory of Bioengineering, University of Massachusetts, Amherst, MA; 2Vanderbilt Institute of Emergency Medicine, Nashville, TN

2:45 pm

Traumatic Brain Injury Induces a Temporal and Severity Dependent Release of Tight Junction Proteins in Extracellular Microvesicles (eMVs)
Allison Andrews1, Eamon Louden2, Lee Anne Camden2, Steven Kasper1, Bosnia Rankovic1, and Servio Ramirez2
2:45 pm

1University of Pennsylvania, Philadelphia, PA; 2McMaster University, Hamilton, ON

2:30 pm

Reorganization of Modular Brain Networks Following Cognitive Training for Chronic Traumatic Brain Injury
Khiwan Han1, Sandra Chapman1, and Daniel Krawczyk2,1
2:30 pm

1University of Texas at Dallas, Dallas, TX; 2University of Texas at Dallas

3:00 pm

Impact Force Alters Extracellular miRNA Release by Porcine Articular Cartilage
Kratin Culliford1, Vilesh Patel1, Thomas West1, and Keith L. Kaper1
3:00 pm

1University of Miami, Coral Gables, FL
Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

SPECIAL SESSION
1:30 pm–3:00 pm Room 121ABC

NIH Funding Panel Session
The session will provide an overview of NIH funding opportunities and resources particularly well-suited to the BMES research community. NIH Program Officers and awardees will offer insights and “lessons learned” from the perspective of winning these NIH awards as well as in serving on NIH review panels. The session will explore how researchers may develop strategies to align their research interests with NIH opportunities and priorities.

SPECIAL SESSION
1:30 pm–3:00 pm Room 1228

Defining Educational Goals of Bioengineering in the 21st century
Chairs: Jennifer Amos
Speakers:
- Andrew Smith, Associate Head and Assistant Professor of Bioengineering, University of California, Santa Cruz
- Daniel A. Fletcher, Bioengineer and Biophysics, UC Berkeley
- Alixa Sarang-Sieminski, Associate Professor of Bioengineering, Franklin W. Olin College of Engineering
- Ross Venook, Lecturer Bioengineering Department and BioDesign, Stanford University

Engineers design and create tools, products, and systems that change society and improve the lives of people. The most impactful products are ones that address profound societal and personal needs. We speak of engineering as grand challenges because engineering is essential for addressing urgent societal issues such as combating global climate change, ensuring a secure food supply, or providing sustainable and effective medical care. For our engineering students to be effective at addressing the societal needs posed by these grand challenges, our students must understand the "needs" that require engineering solutions as well as the science and technologies that make engineering effective.

This session will highlight how 3 institutions are approaching this balance of social needs integration and into BMES Curricula. Following the talks, we will guide discussion on three main discussion points to engage the BIOE community: 1) Is it possible to redesign the curriculum so that societal needs for healthcare and medicine drive the technical content, 2) Can we integrate co-curricular experiences providing insight to the clinical needs and challenges from the freshmen year, 3) How do we develop our faculty’s teaching skills to meet these new challenges and foster more project-based and clinically focused curricula.

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

INDUSTRY SESSION
2:00 pm–5:00 pm Room 123AB

Entrepreneur Workshop
Ticket purchase required
Chairs: Clark Wilson, Merchant and Gould P.C.

The session will include a panel discussion where the individuals will cover one or more of the below areas. It is up to the individual as to which he/she feels they have expertise in. The second half of the session will include an open round table whereby the startups in the room can interact with you individually to address specific questions they might have.

- US Regulatory strategy
- OUS Regulatory strategy
- Verification/Validation
- Pre-clinical trials
- Feasibility Studies
- Clinical trials
- Design
- Manufacturing
- Quality Management System
- Risk Management
- Reimbursement
- Corporate Governance
- Medical Imaging
- Marketing/Sales
- Fundraising Strategy
- IP Strategy
- Launch
- Post-market surveillance
- Post-market studies
- Company growth
- Exit strategy

*Industry Track sponsored by:

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

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- Launch
- Post-market surveillance
- Post-market studies
- Company growth
- Exit strategy

*Industry Track sponsored by:

OP-Thurs-3-1 Room 224A

Track: Biomaterials
Biomaterials for Immunengineering III
Chairs: James Mason, Anil Singh
3:45 pm

Immunologically Active Cryogels for Breast Cancer Therapy
Sidd A. Banchero-Patel
Northeastern University, Boston, MA; Harvard University, Cambridge, MA; The National Center for Scientific Research, Sorbonne Université, Université de Technologie de Compiègne (UTC), Compiègne, France

4:00 pm

Biomimetic Design of Artificial Lymph Nodes for T Cell Immunotherapy
John Hickey1, Jon Wook Chung2, Hai-Quan Miez3, and Jonathan Schnick4
Johns Hopkins University, Baltimore, MD

4:15 pm

An Acellular Polymeric Particle-Based Platform for The Highly Efficient Activation and Expansion Of Natural Killer Cells
Kelly Brodkey1, Randall Meyer2, and Jordan Green3
Johns Hopkins University, Baltimore, MD

4:30 pm

Role of Integrins in Macrophage Activation to Biomaterials Properties
Kelly Hatchick1, Andy Vo1, Emily Burch1, and Rene Olivares Navarrete2
Virginia Commonwealth University, Richmond, VA

4:45 pm

The Role of Geometry in T-cell Stimulation for Adoptive Cell Therapy: An Initial Assessment of Possible Flat Static Patterns Presenting Key Signals for Enhanced Ex Vivo T-cell Expansion
Robbi Chaudhry1, Christopher Korg1, and Tarek Fahmy1
Yale University, New Haven, CT

5:00 pm

Intra-Lymph Node Delivery of Tolerogenic Microparticles Reverses Disease and Prevents Relapse in an Autoimmune Model of Multiple Sclerosis
Emily A. Gosselin1, Emily A. Gosselin1, Lisa H. Tostanoski1, and Christopher M. Jewell1,2,3
Johns Hopkins University, Baltimore, MD

*Biomaterials Track sponsored by:
Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

**OP-Thurs–3**

**Room 224B**

**Track: Biomaterials**

**Advanced Characterization and Imaging of Biomaterial Environments**

Chairs: Nicole Iversen, Greg Huddleson

*3:45 pm*

**Direct Imaging of Protein Stability and Folding Kinetics In Hydrogels**

Lydia Kiley, Deborah Leskabi, Martin Gruene, Kali Serrano, Dhashi Guir, and Yinhuo Kong

University of Illinois, Urbana, IL

*4:00 pm*

**Upstream Platelet Priming Effects on Transient Downstream Platelet-Surface Interactions**

Alexandra Zudova, Elisabeth Pumford, and Vladimir Hlady

*4:15 pm*

**Fabrication of Aligned Collagen Fibers via Microfluidic Device for Observing Keratocyte Behavior**

Kevin Lien, Poukia Kavanagh, Kyle Gross, Nihar Taneja, Matthew Peterson, and David Schmidt

UT Dallas, Dallas, TX, UT Southwestern, Dallas, TX, Istanbul Medipol University, Istanbul, Turkey

*4:30 pm*

**Microstructure of Laminin Networks Affects Adhesion to Dystroglycan Null Cells and Downstream Signaling**

Claire Robertson, Anil Kent, Naziera Meyer, and Mina Bissell

Lawrence Berkeley National Lab, Berkeley, CA

*4:45 pm*

**Flow Induced Liposome Rupture into a Lipid Bilayer on Solid Surfaces using QCM-D**

Claire Robertson, Anil Kent, and Mina Bissell

*5:00 pm*

**The Effects of Spatial Confinement on Metastatic Cancer Cell Migration in 3D Collagen Microtracks**

Aniqua Rahman, Aadhar Jain, Andres Larraza, David Erickson, and Cynthia Reinhart-King

1 University of Illinois, Urbana, IL, 2 Vanderbilt University, Nashville, TN

*OP-Thurs–3–3*

**Room 229A**

**Track: Biomaterials**

**Brain Biomechanics and Mechanobiology**

Chairs: Raj Prabhakar, Adam Bertei

*3:45 pm*

**Viscoelastic Characterization of the White Matter Brain Tissue via Indentation: An Experimental and Theoretical Study**

Aniqua Rahman, Aadhar Jain, Andres Larraza, David Erickson, and Cynthia Reinhart-King

1 University of Illinois, Urbana, IL, 2 Vanderbilt University, Nashville, TN

*4:00 pm*

**Solid Stress from Tumors Impairs the Surrounding Brain Vascular Perfusion and Neuronal Function**

Alexandra Zudova, Elisabeth Pumford, and Vladimir Hlady

*4:15 pm*

**Upstream Platelet Priming Effects on Temporal Platelet-Surface Interactions**

Alexandra Zudova, Elisabeth Pumford, and Vladimir Hlady

*4:30 pm*

**Mechanical Properties of Gial Cells in 3D Scaffolds**

Amy Dagost, K. T. Ramesh, Labchen Rajphandar, Anur Venkatnathan, Santiago Orrego, and Sunj Hoon Kang

Johns Hopkins University, Baltimore, MD

*4:45 pm*

**Astrocyte Mechanobiology and Regulation of the Extracellular Matrix Environment**

Galbra Compton, Addison Walker, Abby Testfau, Jacob Schliim, Ethan Echols, Kedh Balachandran, and Jeffrey Woloch

University of Arkansas, Fayetteville, AR

*5:00 pm*

**The Appropriateness of Biphasic Poroelastic Constitutive Models for Estimating Brain Biomechanics Under Surgical Load**

Sarath Narasimhan, Jared A. Web, Reid C. Thompson, and Michael L. Miga 1, 2

*5:05 pm*

**Three-dimensional Human Brain Models under Mild Angular Acceleration using Material Point Method**

Yuan-Chiao Lu, Nithin Dhalapagurapu, Kaidi Ramesh, Andrew Knutson, Daqing Pham, Philip Basby, and Jerry Principe

Johns Hopkins University, Baltimore, MD, Henry M. Jackson Foundation, Bethesda, MD, Washington University in St. Louis, St. Louis, MO

**OP-Thurs–3–4**

**Room 229**

**Track: Biomaterials**

**Computational and Multiscale Modeling in Biomechanics II**

Chair: Will Richardson, Taewooy Kim

*3:45 pm*

**Coarse-Grained Model of SNARe Shows that Reconstitution Assembly Is Required for Quick Zippering and Determines the Number of SNAREs Required for Docking**

Nicole Fontaine, Maria Blyakhaeva, and Anand Jagota

1 Lehigh University, Bethlehem, PA, 2 Wayne State University of Medicine, Detroit, MI

*4:00 pm*

**The Versatile Micromechanical Model of Cell Migration**

AliRuban Hashemi, Thomas Bell, and Taewooy Kim

Purdue University, West Lafayette, IN

*4:15 pm*

**Application of Filopodial Mechano-SENSING of Surrounding ECM Stiffness to Modeling of Directed Cancer Cell Invasion Dynamics into 3D ECM**

Min-Chae Kim, Rohan Abeyaratne, Roger D. Kammler, and H. Harry Asada

1 Massachusetts Institute of Technology, Cambridge, MA, 2 Singapore MIT Alliance Research Technology, Singapore, Singapore

*4:30 pm*

**A Coupled Chemo-Mechanical Cell-Matrix Model to Predict Mechanical Feedback Between Cells and Extracellular Matrices**

Fard Alkaisi, Matthew Halli, Mingming Wu, and Vivek Shenoy

1 University of Pennsylvania, Philadelphia, PA, 2 Cornell University, Ithaca, NY

*4:45 pm*

**A Multiscale Model of Leukocyte Transendothelial Migration During Atherogenesis**

Rita Bhui and Heather Hayenga

1 University of Texas at Dallas, Richardson, TX

*5:00 pm*

**A Coupled Agent Based Model–Finite Element Analysis Model of Vascular Adaptation**

Maziar Kasharzad, Clark Meyer, and Heather Hayenga

University of Texas, Dallas, Richardson, TX

**OP-Thurs–3–5**

**Room 221A**

**Track: Cardiovascular Engineering**

**Heart Valve Structure, Function, and Disease**

Chair: Karit Balachandran, Rosabha Amir

*3:45 pm*

**Stable Flow Prevents Inflammation of Aortic Valve Endothelial Cells By Increasing Expression of a Novel Flow-Sensitive MIR-483, Which In Turn Downregulates Ash2L and Ube3c**

Joan Fernandes, Jack Heath, Sandeep Kumar, Marwa Mahmoud, and Wael I. Husseini

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

*4:00 pm*

**A Non-invasive Method to Estimate In Vivo Strains of the Mitral Valve**

Bruno Regis, Amir Khajeh, Andrew Drash, Joseph Gormann, Robert Gormann, and Michael Sacks

1 University of Texas at Austin, TX, 2 University of Pennsylvania, Philadelphia, PA

*4:15 pm*

**Label-Free Metabolic Biomarkers for Assessing Calcific Aortic Stenosis Progression**

Ishita Tandon, Olivia Kalen, Kyle Quin, and Karit Balachandran

University of Arkansas, Fayetteville, AR

*4:30 pm*

**Targeting Cadherin-11 Prevents Notch-1-mediated Calcific Aortic Valve Disease**

Cindy Clarke, Meghan Bowler, J. Caleb Snider, and W. David Merryman

Vanderbilt University, Nashville, TN

*4:45 pm*

**Investigating Effects of the 3D Extracellular Environment on Aortic Valve Cell Calcification Using Filter Paper Platforms**

Madhura Montek, Rebecca Nizakowska, Matthew Sapp, and K. Jane Grandel-Aiken

Rice University, Houston, TX

*5:00 pm*

**The Three-Dimensional Microenvironment of the Mitral Valve: Insights into the Effects of Physiological Loads**

Sahra Ayoub, Karen Ten, Amir Khajeh, and Michael Sacks

1 The University of Texas at Austin, Austin, TX

*5:15 pm*

**OP-Thurs–3–6**

**Room 221B**

**Tracks: Tissue Engineering, Cardiovascular Engineering**

**Cardiovascular Tissue Engineering**

*3:45 pm*

**A Flexible Wireless Passive Stimulator for Engineered Cardiac Tissue Constructs**

Shiy Lu, Ali Nawer, Mehdit Nakhjah, and Junseok Chea

1 Arizona State University, Tempe, AZ

*4:00 pm*

**Cell-Cell Interactions in Cardiac Tissue Engineering**

Spencer Marsh and Agneta Simoncic

Clemson University, Greenville, SC

*4:15 pm*

**Using Extracellular Matrix Peptides to Increase Endothelialization of Poly(Vinyl Alcohol) Vascular Grafts Without Increasing Thrombosis**

Dendre Anderson, Kate Trust, Evelyn Yin, and Miranda Hinds

1 Oregon Health & Science University, Portland, OR, 2 University of Waterloo, Waterloo, ON, Canada

*BMES 2017 | Phoenix | 97*
4:30 pm Diabetes Resistant Tissue Engineered Vascular Grafts
Jimit Dukulak1, Passage Uzoh, Zhilan Haji, Christopher Wright2, John Bruch3, Dan Simonson4, and Agneta Simonson4
1Clemson University, Clemson, SC, 2Clemson Health System, Greenville, SC

4:45 pm Tissue Engineered Graft for Use in Vascular and Reconstructive Surgeries
Elisabeth Varghese1, Gungn Singh, Miriam Rafailovich1, Duc Bui2, Marzia Sigori1, Sam Kant1, and Alexander Degnim3
1Stony Brook University, Stony Brook, NY, 2Stony Brook School of Medicine, Stony Brook, NY

5:00 pm Enhancing Decellularized Vascular Grafts Using Self-Assembling Multidomain Peptides
Peter Nguyen1, Rohit Pramuk1, and Vicky Kumar1
1New Jersey Institute of Technology, Newark, NJ

Room 221C
Track: Tissue Engineering

Engineering Replacement Tissues
Chairs: Matthew Lynch, David Habibian

3:45 pm Extensively Passaged Human Auricular Chondrocytes Retain the Capacity to Generate Auricular Cartilage In Vivo
Benjamin Cohen1, Jaime Berenstein1, Alice Harper2, Jason Spector3, and Lawrence Bonassar1
1Cornell University, Ithaca, NY, 2Weill Cornell Medical College, New York, NY

4:00 pm Development of Human-on-a-Chip Systems for Understanding Disease and for Preclinical Drug Discovery
James Hickman1
1University of Central Florida, Orlando, FL, 2Upham, Inc, Orlando, FL

4:15 pm Rapid and Facile Fabrication Of Organs-on-chips: Toward a Patient Derived Intestine-On-A-Chip
Sanjiv Jhangiani1, Shashi Murthy2,4, and Abigail Koppes1
1University of Washington, Seattle, WA, 2Seattle Children's Research Institute, Seattle, WA, 3University of Melbourne, Melbourne, Australia, 4CSIRO, Melbourne, Australia

4:30 pm High Throughput Optimization of Differentiation from Human Pluripotent Cells to Kidney Lines Using Microbead Array Assays
Nicholas Glew1, Minoru Takesaka1, Drew Timmerman2, Pei Xuan3,4, Ernst Wolfman1, Melissa Little1,5, and Justin Cooper-White6
1The University of Queensland, Brisbane, Australia, 2Murdock Children's Research Institute, Melbourne, Australia3, 3Munich Children's Hospital, Munich, Germany, 4The University of Melbourne, Melbourne, Australia, 5CSIRO, Melbourne, Australia

4:45 pm Flexible Shape-memory Scaffold for Minimally Invasive Delivery of Functional Tissues
Miles Montgomery1, Samad Ahadian1, Locke Davenport Huyer1, Miles Montgomery1, Samad Ahadian1, Locke Davenport Huyer1,2, and Abigail Koppes1
1University of Washington, Seattle, WA, 2Seattle Children's Research Institute, Seattle, WA

5:00 pm An In Vitro Chondro-Osteo-Vascular Triphasic Model of the Osteochondral Complex
Alexandre Probst1, Riccardo Conticello2, Peter Alexander1, Dara Poppi3, Federica Chiellini1, and Rocky Yuan1
1University of Pittsburgh, Pittsburgh, PA, 2RETI Foundation, Palermo, Italy, 3University of Pisa, Pisa, Italy

Room 222B
Tracks: Cellular and Molecular Bioengineering, Biomechanics

Cellular and Molecular Mechano生物学
Chairs: Ashley Brown, Kristen Mills

3:45 pm A Chemosensitive Tool for Controlling Chondrogenesis Activity In Vitro
Ryan McDonagh1, Jeny Shaha1, and Christopher Price1
1University of Delaware, Newark, DE

4:00 pm Computational and Experimental Analysis of ECM Remodeling Dynamics by Cell-generated Forces
Michael Malik1, Andrea Malandrino2, and Roger Kamm1
1Yale University, New Haven, CT, 2Massachusetts Institute of Technology, Cambridge, MA

4:15 pm A Stochastic Motor-Clutch Model Describes Mechanical Regulation of Cellular Morphology
Benjamin Soundung1 and Keith Good1
1The Ohio State University, Columbus, OH

4:30 pm A Novel Mechanism for Shear Mechano-transduction and Regulation of Barrier Function in 3D Biomimetic Microvessels
William Palachuk1,2, Matthew Kutys1,2, Jingyang Yang1,2, and Christopher Chen1,2
1Harvard University, Boston, MA, 2Boston Children's Hospital, Boston, MA

4:45 pm Cadherin-11's Mechanical and Inflammatory Role in Fibroblasts
Meghan Bowler1, Matthew Berri1, Rachel Jerrell1, Aron Parekh1, and David Meryman1
1University of Illinois, Urbana, IL

5:00 pm Endothelial Growth Factor Receptor is a Key Effector in Intercellular Force Transduction in Epithelia
Deborah Lackbald1, Poonam Sehgal1, Kinya Kong1, and Jun Wu1
1University of Illinois, Urbana, IL

Room 225A
Tracks: Biomedical Imaging and Optics, Cancer Technologies

Imaging Strategies and Molecular Profiling in Cancer
Chairs: Sivakumara Muthur, Raman Zaman

3:45 pm Optical Detection of Early Changes in a Transgenic Model of Ovarian Cancer
Jan Kowey1, Katrin Haase1, Zoe L. Dominguez2,3,4,5, Michael D. Green2,6,7, Patrick F. Schmid8,9, and Bryan Beck1
1University of Arizona, Tucson, AZ, 2Fox Chase Cancer Center, Philadelphia, PA, 3Fox Chase Cancer Center, Philadelphia, PA, 4Rowan University, Glassboro, NJ, 5University of Arizona, Tucson, AZ, 6Fox Chase Cancer Center, Philadelphia, PA, 7University of Arizona, Tucson, AZ, 8University of Arizona, Tucson, AZ, 9Rowan University, Glassboro, NJ

4:00 pm Validation of Gait Analysis Pro App for 10m Walk Test
Lee Fawcett1 and Ryan McGrain1
1University of Vermont, Burlington, VT

4:15 pm A Caprine Model of a Novel Anaesthesia Paradigm for Bi-directional Neural Control of an Osseointegrated Bionic Limb
Tyler Cleer1, Matthew Cary2, Richard Braemena, and Hugh Herra3
1MIT Center for Extreme Bionics, Cambridge, MA, 2University of California, San Francisco, San Francisco, CA

4:30 pm Soft-Inflatable Exosuit For Knee Rehabilitation
Sarvimal Sridar1, Pham Huong Nguyen1, Manju2, Quoc Lam1, and Panagios Papatheoricas1
1Arizona State University, Mesa, AZ, 2Arizona State University, Tempe, AZ

4:45 pm A Novel Orthopedic Robot Design for Femoral Fracture Alignment
Mohammad Alavi-Nejad1, Matthew Golden1, Nathaniel Hoffmann1, Daniel Infusini1, Nicholas Silva1, and Caroline Smith1
1Rowan University, Glassboro, NJ

5:00 pm Designing A Novel Spill-proof Cup For Individuals with Cerebral Palsy
Kethleen Brady1, Yu Ju1, Alexander de la Vega1, Alexander Hoorn2, Mary Ladrina3, Andrea Sharar4, Angela Lane5, Elaine Stashinko1, and Tara Johnson1
1University of Illinois, Urbana, IL, 2Kennedy-Krieger Institute, Baltimore, MD, 3Johns Hopkins University, Baltimore, MD, 4Unived Community Connections, Baltimore, MD

Room 223
Tracks: Device Technologies and Biomedical Robotics, Orthopedic and Rehabilitation Engineering

Prosthetics and Orthotics
Chairs: Tyler Cities, Tara Johnson

3:45 pm Movement of a Paralyzed Hand with a Mechanical Gear Orthosis
Tyler Clites1, Matthew Carty1, Rickard Braamark2, and Hugh Herr1
1MIT Center for Extreme Bionics, Cambridge, MA, 2Royal Institute of Technology, Stockholm, Sweden

4:00 pm A Non-invasive Analysis of the Tumor Microenvironment in a Novel Stem-Like Cancer Cell Xenograft Model
Christopher Kozak1,2, Janaki Hegde1,3,4,5, Junmin Lee1, Tan Huynh5, Eun Ji Chung,6 and Gretchen Mahler1
1Vanderbilt University, Nashville, TN, 2Fox Chase Cancer Center, Philadelphia, PA, 3Rowan University, Glassboro, NJ, 4University of Arizona, Tucson, AZ, 5University of Arizona, Tucson, AZ

4:15 pm Transgenic Model of Ovarian Cancer
Jan Kowey1, Katrin Haase1, Zoe L. Dominguez2,3,4,5, Michael D. Green2,6,7, Patrick F. Schmid8,9, and Bryan Beck1
1University of Arizona, Tucson, AZ, 2Fox Chase Cancer Center, Philadelphia, PA, 3Rowan University, Glassboro, NJ, 4University of Arizona, Tucson, AZ, 5University of Arizona, Tucson, AZ, 6Fox Chase Cancer Center, Philadelphia, PA, 7University of Arizona, Tucson, AZ, 8University of Arizona, Tucson, AZ, 9Rowan University, Glassboro, NJ

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Christopher Kozak1,2, Janaki Hegde1,3,4,5, Junmin Lee1, Tan Huynh5, Eun Ji Chung,6 and Gretchen Mahler1
1Vanderbilt University, Nashville, TN, 2Fox Chase Cancer Center, Philadelphia, PA, 3Rowan University, Glassboro, NJ, 4University of Arizona, Tucson, AZ, 5University of Arizona, Tucson, AZ, 6Fox Chase Cancer Center, Philadelphia, PA, 7University of Arizona, Tucson, AZ, 8University of Arizona, Tucson, AZ, 9Rowan University, Glassboro, NJ

BMES 2017
Phoenix | BMES 2017

Platform Sessions—Thursday, Oct 12—3:45 pm to 5:15 pm—Platform Session 3

Thursday, October 12 | 3:45 pm—5:15 pm | Platform Session 3

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3:45 pm–5:15 pm | Platform Session 3

3:40 pm
**Validation of Elastic Image Registration for Estimation of Regional Lung Expansion**

From: Michele Napolitano, Tim Winkler, and Dominik Vital Mello

1. Massachusetts General Hospital and Harvard Medical School, Boston, MA
2. Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil

**4:45 pm**

**Next Generation Airway Suction System for First Responders in Military and Civilian Emergencies**

For: Akhter Forhad, Clark David, Laban Andrew, and Adam Bugaj

1. The Ohio State University, Columbus, OH
2. For Chase Cancer Center, Philadelphia, PA

**5:00 pm**

**A Neurovascular System for Adaptive Closed-Loop Control of Ventilation After Spinal Cord Injury**

From: Zachery GA, James Abba, Brian Hillen, and Rami Jung

1. Florida International University, Miami, FL
2. Arizona State University, Tempe, AZ

**OP-Thurs-3-14**

**Room 228B**

**Track: Cancer Technologies**

**Cancer Microenvironment II**

Chair: Shripate Sare, Calian Steven

3:45 pm

**PTEN DN Deletion in Pancreatic Cancer Associated Fibroblasts Decreases Hydraulic Permeability Through Hyaluronan and AKT Signaling in a 3D Microfluidic Tumor Stroma Model**

From: Alex Avendano, Jonathan Chang, Christina Ennis, and Jason Pitarresi

1. University of California, Los Angeles, Los Angeles, CA
2. Massachusetts Institute of Technology, Cambridge, MA
3. Northeastern University, Boston, MA

4:00 pm

**Hyaluronic Acid-Based, Brain-Mimetic Hydrogel Platform to Study Glial Fibroblasts Resistance to EGFR Inhibition**

From: Wei Kong, Songmo Zhang, Alkaran Sohrabi, Sopureesung Suri, Archana Bhanupreet, Chris Walther, Jesse Liang, Lisa Tav, David Nathanson, and Stephanie Sedlin

1. University of California, Los Angeles, Los Angeles, CA
2. Johns Hopkins University, Baltimore, MD

4:15 pm

**Modeling Breast Cancer Metastasis Mechanisms in a Tissue Engineered Organotypic Model**

From: Jessie Jame, Beatrice Bitter, Matthew Zunke, Yoshiko Tsunoda, Andrew Akadawwa, Sarah Kariuki, Omer Kaymakcalan, Alessia Lin, Peter Torgers, John Morgan, and Jason Specktor

1. Weill Cornell Medical College, New York, NY
2. Cornell University, Ithaca, NY
3. Hospital for Special Surgery, New York, NY

4:30 pm

**Increased in ECM Stiffness Results in a More Mesenchymal Phenotype in Murine Epithelial Cells**

From: Shane Allen, Viktoriya Rybakova, and Laura Suggs

1. The University of Texas at Austin, Austin, TX

4:45 pm

**Changes in Extracellular Matrix Structure Due to Fibroblast Genotype Direct Cancer Cell Behavior**

From: Catlin Jones, Edna Cukierman, Anna Hammar, Michael Ostrowski, and Jennifer Leigh

1. The Ohio State University, Columbus, OH
2. For Chase Cancer Center, Philadelphia, PA

5:00 pm

**Bone-Homing Versus Primary Breast Cancer Cells Differentially Alter Osteocyte Function in 3D**

From: Biyiye Serar, Mary Hagen, Avine Burman, and Massimo Lynch

1. University of Massachusetts, Amherst, Amherst, MA

**OP-Thurs-3-15**

**Room 227C**

**Track: Cancer Technologies**

**Metastasis, Dormancy & Treatment Response**

Chair: Meera Patel, Junghoe Lee

3:45 pm

**In Vivo, Multi-Organ Examination of Cancer Cell Trafficking and Extravasation in Early Metastatic Dissemination**

From: Paul Colin, Kevin Bishoff, Alexis Devine, and Nicole Morgan

1. Lennett Paper, Lisa Jenkins, Raman Sood, and Kandice Tanner
2. National Cancer Institute, Bethesda, MD
3. National Human Genome Research Institute, Bethesda, MD
4. National Institute of Biomedical Imaging and Bioengineering, Bethesda, MD

4:00 pm

**Single Cell Dynamic Transcription Factor Programs Driving Colonization of the Metastatic Niche**

From: Matthew Hall, Joseph Dacher, Robert C. Slater, and Luen Liu

1. University of Michigan, Ann Arbor, MI
2. University of Pennsylvania, Philadelphia, PA
3. University of California, Los Angeles, Los Angeles, CA
4. University of Pennsylvania, Philadelphia, PA

4:45 pm

**Enhanced Radiation Response of Head and Neck Tumor Xenografts Using Novel Tridimensional Optical/ MR/X-ray Contrast Nanoconstrats**

From: Gayatri Sharma, Abdul Parchur, Jaidip Jagtap, Brian Fish, Bergom Carameri, Meeta M. Madhira, Michael J. Fisher, and Amrita Joshi

1. Department of Biomedical Engineering, Medical College of Wisconsin, Milwaukee, WI
2. Department of Radiation Oncology, Medical College of Wisconsin, Milwaukee, WI
3. Department of Physiology, Medical College of Wisconsin, Milwaukee, WI
4. Department of Biomedical Engineering, National Institutes of Health, Bethesda, MD
5. Department of Radiation Oncology, Medical College of Wisconsin, Milwaukee, WI
6. Department of Biomedical Engineering, National Institutes of Health, Bethesda, MD

**4:30 pm**

**Effects of HDAC Inhibitors on Breast Cancer Cell Phenotype in a Microengineered 3D Invasion Assay**

From: Eric Barrientos, Nitish Peral, Daehn Taeung, Tran Nguyen, Ghasan Moumen, and Mohd-Nikhalib

1. Arizona State University, Tempe, AZ
2. University of Arizona, Tucson, AZ
Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

**Single-cell Analysis of Rituximab Sensitivity and Anti-tumor Activity in Microfluidic Droplets**
Sahali Sarkar1, Praveen Sahitharaman1, and Tanya Konya1
Northeastern University, Boston, MA

**Myeloid-Targeted Immunotherapies Act in Synergy to Induce a Subpopulation of Inflammatory Tumor-Associated Macrophages and Anti-Tumor Immunity**
Anya Kuma-Rojas1, Cuma Perry1, Susan Karch1, and Kathryn Miller-Jensen1
Yale University, New Haven, CT

**Inflammatory Tumor-Associated Macrophages Synergy to Induce a Subpopulation of BMES 2017 | Phoenix**
Matthew Bersi1, Nilay Taneja1, Aidan Fenix1, J. Caleb Snider1, and Michael King1
1University of Texas Southwestern Medical Center, Dallas, TX
4:30 pm
Dependent Cortical Stability During Cytokinesis Mathematical Modeling of Nonmuscle Myosin
Kevin Anderson1 and Michael King1
1Wayne Young University, Provo, UT
4:15 pm

**Gelatin/Tropoelastin Hydrogel Composites for Peripheral Nerve Repair**
Jonathan Soucy1, Elham Shriazian Sami1, David Diaz Vera1, Roberto Portillo Lara1, Abigail Koppe1, Ryan Koppen1, and Nawam Annabathi1
Northeastern University, Boston, MA, 2Harvard MIT HST, Cambridge, MA
4:30 pm

**Improving Nerve Growth Conduits with Aligned Nanofibers, Growth Factors, and Physical Therapy**
Tonya Whitehead1, Elizabeth May1, Jean Pedram1, Assefoddah Mashani1, Chinyang Chen1, John Cavanaugh1, and Harin Sundaramaian1
Wayne State University, Detroit, MI
4:45 pm

**Microparticle Release of Sema3A Selectively Blocks Pain Fibers, While Allowing Other Fiber Types to Grow Towards Molecular Attractants**
Brian Haddad1, Sanjeev Anand1, and Mari Romero-Ortega1
University of Texas at Dallas, Richardson, TX
5:00 pm

**Uptake of Cholera Toxin B Modified Protocells in Phrenic Motoneurons**
Maria Gonzalez Porras1, Jeffrey Brinker1, Gary Sieck1, and Marka Mantilla1
Mayo Clinic, Rochester, MN, 2University of New Mexico, Albuquerque, NM
5:00 pm

**Development of Adaptive Spatiotemporal Spectrum Decomposition and Clustering for Cellular Morphodynamic Profiling**
Xiao Mei1, Cruz Dagley1, Klaus Hahn2, and Gautam Danuser1
1University of Texas Southwestern Medical Center, Dallas, TX
2University of North Carolina at Chapel Hill, Chapel Hill, NC
5:00 pm

**Session:**
Room 226B
**Track:** Neural Engineering
**Periperal Repair**
Chair: Rebecca Wechs, Mario Romero-Ortega
5:00 pm

**A Microfluidic Platform to Study the Effects of GDNF on Neuronal Axon Entrapment**
Za Zhou Wang1, Matthew D. Wood1, Susan E. Macklon2, and Shelly E. Sastry-Elbert1
1Washington University in St. Louis, St. Louis, MO, 2Washington University School of Medicine, St. Louis, MO, 3University of Texas at Austin, Austin, TX
4:00 pm

**Application of Lysophosphatidylcholine and Nerve Growth Factor for Nerve Regeneration**
Alana Cook1, Ryan Ward1, Keaton Karlinsky1, Austin Thompson1, Mark Rigby1, Sarah Coffin1, William Pitt1, Beverly Roeder1, and Scott Steffensen1
1Brigham Young University, Provo, UT
4:15 pm

**Mitigation of Pin-tract Infections via Monolaurin Coating**
Alexey Vertegel1, Dmitriy Gil1, Anastasia Frank-Kamenetskaya1, Nikolay Borodinov1, 2Christopher Gross1, and Igor Luzinov1
1Clemson University, 2Clemson, SC, 3Medical University of South Carolina, Charleston, SC
4:15 pm

**Cell-Laden Annulus Fibrosus Repair in an In Vivo Ovine Lumbar Spine Model**
Joshua Stoner1, John1, Ibrahim Hawaw1, Rodrigo Navarro-Ramirez1, Micaela Zubkova1, Gennet Lang1, Roger Hart1, and Laureen Bonassar1
Cornell University, Ithaca, NY, 2Weill Cornell Medical College, New York, NY
4:30 pm

**Degenerative IVDs Sensitize Sensory Neurons to Mechanical Loading at Physiological Strain Levels**
Joshua Stoner1, Brandon Lawrence1, Corban Bethel1, Jared Zitnay1, Wesley Wilcox1, and Bobby Bowles1
University of Utah, Salt Lake City, UT
4:45 pm

**RANKL Expression as a Measure of Osteocyte Apoptotic Signaling in Confined Space**
Sean McCutcheon1, Robert Majajaka1, Mitchell Schaffner1, and Marka Mantilla1
1City College of New York, New York, NY
5:00 pm

**Multiphase Osteogenic and Vascular Microtissues Support Endothelial Cell Network Formation and Enhance the Mineralization Potential of Mesenchymal Stem Cells**
Kash Slowik1, Andrew Armold1, Nicholas Schoen1, Adeline Hong1, Gopiathan Thirumangal1, Benjamin Lee1, and Zan Segre1
1University of Michigan, Ann Arbor, MI
5:00 pm

**OP-Thurs-3-17**
**Room 226B**

**OP-Thurs-3-18**
**Room 227C**

**Track:** Orthopedic and Rehabilitation Engineering
**Spine, Bone and Associated Tissue**
Chair: Jennifer Cutney, Christopher Price
5:00 pm

**Engineered Substrates Regulate Nucleus Pulposus Cell Phenotype of the Intervertebral Disc Through Mechano-Sensing Pathways**
Brooke Lynch1, Swasunna E. Sri, Ludwig Jing1, Michael P. Kelly1, Izabele M. Buchbinder1, Lukas F. Zabala1, Marchel L. Gupta1, and Leo A. Santel1
1Washington University in St. Louis, St. Louis, MO, 2Washington University School of Medicine, St. Louis, MO
4:30 pm

**B. Rita Alevriadou, PhD, Department of BME, University School of Medicine, St. Louis, MO, 3University of Texas at Dallas, Richardson, TX

**2017 DEBUT Awards Presentation**
Chairs: Zeynep Erim
The National Institute of Biomedical Imaging and Bioengineering (NIBIB) and VentureWell have come together to support and expand the Design by Biomedical Undergraduate Teams (DEBUT) challenge, which recognizes undergraduate excellence in biomedical design and innovation. This special session will feature presentations from the 2017 winning teams followed by an award ceremony. A former award winner will also share their perspective of the DEBUT Challenge and the role it played in their success in commercializing a design. This is a unique opportunity for aspiring design engineers, future DEBUT applicants, and future entrepreneurs to be inspired and learn more about the Challenge competition and its impact.

**3:45 pm–5:15 pm**
**Room 121BC**

**2017 DEBUT Awards Presentation**
Chairs: Zeynep Erim
The National Institute of Biomedical Imaging and Bioengineering (NIBIB) and VentureWell have come together to support and expand the Design by Biomedical Undergraduate Teams (DEBUT) challenge, which recognizes undergraduate excellence in biomedical design and innovation. This special session will feature presentations from the 2017 winning teams followed by an award ceremony. A former award winner will also share their perspective of the DEBUT Challenge and the role it played in their success in commercializing a design. This is a unique opportunity for aspiring design engineers, future DEBUT applicants, and future entrepreneurs to be inspired and learn more about the Challenge competition and its impact.

**3:45 pm–5:15 pm**
**Room 121C**

**Engineering Solutions to Address Healthcare Disparities**
Chair: Gilda Barabino
Health and health care disparities remain a costly and burdensome challenge in the U.S. and pose a serious threat to continued improvement in overall quality of care and population health. Biomedical engineers are well positioned to employ novel biodesign strategies toward the elimination of these disparities. This interactive session will explore approaches for research and education related to the application of biomedical technologies and engineer ing designs to solve health disparities. The session will highlight designs developed in the 2017 BMES Coulter College with a focus on health disparity solutions.
Track: Biomaterials
3D Printing and Advanced Biomaterial Manufacturing

TH-1 Collagen Type-1 Hybrid Bioink for 3D Printed Microenvironments
Andrea Mazzocchi1,2, Shay Soker1,2, and Aleksander Skardal1,2
1Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, 2Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC

TH-2 Incorporation of Growth Factor Mimetic Peptides into GelMA Bioinks
Jimmy Su1, Patrick Thayer2, and Hector Martinez1,2
1Northwestern University, Evanston, IL, 2CELLINK LLC, Blacksburg, VA

TH-3 Meniscus Guiding Printing of Collagen Fiber Patterns Capable of Controlling Cell Morphology
Justyn Jaworski1
1University of Texas, Arlington, TX

TH-4 Synthesis and Characterization of Microparticles for Templating Porous Shape Memory Polymer Scaffolds
Nehal Banakorkina1, Grace Fletcher1, Mary Beth Monroe1, and Duncan MacInlay1
1Texas A&M University, College Station, TX

TH-5 Development of a Scaffold-Free, Three Dimensional Bioprinter that Utilizes Cellular Spheroids
Wesley Laffargue1, Sachiul Maitapally1, Joel Berry1, and Jianyi Zhang1
1University of Alabama at Birmingham, Birmingham, AL

TH-6 Muscle Cell Driven Graphene Transfer on the Three Dimensional Printed Hydrogel
Yongrok Kim1, Golmon Pagan-Diaz1, and Rashid Bashir1
1University of Illinois at Urbana-Champaign, Urbana, IL

Track: Biomaterials
Natural and Bioinspired Biomaterials

TH-7 Hydrophilic Topcoat on NO-Releasing Surfaces for Enhanced Antibacterials and Antifouling Properties
Christina Workman1, Prayadarnshi Singh1, Aitendra Pant1, Marcus Goudie1, and Hitesh Handa1
1University of Georgia, Athens, GA

TH-8 Engineering Biomimetic Magnetic Liposomes Inspired from Red Blood Cell
Colin Farrell1, Tyen Pagan-Diaz1, Pranav Kondur, Pocharam1, and Santosh Aryal2
1Kansas State University, Manhattan, KS

TH-9 Investigative Studies of a AuNP Viscoelastic Collagen for Disc Degeneration
Jamee Bradley1, Sheila Grant1, and David Grant1
1University of Missouri, Columbia, MO

TH-10 Novel Size Sieving Materials for the Target Protein Purification
Kangyang Yang1, Senwu Li1, Lukuan Liu1, Lihua Zhang1, and Yuru Zhang1
1Dalton Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, People’s Republic of

TH-11 Do Insect Tracheal Tubes Collapse Under Pressure as Thin-walled Cylinders?
Khaled A. Adjerid1, Rafaela De Vit1, and Jake Socha2
1Virginia Tech, Blacksburg, VA

TH-12 New Approaches to Engineering Anti-biofilm Surfaces
Nicolas Lasciak1, Dalal Asker1, and Benjamin Hatton1
1University of Toronto, Toronto, ON, Canada

Track: Biomaterials
Biomaterials - Other / Non-Specified

TH-13 Corrosion of Compressive- and Tensile-Stressed Medical Grade Ti-6Al-4V Corrosion Under Static Load
Devin Mahon1, Melinda Harman1, and Amir Poursaeed1
1Clemson University, Clemson, SC

TH-14 Improving the Activity of Cellulolytic Enzymes by Modifying Molecular Interactions
Hengameh Shams1, Abigail A. Landers1, and Mohammad R. K. Mofrad1
1University of California, Berkeley, Berkeley, CA

TH-15 Characterizing Biomaterials Using Vibrating Glass Tube Mass Sensors
Herman Blukis1, Shrinivas Bodapati1, Huanan Liu2, and William Grover2
1University of California, Riverside, Riverside, CA

TH-16 Biominalization of Calcium Oxalate Mimicking Kidney Stones with Citrate-Induced Inhibition: Changes in Crystal Structure and Hydration State
Jose R. Pina1, David I. Banner1, Emre Firtan1, Rasa Shahbazian-Yassar2, and Tolou Shokuhfar2
1University of Illinois at Chicago, Plainfield, IL, 2University of Illinois at Chicago, Chicago, IL

TH-17 Evaluation of the Antimicrobial Activity of Glycerol Monolaurate-Coated Hernia Repair Meshes
Mikhal Brezhnik1, Dmitry Gli2, William Cobb1, and Alexey Verzute1
1Clemson University, Clemson, SC, 2Greenville Health Center, Greenville, SC
TH-52

Nanoparticles Derived from Lung Extracellular Matrix Induce Epithelial Cell Proliferation and Pre-regenerative Macrophage Phenotype

Patrick Liu1, Erinelle Commar1, Alexandra Rinchi1, and Rebecca Heis1

Virginia Commonwealth University, Richmond, VA

TH-53

Bioengineered Lung Scaffolds to Repair PAH-induced Lung Damage

Snehal Baut1

Texas Tech Health Sciences Center, Amarillo, TX

TH-54

Multifunctional Properties of Pentagalloyl Glucose Polyphenol--A Possible Pathway For Emphysema Treatment

Vasudeva Paravarsham1, Naam Nosoudi1, and Naren Vyawahare1

Charles Sturt University, Clemson, SC, 2Wright State University, Dayton, OH

Tracks: Translational Biomedical Engineering, Tissue Engineering

Tissue/Organoid Biofabrication (*ABioM SIG)

TH-55

Growing Vascularized Tissues In Vivo with an Autonomous Tissue Cartridge

John Morgan1 and Jason Spector1

Cornell University Medical College, New York, NY

TH-56

Hypoxic 3D Cellular Network Construction Preserves Ex vivo the Phenotype of Primary Human Osteocytes

Saba Choudhary1, Giseung Sun1, Ciaran Manmion1, Terri Kasir1, Jenny Zilverberg1, and Walter Stover1

Stevens Institute of Technology, Hoboken, NJ, 2Hackensack University Medical Center, Hackensack, NJ

Track: Biomechanics

Biofluid Mechanics

TH-57

Two-Photon Excitation Based Velocity for Blood Flow Measurement with Ultrahigh Spatial Resolution

Audrey Wang1 and Guiren Wang1

1University of South Carolina, Columbia, SC

TH-58

Effects of Physiology on Blood Rheology

Jeffrey Horton1, Anthony Ben1, Norman Wagner1, and Donna Woulfe1

University of Delaware, Newark, DE

Track: Biomaterials

Biomaterials for Immunengineering

TH-60

Design of Degradable PEG Hydrides To Deliver CCL21 and β Cell Autoantigens to Induce Peripheral Tolerance in Type 1 Diabetes

Aaron Stock1, Stephen Bell1, and Alice Termael1

1University of Miami, Miami, FL

TH-61

Direct Irradiation Synthesis of Titanium Alloys to Develop Immunomodulatory Implants for Hard Tissue Applications

Aletha Barnett1, Ana Civasos Fernando1, Sandra Arias1, Alkesh Shetty1, and Jean-Paul Allain1

1University of Illinois Urbana-Champaign, Urbana, IL

TH-62

A Helical Capping System for Controlling the Aspect Ratios of Peptide Nanofibers

Chelsea Fraz1 and Joel H. Coffin1

1Duke University, Durham, NC

TH-63

CD200-coated PLGA Nanoparticles Inhibit Macrophage Activation

Esther Chen1 and Wendy Liu1

1University of California, Irvine, Irvine, CA

TH-64

A Combined Carrier-Adjuvant System of Peptide Nanofibers and Toll-like Receptor Agonists Potentiates Robust CD8+ T Cell Responses

In-Roo1 and Gregory M. Milbrandt1

1University of Texas Medical Branch, Galveston, TX

TH-65

Mechanochemical Regulation of Macrophage Inflammatory Activation by Fibrinogen

Jessica Y. Hsiao1, Joon Young Kim1, and Wendy J. Liu1

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

TH-66

Utilizing Magnetic Iron Oxide Nanoparticles for Tracking Activated T Cells In Vivo

Rohit Vatsala1 and Ganga Prasad1

1Rice University, Houston, TX

TH-67

Peptide Amphiphile Vaccine for Cocaine Addiction

Tara Clover1, Aida G. Walker1, and Jai S. Rudra1

1University of Texas Rio Grande Valley, Brownsville, TX

TH-68

Inhibitor Loaded Micelles for Suppression of MPS Clearance of Therapeutic Nanocarriers

Trevor Stack1 and Evan Scott1

1Northwestern University, Evanston, IL

Track: Biomaterials

Biomaterials for Regenerative Medicine

TH-69

Directed Irradiation Synthesis on Porous Titanium for Enhanced Biocompatibility

AlaShahr Shetty1, Ana Civasos Fernando1, Sandra Arias1, and Jean Paul Allain1

1University of Illinois Urbana-Champaign, Urbana, IL, 2University of Illinois at Urbana-Champaign, urbana, IL

TH-70

Bioreactor Conditioning of Tissue-Engineered Vascular Grafts for Diabetic Patients

Anna Carter1, James Cho1, and Agneta Smimou1

1Clemson University, Clemson, SC

TH-71

A Study of Porous Polycaprolactone (PCL) Scaffolds with Different Porogen Amount and Size Ranges for Bone Tissue Engineering

Carolina Leynes1, Marco A. Arriaga1, and Sue Anne Chew1

1University of Texas Rio Grande Valley, Brownsville, TX

TH-72

Novel Healing Strategy for Chronic Wounds

Heather Barinbrudge, Sarah Grace Dennis1,2, Grant Kahley1, Stephen Fenn1, and Michael Yost1

1Medical University of SC, Charleston, SC, 2Clemson University, Charleston, SC

TH-73

Cytocompatibility Evaluation of Injectable Bone Substitutes of Carrageenan and Nano Hydroxyapatite

Jazmín González1,2, Claudia Ossa1, and Thomas Webster1

1Northeastern University, Boston, MA, 2University of Antioque, Medellin, Colombia

TH-74

Biocompatible Ferromagnetic Polyurethane Nanofibers for Tissue Engineering

Joshua Choi1, Brandon Seiff2, Susan Luhmann1, Gurpreet Sandhu1, Amit Lerman1, and Dan Dragomir-Daescu1

1Mayo Clinic, Rochester, MN

TH-75

Elucidating the Antibacterial Functionality of CCL21 and β Cell Autoantigens to Induce In Vivo Regenerative Potential of Soft Polymeric Nanofibers for Tissue Engineering

Rene Schloss1, Martin Yarmush1, Andre Palmer2, and Francois Berthiaume1

1University of Malaya, Kuala Lumpur, Malaysia, 2Ryerson University, Toronto, ON, Canada

TH-76

The Antibacterial Potential of an Ag-Containing Bone Void Filler

Hiroshi Inoue1,2, Emiko Kurokawa1, and Tomoyasu Nakajima1

1University of Tokyo, Tokyo, Japan, 2Tokyo University, Tokyo, Tokyo

TH-77

Crosslinkable Amine Coating of Poly(L-lactic acid) for Bone Tissue Engineering Scaffolds

Nathan Richthor1, Cortes Williams1, and Vasilios Siketas1

1University of Oklahoma, Norman, OK

TH-78

Effects of Polymerized Hemoglobin on Macrophage Response

Paulina Kryszczuk1, Kiran Patel1, Christopher Richardson1, Rene Schloss2, Martin Yarmush1, Andre Palmer1, and Franziska Bartsch1

1Rutgers University, New Brunswick, NJ, 2Ohio State University, Columbus, OH

TH-79

The Accelerating Effect of Gallium-Containing Mesoporous Bioactive Glass On The Platelet Activation

Sara Prashanthane1, Eshan Zeeraman1, Nahid Adib Kadiri1, and Mark R. Tower1

1University of Malaysia, Kuala Lumpur, Malaysia, 2University of Toronto, Toronto, ON, Canada

TH-80

Injectable Thermoreponsive and Biodegradable Hydrogels for Stem Cell Based Dental Tissue Engineering

Sri Chandana Reddy Damari1 and Tao-L. Lowe1

1University of Tennessee Health Science Center, Memphis, TN

TH-81

In Vivo Regenerative Potential of Soft Polymeric Scaffolds in Osteochondral TJM Defects

Adam Cho1, Juan Taboas1, Jon Gea1, and Alejandro Almarza1

1University of Pittsburgh, Pittsburgh, PA

TH-82

Electrospinning of Hybrid Scaffolds to Mimic the Tumor Microenvironment

Adriel Villagran1, Tasha Das1, and Kristen Mills1

Rensselaer Polytechnic Institute, Troy, NY

TH-83

A Comparison between Cortical and Spinal Cord Astrocyte Response to Electrospray Topography

Devan Puhl1, Anthony D’Amato1, Christopher Johnson1, Amanda Vespermann1, and Ryan Gilbert1

Rensselaer Polytechnic Institute, Troy, NY

TH-84

Poly (1, 8-Octanediol Citrate)/Bioglass Scaffolds for Osteogenic Differentiation of Stem Cells

Eshan Zeeraman1, Sara Prashanthane1, Nahid Adib Kadiri1, Balinda Pirisingum-Murphy1, and Mark R. Tower1

1University of Malaysia, Kuala Lumpur, Malaysia, 2University of Toronto, Toronto, ON, Canada
TH-85 Layer-by-Layer Gelatin Coating on Hydrolyzed PCL Nanofibers for Cell Cultivation
Jian Shi1, Hye Sung Kim2, Young Ju Son1, Wei Ma1, Myou Koo Kang1, Sol Lee1, and Hyuk Sang Yang2
1Kangwon National University, Chuncheon, Korea, Republic of
2Boston University, Boston, MA

TH-86 Electrospun Collagen Scaffold for Peripheral Nerve Regeneration
Jorge Almodovar1, Janet Mendel1, and Carol Rivera Martinez1
1University of Puerto Rico Mayaguez, Mayaguez, PR, Puerto Rico

TH-88 Characterization of Electrospun Nanofiber Scaffold for Wound Healing Applications
Meghan Friske1
1Michigan Technological University, Houghton, MI

TH-89 A Bio-inspired Hybrid Nanosack for Islet Transplantation in the Omentum
Patrick Hwang1, Dong Jin Lim2, Grant Alexandre1, Daisat Siah1, Jacob Garcia2, La Verne Adger1, Nathan Shelby1, Wansung Cai1, Shuen Gilbert1, Jeong-a Kim1, and Ho-Wook Jun1
1University of Alabama at Birmingham, Birmingham, AL
2MedStar Georgetown University Hospital, Washington, DC

TH-90 Visible Light-Induced Gelatin Methacrylate Hydrogels as 3D Biomimetic Matrices for In Vitro Monitoring of Invasion and Chemotactic Behavior of Glioblastoma Multiforme (GBM)
Palin Ersoy1, Tolga Uzunbilek2, Bego-Cinar1, and Seda Kizil1
1Koc University, Istanbul, Turkey

TH-91 Coaxial Electrospun Cellulose Acetate/ Polyvinylidene Fluoride Nanofibers for Sustained Release of Growth Factors
Ramakrishna Sharma1, Qingzhi Zhang2, and Shyam Aravamudhan1
1North Carolina A&T State University, Greensboro, NC

TH-92 Highly Aligned Electrospun Nanofibers for Orthopedic Tissue Engineering
Raymond Tindell1 and Juliane Holloway1
1University of Puerto Rico Mayaguez, Puerto Rico, Puerto Rico

TH-93 Template-free Electrospinning of Honeycomb Patterned Electrotactile Scaffolds
Samender Nagam Hanumantharao1, Meghan Friske1, and Smitha Ravi2
1Michigan Technological University, Houghton, MI
2Virginia Tech, Blacksburg, VA

TH-94 Biofabrication of Collagen-Alginateg Membranes with Spatial Resolution in Microfluidics
Santiago Coronel1, Manal Almeai2, Christopher Raub1, and Xiaosheng Liu3
1Catholic University of America, Washington, DC
2Virginia Tech, Blacksburg, VA
3University of Texas at Dallas, Richardson, TX

TH-95 Effect of Fe in the Mechanical and Biological Properties of the Alloy Ti-Nb-Zr
Sergio Montelongo1, Crescento Rodrigues1, Victor Hugo Balseca Hernandez1, Omran Mehta Almair2, Teya Ged1, Zao Jing1, and Francisco Alvarado Hernandez2
1University of Texas at San Antonio, San Antonio, TX, 2University Autonoma de Zacatecas, Zacatecas, Mexico, Universidad de Guadalajara, Guadalajara, Mexico

TH-96 The Effects of Piezoelectric Nanoparticle/polymer Scaffolds on Orthopedic Applications
Yuan Li1, Lin Lin Sun2, and Thomas Webster1,2
1Northeastern University, Boston, MA, 2Wenzhou Medical University, Wenzhou, China, People’s Republic of, 3King Abdulaziz University, Jeddah, Saudi Arabia

Tracks: Biomaterials, Tissue Engineering

TH-97 Magnetic Nanoparticle-loaded Alginateg Beads for Force Loading of In Vitro Tissue Constructs
Atawaf Alshahr1, Otto Wilson, Jr1, Xiaosheng Liu2, and Christopher B. Raub1
1The Catholic University of America, Washington, DC
2Virginia Tech, Blacksburg, VA

TH-98 Effects of Red Blood Cell on Wall Shear Flow During Flow
Ascarino Arokias1 and Balu Saki1
1Federal University of Caxias, Fortaleza, Brazil, 2Boston University, Boston, MA

TH-99 Microstructural Finite Element Model of Left Ventricular Passive Mechanics
Cui Xi1 and Liu Chuan1
1Michigan State University, East Lansing, MI

TH-100 Differential Establishment of MCF7 Cancer Cells’ Polarity In Vitro 3D Culture System
Daeyun Kong1, Youngbin Cho1, and Jennifer Hyunjong Shin2
1Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea, 2Kumamoto University, Kumamoto, Japan

TH-101 Physiological Cues Modulate the Morphology and Contractility of Cultured Corneal Fibroblasts
Danial Maruo1, Miguel Miron Mendez1, Kyle Gross1, David Schmidt1, Ma Linxi1, and Victor M. Ver1
1The University of Texas at Dallas, Richardson, TX, 2University of Texas Southwestern Medical Center, Dallas, TX

TH-102 In Vitro Validation of Asymptotic Smoluchowski Model Using Subpopulations of Electroporators
Daniel Sawyer1 and Rafael Davila1
1Virginia Tech, Blacksburg, VA

TH-103 Mechanical Correlations in Collective Cell Migration
Hyunae Jung1, Yoonsun Cho1, Yoongho Ko1, and Jennifer Shin2
1KAST, Daegu, Korea, Republic of
2Kumamoto University, Kumamoto, Japan

TH-104 Dissemination of Cellular Spheroids
Jason Kim1, Youngbin Cho1, and Jennifer Shin2
1KAST, Daegu, Korea, Republic of

TH-105 Investigation for the Effect of Shear Stress on Angiogenesis using On-chip 3D Vasculature
Masayuki Nakayama1, Yujiro Narikawa1, Ikuko Nakama2, Akiko Nakama2, Sanna Hiroo2, Yasuhiro Aratani3, Yu-suke Tatsuno2, Hitoshi Kato2, Koichi Hohiyama2, Takashi Mur2, and Reyuki Yokoyama2
1Kyoto University, Kyoto, Japan, 2Kyushu University, Fukuoka, Japan, 3Kumamoto University, Kumamoto, Japan

TH-106 Live-cell Rheometry to Study Dynamics of Cell-matrix Interaction in 3D
Matthew Flori1, Hannah Brown1, and Peter Calvi1
1Rowan University, Glassboro, NJ

TH-107 Investigating the Effect of Substrate Stiffness on Mechanical Coupling and Propagation of Contractile Force in Myocardial Cells
Naweeta Nateepong1, Young Dung Piyapong1, and Pinr Zorlutuna2
1University of Notre Dame, South Bend, IN

TH-108 Structural and Mechanical Characterization of Split Thickness Skin Autografts
Samir Teraf1, Holly Sparks1, Elena Di Martino1, and Jeff Biernaskie1
1University of Calgary, AB, Canada

TH-109 Bone Notcher Device Design for Fracture Toughness Testing
Talia D’Ambrosio1, Elyse Flood2, Pierre Louis3, Mege Hartog2, and Jennifer Hyunjong Shin2
1The Biodesign Institute, Arizona State University, Tempe, AZ

TH-110 Mechanical Impedance of the Organ of Corti
Jessica Huh1, Wensao Zhi2, Jonathan Barber1, and Jiang Hsiong1
1University of Rochester, Rochester, NY
2School of Medicine, University of Texas, San Antonio, TX

TH-111 In Vivo Bone Stain and Response to Mechanical Loading in the Chukar Partridge Tibiaturas
Karin Vener1 and Kyle Grose2
1Purdue University, West Lafayette, IN
2Virginia Tech, Blacksburg, VA

TH-112 3D Tissue Model with Reversible Tunable Stiffness
Kunah Ramah Eliat1, Haripand Sim1, Yang Xu1, Purbaasha Nandi1, Mehlh Nikhil2, Nihalih Shephard3, and Robert Rosi1
1Center for Biologic Physics and Department of Physics, Arizona State University, Tempe, AZ, 2School of Biological and Health Systems Engineering (SBHSE), Arizona State University, Tempe, AZ, 3School of Molecular Sciences and Center for Molecular Design and Biomimetics, The Biodesign Institute, Arizona State University, Tempe, AZ

TH-113 A Multi-scale Approach for Characterizing Mesh Mechanic Properties
Mathias Stefans1, Kingsley Li, Brittny Cotton1, and Melinda Harman1
1Clemson University, Clemson, SC

TH-114 Characterization of Material Properties and Advanced Glycation End-products (AGE) in Non-obese Type 2 Diabetic Mouse Model
Matthew Tice1, Staycyn Bailey1, Emily Gallagher1, and Deepak Vashishth1
1Rensselaer Polytechnic Institute, Troy, NY, 2School of Medicine at Albany Medical Center, Albany Medical College, New York City, NY

TH-115 Characterization of Human Female Breast Skin Anisotropy using Bulge Test
Mazen Diab1,2, Nishamathi Kumaraswamy1,2, Gregory Reece2, and Krishnaswamy Ravi-Chandar1
1University of Texas at Austin, Austin, TX, 2University of Texas at Austin, Texas, TX

Tracks: Biomechanics, Biomaterials

TH-110 Acceptance Criteria for Nanoinjection of Bone Marrow Derived 2
Hai Eberhardt1 and Ryan Duc1
1University of Alabama at Birmingham, Birmingham, AL

TH-111 The Relationship between Stiffness and Strength in the Proximal Femur is Sex- and Age-Dependent
Danavala Pantor, Erin Bigelow1, Stephen Schlacht1, Todd Breidenbach2, and Karl Jaspers1
1University of Michigan, Ann Arbor, MI, 2Southwest Research Institute, San Antonio, TX

TH-112 Mechanical Impedance of the Organ of Corti
Jessica Huh1, Wensao Zhi2, Jonathan Barber1, and Jiang Hsiong1
1University of Rochester, Rochester, NY
2School of Medicine, University of Texas, San Antonio, TX

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Danavala Pantor, Erin Bigelow1, Stephen Schlacht1, Todd Breidenbach2, and Karl Jaspers1
1University of Michigan, Ann Arbor, MI, 2Southwest Research Institute, San Antonio, TX

TH-112 Mechanical Impedance of the Organ of Corti
Jessica Huh1, Wensao Zhi2, Jonathan Barber1, and Jiang Hsiong1
1University of Rochester, Rochester, NY
2School of Medicine, University of Texas, San Antonio, TX

Tracks: Biomechanics, Biomaterials
Response Model-Driven Design of Softening Intracortical Carotid Artery Stenosis

Bradley Hoffmann1, Long Jiang1, and Amanda Brooks1
Allison Stiller1, Vindhya Danda1, Walter Voit1, Victor Varner1, and Cheyenne Andrew1, Brittany White1, and Ha Vo1

1Clemson University, Clemson, SC, 2Wake Forest School of Medicine, Winston-Salem, NC

1Texas A&M University, College station, TX

1Korea Advanced Institute of Science and Technology, Daejeon, Korea, 2University of California, Los Angeles, CA, 3Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA, 4Max Planck Institute for Intelligent Systems, Stuttgart, Germany, 5University of Heidelberg, Heidelberg, Germany

TH-145 Oscillatory Tensile Forces as a Mediator of Breast Cancer Epithelial Cell Behavior
Joel Berry1, Derek Van Vessem1, Paige Sawyer1, Tess Vessels1, and Andrea Frost1
1The University of Alabama at Birmingham, Birmingham, AL

TH-144 3D Microchannels for Analyzing Confined Cancer Cell Invasion and Cell-Cell Interactions
Andrew Holle1, I-Hsuan Wang1, Ralf Kemkemer3,4, and Joachim Spatz1,5
1University of Ulm, Ulm, Germany, 3Max Planck Institute for Intelligent Systems, Stuttgart, Germany, 4Reutlingen University, Reutlingen, Germany, 5University of Heidelberg, Heidelberg, Germany

TH-143 An Engineered Platform for Investigating Fluid Shear Stress Effects on Ovarian Cancer Cell Malignancy
Alexandra R. Hyle1, Nicolas C. Baudoin1, Mark A. Streeter1, Danielle Camm1, Rachel W. Davids1, and Evon M. Scher1
1Virginia Tech, Blacksburg, VA

TH-142 Pressure Plasma Treatment Effects on Cell Behavior Within Lymphatic Vessels
Jonathan Kulwatno1, Ruth Griswold2, Mihaela Skobe2, and Herbert Levine1
1University of Texas at Arlington, Arlington, TX, 2University of Texas Southwestern Medical Center at Dallas, Dallas, TX

TH-141 Guiding Tumor Cell Invasion using Non-soluble Cues in the Tumor Microenvironment
Vasudha Shukla1, Christopher Bobba1, and Samir Ghadiali1
1Virginia Tech, Blacksburg, VA

TH-140 The Effect of Chemokine Gradients on Directional Collective Migration of Breast Tumor Cells
Pranita Kaphle1 and Li Yao1
1University of California, Los Angeles, CA

TH-139 A Platform of Colliagen Hydrogel for Investigation of Glioblastoma Cell Migration and the Differential Effects of Pharmaceutical Inhibition
Pranita Kaphle1, Cyrene Arputhasamy1, Kelsey Springer1, and Anjali Verma1
1University of Washington, Seattle, WA

TH-138 Metastatic Breast Cancer Detection from Image Analysis of Aptamer-mediated Captured Tumor Cells
Nushrat Menuar1, Francesco J. Villareal1, Mohammad R. Hasani1, Young-Tae Kim1, and Samir M. Iqbal1
1University of Texas at Arlington, Arlington, TX, 2University of Texas Southwestern Medical Center at Dallas, Dallas, TX

TH-137 Quantifying Epithelial-mesenchymal Plasticity through an Integrated Computational-experimental Approach
Mohit Kumar Jolly1, Dongya Jia1, Jason Geering1, Satyendra Tripathi1, Shangguan Xu1, Muge Calikci1, Jason Somanath1, Sameh Hanash1, and Herbert Levine1
1Wine University, Houston, TX, 2MD Anderson Cancer Center, Houston, TX, 3Cologne University, Durham, NC

TH-136 Microtubule-Targeting Agents Alter Glioma Cell Fraction and Migration by Distinct Drug-Specific Mechanisms
Louis Pahl1, Patrick Banagase1, Mahiya Hemmat1, Steven Rosenfeld1, and David Oddis1
1University of Minnesota, Minneapolis, MN, 2Cleveland Clinic, Cleveland, OH

TH-135 Proteolytic Regulation of Cancer Metastasis at the Tumor-Metastasis Interface
Hsi-Lin Tai1 and Kayae Seki1
1Department of Biomedical Engineering, University of Southern California, Los Angeles, CA, 2Department of Stem Cell Biology and Regenerative Medicine, University of California, Los Angeles, CA, 3Cancer Comprehensive Cancer Center, University of Southern California, Los Angeles, CA

TH-134 Experimental and Modeling Approaches to Quantify Migration Dynamics of Pediatric Glioblastoma Cells and Human Neural Progenitor Cells in vitro and in vivo
Kurt Farrell1, Parthasarathy Srinivasan1, Mool-Yeal Lee1, and Joachim Spatz5
1UC Berkeley, Berkeley, CA, 2University of Illinois, Urbana Champaign, Urbana, IL, 3Texas Southwestern Medical Center, Dallas, TX, 4Reutlingen University, Reutlingen, Germany, 5University of Heidelberg, Heidelberg, Germany

TH-133 Cadherin-11 Regulates the Invasion of Mesenchymal Glioblastoma-initiating Cells
Joseph Chen1, Cyrene Arputhasamy1, Kelley Springer1, and Sanjay Kumar1
1UC, Berkeley, Berkeley, CA

TH-132 The Biomechanics Contributing to Tumor Vascularization in 3D Models
Brandon Riehl1, Jeong Soon Lee1, and Jung Yul Lim1
1University of Nebraska-Lincoln, Lincoln, NE

TH-131 Proteolytic Regulation of Cancer Metastasis at the Tumor-Stromal Interface
Hsi-Lin Tai1 and Kayae Seki1
1Department of Biomedical Engineering, University of Southern California, Los Angeles, CA, 2Department of Stem Cell Biology and Regenerative Medicine, University of California, Los Angeles, CA, 3Cancer Comprehensive Cancer Center, University of Southern California, Los Angeles, CA

TH-130 Fluid Shear and Metastatic Potential Regulate Breast Cancer Cell Migration
Brandon Riehl1, Jeong Soon Lee1, and Jung Yul Lim1
1University of Nebraska-Lincoln, Lincoln, NE

TH-129 An Engineered Platform for Investigating Fluid Shear Stress Effects on Ovarian Cancer Cell Malignancy
Alexandra R. Hyle1, Nicolas C. Baudoin1, Mark A. Streeter1, Danielle Camm1, Rachel W. Davids1, and Evon M. Scher1
1Virginia Tech, Blacksburg, VA

TH-128 Does Inkjet Printing Help Improve 3D Tumor Tissue Modeling for In Vitro Studies?
Atik Campbell1, Thomas Roland1, and Karla Ferri1
1The University of Texas at El Paso (UTEP), El Paso, TX

TH-127 Differential Effects of Compressive Stress on Single Cell Invasion and Collective Cell Migration in Lung Adenocarcinoma Cells
Vasudha Shukla1, Christopher Bobba1, and Samir Ghadiali1
1The Ohio State University, Columbus, OH

TH-126 Unjamming at the Breast Tumor Boundary to Collectively Migrate in a Spherical Model System
Karin Wang1 and Jeffrey Fredberg1
1Harvard University, Boston, MA

TH-125 A Stochastic Model for Chemotaxis of Breast Cancer Cells within EGF Gradient
Sangjin Lim1 and Jessie Sungyun Jeon1
1Korea Advanced Institute of Science and Technology, Daejeon, Korea, 2North Dakota State University, Fargo, ND

TH-124 The Effects of Low Dose Radiation on Pore size Articular Cartilage
Hannah Cash1, Delphine Dean1, and Jeffrey Willey1
1Clemson University, Clemson, SC, 2Wake Forest School of Medicine, Winston-Salem, NC

TH-123 Nematotextured Platform to Quantitatively and Sensitive Measure Cancer Invasion into Stroma Reveals the Molecular Determinants of Stromal Invasion
Kaila Ka1
1Yale University, West Haven, India

TH-122 Weatability of a Novel Biofilm-Resistant Surface Modification Process for Metallic Implants
Caroline Bales1, Sarah Helms1, and John Crucione1
1Texas A&M University, College station, TX

TH-121 Natural Silk Casts: Mimicking the Tenable Biomechanics of Heart Valves
Bradley Hoffmann1, Long Jiang1, and Amanda Brooks1
North Dakota State University, Fargo, ND

TH-120 Model-Driven Design of Softening Intracortical Electrodes For Decreased Chronic Tissue Response
Allison Seller, Vindhya Danda1, Walter Voit1, Victor Varner1, and Joseph Panzaratz1
University of Texas at Dallas, Richardson, TX

TH-119 Mechanical Behavior of Skin under Cyclic Uniaxial Loading
Nazann Alfar Kazerun1, Arun Sinnmana1, and John Crucione1
2Texas A&M University, College station, TX

1Clemson University, Clemson, SC

TH-118 General Approach for Determination of Poroelastic Properties of Articular Cartilage and Other Tissues Subjected to Unconfined Compression
Melathia Yousal1, Fotomatua Camara1, and Gaffar Gallani1
New York City College of Technology, Brooklyn, NY
TH-151 High Throughput Studies of Tumor Shape Development
Xiangyu Gong1 and Kristen Mills2
1Department of Mechanical/Aerospace, and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY, 2Center for Biotechnology and Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, NY

TH-152 Cyclic Mechanical Strain Modulates Lung Adenocarcinoma Cell Proliferation and Erlotinib Resistance
Youniu Che1, Christopher Bobbitt2, Vauhda Shukla1, Joshua Englert2, and Samir Gladiali1,2
1The Ohio State University, Columbus, OH, 2Ohio State University Wexner Medical Center, Columbus, OH

Track: Cellular and Molecular Bioengineering Cell Migration

TH-153 Microfluidic Platform to De commodulate Neutrophil Migration Phenotypes in Sepsi
Brittany Boostong1, Mark Love1, Liu Liu1, and Caroline Jones1,2
Virginia Polytechnic Institute and State University, Blacksburg, VA

TH-154 Utilizing Genetics and Microfluidics to Examine Neural Cell Migration in Retinogenes of a Drosophila Model
Caroline Penz1, Stephanie Zhang1, Miledri Kamari1, Tadmor Vardenkely1, and Marina Kamm1
Temple University, Philadelphia, PA

TH-155 A Biomimetic Assay for Predicting the Response of Novel Anti-inflammatory Therapeutics in Humans
Farboda Sarosha1, Yuan Tang1, Laurie Kilpatrick1, and Mohammad Kam1
Temple University, Philadelphia, PA

TH-156 Porous Substrates Influence Early Endothelial Migration and the Associated Fibronectin Fibrillogenesis
Henry Chung1, Spencer Perry1, Stephanie Casillo1, and Thomas Gabaldon1
Rochester Institute of Technology, Rochester, NY

TH-157 Laser Ablation of the Cell Cortex Reveals a Pressure-Induced Nuclear Transit Mechanism
Jeremy Keys1, Philipp Seemann1, and Jan Lammert1
Carnegie University, Irvine, CA

TH-158 Invasive Cancer Cells Take Turns in Leading Collective Migration
Jian Zhang1, François Bonneville1, and Cynthia Rainhart-King1
Vanderbilt University, Nashville, TN

TH-159 Strengthening the Effect of Fibroblast Growth Factor 23 on Neutrophil Chemotaxis using Microfluidic Devices
Ming Wang1, Junyi Hu2, Hang Zhu2, Ying Li1, and Xueling Chen1
1Virginia Polytechnic Institute and State University, Blacksburg, VA, 2Beijing Institute of Brain and Spinal Cord Diseases, Beijing, China

TH-160 A Dual-Docking Microfluidic Device for Studying Immune Cell Migration and Chemotaxis
Ka Yang1, Jiajiong Wu2, Guangqi Fu1, and Dapeng Xin1
1Hepit Pervarco, Suzi Santos2,1, Murry Alexander1, Ling Zhu2, Michael Zhang2, Xiaoxue Ren1, Yong Liu2, and Francis Lin1
1Institute of Applied Technology, Hebrew University of Physical Science, China, 2Academy of Sciences, Hebrew, China, People’s Republic of

TH-161 Fiber Stiffness Influences Cell Migration into Dense Fibronetvew
Kwanghoon Song1, Su-Jin Heo1, Mu-Huan Lee1, Robert Macaulay1, and Jason Burdick1
1University of Pennsylvania, Philadelphia, PA

TH-162 The Role of Neurto-Endothelial Interactions in Neutrophil Extravasation and Migration using Organotypic Fibrinovessels
Laurel Hind1, Patrick Ingram1, David Beebe1, and Anna Huttenlocher1
1Virginia Polytechnic Institute and State University, Blacksburg, VA

TH-163 Cell Division Induces and Switches Coherent Angular Motion Within Bounded Cellular Collectives
Michael Seo2 and Srinav Patnam1
1University of Wisconsin-Madison, Madison, WI

TH-164 Electrochemotactic Stimulation to Enhance Retinal Progenitor Cell Migration and Integration into Damaged Retinas
anton Mihara, Stephen Redfield1, and Mark U. Varvares1
1City College of New York, New York, NY, 2Carnegie College, NY

TH-165 Characterization of Ca2+ Oscillations in Endothelial Cells Exposed to Pulsatile vs. Oscillatory Flow
Alsharif Patel1, Alexander Cramer1, and B. Rita Alevradou1
1The Ohio State University, Columbus, OH

TH-166 Tunable Molecular Tension Sensors Reveal Extension-Based Control of Vinculin Loading
Andrew LaCroix1, Andrea Lynch1, and Brenton Hoffman1
1Duke University, Durham, NC

TH-167 Measurement of Nuclear Force and Deformation in MDCK Cells Under Biaxial Strain
Cayt Meyar1, Paul Armes1, and Daniel Conway1
1Virginia Commonwealth University, Richmond, VA

TH-168 In Vitro Evaluation of Hydrostatic Pressure on ATP Release and Purinergic Regulated Caspase-1 Activation in Rat Uretic Cells
Cody Dunton1, F. Monty Hughes1,2, J. Todd Purves1,2, and Jason Burdick1
1University of Pennsylvania, Philadelphia, PA, 2Virginia Commonwealth University, Richmond, VA

TH-169 The Role of Nuclear Lamin A/C In Nuclear Mechanotransduction
Graeme Murray1, Fanchi Meng2, Lukasz Kurgan1, and Henry Donahue1
1Virginia Polytechnic Institute and State University, Blacksburg, VA

TH-170 YAP-mediated Stretch Mechanotransduction in Controlling MSC Adipogenesis
Eunjoo Kim1 and Jang Yol Lim1
1University of Nebraska, Lincoln, NE

TH-171 In Silico Analyses of Protein Function in Osteolytic Cells Exposed to Fluid Flow
Graeme Murray1, Fanchi Meng2, Lukasz Kurgan1, and Henry Donahue1
1Virginia Commonwealth University, Richmond, VA, 2University of Alberta, Edmonton, AB, Canada

TH-172 Simulated Microgravity Decreases LINC Complex Expression in MSCs
Hallei Truman1, Richard Beard1, Brian Hoettels1, and Gunes Uzer1
1Virginia Commonwealth University, Richmond, VA

TH-173 Site-Specific E-cadherin Mutations Affect Gastric Cancer Cell Tensinal Homeostasis
Han Xu1, Joanna Figueiredo1, Joanna Padale1, Rafael Seruca1, Michael Smith1, and Dimitrija Stamenovic1
1Boston University, Boston, MA, 2Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal

TH-174 The Role of Age in Shear-Induced Platelet Activation: Comparison of Neonatal Cord and Adult Platelets
Jason Shef1, Lisa Maite1, Wensong Gao1, Nikol Patoln1, Amanda Zsigarm1, Wadie Bahou1, and Danny Bluester1
1Stony Brook University, Stony Brook, NY

TH-175 Determination of Magnetic Bead Pulling Forces Using Traction Force Microscopy
Joshua Bush1 and Venkat Mani1
1Old Dominion University, Norfolk, VA

TH-176 Spatial Patterning of Epithelial-Mesenchymal Transition is Regulated by Fibronectin Fibrillogenesis
Lauren Gregg1, Jien Narang1, and Christopher Lemmon1
1Virginia Commonwealth University, Richmond, VA

TH-177 3D Traction Generation Measured from Neutrophils Confined to Micropatterned Stripes
Lauren Haber1, Michael Patel1, Michael Hammar1, Jonathan Reincher1, and Christian Franck1
1Brown University, Providence, RI

TH-178 Biomechanics of Axonal Microtubules under Various Loading Conditions
Mohammad Soheilypour1, Mohdaliwthaw Pestro1, Steve Peter1, Carrie Lenzarini1, and Mohammad Mishra1
1University of California, Berkeley, CA

TH-179 Evaluation of the Role of Cross-Links on Microtubule Mechanics Using a Corotational Finite Element Simulation
Nesta Abdollahi1 and Jason Halloran1
1Cleveland State University, Cleveland, OH

TH-180 Traction Force Microscopy Using Embedded Marker Arrays with an Imposed Zero-Displacement State
Omar Banda1, Ryan Taitano1, and John Slater1
1University of Delaware, Newark, DE

TH-181 Quantifying Forces Required to Rupture the Nuclear Membrane
Qiao Zhang1, Jian Lammerding1, and Taimur Lala1
1University of Florida, Gainesville, FL, 2Cornell University, Ithaca, NY

Tracks: Cellular and Molecular Bioengineering, Biomechanics Cellular and Molecular Biomechanics: Mechanobiology
TH-229 The Breast Simulacrum: A 3D Biometric Model of the Tumor Microenvironment and Metabolism
Yoshiko Toida1, John Morgan1, Julia Jin1, Jaime Bernstein2, and Jason Spector1
1Weill Cornell Medical College, New York, NY, 2Nancy E. and Peter C. Menig School of Biomedical Engineering, Cornell University, Ithaca, NY
Track: Cancer Technologies
TH-230 Substratum Stiffness and Cancer Cell Dormancy
Alysa Ania1 and Catherine Nelson2
1Princeton University, Princeton, NJ
TH-231 High-Frequency Irreversible Electroporation Selectively Kills Tumor-Initiating Cells in Ovarian Cancer
Andrea Roling1, Eva Schmelik1, and Rafael Davallo1
1Virginia Tech, Blacksburg, VA
TH-232 Platelet Decoys: Novel Cellular Therapeutic Approach to Target the Metastatic Cascade
Emma Bortz1, Heng Yu1, Hakm Murad1, and Damir Khismatullin1
1University of Minnesota, Minneapolis, MN
TH-233 Alterations in Adhesion: Critical Step in Developing Chemoresistant Ovarian Cancer
Deepak Gushik, Carolina Maya Penal, and Michelle Dawson1
1Texas Tech University, Provder, TX
TH-234 Ethanol and HIFU Revert Prostate Cancer Cells to a Healthy Phenotype via ROS Production and NF-κB Blockage
Emma Bortz1, Heng Yu1, Hakm Murad1, and Damir Khismatullin1
1Tulane University, New Orleans, LA
TH-235 Pulsed Electric Fields Preferentially Target Structures in Cancer
Emma Bortz1, Heng Yu1, Hakm Murad1, and Damir Khismatullin1
1Tulane University, New Orleans, LA
TH-236 Molecular Mechanisms of Emergent Drug Resistance of Colon Cancer Cells in 3D Tumor Models
Pradeep S. Chakravarty1, Gary Luker1, and Hossein Tavaw1
1The University of Akron, Akron, OH, 2University of Michigan, Ann Arbor, MI
TH-237 The Immunomicroenvironment of a Synthetic Pre-Metastatic Niche That Captures Early Metastatic Cells
Robert Oates1, Shreya Rain1, Grace Bushnell1, Joseph Becker1, Yining Zhang1, Matthew Hall1, Rachel Duduk1, Jacqueline Jeruss1, and Lorraine Shee2
1University of Michigan, Ann Arbor, MI, 2The University of Alabama, Tuscaloosa, AL
Track: Cancer Technologies
Microfluidic Cancer Models
TH-238 A Microfluidic Device for Controlled Cell Placement and 1D Migration on Biometric Structures
Colin Hippe1, Cinthiane M. Villelva-Iturbe1, Miguel Martinez-Calderon1, Sergio Aga1, Marie M. Jankovic1, Santiago Olazabal2, and Derek Hanford1
1The Ohio State University, Columbus, OH, 2CEIT/R&I, Donostia, San Sebastian, Spain
TH-239 A Stationary Microfluidic Approach to Circulating Tumor Cell Isolation from Whole Blood
Iseas Poulson, Aidan Strickler, and Anahtara Trigatti2
1Brown University, Providence, RI
TH-240 Real Time Analysis of the Role of Pericellular Matrix in Metastatic Extravasation and Invasion of Breast Cancer Epithelial Cells within a Microfluidic Platform
Marie-Dana Brevet1, Heather Bomberg2, Gregory Dosk2, Matthew Prior1, James McCarthy1, and David Wood2
1University of Minnesota, Minneapolis, MN
TH-241 Engineered Microfluidic Bioreactor For Examining The Three-Dimensional Breast Tumor Microenvironment
Matthew Rogers1, Tammy Sobolik1, David Schaffer1, Phil Samson2, Andrew Johnson3, Phil Owen4, John Wikowski5, and Yves J. Couder6
1Sp2BURE-Searle Undergraduate Research Program, Nashville, TN, 2Vanderbilt University, Nashville, TN, 3University of Illinois at Chicago, Chicago, IL, 4Vanderbilt University, Nashville, TN, 5University of Southern California, Los Angeles, CA, 6Vanderbilt University, Nashville, TN, Department of Veterans Affairs, Nashville, TN
Track: Cancer Technologies
Poster Session—Thursday
Thursday, October 12 | 9:30 am–5:00 pm
Exhibit Hall 300 North
TH-242 High-throughput Cancer Drug Screening for Migratory Cancer Cells

Qionghua Shan1, Young-tae Kim1, Zaid Haddadin1, Simon Miller1, Kelly Lim1, and Hanspeter Niederstrasser1
1University of Texas at Arlington, Arlington, TX, 2UT southwestern Medical Center, Dallas, TX

TH-243 Developing 3D Tumor Construct in Microfluidic Systems for Translational Applications

Shiny Raja1, Andrea Mazocco1, Kristina Osborn1, Vetonoska2, Aleksander Skardal1, and Adam R. Hall1,2,4
1Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, 2Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, 3Wake Forest Baptist Medical Center, Department of Surgery-Surgical Oncology, Winston-Salem, NC, 4Center for BioEngineering, Unc, University of North Carolina at Chapel Hill, Chapel Hill, NC

TH-244 Flow Induces Epithelial-mesenchymal Transition (EMT) in Dynamic Bioengineered Lung Cancer Microenvironment

Vigneeshwar Mani1, Zhonglin Lui1, Baris Erkal1, Ramasamy Padmanabhan1, and Urban Dmitriu1
1Stanford University, Palo Alto, CA, 2Stanford University, Stanford, CA, 3Stanford University, Kayani, CA

Track: Cancer Technologies
Cancer Technologies—Other / Non-specified

TH-245 Effect of Low Dose X-Ray Radiation on Cells In Vitro

Katelyn Truong1, Suzanne Bradley1, Bryana Baginski1, and Endre Takacs1
1University of Texas at San Antonio, San Antonio, TX, 2Mayo Clinic, Phoenix, AZ

TH-246 Investigating the Effects of Cold Atmospheric Plasma on Cervical Cancer

Nicole Sova1, Yonry Zhu1, Ariel Lanier1, Quinn Mitchell1, Amir Farnoud1, and Bonnie Firestein1
1University of Miami, Miami, FL

TH-247 An Integrated Gut-Liver Model to Assess Chemical Toxicity In Vivo

Anjeyan Kathiri1, Rebekah Les1, and Padma Rajagopal1
1Virginia Tech, Blacksburg, VA

TH-249 Novel Muscle-powered Machine Design for Integrating a Motor Neuronal Central Nervous System Unit

Guzen Pagan-Diaz1, Yongdeok Kim1, Caroline Cvetkovic1, and Rashid Bashir1
1University of Illinois, Urbana-Champaign, Urbana, IL

TH-250 3D Biomimetic Blasema Model to Study Epimorphic Regeneration

Liu Guojian1 and Toby Alm1
1Tulane University, New Orleans, LA

TH-251 Influence of Endothelial Cells on Mesenchymal Stem Cell Osteogenesis in Co-Culture Systems

Nicholas Schott1, Ramkumar T-Ansmale1, and Jan Stegeman1
1The University of Michigan, Ann Arbor, MI

TH-252 Tissue Engineered Bone as a Model for Cancer Metastasis

Vera Mayoff1, Siddarth Rawat1, Diego Correa1, Diego Correa1, and Bhattacharjee2
1University of Miami, Miami, FL

TH-253 In Vitro Fabrication of 3D Tissues with Spatial Organization of Heterogeneous Cells via Microsphere-Enabled Modular Strategy

Wee Woong Wang1
1Steven’s Institute of Technology, Hoboken, NJ

TH-254 Brain-on-a-chip for Traumatic Brain Injury Drug Discovery

Anton Ochevichanski1, Rana Schloss1, Jeffrey Zahn1, Martin Yarmush1, and Bonnie Firestein1
1The University of Michigan, Ann Arbor, MI

TH-255 Manipulating Quorum Sensing Signals in a Consortia

Kristina Stepanov1, Chen Yu Tu2, Prachi Haul1, and William Bentley1
1University of Maryland, College Park, MD

TH-256 Assessing the Role of Dietary Factors and Inflammation on Gut Permeability

Mridu Malik1, Laura Musselman1, and Gretchen Mahler1
1Binghamton University, Binghamton, NY

Track: Tissue Engineering, Cellular and Molecular Bioengineering

TH-248 Engineering Multi-Cellular Systems

TH-257 A Computational Model to Capture Gastrulation-like Pattern in 2D and 3D Constructs: A First Step Towards Developing a Quantitatively Validated Roadmap for Tissue Development Ex Vivo

Himashu Kul1, Geoff Clarke1, Christopher McFaul1, Mukul Tewary1, Christopher Yui1, and Peter Zandstra1
1University of Toronto, Toronto, ON, Canada

TH-258 Generation of Biliary Organoids with Mesenchymal Niche from Human Induced Pluripotent Stem Cells

Jeremy Velazquez1, Werner Kostes1, Nguyen G1, Siewchitra Pradhan1, Samaa Kran1, Jorge Rakela1, and Ritu Raman1
1Arizona State University, Tempe, AZ, 2Mayo Clinic, Phoenix, AZ

Track: Tissue Engineering

TH-259 Engineering Replacement Tissues

Brittany Banik1 and Justin Brown1
1The Pennsylvania State University, University Park, PA

TH-260 Synthesis of Hydroxypatite Particles as a Novel Treatment to Osteoporosis

Domiinico Roman1, David Grant1, and Sheila Grant1
1University of Missouri-Columbia, Columbia, MO

TH-261 The Endothelial Cell Sacromere Differently Affects the Proliferation and Differentiation of Dysfunctional Skeletal Muscle Satellite Cells

Franciaca Acosta1, Rebekah Rodriguez1, Sarah Stagg1, and Christopher Rathbone1
1University of Texas at San Antonio, San Antonio, TX

TH-262 Nanotechnology-based Reprogramming of Diabetic Tissue Resolves Local Vascularopathy

Nicola Hipps1, Cristina Castillo1, Alex Suyemura1, Jordan Moore1, Richard Stewart1, William Lawrence1, Durbe Pal1, Chanda K. Sen1, Savita Khanna1, and Daniel Galetthe1
1The Ohio State University, Columbus, OH

TH-263 Nano-Fiber Hydrogel Grafts for Ligament Repair

Nicolas Miro1, Samantha Gualandi1, Isabella Medeniers1, and Vincent Beatchley1
1Bowman University, Glenwood, NJ

TH-264 Induced Healing of Damaged Skeletal Muscle Restores Function of a Bio-hybrid Machine

Ritu Raman1, Lauren Grant1, Yongdeok Kim1, Caroline Cvetkovic1, Michael Gipsmike1, Alexandra Pallas1, Howard Dobinski1, Hyunjoon Kong1, Pablo Perea-Priera1, and Rachel Bashir1
1Massachusetts Institute of Technology, Cambridge, MA, 2University of Illinois at Urbana-Champaign, Urbana, IL

TH-265 In Situ Tissue Regeneration Using Acellular Electroactive Scaffolds

Samender Nagam Hanumantharao1, Srinivas Kannan1, Meghan Frisk1, and Smitha Rall1
1Michigan Technological University, Houghton, MI

TH-266 Pro-angiogenic Factor Stimulation on Tissue Engineered Constructs

Sarah Grace Coleman1, C. Brian Brindig1, Saneht Pattana1, and Michael Yost1
1Clemson University, Charlotte, SC, 2Medical University of South Carolina, Charleston, SC

TH-267 Expediting Tissue Engineered Muscle Construct Formation

Sarah Stagg1, Rebekah Rodriguez1, Francisco Acosta1, and Christopher Rathbone1
1University of Texas at San Antonio, San Antonio, TX

TH-268 Transplantation of Conformal Coated Islets of Langerhan: A Computational Model of In Vivo Glucose Transport and Insulin Release

Vita Marzetti1, Filippo Comolli1, Andrea Dossena1, Arnamak Olims1, Laura Monard1, Mary Beggs1, Diana Velluto1, Alice A. Tomei4, and Albert C. Redaelli1
1University of Miami, Miami, FL, 2Politecnico di Milano, Milano, Italy, 3University of Illinois at Urbana-Champaign, Urbana, IL

TH-269 Biomimetic Cytotoxic Dermatitis Model by 3D Bioprinting

Wonshee Lee1, Shuyun Xu1, Joo Yeon Ko1, Anna Mandriulo1, Thiago J. Borges1, Leandro N. Bialas1, Bohdan Pehatno1, George F. Murphy1, Christina G. Lie1, and Seung-Schik Yoo1
1Brigham and Women’s Hospital, Harvard Medical School, Boston, MA, 2Massachusetts General Hospital, Boston, MA

TH-272 Hydro-nanofiber Mesh for Fibrobast 3D Cultivation

Young Ju Son1, Wee Mew1, Myun Koo Kang1, Sol Lee1, Jin Shin1, and Hyung Joong You1
1Kwangwoon National University, Chuncheon, Republic of Korea
**POSTER SESSION—THURSDAY**

**TH-281**
Assessing the Effect of Crosstalk between Human Mesenchymal Stem Cells and Human Umbilical Venous Endothelial Cells on a Peptide Amphiphile Scaffold on Osteogenesis and Angiogenesis
Lily Dang, Dhiru Patel, Jeremy Vinuesa, Jun Chen, Catherine Porter, Grant Alexander, David Chakwen Boyoi, Yi-Ping Li, Amary Jawed, Shawn Gilbert, Konpya Chensri, and Ho-Wook Jun
University of Alabama at Birmingham, Birmingham, AL

**TH-282**
Decellularized Bone Marrow Extracellular Matrix: A Novel Material for Studying Cell-Matrix Interactions
Rebecca Goldstein, Connor Heky, and Tara Dream
University of Utah, Salt Lake City, UT

**Track: Tissue Engineering**

**TH-283**
Development of a Novel Fibron Polymampholyte Composite Hydrogel for Marine Applications
Anara Izy, Weilue He, Bruce Lee, and Rupak Raycha
Michigan Technological University, Houghton, MI

**TH-284**
The Development of Spatially Heterogeneous Silk-cECM Scaffolds for Use in 3D In Vitro Models of the Interaction Between Stem Cells and Infarcted Myocardium
Bevera Mae Dudley, Whitney L. Stopple, Kelly Giachetto, David L. Kaplan, and Lauren D. Black
Ifts University, Medford, MA, “Amgen Inc.”, Cambridge, MA

**TH-285**
A 3D Printed Microfluidic Bioreactor to Engineering Biphasic: Modelling and Experimental Validation
Miguel Angel Ayala, Manuel Raimondi, Rucky Tsou, and Riccardo Gottardi
University of Milan, Milan, Italy; University of Pittsburgh, Pittsburgh, PA

**TH-286**
3-D Physiomimetic Porcine ECM Hydrogels Promotes the Intra-Islet Vascular Cell Proliferation and Function of Rodent and Human Islets
Kapyan Jung, Deborah Charman, Jiaqi Liang, Smit Patel, and Cherie Stabler
University of Florida, Gainesville, FL

**TH-287**
Stent-Grafts with Novel Electropositive Magnetic Material and Bare Metal Stent Capable of Cell Capture
Saaed Ulshamsa, Joshua Choa, Brandon Taffel, Ami Lerman, Dan Dragomir-Daescu, and Gupnirat Sandhu
Mayo Clinic, Rochester, MN

**Track: Tissue Engineering**

**Printing and Patternin in Tissues**

**TH-288**
Finding the Optimum Microenvironmental Factors to Engineer Cardiac Tissues
Ahmad Alalask, Vera Mapo, Draya Bhansali, and Ashokthi Arugam
Department of Biomedical Engineering, University of Miami, Miami, FL

**TH-289**
Photo-Crosslinkable Furfuryl-Gelatin as a Novel Bioink for 3D Bioprinting of Cardiac Tissue
Alicia Kumar, Shwea Anil Kumar, Shreya Park, Yashirobu Ito, and Bineta Jisdi
University of Texas at El Paso, El Paso, TX, “Riken, Wako-shi”, Japan

**TH-290**
Assessment of Angiogenesis and Cell Survival of a Bio-Printed Implant in an Animal Model
Diana Serna, Viviana Casas Iberico, Jesus Antonio, Jesus Castro, Jesus Cedeno, Dante Chaparong, Octavio Cordova, Isaac Despam, Ivan Delgado, Michael Firth, Marvin Garcia, Mina Gontales, Alba Leyes, Emil Mora, Griselle Lopez, Fernandez Lopez, Tina Miramante, Eri Monro, Patricia Rodríguez, Carlos Serna, Yaela Subza, Ahmed Ziura, and Thomas Boland
University of Texas at El Paso, El Paso, TX

**TH-291**
3D Bioprinted Human Skin Models with RGD Modified Alginate-Nanocellulose Bioink
Hector Martinez, Evita Ning, Linnea Orthlid, Patrick Thayer, Erik Gatenholm, and Paul Gatenholm
CELLINK LLC, Blacksburg, VA, “University of Strathclyde, Glasgow”, and “Chalmers University, Gothenburg, Sweden”

**TH-292**
Surface Acoustic Waves Direct Spatial Control of Cells Embedded in Hydrogel Fibers
Jeffrey Ryan, Jingyuan You, Feng Gou, Po-Hsun Huang, Jian Yang, and Tony Huynh
Yale University, Durham, NC, “The Pennsylvania State University, University Park, PA

**TH-293**
3-D Printed Induced-Tissue-like Tissue Mimics for 3D Bioprinted Constructs
Kyeong Nam Yu, Soo Yeon Kang, Dongsoo Park, and Moo Yeal Lee
Cleveland State University, Cleveland, OH, “University of Alabama, Tuscaloos, AL”

**TH-294**
Leaf-inspired Microcontact Printing Vascular Architecture for Tissue Engineering
Srinivasan Gayathri, Divya Varun, Daylin Morgan, Nicholas Walker, and Nicholas Walker
University of California, Los Angeles, Los Angeles, CA

**TH-295**
Spatially patterned Engineering of Growth Factors in Hydrogels for Regulation of Encapsulated Cell Behaviors
Cherie Stabler, Lewis Kane, and Eben Alexander
“Case Western Reserve University, Cleveland, OH”

**Track: Tissue Engineering**

**Other—Non-Specific**

**TH-296**
Four Dimensional (4D) Printing of Dynamic Architecture for Tissue Engineering
Shida Mao, Hathai Cuil, Margaret Nowicki, Seun Lee, Yuan Zhou, We Zhang, and Jingze Zhang
“George Washington University, Washington, DC”

**TH-297**
Nanocomposite Hydrogels for Printing Three-Dimensional Tissue Constructs
SuRun Shen
Harvard Medical School, Cambridge, MA

**Track: Tissue Engineering**

**TH-298**
Non-destructive Evaluation of Engineered Cartilage Damage by Sliding Shear using Ultrasound
Mostafa Mostavali, James Benfield, James Dennis, Arnold Caplan, Joseph Maniscalco, and Jean Weber
“Case Western Reserve University, Cleveland, OH”, “Mayo College of Medicine, Dubai, UAE”

**TH-299**
3D Bioprinting of Cardiac Tissue
Alicia Kumar, Shwea Anil Kumar, Shreya Park, Yashirobu Ito, and Bineta Jisdi
University of Texas at El Paso, El Paso, TX, “Riken, Wako-shi”, Japan

**TH-300**
Assessment of Angiogenesis and Cell Survival of a Bio-Printed Implant in an Animal Model
Diana Serna, Viviana Casas Iberico, Jesus Antonio, Jesus Castro, Jesus Cedeno, Dante Chaparong, Octavio Cordova, Isaac Despam, Ivan Delgado, Michael Firth, Marvin Garcia, Mina Gontales, Alba Leyes, Emil Mora, Griselle Lopez, Fernandez Lopez, Tina Miramante, Eri Monro, Patricia Rodríguez, Carlos Serna, Yaela Subza, Ahmed Ziura, and Thomas Boland
University of Texas at El Paso, El Paso, TX

**TH-301**
Specific MicroRNAs Act as a Feedback Loop in Regulating Chondrocyte Maturation and Proliferation
Nael Aasmussen, Michael McClure, Zhao Luo, Allison Ramsey, Sharon Hoy, Zhi Chen, Wolfgang, and Barbara Boyan
“Virginia Commonwealth University, Richmond, VA”, “The University of Texas Health Science Center at San Antonio, San Antonio, TX”, “Georgia Institute of Technology, Atlanta, GA”

**TH-302**
Detection of Molecular Markers Which Stimulate EMT and Migration in Cells
Tamara Hill, Rami Barsalou, Luqiu Bu, Sayem Bhuiyan, Sandra Miller, Viviana Cesare Benito, and Young-tae Kim
“University of Texas at Arlington, Arlington, TX”

**Track: Cellular and Molecular Bioengineering**

**Experimental and Computational Studies of Mechanotransduction**

**TH-303**
Modification of Fluidity and Shear-Mediated Activation of Platelets by Exogenous Fatty Acids
Alison Segal, Matthew Fairbanks, Scott Savidge, and Marvin Stepanian
“University of Arizona, Tucson, AZ”, “The Pennsylvania State University, University Park, PA”
POSTER SESSION—THURSDAY

TH-304 Mechanotransmission in Endothelial Cells Subjected to Oscillatory and Multidirectional Shear Flow
Maha Dabagh1, Payman Jabali1, Peter Butler1, Amanda Randale1, and John Tarbell1
1Duke University, Durham, NC, 2Lappeennarven University of Technology, Finland, 3The Pennsylvania State University, University Park, PA, 4The City College of New York, New York, New York, NY

TH-306 FLNs Mechano transmission in Cells Under Microfluidic Shear Flow Measured with Traction Force Microscopy
Rosa Kaviani1, Chris Sitaras1, Haruka Yoshie1, and Allan Ehrlicher1
1McGill University, Montreal, QC, Canada

TH-307 A Computational and Experimental Study of Water and Humidity in a Human Cell Culture Model of the Alveolar Epithelium
Shelley Feng1, Hua Ren1, James Sneyd1, Nigel Birch1, and Vinod Suresh1
1University of Auckland, Auckland, New Zealand

TH-308 Assessment of Ca2+ Sensitivity of Force Generation in Intact Airway Smooth Muscle Using Phase Loop Flows
Young Han1, Sae Ostrin1, and Gary Seck1
1Mayo Clinic, Rochester, MN

TH-309 Efficient Correction of the Sickle Allele in Patient Hematopoietic Stem Cells
Ciaran Leor1, So Hyun Park1, Yankai Zhang1, Vivien Sheehan1, and Gang Bai1
1Rice University, Houston, TX, 2Rice University, Houston, TX, 2Baylor College of Medicine, Houston, TX

TH-310 Protective Effects of Micro RNA-122 in Rat Artificial Chondrocytes in an In Vitro Osteoarthritis Model
Rajya Scott1, Ankit Kulka1, Zuo Schwartz1, and Barbara Boyar1
1Virginia Commonwealth University, Richmond, VA, 2Virginia Commonwealth University, Richmond, VA

TH-311 Discovery and Characterization of SUMOylation Site of N51 Protein in Influenza Viral Life Cycle Using FRET Technology
Zhensheng Xiong1, Jin Jiang1, Xueting Dong1, and Jiaoyu Liao1
1University of California, Riverside, Riverside, CA

TH-312 Epigenomic Approaches to Analyze Role Of Topoisomerase Ib eta On Neural Development
Misael Patel1, Jeremy Anderson1, Yi Liu2,3, and Li Can1
1Rutgers University, Piscataway, NJ

TH-313 Disruption of CD109 in HUVECs using CRISPR/ Cas9
Mihir Chokshi1, Ciaran Leor1, and Gang Bai1
1Rice University, Houston, TX

TH-314 Imaging-Based Fate Tracking for In Vitro Cultures of Hematopoietic Stem Cells
Hai Zhou1, Gabriel Rosche1, Lisa Bigelow1, Daniel Yen1, Dong Lin2, and Kayye Shen1,2
1Department of Biomedical Engineering, University of Southern California, Los Angeles, CA, 2Department of Stem Cell Biology and Reparative Medicine, University of Southern California, Los Angeles, CA, 3W. M. Keck Medical Center, Beverly Hills, CA, 4W. M. Keck Medical Center, Beverly Hills, CA

TH-315 Local Myeloid Expansion of Hematopoietic Stem and Progenitor Cells to Treat Staph-aureus Infections
Leif Anderson1, Lloyd Miller1, and Scott Simon1
1UC Davis, Davis, CA, 2The Johns Hopkins University School of Medicine, Baltimore, MD

TH-316 Photothermal Wound Sealing Using Collagen-Silver Nanoplates Composite
Jorge A. Belgodere1, Syed A. Zamin1, and Jangwook P. Jung1
1University of Texas at Arlington, Arlington, TX

TH-317 Using Bioengineering Approaches to Investigate the Mechanism of a Multi-State Model of WNT Signaling
Joshua Cutri1 and David Bromfield1
1Arizona State University, Tempe, AZ

TH-318 Personalized Medicine for Rare Diseases: Towards Modeling Limb-Girdle Muscular Dystrophies Using Induced Pluripotent Stem Cells
Uli Habib1, Rudolf Jarcieszki1, Maya Mitropoulou1, John Jinn1, Jasmir Anjali-Hasel1, and Eiman Al-Jumah1
1Kuwait University, Jabriya, Kuwait, 2Massachusetts Institute of Technology, Cambridge, MA, 3In Vitro Sistem Hospital, Shuwaykh, Kuwait, 4University of Nebraska Medical Center, Omaha, NE

TH-319 Culturing Mucoadhesive Hydrogels from Engineered Biofilm Matrix Proteins
Anna Duru1, Thao Thi Nguyen2, and Paul Maloney3
1University of Nebraska Medical Center, Omaha, NE, 2University of Nebraska Medical Center, Omaha, NE, 3Institute for Regenerative Medicine, University of Southern California, Los Angeles, CA

TH-320 Hydrogels to Treat Obesity
Christine Chang1, Ana Onodera1, Abbey Cutlich1, and Daniel Hart1
1Stanford University, Stanford, CA

TH-321 Effect of pH and Salt on Rheological Properties of RADAR6 A Self-Assembled Peptide Hydrogel
Eunice Leong1 and Hyunjoon Kong1
1University of Illinois Urbana-Champaign, Urbana, IL

TH-322 Modulating Mechanical Properties of Cell In Vitro Cultures
Stefan Marze1,2,3
1Lan O-P, Wuhan, China, 2Department of Biomedical Engineering, University of Southern California, Los Angeles, CA, 3Blake School, Minneapolis, MN

TH-323 Hydrogel Biomaterials
Track: Biomaterials

TH-324 Photothermal Wound Sealing Using Collagen-Silver Nanoplates Composite
Jorge A. Belgodere1, Syed A. Zamin1, and Jangwook P. Jung1
1University of Texas at Arlington, Arlington, TX

TH-325 Modulating Mechanical Properties of Extracellular Matrix Materials Via Lignin Incorporation
Jorge A. Belgodere1,2,3
1Lan O-P, Wuhan, China, 2Georgia Institute of Technology, Atlanta, GA, 3Blake School, Minneapolis, MN

TH-326 Engineering Dynamic Reversible PEG Hydrogels Using Light-sensing Proteins
Joshua Hammer1, Ryan Schwellner1, and Jennifer West1
1Duke University, Durham, NC

TH-327 MMP-deactivating Contact Lens for Corneal Melting
Kyoung Jae Jeong1 and Jung-Jae Lee2
1University of New Hampshire, Durham, NH, 2University of Nebraska Medical Center, Omaha, NE

TH-328 Cell-reprogrammed Hydrogel for Capture and Release of Circulating Tumor Cells
Lukian Liu1, Xueguang Yang1, Senwu Liu1, Xiao Bai1, Boafeng Zhao1, Lihua Zhang1, and Yuxu Zhang1
1Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, People’s Republic of China

TH-329 Hyaluronic Acid-Based Hydrogels with Simultaneously Tunable Mechanical and Bioactive Properties
Madison Godsey1 and David Shreiber1
1Rutgers, The State University of New Jersey, Piscataway, NJ

TH-330 Agile silica-Entrapped Hydrogel Microarray: Enhanced Fluorescence from the Metal for Protein Assay System
Mina Kim1, Kanghyuk Lee1, Seungchul Yoo1, Jang-Gae Lee2, So Young Noh1, Hye Yeon Goi3, and Won-Gun Koh1
1Yonsei University, Seoul, Korea, Republic of Korea

TH-331 A Two-step Method for Transferring Single Wall Carbon Nanotubes onto a Hydrogel Substrate
Muhbaha Imannebadah1, Irma Kulajashifti1, and Sikyra Zitak1
1Saint Louis University, MO, 2Saint Louis University, Saint Louis, MO

TH-332 Mussel-Inspired Wet Tissue Adhering Non-Shapes for Diabetic Footh Ulcer Treatment
Nikhil Pandey1, Valentina Jones1, Andrei Ursu1, Yi Hong1, and Kyung Nguyen1
1University of Texas at Arlington, Arlington, TX

TH-333 A New Class of Mechanically Robust Triazolo-Zwitterionic Hydrogels with Foreign Body Response (FBR)-Resistant Property
Qinghong Lu1 and Minghui Lin1
1Cornell University, Ithaca, NY, 2Cornell University, Ithaca, NY

TH-334 Generating Composite Patterned Hydrogels Mechanically Faithful to Biological Tissue
Shiying Ma1,2,3, and Rachel Lalezar1
1Rice University, Houston, TX

TH-335 An Injectable and Self-healing Hydrogel for Cranial Bone Repair
Shaoyu Li1 and Xiao Bai1
1Lanzhou University, Lanzhou, China, People’s Republic of China

TH-336 Injectable Microporous Gelatin Hydrogel for Wound Healing
Shujie Hou1, Rachel Lalezar1, and Kyung Jae Jeong1
1University of New Hampshire, Durham, NH

TH-308 Cell-reprogrammed Hydrogel for Capture and Release of Circulating Tumor Cells
Lukian Liu1, Xueguang Yang1, Senwu Liu1, Xiao Bai1, Boafeng Zhao1, Lihua Zhang1, and Yuxu Zhang1
1Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, People’s Republic of China

TH-329 Hyaluronic Acid-Based Hydrogels with Simultaneously Tunable Mechanical and Bioactive Properties
Madison Godsey1 and David Shreiber1
1Rutgers, The State University of New Jersey, Piscataway, NJ
Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-337 Enhanced Cellular Penetration into "Porous" Fibrous Implants Modulates the Immune Response In Vivo
Arashen Tirnakli1, Mlycawat Y1,2, Lindsey L. Yan1, Yah-Hel Ha-el1, and Peter L. Leffes1,2
1Temple University, Philadelphia, PA, 2Temple Institute for Regenerative Medicine and Engineering (TIME), Philadelphia, PA

TH-338 Engineering an Immunoengineering and Adhesive Hydrogel for Diabetic Wound Healing
Bahram Sahali1, Harkiratpreet Kaur1, Katherine Drake1, Elean Shariati Sari1, Mansoor Amiji1, and Naim Amin1
1Northwestern University, Boston, MA

TH-339 Isolation and 3D Culture of Lymph Node Fibroblastic Reticular Cells to Restore Self-tolerance
Fredy Gonzalez1,2, Maria Abreu1, Vita Manzoli1,3, Diana Velluto1, and Alice Tomei1,2
1University of Miami, Coral Gables, FL, 2Department of Biomedical Engineering - University of Miami, Coral Gables, FL, 3Department of Electronics, Information and Bioengineering – Politecnico di Milano, Milano, Italy

TH-340 Identification of Immunosuppressive (ifn-ε-stimulated) MSC Morphological Subpopulations using viSNE, A Tool for Visualizing Cellular Heterogeneity
Ross Marklen1,2, Kathleen C. Martinez1,3,4,5,6,7, Hannah Polkowsky1, Jessica Lo Sardo1, and Steven Bauer1,2,3,4
1U.S. Food and Drug Administration, Silver Spring, MD, 2CytoBank, Inc., Santa Clara, CA, 3Bristol-Myers Squibb, Princeton, NJ, 4Department of Pharmacology and Experimental Therapeutics, University of Pittsburgh, Pittsburgh, PA, 5Department of Medical Genetics, University of Alberta, Edmonton, Alberta, Canada, 6Department of Orthopaedic Surgery, University of California, San Francisco, San Francisco, CA, 7Albion Equipment, Inc., San Diego, CA

TH-341 Micro- and Nano-engineered Surfaces Modulate the Phenotype of Blood-derived Cells: Applications in Regenerative Medicine and Disease Modeling
Aylin Arici1,2, Abish Bheragat1, Trung Dong1, and Pinar Zorlutuna1
1University of Notre Dame, South Bend, IN

TH-342 Optimization of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes for Tissue Engineering and Disease Modeling
Aylin Arici1,2, Abish Bheragat1, Trung Dong1, and Pinar Zorlutuna1
1University of Notre Dame, South Bend, IN

TH-343 Mimicking Embryological Vascular Development in Liposome-Laden Hydrogels
Cody Crosby1, Christine Wei1, David Shui1, and James Zelddan1
1University of Texas at Austin, Austin, TX

TH-344 The Role of Collagen and S-azacytidine in the Secretion of Cardiac Secretome by Human Bone Marrow Derenched Mesenchymal Stem Cells
Jyotira Joshi1 and Chandra Kothapalli2
1Cleveland State University, Cleveland, OH

TH-345 Assessment of Mitochondrial Channal in a Human Induced Pluripotent Stem Cell Model of Diabetic Cardiomyopathy
Hyung Kyung Suh1, San Hoon Hwang1, Hae Sun Hwang2, Min Hee Lee1, Ningyi Shao2, Haed-Up Wi1, Kaesil Kibbi1, and Joseph Wu2
1Stanford University, Stanford, CA, 2Stanford Cardiovascular Institute, Stanford University School of Medicine, Stanford, CA

TH-346 Sclerostin Supplementation as an Effective Therapy in Regulating Phenotypic Switch of Smooth Muscle Cells in Vascular Calcification
Kaley McCarthy1, Amber Key1, James Stewart1, and Charles Leitner2
1Mississippi State University, Starkville, MS, 2Mississippi State University, Mississippi State, MS

TH-347 Identification of the Transient Regenerative Potential of Cardiac Muscle using a Neonatal Pig Model
M. Katherine Copeland1, Bryn Brazile2, J. Ryan Butler2, Yan Chang1, M. Carrie Miceli2,3,4, and Megan L. McCain1,5
1Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC, 2Viterbi School of Engineering, University of Southern California, Los Angeles, CA, 3Department of Integrative Biology, University of California, Irvine, Irvine, CA, 4Department of Biology, University of California, San Diego, San Diego, CA, 5Department of Bioengineering, University of Washington, Seattle, WA

TH-348 A New Target for Genetic Modification to Regulate Cardiac Tissue Regulation after Ischemia/Reperfusion: The Role of MIP1V17 Protein
Ngoanalyde Madung2a,1, Yasheng Feng1, and Joan Bopassa1
1University of Texas Health Science Center at San Antonio, San Antonio, TX, 2University of Texas at Austin, Austin, TX

TH-349 In vitro Myocardial Inflammation Model to Examine Macrophage and Cardiomyocyte Interaction
Pamela Hitscherich1 and Eun Jung Lee1
1New Jersey Institute of Technology, Newark, NJ

TH-350 Enhanced Capture of Endothelium Regenerating Cells In Vitro and Ex Vivo Using a Combinatorial Approach of Growth Factors.
Randall Scott Smith1,2, and Station Arakelian2
1SUNY BUFFALO, Amherst, NY, 2Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

TH-351 Beating Clusters Created with Cardiac Extracellular Matrix from Decellularized Pig Hearts and Repopulated with Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes
Silvia Moncada1, Joseph Rich2, Matthew Trone1, Kaitlyn McIntyre1, Harriet Bahneman1, TOP Knudsen1, Matthew Hodgson1, Beverly Rood1, and Alonzo Cook
1Bingham Young University, Provo, UT

Tracks: Cardiovascular Engineering, Tissue Engineering
Cardiovascular Tissue Engineering

TH-352 CORM-3 Improves Cardiac Patch Function and Visualization In Vitro
Brian Allen1, Xia Shadri2, Chris Jackman1, Ying Qian1, and Naim Amin1
1Wayne State University, Detroit, MI

TH-353 Self-Assembly of Large Scale Engineered Vessels via Layer-by-Layer Deposited Inserts
Cameron Pinnock1, Zhenglian Xu1, and Mai Lam1
1Wayne State University, Detroit, MI

TH-354 Optimizing Substrates for Engineering Aligned Human Stem Cell-Derived Cardiac Myocyte Tissues
Josueyani Y. Yap1, Nathan Cho1, Florian Barthelme2,1, M. Carrie Miceli1,3,4, and Megan L. McCain1
1Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC, 2Viterbi School of Engineering, University of Southern California, Los Angeles, CA, 3Department of Cell and Molecular Biology, University of California, Irvine, Irvine, CA, 4Department of Bioengineering, University of Washington, Seattle, WA

TH-355 Generating Functional Anisotropic and 3D Tissue-like Construct Using Induced Pluripotent Stem-cell Derived Cardiomyocytes
Junji Uto1
1Kyoto University, Kyoto, Japan

TH-356 Toward Development of a Tissue Engineered Diabetic Cardiomyopathy Model
Laura McCellum1, Charles Pibrowski1, and Agronas Simionescu2
1Clemson University, Clemson, SC

TH-357 Nuclear Architecture in Patients with Heart Disease Due to LMNA Mutation
Mehran Mahboubi1, Jason Core1, Zachary Robinson2, Linda McCarthy1, Michael Zaragoza1,2, and Anna Grosberg1
1Brigham Young University, Provo, UT

TH-358 End-Point Immobilization of Heparin on Plasma-Treated Surface of Elctropun Polypropylene-Urethane Vascular Graft in a Minipig Model
Ninggang Dong1, Song Li1, and Xuefeng Qiu2
1Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, People's Republic of China, 2University of California, Los Angeles, Los Angeles, CA

TH-359 Benefits of Nitric Oxide Delivery to Elastogenesis by Adult Human Aneurnysm-derived Smooth Muscle Cells
Philip Simmers1, Kurt Ferrall1, and Chandra Kothapalli2
1Cleveland State University, Cleveland, OH

TH-360 In Vitro Tissue Engineering of Trilayered Structure of a Heart Valve Leaflet
Sounen Jan1, Ryan Hennessy2, Federico Franchi3, Melissa Young4, and Amir Lerman1
1Mayo Clinic, Rochester, MN

TH-361 Human Tissue Engineered Model of Myocardial Ischemia Repaired by Primed Inserts
Timothy Chen1 and Gordana Vunjak-Novakovic1
1Columbia University, New York, NY

TH-362 Nanoscale Decoration of Cardiac Microtissues Using Functionalized Gold Nanowires for Cell-Based Therapies
Ali Mesgar1 and Melih Fik Hashi1
1Arizona State University, Tempe, AZ

TH-363 Fabrication of Biphasic Scaffold for Small Diameter Vascular Graft Applications
Alison Goin1, Vidhya RamaRao1, and Josephine Allen1
1University of Florida, Gainesville, FL

TH-364 Ferromagnetic Vascular Graft Enables Magnetic Targeting of Endothelial Cells
Brandon Tellf1, Joshua Chou1, Saeedul Ullahraman1, 2David Dagon-daCu2, Gurpreet Sandhu,3 and Amir Lerman1
1Mayo Clinic, Rochester, MN

TH-365 Micropatterned Soft Substrates Improve hESC-derived Cardiomyocytes Maturation
Brett Nagowski1,2, Rendish Ashton1, and Wendy Coney1
1U-Madison, Madison, W1, Wisconsin Institutes for Discovery, Madison, W1
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<th>Track: Cardiovascular Engineering, Biomechanics</th>
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<td>TH-382</td>
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<tr>
<td>Alison Schroer1, Kristina Kosuke1, Arjun Adhikari1, Kathleen Ruppel1, James Spaulding1, and Beth Print1</td>
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<td>Stanford University, Stanford, CA</td>
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<td>Poonam Sharma1, Diane R Wagner1, and Adam H Hsieh1</td>
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<td>1University of Maryland, College Park, MD, 2Indiana University-Purdue University Indianapolis, Indianapolis, IN, 3University of Wisconsin-Madison, Madison, WI</td>
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<td>1Syracuse University, Syracuse, NY, 2Syracuse Biomaterials Institute, Syracuse, NY</td>
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<td>Mary Dozl1 and Kimberly Smoka1</td>
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<td>1University of Maryland, College Park, MD</td>
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<td>Wei Qi1, Lanyu Geng1, Jun Cai1, Ziyang Zhang1, and Weiqiang Chen1</td>
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<td>1University of Maryland, College Park, MD, 2Brown University, Providence, RI</td>
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<td>Parisa Rabani1, Carlo Liebman1, and Michael Chiu1</td>
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<td>1University of Texas at Arlington, Arlington, TX</td>
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<td>Poonam Sharma1, Diane R Wagner2, and Adam H Hsieh1,3</td>
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<td>Prachanth Keshavarth1, M Arthi Gopalakrishnan1, Raji Rao1, and Kerkil Balachandran1</td>
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<td>Hamzeh Shams1 and Mohammad B K Mohaf1</td>
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TH-398
Triglyceride Rich Lipoprotein Composition and Metabolism Modulate Endothelial Inflammatory Phenytopathy
Antis Fagman1, Andrea Frederands1, John Newman, Scott Simon1, and Anthony Passarella1
University of California, Davis, CA

TH-400
Flow-induced HDAC1 Phosphorylation and Nuclear Export in Angiogenic Sprouting
Deepna Banerji1, Mai Rosa Ng1, Jonathan Song1, Shan Min Chin1, Nir Maenon1, and Liaoqu Muan1
Massachusetts General Hospital, Harvard Medical School, Boston, MA

TH-401
Mechanical Properties of the Mitochondria of von Willebrand Factor
Whitney La1, Wengang Cai1, Yi Wang1, Frank Zhang1, and Xuanhong Cheng1
Lehigh University, Bethlehem, PA

TH-402
Experimental Results: Asymmetric Flow in Symmetric Branched Structures
Adam Sennewald1, Acanin Ata, and Bela Suki1
Bioengineering, Boston University, MA, and University of Southern California, Los Angeles, CA

TH-403
Cell Injury Patterns in Airway Bifurcations Suggest an Alternative Mechanism of Plasma Membrane Disruption and Cell Detachment
During Airway Reopening
Christopher T. Smith1,2,3,4 and Siddhartha Dey1
1The Ohio State University, Columbus, OH, 2The Ohio State University Wexner Medical Center, Columbus, OH

TH-404
Computational Modelling of Cough and Mucus Clearance in Patients with Total Laryngectomy
Don Naidin Kunpimulrapee1
1University of Central Florida, Orlando, FL

TH-405
Lung Tissue Mechanics: Role of Pleural Cavity Shape on Tissue Deformation
Hamed Minekezaim1, Haribalan Kumar1, Meryn H. Tawhai1, and Aly R. Klein1
1Auckland Bioengineering Institute, University of Auckland, Auckland, New Zealand,

TH-406
Effects of Aging and Stretch Pattern on the Actin Cytoskeleton of Lung Fibroblasts
Elizabeth Bartolucci1 and Bela Suki1
1Boston University, Boston, MA

Track: Bioinformatics, Computational and Systems Biology

TH-407
Mapping Pancreatic Cancer Metabolism to Investigate Optimal Therapeutic Strategies: Insight from 13C Labeling
Mahul Roy1, Katherine Machado1, Daniel Brus1, Heather Christofk1, and Stacey Finley1
1Biomedical Engineering, University of Southern California, Los Angeles, CA, 2Biological Chemistry Department and UCLA Metabolism Center at the David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA, 3 UCLA-Metabolism Center at the David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA, 4Biomedical Engineering and Chemical Engineering & Materials Science, University of Southern California, Los Angeles, CA

TH-408
Functional Significance of NOS-dependent Nitrite in Staphylococcal Cereulysin
Mohammad Islam1, Sunil Gadde1, and Alireza Tofangchi1
1University of Central Florida, Orlando, FL, 2The Ohio State University, Columbus, OH

TH-409
Computational Model to Study Viral Drug Dosing in Cats
Renee Lake1, Jessica Quinby1, and Brad Reifel2
1Colorado State University, Fort Collins, CO, 2The Ohio State University, Columbus, OH

TH-410
Pharm Cat: A Physiologic-based Pharmacokinetic (PPKx) Model to Study Virtual Drug Dosing in Cats
Renee Lake1, Jessica Quinby1, and Brad Reifel2
1Colorado State University, Fort Collins, CO, 2The Ohio State University, Columbus, OH

TH-411
Sorting Cells by their Density
Nazia Nosrati1, Heran C. Bhakta1, and William H. Grover2
1University of California, Riverside, Mission Viejo, CA, 2University of Arizona, Phoenix, AZ

TH-412
Paper-based Vertical Flow Microfluidic Immunoassay for Diagnosis of Melioidosis
Peng Chen1, Jiu Gu1, Marcelline Hollingsworth1, Judy Pan1, Arsene Paul1, Douglas Mingsinger1, David Aucoc1, and Frederic Zerhanwani1
1University of Arizona, Phoenix, AZ, 2University of Nevada, Reno, NV, 3Arizona State University, Tempe, AZ

TH-413
Graphene Oxide-Based Microfluidic Cortisol Sensor with Enhanced Sensitivity
Shuai Shree Pouya1, Kyung Eun You1, and Hyun Jaung Yoon1
1South Dakota State University, Brookings, SD

TH-414
Multiple Myeloma Cell Drug Responses Differ in Thermoplasmic vs. PDMS Microfluidic Devices
Thomas Moro1 and Edmond Young1
1University of Toronto, Toronto, ON, Canada

TH-415
Nanoparticles Enrichment in a Microfluidic Thermal Gradient Device
Thomas Reidy1, Zhinu Cao1, and Xuanhong Cheng1
Lehigh University, Bethlehem, PA

Track: Cancer Technologies, Nano and Micro Technologies

TH-416
Luminescent Nanoparticles for High-throughput Microfluidic Droplet Barcoding
Huang-Chiao Huang1, Joyce Liu1, Ningning Xu1, Xuanhong Cheng1, and James Dorman1
1Stanford University, Palo Alto, CA, 2Stanford University, Santa Clara, CA

TH-417
Novel Biocompatible Piezoelectric Microsensor for Cancer and Soft Tissue Treatment Monitoring
Nicola Scortichini1, Lucian Gruia1, and Gabriel Groisman1
1The National Institute for Laser, Plasma & Radiation Physics (INLPR), 2Boston University, MA, 3University of Biomedical Engineering and Chemical Engineering, University of Southern California, Los Angeles, CA

TH-418
The Vital Role of Nuclei in the Cell Passing through Small Restrictions and Size Based Filtration
Yeqin Xu1 and Si-Yang Zhang1
1Penn State University, University Park, PA

TH-419
Evaluating Binding Events of Cancer Cell Surfaceome
Fahad M. Gup1,2,3,4, Gaëlle Dourad1,4, Muhammad Pooya1, Khalil Gupta1, and Ulkan Darmol1
1Stanford University, Palo Alto, CA

TH-420
High Throughput Single Cell Analysis of Peptide Uptake and Deubiquitinating Enzyme Activity Using a Microfluidic Droplet Trapping Array
Nora Safabakhsh1, Nathan Vastavas1, Ehsan Schwan1, Rad Ekhansouli1, Wayne III Wirtmoran1, Adam Melvin1, and Nora Safabakhsh1
1Louisiana State University, Baton Rouge, LA, 2Louisiana State University, Baton Rouge, LA

Track: Cancer Technologies

TH-421
Precision Medicine and Biomarkers in Cancer

TH-422
Primary Patient Tumor Organoids for Personalized Drug Treatment
Andrea Mazzochi1, Konstantinos Votanopoulos1, Shay Soker1, and Aleksandar Stefanov1
2Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, 3Comprehensive Cancer Center at Wake Forest Baptist Hospital, Winston Salem, NC

TH-423
Development of Pancreatic Neuroendocrine Tumor Therapy Based on Specific Surface Receptors
Jade Dry1, Ziad Al-Abed1, Samuel Jung1, Niharika Gokhle1, Xuanhong Cheng1, and Norbert Buczkowska1
1University of Alabama at Birmingham, Birmingham, AL

TH-424
Direct Quantification of Deubiquitinating Enzyme Activity in Intact Cells Using a Protein Resistant, Cell Permeable Peptide-based Reporter
Nora Safabakhsh1, Jacob Pettigrew1, John Dorman1, and Adam Melvin2
1Louisiana State University, Baton Rouge, LA, 2Louisiana State University, Baton Rouge, LA

TH-425
Olfactory Receptor Gene Expression Is Correlated with Breast Cancer Progression
Shi Tian1,2,3,4,5, Xiaodong Zou6, and Todd Gearty1
5University of Southern California, Los Angeles, CA, 6University of Alabama, Birmingham, AL

TH-426
Improving Cancer Diagnostics with a Novel Protein Energetics Model
Zachary Friz1, Lawrence Williams1, and Martin Yarmush1
1Rutgers University, Piscataway, NJ

POSTER SESSION—THURSDAY
TH-441 Impeding Foreign Body Response to Ventricular Catheters in the Treatment of Hydrocephalus by Masking Shunts with Monolayers of Ciliated Epithelial Cells.
Carolyn Harris1 and Pradesh Haricharan1
Wayne State University, Detroit, MI

TH-442 Rationally Designed 2-Dimensional Paper Networks (2DPPs) for Point-of-Care Diagnostics
Kristin Byers1, Laura Jamieson1, Anna Bird1, and Jacqueline Linnell1
Purdue University, West Lafayette, IN

TH-443 Modeling the Frequency Response of a Proportional Solenoid Valve for Oscillatory Ventilation
Bakir Hajmrejic1, Jacob Herrmann1, and David Kaczka2
The Ohio State University Wexner Medical Center, Columbus, OH

TH-444 Assessing Driver Mental State through Physiological Measurements Using Simulator
Samuel John1, Qianxing Cai1, Liang Li2, Ranjit Wijesinghe1, and Mary Ewing1
Lawrence Technological University, Southfield, MI, Ascension-St. John Providence, Southfield, MI, Lawrence Technological University, Southfield, MI, "Aażakawa-St. John Providence, Southfield, MI"

TH-445 Reducing the Structure of Pyranose-2-oxidase for Nanocomposites of Polyaniline-Chloride and Chitosan of Electrical and Cell Adhesive Behavior
Vi Nguyen1, Samantha Brenna1, Jarrett Eshima1, and Barbara Smith1
Kansai University, Suita, Japan

TH-446 Processing of Fixed and Stored Adipose-Derived Stem Cells for Quantitative Protein Array Assays
Jessica Sadick1, Adrienne Parsons1, and Eric Darling1
Washington State University, Pullman, WA

TH-447 Evolution of Antibody Probe for Detection of Fibronectin Conformational Changes
Leandro Mowbray1, Kenneth Kelly1, and Thomas Barlow1
University of Virginia, Charlottesville, VA

TH-448 Microfluidic Devices with Integrated Microvalves for High-Throughput Replicative Lung Models
Michael Robles1, Nathaniel H. Thayer1, Ben Cooper1, Rob Keyser1, Dan E. Gottschling1, and R. Scott McIsaac1
"CaliCos Labs, South San Francisco, CA"

TH-450 Electrical and Cell Adhesive Behavior of Polyaniline-Chloride and Chitosan Nanocomposites
Sara Alazab1, John Appag1, and Anthony Guiseppe-Elia1
"Center for Bioelectronics, Biosensors and Biochips (CBB), Department of Biomedical Engineering, Texas A&M University, College Station, TX"

TH-451 Monitoring Women's Fertility Through Vibratile Biomarkers
Sherry M. Onig1, Christopher Miranda1, Heather D. Bean1, and Barbara S. Smith1
"Arizona State University, Tempe, AZ"

TH-452 Identifying Volatile Hormone Signatures for Monitoring Female Reproductive Health
Vi Nguyen1, Samantha Brenna1, Jarrett Eshima1, and Barbara Smith1
Kansai University, Suita, Japan

TH-453 Functional Evaluation of Cell Aggregation Induced Peptide for 3D Culture
Yoshiko Minowa1, Yuji Yamamoto1, and Sachiko Katokoi1
Kansai University, Suita, Japan

TH-454 A Novel Permanent Anti-Inflammatory Molecular Coating on Silicone Implants Significantly Reduces Peri-Prosthetic Capsule Formation
Alessandra Lin1, Sarah Karinj1, Omid Vaseghi2, Jamie Bernstein1, Julie Jir3, Omolayos Temal1, Nita1, Andrew Abadeer1, Kerry Minton1, Rachel Akintayo1, Robert Langer3, Daniel Anderson3, and Jason Spector1
"Laboratory for Bioregenerative Medicine & Surgery, Weill Cornell Medical College, New York, NY; SIPGC, Cambridge, MA, Massachusetts Institute of Technology, Cambridge, MA"

TH-455 Engineering T Cells into Disease-Directed Protein Biofactories
Claire Reppe1, Pushe Patel1, Lilia Sambuceti1, and Parajit Bhatnagar2
SRI International, Menlo Park, CA, "Stanford University, Stanford, CA"

TH-456 Developing a New Treatment for Chronic Obstructive Pulmonary Disease (COPD) Using Microfluidics and Precise Delivery of Medications
Bo Mesland1, Jason O’Donnell1, and R. Scott McIsaac1
"CaliCos Labs, South San Francisco, CA"

TH-457 A Computationally Tractable Model of Alveolar/Airway Interactions in the Entire Lung
Jason Ryans1, Laura Krasovec1, Hideki Fujioka1, Dave Halpern2, and Brent Nannenga1
University of Vermont, Burlington, VT, Arizona State University, Tempe, AZ, "University of Vermont, Burlington, VT"

TH-458 Radiolology Department, University of Pennsylvania, Philadelphia, PA, to Healthy and Diseased Lung Conditions
Maltose Binding Protein Radiation Sensitivity of Gold Reduction by a Maltose Binding Protein
Jacqueline Linnell1, Kurt Repce1, Xiaole Chen2, Zelin Xu3, and Ahmadreza Haghnegahdar1
University of Otago, Dunedin, New Zealand, 2University of Auckland, Auckland, New Zealand, 3Auckland Bioengineering Institute, Roanoke, VA

TH-459 A Novel Device for Preventing Rodent Wound Splint Removal
Jude Montgomery1, Linda Jouand1, and Robert Guiseppe1
Virginia Tech, Blacksburg, VA, "Virginia Tech Carilion Research Institute, Roanoke, VA"

TH-460 Processing of Fixed and Stored Adipose-Derived Stem Cells for Quantitative Protein Array Assays
Jessica Sadick1, Adrienne Parsons1, and Eric Darling1
Washington State University, Pullman, WA

TH-461 Impeding Foreign Body Response to Ventricular Catheters in the Treatment of Hydrocephalus by Masking Shunts with Monolayers of Ciliated Epithelial Cells.
Carolyn Harris1 and Pradesh Haricharan1
Wayne State University, Detroit, MI

TH-462 Reducing the Structure of Pyranose-2-oxidase for Nanocomposites of Polyaniline-Chloride and Chitosan of Electrical and Cell Adhesive Behavior
Vi Nguyen1, Samantha Brenna1, Jarrett Eshima1, and Barbara Smith1
Kansai University, Suita, Japan

TH-463 Intersubject Variability in Pulmonary Drug Delivery Efficiency to Target Lung Tumors at Different Lobes: An In Silico Study
Yu Feng1, Kwasi Kwakwa2, Zhe Su1, and Alexandrashq Haghshmaghad2
"Oklahoma State University, Stillwater, OK, 'Southeastern University, Norwood, China, People's Republic of, North Carolina State University, Raleigh, NC"
Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-487 Task-Dependent Properties of Motor Cortical Impulse Response Functions
Douglas Crowley1, William Memmert2, Brian Murphy2, Jennifer Sweet1, Jonathan Miller1, Benjamin Walker1, Leigh Hinchley1, Ali A. Ajiboye1, and Robert Kirsch2
1Case Western Reserve University, Cleveland, OH, 2Louis Stokes Cleveland Dept. of VA Med. Ctr., Cleveland, OH, 3University Hospitals, Cleveland, OH, 4Dept. of VA Med. Ctr., Providence, RI, 5Brown University, Providence, RI, 6Massachusetts Gen. Hosp., Boston, MA, 7Howard Medical School, Cambridge, MA

TH-488 Intramuscular EMG-Driven Control of a Virtual Hand Based on a Musculoskeletal Model
Dustin Crouse1, Lili Fan1, and Hu Huang2
1North Carolina State University, Raleigh, NC, 2Washington University, St. Louis, MO

TH-489 BCI System of High Rate Quasi-Static-State VEPs Elicited by Orthogonal Stimulation Sequences
Ibrahim Kaye1, Ocan Gunhan1, and Jorge Bokay2
1University of Miami, Miami, FL

TH-490 Chaotic Analysis of EEG Signals to Predict Seizures
Kannathal Natarajan1, Esma Cetinkaya1, Sinan Gök1, Espen Metzger1, and Detlev J. Klöckl1
1The Catholic University of America, Washington, DC

TH-491 Cerebro-cardiac and Cerebro-respiratory Interactions while Listening to Songs
Mohammad Jawad Mofakara1, Dibyajyoti Biswal1, Shaheer Hassan1, and Sabato Santaniello1
1The College of New Jersey, Ewing, NJ

TH-492 A Brain Computer Interface Approach to Examine Changes in Anxiety While Walking in a Virtually Infinite Environment
Rachnesh Kaur1, Dean Michaels1, Vivek Kaushik1, Michael Bartchev1, Manuel Hernandez1, and Richard Sowers1
1Case Western Reserve University, Cleveland, OH, 2Louis Stokes Cleveland Dept. of VA Med. Ctr., Cleveland, OH, 3University Hospitals, Cleveland, OH, 4Dept. of VA Med. Ctr., Providence, RI, 5Brown University, Providence, RI, 6Massachusetts Gen. Hosp., Boston, MA, 7Howard Medical School, Cambridge, MA

TH-493 Effects of Neuronal Network Topology on Epileptogenesis
Shalonn Oluwafemi1 and Vergenyi Berdichevsky2
1Lehigh University, Bethlehem, PA

TH-494 Fully Automated Unsupervised Behavioral Stage Classifier Using Intracranial EGG
Valv Kremen1, Benjamin Brinkmann1, Brett Berry1, Michael Kowalczyk1, Fatemeh Khadjooi1, Jamie Van Gampal1, Matt Steed1, Erik S. Louis1, and Gregory Witte1
1Mayo Clinic, Rochester, MN, 2CIRIC, Czech Technical University in Prague, Prague, Czech Republic

Track: Neural Engineering
Neural Device Interfaces

TH-495 Novel Recessed High-Selectivity Electrode Design for Safer Deep Brain Stimulation
Jennifer Sweet1, Jonathan Miller2, Benjamin Walker2, Leigh Hinchley2, Ali A. Ajiboye1, and Robert Kirsch2
1Case Western Reserve University, Cleveland, OH, 2Louis Stokes Cleveland Dept. of VA Med. Ctr., Cleveland, OH, 3University Hospitals, Cleveland, OH, 4Dept. of VA Med. Ctr., Providence, RI, 5Brown University, Providence, RI, 6Massachusetts Gen. Hosp., Boston, MA, 7Howard Medical School, Cambridge, MA

TH-496 Multi-Electrode Recordings from the Stellate Ganglion Reveal Single Unit Potentiation by Hypoxia
Andrew Wells1 and Mario Moreno Ortega1
1University of Texas at Dallas, Richardson, TX, 2University of Texas Southwestern Medical Center, Dallas, TX

TH-497 Interfacial Mechanics of Shape Memory Polymers (SMPs) in Cortical Brain Tissue
Arati Sridharan1, Vithiya Reddy Dandayi1, Melanie Ecker1, Allison Stiller1, Walter Vis1, Joseph J. Panascioli1, and Jit Museum1
1Arizona State University, Tempe, AZ, 2University of Texas at Dallas, Dallas, TX

TH-498 New Mixed Boundary Value Model of Electromagnetic Fields from Surface Electrodes
Benjamin Schwartz1, Jonathan Duncan1, Shaun Brown1, and Jit Museum1
1Arizona State University, Tempe, AZ

TH-499 In Vivo Evaluation of Chronic Reliability of High Resolution, Low-cost µECoG Arrays
Brinnae Bent1, Michael Trumpa1, Ken Chang1, Virginia Woods1, and Jonathan Viventi1
1Duke University, Durham, NC

TH-500 Broadband Spectral Power Modulation of Rat Epidural ECoG During Frequency Discrimination Task
Christian Song1, Michael Trumpa1, and Jonathan Viventi1
1Duke University, Durham, NC

TH-501 Fabrication and Long-Term Recording Ability of a Companion Micro-ECoG Electrode Array
Cody Barton1, Ruben Ponce Wang1, Oliver Graudejus2, and Bradley Greger3
1Arizona State University, Tempe, AZ, 2BMISSEED, Tempe, AZ

TH-502 EEG Characterization of Mechanoreceptors
Elena Chernysh1 and Sahana Kubal1
1The Catholic University of America, Washington, DC

TH-503 Carbon Fiber Electrodes for Recording Spinal Cord Activity in Rats
Esma Cetinkaya1, Sinan Gök1, and Mees Tahan1
1New Jersey Institute of Technology, Newark, NJ

TH-504 Dynamic Hearing-Aid Algorithm with Spatial Selectivity
Kuan Rafi1
1Saint Louis University, St. Louis, MO

TH-505 The Impact of Protein Loaded Thin-film Sol-Gel on Electrical Impedance Spectroscopy and Charge Carrying Capacity
Matthew McDermott1 and Kevin Otto2
1Purdue University, West Lafayette, IN, 2University of Florida, Gainesville, FL

TH-506 Motion Artefact Contamination of Neural Electrophysiology Recordings Cannot Be Eliminated with CAR
Nicholas Michaelson1, Alberto Vasquez1, Jordan Williams1, Xinyan Cui1, and Takanori Kura1
1University of Pittsburgh, PA

TH-507 Quantifying the Neurite Growth of Dissociated Retinal Cell Cultures to Assess the Biocompatibility of Vertically Aligned Carbon Nanotubes
Saba Mobashir1, William Watterson1, Julian Smith1, Kara Zappatelli2, David Miller2, Curtis Culwell3, Derek Hallman1, Richard Taylor1, Maria Pera1, and Benjamin Alamar1
1University of Oregon, Eugene, OR, 2Lund University, Lund, Sweden

Track: Neural Engineering
Neural Disease: Model Systems and Therapeutics

TH-508 A Diagnostic System for Automatic Seizure Onset Zone Localization
Adina van Dam1, Jake Burgess1, Morgan Murphy1, Stephen Schmidt1, Shawn Hassan1, and Sabato Santaniello1
1University of Connecticut, Storrs, CT

TH-509 Material Testing of PPODA-QT for the Treatment of Aneurysms
April Huckleberry1, Sharna Beahm1, Connor Gonzalez1, William Merritt1, and Timothy Becker1
1Northern Arizona University, Flagstaff, AZ

TH-510 In Vitro Neurovascular Model Development for Biomaterial Device Testing and Particulate Characterization
Trevor Cottle1, Connor Gonzalez1, William Merritt1, and Timothy Becker1
1Northern Arizona University, Flagstaff, AZ

TH-511 Enhanced Neural Stem Cell Differentiation in 3D Printed Scaffolds with Light Stimulation
Wee Zhu1, Se-Jun Lee1, and Liye Grace Zhang1
1The George Washington University, Washington, DC

Track: Neural Engineering
Neuromodulation: Brain and Spinal Cord

TH-512 Retinal Temperature Monitoring by In Vivo Electretinography
Maria Prikamar1, Oskar Kakkinen1, and Anttis Koskelainen1
1University of Oulu School of Science, Espoo, Finland

TH-513 Culture of Human Stem Cell Derived Dopaminergic Neurons on Graphene Oxide to Reduce the Progression of Parkinson’s Disease
Nihat Tanriver1, Lisa Mendez1, Ali Ak Kumer1, Mahesh Narayan1, and Binata Jodha1
1University of Texas at El Paso, El Paso, TX

TH-514 Continuous Analysis of Parkinsonian Rodent Gait via Frustrated Total Internal Reflection
Robert Mooring1 and Alan Dorval1
1University of Utah, Ogden, UT, 2University of Utah, Salt Lake City, UT

TH-515 In Vitro Neurovascular Model Development for Biomaterial Device Testing and Particulate Characterization
Trevor Cottle1, Connor Gonzalez1, William Merritt1, and Timothy Becker1
1Northern Arizona University, Flagstaff, AZ

TH-516 Enhanced Neural Stem Cell Differentiation in 3D Printed Scaffolds with Light Stimulation
Wee Zhu1, Se-Jun Lee1, and Liye Grace Zhang1
1The George Washington University, Washington, DC

Track: Neural Engineering
Neuromodulation: Brain and Spinal Cord

TH-517 Sophorolipid Butyl Ester Diacetate Has No Effect on Murine Peritoneal Macrophage and Spinal Cord Astrocyte Viability but Increases Spinal Cord Astrocyte Glial Fibillary Acidic Protein Expression In Vivo
Aleks Zimbler1, Marq Gottipati1, Robert Tonnissen1, Cheryl Hawe1, Richard Gros1, Michelle Lennartz1, and Ryan Gilbert1
1Rensselaer Polytechnic Institute, Troy, NY, 2Albany Medical Center, Albany, NY

TH-518 Denoising of Local Field Potentials from Deep Leads affected by Blood Pressure Artifacts
Enrico Ogli1, Stephanie Cerrina1, Rene Molina1, Michael Okun1, Kelly Foshee1, and Arslan Gondar1
1University of Florida, Gainesville, FL

TH-519 Information Theoretic EEG Analysis Of Children With Severe Disabilities In Response To Power Mobility Training: A Pilot Study
Joshua Urrutia1, Lisa Kenyon1, John Farrie1, and Sanamh Rhodes1
1Grand Valley State University, Grand Rapids, MI
Experience Dependent Plasticity of Cortical Delivery to Deep Brain Microstructures: A Chronically Implantable System for Drug

Seung-Schik Yoo

Emory University, Atlanta, GA, 2San Jose State University,

Seung-Schik Yoo1

TH-292

Quantification of the Natural Tactile Scene Using a Three Dimensional Dynamic Model of the Rat Vibrissal System

Nadine Zweifel1, Ian Abraham1, Todd D. Murphy’, and Mina J.Z. Hartmann1

Northwestern University, Evanston, IL

TH-293

Locomotor Adaptation on Visual Feedback Stimulation on Gait Cadence

Kailey Nishimura1 and Seung-Jae Kim1

University of Minnesota-Twin Cities, Minneapolis, MN

TH-294

Spatiotemporal Growth Factor Release for Enhanced Peripheral Nerve Regeneration

Mo Ebrahimkhani1,2, Khalil Ramadi1,2, Kevin Spencer1,2, Canan Dagdeviren1,2, Pauline Zweifel1, and Sanchit Chirania1

1Mayo Clinic, Rochester, MN, 2Mayo Clinic, Phoenix, AZ

TH-295

Neurostem Cell Systems Biology & Bioinformatics

1Mayo Clinic, Rochester, MN

TH-296

Neural Engineering—Other/Non-Specified

1Mayo Clinic, Rochester, MN

TH-297

Transcranial Focused Ultrasound (tFUS) Multi-resolution Acoustic Simulation of Vibrissal System

1UCLA, Los Angeles, CA

TH-298

Three Dimensional Dynamic Model of the Rat Vibrissal System

Sanchit Chirania1 and Bruce Towel2

1Arizona State University, Tempe, AZ, 2Arizona State University, Riverside, CA

TH-299

Neuromodulation of Peripheral Nerve Excitability using Ultrasound

Sanchit Chirania1 and Bruce Towel2

1Arizona State University, Tempe, AZ, 2Arizona State University, Riverside, CA

TH-300

Electrically Conductive Composite Hydrogel Functionalized with Carbon Nanotubes for Nerve Regeneration

Kileng Liu1, Joseph Kim2, Wei Wu1, Alan Miller1, and Lichun Liu3

1Mayo Clinic, Rochester, MN, 2University of California, Los Angeles, CA

TH-301

Tracks: Stem Cell Engineering, Bioinformatics, Computational and Systems Biology

1Mayo Clinic, Rochester, MN

TH-302

Role of Cross-talk between PDGF and tgf-β Signaling in Controlling Mesenchymal Stem Cell Migration

Despena Ghioti1 and Michelle Dawson1

Brown University, Providence, RI

TH-303

Delivery and In Situ Differentiation of MSCs to the Trabecular Meshwork During Glaucoma

Eric Snider1, Yinglin Li1, Shawn Zeng1, Kristin Gao1, Richard Kim1, Kelley Reed1, and C. Ross Ehlers1

1Georgia Tech and Emory University, Atlanta, GA

TH-304

Alginite Encapsulated Mesenchymal Stromal Cells for Osteoarthritis Treatment

Seena Marri1, Barry1, Sarah S. Saeidi1, Rene S. Schloss1, and Martin L. Yarmush1

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

TH-305

Microfluidic Selection of Mesenchymal Stromal Cell Subpopulations During Culture Expansion Extends the Chondrogenic Potential In Vitro

Christopher Walthers1, Jesse Liang1, Alexander Lobstein1, Sharon Baumgartner-Gould1, Debashrita Bhattacherai1, Ruth Kopoyo1, Joseph Kim1, and Benjamin Caplan1

1Cornell University, Ithaca, NY

TH-306

The Effect of GATA6 Expression And Its Neighborhood Impact Factor On Regulating Cell Fate

Irene Li1, Jeremy Velazquez1, Shawn Wootten1, Samima Khan1, and Mo Ibrahimkhani11

1Arizona State University, Tempe, AZ, 2Arizona State University, Riverside, CA

TH-307

Tracks: Stem Cell Engineering, Tissue Engineering

1Arizona State University, Tempe, AZ

TH-308

Stem Cells in Tissue Engineering

1Mayo Clinic, Phoenix, AZ

TH-309

Mechanical Stimulation Promoting the Differentiation of Mesenchymal Stem Cells into Chondrocytes

Andrew Lopes1, Alex Eddington1, Nick Denney1, Theresa Buit-Art1, and Yewen Lu1

1Laurence-Lipsky1, Justin2, and Xia-kun3

1University of California, Los Angeles, CA

TH-310

Designing an Artificial Pancreas

Caden Duff1 and Alonso Cook1

1Brigham Young University, Provo, UT

TH-311

Peptide-Modified Hyaluronic Acid Hydrogels Promote Oligodendrocyte-Lineage Differentiation

Christopher Marks1, Ocsa Li1, Joshua Karam1, Rebecca Biemar1, and Stephanie Soddle1

1UCLA, Los Angeles, CA

TH-312

Self-Regulation of Neural Differentiation of Embryonic Stem Cells Mediated by Stromal Cell Signaling

Ramita Joshi1, James Buchanan1, Jun Li1, and Hossein Tavana1

1The University of Akron, Akron, OH, 2Kent State University, Kent, OH

TH-313

Glucose Metabolism during Chondrogenesis of Human Mesenchymal Stem Cells

Yu Zheng1, William Ponton1, Mostafa Motawall1, Arnold Caplan1, Jean Wilsterman1, and Yunchao Ma2

1Case Western Reserve University, Cleveland, OH

TH-314

Self-Regulation of Neural Differentiation of Embryonic Stem Cells Mediated by Stromal Cell Signaling

Ramita Joshi1, James Buchanan1, Jun Li1, and Hossein Tavana1

1The University of Akron, Akron, OH, 2Kent State University, Kent, OH

TH-315

Glucose Metabolism during Chondrogenesis of Human Mesenchymal Stem Cells

Yu Zheng1, William Ponton1, Mostafa Motawall1, Arnold Caplan1, Jean Wilsterman1, and Yunchao Ma2

1Case Western Reserve University, Cleveland, OH
TH-551 PO2-regulated Red Cell Mechanics Modulates Capillary Blood Flow in the Brain
Jenri Wan1 and Samantha Zhou1
1RT, Rochester, NY

TH-552 Multi-Joint Somatosensory Assessment in Patients Post Stroke
Li-Qun Zhang1, Da Xu1, Yiqing Ren1, Sang Hoon Kang2, and Yunji Lee2
1University of Maryland, Baltimore, MD, 2Northeastern University, Evanston, IL, 4NorthShore Hospital, Evanston, IL

TH-553 Nitric Oxide Releasing Bionanomatrix Coating for Brain Aneurysm Coils to Improve Healing
Patrick Heaey1, Maggy Collie1, Grant Alexander1, Briigma Brodl1, Robert Hengerstorfer1, Ramanathan Kadri2, David Skalmes1, and Ho-Work Jun1
1Endometriosis LLC, Birmingham, AL, 2University of Alabama at Birmingham, Birmingham, AL, 4Mayo Clinic, Rochester, MN

TH-554 Cracks in Basement Membrane-like Soft Substrate Trigger Epithelial Dissociation Without Mechanotransduction
Christopher Walter1, Joshua Davis1, and Amit Pathak1
1Washington University in St Louis, St Louis, MO

TH-555 Physical Confinement of Cells Induces Compression of the Focal Adhesion Protein Vinculin
Katheryn Rothenberg1, Andrew LaCroix1, Shane Niebert1, and Brenton Hoffman1
1Oklahoma University, Durham, NC

TH-556 Disrupted Surfaces of Porous Membranes Reduce Yap Nuclear Localization in Adipose-Derived Stem Cells
Stephanie Casillo1, Ana Peredo1, Spencer Perry1, Henry Chung1, and Thomas Gabbard1
1Rochester Institute of Technology, Rochester, NY

TH-557 Solid Surface Tension Directs Cellular Behaviors through Integrin-based Mechanotransduction
Zhui Cheng1, Carolyn Shurer1, Chong Yuan Hui1, and Matthew Paszek1
1Clemson University, Clemson, SC

TH-558 Force Driving Metastatic-like Dispersion and Malignant Transformation in Epithelial Monolayers
Sulin Zhang1, Yao Zhang1, Xuechen Shi1, and Tiankai Zhao1
1Penn State University, University Park, PA, 2Northeastern University, Evanston, IL

TH-559 The Cytotoxicity of Silica Nanoparticles on A549 Human Epithelial Cells under Biaxial Mechanical Stretch
Hamed Ghazizadeh1 and Shyam Aravamudhan1
1NC A&T State University, Greensboro, NC

TH-560 Effects of Tumor-Relevant Substrate Mechanics on Primary Pancreatic Cancer Cells
Janny Pioneers1, Wilson Fares1, Andres Rubakos1, and Chelsey Simmans1
1University of Florida, Gainesville, FL

TH-561 Size Effect on Random Motion of Colloidal Particles near a Substrate
Jyeon Hyun1, Jeonghun Kang1, Sangsoo Lee1, and Sehyung Lee1
1Korea University, Wonju, Korea, Republic of, 2Korea University, Wonju, Korea, Republic of

TH-562 System for the Application of Hydrostatic Pressure and Mechanical Strain to a Flexible Cell-Seeded Substrate
Justin Baca1, Jim Nigam1, and Cody Dunton1
1Clemson University, Clemson, SC

TH-563 NF2 Haploinsufficient Fibroblasts are Less Mechanically Sensitive than NF1 Haploinsufficient Fibroblasts or Healthy Fibroblasts
Rufeng Ma1, Ralf Kemkemer2,3, Dieter Kaufman2,3, and Kristen L. Mills1
1University of California, Berkeley, Berkeley, CA, 2Reutlingen University, Stuttgart, Germany, 3Max Planck Institute for Intelligent Systems, Stuttgart, Germany

TH-564 Development of a Novel RNA-Dependent Method for Tuning Gene Circuit Dynamics
Gi Zhang1, Sung Yuan1, and Xiao Wang1
1Arizona State University, Tempe, AZ

Jenri Wan1 and Samantha Zhou1
1RT, Rochester, NY

TH-566 All-trans Retinoic Acid Induces Serine-Phosphorylation of ADAM17 and Secreted Matrix Metalloproteinase-9 (VWF) Multimer and Fragments
Zeerab Jahed1, Uyen Vu1, Jared Hennen1, Joachim D. Mueller1, Gi W. Gant Luxton2, and Mohammad R.K. Mofrad1
1University of California Berkeley, Berkeley, CA, 2University of Minnesota, Minneapolis, MN

TH-567 Allosteric Effect of Haploinsufficient Fibroblasts or Healthy Fibroblasts
Rufeng Ma1, Ralf Kemkemer2,3, Dieter Kaufman2,3, and Kristen L. Mills1
1University of California, Berkeley, Berkeley, CA, 2Reutlingen University, Stuttgart, Germany, 3Max Planck Institute for Intelligent Systems, Stuttgart, Germany

TH-568 Nuclear Stress Dependent DNA Damage and Repair Factors Mis-localization after Lamin-A Depletion
Yuman Xiao1, Jerome Ianirot1, Charlotte Pfleger1, Lucas Smith1, and Dennis Duan1
1University of Pennsylvania, Philadelphia, PA

TH-569 A Novel Bio-chemo-mechanical Model of Tissue-engineered Vascular Graft Dynamics
Ramak Khosravi1, Jason Sazafro1, Cameron Best1, James Reinhart1, Yong Ung Lee1, Ta-Y. Giang Zeng1, Tooshiru Srinak1, Christopher Breuer1, and Jay Humphrey1
1Yale University, New Haven, CT, 2Nationwide Children’s Hospital, Columbus, OH

Tracks: Biomechanics, Cellular and Molecular Biomechanics.

TH-570 The Nucleus and Cytoskeleton in Mechanobiology
Hengameh Shams1 and Mohammad R. K. Mofrad1
1Purdue University, West Lafayette, IN

TH-571 The Cytotoxicity of Silica Nanoparticles on A549 Human Epithelial Cells under Biaxial Mechanical Stretch
Hamed Ghazizadeh1 and Shyam Aravamudhan1
1NC A&T State University, Greensboro, NC

TH-572 High-throughput Cell Phenotyping for Early Diagnosis Of Atherosclerosis
Jeong Ki Kim1 and Dong Hwee Kim1
1Korea University, Seoul, Korea, Republic of

TH-573 Development of a Novel RNA-Dependent Method for Tuning Gene Circuit Dynamics
Gi Zhang1, Sung Yuan1, and Xiao Wang1
1Arizona State University, Tempe, AZ

TH-574 A Novel Bio-chemo-mechanical Model of Tissue-engineered Vascular Graft Dynamics
Ramak Khosravi1, Jason Sazafro1, Cameron Best1, James Reinhart1, Yong Ung Lee1, Ta-Y. Giang Zeng1, Tooshiru Srinak1, Christopher Breuer1, and Jay Humphrey1
1Yale University, New Haven, CT, 2Nationwide Children’s Hospital, Columbus, OH

Tracks: Biomechanics, Cellular and Molecular Biomechanics.

TH-575 Allotrophic Effect of E-Actin Binding on Vinculin Activation
Hengameh Shams and Mohammad R. K. Mofrad1
1Purdue University, West Lafayette, IN

TH-576 Characterization of Cellular Behaviors Towards Cancer Progression Under Compression
Kenneth Kwon Yin Ht1, Yu En Huang1, Katharine Shar1, and Allen Lu1
1University of California, Irvine, Orange, CA

TH-577 Shear Force On Hutchinson - Gilford Progerin Cells Causes Nuclear Rupture And Cell Death
Krithnitha Bathula1, Lindsay Lefrata1, and Daniel Conway1
1Virginia Commonwealth University, Richmond, VA

TH-578 Unfolding Behavior of Von Willebrand Factor (VWF) Multimer and Fragments
Y Wang1, Wei Zhang1, Whitney Lai1, Xuanhong Cheng1, and K. Frank Zhang1
1Lehigh University, Bethlehem, PA

TH-579 Molecular Insights into the Activation of LINC Complex Protein SUN2
Zunhua Bai1,2, Uyen Vu1, Jared Hennen1, Joachim D. Mueller1, Gi W. Gant Luxton2, and Mohammad R.K. Mofrad1
1University of California Berkeley, Berkeley, CA, 2University of Minnesota, Minneapolis, MN

Tracks: Biomechanics, Bioinformatics, Computational and Systems Biology.

TH-580 The Versatile Micromechanical Model of Cell Migration
Abdel Rahman Hassani1, Thomas Ba1, and Tony Ciri1
1Purdue University, West Lafayette, IN

TH-581 Multi-scale Modeling of Thrombus Biomechanics in Aortic Dissections
Alessia Yavari1, and Benjamin Brown University, Providence, RI

TH-582 A Multi-scale Modeling Approach to Quantifying the Effects of Brain Geometry Changes in Chronic Traumatic Encephalopathy
Amini Bahcar1, Amy Dobbs1, Kyle Johnson1, Mark Horstemeyer1, and Rajkumar Prabhu1
1Mississippi State University, Mx, State, MI, 2University of Alabama at Birmingham, Birmingham, AL

TH-583 Biomechanical Investigation of the Influence of Increased Femoral Anteversion on the Success of Reduction of Severe Grades of Developmental Dysplasia of the Hip with the Pavlik Harness
Blake Loezinski1, Hessel Al1, Victor Huaymany1, Christopher Rose1, Brendan Jones1, Eduardo Diaz1, Fassal Modelagy1, Alan Kassab1, and Charles Proia2
1University of Central Florida, Orlando, FL, 2Embry-Riddle Aeronautical University, Daytona Beach, FL, 3ORLANDO Health, Orlando, FL

TH-584 Analysis of Foot Pressure Data to Model Human Walking Through a Doorway
Christopher Karci1, Antonio Valdevit1, and Arthur Ritter1
1Stevens Institute of Technology, Hoboken, NJ

TH-585 Reduction of Severe Grades of Developmental Dysplasia of the Hip with the Pavlik Harness
Blake Loezinski1, Hessel Al1, Victor Huaymany1, Christopher Rose1, Brendan Jones1, Eduardo Diaz1, Fassal Modelagy1, Alan Kassab1, and Charles Proia2
1University of Central Florida, Orlando, FL, 2Embry-Riddle Aeronautical University, Daytona Beach, FL, 3ORLANDO Health, Orlando, FL
POSTER SESSION—THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-585 A Phenomenological Model of the Spatio-Temporal Evolution of Embryonic Aortic Arch Microstructure
Guilherme Cunha de Lima, Lashkariana, Muhammad Jamil1, Eran Ermek, Selcuk Göktaş3, Ayşe İdi Çokak, Canan Karakaş, Merve Çakıl, and Kerem Pehkari
Kag University, Istanbul, Turkey

TH-586 Development of an Active Continuum Small Intestine Finite Element Model
In-seok Han1, Jiannan Kim, Soonmoon Jung, and Junghwa Hong
Korea Univ., Seoul, Korea, Republic of

TH-587 A Design of Trocar Valve Based on Finite Element Analysis for Improving Performance in Laparoscopic Surgery
Jae-won Kim1, Doo-ho Lim1, Wonhee Kim1, Youngsu Lee1, Soonmoon Jung1, Dongwook Yang1, Beomjeong Je1, Jeongwook Lee1, Cheonwo Lee1, and Junghwa Hong
Korea University, Gyeonggi, Korea, Republic of

TH-588 Identifying Injury Risk Regions within Soft Tissues of Dynamic Human Body Finite Element Models
James Gaewsky1, Derek Jones1, Ashley Weaver1, and Joel Stitzel1
University of Pennsylvania, Philadelphia, PA

TH-589 A Biomechanical Investigation of the Thoracic Kyphosis after Surgical Correction with A Spinal Implant
Jaylin Carter1, Timothy Michney1, and Guigen Zhang1
Clemson University, Clemson, SC, *Greenville Health System, Greenville, SC

TH-590 A Parallel Coupled Fluid Solid Modeling Tool with Palabos and LAMMPS based on the Immersed Boundary Method
Ju Tae, Taidi Sim2, and Scott Diamond1
University of Pennsylvania, Philadelphia, PA

TH-591 Constitutive Modeling and Fluid-Structure Interactions of Venous Tissue
Noyan Kas1 and Hoiwa-Ying Shao Hung2
North Carolina State University, Raleigh, NC

TH-592 Analysis of Thermical Characteristics of Normal and Tumoral Tissues During Hyperthermia Treatment
Saeed Tah1, Mahshoosheh Mahmoud1, Kajaljuma Chauhan1, Saurin Patel1, and Ryan Patel1
Clemson University, Erie, PA

TH-593 Imaging and Modelling the Motility of the Forestomach in Sheep
Stephen Wain1, John Cate1, Garry Waghorn2, and Vinod Suresh1
University of Auckland, Auckland, New Zealand, *Independent Scientist, Hamilton, New Zealand

TH-594 Multiscale Model Predicts Increasing Focal Adhesion Size with Decreasing Stiffness in Fibrous Matrices
Xuan Cao1, Shamin Barry1, Brendan Baker1, Yuan Lin1, Jason Buddick1, Christopher Chen1, and Vivek Shanker1
1University of Pennsylvania, Philadelphia, PA, 2University of Michigan, Ann Arbor, MI, “The university of Hong Kong, Hong Kong, Hong Kong

Tracks: Cardiovascular Engineering, Bioinformatics, Computational and Systems Biology
Computational Modeling in Cardiovascular Systems

TH-595 Database of Biophysical Parameters Of Mammalian Myocyte
André Petracconi1, Jorge Negrotti1, José Puglisi1,3, and Daniel Geromel1
1University of São Paulo, São Paulo, Brazil, 2University of the Republic of Korea, 3Instituto de Física, UNICAMP, Campinas, SP, Brazil

TH-596 Under-sized Mitral Annuloplasty Increases Left Ventricular Strain Regardless of Ring Type
Ashley Morgan1, Jonathan Robert1, Alexander Catelano1, and Jiwon Kim4
1UCSF East Bay General Surgery Residency, Oakland, CA, 2UCG-General Surgery Residency, Los Angeles, CA, “Northern California Institute for Research and Education, Redding, CA, 3Weil Cornell Medical College, New York, NY, “Massachusetts General Hospital, Boston, MA, 4San Francisco VA Medical Center, San Francisco, CA

TH-597 Increased CaMKII-activated NaL Alters Ion Homeostasis and CaMKII Regulation of Calcium Cycling in Atrial Cells: A Mathematical Modeling Study
Brice Omal1, Daniel Gratz1, and Thomas Hund1
1The Ohio State University, Columbus, OH

TH-598 Assessing the Effect of Risk Factors on Patients with Coarctation of the Aorta
Bradley Feiger1, John Gourley1, Jane Leepold1, and Amanda Randels1
1Duke University, Durham, NC, 2Harvard Medical School, Boston, MA

TH-599 In Silico Evaluation of Plaque and Arterial Boundaries for Patient Specific Modeling
Christopher Nobile1, Kent Carlton1, Dan Dragomir-Daescu1, 2Amit Lerman1, and Michael Young1
1Mayo Clinic, Rochester, MN

TH-600 Influence of Cell- and Tissue-level Factors on Sinoatrial Node Firing: a Mathematical Modeling Study Using the Expanded LongQT User Interface
Daniel Gratz1, Bice Onal1, and Thomas Hund1
1The Ohio State University, Columbus, OH

TH-601 Predicting Downstream Wall Shear Stress Profiles in Aortas Using Simulations and Overall Morphology
Daniele Foc1, Haimad Perad1, Austin Fergusson1, Ziyun Niu1, John Gourley1, and Amanda Randels1
1Duke University, Durham, NC, 2North Carolina School of Science and Mathematics, Durham, NC

TH-602 Simulated Impact of Arteriovenous Stenoses on Flow Dynamics in Upper Extremity Dialysis Fistulae
Daniele DeCos1, Kevin Anton1, Arjaan Patel1, and Joseph Tranqua11
1Bucknell University, Lewisburg, PA, 2Geisinger Medical Center, Danville, PA

TH-603 J Wave Identification Optimization Algorithm Based on Feature Selection and PCA
Dangso Li1, Huaying Niu1, Jimin Zhao1, Farming Wu1, and Hong Wang1
1Tianyuan University of Technology, Tianjin, China, People’s Republic of

TH-604 Automated Detection of J Wave using Analytic Time Frequency Flexible Wavelet Transform Applied on ECG Signals
Dangso Li1, Huaying Niu1, Jimin Zhao1, and Xinyu Liu1
1Tianyuan University of Technology, Tianjin, China, People’s Republic of

TH-605 An Automated J Wave Detection System Based on Feature Extraction
Dangso Li1, Xinyuan Zhao1, and Jie Zhou1
1Tianyuan University of Technology, Tianjin, China, People’s Republic of

TH-606 Left Ventricular End Systolic Pressure Volume Relationship (ESPV): Comparison between Real Time MRI and Conductance Catheter Measurement Methods
Dai Dai1, Yan Weng1, Henrik Haroldsen1, Kiyouji Tabaki1, Kimberley Spaulding1, Renat Rajjii1, Gilbert Soon1, Anusha Badshah1, Yue Zheng1, Jing Ling1, David Selonovic1, Liang Ge1, and Mark Ratcliffe1
1Veterans Affairs Medical Center, San Francisco, CA, 2San Francisco VA Medical Center, San Francisco, CA, 3University of California, San Francisco, San Francisco, CA, 4University of California, San Francisco and Veterans Affairs Medical Center, San Francisco, CA

TH-607 Optimal Blood Flow Characteristics in a Four-way Right-atrium Bypass Connector
Elizabeth Meck1, Jilin Jagen1, and Alexandra Ursu1
1Virginia Tech, Blacksburg, VA

TH-608 Computational Fluid Dynamics of 22 Weeks Old Human Fetal Heart with Tetralogy of Fallot
Hadi Wiputra1, Maysam Jaharnejad1, Guang Lin2,3, Sarah Merchant2, Sofiia Hea Lung Le1, Arjii Behera1, Carl Naulet4, Zain Matrar1, and Choon Hoe Yap1
1National University of Singapore, Singapore, Singapore

TH-609 A Closed Catheterized Circulation Model and Its Applications to Arteriovenous Fistulas and LVAD
Hui Jia2,3, Hamidreza Ghashi4, Adam Will5,6, and Seungik Bae4
1Michigan State University, East Lansing, MI, 2University of Texas Southwestern, Dallas, TX

TH-610 Effect of Gaussian Weight Function on Element Free Galerkin Cardiac Propagation Ian Sturdevant1 and Kwong Ng1
1New Mexico State University, Las Cruces, NM

TH-611 A Computational Thrombus Generation Model Applied to Aneurysms Treated with Shape Memory Polymer Foam and Metal Coils
John Nitsch1, Keith Pyrak-Novak1, Jonathon courtyard2, and Duncan McFarland1
1Lawrence Livermore National Laboratory, Livermore, CA, 2Texas A&M University, College Station, TX, 3Yasser Permanences 4Sacramento Medical Center, Sacramento, CA

TH-612 Multivariable Models for Aortic Pressure and Cardiac Output Constructed from Meta-Analysis
John Scaringi1, John Gounley1, and Ethan Kung1
1Clemson University, Clemson, SC

TH-613 Investigating the Effects of FGFL2B on Nav.1.5 Sodium Channel Dynamics
Karyn Mansfield1 and Jonathan Silver1
Washington University in St. Louis, St. Louis, MO

TH-614 Introducing New Criteria to Predict Aneurysm Growth
Mahaa Darabji1, Priya Nair1, John Gourley1, David Frakes1, Jonathan George1, and William DeCamp1
1University of Central Florida, Orlando, FL, 2Embry-Riddle Aeronautical University, Daytona Beach, FL, 3Armed Forces Hospital, Orlando, FL

TH-615 Computational Investigation of a Self-Powered Fontan Circulation
Rachel Guarn1, Marcus Nii1, Ray Prater1, Alan Kassab1, Eduardo Divo1, and William DeCamp1
1University of Central Florida, Orlando, FL, 2Embry-Riddle Aeronautical University, Daytona Beach, FL, 3Armed Forces Hospital, Orlando, FL
TH-615 Multiscale Computational Fluid Dynamics Assessment of Post-LVAD Implantation to Reduce Stroke
Ray Prather1, Marcus N1, Alain Kazadi1, Eduarda D1, and William DeCample1
University of Central Florida, Orlando, FL, 1Embry Riddle Aeronautical University, Daytona Beach, FL, 2Orlando Health, Orlando, FL

TH-617 Model Order Reduction for Finite Difference Modeling of Cardiac Propagation
Rayan Khan1 and Rasig Ng1
New Mexico State University, Las Cruces, NM

TH-618 Finite Difference Monodomain Modeling of Cardiac Tissue with Optimal Parameters
Rayan Khan1 and Rasig Ng1
New Mexico State University, Las Cruces, NM

TH-619 A Reduced-order Model for Wall Shear Stress in Patient-specific Cerebral Aneurysms Based on Snapshot Proper Orthogonal Decomposition
Suyue Han1, Clemens Schirmer2, and Yahya Modarres-Sadeghi1
1University of Massachusetts, Amherst, MA, 2Geisinger Health System, Danville, PA

TH-626 Computational-experimental Approach to Model Tumor Development as a Function of Glucose Level
Jianchen Yang1, John Virostko1, Angela Jarrett1, and Maureen Lynch1
1University of Texas at Austin, Austin, TX

TH-625 Multi-scale Modeling of Interactions Between Deformable Cancer Cell and the Vessel Wall
Mahsa Dalbagh1, John Gourley1, and Amanda Randles1
1Duke University, Durham, NC

TH-624 Agent-based Modeling to Predict the Effect of Electrochemotherapy on Tumors
Maryam Momennejad1 and Luke Acheson1
1Virginia Polytechnic Institute and State University, Blacksburg, VA

TH-627 Physical Mechanisms of Cancer in the Transition to Metastasis
Phillip Lee1 and Charles Wolgemuth2
1University of Michigan, Ann Arbor, MI, 2University of Arizona, Tucson, AZ

TH-628 Modeling of Extracellular Matrix Degradation in a Metastatic Tumor Microenvironment Using CompuCell3D
Yan Nguyen1, Anya Zornes1, and Ashlee Ford Versypt1
1Oakland State University, Stilwell, OK

Tracks: Cellular and Molecular Bioengineering, Bioinformatics, Computational and Systems Biology
Computational Modeling of Cell Motility and Proliferation
TH-629 Preliminary Validation of a Discrete Macrophage Model Using Published Experimental Results
Adam Bursch1, Cheryl Talbot1, and Natasha Molok-Vizcarra1
1University of Pittsburgh, Pittsburgh, PA, 2Carnegie Mellon, Pittsburgh, PA

TH-630 Analysis of the Spatio-Temporal Dynamics of Infection Using a Hybrid Imaris-MATLAB Platform
Danielle Sidney1 and Elisabetta M1
1University of Houston, Houston, TX

TH-631 Theory of Fluidic Control for Bacterial Sociality
Denis Vina1 and Garthi Uppal
1University of Notre Dame, Notre Dame, IN

TH-632 Engineering of a Synthetic Quadrastable Gene Network to Approach Waddington Landscape and Cell Fate Determination
Fujing Wu1, Riq Su1, Ying-Cheng Li1, and Xiao Wang1
1Arizona State University, Tempe, AZ

TH-623 A Multi-state Population Model of Chemoresistance and Phenotypic Dynamics of Breast Cancer Cells
Grant Howard1, Kaitlyn Johnson1, Thomas Yankellow2, and Amy Brock1
1The University of Texas at Austin, Austin, TX

TH-624 Computational-experimental Approach to Model Tumor Development as a Function of Glucose Level
Jianchen Yang1, John Virostko1, Angela Jarrett1, and Thomas Yankellow1
1University of Texas at Austin, Austin, TX

TH-633 Modeling Blood Vessel Development via Co-emergence of Endothelial and Smooth Muscle Cell Patterns
Jaw Zameer1, Ayy Genopatna1, and Kara McCluskey1
1University of California Merced, Merced, CA

TH-634 Agent-Based Computational Model of Salmonella Infection of Dendritic Cells
Lee Talman1, Denise Monack2, and Shawn Pearce-Cottler1
1University of Virginia, Charlottesville, VA, 2Stanford University, Stanford, CA

Track: Bioinformatics, Computational and Systems Biology
Single-Cell Measurements and Models
TH-635 A Dynamical Model of Gene Expression Exposes the Regulative Power of the Nuclear Nanoenvironment
Anne Shin1, Luay Almassalha1, Hiroaki Matsuda1, Rikky Nag1, Marina Causé-Matsuda1, Vadim Backman2, Roger Kem1, and Ita Safar1
1Northwestern University, Evanston, IL, 2Northwestern University, Chicago, IL, 3Institute of Technology, Cambridge, MA

TH-636 A Robust scRNA-seq Data Analysis Pipeline for Measuring Gene Expression Noise
Pamela Balachenko1, Philipp Foucart1, and Yuan Wang1
1School of Biological and Health Systems Engineering, Arizona State University, Tempe, AZ, 2School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe, AZ

TH-637 A Computational Analysis of Interactions of Oxidative Stress and Antioxidant System in Endothelial Dysfunction.
Sheewal Joshi1 and Mahendra Kavdia1
1Wayne State University, Detroit, MI

TH-638 Induced Transmembrane Voltage of Stem Cells with Realistic 3D Morphologies
Suman Badly1, Ahmed M. Hassan1, Beatrix Ram1, Jack F. Douglas2, and Edward J. Garboczi3
1University of Michigan, Ann Arbor, MI, 2National Institute of Standards and Technology, Boulder, CO

TH-639 Model-Driven Design of Single-Cell Experiments
Zachary Fox1 and Brian Munsky1
1University of Alabama at Birmingham, Birmingham, AL

TH-640 Differences in Immune Cell Signaling Between Treatment-Naive polyJIA Patients and Matched Controls
Alison Trotn1 and Anthony French1
1Washington University in St. Louis, St. Louis, MO

TH-641 Computational Simulations of intermittent and Repeated Delivery of TRAIL Apoptosis Signal to Neutralize Tumor Cells in the Bloodstream
Emily Lederman1 and Michael King1
1Cornell University, Ithaca, NY, 2Vanderbilt University, Nashville, TN

TH-642 Inflammatory Microenvironment Alterations of Paracrine Signaling Dynamics in Antigen Presenting Cells
Joseph Desler1, Liam Casey1, and Lonnie Shal1
1University of Michigan, Ann Arbor, MI

TH-643 Multiscale Modeling of Dynamic Interactions between Caeleticsin and a Model Membrane Microdomain
Lingyu Wang1, Ioanne Murphy-Ullrich1, Jinyi Zhang1, and Yuhua Song1
1The University of Alabama at Birmingham, Birmingham, AL

TH-644 The Translational Problem: Machine Learning Models of Mouse Molecular Data Predict Human Inflammatory Pathology Phenotypes
Douglas South1 and Douglas Lauffenburger1
1MIT, Cambridge, MA

TH-645 Gene Regulatory Network Reconstruction of Fibroblast with Biophysical and Biochemical Cues
Iryna Lys1, Joseph Desler1, Lonnie Shal1, and Daniel Baird1
1University of Michigan, Ann Arbor, MI

TH-646 Molecular Basis for the Link between Macular Degeneration and a Single Nucleotide Polymorphism
Somen Baidya1, Ahmed M. Hassan1, Beatriz Pazmino2, Zachary Fox1, and Brian Munsky1
1Wayne State University, Detroit, MI, 2University of Houston, Houston, TX

Track: Bioinformatics, Computational and Systems Biology
Omnis Data and Analysis
TH-647 Track: Bioinformatics, Computational and Systems Biology

TH-649 Track: Bioinformatics, Computational and Systems Biology

TH-650 Track: Bioinformatics, Computational and Systems Biology

TH-651 Track: Bioinformatics, Computational and Systems Biology

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TH-662 Track: Bioinformatics, Computational and Systems Biology

TH-663 Track: Bioinformatics, Computational and Systems Biology

TH-664 Track: Bioinformatics, Computational and Systems Biology

TH-665 Track: Bioinformatics, Computational and Systems Biology

TH-666 Track: Bioinformatics, Computational and Systems Biology
Sriram Nekamegham1, Kai Cheng1, and Yusen Zhou1
1University of Texas at Austin, Austin, TX

TH-648 Volatile Metabolites as Biomarkers for Characterizing Pyocyanin Production and Mucoidy in Pseudomonas aeruginosa
Trenton O. Davis1 and Heather D. Bean1
1Arizona State University, Tempe, AZ

Troy Vargason1, Daniel P. Hoxmon1, Sue Krugel1, James Adams2, and Juergen Hahn1
1Bentleseer Polytechnic Institute, Troy, NY, 2Arizona State University, Tempe, AZ

TH-650 A Comparison on Bio-mathematical Models for Cognitive Performance under Fatigue
Harry Peng1, Fethi Bouak1, Wenbi Wang1, Renee Chow1, and Martin Yarmush1
1University of Virginia, Charlottesville, VA

TH-651 Developing a Retrieval Method for a Case-Based Reasoning System for Predicting Appearance after Breast Reconstruction
Jonathan Ehrman1, Kevin Cyr1, Katrina Leaptrot1
1Arizona State University, Tempe, AZ

TH-652 An In Vitro Approach to Identify Skin Sensitizers With Feature Selection and Classification Models
Lintong Shi1, Talia Greenstein1, Serom Lee1, Rene Schloss1, and Martin Yarmush1
1Arizona State University, Tempe, AZ

TH-653 Quality Control of mRNAs at the Entry of the Nuclear Pore Complex
Mohammad Esahayyoun2 and Mohammad Mohid1
1University of California, Berkeley, Berkeley, CA

TH-654 Gut Microbiome as Biomarker for Neuramodulation Therapy of Inflammatory Bowel Diseases
Ziyang Gao1
1Duke University, Durham, NC

TH-655 Processing Oscillatory Signals by Incoherent Feedforward Loops
Carolyn Zhang1, Ryan Tien1, Celin Wu1, and Lingchong You1
1Duke University, Durham, NC

TH-656 Fine Tuning of Population Ratio in a Two-strain Synthetic Microbial Consortia
Xingyan Chen1 and Xiao Wang1
1Arizona State University, Tempe, AZ

TH-657 Three-Course Sequence: An Approach to Launching Innovative Medical Devices
Andrew Jacobs1, Duncan McNally1, and Olivia Ciasd1
1University of Portland, Portland, OR

TH-658 ThinkTank: A Hyperdisciplinary Approach to Team-Based Innovation
Jonathan Elmhurst1, Kevin Cp1, Katrina Leaptrot1, Sean Bedingfield1, Alyssa Lukin1, Stacy Shorro1, Corin McAlive1, and Chelsey Maric1
1Vanderbilt University, Nashville, TN

TH-659 Initial Experience with Active Learning to Inspire The Entrepreneurial Mindset in a Junior Level Biomedical Engineering Product Design Class
Michael VanAuker1
1Arizona State University, Tempe, AZ

TH-660 A Template for Multi-Disciplinary Team-Based Problem Solving, Design, and Assessment: Application in Biomedical Engineering
Shiyu Zustak1, Scott Self1, and Glenn Gaudette1
1Saint Louis University, St Louis, MO, 2Arizona State University, Tempe, AZ

TH-661 Learning Catalytics: Real-time Assessment and Peer-learning in Interdisciplinary Engineering Course
Angela Jones1
1University of Maryland, College Park, College Park, MD

TH-662 Flipping Biomolecules for Enhanced Learning and Course Sustainability
Kevin Buno1, Evan Phillips1, and Sherry Vyslt-Kharbin1
1Purdue University, West Lafayette, IN

TH-663 Continuous ABET Assessments Made Easier
William G. Smith1, and Brandi DeMont1
1University of Virginia, Charlottesville, VA

TH-664 Flipping Biomolecules for Enhanced Learning and Course Sustainability
Kevin Buno1, Evan Phillips1, and Sherry Vyslt-Kharbin1
1Purdue University, West Lafayette, IN

TH-665 Continuous ABET Assessments Made Easier
Eileen Haase1 and Cathy Janus1
1Johns Hopkins University, Baltimore, MD

TH-666 Continuous Improvement in Instruction in Responsible Conduct of Research
Jula Sane1, Mia Markey1, and H. Grady Rylander2
1University of Wisconsin-Madison, Madison, WI, 2The University of Texas at Austin, Austin, TX

TH-667 Improvements on a Communication Intervention as a Part of a Summer Research Experiences for Undergraduates (REU) Program
Margo Casalino1, Courtney Skidmore1, Stephanie Young1, Laura Sugger1, Mia Markey1, and Brandi DeMont1
1University of Texas at Austin, Austin, TX

TH-668 A Comparison of Summative and Formative Assessments in Promoting Learning of Physiology by Biomedical Engineering Students
William G. Smith1, and Brandi DeMont1
1University of Virginia, Charlottesville, VA

TH-669 Research Animal Retirement Foundation
Rachael McAndrew1 and Jennifer Lyn Gregg VanGilder2
1Arizona State University, Tempe, AZ, 2Arizona State University, Tempe, AZ

TH-670 Unexpected Positive Consequence of a Nationwide Program that Gives Economic Support for Low Income High Quality Students in Colombia
Vivian Talero1, Juan M Cardona1, and Juan Carlos Briceno1
1Universidad de los Andes, Bogota, Colombia

TH-671 Developing an In Vitro Approach to Identify Skin Sensitizers With Feature Selection and Classification Models
Lintong Shi1, Talia Greenstein1, Serom Lee1, Rene Schloss1, and Martin Yarmush1
1Arizona State University, Tempe, AZ

TH-672 An In Vitro Approach to Identify Skin Sensitizers With Feature Selection and Classification Models
Lintong Shi1, Talia Greenstein1, Serom Lee1, Rene Schloss1, and Martin Yarmush1
1Arizona State University, Tempe, AZ

TH-673 Quality Control of mRNAs at the Entry of the Nuclear Pore Complex
Mohammad Esahayyoun2 and Mohammad Mohid1
1University of California, Berkeley, Berkeley, CA
FRIDAY’S SCHEDULE HIGHLIGHTS

PLATFORM SESSIONS—FRIDAY—1—8:00 AM—9:30 AM

8:00 am—9:30 am | Convention Center
See pages 149–157

Special Session
8:00 am—9:30 am | Room 122C
Career Options for the BME Graduate Students and Postdoctoral Fellows

Industry Session
8:00 am—10:00 am | Room 125AB
Tech Transfer Innovation Challenge

Exhibit Hall Open
9:30 am—5:00 pm | 300 Level Exhibition Hall

Poster Session
9:30 am—5:00 pm | 300 Level Exhibition Hall

Poster Viewing with Authors & Refreshment Break
9:30 am—10:15 am | 300 Level Exhibition Hall

Plenary Session
10:15 am–11:15 am | North Ballroom BCD
Wallace H. Coulter Award for Healthcare Innovation Lecture
Bonnie Anderson

Women in BME Luncheon
11:30 am–1:00 pm | West Ballroom
See page 144

Industry Session
1:00 pm–3:00 pm | Room 125AB
Clinical Innovators Spotlight

Don’t forget to turn your BMES BASH ticket in for a wristband at the information or registration booths before Friday afternoon

PLATFORM SESSIONS—FRIDAY—2—9:30 AM—11:00 AM

9:30 am—11:00 am | Convention Center
See pages 158–166

Special Session
9:30 am—11:00 am | Room 122C
Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings

Special Session
9:30 am–11:00 am | Room 122A
International Symposium on Biomedical Engineering

Special Session
9:30 am–11:00 am | Room 122B
BMES-NSF Special Session on Research in Biomedical Engineering and Grant Writing

Poster Viewing with Authors & Refreshment Break
9:30 am–11:00 am | 300 Level Exhibition Hall

Industry Session
9:30 am–11:00 am | Room 125AB
Investment Pitches and Partnering

PLATFORM SESSIONS—FRIDAY—3—11:00 AM–1:15 PM

11:00 am–1:15 pm | Convention Center
See pages 167–175

Special Session
11:00 am–1:15 pm | Room 122A
BMES-NSF Special Session on Biomedical Engineering and Grant Writing

Plenary Session
11:00 am–1:15 pm | Room 122B
Symposium in honor of Dr. and Mrs. Athanasiou

BMES Dessert Bash
8:30 pm–11:00 pm | Arizona Science Center

FRIDAY’S SCHEDULE HIGHLIGHTS

PLATFORM SESSIONS—FRIDAY’S SCHEDULE HIGHLIGHTS

BMES 2017 | Phoenix

Clinical Innovators Spotlight
Industry Session
See page 144

11:30 am—1:00 pm
Women in BME Luncheon

Industry Session
1:00 pm–3:00 pm
Clinical Innovators Spotlight

Don’t forget to turn your BMES BASH ticket in for a wristband at the information or registration booths before Friday afternoon

OP-Fri-1.1
Room 224A

OP-Fri-1.2
Room 224B

BMES 2017 | Phoenix
OP- Fri-1-3
Room 229A
Tracks: Biomechanics, Cellular and Molecular Biengineering
The Nucleus and Cytoskeleton in Mechanobiology
Chairs: Amit Pathak, Kimberly Stroka
8:00 am
Differential SUN Protein Oligomerization Reveals Novel Functional Insights
Zainab Jawed1, Darya Paday1, Uyen Vu1, Jareed Hennes1, Ehuan Asgar1, Joachim D. Mueller1, G.W. Gant Luston2, and Mohammad R.K. Mofrad1
1University of California, Berkeley, Berkeley, CA, 2University of Minnesota, Minneapolis, MN
8:15 am
Role of Nuclear Factors in Topography of Stem Cell Differentiation
Kelly Hotchkiss1, Paul Arsenevic1, Cristiano Corriero-Orita1, Claire Baggart2, Daniel Conway3, and Rene Oliveira-Nunes4,5
1Virginia Commonwealth University, Richmond, VA
8:30 am
Lamin Mutations Responsible for Muscular Dystrophy Cause Progressive Nuclear Damage in Muscle Fibers
Ashley Kaminski1, Gregory Fedorchak1, Tyler Kirby1, Phillip Ismael1, and Jan Lammersing1
1Cornell University, Ithaca, NY
8:45 am
The Role of Cell Geometry and Extracellular Matrix Ligands in Vinculin Loading and Actin Architecture
Karen Xu1, Andrew LaCroix1, and Brenton Hoffman1
1Duke University, Durham, NC
9:00 am
Repair Factor Depletion and Genome Variation in Cancer Cells after Pore Inversion
Jerome Tien1, Yuming Xu1, Charlotte R. Pfeifer1, Jungsil Kim1, Kacey Lentz1, Hiromi Yanagisawa2, and Jungsil Kim1
1University of Pennsylvania, Philadelphia, PA
9:15 am
Proteomic Responses to Mechanical Perturbation in Drosophila
Andrian Z. Shorr1, Rachel Willen1,2, Tiffany Lau1, Lina Gonzalez3, and Donny Hanjaya-Putra1,2
1University of Pennsylvania, Philadelphia, PA, 2University of Minnesota, Minneapolis, MN
9:30 am
Isothermal DNA Preparation and Amplification
Chairs: Karen May-Newman, Manuel Rausch
8:00 am
Changes in Biaxial Mechanical Properties Precede Ascending Aortic Aneurysm Formation in Mice
Jungki Lee1, Kaye Lenz1, Hirohito Tanigawara1, and Jessica Wagner1
1Washington University, St. Louis, MO, 2University of Tsukuba, Tsukuba, Japan
8:15 am
Intramural Shear in Ascending Thoracic Aortic Aneurysm
Christopher Konzen1, Rohit Dhume1, Ryan Mahutga1, and Victorianne1
1University of Minnesota, Minneapolis, MN
8:45 am
Impact of Prior High-Altitude Pulmonary Edema on Pulmonary Hemodynamics
Ashley Mulchrone1, Heather Shumaker1, Marlowe Eldridge1, and Naomi Cheson1
1University of Wisconsin-Madison, Madison, WI
9:00 am
A Unified Approach for Reconstructing Left Ventricular Kinematics from Noninvasive Imaging Data
Brian Heng1, Timothy Swomey1, and Michael Mouzon1
1University of Arizona, Tucson, AZ, 2University of Nebraska Medical Center, Omaha, NE
9:15 am
Predicting the Uniaxial Failure Properties Of The Aortic Media With An Embedded Fiber Finite Element Method
James Thomas, Julie Phillips3, Thomas Gleason2, David Vorp1, and Spandan Maiti1
3University of Pittsburgh, Pittsburgh, PA
OP- Fri-1-4
Room 229B
Tracks: Biomechanics, Cellular and Molecular Biengineering
Cardiovascular Biomechanics
Chairs: Karen May-Newman, Manuel Rausch
8:00 am
Changes in Biaxial Mechanical Properties Precede Ascending Aortic Aneurysm Formation in Mice
Jungki Lee1, Kaye Lenz1, Hirohito Tanigawara1, and Jessica Wagner1
1Washington University, St. Louis, MO, 2University of Tsukuba, Tsukuba, Japan
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1University of Arizona, Tucson, AZ, 2University of Nebraska Medical Center, Omaha, NE
9:15 am
Predicting the Uniaxial Failure Properties Of The Aortic Media With An Embedded Fiber Finite Element Method
James Thomas, Julie Phillips3, Thomas Gleason2, David Vorp1, and Spandan Maiti1
3University of Pittsburgh, Pittsburgh, PA
OP- Fri-1-5
Room 221A
Track: Cardiovascular Engineering
Thrombosis and Hemostasis
Chairs: Elizabeth Rahbar, Juan Jimenez
8:00 am
Assessment of Platelet Dense Granule Trafficking, P2Y1/2/P2Y12, and Protease-activated Receptors Interactions in Neonates Utilizing Whole Blood, Small Volume Assays
Ash Ngai1, Annamaria Mitroglou1, Anne Richkus1, Sandra Baker1, Ayasha Kheder1, Joseph Awan1, Susan Lattimore1, Michael Recht1, Kristina Haid1, Katie Nel1, and Owen McCarty1
1Oregon Health & Science University, Portland, OR
8:15 am
An Inferior Vena Cava Ligation Model to Study Thrombin Generation Kinetics under Flow
Wenxian Zhang1, Andrew Dimatta1, Andrew Kumpfbeck1, Stephen Leung1, Marin Fortandier1, Bryan Muesmacher1, David Rubenstein1, and Mary Frame1
1Stony Brook University, Stony Brook, NY
8:30 am
Pathway Analysis Reveals a p38 MAPK-APK2-RTN4/Nogo Axis Regulating Intracellular Calcium Dynamics in Procoagulant Platelets
Owen Gun1, Joseph Aslan1, Ogün Babu1, Ariana Buchanan1, Ash Ngo1, Jiaying Pang1, Rachel Rigg1, Annamaria Mitroglou1, Larry David1, and Erem Uzun1
1Oregon Health & Science University, Portland, OR
8:45 am
A Novel Targeted Dual-Pathway Anti-thrombotic Therapy Reduces Arterial and Venous Thrombosis without Increased Bleeding Risk
Donny Hanjaya-Putra1, Carolyn Haller1, Xiaowei Wang3, Sara Kaminsky1, and Anh Ngo1
1University of Minnesota, Minneapolis, MN
9:00 am
Decreased Expression of Platelet Glycoprotein Ibα and Glycoprotein VI Receptors and Diminished Hemostatic Capacity In Heart Failure Patients
Zhenfeng Chen1, Tieluo Li1, Bartley Griffith1,2,3, and Zhongjun Wu1,2
1University of Illinois at Urbana-Champaign, Urbana, IL
9:15 am
Soluble Fibrin Causes an Acquired Platelet GPVI-Deficiency: Implications for Coagulopathy
Mia Yen1, Lee Bradley1, Christopher Venn1, and Scott Diamond1
1University of Pennsylvania, Philadelphia, PA
OP- Fri-1-6
Room 221B
Track: Nano and Micro Technologies, Cellular and Molecular Biengineering
Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)
Chairs: Chang-Di Yang, Jacqueline Linnes
8:00 am
A Non-invasive Single-cell Transcriptomic and Metabolic Analysis Microfluidic Array
Xuan Li1, Yingjie Tao1, Ning Ma1, Do-Hyun Lee1, H. Kumar Wickramasinghe1, Michelle Dignam1, and Abraham Lee1
1University of California, Irvine, Irvine, CA
8:15 am
Macrogenomic Engineering: Modulating Chromatin Folding for Increased Chemotherapeutic Efficacy
Jonathan S. Minden1, and Philip R. LeDuc1
1University of Illinois at Urbana-Champaign, Urbana, IL
8:30 am
Multiplexed Quantification of Angiogenic Receptors via qFlow Cytometry and Qdot-nanosensors
Si (Dexie) Chen1 and Fo. Imoukhuede1
1University of Illinois at Urbana-Champaign, Urbana, IL
8:45 am
Simultaneous Detection of Zika, Dengue, and Chikungunya Viral Targets Directly From Whole Blood
Akil Omobi1, Anurup Gangal1, Hojjang Yu1, Gregory Dembowski1, Weil Chen2, Fu Sun1, Abdullah Bhuyai1, Brian Cunningham1, and Rashid Bashir1
1The University of Illinois at Urbana-Champaign, Urbana, IL
9:00 am
Sequence-Specific Purification of Urine Cell-Free DNA for Tuberculosis Diagnosis
Amy Oravecz1, Nudattra Panpradit1, David Horn1, and Barry Lutz1
1University of Washington, Seattle, WA, 2Harborview Medical Center, Seattle, WA
9:15 am
Detection of e. coli O157:H7 via a One-pot, Isothermal DNA Preparation and Amplification Platform
Sharine Cheung1, Matthew Yew1, Nguyen Le1, Benjamin Wu1, and Daniel Kamel1
1University of California at Los Angeles, Los Angeles, CA
OP-Fri-2-1
**Room 224A**

**Track: Biomaterials**

**Biomaterials for Regenerative Medicine II**

**Chairs:** Ariela Shobran, Rene Olivares-Narvaez

1:15 pm

**Platform Session 2**

**1:15 pm**

**Leukocytes as Mobile Carriers of Anti-Cancer Therapeutics via Bispecific Liposomes**

Zhenjiang Zhang, Dai Li, Nerymar Ortiz-Otero, Thong Cao, and Michael King

**1:30 pm**

**Connectomics with Chimeric Transmembrane Proteins for Cell-Specific Targeting and Drug Delivery**

Amanda Marianthever, Arvind Gadok, Chi Zhao, and Jeanne Stachowski

**1:45 pm**

**Tuning Sequential Delivery of Multiple Biological Factors from a Drug Delivery System**

Jumana Alhamdi, Maria Hurley, Gloria Gronowicz, and Lisa Kuhn

**2:00 pm**

**Sustained Release of Bioactive VEGF-C and VEGF-D from Alginate Hydrogels for Therapeutic Lymphangiogenic Applications**

Kevin Campbell, Austin Hadley, David Kako, and Eduardo Silva

**2:15 pm**

**Plant-inspired Biomimetic and Estrogenic Nanofiber as a Regenerative Wound Dressing**

Sangki Joo, Chihoong Lee, Inyong Oh, Jin Seok Kang, Hyun Kim, and Kyeong Seok Roh

**2:30 pm**

**Plant-inspired Biomimetic and Estrogenic Nanofiber as a Regenerative Wound Dressing**

Changsoo Jeon, Hyun Kim, and Kyeong Seok Roh

**2:45 pm**

**Biomaterials Track sponsored by:**

**OP-Fri-2-2**

**Room 224B**

**Tracks: Biomaterials, Drug Delivery & Intelligent Systems**

**Drug Delivery Biomaterials II**

**Chairs:** Shinya Zasakui, Srinivasan Kadambi

1:15 pm

**Leukocytes as Mobile Carriers of Anti-Cancer Therapeutics via Bispecific Liposomes**

Zhenjiang Zhang, Dai Li, Nerymar Ortiz-Otero, Thong Cao, and Michael King

**1:30 pm**

**Connectomics with Chimeric Transmembrane Proteins for Cell-Specific Targeting and Drug Delivery**

Amanda Marianthever, Arvind Gadok, Chi Zhao, and Jeanne Stachowski

**1:45 pm**

**Tuning Sequential Delivery of Multiple Biological Factors from a Drug Delivery System**

Jumana Alhamdi, Maria Hurley, Gloria Gronowicz, and Lisa Kuhn

**2:00 pm**

**The Therapeutic Effect of Epigenetic Drug-Encapsulating Lipid Nanomulsions for Triple Negative Breast Cancer Cells**

Bumjin Kim and Debra Auguste

**2:15 pm**

**Hydrogels for Biomimetic Signal Transduction and Cell Regulation**

Yang Wang and Jiqing Lai

**2:30 pm**

**Raising the BAR: Functional and Mechanistic Evaluation of Multivalent BAR Nanoparticles to Inhibit Oral Biofilms**

Paridhi Kalai, Ankita Jani, Donald Demuth, and Jill Steinback-Rankings

**Biomaterials Track sponsored by:**

ACS Biomaterials Sciences & Engineering
Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

1:30 pm
High Throughput Microfluidic Technologies for the Isolation and Single Cell Multiplex Gene Expression Analysis of Cultured Tumor Cells
Suretha Nagraj1, University of Michigan, Ann Arbor, MI

1:45 pm
Self-separable Hollow-Microspheres Coated with Enzymatically Degradable Nanofilm For Rapid Cell Isolation And Recovery
Ziyu Ding1, Carolina Ahrens2, Yu Dani1, Zhenya Dong1, HyunTaek Lim3, and Wei Li1
Texas Tech University, Lubbock, TX

2:00 pm
Microvesicle Induction by the Metabolically-Regulated Glycolalxy
LaCierra Monet Roberts1, Carolyn Shure1, Michael Holland1, Thas Enoki1, and Matthew Fazekas1
Cornell University, Ithaca, NY

2:15 pm
Whole Blood Preservation for Microfluidic Rare-cell diagnostics and Transcriptomics
Keith Wong1, Shannon Tesser1, David Miyamoto2, Kathleen Miller1, Lauren Bookstaver1, Thomas Carey1, Ciao Stennard1, Rebecca Sandlin1, Vishal Thapar1, Lexa Sequist1, David Ting1, Daniel Haber1, Shreyas Mahawar1, Shannan Strop2, and Mehmet Toner1
Massachusetts General Hospital, Harvard Medical School, Boston, MA. 1Howard Hughes Medical Institute, Chevy Chase, MD

2:30 pm
An Intravascular Magnetic wire for High-Throughput In Vivo Enrichment Of Rare Circulating Cancer Biomarkers
Chaphe Verma1, Amir Alpoor1, Jessica Ge2, Yamil Saenz1, Yue Guo1, Seung-seok Park1, Yosikazu Mitasuka1, Michael Bachmann1, Chiu Chun Ooi1, Jennifer Lyons1, Kerstin Mueller1, Hamad Arami1, Alfredo Green1, Simon Wang1, and Simon Gamble1
Stanford University, Stanford, CA

2:45 pm
OP-FR–2-6
Room 221B

Tracks: Nano and Micro Technologies, Translational Biomedical Engineering

Micro/Nano Tools in Medicine

Chairs: Jung Joo Lee, Gun Wang

1:15 pm
Novel Nanoparticle Carriers capable of Spontaneous, Linker-free Multifunctionalization
Paweena Michael1, Miguel Santoro1, Elwyn C. Cepeda1, Alex H.P. Chen1, Jucksun Hong2, Bob S.L. Lee1, Richard Tan1, Min Huyghe1, Claire Hayes1,11, Anna Waterhouse1, Marcela M.M. Bilkis1, and Steven G. Wise2
University of Sydney, Sydney, Australia, 1The Heart Research Institute, Sydney, Australia, 2Panum Institute, Denmark, Denmark

1:30 pm
Deformability-based Separation of Pancreatic Islets From Exocrine Acinar Tissue For Transplant Applications
Walter Verhaeg1, Linda Langman1, Molly Kelly-Gossel1, Kenneth Bramley1, Shayan Peerio-Cantlier1, and Nathan Saucedo1
University of Virginia, Charlotteville, VA

1:45 pm
A Microfluidic Biopsy Tissue Array for Clinical Screening Of Pancreatic Cancer
A. Ahmed1, Chenghui Li1, Helen Kang1, Chun-Wei Chi1, Xuexuan Jiang1, and Sheng Wang1
City University of New York, City College, New York, NY. 1Memorial Sloan Kettering Cancer Center, New York, NY

2:00 pm
An In Vivo Nanoroper for the Detection of Lysosomal Storage Disorders
Thomas Galasso1, Pratik Jena1, Jani Shah1, Daniel Rosbury1, and Daniel Heller1
Weill Cornell Medicine, New York, NY. 1Memorial Sloan Kettering Cancer Center, New York, NY. 1University of Rhode Island, Kingston, RI

2:15 pm
Rapid Detection of Exosomal RNAs on A Micro-Mixer Device for Lung Cancer Early Detection
Yuchun Yang1, Rongrong Sun1, Lei Li2, and Yun Wu3
1State University of New York at Buffalo, Buffalo, NY. 1University at Buffalo, Buffalo, NY. 2Washington State University, Pullman, WA

2:30 pm
Photothermal Ablation with Plasmon Resonant Liposomes
Jeffrey Watson1, and Marek Romanowski1
University of Arizona, Tucson, AZ

2:45 pm
OP-FR–2-7
Room 221C

Track: Tissue Engineering

Printing and Patterning in Tissue Engineering

Chairs: Shue Wang1, Kelly Stevens

1:15 pm
Characterization of Vascular Tissue Functionality in Microgravity using 3D Bioprinted Tissues
Lokitha Samesakkii, Cameron H. Luna, Kenna Kwan1, Amanda Oliveira1, Kresh Mira1, and Kona Mira1
Florida Institute of Technology, Melbourne, FL

1:30 pm
Bioprinting Exosome Microenvironments
Sagipkalantha Vernet1, Theresa Whitehead1, Lee Winter1, and Phil Campbell1
Carnegie Mellon University, Pittsburgh, PA

1:45 pm
Biomaterial Extrusion and Organization For In Situ Skin Cell Deposition
Richard Cheng1, Navid Halmi1, Saed Amin-Nik1, Marc Jeschke1, and Axel Guenther1
1University of Toronto, Toronto, ON, Canada, 2Sunnybrook Research Institute, Toronto, ON, Canada

2:00 pm
Rapid Stereolithography Printing of Human-scale Vascularized Tissue
Namitha Anandakrishnan1, Hang Ye1, Chi Zou5, and Ruogang Zhao1
1University of Buffalo, Buffalo, NY

2:15 pm
In Situ Polymerizing Collagen for the Development of 3D Printed Tissue Engineering Scaffolds
Chra Glover1, Ferra Pfeffer1, Bret Uery1, Dave Grant1, and Sheila Grant1
1University of Missouri, Columbia, MO

2:30 pm
Open Source, Multi-Printhead, Modular Bioprinting System
Eden Shen1 and Kara McClosey1
1University of California, Merced, Merced, CA

OP-FR–2-8
Room 222A

Tracks: Tissue Engineering, Nano and Micro Technologies

Organ-on-a-Chip Models for Drug Discovery and the Study of Disease III

Chairs: Chandira Kothapalli, Zhen Ma

1:15 pm
Optogenetic Cardiac Muscular Thin Film assay for Predictive Proarrhythmic Risk Assessment
Shan Li1, Priel Young Lew1, Sean L. Kim1, Patrick H. Campbell1, Francesco S. Pasqualini1, and Kevin K. Parker1
1University of Cambridge, Cambridge, UK

1:30 pm
Myocardium-on-chip Derived from Characterized Human iPSCs with Capillary-like flow for Functional Modeling and the Study of Disease III

Chairs: Corey Bishop, Ana Jaklenec

1:15 pm
Using Synthetic Biology to Engineer Inducible Hybrid Biomagnetic Materials
Michael Behrens1, Felicia Scott1, and Warren Ruder1
University of Pittsburgh, Pittsburgh, PA. ‘Virginia Tech, Blacksburg, VA

1:30 pm
High-throughput In Vivo Evaluation of Nanobiomaterial-mediated Tissue Targeting of Polymeric Gene Delivery Vectors Using BARCODES
Jiyong Kim1, Camilla Zamboni1, Hannah Vaughan1, David Wilson1, and Jordan Green1
Department of Biomedical Engineering, Institute for NanoBioTech – Molecular and Cellular Engineering, Johns Hopkins University School of Medicine, Baltimore, MD

1:45 pm
A Novel Synthetic Toehold Switch for microRNA Detection in Mammalian Cells
Shue Wang1, Nick Emery1, and Allen Liu1
1University of Michigan, Ann Arbor, MI

2:00 pm
Intracellular Probes for Detection of Polymerase Activity in Live Cells
Luk Ting Chiu1, and Teng-Huan Chen1
‘City University of Hong Kong, Hong Kong, Hong Kong

2:15 pm
Development of a Rapid Diagnostic for Nasal Neuroepitheliopathy
Courtney Dublitz1, David Carpenter2, Mitchell Shub1, and Michael Caplan1
Ascend Phoenix Children’s Hospital, Tempe, AZ

2:15 pm
Engineering Microscale Perfused Vascularized Fat In Vitro
Xuyan Li1, Yifei Ruan1, Cain Nicolle2, Miles Maxsidda2, and Joe Tier1
Boston University, Boston, MA

3:20 pm
Formation and Characterization of Human Dermal Microvascular Structure in a Microfluidic Device
Sahar Biglan1, Alessandro Zamboni2, Sina Naficy1, Majid Ebrahimi Wahlbye1, and Fariba Dehihari1
University of Sydney, Sydney, Australia, 2University of Padua, Padua, Italy. ‘University of New South Wales, Sydney, Australia

OP-FR–2-9
Room 222B

Track: Cellular and Molecular Bioengineering

Molecular and Cellular Engineering Functional Materials and Sensors

Chairs: Corey Bishop, Anna Jaklenec

1:15 pm

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Phoenix | BMES 2017
Eyerusalem Assefa1, Robert Ros1, and Mehdi Nikkhah1
Stephanie Cuskey1, Nikolai Fedorchak1, and Randolph Ashton1

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

Room 226A

Track: Neural Engineering

Motor Control and Rehabilitation

Chairs: Dan Moran, Jeff Capadona

1:15 pm

BCI Control Using Signal from DBS Electrode Implant

Keith Odon-Parkin2, Rory Murphy1, and Daniel Moran3
Washington University in St. Louis, St. Louis, MO

1:30 pm

Electrochemical Neural Interfaces for Promoting Motor Plasticity

Samea Mobiny1,2, Steven I. Permutt3, and Eberhard E. Fetz4
1University of Washington, Seattle, WA
2University of Western Ontario, London, ON, Canada

2:00 pm

Brain Machine Interface-Driven Affenter Peripheral Nerve Stimulation for Motor Rehabilitation After Spinal Cord Injury

Tayler Jackson1,2, Min Ting Schomer1,2, David Kaplan1,2, and Sabattis Santaniello1
1Connecitcg Children’s Medical Center, Farmington, CT, 2CT Institute for the Brain and Cognitive Sciences, Storrs, CT

2:15 pm

The Effects of Chronic Microelectrode Implantation in Motor Cortex on Motor Behavior in Healthy Rats

Monika Gusz1,2, Keith Dorn3, Justin Mcmahon3,4, Andrew Shoffitall1,2, Evon Effele1,2, and Jeffrey Capadona4
1Louis Stokes Cleveland VA Medical Center, Cleveland, OH, 4Case Western Reserve University, Cleveland, OH

2:30 pm

Exploiting the Selectivity of Multi-contact Peripheral Nerve Electrodes to Prolong Standing Times with Neural Stimulation after Spinal Cord Injury

Frida Garnero1, Max Freeberg2,3, and Ronald Trocha1
1Case Western Reserve University, Cleveland, OH

Room 226B

Track: Neural Engineering

Sensory Neuroprostheses

Chairs: Bradley Greger, George McConnell

1:15 pm

Neural ITD Sensitivity and Temporal Coding with Cochlear Implants in an Animal Model of Early-onset Deafness

Yaojun Chung1,2 and Bertrand Delgutte1,2
1Massachusetts Eye and Ear, Boston, MA, 2Harvard Medical School, Boston, MA

1:30 pm

Evoking Visual Percepts via Epicortical Micro-stimulation in Nonhuman Primates

Denise Osawa1, David Zhou2, Prodyag Datta1, Neil Talbot1,2, Robert Greenberg1,2, Zameer Mirzaie1,2, and Bradley Greger3
1Arizona State University, Tempe, AZ, 2Second Sight Medical Products, Sylmar, CA, 3Barrow Neurological Institute, Phoenix, AZ

1:45 pm

Latency of The Perceived Sensation Evoked by Peripheral Nerve Stimulation in People With Lower Limb Amputations

Breanne Christon1, Harald Chari-Netz1, Emily Graczyk1,2, Dustin Tyler1,2, and Ronald Trocha1
1Case Western Reserve University, Cleveland, OH, 2Louis Stokes Cleveland VA Medical Center, Cleveland, OH

2:00 pm

Median Nerve Stimulation via a FAST-LIFE Array Elicits a Graded Response in Primary Somatosensory Cortex Area 3b

Taylor Tanner1,2, Taylor Hearn1,2, Stephen Helms Tillery1,2, Edward Kefee3, and Jonathan Cheng1
1Arizona State University, Tempe, AZ, 2Nerves Incorporated, Dallas, TX

2:15 pm

Modification of the Proprioceptive Map in an Upper Limb Amputee via Peripheral Nerve Stimulation

Taylor Hearn1,2, Cynthia Ovstreet1,2, Jonathan Cheng1,2, Edward Kefee3, and Stephen Helms Tillery1
1Arizona State University, Tempe, AZ, 2Nerves Incorporated, Dallas, TX

2:30 pm

Spinal Root Stimulation to Restore Sensation and Reduce Phantom Limb Pain in Upper-limb Amputees

Lee Fisher1,2, Santosh Chandrasekaran1, Aramay Narodevaker1, Ahmed Keshkash1, Eric Helin1, Jennifer Collinge1,2, Michael Bosinger1,2, and Robert Gaunt1,2
1University of Pittsburgh, Pittsburgh, PA

*BMES Track sponsored by:

Department of Biomedical Engineering

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**INDUSTRY SESSION**

**1:00 pm–3:00 pm**  
**Room 125AB**

**Clinical Innovators Spotlight**

Chair: Jonathan Quin, Briseida, and Omid Veiseh, Sigilon

One of the challenges in biomedical engineering careers is developing an understanding of current and anticipated unmet clinical needs, and how to address those needs with existing and new technologies. The audience will be treated to a detailed view, from leading clinical innovators, on how real-world problems in cardiology, oncology, organ transplantation, and orthopedics can be addressed with biomedical engineering solutions.

*Industry Track sponsored by:*

**SPECIAL SESSION**

**1:30 pm–4:30 pm**  
**Room 121ABC**

**BMES-NSF Special Session on CAREER and UNSOLICITED Awards**

Chair: Michele Grimm

*Additional registration and $10 ticket required*

BMES and the National Science Foundation (NSF) will convene a special session focused on innovative research in biomedical engineering and grant writing. The session will bring together NSF Biomedical Engineering and Engineering Healthcare grantees, young investigators, junior and senior faculty, post-doctoral fellows and graduate students for idea exchange and networking related to conducting and funding cutting-edge research in BiME. The session will showcase NSF-funded research and researchers, foster collaboration and idea exchange, familiarize participants with NSF funding mechanisms, and provide strategies for preparing competitive grant proposals, in particular NSF CAREER and unsolicited award applications. The research areas where the NSF Biomedical Engineering Program supports fundamental and translational research will also be discussed. Participants will gain an increased awareness of NSF-funded research, a better understanding of NSF funding opportunities and how to prepare successful grant applications, and a chance to establish new relationships leading to future collaborations. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1141771. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

*SPECIAL SESSION sponsored by:

**SPECIAL SESSIONS**

**1:15 pm–2:45 pm**  
**Room 122C**

**Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings**

Chair: Terry Johnson

Our courses and curricula reflect the fast-paced, interdisciplinary nature of bioengineering. Each of us have faced challenges in giving students access to—and deciding upon the types of delivery for—crucial content and experience. Please, take this opportunity to share with the BMES community your innovative and unique modules, courses, and curricula—your students’ experiences with them. This special session on education is a series of talks that will allow the community to share with one another their latest curricular work, and related challenges.

**1:15 pm–2:45 pm**  
**Room 122A**

**Minisymposium on International Research Collaborations and Funding Opportunities in Biomedical Engineering**

Chair: Damir Khismatullin
Co-Chair: Song Li

This Minisymposium is the follow-up of the First International Symposium on Biomedical Engineering that was held at the BMES 2016 Annual Meeting and brought together high-level officials from biomedical engineering societies in the United States, Canada, Australia, South Korea, and China. It consists of several talks by leading biomedical engineers showcasing successful externally-funded research collaboration between the United States and other countries participated in the First International Symposium. The talks will be followed by panel discussion of funding opportunities available for international collaborative research in bioengineering.

Invited speakers:

X. Edward Guo (Columbia University)  
Stephanie Willirth (University of Victoria, Canada)  
Deok-Ho Kim (University of Washington)

**PLATFORM SESSIONS—FRIDAY—3—3:30 PM—5:00 PM**

**Friday, October 13 | 3:30 pm–5:00 pm | Room 224B**

**OP-Fri-3-2**

**Tracks:** Drug Delivery & Intelligent Systems, Biomaterials

**Drug Delivering Biomaterials III**

Chairs: Craig Duvall, Rebecca Willis

3:30 pm

**Optimization of Protein-Loaded Electrospray Fibers for Targeted Intestinal Delivery**

Hannah Frizzell and Kim A. Woodrow  
University of Washington, Seattle, WA

3:45 pm

**Disruption of Gram-negative Bacterial Membranes via Peptide-based Potentiators for Intracellular Delivery of Small Molecule Antibiotics**

Leisl Chan, Kelsey Hem, Ester Kwok, Katie Lee, Deborah Hing, and Sang merging Bhate  
Massachusetts Institute of Technology, Cambridge, MA

4:00 pm

**Resorbable Antibiotic-eluting Bone Void Filler Performance in a Large Animal Model to Address Periprosthetic Joint Infection**

David Ranger and Katherine Evans  
University of Utah, Salt Lake City, UT

4:15 pm

**Self-assembled Galectin-enzyme Fusions for Localized Biocatalysis**

Shaneen Farhadi, Margaret Fetta, Evelyn Bracho-Sanchez, Sabina Freeman, Benjamin Kassowsky, and Gregory Huda  
University of Florida, Gainesville, FL

4:30 pm

**Cefostat-Loaded Nanocarriers for Targeted Therapeutic Inhibition of Inflammatory Cells**

Sean Allison, Susan Li, and Evan Forrest  
Northwestern University, Evanston, IL

4:45 pm

**Acellulized Dextran Nanoparticles for Rapid and Glucose Responsive Insulin Delivery**

Lisa Volpati, Robert Langest, and Daniel Anderson  
Massachusetts Institute of Technology, Cambridge, MA

4:45 pm

**Biomaterials Track sponsored by:**

ACS Biomaterials & Drug Delivery
Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

4:00 pm
3D Intracellular Spheroids as a Biomimetic Model for Studying Drug Transport
Karen Sandy and Tjadd DeDona
University of California San Francisco, San Francisco, CA

4:15 pm
The Role of Cellular Morphology in Nanoparticle Uptake
Pouria Fattahi, Yin Tong Yeh, Si-Yang Zheng, Sulin Zhang, Justin Brown, and Jeffery Moore
Pennsylvania State University, University Park, PA

4:30 pm
Intra-Cartilage Delivery of RNA Therapeutics via Nanopiece to Treat Osteoarthritis
Yuseng Chen1,2, Brandon Vertrus1, Hicham Fennai1, Thomas Webster1, and Qian Chen1
Brown University, Providence, RI; 1Rhode Island Hospital, Providence, RI; 2Northwestern University, Boston, MA, 3National Institute of Nanotechnology, Edmonton, Canada

4:45 pm
VEGF Nanoparticles to Repair Heart Myocardial Infarction
Yuan Osaki, Xuoping Zhu, Ramaswamy Kannappan, and Jiamp (Jay) Zhang
University of Alabama at Birmingham, Birmingham, AL

OP-Fri-3 Room 222A
Tracks: Tissue Engineering, Nano and Micro Technologies
Organ-on-a-Chip Models for Drug Discovery and the Study of Disease IV
Chairs: Chelsey Simmons, Salmaan Kharez

3:30 pm
Engineering an In Vitro Alveolar Model: Engineering an In Vitro 3D Bi-cellular Biomimetic Model of Vasculitis Reveals a RhoA, Rac, and N-cadherin Balance in Pericyte-regulated Barrier Function
Matthew Ishrahet1, Giovanni Lenguolds1, Siddarth Rawal1, Peter Buchwald1, Chad Stark1, and Anuradha Argawal1
University of Miami, Miami, FL; 1University of Florida, Gainesville, FL

3:45 pm
Fluidic Platform for ex vivo Interrogation of Pancreatic Islets
有效的Cellular Agents to Study Angiogenesis in Human Preadipocytes
Li-Chen Chien1, Shun Ito1, Nobuhito Nagai2, Mutsuhiko Nishizawa1, Toshiaki Abe13, and Hikarua Kaj1
Texas Children’s Hospital, Seattle, Japan

4:00 pm
Engineering Vascularized Livers to Recapitulate Organ-Level Functions
Arnav Chhabra1, Hyun-Ho Song1, Christopher Chen2, and William Polacheck1,2, Jeroen Eyckmans2
1University of Virginia, Charlottesville, VA; 2Emory University School of Medicine, Atlanta, GA

4:15 pm
Liver-on-a-chip Model for Drug Screening
Katsuki Kaia1, Shohei Choy1, and Jeong-Ho Youn1
The University of Aichi, Aichi, Japan

4:30 pm
In Vitro Disease Model of the Retina Focusing on Angiogenesis
Li-Chen Chien1, Shun Ito1, Nobuhito Nagai2, Mutsuhiko Nishizawa1, Toshiaki Abe13, and Hikarua Kaj1
Texas Children’s Hospital, Seattle, Japan

4:45 pm
Engineering Biomimetic Hydrogels to Support Hepatocyte Phenotype and Function
Aki Unal1, Syndey Jethi1, and Jennifer West1
Duke University, Durham, NC

OP-Fri-3 Room 223
Track: Cellular and Molecular Bioengineering
CMBE Young Innovators II
Chair: Michael King, Alyssa Panitch

3:30 pm
Data-modeling Identifies Conflicting Signaling Axes Governing Myoblast Proliferation and Differentiation Responses to Diverse Ligand Stimuli
Alexander M. Lobin1, Sharon Y. Baumgartner-Soueid1, Delshad Bhattarcharya1, Ruh F. Keyour1, Joseph Kim1, and Benjamin Cosgrove1
Cornell University, Ithaca, NY

3:45 pm
Distinct Roles of Direct Contact and Secreted Factors in the Immunomodulatory Effects of Cryopreserved Viable Human Aminotic Membrane
Claire E. Withrow1, Tony Vu1, Mark Cannon1, Will Dampier1, and Kara Spiller1
Drugs and University of Medicine, Philadelphia, PA

3:00 pm
Free Radicals and Pathogen Exposure on Human Colon Biopsy Slices
Luke Schwerdtfeger1, Erica Borresen1, Elizabeth Ryan1, and Stuart Tobin1
Yale University, New Haven, CT

3:15 pm
Sex Differences in the Impact of Oxygen and Pathogen Exposure on Human Colon Biopsy Slices
Luke Schwerdtfeger1, Erica Borresen1, Elizabeth Ryan1, and Stuart Tobin1
Yale University, New Haven, CT

4:00 pm
4:15 pm
4:30 pm
Imaging Techniques in Clinical Translation
OP-Fri-3-11
Track: Biomedical Imaging and Optics
Chair: Sorenson Reisner, Ramon Pashana

3:30 pm
Automated and Cost-Effective Antimicrobial Susceptibility Testing on a Mobile Phone
Steve Feng1,2, Danish Tew1, Calvin Brown1,3, Dinor Di Carp1,2, 3, Oma Garne1, and Aydogan Ozcan1,3
1Electrical Engineering Department, University of California, Los Angeles, CA; 2Biocomputing Department, University of California, Los Angeles, CA; 3California NanoSystems Institute, University of California, Los Angeles, CA; 4Oncology Comprehensive Cancer Center, University of California, Los Angeles, CA; 5Department of Pathology and Laboratory Medicine, David Geffen School of Medicine, University of California, Los Angeles, CA; 6Department of Surgery, David Geffen School of Medicine, University of California, Los Angeles, CA

4:45 pm
Intracranial Electrical Impedance Tomography for TBI Monitoring
Ryan Haller1
Sham College, Hanover, NH

4:00 pm
4:15 pm
4:30 pm
A Novel Low-cost Compact Diffuse Speckle Contrast Flowmeter for Contact Blood Flow Measurement
Sasan Malekzadeh1, Chong Huang2, Myoungsoon Seong3, Joshua Mangiri1, Minju Zhai4, Ahmed Bahraini1, Jie Kim5, Jeffrey Hastings6, and Giuseppe Yung7
University of Kentucky, Lexington, KY; 1Geisinger Institute for Science and Technology, Geisngen, Korea; Republic of

4:45 pm
Development of Augmented Microscope for Image Guided Surgery
Laura Catarina1,2, Nicolay Martin1,2,3, Matthew Lamed2,3, and Merck Romanowski1
1University of Arizona, Tucson, AZ; 2Barnes University Medical Center, Turlock, CA; 3University of California, Los Angeles, CA

5:00 pm
Monitoring Exocytosis and Full Fusion of Insulin Granules via Graphene Liquid Cell Transmission Electron Microscopy Imaging
Narasimhan Rajaram, Ramin Pashaie1, and Amy Chen1
1Emory University and Georgia Institute of Technology, Atlanta, GA; 2Emory University School of Medicine, Atlanta, GA; 3Emory University, Atlanta, GA

4:30 pm
Stress-induced Calcification in Primary Human Valvular Interstitial Cell Culture
Yingfei Xue1, Cynthia St. Hilaire1, Luis Hortells1, Julie A. Phillippi1, and Leonardo Morsut1
University of California, Los Angeles, CA

4:45 pm
Intravascular Delivery of RNA Therapeutics via Nanoparticles for Studying Synthetic Nucleic Acid Receptors
Neelam Mazum1, University of Southern California (USC), Los Angeles, CA

4:30 pm
Engineering Customized Cellular and Multicellular Sensing and Response Behaviors Using Synthetic Nucleic Acid Receptors
Leonardo Mazum1
University of Southern California (USC), Los Angeles, CA

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Steve Feng1,2, Danish Tew1, Calvin Brown1,3, Dinor Di Carp1,2, 3, Oma Garne1, and Aydogan Ozcan1,3
1Electrical Engineering Department, University of California, Los Angeles, CA; 2Biocomputing Department, University of California, Los Angeles, CA; 3California NanoSystems Institute, University of California, Los Angeles, CA; 4Oncology Comprehensive Cancer Center, University of California, Los Angeles, CA; 5Department of Pathology and Laboratory Medicine, David Geffen School of Medicine, University of California, Los Angeles, CA; 6Department of Surgery, David Geffen School of Medicine, University of California, Los Angeles, CA

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University of Kentucky, Lexington, KY; 1Geisinger Institute for Science and Technology, Geisngen, Korea; Republic of

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Laura Catarina1,2, Nicolay Martin1,2,3, Matthew Lamed2,3, and Merck Romanowski1
1University of Arizona, Tucson, AZ; 2Barnes University Medical Center, Turlock, CA; 3University of California, Los Angeles, CA

5:00 pm
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Narasimhan Rajaram, Ramin Pashaie1, and Amy Chen1
1Emory University and Georgia Institute of Technology, Atlanta, GA; 2Emory University School of Medicine, Atlanta, GA; 3Emory University, Atlanta, GA

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Stress-induced Calcification in Primary Human Valvular Interstitial Cell Culture
Yingfei Xue1, Cynthia St. Hilaire1, Luis Hortells1, Julie A. Phillippi1, and Leonardo Morsut1
University of California, Los Angeles, CA
### Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

<table>
<thead>
<tr>
<th>Track: Biomedical Imaging and Optics</th>
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<tbody>
<tr>
<td><strong>Applications of MRI and Focused Ultrasound</strong></td>
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<tr>
<td>Chairs: Stephen LaConte</td>
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<tr>
<td><strong>3:30 pm</strong></td>
<td>Quantitative T1 Mapping of Breast Cancer Xenografts During HIFU Ablation</td>
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<tr>
<td>Sarah Johnson¹, Jill Shea¹, Alana Wein², Harika Gundlapalli², Mathi Fugita³, and Allison Payne⁴</td>
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<tr>
<td>¹University of Utah, Salt Lake City, UT, ²Huntsman Cancer Institute, Salt Lake City, UT</td>
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<tr>
<td><strong>3:45 pm</strong></td>
<td>Toward Personalized Medicine in Autism Diagnosis: Anatomical Abnormalities Analysis Using a Deep Learning Based Approach</td>
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<tr>
<td>Omar Dehkai¹, Mohammad Chizhov¹, Ahmed Shahrabi¹, Andy Sartaki¹, Gregory Baranie², Ayman El-Bakr³, and Aashraf Khalil¹</td>
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<tr>
<td>¹University of Illinois at Chicago, Chicago, IL, ²School of Electrical and Computer Engineering, Abdu Dhabi University, UAE, ³Abdu Dhabi, United Arab Emirates, ⁴Abu Dhabi University, Abu Dhabi University, United Arab Emirates</td>
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| (Room 225B) | 3:30 pm—5:00 pm | Platform Session 3 |

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<tr>
<th>Track: Device Technologies and Biomedical Robotics</th>
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<tbody>
<tr>
<td><strong>Upper-Limb Exoskeletons</strong></td>
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<tr>
<td>Chairs: Simon Kudernatsch and Jennifer Kovac</td>
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<tr>
<td><strong>3:30 pm</strong></td>
<td>A Real-Time EMG Based Embedded Controlling System for Intuitive Exoskeletons</td>
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<tr>
<td>Yousef Alshahrani¹, Guanghua Xu², Chaoyang Chen¹, Yang Zhou¹, Min Li², and John Cavanaugh¹</td>
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<tr>
<td>¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Wayne State University, Detroit, MI, ³China Capital Medical University, Beijing, China, People’s Republic of China</td>
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<tr>
<td><strong>3:45 pm</strong></td>
<td>Kineiology of Light Weight Bionic Upper Arm Exoskeleton and Computer Simulation</td>
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<tr>
<td>Fadi Jateh¹, Jennifer Kovac¹, Mohammad Hakobian Rehman¹, and Masoud Saed³</td>
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<tr>
<td>¹University of Wisconsin-Milwaukee, Milwaukee, WI, ²École de technologie supérieure, Montreal, QC, Canada, ³University of Texas at Austin, Austin, TX</td>
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<td><strong>4:00 pm</strong></td>
<td>Robotic Exoskeleton for Upper Extremity Strength Augmentation: REVUESA</td>
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<tr>
<td>Simon Kudernatsch¹ and Donald Peterson¹</td>
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<td>¹Texas A&amp;M University, College Station, TX</td>
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<td>EMG Based Control of a Wearable Robot for Elbow and Forearm Movement Assistance</td>
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<td><strong>4:30 pm</strong></td>
<td>Movement of a Paralyzed Hand With Elastomeric Orthotics</td>
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<tr>
<td>Eddan Braverman¹, Charles Kearney¹, Mitchell St. Pierre¹, Young Ho Shin¹, and Jin-Woo Choi¹</td>
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<tr>
<td>¹Baton Rouge General Medical Center/Louisiana State University, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA</td>
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<td><strong>4:45 pm</strong></td>
<td>DExTerous hand control through Fuscatorial Targeting (DEFT)</td>
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<td>Cynthia Ovastrell¹, Jonathan Cheng¹, and Edward Keefer¹</td>
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<tr>
<td>¹Nerves Incorporated, Dallas, TX, ²UT Southwestern Medical Center, Dallas, TX</td>
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<th>Track: Cancer Technologies</th>
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<tr>
<td><strong>Molecular Profiling in Cancer</strong></td>
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<tr>
<td>Chairs: Gabe Keaov, Kristen Reegaal</td>
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<td><strong>3:30 pm</strong></td>
<td>Microsphere Spatial Gene Expression Analysis Using Real-Time Reverse Transcription Loop Mediated Isothermal Amplification for Molecular Histopathology</td>
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<td>Anurup Ganguli¹, Gregory Dambros¹, Nicola Spezzano¹, Akid Omri¹, Tammy Grog⁵, Brianne Thornton¹, Christian Konople¹, Aiwemyin Oshinhó¹, Rohit Bhargava¹, Farhad Kosari³, and Rashid Bashir¹</td>
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<tr>
<td>¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Texas at Arlington, Arlington, TX, ³St. Jude Children’s Research Hospital, Memphis, TN, ⁴University of California, Los Angeles, CA, ⁵University of California, Los Angeles, CA, People’s Republic of China</td>
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<td><strong>3:45 pm</strong></td>
<td>Sphingosine-1-Phosphate Inhibits Adhesion of Malignant Cancer Cells in Microvessels Using Protective Endothelial Surface Glycocalyx</td>
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<tr>
<td>Lin Zhang¹, Min Zeng¹, and Bingmei Fu¹</td>
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<tr>
<td>¹The City College of New York, New York, NY</td>
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<td>Nanoparticle Relaxation Mechanism Plays a Role in Lysosomal Membrane Permeabilization</td>
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<tr>
<td>Andrea Chin¹, Evelyn Chen¹, Malena Cruz-Azua¹, and Carlos Rinaldi¹</td>
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<td>Implantable Nanosensor Detection of an Ovarian Cancer Biomarker Using Real-Time Reverse Transcriptase Loop Mediated Isothermal Amplification for Biomarker Detection/Monitoring</td>
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<tr>
<td>Yue Shao¹, Kenichiro Taniguchi², Katherine Guilarte³, and Maarouf Saad²</td>
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<td>¹Shanghai Jiao Tong University, Shanghai, China, People’s Republic of China, ²Ecole de technologie supérieure, Montreal, QC, Canada, ³Harvard Medical School, Boston, MA</td>
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<td><strong>4:30 pm</strong></td>
<td>Protease-Activated Detection and Imaging of Cancer Metastasis</td>
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<td>Lijun Li¹, Kaiming Ye¹, and Sha Jin¹</td>
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<tr>
<td>¹Baton Rouge General Medical Center/Louisiana State University, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA</td>
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<td><strong>4:45 pm</strong></td>
<td>Rapid Production of Bi-specific Antibodies Using Off-the-shelf IgG</td>
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<td>Andrew Tsourkis¹ and Bocin Albur¹</td>
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| ¹University of Pennsylvania, Philadelphia, PA

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**OP–Fri–3–14**

**Room 227C**

**Track: Stem Cell Engineering**

**Organoid Engineering and Advanced Biomimicking**

**Chairs: Talya Alhany, Kelly Stevens**

**3:30 pm**

Self-organized Amniongogenesis from Human Pluripotent Stem Cells in an Engineered Biometric Niche

Yue Shao, Kevin Tran, Tojinder Kaur, Katherine Guilarte, Ryan Townsend, Xufeng Xia, K. Ming Ang, Yating Jiang, Jason Spencer, Deborah Gustavo, and Juming Fu

University of Michigan, Ann Arbor, Ann Arbor, MI, 1University of Michigan Medical School, Ann Arbor, MI, 2Wayne State University, Detroit, MI

**3:45 pm**

Engineering CNS Morphogenesis: De Novo Synthesis of Neural Tube Slices Cultures

Gavin Knight and Randolph Austin

University of Wisconsin, Madison, WI, 1Wisconsin Institute for Discovery, Madison, WI

**4:00 pm**

Engineering 3-D Neural Organoid Morphology using PVOH-Ca Sacrificial Templates

Carlo Berg, Figurino, Jason McNulty, Joshua Plants, Lih Sheng Tong, and Randolph Austin

University of Wisconsin - Madison, Madison, WI

**4:15 pm**

Mechanically Guided Emergent Patterning of Neuroectoderm Tissue Using Human Pluripotent Stem Cells

Xufeng Xia, Huang Sun, Agnes Resto-Irizarry, K. Ming Ang, Yuting Jiang, Shunshong Wang, Yue Shao, and Juming Fu

University of Michigan, Ann Arbor, MI, 1University of Massachusetts, Amherst, MA

**4:30 pm**

In Vitro Production of Functional Pancreatic Islets from iPSC-Derived Organs

Huangyi Bi, Kaining Wu, and Sha Jin

SUNY-Binghamton, Binghamton, NY

**4:45 pm**

Rational Design of Synthetic Matrices to Guide Intestinal Stem Cell Morphogenesis

Victor Hernandez-Gordillo, GiHun Choi, Mario Gamboa, Rebecca Carrier, David Breault, and Linda Griffith

Massachusetts Institute of Technology, Cambridge, MA, 1Northeastern University, Boston, MA, 2Harvard Medical School, Boston, MA
**Poster Viewing with Authors & Refreshment Break**

**Friday, October 13**

9:30 am–5:00 pm  |  Exhibit Hall 300 North

**Poster Viewing with Authors**

9:30 am–10:15 am and 2:45 pm–3:30 pm

**Track: Device Technologies and Biomedical Robotics**

**Affordable Health Devices and Frugal Innovation**

**FRI-1**
An Effective Tool to Eradicate Root Canal Infection: Based on Electrochemistry

Abrish Bonoo, Darya Ran Bijukciana, Sakoto Corto, Qian Xue, and Mathew M. Mathew

1*University of Illinois at Chicago, Rockford, IL, 2*UIC College of Dentistry, Chicago, IL

**FRI-2**
Aramid Nanofiber Composite Separators for Flexible Zinc-Based Thin Film Batteries

Ahmet Emre and Nicholas Kotevich

1*University of Michigan, Ann Arbor, MI

**FRI-3**
CT-Derived, 3D-Printed Needle Guide to Mark the Alveolar Foramen Prior to Pediatric Craniofacial Surgery

Amanda Banks, Alexa Melvin, Alexander Lit, and Andrew Hall

1*Saint Louis University, Saint Louis, MO, 2*Saint Louis University School of Medicine, Saint Louis, MO

**FRI-4**
Rapid Electroanalytical Device for Single Drop Dengue Diagnosis

Ambadika Talati, Srijan Muthukumar, and Shashik Prasad

1*University of Texas at Dallas, Richardson, TX, 2*EnLiSense LLC, Allen, TX

**FRI-5**
Automatic Measurement of Pulpal Responsiveness for Vitamin A Deficiency Diagnostics

Amir Siahmazadeh, Katie Healy, Sacheta Mehra, Amanda Palmer, Theodor Sauer, Mattia Busca, Keith West, and Alain Labrique

1*Johns Hopkins University, Baltimore, MD

**FRI-6**
Preliminary Refractive Index Measurements in a Portable Optical Cavity Biosensor

Codjo Joy, Damyong Rho, and Seunghyun Kim

1*Baylor University, Waco, TX

**FRI-7**
Spinal Cannulation Automated Navigation (SCAN) Robotic System

David Le, Ahmad Maf, Ariantus Daniel, Dora Obodo, Lan-Kheeu Tran, Quadee Sayari, Feitian Zhang, and Mahesh B. Shena

1*George Mason University, Fairfax, VA, 2*INOVA Fairfax Hospital, Falls Church, VA

**FRI-8**
Harnessing Virtual Reality in Robotic Assistive Devices

Devaraj Savitri Dhakshinamurthy, Mahesh Shena, and Nathalia Paesano

1*George Mason University, Fairfax, VA, 2*Inova Fairfax Medical Campus, Fairfax, VA

**FRI-9**
Design of an Improved Skin Graft Knife: The Motorized Woke Blade

Garret Glenn, Alexis Morgan, Matthew Rodrigues, and Olivia cuculo

1*University of Portland, Portland, OR

**FRI-10**
A Simple, Accurate, and Reproducible Method to Quantify the Tension on Fascial Closures in Hernia Repair

Jaime Bimstein, Adam Levy, Lawrence Bonnassar, and Jason Specto

1*Weil Cornell Medical College, New York, NY, 2*Cornell University, Ithaca, NY

**FRI-11**
A Point-of-Care Screening Platform for Serotargets of Severe Acute Malnutrition

Jaya Gupta, Amy Cheng, Daniel Joff, Trenton Dalley-Claikling, Angus Hucknall, Qinghong Wei, Aydogan Ozcan, Benjamin Guerdon, Michael Freeman, and Ashutosh Chilkoti

1*Duke University, Durham, NC, 2*Action Contre la Faim, Paris, France, 3*North Carolina State University, Raleigh, NC, 4*University of California, Los Angeles, CA

**FRI-12**
Development of an Affordable 3D Printed Bionic Hand using Underactuation Principle

Jonah Robinson, Rebecca Drayrey, Christopher Hicks, David McLeod, Alexander Oremus, Matthew Rausch, Andrew Sgaller, Melissa McCallough, and Jorge Rodriguez

1*Clemson University, Clemson, SC

**FRI-13**
Continuous Flow Bioreactor System with pH and Dissolved Oxygen Monitoring for Cell Expansion

Katherine Gillern, Maria Garcia, and Colin Tomasselli-Greenslade

1*Hofstra University, Hempstead, NY

**FRI-14**
Rapid Prototyping of 3D Microfluidics Using Low-cost Materials and Maker Tools

Kevin Bishop, Megan Cio, and Matthew Johnston

1*Oregon State University, Corvallis, OR

**FRI-15**
A Straightforward Low-Cost Test for Sickle Cell Disease

Kevin Cuy, Jennifer Colby, and Christine Manwaring

1*Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN, 2*Vanderbilt University Medical Center, Nashville, TN

**FRI-16**
Design of a Laminar Flow Hood for a Vietnamese Pediatric Hospital

Krunal Patel, Maxwell McKeough, and Miiri Kotche

1*University of Illinois at Chicago, Chicago, IL
Track: Device Technologies and Biomedical Robotics

Sensors and Wearable Devices

FRI-50 Testing the Accuracy of Wearable Heart Rate Monitors in a Diverse Population
Quynh Ho1, Vanessa Oyston1, Chelsi Uving1, and Alessandro Bellonetti1
1San Jose State University, San Jose, CA

FRI-51 Wax Transfer-Printing-Based Fabrication of Cloth Electrochemical Sensors
Courtney Glazer1, Nan Jiang1, Shanghua Tang2, and Elan Fu1
1Oregon State University, Corvallis, OR

FRI-52 A Wearable and Cost Effective Brain-Computer Interface Assistive Device
DaviDe Marzatii1, and Hannah Elmarghity1
1University of Illinois at Chicago, Chicago, IL

FRI-53 A Customizable Tongue Controlled Assistive Device
Kevin Keri1, Nicholas Marjosz2, Ricardo Aranada1, Ernesto Berrum1, and Hannah Elmarghity1
1University of Illinois at Chicago, Chicago, IL

FRI-54 Chip-Scale and Label-Free Biomedical Sensors Using Mid-Infrared Aluminum Nitride Waveguides
Pan Lin1
1Texas A&M University, College Station, TX

FRI-55 Towards the Design of a Soft Robotic Third Arm for Assisted Living Tasks
Pham Nguyen1, and Panagiotis Polygerinos1
1Texas A&M University, College Station, TX

FRI-56 Microneedles for Wearable Sensing and Interstitial Fluid Collection
Philip Miller1
1Sandia National Labs, Albuquerque, NM

FRI-57 Toward Securing LoT-based Medical Devices
Sukat Chakrabarti1, and Oliva Cocada1
1University of Portland, Portland, OR

FRI-58 Analysis of Bilary Stent Using Abaqus
Aaron Van Gorkom1, Gregory Gillispie1, Clifford Howard Jr1, and Philip Brown1
1Biomedical Engineering, Wake Forest Baptist Health, Winston-Salem, NC; 2Wake Forest University Baptist Medical Center, Winston-Salem, NC

FRI-59 Development of the Digitally Adjustable Phrenic Nerve Stimulator
Alexey Rusevski1, Emma Corpe1, Michelle Wang1, Kirby Gong1, Matthew Glucksberg1, and Debra Weese-Mayer1
1Northwestern University, Evanston, IL; 2Curie Children’s Hospital, Chicago, IL

FRI-60 Enhanced Speech Perception Under Noisy Conditions using an Optimized Cochlear Implant Stimulation
Andres Liotta1,1, David Aguilar1, and Thomas Talavage1
1Purdue University, West Lafayette, IN

FRI-61 The Development of a Novel Inserter for the InFocus MicroShunt1
Arich La1, Eudras Aramata1, Rahul Balasubhian1, YasaHito Kato1, John Martin1, Jean Marie Pan11, and Leonard Pinchuk1
1InFocus Inc., Miami, FL; 2Ophthalmic Biophysics Center, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL

FRI-62 Osmotic Transport Device to Alleviate Tissue Swelling Following Spinal Cord Injury
Christopher Halpin1, Jennifer Yuan1, Devin Binder1, and Victor Rodgers1
1UC Riverside, Riverside, CA

FRI-63 Impact of Bifurcation Dual Stenting on Endothelial Shear Stress
Henry Chen1,2, Wei-Hsin Tien2, and Ghassan Kassab1
1California Medical Innovations Institute, San Diego, CA; 2Division of Cardiology, Sewal National University Hospital, Seoul, Korea, Republic of

FRI-64 Characterization of a Bioprosthetic Bicuspid Venous Valve Hemodynamics: Implications for Mechanism of Valve Dynamics
Hanli Chen1, Wei-Hsin Tien2, and Ghassan Kassab1
1California Medical Innovations Institute, San Diego, CA; 2University of Washington, Seattle, WA

FRI-65 Anti-bleeding Microtubes for Glaucoma Drainage Devices
Hyun Park1, Simon John1, and Hywoon Lee1
1School of Biomedical Engineering, BiOtech Nanotechnology Center, Anirh Drainable Devices, Purdue University, West Lafayette, IN; 2Howard Hughes Medical Institute, Jackson Laboratory, Bar Harbor, ME

FRI-66 An Ex Vivo Study of an Inducedly Powered Remote-Controlled Miniature Pacer
Fanna Alizai1, Rene Packard1, Yichen Ding1, AliReza Youcef1, Dejan Markovic1, and Tsung Hsi1
1University of California, Los Angeles, Los Angeles, CA

Track: Biomimetics, Device Technologies and Biomedical Robotics

Advances in Biomedical Testing of Medical Devices

FRI-67 Biomedical Testing and Validation of a Novel Fastening Device for Adolescent Scoliosis Braces
Choil Chung1, Derek Kelly1, Jack Steeler1, Terril Tate1, Eddie Battersby1, and Denis Dehghan1
1University of Tennessee Health Science Center, Memphis, TN; 2Curtis Clinic Orthopaedics and Le Bonheur Children’s Hospital, Collierville, TN; 3The Center for Orthotics and Prosthetics, Inc., Memphis, TN

FRI-68 Use of a Novel, Clinically Relevant Ex Vivo Model to Study the Prophylactic Use of Foam Dressings to Redistribute Pressure
Elisabeth Izarrariz1, George Skoutanencle1, and Abram Janit1
1Hollister Incorporated, Libertyville, IL

FRI-69 Validation of MicroCT Based Bone Bending Device
Kyle Bodzin1, and Richard Hart1
1The Ohio State University, Columbus, OH

FRI-70 Plastic Anatomical Characterization and Comparison by Sex and History of Pregnancy
Mona Safrazafard1, Gareese Hightower1, and Ashley Weaver1
1Wake Forest Virginia Tech School of Biomedical Engineering Sciences, Winston-Salem, NC

FRI-71 Effects of Slope Walking on Dynamic Stability
Seang Hyun Mo1, Rahul Sooraj1, Chris Frimer1, Sabas Rosner1, Victoria Smith1, Marley Olson1, and Thumon Lockhart1
1Arizona State University, Tempe, AZ

Track: Biomaterials, Nano and Micro Technologies

Integration of Biomaterials with Chips and Devices

FRI-73 Femtosecond Laser Micromachining, Fabrication and Alignment of Circular Microtubes in Hydrogels
Carsten Conrads1, and David Long1
1University of Auckland, Auckland, New Zealand; 2Wake Forest University Baptist Health, Winston-Salem, NC; 3Wake Forest Baptist Medical Center, Omaha, NE

FRI-74 Tunable Electrochemical Impedance Spectroscopy - Factors Affecting the Optimal Frequency
Chi En Lo1, David Probst1, and Jeffrey Laliberte1
1Arizona State University, Tempe, AZ

FRI-75 Microengineered Cell Compression Device for Studying Chondrocyte Mechanobiology
Donghee Lee1, Adik Erickson1, Andrew T. Dudley1, and Sangee Ruy1
1University of Missouri-Columbia, Columbia, MO; 2Wake Forest University, Winston-Salem, NC; 3University of Nebraska Medical Center, Omaha, NE

FRI-76 Design of a Pumpless Microfluidic Chip for Blood Analysis Using Modified Silicon
Kokou Serge Dogblay1, Bryan Khi Ng1, Melissa Grün1, and Genoa Cudial1
1Texas A&M University, College Station, TX

FRI-77 High-precision Microtubule Sorting by the Measurement of Persistence Length with Sub-pixel Resolution
Naeto Itasca1, Karuki Uchita1, Hirofumi Shintaku1, Hidehiko Koto1, Tatsuya Kawada1, Minoru Kato1, and Ryoji Yokokawa1
1Kyoto University, Kyoto, Japan; 2University of Wisconsin-La Crosse, La Crosse, WI; 3University of Massachusetts-Amherst, Amherst, MA

FRI-78 Engineered Biomimetic Glomerular Membrane: Effects of Stiffness on Podocyte Culture
Ellery Jones1, Matthew Ishak1, Alexisa Fornoli1, and Ashutosh Agrawal1
1University of Miami, Miami, FL

FRI-79 Suppression of Fibrosis in Glaucoma Surgery using an Innovaate Microfluidic Meshwork
Fei He1, Jhabao Amontong1, Stanley Wei1, Hongfu Liu1, Micahel Bloomer1, Zhengtian Zhai1, Paul Colh1, Lan Luan2, Ying Han2, and Chong Xie1
1The University of Texas at Austin, Austin, TX; 2University of California, San Francisco, CA

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm
FRI-80 Polymorph Morphology Influences Electronic Properties of Polyaniline-Chitosan Nanocomposites
John Auger1, Indradeep Paul1, and Anthony Gnanappillai Elai1
1Center for Bioelectronics, Biosensors, and Biocircuits (CBB), Texas A&M University, College Station, TX, and Arvind McKee Development of Chemical Engineering, Texas A&M University, College Station, TX

FRI-81 Graphene Patterned Microchip for Colorectal Cancer Detection
Kasya Hemmanaru1, Shrihari Singh1, Sanjay Ramkarunimbahraysamy Babu1, Iwan Maxwel1, and Prabin Patria1
1University of Bridgeport, Bridgeport, CT

FRI-82 Efficient Designing of High-performance Biomarker Assays using Computational Modeling
Mahesa Dubaghe1, Carmel Fortes1, Daniel Jin1, Rohan Asha1, John Gounley1, Arups Husklin1, Ashutosh Chilkoti1, and Amandla Randles1
1Duke University, Durham, NC

FRI-83 In Vitro Recapitulation of the Dysfunctional Neuromuscular Junction in Charcot-Marie-Tooth Disease
Rachel Besser1, Matthew Ishahak1, Ellen Jones1, Renata Maciel1, and Junghyun Cho1
1University of Nebraska Medical Center, Omaha, NE, 2University of Hartford, Farmington, CT, 3Politecnico di Turino, Turin, Italy

FRI-84 Microfluidic System for Assessing Myoblast Migration Behavior in Co-culture Systems
Rahul R. Atmaramani1, Nesreen Alsmadi1, Bryan Jordan1, and Michael Kokkolaras1
1University of Cincinnati, Cincinnati, OH

Track: Nano and Micro Technologies, Drug Delivery & Intelligent Systems
Nano to Micro Devices in Delivery

FRI-85 Iron Oxide Nanoparticle Based T-cell Tracking for Improving Personalized Cancer Immunotherapy
Albert Trubelja1, Harshavardhan Deshmukh1, Ciaran Lee1, Sheng Tong1, Mario Saporta1, and Ashutosh Agarwal1
1Rice University, Houston, TX, 2Duke University, Durham, NC, 3Binghamton University, Binghamton, NY

FRI-86 Design Optimization of Dual Nanoparticle Delivery for Enhanced Cancer Treatment
Lauren Chaimer5,1,2, and Michael Kokkolaras1
McGill University, Montreal, QC, Canada

FRI-87 Apoptosis Induction by Functionalized Fullerene-based Ultrasound Sonodynamic Therapy in HL-60 cells
Naghash Alavideh, Yumiko Isawa1, and Nashi Koyp1
1Yokohama University of Pharmacy, Yokohama, Kanagawa, Japan, 2Yokohama University of Pharmacy, Yokohama, Japan

FRI-88 Nanochannel Delivery System for Controlled Release of Ocular Drugs to Target Increased Intracellular Pressure
Priya Jain1, RJ Lyle Howse1, Andrea Ballan1i, Gaiomar Brogi1,2, and Alessandro Grattoni1
1Houston Methodist Research Institute, Houston, TX, 2University of Texas at San Antonio, San Antonio, TX, 3Politecnico di Turino, Turin, Italy

FRI-89 Development of Targeted Nanoscale Drug Delivery System for Osteoarthritic Cartilage Tissue
Tao Jang1, Jomol Raja3, Ho Man Kan1, Eina Komal1, Yingzhe Li1, and Kevin Lai1
1UCan Health, Farmington, CT, 2University of Hartford, West Hartford, CT

FRI-90 Enzyme-Loaded Poly(lactic-co-glycolic acid) Nanoparticles as Anti-biofilm Treatment Strategy for Biofilm Infections
Chenlong Han1, James Goodmue1, Kein Seaver1, and Amber Diorio1
1State University of New York at Binghamton, Vestal, NY

FRI-91 Biomimetic Anisotropic Platelet Membrane Coated Particles for Enhanced Drug Delivery and Wound Healing
Elana Ben-Akiva1, Randall Meyer1, Jonathan Smith1, Drew Pardoll1, and Jordan Green1
1Johns Hopkins University, Baltimore, MD

FRI-92 Sustained Delivery of 1,25-dihydroxyvitamin D3 for Endogenous Antimicrobial Peptide Induction in an Angiogenesis Factor
Joona Kain2, Jianang Jiang1, and Hongjun Wang1
1University of Nebraska Medical Center, Omaha, NE, 2Johns Hopkins University, Baltimore, MD

FRI-93 Injectable Multidrug Delivery Hydrogel for Postoperative Management of Ocular Surgery
Maziar Mohammadi1,2, Kisha Patel1, Seyedeh Parsa Alae1, Nisha Hollingsworth1, Craig Bernati1, Ronald Lankos1, and Jordan Green1
1University of Michigan, Ann Arbor, MI, 2Johns Hopkins University School of Medicine, Baltimore, MD

FRI-94 Drosophila Melanogaster as a Model for the Delivery of Protein Based Nanoparticles Through the Blood-Brain Barrier
Michael Farhi1, Samantha Hirajita1, Kyung-An Han1, and Thomas Bolard1
1University of Texas at El Paso, El Paso, TX

FRI-95 Greater than 24 Hour Sweat Stimulation By Iontophoretic Delivery of Carbadox For Continuous Biosensing
Philip Stevens1, Kevin Li1, Gerald Kasting1, and Jason Heikenfeld1
1University of Cincinnati, Cincinnati, OH

FRI-96 Targeting of Nanoparticles to Degraded Elastin in an Angiotensin II Abdominal Aortic Aneurysm Model
Xiaoying Wang1, Naimo Nosoudi1, Saeid Karamshahi1, Aydin Sina1, and Karen Yeevanath1
1Clemson University, Clemson, SC, 2Wright State University, Dayton, OH, 3Memhr Inc., Thousand Oaks, CA

FRI-97 Nanoporous Coatings to Prevent Bacterial Contamination and Biofilm Formation in Dental Unit Waterlines
Anash Ali1,2, Jang Youn Shin1,2, Tao Tao1,2, Junja Oh1,2, Kein Seaver1, and Junghyun Cho1
1BMD Medical, Bedford, MA, 2Binghamton University, Binghamton, NY, 3Binghamton University, Binghamton, NY

Daniel Baughman1, Julia Debely1, Jonathan Smith1, Drew Pardoll1, and Jordan Green1
1Johns Hopkins University, Baltimore, MD

FRI-99 Development Micromixing Evaluation Software Based on Particle-tracking Algorithms
H.A. Betancourt Carvajal1, Hector R. Silber1, and J. Israel Martinez-Lopez1
1FACtologico de Monterrey, Monterrey, Mexico

FRI-100 Characterization of a Nanoscale Electroprotection Platform Using HL-60 Cells
Hamdan Yuan1, Mark Crain1, Patrick Soutey1, Stuart Williams1, and Robert Keynton
1University of Louisville, Louisville, KY

FRI-101 Development of Dry and Wet Adhesion in Parylene C Microdevices
Jessica Ortizgoitia1, Kei Scholten1, and Ellis Meng1
1UC, Los Angeles, CA

FRI-102 A Novel Route for Generation of 3D Nanofiber Scaffolds
Junghyeon Kim1, Jiayang Jiang1, Shousan Chen1, and Hongjun Wang1
1University of Nebraska Medical Center, Omaha, NE

FRI-103 Co-Culture Membranes with Tunable Nanopore Sizes to Selectively Control Cell-Cell Communication
Marcia Mireles Ramirez1, Costy Soul1, Robert Carter1, and Stephanie Casillo1
1Rochester Institute of Technology, Rochester, NY

FRI-104 Surface Modification of Medical Devices using Microfabrication Techniques
Sayeh Владимировна Абасова1,2,3, Ano Ali Amiri Moghadam1,2,3, Jordin Augue1,4, James Min1,2, Bobak Movagheghi1,2, and Simon Dumas1,2
1Weill Cornell Medicine, New York, NY, 2New York-Presbyterian Hospital-West Cornell Medicine, New York, NY, 3Cornell University, Ithaca, NY

FRI-105 Femtosecond Laser Micro-processing of Gelatin Methacrylate Hydrogel
Zhang Xiong1,2, Pusalka Kumar1,3, Yin Zhu1,2, Rafael Ramon1, and Pranav Somani2,3
1Syracuse University, Syracuse, NY, 2Syracuse Biomaterials Institute, Syracuse, NY

Track: Nano and Micro Technologies
Advances in Pathogen Detection

FRI-106 Integration of Droplet Digital PCR Assay for Microbial Detection on Centrifugal Microfluidic Disc
Hanna Gesada1, Xiao Huang2, Horacio Kobi1, Michael Hoffman2, Mark Matlau2, and Sunny Jeng1
1University of California, Irvine, Irvine, CA, 2California Institute of Technology, Pasadena, CA
POSTER SESSION—FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-135 Position Tracking System for Dental Patients during Cone Beam Computer Tomography (CBCT)
Cem Yala1, Sinan Oral1, Soothyong Cho1, Cyril Pandarakalam1, Nathanael Garcia1, and Mohamed Derman1
1Southern Illinois University Edwardsville, Edwardsville, IL

FRI-136 Non-Invasive Detection of Respiration and Heart Rate with Vehicle Seat Sensor
Grace Wasik1 and Hampton Gabler1
1Virginia Tech, Blacksburg, VA

FRI-137 Mechanical Characterization of Medical Adhesive Tapes Used for Pediatric Nasogastric Tube Securement
Hannah Caball1, Aaron Beaucou1, Hallie Kirdaly1, Eza Alashar1, Jean Christophe1, and James Keesenheimer1
1The University of Akron, Akron, OH, 2Akron Children's Hospital, Akron, OH

FRI-138 3D-Printed Microfluidic Device for the Analysis of Intestinal Tissue Ex Vivo
Ian McClellan1, Charles Henry1, and Stuart Tobel1
1Colorado State University, Fort Collins, CO

FRI-139 Investigating the Use of Structured Light Imaging for 3-D Reconstruction of the Human Forearm for Automated Ventipuncture
Josh Leahmher1, Max Baha1, Alvin Chen1, Tim Maguire1, and Martin Yarmush1
1Rutgers University, Piscataway, NJ

FRI-140 Developing a Minimal Gut-Brain Axis with Genetically Engineered Cells and Robots
Keith Heyland1 and Warren Ruder1
1Carnegie Mellon University, Pittsburgh, PA, 2University of Pittsburgh, Pittsburgh, PA

FRI-141 Design and Mechanics of Honeybee-inspired Surgical Needles
Mohammad Sahabi1, David Gardelli1, Jonassen Yousan Attia1, and Paraszni Hatz1
1Temple University, Philadelphia, PA

FRI-142 Direct Nucleic Acid Amplification from Urine with Adaptive PCR
Nicholas Adams1, Austin Hardcastle1, Bill Gabella1, and Rick Haselton1
1Temple University, Philadelphia, PA

FRI-143 Modeling and Experimental Study of a Laparoscopic Camera’s Interaction with Abdomen Tissue
Reza Yasdanpanah1, Xiaocheng Li1, and Jimin He1
1University of Tennessee, Knoxville, TN, 2University of Tennessee, Knoxville, TN

FRI-144 Steerable and Stretchable Hydrogel Ionic Circuit Materials for Localized Electrical Stimulation in Aquous Environments
Siven Chen1, Peter Tien2, Wen Lu1, Jonathan Graeme1, Ying Chen1, Bradley Napierski1, Fiorenzo Omenetto1, and David Kaplan1
1Tufts University, Medford, MA

FRI-145 Design of Collector Tips for Proper Collection of Basal Tear Fluid with Minimized Eye Irritation
Yang-Chun Chi1, Seung Heo2, Dong Yeon Nam1, Beom Kang Huh1, Sa-Na Kim1, and Young Bin Cho1
1Interdisciplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of 2Institute of Medical and Biological Engineering, Medical Research Center, Seoul National University, Seoul, Korea, Republic of 3Department of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea, Republic of

Track: Cardiovascular Engineering, Device Technologies and Biomedical Robotics

Cardiovascular Devices

FRI-146 Analysis of Expanded Polytetrafluoroethylene (EPTFE) Membranes for Use Within a Valved Conduit for Right Ventricular Outflow Tract Reconstruction
Abigail Lonerker1, Avash Karla1, Samuel Lukich1, Druig Bemstien1, Antonio DiFronzo1 2, and Darvene Faulk1
1University of Pittsburgh, Pittsburgh, PA, 2Pittsburgh Heart Valve, Pittsburgh, PA

FRI-147 Evaluation of a Flexible Cardiac Cryoaablation Probe in Modified Porcine Thoracic Muscle Preparation
Carrie Herman1, Danielle Rater1, Jacqueline Wendel1, Philip Schmidt1, Jeremy Dandy1, Adam Caley1, Tamer Bahdin1, and David Franscelli1
1AirCure, Minneapolis, MN, 2AirCure, San Ramon, CA

FRI-148 Effect of Short Exposure to High Shear on Neutrophil Rolling Behavior
Christopher Lewis1, Nicholas Almand1, Trevor Snyder1, and David Schmidt1
1University of Oklahoma, Norman, OK, 2U/Dallas, Richardson, TX, 3VAEast, Oklahoma City, OK

FRI-149 Solid-State Drive System for use in Ventricular Assist Devices
Dillon Hard1
1Iowa State University, Ames, IA

FRI-150 Yagus Nerve Stimulation Improves Long-term Survival in Dahl Salt-Sensitive Hypertensive Rats
Elizabriel M. Amorin1, Dusty Van Helden1, Imad Liba2, Bruce H. Koo1, Jonathan A. G. Lima1, and John W. Odom2
1University of Minnesota, Department of Biomedical Engineering, Minneapolis, MN, 2University of Minnesota, Department of Integrative Biology and Physiology, Minneapolis, MN, 3Cyberonics Inc., Houston, TX

FRI-151 Pharmacokinetic and Pathological Analysis of Local Liquid Delivery of Paclitaxel Via a Perfusion Cardiac Catheter
Emily Tuma1, Megan Erazzi1, Marzeih Aligh1, Uwe Christians1, and Saami K. Yazdani1
1University of Alabama at Birmingham, Mobile, AL, 2C2D2 Clinical Research and Development, University of Colorado, Aurora, CO

FRI-152 Nanomatrix Coated Stent Enhances Endothelialization and Reduces Platelet and Smooth Muscle Cell Adhesion under Physiologic Conditions
Grant Alexander1, Patrick Heuang1, Jeong a Kim1, Brighta Brown1, Young-Soo Yoon1, and Ho-Wook Jun1
1University of Alabama at Birmingham, Birmingham, AL, 2Emory University, Atlanta, GA

FRI-153 Novel Synthetic Biomaterial for Fabrication of Heart Valve Replacements Resists Calcification
Hoby Tan1 and Nayan Vavarayan1
1Clemson University, Clemson, SC

FRI-154 Electrocardiac Alignment System for Vascular Fistula Creation
Mamadou Diallo1, Sorin Popa1, and Robert Dickson1
1Imperial College, London, United Kingdom, 2Streeter Ltd Chelmsford, United Kingdom

FRI-155 Computational Modeling for Optimizing Hemodynamic Performance of Endovascular Chemoembolization Filter
Nazarin Maani1, Daryl Yee2, Michael Nosonovsky1, Julia Greer2, 3Dassault Systèmes Simulia Corp., 4Purdue University, West Lafayette, IN

FRI-157 The Effect of Inflow Cannula Angle on the Intraventricular Flow Field of the LVAD-Assisted Heart
Hiroki Miura1, Ricardo Montes1, Sanja Sakim1, and Karen May Newman1
1San Diego State University, San Diego, CA

FRI-158 Design of a Wireless Power System for Continuous Flow Pediatric Left Ventricular Assist Devices
Najyn Park1, Thomas Zuccardi1, Arash Keshab1, Tommy Khalil1, Andy Nguyen1, and John Valdivos1
1California State University, Northridge, Northridge, CA

FRI-159 Simulation of Transcatheter Aortic Valve Deployment and Blood Flow in a Beating Heart
Ron Goul1, Matt Watson1, Matt Arduini1, Praveen Sridhar1, Karl D’Souza1, and Danny Bluestein1
1Stony Brook University, Stony Brook, NY, 2Dassault Systems Simulia Corp., Aschen, Germany, 3Dassault Systems Simulia Corp., Johnston, RI

FRI-160 The Effect of Mitral Valve Prosthesis Design and Orientation on Intraventricular Flow Transport Studied in a Mock Circulatory Loop
Ricardo Montes1, Matt Watson1, Matt Arduini1, Praveen Sridhar1, Pablo Martinez-Legaz1, J Bermejo1, Juan Carlos del Alamo1, and Karen May Newman1
1San Diego State University, San Diego, CA, 2University of California, San Diego, La Jolla, CA, 3Hospit al General Universitario Gregorio Maranon and Instituto de Investigacion Santander Gregorio Maranon, Madrid, Spain, 4Madrid, Spain, 5Madrid, Spain

FRI-161 Paper-Microfluidic Device to Monitor Blood Coagulation and Patient-Specific Response to Heparin/Protamine
Roland Sevrens1, Claire Niyigeza1, Benjamin Alouise1, Elizabeth Budman1, Raymond Wong1, and Jason-Yeol Yoon1
1University of Arizona, Tucson, AZ

FRI-162 Detection of the Infrasonic Sounds Emitted from the Human Heart with a Novel Infrasonic Stethoscope
Rolando Valdez1, Kenneth D. Cohen1, Daniel Woodard1, and Qamar A. Shams2
1NASA-Kennedy Space Center, Kennedy Space Center, FL, 2NASA-Langley Research Center, Hampton, VA

FRI-163 A Physiologically-Driven Biaxial Bioreactor System to Investigate Valve Interstitial Cell Phenotypic State after Surgical Repair
Salma Ayoubi1, Samuel Potter1, Jordan Gracse1, and Michael Stuck1
1The University of Texas at Austin, Austin, TX

POSTER SESSION—FRIDAY

POSTER SESSION—FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

FRI-164 The Interaction of Cardiac Geometry and LVAD Inflow Cannula Diameter on the Flow Dynamics of the LVAD-Assisted Heart
Suziya Saikali1, Michael Enfield1, Nikolai Marques1, Ashley Tabajjudin1, Vi Vu1, and Karen May-Newman1
Cornell University, Ithaca, NY, 

FRI-165 Surgical Implantation of Patient-Specific Device for the Left Atrial Appendage
Sarlin Robison1, 2, Seyyedhamidreza Alaie1, Hannah Sidoti1, Jordan Auge1, Lohendran Bakraskan1, James Miv1, Simon Dunham1, and Bobak Mosadegh1
Cornell University, Ithaca, NY, Weill Cornell Medicine, New York - Presidential, New York, NY

FRI-166 Catheter Deployable, Patient Specific, Left Atrial Appendage Occluders
Simon Dunham1, Seyyedhamidreza Alaie1, Sarlin Robison1, Amir Ali-Ali1, Maria Facchini-Thomas1, Hannah Sidoti1, Lohendran Bakraskan1, James Miv1, and Bobak Mosadegh1
Well Cornell Medical College, New York, NY, Cornell University, Ithaca, NY

FRI-167 Patient-specific Left Ventricle Models for Studying Flow Dynamics in the LVAD-Assisted Heart
Vi Vu1, Riccardo Montesi1, Lorenzo Rosson1, James Campos1, Nikolai Marques1, Publis Martinez-Lagazio1, I. Barme1, Juan Carlos del Alamo1, and Karen May-Newman1
San Diego State University, San Diego, CA, 

FRI-168 The Role of Stent Types in Abdominal Aortic Aneurysm Eaker After Endovascular Aneurysm Repair
Yue Liu1, Gregory Sirmian1, and Vikki Haeusswold1
Stevens Institute of Technology, Hoboken, NJ, Seton Hall Hackensack Meridian School of Medicine, South Orange, NJ

Track: Cardiovascular Engineering

Cardiac Electrophysiology

FRI-169 Kinetics of Chromophore Oxidation and Action Potential Repolarization after Cardiac Ischemia
Frederick Zasadny1 and Matthew Kay1
The George Washington University, Washington, DC

FRI-170 The Origin of Ectopic Ventricular Beats during Early Acute Regional Ischemia in Isolated Noncontracting Swine Hearts
Hanyu Zhang1, Gregory Sirmian1, and Jack Rogers1
University of Alabama at Birmingham, Birmingham, AL

FRI-171 Engineered Prokaryotic Channels for Cardiac Antiarrhythmic Therapy
Hung Nguyen1 and Nenad Bursac1
Duke University, Durham, NC

FRI-172 Minimum Reentrant Path Volume Index (RVI) Predicts Arrhythmia Vulnerability in Human Left Ventricle
Kedar Arai1, Chosoi Kang1, Brianna Cathey1, and Igor Elomov1
George Washington University, Washington, DC

FRI-173 Altering Heights of the R Wave in ECG: Possible Link with Depolarization Alternans
Saheer Alavi1, Vassos Deroules1, David Wesseler1, Sijq Wang1, Paul Arany1, and Abhijit Patwardhan1
University of Kentucky, Lexington, KY

FRI-174 Investigation of Bioinspired Soft Materials and Robotics in Modeling of the Human Left Atrium
Samuel Shrago1, Christopher Copenre1, Chance Mungre1, Alexander Kurz1, Grant Knopfer1, and Helen Drey1
University of Michigan, Ann Arbor, MI, University of Michigan Medical School, Ann Arbor, MI

FRI-175 Adrenergic Stimulation in Acute Hyperglycemia: Effects On Cellular And Tissue Level Murine Cardiac Electrophysiology
Sridha Thyagarajan1, and Abhijit Patwardhan1
University of Kentucky, Lexington, KY

FRI-176 Muscle Cell-Based “Living” Diodes
Uyen Carl1, Neevay Raghu1, Deren Can-Voral1, and Pine Zoruhma1
University of Notre Dame, Notre Dame, IN

Track: Cardiovascular Engineering

Heart Valve Structure, Function, and Disease

FRI-177 Smaller and Less Crystalline Hydroxyapatite Nanoparticles Drive Osteogenic Response of 3D-Cultured Aortic Valve Interstitial Cells Under Cyclic Strain via a BMP-Dependent Pathway
Abduln Mahmud1, Kwan Yoon1, Andrew Li1, Jennifer Richardson1, Joshua Kim1, Liana A Estrin1, and Jonathan T Butcher1
Cornell University, Ithaca, NY

FRI-178 Mitral Valve Chordae Tendineae: Functional Characterization
Amir Khalighi1, Bruno Reig2, Andrew Drach1, Robert Gorman1, Joseph Gorman1, and Michael S Sacks1
The University of Texas at Austin, Austin, TX, University of Pennsylvania, Philadelphia, PA

FRI-179 Pat-Endothelium-Expressed Specific In-Vitro and In-Vivo Simulations of Onvite Mitral Valve
Andrew Drach1, Amir Khalighi1, Joseph H Gorman1, Robert C Gorman1, and Michael S Sacks1
University of Texas at Austin, Austin, TX, University of Pennsylvania, Philadelphia, PA

FRI-180 Two-Photon Fluorescence Microscopy Assessment of Elastic Fiber Network in Primate Aortic Valves Subjected to Flow-Conditioned Brittany Gonzalez1, Alejandro Pinero1, Manuel Perez1, Eulsa Sayhan1, Krishna Riva1, Pablo Morales1, Sharan Ramasamy1, and Jessica Ramella-Roman1
Florida International University, Miami, FL, Mannheim University Foundation Inc., Hermannstr, FL

FRI-181 Valve Interventricular Cell Calcification Is Induced by Chondroitin Sulfate
Jooho Kim1, Lara A Estroff1, and Jonathan T Butcher1
George Washington University, Washington, DC

FRI-182 Temporal Ablusus Dilates After Chordae Tendineae Rupture in Porcine Ex-vivo Bating Hearts
Kooyu Kim1, Jousho Asagani1, Francis Lotti1, and Roubab Amini1
The University of Akron, Akron, OH, St. Joseph’s Regional Medical Center, Paterson, NJ

FRI-183 Decreasing Protein Adsorption on Heart valves using PEGDA-Based Coating
Madeleine Gorn1, Monica Farenholz1, and Jane Grande-Allen1
Rice University, Houston, TX, The Children’s Hospital, Houston, TX

FRI-184 On the Dynamics of Bioprosthetic Heart Valve Kosta Zakerzadeh1, Michael C. H. Wu1, Ming Chen1, and Michael Sacks1
University of Texas at Austin, Austin, TX, Iowa State University, Ames, IA

FRI-185 Vascular Tissue-Engineered Model For Studying Drug Resistance In Neuroblastoma
Aranzau Utxabarte1, Katsuhisa Nakayama2, Hesam Parsa1, Nai-Kong Cheung4, Masamichi Nakayama2, Hesam Parsa1, Nai-Kong Cheung4, Masamichi Nakayama2, Hesam Parsa1, Nai-Kong Cheung4, Masamichi Nakayama2, Hesam Parsa1
University of Texas at Austin, Austin, TX, National Institutes of Health, Bethesda, MD

FRI-186 Introduction of the Ex Vivo Mouse Mesometrium Culture Model for Investigating Multicellular Dynamics During Angiogenesis
Anne Goldlow1, Amelia Dugan1, Capucine Kapila1, Karla Huong1, Snyder Meadow1, Susanne Bierschenk1, Markus Sparrandon1, and Walter Muller1
Tulane University, New Orleans, LA, Ludwig-Maximilians Universitat, Munich, Germany

FRI-187 A Microfluidic Model to Study Endothelial Hydraulic Conductivity at Vessel Bifurcation
Hsan Aab1, Griffin Syzylak1, Kauhik Rangharjan1, Shauriyu Prakas1, and Jonathan W. Song1
The Ohio State University, Columbus, OH

FRI-188 Collagen Type I Alignment Regulates Endothelial Network Formation During Vasculogenesis
Jian Wei1, Michael McCoy1, Liang Yang1, and Claudine Fischer-Tachibana1
Cornell University, Ithaca, NY

FRI-189 Conditional Regulation of Inflammation-driven Angiogenesis using Engineered HDL-mimetic Nanoparticles
Jungho Ahn1, Yohitsuka Sai1, Nii L. Jeong1, and YongTae Kim1
Georgia Institute of Technology, Atlanta, GA, Seoul National University, Seoul, Korea, Republic of Korea

FRI-190 Galvanotaxis: An Electrocstatic Strategy for Directing Vascular Cell Migration
Katlyn Ammann1 and Martin Siegel1
University of Arizona, Tucson, AZ

FRI-191 Laser-Based Degradation for Engineered Vasculature in Synthetic and Natural Hydrogels
Keely Keller1 and John Slater1
University of Delaware, Newark, DE

FRI-192 RedoxActive Ultraparticles Disrupt the Cooperation of POXO1/Notch Signaling to Impair Vascular Regeneration
Kyung In Baek1, Rene Packard1, Yichen Ding1, Arlu Lee1, Jeffrey Hsu1, Constantinos Souvatzis1, Bingqian Li1, and Tsung Hua1
UGA, LA, CA, USC, CA

FRI-193 Nanoparticles for Gene Therapy: An Alternative Treatment For Hindlimb Ischemia
Linda Holzmann1, Guilhabert Baranger1, Luong Tien1, and Kytes Nguyen1
Department of Biomechanics, University of Texas at Arlington, Arlington, TX, Joint Biomedical program, UT southwestern, DaVa, TX, Department of Cardiology, UT southwestern Medical Center, Dallas, TX

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FRI-194 Endothelial Progenitor Cells Undergo Endothelial-to-Mesenchymal Transition and Angiogenesis from Increased Stiffness and Shear Stress
Patrick Lork, László Farkas, and Rebecca Heavey
Virginia Commonwealth University, Richmond, VA
FRI-195 Sacrificial Fiber Patternning to Induce Vascularization and Inosculatio in hiPSC-Derived Cardiac Tissues
Rahul Kari and Karen Coustan
Brown University, Providence, RI
FRI-196 Microvascular Orientation Guided by Aligned Extracellular Matrix Nanofibers
Zichen Guan, Wenjia Liu, Anik Ghosh, Danail Badal, and Feng Zhao
Michigan Technological University, Houghton, MI

Track: Cardiovascular Engineering

FRI-197 Endothelial Dysfunction and Dilation to Pico-molar Doses in Mesenteric Arteries Following Upstream Vascular Damage
Andrew DiMatese, Andrew Kumpfblatt, Joseph Gha, Wei Yin, David Rubenstein, and Mary Frame
Stony Brook University, Stony Brook, NY
FRI-198 Novel Approach for Visualizing the Binding of FXIIa on Endothelial Cell Surface and FXIIa Trafficking Following Endothelial Cell-induced Internalization
Arh Ngu, Cristina Puy, Erik Tucker, David Galan, Andreas Gruber, and Owen McCarty
Oregon Health & Science University, Portland, OR
FRI-199 Quantitative Assessment of Platelet Function in Adolescent Women with Heavy Menstrual Bleeding
Anne Rocha-Le, Ayeesha Khader, Arh Ngu, Michael Recht, Owen McCarty, and Kristina Haley
Oregon Health & Science University, Portland, OR
FRI-200 Characterization of Thrombi Produced in Stagnation Point Flows
Bradley Herbig and Scott Diamond
University of Pennsylvania, Philadelphia, PA
FRI-201 Investigation of the Platelet-endothelium Interface Using a MicrovesSEL Flow Chamber
Daniel Sallies, Jaeyoung Zillerman-Rudnicki, Andrew Wong, Stephanie Retamdo, Cristina Puy, Toshiaki Shirai, Peter Severs, and Owen McCarty
Oregon Health & Science University, Portland, OR

FRI-202 In Vitro Hemocompatibility Testing of Coronary Stents
Reema Elzig and Alessandra Baldi
San Jose State University, San Jose, CA
FRI-203 Evaluation of Upstream Stenosis-Platelet Interactions for Downstream Adhesion and Activation
Sheah Rahman, Colin Eichinger, and Vladimir Hlavc
University of Idaho, Salt Lake City, UT
FRI-204 Tissue Plasminogen Activator (tPA) Nanoformulation for Effective Ischemic Stroke Therapy with Minimal Hemorrhagic Risk
Su-Eun Jang, Daniel Lawrence, and Mahima Ranjan
University of Michigan, Ann Arbor, MI
FRI-205 Effect of Tissue Factor and Fibrogen Supplementation on Clot Functional Properties Under Blood Flow
Vijay Gogralapati, Zhu Zhu, Scott Diamond, Jacques Reiman, and Alexander Mitropoulos
DoD Biotechnology High Performance Computing Software Applications Institute, US Army Medical Research and Materiel Command, Fort Detrick, MD, University of Pennsylvania, Philadelphia, PA
FRI-206 Hemodynamic Force Triggers Rapid NETosis within Sterile Thrombotic Occlusions
Xinyi Xu, Jia Tan, and Scott Diamond
University of Pennsylvania, Philadelphia, PA

Track: Cardiovascular Biomechanics

FRI-207 LV Free Wall 3D Kinematics in Healthy and Heart Failure Patients - Adaptation and Remodeling
Joan Scardini, Robert Joseph Desjardins, John Goreham III, Robert Komrsak, and Michael Sacks
University of Texas at Austin, Austin, TX, University of Pennsylvania, Philadelphia, PA
FRI-208 In Silico Systolic Performance of a Tissue Engineered Porcine Aortic Valve
Joshua Choe, Souhail Isham, Christopher Noble, Brandon Telft, Sousan Jain, Amir Lerman, and Melissa Young
Mayo Clinic, Rochester, MN

FRI-209 Regulation of Human Cardiac Fibroblast-Myofibroblast Phenotype by Chemical and Biomechanical Cues
Katherine Choi, Shuli R. Nacht, Dasi M. Lyra-Lane, and Megan L. McCarty
Laboratory for Living Systems Engineering, Department of Biomedical Engineering, University of Southern California, Los Angeles, CA
FRI-210 Valve Endothelial Cell Gene Expression in Response to a Clinically-Relevant Pediatric Pulsatile Flow Profile
Sana Razzouk, Alexander Williams, Denise Medina, Lillian Valdes-Cruz, Steven Bibikov, Frank Scholl, and Sharan Ramaswamy
Florida International University, Miami, FL
FRI-211 Impact of Size of Transcatheter Aortic Valve on Leaflet and Stent Stresses
Yue Xuan, Kapil Krishnan, Danny Dorf, Ian Ye, Julius Giucioone, Liang Ge, and Farha Toor
University of California San Francisco, San Francisco, CA
FRI-212 Impact of Shear Stress on Intimal Plasticity
Rachel Knut, Robert Joseph Desjardins, Joseph Gorman III, and Hsiao-Ying Shadow Huang
University of Pennsylvania, Philadelphia, PA
FRI-213 Impact of Size of Transcatheter Aortic Valve on Leaflet and Stent Stresses
Yue Xuan, Kapil Krishnan, Danny Dorf, Ian Ye, Julius Giucioone, Liang Ge, and Farha Toor
University of California San Francisco, San Francisco, CA
FRI-214 Biaxial Mechanical Properties of Venous Valve Leaflet Tissues
Jian Li and Hao-Ying Shadow Huang
North Carolina State University, Raleigh, NC
FRI-215 Biaxial Mechanical Properties of Venous Valve Leaflets Tissues
Jian Li and Hao-Ying Shadow Huang
North Carolina State University, Raleigh, NC
FRI-216 Strain Effects on Collagen Proteolysis in Heart Valve Tissues
Katherine Choi, Robert Joseph Desjardins, and Hao-Ying Shadow Huang
North Carolina State University, Raleigh, NC
FRI-217 Cardiovascular Function and Structure are Preserved Despite Disruption of Collagen Synthesis
Mark Goldblatt, Dawayt Masood, Diana Tabim, James Johnston, Gregory W. Wolfe, Timothy Haseler, Daniel Greenspan, and Naomi Chedner
University of Wisconsin-Madison, Madison, WI
FRI-218 A Finite-Element Approach to Compute the Pressure Waveform in Vascular Structures from 4D MR Data
Mark Dietrich, Michael Rand, Tariq Tanbi, Evan Kosi, Sarah Kefarayi, Henrik Harlak, Michael Hope, and David Saloner
University of California San Francisco, San Francisco, CA
Zhangjie Wang, Yue Xuan, Liang Ge, and Elaine Tseung
UCSF Medical Center and San Francisco VA Medical Center, San Francisco, CA

Track: Cardiovascular Engineering, Biomechanics

FRI-220 Design of a Pulsatile Patient-specific In-Vitro Benchtop Model for Use in LVAD Hemodynamic Experiments
Benjamin Ellis, Kyle Begg, Zoe Lautem, William DeCamp, and K米尔 Kassab
University of Central Florida, Orlando, FL, Arnold Palmer Children’s Hospital, Orlando, FL
FRI-221 Bioscaffolding Mitral Valve Hydrodynamic Evaluation in Child versus Adult Hemodynamic Settings
Eliza Pour Issa, Omar V. Marklund, Schedules Hernandez, Steven Bibikov, Frank Scholl, Sarah M. Sieb, Ivan Saz, Lillian Valdes-Cruz, and Sharan Ramaswamy
Florida International University, Miami, FL, Joe DiMaggio’s Children’s Hospital, Hollywood, FL
FRI-222 Physiology-Modeling Coupled Experiment: A High Fidelity Hardware-In-The-Loop Hybrid Model for the Circulation
Ethan Kang, Masoud Farahmand, and Akash Gupta
Claremont University, Claremont, CA
FRI-223 Development of an In Vitro Model for Physiological Testing Native and Prosthetic Venous Valves
Gamze Ercan, Megan Laughlin, Hanna Jensen, Marc Girardot, and Morten Jensen
University of Arkansas, Fayetteville, AR, BioMed Design LLC, Atlanta, GA
Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-255 Strain-Rate Dependent Elasticity of Lung Surfactant
Alex Thomas1 and Mark Borden1
University of Colorado, Boulder, CO

FRI-256 Development of a Humanized Mouse Model that Recapitulates the Fibrotic Response to Biomaterial Implants
Joshua Dooloff1, Alyah Sadskar1, Shady Farah1, Rita Bertolla1, Michael Brehm1, Dale Greiner1, Robert Langer1, and Daniel Anderson1
Massachusetts Institute of Technology, Cambridge, MA, Children’s Hospital Boston, Boston, MA, University of Massachusetts Medical School, Worcester, MA

FRI-257 Assessing Drug Encapsulation Efficiency using Nanoparticle Tracking Analysis
Ragg Raghel1 and Duncan Griffiths1
Malvern, Westborough, MA

FRI-258 Imaging in Cardiovascular Systems

FRI-259 Deep Learning Semi-Automated Heart Tagging
Ayman El-Baz1, and Hussain Al-ahmad3
1Faculty of Computers and Information, Mansoura University, Mansoura, Egypt, 2J.B. Speed School of Engineering, University of Louisville, Louisville, KY, 3Abu Dhabi University, Abu Dhabi, United Arab Emirates

FRI-260 Biphagic Analysis of Coronary Arterial Shear Stress Using IVUS-derived Borders and CFD Analysis
Jan Kriegsmann1, Naga Sai Kiran Madal1, Vikas Aluri1, and M. Fazel Lee1
Southern Illinois University Edwardsville, Edwardsville, IL

FRI-261 Determining Radiation-Induced Subclinical Cardiac Toxicity in Left Sided Breast Cancer Patients using Magnetic Resonance Imaging with Tagging
Shruti Siva Kumar1, Alexandra Walker1, Julie Bradley1, Christopher Klassen1, and Walter O’Dell2
1University of Florida, Gainesville, FL, 2UF Health Proton Therapy Institute, Jacksonville, FL

FRI-262 Imaging based Left Atrial Appendage Shape Classification for Stasis Risk Stratification
Soroosh Sanatham1 and Phrahlid Manon1,2
1University of Pittsburgh, Pittsburgh, PA, 2Duquesne University, Pittsburgh, PA

FRI-263 Optical Coherence Tomography Imaging to Study Cardiac Tissue Changes Due to Chemically Induced Edema
Tara Darb1, Sharon Geoghe2, Igor Elmov1, and Jason Zani1
1The George Washington University, Washington, DC

FRI-264 Quantification of Myocardic Mechanics under Inotropic Stimulation using 3D cine DENSE CMR
Zhanqiu Liu1, Xiaoyan Zhang1, Gregory Walsh1, David Powell1, Kenneth Campbell1, Brandon Formisano1,2, and Jonathan Work1
1University of Kentucky, Lexington, KY, 2Genisys Health System, Danville, PA

FRI-265 Sarcomeric Addition in a 3D in-vivo-like Neonatal Cardiomyocyte Culture under Mechanical Stretch
Zhonghai Wang1, Aikin Wei1, Xiaojie Yang1, Siyu Mai1, Thomas K. Borg2,3, and Zhongliang Tang1
1Clemson University, Clemson, SC, 2Medical School of South Carolina, Charleston, Clemson, SC

FRI-266 Imaging Lymphatic Function in a Rat Model of Hypertension and the Impact on Breast Cancer Metastasis
Jeddly Jagtap1, Saygul Sermes1, Abdul Panw1, Venkateshwar Gogineni1, Sarah White1, Carmen Bergom1, Max Zetterqvist1, and Peter Moss1
1Medical College of Wisconsin, Milwaukee, WI

FRI-267 4D Light Sheet Fluorescent Imaging to Elucidate Notch and ErbB Signaling in Chemo-Induced Cardiac Injury and Regeneration
Junjie Chen1, Nelson Jen1, Yichen Ding1, Jonathan Gao1, Michael Cheri1, Chadi Nahal1, Rene Packard1, and Tzung Hsiai1
1University of California, Los Angeles, Los Angeles, CA

FRI-268 Using Augmented Reality to Interact with 3D Holographic Images of Intra-cardiac Geometry and Catheter Positions during Cardiac Ablation Procedures
Michael Southworth1, Jeneren Silve1, and Jonathan Silver1
Washington University in St Louis School of Engineering and Applied Science, St Louis, MO, Washington University in St Louis School of Medicine, St Louis, MO

FRI-269 3D Printed Model of Mital Valve Prolapse with Accurate Replicability for Surgical Simulation
Takahiro Shiraake1, Masayoshi Yoshitsuya2, Yasushi Koyama3, Hiroki Masuyagi3, Taro Miyoshi3, Akira Kunara3, Takakite Misaka2, Kishio Todai2, and Yoshiki Sawai3
1Kawen Rosai Hospital, Aomaikeji, Japan, 2Okaya University, Suita, Japan, 3Sakurabashi Watanabe Hospital, Osaka, Japan, 4Okayama University, Okayama, Japan, 5Daihara University, Okayama, Japan

FRI-270 The Three-dimensional Neutrophil Distribution in the Acutely Injured Skull Cord Revealed by Optical Clearing and Light Sheet Imaging
Ikbeom Jang1, Victoria Poole2, Trey Shenk1, Diana Svaldi1, and Joseph Rispoli1
1David Glidstone Institutes, San Francisco, CA, 2University of California, San Francisco, CA

FRI-271 Assessment of Preictal Periods by Detecting Features and Machine Learning
Fatma El-zahraa Elgamal1,2, Mohammed Moubaradre1, Diana Piatt1,3, Sandipan Pati1, and Leonidas Iasemidis1
1Louisiana Tech University, Ruston, LA, 2University of Alabama, Birmingham, AL

FRI-272 A Novel Early Diagnosis System for Alzheimer’s Disease Based on Local based Analysis Using 11C PiB PET Scans
Fatma El-zahraa Elgamal1,2, Mohammad Elzopy1, Ahmed Atwan1, Mahmoud El-Kady1, Mohamed Mansour1,2,4,5, Asaad Bawab1, and Aymen El-Baz1
1Faculty of Computers and Information, Mansoura University, Mansoura, Egypt, 2J.B. Speed School of Engineering, University of Louisville, Louisville, KY, 3Abu Dhabi University, Abu Dhabi, United Arab Emirates, 4School of Medicine, University of South Carolina, Greenville, SC, 5University of Louisville Autism Center, University of Louisville, Louisville, KY

FRI-273 Group-level White Matter Analysis for Middle School Football Athletes in Comparison with Average Male Students: DTI Study
Ikebe Jang1, Troy Shenk1, Nicole Vike1, Sharlene Newman1, and Thomas Talavage1
1Purdue University, West Lafayette, IN, 2Indiana University, Bloomington, IN

FRI-274 Machine Learning based Classification using Diffusion Tensor MR Imaging to detect Youth Athletes with Repetitive Head Blows
Ikebe Jang1, Victoria Poole1, Troy Shenk1, Drissa Ndiaye1, and Thomas Talavage1
1Purdue University, West Lafayette, IN, 2Beth Israel Deaconess Medical Center, Boston, MA

FRI-275 A Functional Neural Circuit Signature of Blast Induced Traumatic Brain Injury Identified by In Vivo Calcium Imaging of Hippocampal CA1 Neurons
Matthew Hempel1, Shanti Tumrala1, and David Mearny2
1University of Pennsylvania, Philadelphia, PA, 2Biomimicry Program, Lehigh University, Bethlehem, PA

FRI-276 2D and 3D Neural Cultures Exhibit Significantly Different Spontaneous Activity Patterns
McFadyen Hui1 and Vergipony Bandubasch1,2
1Department of Electrical and Computer Engineering, Lehigh University, Bethlehem, PA, 2Biomimicry Program, Lehigh University, Bethlehem, PA

FRI-277 Development of Novel Carbon Electrodes for the Detection of Neural Activity using fMRI
Naeem Ashraf-Kumar1, Munir Choudhry1,2,1, and Rosalind Saderis1
Arizona State University, Tempe, AZ

FRI-278 Visualizing Beta Band ERD In Stereoscopic 3D: Exploring Brain Activity During Fatiguing Contractions
Priya Balasubramaniam1, Chris Larke1, Dylan Snyder1, and Brian Schooler1
Marquette University, Milwaukee, WI

FRI-279 Acute Impacts of Football Competition on Brain White Matter Microstructure in High School Athletes
Yuken Zou1, Ikebe Jang1, Nicole Vike1, Thomas Talavage1, and Joseph Rispoli1
Purdue University, West Lafayette, IN

FRI-280 Abnormal White Matter Microstructure and Cognitions in Adolescent Athletes with Concussion History
Yuken Zou1, Ikebe Jang1, Nicole Vike1, Victoria Poole1, Troy Shenk1, Drissa Ndiaye1, Thomas Talavage1, and Joseph Rispoli1
Purdue University, West Lafayette, IN, 2Beth Israel Deaconess Medical Center, Boston, MA

FRI-281 Short and Long-term White Matter Microstructural Differences in Adolescent Female Soccer Athletes
Yuken Zou1, Ikebe Jang1, Nicole Vike1, Drissa Ndiaye1, Thomas Talavage1, and Joseph Rispoli1
Purdue University, West Lafayette, IN

FRI-282 A Novel MRI-compatible Haptic Interface for Functional Brain Imaging
Aleks Subbarao1, Semir Mehtens1, and Alessandro Balestrieri1
1San Jose State University, San Jose, CA, 2Stanford University, Palo Alto, CA
Track: Biomedical Imaging and Optics, Respiratory Bioengineering
Imaging the Respiratory System

FRI-329
A Comprehensive Framework for Early Assessment of Radiation Induced Lung Injury
Ahmed Soliman2, Fahmi Khalifa2, Ahmed Shalaby2, Mohamed Elmaghraby1, Olesya Motovylyak2, and Richard Dortch1

FRI-330
Imaging of 99mTc-HMPAO Uptake in the Isolated Perfused Rat Lung: Pharmacokinetic Analysis
Anne Clough1, Katherine Barry1, Benoît Rizzo1, Elizabet Jacob2, and Randall Goodenough3

FRI-331
Validation of Pulmonary Vessel Sizing from 3D Medical Images
Anne Gormaley1, David Prada1, Shruti Siva Kumar1, and Walter O’Dell1

University of Florida, Gainesville, FL

FRI-332
Predicting Fissure Form Area Activation Using Surface Brain Decoding During Resting State and Task
Azam Eltahir1, Matthew D. Budde2, Shekar N. Kurpad2, Olesya Motovylyak1, and Richard Dortch2

1Virginia Tech Carilion Research Institute, Roanoke, VA, 2Texas A&M University, College Station, TX

FRI-333
A Geometric Deformable Model-Based Framework for Kidney Segmentation using 3D Diffusion MRI
Danyal Bhattu1, Mohammad Shehata2, Ahmed Soliman2, Mohamed Abbas El-ghar2, Fahmi Khalifa1, Moumen Elmelegy3, Adel Elmaghraby1, and Ayman El-baz4

1University of Louisville, Louisville, KY, 2Faculty of Computers and Information, Mansoura University, Mansoura, Egypt, 3Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates, 4Department of Neurological Surgery, University of Louisville, Louisville, KY

FRI-334
Magnetic Resonance Electrical Impedance Tomography on Neural Activity Imaging
Fanru Li1, Minshu Chauhan1, and Rowland Sadler2

1Arizona State University, Tempe, AZ

FRI-335
Prostate Cancer Diagnosis Based on the Fusion of Imaging-Markers with Clinical-Biomarkers
Islam Aboulfotouh3, Ahmed Shalaby2, Mohamed Elmaghy3, Ahmed Abdoulouitou3, Naoufel Werghi1, Adel Elmaghraby1, and Ayman El-baz2

1University of Louisville, Louisville, KY, 2Faculty of Computers and Information, Mansoura University, Mansoura, Egypt, 3Khalifa University of Science and Technology and Research, Abu Dhabi, United Arab Emirates

FRI-336
Prostate Cancer Diagnosis Based on the Fusion of Biomarkers with Ultrasound Imaging
Islam Aboulfotouh3, Ahmed Shalaby2, Mohamed Elmaghy3, Ahmed Abdoulouitou3, Naoufel Werghi1, Adel Elmaghraby1, and Ayman El-baz2

1University of Louisville, Louisville, KY, 2Faculty of Computers and Information, Mansoura University, Mansoura, Egypt, 3Khalifa University of Science and Technology and Research, Abu Dhabi, United Arab Emirates

FRI-337
Carbogen Gas-challenge to Obtain a Set of Critical Perfusion Parameters in fMRI
Zimna Yari1, Gregory Tamer2, and Yujie Tong2

1Purdue University, West Lafayette, IN

FRI-338
Multisite Reliability of Default Mode Network in Resting State fMRI
Sumra Bai1, Kaseem Akhtar1, Prakash Kashyap1, and Thomas Talavage1

Purdue University, West Lafayette, IN

FRI-339
ASL and Temperature Rise Simulation of Breast Model Fused with Human Model in High Field MRI
Xin Li1, Qingyu Yang1, and Joseph Rispoli2

1Purdue University, West Lafayette, IN, 2University of Missouri, Columbia, MO

FRI-340
Estimating Uncertainty in Images Reconstructed with Sparsity-Based Object Prior-inspired MRI
Yang Liu1, Yuja Chen2, Chai Eldema3, hongyu an1, and Mark Anastasio1

1Washington University in St. Louis, St. Louis, MO, 2Washington University in St. Louis, St. Louis, MO, 3Michigan State University, East Lansing, MI
FRI-341
Detection of Resting Low-frequency Oscillations in Cerebral Blood Flow using a Fast Diffuse Correlation Spectroscopy
Ahmed Bahraei1 and Guoqiang Yu1
1University of Kentucky, Lexington, KY

FRI-342
Level Set Segmentation Using Statistical Shape Prior
Ahmad ElTarabily1, Hassan Hajjidak1, Mohammed Ghazali1, Ahmad Shalaby1, Magdi ElAzabi1, and Ayman El-Baz1
University of Louisville, Louisville, KY, 2Manuscript University, Mansoura, Egypt, 1Abu Dhabi University, Abu Dhabi, United Arab Emirates

FRI-343
Imaging Cell-Nanostructure Interactions via Anisotropy Contrast Optical Microscopy: Contrast Enhancement and Quantitative Estimation of Protein Adsorption and Infiltration
Albert Nguyen1, Dain Peer2, Chad Brady1, Alex Ruder1, Angela Pannier1, and Mathias Schubert1
1University of Nebraska-Lincoln, Lincoln, NE

FRI-344
Employing Optical Singularities to Investigate Biophysical Phenomena
Anindya Majumdar1 and Sean Kirkpatrick1
1University of Southern California, Los Angeles, CA

FRI-345
Quantitative Method to Estimate Age-At-Death of Human Crania using Computer Vision and Machine Learning
Jessica Aldrich1, Jacob Griffith2, Peer Moore-Jansen1, and Kim Cluff1
1Wichita State University, Wichita, KS

FRI-351
Clinical Report Guided Retinal Microaneurysm Detection Using Deep Learning
Ling Dai1, Qiang Wu1, Ben Shang1, Weiping Jia1, Xuqiong Hou1, and Ruigu Fang1
1Shanghai Jiao Tong University, Shanghai, China, People’s Republic of China; 2Shanghai Jiao Tong University Affiliated Sixth People’s Hospital, Shanghai, China; People’s Republic of China; 3Florida International University, Miami, FL

FRI-352
Generation of Subcellular Micro-Texture Using Label-free Optical Scatter Imaging
Mohammad Naseer1, Rene Schloss1, Aril Shrinad1, and Nada Boutayam1
1 Rutgers University, Piscataway, NJ

FRI-353
Light-Scale-Based Label-free Assessment of Mitochondrial Remodeling and Fission
Mohamad Naseer1, Rene Schloss1, Bonnie Firestein1, and Nada Boutayam1
1Rutgers University, Piscataway, NJ

FRI-354
Using Wavelength-Normalized Optical Spectroscopy to Improve the Accuracy of Bacteria Growth Rate Quantification
Samuela McMillion1, Katelyn Trahan1, Annie Wong-Beringer1, and Andrea Armani1
1University of Southern California, Los Angeles, CA

FRI-355
Quantitative Imaging of Breast Cancer Cell Metabolism in Response to Varying Periods of Hypoxic Stress
Jake Allison1, Lisa Rebello1, Kyle Quinn1, and Narasimhan Rajaram1
1University of Wisconsin—Madison, Madison, WI

FRI-356
Spectral Analysis of Radiofrequency Ultrasound Signals for the Identification of Intercellular Nerves
Asher Haggard1, Jon Klingensmith1, Russell Fedewa1, Hesham Elsharkawy1, Kenneth Cunningham1, Sean DeGrande1, and Geoffrey Vince1
1Southern Illinois University Edwardsville, Edwardsville, IL, 2The Cleveland Clinic Foundation, Cleveland, OH

FRI-357
Transcranial Focused Ultrasound Aberration Correction
Jacob Jagniecki1, Gayeun Sharma1, Abdul Parchur2, Venkateswara Gogineni1, Sarah White1, Michael Fisher1, and Amit Joshi1
1Medical College of Wisconsin, Milwaukee, WI

FRI-358
Development of Quasi-Stable Microbubble Clusters: Potential for New Strategies in Ultrasound Contrast Agent Imaging and Drug Delivery
Ronald Hall1, Kenneth Hoyt1, Caroline Loo1, Jacqueline Loo1, Robert Mathey1, and Shashank Sire1
1University of Texas at Dallas, Richardson, TX, 2University of Texas at Southwestern, Dallas, TX

FRI-359
Concurrent Assessment of Mechanical and Computational Information of Soft Tissues Using Combined Acoustic Force Impulse Imaging and Thermal Strain Imaging
Vineet Sinha1, Wei Jin1, and Shashank Sire1
1University of Pittsburgh, PA

FRI-360
Evaluation of a Nanoparticle Treatment for Traumatic Brain Injury in Mice Using MRI
Alexander Majumdar1, Forrest Kavir6, Anthony Convertine1,2,3, Christine Vong1, and Patrick Stayton1
1University of Nebraska-Lincoln, Lincoln, NE; 2Molecular Engineering and Sciences Institute, Seattle, WA

FRI-361
Assessment of Complex Shear Moduli from Inverse Modeling of MRE Displacement Data
Benjamin Schwartz1 and Richard Magin1
1University of Chicago, Chicago, IL

FRI-362
Photoacoustic-guided Surgery with Indocyanine Green-coated Superparamagnetic Iron Oxide Nanoparticle Clusters Extends Progression-free Survival in a Pre-clinical Mouse Tumor Model
Ahmed Almatrooghi1, Jayesh Thawani1, Lesan Yan1, Joel Stein1, Mohammad Naser1, Rene Schloss1, Bonnie Firestein1, and Patrick Stayton1
1University of Nebraska-Lincoln, Lincoln, NE; 2University of Texas at Dallas, Richardson, TX

FRI-363
A Noise Reduction Method for Quantifying Nanoparticle Light Scattering in Low Magnification Dark-field Microscopy Far-Field Images
Dali Sui1, Xu Fan1, Chang Li1, and Ye Hu1
1Wuhan Institute of Physics, Chinese Academy of Sciences, Wuhan, China

FRI-364
Imaging the Effect of Germline Tumor Micro-environment Variation on Triple Negative Breast Cancer
Jared Jagtji1, Gayeun Sharma1, Abdul Parchur2, Venkateswara Gogineni1, Sarah White1, Michael Fisher1, and Amit Joshi1
1Medical College of Wisconsin, Milwaukee, WI

FRI-365
Synthesis and Characterization of a Magnetically Active 19F Molecular Beacon
Megan E. Dempsey1, Hetal D. Marbla1, Tun Li1,2, Nicholas L. Fawzi1, and Eric M. Darlington1
1Brown University, Providence, RI

FRI-366
The Plasma Membrane Is Compartmentalized by a Fractured Actin Network
Patrick C. Mannion1, Sanaz Sedeghi1, Jenny L. Higgins1, Michael M. Tamkun1, and Diego A. Magnolino1
1Colorado State University, Fort Collins, CO

Track: Biomedical Imaging and Optics
Nanotheranostics
FRI-367
Synthesizing Various Sizes of PLAGA Nanoparticles to Image NP Behavior in Traumatic Brain Injury
Aria Taroudi1, Alex Maganti1, and Forrest Kavir1
1University of Nebraska-Lincoln, Lincoln, NE

FRI-368
Novel Nanotheranostics for MRI-Guided Delivery of Arsenic Trioxide to Treat Glioma
Liang Zhang1, Zhongwei Zhang2, and Dawen Zhao3
1UT Southwestern Medical Center, Dallas, TX, 2Wake Forest University School of Medicine, Winston Salem, NC

FRI-369
Conducting Polymer Nanoparticles for Laser-Mediated Photothermal Ablation of Cancer: Synthesis, Characterization, and In Vitro Evaluation
Travis Carter1, Kyle Walsh1, Varun Pattana1, Austin Ming1, James Tunnell3, Jennifer Intie1, and Tama Betancourt1,2
1Texas State University, San Marcos, TX; 2Texas State University, SAN MARCOS, TX; 3The University of Texas at Austin, Austin, TX

Track: Biomedical Imaging and Optics
Biomedical Imaging and Optics—Other/Non-Specified
FRI-370
In Vivo Photophotographic Monitoring of the Intestine using Visible WaveLengths
Anna Warsiowski1, Michael Robinson1, Ryan Butcher1, Mark Wilson1, Mark Wilson1, M. Nancy Ersson1, and Gerard Colt1
1Texas A&M University, College Station, TX, 2University of Pittsburgh, Pittsburgh, PA; 3Veterans Affairs Healthcare System, Pittsburgh, PA; 4Consultant, Knoxville, TN

FRI-371
Breast Image Segmentation by Improved BP Neural Network based on Mathematical Morphology and Fuzzy Clustering
Deng Min1, Li Liu1, Mei Duan1, and Li Liu1
1Tsinghua University of Technology, Tsinghua, China, People’s Republic of China

Track: Biomedical Imaging and Optics
Imaging—MR and Other Modalities
Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Track: Cancer Technologies, Drug Delivery & Intelligient Systems

Cancer Drug Delivery

FRI-402 Targeting Nanotherapeutics to the Glioblastoma via the Cell Surface Receptor Fnt14
Anoket Wadkar1, Jimena Dannys, Nina Connolly, Jeffrey Winkles, Graeme Woodworth2, and Anthony Kim1
1University of Maryland, Baltimore, Baltimore, MD

FRI-403 Semiconducting Polymeric Patchy Nanoparticles as Novel Cancer Theranostics for Ovarian Cancer
Binal Brahmbhatt1, Kaitlyn Scott1, Veda Prasad1, Dora Obodio2, Anir Misra1, Negi Anukuldasheh3, Sundararaman Gobakaran4, Jamal Dew1, and Carolina Salvador-Morales1
1George Mason University, Fairfax, VA; 2Virginia Commonwealth University, Richmond, VA

FRI-404 Multifunctional Gold Nanoparticles for Targeted Combimational Cancer Therapy
Bruna Mercado1, Claudia Ying Wu1, and Liang Tang1
1University of Texas at San Antonio, San Antonio, TX; 2University of Texas Health Science Center, San Antonio, TX

FRI-405 A Computational Model to Predict Drug Delivery to Heterogeneous Tumors Overexpressing HER2
Bruna Mercado1, Cornelius Cilliers1, Greg Thurber1, and Jennifer To1
1School of Computing and Engineering, Southwestern Polytechnic University, Tempe, AZ, 2Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA

FRI-406 A Comparison Study to Investigate the Effect of Drug-conjugated Site on its Delivery Efficacy using Double Hydrophilic Block Copolymers-based Prodrugs
Hua Wei1
1Lanzhou University, Lanzhou, China, People’s Republic of China

FRI-407 Redox-sensitive Multi-stage Albumin Nanoparticle for Drug Delivery
Jae You Kim1 and Debayukti Ghose1
1The University of Texas at Austin, Austin, TX

FRI-408 Lipid and Polymer Nanoparticle Delivery of Lipophilic Black Raspberry Phytochemicals for Oral Cancer Chemoprevention
Lauren Kosly1, Thomas Knobloch, Christopher McLaughlin1, and David A. Brown1
1University of Florida, Gainesville, FL

FRI-409 Preparation of Small Gold Nanorods and Their Applications in the Photothermal Therapy against Breast Cancer
Lijun Wang1 and Liang Tang1
1University of Texas at San Antonio, San Antonio, TX

FRI-410 Ultrasound-Guided Monitoring and Control of Liposomal Doxorubicin Uptake in Tumors using Microbubble Contrast Agents.
Roxi Kim1,2, Sina Harnasheh1, Rajan Patil1,2, Mark Borden1, Jessica Kendall1, and Shashank Suri1
1University of Texas Dallas, Richardson, TX; 2University of Chicago Medical Center, Chicago, IL; 3University of Colorado, Boulder, CO; 4University of Texas Dallas, Richardson, TX; 5University of Texas Southwestern, Dallas, TX

FRI-411 The Effect of Gold Nanosphere Physiochemical Properties on Corona Formation and Cellular Uptake
Safid Punshi1, Bruna Mercado1, and Liang Tang1
1UTSA, San Antonio, TX

FRI-412 Multifunctional Ormosil-Theranostic Probes for Adjuvant Cancer Therapy, Deep Tumor Penetration and In- Vivo Imaging
Ashishyagan Nageswat1, Zora Bernard1, Pedro de Costa1, Juanpalda Olguin1, and Anthony McGovern1
1Florida International University, Miami, FL

FRI-413 Exploiting Protein Adsorption to Stabilize Colloidal Drug Aggregates
Ahli Gieri1, Christopher McLaughlin1, Da Du1, Brian Shiozaki1, and Molly Shiozaki1
1University of Toronto, Toronto, ON, Canada; 2University of California, San Francisco, San Francisco, CA

FRI-414 Shape, Targeting and EPR effect in the Lipid Nanoparticles: Dicosidal bicelle as an Ideal Carrier for Cancer Therapeutics
Armin Tahmasbi Rad1 and Mu-Ping Nieh1
1University of Idaho, Moscow, ID

FRI-415 Liposome-Targeted Inhibition of CCR2 in PDAC-CAF Mouse Models
Austin Rivera1, Lindsey Britton1, Siva Sai Krishna Dasa1, and Kimberly Kely1
1University of Connecticut, Storrs, CT

FRI-416 STAT3 Inhibitor Loaded Dipalmitylophosphatidylcholine-Poly(lactic-co-glycolic acid) (DPPC-PCLA) Nanoparticles For The Treatment of Lung Cancer
Dani Zhukov1, Roshin Iyer1, Gazem Ozer1, Matthias Mu1, Benjamin Ozer1, Debbie Sanchez2, and Kyle Nipper2
1University of Texas at Arlington, Arlington, TX; 2University of Texas Southwestern Medical Center, Dallas, TX

FRI-417 Magnetically Triggered Drug Release from Nanoparticles
Eric Fuller1, Carlos Rinaldi1, Brent Sumerlin1, and Hao Sun1
1University of Florida, Gainesville, FL

FRI-418 HIFU Synergistically Enhances Thermally Triggered Chemotherapy for Liver Cancer: Evidence from in vitro and in vivo Studies
Gray Habber, Haim Murad1, Monica Kul4, Yuhui Zhang4, Vijay John1, and Damo Khismatullin1
1Tufts University, New Orleans, LA

FRI-419 HIFU is Synergistic with Anti-neoplastic Drugs that Target ER Stress
Haim Murad1, Emma Bort1, Partha Chundar, Debiai Mondal, and Damo Khismatullin1
1Tufts University, New Orleans, LA

FRI-420 Microbeam Radiation Therapy Enhances Nanoparticle Drug Delivery in GEMM Triple Negative Breast Cancer Model
Judith Vonesch1, Joa Chang1, Henry Lee1, Lauren Price1, Andrew Madden1, Charlie Sontg1, David Darr1, and William Zhang1
1UNC-Chapel Hill/ NC State University, Chapel Hill, NC; 2UNC School of Medicine, Chapel Hill, NC; 3UNC Chapel Hill, Chapel Hill, NC

FRI-421 Carbon Nanotube Functionalized Mesenchymal Stem Cell for Tumor-Targeted Photothermal Therapy
Ahli Gieri1, Christopher McLaughlin1, and Ching-Ann Peng1
1University of Idaho, Moscow, ID

FRI-422 Cerebrospinal Fluid as a Medium for Nanoparticle Drug Delivery to Leptomeningeal Metastasis in Medulloblastoma
Kyle Householder1, Robert Wechsler-Reya1, and Rachel Srinivas1
1Barrow Neurological Institute, Phoenix, AZ; 2Arizona State University, Tempe, AZ; 3Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA

FRI-423 Targeted Photothermal Ablation of Breast Cancer
Patrick McKenna1, Roger Harrison1, and Rajagopal Ramesh1
1University of Oklahoma, Norman, OK; 2University of Oklahoma Health Science Center, Norman, OK

FRI-424 Enhanced Ethanol Ablation as a Surgical-Alternative for Tumor Treatment in Response to the Immunotherapeutic Effect of CAR T-Cell Therapy
Robert McPherson1, Corinne Nief1, Carlos Barrera Castedo1, Megan Maggi1, Francesca Salvi1, Jenna Mueller1, Mark Dwoh1, David Katz1, and Nirmal Ramamun1
1Duke University, Durham, NC

FRI-425 The Downstream Bioeffects of Microbubble-mediated Sonoporation on Cancer Cells
Ximing Du1, Shun Yu1, Wei Hong2, Alfred C.H. Y1, and Jennifer M.F. Wan1
1The University of Hong Kong, Hong Kong, Hong Kong; 2The University of Waterloo, Waterloo, ON, Canada

Track: Cancer Technologies
Cancer Immunoeengineering

FRI-426 Mathematical Modeling to Analyze CAR T-Cell Dynamics and Survival
Amirreza Das1, Nicole Piccio1, Katie Mueller1, Christopher Capitan1, David Hu1, and Khiemara Sar1
1University of Wisconsin–Madison, Madison, WI

FRI-427 Can Exogenous Electric Fields Abrogate Cancerous Signaling? Evidence and a Mitochondrial Perspective
Johan Goswami1, Justin Perry1, Mitchell Allen1, David A. Brown1, Michael E. Sonksen2, and Yves Veschambre1
1Virginia Polytechnic Institute and State University, Blacksburg, VA

FRI-428 Bio-inspired Design of Nanoparticle Artificial Antigen-presenting Cells for Immunotherapy
John Hickey1, Fernando Vieira1, Hua-Quan Mao1, and Jonathan Schnick1
1Sofia Hopkins University, Baltimore, MD

FRI-429 Immune Modulating Effects of Pulsed Focused Ultrasound in Murine Breast and Melanoma Tumor Models
Omar Aly1, Scott Burka1, and Joseph Frank1
1National Institute of Health, Bethesda, MD

FRI-430 The Expression and Functional Testing of ACCDCs, a Novel Antibody-Pepitide Fusion for Immunotherapy of Glioblastoma
Rebecca Cohn1, Sierra Richner1, Andrew Diament1, Breandn Schaefer1, Andrew Niemann1, Hugh Mason1, Tsafrir Mor1, Joseph Blattman1, and Rachael Linn1
1University of Texas Dallas, Richardson, TX, 2University of Chicago, Chicago, IL

FRI-431 Tracking the Dynamic Interplay of Tumor Response to the Immunothapeutic Effect of Iron Oxide Nanoparticles
Sagar Jagannath1 and Ryan Spiller1
1Sloan-Kettering Institute for Cancer Research, New York, NY; 2Stanford Cancer Imaging Training Program (SCI), Stanford University, Palo Alto, CA

Track: Drug Delivery & Intelligent Systems
Delivery Systems for Proteins and Vaccines

FRI-432 Dermal Delivery of Herosideris Peroxide (HRP) via a Novel Noninvasive Vaccination Device (Poricine Model)
Adiba Chowdhury1, Stany Brook University, Comer, NY
FRI-433 Immune Responses to Influenza A Virus DNA Vaccination are Enhanced by Chitosan Nanoparticle Delivery Annalisa Lamperti, Eric V. Price, James Willms, Deborah Brown, and Angela Pannier1 University of Nebraska-Lincoln, Lincoln, NE, “Neure Technology Corporation, Lincoln, NE.

FRI-434 Optimization of pH-Responsive, Polymer-Enabled Intracellular Peptide Delivery Brian Evans1, Craig Duvall2, Eric Dailing2, Kameron Kithinji1, and Alvin Mukate1 Vanderbilt University Medical Center, Nashville, TN, 2Vanderbilt University, Nashville, TN

FRI-435 The Effects of Storage Conditions on Stability of an Antigen-Model Protein within the ImmunoMatrix Patch Eshani Goradia1, Akshita Choudhury1, Yun Shi Liang1, Samuel Urena1, Ryan Von Dollen1, and Swarnika Katareyna1 Stony Brook University, Princeton, NJ, 2Stony Brook University, Stony Brook, NY

FRI-436 Nanoparticle Vaccine Generates Lung-Resident CD8+ T Cells That Protect against Viral Challenge Frances C. Kirshner1, Parag Pathak1, Pavan Chalasani1, Kyle W. Becker1, Sema Sivrioglu3, Sebastian Joyo1, and John T. Wilson1 Vanderbilt University, Nashville, TN

FRI-437 Antimarial Action of a Recombinant Engineered Fusion Protein Patrick Mucha1 and Roger Harrison1 University of Oklahoma, Norman, OK

FRI-438 The Effects of Temperature and Humidity on Nanofiber Morphology Samuel Urena1, Akshita Choudhury1, Ryan Von Dollen, Yun Shi Liang1, Eshani Goradia1, and Katarzyna Sawicka1 Stony Brook University, Stony Brook, NY

FRI-439 Novel Approach to Measuring Hydrophobic Drug Release In Vitro Anastasia Frank, Kamenetskiy1, Dmitry G; John Barry1; Naren Bank1; and Alexey Vertegel1 Clemson University, Clemson, SC, “Medical University of South Carolina, Charleston, SC.

Track: Drug Delivery & Intelligent Systems, Biomaterials Drug Delivery Biomaterials

FRI-440 Biocatalyst-Derived Functionally Engineered Nanofibers for Drug Delivery to Lung Epithelial Cells in Air-liquid Interface Rana Agha1, Shoaib Amin1, and Robert A. Grubbs1 Georgia Institute of Technology, Atlanta, GA, 2Georgia Institute of Technology, Atlanta, GA, 3Emory University, Atlanta, GA

FRI-441 DNA-Dual Functionalized Ferrohydrogels for Drug Delivery Chengkai Chen1, Xiangdong Guo1, Xiaolin Huang1, and Zhihong Cheng1 Northeastern University, Boston, MA

FRI-442 Modulation of Endoplasmic Reticulum Stress Associated Brain Endothelial Dysfunction by Natural Osmolytes Jacqueline Sticoz1, Tania Imel1, Zhainai Chen1, and Mathew Khan1 University of Michigan-Dearborn, Dearborn, MI, 2UM-Dearborn, Dearborn, MI

FRI-443 Optimization of Drug Loaded Electrospun Fibers to Induce Fibrosis of the Utero-tubal Junction Joanna Hernandez1, Anna Bielak1, Bob Katz1, Jeffery Jansen1, and Kim Woodrow1 University of Washington, Seattle, WA, 2Contramed, Campbell, CA

FRI-444 Alginate Nanoparticles Prepared via W/O Emulsions as Therapeutic Carriers Justin Boschi1, Allison Dukoff1, Mariton Hem1, Anna Brown1, and Connor Sun1 Oregon State University, Portland, OR, 2Portland State University, Portland, OR

FRI-445 Novel Engineered Silicone Hydrogel Contact Lenses for the Controlled Release of a Diversity of Post-Cataract Therapeutics Mark Byrne1 and Stephen DePaquale1 Bowar University, Glassboro, NJ, “Oculomed Inc., Mulia, NJ

FRI-446 Oligonucleotide Hybridized Hydrogels for Sustained Release of Small Molecule (Aptamer) Therapeutics Nikunj Agrawal1, Robyn Berend1, Ryan Von Dollen, and Yun Shi Liang1 Stony Brook University, Stony Brook, NY

FRI-447 Dasatinib Encapsulated Sub-micrometer Spray Dried PLGA Particles As Drug Delivery Platform For Proliferative Vitreoretinopathy Rayanne Balgemann1, Rayeanne Balgemann1, Rajat Chauhan1, Kevin McDonald1, Henry Kapler1, Tamya Shopes1, and Martin O’Toole1 University of Louisville, Louisville, KY

FRI-448 PEG-coated amine-functionalized Mesoporous Silica for Ocular Drug Delivery or Exosome Transport Soa Na Kim1, Soon Ji Ku1, and Young Il Hur1 Interdisciplinary Program in Biomeingineering, College of Engineering, Seoul National University, Seoul, Korea, “Republic of "Department of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea, Republic of "Institute of Medical & Biological Engineering, Medical Research Center, Seoul National University, Seoul, Korea


FRI-450 Theranostic Multi-Label Capsules for Ultrasound Imaging and Guided Brain Drug Delivery Sofiia Ratnayaka1, Jun Chen1, Aaron Aldorf1, Veronika Kovalevskaya1, and Eugenia Kharlampieva1 University of Alabama at Birmingham, Birmingham, AL

FRI-451 Plasma based Semisynthetic Hydrogels as Alternative to Fibrin Sealants Anmita Pal1, Chandresh Patel1, and Brent Vennos1 Arizona State University, Tempe, AZ

FRI-452 Effects of Formulation Parameters on the Size of Biodegradable Fluorescent Nanoparticles Aneewta Kukurak1, Paula Perez1, Nikhil Pandey1, Dongjing Shan1, Jang Yang1, and Kytai Nguyen1 UT Arlington, Arlington, TX, 2University of Texas at El Paso, El Paso, TX, 3Pennsylvania State University, State College, PA

FRI-453 Targeting and Immunomodulation of Therapeutic Factors via Native Free Radicals Christopher Lowe1, Keana Mirmajlesi1, and David Shreiber1 Rutgers University, Piscataway, NJ

FRI-454 Injectable in Situ Forming Depot Systems for Long-Acting Contraception Felix E. Karagios, Sang-Pyeong Ahn1, Kamaljit Chahour1, Leerong Wu1, Timothy D. Mandrell1, James R. Johnson1, and Daryl L. Lowe1 University of Tennessee Health Science Center, Memphis, TN

FRI-455 Enzyme-Cleavable Peptide Amphiphiles Enhance Intracellular Delivery Hanvand Arar1, Mathew R. Schneeberger1, James L. Lallier1, and Matthew V. Tirrell1 1The University of Chicago, Chicago, IL

FRI-456 Effect of Chitosans’ Biophysical Properties on Intravascular Drug Delivery James J. Hopkins1, Sarah Smith1, and David A. Zaharoff1 1University of North Carolina, North Carolina State University, Raleigh, NC

FRI-457 Oral Delivery of Therapeutic Peptide Amphiphiles for Polycystic Kidney Disease Jonathan Wang1 and Eun J. Chung1 University of Southern California, Los Angeles, CA

FRI-458 Biocompatible Electrospun Nanofibrous Scaffolds Enhance Tumoral Cell Stem Cell Therapy in Surgical Model of Glioblastoma Recurrence and Rescuer Kathryn Moore1, Julio Bago1, Oyin Olukola1, Mahta Mohtas-Aali1, Elisabeth Loboa1, and Shawn Hingston1 1The University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC, 2UNC Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, NC, 3College of Engineering, University of Missouri, Columbia, MO

FRI-459 Preparation and Optimization of Chemically Modified Liposomes as Vehicles for Targeted Drug Delivery Kevin Endv1, Surya Banks1, Victor Agee1, Aubrey Peed1, Mark Weikel1, and Emmanuel Opara1 Wake Forest University, Winston-Salem, NC, “Forsyth Tech, Winston-Salem, NC

FRI-460 Mechanisms of Cell Death Caused by Photothermal Ablation of Cancer Cells Mediated by Conductive Polymer Nanoparticles Madeline Huff1, Edd Baykal-Caglar1, Janet Vela Ross1, James Tunnell1, Jennifer Irene1, and Tania Ballesta1 1Texas State University, San Marcos, TX, 2University of Texas at Austin, Austin, TX

FRI-461 PNJ Hydrogel Provides High, Sustained Antimicrobial Levels in Orthopaedic Surgical Sites Michael Nguyen1, Vijeet Badhe1, Erin Childers1, 2Alley Mclaren1, and Derek Overtree1 1Arizona State University, Tempe, AZ, 2Sonoran Biosciences, Chandler, AZ, 3University of Arizona, College of Medicine, Phoenix, AZ

FRI-462 Heparin-Coated Magnetic Nanoparticles Uptake by Fibroblasts and Vascular Cells Nandine Gobodi1, Benjamin Fellow1, Olen Mefford2, “Clene Dowel1 1Clemson University, Clemson, SC

FRI-463 Maximizing Drug Loading in Microbubbles for Ultrasound-Mediated Drug Delivery Pratima Ntrirawan1, Jacob Lif1, and Agata Ener1 1Case Western Reserve University, Cleveland, OH

FRI-464 Antibacterial Properties of Nitric Oxide Nerve Fibers: A Potential Tool for Long-Term Delivery of Anti-Infective Therapeutics Selva Jeganathan1, Christopher Henderson1, Arahd Ohringa1, and Agata Ener1 1Case Western Reserve University, Cleveland, OH

Poster Viewing with Authors & Refreshment Break 9:30 am–10:15 am and 2:45 pm–3:30 pm

Poster Viewing with Authors & Refreshment Break 9:30 am–10:15 am and 2:45 pm–3:30 pm
FRI-466 Degradable Alginic Hydrogels for Controlled Release Shonti Sharma1, Justin Madrigal1, and Eduardo Silveira2
University of California, Davis, CA

FRI-467 Engineered Polymeric Matrices with Controlled Protein Release for Rotator Cuff Tendon Repair Vanessa Verdade1, Anupama Prabhat1, Sajeevan Kumbar1, and Cato Laurencin2
UCONN Health, Farmington, CT

FRI-468 Extended Antibiotics Release by Incorporation of Calcium Polyphosphate Gel in PMMA Cement Weiping Ren1, Wei Song1, and David Markel2
Wayne State University, Detroit, MI, Providence Hospital, Southfield, MI

FRI-469 Efficient Intracellular Gene Therapeutics Delivery Using Biodegradable Lipid-Like Nanoparticles Yanme Li1, Yong Tai2, Zheng-Yi Chen1, and Qiaobing Xu1
Telford University, Medford, MA, Harvard Medical School, Boston, MA

Track: Drug Delivery & Intelligent Systems, Cancer Technologies

FRI-470 Drug Delivery for Immunomodulation and Immunotherapy

FRI-471 Platelets with Checkpoint Inhibitors for Post-surgical Cancer Immunotherapy Patrick H1, Sean Bickerton2, Shiban Khan1, Jangmin Lee1, Eric Song1, and Tarek Fahmy1
Yale University, New Haven, CT

FRI-472 Development of a Drug Loaded Nano-Liposomal Vesicle Platform to Use in Drug Carrier Cell Applications for the Modulation of ImmunoChemotherapy Outcomes Serkan Yaman1,2, Jun A. Wiedanz1, and Kyung T. Nguyen1
The University of Texas at Arlington, Arlington, TX, University of North Carolina at Chapel Hill, Chapel Hill, NC

FRI-473 Self-Assembly of Degradable Immune Polyplexes to Control Toll-like Receptor Function Shannon J. Tsai1 and Christopher M. Jewell1,2,3
Fischell Department of Bioengineering, University of Maryland – College Park, College Park, MD, Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD, Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD, United States Department of Veterans Affairs, Baltimore, MD

POSTER SESSION—FRIDAY
College Park, College Park, MD, University of Maryland Medical School, Baltimore, MD, United States Department of Veterans Affairs, Baltimore, MD

FRI-474 Electrogenic Nanoparticles as a Clinically Accessible Biomarker of Patient Response to Dendritic Cell Vaccines Adam Gitelman1, Elias Sayour1, Brandon Wummer1, Adam Monalve1, Jon Dobson1, and Duane Mitchell1
University of Florida, Gainesville, FL

FRI-475 Computationally-Designed Nanotherapeutics for Immune Modulation of the Tumor Microenvironment Ashish Kulkarni1
Harvard Medical School, Cambridge, MA

FRI-476 Enhancing Immune Cells using Plasma Membrane-inserting Drugs to Combat Cancer Emily M. Sayler1, Michael H. Zhang1, Georgianna A. Stephanelli1, and Gary S. Golub2
University of Maryland, Baltimore County, Baltimore, MD, University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, Baltimore, MD

Track: Drug Delivery & Intelligent Systems, Tissue Engineering

FRI-477 Spatiotemporal Release of Bioactive Molecules for Tissue Engineering Applications Amir Najafi1 and David Puleo1
University of Kentucky, Lexington, KY

FRI-478 Development of a Tissue Regeneration Matrix with Anti-Breast Cancer Properties Heather Gregory1, Bailey-Jean Walker1, Kendyl Williams1, and Brian Booth1
Clemson University, Clemson, SC

FRI-479 Localization of Release of Corticosteroid from Macroporous Organosilicone Beads Scaffolds Jiaqiu Li1, Kaysun Jiang1, and Chenie Stabler1
University of Florida, Gainesville, FL

FRI-480 Validation of an Osteochondral Bioreactor for In Vitro Drug Screening Kalton Overholt1, Alessandro Pirona1, Rocky Tian1, and Riccardo Triggiano2
University of Pittsburgh, Pittsburgh, PA

FRI-481 Host Tissue Responses to PEG-Immobilized Pro-Chondrogenic and Anti-Angiogenic Growth Factor Roche de Guzman1, Lian Lang1, and Daniel Fryd2
Hofstra University, Hempstead, NY

FRI-482 Electrogenic Growth Factor Delivery from Polypyrrole Coated Polyanilinide Fluoride Electrospun Fibers Salah M. Shaheen1 and Taysir Gozal1
University of Texas at San Antonio, San Antonio, TX

FRI-483 Cold Atmosphere Plasma (CAP) Modified Core-shell Nanofibers for Bone Tissue Engineering Applications Yangli Zhou1, Mian Wang1, Michael Keadle1, and Thomas Webster1
Northwestern University, Chicago, IL, The George Washington University, Washington, DC

FRI-484 Alginic-Liposomal Bupivacaine Formulation Preserves Mesenchymal Stromal Cells Anti-Inflammatory Function Xiaoxiao Lai1, Mollie Davis1, Sarena Manni-Berrino1, Timothy Maguire1, Rene S. Schlief1, Joel Yermiah1, and Martin L. Yarmush1
University of Michigan, Piscataway, NJ, Abbott Laboratories, New York, NY, New York Presbyterian-Brooklyn Methodist Hospital, Brooklyn, NY

Track: Drug Delivery & Intelligent Systems, Novel Materials and Self Assembly

FRI-485 Self Assembly of Smart Multifunctional Hybrid Compartments with Programmable Bioactivity Gong Chang1, Siye Hai1, Yuan Wai1, and Siyung Zheng1
Penn State University, University Park, PA

FRI-486 Trafficking and Processing of Self-assembled Immune Signals in Primary Antigen Presenting Cells Michelle L. Buckstiver1,2, Kristyn L. Hew1, and Christopher M. Jewell1,2
Fischell Department of Bioengineering, University of Maryland–College Park, College Park, MD, Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD, Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD, United States Department of Veterans Affairs, Baltimore, MD

Track: Drug Delivery & Intelligent Systems, Nucleic Acid Delivery

FRI-487 Mechanisms of Enhanced Non-Viral Gene Delivery to Human Mesenchymal Stem Cells Induced by Glucocorticoid Priming Andrew Fentress1, Kelly Brooks1, Anna Toner1, and Angela K. Pannier1
University of Nebraska-Lincoln, Lincoln, NE

FRI-488 Self-organized Iron Sulfide Supraparticles as Artificial Viruses Edward W. Wu1, Abrar Envi1, Zhefu Erena1, and Nicholas Kostos1
University of Michigan, Ann Arbor, MI

FRI-489 Nuclear Envelope as a Physical Barrier in Electrosensation Lisa Carvajal1, Liangzi Wang1, Chun-Chi Chang1, Mao Mao1, and Fan Yuan1
Duke University, Durham, NC

FRI-490 Increase in Electrosensation Efficiency by Activation of Autophagy Machinery Max Mao1, Chun-Chi Chang1, Lisa Carvajal1, Jing Ji1, Paloma Lison1, and Fan Yuan1
Duke University, Durham, NC

FRI-491 Mucus-Penetrating Non-Viral Gene Delivery Platform for Obstructive Lung Diseases Nanoo Kim1,2, Alessandra Livigni-Balan1, Richard C. Boucher1, Justin Hansen1, and Jing Sun2
Johns Hopkins University, Baltimore, MD, Johns Hopkins University School of Medicine, Baltimore, MD, United States Department of Veterans Affairs, Baltimore, MD

FRI-492 Novel Gene Delivery via Cell-nanoparticle Hybridization Remy C. Cooper1, Leyuan Xu1, and Hu Yang1
Virginia Commonwealth University, Richmond, VA, Yale University, New Haven, CT

FRI-493 Layer-by-layer Assembly of siRNA on SI-ATRP Shelled Gold Nanoparticles Sol Lee1, Hyeung Kim1, Youngju Son1, Wei Mao1, Myokang Kang1, Jun Shin1, and Hyesung Lim1
Xiangtan National University, Chuncheon-si, Korea, Republic of Korea

FRI-494 Lipid nanoparticle-based mRNA delivery to the Brain Venkatesh Deshpande1, Kevin Kaufman2, James Kaczmarek1, Danielle Anderson3, and Jay S1
University of Michigan, Ann Arbor, MI, National Institutes of Health, National Library of Medicine, Bethesda, MD

Track: Drug Delivery & Intelligent Systems, Topics in Drug Delivery

FRI-495 Development of Carbon Monoxide-Releasing Poly(diol citrate) Polymer as a Potential Surface Modifier for Vascular Graft Applications Danny Lichtenberg1, Jenny Pooin1, and Antonio Webb1
University of Florida, Gainesville, FL

FRI-496 Effect of Formulation Variables on Injectability, in Vitro Release and In Vivo Initial Burst of Injectable In Situ Forming Depot Systems Dipen R. Janagav1, Suryanatha Annathul3, Lisha Wang1, Timothy D. Machulka1, John R. Johnson1, and Tim Low1
University of Tennessee Health Science Center, Memphis, TN
FRI-497
Contracted Hormone-loaded Electropat
Patches in Combination with Microneedles for Transdermal Drug Delivery
Muhammad Mudasir1, Mark R. Prausnitz2
1School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA, 2Georgia Institute of Technology, Atlanta, GA

FRI-498
Measurement of Sustainable Release of Mitofusin from Biodegradable Nanoparticles
Using a New Colorimetric Detection Assay
Rebecca Byler1, Diane McMahon-Pratt1, and Tarek Fahmy2
1Yale School of Engineering and Applied Science, New Haven, CT, 2Yale School of Public Health, New Haven, CT

FRI-499
Rapidly Separable Microneedle Patches for Sustained Release of Contraceptive Hormones
Wei Lu, Richard Terry1, and Mark Prausnitz2
1Georgia Institute of Technology, Atlanta, GA

Track: Drug Delivery & Intelligent Systems
Targeted or Responsive Delivery Systems

FRI-500
Epitope-functionalized Nanoparticles for Entrapment of Autism Auto-antibodies
Amar Balasubramanian1, Elizabeth Edmiston1, Kenneth Alvarez1, Judy Van De Water2, and Jamal Lewis3
1UC Davis, Davis, CA, 2UC Davis, Davis, CA, 3Miami University (Ohio)

FRI-501
Gelatin Nanoparticle Loading of Anti-Parasitic Compound for Treatment of Leishmaniasis
Carlos Serna1, Alfredo Orellana1, Eva Izguirde1, Katja Michael1, Rosa Malinda2, and Thomas Boland1
1The University of Texas at El Paso, El Paso, TX

FRI-502
Red Blood Cells for Glucose-Responsive Insulin Delivery
Chao Wang1 and Zhen Gu1
1University of Delaware, Newark, DE

FRI-503
IR820-Loaded PLGA Nanoparticles for Photothermal Therapy of Triple Negative Breast Cancer
Daniele Vatocci1, Sarah Peden1, and Emily Day1
1University of Delaware, Newark, DE

FRI-504
Folate Receptor-Mediated Targeting of Plasmin Resistant Liposomes
Danice Tew1, Shelia Knights-Mitchell1, and Marek Romanowski1
1University of Arizona, Tucson, AZ

FRI-505
Enzymatic-Responsive Nanoparticles as Drug Carriers to Treat Cancer
Duong Le1, Hien Lam1, Tran Van1, and Kyat Nguyen1
1University of Texas at Arlington, Arlington, TX, 2Joint Biomedical Engineering Program between the University of Texas at Arlington and the University of Texas Southwestern Medical Center, Dallas, TX

FRI-506
Investigation of Protein Modulus for Vascular Targeted Drug Delivery In Vitro and In Vivo
Carmen Lopez-Carter1, Maripily Reyes1, Catherine Fronekon1, Timothy Scott1, Raymond Ask1, Michael Holinstat1, and Omolola Esiri1
1University of Michigan, Ann Arbor, MI

FRI-507
NIR-Induced Spatiotemporally Controlled Gene Silencing in Cells
Gusen Chen1, Ben Ma1, and Shaoqin Gong1
1University of Wisconsin-Madison, Madison, WI, 2Fourth Military Medical University, Xi’an, China, 3People’s Republic of China

FRI-508
Blood-Brain Barrier Disruption by Novel Cationic Polymers
Jannah Simmons1, Shu Liu1, Kevin Edgar1, and Yong Woo Lee1
1Virginia Tech, Blacksburg, VA

FRI-509
Pretargeting for Prolonged Retention of Mucus-Penetrating Particles at Mucosal Sites
Justin Christina1, Christina Karande1, Preeti Wadsworth1, Jay Nibley1, and Sam Lee1
1University of North Carolina-Chapel Hill, Chapel Hill, NC

FRI-510
Redox Dual-Responsive Biodegradable Polymeric Micelles with High Drug Loading for Effective Anticancer Drug Delivery
Jye Ying Teo1, Willy Chia1, Xiu Ya1, Shujun Gao1, Shaoqipeng Liu1, Wei Cheng1, James Hedrick1, and Yi Yan Yang1
1University of Illinois at Urbana-Champaign, Urbana, IL, 2Institute of Bioengineering and Nanotechnology, Singapore, Singapore, 3A*STAR Research Centre, San Jose, CA

FRI-511
MMP-Responsive Hydrogels for siRNA Delivery after Myocardial Infarction
Leo Wang1, Jennifer Chung1, Parag Nile1, and Jason Burdick1
1University of Pennsylvania, Philadelphia, PA

FRI-512
Acoustico-transport using High Frequency Ultrasound for Cell Manipulation
Sang Hoon Yoon1, Pengxi Wang1, Yingyao Wang1, and K. Krik Shung1
1University of Southern California, Los Angeles, CA, 2University of California, San Diego, La Jolla, CA

FRI-513
Establishing an Animal Model Artificial Pancreas System to Study Blood Glucose Levels in Real-Time
Sarah Park1, Ramin Balouchzadeh1, Hoi Sang Ko1, H Felix Lee1, and Quin Kase1
1Southern Illinois University Edwardsville, Edwardsville, IL

FRI-514
Selecting an Optimally Charged Cartilage-Targeting Delivery Carrier for Post-Traumatic Osteoarthritis
Yoonjoo Park1, Hyunsoo Ahn1, Jiyu A. Reaw1, Christina P. Rosatto1, Hana He Hua1, Elliot H. Frank1, Paula T. Hammond1, David R. Liu1, and Allen J. Goldemberg1
1Massachusetts Institute of Technology, Cambridge, MA, 2Harvard University, Cambridge, MA

FRI-515
You Can Trigger and Monitor Drug Release for a Long Time
Yoonjoo Park1, Zhe Zhang1, Madison Taylor1, and Xingyu He1
1University of Cincinnati, Cincinnati, OH

Track: Drug Delivery & Intelligent Systems
Drug Delivery & Intelligent Systems—Other/Non-Specified

FRI-516
Surface Properties of Silicone Nanoparticles Regulate Their Interactions with Cell Membrane Models
Ali Askari1, Saed Nazemizadeh1, Alexander Kady1, Addy Knoc1, Katherine Cimatu1, Allan Davos1, and Amor Farnoud1
1Ohio University, Athens, OH, 2Auburn University, Auburn, AL

FRI-517
Design of a Universal Microscopic Incubator for Drug Screening of 3D Models of Engineered Myocardium
Marianne Kanellas1, Rachel Connolly1, Heather Stratica1, Katrina Hansen1, Megan Chrobak1, Glenn Gaudette1, John Sullivan1, and George Pira1
1Worcester Polytechnic Institute, Worcester, MA

Track: Biomechanics
Human Performance/Sports Biomechanics

FRI-518
The Effect of Vision Compared To Additional Sensory Inputs on Stability after a Perturbation
Anita Moore1, Payye Sadighi1, Shreya Agrawal1, and Katrina Hansen1
1California State University Long Beach, Long Beach, CA

FRI-519
Novel Compression Method to Measure Structural Stiffness Differences in Football Facemasks
Alex Bina1, Steve Siciak1, Gregory Bati1, and John Desjardins1
1Clemson University, Clemson, SC

FRI-520
Timing of Major Pitching Motion Events in Youth Baseball Players in Relation to Elbow and Shoulder Moment
Andrew Chung1, Duong Le2, Kristofer Howenstein1, Kristof Kipp1, and Michelle Sabick1
1Saint Louis University, St. Louis, MO, 2Marquette University, Milwaukee, WI

FRI-521
Effects of Visual Feedback Distortion on Gaits Asymmetry Induced by Unilateral Load Perturbation
Carlos Tobar1, Eva Martinez1, and Seung-Jae Kim1
1California Baptist University, Riverside, CA

FRI-522
The Effects of BackPack Type on Kinematics of Lower Back and Abdominal Muscles during Walking and Jogging
Cameron Sur1, Iman Shojaei1, and Babak Baarani1
1University of Kentucky, Lexington, KY

FRI-523
Parametric Analysis of Fatigue in Stationary Biking: A Computational Approach
Deepak Satyanarayan1, Austin Rivera1, and Matthew Panzer1
1University of Virginia, Charlottesville, VA

FRI-524
Optimal Design and Control of a Rowing Exercise Machine
Farbod Rohani1, Hans Richter1, and Antonio J. van der Bogert1
1Cleveland State University, Cleveland, OH

FRI-525
Entropy Analysis of Ankle Stability in Relation to Environmental Mechanics
Harrison Hanlick1 and Hyung Lee1
1Arizona State University, Tempe, AZ

FRI-526
Ramp Perturbation Tests are too Simple to Identify a Realistic Controller in Human Standing Balance
Husan Wang1 and Antonie van der Bogert1
1Cleveland State University, Cleveland, OH

FRI-527
Reactive Behaviors of Trunk Muscles in Sudden Perturbations: The Effects of Age
Iman Shojaei1 and Babak Baarani1
1University of Kentucky, Lexington, KY

FRI-528
Head Impacts in Soccer: Measurement and Characterization of Influencing Parameters
Josh Auger1, Justin Markel1, Dmitry Pakoski1, Nicholas Leiva1, Thomas Tallaje1, Christopher Alvarado1, and Eric Nauman1
1Purdue University, West Lafayette, IN, 2University of California, Berkeley, CA

FRI-529
Changes In Head Impact Exposure Over Consecutive Seasons Among Individual Youth Football Players
Mirreille Kelley1,2, Jillian Urban1,2, Meagan Rosenberg1,2, and Hyunglae Lee1
1University of Delaware, Newark, DE, 2University of Pennsylvania, Philadelphia, PA
POSTER SESSION—FRIDAY

FRI-531
Comparison of Gait Initiation Characteristics With And Without Additional Load
Posaye Sedighehi1, Asha Moore2, Venkata Krishna3, and Shahnawaz Ansari4
1California State University Long Beach, Long Beach, CA

FRI-532
Comparison of Kinect and Optical Motion Capture System for Kinematic and Kinetic Gait Analysis Utilizing OpenSim
Ryoouke Akaguma1, Masahiro Fujimoto1, Takahiro Sato1, and Akinori Nagano1
1Witsmanek University, Shiga, Japan

FRI-533
A Comprehensive Technique to Investigate Differences in Upper-extremity Movement During a Touch Screen Task within an Open and a Constrained Environment
Takumi Delamore1-Neal1 and Donald R. Peterson2
1University of Connecticut, Stor, CT, 2Texas A&M University, College Station, TX

FRI-534
Head Impacts for Middle School Football Players Comparable to High School Players
Taylor Lee1, Joshua Murphy2, Jacob Black3, Roy Lykke4, Thomas Talavage1, Larry Leverenz1, Sharlene Newman1, and Eric Nauman1
1Purdue University, West Lafayette, IN, 2Indiana University, Bloomington, IN

FRI-535
Quantification of Energetic Passivity of the Human Ankle in 2 Degrees-of-Freedom
VaNan1, Kyle Lodes1, Dhrumil Shah1, and Hyunjeew Lee1
1Arizona State University, Tempe, AZ

Track: Biomechanics

FRI-536
Injuries Sustained to the Human Knee During Hyperextension with Applied External Rotation of the Femur
Adesola Kohlie1, Lauren Reagan1, and Ha Vo1
1Mercer University, Macon, GA

FRI-537
Relative Displacement of the Brain with Respect to the Skull During a Controlled Anguler Speed Pulse
Allison Guettler1, Andrew Kemper1, John Bolte1, N1, and Warren Hardy1
1Virginia Tech, Blacksburg, VA, 2The Ohio State University, Columbus, OH

FRI-538
Assessing Brain Injury Criteria through Reconstructions of Head Impacts in Football
Bethany Rowson1, Steven Rosnow2, and Stefan Duma1
1Virginia Tech, Blacksburg, VA

FRI-539
Finite Element Based Pelvic Injury Metric Creation and Validation in Lateral Impact for a Human Body Model
Carlin Weaver1,2, Alexander Baker1,2, Matthew Davis1, and Joel Sittel1
1Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, 2Wake Forest School of Medicine, Winston-Salem, NC

FRI-540
Development of Human Rib Cortical Bone Material Modeling with Finite Element Analysis
Akinori Nagano1, Masahiro Fujimoto1, Takahiko Sato1, and Ryosuke Akaguma1
1Virginia Tech, Blacksburg, VA

FRI-541
Skull Deflection Effects on Brain Tissue Response Using Finite Element Simulation
Takahiro Sato1,2, Masahiro Fujimoto1, and Joel Sittel1
1Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, 2Wake Forest School of Medicine, Winston-Salem, NC, 3Clinical and Translational Sciences Institute, Wakefield-Salem, NC

FRI-542
Quantiﬁying the Range of Injury Risk to the Head And Neck from Unmanned Aircraft Systems
Evanam Campollant1, portrait, Ryan Gathen2, Bethany Rowson1, David Sproul3, Abigail Tyson1, Steven Duma1, and Steven Rosnow1
1Virginia Tech, Blacksburg, VA

FRI-543
Injury Simulation of While Wearing High Footwear
Harsharan Singh Ranu1
1American Orthopaedic Biomechanics Research Institute, Atlanta, GA

FRI-544
Effects of Anthropometric and Environmental Variables on Biomechanical Measures of Head Impact Exposure in Youth Football Players
Jillian Urban1,2, Mikeley Kelby1, Mark Esplin1, Logan Miller1, Derek Jones1, Elizabeth Deavenport1, Christopher Whithow1,2, and Joel Sittel1
1Virginia Tech, 2Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem NC, 3Wake Forest School of Medicine, Clinical and Translational Sciences Institute, Winston-Salem, NC, 4Wake Forest School of Medicine, Department of Biostatistical Sciences, Winston-Salem, NC, 5University of Texas Southwestern, Department of Radiology, Dallas, TX, 6Wake Forest School of Medicine, Department of Radiology (Neuroradiology), Winston-Salem, NC, 7Wake Forest School of Medicine, Department of Neurosurgery, Winston-Salem, NC

FRI-545
Effects of Cervical Spine Ligament Sprain on Head and Neck Stability
Jost De Scheffer1, Rosa Hamalainen1, Calvin Kuo2, and David Camarillo1
1Stanford University, Stanford, CA

FRI-546
Biomechanical Investigation of Ankle Injuries Sustained from Foot Pronation and Supination in Subtalar Joint (STJ)-Closed Kinematics Chain Models
Yeung L1, Bich Nguyen1, and Ho Vo1
1Mercer University, Macon, GA

FRI-547
Development of a Gottingen Miniature Pig Finite Element Model to Investigate Injury Scaling Techniques
Kewang Yeo1 and Costin Untaroiu1
1Virginia Tech, Blacksburg, VA

FRI-548
Comparative Analysis of Impact Attenuation Properties from Soccer Headgear
Kevin Melve1, Goutham sankaran1, Justin Marcell1, Tom Talavage1, Larry Leverenz1, and Eric Nauman1
1Virginia Tech, Blacksburg, VA

FRI-549
Effect of Achilles Taping on Joint Contributions to Work and Power
Kristen Ramirez1, Evan McConnell1, Alex Black1, Lewis Young1, and Robin Queen1
1Virginia Tech, Blacksburg, VA

FRI-550
Biomechanics of Orbital Floor Fractures
Liyang Zhang1, Sagar Patel1, Christopher Andreevich2, Michael Silverman1, and Mahdi Shishir3
1Wayne State University, Detroit, MI

FRI-551
Hearing Damage Caused by Multiple Blast Exposure-A Study on Middle Ear and Cochlea Function Changes in Chinchillas
Rong Gai1, Tao Chen1, Kyle Smish1, and Zachary Yokell1
1University of Alabama, Norman, OK

FRI-552
Are Humans More Accurate Than Sensors in Head Impact Severity Estimation?
Rosa Hamalainen1, Adele Sheffler1, Calvin Kuo2, Lyndia Wu2, and David Camarillo1
1Stanford University, Stanford, CA

FRI-553
Effect of Tackling Form on Head Acceleration in Youth Football
Ryan Gai1, Evanam Campollant1, and Steven Rosnow1
1Virginia Tech, Blacksburg, VA

FRI-554
Design of Wearable Protection System for a Fall Injury Reduction
Taeoog Lee1, Hunchae Kim1, Yeongho Lee1, Jaemin Kim1, Soonmoong Jung1, Dongwook Yang1, Jeongwoo Lee1, Beomgyoun Jo1, Chanees Lee1, and Junghee Hong1
1Korea University, Sejong, Korea, Republic of

FRI-555
A Whole Joint-In Motion Culture System Reveals a Critical Role of Glucose in Regulating Articular Cartilage and Growth Plate Matrix Production
Carla DeMagistro1, Christopher Nahm1, Kristen Garrett1, Rose Banks1, Thomas James1, William Messner1, and Li Zeng1
1Tufts University, Boston, MA, 2Tufts University, Medford, MA

FRI-556
Gold nanoparticle-Homogenized Tissue-Hyaluronic Acid Conjugate for Limiting Progression of Osteoarthritis
Colleen Smider1, David Missouri, Columbia, MO

FRI-557
A Modular Simulated Human Body Finite Element Model Can Reduce Run-Time Requirements for Lower Extremity Impact Biomechanics Studies
William Dock1, Bhushan Kopy1, Berkay Golcuk2, and F. Scott Gayzik1
1Virginia Tech University Center for Injury Biomechanics, Winston-Salem, NC, 2Wake Forest School of Medicine, Winston-Salem, NC

FRI-558
Comparing Injury Prediction Performance Between Supervised Machine Learning and Regression
Yunkang Cai1, Wei Zhao1, and Songbai Li1
1Western University, St. Catharines, ON, 2Dartmouth College, Hanover, NH

Track: Orthopedic and Rehabilitation Engineering

FRI-559
Articular Cartilage, Meniscus and Joints

FRI-560
Using Finite Element Simulation to Investigate Injury Biomechanics Utilizing OpenSim
Takumi Delamore1, Neal Peterson2, and Donald R. Peterson2
1University of Connecticut, Storrs, CT, 2Texas A&M University, College Station, TX

FRI-561
Initial Screening of Pomegranate Punicalagin for use in Intraarticular Osteoarthritis Therapy
Mark Mosher1,2, Steven Elder1, John Crane1,2, Hudson Chen2, and Paul Glot1
1Mississippi State University, Mississippi State, MS, 2The Center for Advanced Vehicular Systems, Starkville, MS

FRI-562
3D Printed Orthotaphic Scaffold with Biomimetic Structure
Xuan Zhou1, Margaret Nowicki1, and Li-Jiang Zhang1
1The George Washington University, Washington, DC
**Poster Viewing with Authors & Refreshment Break | 9:30 am—10:15 am and 2:45 pm—3:30 pm**

**FRIDAY**

**POSTER SESSION—FRIDAY**

**BMES 2017 | Phoenix**

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**Track: Orthopedic and Rehabilitation Engineering**

**Bone**

**FRI-563**

*Smart* Surgical Instruments: Surgical Skill Measurement Apparatus for Resident Motor Skills Training and Evaluation

Ashkan Pourmand, Rebecca Smith, Jibril Bhakat, Naqshmin Zaman, Deena Mercer, Christina Salas, and David Greve

University of Utah, SaltLake City, UT, University of Minnesota, Minneapolis, MN, Georgia Institute of Technology, Atlanta, GA, New Mexico Tech, Socorro, NM, University of New Mexico, Albuquerque, NM

**FRI-564**

An Injectable, Bioactive Material for Osteoporotic Bone Regeneration

Simona Morochini and Guillermo Armeé

Northwestern University, Chicago, IL

**Track: Design Technologies and Biomedical Robotics**

**Design and Control of Prostheses and Exoskeletons**

**FRI-565**

Decoding User’s Intention from Surface EEG Signals Using Machine Learning Algorithms

Ali Alnazi, Guanghua Xu, and Chaoyang Chen

Wayne State University, Detroit, MI

**FRI-566**

Performance Requirements of MEMS based Vestibular Prosthesis

Sina Akaei, Mohammad H. Asadiari, and Andrei M. Shiloi

University of California Irvine, Irvine, CA

**Track: Orthopedic and Rehabilitation Engineering: Implant and Prosthetic Biomechanics**

**FRI-567**

A Clinical Gait Analysis of Below Knee Amputee Fit With Mercer Universal Prosthesis

Ha Wei, Lawrence Webb, Edward O’Brien, Richard Kurni, Trung Le, Ngoc Bich Nguyen, Alisha Anand, and Craig McMahan

Mercer University, Macon, GA

**FRI-571**

The Effect of Focal Offset Size Within a 3D Printed Orthotic Material on Pressure Distribution

Kyle Walker, Shannon Hall, Bhanu Prausnitz-Kusk, Katelyn Ragland, Meredith Owen, Brian Kalaf, Timothy Prusti, Steven Hoeffner, and John DesJardine

Clemson University, Central, SC, Clemson University, Clemson, SC, Ability Prosthetics & Orthotics, Greenville, SC

**FRI-572**

Biomechanical Comparison of Augmented Glenoid Implant Designs: A Finite Element Analysis

Liyang Zhang, Varun Patilah, James Whaley, and Varun Salbeswar

Wayne State University, Detroit, MI

**FRI-573**

The Effect of Gel Liner Materials on Changes in Peak Pressures and Pressure Gradients

Meredith Owen, Kara DesJardine, Kyle Walker, Shannon Hall, and John DesJardine

Clemson University, Clemson, SC

**FRI-574**

Controlling Degradation of a Magnesium Based Metal for Internal Fixation Applications

Michael Swol, Taylor Guad, Karrin Bach, Thomas Bailey, Devin Bomer, Ziyu Liu, C Liu, and Dale Feldman

University of Nebraska Lincoln, Lincoln, NE, University of Alabama, Tuscaloosa, AL, UAB, Birmingham, AL

**FRI-575**

Fatigue Analysis of Knee Implant Inserts for Total Knee Replacement

Narayana Kurupati, Erin Bukov, Samir Rana, and H. Felix Lee

Southern Illinois University Edwardsville, Edwardsville, IL, Indian Institute of Technology, Roorkee, India

**FRI-576**

Adverse Effect of CoCrMo Wear Particles on Human Osteoblast Cells

Preeya Vellapally, Akhila Raman, and Mathew Mathew

University of Illinois College of Medicine at Rockford, Rockford, IL

**Track: Orthopedic and Rehabilitation Engineering, Biomechanics**

**Orthopedic Biomechanics**

**FRI-577**

The Pull-out Strength of Cortical Screw in Different Angle Configurations on Cadaveric Tibia Bone

Bich Nguyen, Trung Le, Ha Vo, and Lawrence Webb

Mercer University, Macon, GA, Navicent Health, Macon, GA

**FRI-578**

Morphometric, Mechanical, and Histological Characterization of the Ligaments of the Trapeziopelvic Joint

Christina Bohn, Steven Long, Josde Gomez, Mahmoud Reda Tah, and Deena Mercer

University of New Mexico, Albuquerque, NM

**FRI-579**

Lower Body Gait Kinematics in Mild-to-Moderate vs. Severe Osteogenesis Imperfecta in Southeastern Asia

Nikit Kungpati, Rebecca Boesinger, Carlo Sumpsiac, Joyse Abaya, Melanie Alcausen, Peter A. Smith, and Gerald Harris

Marquette University, Milwaukee, WI, Medical College of Wisconsin, Milwaukee, WI, Shriners Hospitals for Children-Chicago, Chicago, IL, Philippine General Hospital, Manila, Philippines

**FRI-580**

Rib Plate With Angled Monocortical Screws Has Pull-out Strength Equivalent to Bicortical Screw-Plate

Oluwajomola Oladele, Raymond Dunn, and Kris庭ian Bilais

Worcester Polytechnic Institute, Worcester, MA, University of Massachusetts Medical School, Worcester, MA

**FRI-581**

The Effect of Simulated Rotator Cuff Tear Size on Glenohumeral Joint Force and Muscle Compensation

Richard A. Arce and Meghan E. Vidi

Worcester Polytechnic Institute, Phoenix, AZ

**FRI-582**

Buckling Behavior of Spinal Anesthesia Needles

Tessa Hultbr, Jessica Booth, Peter Pan, and Philip Brown

Wake Forest School of Medicine Virginia Polytechnic Institute, Winston Salem, NC, Wake Forest Baptist Health, Winston Salem, NC

**FRI-583**

A Comparison Pullout Strength Between Locking Screw and Non-locking Screw: A Biomechanical Study of Fresh Frozen Cadaver

Trang Vu, Jinh Yeon, Yoon Hong, and Ung Le

Mercer University, Macon, GA, Philadelphia College of Osteopathic Medicine-Georgia Campus, Savannah, GA

**Track: Orthopedic and Rehabilitation Engineering, Biomechanics**

Orthopedic: Mechanobiology and Transplantation

**FRI-584**

Development of an In Vitro Bone-Tendon-Muscle-Implant Culture Model

Briana K. Connors, Hannah M. Zitromick, John M. Dragoo, and Alan J. Grodzinsky

Massachusetts Institute of Technology, Cambridge, MA

**FRI-585**

Long Term Wear of Novel 3D-Printed Foot Orthoses

Breanne Prasretkasri, Katelyn Ragland, Shannon Hall, Kyle Walker, Tim Priem, Steve Hoeffner, Brian Kalaf, Nicole Hooks, Dan Ballantyn, and John DesJardine

Clemson University, Clemson, SC, Abiotic Prosthetics & Orthotics, Greenville, SC, Upstate Pedorthics, Greenville, SC

**FRI-586**

Biomechanical Investigation of Ibuprofen Treatment of Murine Achilles Tendinopathy

Sahab Rezaei, Adam Broman, Jun Li, George Holmes, Johnny Loi, Simon Law, Anna Plais, and Vincent Wang

Virginia Tech, Blacksburg, VA, Northwell Health, Huntington, NY, Rush University, Chicago, IL

**FRI-577**

Medial Tibial Plateau Cartilage Compression during a Closed-Chain Flexion Task

Stephanie Willmar, Elizabeth Batter, and April Chambers

University of Pittsburgh, Pittsburgh, PA

**FRI-588**

In Vitro Models for the Guidance of Rehabilitation Regimens that Promote Cartilage Regeneration after Repair Surgery

Tomoya Ikuboi, Shinsuke Kihara, Hiroaki Sasak, Shinich Yoshida, Freddie Ffu, Rocky Tsui, and Ricardo Gottardo

University of Pittsburgh, Pittsburgh, PA, Ningbo College of Medicine, Nanhui, China, Japan

**Track: Stem Cell Engineering, Orthopedic and Rehabilitation Engineering**

Musculoskeletal Stem Cell Engineering

**FRI-589**

NANOG Restores the Myogenic Differentiation Potential of Senescent Myoblasts

Aref Shahiny, Debarki Choudhury, Mohammadnabi Amini, Ruang Tang, Peder Lai, and Stelios Andreadis

University at Buffalo, Buffalo, NY

**FRI-590**

Muscle Satellite Cells from Non-Pathological Tissue Exhibit Stiffness-Dependent Behaviors Not Observed in Cells from Patients with Cerebral Palsy

Stephane Yeager, Rebecca Scott, and Robert Alkii

Namours Alfred I duPont Hospital for Children, Wilmington, DE, University of Delaware, Newark, DE

**FRI-591**

3D Bioprinted Cartilage Scaffold for Improved Human Bone Marrow Mesenchymal Stem Cell Differentiation

Wei Zhu, Hanlin cui, Benchao Bouslan, Fahed Masood, and Liie Grace Zhang

The George Washington University, Washington, DC, University of Maryland College Park

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**Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North**

**Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm**
Track: Tissue Engineering, Orthopedic and Rehabilitation Engineering

Musculoskeletal Tissue Engineering

**FRI-592**

**The Role of Bioreactor Oscillatory Mechanostimulation on an Engineered Tendon Tissue Construct**

Chloe Coffey1, Mary Beth Hoogen1, and Vasileios Skalavitsis2

1University of Oklahoma, Norman, OK

**FRI-593**

**Human iPSC-derived Neuronal Enhancement of Tissue Engineered Muscle Repair Technologies with a Novel Hydrogel for the Treatment of Volumetric Muscle Loss**

Elen Mintz1, Kimberly Smith1, Edward Endr1, Victoria Tococan2, KJ Lampel2, MI McConnell2, and George J Christ2

1University of Virginia, Charlottesville, VA

**FRI-594**

**Improving BMP-Induced Osteogenesis Through DNA-DNA Binding to Hydrolytic Acidic Hydrides**

Fallon Fumasi2, Purbasha Nandi1, Nicholas Stephanopoulos1, and Julianne Holloway1

1Arizona State University, Tempe, AZ

**FRI-595**


Jeffrey M. Santos1, Gao C. Cui1, Shaoyu Lou1, Nhat K. Anjongsingh1, Justin K. Ichida2, and Mark Pfeul1

1Barnes Neurological Institute, St. Joseph’s Hospital and Medical Center, Phoenix, AZ, 2Yuktu Scientific Center of Surgery and Traumaology, Irkutsk, Russian Federation, 3Irkutsk State Medical University, Irkutsk, Russian Federation, 4Arizona State University, Tempe, AZ, 5John Hopkins University, Baltimore, MD

**FRI-400**

**Evaluation of GLP-1 Receptor Agonist Exendin-4 on Tendon Regeneration**

Samee Abdulrahim1, Dayee Remoo1, Sowetha Rubenakk1, Anugusta D. Mazzocca1, and Sangam Korab1

1University of Connecticut Health Center, Farmington, CT, 2University of Connecticut, Storrs, CT, 3Materials Science and Engineering, Storrs, CT, 4University of St. Joseph, Hartford, CT

**FRI-601**

**3D Printed Scaffolds for Vascularized Bone Tissue Engineering**

Adhiti Kanthan1 and Joseph Freeman1

1Rutgers University, Piscataway, NJ

**FRI-602**

**Modeling Ultrasound in Cartilage Tissue Engineering: From Cellular to Macroscale**

Ami Subramanian1, April Miller1, Neeyo Sahu1, and Hendrik Vojten1

1University of Nebraska, Lincoln, NE

**FRI-603**

**The In Vitro Effects of Ascorbic Acid and Calcitriol on Stem Cell Differentiation on Silicone**

Pam Pearlson1, Jon Org1, and Taja Guda1

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

**FRI-604**

**Characterization of Antimicrobial Susceptibility of Bacterial Biofilms on Tissues**

Lea Daneshvar2, Yassaf Khadr1, and Cato Lauriello1

1University of Connecticut, Storrs, CT, 2Institute for Regenerative Engineering, Farmington, CT

**FRI-599**

**Therapeutic Intervertebral Disc Cells’ Affect on the Metabolism of Transplanted Cells**

Morgan B. Gien1, Liudmila Bardovina1,2, Kiyu Eyster3, Eric Woolf4, Adrienne Schiek5, Vadim Bykhovskiy5, Nicholas Theodore5, and Mark Pfeul1

1Barnes Neurological Institute, St. Joseph’s Hospital and Medical Center, Phoenix, AZ, 2Yuktu Scientific Center of Surgery and Traumaology, Irkutsk, Russian Federation, 3Irkutsk State Medical University, Irkutsk, Russian Federation, 4Arizona State University, Tempe, AZ

**FRI-607**

**Stable Myoelectric Signal Recordings Via Permanently Implanted Intramuscular Electrodes For Enhanced Prosthetic Control**

Hendrik Dawid1,2, Mathew Williams1,2, Jana Lambrecht1, and Robert Kirsch1,2

1Case Western Reserve University, Cleveland, OH, 2Cleveland FES Center, Cleveland, OH, 3Louis Stokes Cleveland VA Medical Center, Cleveland, OH

**FRI-608**

**Assessment of Cerebellar Injury in Rats Using Evoked Potentials and a Behavioral Task**

Ahmet Asrate1, Gohtan Ondar1, Eroma Celikcu1,2, Venkata Kakulavenu1, Maciej Sotak1, and Mazut Saha1,2

1New York Institute of Technology, Newark, NJ

**FRI-609**

**Dynamic Synaptic Weights of Hodgkin Huxley Model**

Amadeo Candolfi1, Deborah Won1, and Ismael Peraza1

1Arizona State University, Tempe, AZ, 2Arizona State University Los Angeles, Los Angeles, CA, 3Duke University, Durham, NC

**FRI-610**

**A Hybrid Computational Model for Optimizing NMES OF Peripheral Nerve Fibers: Electrode Tip Radius Variation**

Patrick Arguello1 and Deborah Won1

1California State University, Los Angeles, Los Angeles, CA

**FRI-611**

**Spatial and Temporal Deformation Patterns of the Brain Under Blunt and Blast Trauma**

Abdu Ali1, Namas Chandra1, and Bryan Pfister1

1New Jersey Institute of Technology, Newark, NJ

**FRI-612**

**Characterization of a Combined Model of Blast and Blunt Injury**

Awais Akram1, Matthew Long1, Rama Kakulavenu1, Maciej Sotak1, and Bryan Pfister1

1New York Institute of Technology, Newark, NJ

**FRI-613**

**Validation of an In Vitro TBI Model for Blood Brain Barrier Disruption**

Eidstaing Ing1, Vinay Abhyankar2, and Michael Choi3

1University of Texas at Arlington, Arlington, TX, 2University of Texas at Arlington, Arlington, TX, 3University of Texas at Arlington Research Institute, Forth Worth, TX

**FRI-614**

**Theoretical Hypothetical Effects on Caspase-3 and Calpastatin Expression after Injury in a 3D in vitro TBI Model**

Mark Scimone1, Paul Hopkins1, Harry Cramer1, Jonathan Estrada1, and Christian Franki1

1Brown University, Providence, RI

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**FRI-615**

**Monitoring HDAC Class IIA Activity In The Brain After Traumatic Brain Injury Using Noninvasive PET Imaging With 18F-TFAHA**

Sekadiki Kami1, Wayne State University, Detroit, MI

**FRI-616**

**Derivation of V0 Interneurons from Mouse Embryonic Stem Cells**

Jennifer Fairchild1, and Shally Saksena-Ellert2

1Washington University in St. Louis, St. Louis, MO, 2University of Texas at Austin, TX

**FRI-617**

**Mapping Applied DC Electric Fields in the Intact and Injured Spinal Cord via Computational Modeling**

Kaya Chehade1 and Jamming Li2

1Purdue University, West Lafayette, IN

**FRI-618**

**GAG Mimetic Scaffolds Containing Aligned Fibers for Spinal Cord Repair Strategies**

Sharanash Mhatre1, Roseline Dominique Menereau1, and Tristana Livingston Arinzeh1

1New Jersey Institute of Technology, Newark, NJ

**FRI-619**

**Traumatic Brain Injury Biomechannics**

Derek Overstreet1,2

1Arizona State University, Tempe, AZ, 2Úniversity of Texas at Austin, TX

**FRI-620**

**Utilizing Phage Display to Target the Neural Injury Landscape**

Amanda Witten1, Jonathan Linfield1, and Sarah Stabefeldt1

1Arizona State University, Phoenix, AZ, 2Arizona Metabolism Repair Institute, Phoenix, AZ, 3Arizona State University, Tempe, AZ

**FRI-621**

**Phage Display as a Biomarker Discovery Tool for Brain Injury**

Briana Martinez1, Gergory Mousa1, and Sarah Stabefeldt1

1Arizona State University, Tempe, AZ

**FRI-622**

**Using a Hyaluronan and Methylcellulose Hydrogel to Deliver Human Cortically-Cultivated Neural Cells to the Stroke-Injured Brain**

Samartha Payen1, Balasa Varghese1, Cindi Morshead1, Andras Nagy3, and Molly Shiozawa1

1University of Toronto, Toronto, ON, Canada, 2Welcome Trust-Medical Research Council Stem Cell Institute, Cambridge, United Kingdom, 3Lunenfeld-Tanenbaum Research Institute, Toronto, ON, Canada
Track: Orthopedic and Rehabilitation Engineering

Spine and Intervertebral Disc

FRI-623
Reliability of Structural Measurements of the Human Intervertebral Disks Using Open-Upper MRI

Christian Weber1 and Simon Tang2
Washington University in St. Louis, St. Louis, MO

FRI-624
Effects of Foot Joint Deformation on Stress Alteration in Cervical Spine C5–C6: A Finite Element Analysis

Huishao Wang1,2, Kuan Wang3,2, Zhen Deng2,3, Hongsheng Zhan2,3, and Yi-Kuan Qiu4
“Shuguang Hospital Affiliated to Shanghai University of TCM, Shanghai, China, People’s Republic of,” Shanghai Academy of TCM, Shanghai, China, People’s Republic of, “Stony Brook University, Stony Brook, NY

FRI-625
Epigenome Targeting Gene Therapies for Disc Degeneration

Nicoleri Tariyang,1 Martin Jensen2, Brandon Lawerson2, Harmid Ghandehari1, and Robby Bowers1
University of Utah, Salt Lake City, UT

FRI-626
Hypertrophic Differentiation of Human Cartilage Endplate Cells Promotes Catabolism and Expression of Pain Predictors in Discogenic Back Pain

Taylan Keter1, Katherine Laksin1, Sallar Kher1, William Mannas1, and Divina Purnamas1, “The Ohio State University, Columbus, OH

FRI-627
Durability of Instrument Drives Made From Machined and 3-D Printed 17-4 Stainless Steel

Case Western Reserve University, Cleveland, OH, 2University of Mississippi Medical Center, Cleveland, OH

Track: Biomechanics, Orthopedic and Rehabilitation Engineering

Biomechanics of Rehabilitation/Injury

FRI-628
A Study on Fall Detection Algorithm in Non-Argument Situation

Jeongzoo Lee1, Jeokyong Lee2, Hyunhee Kim3, Youngho Lee4, Jaemin Kim5, Soomin Song6, Jongwook Yang7, Beomjung Je8, Chaeasoo Lee9, and Junghyeong Hong10
Korea University, Seong, Korea, Republic of

FRI-629
Modeling of Tendon Transfer Surgeries to Revert Degeneration

Johns Hopkins1,2, James Gentry1,2, and Akinori Nagano1
1Arizona State University, Tempe, AZ, 2Barrow Neurological Institute, Phoenix, AZ

FRI-630
Inverse Dynamic Analysis of Knee Contact Loads for ACL Reconstruction Patients During Gait and Cycling

Kathleen Fullmer1,2, Megan Pottinger1,2, Otto Schuweiler1,2, Scott Hawriluk1,2, and Stephen Klisch1,2
1Case Western Reserve University, Cleveland, OH, 2Cleveland Clinic Foundation, Cleveland, OH

FRI-631
Automatically Detecting Destabilizing Wheelchair Conditions and Applying Electrical Stimulation to Maintain Seated Posture

Kiley Armstrong1,2, Maya Audu3,2, and Ronald Tisto1,2
1Case Western Reserve University, Cleveland, OH, 2Louis Stokes Cleveland VA Medical Center, Cleveland, OH

FRI-632
Touch Screen Application in a Stroke Rehabilitation

Kostantyn Shcherbin1,2, Erin Schul1,2, Omar Sargi1,2, Zhepar Begnelli1,2, Wissam Joner1,2, and Michelle Harris-Love1,2
1George Mason University, Fairfax, VA

FRI-633
Are Ankle Foot-Orthoses (AFOs) Contributing to Falls?

Massoud Nezivipour1,2 and Claire Honeycutt1,2
1North Dakota State University, Fargo, ND, 2Harvey Mudd College, Redlands, CA

FRI-634
The Impact of Asymmetrical Gait Loading Throughout gait

Matthew Daley1, Kristen Currie1, Courtney Mason1, and Connor Ronning1
Arizona State University, Tempe, AZ

FRI-635
Self-paced Walking on Treadmill Induces Higher Gait Adaptive Capacity in Healthy Individuals than that when Walking at Constant Speed

Rahul Soorna1, Seung Moon1, and Thurmon Lockhart1
1University of Tennessee, Tempe, AZ, 2Arizona State University, Tempe, AZ

FRI-636
Effects of Military Rucksacks on Dynamic Stability

Seong Hyoung Moon1, Rahul Soorna1, Chris Frame1, Victoria Smith1, Sara Razamani1, Markley Rush1, and Thurmon Lockhart1
1University of Tennessee, Tempe, AZ, 2Arizona State University, Tempe, AZ

FRI-637
Effects of Therapeutic Ultrasound on Postural Control and Fibularis Longus Corticaloskeletal Excitabilities in Population with Chronic Ankle Instability

Takaaki Suzuki1, Masahumi Terada1, Daiso Tanjame1, Kohei Kawasaki1, and Akinori Nagano1
1Nihon University, Chiba, Japan

FRI-638
Analysis of Upper Limb Motor Loss Effects on Daily Living Activities

Tyren Wozniakowsky1, Stephanie Care1, and Noriaki Penazula1
1University of South Florida, Tampa, FL, 2California State Polytechnic University Pomona, Pomona, CA

FRI-639
Assessing Dynamic Stability and Motor Adaptation in Unanticipated Locomotor Transitions Using an Inverted Pendulum Model of Human Walking

Victoria Barrera1, Nathalia Pickle1, and Nicholas Fay2
1The University of Texas at Dallas, Richardson, TX, 2The University of Texas Southwestern Medical Center, Dallas, TX

Track: Biomechanics, Neural Engineering

Brain Biomechanics

FRI-640
Vibration of Skull and Cerebrospinal Fluid (CSF) Pressure in Noninvasive Intracranial Pressure Monitoring

Ashkan Esmaeilijad1, Mohamad Hosseini Faraj1, Hesam Samagh Mohyou1,2, Marius Zwiep1,2, and Ghodrat Karim1
1University of Toronto, Toronto, ON, Canada, 2Stony Brook University, Stony Brook, NY

FRI-641
Development of In Vitro Platform to Investigate the Brain Wind Formulation Associated by BMI

Eun Young Park1,2, Eunmin Ko1, and Jennifer H. Shin1
1Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

FRI-642
Attenuation Properties of Guardian Caps on Riddell Speed Football Helmets

Gou Shannon1, Kevin Moer2, Eric Nauman1, Tom Talavage1, and Larry Leavera1
1University of Mississippi, Oxford, MS, 2Purdue University, West Lafayette, IN

FRI-643
The Effect of Hydrostatic Pressure on Neuronal Cell Morphology In Vitro

Kathie Evert2 and Jino Negah2
1Clemson University, Clemson, SC

FRI-644
A Biomechanical, Histological and Computational Modeling Study of Brain Response to Free-Field Blast

Liying Zhang1, John Cavanaugh1, Srinivasu Kallakuri1, Ke Feng1,2, Tushar Arora1, and Albert King1
1University of South Florida, Tampa, FL, 2Case Western Reserve University, Cleveland, OH

FRI-645
The Effect of Therapeutic Ultrasound on Postural Stability

Eunmin Ko1,2, Eun Young Park2,3, and Jennifer H. Shin1
1Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

FRI-646
Volumetric White Matter Changes due to Blast Exposure

Goutham Sankaran1, Kevin Moer2, Eric Nauman1, Tom Talavage1, and Larry Leavera1
1University of Mississippi, Oxford, MS, 2Purdue University, West Lafayette, IN

FRI-647
The Effect of Dyskinesia on Postural Stability: A Pilot Study

Marley Olson1,2, Victoria Smith1,2, Christopher Frame1,2, Thurmon Lockhart1, and Albert King1
1University of Texas Southwestern Medical Center, Dallas, TX

Track: Biomedical Engineering (BME)

FRI-648
An Examination of Brain Injury by Golf Ball Impacts

Mohammad Hosseini Faraj1, Ashkan Esmaeilijad1, Mohammadreza Rezaee1, Marius Zwiep1,2, and Ghodrat Karim1
1North Dakota State University, Fargo, ND

Track: Biomedical Engineering Education (BME) Dual & Plur-Institutional Programs

FRI-650
Leveraging on North-South Collaboration to Develop Biomedical Engineering Education and Practice in Nigeria

Alkiniwe Coker1, Chucks Dijji1, Sunday Adeagbon2, Abel Obinumina1, David Gallow1,2, and Robert Murphy1
1University of Lagos, “The Northeastern Center for Global Health, Chicago, IL, 2Northwestern University, Chicago, IL

FRI-651
STING Activities for Early Scouting

Diana Garcia-Leon1 and Mariana Talli-Azargani1
1University of Los Andes, Bogota, Colombia

FRI-652
Immersing Biomedical Engineering Graduate Instructors into High School STEM Curriculum: The IBMBE Discovery Program at the University of Toronto

Lisack Davenport Huyse1, Gemeene Canva2,3, Cindy V. Bul4, Sherif Ramada1, Ben G. Krinsella1, Andrew Vehgi1, Andrew Effat1, Janice Wong1, Neal Callaghan1, Brittany Lauton1, Andrew I. Shukalyski1, and Dawn M. Kilker1
1University of Toronto, Toronto, ON, Canada

Track: Biomedical Engineering Education (BME), Undergraduate Research, Design & Leadership

FRI-653
Industrial Design of Medical Devices in a Master of Engineering Project Course

Adam Elsharkawi1 and Elie Slim2
1University of Alabama at Birmingham, Birmingham, AL, 2Auburn University, Auburn, AL

FRI-654
A Collaborative Approach to Enhancing Undergraduate and Graduate Curriculum by Engaging New Content Building and Utilizing Research and Outreach Resources at the University of Toronto

Andrey Shukalyuk1,2
1University of Toronto, Toronto, ON, Canada

FRI-655
Using Course Design to Achieve Gender Equity in an Undergraduate STEM Course

Carlin Handley1,2, Elen Eassay1, and Harry Goldberg1
1Joshes Hopkins University School of Medicine, Baltimore, MD, 2Joshes Hopkins University, Baltimore, MD
Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-658 Development of a Two-week Active-learning Ultrasound Module for a General Bioimaging Course
Christopher Dillon1, Allison Payne1, and Douglas Christiansen1
1University of Utah, Salt Lake City, UT

FRI-659 Bringing the Clinic to the Classroom: An Alternative to Clinical Immersion
Conrad Zapanta1, Howard Edington2, Philip Empey3, Divya Tankasala1, Matthew Thompson1, and Howard Edington2
1University of Texas at Arlington, Arlington, TX, 2University of Texas Southwestern Medical Center at Dallas, Dallas, TX, 3University of Massachusetts Lowell, Lowell, MA

FRI-660 Enhancing Professional Development in Research-intensive Summer Programs
David Shreiber1 and Evelyn Erenrich1
1University of Illinois at Urbana-Champaign, Urbana, IL

FRI-661 Practicing Design and Prototyping in Biomedical Engineering Programs
Eric Meyer1 and Manooroo Nasir1
1Lawrence Technological University, Southfield, MI

FRI-662 An Integrated Approach to Teaching an Interdisciplinary Biomedical Device Engineering Course
Erik Sake1
1University of California, Davis, Davis, CA

FRI-663 Are We on the Right Track with Tracks?
Jennifer Amos1
1University of Illinois at Urbana-Champaign, Urbana, IL

FRI-664 Introducing Bioengineering Approaches through Grand Challenges
Karin Jensen1, Marina Marjanovic1, and Marcia Post1
1University of Illinois at Urbana-Champaign, Urbana, IL

FRI-665 New Project-based, Self-learning Module at Sophomore Level to Jump-start Computer Aided Design (CAD) Skill Development in Biomedical Engineering Education
Ruchi Joshi1, Andrew Brightman1, Asen Abobahab1, Melanie Verderley1, Divya Tankasala1, Matthew Thompson1, and Shuo Han1
1Purdue University, West Lafayette, IN

FRI-666 A Redesigned Two Term Bioengineering Capstone Experience at Union College Incorporating Needs Finding from a Clinical Immersion Program
Shane Cutler1, Jennifer Currey1, and Sudhir Khater1
1Union College, Schenectady, NY

Track: Biomedical Engineering Education (BME), Undergraduate Research, Design & Leadership

Industry Preparation

FRI-667 A Convergent Collaborative Learning Model to Enhance Students’ Learning Experience In Biomedical Engineering Course
Kannathal Natarajan1
1NgeeAnn Polytechnic, Singapore, Singapore

FRI-668 The Future of BME Design and Undergraduate Research in an Academic Biomanufacturing Lab
Marc Moore1
1University of Oklahoma, Norman, OK

FRI-669 Person-to-person Variability in nMacrophage Protease Dynamics
Ken Brandon1, Andrew Shockey3, and Manu Platt3
1University of Alabama, Huntsville, Huntsville, AL, 3Georgia Institute of Technology, Atlanta, GA

Track: Biomedical Imaging and Optics

FRI-670 Functional Neuroimaging via Optical Coherence Angiography
Ramini Pasha1
1University of Wisconsin-Milwaukee, Milwaukee, WI

SATURDAY’S SCHEDULE HIGHLIGHTS

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

PLATFORM SESSIONS-SAT-1
8:00 am–9:30 am | See pages 221–229
Special Session
Room 121ABC
BMES-NSF Special Session on Graduate Research Fellowships Program
Exhibit Hall Open
9:30 am–5:00 pm | 300 Level Exhibition Hall
Poster Session
9:30 am–1:00 pm | 300 Level Exhibition Hall
Poster Viewing with Authors & Refreshment Break
9:30 am–5:00 pm | 300 Level Exhibition Hall
Plenary Session
10:30 am–11:45 am | North Ballroom BCD

PLATFORM SESSIONS-SAT-2
1:30 pm–3:00 pm | See pages 230–238
Plenary Session
3:15 pm–4:45 pm | See pages 238–244

PLATFORM SESSIONS-SAT-3
3:15 pm–4:45 pm | Convention Center

OP-Sat-1-1
Room 224A
Track: Biomaterials
Biomaterials Scaffolds II
Chairs: Antonio Webb, Ashley Brown
8:00 am
Biodegradable Conductive Elastomers with Improved Conductive Stability
Can-can Xu1, Yi-hua Huang1, Giorgio Vesper1, Zhi Wei1, Fu-Siang Liu2, Alejandro Buguen1, Liping Yang2, and Yi Hong2
1University of Texas at Arlington, Arlington, TX, 2University of Texas Southwestern Medical Center at Dallas, Dallas, TX

8:15 am
Osteogenic Differentiation of Mesenchymal Stem Cells on Zinc Oxide Composite Scaffolds
Haisa Khadi1 and Treena Living-ston Arinzeh1
1New Jersey Institute of Technology, Newark, NJ

8:30 am
Addition of poly-(L-lactic acid)-co-poly (pentadecalactone) to poly-L-lactic Acid Fibers Increases Neurite Outgrowth of Dorsal Root Ganglia In Vitro
Alex Zombal1, Keith Lane1, Andrew Mason1, Nacho Martinez1, Ryan Swinton1, Anthony D’Amato1, Filbert Tontong1, Hubert Casaja1, Richard Gnome1, David Cott1, and Ryan Gilbert1
1Rensselaer Polytechnic Institute, Troy, NY

8:45 am
Electrospun Poly(N-isopropyl acrylamide)/Polyacrylonitrile Fibers to Generate Anisotropic Cell Sheets
Alicia Allen1, Elaina Barone1, Cody Crosby1, Laura Suggs1, and James Zuldana1
1University of Texas at Austin, Austin, TX

9:00 am
Vascular Scaffolds with Enhanced Antioxidant Activity Inhibit Grant Calciumization
Bin Jiang1, Rachel Sue1, Jian-Jing Wang2, Zheng Zhang2, Jason Wertheim2, and Guillermo Ameer1
1Northwestern University, Evanston, IL, 2Northwestern University, Chicago, IL

9:15 am
Mechanical Characterization of Drawn Electrospun Polyacrylonitrile (PAN) Carbon Fiber Precursor
David Brennan1 and Vincent Beachley1
1Rowan University, Glassboro, NJ

*Biomaterials Track sponsored by:
PLATFORM SESSIONS—SATURDAY—1—8:00 AM—9:30 AM

**Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1**

### OP-Set-1-2 Room 224B

**Track: Biomaterials**

**Drug Delivering Biomaterials IV**

Chairs: Benet Dunlap, Yujung Lee

**8:00 am** Reducing Implant Precipitation Rate for Deeper Vascular Occlusion

Danielle Gilbert, Selva Jeganathan, Siddharth Tewi, and Agata Ester*

*Case Western Reserve University, Cleveland, Ohio, 2University Hospitals, Cleveland, Ohio

**8:15 am** IgA and IgM Protein Primarily Drive Plasma Corona-induced Reduction of PLGA Nanoparticles in Human Blood Flow

Daniel Solczynski and Omidole Emilu-Adedapo*

*University of Michigan, Ann Arbor, MI

**8:30 am** Anisotropic Single Cell Migration

Abinash Padhi1 and Amrinder Nain1

*University of Pennsylvania, Philadelphia, PA

**8:45 am** Combating Bioactive Silica-based Nanospheres With Long-Range Seeding

Joshua Webb1 and Giuliana Scarcelli1

*University of Maryland, College Park, MD

**9:00 am** Full-Volume Strain Mapping and Mechanical Characterization of Anterocrural Ligament Bundles

Callan Luxlemo1, Luyao Cai1, Corey Nau2, and Ellen Arruda1

*University of Michigan, Ann Arbor, MI, 2Purdue University, West Lafayette, IN, 3University of Colorado Boulder, Boulder, CO

**9:15 am** Imaging Techniques in Biomechanics

Chairs: Benet Dunlap, Yujung Lee

**8:00 am** Determining 3D Displacement Fields In Cartilage Using Two-Photon Microscopy

Mieko Takemori1, Jay Myers2, Ariya Huang3, Jean Welter1, and Joseph Mamoun1

1Case Western Reserve University, Cleveland, OH

**8:30 am** Quantification of Sliding Induced Transport in Articular Cartilage Using FRAP

Bryan Graham1, Aven McVicar1, David Burnett1, and Christopher Price1

*University of Delaware, Newark, DE

**8:45 am** Using Brillouin Microscopy to Quantify the Effectiveness of Accelerated Coarset Collagen Cross-Linking

Bryan Graham1, Aven McVicar1, David Burnett1, and Christopher Price1

*University of Delaware, Newark, DE

**9:00 am** Patterns in Ankle Osteoarthritis Patients

Joshua Webb1 and Giuliana Scarcelli1

*University of Maryland, College Park, MD

**9:15 am** Examining the Influence of Residual Limb Adipose Tissue Volume On non-steady locomotor Performance Of Transfemoral Amputees–A Surgical Intervention Case Study

Nicholas Pey1 and Emily Levy1

*University of Texas at Dallas, Richardson, TX, 1UT Southwestern Medical Center, Dallas, TX

### OP-Set-1-4 Room 229B

**Tracks: Biomechanics, Orthopedic and Rehabilitation Engineering**

**Rehabilitation Biomechanics**

Chairs: Ashley Weaver

**8:00 am** Sex-Specific Differences of Temporal Gait Patterns in Ankle Osteoarthritis Patients

Chinmaye Hughes-Oliver1, Divya Srinivasan1, and Robin Queen1

*Virginia Tech, Blacksburg, VA

**8:15 am** Passive Elastic Finger Joint Torques Change Minimally in Moderately Impaired Individuals With Chronic Hemiparetic Stroke

Benjamin Binder-Macke1,2, Joshua PA Dawidow1, and Wendy Murray1,3

1Northwestern University, Chicago, IL, 2Shirley Ryan AbilityLab, Chicago, IL, 3Edward Hines, Jr. VA Hospital, Hines, IL

**8:30 am** Compensation in the Forelimb After Body Weight Supported Treadmill Training in Spinal Cord Injury Paralyzed

Anita Singh1, Gabrielle Gehron1, Shainia Shah1, Brittany King1, Jacklin Winheer1, and Jannine Kadlusek1

*Widener University, Chester, PA, 1Rowan Institution, Glassboro, NJ

**8:45 am** Comparative Analysis of the Destabilizing Effects of Ankle Inversion Versus Posterior Releases on the Thoracolumbar and Lumbar Spine

Bryan Rynarson1, Rahul Ramathan1, Marcus Allen1, Nicholas Pey1,2, Kevin Bell1, and Patrick Bossh1

*University of Pittsburgh, Pittsburgh, PA

**9:00 am** More Push from Your Push-Off: Joint-Level Modifications to Modulate Propulsive Forces in Old Age

Michael Brown1 and Jason Fair1

*University of North Carolina and North Carolina State University, Chapel Hill, NC

**9:15 am** Examining the Influence of Residual Limb Adipose Tissue Volume On non-steady locomotor Performance Of Transfemoral Amputees–A Surgical Intervention Case Study

Nicholas Pey1 and Emily Levy1

*University of Texas at Dallas, Richardson, TX, 1UT Southwestern Medical Center, Dallas, TX

### OP-Set-1-5 Room 221A

**Tracks: Cardiovascular Engineering, Device Technologies and Biomedical Robotics**

**Cardiovascular Devices**

Chairs: Ken Kenney, Robert Atkins

**8:00 am** Preclinical Development of a Radially Expandable Vascular Conduit for Pediatric Cardiovascular Surgery

Abigail Lonerak1,2, Aneel Kaht1, Alano Nugent1, Samuel Lukitch1, Doug Barter1, Antonio D’Amore1,2, and Dr. Frank Huang1

1University of Pittsburgh, Pittsburgh, PA, 2Pfizer Labs, Pittsburgh, PA, 3UT Southwestern Medical Center, Dallas, TX, 4McGowan Institute for Regenerative Medicine, Pittsburgh, PA, 5WEED Foundation, Palermo, Italy

**8:15 am** Biennial Balloon for Fontan Cavo-Pulmonary Assist–In-Vitro Study Of Device Design Considerations

Mira Shaharamshahradi1,2 and Ethan Kung1

1Clemson University, Clemson, SC

**8:30 am** Thrombogenicity and Hemodynamic Assessment of a Novel Polymeric Valve for Transcatheter Aortic Valve Replacement

Oren Rottman1, Jawad Shafie1, Marion Stefan1,2, and Danny Bilinar1

1Stony Brook University, Stony Brook, NY, 2University of Arizona, Tucson, AZ, 3Polyvance Cardiovascular Inc., Stony Brook, NY

**8:45 am** Quantification of Fluid Changes through Cardiac Muscle for the Development of a Biomedical, Electromechanical Patch Sensor

Faye Aruwaili1, Jacob Griffith1, Jeremy Patterson1, and Kim Cluff1

*Wichita State University, Wichita, KS

**9:00 am** Development of an Experimental Model for Detection of LVAD Pump Thrombus

Ashley Tabajabadi1, Ricardo Monteis1, Saniya Salem1, VJ Vu1, and Benoit Danielle1

*San Diego State University, San Diego, CA

**9:15 am** Dual-Propeller Micro-pump for Pediatric Patients with Right Ventricular Dysfunction

Alexandrina Untaroiu1, Jakin Jagen1, and Elizabeth Mack1

*Virginia Tech, Blacksburg, VA

**9:30 am** Microfabricated Immune-isolating Devices for Long Term Cell Based Therapies

Suman Bose1, Robert Langer1, and Daniel Anderson1

*Massachusetts Institute of Technology, Cambridge, MA

**9:45 am** Microfabricated Immune-isolating Devices for Long Term Cell Based Therapies

Suman Bose1, Robert Langer1, and Daniel Anderson1

*Massachusetts Institute of Technology, Cambridge, MA

**10:00 am** Microfluidic Immune-isolating Devices for Long Term Cell Based Therapies

Suman Bose1, Robert Langer1, and Daniel Anderson1

*Massachusetts Institute of Technology, Cambridge, MA

**10:15 am** Microfabricated Immune-isolating Devices for Long Term Cell Based Therapies

Suman Bose1, Robert Langer1, and Daniel Anderson1

*Massachusetts Institute of Technology, Cambridge, MA

**10:30 am** Microfabricated Immune-isolating Devices for Long Term Cell Based Therapies

Suman Bose1, Robert Langer1, and Daniel Anderson1

*Massachusetts Institute of Technology, Cambridge, MA
Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

9:15 am
Cationic Helical Polypeptide Carrier for CRISPR/Cas9 Based Genome Editing
Hongxu Wei1, Yingyu Song1, Yinheng Guo1, Zhenpeng Li2, Jianye Guo3, Zhiyong Guo1,2
1University of Science and Technology Beijing, Beijing, China, 2Beijing Institute of Radiation Medicine, Beijing, China, 3National Hospital of Malaysia, Kuala Lumpur, Malaysia

9:30 am
Mechanobiology of Cell Adhesion in the Context of Bioengineering
Chairs: Kimberly Stokes, Renita Horton
8:00 am
Detecting Vinculin Load-Dependent Protein Recruitment to Focal Adhesions
Andreas LaCroix1 and Brenton Hoffman1
1Duke University, Durham, NC

8:15 am
P-selectin and ICAM-1 Synergy in Mediating THP-1 Monocyte Adhesion in Flow is Length Dependent
Eric Edwards1 and Susan Thomas1
1Georgia Institute of Technology, Atlanta, GA

8:30 am
Integrin Subtypes and Nonoscale Dimensionality Influence Chemoresistance in Breast Cancer Cells
Jennifer Young1, Heidi Solamel1, Ximeng Hua1, Horst Kessler2, and Ximeng Hua1
1University of Toronto, Toronto, ON, Canada, 2Frederick Cancer Research Foundation, Frederick, MD

8:45 am
Calibrating and Mapping Integral Membrane Tensions in Single Platelets
Xiaoyang Wei1, Yongping Deng2, and Dana LeVine1
1State University of New York, Stony Brook, NY, 2The Rockefeller University, New York, NY

9:00 am
Mechanosensitive Caderhin Adhesion and its Regulation
Ramesh Koirala1, Chi-Fu Yen1, Andrew Priest1, and Sanjeevi Sivasankar1
1Northwestern University, Evanston, IL

9:15 am
Novel Role of Caderhin-11 In Cell Signaling Via Direct Interaction with the PDGFR Receptor
Yuyan Liu1, Sindhu Reddy1, Sandeep Agarwal2, and Stelios Arnaoutidou1
1University of Buffalo, Buffalo, NY, 2Taylor College of Medicine, Houston, TX

9:30 am
Molecular and Cellular Immunoregulation
Chair: Stacey Finley, Jordan Green
8:00 am
Immunopathology and Cell Biology of the GAD65 Autoantigen in Pancreatic Islets
Edward Prefet1, chair, Chiana Ciancaruso2, and Stefaniin Baekkesk61
1University of Florida, Gainesville, FL, 2Swiss Federal Institute of Technology, Lausanne, Switzerland

8:15 am
Super Natural Killer Cell-Mediated Targeted Therapy on Chemo-Resistant Cancer Cells
Dai Liu1, Heng Yang2, Thong Cai3,4, Nirmayi Omot Okoro1,2, and Michael King1
1Sanderling University, Nashville, TN, 2Cornell University, Ithaca, NY

8:30 am
Nanoantheranostics Reveal Sex Dependent Inflammatory Responses in Mouse Models of Atherosclerosis
Yu-Gang Liu1, Sean David Allen1, Sija Y1, and Evan Alexander Scott1
1Northwestern University, Evanston, IL

8:45 am
Engineered T Regulatory Cells (Tregs) as a Multiple Sclerosis (MS) Therapeutic
Elissa Leonard1 and Jennifer Maynard1
1University of Texas at Austin, Austin, TX

9:00 am
Glycoengineering HIV Immunogens to Enhance the Binding Landscape for Humoral Immune Responses
Wee Han Yu1, Ping Zhao1, Monia Draghi2, Claudia Arevalo2,3, Christina Kant1, Lianne Wells1, Douglas Lauffenburger1, and David Atter1
1University of Technology and Harvard University, Cambridge, MA, 2University of Technology and Harvard University, Cambridge, MA, 3University of Technology, Lausanne, Switzerland

9:15 am
Role of Transport Phenomena in Establishing Chemokine Gradients in Lymph Nodes
Matthew H. Harper1, David Zawieja2, Bindu Brooks1, Robert Nibbs4, and James Moore1
1University of California, San Diego, La Jolla, CA, 2TUM Institute for Advanced Study, Munich, Germany, 3University of Texas at Austin, Austin, TX, 4University of Kent, Canterbury, Kent, UK
Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

**Room 225A**

**Track: Nano and Micro Technologies**

- Advances in Micro/Nano Manufacturing
  - Chairs: Meryam Mobli-Mesmadi, Vadym Rockey
  - 8:00 am
  - Acoustic Separation of Nanoparticles in Continuous Flow
    - Joseph Roda, Merci Wu, Zhongming Mao, Lin Wang, and Tony Huang
  - 8:15 am
  - Flexible Nanotextured PDMS as a Substrate for Selective Cell Capture
    - Mohammad R. Hasan, Sai Santosh Saxena Peri, Vinjal Sabanne, Nuzat Mansur, Jean Gabi, Riyad Nguyen, Ion Wendland, Vinay Abhyankar, and Samir Igbal
  - 8:30 am
  - A Microfluidic Thermometer: Precise Temperature Measurements in Microliter-Scale Volumes
    - Britney A. McKeating and William H. Gruber

- Delivery of Undiluted Whole Blood in Microchannels Enabled by Acoustic-based Fluid Propulsion
  - Po Hoon Huang, Junhui Niu, and Tony Jun Huang

- A Viscosity-Based Measurement System for Pathogen Detection
  - Katherine Clayton, Taylor Moehling, Andrew J. Witten, Dong Hoan Lee, Don Bergland, Steven T. Wall, Jacqueline C. Limnas, and Tamer E. Kraus

- High-throughput Microtechnologies for Transient Profiling of Molecular Signatures during Neutrophil Swarming
  - Eduardo冉冉, Lee Jun Kang, Alex Hopke, Fatemeh Jalali, Maedeh Roushan, and Jesmond Dalli

**Room 225B**

**Track: Device Technologies and Biomedical Robotics**

- Translation of Devices from the Lab to the Market
  - Chairs: Yongfan Men, Curtis Wong
  - 8:00 am
  - Evaluation of a Novel Incremental Syringe to Improve on Accuracy and Precision of Dosing
    - Gregory Lippitt and Philip Brown
  - 8:15 am
  - CloudPette: Cloud-Based Ultra-high-Precision Microfluidic Pipetting
    - Yongfan Men, Jinhoong Far, Kuo-Hao Tseng, Yi Ding, Yungfeng Ding, Chuwang Tan, and Tingyang Fan
  - 8:30 am
  - Retrospective Review of Predictors of Mortality in an Enterocutaneous Fistula Population at a Tertiary Medical Center
    - Alyssa Rolandi, Stephen Waller, Philip Johnson, Russ Wattman, and Sara Wilson
  - 8:45 am
  - Development of a Novel Bipolar Radiofrequency Ablation Device for Ablation of Post-excision Surfaces and Summary of Performance in Ex Vivo and In Vivo Soft Tissues
    - Tyler Waranik, Alyssa Bailey, Thomas Kurth, Ryan Bean, Terrence Chan, Michelle Hasei, Curtis Wang, Anna Somen, Robert Rouss, and Roberta Leal
  - 9:00 am
  - Design and Fabrication of Indigenous Phototherapy Equipment for Treating Neonatal Jaundice in Nigeria
    - Akinwale Coker, Mukiy Satidra, Hammed Taiye, and Akinwunmi Ajayi

- Commercial Robot Based Rетracor for Spine Surgery
  - Alexandre Smith, Riley Neuville, Paul Bonny, and Andrew Hall

**Room 227C**

**Track: Cancer Technologies, Drug Delivery & Intelligent Systems**

- Targeting Personalized Medicines to the Tumor Microenvironment
  - Daniel Helfer, Yoo Se Young, Amin Marzouki, Mauricio Scarlati, Adriana Hamovitz-Fridman, and John Humer

- Datasim Physical Interactions Between Multiple Myeloma and the Bone Marrow Niche via Nanoparticle-Mediated RNAi
  - Michelle Huang and Kobi Lavon

- Nanoscale Bacteria-Enabled Autonomous Delivery Systems (NanoBEADS) for Cancer Therapy
  - Bahareh Bahkami

- Co-delivery of Chemotherapeutics and Stem Cell-mediated Non-viral Gene Therapy Synergistically Enhances Tumor apoptosis of Pediatric Brain Glioma
  - Xinyi Jiang, Christine Wang, Anitha Ponnusamy, Michelle Mong-Duncan, and Fan Yang

**OP-Sat-1-11**

**Platform Session 1**

- Targets Stem Cell Engineering, Bioinformatics, Computational and Systems Biology
  - Chairs: Patrick Cahan, Srinivas Chandrasekaran

- Tracking Pluripotent Stem Cell Differentiation with FLOW-MAP, a Graph-Based, Force-Directed Layout Algorithm for Single-Cell, Time Course Datasets—INVITED
  - Kristen Freese, Melissa Ko, Corey Williams, Rohit Rustagi, Gabriela K. Fragadakis, Gary Pimplikar, and El Zunder

- Systems Analysis of Transcriptional and Signaling Networks Specifying Hematopoietic Cell Fate
  - Melissa Kimball, Jessica Romeijn, Trusipriya Manuparampil, Pinar Eser, James Collins, Patrick Cahan, Douglas Laufenburger, and George Daley

**OP-Sat-1-12**

**Track: Cancer Technologies, Drug Delivery & Intelligent Systems**

- Cancer Drug Delivery
  - Chairs: Jeannine Cabum, Ashish Kulkarni
  - 8:00 am
  - Nanomedicine Claims Versus Human Clinical Performance: Where’s the Disconnect?
    - David Granger

- Multiple Myeloma and the Bone Marrow Niche via Nanoparticle-Mediated RNAi
  - Michelle Huang and Kobi Lavon

- Nanoscale Bacteria-Enabled Autonomous Delivery Systems (NanoBEADS) for Cancer Therapy
  - Bahareh Bahkami

- Co-delivery of Chemotherapeutics and Stem Cell-mediated Non-viral Gene Therapy Synergistically Enhances Tumor apoptosis of Pediatric Brain Glioma
  - Xinyi Jiang, Christine Wang, Anitha Ponnusamy, Michelle Mong-Duncan, and Fan Yang

**OP-Sat-1-13**

**Track: Device Technologies and Biomedical Robotics**

- Implantable Sensors I
  - Chairs: Shang Song, Tim Bruns
  - 8:00 am
  - A Silicon Nanopore Membrane (SNM) Based Intravascular Bioartificial Pancreas Device (iBAP) for Islet Encapsulation Under Convective Transport
    - Shang Song, Charles Blaha, Willeford Moses, Jeahyun Park, Nathan Wright, Joey Grossak, William Fissel, Shant Varandani, Andrew Pozzaik, and Shuvo Roy
  - 8:15 am
  - Localization of Microscale Devices In Vivo using Addressable Transmitters Operated As Magnetic Spins
    - Manuel Monge, Audrey Lew-Gosselin, Mikhail Shapiro, and Azita Emami
  - 8:30 am
  - Artificial Muscle for Artificial Heart: Large Volume Fluid Pumping by Dielectric Elastomer
    - Ze Li, Yingfan Wang, Choon Cheong Foo, Haweed Almusallam, Jiao Zhu, and Choon Hwa Yap
  - 8:45 am
  - Real Time Angle Measuring Tool for Lumbar Spinal Fusion
    - William Langenbach, Kristen Jefferys, James Abbasi, and Brian Kafy
  - 9:00 am
  - Development of a Stretchable Substrate for a Bidirectional Bladder Interface
    - Christian Stephen, Dongmeen You, Yu-Heng Cheng, Laurence Zimmerman, Anne Cameron, Eusik Youn, John Seymor, and Tim Bruns

- Stem Cell Systems Biology
  - Chairs: Patrick Cahan, Srinivas Chandrasekaran

- Tracking Pluripotent Stem Cell Differentiation with FLOW-MAP, a Graph-Based, Force-Directed Layout Algorithm for Single-Cell, Time Course Datasets—INVITED
  - Kristen Freese, Melissa Ko, Corey Williams, Rohit Rustagi, Gabriela K. Fragadakis, Gary Pimplikar, and El Zunder

- Systems Analysis of Transcriptional and Signaling Networks Specifying Hematopoietic Cell Fate
  - Melissa Kimball, Jessica Romeijn, Trusipriya Manuparampil, Pinar Eser, James Collins, Patrick Cahan, Douglas Laufenburger, and George Daley

- Targeting Small Cell Lung Cancer-Breast Metastasis in vivo using Human Adipose-derived Stromal Cells
  - Xinyi Jiang, Duan Yang, Jing Shan Lim, Julian Sage, and Fan Yang

- Stanford University, Stanford, CA

- 8:30 am
  - Stanford University, Stanford, CA

- 8:45 am
  - Stanford University, Stanford, CA

- 9:00 am
  - Stanford University, Stanford, CA

- 9:15 am
  - Stanford University, Stanford, CA

- 9:30 am
Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

8:45 am Interrogation of Muscle Stem Cell Niche Interactions Using Artificial 3D Micro-Gels and Single-Cell Sequencing
Andrea De Michiel1, Sharon Baumgartner-Soud1, Frances Cher1, Brenton Munson, and Benjamin Giessegov1
1University of Texas, Houston, TX

9:00 am A Notch Positive Feedback Controlling Intestinal Stem Cell Niche Patternning
Kai Yuan Chen1, Tara Srinivasan1, Qin-Ling Tung1, Pengcheng Bu1, and Xiling Shen1
1Duke University, Durham, NC, 2Cornell University, Ithaca, NY

9:15 am Comprehensive Mapping of Pluripotent Stem Cell Metabolism using Dynamic Genome-scale Network Modeling
Sitaram Chandrasekaran1, Jin Zhang2, George Daley2, and Jit Lim1
1University of Michigan, Ann Arbor, MI, 2Harvard Medical School, Boston, MA, 3MIT, Cambridge, MA

OP-Sat-1-16 Room 226A
Track: Bioinformatics, Computational and Systems Biology
Systems Biology of Infectious Disease
Chairs: Kelly Amidi, Priya Shah

8:00 am A Systems Approach to Elucidate Mechanisms of HIV Control
Jahn Du1, Jessica Savicki1, Max Mangano2, Sean O’Keefe2, Douglas Lauffenburger1, and Gali Albar1
1Massachusetts Institute of Technology, Cambridge, MA, 2Massachusetts General Hospital, Cambridge, MA

8:15 am Quantifying Lenticulal Reactivation Across Individual Genomic Integration Sites
Amand Fa1 and Leon Weiberg1
1 Gladstone Institutes and UCSF, San Francisco, CA

8:30 am Eradicating M. tuberculosis Persisters
Jason Yang1, Meagan Habib1, Sarah Wright1, and James Collins1
1Massachusetts Institute of Technology, Cambridge, MA, 2University of Maryland, and 3Harvard Medical School, Cambridge, MA

8:45 am Surrogate-assisted Optimization Can Locate Optimal Tuberculosis Antibiotic Treatment Regimens
Joseph Coche1, Elgie Pietsch1, Denise Kirschner1, and Jennifer Linderman1
1University of Michigan, Ann Arbor, MI, 2University of Michigan Medical School, Ann Arbor, MI

9:00 am Emergence and Selection of Antibiotic Resistance in Tuberculosis
Elgie Pietsch1, Denise Kirschner1, and Jennifer Linderman1
1University of Michigan, Ann Arbor, MI

9:15 am Experimental Design in the Context of Bacterial Strain Identification
Carolyn Zhang1 and Longou You1
1Duke University, Durham, NC

OP-Sat-1-17 Room 226B
Tracks: Neural Engineering, Device Technologies and Biomedical Robotics
Neural Device-Tissue Interfaces
Chairs: Takashi Koaze, Erin Purcell

8:00 am Investigating the Role of Inflammation in the Functionality of Intracortical Devices
Janak Gare1, Hsiu Chang Lee1, Nicholas L. Hiltborn1, Mary K. Regan1, and Kevin J. Otto1
1University of Florida, Gainesville, FL, 2University of Texas Southwestern Medical Center, Dallas, TX

8:15 am Quantitative Mapping of Tissue Oxygenation Around Neural Interfaces Using Novel PISTOL MR Imaging
James Beushausen1, Jordan Karriemi1, Nutandev B. Jayda1, Anat Sridharan1, Vikram D. Kookbaghar1, and Jit Muthuswamy1
1Arizona State University, Tempe, AZ

8:30 am Melatonin Injection Improves Quality and Longevity of Chronic Neural Recording
Assiyeh Golabchi1, Patrick Cody1, Bingchen Wu1, Takashi D. Y. Kasi1,2, and X. Tracy Chu1,2
1University of Pittsburgh, Pittsburgh, PA, 2Center for the Neural Basis of Cognition, Pittsburgh, PA, 3McGowan Institute for Regenerative Medicine, Pittsburgh, PA, 4Neuralized Center of the University of Pittsburgh Brain Institute, Pittsburgh, PA

8:45 am Electrical Evaluation of Micro-Electrode Arrays Coated with Thin Films for Minocycline Release
Flavia Vitali, Wendy Shaw1, Nicolaette Drisco1, Andrew G. Richardson1, Brendan Murphy1, Alkasir Ananthakrishnan1, Justin Burnet1, Madhava Adwele1, Timothy H. Lucier1, and Mary K. Cullen1
1University of Florida, Gainesville, FL, 2Purdue University, West Lafayette, IN

9:00 am Evaluation of Impedance and In Vivo Recording Performance of Extracellular Matrix-Coated Neural Microelectrodes
Zhengning Zhao1, Lin Luan1, Xueling Wei, Jennifer Siegel1, Shans Kamei1, Robert Fowler1, Andrew Dunn1, Raymond Chinwood1, and Chong Xie1
1University of Texas at Austin, Austin, TX

9:15 am Ultra-flexible Brain Probes Form Reliable, Glial Scar Free Neural Integration
Zhihong Zhao1, Lin Luan1, Xueling Wei, Jennifer Siegel1, and Chong Xie1
1University of Texas at Austin, Austin, TX

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

OP-Sat-1-18 Room 227C
Track: Undergraduate Research, Design & Leadership
Undergraduate Research, Design & Leadership I
Chair: Jeffrey La Belle, Tim Becker

8:00 am A Per fusable Hollow Fiber In A 3 D Poly(ethylen e glycol)-based Vascularized 3D Scaffold
Jennifer Jeff1, Auli Unal1, and Jennifer West1
1Duke University, Chapel Hill, NC, 2Duke University, Durham, NC

8:09 am The Role of Electroretinography in Cold Atmospheric Plasma as a Potential Cancer Therapy
Quinn Mitchell1, Nicole Soule1, David Burnette1, and Monica Burdick1
1Ohio University, Athens, OH

8:18 am Photocrosslinkable, Stimuli-Responsive Protein Microparticles
Vincent Ma1, Stefan Roberts1, Simone Costa1, Joseph Simon1, and Andrew Chirlian1
1Duke University, Durham, NC

8:27 am Characterizing Metabolic Network Changes in Pseudomonas aeruginosa During Development of Antibiotic Resistance
Ethan Stenfl1 and Jason Papin1
1University of Virginia, Charlottesville, VA

8:36 am Biomimetic Microgels with Controllable Deformability to Improve Wound Healing Outcomes
Cullen Rave1, Eln Spraul1, and Ashley Brown1
1Joint Department of Biomedical Engineering at NC State University and UNC-Chapel Hill, Raleigh, NC

8:45 am Computational Modeling of Mechanical Interactions of Cell Migration in a Viscoelastic Substrate
Kara Roberts1, Min-Chael Kim1, and Harry Avad1
1Middle Tennessee State University, Madison, TN, 2Massachusetts Institute of Technology, Cambridge, MA

8:54 am Tension Simulating Ligament Loading Induces Changes in Neuronal Morphology Even at Strain Below Those Sustained in Painful Injury
Alejandro Villamar1, Meagan Ica1, Sagar Sing1, and Beth Winklestein1
1University of Pennsylvania, Philadelphia, PA

9:03 am Investigating Cholera Toxin Infection During Pregnancy Using An In Vitro Placental Model
Tanaya Paranik1, Christina Bailey1, and Anita Shukla1
1Brown University, Providence, RI

9:12 am A Hybrid Model of Tumor Angiogenesis: Theory and Simulations
Carlos Ponce2, Martin Gadda2, Tessa Dawn2, Thomas Yankelow2, J. Tinsley Odan1, and Ernesto Lima1
1The University of Texas at Austin, Austin, TX

9:21 am Whole-Body Mathematical Models of Synthetic Bionensing Liposomes: An Application for the Prevention of Metastasis
Tanisha Abraham1 and Cheemeng Tan1
1University of California, Davis, Davis, CA

SPECIAL SESSION
8:00 am–9:30 am Room 121ABC
BMES-NSF Special Session on Graduate Research Fellowships Program
Chair: Michele Greene
BMES and the National Science Foundation (NSF) will convene a special session focused on NSF’s Graduate Research Fellowships Program (GRFP). The goal of the session is to bring together program officers, grantees, reviewers and graduate students to highlight the NSF GRFP and inform undergraduate and graduate students on GRFP guidelines and strategies to develop winning GRFP grant proposals. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1741771. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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Acid-Based Hydrogels

*Biomaterials Track sponsored by:
Kerim Gattas-Asfura 1, Nicholas Abuid1

Pancreatic Islets

Generation of Ultrathin Polymeric Coatings on Silane-Functionalized Dendrimer for the Multicellular Assemblies of Salivary Stem/ (Hema) Hydrogels

Minor Aema/Dmaema Inclusion Influences Water Hydrogels for Chronic Wound Healing Elastic and Anti-inflammatory Gelatin/Tropoelastin Hydrogels for the Healing Potential of Mesenchymal Stem Cell Spheroids

Elastic and Anti-inflammatory Gelatin/Tropoelastin Hydrogels for Chronic Wound Healing

Nasim Annabi1,4
Cerasela Zoica-Dinu 2
1Northeastern University, Boston, MA, 2Tecnologico de Monterrey, Institute of Technology, Cambridge, MA

West Virginia University, Morgantown, WV

Acid-Based Hydrogels

Nasim Annabi1,3,4
1University of Delaware, Newark, DE, 2Helen F. Graham Cancer Center of Proteins

Materials for the Recognition and Sequestration of Proteins

Mozhdeh Imaninezhad1, Grant Kolar1, and Silviya Zustiak1

Encapsulation of Proteins

Fabrication of Polyethylene Glycol-based NO-Releasing Polymer Combined with Covalently-Bound Polyzwitterion For Acid-Based Hydrogels

Hydrogel Biomaterials I

Track: Biomaterials

Room 224A

Room 224B

Room 229B

Room 229A

Room 228A

Room 228B

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Room 227

Room 223

Room 224

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Room 221

Room 220
DNA Netosis Engineered to Ensnare and Kill Oligomeric Amyloid-
Cytosolic Phospholipase A2 Facilitates Soluble Disseminated Tumor Cells
Jennifer A. Rohrs1, Dongqing Zheng1, Nicholas A. Graham1, Pin Wang1, 
Domain Structure for Dual Antigen Targeting Chimeric Antigen Receptor (CAR) Signaling Thorin Furt1 and James More1 
1University of Southern California, Los Angeles, CA
2:00 pm
Development of a Composite Scaffold to Provide Electrical, Mechanical, and Topographical Cues for Myoblast Maturation David Brower and Joseph Freeman闭环 1Rutgers University, Picatysney, NJ
2:00 pm
Toward Combining Cell Printing and CRISPR Epigenome Editing for Engineered IVD and Repair and Regeneration of Chondral Defects: Field-Dependence of Magnetic Iron Oxide Nanoparticle-induced Heating Sheng Tong1, Lu Han1, and Gang Bai2闭环 1Rice University, Houston, TX
2:45 pm
Quantification of Circulating M. tuberculosis Antigen Peptides Allows Rapid Diagnosis and Treatment Monitoring Chang Lui1, Jia Fan1, Christopher Lyon1, and Ye Hu1闭环 1University of California, Davis, CA, 2Rutgers University, New Brunswick, NJ
1:45 pm
Thick-Shelled Indium Phosphide Quantum Dots: Cadmiun-Free Imaging in the Visible and Near Infrared Allison Dennis1, Reyhanah Toofan1, Alexander Saxon1, Margaret Chen1, and Thijs Nijpae1闭环 1Boston University, Boston, MA
2:00 pm
Near-Infrared Chemiluminescent Nanoparticles for In Vivo Optical Imaging Veronika Sepekkal1, Rupinder Ka1t, and Jung-Jae Lee1闭环 1University of Colorado Denver | Anschutz Medical Campus, Denver, CO
2:15 pm
Temperature-switchable Near-infrared Fluorescence Nano-capsules Sha Yu1, Zhen Wang1, Tingfeng Yao1, and Baoshang Yuan1闭环 1The University of Texas at Arlington, Arlington, TX
2:30 pm
Nanostructure Introduces Artifacts in Quantitative Immunofluorescence by Influencing Fluorophore Intensity Christopher Chapman1, Xiangchao Zhu1, Hao Chen1, Pamela Lain1, Ahmet Vanolk1, and Hong Shuk1闭环 1University of California, Davis, Davis, CA, 2University of California, Santa Cruz, Santa Cruz, CA
1:45 pm
PLATFORM SESSIONS—SATURDAY—2—1:30 PM—3:00 PM

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

**OP–Sat–2–16**

Room 226A

**Track: Biobehavioral and Social Sciences**

**Session: Measurement of Social, Emotional, and Mental Health**

**Chair:** Tara Deans, Patrick Cahalan

1:30 pm

**Validating a Multidimensional Bonding Scale for Young Children Through Item Response Theory**

Carla Arroyave, Tayna Freitas, and Beatrice Palacios

2:15 pm

**The Longitudinal Trajectories of Childhood Resilience and Academic Achievement**

Gloria Guevara, Michaela Pfaus, and Jennifer Simoni

**OP–Sat–2–17**

Room 227C

**Track: Biomedical Engineering Education (BME)**

**Session: Motivation and Added Value**

**Chair:** Veronique Pellerin; Ruth Ochser

1:30 pm

**Non-cognitive Factors Associated with Freshmen Undergraduate Biomedical Majors**

Ruth Ochser, James Bracey, and Ye Hai-Hua

2:00 pm

**Teaching Communication Skills to Undergraduate and Graduate Students of Biomedical Engineering**

Emma Frood and Michael Cepelan

*Arizona State University, Tempe, AZ*

2:15 pm

**Engaging Biomedical Engineering Students in Health Disparities Research and Impact: A Pilot Study at the City College of New York (CCNY)**

Maribel Vázquez, Chris Marks, Joseph Karbuz, and Kevin Hubbard

*City College of New York (CCNY), New York, NY*

2:30 pm

**Impact of Two-Stage Quizzes on Student Learning and Perceptions in a Lower Division BME Course**

Jennifer Chi

*University of California Davis, Davis, CA*

2:45 pm

**The Value-oriented Health Economic Environment: What Every Innovator Should Know**

Supriya Nagaraju, Dhruv Tewari, and Mehdi Nikkhah

*Arizona State University, Tempe, AZ*

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**BME Track sponsored by:**

**Department of Biomedical Engineering**

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Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

**OP–Sat–2–18**

Room 227C

**Track: Undergraduate Research, Design & Leadership**

**Session: Undergraduate Research, Design & Leadership II**

**Chair:** Jeffrey La Belle, Tim Becker

1:30 pm

**Biased Anogeniess in Response to Low Oxygen Dynamics**

Yuki Chu, Sandra Lam, and Steven George

*Washington University in St. Louis, St. Louis, MO*

2:30 pm

**Microfluidic Encapsulation of Mesenchymal Stem Cells for Treatment of Type 1 Diabetes**

Emily Long

*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*

1:39 pm

**Microfluidic Encapsulation of Mesenchymal Stem Cells for Treatment of Type 1 Diabetes**

Emily Long

*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*

1:48 pm

**Identifying the Mechanisms Mediating TKI-Induced Cardiac Hypertrophy**

Monica Grabowska, Bryan Chiu, and Jeff Saucerman

*University of Colorado, Boulder, CO*

1:57 pm

**Nanoparticle Delivery Through a Resection-Disrupted Blood-Brain-Barrier for the Treatment of Glioblastoma**

Sara Bello, Kyle Housden, and Rachael Sinianni

*Arizona State University, Tempe, AZ*
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>3:15 pm</td>
<td>Developing and Characterizing an N-Cadherin FRET-based Tension Sensor</td>
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<td>3:30 pm</td>
<td>Microvascular Networks</td>
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<td>3:45 pm</td>
<td>Computational Modeling of Inferior Vena Cava Filters:</td>
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<td>Filtering Fluid-Structure Interactions that Lead to Filter Perforation</td>
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<td>4:00 pm</td>
<td>A Mathematical Model for NO Production by Aldehyde and Xanthine Oxidases</td>
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<td>Giving it a Whirl: Spiral Flow Modulation of Mechanical Circulatory</td>
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<td>Supportive Circuits Devices</td>
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<td>Patient Specific Assessment of Critical Embolization Rates in the</td>
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<td>Hybrid Procedure</td>
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<td>Microfluidic FePt Nanoparticle-Based ELISA</td>
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<td>Femtomolar IL-1 Cytokine Detection Using A</td>
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<td>Microvascular Networks</td>
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<td>Anti-fusion Targeted Nanomicellar Theranostics:</td>
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<td>Self-Assembled FN III 12-14 Into Microaggregates</td>
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<td>5:00 pm</td>
<td>The Use of Magnetic Microwires in Promoting Osteosarcoma Cell Death in</td>
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<td>Syncytial Virus Infection-induced Lung Diseases</td>
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<td>Assembly of Pure Multi-Protein Machinery Using Synthetic Microbial</td>
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**Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3**

**OP-Sat-3-4**
Tracks: Cardiovascular Engineering, Biomembranes
Mechanobiology of the Cardiovascular System
Chairs: Kytao Nguyen, Chekley Simmons

**OP-Sat-3-5**
Tracks: Cardiovascular Engineering, Bioinformatics, Computational and Systems Biology
Computational Modeling in Cardiovascular Systems
Chairs: Andrew Siefer, Saimi Yazdani

**OP-Sat-3-6**
Tracks: Nano and Micro Technologies, Drug Delivery & Intelligent Systems
Nano to Micro Devices in Delivery III
Chairs: Andrew Tosurak, Smithia Rao

**OP-Sat-3-7**
Tracks: Cellular and Molecular Bioengineering
Molecular Bioengineering
Chairs: Greg Mudella, Krishnan Sehag
Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

3:30 pm
Real-Time Label-Free Imaging of Dynamic Metabolic Processes During Apoptosis in Live Cells
Marina Marjanovic1, Andrew Bower1, Joanne Li1, Eric Chaney1, and Eric M. Chaney1
University of California, Los Angeles, CA

3:45 pm
Implementation of a Split Trehalase in an Electrochemical Biosensor for Rapid Point-of-Care Detection of Antibodies and Biomarkers of Disease
Jerson De Boul1 and Maria Dinkel1
University of Calgary, Calgary, AB, Canada

4:00 pm
Rapid Workflow for Cancer Cell Genomics
Adam Snider1 and Anishwar Tripathi1
Brown University, Providence, RI

4:15 pm
Open-Source Device for Variable Ultranar Emlinece
Perry Wendthal
Florida Atlantic University, Boca Raton, FL

4:30 pm
Point-of-Care System for Monitoring Cellular Adhesion in Sickle Cell Disease
Mark Lasakowski1, Jonathan Kno1, Jane Little1, and Umut Gurkan1
Case Western Reserve University, Cleveland, OH

Track: Bioinformatics, Computational and Systems Biology
Analysis of Cell Signaling
Chairs: Megan McLean, Priscila Inusukwu

3:15 pm
A Rule-based Model of the CamKII Holozyme
Matthew Pharris1, Matthew Stefan2, and Tamara Kintner-Ursem1
University of Virginia, Charlottesville, VA, 2Arizona State University, Tempe, AZ

3:30 pm
How Specific Sequence Features of FG Nups Affect Nucleocytoplasmic Transport
Mohaddeseh Peyro1, Mohammad Soheilypour1, Ali Ghavami1, Mark Lewandowski1, Jonathon Koss1, Jane Little1, and Umut Gurkan1
1University of Arizona, College of Medicine-Phoenix, Phoenix, AZ, 3Barrow Neurological Institute at Phoenix Children’s, Phoenix, AZ

3:45 pm
Keratinocyte ERK Signaling is Modulated by Growth Factor Presentation Scheme and Cellular Tight Junctions
Pamela Krapbiej1, Chiese Kim1, Sarah Jacobsen1, Cameron Stewart1, Megan McLean1, and Kristyn Masters1
1University of Wisconsin-Madison, Madison, WI

4:00 pm
Computational Model Predicts the Dynamics of Thrombomodulin-1 Mediated Apoptosis Signaling
Guasha Wu1, Jennifer Rohr1, Pin Wang2, and Stacey Finlay1
1University of Southern California, Los Angeles, CA

4:15 pm
Large-scale Logic-based Differential Equation Computational Model Revealed a New Dimension in Macrophage Polarization
Xiaoj Li1, Jingyuan Zhang2, Angela Zeigler1, Merry Lindsey2,3, and Jeffrey Kleim1,2
1University of Virginia, Charlottesville, VA, 2University of Mississippi Medical Center, Jackson, MS, 3G.V. (Sonny) Montgomery Veterans Affairs Medical Center, Jackson, MS

4:30 pm
High-dimensional Single-cell Signaling Analysis Identifies Novel Targets for Eradicating Latent HIV-infected T Cells
Linda Foy3 and Kathryn Miller-Jensen1
1Yale University, New Haven, CT

Track: CNS Repair and Regeneration
Chairs: Stephanie Seditius, Ryan Koppes

3:15 pm
Improving Functional Gains in a Skilled Reaching Task Following Brain Injury Through Combinatorial Neural Stem Cell and Motor Rehabilitation Therapy
Caroline Addington1, Gergey Mousa2, Peter Hillbrand2,1, Amanda Benjamins1,4, Akash Chaudhary1, Sarah Stabenfeldt2,3, and Jeffrey Kleim1,2
1University of California Berkeley, Berkeley, CA, 2University of Virginia, Charlottesville, VA, 3Barrow Neurological Institute at Phoenix Children’s, Phoenix, AZ

3:30 pm
Endogenous Neural Stem Cell Activation After Traumatic Brain Injury
Jeremy Anderson1, Misaal Patel1, Quinn Wade1, Kelvin Kwan1, and Jeffrey Saucerman1
1Penn State College of Medicine-University Park, University Park, PA

3:45 pm
Feasibility of Nanoparticle Delivery Correlates With Blood Brain Barrier Permeability After Diffuse Brain Injury
Vimala Bharadwaj1, Rachael Ross2, Jordan Herrmann3, Chen Wu4, Trent Anderson1, Jonathan Lihitbrat3, P. David Adelson1, Vinod Pathak1, and Sarah Stabenfeldt1
1Arizona State University, Tempe, AZ, 2University of Arizona, College of Medicine-Phoenix, Phoenix, AZ, 3Barrow Neurological Institute at Phoenix Children’s Hospital, Phoenix, AZ

4:00 pm
Implantation of an Astrocyte Extracellular Matrix Containing Hydrogel Improves Neural Fiber Growth into a Spinal Cord Lesion
Kerrie Thompson1, Jennifer Partridge1, Lindsey Crawford2, and Emily Saksena Elbers1
1University of Texas-Austin, Austin, TX, 2Washington University in St Louis, St Louis, MO

4:15 pm
IL-4-Releasing Films Shift Macrophages to an Anti-inflammatory State for Spinal Cord Injury Regeneration
Alexis Ziemba1, Anthony D’Amato1, Davon Puhl1, Taylor MacEwen1, Alya Koppes2, Ryan Elbel1, Michelle Lennartz3, and Ryan Koppes2
1Reinhard Polytechnics Institute, Troy, NY, 2Northeastern University, Boston, MA, 3Albany Medical Center, Albany, NY

4:30 pm
Combimional Lentiviral Gene Delivery of Pro-oligodendrogenic Factors to Improve Myelin Regeneration of Axons After Spinal Cord Injury
Dominique Smith1, Daniel Margul2, Mitchell Johnson1, and Lorenze Shae1
1University of Michigan Ann Arbor, Ann Arbor, MI, 2Northwestern University, Chicago, IL

Platform Session 3—Saturday—3:15 pm–4:45 pm

OP-Sat-3-10
Room 226B

Track: Undergraduate Research, Design & Leadership
Chairs: Jeffery La Belle, Tim Becker

3:15 pm
The Influences of Mitochondrial Degpolarization on Mitochondrial Network Structures
Shao-Ting Chew1, Jun Yu Lee1, and An-Chi Wei1
1Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan, 2National Taiwan University, Taipei, Taiwan

3:30 pm
3-Dimensional Fluid-Structure Interaction Computational Model of Heart Valves for Bioreactor Optimization
Federic Bliss1, Giulia Luraghi1, Francesco Miciglattera1, Giancarlo Pernati1, Leslie Sierral1, and Ethan Kung1
1Clemson University, Clemson, SC, 2Politecnico di Milano, Milan, Italy, 3Aptus Bioreactors, Clemson, SC

3:33 pm
Antibacterial Effects of Copper-PDMS Membranes for Artificial Lungs
Angela Lai1, Nick Berri2, Joel Carleton1, and Keith Cook1
1Carnegie Mellon University, Pittsburgh, PA

3:42 pm
Similarity in Viral and Host Promoters Couples Viral Reactivation with Host Cell Migration
Kathrin Bohn-Wepner1, Eric Teaman1, Malina Magerndorfer1, and Rod Das1
1University of Illinois at Urbana-Champaign, Urbana, IL
Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

3:51 pm  
Modeling Glioblastoma Invasion With Microfluidics  
Elijah Karvelis1, Mai Ngo1, Aidan Gilchrist1, Roger Kamm2, and Brendan Harley3  
1University of Illinois at Urbana Champaign, Urbana, IL, 2Massachusetts Institute of Technology, Cambridge, MA

4:00 pm  
Anti-inflammatory Potential and Dose Dependence of Select Cytokines on Macrophage Activation Profiles  
Nicolas Castro1, Hongyu Chen1, and Mariah Hahn2  
1Georgia Institute of Technology, DeKalb, NY, 2Wayne State Polytechnic Institute, Troy, NY

4:09 pm  
Tunable Release of Metabolic Modulators To Restrain Autoimmune Reactions  
Jessica Yau1, Joshua Gammon2, and Christopher Jewell2  
1University of Maryland, College Park, MD, 2University of Maryland Medical School, Baltimore, MD, 3Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD, 4United States Veterans Administration, Washington D.C., MD

4:18 pm  
Smartphone-Based Microscope For Pathogen Detection  
Maghan Henderson1, Katherine Clayton2, Ryan Preston3, Dong Hoon Lee4, Steven Wereley5, and Tamara Kinzer-Unser6  
1Purdue University, West Lafayette, IN, 2Texas A&M University, College Station, TX, 3University of Illinois at Urbana Champaign, Urbana, IL, 4University of Maryland, Baltimore, MD, 5University of Virginia, Charlottesville, VA

4:27 pm  
Spatial Organization of Peptides by 3D Printing with Peptide-Polymer Conjugates  
Kelly Sears1, Katherine Hudson1, Peter Schwarzenberg1, Hafiz Busari1, Divya Patel1, Anasma Fawsia1, Hannah Daley1, and Lesley Chow1  
1Lehigh University, Bethlehem, PA

4:36 pm  
High-Throughput Single-Cell Analysis of MSC Mechanosensing  
John F. Durel1, Sebastián L. Vega2, and Jason A. Burdick2  
1University of Virginia, Charlottesville, VA, 2University of Pennsylvania, Philadelphia, PA

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North
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<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
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<td>SAT-1 Identity Determination of Efficacy of Anti-angiogenic Treatment</td>
<td>Alyssa Armenti and Stacey Foley</td>
<td>Boston University, Boston, MA, University of Southern California, Los Angeles, CA</td>
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<td>SAT-2 Transcriptional Analysis of Effects of Chorionic Treatment on Resistant Malnourished Parastris</td>
<td>Ana Urrutia, Mauricio Carey, Jason Pacot, and Jennifer Guile</td>
<td>University of Virginia, Charlottesville, VA</td>
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<td>SAT-3 Kinetic Modeling of Chorionic Function Decline in Patients with Hypertrohaluria</td>
<td>Emily Nieves and Melisa Hallins</td>
<td>University of Georgia, Athens, GA</td>
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<td>SAT-4 Machine-Learning Predictions and Experimental Validation of Structural Factors in Mediate GPCR-Arrtist Interactions</td>
<td>Julian Kasinski, P. C. Dave Dingal, Timothy Daley, and Lei S. Qi</td>
<td>University of California, Riverside, Riverside, CA, Stanford University, Stanford, California</td>
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<td>SAT-5 Pervasive Monitoring of Patients Activity In The Intensive Care Unit</td>
<td>Karthik Aradhyula, Sumit Malhotra, Scott Siegel, Ana Davoudi, Ana Bhosale, and Parnia Rashidi</td>
<td>University of Florida, Gainesville, FL</td>
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<td>SAT-6 Sleep and the Gut Microbiome</td>
<td>Karan Rajesh</td>
<td>University of Virginia, Charlottesville, VA</td>
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<td>SAT-7 Initialisation of an Agent-Based Model for the Investigation of Diabetic Retinopathy</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
<td>University of Virginia, Charlottesville, VA</td>
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<td>SAT-8 Inclusion of Fold Change Genes into a Computational Model to Identify Novel Regulators of Cardiomyocyte Hypertrophy</td>
<td>Kathryn H. Bridger, Brian Ouyang, and Jeffrey J. Sauermann</td>
<td>University of Virginia, Charlottesville, VA</td>
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<td>SAT-9 Non-motor Symptoms as a Marker of Parkinson’s Disease Progression: An Exploratory Analysis</td>
<td>Kimberly Huyghe, Ying-Hui Chou, Mark Surdonia, Nan-Iuon Chen, and Vireneh Subban</td>
<td>University of Arizona, Tucson, AZ</td>
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<td>SAT-10 Agent Based Modeling of Salmonella Infection</td>
<td>Miguel Anaya, Shayan Peirce-Cottler, and Lee Takman</td>
<td>Stevens Institute of Technology, Hoboken, NJ, University of Virginia, Charlottesville, VA</td>
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<td>SAT-11 Refining Causal Networks Associated with Immune Cell Interactions in Cancer using Network Inference Algorithms and Expanded Metagenic Constructs</td>
<td>Parvathy Sapra and David Kline</td>
<td>West Virginia University, Morgantown, WV</td>
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<td>SAT-12 Bottom Up Approach for Examining Network Connectivity Through Measures of Dynamics</td>
<td>Rohit Kundu, Vincent Tiruvellai, Robert Butera, and Helen Mayberry</td>
<td>Georgia Institute of Technology, Atlanta, GA, Emory University, Atlanta, GA</td>
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<td>SAT-13 FLOWMAP: A Tool to Visualize Single-Cell Datasets with Force-Directed Graph Layout</td>
<td>Rohit Bhatia</td>
<td>University of Virginia, Charlottesville, VA</td>
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<td>SAT-14 MaGiC: Predictive Infrastructure Leveraging Chromatin Signature to Infer Stochastic Monolocalistic Expression</td>
<td>Sachin Saraktia, Henry Grant, Sebastian Virgós, Sufia-Virgós, and Alexander Gimbrizba</td>
<td>Harvard Medical School, Boston, MA, University of Texas at Austin, Austin, TX, Duke-Faber Cancer Institute, Boston, MA</td>
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<td>SAT-15 Identification of Adipose Gene Networks Using Naturally Occurring Genetic Variation in Male and Female Mice</td>
<td>Shinya Holmes and Marie Cripke</td>
<td>Rider University, Lawrenceville, NJ, University of Virginia, Charlottesville, VA</td>
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<td>SAT-16 Coupling of Agent Based and Network Models of Cardiac Fibrosis</td>
<td>Thomas Ahlwey, Jia Jie Lee, Jeff Sauerman, and Jeffrey Holmes</td>
<td>University of Virginia, Charlottesville, VA, Johns Hopkins University, Baltimore, MD</td>
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<td>SAT-17 Design of Intraoperative Visualizations of Mastectomy Specimens for Breast Reconstruction Surgery</td>
<td>Tien Comolli, Krista Nickloud, Ali Noviky, Mary Catherine Bardole, Audrey Cheong, Michelle Forgeren, Farma Merchent, Greg Reaves, and Mel Marko</td>
<td>University of Texas at Arlington, Arlington, TX, University of Texas at Austin, TX, University of Texas at Austin, TX, MD Anderson Cancer Center, Houston, TX, University of Houston, Houston, TX</td>
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<td>SAT-18 Heart Rate Variability Alters Cardiac Repolarization and Electromechanical Dynamics</td>
<td>Vrishi Phadumlo and Seth Weinberg</td>
<td>Virginia Commonwealth University, Richmond, VA</td>
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<td>SAT-19 Exploration of Variables for Use in a Retrieval Method for a Case Based Reasoning System for Predicting Appearance After Breast Reconstruction</td>
<td>Yahir Garay, Krista M. Nicklaus, Qixiang Wen, Jossion Chol, Audrey Chou, Greg F. Reaves, Fatma A. Merchant, and Mia K. Marley</td>
<td>University of Texas at El Paso, El Paso, TX, The University of Texas at Austin, TX, The University of Texas MD Anderson Cancer Center, Houston, TX, University of Houston, Houston, TX</td>
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<td>SAT-20 Comparison of Multi-arm PEG-based Hydrogels for Tendon and Ligament Repair</td>
<td>Amanda Kautzer, Breanne Brand, Carly Joseph, Ariana Tyo, and Rupal Rajachar</td>
<td>Michigan Technological University, Houghton, MI</td>
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<td>SAT-21 Pathophysiology Model using Micro-Interactive Optical Printing</td>
<td>Anna Vesy, Kathleen Miller, Natalie Lawrence, Justin Liu, and Shaoshan Chen</td>
<td>Stanford University, Stanford, CA, UC San Diego, La Jolla, CA</td>
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<td>SAT-22 Multi-Capillary Blood Flow in a Continuous Optical Printing</td>
<td>Karen Roter, Joshua Hammond, and Jennifer Wolf</td>
<td>Duke University, Durham, NC</td>
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<td>SAT-23 Multi-Channel Hydrogel Printing Using Open-sourced 3D Printer</td>
<td>Alex Filip, Lucas Albrecht, Stephen Sawyer, and Pranav Soman</td>
<td>University of Virginia, Syracuse, NY</td>
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<td>SAT-24 Exploration of Defect Site Growth in Thin-Film Encapsulation Layers</td>
<td>Alireza Nazari Khanamiri, Alexandra Joshi, and Walter Voel</td>
<td>University of Texas at Dallas, Richardson, TX</td>
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<td>SAT-26 Novel Material in Biomedical Engineering</td>
<td>Richard Elhadad, Shon Lucier, and Arthur T. Fair</td>
<td>University of Pennsylvania, Institute of Washington, PA, Microwave Institute, Tuscon, MA</td>
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<td>SAT-27 Comparison of Multi-arm PEG-based Hydrogels for Tendon and Ligament Repair</td>
<td>Amanda Kautzer, Breanne Brand, Carly Joseph, Ariana Tyo, and Rupal Rajachar</td>
<td>Michigan Technological University, Houghton, MI</td>
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<td>SAT-28 Synthesis and Characterization of Biogenic Selenium Nanoparticles with Antibacterial properties</td>
<td>David Cruz, Amit K. Roy, and Thomas J. Webster</td>
<td>Northeastern University, Boston, MA</td>
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<td>SAT-29 Intimadose-Modification Enhances Nanoparticle Transport Through Cystic Fibrosis (CF) Mucus and Promotes Uptake into a Human CF Cell Line</td>
<td>Angela Jimenez, Jocelyn Majaj, Blake Lash, and Krishnendu Roy</td>
<td>University of Florida, Gainesville, FL, Georgia Institute of Technology and Emory University, Atlanta, GA, Georgia Institute of Technology, Atlanta, GA</td>
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<td>SAT-30 Design of a Light-Mediated, Reversible Sol-Gel Transition PEG Hydrogel Using LOV2</td>
<td>Anna Roter, Joshua Hammond, and Jennifer Wolf</td>
<td>Duke University, Durham, NC</td>
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<td>SAT-31 Pathophysiology Model using Micro-Interactive Optical Printing</td>
<td>Anna Vesy, Kathleen Miller, Natalie Lawrence, Justin Liu, and Shaoshan Chen</td>
<td>Stanford University, Stanford, CA, UC San Diego, La Jolla, CA</td>
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<td>SAT-32 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
<td>University of Virginia, Charlottesville, VA</td>
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<td>SAT-1 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-2 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-3 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-4 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-5 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-6 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-7 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
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<td>SAT-8 Bioinformatics, Computational and Systems Biology</td>
<td>Kathleen Fitzgerald, Bruce Corlais, and Shyan Parra</td>
<td>University of Virginia, Charlottesville, VA</td>
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SAT-33 Nanotechnology-SOD Conjugate’s Antioxidant Thermal Stability
Bradley Stelator1, Benjamin Syngraud2, Nicholas Seiter3, Dmitry Gil1, and Vladimir Palukaitis1
Clemson University, Clemson, SC

SAT-34 Effects of Aging on Liver Extracellular Matrix Structural Proteins
Brandon Burger1, Andrea Hartmann1, Elizabeth Stahl2, and Bryan Brown1
University of Pittsburgh, Pittsburgh, PA, University of Pittsburgh, Pittsburgh, PA

SAT-35 Fabrication of a Brain Endothelium in a Perfused Hydrogel Scaffold
Calle Weber1, Jason Wang2, Emma Hollmann1, Allison Boseworth1, Shannon Faley1, Ethan Lipman1, and Leon Beller1
Vanderbilt University, Nashville, TN

SAT-36 Evaluating the Feasibility of 3D Printing a PEGDA/AA Hydrogel for Skeletal Muscle Tissue Engineering
Carolina Leyser1, Robert Warren1, Daniel Brown1, and Joseph Freeman2
The University of Texas Rio Grande Valley, Brownsville, TX, Rutgers, The State University of New Jersey, Piscataway, NJ

SAT-37 Cells on Gels: Biomimetic Micron-Scale Polyacrylamide Gel Substrates for Studies of GBM Cell Adhesion and Migration
Carolina Miller1, Alyse Kraus1, Natalie Higuera-Castro1, Daniel Colberg1, and Paul Harford2
The Ohio State University, Columbus, OH, University of Michigan, Ann Arbor, MI

SAT-38 Lymp Node Trafficking and Dendritic Cell Activation of Supramolecular Peptides
Cassandra Ingwall1, Lucas Sheen1, and Joel Collier1
Duke University, Durham, NC

Charise Austin1, Franjyal Ber1, and Adam Engle1
University of California, San Diego, La Jolla, CA, Sanford Consortium, La Jolla, CA

SAT-40 Characterization of an Extracellular Matrix Hydrogel and its Effects on MMP Activity
Charles Webb1, Timothy Kean1, Christina-Marie Horace1, and Molly Severing1
Carnegie Mellon University, Pittsburgh, PA, Imperial College London, London, United Kingdom, Kanski Institutet, Stockholm, Sweden

SAT-41 Mechanical Stem Cells Distribute Unevenly on PEG-DMA Hydrogel Surfaces
Christina Lohmeier1, Elizabeth Hernandez2, and Derek Dorsky1
Francis Crick Institute, Steybeville, OH

SAT-42 Cell Densities and The Effects on Cell-Cell Junction Forces
Christina Smith1, Sung Sik Hur1, Yi-Ting Yeh1, Yi-Shuan Li1, and Shu Chi1
Arizona State University, Scottsdale, AZ, University of California San Diego, San Diego, CA

SAT-43 Determining the Rate of Oxygen Diffusion from Oxygen Microbubbles Through the Peritoneum
Cora Cramer1, Nathan Legrand1, Fariba Aghababou1, Hunter Veiga1, Connor Slagle1, Mark Borden1, and Benjamin Terry1
New Mexico Institute of Mining and Technology, Socorro, NM, University of Nebraska, Lincoln, NE, University of Colorado, Boulder, CO

SAT-44 3D Printing with Peptide-Polymer Conjugates to Control Scaffold Functionalization and Porosity
Divya Patel1, Katherine Hudson1, Peter Schwarzenberg1, Hafe Buxer1, Kelly Sam1, Hannah Delker1, and Lexie Chown2
Lehigh University, Towanda, PA, Lehigh University, Bethlehem, PA

SAT-45 Microstructural and Nanomechanical Analysis of Cat Vibrisses
Gar Easley1 and Donna Ebenstein2
Bucknell University, Lewisburg, PA

SAT-46 Development and Validation of a Method for Microindentation of Denture Teeth
Emily Gabrielle1 and Donna Ebenstein1
Bucknell University, Lewisburg, PA

SAT-47 Establishment of Guidelines for Indentation of Soft Biomaterials Using Blunt Tips
Avery Snyder1 and Donna Ebenstein1
Bucknell University, Lewisburg, PA

SAT-48 Adhesion Ligand Density Influences Dendritic Cell Activation and Maturation in RGD-Modified Alginate Hydrogels
Erica Budina1, Brian Koo2, Nathaniel Hubeck1, Omar Al1, and David Massung1
Harvard University, Cambridge, MA, Wyss Institute for Biologically Inspired Engineering, Cambridge, MA

SAT-49 Determining the Morphology-Property Relationship of ZnO Nanoparticles
Gregory Jensen1, Adam Talbot1, Angala Clyde1, James Gay1, David Britz1, and Yu Huang1
Utah State University, Logan, UT

SAT-50 Mesenchymal Stems Distribute Unevenly on PEG-DMA Hydrogel Surfaces
Christina Lohmeier1, Elizabeth Hernandez2, and Derek Dorsky1
Francis Crick Institute, Steybeville, OH

SAT-51 Integrating Degradable Polymers for Tunable Release of Toll-like Receptor Ligands from Microneedles
Jawahar Murthy1, Emily Gosselin1, and Christopher Jewell2,3,4
Fischell Department of Biotechnology, University of Maryland College Park, College Park, MD, Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD, Marine and Stewart Greenebaum Cancer Center, Baltimore, MD, United States Department of Veteran Affairs, Baltimore, MD

SAT-52 Vacancy-Driven Gelation of Thioloated Polymer Using Defect-Rich MoS2 Nanoassemblies for Biomedical Applications
James Gaunt1, Mark Jolles1, Jake Carraro1, and Achkirk Gaharwar1
Texas A&M University, College Station, TX

SAT-53 Biocompatibility and Functionality Assessment of a Novel Nitinol Tongue Prosthetic Device to Treat Dysphagia
James Kerr1, Yanlei Chen1, and Young Jue Chun1
University of Pittsburgh, Pittsburgh, PA

SAT-54 3D Printed and Solvent-Spun PNIPAM Templates form Multiscale-Vascularized Hydrogels for Brain Modeling with IPSIC-Driven Brain Microvascular Endothelial Cells
Jason Wang1, Calle Weber1, Shannon Faley1, Brian O’Grady1, Emme Holzberg1, Allision Boseworth1, Ethan Lipman1, and Leon Beller1
Vanderbilt University, Nashville, TN

SAT-55 In Vitro Characterization of Tolerogenic Responses Induced by Antigen-Polymer Conjugate Nanoparticles
Justin Rose1, Ryan Pearson1, Liam Casey1, Kevin Hughes1, and Larry Cher1
University of California, Davis, Davis, CA

SAT-56 Biomimetic Rubber: Structure, Properties, and Applications
Justine Paas1, Sheldon Buftington1, and Dr. Patrick Mater1
Syracuse University, Syracuse, NY, Bucknell University, Lewisburg, PA

SAT-57 Poly(N-isopropylacrylamide): Collagen Hydrogels for Tunable Rate of Drug Hydrogels
Katarina Dillillo1, Victoria Smith1, and Christopher Anderson1
Lafayette College, Easton, PA

SAT-58 Importance of Podosome Formation on Macrophage-Implant Interaction
Andy Vo1, Kelly Hotchkiss1, and Rene Olivares-Navarrete1
Virginia Commonwealth University, Richmond, VA

SAT-59 Gut Microbe-derived Microparticles for Controlling the Immune System
Kenneth Allen1, Swetha Mekhada1, Neeram Corporation1, and Jamal Levis1
University of California Davis, Davis, CA, Florida Agricultural & Mechanical University, Tallahassee, FL

SAT-60 Non-enzymatic Glycation Enhances Mechanical Properties of Collagen Bioinks for 3D Printing
Leigh Stiller1, Nicole Diamantides1, and Lawrence Stonier1
The University of Buffalo (SUNY), Buffalo, NY, Cornell University, Ithaca, NY

SAT-61 Role of Nanoparticles on Mechanical and Thermal Properties of Thermosensitive Hydrogels
Marcus Krauss1, Andrew Chang1, and Freshman Amin1
Santa Clara University, Santa Clara, CA

SAT-62 Nanoparticle Self-Assembly for Collodial Gel Fabrication
Maria Guevara1, James Cosyne1, and Yong Wang1
University of Florida, Gainesville, FL, Pennsylvania State University, State College, PA

SAT-63 Tuning Silk Fibroin Scaffold Pore Size Via Varying Temperature-Controlled Lyophilization Parameters
Megan Sanders1, Kim Ornell1, and Jeanne Coburn1
University of Oklahoma, Norman, OK, Worcester Polytechnic Institute, Worcester, MA

SAT-64 Solid Polymer Electrolytes for Lithium-Ion Batteries in Medical Devices
Mariana Erd1, Matthew Lampert1, and Peter Kotin1
University of Maryland, College Park, MD

SAT-65 Fabrication of Hybrid Hydrogel Constructs for Biomedical Applications
Michael Zimmerman1, Sara Abas1, John Aggas1, and Ambrose Griswold1
Texas A&M University, College Station, TX, Center for Biowearables, Biosensors and Biochip (CBB), College Station, TX

SAT-66 Chitosan as an Oral Phosphate Binder
Michelle Dill1, Sharma Smith1, and Christopher Batch1
University of Florida, Gainesville, FL
SOT-77 Development of a 3D Hydrogel System that Promotes Sequestration of Cell-Secreted Extracellular Matrix
Salon Lakonakal, Claire Tomeszewski, and Ariella Shkarovska
University of Michigan, Ann Arbor, MI

SOT-78 Design and Application of an Oxygen-Sensing Construction for Monitoring Chronic Wound Recovery
Samantha Schweiger, Daniel Towle, Lindsay Jeffries, Anthony Bruce, Kristen Fraser, and Shayan Akbari
University of Virginia, Charlottesville, VA

SOT-79 Measuring the Mechanical Properties of Biological Adhesives on Hydrophobic Surfaces
Samantha Zaranik, Samantha Mostowig, Gary Distelroth, and Manuel Fugere
The College of New Jersey, Ewing Township, NJ

SOT-80 Recapturing Fibroblastic Reticular Cell Networks In Vitro Using Collagen Scaffolds
Shane Wright, Freddy Gonzalez, and Stephanie Flamey
Union College, Schenectady, NY; University of California, San Diego, CA

SOT-81 Response of Bone Marrow Mononuclear Cells to Oxidative Damage and Decellularized Cardiac Extracellular Matrix
Shane Wright, Raymond Wang, and Karen Christman
University of California San Diego, La Jolla, CA

SOT-82 Incorporation of Novel BDNF-Mimetic Small Molecule onto Peptide Amphiphile Scaffold for Neural Regeneration
Siuin Lee, Stacey Chen, Alexandra Edelman, and Samuel Stupp
Hope College, Holland, MI; Northwestern University, Evanston, IL; Northwestern University, Chicago, IL

SOT-83 Micro-Fabrication of Bioengineered Muscle Tissue for High Throughput Screening
Sindhu Ramam
North Carolina State University, Raleigh, NC

SOT-84 Characterization of Decellularized Extracellular Matrix (ECM) Hydrogel for Endothelial Cell Function
Soojin Kim, Sydney Thal, Andrea Luce Alfonso, and Allen Lee Jung Lee
New Jersey Institute of Technology, Newark, NJ; Livingston High School, Livingston, NJ; County College of Morris, Paterson, NJ

SOT-85 Injectable Hydrogels from Poly (ethylene glycol) and Synthetic Silicate Nanoparticles for 3D Printing
Sujoy Shankar, Charles Peak, and Akhilesh Gaharwar
The University of Texas at Austin, Austin, TX; Texas A&M University, College Station, TX

SOT-86 Interactions between Biophysical Processes In Vivo and Cancer Cell Migration
Sydney Corrin, Daniel Ortiz, and Stephanie Flamey
Union College, Schenectady, NY; University of California San Diego, La Jolla, CA

SOT-87 Injectable Enzyme-Responsive Nano-particles for Myocardial Infarction
Tina Pratap, Gisea Pilacarico, Karen Christman, and Nathan Giannschi
North Carolina A&T State University, Columbia, SC; University of California San Diego, San Diego, CA; Northwestern University, Chicago, IL

SOT-88 Hydroxyapatite Mineralization by Proteins Derived from Bone and Nacre
Annie Scaglione, Blake Wilson, and Binda Chakravarty
CUNY Queens College, Bayville, NY; Rutgers, The State University of New Jersey, Piscataway, NJ

SOT-89 Pancreatic Cancer Cell Chemoresistance On Mechanically Tailored Hydrogels
Wismar Fares, Jenny Pincon, Andrea Rubiano, and Chelsey Simmons
University of Florida, Gainesville, FL

SOT-90 Synthesis and Characterization of Modular PEG-Peptide Bioinks
Zoeary Davis, Fabas Ivan, and Daniel Alger
Texas A&M University, College Station, TX; Northern State University, Aberdeen, SD

SOT-91 Porous All-Carbon Electrodes for In Vivo Energy Storage
Michael D’Agati and Babajit Sathiraman
Stony Brook University, Stony Brook, NY

Track: Undergraduate Research, Design & Leadership, Biomechanics
Biomechanics-Undergraduate

SOT-92 Musculoskeletal Modeling of the Lower Limb: A Novel Approach for Locomotor Rehabilitation
Abby Williamson, Anton Sobiraj, Matthew Bost, and Sergey Yakovenko
University of Rochester, Rochester, NY; West Virginia University, Morgantown, WV

SOT-93 Standardization of the Jaipur Foot Manufacturing Process
Catholic University of America, Washington, DC; The Ohio State University, Columbus, OH; Malaya National Institute of Technology, Jaipur, India; Santibanta Durbarly Memorial Hospital, Jaipur, India

SOT-94 Correlation between Shear Wave Elastography and Mechanical Properties of the Achilles Tendon
Alexander Singh, Elliot Dobson, Noah Flaxman, Colin Price, Sebastian Guidicci, and Matthew Panzer
University of Virginia, Charlottesville, VA

SOT-95 Application of the Euro NCAP Pedestrian Protocol Using an Advanced Human Body Model
Alexandra Deghand, Scott Gayzik, Bharath Koya1, and Will Dicker
Wichita State University, Wichita, KS; Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Blacksburg, VA; Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

SOT-96 Numerical Determination of Wall Shear Stress in Red Blood Cell Membranes
Alfredo Lusac, Vivek P. Jain, and Pedro Cabral
University of California, San Diego, La Jolla, CA

SOT-97 Towards Virtualized Transradial Prosthesis with Simulated Dynamics and Surface EMG Interface
Amanda Studnicki and Fabrizio Sergi
University of Delaware, Newark, DE

SOT-98 Rocking or Rolling? Analysis of Leg Kinematics during the Stance Phase of Normal Walking
Amanda Studnicki and Fabrizio Sergi
University of Delaware, Newark, DE

POSTER SESSION—SATURDAY
Athens, GA
Eun Ji Chung1
1Princeton University, Princeton, NJ, 2University of California, San Diego, La Jolla, CA

(PDMS) Microfluidic Devices
Uncross-linked Polymers in Polydimethylsiloxane
Characterization of Clogging Effect due to Shift Assay on the Thermostability of NELL-1 Using Thermal Evaluating the Effects of Formulation Conditions In Vitro

Satellite: Biomechanics

Satellite: Biomechanics-Undergraduate

Satellite: Biomechanics

Satellite: Biomechanics-Undergraduate

Satellite: Biomechanics

Satellite: Biomechanics-Undergraduate
SAT-99 Mechanical Integrity of a Decellularized Porcine Lamina Cribrrosa
Amy Hill1, Kelsey Sadlcki1, Catalina Andria1, Dominic Mulli1, Bryan Brown1, and Jonathan Vannie Geest1,2
1University of Pittsburgh, Pittsburgh, PA, 2McGowan Institute for Regenerative Medicine, Pittsburgh, PA

SAT-100 Quantifying Mechanical Properties of the Extracellular Matrix Using Externally Stretched Post Array Detectors
Anara Jay DeCattano1, Carl Meyers1, Daniel Convey1, and Christopher Wagner1
Virginia Commonwealth University, Richmond, VA

SAT-101 Measuring the Motion of Finger Joints during Natural Flexion and Extension of the Human Hand
Bridge J. Goding1,2, Christopher Noy1, and Gregory Fuchs3
Worcester Polytechnic Institute, Worcester, MA, 3Clemson University, Clemson, SC

SAT-102 Regional Distribution and Time-Course of Changes in Abnormal Delta Wave Activity Following a Single Season of High School Football
Caroline Hefer1, Elizabeth Davenport1, Richard Barcus1, Leonardo Bezzera1, Jillian Urban1, Alexander Power1, Joel Stitzel1, Joseph Madjian1, and Christopher Whorton1
1Georgia Institute of Technology, Savannah, GA, 2University of Texas Southwestern, Dallas, TX, 3Wake Forest University School of Medicine, Winston-Salem, NC

SAT-103 Gait Analysis of Genu Recurvatum Pediatric Patient Before and After KAFO Fitting
Christine Mer1, and Ha Vu, MD, PhD, DPM3
1Mercer University, Macon, GA, 2Mercer University School of Medicine, Macon, GA

SAT-104 Dynamic Fluorescent Assessment of Glenohumeral Kinematics in People with Spinal Cord Injury
Christina Lee1, Yin-Sheng Johnny Lin1, and Yasir Dhaner1
1Northwestern University, Evanston, IL, 2Shiley Ryan AbilityLab, Farmington Hills, MI

SAT-105 Analysis of Strain Induced MSC Differentiation using Native ECM Scaffolds
Sawatha Raghupathi1, Amulya Veldanda1, and Christopher Wagner1
1The College of New Jersey, Ewing, NJ

SAT-106 Computational Analysis of Strain Gradients Within 3D Hydrogel Scaffolds
Amulya Veldanda1, Sawatha Raghupathi1, and Christopher Wagner1
1The College of New Jersey, Ewing, NJ

SAT-107 Reproducibility of Clinical Shear Wave Elastography Imaging of the Achilles Tendon Assessed on a Volunteer Population
Colin Prior1, Eliot Dobson1, Alexander Singh1, Nasir Gomer2, J. Sebastian Giudicini1, Ahmed Alshaiefeh3, and Matthew Palmer4
1University of Virginia, Charlottesville, VA

Colin Prior1, Noah Flaiman1, Ahmed Alshaiefeh3, Erin Sanchez1, James Funk1, and Matthew Palmer4
1University of Virginia, Charlottesville, VA

SAT-109 Quantifying Motion Variability During a Skilled Dance Sequence
Cydney Denson1, Michelle Dickerson1, Julia Cipriani1, Chrysanthi Davi1, Sofia Massa1, and Delina Sheth1
1George Mason University, Fairfax, VA

SAT-110 Finite Element Analysis of Femoral Neck Strength Losses Due to Space Irradiation
Dale Johnson1, Summer Lawrence1, Eric Livingston1, Robert Hienz3, Catherine Davis1, and Anthony Lau2
1The College of New Jersey, Ewing, NJ, 2University of North Carolina, Chapel Hill, NC, 3Johns Hopkins University School of Medicine, Baltimore, MD

SAT-111 Winding Filament Muscle Model Improves OpenSim Force Predictions
Dan Rivera1, Zachary Lerner1, and Kisa Nishikawa1
1Northern Arizona University Flagstaff, AZ

SAT-112 Effects of Mechanical Perturbations on Muscle Activation During Walking
Dana Lounsbury1, Huayan Wang1, and Antoine van den Bogert1
1University of Hartford, West Hartford, CT, 2Cleveland State University, Cleveland, OH

SAT-113 Development of Subject-Specific Musculoskeletal Models to Predict Quadriceps Strength
Daniel Davies1, Zachary Doimini1, Brett Whorl1, and Anthony Kulesa1
1University of Wyoming, Laramie, WY, 2East Carolina University, Greenville, NC, 3University of Nebraska-Lincoln, Omaha, NE

SAT-114 Axial Mechanical Properties of Tutoplast Processed Pericardial Grafts: Comparison to Human Tunica Albuginea Properties
Daniel Turlington1, and Vincent Wang1
Virginia Tech, Blacksburg, VA

SAT-115 Geometry Dependent Relaxation of Tissue Using Softening Neural Interfacing Devices for Cortical and Intracerebral Applications.
David Shumate1, Derek Jones1, F. Scott Gayzik1, Ashley Weaver1, and Joel Stitzel1
1Wake Forest University School of Medicine, Winston-Salem, NC

SAT-116 Injury Sensitivity in FE ATDs and the GBHMC MS0-OS to Small Boundary Condition Perturbations
David Shumate1, Derek Jones1, F. Scott Gayzik1, Ashley Weaver1, and Joel Stitzel1
1Wake Forest University School of Medicine, Winston-Salem, NC

SAT-117 The Pressure Pointe: Assessing Forces on Young Dancers’ Feet during Ballet
Jacob Fladd1, Natalie Janney1, Matt Powers2, and Joel Stitzel1
1North Carolina School of the Arts, Winston-Salem, NC

SAT-118 Comparison of Compression-Based Mechanical Properties of Low-Cost Foam Materials and Skin for Tourniquet Application Training
Derek Viehauer1,2, Alexander Hooke1, Bethany Loewens3, and Susan Halkett3
1Mayo Clinic, Rochester, AZ, 2Arizona State University, Tempe, AZ, 3Mayo Clinic, Rochester, MN

SAT-119 Measurement of EMG of Reflex Responses to Wrist Perturbations Applied by an MRI Compatible Robot
Emily Patterson1, Andrea Zonnino1, and Fabrizio Sergi1
1University of Delaware, Newark, DE

SAT-120 Design of a Non-Invasive Mouse Model for Post-Transomatic Osteoarthritids
Emma MacIntyre1, Shayna Tomlinson 2, and Deva Chan2
1Worcester Polytechnic Institute, Worcester, MA, 2Wake Forest Polytechnic Institute, Troy, NY

SAT-121 Designing a Perfusion System for Decellularized Spinach Leaf Scaffolds to Support Cell Functioning
Jacob Almeida1, Travis Rose Robinson1, Katina Hansen1, and Glenn Gaudette1
1Worcester Polytechnic Institute, Worcester, MA, 2Worcester Polytechnic Institute, Worcester, MA, 3Worcester Polytechnic Institute, Worcester, MA

SAT-122 De-phosphorylation of Osteopontin: Does it Affect Bone Fracture?
Felix Andrea Lar1, Stephanie Bailey1, and Deepak Vaidhish1
1Universidad Interamericana de Puerto Rico, Bayamón, PR, 2Rensselaer Polytechnic Institute, Troy, NY

SAT-123 Strain Patterns in the Patellar Tendon Assessed During Exercise Using Ultrasound Elastography
Grace Waynep1, Hannah Goldberg1, Catherine Kuo1, Michael Richards1, Kathryn Rodeheaver2,3, and Mark Buckley1
1University of Rochester, Rochester, NY

SAT-124 Relationship between Coordination Variability and Tibial Stress during Running
Hannah An1, Joseph Hart3, and Stacey Meardon1
1University of Maryland, Baltimore County, Baltimore, MD, 2University of Massachusetts Amherst, Amherst, MA, 3East Carolina University, Greenville, NC

SAT-125 Comparison of Viscoelastic Heating in the Nucleus and Annulus Fibrosus of Bovine Intervertebral Disc
Harsh Naaneri1, Robby Backes1,2, and Mark Buckley1
1University of Rochester, Rochester, NY, 2University of Utah, Salt Lake City, UT

SAT-126 Development of a 3D-Printed Myoelectric Powered Upper Limb Prosthetic for Transradial Amputees
Ian Paul
Washington University in St. Louis, St. Louis, MO

SAT-127 Validation of Agreement Between Muscular Models in FEBio2 and OpenSim
Jacob Almeida1, Silvia Blemker1, and Brian Jones1
1University of Virginia, Charlottesville, VA

SAT-128 Development of Rupture Testing Methodology for Eyeballs Using Intracocular Pressurization
Jacob Fladd1, Natalie Pelle1, John Diederzand1, Robert Sharpe1, and George Maguire1
1Clemson University, Summerville, SC, 2Clemson University, Clemson, SC, 3Medical University of South Carolina, Charleston, SC

SAT-129 Evaluation of Head Impact Exposure in High School Football Players by Position Group
Jacob Garlant1, Mireille Kelley1, Jill Urban1, and Joel Stitzel1
1Mayo Clinic, Rochester, AZ, 2Arizona State University, Tempe, AZ, 3Wake Forest University School of Medicine, Winston-Salem, NC

SAT-130 Development Toward a Noninvasive Tissue Glucose Sensor Employing an Evoked ECG 70 Hz FAD
Jared Johns1, Anna Deng1, Daniel Mattoli1, Chi Lin1, Yuka Hsu1, Koj Sode1, and Jeffrey Laliberte1
1Arizona State University, Paradise Valley, AZ, 2Arizona State University, Tempe, AZ, 3Tokyo University of Agricultural Technology, Tokyo, Japan

SAT-131 Accuracy of the GForceTracker for Monitoring Head Impacts in Boys and Girls Lacrosse
Jessica Buce1, Amanda Esquivel1, and Christopher Archevich2
1University of Michigan--Dearborn, Dearborn, MI, 2Exponent, Inc., Farmington Hills, MI
SAT-132 | ARHGP36 and FOXX2 Role in Cellular Mechanoansencing and Force Transmission
Jonathan Malecki, Ghaidan Sharma1, David Odde1, Pauline Jackson1, and David Langenkepper
University of Minnesota, Twin Cities, Minneapolis, MN

SAT-133 | Compression, Relaxation, and Adhesion Properties of Hydrogels and an Organogel as Potential Synthetic Brain Phantoms
Allison Trup1, Shawn Potter1, and Jorge Rodriguez1
'SC Governor's School for Science and Mathematics, Hartselle, SC, 2Clemson University, Clemson, SC

SAT-134 | Swing Phase of the Gait Cycle Between Fallers and Non-fallers
Joseph Dimidio1, Arlette Geller1, Rahul Soorag1, Seong Moon1, Saba Rezvanian1, Chris Fram1, Victoria Smith1, Markay Olson1, and Thurmon Lockhart1
Arizona State University, Tempe, AZ, 2Clemson University, Greenville, SC

SAT-135 | Adaptations to Split-Belt User-Driven Treadmill After Induced Asymmetric Gait
Kelley Kampa1, Nicole Ray1, and Jill Higginson1
University of Delaware, Newark, DE

SAT-136 | Nonlinear Evaluation of Gait in Older Fallers and Non-fallers
Kylie Xu1, Arlette Geller1, Joseph Dimidio1, Rahul Soorag1, Seong Moon1, Thurmon Lockhart1, Saba Rezvanian1, Christopher Fram1, Tuan Nguyen1, Victoria Smith1, and Markay Olson1
Arizona State University, Tempe, AZ, 2Clemson University, Greenville, SC

SAT-137 | An Evaluation of Positioning an Advanced Human Body Model Using Open Source PIPER
Madeline Blankenship1, 2, Benjamin Guleyjugul1, 2, Brantley Rose1, and Scott Gayzik1
Wake Forest University Center for Injury Biomechanics, Winston Salem, NC

SAT-138 | Field Measure to Estimate Vertical Leg stiffness
Margaret Marshall1 and Richard Willy1
East Carolina University, Greenville, NC

SAT-139 | The Effects of Hind Limb Suspension and Casting on Bone Strength
Matthew Sansver1, Toni Speacht2, Henry J. Donahue3, and Margaret Marshall1
1Arizona State University, Tempe, AZ, 2Boston University, Boston, MA, 3Boston University School of Medicine, Boston, MA

SAT-140 | EMS Backboard Pad: An Inflatable Spinal Support System
Maxwell Lucha1
University of Pittsburgh, Pittsburgh, PA

SAT-141 | Absence of a Primary Ciliium in Osteocytes Results in Altered Actin Cytoskeleton Reorganization in Response to Fluid Flow
McKenzie Sup1, Michael Duffy2, and Christopher Jacob3
Columbia University, New York, NY

SAT-142 | Bio-mechanic Applications in the Design of the Flexible Spine Fixation Devices
Megan Wissner1, Steven Lether1, and Jeffrey T. LaBelle1
Arizona State University, Tempe, AZ

SAT-143 | Role of the A2B Adenosine Receptor in the Degradation of Cartilage in Rheumatoid Arthritis
Meghan Kupravis1, Lauren Marango-Drenkard1, Louis Guntert1, and Elise Morgan1
Boston University, Boston, MA, 2Boston University School of Medicine, Boston, MA

SAT-144 | Mechanical Analysis of Human Motion: Validation of Static Optimization and Computed Muscle Control
Michael L. Frawley1 and Anthony J. van den Boger1
Cleveland State University, Cleveland, OH

SAT-145 | Mechanical Properties of the Pulmonary Arteries in Normotensive and Hypertensive Rats
Michael Goody1, Daniela Velez-Rendon1, Erica Purcell1, and Daniela Valdez-Jasso2
University of Illinois at Chicago, Chicago, IL

SAT-146 | Relation of Lumbar Disk Degeneration and the Root Lesion: A Poro-elastic Finite Element Analysis
Nicholas J. van Ness1
Stone Brook University, Stony Brook, NY

SAT-147 | Novel Axial Forearm Loading Causes Short Term Changes to Distal Radius Microstructure in Young Women
Nicole Zaino1, Ying Fang1, and Karen Trep1
Clarkson University, Potsdam, NY, 2Worcester Polytechnic Institute, Worcester, MA

SAT-148 | Cortical Thinning in Lumbar Vertebrae of Astronauts on Long-Duration Spaceflight Missions
Nisha Subramanian1, Kyle McNamara1, and Ashley Weaver1
University of California, Berkeley, Fremont, CA, 2Virginia Tech-Wake Forest University, Winston-Salem, NC

SAT-149 | Design of a Shape-Memory Alloy Actuated Glove
Sean Vincent Hamera1 and Michael Zabala1
Auburn University, Auburn, AL

SAT-150 | Disruption of Gut Microbiome Alters Bone Tissue Composition
Sebastian Roubert Martinez1, Jason D. Guse1, and Christopher J. Herzenberg1
Cornell University, Ithaca, NY

SAT-151 | The Effect of Insulin on Insulin Sensitivity in Mice
Kendal Franklin1, Junyong Hwang1, and Richard Han1
University of Pittsburgh, Pittsburgh, PA

SAT-152 | Influence of Bracing on Kinematic Response of Occupants in Pre-Crash Evasive Swerving Maneuvers
Kodi Salarin1, Christine Holz1, Ethan Douglas1, Valentina Giraldo1, Thomas Sweeney1, and Kristy Argo1
Center for Injury Research and Prevention, Children's Hospital of Philadelphia, Philadelphia, PA, 2Bucknell University, Lewisburg, PA

SAT-153 | Bone Strength in Rat Models subjected to Head-On Proton Radiation
Rose Loffran1a, Robert D. Hiner1b, and Catherine M. Davis1c
1The College of New Jersey, Ewing, Ewing, NJ, 2Johns Hopkins University School of Medicine, Baltimore, MD

SAT-154 | Barometric Soft Shoe Comparison to Vicon System
Ryan Briscoe1, Seong Moon1, Saba Rezvanian1, Christopher Fram1, Victoria Smith1, Rahul Soorag1, and Thurmon Lockhart1
Arizona State University, Tempe, AZ

SAT-155 | Community Dwelling Measurement of Vitamin D, CHAMPS Questionnaire, and Time Up & Go
Shaurey Vetsa1, Christopher Fram1, Victoria Smith1, Rahul Soorag1, and Thurmon Lockhart1
Arizona State University, Tempe, AZ

Samuel Tucker1, Nina Yadowsky1, Steven Klish1, Scott Haan43d, and Valentina Prat1
1Cal Poly State University, San Luis Obispo, CA, 2Polytecnico di Torino, Torino, Italy

SAT-157 | Proposed Age and Gender Adjustments to the Hybrid III ATD Scaling Procedure
Sean Marchey1, Jared Shimpick1, and Michael R. Wood1
University of California at Davis, Davis, CA

SAT-158 | Design of a Shape-Memory Alloy Actuated Glove
Sean Vincent Hamera1 and Michael Zabala1
Auburn University, Auburn, AL

SAT-159 | The Effect of DMSO on the Mechanobiology of Lung Cancer Cells During Metastasis
Shawny Veta1, Richard Harr1, Don Gibbons1, and Katarina Grand-Alalu1
Rice University, Houston, TX, 2MO-Anderson, Houston, TX

SAT-160 | The Effects of an Osteoarthritis Unloader Brace on Knee Joint Space During Gait
Shunming Yang1, Kento Yasugi1, and William Andral1
University of Pittsburgh, Pittsburgh, PA

SAT-161 | Nanomolar Drag Reducing Polymers (DRPs) Reduce Near-wall Malignation of Rigid BCCs in Microchannels: A Potential Therapy for Sickle Cell Disease
Shuang Guo1, Daniel Crompton1, and Marina V. Kamenava1
1University of Pittsburgh, Pittsburgh, PA, 2McGowan Institute for Regenerative Medicine, Pittsburgh, PA

SAT-162 | Characterization of Collits and Control Bones
Silvia Alzare1, Cory Lindeman1, Suyan Pang1, and Ivona Jasiuk1
Ernst Abbe Center for Medical Imaging, Jena, Germany, 2Wichita State University, Pratt, KS, 3University of Illinois at Urbana-Champaign, Urbana, IL

SAT-163 | FEM Analysis of the Effect of Valgus Knee Condition on the Stress Distribution in Proximal Femur
Saifya Pugachi1, Chaundra Haney1, and Xi-Yian Qin1
Department of Biomechanical Engineering, Stony Brook University, Stony Brook, NY

SAT-164 | Application of PIPER Software to Adjut Spinal Position of Human Body Models in Military Relevant Postures
Sophia K. Tsukah1, 2, Jazmine R. Aira1, 2, and Scott Gayzik1
1Wake Forest University Center for Injury Biomechanics, Winston Salem, NC, 2Wake Forest University School of Medicine, Winston-Salem, NC

SAT-165 | Comparison of Atlas-Based Finite Element Model to In Vivo Brain Motion During Low-Velocity Impacts
Tanner Flaherty1, 2, Logan Miller1, 2, Jill Urban1, 2, Yuan Feng1, Philip Baly1, and Joel Stitzel1
1Wake Forest School of Medicine, Winston-Salem, NC, 2Texas Tech University, Sutherland, China, People’s Republic of, 3Washington University in St. Louis, St. Louis, MO
SAT-170 A Novel Spherical Stent for Oclusion of Cancer and Anerysm
Hao-Ming Hsiao1, Wen Hsin Yang2, Tzu-Yuan Lin1, Chien-Erh Lin1, Victoria Doheny1,2, Yunbo Liu2, Subha Maruvada2, and Jiong-Hong Chen1
1University of Minnesota, Minneapolis, MN, 2University of Minnesota—Medical School, Minneapolis, MN, 3Stem Cell Institute, Minneapolis, MN, 4Paul & Sheila Wellstone Muscular Dystrophy Center, Minneapolis, MN

SAT-171 Feasibility of Using the Chich Chiroallantoc Membrane Model to Test Constancy of Angiogenesis in Vascular Perfusion
Trevor Kickliter1, Kory Blose1, Justin Weinbaum1,2, Thomas Gleason1, and Bakir Mousa1, Aprinda Indahlastari1, May Boggess1, Christopher Saar1, Bakir Mousa1, Aprinda Indahlastari1, May Boggess1, Christopher Saar1

SAT-172 Changes in Muscle Architecture During Isometric Contractions in Stroke Survivors
Zoe Villamar1, William Carlson1 and Christopher Quick1
1Virginia Commonwealth University, Richmond, VA, 2Northwestern University, Chicago, IL

SAT-173 An Application of mHealth Technologies for the Plantar Fasciitis: Implications for Muscle Modeling
Taylor Montgomery1,2,3
1Florida Atlantic University, Boca Raton, FL, 2University of Nebraska-Lincoln, Lincoln, NE, 3University of Connecticut, Storrs, CT

SAT-174 Microscopy with Ultraviolet Surface Excitation (MUSE) for Enhancing K-12 and Undergraduate Education in Life Sciences
Chin Huang1, Ronald Woolf1, and Steven Demas1
1University of Rochester, Rochester, NY, 2University of Rochester School of Medicine and Dentistry, Rochester, NY

SAT-175 MacroAFM: A Macroscopic Model for High School and Undergraduate Education
Flatter Roberts1, Thomas Roberts1, William Bagnal1, and Vladimir Rukov1
1Clemson University, Clemson, SC

SAT-176 Micro-BLIP: A New Tool for Instrumentation Education
Jake Donovan1, Oliver Snyder1, and George Stetten1
1University of Pittsburgh, Pittsburgh, PA

SAT-177 Magnetic Nanoparticles for the Detection of Matrix Metalloproteinase-2 Activity in Tumor Models
Kevin Kattan1, Taejik An1, and Allan David1
1Auburn University, Auburn, AL

SAT-178 A Comprehensive Comparison of Five Different Methods to Characterize Theranostics Nanoparticles Size Distribution Based on Polysaccharide and Nanoparticle Morphology
Ralph Valentino1, Gloria Andres Arevalo1, and Anthony McGovern1
1Florida International University, Miami, FL, 2Pennsylvania State University, State College, PA

SAT-179 Effects of Statin on Endothelial Cell Inflammation When Pretreated or Post-treated With tnf-alpha
Trey Lee1, Matthew Hagen1, and Monica Hinds1
1Portland State University, Portland, OR, 2Oregon Health & Science University, Portland, OR

Track: Undergraduate Research, Design & Leadership, Biomedical Engineering Education (BME)-Undergraduate

SAT-180 Cluster and Quadrant Analysis for Thermographic Breast Cancer Detection
Aidan Murray1, Shannon Tse1, and Pamela Xu1
1George Washington University, Washington, DC

SAT-181 Acoustoelectric Imaging of Nerve Phantom Using a 96-Element Phased Array Ultrasound Transducer
Alex Burton1, Yexian Qin1, Pier Ingram1, Chet Preston1, and Russell Witter1
1University of Arizona, Tucson, AZ

SAT-182 A Role of Autofocusing Module for Whole Slide Imaging
Alexander Magas1, Jun Li1, and Guan Zheng1
1University of Nebraska-Lincoln, Lincoln, NE, 2University of Connecticut, Storrs, CT

SAT-183 Determination of Blood Flow Velocity Profile from Intravital Microscopy Using Digital Image Cross-Correlation
Alfredo Luc1, Viv P. J1, and Pedro Cabral1
1University of California, San Diego, La Jolla, CA

SAT-184 Linearly Normalized T2w MR Intensities Clustering and Quadrant Analysis for Thermographic Specific Differences within Rectal Tumor and Adjacent Non-Tumor Regions
Aniket Selvadurai1, Jacob Antonini1, Raaj Thawani1, Kastava Bara1, Justin Brady1, Joseph Willis1, Raj Paspulati1, Anant Madabhushi1, and Sattah Waisanen1
1Case Western Reserve University, Cleveland, OH, 2University Hospitals Cleveland Medical Center, Cleveland, OH

SAT-185 Validation of Multi-Otsu Thresholding for the Quantification of Choroidal Neovascularization (CNV) Lesion Size In Laser-Induced CNV Models
Anessa Puskar1, Wenqiang Liu1, and Jennifer Kamp-Miller1
1University of Illinois, Urbana-Champaign, IL

SAT-186 Dual-Tuned Removable Common-Mode Current Suppression Trap for MRI
Angelence Enriquez1 and Joseph Jepson1
1University of Puerto Rico Mayaguez, Anasco, PR, Puerto Rico, 2University of Puerto Rico, West peninsula, West Lafayette, IN

SAT-187 Using Regression Analyses of Brain Imaging Data to Predict Change in Depression Severity Following Cognitive Behavioral Therapy
Anthony Chehab1, Harry Rubin-Falcon1, Roni Kohon1, Marisa Oquendo1, John Mann1, Jeffrey Miller1, and Francesca Zendehy1
1Virginia Commonwealth University, Richmond, VA, 2University of Minnesota—Medical School, Minneapolis, MN, 3Stem Cell Institute, Minneapolis, MN, 4Paul & Sheila Wellstone Muscular Dystrophy Center, Minneapolis, MN

SAT-188 Time Correlated Single Photon Counting using an FPGA Board
Anthony Zilinsky1, Bassen Fasou1, and Ben Jenkins1
1Colorado State University, Fort Collins, CO

SAT-189 Math Model of Brain Tumor Growth Facilitates Tumor Cell Quantification from Bioluminescence Imaging
April A. Fleming1, Jamie M. Chapman1, Susan Christine Massey1, Pamela R. Jackson1, Shv K. Gupta1, Ann C. Tuma1, Lihong Hai1, Fang Lin1, Aaron Johnson1, Jann N. Sarkar1, and Kristen R. Saunders1
1Arizona State University, Tempe, AZ, 2Mayo Clinic, Phoenix, AZ, 3Mayo Clinic, Rochester, MN

SAT-190 Associations Between CT-derived Muscle, Fat, and Bone Metrics During Weight Loss in Older Adults
Arvathy Sreenathan1, Samantha Schade1, Leonencich1, Daniel Beavers1, Anthony Marcell1, Jack Rajabi1, Ashley Weaver1, and Kratene Beavers1
1Western Carolina University, Cullowhee, NC, 2Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston Salem, NC, 3Wake Forest School of Medicine, Winston-Salem, NC, 4Wake Forest University, Winston-Salem, NC

SAT-191 Inter-subject Variability in Healthy TES Recipients: A Computational Study.
Bakir Moussa1, Aprinda Indahlastari1, May Boggess1, Charles Caskey2, Kevin Castellano1, Aditya Kasadunn1, Munish Chaurasi1, Thomas Maron1, and Ronaldad Sadler1
1Arizona State University, Tempe, AZ, 2University of Florida, Gainesville, FL

SAT-192 Platform for Skeletal Muscle Tissue Clearing for Fluorescent Reporters and Immunofluorescence Staining
Bhavani Sat Rohit Murukonda1,2,3, Mayanik Verma1,2,3, Attithi Asakura1,2,3,4, and Aashe Asakura1,2,3,4
1University of Minnesota, Minneapolis, MN, 2University of Minnesota—Medical School, Minneapolis, MN, 3Stem Cell Institute, Minneapolis, MN, 4Paul & Sheila Wellstone Muscular Dystrophy Center, Minneapolis, MN

SAT-193 Methods for Measuring Dry Mass Change in Time-lapse Gradient Light Interference Microscopy
Brittany Mahaffey1, Michael Kandel1, Oghal Kuzhegaran1, Martha Gillette1, and Gabriel Popescu1
1University of Evansville, Jeffersonville, IN, 2University of Wisconsin-Madison, Madison, WI, 3University of Illinois-Chicago, Chicago, IL

SAT-194 The Relationship Between Resting-State fMRI Low Frequency Fluctuations and Cerebral Hemodynamics
Chantelle Lim1, Baxter Rogers2, and Victoria Morgan1
1University of Rochester, Rochester, NY, 2Vanderbilt University, Nashville, TN

SAT-195 Magnetoencephalography Analysis of the 40-Hz Auditory Steady-State Response in First Episode Patients with Schizophrenia
Charles Ellis1, Timothy Gaws1, Gregory Overbeek1, Jeffrey Keller1, David White1, Meredith Read1, and Adrienne Lahti1
1University Hospitals Cleveland Medical Center, Cleveland, OH, 2University Hospitals Cleveland Medical Center, Cleveland, OH

SAT-196 Simulation-Based Optimization of Ultrasound Adapters for Brain Slice Neuronodiumulation
Charles Naumann1, Martial Preppe2, and Charles Caskey1
1Vanderbilt University, Nashville, TN, 2Vanderbilt University School of Medicine, Nashville, TN, 3Vanderbilt University School of Medicine, Nashville, TN, 4Vanderbilt University Institute of Imaging Science, Nashville, TN
SAT-197 Cardiac Segmentation approached by Way of Convolutional LSTM Network
Chris Petty
Clemson University, Westen, CT

SAT-198 TwitchRead: Analyzing Contraction in Engineered Skeletal Muscle Tissue Co-Cultured with Neurons
Daniel Carbonetti, Rachel Besser, and Arshotch Agarwall
University of Miami, Coral Gables, FL

SAT-199 A Convolutional Neural Network-based Algorithm for Targeting Relevant Diagnostic Sites in HRME Images
Davide Bienia, Eric Tenny, Ramesh Vigneswaran, Ann Gillenwater, and Rebecca Richards-Kortum
Duke University, Durham, NC; Rice University, Houston, TX; University of Texas, Houston, TX

SAT-200 The Quantitative Assessment of Ultrasound Backscatter in 3D Printed Phenotypes
Dhruv Bharadia1, Varsha Paudel,1 Trevor Mitcham,1 Bagrat Grigoryan,1 Wolfgang Stefani,3 Jordan Miller,2 and Richard Bourão
1University of Texas MD Anderson Cancer Center, Houston, TX; 2University of Pittsburgh, Pittsburgh, PA

SAT-201 Source Localization of Cortico-Cerebellar Activity During a Sensorimotor Control Task
Shih-Tu Terng1 and Soo Beanid1
1Marquette University, Milwaukee, WI; 2Marquette University, Milwaukee, WI

SAT-202 Thermal Infrared Imaging for Detection of Pulpal Blood Flow
Elizabeth Budimlić, Seany Tweddle, Justin Bequette, and Roy Day
1Neural Medical Research Unit San Antonio, San Antonio, TX; 2University of California, San Diego, CA

SAT-203 Comparative Analysis of Nanoscale Ultrasound Contrast Agents
Elly Lambert1, Hannah Cebull,1 Craig Goergen1, and Luis Solorio1
1The University of Texas at Austin, Austin, TX; 2The University of Rochester, Rochester, NY

SAT-204 Collagen Fiber Orientation Mapping with Fourier Psychography Polarization Light Microscopy
Erzhang Zhou1,2, Bin Yang1,2, and Ian Gillenwater1
1University of Pittsburgh, Pittsburgh, PA; 2University of Pittsburgh School of Medicine, Pittsburgh, PA

SAT-205 Developing an Algorithm to Determine Protein Structure via X-Ray Free Electron Laser Diffraction sans Crystallization
Ethan Kwan1 and Dilano Saldin2
1The University of Texas at Austin, Austin, TX; 2The University of Wisconsin Milwaukee, Milwaukee, WI

SAT-206 Improving Radial GRAPPA Efficiency by Reconstructing Multiple Points from a Single Weight Set
Evan Cunningham, Dominique Fransson1, Jesse Hamilton1, and Nicole Seiberlich1
1Case Western Reserve University, Cleveland, OH

SAT-207 Spiral Catheter With 1550nm Fiber-Bragg Grating and Mach-Zehnder Interferometer Touch Sensors for Accurate Atrial Electroanatomic Mapping
Grace Jeongjeun1, Ji-Ke, and Malika Fok1
1San José State University, San José, CA; 2University of California, San Francisco, CA

SAT-208 Semi-automated Analysis of Microembolic Lesions in Brain Diffusion Weighted MRI
Gregory Wheeler1,2, Liu Dao2, Weizhu1, and Theodore Trouard1
1University of Arizona, Tucson, AZ; 2Northwestern University, Chicago, IL

SAT-209 Angiogenesis-In-Induced Hypertension Does Not Lead to Dissecting Aortic Aneurysms in Apolipoprotein E-Deficient Rats
Hanna Qureshi1, Evan Phillips1, and Craig Goergen1
1Purdue University, West Lafayette, IN

SAT-210 Reducing Error in Ultrasound Elasticity Imaging via 3D Simulation of Human Tendon
Hamza Schmidt1, Andres Nunez Zuniga1, Cindy Fastie1, Danail Latt1, and Ruza Wima1
1The University of Arizona, Tucson, AZ

SAT-211 SERRES Array for Detection of Biomarkers Using Metallic Nanoparticles
Hamma Smith1, Andrea Lockie1, and Gerard Cote1
1Texas A&M University, College Station, TX

SAT-212 Development of a Rodent Restraint System to Study Brain Networks in Absence of Anesthetic Agents
Ishu Thomas1, Hosh Tanimura1, Ayende Bara1, Maysam Nezafati1,2, and Sheila Keshani1
1Georgia Institute of Technology, Atlanta, GA; 2Emory University, Atlanta, GA

SAT-213 Transient Optical Scattering as an Imaging Contrast Mechanism for Molecular-Scale Dynamics in Tissues
Janet Sorell1,2, Joanne Le1, Andrew Bower1, Pin-Chih Huang1, and Stephen Bogdan1
1University of Rochester, Rochester, NY; 2University of Illinois at Urbana-Champaign, Urbana, IL

SAT-214 Retinal Vascular Permeability Changes in a Rat Model of Diabetic Retinopathy
Jason Wu1, Patrick Magaigian1, Michael Liu1, Jennifer Kang-Mueller1, and Kenneth Tischler1
1University of Illinois at Urbana-Champaign, Urbana, IL; 2University of California, Santa Cruz, Santa Cruz, CA; 3Institute of Technology, Chicago, IL

SAT-215 3D Murine Brain Cartography: Reconstruction using Spatial Light Interference Microscopy (SLIM)
Javier De Jesus Astacio1, Patricia Contrera1, Mikhail Kendall1, and Catherine Bear Popescu1
1University of Puerto Rico at Mayaguez, Trujillo Alto, PR; 2University of Illinois at Urbana-Champaign, Urbana, IL

SAT-216 Synthesis of DNA-antibody Constructs for Studying Nucleic Acid Hybridization Kinetics in Live Cells
Jillian Ortnier1, Yuan Chen1, Yuan Chen1, and Tim Yeh1
1The Georgia Institute of Technology, Atlanta, GA; 2The University of Texas at Austin, Austin, TX

SAT-217 Microscopy with UV Surface Excitation (MUSE) for Imaging of Mohs Skin Cancer Samples
Lina Wang1,2, Ian Zhang1, Irene Kung1, Marcus Mogil1, James Turner1, Matthew Fox1, Jason Reichenberg1, and Kate Sebastian1
1The University of Texas at Austin, Austin, TX

SAT-218 Automated Artifact Identification in MR Images using Deep Convolutional Neural Networks
Jordann Herrold1, Monika Mandar1,2, Shreyas Vasanawala1, John Paul1, and Lei Xing1
1Michael E. DeBakey School of Biomedical Engineering, Cornell University, Ithaca, NY; 2Department of Electrical Engineering, Cornell University, Ithaca, NY

SAT-219 Hybrid Spectroscopy Imaging System for In Vivo Tissue Differentiation: System Development
Juan Giraldes2 and Wei-Chiang Lin1
1Florida International University, Miami, FL; 2University of Miami, Miami, FL

SAT-220 Automatic Bolus Detection for Dynamic Contrast-Enhanced Imaging with Undersampling
Jiankang Park1, Fatemeh Rezapoor2,3, Lina1, B. Andeen2, Richard Frey3,4, and R. Marc Lebe2, 3
1University of California, Berkeley, CA; 2University of California, San Francisco, CA; 3Marin County MR Centre, San Rafael, CA; 4Institut National de la Santé et de la Recherche Médicale, France

SAT-221 Use of Wireless Hand Tracking Sensors to Navigate 3D Medical Images
Katherine Younger1,2, Josh Tan1, and Jeffrey Wilsey1,2
1Johns Hopkins University, Baltimore, MD; 2Wake Forest School of Medicine, Winston Salem, NC

SAT-222 Automated Segmentation Algorithm for Thermal Images
Zainab Mahmood1, Katherine Fergusson1, and Nada Kamouna1
1Case Western Reserve University, Washington, DC

SAT-223 Correction of Gibbs Ringing Artifact in DW-MRI with Biomimetic Brain Phantom as Ground Truth
Katherine Richter1
1University of Pittsburgh, Pittsburgh, PA

SAT-224 The Investigation of Organ Dose Reduction in Head CT Scans Due to Head Angle Adjustments
Kasper Tranum-Jensen1,2, Molly Olseth1, Charles Bolton1,3, and Diana Bard1
1Arizona State University, Tempe, AZ, 2Phoenix Children’s Hospital, Phoenix, AZ

SAT-225 Measuring the Change of Mitochondrial Morphology in RSV Infected MH-S Cells using Kerrey Alfaro, Abhishek Mar1, Peter Kner1, and Jocelyn Grunew1
1California State University, Long Beach, Long Beach, CA; 2University of Georgia, Athens, GA; 3Emory University, Atlanta, GA

SAT-226 Associations between Functional Connectivity and Walking in Multiple Sclerosis Patients
Kyle Poor, Rachael Bollai1, Elizabeth Hubbard1, Curtis Johnson1, Robert Mott2, and Bradley Sutton
1University of the Pacific, Stockton, CA; 2University of Wisconsin at Urbana-Champaign, Urbana, IL; 3Berry College, Mount Berry, GA; 4University of Delaware, Newark, DE; 5University of Alabama, Tuscaloosa, AL

SAT-227 Murine Medial Femoral Condyle Growth Plate Profile Varies with Orientation of Histology Section
Laura Vasquez-Bollai1,2, Leerin Li1, Marisa Kelle1, Felix Hsu1, Anna Plass1, and Robert Sall1
1Cornell University, Ithaca, NY; 2University of California, San Diego, San Diego, CA; 3Rush University Medical Center, Chicago, IL

SAT-228 Aggregation of Copper Sulfide Nanoparticles Around Nanoscale Targets for Photoacoustic Contrast in a Flow Model
Madeleine Howell1, José Luís1,2, Christian Miranda1, and Barbara Smith
1Arizona State University, Tempe, AZ

SAT-229 Stabilizing a Reference Laser for a Modified Michelson Interferometer
Markel Haynie1, Jiahwee Mittal2, Brynna Besco1, and Theodore Corts2
1Duquesne University, Pittsburgh, PA; 2American Chemical Society Project SEED, Duquesne University, Pittsburgh, PA

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

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

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**SAT-230**
Oxygen Nanobubble Formation as a Mechanism of Thermally Induced Erthrocyte Aggregation
Joey Blasco1, Arianne Jean-Frances1, Samantha Weber-Fashih1, Geoffery Gunter1, Harrison Saridere1, and Mary Frame1
1Stony Brook University, Stony Brook, NY

**SAT-231**
Detection of Newly Formed Blood Vessels Using Label-Free Optical Molecular Imaging
Merci-Pauline Ujereza1, Sisan You1, Jamila HedhiH1, Eric Chancy1, Marina Marjanovic1, and Stephen Boppart1
1University of Rhode Island, Providence, RI, 2University of Illinois at Urbana-Champaign, Urbana, IL

**SAT-232**
Fouier Transform Infrared Spectroscopy as a Tool for Analyzing Differentiable Bile Acid Concentrations in Liver Tissue Biopsies
Miranda Davidson1, Senima Tajdari1, Shuoniu Ma1, Sayee Ansari1, and Rohit Bhargava1
1University of Illinois at Urbana-Champaign, Urbana, IL, 2Beckman Institute, Urbana, IL

**SAT-234**
Design and Characterization of Phantom Materials for Ultrasound Elastography Research
Mohamed Salah Mahmoudi1, Penelope Subervi1, and John Carl2
1University of Rochester, Rochester, NY

**SAT-235**
Variability of Image Texture Quantification in Simulated Medical Imaging Systems
Nada Karmouni1, Saija Tauri1, and Dietlind Klein1
1Brigham Young University, Provo, UT

**SAT-236**
Creation of In Vivo Imaging Support System Using Additive Manufacturing
Natalie Mueller1, P. Timothy Dougherty1, and Teresa A. Murray1
1Louisiana Tech University, Ruston, LA

**SAT-237**
Optimizing Geometry of a 64-channel RF Detection of Ovarian Cancer
Stephen McAleavey1
1University of Rhode Island, Providence, RI, 2University of Illinois at Urbana-Champaign, Urbana, IL

**SAT-240**
Development of a Brain Stage II-Integration of the Cerebrovascular System
Ryan Branco1, Peyton Tharp1, Evan Kranz1, Savannah Dale1, and Jorge Rodriguez1
1Clemson University, Clemson, SC

**SAT-241**
Evaluation of Segmentation Performance with 3T and 7T Magnetic Resonance Imaging using FreeSurfer
Shane Mifflin1, Anusha Ragangari1, Minju Wu2, Tales Santini3, Tamar Israelom1, Oscar Lopez1, and Howard Aizenstein1
1University of Pittsburgh, Pittsburgh, PA

**SAT-242**
Characterizing Tissue Autofluorescence To Enhance Visualization of Fluorescent Biomarkers
Su Hyun Lyu1, Jiaojiao Leng2, and Laura Maruo1
1University of California, Davis, CA

**SAT-244**
Cellular Topological Growth Limits Affect Melanoma Phenotype
Than Hoyng1, Jamila Hedhi1, Minwoo Kim1, Sisan You1, Jumun Lee1, Iwona Dobrucka1, Kristopher Kilian1, Stephen Boppart1, Michael Insana1, and Lawrence Dobrucka1
1University of Illinois at Urbana-Champaign, Urbana, IL, 2Beckman Institute for Advanced Science and Technology, Urbana, IL

**SAT-246**
Development of a Dual Modality Gastrointestinal Capsule for Optical Coherence Topography (OCT) and Near-Infrared Fluorescence Imaging (NIRF) Imaging
Yunhao Wei1, Joe Gander2, and Gary Tomasz1
1Duke University, Durham, NC, 2Massachusetts General Hospital, Boston, MA

**SAT-247**
Kidney as Verification of Microsphere Methods for Validating Diffuse Optical Blood Flow Measurement
Ziping Liu1, Ashley Proctor1, Gabriel Ramirez1, Songfeng Han1, Leidong Mao2, and Donal O'Sullivan1
1University of Texas at El Paso, El Paso, TX, 2University of Texas at Austin, Austin, TX

**SAT-248**
Track: Undergraduate Research, Design & Leadership, Cancer Technologies
Cancer Technologies-Undergraduate

**SAT-247**
Angiogenesis in an In Vitro Vascular Model of Inflammatory Breast Cancer
Ambert Boucher1, Peter Galia1, and Mary Alpaugh1
1Rowan University, Glassboro, NJ

**SAT-250**
The Effects of Cold Atmospheric Plasma on Cell Migration and Expression of Adhesion Molecules on Cervical Cancer Cells
Avai Canner1, Nicole Sousa1, Tony Zhu2, David Burnette1, and Monica Burke1
1Ohio University, Athens, OH

**SAT-251**
Characterization of Biocompatible Scaffolds for Modeling Tumor Microenvironments
Carolyna Quiles1, Troy Comi2, and Rohit Bhargava1
1University of Virginia, Charlottesville, VA, 2University of Illinois at Urbana-Champaign, Urbana, IL

**SAT-252**
Synthesis Conditions of Iron Oxide Nanoparticles for Magnetic Hyperthermia Therapy
Dalton Kotilska1, Lae Haeseema2, Stephanie Huffnagle1, Zhengpeng Cui1, and Hugh D.C. Smyth1
1South Dakota School of Mines & Technology, Rapid City, SD, 2The University of Austin at Austin, TX

**SAT-253**
The Role of Varying Doses and Sources of Radiation on Endothelial Cells
Mary Jane Bevil1, Suzanne Bradley1, Daniel Medlin1, and Melanie Darcy1
1Coe College, Cedar Rapids, IA, 2Clemson University, Clemson, SC

**SAT-254**
The Role of the Extracellular Matrix in the Breast Cancer Resistance to Paclitaxel
Donna Mullins1, Hunter Joyce2, and Amy Brack1
1Worcester Polytechnic Institute, Worcester, MA, 2University of Texas at Austin, Austin, TX

**SAT-255**
Mechanical Strain Increases YAP/Taz Nuclear Localization and Chemoresistance in Breast Cancer Cells
Gabriel Garcia1, Adrienne Spencer1, and Aaron Baker1
1University of Texas at El Paso, El Paso, TX, 2The University of Texas at Austin, Austin, TX

**SAT-256**
Macrophage Response to Stiffness Is Angiogenic
Gabriela Perez-Lozano1, Shana Allen1, Adiel Hernandez1, Alecia Antencion1, and Laura Sugg1
1The University of Texas at Austin, Austin, TX, 2The University of Miami, Miami, FL

**SAT-257**
Internalization of Near-Infrared-Absorbing Nanorods for the Photomechanical Ablation of Cancer Cells
Ian Duckworth1, Greg Suryan1, Austin Moy1, and James Tunnel1
1Virginia Polytechnic Institute and State University, Blacksburg, VA
2Texas A&M University, College Station, TX

**SAT-258**
Biometric and Biophysical Approach to Profile Metastatic Cancer Cell Migration
Jacob Orndorff1, Ayush Garg1, Carlos Castro1, and Jonathan Song1
1The Ohio State University, Columbus, OH

**SAT-259**
Probing the Effect of Cancer-Associated Fibroblasts on Therapeutic Resistance in a 3-D Tumor Model
Jonathan Chang1, Alex Andevcian1, Christina Erni1, Anna-Irina Strelcyn1, and Jonathan Song1
1Ohio State University, Columbus, OH, 2Kenyon College, Gambier, OH, 3Leibig University, Bethlehem, PA

**SAT-260**
Microfluidic Co-Culture of Breast Cancer Cells and Adipose Stem Cells
Katia A. Render1, Joshua M. Campbell1, Shari M. Rahman1, Elizabeth C. Martin2, and Adam T. Melen1
1Louisiana State University, Baton Rouge, LA

**SAT-261**
Optimization of a Microfluidics Device for the Cell Separation of F99 Rat Glial Cells from Primary Rat Astrocytes
Kylie Klinekowski1, Meghan Logan1, Wuin Zhao2, Leidong Mao2, and Lohitash Karumanchi1
1University of Massachusetts Amherst, Amherst, MA, 2University of Georgia, Athens, GA

**SAT-262**
Characterization of the Primary Binding Interactions in CAR-T Therapy
Liam Doyle1, Matthew DiPasquale1, Megan Gueye1, Wenpeng Cai1, Brendan Curren1, and X. Frank Zhang1
1Leibig University, Bethlehem, PA

**SAT-263**
Adapting Neurovascular Unit (NVU) Organ-on-chip to Examine Breast-to-brain Metastases
Emily Schuler1, Dorothy Markov1, Philip Fryman1, Tyler Moss2, and Lisa McClear2
1Vanderbilt University, Nashville, TN

**SAT-264**
Agent-based Modeling of the Glialbiostoma Tumor Microenvironment
Lynette Sequeira1, Jessica Yuar1, Daniel Logsdon1, and Jennifer Munday1
1University of Virginia, Charlottesville, VA

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SAT-265 The Effect of Alternating Current Electric Fields on Microtuble Polymerization In Vitro - Madeline Simon1, Clyde Salaman2, Joseph Cleary3, and William Harms2
University of Missouri, Columbia, MO, 1Cytoskeleton Biomedical Independent School District, Houston, TX, 2Pennsylvania State University, State College, PA

SAT-266 A Quantitative Approach for Risk Stratification and Metastatic Potential Modeling in Melanoma Diagnosis - Madelyn O’Gorman1, Ekaterina Nikolova1, Joel Herman1, Ming Li2, Seetha Jayawardana3, Edwin Squierwell1, Mark Cappel1, Mark Pittelkow1, Clark Dixey1, Louis Schendis1, Amy Weaver1, Vera Suman1, and Nicolas Durr1 Johns Hopkins University, Baltimore, MD

SAT-267 Organ-on-a-vin: Spinach Leaves used as Cancer Model - Ryan Zehraeen1, Louie Macedonia1, and Freidie Zehraeen1
University of Arizona, Honors College, Tucson, AZ, 2University of Arizona, Center for Applied Nanobioscience and Medicine, Phoenix, AZ

SAT-270 Maximizing the Interplay Between Myc and P1SK in Prostate Cancer Evolution - Yuting Li1, Gironi Mathew1, and Lloyd Trotman1
1University of California, Berkeley, Berkeley, CA, 2Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

SAT-280 CRISPR/Cas9-Mediated PARP Disruption to Sensitize BRCA1 Mutated Breast Cancer Cells to Chemotherapy - Rachel Minter1, Yeh-Hsing Lai1, Minqiang Li1, Chi Hoon Quak1, and Kam Leong1
1Columbia University, New York, NY

SAT-292 Validating a Benchtop Mock Circulatory Loop Allows for Improved Characterization of Acute Cardiac Disease Conditions for Mechanical Circulatory Support Devices - Brian Chang1, Samantha Rusman1, Kimberly Feng1, Samantha Rossman1, Steven Keller1,2, and Elazer Edelman1
1Massachusetts Institute of Technology, Cambridge, MA, 2Brigham and Women’s Hospital, Harvard Medical School, Boston, MA

SAT-294 OCT Validation of Purkinje Fiber Networks in CLARITY Cleared Cardiac Tissue - Devin Guerrieri1, Jaclyn Brennan1, Stacey Rentschler1, Jason Zara2, and Igor Efimov3
1The George Washington University, Washington, DC, 2Washington University in St. Louis, St. Louis, MO
SAT-294
Computation Modeling of Clotting Blood
Emily Shimamori1, Francescos Custodio2, Anila Awadekar1, and Michael Miao1
1University of Dayton, Dayton, OH, 2Pennsylvania State University, University Park, PA

SAT-295
Investigation of Regional Cardiac ECM Derived Hydrogels for Myocardial Infarction Treatment
Sara Salem1, Emily Muñoz1, Jingle Wu2, Victoria Leigh Messer schmidt1, Yi Huang1, and Gai Zhang1
1The University of Akron, Akron, OH, 2University of Texas at Arlington, Arlington, TX

SAT-296
Local Fluid Forces Regulate Endothelial Hydraulic Conductivity
Göttfl Strychnitz1, Elanu Askari1, Kaukhi Kanghara1, Shaurya Prakash1, and Jonathan Kim1
1The Ohio State University, Columbus, OH, 2The Ohio State University Comprehensive Cancer Center, Columbus, OH

SAT-297
Novel Approaches to Simultaneously Monitor and Analyze Electrocardiographic of Zebrafish
Ang Sheperd1, Janel Clark1, Shino Kobara1, Wyatt Mason1, Michael Lennig1, Peter Hoftest1, Jingchun Yang2, Xiaolei Xu2, and James Baish1
1The University of Akron, Akron, OH, 2University of Texas at Arlington, Arlington, TX

SAT-298
Insights from Physical and Electrical Analogs of Multi-Lymphangion Systems
Benjamin Teig1, Benjamin Darzel1, Luke Riesinger1, Lance Mum1, and James Beall1
1Bucknell University, Lewisburg, PA, 2Massachusetts General Hospital/Harvard Medical School, Boston, MA

SAT-299
Effect of Fetuin-A as Protein Therapy for Calcification of Vascular Smooth Muscle Cells
Jenna Moser1, Rachel Hybert1, Amber Kay1, James A. Stewart, Jr.2, and C. Lindsay Simpson1
1Mississippi State University, Mississippi State, MS, 2University of Mississippi, University, MS

SAT-300
Design of an Actuated Pressure Waveform Generating Device for In Vitro Cardiovascular Experiments
Kalpesh Neely1, Ryan Danahy1, Paul Capobianco1, Mitra Shabani1, Masoud Farahmand1, and Ethan Kung1
1Clemson University, Clemson, SC

SAT-301
Whole Body Cardiovascular Modeling for ECMO Training Simulator
Le Huang1 and Saneep Shrid1
1University of Pittsburgh, Pittsburgh, PA

SAT-302
Amputated UFP Exposure Impairs the Integrity of the Gut Vascular Barrier
Mark Gutin1, Kyung In Bae1, Tsung Hsiao1, Li Rongrong1, and Constantina Sougioultzis1
1Department of Biology, University of California Los Angeles, Los Angeles, CA, 2Department of Bioengineering, University of California Los Angeles, Los Angeles, CA, 3Division of Cardiology, Department of Medicine, University of California, Los Angeles, CA, 4Division of Cardiology, Department of Medicine, Los Angeles, CA, 5USC, LAC, USC, CA

SAT-303
Mechanical and Histological Characterization of Regurgitant Mitral Valve Anterior Leaflets
Michelle Liu1, Nivedita Raw1, Jessica Kim1, Bruno V. Rigo2, Salma Alyoubi1, and Michael S. Sacks1
1Institute for Computational Engineering and Sciences, Austin, TX

SAT-304
Modeling Heart Disease Using Mechanically Dynamic Magnetoregulatory PDMS Substrates
Myon Bhoppal1, Elise Corbin1, Alexa Vitale1, and Kenneth Margules1
1University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

SAT-305
Impact of Collateral Vessels on the Hemodynamics in a Coronary Bypass Graft: A Computational Study
Nadia Francis1 and Stephanie Gasper1
1Fisk University, Nashville, TN, 2East Carolina University, Greenville, NC

SAT-306
Characterization and Expansion of Human Induced Pluripotent Stem Cells Derived Mural Cells
Nicole Zambrana-Garcia1, Bra Madin2, and Sharon Genechi1
1University of Puerto Rico, San Juan, Puerto Rico, 2Johns Hopkins University, Baltimore, MD

SAT-307
Histological Assessment of Elastin Fiber Orientation in Non-Human Primate Aortic Valves After Flex-Flow Treatment
Nidhi Suthar1, Brittany Gonzalez1, Alejandro Pinero1, Nidhi Suthar1, Brittany Gonzalez1, Alejandro Pinero1, and Jonathan M Grasman1, David L Kaplan1, and Lauren D Black, III1,4
1Lehigh University, Bethlehem, PA, 2Lehigh University, Bethelehem, PA

SAT-308
Mural Valve Leaflet Characterization under In Vivo Stresses Using a Novel Biaxial Bioresorber
Nivedita Rani1, Michelle Liu1, Branda Rodriguez1, Jessica Kim1, Jordan Greaves1, Salma Alyoubi1, and Michael Sacks1
1University of Texas at Austin, Austin, TX

SAT-309
Recreating Microenvironment of Cardiac Tissue at Different Stages of Cardiac Fibrosis
Phu Nguyen1, Rashmi Parvate1, Matthew Sui1, and Srivatsan Kollidam1
1University of Nebraska Lincoln, Lincoln, NE
2University of Nebraska-Lincoln, Lincoln, NE
SAT-327
Downregulation of CXCR1 and CXCR2 on Human Neutrophils in Extracorporeal Recirculation Through Fibers with Immobilized IL-8
Bianca N. Dar, Alexander D. Mollin1, William J. Fenderpil1, John A. Kellum1, and Kai Singbartl2
1University of Pittsburgh, Pittsburgh, PA, 2Mayo Clinic, Phoenix, AZ

SAT-328
SIRPA Immobilization Inhibits “Self” Signaling & Promotes Solid Tumor Clearence
Brandon Hayer1, Gary Alvey2, Jerome Irianto1, and Dennis Discher1
1University of Pennsylvania, Philadelphia, PA

SAT-329
Biphasic, Switch-like Isotothermal DNA Amplification
Cara Robertus1, Burcu Ozay1, Jackson Negri1, and Stephanie McCall1
1Montana State University, Bozeman, MT

SAT-330
A Small Regulatory RNA Controlling Toxin Secretion in Vibrio cholerae
Caroline Blassick1, Mona Distel1, and Kai Papenfort2
1University of Virginia, Charlottesville, VA, 2Rutgers, The State University of New Jersey, New Brunswick, NJ

SAT-331
Understanding Estradiol Receptor Profiles and Estrogen Responsiveness in Laryngeal Cancer
Chandna Mukpatyi1, Anjali Verma1, Nadif Schauer2,3
1University of Texas at Austin-Champaign, Urbana, IL, 2Ludwig Maximilian University, Munich, Germany

SAT-332
Optimization of Biotinylated Protein Elution from Streptavidin Conjugated Beads for BioID Analysis
Joleen Cheah1,2, Cara Robertus1, and Jonathan Sachs1
1University of California, Davis, Davis, CA, 2University of Minnesota, Minneapolis, MN

SAT-333
Analysis of Cell Phenotype Adaptation Following Inducible Cas9 Mediated E-cadherin Knockout
Joleen Cheah1,2, Cara Robertus1, and Jonathan Sachs1
1University of California, Davis, Davis, CA, 2University of Minnesota, Minneapolis, MN

SAT-334
Gene Perturbation And Analysis of an NRF2–JUND–p53 Regulatory Network In Breast Epithelia
Joseph Burn1, Elizabeth Perera1, and Kevin James1
1University of Virginia, Charlottesville, VA

SAT-335
PtDer-Gas6 Interaction Promotes Cell Migration Via AXL
Joshua Mesfin1, Annelien Zweemer1, and Douglas Lauffenburger1
1Massachusetts Institute of Technology, Cambridge, MA

SAT-336
Towards the Development of a Protein-Based Extracellular Tension Sensor
Julie Malavade1, Kasie Collins2, and Brenton Hoffman2
1Washington University in St. Louis, St. Louis, MO, 2Duke University, Durham, NC

SAT-337
Role of Nesp in Mesenchymal Stem Cell Stretch Mechanosensing
Benjamin Plambeck1, Eunji Kim1, and Jung Yul Lim1
1University of Nebraska-Lincoln, Lincoln, NE

SAT-338
An Engineered Polysaccharide Lyse to Combat Toxic Algal Blooms
Evon Eisenkraft1 and Bryan Berger1
1Lehigh University, Bethlehem, PA

SAT-339
The Role of c-abl in E-synuclein-induced Cell Death: Efficacy of Nilotinib in Parkinson’s Prevention
Haseeoo Moon1,2, Hyun Hee Kim1, Todd M. Dawson1, and Valina L. Dawson1
1University of Massachusetts, Columb, MA, 2Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore, MD

SAT-340
Analysis of Cell Phenotype Adaptation Following Inducible Cas9 Mediated E-cadherin Knockout
Joleen Cheah1,2, Cara Robertus1, and Jonathan Sachs1
1University of California, Davis, Davis, CA, 2University of Minnesota, Minneapolis, MN

SAT-341
Phosphorylation to Quantitatively Study Nanoenvironment
Kiara Leeb2, Arinola Lampejoa1, Victor Hernandez-Gordilloa 1, Jonathan Sachs1, and Brenton Hoffman2
1University of California Berkeley, Berkeley, CA, 2UC Berkeley-UCSF Graduate Program in Bioengineering, Berkeley, CA

SAT-342
Environmental Influence on Cellular Uptake in Micro-scaled Cell Models
Kendal Huesteg1, Cheemeng Tan1, and Zvi Schwartz1
1University of Nebraska-Lincoln, Lincoln, NE, 2University of Pittsburgh, Pittsburgh, PA

SAT-343
Analysing Internalized Nanoparticles with MicroAmerican Fluorescence FRET
Brandon Hayer1, Gary Alvey2, and Dennis Discher1
1University of Pennsylvania, Philadelphia, PA
2University of Pittsburgh, Pittsburgh, PA, 3University of Lincoln, Lincoln, NE, 4West Chester University of Pennsylvania, West Chester, PA, 5Temple University, Philadelphia, PA

SAT-344
Comparing Engineered Multivalent HER3-Targeting Affibodies
Sonya Williams1, John Schardt2, Jonan Oubaid1, and Steven Jay1
1University of Maryland, College Park, MD

SAT-345
Investigating the Possibility of Dimerization of the FAS Transmembrane Domain and Effects in Signal Transduction
Sophia Szegedy1, Neal Jarman2, and Jonathan Sachs1
1University of Minnesota, Minneapolis, MN
2University of Texas Southwestern, Dallas, TX

SAT-346
The Role of RhoA/Rock Pathway in the Mechanotransduction of Pre-adipocytes: An Environmental Influence on Cellular Uptake in a Well-Defined Synthetic Basement membrane
Matthew Gayoso1, Elizabeth Leimer1,2,3, Liufang Jing1, Munish Gupta1,2, and Overton4
1Washington University in St. Louis, St. Louis, MO, 2Duke University, Durham, NC, 3Washington University in St. Louis, St. Louis, MO, 4Duke University, Durham, NC, 5Albany Medical College, Albany, NY

SAT-347
Engineered Artificial Cells as Biosensors in a Biofilm Environment
Michelle Mas1, Yufeng Ding1, Luis Eduardo Contreras Llera1, and Cheemeng Tan1
1University of California, Davis, CA

SAT-348
Engineering Microscopic Cell Models in a Microfluidic Platform
Brandon Hayer1, Gary Alvey2, and Dennis Discher1
1University of Pennsylvania, Philadelphia, PA
2University of Pittsburgh, Pittsburgh, PA

SAT-349
Assessing Intestinal Organs Drug Response in a Well-Defined Synthetic Basement membrane
Eric Cecco1, Courtney Sparacino-Watkins 1, and Mark Gladwin1
1University of Vermont, Charlottesville, VA, 2Rutgers, The State University of New Jersey, New Brunswick, NJ

SAT-350
Study of the Suitability of Plasma Nanoparticles to Release Bioactive Molecules
Brandon Hayer1, Gary Alvey2, and Dennis Discher1
1University of Pennsylvania, Philadelphia, PA
2University of Pittsburgh, Pittsburgh, PA, 3University of Lincoln, Lincoln, NE, 4West Chester University of Pennsylvania, West Chester, PA, 5Temple University, Philadelphia, PA

SAT-351
Intestinal Alkaline Phosphatase Activity is Altered by Bacterial Exposure in an In Vitro Intestinal Epithelium Model
Olivia Varela1 and Jennifer Forman1
1Binghamton University, Binghamton, NY

SAT-352
ARF6 GTPase Is Key Modulator of Extracellular Microvesicles Biogenesis in Brain Endothelial Cells
Rogena Aze1, Anne Sori1, Marquette Cannon1, Tiffany Smith1, Roshanak Reazpour1, Alison Andrew2, and Sasivi Ramaratnam1
1Temple University, Philadelphia, PA, 2University of Pittsburgh, Philadelphia, PA, 3Lincoln University, Philadelphia, PA, 4West Chester University of Pennsylvania, West Chester, PA, 5Temple University, Philadelphia, PA

SAT-353
Nurr1 and NR2F2 Mediate the Hypothalamic Response to Salt Intake
Sara Massoud1, Daniel P. Wu2,3, and Thomas R. Conover2
1University of California, Davis, Davis, CA, 2Department of Biomedical Engineering, University of California, Irvine, CA, 3Department of Pathology and Microbiology, University of Nebraska Medical Center, Omaha, NE

SAT-354
Comparison of Engineered Multivalent HER3-Targeting Affibodies
Sonya Williams1, John Schardt2, Jonan Oubaid1, and Steven Jay1
1University of Maryland, College Park, MD

SAT-355
Investigating the Possibility of Dimerization of the FAS Transmembrane Domain and Effects in Signal Transduction
Sophia Szegedy1, Neal Jarman2, and Jonathan Sachs1
1University of Minnesota, Minneapolis, MN
2University of Texas Southwestern, Dallas, TX

SAT-356
The Role of RhoA/Rock Pathway in the Mechanotransduction of Pre-adipocytes: An In Vitro Study
Brandon Hayer1, Gary Alvey2, and Dennis Discher1
1University of Pennsylvania, Philadelphia, PA
2University of Pittsburgh, Pittsburgh, PA

SAT-357
Physical Regulation of Cell Adhesion Strength by Cell-Surface Bound Polymers
Rebecca Keeler1, Patrick Cheng1, and Jennifer Curtis1
1Georgia Institute of Technology, Atlanta, GA

SAT-358
Disrupting Mutant K-Ras Gene with High Specificity By CRISPR/Cas9
Thomas Ethridge1, Ciaran M. Lee1, Anirban Ray1, and Gang Bao1
1University of Texas, Houston, TX
SAT-362 Role of Protease-Activated Receptor 4 in Regulating Platelet Dense Granule Release
Tiffany Chu1, Rachel Riggs1, Laura Hawry1, Anh Ngo1, Antonina Mitrougno1, Joseph Aslan2, András Gruber2, Craig Lindsley3, Matthew Duivenvoorden1, Heidi Hamilton1, and Owen McCarty1
1Johns Hopkins University, Baltimore, MD, 2Oregon Health and Science University, Portland, OR, 3Vanderbilt University, Nashville, TN

SAT-363 Wnt Signaling Modulation & c-Synuclein Aggregation in Synucleinopathies
Virat Goswami1, Jee-Hyun Park1, and Pamela McLane2
1University of Illinois at Urbana-Champaign, Bloomington, IL, 2Mayo Clinic, Jacksonville, FL

SAT-364 Optical Control of Escherichia Coli Chemotaxis using the Photoswitchable Protein Droprna
Vivian Hu1, William McMillan2, Ian Callanan1, Daron Chang1, Gabrielle Gannon1, Adam Butsch1, Jason Lohmueller1, Natasia Metz1, Zachary Tekman1, Jazmin Orozco1, and Alex Daven1
1University of Pittsburgh, Pittsburgh, PA, 2Carnegie Mellon University, Pittsburgh, PA

SAT-365 The Role of Post-Translation Modifications on Chemokine Receptor CXC4 Trafficking Through Clathrin-Coated Pits
Yaan Herrera1, Luciana Kauer Rosell2, and Allen Liu3
1University of Michigan, Ann Arbor, MI, 2University of Pittsburgh, Pittsburgh, PA, 3University of California, San Diego, CA

SAT-366 tnfα Increases Isometric Force in Intact Airway Smooth Muscle
Se Sae Oh1, Murali Dogan1, Young Han2, Philippe Dutilme1, and Gary Siew1
1Mayo Clinic, Rochester, MN

SAT-368 The Effect of Sweeteners on Wound Healing
Zenia Aubdoollah1, Sofia Castro-Pedrido1, and Ronke Olabisi1
1University of Pittsburgh, Pittsburgh, PA

Track: Undergraduate Research, Design & Leadership, Device Technologies and Biomedical Robotics

SAT-369 Text Bed Development for Adaptive Control of Biological Systems Using Iterative Learning
Adam Terwulst1, Christopher Fest1, Jerome McClendon2, and Jordan Gilmore2
1The Citadel, Military College of South Carolina, Charleston, SC, 2Clemson University, Clemson, SC

SAT-370 Optimizing a Dihydroartemisinin Assay for the Detection of Substandard Medicines
Alana Gonzales1, Andrew J. Acevedo2, and Muhammad H. Zaman2
1The University of Arizona, Tucson, AZ, 2Boston University, Boston, MA

SAT-371 Smartphone-Based Quantification Method for Assessing Sickle Cell Disease Severity
Alex Jolly1, Keen Cyp2, Jennifer Colby1, and Cristina Marasco1
1Vanderbilt University, Nashville, TN

SAT-372 Reflectance-Based Metabolic Sensor
Amaya Perez1, Jonathan Ohriman1, and Cristin Marasco1
1Vanderbilt University, Nashville, TN

SAT-373 Design of "Digital Extenders" Platform for Augmented Digital Iteration
Andrew Afanador1, Sarah Robinson1, Corinne Naver1, and R. Lyle Moss1
1University of Texas at San Antonio, San Antonio, TX

SAT-374 Characterizing Flow Rates in Nitrocellulose For Multistep Assays
Anna Bred1, Kristen Bren1, and Jacqueline Linnes1
1Purdue University, West Lafayette, IN

SAT-375 Non-invasive Skin Patch Sensor to Detect Lower-leg Fluid Volume Shift after Simulated Microgravity
Brandon Eckerman1, Jacob Griffin2, Ryan Bexler2, and Kim Cluff2
1Wichita State University, Wichita, KS

SAT-376 Improving Robotic Surgery Training with Bimanual Wrist Squeezing Haptic Feedback
Zachary Petersen1, Micah Goodman2, Anahita Vakili1, and A. Lee Poppen1
1University of Pittsburgh, Pittsburgh, PA, 2Vanderbilt University, Nashville, TN

SAT-377 Parameter Optimization for the Detection of Nucleotides using Electrochemical Impedance Spectroscopy
Caroline Lodged1 and Jeffrey Halpren2
1University of New Hampshire, Durham, NH

SAT-378 Emergency Rapid Injection Device
Zachary Thome1, Pamela Johnson1, Rebecca Osborne1, Katherine Salllie1, Fatima Rezaei1, Kevin Grimmer1, Eric Kennady1, and Daniel Cavanagh1
1Bucknell University, Lewisburg, PA, 2GivingHealth Endosystem, Danville, PA

SAT-379 Continued Development of a Solution to Epidermal Catheter Dislocation
Hannah Tickets1 and Daniel Cavanagh2
1University of Louisville, Louisville, KY

SAT-380 Development Toward a Tear Lactase Sensor Employing an Engineered Lactate Oxidase
Daniel Cavanagh1, Alan Doug2, Jared John1, Cho Li2, Kaince Hrake1, Kay Soder2, and Jeffrey Labeela2
1Arizona State University, Tempe, AZ, 2Tokyo University of Agricultural Technology, Tokyo, Japan

SAT-381 Impedance Sensors for Early Bacterial Biofilm Detection and Treatment Assessment in Medical Implants
Dennis Roukenvt1, Erikulden Goktovt2, Jordan Green3, Hans Steenstra4, and Dries Breaken3
1Johns Hopkins University, Baltimore, MD, 2WECS, Leuven, Belgium, 3 Katholieke Universiteit Leuven, Leuven, Belgium

SAT-382 Characterization of a Custom-Built, Open-Source Microimager Bioreactor for Testing Glisosc Response
Eric Dula1 and Jay Syp1
1California Polytechnic State University, San Luis Obispo, CA

SAT-383 A Clinically Translatable Syringe Adaptor for Delivering a Biomaterial in Spatially Controlled Patterns for Spinal Cord Injury
Gayatri Karakonda1, Eric Krystak2, and Michael Dostern1
1University of Colorado Boulder, Boulder, CO, 2University of Oklahoma, Norman, OK

SAT-384 Four-Point Fortune-Teller-Inspired Origami Grasper for Increased Dexterity and Less Tissue Damage in Minimally Invasive Surgery
Haesun Liu1, Bok Seng Yeo1, and Hongliang Ren1
1University of Pittsburgh, Pittsburgh, PA, 2National University of Singapore, Singapore, Singapore

SAT-385 Pressure Mapping Prosthetic Socket Using Textile Force Sensors
Harrison Nygren1, Jonathan Fu2, William K. Lee3, and Nitish Thakor1
1Arizona State University, Tempe, AZ, 2Arizona State University, Tempe, AZ, 3Mayo Clinic, Scottsdale, AZ, 4Arizona State University, El Paso, TX

SAT-386 Preliminary Development of A Low-Cost Flexible Endoscopic Device for Robotic Minimally Invasive Nasopharyngoscopy
Jacob Meadows1, Bok Seng Yeo1, and Hongliang Ren1
1University of Pittsburgh, Pittsburgh, PA, 2National University of Singapore, Singapore, Singapore

SAT-387 Rapid Prototyping of a Novel Device for Treatment Of Colorctal Anastomotic Leak
Janna Lee-Coyle1, Andrew Russo1, Rachel Slatopy1, and Elizabeth Barker2
1University of Tennessee, Knoxville, Knoxville, TN, 2University of Tennessee Medical Center, Knoxville, TN

SAT-388 Rapid Fabrication and Characterization of Pediatric Nitric Oxide (NO) Releasing Catheter
Igor Panchenkov1, Manjel Ying1, and Kazuya Amako1
1University of New Haven, West Haven, CT

SAT-389 A Portable, Low-Cost Imaging System to Study Long-Term Live Cell Fluorescent Dynamics
Connor Beitz1, Clark Hixman1, Hunter Petersen1, and Karuse Anja1
1Montana State University, Bozeman, MT, 2Gustave Adolphe College, St. Peter, MN

SAT-390 The Development of an Electrochemical Impedance Spectroscopy Point-of-Care Glucagon Sensor
Connor Beitz1, Victor Madrid2, Mukund Khawankar1, Aldin Malik2, David Probst1, Chi Lin2, Jeffrey Labella1, and Curtis Cock1
1Arizona State University, Tempe, AZ, 2Vanderbilt University, Nashville, TN

SAT-391 Faradic Assessment of IGF-1 interference on Insulin to Further the Development of a Point-of-Care Insulin Sensor
Mukund Khawankar1, Connor Beitz1, Aldin Malik2, David Probst1, Chi Lin2, Jeffrey Labella1, Curtis Cock1, and Victor Madrid1
1Arizona State University, Tempe, AZ, 2Arizona State University, Tempe, AZ, 3Mayo Clinic, Scottsdale, AZ, 4Arizona State University, El Paso, TX

SAT-392 Wearable Sensor Network Monitors Tibial Loading During Athletic Activity
Navin Balaji1, Jonathan Ehman1, and Christina Marasco1
1Vanderbilt University, Nashville, TN

SAT-393 BioZ Sense: Evaluating Biomechanical Impedance for Non-invasive Lifestyle Activity Monitoring
Vikas Turakhia1,2
1University of Illinois at Urbana-Champaign, Bloomington, IL, 2Vanderbilt University, Nashville, TN

SAT-394 Texture Simulation with One Degree of Freedom Normal to the Surface using a Loudspeaker
Oliver Snyder1, George Sterbentz1, and Robert Klatzky1
1University of Pittsburgh, Pittsburgh, PA, 2Carnegie Mellon University, Pittsburgh, PA

SAT-395 A Device for Preloaded, Tri-Folded Grafts to Facilitate Descemet’s Membrane Endothelial Keratoplasty
Parth Vora1, Eric Chiang1, Stephanie Cai1, Kali Barnes1, Conan Chen1, Anurak Subramaniam1, Alex Cherubae1, Allison Rosen1, Amir Mansbach1, Allen Egan1, and Robert Aller1
1Johns Hopkins University, Baltimore, MD

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North
SAT-396
Rapid Prototyping of a Novel Fistula Treatment Device
Rachel Sleppy1, Drew Rust1, Jemma LeCalle1, and Elizabeth Barker1
1University of Tennessee, Knoxville, TN, 2University of Tennessee Medical Center, Knoxville, TN

SAT-397
A Haptic Video Game Designed to Study How Sensory Feedback Reshapes Perception 
Workload as Measured by Electrodermal Activity (EDA)
Holomi Hemmerling1, Mitchell Young1, Morgan Mandalek1, Isaac Maass1, and Reva Johnson
1Valparaiso University, Valparaiso, IN

SAT-400
Modular Steering and Force Sensing Soft Robotic Actuator
Rudy Montag1, Austin Taylor1, Zion Tse1, and Zhuo Zhao1
1University of Georgia, Athens, GA

SAT-401
Softening Spinal Cord Stimulator: Evaluation of Chronic Neural Interface
Sydney Shami1, Aldo Garcia1, Ajay Pal2, Asht Mishra2, Walter Voit3, and Timo Paasch1
1University of Texas at El Paso, El Paso, TX, 2The University of Texas at Austin, Austin, TX

SAT-402
Development of a 3D Printed, Low Cost Thumb Prosthetic
Tyler Bray1, Step Hawkins1, Sam Schaff1, and Alexander Spiegel1
1University of Pittsburgh, Pittsburgh, PA, 2Rochester e-NABLE Lab, Rochester, NY, 3University of Pittsburgh Medical Center, Pittsburgh, PA

SAT-403
Compression Profiles of Surgical Staplers Collected Using a Pressure Sensitive Film for Comparison to In Vivo Evaluation
William DeMaria1, Kevin Fogarty1, and Marisha Godek1
1University of Louisville, Louisville, KY

SAT-404
Soil Mobility of Tobacco Mild Green Mosaic Virus for the Delivery of Pesticides to Plant Parasitic Nematodes. 
Paul Chouinard1, Alan DeOzier1, and Nicole Stelmack2
1Case Western Reserve University, Cleveland, OH

SAT-405
X-ray Activatable Drug Release of Hybrid Gold Polymersomes for Cancer Chemoradiotherapy 
Alexander Chen1, Ziyuan Zhou1, and Xiaoyan Chen1
1The National Institutes of Health, Bethesda, MD, 2The Pennsylvania State University, University Park, PA

SAT-406
The Efficacy of a Novel Nanoparticle as a Delivery Vector for Exogenous miR-7 to Cells In Vitro
Amanda Solbach1,2, Michael Holloway1, David Devore3, and Charles Roth2
1Texas A&M University San Antonio, San Antonio, TX, 2Rutgers, The University of New Jersey, Piscataway, NJ

SAT-407
Local Administration of Aspirin to Stent Sites Via Self Assembled Monolayers
Angelo Miskalis1, Tel Lovecaw1, and Ellen Gawalek1
1Duquesne University, Pittsburgh, PA, 2McGowan Institute of Regenerative Medicine, Pittsburgh, PA

SAT-409
Exosomes: A Potential Therapeutic Delivery Device for Multiple Sclerosis (MS)
Ashley Tucker1, Megha Bilawal1, Colin Young1, and Jane Welsh1
1Texas A&M University, College Station, TX

SAT-410
Constant Pressure Controlled Infusions in Agarose Gels
Bianca Montano1, Elyse Edelman1, and Christopher Rylander1
1University of Texas at El Paso, El Paso, TX, 2The University of Texas at Austin, Austin, TX

SAT-411
Dissolvable Microneedles for Inhibition of Angiogenesis
Brandon Davis1, David Kaufman1, James Coyne1, and Yong Wang1
1The Pennsylvania State University, State College, PA

SAT-412
Effect of Molecular Weight on Ultrasound-Targeted Drug Delivery
Daniel F. Brott1, Emily M. Murphy1, Mariam C. Priddy1, Connor C. Centner1, Joseph B. Moore IV1, Roberto Boll1, and Jonathan A. Kopeck1
1University of Louisville, Louisville, KY

SAT-413
Sustained Release of Protein Drugs from Polymeric Microneedles for Immunotherapy
David Kaufman1, Brandon Davis1, James Coyne1, and Yong Wang1
1The Pennsylvania State University, State College, PA

SAT-414
In Silico Collagen Crosslinking to Improve Tendon Strength After Tears
Dominic Kieck1, Edgar Zorn-Delgado1, Tiejun Keshap1, Greg Lavoie1, and Horst von Recum1
1Case Western Reserve University, Cleveland, OH

SAT-415
Optimization of the Synthesis of Multi-Stage Albumin Nanoparticles for Drug Delivery
Elena Heiton1, Jee You Kim1, and Debajyoti Ghorai1
1Smith College, Northampton, MA, 2The University of Texas at Austin, Austin, TX

SAT-416
In Vitro Characterization of Melatonin-Loaded Conducting Polymer Coatings for Neural Electrodes
Elsa Schubert1, Ayakshe Golabchi1, Kevin Wrappel1, Ian Taylor1, and X. Trace Cui1
1University of Pittsburgh, Pittsburgh, PA

SAT-417
Targeted Delivery of Chemotherapeutics to Human Cancer Cells with Aptamer-conjugated Nanoeumulcines
Emily M. Murphy1, Daniel A. Hodge1, Paula J. Bate1, Mohammand T. Malik1, and Jonathan A. Kopeck1
1University of Louisville, Louisville, KY

SAT-419
Inertial Microfluidic Intracellular Macromolecule Delivery
Bianca Montano1, Venkatesh Dang1, and Aram Chung1
1University at Buffalo, Buffalo, NY, 2Rensselaer Polytechnic Institute, Troy, NY

SAT-420
Novel Nanoparticle Growth Factor Delivery System Promotes Cell Proliferation In Vitro Novel Growth Factor Delivery System Promotes Cell Proliferation In Vitro
Eri Shin1, Jessica Underlinger1, Cassandra Cellmann1, Nathan Gaenschn1, and Karen Christmas1
1University of California, San Diego, La Jolla, CA, 2Northwestern University, Evanston, IL

SAT-421
Polymer Microneedle Patch Loaded with PLGA-Curcumin Microspheres
John Molinski1, Khrin Tran1, and Than Nguyen2
1University of Massachusetts Dartmouth, Dartmouth, MA, 2University of Connecticut, Storrs, CT

SAT-422
Microtuboidal Optical Resonators as a Novel Platform for Selective Drug Detection
Kara Roberts1
1University of Arizona, Tucson, AZ

SAT-423
Analysis of Nanoparticle Adhesion Under Flow 
Kathleen Lutz1, Kelly Langslet1, and Eric Bray1
1University of Arkansas, Fayetteville, AR, 2Illinois Institute of Technology, Chicago, IL

SAT-424
Development of Tissue Mimic Structures to Study Free Radical-Initiated Polymer Immobilization 
Kris K. Etzkorn1, Christopher A. Lowy1, and David L. Shrestha1
1Rutgers, The State University of New Jersey, Piscataway, NJ

SAT-425
A Biodegradable Multidrug Delivery System for Post-Operative Ocular Management
Kisha Patel1 and Maira Mohammad1
1Johns Hopkins University, Baltimore, MD

SAT-426
A Biomimetic Microfluidic Platform for Anti-Tumor Drug Evaluation
Lara Reid1, Wentao Shi1, and Yaling Lu1
1Lethbridge University, Bethal, PA

SAT-427
Localized Immunosuppression Therapy for Islet Cell Encapsulation
Madeline Mickaugh1, Ciera Hernandez1, and Sherry Harbin1
1Purdue University, West Lafayette, IN

SAT-429
Investigating Chemical Compound Modulators against Vibrio Cholerae’s Phosphotransferase System
Mahatb Wasse1 and Patrick Ymele-Leki1
1Howard University, NW, DC

SAT-430
Enzymatic Activation of Prodrugs for Targeted Drug Delivery 
Meghan Hill1, Menel Marquet1, Lydia Plohoe1, and Michaelann Tarts1
1New Mexico Institute of Mining and Technology, Socorro, NM

SAT-431
Eliciting the Roles of Extracellular Vesicle-Associated Long Noncoding RNAs in Breast Cancer
Natalie Livingston1, Tek Limchich1, and Steven Jay1
1University of Maryland, College Park, MD

SAT-432
Assay Characterizing Mechanical Properties of Long-Acting Implant Seals 
Phillip Chung1, Solange Simpson1, Lakmuni Wadasaparnith1, Samuel Song1, and Patrick Klair2
1Northwestern University, Evanston, IL

SAT-433
The Effect of Pig Lung Extracellular Matrix Nanoparticles on Macrophage Phenotype 
Alexandra Ritchie1, Gabrielle Cotman1, Michael Valentine1, Patrick Link1, and Rebecca Heise1
1Virginia Commonwealth University, Richmond, VA

SAT-434
Tuning Size and Charge of a Multivalent Polymer Library for Enhanced Drug Delivery to Cartilage 
Sawan Bhatia1, Bret Geiger1, Alan Grodzinski1, and Paula Hammond1
1University of Michigan, Ann Arbor, MI, 2Massachusetts Institute of Technology, Cambridge, MA

SAT-435
Self-assembling Nanomaterials for Local Delivery of Anti-inflammatory Drugs in Cell Traction 
Teresa De Toni1, Diana Velluto2, and Alice A. Tomasi1
1University of Padova, 3TetraDox S.r.l. 4University of Miami, Miller School of Medicine – USA, Miami, FL, 5University of Miami – USA, Miami, FL

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am
SAT-436  Heparin/Poly-L-lysine Adhered on 3D-Printed PLGA Scaffold as Drug Carriers for Local Immune Modulation in Bone Regeneration
Tony Nguyen1,2
1Colombia University, New York, NY

SAT-438  Native Free Radical Mediated Crosslinking of Functionalized PEGs as a Targeted Delivery Mechanism
Victor Manuel Guerra1, Keana R. Mormile1, Christopher J. Low1, and David J. Shrestha1
1Kean University, Union, NJ, 2University of Texas at New Jersey, Piscataway, NJ

Track: Undergraduate Research, Design & Leadership, Nano and Micro Technologies
Nano to Micro Technologies-Undergraduate

SAT-439  In Cell Western Blotting for Quantifying Protein Expression in 3D Tumor-Struma Microfluidic Device
Alexander Kraft1,2, Daeseung Kwon3, Toan Nguyen4, and Mehdi Nikkhah1
1Arizona State University, Tempe, AZ

SAT-440  Hydrogel Microdomain Encapsulation of 4-Mercaptopyrimidine-Silane-Bovine Serum Albumin for SERS pH and Urea Sensing
Alexander Quinn1, Yi-Hsuan You2, and Michael McClure2
1Texas A&M, College Station, TX

SAT-441  Microfluidic Magnetic Cell Sorter for Breast Cancer Culturing Tumor Cells
Byana Harris1, Ying Liu2, Jiashu Zhai3, and Leolong Mao4
1Auburn University, Montgomery, AL, 2University of Georgia, Athens, GA

SAT-442  Colistin Functionalization of Carboxylated Nanoparticles
Candace Graham1, Stephen Petty Valenzuela1, Simead Miller1, Charlesea Bell2, and Todd Giorgio2
1Mercyhurst University, Erie, PA, 2Texas A&M, College Station, TX

SAT-443  Adapting the MiniON Nanopore Platform to Measure the Single-Molecule Movements of a Superhelix
Daniel Huang1, Dmitry Bobrovnikov2, and Taejong Ha4
1Johns Hopkins University, Houston, TX, 2James Madison University, Harrisonburg, VA, 3University of Texas at Austin, TX

SAT-444  Design and Synthesis of Nanoparticle Loaded Nanofiber for Localized Detoxification
David Cadena1, Hao Zhuang2, Oliver Zhang3, Yue Zhang4, and Liyinhe Zheng1
1University of Texas at San Antonio, San Antonio, TX, 2UC San Francisco, San Francisco, CA, 3University of California Davis, Davis, CA, 4University of California, San Diego, CA

David Magnoni1, Christian Shiwan2, and Adam Abate3
1University of California, Davis, CA, 2University of California, San Francisco, San Francisco, CA, 3UC Davis, Davis, CA

SAT-446  Analyzing the Chemical and Physical Properties of Bovine Serum Albumin and Celitim Oxide Nanoparticles Using a Nanosensor Sensor
David Mat1, Sam Bearden1, and Georg-Zhang Yang2
1University of California, Berkeley, Berkeley, CA, 2University of California, Los Angeles, CA

SAT-447  Viscous Fingering and Lateral Flow Parameters in Rapid Salivary Testing Applications
Devon Roux1, Pierce Lieberman1, and Holly Clingen2
1University of Wisconsin, Tempe, AZ, 2University of Colorado, Boulder, Boulder, CO

SAT-448  Horseradish Peroxidase (HRP)-mediated Silver Precipitation for Vascular Endothelial Growth Factor (VEGF) Quantiﬁcation
Dina Shoshanow1, Joshua Kefler1, and Gangi Ghosh2
1University of Michigan, Dearborn, Dearborn, MI

SAT-449  Comparative Deformability and Microﬂuidic Perfusion of Human and Nonhuman Red Blood Cells
Franz Murugan1, Madeleine Lu1,4, Everett Von2,3, and Sergey Shklyapnikov1
1University of Houston, Houston, TX

SAT-450  Study NanoCluster Beacons using NGS Platform
Guillermo Beckmann1, Yu-Ju Chen1, and Tim Yeh2
1University of Texas at El Paso, El Paso, TX, 2University of Texas at Austin, TX

SAT-451  DNA Constellations: A High Throughput Microfluidic Assay for Visualizing DNA Holliday Junctions
Helen Xiao1,2,3,4 and Si Redding1
1UC Berkeley, Berkeley, CA, 2UC, San Francisco, San Francisco, CA, 3Syracuse University, Syracuse, NY

SAT-452  Development of Flexible pH Sensors Based on Electrodeposited IrOx Thin Films
Lillian Thiel1, Isaac Clark1, Paul Menzi1, Wyen-Moore2, and Hung Cao2
1University of Washington, Seattle, WA, 2University of Washington, Bothell, WA

SAT-453  Development of Mn@C-Dot Based T1 MRI Contrast Agents
Jessica Almich1, Daye Lee2, and Jin Xie1
1Wichita State University, Wichita, KS, 2University of Georgia, Athens, GA

SAT-454  A Novel Enzyme Linked Immunosorbent Assay for Magnetic Capture of the Interleukin-6 Biomarker
Jorge Figueroa1, Elena Yarmola2, and Kyle Allen2
1University of Florida, Gainesville, FL, 2University of California, Los Angeles, CA

SAT-455  Development of an Assay for Detecting an Oral Cancer Biomarker Using Surface Enhanced Raman Spectroscopy (SERS)
Lukas Oski1, Sungyol Ha1, Andrew Loeck2, Yi-Shing Lisa Chang2, and Gerard Cote2
1Texas A&M University, College Station, TX, 2Texas A&M Engineering Experiment Station, College Station, TX, 3Texas A&M University, Dallas, TX

SAT-456  Immunohistological Image Analysis of Microprobe Array Targeting Hippocampus
Marcela Val1, Victor Agapo1, and Liang Tang2
1The University of Texas at San Antonio, San Antonio, TX

SAT-457  Oriented Immobilization of Antibodies Through Recombinant Protein-G on Assembled Gold Nanorods for Label-Free Biosensing Applications
Marco Vital1, Victor Agapo1, and Liang Tang2
1The University of Texas at San Antonio, San Antonio, TX

SAT-458  Nanoshells Targeting EGFR Enhance the Sensitivity of ELISA-Based Detection Methods
Margaret Billingsley1, Rachel Nol1, and Emily Day1
1University of Delaware, Newark, DE

SAT-459  Hydrophobic Porous Si Based Photonic Crystals for the Detection of Ethanol During Fermentation
Michael Gutierrez1, Hunter Pauker2, Etienne Palos3, and Brian Toth4
1The University of Texas at San Antonio, San Antonio, TX, 2Texas A&M University, College Station, TX, 3Texas A&M University, College Station, TX, 4University of Houston, Houston, TX

SAT-460  Temperature Rise of Nanoparticle Doped Silicone within a Perfused Phantom
Nanzei Atay1, Ryan Packert2, Nicole Levi-Polyachenko1, and Frances Gayki2
1Worcester State University, Worcester, MA, 2University of Massachusetts, Amherst, MA

SAT-461  Subordinate Oscillator Array Design for Ultrasensitive Mass Detection
Noah Sonne1, John Sterling1, Aldo Glaes1, Joseph Vigilonda1, and Terence Ryan2
1East Carolina University, Greenville, NC, 2University of California, Los Angeles, CA

SAT-462  A Novel Assay of Growth and Stiffness of Cancer Spheroids Using 3D-Printed Microtweezer Device
Norah Cooper1, Devina Jassal2, Alexander Almeida1,3, Zichao Bian4,5, Kevin Cafferkey1, and Katsumi Hoshino1
1University of Connecticut, Storrs, CT, 2University of Connecticut Health Ctr, Farmington, CT

SAT-463  Raman Spectroscopy and Transmission Electron Microscopy of SixGe1-x-Ge-Si Core-Double-Shell Nanowires
Paola Perez1, Fang Wei2, and Emanuel Tuv2
1University of Texas at El Paso, El Paso, TX, 2University of Texas at Austin, Austin, TX

SAT-464  Single-Cell, Single-Molecule Analysis of intracellular Signaling with Quantum Dots
Pranav Maginnis1, Christian Siltanen2, and Adam Abate2
1Case Western Reserve University, Cleveland, OH, 2University of Illinois at Urbana-Champaign, Champaign, IL

SAT-465  Analysis of Particle Collection Methods Using Magnetic Capture in Rat Osteoarthritic Model Samuel Arredondo1, Elena Yarmola1, Yash Shah2, Brittany Pantin1, and Kyle Allen2
1University of Florida, Gainesville, FL

SAT-466  Optimization of Polyethylenimine-Coated Rare Earth Nanoparticle Biocompatibility In Vitro
Sandra Mccloyd1, Haruni Kattan2, Xinru Zhu3, Shuying He4, Vidya Ganga5, Prabhas Moghe6, and Mei-Chen Tan1
1Rutgers, The State University of New Jersey, Piscataway, NJ, 2Singapore University of Technology and Design, Singapore, Singapore

SAT-467  Cell-laden Hydrogel Microdevices Using 3D Printed Microfluidics
Shannon McLoughlin1, Zainab Sunarwasapakh1, Rafed Ramzi2, Stephen Sawyers, and Pranay Somani2
1Sporesense University, Syracuse, NY

SAT-468  Microfluidic Assay of Whole-cell And Nuclear Deformability Using Single-cell Physical and Fluorescent Phenotyping
Trilli Bissau1, Jonathan Lin1, Lilian Peng1, Bonnie Yeh2, and Dino Di Carlo2
1University of California-Los Angeles, Los Angeles, CA, 2California NanoSystems Institute, University of California, Los Angeles, CA

SAT-469  BBB-on-Chip: Optimizing BBB Culture for Microfluidic Modeling of the NVU
Victoria Harbort, Brian Phan1, Roy Samuel1, Jozsef Davis1, Tarun Masimukku1, and Sagnik Basuray1
1New Jersey Institute of Technology, Newark, NJ

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am
Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am
SAT-470 A 3D Printed, Low Cost, High Capacity Bubble Trap for Microluidic Applications
Cristian Almendariz1, Mohammad Raziul Hasan1, and Seth Meade1,2
1The University of Texas at Austin, Austin, TX, 2Emory University School of Medicine, Atlanta, GA, 3Georgia Institute of Technology, Atlanta, GA

SAT-474 Multitelecortical Stimulation Selectively Activates Excitatory Neurons
Alina Helpo1, Susan Koman1, and Max Barthovskiy1
1University of California, San Diego, La Jolla, CA

SAT-478 Interface Design for Seizure Detection in Zebrafilh Larvae
Cristhian Perez1, Thales Guimaraes Pereira2, Marina Gonzales1, Patricia Macedo3, Claudius Mauren Morell4, and Nathalie Papias2
1Georgia Mason University, Fairfax, VA, 2University of Campinas, Campinas, Brazil

SAT-479 Patterns of Motor Cortical Activity Described by the First Latent Dimension Predict Presence of an Object
Daniel Moranz1, Anjelica Herrera1, John Downey2, and Jennifer Cullinger3
1Dalhousie College, Middlebury, VT, 2University of Pittsburgh, Pittsburgh, PA, 3Department of Veterans Affairs Medical Center, Pittsburgh, PA

SAT-480 Microfluidic Assay to Identify Neuril Circuit Changes During Associative Learning
Dina Avbelj1, Darin Laughlin2, and Dirk Absher3
1University of California Berkeley, Los Angeles, CA, 2Polytechnic Institute, Worcester, MA

SAT-481 Developing a Retrograde Labelling Protocol in a Rat Sciatic Model to Measure Loss of Axonal Somatotopy Following Nerve Transection
Emily Jackson1, Nasha Chamado1,1,2,3, Manu Stephen1, Matthew MacEwan2, and Wilson Ray1
1Washington University, Saint Louis, MO

SAT-482 Reaction Times to Intracortical Microstimulation in a Person with Tetraplegia are Similar to that of Peripheral Tactile and Visual Stimuli in Able-Bodied Subjects
Grace Brueggman1, Jeffrey Weiss2,3,4, and Jennifer Cullinger5,6,7
1University of Pittsburgh, Pittsburgh, PA, 2Department of Biomedical Engineering, University of Pittsburgh, Pittsburgh, PA, 3Department of Physical Medicine and Rehabilitation, University of Pittsburgh, Pittsburgh, PA, 4Center for the Neural Basis of Cognition, Pittsburgh, PA, 5Department of Veterans Affairs Medical Center, Pittsburgh, PA

SAT-483 Rest-State Cortical Network Differences Associated with First-Episode Schizophrenia-Psychosis Spectrum
Henry Phaller1, Brian Coffman2, Dean Salisbury3, and Ervin Sejdic1
1University of Pittsburgh, Pittsburgh, PA, 2Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, PA

SAT-484 Oxidative Stress Following Intracortical Microelectrode Implantation
Jacob Ryeen1, Evon Emrley2, Griffin Rial3, Cara Smith2, Seth Makela2, Kaying Chen1,3, He Fang4,2, and Jeffrey Capadona2,3
1Case Western Reserve University, Cleveland, OH, 2Lewis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

SAT-485 The Impact of Brain Micro-Motion on Intracellular Membrane Potentials
Jonathan Duncan1, Swathy Kumar1,1,2,3, Anil Sridharan1, and Hemal Mehta1,2,3
1Arizona State University, Scottsdale, AZ, 2Arizona State University, Tempe, Arizona, 3BrainWorks, AMD, Brazil

SAT-486 Interactions Between Waveform Shape and Visuo-Motor Response Properties in Prefrontal Cortex
Jonathan Scott1, Sanjeev Khatana1, and Matthew Smith1
1University of Pittsburgh, Pittsburgh, PA

SAT-487 Assessment of M-Phenylenediamine for Chronic Glutamate Microsensors
Katherine Skartvedt1, Prabhu Anumugam2, Shabnam Siddiqui2, and Chao Tan1
1Hendrix College, Conway, AR, 2Louisiana Tech University, Ruston, LA

SAT-488 Procedure for Measuring the Respilicity of the Epineurium Sheath Using Rat Sciatic Nerve
Kathleen Finn1, Parza Patel2, Elissa Well2,7, Cynthia Chestek6, John Seymour4, Scott Lempka5, and Tim Brune1
1Hope College, Holland, MI, 2University of Michigan, Ann Arbor, MI, 3University of Alabama, Birmingham, AL

SAT-489 Evaluation of Electrophysiology from Implanted Intracortical Microelectrodes in Rat and Mouse Models
Kaying Chen1, Evon Emrley2, John Herman2, Hillary Bedell2,3, Seth Makela2,3, Jacob Ryeen2,4, and Jeffrey Capadona2,3
1Case Western Reserve University, Cleveland, OH, 2Lewis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

SAT-490 Exploring Living Neural Network Activity via Multitelecelectrode Array
Kyle Stapleton1, Jaden Brandner1,3, Kara Smith1, Lauren Singelmann1, and Nolan Schrader1
1North Dakota State University, Fargo, ND

SAT-491 Biological Signals Processing: Analyzing Neuronal Calcium Signals Using Continuous Wavelet Transform
Lindamay Lai1, Daniel-Claude Perreault1,2, and Brandon LaPallo1
1The University of Texas at Austin, Austin, TX, 2University of Texas Southwestern Medical Center, Dallas, TX

SAT-492 Fabrication of a Timed-Pressure Regulator (TPR) to Enable the Study of Bladder Pain
Marcos Behan1, Neal McQuaid1, Benjamin Goldschmidt1, and Benedict Kolster2
1Duke University, Durham, NC

SAT-493 Protocols for Assessing the Sensory Performance of Peripheral Nerve Macrosystems With Lux Rius1, Jake Bergman2, John O’Malley2,2,3, Nathalie Papias4, and Wilson Rey5
1Washington University in St Louis, St Louis, MO, 2Christopher Newport University, Newport News, VA, 3University of Alabama, Tuscaloosa, AL, 4Washington University School of Medicine, St Louis, MO

SAT-494 Development of Epilepsy-in-a-dish Method for Antiepileptic Drug Discovery
Madison Schanker1, Jing Lu2, Shabnam Ghasvand3, and Tawfik Benkhadri1
1Lafay University, Bethlehem, PA

SAT-495 Investigating the Role of Astrocytes in Neuronal Networks in Vitro
Margaret Schroeder1,2,3,4,5
1University of Pennsylvania, Philadelphia, PA

SAT-496 Electrical Characterization of Softening Encapsulation Materials in Flexible Thin Film Implantable Devices
Kevin Ding1, Alexandra Jozwi-Imre1, and Walter Volz1
1University of Texas at Dallas, Plano, TX, 2University of Texas at Dallas, Richardson, TX

SAT-497 Characteristic Spike-and-Wave Discharges Link Dys tonic Attack Progression and Absence Seizures in EA2 Mouse Model Totttering
Anet Nair1, Russell Carter2, and Timothy Ebner1
1University of Minnesota Twin Cities, Minneapolis, MN

SAT-498 The Effect of Nanopatterned Surfaces on Intracortical Microelectrode Biocompatibility
Nicholas L. Hilborn1, Janak Gaire1, Heui Chang Lee2, Mary Regan3, and Kevin J. Otto1
1Case Western Reserve University, Cleveland, OH, 2Advanced Platform Technology Center, Lewis Stokes Cleveland Department of Medical Affairs Medical Center, Cleveland, OH

SAT-499 Ex vivo Muscle Stimulation In Vitro
Christopher Mondragon1, Diana Escalona Vargas1, Aaron S. Kemp1, Leonidas Iasemidis1, and Linda Lemos Pires1
1Louisiana Tech University, Ruston, LA, 2University of Arkansas for Medical Sciences, Little Rock, AR

SAT-500 The Effect of Nanopatterned Surfaces on Intracortical Microelectrode Biocompatibility
Seth Makela1, Cara Smith2,3, Seth Ryeen2, Jeffrey Capadona2, and Evon Emrley1
1Case Western Reserve University, Cleveland, OH, 2University of Texas at Dallas, Plano, TX, 3University of Texas at Dallas, Richardson, TX

SAT-501 Protocols for Assessing the Sensory Performance of Peripheral Nerve Macrosystems With Lux Rius1, Jake Bergman2, John O’Malley2,2,3, Nathalie Papias4, and Wilson Rey5
1Washington University in St Louis, St Louis, MO, 2Christopher Newport University, Newport News, VA, 3University of Alabama, Tuscaloosa, AL, 4Washington University School of Medicine, St Louis, MO

SAT-502 Development of Epilepsy-in-a-dish Method for Antiepileptic Drug Discovery
Madison Schanker1, Jing Lu2, Shabnam Ghasvand3, and Tawfik Benkhadri1
1Lafay University, Bethlehem, PA

SAT-503 Investigating the Role of Astrocytes in Neuronal Networks in Vitro
Margaret Schroeder1,2,3,4,5
1University of Pennsylvania, Philadelphia, PA

SAT-504 Electrical Characterization of Softening Encapsulation Materials in Flexible Thin Film Implantable Devices
Kevin Ding1, Alexandra Jozwi-Imre1, and Walter Volz1
1University of Texas at Dallas, Plano, TX, 2University of Texas at Dallas, Richardson, TX

SAT-505 Inducing Myelination in Schwann Cells Using Brief Electrical Stimulation In Vitro
Nicole Balmuth1, Erin Patriot1, Christine Schmidt2, and Sahba Mobini2
1University of Florida, Gainesville, FL

SAT-506 The Effect of Nanopatterned Surfaces on Intracortical Microelectrode Biocompatibility
Seth Makela1, Cara Smith2,3, Seth Ryeen2, Jeffrey Capadona2, and Evon Emrley1
1Case Western Reserve University, Cleveland, OH, 2University of Texas at Dallas, Plano, TX, 3University of Texas at Dallas, Richardson, TX

SAT-507 Protocols for Assessing the Sensory Performance of Peripheral Nerve Macrosystems With Lux Rius1, Jake Bergman2, John O’Malley2,2,3, Nathalie Papias4, and Wilson Rey5
1Washington University in St Louis, St Louis, MO, 2Christopher Newport University, Newport News, VA, 3University of Alabama, Tuscaloosa, AL, 4Washington University School of Medicine, St Louis, MO

SAT-508 Development of Epilepsy-in-a-dish Method for Antiepileptic Drug Discovery
Madison Schanker1, Jing Lu2, Shabnam Ghasvand3, and Tawfik Benkhadri1
1Lafay University, Bethlehem, PA

SAT-509 Investigating the Role of Astrocytes in Neuronal Networks in Vitro
Margaret Schroeder1,2,3,4,5
1University of Pennsylvania, Philadelphia, PA
SAT-502  

calcium oscillations in in vitro neuronal cultures after trauma  

Shreya Udani1, Xinlin Chen1, Lucia Cachuecas1, Joseph Moskal1, Jack Phillips1, and John Finan1  
NorthShore University HealthSystemResearch Institute, Evanston, IL, 2Aptinyx, Inc., Evanston, IL

SAT-503  

Novel Application of Spectral Curvature Clustering for Electrode Assignment in SEEG  

Taylor Texta1, 2  
UC San Diego, La Jolla, CA

SAT-504  

Development of UV Laser System to Etch Parylene C At The Micron Scale  

Yousuf Ahsan1, Guoxin Zhang1, Zichao Bai1, and Martin Han1  
University of Connecticut, Storrs, CT

SAT-505  

Exploring Neuro-Immune Interaction in Chronic Migraine  

Sheng Zhou1, Ting He1, and Matthew MacEwan1  
Washington University in St. Louis, Saint Louis, MO

SAT-507  

Effects of Increasing Ionic Concentrations of Media on Cell Viability and Calcium Transport of Mouse ESC Derived-Hhβ Motor Neurons and C2C12 Myotubes.  

Andrew Ross1, Janwow Leal1, and Sheryl Shkolny-Elbert1  
1University of Texas at El Paso, El Paso, TX, 2The University of Texas at Austin, Austin, TX

SAT-508  

Stroke Rehabilitation Therapy Video Game Design  

Anna Heidar1, Andrew Wol1, Cindy Leung1, Clinton T. Ruben1, and Max Lin (Erie Chan)1  
1Stony Brook University, Stony Brook, NY

SAT-509  

Investigating Wheelchair Seating Parameters and Their Effect on Ramp Propulsion  

Andrew Sivaprakasam1,2, Sarah Bass1,2, Deepan Kamaraj1,2, and Andrew Sivaprakasam1,2  
1University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Case Western Reserve University, Cleveland, OH

SAT-510  

Biomechanical Effect of Surgical Positions and Pre-tension Forces on Implanted Graft Stress during Outside-In ACL Reconstruction Surgery: A Simulation Study  

Byeong Chan Choi1, Dai-Goon Kwak2, and Tae Soo Bae1  
1JungAng University, Goseon-gun, Korea, Republic of, 2Catholic Institute for Applied Anatomy College of Medicine, The Catholic University of Korea, Seoul, Korea, Republic of

SAT-511  

Material Wear Analysis of a Novel Surface Modification Technique for Titanium Implants  

Charles Hayes1, Sarah Helms1, and John DesJardins1  
1Clemson University, Clemson, SC

SAT-512  

LIPUS Treatment with Presence of Polymer Microbubbles Induces Osteogenesis in MC3T3 Cells  

Richa Ramdhane1, Connor Watson1, Wonsae Lee1, Xiufei Li1, and Yuan Qin1  
1Stony Brook University, Stony Brook, NY

SAT-513  

Balance Recovery and Gait Adaptations in Response to Medial-Lateral Perturbations  

Daniele Mura1, Francesca Lessin1, Gerardo Noon1, Rahul Sanga1,2, Victoria Smith1, Chris Frames1, and Thomas Lockhart1  
1Arizona State University, Tempe, AZ, 2Chapman University, Irvine, CA

SAT-514  

Bone Plates Covered with Electrospun PDGF Mats  

Renue Bicab1, Danielle Mo1, Matthew MacE1, and Wilson Ray1  
Washington University School of Medicine, St. Louis, MO

SAT-515  

Developing Pressure-Adaptive Shoes  

Payton Tharp1, Sarah McKain2, John Kerley2, Lucas Schmidt2, and Peyton Tharp1  
1University of Maryland, Baltimore County, Baltimore, MD, 2University of North Carolina at Chapel Hill, Chapel Hill, NC

SAT-516  

The Effect Of Anticipatory Postural Adjustments On Balance When Perturbed  

Ding In Kim1, Stephanie Huang1, and He Huang1  
1Virginia Commonwealth University, Richmond, VA, 2University of Virginia, Charlottesville, VA, 3University of Texas Health Science Center at San Antonio, San Antonio, TX, 4Georgia Institute of Technology, Atlanta, GA

SAT-517  

In Vivo Muscle Architecture Data for Musculoskeletal Models of the Human Leg  

Felipe Suntay1, James Charles1, and William Ander1  
1University of Pittsburgh, Pittsburgh, PA

SAT-518  

Compensation In The Forelimb After Body Weight Supported Treadmill Training In Spinal Cord Injury Rats  

Gabrielle Gehron1, Shania Shaji1, Brittany King2, Jaclyn Witko2, and Gabrielle Gehron1  
1University of Pittsburgh, Pittsburgh, PA, 2Case Western Reserve University, Cleveland, OH

SAT-519  

Design and Use of a Bilateral Grip Strength Device for Assessing Forelimb Function in Rodents  

Cutting Karluk1, Alex Reiter1, Ryan Castile1, Peter Andre1, Cheyly Dunham1, Aaron Chamberlain1, and Spencer Lake2  
Washington University in St. Louis, St. Louis, MO

SAT-520  

Effects of Osteoporosis and Bisphosphonate Treatment on the Osseointegration of Titanium Implants in an Aged Rat Model  

Imra Nazir1, Ethan Lack2, Ryan Blitch1, D. Joshua Cohen1, Ziv Schwartz1, and Barbara Bryan1  
1Virginia Commonwealth University, Richmond, VA, 2University of Virginia, Charlottesville, VA, 3University of Texas Health Science Center at San Antonio, San Antonio, TX, 4Georgia Institute of Technology, Atlanta, GA

SAT-521  

The Effects Of Knee-Ankle-Foot Orthosis On The Gait Of Bilateral Achilles Tendon Contractions  

Jensi Patel1 and Hui Wu1  
1Mercer University, Macon, GA

SAT-522  

Variation In Defect Parameters In Aligned Nanofibrous Scaffolds Yields Diverse Strain Attenuation Profiles  

Kimberly Delacruz1, Tania Tommer1, and Robert Maus1  
1New Jersey Institute of Technology, Newark, NJ, 2University of Pennsylvania, Philadelphia, PA

SAT-523  

Modulating Inflammation Through Cartilage-Derived Extracellular Matrix for Potential Treatments of Cartilage Disease  

Maddie Frietch1, Rocky Tsuen1, Haj Li1, and He Shen1  
1University of Pittsburgh: CCMER, Pittsburgh, PA

SAT-524  

Integrin α7 & β1 Signaling Regulates Myoblast Synchronization  

Nishant Kashyap1, Michael McClure1, Joshua Cohen1, Barbara Bryan1, and Zvi Schwartz1  
1Virginia Commonwealth University, Richmond, VA

SAT-525  

The Cardinal Method of High Density Biosensor Display  

Nicholas Witham1,2, Lizhi Pan2, Ming Liu2, and He (Helen) Huang2  
1University of Illinois at Urbana-Champaign, Urbana, IL, 2University of Texas Health Science Center at Houston, Houston, TX, 3Exponent, Inc., Philadelphia, PA

SAT-526  

Lubricating Properties of Purified Bovine Lubricin  

Nina Linn1,2, Delphine Dean2, Kerry Danelson2, and Tadhg O’Gara2  
1University of North Carolina at Chapel Hill, Chapel Hill, NC, 2University of Texas Health Science Center at Houston, Houston, TX, 3Sonoran Biosciences, Inc., Chandler, AZ

SAT-527  

Revision Reasons and Damage Modes of Metallic Augments Used in Total Knee Arthroplasty  

Paula R. Limberg1, Gemmya B. Higgs1, Daniel W. MacDonald2, and Steven M. Kurtz1  
1University of Illinois at Urbana-Champaign, Urbana, IL, 2Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

SAT-528  

Assessment of EEG to Determine Cortical Activity during Walking with a Robotic Knee Exoskeleton  

Rachel Bell11, Zachary Lerner1, Diane Damason1, and Thomas Buley1  
1National Institutes of Health, Bethesda, MD, 2University of Rhode Island, Kingston, RI

SAT-529  

Analysis Of Postural And Electromyographic Differences In Adolescents With Idiopathic Scoliosis: A Pilot Study  

Rachel Teater1, Michael De Gregorio1, Nick Choi1, Emily Miller1, Kerry Daniels1, and Todd Lillicra1  
1The Ohio State University, Columbus, OH, 2Wake Forest School of Medicine, Winston-Salem, NC, 3University of Maryland, College Park, MD, 4Middlebury College, Middlebury, VT

SAT-530  

Relationship Of Muscle Activation Amplitude With Elongation And Mechanical Properties Of The Achilles Tendon  

Lilana K. Fogel1, Jennifer Zellers1, Sheridan Parker2, and Karin Grävare Silbernagel1  
1Johns Hopkins University, Baltimore, MD, 2University of Delaware, Newark, DE

SAT-531  

A Comparative Analysis of Medial Tibial Strains in Mobile and Fixed Bearing Total Knee Replacements  

Jaci Alumbaugh1, Kayla Gerkov1, Erin Minervini1, and Renée Rigg1  
1Rose-Hulman Institute of Technology, Terre Haute, IN

SAT-532  

Characterization of Antimicrobial Susceptibility Of Bacterial Biofilms On Cancellous Bone  

Rex Moore1, Victoria Sabapathy Badri1, Sandra Zamer1, Alex McMahan1, and Deck Overstreet1  
1Arizona State University, Tempe, AZ, 2University of Arizona, College of Medicine, Phoenix, AZ, 3Sonoran Biosciences, Inc., Chandler, AZ

SAT-533  

Determining the Location of Stress and Strain on Proximal Tibia Following Reconstruction  

Rita Macr1  
1Rowan University, Glassboro, NJ

SAT-534  

Using Affinity Interactions to Improve Antibiotic Activity In PMMA Bone Cement  

Sara Hurley11, Erika Cyphert2, and Horst von Recum1  
1Fordham University, Bronx, NY, 2Case Western Reserve University, Cleveland, OH
SAT-536 The Preliminary Development of a Novel Lightweight Transradial Prosthetic Able Of Withstanding Mechanical Forces during Human Falls
Sarah McIlroy1, Alaid Alkali1, and Jeffrey La Bella1
1Arizona State University, Tempe, AZ, 2Mayo Clinic Arizona, Tempe, AZ

SAT-537 Gait Compensation While Walking in an Immersive Virtual Environment With and Without Coupled Treadmill-Based Perturbations
La R. Rent1, Scott Beardsley1
1Marquette University, Milwaukee, WI

SAT-559 A Novel Approach For Piloting Evaluation In Lower Limb Amputees
Vishwani Vempala1, Ming Lou1, and He (Helen) Huang1
1University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC, 4“Assist Equipment Development, Inc., Cary, NC

Track: Undergraduate Research, Design & Leadership Undergraduate-Other/Non-specified

SAT-560 Demineralization of Porcine Cortical Bone to Assess in Structural collagen
Amesha Greer1, Francois Sul1, and Joanna McKittrick2
1North Carolina Agricultural & Technical State University, Greensboro, NC, 2University of California, San Diego, La Jolla, CA

SAT-561 mHealth Smartphone Application to Measure Risky Driving Behavior and Predict Crashes
Amsha Dave1, Isaac Freed1, Benjamin Espin1, Shawn Stanley1, Tom Pohida2, Johnathon Ehsani3, and Bruce Simons-Morton4
1George Mason University, Fairfax, VA, 2Johns Hopkins Bloomberg School of Public Health, Minneapolis, MN, 3Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, 4University of Texas Health Science Center, Houston, TX

SAT-562 Designing a Thigh Fitness Band with an Integrated Game that Tracks Muscle Activity to induced Traumatic Brain Injury Mechanisms
Chelsea Gibbs1 and Tara L. Deans1
1Florida Gulf Coast University, Fort Myers, FL

SAT-563 Menopause Susceptibility to Pathological Cardiac Remodeling
Dacilia Carter1
1University of Arizona, Tucson, AZ

SAT-564 Altered Reality Assisted Bronchoscopy
Edward Peterson1 and Zhen Zhu1
1Pfayyetteville State University, Fayetteville, NC, 2East Carolina University, Greenville, NC

SAT-565 Evaluating the Properties of a Gallium- Conjugated Siderophore Complex as an Antibacterial Treatment
Connor Nguyen1, Demetri Cendr1, Parmida Eakeshaff1, Paul Har1, Cameron Ham1, Rae Herman1, Margo Huffman1, Faith Lee1, and Taylor Liu1
1University of Maryland, College Park, College Park, MD

SAT-566 Effects of Ambient Room Temperature Fluctuations on C57BL/6 Mice on Sensori- Locomotor Behavioral Outcomes
Hana Ullman1, Jessica Parnawi1, Elizabeth Engler-Chiurazz1, and Candice Brown1
1West Virginia University, Morgantown, WV

SAT-567 Effect of Salt Component on the Properties of Flow-Assembled Chitosan Membranes
Jesse Williams1, Christopher Kaud1, and Xiaolong Luo1
1The Catholic University of America, Washington, DC

SAT-568 Effect of ECM Derived Hydrogel on Peripheral Nerve Injuries
Kathryn LaBeille1, Ruben Hartogy1, and Christine Heisler1
1University of Pittsburgh, Pittsburgh, PA

SAT-569 Barcoding Cells for Multiplexed CyTOF Staining Panel Optimization
Amy Van Deusen1, Irene Cheng1, Chris Dappmann1, and El Zandali1
1University of Virginia, Charlottesville, VA, 2University of Washington, Seattle, WA

SAT-570 Tissue Simulational Materials for Studying Blast- Induced Traumatic Brain Injury Mechanisms
Katya Walsh1, Anne Werner1, Joseph Karam1, Ricardo Mejias-Aranda1, Adam Will1, and Michaela Am Tarti1
1New Mexico Institute of Mining and Technology, Socorro, NM, 2Michigan State University, East Lansing, MI, 3San Antonio Military Medical Center, San Antonio, TX

SAT-571 Optimizing Prosthetic Limbs
Kwak Eun Kyung1 and Anthony Gripp1
1Florida Gulf Coast University, Fort Myers, FL

SAT-572 The Effect of Optical Flow on Human Upright Posture Control in a Virtual Reality Environment
Marah Richards1, Brian Sylsby1, and Chen-Chung Lin1
1University of North Carolina at Chapel Hill, Chapel Hill, NC, 2East Carolina University, Greenville, NC

SAT-573 Patient-Specific Cerebral Aneurysm Fixtures for Endovascular Coil Design
Ryan Hess1
1Arizona State University, Tempe, AZ

SAT-574 Assembly of Chitosan Membranes Cross-linked with Sodium Triply phosphate in Microfluidics
Saba Ow1en1 and Xiaoliang Luo1
1The Catholic University of America, Washington, DC

SAT-575 Regulatory T Cells Delay Beta Cell Death by Suppressing CD8+ T Cell Cytotoxic Function
Samuel Rosenberg1, Qian Xu1, Mustafa Cagdas Ozturk1, and Ali Cinar1
1Illinois Institute of Technology, Chicago, IL

Sarah Mithi1, Amanda Alexander-Bryant1, Jerome McClendon1, and Jordan Glimore1
1North Carolina State University, Boone, NC, 2Clemson University, Clemson, SC

SAT-577 Using Bluetooth Proximity in Creating a Wearable Fitness Tracker for a Family-based Child Obesity Prevention Strategy
Steven Cimarosc1, Brandon Zhuang1, Anna Heiker1, Vinodh Mugaswala2, and Min Lin1
1Stony Brook University, Stony Brook, NY

SAT-578 In Vivo Osmotic Swelling of the Periodontal Ligament
Theresa Thruston1, David Nedrelow2, Kihore Damodaran1, and Victor Baranac1
1Oregon State University, Corvallis, OR, 2University of Minnesota, Minneapolis, MN

SAT-579 Urinary Intensity Vibration Reduces the Amount of Lipids Per Fat Cell in a Diabetic Environment In ST3A1-L1 Differentiated Mature Adipocytes
Yue Long1, Eliz1, Mmegia Hav21ard1, Robert Bruce1, Karen Weng1, Vitahtan Patel1, Clint3, and Melin (Eli) Chan1
1Stony Brook University, Stony Brook, NY

Track: Undergraduate Research, Design & Leadership, Respiratory Bioengineering Respiratory Bioengineering-Undergraduate

SAT-580 Static Dimensional Comparison of Low-Fidelity Airway Trainers to Human Morphometrics
Kathleen Kemp1, August Blackburn1, Robert De Lorenzo1, and Megan Blackburn1
1University of Pittsburgh, Pittsburgh, PA

SAT-581 Infliximab ER Stress with Downstream Effect on Mitochondrial Fragmentation and Mitochondrial Biogenesis in Human Airway Smooth Muscle Cells
Natalia Marin Methael1, Philippe Dellamotte1, and Gary Swick2
1Mayo Clinic, Rochester, MN

SAT-582 Novel Airway Epithelium Model Using Electrosprun Decellularized Lung Extracellular Matrix
Kewherra Shankar1, Bethany Young1, and Rebecca Heil Virginia Commonwealth University, Richmond, VA

SAT-583 Vocal Fold Identification in Porcine Models Using Computed Tomography for Bioengineering Mechanics
Robert Teet1n1, Nathi1 Baya1, Joseph P1earson1, Sergio Montelongo1, Gregory DiN1, and Taiya Go111
1University of Texas at San Antonio, San Antonio, TX, 2San Antonio Military Medical Center, San Antonio, TX

SAT-584 Epithelial Modulation of Fibroblast Function in Airway Organoids
Aiao Yin1, Ali Tan2, and David Tsang1
1Cornell University, Ithaca, NY, 2Mayo Clinic, Rochester, MN

Track: Undergraduate Research, Design & Leadership, Stem Cell Engineering Stem Cell Engineering-Undergraduate

SAT-585 Harnessing In Vivo Biochemical and Biophysical Cues for Stem Cell Biomaterial Ligation
Anna Gil1, Julie Sh1, Kewin W1, and Yong Yang1
1West Virginia University, Morgantown, WV

SAT-586 Effects of Immunosuppressive Drugs on the Survival and Beating Patterns of hPSC Derived Cardiomyocytes
Boon Hien1, Bonnie Arendt1, Sarah Carenato-Peral1, Frank Sec1, and Timotheo N1
1University of Illinois at Urbana-Champaign, Champaign, IL,4Mayo Clinic, Rochester, MN

SAT-587 Engineering a New Docking Site in Stem Cells to Easily Target Genetic Circuit Integration
Charles Han1, Chen Se1, and Sean L. Dean1
1University of Utah, Salt Lake City, UT

SAT-588 Engineering a Gene Expression Driver to Uncover Novel Signals Directing Stem Cell Niche Morphogenesis
Julia Har1, Lauren Anllo1, and Stephen Dinn1111
1Pennsylvania State University, West Chester, PA, 2University of Pennsylvania, Philadelphia, PA

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North
SAT-623 Improving Force Generation of In Vitro Skeletal Tissue Models
Oluwaseun Ayoji, Dnr Aidyn, and Taher Saei
The Pennsylvania State University, University Park, PA, USA; University of Illinois at Urbana-Champaign, Urbana-Champaign, IL

SAT-624 Designing and Characterizing Fibrin Microthread Composite Layers
Patricia L. Garza, Megan O’Brien, Marianne Kandel, and George O. Stroyn
Florida International University Honors College, Miami, FL, USA; Worcester Polytechnic Institute, Worcester, MA

SAT-625 In Vitro Model of Breast Cancer Metastasis in Bone Microenvironment
Roger Charlton, Vera May, Anne Bovles, and Ashutosh Agarwal
University of Miami, Miami, FL

SAT-626 In Situ Production of a Biomimetic Lung-on-a-Chip in a Microfluidic Delivery System
Rosemary Clare Burke, Shiny-Amya Priya Raghu, Sean Murphy, and Adam R. Hall
Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, USA; University of Texas at Austin, Austin, TX, USA; Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, USA

SAT-627 Effect of PNS-ECM Hydrogel on Functional Recovery after Peripheral Nerve Injury
Ruben Hartogs, Christian Heisler, Kathryn LaBelle, Travis Prest, and Bryan Brown
University of Pittsburgh, Pittsburgh, PA

SAT-628 Encapsulation of Mesenchymal Stromal Cells in Alginate for the Treatment of Osteoarthritis
Sarah Saler
Rutgers University, Summit, NJ

SAT-629 Complex 3D Tissue Assembly Using Flat High-Density Cell Sheets
Shayla Collier, Uma Balakrishnan, and Lance Davidson
University of Pittsburgh, Pittsburgh, PA

SAT-630 The Effect of Spinach and Green Tea on Wound Healing
Sheethal Ajakkala, Aishwaria Devi, and Ronke Olabisi
University of Pittsburgh, Pittsburgh, PA

SAT-631 Nutritional Supplementation for Myoblast Proliferation and Differentiation
Sudeepth Vedula, Daniel Broze, Joseph Freeman, Naveen Padliya, and Meghna Deol
Rutgers, the State University of New Brunswick, Piscataway, NJ, USA;UMCNS RENS Technology Inc., Cedar Knolls, NJ

SAT-632 Optimization and Characterization of 3D Human Prepubertal Testis Organoid System
Sue Zang, Nima Pourabbas, Zareneh, Anthony Atalay, and Hossein Seddoh-Ardabili
University of Rochester, Rochester, NY, USA; Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, USA

SAT-633 A Three-Dimensional Neural Spheroid Model for Studying Ischemic Stroke
Taylor Fulgione, Liana Kramer, Samantha Zambuto, Meghan Buonanno, Vito Cseti, Liane Le, Aurora Washington, and Diane Hoffman-Kim
Brown University, Providence, RI; Georgetown University, Washington, DC

SAT-634 Modeling Dual Delivery of Proangiogenic Peptides from Hydrogel Biomaterials for Neovascularization of Ischemic Tissue
Wesley Lo
Wexin Institute of Technology, Chicago, IL

SAT-635 Diffusivity Analysis of Hydrogels for Conformal Coating and Transplantation of Islets of Langerhans
Laura Morales, Vita Marzetti, and Alice Tumel
University of Miami, Coral Gables, FL, USA; University of Miami, Miami, FL; Politecnico di Milano, Milano, Italy

SAT-636 Effect of Minerals on Human Mesenchymal Stem Cells
Madhnyun Maunawilla, Lauren Cress, Jake Carrow, and Ashleigh Gehawar
Texas A&M University, College Station, TX

SAT-637 3-D Bioprinted Cancer Models & Spatial Mapping of 3-D Printed Constructs
Jeffrey Chen, Wesam Malihan, Myath Adlouni, Rahul Kumar, Christian Bergh, Jenny Hong, Rachel Krause, Jose Rosa, Quinn Niguyea, Samantha Elwin, Jemblem Albakri, James Lilly, Charles Peal, and Ashleigh Gehawar
Texas A&M University, College Station, TX

SAT-638 Adapalene Loaded Polymeric Nanoparticles as a Novel Therapeutic for the Treatment of Amyotrophic Lateral Sclerosis in SOD1 G93A Mouse Model
Collin Teague, David Medina, Eugene Chung, Ricki Coton, Robert Brown, and Rachael Dinardo
Arizona State University, Phoenix, AZ; Barrow Neurological Institute, Phoenix, AZ

SAT-639 Revisiting CSD Propagation Characteristics with Microelectrode Arrays: From Spiking to Field Potentials
Daniel Rivera, Ariana Mashikian, Darlene Ramos, Yachiros Mami, and Jorge Bera
Florida International University, Miami, FL, USA; University of Minnesota, Minneapolis, MN

SAT-640 Targeted Removal of Free Hemoglobin Using Zinc Chelating Resin
Elisabeth Kebabli, Kati Sommer, Rosemary Burke, Daniel Kim-Shapiro, Adam Hal, and Elahar Khabab
Virginia Tech, Blacksburg, VA, USA; Wake Forest University Health Sciences, Winston-Salem, NC, USA; University of Texas, Austin, TX; Wake Forest University, Winston-Salem, NC

SAT-641 Identification of Volatile Metabolic Biomarkers Correlated to Changes in Hormone Levels
Jarrett Eshrial and Barbara Smith
Arizona State University, Tempe, AZ

SAT-642 Selective Binding of BSA in a Silica Matrix in the Presence of Carbon Black
Monica Robles, Carolina DeSantiago, Suprorno Ray, Julia Rincon, and Thomas Rother
California State University, Long Beach, Long Beach, CA, USA; Rice University, Houston, TX; Texas A&M University at El Paso, El Paso, TX

SAT-643 Dantrone Suppresses Calciﬁcation by Valve Intestinal Cells
Vesna Pervan
University of Miami, Piscataway, NJ; K. Jane Grande-Alfaro
Clear Lake High School, Houston, TX, USA; Rice University, Houston, TX
<table>
<thead>
<tr>
<th>PROGRAM AT-A-GLANCE—THURSDAY</th>
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<tbody>
<tr>
<td><strong>TRACK</strong></td>
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<tr>
<td>BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY</td>
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<td><strong>STEM CELL ENGINEERING</strong></td>
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<tr>
<td><strong>UNDERGRADUATE RESEARCH, DESIGN &amp; LEADERSHIP</strong></td>
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<td><strong>OTHER</strong></td>
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## Schedule At-A-Glance

### FRIDAY | OCTOBER 13, 2017 (continued)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>11:15 am – 1:00 pm</td>
<td>Lunch on Own</td>
<td></td>
</tr>
<tr>
<td>11:30 am – 1:00 pm</td>
<td>AEMB Annual Reception <em>(tickets required-affiliate event)</em></td>
<td>123</td>
</tr>
<tr>
<td>11:30 am – 1:00 pm</td>
<td>Women in BME Luncheon <em>(ticket purchase required)</em></td>
<td>West Ballroom 301A</td>
</tr>
<tr>
<td>1:00 pm – 3:00 pm</td>
<td><strong>INDUSTRY SESSION</strong></td>
<td>125AB</td>
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<tr>
<td></td>
<td>Clinical Innovators Spotlight</td>
<td></td>
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<tr>
<td>1:15 pm – 2:45 pm</td>
<td><strong>PLATFORM SESSIONS—FRI-2</strong></td>
<td>18 concurrent sessions</td>
</tr>
<tr>
<td>1:15 pm – 2:15 pm</td>
<td>Graduate School Part II: You’re in Graduate School, Now What!</td>
<td>124AB</td>
</tr>
<tr>
<td>1:15 pm – 2:45 pm</td>
<td>Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings</td>
<td>122C</td>
</tr>
<tr>
<td>1:15 pm – 2:45 pm</td>
<td>International Symposium on Biomedical Engineering</td>
<td>122A</td>
</tr>
<tr>
<td>1:30 pm – 4:30 pm</td>
<td>BMES-NSF Special Session on CAREER and UNSOLICITED Awards</td>
<td>121ABC</td>
</tr>
<tr>
<td>1:45 pm – 3:15 pm</td>
<td>BMES Undergraduate Student Design Competition</td>
<td>128AB</td>
</tr>
<tr>
<td>2:45 pm – 3:00 pm</td>
<td>BMES Careers in Industry II</td>
<td>124AB</td>
</tr>
<tr>
<td>2:45 pm – 3:30 pm</td>
<td>POSTER VIEWING WITH AUTHORS &amp; Refreshment Break</td>
<td>North 300</td>
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<tr>
<td>3:00 pm – 4:00 pm</td>
<td>BMES Membership Committee Meeting</td>
<td>127C</td>
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<tr>
<td>3:00 pm – 5:00 pm</td>
<td><strong>INDUSTRY SESSION</strong></td>
<td>125AB</td>
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<td>Investment Pitches and Partnering</td>
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<tr>
<td>3:30 pm – 5:00 pm</td>
<td><strong>PLATFORM SESSIONS—FRI-3</strong></td>
<td>18 concurrent sessions</td>
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<tr>
<td>3:30 pm – 5:00 pm</td>
<td>Symposium in Honor of Dr. and Mrs. Athanasiou</td>
<td>122A</td>
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<tr>
<td>3:30 pm – 4:30 pm</td>
<td>Design Competition Judges</td>
<td>126A</td>
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<tr>
<td>5:15 pm – 6:15 pm</td>
<td><strong>PLENARY SESSION</strong></td>
<td>North Ballroom BCD</td>
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<td>Diversity Plenary Lecture</td>
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<tr>
<td>6:30 pm – 8:30 pm</td>
<td>University Receptions <em>(affiliate event)</em></td>
<td>Sheraton Grand Phoenix</td>
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<tr>
<td>8:30 pm – 10:30 pm</td>
<td><strong>BMES DESSERT BASH</strong></td>
<td>Arizona Science Center</td>
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### SATURDAY | OCTOBER 14, 2017

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<td>7:00 am – 2:00 pm</td>
<td>Registration</td>
<td>Convention Center</td>
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<tr>
<td>8:00 am – 9:30 am</td>
<td><strong>PLATFORM SESSIONS—SAT-1</strong></td>
<td>17 concurrent sessions</td>
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<tr>
<td>8:00 am – 9:30 am</td>
<td>Undergraduate Research, Design &amp; Leadership Orals #1</td>
<td>226C</td>
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<tr>
<td>8:00 am – 9:30 am</td>
<td>BMES-NSF Special Session on Graduate Research Fellowships Program</td>
<td>121ABC</td>
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<tr>
<td>9:00 am – 10:00 am</td>
<td>AEMB Public Policy Session—How to Advocate for Biomedical Research Funding <em>(affiliate event)</em></td>
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<tr>
<td>9:30 am – 1:00 pm</td>
<td>Exhibit Hall Open</td>
<td>North 300</td>
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<tr>
<td>9:30 am – 10:15 am</td>
<td>POSTER SESSION</td>
<td>North 300</td>
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<tr>
<td>10:30 am – 1:45 am</td>
<td><strong>PLENARY SESSION</strong></td>
<td>North Ballroom BC</td>
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<td>Rita Schaffer Young Investigator Lecture &amp; Student Award Winners</td>
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<tr>
<td>11:45 am – 1:15 pm</td>
<td>Lunch on Own</td>
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<tr>
<td>12:30 pm – 3:30 pm</td>
<td>BMES Board of Directors Meeting</td>
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<td>1:30 pm – 3:00 pm</td>
<td><strong>PLATFORM SESSIONS—SAT-2</strong></td>
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<td>1:30 pm – 3:00 pm</td>
<td>Undergraduate Research, Design &amp; Leadership Orals #2</td>
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<td><strong>PLATFORM SESSION—SAT-3</strong></td>
<td>11 concurrent sessions</td>
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<td>3:15 pm – 4:45 pm</td>
<td>Undergraduate Research, Design &amp; Leadership Orals #3</td>
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**CC = Convention Center • SG = Sheraton Grand**

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<tr>
<th>PLENARY SESSION</th>
<th>PLATFORM SESSION</th>
<th>POSTERS</th>
<th>SPECIAL SESSIONS</th>
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<td>STUDENT/EARLY CAREER</td>
<td>EXHIBITS</td>
<td>SPECIAL EVENTS</td>
<td>COMMITTEE MEETINGS</td>
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