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2019 ANNUAL MEETING

October 16–19, 2019

Pennsylvania Convention Center

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Biomedical Engineering at Carnegie Mellon University

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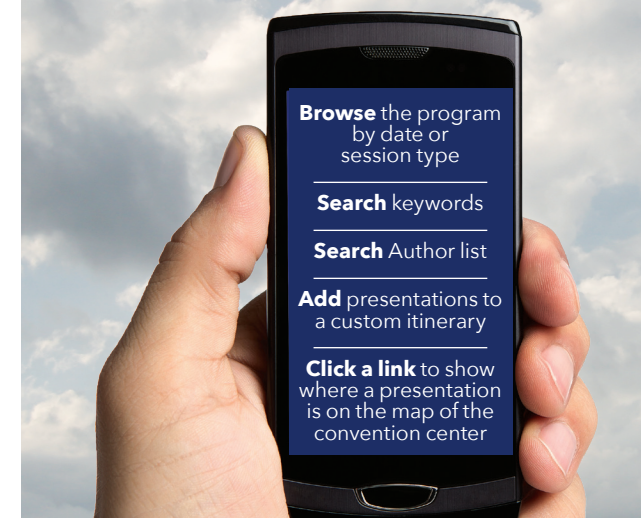
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AUTHOR INDEX

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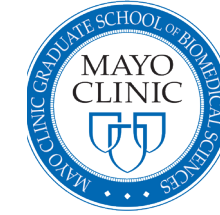
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Dawn Elliott, PhD

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Connecting Communities: Bioengineering Locally and Globally

Welcome to Philadelphia and the 2019 Annual Meeting of the Biomedical Engineering Society (#BMES2019). Thank you for making 2019 a record-breaking year for the Biomedical Engineering Society! We have broken records for numbers of attendees at our Annual Meeting, for numbers of abstracts submitted (nearly 4,000!), and for sponsors supporting our Society's meeting.

The 19 research tracks represented at this meeting show the incredible diversity of work being done in our field today. This fundamental and translational research will positively benefit the lives of people all over the globe.

With our Annual Meeting theme, "Connecting Communities: Bioengineering Locally and Globally" this meeting will build on the history of biomedical engineering to explore where biomedical engineering research and education will evolve in the future. The theme has a two-fold concept:

- ❑ Connecting research communities to create transdisciplinary projects with greater impact and translational potential, and
- ❑ Connecting education and outreach communities locally and globally to share best practices in developing the next generation of biomedical engineers. The vision includes highlighted research sessions and workshops that are jointly organized by multiple tracks, as well as showcasing educational innovation and outreach programs.

As we look at our Annual Meeting with 5,000+ in attendance, and a Society with more than 8,000 members, we appreciate the value of supporting these communities.

Be sure to use the many networking opportunities over the next four days to expand your cohort of colleagues. In particular, don't miss the Friday Night Dessert Bash at the Franklin Institute Science Museum. The renowned venue will be a special place to celebrate your work and to connect with new people.

Make sure to network with your colleagues and intentionally greet and mentor some new ones. And work time into your schedule to listen to talks outside your area of expertise. Going outside your normal comfort zone will reap rewards for your career going forward.

Over the next four days, please give special attention to our impressive line-up of keynote speakers. The plenary sessions kick-off Thursday morning with Christopher Chen, MD, PhD, delivering the Robert A. Pritzker Distinguished Lecture. A BMES Fellow, Dr. Chen's research focuses application of microfabrication and nanotechnology to cell and tissue engineering, and regenerative medicine. On Thursday evening, Steven D. Abramowitch, PhD, University of Pittsburgh, will deliver the Diversity Lecture. Dr. Abramowitch will present a case-study highlighting the critical role leadership plays in diversity and inclusion and the sustained impact that can result from principled advice to junior faculty.

BMES is delighted to collaborate once again with NIH on the NIBIB Lecture Friday morning featuring Rebecca Richards-Kortum, PhD, Department of Bioengineering, Rice University. Rebecca Richards-Kortum's research and teaching focus is on the development of low-cost, high-performance technologies for remote and low-resource settings. She is known for providing vulnerable populations with access to life-saving health technologies that address diseases and conditions that cause high morbidity and mortality, such as cervical and oral cancer, premature birth, sickle cell disease and malaria.

Friday evening, Bruce Levine, PhD, the Barbara and Edward Netter Professor in Cancer Gene Therapy at the University of Pennsylvania, will deliver the Wallace H. Coulter Award for Healthcare Innovation Lecture. Dr. Levine will be using genetically engineered immunity to treat untreatable cancers and the road forward for patient access to these uniquely personal cellular therapies.

Finally, Saturday morning will feature the Rita Schaffer Young Investigator Lecture and the BMES Mid-Career Award Lecture. tk, will present the Rita Schaffer talk, and tk of tk, will deliver the Mid-Career lecture. We look forward to these award-winning lectures with great anticipation as these visions of the future from young and mid-career investigators are so engaging. I encourage you to attend and perhaps apply for the awards in the future.

Join me in thanking our Conference Co-Chairs Jason Burdick, Alisa Morss Clyne and Ruth Ochia for their outstanding efforts. Also be sure to thank our extraordinary BMES Staff for ensuring this conference is fantastic and for advancing all of our BMES programs throughout the year. We also thank the National Science Foundation and the National Institutes of Health for their continued sponsorship and contributions to our program, and all of our other sponsors. Finally, I thank you, our meeting attendees, for bringing your research to this conference and your dedication to the profession of Biomedical Engineering – together we will make the world a better and healthier place.





Jason Burdick, PhD
Annual Meeting Co-Chair
University of Pennsylvania



Alisa Morss Clyne, PhD
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Ruth Ochia, PhD
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We'd like to thank the track chairs, reviewers and session chairs for all of their hard work in the development and implementation of the program this year. They had their work cut out for them this year with a record number of abstracts (nearly 4,000) and exhibitors (almost 150). This year there will be more than 975 oral presentations and about 2,900 posters. Thanks to all the BMES membership for submitting so many great papers and for now attending the meeting.

Finally, special thanks to all the BMES staff and administrators that have contributed to organizing such a great meeting. We especially thank Annual Meeting Director Debby Tucker for her tireless efforts towards this meeting.

We look forward to seeing you in Philadelphia!

Jason Burdick

Alisa Morss Clyne

Ruth Ochia



Welcome to Philadelphia and the 2019 Annual meeting of the Biomedical Engineering Society!

This meeting emphasizes the theme "Connecting Communities: Bioengineering Locally and Globally" with a joint effort from three local Bioengineering programs: UPenn, Drexel, and Temple. Our theme has a two-fold concept: (1) connecting research communities to create multidisciplinary projects with greater impact and translational potential, and (2) connecting education and outreach communities locally and globally to share best practices in developing the next generation of biomedical engineers. We encourage you to explore the rich culture of the city of Philadelphia, including historical monuments such as Constitution Hall, educational resources such as the Franklin Institute, and creative spaces such as the Philadelphia Museum of Art. We are sure these experiences will inspire BMES Annual Meeting attendees to transform the future!

We are proud to present an outstanding series of plenary sessions. The Pritzker Distinguished Lecture Award, the premier award of our society, will be celebrated through a lecture by Dr. Christopher Chen from Boston University. Dr. Chen is a world leader in mechanobiology who has also made seminal contributions in stem cell research. The NIBIB lecturer will be global health pioneer Dr. Rebecca Richards-Kortum from Rice University. The Wallace H. Coulter Award for Healthcare Innovation lecture is Bruce Levine, who developed synthetic immune cells (CAR T-cells) to attack cancer. As BMES strongly supports our diverse community, we welcome our LGBT & Friends speaker: PA Representative Brian Sims; Minorities Lunch speaker: Dr. Marta Villarraga from Exponent, Inc.; and our Diversity Award Lecturer: Dr. Steven Abramowitch from the University of Pittsburgh.

We are happy to report more than 20 concurrent scientific sessions, in addition to numerous special sessions and workshops planned for this year's meetings. This includes a series of seminars on Health Disparities ranging locally and globally, and a new session on bioengineering women's health. We also have special sessions targeted to graduate and undergraduate students, such as the BMES Medtronic Student Design Competition and new BlazeDesign Workshop. Additionally, local high school students will explore bioengineering through a High School Expo and Poster Competition on Thursday.



Christopher Chen, MD, PhD

Thursday, October 17, 2019
10:15 am–11:30 am
Terrace Ballroom 2–4
Pennsylvania Convention Center



Steven D. Abramowitch, PhD

Associate Professor
 Bioengineering Department,
 Clinical and Translational Science Institute
 Swanson School of Engineering
University of Pittsburgh

Thursday, October 17, 2019
5:30 pm–6:30 pm
Terrace Ballroom 2–4
Pennsylvania Convention Center

Emerging from Ignorance

As a suburban, white, middle-class child born in the post-civil rights era, I grew up with the blissful notion that I lived in a country of equal opportunity. After all, we're taught that the laws give equal rights to everyone. I happily went about my days playing kick-the-can, watching space shuttle launches, and wishing that I could be the next Karate Kid. Through college and graduate school, essentially nothing existed outside of my immediate sphere of influence because there was little time for anything else. The next phase of my academic career was all about writing grants, publishing, and figuring out how to teach. Thus, when I was personally confronted with the inequalities that actually existed in my adult world, it was like a cold slap to the face of the socially ignorant child that was still living inside me. I share this because I suspect that this is not an uncommon scenario. What was uncommon, however, was the response of my mentors who encouraged me to make these issues a priority if I felt passionately about them. Instead of the more typical "wait until you're tenured" or "there is no money in that type of work" advice that most junior faculty receive, I was fortunate to be in an environment that enabled me to emerge from my ignorance. This has led to an academic career focused on women's health research, creating an inclusive academic culture, performing community outreach, and, now, challenging undergraduate engineering students to emerge as more globally-minded and socially conscious engineers. This talk is a case-study to highlight the critical role that leadership plays in diversity and inclusion and the sustained impact that can result from principled advice to junior faculty.

Steven Abramowitch is an Associate Professor of Bioengineering and William Kepler Whiteford Faculty Fellow in the Swanson School of Engineering at the University of Pittsburgh. There, he is the director of the Translational Biomechanics Laboratory and CampBioE, a summer camp program for middle and high school students that has been running for more than 10 years and specifically aims to provide opportunities for underserved students. He is the co-PI of two major NSF awards that are aimed at creating opportunities and environments to ensure the success of underrepresented and underserved students in Engineering at both the undergraduate and graduate levels. He also currently shares PI status on two NIH R01s focused on female pelvic health related issues. He has dedicated his research career to improving the quality of life for women suffering from pelvic floor disorders and his research has resulted in more than 60 refereed journal articles, 25 refereed conference papers, 7 book chapters, and 160 conference abstracts. Those works have been cited over 4000 times resulting in an h-index of 32.

Dr. Abramowitch is and has been the research mentor for a number of underrepresented PhD students and has been repeatedly recognized by his institution for his commitment to mentoring and service related to diversity.



Rebecca Richards-Kortum, PhD

Malcolm Gillis University Professor
Department of Bioengineering

Rice University

Thursday, October 18, 2019

10:15 am–11:15 am

**Terrace Ballroom 2–4
Pennsylvania Convention Center**

Global Bioengineering Partnerships to Improve Health in Medically Underserved Communities

Most of the world receives health care in low-resource settings, yet medical technologies are designed to be used mainly in high-resource settings, where designers take for granted basic infrastructure that supports their safe use and effective distribution. The corridors of many hospitals in low-resource settings are lined with donated medical equipment, but up to three-quarters of these devices do not work, often due to lack of spare parts or consumables. As a result, most of the world's population lacks access to life-saving technologies developed decades ago, including infant incubators, oxygen concentrators, and simple laboratory diagnostics. In the US, high costs of technology are a significant barrier to equitable access to quality care.

This talk will highlight the critical role that global bioengineering research and education partnerships play in developing and translating medical technologies to improve health in both domestic and international medically underserved communities. Bioengineering undergraduate and graduate students in high- and low-resource settings must be educated to become successful practitioners of frugal design from a systems perspective. A number of institutions are addressing this challenge through international bioengineering faculty and student exchanges, with a strong focus on project-based education. Curricular reforms are especially needed in low-resource settings where a lack of engineering capacity and infrastructure severely limits economic development.

Over \$130M has been invested to strengthen medical school education through NIH's Medical Education Partnership Initiative, with a focus on developing human capacity, retaining faculty and graduates, and developing regionally relevant research programs; similar investments are critical if tertiary engineering education is to develop sufficient and relevant engineering capacity in the region.

Rebecca Richards-Kortum, Ph.D. is the Rice University Malcolm Gillis University Professor of Bioengineering, the Director of Rice 360°: Institute for Global Health, and serves as the special advisor to the Provost on health-related research and educational initiatives. Her research has been instrumental in improving early detection of cancers and other diseases, especially in low-resources settings. She is currently working with colleagues and undergraduate students to develop a Nursery of the Future to provide technologies necessary to reduce neonatal death in sub-Saharan Africa to rates equivalent to the United States.

Richards-Kortum's research has led to the development of 40 patents. She is author of the textbook *Biomedical Engineering for Global Health* (Cambridge University Press, 2010), more than 230 refereed research papers and 11 book chapters. Her teaching programs, research and collaborations have been supported by generous grants from the National Cancer Institute, National Institutes of Health (with more NIH grants than any other Rice professor), National Science Foundation, U.S. Department of Defense, Howard Hughes Medical Institute, Bill & Melinda Gates Foundation, Whitaker Foundation, and the Virginia and L.E. Simmons Family Foundation.



Bruce Levine, PhD

Barbara and Edward Netter Professor in
Cancer Gene Therapy
Founding Director, Clinical Cell and Vaccine
Production Facility
Center for Cellular Immunotherapies Deputy Director -
Technology Innovation and Assessment
Department of Pathology and Laboratory Medicine

*Abramson Cancer Center
University of Pennsylvania
Perelman School of Medicine*

Thursday, October 18, 2019

5:15 pm–6:30 pm

**Terrace Ballroom 2–4
Pennsylvania Convention Center**

Genetically Engineered Immunity to Treat Untreatable Cancers

Since the 1990's, we have conducted clinical trials of gene modified T cells. These trials have led to advancements in gene delivery and genetic modification, including gene editing and redirection of immune specificity. Chimeric antigen receptors (CARs) may be constructed to recognize targets normally invisible to the immune system, such as cancer antigens. T cells modified with CARs targeting CD19 on B cell leukemias and lymphomas have induced durable complete responses in patients who are relapsed or refractory to all other available treatments. This synthetic biology technology has now undergone global multi-center clinical trials and recently received FDA, EMEA, Canada, Switzerland, Japan, and Australia approvals (Kymriah™, Novartis) in relapsed/refractory acute lymphoid leukemia in children and young adults as well as in diffuse large B cell lymphoma. Translation of these technologies from research bench to clinical application requires integrated scientific, engineering, clinical, and regulatory expertise. New designs for genetically engineered T cells include switches and potency enhancements that will be required for targeting solid tumors. The road forward for wide patient access to these uniquely personal cellular therapies depends not only on scientific progress in targeting, gene modification and cellular manipulation, but also on meeting automation, engineering, clinical site onboarding, and health policy challenges.

Dr. Bruce Levine is the Founding Director of the Clinical Cell and Vaccine Production Facility (CVPPF) in the Department of Pathology and Laboratory Medicine and the Abramson Cancer Center, Perelman School of Medicine, University of Pennsylvania. He received a B.A. (Biology) from Penn and a Ph.D. in Immunology and Infectious Diseases from Johns Hopkins. First-in-human adoptive immunotherapy trials include the first use of a lentiviral vector, the first infusions of gene edited cells, and the first use of lentivirally-modified cells to treat cancer. Dr. Levine has overseen the production, testing and release of 3,000 cellular products administered to >1,200 patients in clinical trials since 1996. He is co-inventor of the first FDA approved gene therapy (Kymriah), chimeric antigen receptor T cells for leukemia and lymphoma, licensed to Novartis. Dr. Levine is co-inventor on 26 issued US patents and co-author of >170 manuscripts and book chapters with a Google Scholar citation h-index of 81. He is a Co-Founder of Tmunity Therapeutics, a spinout of the University of Pennsylvania. Dr. Levine is President Elect of the International Society for Cell and Gene Therapy and serves on the Board of Directors of the Alliance for Regenerative Medicine. He has been interviewed by the NY Times, Wall Street Journal, Washington Post, NPR, Time Magazine, National Geographic, Bloomberg, Forbes, BBC, and other international media outlets.

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

Rita Schaffer Young Investigator Lecture

R

Saturday, October 19, 2019
10:30 am–11:45 am
Terrace Ballroom 2–4
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GI

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S

Inaugural Mid-Career Award Lecture

B

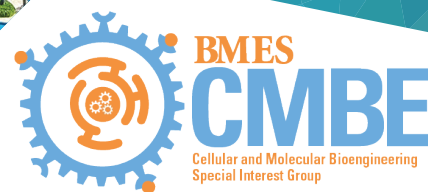
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E

As

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- Multicellular Emerging Behavior
- Engineering Cell-ECM Interactions
- Engineering Cell/Tissue Models
- Engineering Immune System
- Engineered Tissues/Organs and the Path to Translation

Conference Highlights

- Shu Chien Achievement Award presentation
- Christopher Jacobs Award for Excellence
- Rising Star podium sessions for Principal Investigators
- Short talks for student/fellow abstracts
- Poster sessions for latest research
- Mentoring Lunch
- Lunch with Leaders

Keynote Speakers



Nancy Allbritton
University of North Carolina



Ali H. Brivanlou, Ph.D.
The Rockefeller University



David Mooney
Harvard University



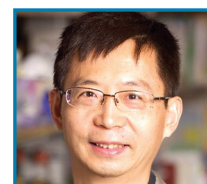
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Texas Heart Institute



Valerie M. Weaver, Ph.D.
University of California, San Francisco



Ron Weiss, Ph.D.
Massachusetts Institute of Technology



Kun Zhang, Ph.D.
University of California, San Diego

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Opens
Aug. 14, 2019
Closes
Dec. 13, 2019

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Cellular and Molecular Bioengineering

Congratulates the 2019 CMBE Young Innovators!

October 2019 issue, edited by Michael King and Stephanie Willerth

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*See the Young Innovators present their work on
Friday, October 18 at 8:00am and 1:15pm in Terrace Ballroom 2-3!*

- **Become a 2020 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 2020 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 an NIH-style biosketch, emailed to mike.king@vanderbilt.edu.**



Key Dates for 2020 Young Innovators issue:
Nomination Deadline: November 8, 2019
Abstract Acceptance: December 13, 2019
Manuscript Submission: February 14, 2020
Print Publication: October 2020

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The Carnegie Mellon BME Department has a long tradition of interdisciplinary research and training that develops the future leaders in biomedicine and healthcare through engineering innovation. The Department features exceptional faculty and students working in emerging areas including 3D bioprinting, brain-computer interface, cellular biomechanics, and medical devices and robotics.

Booths #201/300**Case Western Reserve University**

10900 Euclid Avenue, Wickenden 340
Cleveland, OH 44106
Phone: 216-368-4094
Email: bmedept@case.edu
Web: http://bme.case.edu/

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

Booth #121**Center for Multimodal Evaluation of Engineered Cartilage
Case Western Reserve University**

2102 Adelbert Road
A.W. Smith 141C
Cleveland, OH 44106
Phone: 216-368-1029
Email: hari@case.edu
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Booth #608**Clemson University
Department of Bioengineering**

301 Rhodes Research Center
Clemson, SC 29634
Phone: 864-656-7276
Email: mariam@clemson.edu
Web: www.clemson.edu/cecas/departments/bioe/

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

Booth #131-Canadian Pavilion**Dalhousie University
School of Biomedical Engineering**

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at Dartmouth**

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Booths #422/424**Duke University**

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Booth #545**East Carolina University**

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**Florida A&M University-
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Booth #109

**George Mason University
Department of Bioengineering**

4400 University Drive, MS 1J7
Fairfax, VA 22030
Phone: 703-993-5769
Email: tmcgowa2@gmu.edu
Web: www.bioengineering.gmu.edu

George Mason University's Department of Bioengineering offers unique research and educational experiences with collaborative links to local Washington DC industry, national laboratories, institutes, and clinical centers. The BS program offers concentrations in Biomedical Imaging and Devices, Computational Biomedical Engineering, Biomaterials and Nanomedicine, Neurotechnology and Computational Neuroscience, Health Care Informatics, and Prehealth, and is ABET accredited. The MS program begun in 2018, offers both a research thesis option as well as an industry practicum. The PhD program offers full tuition and stipend support, and a unique translational program with a high level of flexibility. The department's 13 faculty members have a growing \$20M funding in the areas of Biomedical Imaging and Devices, Computational Biomedical Engineering, Biomaterials and Nanomedicine, and Neurotechnology and Computational Neuroscience. Our PhD program is tailored to accept students from both Engineering and Quantitative Sciences backgrounds as well students from the Biological Sciences by strengthening their current knowledge base and broadening it to include complementary skills needed to translate their research to clinical and industrial partners.

Booths #602/604

The George Washington University

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Wallace H. Coulter Department of
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Booths #728/730

Lehigh University Bioengineering

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 Email: inbioe@lehigh.edu
 Web: www.lehigh.edu/bioe/

The Department of Bioengineering continues Lehigh's tradition of world-class excellence in education and research, offering a full range of coursework and research opportunities, from nanoscale to systems, for BS, MS and PhD students. Our faculty and students focus on the advancement of knowledge in three main target areas: Biocomputations and Modeling, Diagnostics, Sensors & Devices, and Materials & Therapies, for application to a wide range of biopharmaceutical, biomedical and health-related industries. The highly collaborative environment at Lehigh fosters interdisciplinary engagement across departmental boundaries and beyond the university campus, capitalizing on Lehigh's proximity to New York City and Philadelphia.

Booth #336

Louisiana Tech University

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The Graduate Program in Biomedical Engineering & Physiology at Mayo Clinic Graduate School of Biomedical Sciences has a long, rich history with a tradition of research that spans interdisciplinary boundaries and routinely connects the engineering and physical sciences to the biological sciences and clinical practice. The Mayo Clinic Graduate School offers graduate programs in various fields leading to PhD and MD/PhD degrees. The Graduate Program in Biomedical Engineering & Physiology offers a wide range of research opportunities from basic discovery science to clinical and translational research. Students are provided the necessary quantitative tools to become leaders in diverse fields of biomedical sciences.

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**McGill University
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Booth #101

**Michigan State University
 Department of Biomedical Engineering**

775 Woodlot Drive
 4000 BioEngineering Building
 East Lansing, MI 48824
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Booth #525

Michigan Technological University

1400 Townsend Drive
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 Email: biomed@mtu.edu
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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 #635

**National Institute of Biomedical Imaging
 & Bioengineering
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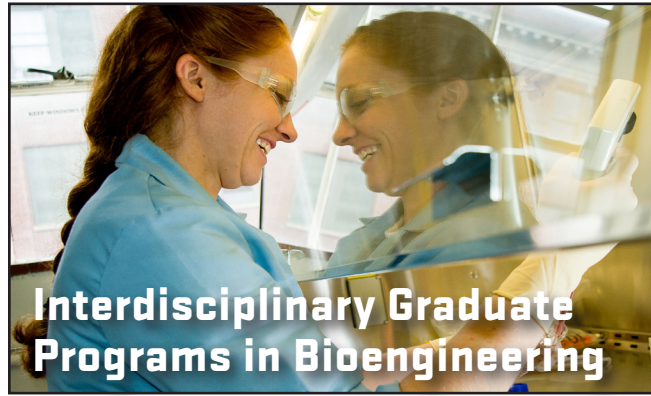
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Booth #208

National Science Foundation (NSF)

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Programs within the NSF Engineering Directorate support innovative, fundamental research and education in biomedical engineering. Ten core programs as well as numerous solicitations include biomedical engineering as part of their portfolios. Program directors from Engineering of Biomedical Systems, Disability & Rehabilitation Engineering, Biosensors, and Biomechanics & Mechanobiology - along with the CBET (Chemical, Bioengineering, Environmental & Transport Systems) Division Director - will be available to answer questions about proposals, areas for funding, timelines and expectations while writing, and common author mistakes.



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Booths #135/137
New Jersey Institute of Technology (NJIT) Department of Biomedical Engineering

323 Dr. Martin Luther King, Jr. Boulevard
Newark, NJ 07102
Phone: 973-596-5476
Email: rocha@njit.edu
Web: <http://biomedical.njit.edu>

The Department of Biomedical Engineering at NJIT offers bachelors, masters and doctoral degrees. We have a strong research program that provides ample opportunity for undergraduate research. All of our tenured and tenure-track faculty are very active in research. We have developed research expertise in neural and neuromuscular engineering, rehabilitation engineering, traumatic brain injury and tissue engineering/regenerative medicine. Our Ph.D. program is a joint program with the New Jersey Medical School of Rutgers University.

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Northeastern University

360 Huntington Avenue
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Booth #309
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Oregon Health & Science University (OHSU) Department of Biomedical Engineering

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Oregon Health & Science University, Oregon State University and the University of Oregon
The graduate programs in Biomedical Engineering and Bioengineering at the Oregon Health & Science University, Oregon State University and the University of Oregon combine to provide both breadth and depth in a range of topics including human (patho) physiology through training in measurement and data science and computational biology approaches to address unmet clinical needs. The curricula are tailored for each student based upon their background, research direction and career goals and leverages the strengths at the three campuses.

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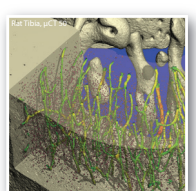
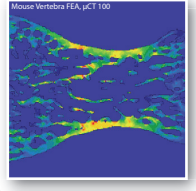
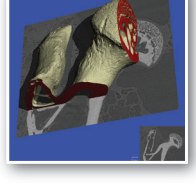
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 Web: <https://my.engineering.queensu.ca/programs/bme/>

Booth #721

Rensselaer Polytechnic Institute

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Booths #229/231

**Rice University
 Department of Engineering**

6500 Main Street, BRC 174-C
 Houston, TX 77030
 Phone: 713-348-2871
 Email: jgb7@rice.edu
 Web: bioengineering.rice.edu

Booth #524

Rochester Institute of Technology

160 Lomb Memorial Drive
 Rochester, NY 14623
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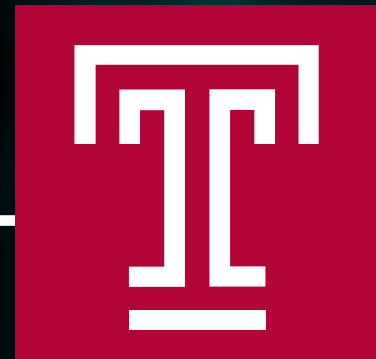


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Web: www.engineering.rowan.edu

Booth #615**Rutgers, The State University
of New Jersey**

599 Taylor Road
Piscataway, NJ 08854
Phone: 848-445-4500
Email: shreiber@soe.rutgers.edu
Web: <http://bme.rutgers.edu>

Booth #637**Scanco USA, Inc.**

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Email: graceyh@stanford.edu
Web: <https://bioengineering.stanford.edu>

Booth #321**Stevens Institute of Technology
Castle Point on Hudson**

Hoboken, NJ 07030
Phone: 201-216-8271
Email: jwilson1@stevens.edu
Web: www.stevens.edu/bme

Booth #311**Stony Brook University**

101 Bioengineering Building
Stony Brook, NY 11777
Phone: 631-632-1480
Email: david.rubenstein@stonybrook.edu
Web: www.stonybrook.edu/bme

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, bioinstrumentation, cellular and molecular bioengineering, and bioimaging.

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Booth #523**Syracuse University
Department of Biomedical and
Chemical Engineering**

329 Link Hall
Syracuse, NY 13244
Phone: 315-443-1931
Email: topgrads@syr.edu
Web: <http://eng-cs.syr.edu/our-departments/biomedical-and-chemical-engineering>

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Booth #335**Temple University
Department of Bioengineering**

1947 North 12th Street, Floor 8
Philadelphia, PA 19122
Phone: 215-204-3404
Email: doreen.aiello@temple.edu
Web: <http://engineering.temple.edu/bioengineering>

Booths #701/703**Texas A & M University
Department of Biomedical Engineering**

3120 TAMU
College Station, TX 77843
Phone: 979-845-5532
Email: mlyons@tamu.edu
Web: <http://engineering.tamu.edu/biomedical>

The Department of Biomedical Engineering at Texas A&M University is impacting health outcomes with translational research in the areas of imaging technologies, medical devices, regenerative medicine, and sensing & monitoring systems. The department's award-winning faculty have strong collaborations with industry and major medical centers across the state and offers a range of exceptional experiences at all degree levels.

Booth #705**Texas A & M University
Engineering Medicine (EnMed)**

3120 TAMU
College Station, TX 77843
Phone: 979-845-5532
Email: guiseppi@tamu.edu
Web: <http://enmed.tamu.edu>

Booths #622/624**Tufts University
Biomedical Engineering**

4 Colby Street
Medford, MA 02155
Phone: 617-627-2580
Email: bme@tufts.edu
Web: www.engineering.tufts.edu/bme

Booths # 723 / 725**Tulane University**

6823 St. Charles Avenue
500 Lindy Boggs Building
New Orleans, LA 70118
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Email: bmen-info@tulane.edu
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Booth #737**The University of Akron
Biomedical Engineering Department**

Auburn Science and Engineering Center
Room 275
Akron, OH 44325-3901
Phone: 330-972-5522
Email: svasenda@uakron.edu
Web: bme.uakron.edu

Booths #628/630**The University of Alabama at Birmingham**

1670 University Boulevard, Volker Hall G094
Birmingham, AL 35294
Phone: 205-996-0165
Email: jcalma@uab.edu
Web: www.uab.edu/engineering/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 Institute for Medical Research.

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The University of Arizona College of Engineering, Biomedical Engineering Department

1127 East James E. Rogers Way
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Email: aanduaga@email.arizona.edu

Web: bme.engineering.arizona.edu

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Booth #601

University of Arkansas

790 West Dickson Street, Room 120

Fayetteville, AR 72701

Phone: 479-575-4786

Email: tshefley@uark.edu

Web: www.biomedical-engineering.uark.edu

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The University of British Columbia School of Biomedical Engineering

2222 Health Sciences Mall

Vancouver, British Columbia V6T 1Z3 Canada

Phone: 604-822-1321

Email: admin@bme.ubc.ca

Web: www.bme.ubc.ca

The School of Biomedical Engineering at University of British Columbia established in 2017 as a strategic partnership between Faculties of Applied Science and Medicine, comprises more than 20 faculty members who are research leaders in areas including molecular and cellular engineering, biological imaging, computational biology and human interfacing devices. We have over 100 graduate students, within our MEng, MASc and PhD programs and offer a four year undergraduate degree in BASc with an optional co-op placement year. We welcome you to visit our booth to learn more.

Booth #200

University at Buffalo, The State University of New York The Department of Biomedical Engineering

332 Bonner Hall

Buffalo, NY 14260

Phone: 716-645-8500

Email: cherylmi@buffalo.edu

Web: <http://engineering.buffalo.edu/bme.html>

Booth # 230 – Canadian Pavilion

University of Calgary Biomedical Engineering

CCIT 012

2500 University Drive NW

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University of California, Davis Biomedical Engineering
 One Shields Avenue, GBSF 2303
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 3120 Natural Sciences II
 Irvine, CA 92697-2715
 Phone: 949-824-9196
 Email: bme@uci.edu
 Web: www.eng.uci.edu/dept/bme

Booth #611
The University of California, Riverside
 205 Materials Science and Engineering
 Riverside, CA 92521
 Phone: 951-827-5025
 Email: nford@engr.ucr.edu
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Booths #214/216

University of California, San Diego

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Phone: 858-534-7303
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Web: <http://be.ucsd.edu/>

UC San Diego is at the forefront of bioengineering. We broadly categorize our research interests as: Cell and Molecular Bioengineering, Multiscale Bioengineering, Tissue Engineering and Regenerative Medicine, Clinical Bioengineering and Imaging, and Systems Biology and Medicine. Our department has disease focus areas that include Cancer, Cardiovascular Diseases, Metabolic Disorders, Orthopedic Injury, Shock, Multiorgan Failure, and Neurodegenerative Diseases.

Booth #820

University of California, Santa Barbara

1104 BioEngineering Building
Santa Barbara, CA 93106
Phone: 805-893-2764
Email: elizabeth.jensen@engineering.ucsb.edu
Web: bioengineering.ucsb.edu

Booth # 440

The University of Chicago Institute for Molecular Engineering

5640 South Ellis Avenue, ERC 299
Chicago, IL 60637
Phone: 773-834-2290
Email: ime-admissions@uchicago.edu
Web: <http://ime.uchicago.edu>

Booth #834

BME University of Cincinnati

2901 Woodside Drive, 501 ERC
Cincinnati, OH 45221
Phone: 513-556-8420
Email: halley@uc.edu
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Booth #735

University of Colorado Boulder Department of Chemical and Biological Engineering

3415 Colorado Avenue
596 UCB, Room A125A
Boulder, CO 80309
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Email: chbegrad@colorado.edu
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Booth #742

University of Colorado Denver/ Anschutz Medical Campus Department of Bioengineering

12705 E. Montview Blvd., Suite 100
Aurora, CO 80045
Phone: 303-724-5893
Email: bioengineering@ucdenver.edu
Web: engineering.ucdenver.edu/academics/departments/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 #204

BME UConn

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Phone: 860-486-5838
Email: ki.chon@uconn.edu
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Booth #349

University of Houston Department of Biomedical Engineering

3517 Cullen Boulevard
 Houston, TX 77204
 Phone: 832-842-8813
 Email: ckwaits@uh.edu
 Web: <http://www.bme.uh.edu>

The University of Houston Department of Biomedical Engineering seeks to develop national and global leadership in academia, government, and industry by building graduate and undergraduate programs emphasizing global scientific, social, and cultural interaction to meet the demands of the dynamic, ever-changing global healthcare economy. Today our research areas span three primary areas: (1) Neural, Cognitive, and Rehabilitation Engineering, (2) Biomedical Imaging, and (3) Bionanoscience.

Booth #430

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Booths #629/631

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The first Bioengineering department in the country to receive a multi-million-dollar NSF RED grant to revolutionize its undergraduate curriculum, Illinois Bioengineering provides its students with immersive, needs-focused courses that prepare them to address real-world biomedical problems with innovative ideas and solutions. We offer B.S., M.S, M.Eng, and Ph.D. degrees. Our faculty helped create the curriculum for the new Carle Illinois College of Medicine, the world's first engineering-based college of medicine. They also continue to break new ground in bioimaging at multi-scale; bio-micro and nanotechnology; computational and systems biology; molecular, cellular and tissue engineering; and synthetic bioengineering research. Illinois Bioengineering is located in the newly renovated Everitt Lab, which also houses the \$10 million Jump Simulation Center, a place where Carle Illinois medical students train in various settings, including an operating room, intensive care unit, and hospital/clinic patient rooms. Bioengineering is also integrating the Simulation Center into our laboratory courses, senior design projects, and technology transfer efforts.

Booth #740

University of Iowa Roy J. Carver Department of Biomedical Engineering

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Booth #420

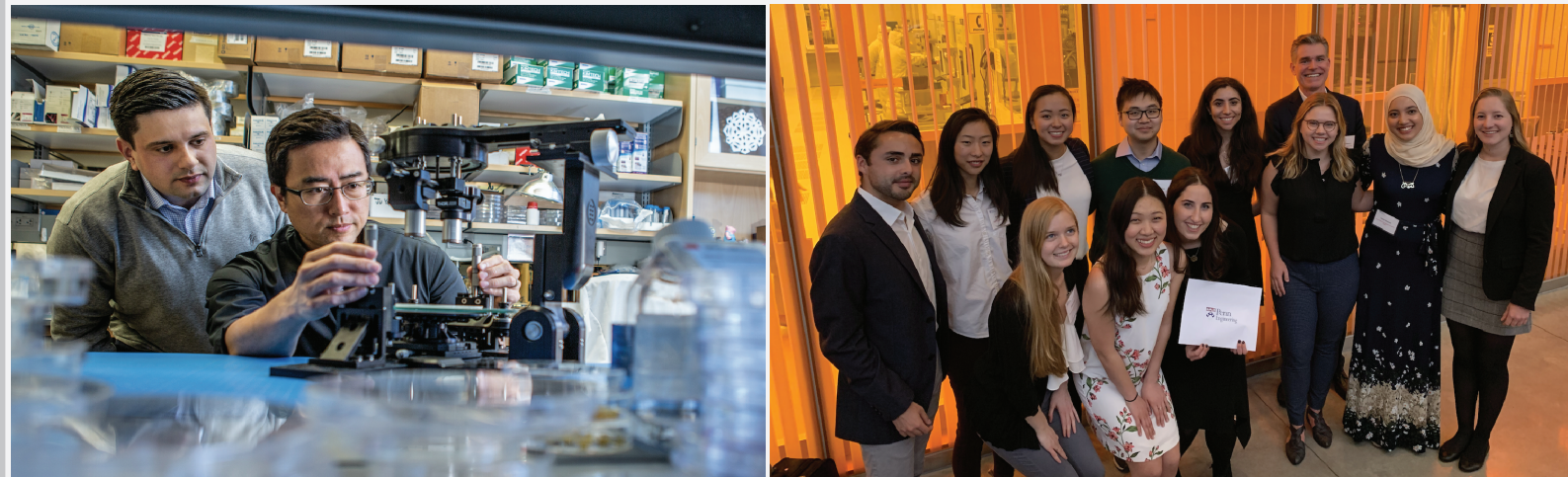
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Booths # 414/416

**University of Louisville &
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 Louisville, KY 40292
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 Email: nancy.hansford@louisville.edu
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Booth #315/317

**University of Maryland
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**University of Miami
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PhD in Biomedical Engineering

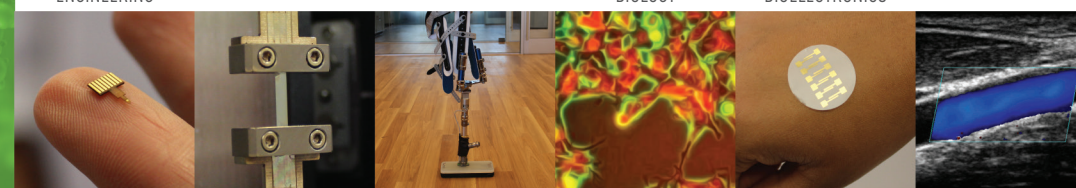
Offered by the **Department of Bioengineering** at The University of Texas at Dallas, the Biomedical Engineering PhD program has over 20 research faculty with more than \$20M in active funding from the NIH, NSF, DARPA and industry partners.

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 1st

For More Information:
 972.883.4483
bioengineering@utdallas.edu
be.utdallas.edu

NEURAL ENGINEERING BIOMATERIALS BIOMECHANICS SYSTEMS BIOLOGY BIOSENSORS AND BIOELECTRONICS BIOIMAGING



Booth #600
The University of Michigan Biomedical Engineering Department
 2200 Bonisteel Blvd.
 Ann Arbor, MI 48109
 Phone: 734-615-9421
 E-mail: kagates@umich.edu
 Web: http://bme.umich.edu

Booths #515/517
University of Minnesota
 312 Church St. SE
 7-105 Nils Hasselmo Hall
 Minneapolis, MN 55432
 Phone: 612-624-8396
 E-mail: bmengp@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 med-tech 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.

Booths # 814/816
University of Nebraska - (UNL Engineering and UNMC Regenerative Medicine)
 P.O. Box 880642
 Lincoln, NE 68588-0642
 Phone: 402-472-3386
 Email: kperson4@unl.edu
 Web: engineering.unl.edu and www.unmc.edu/regenerativemed/

The University of Nebraska offers collaborative graduate degree programs specializing in Biomedical Engineering through the University of Nebraska -Lincoln's (UNL) College of Engineering in close collaboration with the University of Nebraska Medical Center's (UNMC) Regenerative Medicine Program. Research funding and opportunities are available cooperatively through UNL and UNMC.

Booths # 409/411
University of North Carolina at Chapel Hill/NC State University
 137 MacNider Hall
 Chapel Hill, NC 27599
 Phone: 919-445-6051
 Email: vberg@email.unc.edu
 Web: www.bme.unc.edu

Booth #105
University of Oklahoma Stephenson School of Biomedical Engineering
 202 W Boyd Street, DEH Room 320
 Norman, OK 73019
 Phone: 405-325-0789
 Email: detamore@ou.edu
 Web: www.ou.edu/COE/SBME.html

The Stephenson School of Biomedical Engineering offers \$30K graduate fellowships and is hiring faculty with Endowed positions, with a new Gallogly Hall building for BME just opened in Fall 2019, and a nearby Health Sciences Center. Our PhD graduates started 3 companies since 2017, supported by a highly entrepreneurial environment.

Booth #824
Center for Engineering MechanoBiology University of Pennsylvania
 3231 Walnut Street
 Philadelphia, PA 19104
 Phone: 215-898-5151
 E-mail: jmcgon@seas.upenn.edu
 Web: www.cemb.upenn.edu

The University of Pennsylvania, the country's oldest university, is dedicated to integrative training and multi-disciplinary research. The Department of Bioengineering offers MS/PhD degrees and postdoc/faculty opportunities. The Center for Engineering MechanoBiology and the Laboratory for Research on the Structure of Matter seek Phd students and undergraduates for research experiences at UPenn and partner institutions.

Department of Biomedical Engineering
 UNIVERSITY OF WISCONSIN-MADISON

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Visit us at Booth 211
go.wisc.edu/bme



SCHOOL OF BIOMEDICAL ENGINEERING AND SCIENCES



Research Areas

- Biomaterials*
- Biomechanics*
- Biomedical Imaging*
- Cardiovascular Engineering*
- Nanobioengineering*
- Neuroengineering*
- Tissue Engineering*
- Translational Cancer Research*

Degree Programs

- M.S.*
- Ph.D*
- D.V.M / Ph.D*
- M.D. / Ph.D.*

Application Deadline

January 5, 2020

Visit us online at beam.vt.edu/graduate/biomedical

Booths #421/423

**University of Pittsburgh
Department of Bioengineering**

306 CNBIO
300 Technology Drive
Pittsburgh, PA 15219
Phone: 412-624-6445
Email: ngm8@pitt.edu
Web: engineering.pitt.edu

Booths #520/522

University of Rochester

204 Robert E. Georgen Hall
Rochester, NY 14627
Phone: 585-275-3891
Email: judith.principe@rochester.edu
Web: www.bme.rochester.edu

Booth #341

University of South Carolina

301 Main Street
Columbia, SC 29209
Phone: 803-777-2310
Email: mossme@cec.sc.edu
Web: www.sc.edu/study/colleges_schools/engineering_and_computing/study/biomedical_engineering/index.php

Booth #711

**University of South Dakota
Biomedical Engineering**

4800 N. Career Avenue, Ste. 221
Sioux Falls, SD 57032
Phone: 605-275-7474
Email: bme@usd.edu
Web: www.usd.edu/bme

Booth #530

**University of Southern California
Viterbi School of Engineering**

3650 McClintock Ave, OHE 106
Los Angeles, CA 90089-1455
Phone: 213-740-4488
Email: viterbi.gradprograms@usc.edu
Web: http://viterbigradadmission.usc.edu

Booths #329/331

University of Tennessee, Knoxville

1512 Middle Drive
414 Dougherty Engineering Bldg.
Knoxville, TN 37996
Phone: 865-974-5117
Email: mabeinfo@utk.edu
Web: mabe.utk.edu

The University of Tennessee prepares students to be world-class engineers. Our state-of-the-art facilities include a Syndaver Laboratory, the first of its kind in an engineering department. Stop by our booth to speak with students and faculty about the exciting research going on at the University of Tennessee.

Booth #609

University of Texas at Arlington

500 UTA Blvd.
Arlington, TX 76019
Phone: 817-272-2249
Email: be@uta.edu
Web: www.uta.edu/bioengineering

The Bioengineering Department at the University of Texas, Arlington (UTA) is focused on translational research areas in brain imaging, regenerative tissue engineering, biomechanics, and nanomedicine through the joint graduate program with the University of Texas Southwestern Medical Center. The outstanding faculty and students in the department continue to make significant contributions to advance biomedical engineering. Highly qualified students interested in seeking a doctoral degree in nanomedicine to treat cardiovascular and lung diseases are strongly encouraged to apply to our NIH-funded T32 PhD Training Program. Be sure to visit Booth 609 at the exhibit to learn more.

Booths #534/536

**The University of Texas at Austin
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 biomolecular engineering, and computational biomedical engineering, among others.

Booths # 408 / 410

**University of Texas at Dallas
Department of Bioengineering**

800 W. Campbell Rd. BSB 11
Richardson, TX 75080
Phone: 972-883-4468
Email: bioengineering@utdallas.edu
Web: http://be.utdallas.edu

The University of Texas at Dallas presents their Biomedical Engineering degree programs to future students and the highly competitive Eugene McDermott Graduate Fellowship for outstanding PhD applicants. Information about our research programs in bioinformatics, biomaterials, biomechanics, biomedical imaging and optics, biosensors, and neural engineering will also be available.

Booth #914

University of Texas at San Antonio

One UTSA Circle
San Antonio, TX 78249
Phone: 210-458-5535
Email: eric.brey@utsa.edu
Web: http://engineering.utsa.edu/biomedical/

Biomedical Engineering

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GREAT MINDS MULTIPLIED



Booth #822

**University of Texas Southwestern
Medical Center**

5323 Harry Hines Boulevard
Dallas, TX 75390
Phone: 214-648-0712
Email: jim.mcdowell@utsouthwestern.edu
Web: www.utsouthwestern.edu

The UT Southwestern BME graduate program has an emphasis on the development of advanced procedures and technologies that facilitate both basic biomedical research and the detection, diagnosis, and treatment of disease and disability. The PhD degree program features research and training tracks in: Biomedical and Molecular Imaging; Biomaterials, Mechanics and Tissue Engineering; Molecular and Translational Nanomedicine; and Medical Physics. The BME graduate program has more than 40 faculty members from both basic science and clinical departments at UT Southwestern Medical Center, whose research covers a broad range of fundamental and applied bioengineering research.

Booth #334

**University of Toledo
Department of Bioengineering**

2801 West Bancroft Street
5051 Nitschke Hall MS303
Toledo, OH 43606
Phone: 419-530-8030
Email: bioengineering@utoledo.edu
Web: www.utoledo.edu/engineering/bioengineering/

The Department of Bioengineering at The University of Toledo has BS, MS, and PhD degree programs. Our PhD degree in Biomedical Engineering is offered through a joint program between the Colleges of Engineering and Medicine, which includes an entrepreneurship component containing coursework taken from the College of Business. Areas of specialization within the department include biomechanics, biomaterials, biomedical optics and sensing, tissue engineering, medical imaging, machine learning and biofuels. The department is home to an internationally recognized Engineering Center for Orthopedic Research Excellence (E-CORE) and an NSF Industry & University Cooperative Research Center for Disruptive Musculoskeletal Innovations.

Booth # 129 – Canadian Pavilion**University of Toronto
Institute of Biomaterials &
Biomedical Engineering**

164 College Street
Toronto, Ontario M5S 3E2 Canada
Phone: 416-978-6102
Email: comm.ibbme@utoronto.ca
Web: www.ibbme.utoronto.ca

Booth #431**University of Utah
Department of Biomedical Engineering**

36 South Wasatch Drive
Suite 3100
Salt Lake City, UT 84112
Phone: 801-581-8528
Email: bme@utah.edu
Web: www.bme.utah.edu

Nestled in the towering Wasatch mountain range 20 minutes from Salt Lake International Airport, the Department of Biomedical Engineering at the University of Utah prepares graduates to be global leaders in biomedical research, industry, education, medical device design and development, and scholarship. We focus expertise on relevant topics, issues, and challenges at the intersection of engineering, biology, and medicine. The program is closely connected with the University of Utah's flagship School of Medicine and Health sciences with a strategic focus on a biomedical mission that benefits our students, the med-tech industry, healthcare technology, and patients worldwide through meaningful biomedical advancements, creative design and innovation. Faculty research areas in the department include biomaterials, tissue engineering and regenerative medicine; biomedical device design and development; biomechanics; biomedical imaging, computing, modeling and visualization; biosensors, biomolecular engineering and synthetic biology; cardiovascular engineering; neural engineering and neuroprosthetics; and new drug delivery strategies.

Booth #504**University of Virginia**

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

Booth #210**University of Washington
Department of Bioengineering**

3720 15th Avenue NE, N107
UW Mailbox 355061
Seattle, WA 98105
Phone: 206-685-2000
Email: kaleic@uw.edu
Web: bioe.uw.edu

Booth #211**The University of Wisconsin – Madison
Department of Biomedical Engineering**

1550 Engineering Drive
Madison, WI 53706
Phone: 608-263-4660
Email: info@bme.wisc.edu
Web: https://www.bme.wisc.edu

Be a part of something bigger. At the University of Wisconsin-Madison we're guided by the Wisconsin Idea—our pledge to the state, nation, and world that our endeavors will benefit everyone. Through our interdisciplinary programs, students, faculty, and staff collaborate to have significant, far-reaching impacts on human health.

Booths #509/511**Vanderbilt University
Biomedical Engineering**

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

Booth #535**Vanderbilt School of Medicine
Medical Innovators
Development Program**

2209 Garland Avenue
Nashville, TN 37240
Phone: 217-741-0006
Email: ali.c.coffey@vanderbilt.edu
Web: https://medschool.vanderbilt.edu/midp/

Booth #305**Villanova University
Graduate Engineering**

800 East Lancaster Avenue
Villanova, PA 19064
Phone: 610-519-3962
Email: engineering.grad@villanova.edu
Web: http://www1.villanova.edu/villanova/engineering/departments/che.html

Offering full-time, part-time, on campus and online options, the College of Engineering provides the flexibility to accommodate student needs. Those interested in full-time graduate study benefit from a hands-on, collaborative research environment and one-on-one faculty mentorship. Villanova doctoral students lead research, work with industry partners and pursue their passions in solving some of the world's greatest challenges. Degree offerings include a PhD in Engineering, master's degrees in Chemical Engineering, Biochemical Engineering, Mechanical Engineering and Sustainable Engineering (and several others), and more than 15 graduate certificates.

Booths #235/237**Virginia Commonwealth University**

601 W. Main Street
Richmond, VA 23284
Phone: 804-828-7958
Email: biomedicalengr@vcu.edu
Web: https://egr.vcu.edu/departments/biomedical/
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, computational medicine, and imaging.

Booths #400/401/402/403/404/405**Virginia Tech-Wake Forest University
School of Biomedical Engineering
& Science**

VT-WFU SBES:
317 Kelly Hall
325 Stanger Street
Blacksburg, VA 24061
Phone: 540-231-8191
E-mail: kristie@vt.edu
Web: www.sbes.vt.edu

Booths #508/510**Washington University in St. Louis**

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

Booth #610**Wayne State University**

818 W. Hancock
Detroit, MI 48201
Phone: 313-577-1344
Email: nmurthy@wayne.edu
Web: www.bme.wayne.edu

Booth # 232 – Canadian Pavilion**Western University
School of Biomedical Engineering**

1151 Richmond Street
London, Ontario N6A 3K7 Canada
Phone: 519-661-4288
Email: bmeoffice@uwo.ca
Web: www.eng.uwo.ca/biomed/

The School of Biomedical Engineering at Western University promotes teaching and research collaborations among more than 90 professors from Western's Faculties of Engineering, Health Sciences, and Science and the Schulich School of Medicine and Dentistry. Our students and faculty focus on research challenges that bridge our four technology pillars: biomaterials, biomechanics, imaging, and mechatronics. We provide multidisciplinary training opportunities to undergraduate, Master's, and doctoral students that emphasize exposure to real-world clinical problems and development of professional skills that are relevant to careers in industry, academia, and government.

Booth #550**Woodrow Wilson National
Fellowship Foundation**

5 Vaughn Drive, Suite 300
Princeton, NJ 08540
Phone: 609-945-7852
Email: ndiba@woodrow.org
Web: www.woodrow.org

The Woodrow Wilson Teaching Fellowship seeks to attract talented, committed individuals with backgrounds in the STEM fields into teaching in high-need secondary schools in Pennsylvania. Eligible applicants include current undergraduates, recent college graduates, midcareer professionals, and retirees who have majored in one or more of the STEM fields.

Booths #343/345**Worcester Polytechnic Institute**

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 at major medical and biomedical research centers across academia, government, and the medical device industry.

Booth #328**Yale University**

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.

SAVE THE DATE

April 1-3, 2020

2020 ABioM SIG Annual Meeting

Accelerating Advanced Biomanufacturing
through Discovery to Translation

College Park Marriott Hotel and
Conference Center
Located on the University of Maryland (UMD) Campus

www.BMES.org/ABioMSIG

Meeting Location | Registration | Exhibits | Poster Presentations

Meeting Location

Pennsylvania Convention Center

1101 Arch Street
Philadelphia, PA 19107
215-418-4700

Philadelphia Marriott Downtown

1201 Market Street
(guest entrance at 1200 Filbert Street)
Philadelphia, Pennsylvania 19107
215-625-2900

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 BMES meeting registration.

On-Site Registration Hours

Wednesday, October 16	12:00 pm – 7:00 pm
Thursday, October 17	7:00 am – 5:00 pm
Friday, October 18	7:00 am – 4:00 pm
Saturday, October 19	7:00 am – 1:00 pm

Exhibits

Halls DE
Pennsylvania Convention Center

Exhibits will be open:

Thursday, October 17	9:30 am – 5:00 pm
Friday, October 18	9:30 am – 5:00 pm
Saturday, October 19	9:30 am – 1:30 pm

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.

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

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

Sessions chairs should keep sessions on the listed schedule so attendees can move back and forth among sessions. In most cases, presentations should be done in twelve minutes, allowing three minutes for questions and answers and transition to the next speaker.

Poster Presentations

Posters will be presented Thursday, Friday and Saturday. Posters 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 Halls DE in the Pennsylvania Convention Center. Posters are numbered with a card corresponding to the numbers assigned in the program.

Speaker Ready Room

Registration Area, Exhibit Halls DE of the Pennsylvania 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 16	1:00 pm – 5:00 pm
Thursday, October 17	7:00 am – 5:00 pm
Friday, October 18	7:00 am – 5:00 pm
Saturday, October 19	7:00 am – 2:30 pm

Program Highlights—Don't Miss These Events!

Wednesday, October 16

LGBT & Friends Dessert Social*

8:00 pm–9:00 pm **Philadelphia Marriott Downtown**

**additional registration and \$10 ticket required*

Brian Sims, a first-term member of the Pennsylvania House of Representatives, will lead the talk at the event, followed by networking, dessert and a cash bar. Mr. Sims is a distinguished policy attorney and civil rights advocate from Center City Philadelphia and became the first out LGBT member of the Pennsylvania General Assembly when he was elected in 2011.


LGBT & Friends Dessert Social sponsored by:



Refreshment Breaks

Please note your meeting registration includes morning and afternoon refreshments breaks on Thursday, Friday and Saturday. Refreshment breaks are in the Exhibit Hall.

Refreshment Breaks are sponsored by:



Celebration of Minorities in BME Luncheon

Thursday, October 17

Celebration of Minorities in BME Luncheon*

11:45 am–1:15 pm Terrace Ballroom 1

*additional registration and \$35 ticket required

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

Marta L. Villarraga, Ph.D

Principal in the Biomedical Engineering Practice Exponent

Diversity and Inclusion Initiatives: Transition from Academia

This presentation will provide an overview of Diversity and Inclusion initiatives in academia and how those compare to initiatives in the corporate environment. Diversity and Inclusion initiatives in academia provide structured support to both undergraduate and graduate students while they are navigating their educational experience. In academia, these initiatives and organizations are structured with the student at the center of their missions. What do those types of initiatives look like in the corporate environment? Do they look different depending on the type and size of the company? What are their purposes and how are their missions similar or different from those in academia? What goals are they achieving? How should you prepare for these changes?

Celebration of Minorities in BME Luncheon is Sponsored by:



Dr. Marta Villarraga is a Principal in the Biomedical Engineering practice at Exponent, where she has been for twenty years. She is currently the only female principal in her practice. Dr. Villarraga graduated from Tulane University, where she did her undergraduate and graduate degrees in Biomedical Engineering. During graduate school she was supported by a National Science Foundation Minority Graduate Fellowship and by an American Association of University Women (AAUW) Selected Professions Fellowship. Throughout her professional career, Dr. Villarraga has been involved in various panels at the regional and national level that have explored the role of gender and diversity in expert witnesses. She has also been an active participant in her firm's diversity groups, and now serves as a principal advisor for Exponent's POWER-MEGA initiative.

Dr. Villarraga has expertise in biomechanics and bio-material-tissue interactions in medical devices and evaluation of medical device performance during the pre-marketing and postmarketing stages. Dr. Villarraga has conducted failure analyses, root cause analyses, and compliance evaluations related to medical device recalls. As a Regulatory Affairs Certified (RAC) professional, Dr. Villarraga uses her knowledge of the U.S. FDA regulations to develop regulatory strategies for novel products, and to identify and justify technical evaluations for pre-market assessments and post-market compliance matters. She has served as an expert witness in product liability and intellectual property cases involving medical devices. Dr. Villarraga is a member of various scientific and professional societies and continues to serve on the Board of Advisors of the Department of Biomedical Engineering at Tulane University.

Women in BME Luncheon

Friday, October 18

Women in BME Luncheon*

11:30 am–1:00 pm Terrace Ballroom 1

*additional registration and \$35 ticket required

Beth A. Winkelstein, PhD

Eduardo D. Glandt President's Distinguished Professor
Bioengineering & Neurosurgery
University of Pennsylvania

Even if "It Ain't Broke" Consider Trying to Fix It Anyway!

By nature and through practice, engineers seek solutions for problems – ways to fix or improve things that are broken or to discover the unknown. Today, the engineering community is faced with real challenges. Certainly, the challenges for scientific discovery and innovation remain, but just as pressing today is the need to improve the accessibility and inclusivity in the field of engineering. While it should be acknowledged that we have come a long way, particularly for women, and biomedical engineering is often held up as the exemplar engineering discipline in this regard. However, there is still room to improve, at all levels – through our educational initiatives, research enterprises, mentorship and advocacy efforts. Indeed, we must also go a step farther by developing best practices in our own community but also sharing our successes with our professional and scientific networks. It is no longer sufficient to ask if and how can we be better but we must also explore whether we are as good as we think we are. In short, we must consider ways to continually push for improvement even if we think things aren't broken.

Women in BME Luncheon is Sponsored by:

UCDAVIS
BIOMEDICAL ENGINEERING



Beth Winkelstein is the Eduardo D. Glandt President's Distinguished Professor Bioengineering, a Professor of Neurosurgery and the Vice Provost of Education at the University of Pennsylvania. She received her BSE in Bioengineering from Penn and earned a PhD in Biomedical Engineering from Duke, joining Penn's faculty in 2002 after completing a post-doctoral fellowship in the neuro-immunology of pain in Anesthesiology & Pharmacology at Dartmouth. Before assuming the role of Vice Provost for Education, she served as the Undergraduate Dean in the Engineering School and Chair of the Bioengineering Graduate Group at Penn. Dr. Winkelstein's lab studies the biomechanical mechanisms of injuries and defines pathophysiological cellular mechanisms driving chronic pain, mechanotransduction of pain, and diagnostic and therapeutic approaches for these disorders. Her group has pioneered several preclinical models of painful injuries that are the first with clinically-relevant symptoms. She has published over 140 papers, 16 book chapters, the book *Orthopaedic Biomechanics*, and holds a patent. Dr. Winkelstein is a Fellow of the BMES and the ASME, and was elected to the AIMBE. She was awarded a Whitaker Young Investigator Award, NIH Career Award, NSF-CAREER Award, the ASME Fung Young Investigator Award, and the ASME Mow Medal. Dr. Winkelstein has served as the primary research mentor for 45 graduate students and postdoctoral fellows, and over 70 undergraduates. She serves on the Editorial Board for *Spine* and is the Editor of the *Journal of Biomechanical Engineering* since 2012. She is on the Board of Directors of the BMES.

Additional Meetings

Most of these meetings/events are invitation only. Please check with the organizer.
Meetings held at the Georgia World Congress Center unless noted.

Wednesday, October 16

BMES Board of Directors Meeting
8:30 am–4:30 pm **Room 126B**
Organizer: Dawn Elliott

AIMBE Board of Directors Meeting
Affiliate Event
11:00 am–4:00 pm **Room A309**
Organizer: Milan Yager

AIMBE Academic Council
Affiliate Event
4:00 pm–5:00 pm **Room A309**
Organizer: Milan Yager

Council of Chairs Dinner & Meeting
Invitation Only
7:30 pm–10:30 pm **Marriott Hotel
Salon ABC**
Organizer: Eric Perreault

Industry Committee Planning Meeting
Invitation Only
7:30 pm–8:30 pm **Marriott Hotel
Salon D**
Organizer: Ben Noe

Thursday, October 17

Council of Industry Chapter Presidents–
Invitation Only
7:00 am–8:00 am **Room 109A**
Organizer: Ben Noe

Diversity Committee Meeting
7:00 am–8:00 am **Room 111A**
Organizer: Debra Auguste

National Meetings Committee Meeting
8:00 am–9:30 am **Room 126B**
Organizers: Shelly Sakiyama-Elbert and John P. Fisher

Thursday, October 17 *(continued)*

Student Affairs Committee
8:30 am–9:30 am **Room 112A**
Organizer: Kyle Allen

Ethics Subcommittee Meeting
9:30 am–10:30 am **Room 111A**
Organizer: Zachary Danzinger

CMBE SIG Council Meeting
12 noon–1:30 pm **Room 126B**
Organizer: Yingxiao (Peter) Wang

Coulter College Steering Committee Meeting
4:30 pm–5:30 pm **Room 111A**
Contact: Gilda Barabino

Friday, October 18

Education Committee Meeting
7:00 am–8:00 am **Room 109A**
Organizer: Kristen Billiar

2020 Annual Meeting Planning
Committee Meeting
8:00 am–10:00 am **Room 126A**
Organizers: Alisa Morss Clyne and Ruth Ochia

International Affairs
Subcommittee Meeting
8:00 am–9:00 am **Room 111A**
Organizer: Hanjoong Jo

Membership Committee Meeting
3:00 pm–4:00 pm **Room 109A**
Organizer: Craig Goergen

Design Competition Judges Meeting
3:30 pm–4:30 pm **Room 111A**
Organizer: Ryan Green

Receptions located at the Marriott Hotel

Thursday, October 17

~~**Boston University**~~
Hazelnut Room

~~**Clemson Bioengineering**~~
Oak Room

~~**Cornell University**~~
Pecan Room & Foyer

~~**Duke University**~~
Maple C Room & Maple Terrace

~~**Georgia Tech/Emory Coulter Department**~~
International Ballroom D

~~**Johns Hopkins University**~~
International Ballroom A

~~**Northwestern University**~~
Chestnut Room

~~**Purdue University/Weldon School of**~~
~~**Biomedical Engineering**~~
International Ballroom B

~~**Rensselaer Polytechnic Institute**~~
Cypress Room

~~**Rice University**~~
Cottonwood AB

~~**Texas A&M University**~~
Magnolia Room

~~**The Ohio State University**~~
International Ballroom E

~~**Bioengineering Institute of California**~~
~~**UC System Wide**~~
International Ballroom F

~~**University of Florida**~~
Dogwood Room B

~~**Washington University in St. Louis**~~
Juniper Room

~~**University of Michigan**~~
Spruce/Birch Room

~~**University of Pennsylvania**~~
International Ballroom C

~~**University of Pittsburgh**~~
Sycamore Room

~~**University of Rochester**~~
Redwood Room

~~**University of Utah**~~
Hickory Room

~~**University of Victoria**~~
Pine Room

~~**University of Virginia**~~
Walnut Room

~~**Vanderbilt University**~~
Dogwood Room A

~~**University of Maryland**~~
Maple AB Room

Friday, October 18

~~**AIP Publishing–APL Bioengineering**~~
Juniper Room

~~**Florida International University**~~
Dogwood Room A

~~**Physical Science Oncology Networking**~~
Hickory Room

~~**University of Buffalo**~~
Cypress Room

~~**University of Illinois**~~
Redwood Room

~~**University of Southern California**~~
Magnolia Room

~~**University of Texas at Austin**~~
Pecan Room & Foyer

~~**University of Washington**~~
Cottonwood Room AB

~~**University of Wisconsin Madison**~~
Dogwood Room B

Student and Early Career Program Schedule

Programs take place in the Pennsylvania Convention Center, unless otherwise noted

Wednesday, October 16

4:00 pm–5:00 pm

Nutter Theater

Perfecting the First-time Student and Early Career Attendees 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 Philadelphia.

Thursday, October 17

9:00 am–10:00 am

Nutter Theater

Making the Most of Your Academic Experience

Hear from professionals in industry and academia as they share insight and tips on how to optimize your time in school. Speakers will also discuss how to identify and connect with mentors, develop skills that will strengthen your path to employment, and have an active plan for achieving your career goals.

1:30 pm–2:30 pm

Nutter Theater

BME Careers in Industry and Government I

Explore the various industry and government options for BME professionals. Representatives from industry and the government 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

Arizona State University

Florida International University

Johns Hopkins University

Marquette University

University of California San Diego

University of Florida

1:30 pm–3:00 pm

Room 110AB

Speak Easy Workshop for Graduate Students

Speak Easy is an interactive workshop on impromptu research communication. Participants will practice unscripted communication that successfully crosses disciplinary barriers by formulating and distilling their message appropriately for the audience, while faithfully communicating their findings. To continue to develop their communication skills beyond the workshop, attendees will takeaway materials and skills needed to host a Speak Easy workshop at their school.

2:30 pm–4:00 pm

Exhibit Hall Career Zone

Rapid Resume Review - Members Only

Experienced BME professionals will review an electronic or hard copy of your resume and work with you to make improvements.

3:00 pm–4:00 pm

Nutter Theater

BME 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 who wish to pursue post graduate training and academic careers.

3:00 pm–4:00 pm

Room 113C

BMES Special Interest Group: Medical Devices

The BMES Medical Devices Special Interest Group (SIG) promotes collaboration and knowledge sharing between partners from academia, government, industry, and the clinic. Join us to learn about the Medical Devices SIG annual meeting that's in collaboration with the FDA (BMES/FDA Frontiers in Medical Devices Conference), the Medical Devices SIG webinars, careers in the medical device field, the Medical Devices SIG goals, and how you can become a member of the BMES Medical Devices SIG.

University of Maryland at College Park

University of Oklahoma

University of Southern California

University of Texas at Austin

University of Wisconsin-Madison

Virginia Commonwealth University

Worcester Polytechnic Institute

Student and Early Career Program Schedule

Programs take place in the Pennsylvania Convention Center, unless otherwise noted

Friday, October 18

8:00 am–9:30 am

Nutter Theater

BMES Medtronic Student Design Competition

The theme of this year's competition is Digital Imaging, with a focus on new and innovative ways to view the body. This year we chose to bring together the top four of many fine design submissions; University of Florida, Arizona State University, California State – Los Angeles, and George Washington University. This competition will allow each design team to present their projects, followed by a short Q&A session to explore the design's underdeveloped territory. Upon completion of all presentations, the judges will deliberate and announce the First, Second, and Third place winners, along with an Honorary mention. The announcement and the presentation of awards will be held at the BMES booth on Friday, October 19th, at 11:00 pm.

9:00 am–12:00 pm

Room 108A

BMES Student Think Tank (by invitation only)

BMES student members assemble for a unique roundtable program that will directly help forge BMES's future.

9:00 am–10:00 am

Room 113C

The Path to Graduate School

Professionals from academia will discuss how to select the best graduate school, captivate professors, how to position yourself to be competitive for fellowships/financing, how to be a competitive applicant, and how to engage with the department beyond your application.

1:15 pm–3:15 pm

Room 113A

BMES Best Student Chapter Practices Presentation

During this workshop, this year's student chapter awardees will present on their chapter's accomplishments in the areas of mentoring, community outreach, and chapter-industry relationships. Following each chapter's presentation, the Chair of the Student Affairs Subcommittee, Kyle Allen, will present the chapter with their award. This year's award winners are: Ohio State University, winning the Outstanding Chapter Award; University of California-Los Angeles, winning the Commendable Achievement Award; Florida International University, winning the Outstanding Outreach Award; University of California-Davis, winning the Outstanding Mentoring Award; University of Texas-San Antonio, winning the Outstanding Chapter-Industry Award.

1:30 pm–2:30 pm

Nutter Theater

BME Careers in Industry and Government II

Explore the various industry and government options for BME professionals. Representatives from industry and the government share their career paths, educational training, insight into the hiring market, and suggestions for current students and recent graduates. Panelists are different from Careers in Industry/Government I.

2:00 pm–3:30 pm

Room 110AB

Speak Easy Workshop for Graduate Students

Speak Easy is an interactive workshop on impromptu research communication. Participants will practice unscripted communication that successfully crosses disciplinary barriers by formulating and distilling their message appropriately for the audience, while faithfully communicating their findings. To continue to develop their communication skills beyond the workshop, attendees will takeaway materials and skills needed to host a Speak Easy workshop at their school.

2:45 pm–3:45 pm

Nutter Theater

BME Entrepreneurship

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.

3:00 pm–4:00 pm

Room 115C

BMES Special Interest Group: Cellular and Molecular Bioengineering (CMBE)

The CMBE-SIG brings together researchers with diverse backgrounds in scientific and clinical interests with a common goal of understanding how physical forces control biological processes and a desire to improve the practice of medicine, human and veterinary, through the results of their research. Join us to learn about the annual CMBE SIG Conference, the CMBE SIG awards (Shu Chien Achievement, Christopher Jacobs Award for Excellence, Rising Stars, and), Shooting Stars), and how to become a BMES CMBE SIG member.

4:00 pm–5:00 pm

Room 113A

BMES Q&A Panel with Student Chapter Leaders

Professionals from academia will discuss how to select the best graduate school, captivate professors, how to position yourself to be competitive for fellowships/financing, how to be a competitive applicant, and how to engage with the department beyond your application.

4:15 pm–5:15 pm

Room 113C

BMES Special Interest Group: Advanced Biomanufacturing (ABioM)

The ABioM SIG is an emerging field in biomedical engineering. This SIG brings academia and industrial leaders together to promote the development of advanced biomanufacturing, foster collaborations among investigators in the field, and create a new mode of educating and training the next generation leaders and workforce in advanced biomanufacturing. Join us to learn more about the ABioM SIG annual conference, and how you can become a ABioM SIG member.

Alpha Eta Mu Beta (AEMB) Programs

Thursday, October 17

1:00 pm–3:00 pm

Room 109B

Alpha Eta Mu Beta, Mentoring for INnovative Design Solutions (MINDS) Workshop

Session Co-chairs: **Teresa A. Murray, PhD; Alicia Fernandez-Fernandez, PhD, DPT 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.alphaetamubeta.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) regulatory strategy, and (iii) intellectual property protection. After the workshop, students will meet virtually (e.g., via Skype) for up to 5 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 a 5 month commitment.

4:00 pm–5:30 pm

Georgia State Meeting Room

Alpha Eta Mu Beta Annual Meeting

Session Co-chairs: **Teresa A. Murray PhD; Alicia Fernandez-Fernandez, PhD, DPT; Kerri A. Green, MS; Bahar Dhowan, MS, Lauren Pruett, BS, Shyanthony Synigal, BS, Sara Mohamed, BS, and Dominic E. Nathan PhD**

At this annual 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.

Alpha Eta Mu Beta-

Annual Ethics Session

Friday, October 18

9:00 am–10:15 am

Room 109B

Robot Caregivers and Health Care: Ethical Challenges for Engineers

(open to all attendees)

Session Co-chairs: **Jason Borenstein, PhD, and Shyanthony Synigal, BS**

Computing technology is increasingly making its way into health care environments. This includes the use of artificial intelligence (AI) to assist with medical diagnoses. According to some predictions, we may be nearing a time when AI becomes more reliable than physicians at identifying a patient's illness and perhaps even offering a treatment recommendation. Integrating AI systems into medical decision-making in this and other ways of course raises important ethical, legal, and policy issues that need to be addressed. Yet the focus of this presentation will be on a particular type of computing technology that requires attention as well: physically-embodied robots used to provide health care. Many types of robots are, or eventually will be, used in care environments. For example, some robots are tasked with delivering prescription drugs to patients; others can function as cleaners, which could involve sweeping a patient's floor. There are also sophisticated robotic systems that assist with surgical procedures. Other types, including robotic exoskeletons, are classified as prosthetic devices; these robots are designed to be physically attached to a patient and are sometimes used to assist with rehabilitation sessions. Each of these technologies warrants a thorough ethical analysis. Yet the specific aim here is to identify ethical issues emerging from robots designed to serve as caregivers or companions. Engineers and other designers are creating robot caregivers to provide assistance, including at times comfort and support, to variety of populations. Children and older adults, for example, are often identified as potential users of the technology. However, those involved in the design process for robot caregivers need to be cognizant of many emerging ethical concerns. This presentation will provide an overview of some of these concerns, including that patients or others who interact with robots may "overtrust" the technology. Another issue that will be discussed is whether the availability of robots may contribute to less frequent human-to-human interaction, including between patients and health care providers.

Alpha Eta Mu Beta (AEMB), the International Biomedical Engineering Honor Society, is committed to promoting



ethics in the field of biomedical engineering. This year, AEMB is honored to host Dr. Jason Borenstein as our distinguished ethics speaker. Dr. Borenstein received his B.S. in Biology and a B.A. in Philosophy from Emory University. He also attended the University of Miami where he received both his M.A. and Ph.D. in Philosophy. At the Georgia Institute of Technology, Dr. Borenstein serves as the Director of the Graduate Research Ethics Program and also the Associate Director of the Center for Ethics and Technology. He is also affiliated with the Institute of Robotics and Intelligent Machines with a primary research area in collaborative robotics. His areas of interest are related to bioethics, engineering ethics, robot ethics, and research ethics. He is currently a Co-Principal Investigator on a five year project funded by the National Science Foundation entitled "Institutional Transformation: The Role of Service Learning and Community Engagement on the Ethical Development of STEM Students and Campus Culture". Dr. Borenstein is an advocate for effective communication amongst scientists and their audiences, and as a result he has utilized writing as his prime medium. For instance, he is the founder and former editor of the Journal of Philosophy, Science, and Law. Additionally, he assists in editing numerous publications such as the journal of Science and Engineering Ethics, the Stanford Encyclopedia of Philosophy, and Research Ethics for the National Academy of Engineering's Online Ethics Center for Engineering and Science. Dr. Borenstein is also well published and his work has appeared in numerous professional journals including AI & Society, Communications of the ACM, Science and Engineering Ethics, the Journal of Academic Ethics, Ethics and Information Technology, IEEE Technology & Society, Accountability in Research, and the Columbia Science and Technology Law Review. For more information on Dr. Borenstein, please see his personal website: <https://tinyurl.com/ybo9y83b>.

Friday, October 19

11:30 am–1:00 pm

**McCormick & Schmicks
In CNN Center across
from the GWCC**

Alpha Eta Mu Beta Reception

(ticket purchase required)

Session Co-chairs: **Teresa A. Murray PhD; Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS; Bahar Dhowan, MS; Lauren Pruett, BS; Shyanthony Synigal, BS; Sara Mohamed, BS and Dominic E. Nathan PhD**

The Annual AEMB reception will be held at McCormick & Schmicks, Atlanta, GA. New 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: aemb@alphaetamubeta.org

1:15 pm–2:45 pm

Georgia State Meeting Room

AEMB/BMES Regulatory and Intellectual Property Protection Strategies

(open to all attendees)

Session Co-chairs: **Teresa A. Murray, PhD and Alicia Fernandez-Fernandez, PhD, DPT**

Learn important considerations for translating medical device designs from the classroom and the lab into commercially viable products to improve human health and wellbeing. Experts from the medical device industry will describe how to determine the market for a product and the pathways to gain regulatory approval (US and global). Additionally, a patent attorney will present strategies to protect intellectual property, another critically important step toward creating a commercially viable device.

This session is open to all conference attendees and is part of the Mentoring for INnovative Design Solutions (MINDS) Scholar Program, which is run by Alpha Eta Mu Beta and funded through the National Science Foundation. The session is co-sponsored by BMES.

The Society takes great pleasure in honoring and recognizing the significant accomplishments and contributions its members have made in the diverse field of Biomedical Engineering.

On behalf of the Awards Committee we would like to thank all the members who submitted nominations and provided letters of support for all award nominees.

Congratulations to the following Award Winners:

Thursday, October 17 - Plenary I

BMES State of the Society and Pritzker Address

Convention Center | Terrace Ballroom 1-3

- 10:15 am **BMES State of the Society Address**
Dawn Elliott
- 10:30 am **BMES Pritzker Award Presentation by Dawn Elliott**
Christopher Chen, MD, PhD
- 11:30 am **Adjourn**

Thursday, October 17 - Plenary II

Diversity Award Lecture and BMES Class of Fellows

Convention Center | Terrace Ballroom 1-3

- 5:30 pm **BMES 2019 Class of Fellows Presentation**
Dawn Elliott
- 5:45 pm **HS Expo Poster Competition Winners Announced**
Dawn Elliott
- 5:55 pm **Diversity Award Presentation by Dawn Elliott followed by lecture**
Steven Abramowitch, PhD
- 6:30 pm **Adjourn**

Friday, October 18 - Plenary III

NIBIB Lecture, Extended Abstract Awards and Journal Awards

Convention Center | Terrace Ballroom 1-3

- 10:15 am **BMES Extended Abstracts/ Design & Research Awards**
- 10:20 am **Journal Awards**
- 10:30 am **NIBIB Lecture**
Rebecca Richards-Kortum, PhD
- 11:15 am **Adjourn**

Friday, October 18 - Plenary IV

Wallace H. Coulter Award for Healthcare Innovation Lecture and Student Chapter Awards

Convention Center | Terrace Ballroom 1-3

- 5:15 pm **BMES Chapter Awards (Outstanding, Commendable, Mentoring, Outreach, Chapter-Industry)**
- 5:30 pm **Coulter Award Presentation by Dawn Elliott followed by lecture**
- 6:15 pm **Adjourn**

Saturday, October 19 - Plenary V

Rita Schaffer Young Investigator and Mid-Career Award

Convention Center | Terrace Ballroom 1-3

- 10:30 am **Rita Schaffer Award Presentation by Dawn Elliott followed by Lecture**
- 11:00 am **Mid-Career Award Presentation by Dawn Elliott followed by Lecture**
- 11:40 am **Engineering World Health Awards**
Leslie Calman
- 11:45 am **Adjourn**

GRADUATE STUDENTS

- Hyunwoo Yuk**
Massachusetts Institute of Technology
- Lauren Hapach**
Cornell University
- Sonia Kartha**
University of Pennsylvania
- Paul Taufalele**
Vanderbilt University
- Adam Mulka**
Wayne State University
- Erik Gonzalez-Leon**
University of California, Irvine
- Megan Bland**
Virginia Tech

UNDERGRADUATE STUDENTS

- Jenny Yao**
Clemson University
- Arth Shah**
Virginia Commonwealth University
- Nicholas Paleologos**
University of Pennsylvania
- Claire Hilburger**
Northwestern University
- Vishal Tien**
University of Pennsylvania

Friday, October 18-Plenary Session

10:15 am Sidney Marcus Auditorium

BMES Journal Paper Awards Annals of Biomedical Engineering (ABME) ABME Editor's Choice Award

Additive Manufacturing of Biomaterials, Tissues, and Organs
Amir Zadpoor, Delft University of Technology

Subject Specific Optimisation of the Stiffness of Footwear Material for Maximum Plantar Pressure Reduction
Panagiotis Chatzistergos, Staffordshire University

Alginate Sulfate-Nanocellulose Bioinks for Cartilage Bioprinting Applications
Marcy Wong, ETH Zurich

State-of-the-Art Review of 3D Bioprinting for Cardiovascular Tissue Engineering
Bin Duan, University of Nebraska Medical Center

ABME Most Cited

3D Bioprinting for Tissue and Organ Fabrication
Ali Khademhosseini, UCLA

ABME Most Downloaded

Ranges of Injury Risk Associated with Impact from Unmanned Aircraft Systems
Steve Rowson, Virginia Tech

Athanasίου ABME Student Awards

Ranges of Injury Risk Associated with Impact from Unmanned Aircraft Systems
Eamon Campolettano, Virginia Tech

Robotic Surgery Improves Technical Performance and Enhances Prefrontal Activation During High Temporal Demand
Harsimrat Singh, Imperial College London

Towards alternative approaches for coupling of a soft robotic sleeve to the heart
Markus Horvath, MIT

In-Vitro detection of small isolated Cartilage Defects: Intra-Vascular Ultrasound vs. Optical Coherence Tomography
Tim Horeman, Delft University of Technology

Mechanical and Clinical Evaluation of a Shape Memory Alloy and Conventional Struts in a Flexible Scoliotic Brace
Wing Yu Chan, The Hong Kong Polytechnic University

Augmented Reality Based Navigation for Computer Assisted Hip Resurfacing: A Proof of Concept Study

He Liu, Imperial College London

Cardiovascular Engineering and Technology (CVET)

CVET Most Downloaded

Dynamic Viscoelasticity and Surface Properties of Porcine Left Anterior Descending Coronary Arteries
Hanna E. Burton; Jenny M. Freij; Daniel M. Espino
March 2017, Volume 8, Issue 1, pp 41-56.

CVET Most Cited

Assessment of CFD Performance in Simulations of an Idealized Medical Device: Results of FDA's First Computational Interlaboratory Study
Sandy F. C. Stewart; Eric G. Paterson; Greg W. Burgreen; Prasanna Hariharan; Matthew Giarra; Varun Reddy; Steven W. Day; Keefe B. Manning; Steven Deutsch; Michael R. Berman; Matthew R. Myers; Richard A. Malinauskas
2 June 2012, Volume 3, Issue 2, pp 139-160.

Cellular and Molecular Bioengineering

CMBE Most Downloaded

Nanomaterials for the Capture and Therapeutic Targeting of Circulating Tumor Cells
Z. Zhang and M.R. King.
Cell Mol Bioeng. 2017;10(4):275-94.

CMBE Editor's Choice Award

A Microfluidic Model of Hemostasis Sensitive to Platelet Function and Coagulation
R.M. Schoeman; K. Rana; N. Danes; M. Lehmann; J.A. Di Paola; A.L. Fogelson; K. Leiderman; and K.B. Neeves.
Cell Mol Bioeng. 2017; 10(1): 3-15.

Friday, October 19-Plenary Session

5:15 pm Sidney Marcus Auditorium

The Wallace H. Coulter Award for Healthcare Innovation

Josh Makower, MD
Stanford Byers Center for Biodesign

BMES Student Chapter Awards

2018 Outstanding Achievement Award

University of Southern California

2018 Commendable Achievement Award

San Jose State University

Congratulations to all the 2018 BMES Career Development Award, BMES-NSBE (National Society of Black Engineers) Student Travel Award, and BMES Student Travel Award winners. Please pick up your award check at registration.

BMES Career Development Awards

- Isaac Adjeiq**
University of Florida
- Ghuncha Ambrin**
University of Massachusetts, Dartmouth
- Marcos Barcellona**
Washington University in St. Louis
- Evans Bernardin**
University of South Florida
- Leslie Chan**
Massachusetts Institute of Technology
- Si (Stacie) Chen**
University of Illinois at Urbana-Champaign
- Nathan Cho**
University of Southern California
- Renee Cottle**
Clemson University
- Anna Colleen Crouch**
University of Michigan
- Priscilla Do**
Emory University
- Morgan Elliott**
Johns Hopkins University
- Meghan Ferrall-Fairbanks**
Moffitt Cancer Center and Research Institute
- Emily Gosselin**
University of Maryland - College Park
- Kelsey Gray**
University of Maryland
- Hannah Grover**
Thayer School of Engineering, Dartmouth College
- Zeinab Hajjarian**
Massachusetts General Hospital
- Jamila Hedhli**
University of Illinois at Urbana Champaign
- Cherice Hughes-Oliver**
Virginia Tech
- Kalana Jayawardana**
Vanderbilt University
- Anjana Jeyaram**
University of Maryland, College Park
- Franck Kamga Gninzeko**
Virginia Commonwealth University
- Keely Keller**
University of Delaware
- Chafica Kesserwan**
Wayne State University

- Ahyeon Koh**
SUNY Binghamton University
- Patrick Link**
Virginia Commonwealth University
- Davi Lyra-Leite**
University of Southern California
- Kevin McHugh**
Massachusetts Institute of Technology
- Alexa Melvin**
University of Louisville
- Marcela Mireles Ramirez**
Rochester Inst of Technology & Univ of Rochester
- Olivia Ngo**
Drexel University
- Laura Osorno**
Rowan University
- Jude Phillip**
Weill Cornell Medicine
- Faisal Reza**
Centers for Disease Control and Prevention
- Evelia Salinas**
University of California-Irvine
- Shier Nee Saw**
National University of Singapore
- Sejin Son**
University of Michigan
- Ishita Tandon**
University of Arkansas
- Jennifer Wilson**
Stanford University
- Joycelyn Yip**
University of Southern California
- Bethany Young**
Virginia Commonwealth University
- Rana Zakerzadeh**
University of Texas at Austin
- Zhenjiang Zhang**
Vanderbilt University
- Alexis Ziemba**
Rensselaer Polytechnic Institute

BMES-NSBE (National Society of Black Engineers) Student Travel Awards

- Busola Alabi**
University of Texas Southwestern Medical Center
- Ashlee Colbert**
Purdue University
- Olufunto Faweya**
Rice University
- Korie Grayson**
Vanderbilt University
- Candace Grisham**
Vanderbilt University

- Demba Kah**
University of Miami
- Jordan Langston**
Temple University
- Danielle McLaurin**
Mississippi State University
- LaDeidra Monet Roberts**
Cornell University
- Michael Sutton**
Columbia University
- Kyle Thomas**
Washington University in St. Louis

BMES Student Travel Awards

- Alaa Abdelgawad**
University of Arkansas
- Dahlia Alkekhia**
Brown University
- Shelby Bess**
University of Arkansas
- Andrea Cancino**
Illinois Institute of Technology
- Jesse Fine**
Texas A&M University & The Ohio State University
- Estee George**
The University of Akron
- Jordan Harrod**
Cornell University
- Erika Kasen**
Trine University

- Siavash Mazdeyasna**
University of Kentucky
- Melissa Mendoza**
Binghamton University
- Jenna Mosier**
Mississippi State University
- Bryan Neger**
Princeton University
- Katherine Nguyen**
University of California, San Diego
- Michael Nguyen-Truong**
Colorado State University
- Thea Ornstein**
University of Maryland College Park, Fischell Department of Engineering
- Jitendra Pant**
University of Georgia
- Divya Patel**
University of Maryland, College Park
- Diana Philip**
The University of Akron
- Sarah Snyder**
Cornell University
- Connor Virgile**
University of Rochester
- Reo Yoo**
University of California, San Diego

CONGRATULATIONS! BMES 2019 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

Paul Benkeser, PhD	Joseph Irudayaraj, PhD	Michael O'Connor, PhD
Lawrence Bonassar, PhD	Erin Lavik, PhD	Yi-Xian Qin, PhD
Jason Burdick, PhD	Sriram Neelamegham, PhD	Clinton Rubin, PhD
Jordan Green, PhD	Kytai Nguyen, PhD	Paul Sanberg, PhD
Mark Grinstaff, PhD	Anson (Joo) Ong, PhD	Kaiming Ye, PhD

Fellows will receive Awards at the plenary session on Thursday, October 17, 2019 at 5:30 pm in the Terrace Ballroom 1-3.

Industry Programs

Wednesday, October 17

7:30 pm–8:30 pm

Omni Hotel
Magnolia Room

Industry and Clinical Committee Meeting

By Invitation Only

Thursday, October 18

7:00 am–8:00 am

Room A308A

Council of Industry Chapter Presidents

By Invitation Only

8:00 am–10:00 am

Room A402

Tech Transfer Innovation Challenge

1:15 pm–3:15 pm

Room A402

Entrepreneur Workshop

Ticket Purchase Required

7:00 pm–8:30 pm

STATS Brewpub

Industry and Clinical Mixer

Ticket Purchase Required

Hosted at STATS Brewpub, this event is an opportunity for industry professionals and clinicians attending the conference to network in a fun setting. Hors d'oeuvres and one free drink will be provided for those in attendance.

Industry and Clinical Mixer sponsored by



Friday, October 19

8:00 am–9:00 am

Room A402

Product Development Implications based on FDA Medical Device Classification

Chair: Christopher Basciano, BD

A panel based presentation and discussion on FDA device classifications and their impact on requirements for new product development. Specific content will include discussions on the regulatory submission pathways, sterilization methods, physics-based computer modeling and simulation, and the role of ASTM/ISO standards in the regulatory submission.

9:00 am–10:15 am

Room A402

Connecting Engineering Skillsets with Professional Achievement and Advancement

Chair: Christopher Basciano, BD

The medical technology and pharmaceutical industries contain a broad range of career pathways that includes positions at small companies, global corporations, and regulatory agencies. Successful entry and advancement for each organization often requires individual professionals or students to navigate open-ended scenarios that extend beyond technical work completed in a laboratory, office, or classroom. To help students and professionals make informed decisions on the value of different skillsets and equip individuals for making their next career transition, the current session will present descriptions on different career pathways and offer guidance from professionals who are employed in various medical organizations. Responses from an anonymized survey of multiple industry professionals giving their opinions on career advancement and professional achievement will also be presented as part of the discussion.

1:00 pm–2:30 pm

Room A402

Clinical Innovators Spotlight

BMES INDUSTRY CHAPTERS

BMES Industry Chapters directly address the needs of both the clinical and industrial BME professionals by providing networking, professional development, and business development opportunities, as well as recruiting opportunities and the general development of a BME community.

Atlanta Industry Chapter
Boston Industry Chapter
Denver Industry Chapter
Houston Industry Chapter
Indiana Industry Chapter

Minneapolis Twin Cities Industry Chapter
North Carolina Industry Chapter
Philadelphia Industry Chapter
San Francisco Bay Area Industry Chapter
St. Louis Region Industry Chapter

Special Sessions

Wednesday, October 16

3:30 pm–5:00 pm

Room A411

BMES Student Chapter Development Event

Chairs: Michael Brooks (UC Davis) and Sarah St. Clair (UC Davis)

Calling all BMES student chapter leaders! Join us for multiple, short presentations by the chapters leading the nation in various club aspects. These presentations will be followed by two breakout workshops chosen by you based on your personal interests.

The first breakout session period will focus on General Leadership and the second on Targeted Officer Roles. Work with your peers to generate new ideas and leadership strategies for your chapters. This event will generate exciting, new ideas for your chapters. As an added bonus, meet up with other student chapter leaders to start out the week and make weeklong and lifelong friends which will certainly improve your overall conference experience. Event hosted by BMES at UC Davis.

3:00 pm–5:00 pm

Omni Hotel
Dogwood Room

Black Women in Biomedical Engineering: Lessons for Healthy and Successful Career Advancement

(additional \$20 ticket required)

Chairs: C. LaShan Simpson, PhD; Princess Imoukhuede, PhD and Gilda Barabino, PhD

According to a recent joint study released by the National Society for Black Engineers and the Society for Women Engineers, 25% of black women leave the engineering field within the first 5 years. Through this event, we hope to address some of the issues related to the dismal retention rates of black women in STEM. Extensive literature has shown that black women experience more oppression, poor work-life balance, and harsh work environments than their counterparts in STEM fields. Guest speaker, Dr. Joy Harden Bradford, a licensed Psychologist in Atlanta, GA, and host of the weekly podcast "Therapy for Black Girls" will address emotional and mental health issues, as well as provide tips for black women to survive and thrive in their professional careers.

This event is targeted towards black women in biomedical engineering, advocates, and those interested in the retention and career advancement of underrepresented and underserved populations in BME. The event will facilitate the retention of black women in the field. Through the lens and experiences of black women, much can be learned about how to promote healthy and successful careers for all BMEs. A networking reception will follow the session.

Thursday, October 17

8:00 am–9:30 am

Georgia State Room

50th Anniversary Student Chapter Jeopardy Tournament

Chairs: Martine LaBerge; Liz Richards and Matthew Brown

Grab your classmates and professors and come show your school spirit at the 2018 BMES student chapter jeopardy tournament.

Student chapters from across the country will face off in a jeopardy tournament utilizing questions from biomedical engineering coursework and 50 years of BMES history in a fun, fast-paced, and friendly competition. Students will compete for prizes as well as for the inaugural BMES student chapter jeopardy title!

8:00 am–9:30 am

Room A301

The Future of Bioelectronics: Materials, Processes, and Applications

Chairs: Jonathan Rivnay (Northwestern University); Tzahi Cohen-Karni (Carnegie Mellon University); Chong Xie (UT Austin) and Jacob Robinson (Rice University)

The bioelectronics field encompasses a broad range of materials and devices. This symposium will highlight efforts in the field including organic and low dimensional carbon-based bioelectronic materials and devices for biosensing, diagnostics, actuation, drug delivery, and active tissue engineering. Focus will also be placed on both active and passive materials and processes meant to impart flexible, conformal, stretchable, and/or transient/degradable functionality. This symposium intends to further emphasize the need for cross-disciplinary efforts in the development of next-generation bio-integrated electronics by bringing together more fundamental research efforts with those of industrial participants—highlighting systems-level challenges (power and signal transmission/communication) and rising clinical needs.

Thursday, October 18

8:00 am–9:30 am

Room A411

State-of-the-Art ImmunoEngineering and Future Opportunities

Chairs: Julia Babensee (Georgia Tech/Emory University); Susan Thomas (Georgia Tech/Emory University) and Shadi Mamaghani (NIBIB, NIH)

The symposium will bring forth thought-leaders in immuno-Engineering to present state-of-the-art research and opportunities for future directions. Topics to be covered will represent the breath to which immunology intersects with different areas of biomedical engineering such as imaging, biomechanics, biomaterials and computational biology. ImmunoEngineering is a very timely subject of great interest to many bioengineers as well as the funding agency, National Institutes of Health (NIH). The National Institute for Biomedical Imaging and Bioengineering (NIBIB) recently established the first ImmunoEngineering program at NIH. At this gathering of biomedical engineers, a panel discussion will be facilitated by the NIH representative, with the panel consisting of the four speakers and two co-chairs. The purpose of this discussion is to foster ideas from panelists and the audience. Issues to consider include opportunities for further engagement of the biomedical engineering community in immunoEngineering, identify gaps and opportunities for collaboration amongst the community and with immunologists, and how NIH programs can support such endeavors. The NIBIB is of the view that the biomedical engineering community can utilize their expertise and out-of-box solutions to help immunologists, cancer biologists or HIV experts to address unresolved issues that will benefit from a multidisciplinary team-based approach.

8:00 am–9:30 am

Room A310

Single Cell Analysis and Tumor Heterogeneity

Chairs: Sunitha Nagrath (University of Michigan) and Lydia Sohn (UC Berkeley)

The tumor heterogeneity is a critical factor in understanding the biology of aggressive tumors and mechanisms underlying resistance to an expanding repertoire of targeted therapies in cancer. The session will focus on technology developments and the data analytics for single cell analysis to explore the tumor heterogeneity. The session will highlight important areas of single cell analysis including technologies and tools related to single cell isolation and single cell analytical methods (RNA, DNA, protein).

9:30 am–6:30 pm

Exhibit Hall A1

High School Biomedical Engineering Expo

High school students primarily from traditionally under-represented backgrounds in science and engineering will have the opportunity to connect with biomedical engineers, students, faculty and industry, get exposure to the biomedical engineering field, and share projects they are working on related to life sciences (biology, chemistry, biotechnology, healthcare), biomedical engineering, or bioengineering. Selected students will present a poster in the exhibit hall during a poster competition at the Expo and prizes will be awarded to the top winners. The program is supported by funding through the National Science Foundation, National Institutes of Health and the Wallace H. Coulter Foundation (BMES Minority Network).

1:30 pm–3:00 pm

Room A301

NIH Funding Panel Session

Chairs: Zeynep Erim (NIBIB) and Tony Dickherber (NCI)

The session will provide an overview of NIH funding opportunities and resources particularly well-suited to the BME 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. The session is supported by funding through the National Institutes of Health NIBIB, NCI, NIAMS, NICHD and NINDS.

1:30 pm–3:00 pm

Room A310

Soft Material-Enabled Electronics for Medicine, Healthcare, and Human-Machine Interfaces

Chairs: Prof. Woon-Hong Yeo (Georgia Institute of Technology) and Prof. Jae-Woong Jeong (Korea Advanced Institute of Science & Technology, South Korea)

The session will feature renowned speakers who made significant advancements in low-profile, stretchable wearable and implantable electronics for disease diagnostics, health monitoring, therapeutics, and machine interfaces. Introduction and discussion of the emerging technologies and systems regarding wearable and implantable biosensors and bioelectronics will make a direct contribution to the biomedical engineering society since this emerging research area is focusing on the development of advanced materials and engineering technologies to advance human health and well-being.

2:30 pm–5:00 pm

Room A411

6th US-Korea Joint BMES Workshop

Chairs: Ho-Wook Jun (University of Alabama at Birmingham) and Hanjoong Jo (Emory University and Georgia Tech)

The goal of the 6th Annual US-Korea Joint Workshop on Biomedical Engineering is to promote cooperation, collaboration, and networking between the members of Korean Society of Medical and Biological Engineering (KOSOMBE) and Biomedical Engineering Society (BMES). In the past five years, this annual Workshop has become increasingly well-known among biomedical engineers in both US and Korea, attracting >~100 PIs and trainees from both countries as part of the Annual BMES meeting. The workshop will cover topics on various convergent technologies to better understand and improve human health via different approaches in multi-disciplines including biomaterials, tissue engineering, mechanobiology, biotransport, neuro-engineering, exosome, and immunotherapies, drug delivery, medical imaging, immune cancer therapy, stem cell therapy, and bionanotechnology. The Workshop provides an important venue and serves as bridge for a long-term relationship and mutual benefit for both Society members in US and Korea.

3:45 pm–5:15 pm

Room A301

DEBUT Winner Presentations and Award Ceremony

Chairs: Zeynep Erim (NIH/NIBIB) and Phil Weilerstein (VentureWell)

The winners of the DEBUT (Design by Undergraduate Biomedical Teams) jointly sponsored by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) and VentureWell, will present their projects and receive their awards. The session will conclude with a talk on “Next steps in the path to commercialization” by Colin J.H. Brenan, Founder and Chief Commercial Officer of HiFiBio BV, Editor-in-Chief of IEEE PULSE Magazine.

3:45 pm–5:15 pm

Room A310

Novel Photoacoustic Imaging: Systems, Computation, and Agents

Chairs: Junjie Yao (Duke University); Muyinatu (Bisi) Bell (John Hopkins University) and Jun Xia (University of Buffalo)

The special session will feature four world-leading experts on the latest breakthroughs in photoacoustic imaging, including Drs. Lihong V. Wang (Caltech, USA), Stanislav Emelianov (Georgia Tech, USA), Daniel Razansky (TUM, Germany), and Chulhong Kim (POSTECH, South Korea). Photoacoustic imaging, also referred to as optoacoustic imaging, is most sensitive to rich optical absorption contrast and has overcome the fundamental depth limit of

high-resolution optical imaging. The image resolution, as well as the maximum imaging depth, is highly scalable with the optical and acoustic configurations at depths up to several centimeters in biological tissues. Photoacoustic imaging can provide anatomical (e.g., tumor angiogenesis and artery plaque), functional (e.g., neuronal activity and ischemic hypoxia), and molecular information (e.g., protein-protein interaction and gene expression) of living tissues. Photoacoustic imaging is a valuable tool for personalized medicine, using numerous exogenous contrast agents (e.g., organic dyes, metallic and nonmetallic nanoparticles, and reporter gene products) with biomarkers. The invited speakers will collectively cover four exciting topics: (1) Omniscale photoacoustic imaging from organelles to patients, (2) ultrafast photoacoustic imaging of biological functions and dynamics, (3) contrast agents for theranostic photoacoustic imaging, and (4) clinical and commercial translation of photoacoustic imaging.

Friday, October 19

8:00 am–9:30 am

Room A301

Systems Thinking in the Education of Biomedical Engineering Students

Chairs: Eberhard Voit and Denis Tsygankov

This session is dedicated to discussions of innovative BME teaching modalities in the area of computational biomedical systems analysis and highlights novel ideas pertaining to classroom education in the rapidly emerging field of dynamical systems analysis in health and disease. The session begins with real-life illustrations from a critical care unit that set the stage by demonstrating the importance of systems-based biomedical engineering. The subsequent presentations describe different approaches toward fostering systems thinking in the next generation of biomedical engineers.

8:00 am–9:30 am

Room A311

Advanced Biomanufacturing Session I: Advanced Tissue Biofabrication

Chairs: Kaiming Ye (Binghamton University, SUNY) and Cheng Dong

Advanced Biomanufacturing Special Interest Group (ABioM SIG) is pleased to organize two special sessions: “Advanced Cell Biomanufacturing” and “Tissue Biofabrication” to highlight grant challenges and R&D opportunities as well as workforce training in these emerging fields. Invited speakers include Director of National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL), Director of NSF Engineering Research Center (ERC) for Cell Manufacturing Technologies, Director of NIH Center for Engineering Complex Tissues, and pioneers and leaders in these fields.

Special Sessions

Friday, October 19

8:00 am–9:30 am

Room A411

AAA-BMES Symposium: Engineering and Imaging the Stem Cell Niche for Guided Regeneration

Chair: **Scott Simon (University of California-Davis)**

This symposium will focus on anatomical and bioengineering approaches. The theme of the symposium is multi-scale imaging and mechanical contributions to deriving stem cell derived therapeutic tissue growth with emphasis on the matrix and signaling events that are measurable using novel imaging and organoid-on-a-chip approaches.

1:15 pm–2:45 pm

Room A311

Advanced Biomanufacturing Session II: Advanced Cell Biomanufacturing

Chairs: **Kaiming Ye (Binghamton University, SUNY) and Cheng Dong**

Advanced Biomanufacturing Special Interest Group (ABioM SIG) is pleased to organize two special sessions: "Advanced Cell Biomanufacturing" and "Tissue Biofabrication" to highlight grant challenges and R&D opportunities as well as workforce training in these emerging fields. Invited speakers include Director of National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL), Director of NSF Engineering Research Center (ERC) for Cell Manufacturing Technologies, Director of NIH Center for Engineering Complex Tissues, and pioneers and leaders in these fields.

1:15 pm–2:45 pm

GWCC,
Georgia State Room

AEMB/BMES Regulatory and Intellectual Property Protection Strategies

Learn important considerations for translating medical device designs from the classroom and the lab into commercially viable products to improve human health and wellbeing. Experts from the medical device industry will describe how to determine the market for a product and the pathways to gain regulatory approval (US and global). Additionally, a patent attorney will present strategies to protect intellectual property, another critically important step toward creating a commercially viable device. This session is open to all conference attendees and is part of the Mentoring for Innovative Design Solutions (MINDS) Scholar Program, which is run by Alpha Eta Mu Beta and funded through the National Science Foundation. The session is co-sponsored by BMES.

8:00 am–9:30 am

Room A404

Young Innovators of Cellular and Molecular Bioengineering, Part I

1:15 pm–2:45 pm

Room A404

Young Innovators of Cellular and Molecular Bioengineering, Part II

1:15 pm–2:45 pm

Room A409

Engineering Solutions to Health Care Disparities

Chairs: **Gilda Barabino and Cato Laurencin**

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 engineering designs to solve health disparities. The session will feature outstanding designs developed in the 2018 BMES Coulter College.

1:30 pm–4:30 pm

Room A301

BMES-NSF Special Session on CAREER and UNSOLICITED Awards

Preregistration Required

BMES and the National Science Foundation (NSF) have partnered to convene a special session focused on innovative research in biomedical engineering and grant writing. The session will bring together NSF Bioengineering and Engineering Healthcare grantees, young investigators, junior and senior faculty, and post-doctoral fellows for idea exchange and networking related to conducting and funding cutting-edge research in BME. 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 grant applications. The session is funded through the National Science Foundation. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1824363. 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 Sessions

3:30 pm–5:00 pm

Room A411

Physical Science Oncology Networking

Chairs: **Dennis Discher (PSOC@Penn Director) and Denis Wirtz (PSOC Johns Hopkins Director)**

A Network of Physical Science Oncology Centers & Projects is being funded by the National Cancer Institute, and many faculty and students in Biomedical Engineering Departments are directors, investigators, or fellows in the Network. This symposium will describe the Center efforts while highlighting ongoing work and will breakup into small roundtable discussions to answer science questions and also describe opportunities for interactions. A reception will follow on Friday evening at the Omni Hotel at CNN Center to socialize and further network.

3:30 pm–5:00 pm

Room A409

Athanasios Annals of Biomedical Engineering Student Award Session

Chair: **Stefan Duma (Virginia Tech)**

In 2017 the Kerry and Kiley Athanasios Endowment was established within the Biomedical Engineering Society (BMES) to promote graduate students and post-doctoral scholars through their publications in the Annals of Biomedical Engineering (ABME). This session will include up to six speakers selected by the ABME Editorial Board based on their outstanding publications in ABME during the past year. Each award recipient will present a 10 minute summary of their paper followed by 5 minutes of Q&A. A plaque and award of \$500 will be presented to each winner.

3:30 pm–5:00 pm

Room A310

BMES Graduate Medical Innovation Program Workshop Part III: Defining Student Archetype(s)

Chairs: **Jennifer Amos (University of Illinois at Urbana-Champaign); Gilda A. Barabino (The City College of New York); Jeffrey S. Garanich (The City College of New York) and Michael O'Donnell (UC Berkeley/UC San Francisco)**

Graduate medical innovation (GMI) programs provide pathways for engineers, life scientists, and MDs to amplify each other's efforts in developing new innovations in medicine. These programs are emerging from engineering departments, but also from medical schools, business pro-

grams, and entrepreneurship centers. All of these different graduate programs have in common the need to identify high-quality students with strong potential for success. At the same time, the process of bringing new medical technologies to market requires contributions from individuals with disparate skill sets, such as engineers, researchers, clinicians, and entrepreneurs. This diverse range of skills demands a careful consideration of the student archetypes who should be included in such programs.

This workshop emerged from the second GMI Program Workshop, held at the 2017 BMES Annual Meeting; at that event, a break-out session brainstormed attributes of "ideal" candidate students for GMI programs. Following up on that workshop, the organizers distributed surveys to both administrators and alumni of GMI programs. The 2018 Workshop will include detailed review and discussion of the results of these surveys, with the goal of continuing to define the archetype(s) of prospective students with the potential for success in this style of program.

Saturday, October 20

8:00 am–9:30 am

Room A310

Application of Two Dimensional Materials in Healthcare

Chair: **Aida Ebrahimi (Pennsylvania State University)**

2D materials offer high sensitivity due to large surface area, thin atomic profile, tunable electronic/optical properties, flexibility, mechanical strength, and optical transparency. The distinct chemical and physical properties of 2D materials make them ideal for detecting various biological targets, such as nucleic acids, proteins, and small molecules. In recent years, 2D materials and their composite structure with other nanoscale materials (such as nanoparticles, enzymes, nanotubes) have attracted great attention in various technologies related to healthcare, including biochemical sensors, drug delivery, design of in vivo probes, substrate for immobilization of biomolecules, etc. This Special Session intends to share some of the exciting research efforts in the filed on application of 2D materials in healthcare, and can create new collaborative opportunities between the attendees with different areas of expertise, including biomedical engineering, materials science/engineering, electrical engineers, and chemical engineering.

Saturday, October 20

8:00 am–9:30 am

Room A311

Scientific Advancement in the Biomechanics of Prosthetic Heart Valves*Chair: Ajit Yoganathan (Georgia Institute of Technology and Emory University)*

Over the past 60 years, prosthetic heart valves have evolved from mechanical valves to tissue valves implanted surgically, to recent stented tissue valves implanted percutaneously. As one of the major medical devices in clinical cardiovascular disease treatment, prosthetic heart valve has dramatically improved the quality and length of the lives of millions of patients worldwide who otherwise may have no treatment options. Behind its marvelous success, biomedical engineering analysis has played a critical role in improving prosthetic valve design and functionality. In the symposium, we will review and discuss the scientific advancement of prosthetic valve design and the associated engineering analyses done in the past 60 years, ongoing research, and future research directions.

8:00 am–9:30 am

Room A301

BMES-NSF Special Session on Graduate Research Fellowships Program**Preregistration Required**

BMES and the National Science Foundation (NSF) have partnered to 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. The session is funded through the National Science Foundation. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1824363. 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.

1:30 pm–3:00 pm

Room A310

International Collaboration in Biomedical Engineering Education*Chairs: Damir Khismatullin (Tulane University) and Song Li (UCLA)*

This special session will highlight progress in the development of joint biomedical engineering programs between U.S. universities and universities in China, Singapore, and South Korea. This event is a key step in forming partnerships between the BMES and biomedical engineering societies abroad. The invited speakers will share their experience in development/running of international BS/MS/PhD Programs in Biomedical Engineering.

Bioinformatics, Computational and Systems Biology**Kathryn Miller-Jensen**
*Yale University***Matthew Lazzara**
*University of Virginia***Biomaterials****Kaiming Ye**
*Binghamton University***Guohao Dai**
*Northeastern University***Biomechanics****Rouzbeh Amini**
*University of Akron***Daniel Conway**
*Virginia Commonwealth University***Biomedical Engineering Education****Bilal Ghosn**
*Rice University***C. LaShan Simpson**
*Mississippi State University***Biomedical Imaging and Instrumentation****Muyinatu Bell**
*Johns Hopkins University***Carolyn Bayer**
*Tulane University***Cancer Technologies****Xiling Shen**
*Duke University***Ovijit Chaudhuri**
*Stanford University***Cardiovascular Engineering****Mehdi Nikkah**
*Arizona State University***Karen Coulombe**
*Brown University***Cellular and Molecular Bioengineering****Ning Jenny Jiang**
*University of Texas Austin***Roland Kaunas**
*Texas A&M***Device Technologies and Biomedical Robotics****Woon-Hong Yeo**
*Georgia Institute of Technology***Jacqueline C. Linnes**
*Purdue University***Drug Delivery and Intelligent Systems****Anirban Sen Gupta**
*Case Western University***Craig Duvall**
*Vanderbilt University***Nano and Micro Technologies****Evangelia Bellas**
*Temple University***Deok-Ho Kim**
*University of Washington***Neural Engineering****Bryan Pfister**
*New Jersey Institute of Technology***Bonnie Firestein**
*Rutgers University***Orthopedic and Rehabilitation Engineering****Larry Bonassar**
*Cornell University***Grace O'Connell**
*University of California, Berkeley***Respiratory Bioengineering****Jessica Oakes**
*Northeastern University***Jason Gleghorn**
*University of Delaware***Stem Cell Engineering****Penney Gilbert**
*University of Toronto***Treena Arinze**
*New Jersey Institute of Technology***Tissue Engineering****Ho-Wook Jun**
*University of Alabama***Kara Spiller**
*Drexel University***Translational Biomedical Engineering****Karen Christman**
*University of California San Diego***Blanka Sharma**
*University of Florida***Undergraduate Research & Design****Jennifer Choi**
*University of California Davis***Harini Sundararaghavan**
Wayne State University

Thank you to our Reviewers for their Time and Effort

Bioinformatics, Computational and Systems Biology

Kelly Arnold
Olivia Burnsed
Patrick Cahan
Sriram Chandrasekaran
Rachel Childers
Benjamin Cosgrove
Colin Drummond
Mohammad Fallahi-Sichani
Ruogu Fang
Stacey Finley
Joshua Grolman
Sangyoon Han
Kevin Janes
Paul Jensen
Melissa Kemp
Christine King
Pamela Kreeger
Grant Kruger
Matthew Lazzara
Michael Mak
Angelo Mao
Prahlad Menon
Kathryn Miler-Jensen
Kristen Naegle
Shayn Pearce-Cottler
Elsje Pienaar
Manu Platt
Justin Pritchard
William Richardson
Arthur Ritter
Casim Sarkar
Jeff Saucerman
Priya Shah
Xiling Shen
Mary Staehle
Gregory Szeto
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Jared Weis
Levi Wood
Lingchong You
Ioannis Zervantonakis

Biomaterials

Rosalyn Abbott
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Leon Bellan
Ashley Brown
Olivia Burnsed
Ovijit Chaudhuri
Rachel Childers
Cole DeForest
Yizhou Dong
Tim Downing
Erik Dreaden
Craig Duvall
Adam Engler
Adam Feinberg
Claudia Fischbach
Penny Gilbert
Adam Gormley

Joshua Grolman
Brendan Harley
Brenton Hoffman
Nathaniel Huebsch
Nicole Iverson
Jeffrey Jacot
Ning Jenny Jiang
Shan Jiang
Neha Kamat
Ali Khademhosseini
Forrest Kievit
Deok-Ho Kim
Christine King
Grant Kruger
Sanjay Kumar
Ester Kwon
Kent Leach
Jungwoo Lee
Jennifer Leight
Prashant Mali
Angelo Mao
Michael Mitchell
Mary Beth Monroe
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Sharon Presnell
Andrew Putnam
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Geert Schmid-Schoenbein
Ian Schneider
Blanka Sharma
Yunfei Shi
Jae-Won Shin
Craig Simmons
Ankur Singh
Aleksander Skardal
Michael Smith
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Omid Veisesh
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Qun Wang
Jennifer West
Catherine Whittington
Jeffrey Wolchok

Biomechanics

Vinay Abhyankar
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Kyle Allen
Rouzbeh Amini
Ashley Brown
Olivia Burnsed
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Rhima Coleman
Daniel Conway
Kareen Coulombe
Joanna Dahl
Juan Del Alamo
Rafaella Devita
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Stefan Duma

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Maureen Lynch
Mike Madigan
Michael Mak
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Grace O'Connell
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Steve Rowson
Giuliano Scarcelli
Alok Shah
Yunfei Shi
Michael Smith
Brian Stemper
Joel Stitzel
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Pam VandeVord
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Biomedical Engineering Education (BME)

Asem Aboelzahab
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Jennifer Choi
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Diana Gaitan-Leon
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Jean-Michel Maerek
Amir Manbachi
Angelo Mao
Tanya Nocera
Ruth Ochia
Brian Plouffe
Renata Ramos
Sarah Rooney
Daniel Rueda
Mark Ruegsegger
Ann Saterbak
Scott Sell
C. LaShan Simpson
Jan Stegemann

Biomedical Imaging and Instrumentation

Costas Arvanitis
Carolyn Bayer
Tim Becker
Muyinatu Bell
Quincy Brown
Olivia Burnsed
Deva Chan
Rachel Childers
Bernard Choi
Mei-Lan Chu
Delphine Dean
Mark Does
Ayman El-Baz
Ruogu Fang
Baowei Fei
Gabriela Gallego
Sleiman Ghorayeb
Craig Goergen
Joan Greve
Joshua Grolman
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Ken Hoyt
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Yuankai Tao
Tom Yankeelov
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Hongki Yoo
Bing Yu
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Cancer Technologies

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Bahareh Behkam
Brian Booth
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Farhan Chowdhury
Jeannine Coburn
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Esther Gomez
Joshua Grolman
Xiaoming He
R. Lyle Hood
Huang Chiao Huang
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Yonghyun (John) Kim
Christine King
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Ashish Kulkarni
Gabe Kwong
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Matthew Lazzara
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Francis Lin
Solorio Luis
Maureen Lynch
Isidro Magana
Michael Mak
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Hui-sung Moon
Kristen Naegle
Walter O'Dell
Madeleine Oudin
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Prabir Patra
Marjan Rafat

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Liping Tang
Hossein Taviana
Jared Weis
Catherine Whittington
Ian Wong
Bing Yu
Baohong Yuan
Ioannis Zervantonakis
Chao Zhou
Silviya Zustiak

Cardiovascular Engineering

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B. Rita Alevriadou
Rouzbeh Amini
Deirdre Anderson
Reza Avaz
Ashley Brown
Olivia Burnsed
Stuart Campbell
Rachel Childers
Olivia Coiado
Alonzo Cook
Renee Cottle
Kareen Coulombe
Mahsa Dabagh
Guohao Dai
Tim Downing
Adam Feinberg
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Sheila Grant
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Jianjun Guan
Heather Hayenga
Xiaoming He
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Morten Jensen
Bin Jiang
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Grant Kruger
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Owen McCain
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Thank you to our Reviewers for their Time and Effort

Drug Delivery and Intelligent Systems

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Nano and Micro Technologies

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Thank you to our Reviewers for their Time and Effort

Tissue Engineering

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Translational Biomedical Engineering

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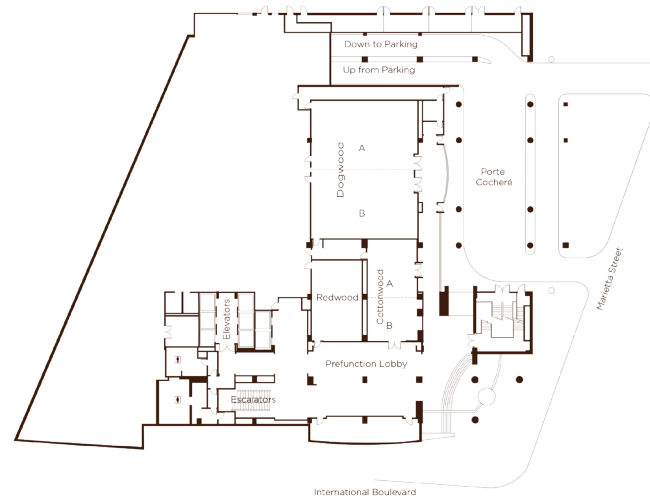
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Undergraduate Research and Design

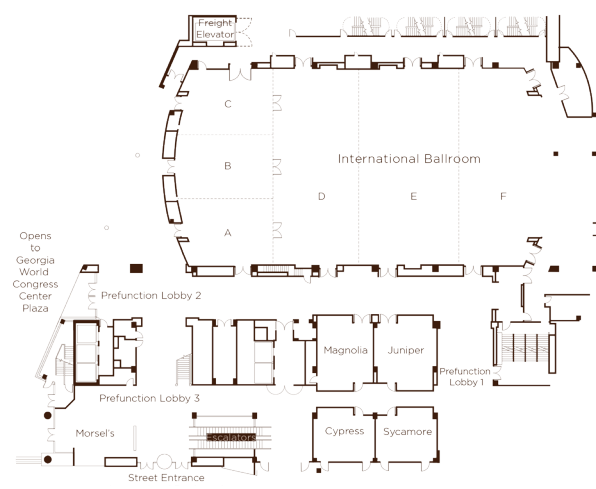
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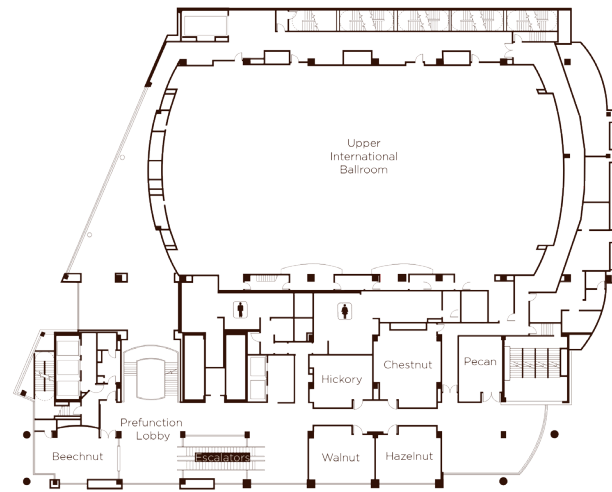
North Tower M1 Street Level



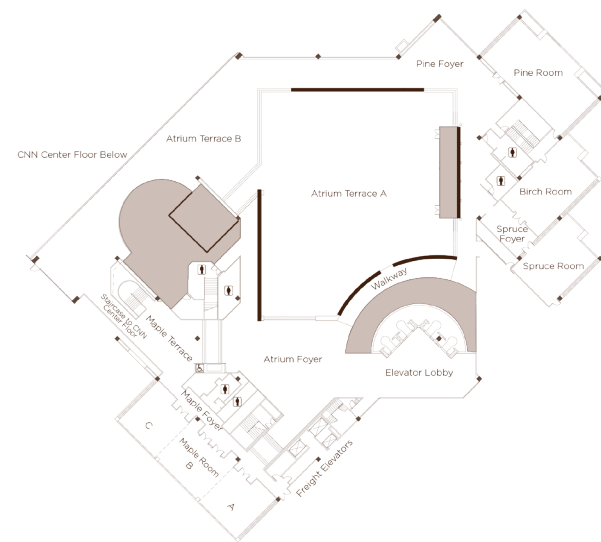
North Tower M2 International Ballroom



North Tower M3 Meeting Level



South Tower Atrium Terrace




Program At-A-Glance | Thursday | October 18, 2018

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:45 pm–5:15 pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	Analysis of Cell Signaling Room A407	Single-cell Measurements and Models Room A407	Systems Approaches to Therapy Therapeutics, and Precision Medicine Room A407
BIOMATERIALS <i>Track sponsored by</i>	Hydrogels I Room A311 3D Printing I Room A312	Hydrogels II Room A311 3D Printing II Room A312	New Hydrogel Methods Room A311 Biomaterials in Regenerative Medicine Room A312 Biomechanics of Biomaterials Room A313
BIOMECHANICS	Human Performance and Sports Biomechanics I Room A313 Cancer Mechanobiology I Room A314	Human Performance and Sports Biomechanics II Room A313 Cancer Mechanobiology II Room A314	Biomechanics of Biomaterials Room A313 Cardiovascular Biomechanics Room A314 Matrix Effects in Mechanobiology I Room A315
BIOMEDICAL ENGINEERING EDUCATION		Innovation in Design Sidney Marcus Auditorium	Novel Pedagogy Room A409
BIOMEDICAL IMAGING & INSTRUMENTATION	Ultrasound Imaging Room A315 Novel Optical Techniques and Devices Room A316	Photoacoustic Imaging Room A315 Cancer Imaging Room A316	Cardiovascular/Flow Imaging Room A316
CANCER TECHNOLOGIES	Microfluidic and Microscale Cancer Models Room A410 Cancer Mechanobiology I Room A314	Tumor Metastasis Room A410 Cancer Mechanobiology II Room A314 Cancer Imaging Room A316 Cancer Cell Motility and Migration Room 404	Cancer Immunoengineering Room A410 Drug Delivery for Immunomodulation and Immunotherapy Room A406
CARDIOVASCULAR ENGINEERING	Cardiovascular Tissue Engineering Room A302 Angiogenesis and Engineered Vascularization Room A401	Computational Modeling in the Cardiovascular System Room A401	Cardiovascular Biomechanics Room A314 Cardiovascular/Flow Imaging Room A316 Thrombosis and Hemostasis Room A401
CELLULAR & MOLECULAR BIOENGINEERING	Extracellular Matrix and Biomaterials Room A403 Cell Migration Room A404 Analysis of Cell Signaling Room A407	Drugs and Growth Factors Room A403 Cancer Cell Motility and Migration Room A404 Single-cell Measurements and Models Room A407	Probes and Signaling Room A403 ImmunoEngineering Room A404 Matrix Effects in Mechanobiology I Room A315
DEVICE TECHNOLOGIES & BIOMEDICAL ROBOTICS	Interventional Devices and Robotics Room A305	Implantable Devices I Room A305	Implantable Devices II Room A305
DRUG DELIVERY & INTELLIGENT SYSTEMS	Delivery Systems for Proteins and Vaccines Room A406 Advances in Respiratory Drug Delivery & Tissue Engineering Room A409	Topics in Drug Delivery Room A406 Drugs and Growth Factors Room A403	Drug Delivery for Immunomodulation and Immunotherapy Room A406
NANO AND MICRO TECHNOLOGIES	Nanotechnologies for Nucleic Acid Detection and Exosome Analysis Room A405	Tissues-on-Chip for Biomedicine Room A405	Micro/Nano Fluidic Engineering and Lab-on-Chip Systems Room A405


Program At-A-Glance | Thursday | October 18, 2018

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:45 pm–5:15 pm
NEURAL ENGINEERING	Neural Device Interfaces Room A303	Neural Disease: Model Systems and Therapeutics Room A303	Neural, Vascular and Immuno Tissue Engineering Room A302 Repair and Regeneration of Brain and Spinal Cord Room A303
ORTHOPEDIC AND REHABILITATION ENGINEERING		Musculoskeletal Tissue Engineering I Room A304	Musculoskeletal Tissue Engineering II Room A304
RESPIRATORY BIOENGINEERING	Advances in Respiratory Drug Delivery & Tissue Engineering Room A409	Respiratory Modeling & Mechanobiology Room A409	
STEM CELL ENGINEERING	Stem Cells in Tissue Engineering Room A408	Advanced Biomanufacturing and Translation of Stem Cell Therapies Room A408	
TISSUE ENGINEERING <i>Track sponsored by</i>	Cardiovascular Tissue Engineering Room A302 Stem Cells in Tissue Engineering Room A408	Tissue Interfaces & Patterning Room A302 Musculoskeletal Tissue Engineering I Room A304	Neural, Vascular and Immuno Tissue Engineering Room A302 Musculoskeletal Tissue Engineering II Room A304
TRANSLATIONAL BIOMEDICAL ENGINEERING	Interventional Devices and Robotics Room A305 Tissue Biofabrication and Cell Therapies Room A304		Preclinical Models Room A408
INDUSTRY	8:00 am–10:00 am Tech Transfer Innovation Challenge Room A402	1:15 pm–3:15 pm Entrepreneur Workshop Room A402	
OTHER	The Future of Bioelectronics: Materials, Processes and Applications Room A301 State-of-the-Art Immuno-Engineering and Future Opportunities Room A411 Single Cell Analysis and Tumor Heterogeneity Room A301 50th Anniversary Jeopardy Georgia State Room	NIH Funding Panel Session Room A301 Soft Material-Enabled Electronics for Medicine, Healthcare, and Human-Machine Interfaces Room A310 2:30pm–5:00pm 6th US-Korea Joint BMES Workshop on Biomedical Engineering Room A411	DEBUT Winner Presentations and Award Ceremony Room A301 Novel Photoacoustic Imaging: Systems, Computation, and Agents Room A310 2:30pm–5:00pm 6th US-Korea Joint BMES Workshop on Biomedical Engineering Room A411
STUDENT AND EARLY CAREER	9:00 am–10:00 am Marketing Yourself: Tips for a Successful Job Search Room A412A	1:30 pm–2:45 pm BME Careers in Industry I Room A412A 2:30 pm–4:00 pm Rapid Resume Review—Members Only Exhibit Hall Career Zone	3:00 pm–4:00 pm BME Careers in Academia Room A412A 4:15 pm–5:15 pm BME Careers in Industry II Room A412A


Program At-A-Glance | Friday | October 19, 2018

TRACK	8:00 am–9:30 am	1:15 pm–2:45 pm	3:30 pm–5:00 pm
BIOINFORMATICS, COMPUTATIONAL AND	Omics Data: Methods, Modeling and Analysis Room A407	Imaging Data Science, Processing, Modeling and Informatics Room A316 Synthetic Biology, Cell Systems Engineering, and Related Technologies Room A407	
BIOMATERIALS <i>Track sponsored by</i> 	Biomaterials for Drug Delivery I Sidney Marcus Auditorium Natural Biomaterial Room A312 Engineering the Stem Cell Microenvironment Room A408	Biomaterials for Drug Delivery I Sidney Marcus Auditorium Scaffolds I Room A312 Biomaterials for Translational Applications Room A313	Characterizing and Modeling the Microenvironment Room A311 Scaffolds II Room A312 Chips and Devices Room A313
BIOMECHANICS	Biomechanics of Rehabilitation Room A313 Biomechanics in Cell and Tissue Engineering Room A314 Matrix Effects in Mechanobiology II Room A315	Cellular and Molecular Biomechanics: Mechanobiology I Room A314 Mechanobiology of Cell Adhesion Room A315	Cellular and Molecular Biomechanics: Mechanobiology II Room A314 Cancer Mechanobiology Room A410
BIOMEDICAL ENGINEERING EDUCATION	Program Development & Assessment Room A409		
BIOMEDICAL IMAGING AND INSTRUMENTATION	Imaging Strategies and Molecular Profiling Room A410 Optics and Spectroscopy in Blood and Cardiovascular Applications Room A316	Imaging Data Science, Processing, Modeling and Informatics Room A316 Imaging in Cardiovascular Systems Room A401	Neuroimaging, Neuromodulation and Neurosurgery Room A316
CANCER TECHNOLOGIES	Imaging Strategies and Molecular Profiling Room A410	Precision Medicine in Cancer Room A410 Photoresponsive Nanomedicines and Immunotherapies for Cancer Room A405	Cancer Mechanobiology Room A410
CARDIOVASCULAR ENGINEERING	Cardiovascular Models and Remodeling Room A401 Heart Valve Structure and Replacement Room A403 Optics and Spectroscopy in Blood and Cardiovascular Applications Room A316	Imaging in Cardiovascular Systems Room A401 Vascular Tissue Engineering Room A403	Vascular Devices and Hemodynamics Room A401 Myocardial Tissue Engineering Room A403
CELLULAR & MOLECULAR BIOENGINEERING	Matrix Effects in Mechanobiology II Room A315 Engineering Multi-cellular Systems Room A302 Young Innovators of Cellular and Molecular Bioengineering: Part I Room A404	Cellular and Molecular Biomechanics: Mechanobiology I Room A314 Young Innovators of Cellular and Molecular Bioengineering: Part II Room A404	Cellular and Molecular Biomechanics: Mechanobiology II Room A314 Molecular and Cellular ImmunoEngineering Room A404
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Prosthetics and Exoskeletons Room A305	Assistive Technologies Room A305	Diagnostic Technology for Low-Resource Settings Room A305 Vascular Devices and Hemodynamics Room A401
DRUG DELIVERY & INTELLIGENT SYSTEMS	Biomaterials for Drug Delivery I Sidney Marcus Auditorium	Biomaterials for Drug Delivery II Sidney Marcus Auditorium Nanotechnologies for Drug and Nucleic Acid Delivery and Immunotherapy Room A406	Drug Delivery for Implants and Responsive Drug Delivery Systems Room A407


Program At-A-Glance | Friday | October 19, 2018

TRACK	8:00 am–9:30 am	1:15 pm–2:45 pm	3:30 pm–5:00 pm
NANO AND MICRO TECHNOLOGIES	Nanotechnologies for Medical Applications Room A405 Molecular Sensors and Nanodevices for Diagnostics Room A406	Photoresponsive Nanomedicines and Immunotherapies for Cancer Room A405 Nanotechnologies for Drug and Nucleic Acid Delivery and Immunotherapy Room A406	Structure Function Relationships in Nanomedicine Room A405 Micro and Nano-Technologies for Cellular Analysis and Neuroscience Room A406 Chips and Devices Room A313
NEURAL ENGINEERING	Neuromodulation Room A303	Neural Cell Model Systems Room A303	Neural Decoding and Control Room A303 Neuroimaging, Neuromodulation and Neurosurgery Room A316 Micro and Nano-Technologies for Cellular Analysis and Neuroscience Room A406 Neural Stem/Progenitor Cell Engineering Room A408
ORTHOPEDIC AND REHABILITATION ENGINEERING	Prosthetics and Exoskeletons Room A305	Musculoskeletal Tissue Engineering III Room A302 Muscle and Tendon Room A304	Spine and Intervertebral Disc Room A304
STEM CELL ENGINEERING	Cartilage and Osteoarthritis Room A304 Engineering the Stem Cell Microenvironment Room A408	Controlling Stem Cell Differentiation Using Novel Technologies Room A408	Development Biology and Stem Cells in Tissue Engineering Room A315 Neural Stem/Progenitor Cell Engineering Room A408
TISSUE ENGINEERING <i>Track sponsored by</i> 	Engineering Multi-cellular Systems Room A302 Biomechanics in Cell and Tissue Engineering Room A314	Musculoskeletal Tissue Engineering III Room A302 Vascular Tissue Engineering Room A403	Advanced Biomanufacturing in Tissue Engineering Room A302 Myocardial Tissue Engineering Room A403 Development Biology and Stem Cells in Tissue Engineering Room A315
INDUSTRY	8:00 am–9:00 am Product Development Implications based on FDA Medical Device Classification Room A402 9:00 am–10:15 am Connecting Engineering Skillsets with Professional Achievement and Advancement Room A402	1:00 pm–2:30 pm Clinical Innovators Spotlight Room A402	
OTHER	Systems Thinking in the Education of Biomedical Engineering Students Room A301 Advanced Biomanufacturing Session I: Advanced Tissue Biofabrication Room A311 AAA-BMES Symposium: Engineering and Imaging the Stem Cell Niche for Guided Regeneration Room A411	BMES-NSF Special Session on CAREER and UNSOLICITED Awards Room A301 Advanced Biomanufacturing Session II: Advanced Cell Biomanufacturing Room A311 Engineering Solutions to Health Care Disparities Room A409	Physical Science Oncology Networking Physical Science Oncology Networking Room A411 Athanasios Annals of Biomedical Engineering Student Award Session Room A409 BMES Graduate Medical Innovation Program Workshop Part III: Defining Student Archetype(s) Room A310
STUDENT AND EARLY CAREER	8:00 am–10:30 am BMES Student Chapter: Chapter Best Practices Room A310 9:00 am–10:00 am The Path to Graduate School Room A412A	1:30 pm–2:30 pm BME Entrepreneurial Careers Room A412A 1:45 pm–3:15 pm BMES Student Chapter: BMES Undergraduate Student Design Competition Room A310 2:30 pm–4:00 pm Rapid Resume Review—Members Only Exhibit Hall Career Zone	3:30 pm–5:00 pm Networking Effectively Online and in Person Room A412A

Program At-A-Glance | Saturday | October 20, 2018

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:15 pm–4:45 pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY		Computational Modeling of Cancer Room A304	Systems Biology of Infectious Disease Room A304
BIOMATERIALS <i>Track sponsored by</i> 	Biomaterials for Immunoengineering I Room A312	Biomaterials for Immunoengineering II Room A312	Drug Delivering Biomaterials Room A407
BIOMECHANICS	Brain Injury Biomechanics <i>Sidney Marcus Auditorium</i> Biofluid Mechanics Room A314 Biomechanics in Cell and Tissue Engineering Room A302 Cardiovascular Mechanobiology Room A401 Cellular and Molecular Biomechanics: Mechanobiology Room A404	Injury Biomechanics I Room A313 Computational and Multiscale Modeling in Biomechanics Room A314 Traumatic Brain Injury Biomechanics and Neuromuscular Biomechanics Room A303	Injury Biomechanics II Room A313
BIOMEDICAL ENGINEERING EDUCATION	Evidence-based Pedagogy Room A409		
BIOMEDICAL IMAGING AND INSTRUMENTATION	Fluorescence Room A315 Imaging in Neuroscience Room A316	MRI I Room A315 Theranostic and Imaging Contrast Agents Room A316 Imaging Technologies and Image-Guided Therapies Room A406	MRI II Room A315 Detection, Therapy and Monitoring Room A316 Advances in Sensing and Imaging Technology Room A305
CANCER TECHNOLOGIES	Physical and Biochemical Pathways in Cancer Room A410	Cancer Drug Delivery I Room A311 Drug Delivery and Immunodulation Room A410 Computational Modeling of Cancer Room A304	Cancer Drug Delivery II Room A311 Tumor Microenvironment Room A410
CARDIOVASCULAR ENGINEERING	Cardiovascular Mechanobiology Room A401 Valvular and Vascular Computational Modeling Room A403	Cardiovascular Stem Cells and Regeneration Room A401	Cardiovascular Electrophysiology Room A401
CELLULAR & MOLECULAR BIOENGINEERING	Cellular and Molecular Biomechanics: Mechanobiology Room A404	Engineering Multi-Cellular Systems Room A404	Micro/Nano Tools in Molecular Biology Room A404
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Point of Care: Enabling Technology and Applications Room A305 Interventional Devices and Micro/Nano Tools Room A406	Wearable and Implantable Sensor Technology Room A305 Device Applications and Translation Room A412	Advances in Sensing and Imaging Technology Room A305
DRUG DELIVERY & INTELLIGENT SYSTEMS	Nanoparticles for Drug Delivery and Genetic Engineering Room A407	Cancer Drug Delivery I Room A311 Drug Delivery and Immunodulation Room A410 Targeted or Responsive Delivery Systems Room A407	Cancer Drug Delivery II Room A311 Drug Delivering Biomaterials Room A407

Program At-A-Glance | Saturday | October 20, 2018

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:15 pm–4:45 pm
NANO AND MICRO TECHNOLOGIES	Organ-on-Chip for Regenerative Medicine I Room A405	Organ-on-Chip for Regenerative Medicine II Room A302 Micro and Nano-Fluidic Engineering and Bioinspired Nano Devices Room A403 Micro/Nano Tools for Cell Sorting, Disease Detection and Diagnosis Room A405	Micro/Nano Tools in Molecular Biology Room A404 Nanotechnologies for Global Health and Infectious Diseases Room A405 Micro/Nano Tools in Neural Engineering Room A303
NEURAL ENGINEERING	Imaging in Neuroscience Room A316 Stem/Progenitor Cells for Neural Applications Room A303	Traumatic Brain Injury Biomechanics and Neuromuscular Biomechanics Room A303	Micro/Nano Tools in Neural Engineering Room A303
ORTHOPEDIC AND REHABILITATION ENGINEERING	Musculoskeletal Tissue Engineering II Room A313		
STEM CELL ENGINEERING	Stem/Progenitor Cells for Neural Applications Room A303	Cardiovascular Stem Cells and Regeneration Room A401	Stem Cells in Tissue Engineering II Room A312
TISSUE ENGINEERING <i>Track sponsored by</i> 	Musculoskeletal Tissue Engineering II Room A313 Biomechanics in Cell and Tissue Engineering Room A302 Organ-on-Chip for Regenerative Medicine I Room A405	Engineering Multi-Cellular Systems Room A404 Organ-on-Chip for Regenerative Medicine I Room A302	Immunoengineering and Immunomodulation in Tissue Engineering Room A302 Printing and Patterning in Tissues Room A314 Stem Cells in Tissue Engineering II Room A312
TRANSLATIONAL BIOMEDICAL ENGINEERING	Interventional Devices and Micro/Nano Tools Room A406	Imaging Technologies and Image-Guided Therapies Room A406 Device Applications and Translation Room A412	
UNDERGRADUATE RESEARCH & DESIGN	Undergraduate Research & Design I Room A408	Undergraduate Research & Design II Room A408	Undergraduate Research & Design III Room A408
OTHER	Application of Two Dimensional Materials in Healthcare Room A310 Scientific Advancement in the Biomechanics of Prosthetic Heart Valves Room A311 BMES-NSF Special Session on Graduate Research Fellowships Program Room A301		

Schedule At-A-Glance

WEDNESDAY | OCTOBER 17, 2018

12:00 noon – 7:00 pm	Registration	GWCC, Exhibit Hall A1-3
8:30 am – 4:30 pm	BMES Board of Directors Meeting	GWCC, Executive Board Room
2:00 pm – 5:00 pm	Georgia Tech Tours <i>(preregistration required)</i>	Leave from GWCC
3:00 pm – 5:00 pm	SPECIAL SESSION: Black Women in Biomedical Engineering: Lessons for Healthy and Successful Career Advancement <i>(preregistration required)</i>	Omni, Dogwood AB Room
3:30 pm – 5:30 pm	Meet the Faculty Candidates	GWCC, Exhibit Hall
3:30 pm – 5:00 pm	SPECIAL SESSION: BMES Student Chapter Development Event	GWCC, A411
4:00 pm – 5:00 pm	Tips for First-time Student and Early Career Attendees	GWCC, A412A
5:30 pm – 7:30 pm	Welcome Reception	GWCC, Levels 3 & 4
6:00 pm – 7:00 pm	VIP Reception <i>(invitation only)</i>	Omni, Pecan Foyer
7:00 pm – 10:30 pm	Council of Chairs Dinner & Meeting <i>(invitation only)</i>	Omni, Intl. Ballroom F
7:30 pm – 8:30 pm	Industry Committee Planning Meeting <i>(invitation only)</i>	Omni, Magnolia Room
8:00 pm – 9:00 pm	LGBT & Friends Dessert Social <i>(ticket purchase required)</i>	Omni, Intl. Ballroom ABC

THURSDAY | OCTOBER 18, 2018

7:00 am – 6:00 pm	Registration	GWCC, Exhibit Hall
7:00 am – 8:00 am	INDUSTRY SESSION: Council of Industry Chapter Presidents <i>(by invitation only)</i>	GWCC, A308A
7:00 am – 8:00 am	BMES Diversity Committee Meeting	GWCC, A308B
8:00 am – 9:30 am	BMES National Meetings Committee Meeting	GWCC, A309
8:00 am – 9:30 am	PLATFORM SESSIONS: Thurs-1	19 concurrent sessions
8:00 am – 9:30 am	SPECIAL SESSION: 50th Anniversary Jeopardy	GWCC, Georgia State Room
8:00 am – 9:30 am	SPECIAL SESSION: The Future of Bioelectronics: Materials, Processes and Applications	GWCC, A301
8:00 am – 9:30 am	SPECIAL SESSION: State-of-the-Art ImmunoEngineering and Future Opportunities	GWCC, A411
8:00 am – 9:30 am	SPECIAL SESSION: Single Cell Analysis and Tumor Heterogeneity	GWCC, A310
8:00 am – 10:00 am	INDUSTRY SESSION: Tech Transfer Innovation Challenge	GWCC, A402
8:30 am – 9:30 am	BMES Student Affairs Committee Meeting	GWCC, A306
9:00 am – 10:00 am	Marketing Yourself: Tips for a Successful Job Search	GWCC, A412A
9:30 am – 5:00 pm	Exhibit Hall Open	GWCC, Exhibit Hall A1-3
9:30 am – 5:00 pm	POSTER SESSION	GWCC, Exhibit Hall
9:30 am – 10:15 am	POSTER VIEWING WITH AUTHORS & Refreshment Break	GWCC, Exhibit Hall
9:30 am – 10:30 am	BMES Ethics Subcommittee Meeting	GWCC, A308A
10:15 am – 11:30 am	PLENARY SESSION: State of the Society by BMES President, Lori Setton, PhD & Pritzker Distinguished Lecture, Rashid Bashir, PhD <i>Department of Bioengineering, University of Illinois</i>	GWCC, Sidney Marcus Auditorium
11:45 am – 1:15 pm	CELEBRATION OF MINORITIES IN BME LUNCHEON <i>Speaker: Paula Hammond, PhD, Koch Institute for Integrative Cancer Research Massachusetts Institute of Technology (ticket purchase required)</i>	GWCC, A411
11:45 am – 1:15 pm	Lunch on Own	
1:00 pm – 3:00 pm	AEMB: Mentoring for INnovative Design Solutions (MINDS) Workshop <i>(by invitation)–affiliate event</i>	GWCC, Georgia State Room
1:15 pm – 3:15 pm	INDUSTRY SESSION: Entrepreneur Workshop <i>(ticket purchase required)</i>	GWCC, A402A
1:30 pm – 3:00 pm	PLATFORM SESSIONS: Thurs-2	20 concurrent sessions
1:30 pm – 2:45 pm	BME Careers in Industry I	GWCC, A412A
1:30 pm – 3:00 pm	SPECIAL SESSION: NIH Funding Panel Session	GWCC, A301
1:30 pm – 3:00 pm	SPECIAL SESSION: Soft Material-Enabled Electronics for Medicine, Healthcare, and Human-Machine Interfaces	GWCC, A310

GWCC = Georgia World Congress Center • Omni = Omni Atlanta Hotel at CNN Center

PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Schedule At-A-Glance

THURSDAY | OCTOBER 18, 2018 *(continued)*

2:30 pm – 4:00 pm	Rapid Resume Review: Members Only	GWCC-Exhibit Hall Career Zone
2:30 pm – 5:00 pm	SPECIAL SESSION: 6th US-Korea Joint BMES Workshop on Biomedical Engineering	GWCC, A411
3:00 pm – 3:45 pm	POSTER VIEWING WITH AUTHORS & Refreshment Break	GWCC, Exhibit Hall
3:00 pm – 4:00 pm	BME Careers in Academia	GWCC, A412A
3:45 pm – 5:15 pm	PLATFORM SESSIONS: Thurs-3	19 concurrent sessions
3:45 pm – 5:15 pm	SPECIAL SESSION: Novel Photoacoustic Imaging: Systems, Computation, and Agents	GWCC, A310
3:45 pm – 5:15 pm	SPECIAL SESSION: NIBIB DEBUT Presentations and Awards Session	GWCC, A301
4:00 pm – 5:30 pm	AEMB: Annual Grand Meeting <i>(affiliate event)</i>	GWCC, Georgia State Room
4:15 pm – 5:15 pm	BME Careers in Industry II	GWCC, A412A
4:30 pm – 5:30 pm	Coulter College Steering Committee Meeting	GWCC, A308A
5:30 pm – 6:30 pm	PLENARY SESSION: Diversity Award Lecture, Anjelica L. Gonzalez, PhD, <i>School of Engineering and Applied Science, Yale University & BMES Fellows</i>	GWCC, Sidney Marcus Auditorium
8:00 pm – 10:00 pm	University Hosted Receptions	Omni

FRIDAY | OCTOBER 19, 2018

7:00 am – 6:00 pm	Registration	GWCC, Exhibit Hall A1-3
7:00 am – 8:00 am	BMES Education Committee Meeting	GWCC, A308B
8:00 am – 9:00 am	INDUSTRY SESSION: Product Development based on FDA Medical Device Classification	GWCC, A402
8:00 am – 9:30 am	BMES 2019 Annual Meeting Planning Committee Meeting	GWCC, A309
8:00 am – 9:00 am	BMES International Committee Meeting	GWCC, A308A
8:00 am – 9:30 am	PLATFORM SESSIONS: Fri-1	19 concurrent sessions
8:00 am – 9:30 am	SPECIAL SESSION: Systems Thinking in the Education of Biomedical Engineering Students	GWCC, A301
8:00 am – 9:30 am	SPECIAL SESSION: AAA-BMES Symposium: Engineering and Imaging the Stem Cell Niche for Guided Regeneration	GWCC, A411
8:00 am – 9:30 am	SPECIAL SESSION: Advanced Biomanufacturing Session I: Advanced Cell Manufacturing	GWCC, A311
8:00 am – 10:30 am	BMES Student Chapter: Chapter Best Practices	GWCC, A310
9:00 am – 10:00 am	The Path to Graduate School	GWCC, A412A
9:00 am – 10:15 am	AEMB Annual Ethics Session: Robot Caregivers and Health Care: Ethical Challenges for Engineers <i>(affiliate event)</i>	GWCC, Georgia State Room
9:00 am – 10:15 am	INDUSTRY SESSION: Connecting Engineering Skillsets with Professional Achievement and Advancement	GWCC, A402
9:30 am – 5:00 pm	Exhibit Hall Open	GWCC, Exhibit Hall A1-3
9:30 am – 5:00 pm	POSTER SESSION	GWCC, Exhibit Hall
9:30 am – 10:15 am	POSTER VIEWING WITH AUTHORS & Refreshment Break	GWCC, Exhibit Hall
10:15 am – 11:15 am	PLENARY SESSION/Design & Research Awards/Journal Awards NIBIB Lecture: Lihong Wang, PhD, <i>California Institute of Technology</i>	GWCC, Sidney Marcus Auditorium
11:15 am – 1:00 pm	Lunch on Own	
11:30 am – 1:00 pm	WOMEN IN BME LUNCHEON <i>(ticket purchase required)</i> <i>Speaker: Jennifer West, PhD, Duke University</i>	GWCC
1:00 pm – 2:30 pm	INDUSTRY SESSION: Clinical Innovators Spotlight	GWCC, A402
1:00 pm – 2:30 pm	AEMB: Intellectual Property Management, From Conception to Production and How to Protect It	GWCC, Georgia State Room
1:15 pm – 2:45 pm	PLATFORM SESSIONS: Fri-2	18 concurrent sessions
1:15 pm – 2:45 pm	SPECIAL SESSION: Advanced Biomanufacturing Session II: Advanced Tissue Biofabrication	GWCC, A311
1:15 pm – 2:45 pm	SPECIAL SESSION: Engineering Solutions to Health Care Disparities	GWCC, A409

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PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Schedule At-A-Glance

FRIDAY | OCTOBER 19, 2018 *(continued)*

1:30 pm – 2:30 pm	BME Entrepreneurial Careers	GWCC, A412A
1:30 pm – 4:30 pm	SPECIAL SESSION: BMES-NSF Session on CAREER and UNSOLICITED Awards <i>(preregistration required)</i>	Room A301
1:45 pm – 3:15 pm	BMES Student Chapter: BMES Undergraduate Student Design Competition	GWCC, A310
2:30 pm – 4:00 pm	Rapid Resume Review: Members Only	GWCC-Exhibit Hall Career Zone
2:45 pm – 3:30 pm	POSTER VIEWING WITH AUTHORS & Refreshment Break	GWCC, Exhibit Hall
3:00 pm – 4:00 pm	BMES Membership Committee Meeting	GWCC, A308A
3:30 pm – 4:30 pm	Design Competition Judges Meeting	GWCC, A308B
3:30 pm – 5:00 pm	Networking Effectively Online and in Person	GWCC, A412A
3:30 pm – 5:00 pm	PLATFORM SESSIONS: Fri-3	18 concurrent sessions
3:30 pm – 5:00 pm	SPECIAL SESSION: Athanasiou Annals of Biomedical Engineering Student Award Session	GWCC, A409
3:30 pm – 5:00 pm	SPECIAL SESSION: BMES Graduate Medical Innovation Program Workshop Part III: Defining Student Archetype(s)	GWCC, A310
3:30 pm – 5:00 pm	SPECIAL SESSION: Physical Science Oncology Networking	GWCC, A411
5:15 pm – 6:15 pm	PLENARY SESSION/Chapter Awards Wallace H. Coulter Award for Healthcare Innovation: Josh Makower, MD, New Enterprise Associates, Inc	GWCC, Sidney Marcus Auditorium
6:30 pm – 8:30 pm	University Hosted Receptions	Omni
6:30 pm – 8:30 pm	Industry Mixer <i>(ticket purchase required)</i>	STATS Brewpub
6:30 pm – 8:30 pm	Physical Science Oncology Networking Reception <i>(invitation only)</i>	Omni, Hickory Room
7:00 pm – 8:30 pm	Reception for Current ABET/BMES Program Evaluators <i>(invitation only)</i>	Omni, Chestnut Room
8:30 pm – 10:30 pm	BMES DESSERT BASH	GWCC, Murphy Ballroom

SATURDAY | OCTOBER 20, 2018

7:00 am – 2:00 pm	Registration	GWCC, Exhibit Hall A1-3
8:00 am – 9:30 am	PLATFORM SESSIONS: Sat-1	17 concurrent sessions
8:00 am – 9:30 am	Undergraduate Research & Design Orals #1	GWCC, A408
8:00 am – 9:30 am	SPECIAL SESSION: BMES-NSF Session on Graduate Research Fellowships Program <i>(preregistration required)</i>	Room A301
8:00 am – 9:30 am	SPECIAL SESSION: Application of Two Dimensional Materials in Healthcare	GWCC, A310
8:00 am – 9:30 am	SPECIAL SESSION: Scientific Advancement in the Biomechanics of Prosthetic Heart Valves	GWCC, A311
8:00 am – 9:30 am	ABioM SIG Meeting	GWCC, A304
9:30 am – 1:30 pm	Exhibit Hall Open	GWCC, Exhibit Hall A1-3
9:30 am – 1:00 pm	POSTER SESSION	GWCC, Exhibit Hall
9:30 am – 10:30 am	POSTER VIEWING WITH AUTHORS & Refreshment Break	GWCC, Exhibit Hall
10:30 am – 11:45 am	PLENARY SESSION: Rita Schaffer Young Investigator Lecture and BMES Mid-Career Award Lecture	GWCC, Sidney Marcus Auditorium
11:45 am – 1:15 pm	Lunch on Own	
1:30 pm – 3:00 pm	PLATFORM SESSIONS: Sat -2	18 concurrent sessions
1:30 pm – 3:00 pm	Undergraduate Research & Design Orals #2	GWCC, A408
1:30 pm – 3:00 pm	SPECIAL SESSION: International Collaboration in Biomedical Engineering Education	GWCC, A310
3:15 pm – 4:45 pm	PLATFORM SESSION: Sat-3	17 concurrent sessions
3:15 pm – 4:45 pm	Undergraduate Research & Design Orals #3	GWCC, A408

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PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Annals of

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2019 Athanasiou ABME Student Award Session

Friday, October 18, 1:15 – 2:45 pm

Navid Manuchehrabadi and Meng Shi: *Ultrarapid Inductive Rewarming of Vitrified Biomaterials with Thin Metal Forms*

Maria Kalli: *Solid Stress Facilitates Fibroblasts Activation to Promote Pancreatic Cancer Cell Migration*

Adam J. Dixon: *In Vitro Sonothrombolysis Enhancement by Transiently Stable Microbubbles Produced by a Flow-Focusing Microfluidic Device*

Chih-Kang Chang and Edward P. Washabaugh: *A Semi-passive Planar Manipulandum for Upper-Extremity Rehabilitation*

Zhuoqi Cheng: *A New Venous Entry Detection Method Based on Electrical Bio-impedance Sensing*

Lee F. Gabler: *Development of a Metric for Predicting Brain Strain Responses Using Head Kinematics*

2019 ABME Paper Awards

Most Downloads

Max Ortiz-Catalan: *Biomechanical Characterisation of Bone-anchored Implant Systems for Amputation Limb Prostheses: A Systematic Review*

Most Citations

Antti Ahola: *Simultaneous Measurement of Contraction and Calcium Transients in Stem Cell Derived Cardiomyocytes*

Editor's Choice

Yi-Chung Lin: *Predictive Simulations of Neuromuscular Coordination and Joint-Contact Loading in Human Gait*

Ellen T. Roche: *Towards Alternative Approaches for Coupling of a Soft Robotic Sleeve to the Heart*

Charlot Philips: *Qualitative and Quantitative Evaluation of a Novel Detergent-Based Method for Decellularization of Peripheral Nerves*

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Spring admission – submit by August 31, 2020

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