### TECHNOLOGIES FOR EMERGING INFECTIOUS DISEASES

**Track Chair:** Gregg Duncan - University of Maryland - gaduncan@umd.edu
- Drug Delivery (vaccines, novel ways to deliver antivirals)
- Biomaterials
- Sterilization
- Modeling Spread of Contagion
- Rapid Detection
- Prevention
- Technology Advancements (3D Printing, Devices, etc.)
- Other / Non-specified

### BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY

**Track Chair:** Shayn Peirce-Cottler – Virginia Tech - smp6p@virginia.edu
**Track Chair:** Tara Deans – University of Utah - tara.deans@utah.edu
- Analysis of Cell Signaling
- Analysis of Multi-Cellular Systems
- Computational Modeling of Cancer
- Computational Modeling of Cell Motility and Proliferation
- Machine Learning for Biomedical Applications
- Models of Metabolism
- Novel Methods for Systems Biology
- Omics Data: Methods, Modeling and Analysis
- Single-Cell Measurements and Models
- Stem Cell Systems Biology & Bioinformatics
- Systems Approaches to Therapy, Therapeutics, and Precision Medicine
- Systems Biology of Infectious Disease
- Theory and Practice of Synthetic Biology
- Other / Non-specified

### BIOMANUFACTURING

**Track Chair:** Tracy Hockway - Binghamton University - thockway@binghamton.edu
**Track Chair:** Yi Hong – University of Texas at Arlington - yihong@uta.edu
- Molecular Biomanufacturing
- Cellular Biomanufacturing
- Tissue and Organ Biomanufacturing
- 3D Printing Advances for Biofabrication
- Biomaterials for Cell Manufacturing and Tissue Biofabrication
- Microphysiological Systems (MPS) Manufacturing
- Multiscale Computation Modeling
- Biomanufacturing Process Integration and Scale-up/out
- Bioprocess Monitoring and In-Line Sensing
- Enabling Technologies for Cell and Tissue Biomanufacturing
- Cryopreservation in Biomanufacturing
- Other / Non-specified

### BIOMATERIALS

**Track Chair:** Lakiesha Williams – University of Florida - lwilliams@bme.ufl.edu
**Track Chair:** Hao Cheng – Drexel University - hc468@drexel.edu
- 3D Printing and Advanced Biomaterial Manufacturing
- Advanced Characterization and Imaging of Biomaterial Environments
- Advances in Biomaterials Integration with Chips and Devices
- Biomaterials for Immunengineering
- Biomaterials for Regenerative Medicine
- Biomaterials Scaffolds
- Biomechanics of Biomaterials
- Drug Delivering Biomaterials
- Engineering the Stem Cell Microenvironment
- Hydrogel Biomaterials
- Natural and Bioinspired Biomaterials
- Other / Non-specified

### BIOMEDICAL ENGINEERING EDUCATION (BME)

**Track Chair:** Cheryl Gomillion – University of Georgia - cpgomillion@uga.edu
**Track Chair:** Aileen Huang-Saad – University of Michigan - aileenhs@umich.edu
- Design and Curriculum
- ABET Program Criteria, Student Outcomes
- Industry and Biomedical Engineering
- Teaching, Learning, and Pedagogy
- Experiential Learning (Curricular and Co-Curricular)
- Multidisciplinary and Interdisciplinary Curriculum
- Diversity, Equity, and Inclusion
- Mentorship
- K-12 Outreach
- Other/Non-Specified

### BIOMECHANICS

**Track Chair:** Josephine Allen - University of Florida - jallen@mse.ufl.edu
**Track Chair:** Ed Guo – Columbia University - exg1@columbia.edu
- Advances in Biomechanical Testing of Medical Devices
- Biofluid Mechanics
- Biomechanics in Cell and Tissue Engineering
- Biomechanics of Biomaterials
- Biomechanics of Rehabilitation/Injury
- Cancer Mechanobiology
- Cardiovascular Biomechanics
- Cellular and Molecular Biomechanics: Mechanobiology
- Computational and Multiscale Modeling in Biomechanics
- Hemodynamics and Vascular Mechanics
- Human Performance/Sports Biomechanics
- Imaging Techniques in Biomechanics
- Injury Biomechanics
- Matrix Effects in Mechanobiology
- Mechanics of the Respiratory System
- Mechanobiology of Cardiac and Smooth Muscle
- Mechanobiology of Cell Adhesion
- Mechanobiology of the Vascular and Nervous System
- Molecular Bioengineering
- Neuromuscular and Brain Biomechanics
- Orthopedic: Mechanobiology and Mechanotransduction
- Topics in Mechanobiology
- Other / Non-specified

### BIOMEDICAL IMAGING AND INSTRUMENTATION

**Track Chair:** Alvin Yeh – Texas A&M - ayyeh@tamu.edu
**Track Chair:** Allen Lii – University of Michigan - allenlii@umich.edu
- Cardiac, Cardiovascular, and Blood Flow Imaging
- Imaging in Neuroscience, Brain and Spine
- Imaging Applications in Reproductive Health
- Imaging Cells, Molecules, and Genomics
- Imaging Technologies and Molecular Profiling in Cancer
- Imaging the Respiratory System
- Imaging Technologies in Clinical Translation
- Imaging in Tissue Engineering
- Optical and Spectroscopic Imaging, Microscopy, and Spectroscopy (Optics)
- Contrast-Enhanced Ultrasound and Therapeutic Ultrasound (US)
- Photoacoustic Imaging (PA)
- Endoscopy and Optical Coherence Tomography (OCT)
- Magnetic Resonance Imaging and Applications (MRI)
- Imaging of Structural and Mechanical Properties
- Deep Learning and Artificial Intelligence in Microstructural Imaging
- Imaging System Development & Emerging Imaging Technologies
- Nuclear Medicine Imaging (PET/PECT)
- X-ray and Computed Tomographic Imaging (CT)
- Other / Non-specified

To submit an abstract go to: [http://submissions.mirasmart.com/bmes2020](http://submissions.mirasmart.com/bmes2020)
CANCER TECHNOLOGIES
Track Chair: Jan Lammerding – Cornell Univ - jan.lammerding@cornell.edu
Track Chair: Kimberly Kelly – University of Virginia - kak3x@virginia.edu
- Cancer Cell Motility and Migration
- Cancer Drug Delivery
- Cancer Immunoeengineering, Immunomodulation and Immunotherapy
- Cancer Mechanobiology
- Circulating Biomarkers: CTCs, Extracellular Vesicles and DNA
- Computational Modeling of Cancer
- Engineered Cancer Models for In Vitro Studies
- Imaging Strategies in Cancer Detection, Diagnosis, and Prognosis
- Metastasis, Dormancy & Treatment Response
- Nanotechnologies in Cancer
- Precision Medicine, Biomarkers and Molecular Profiling
- Tumor Microenvironment
- Other / Non-specified

CARDIOVASCULAR ENGINEERING
Track Chair: Nenad Bursac - Duke University - nbursac@duke.edu
Track Chair: Karen May-Newman – SD State University - kmaynewm@sdsu.edu
- Angiogenesis and Engineered Vascularization
- Cardiac Electrophysiology
- Cardiovascular Biomechanics
- Cardiovascular Devices
- Cardiovascular Organ-on-Chip Technologies
- Cardiovascular Regeneration and Stem Cells
- Cardiovascular Tissue Engineering
- Computational Modeling in Cardiovascular Systems
- Heart Valve Structure, Function, and Disease
- Hemodynamics and Vascular Mechanics
- Imaging in Cardiovascular Systems
- Mechanical Circulatory Support
- Mechanobiology of Cardiac and Smooth Muscle
- Thrombosis and Hemostasis
- Other / Non-specified

CELLULAR AND MOLECULAR BIOENGINEERING
Track Chair: Enos Ebon – Northeastern University - e.ebon@northeastern.edu
Track Chair: Yingxiao Wang – Univ of CA San Diego - yiw015@eng.ucsd.edu
- Analysis of Cell Signaling
- Cancer Cell Motility and Migration
- Cell Migration
- Cellular and Molecular Biomechanics: Mechanobiology
- Engineering and the Microbiome
- Engineering Multi-Cellular Systems
- Epigenetics and Chromatin Regulation
- Gene Delivery and Genome Bioengineering
- Immunoeengineering
- Ligand, Receptor, and Effector Signaling Systems
- Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)
- Molecular and Cellular Engineering for Functional Materials and Sensors
- Molecular and Cellular Immunoeengineering
- Molecular Bioengineering
- Molecular Imaging in Live Cells
- Reprogramming/Directed Differentiation in Stem Cell Engineering
- Single-Cell Measurements and Models
- Other / Non-specified

DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS
Track Chair: Jae-Woong Jeong – KAIST - jjeong1@kaist.ac.kr
Track Chair: Rebecca Wachs – University of Nebraska - rebecca.wachs@unl.edu
- Affordable Health Devices and Frugal Innovation
- Assistive Technology
- Biosensors
- Cardiovascular Devices
- Design and Control of Prostheses and Exoskeletons
- Implantable Sensors and Devices
- Interventional Devices and Robotics
- Musculoskeletal Robotics and Biomechatronics in Rehabilitation
- Neural Devices and Electronics
- Point of Care / Mobile Devices
- Surgical Robotics
- Translation of Devices from the Lab to the Clinic/Market
- Wearable Sensors and Devices
- Other / Non-specified

DRUG DELIVERY
Track Chair: Seungpyo Hong – Univ of Wisconsin - seungpyo.hong@wisc.edu
Track Chair: Julian Nguyen – Univ of North Carolina - julianen@email.unc.edu
- Bioprinted Materials and Self Assembly
- Cancer Drug Delivery
- Delivery Systems for Proteins and Vaccines
- Drug Delivering Biomaterials
- Drug Delivery for Immunomodulation and Immunotherapy
- Drug Delivery in Tissue Engineering & Medicine
- Nanotechnologies for Drug and Nucleic Acid Delivery
- Nucleic Acid Delivery
- Respiratory Drug Delivery
- Targeted or Responsive Delivery Systems
- Translational Aspects of Drug Delivery
- Other / Non-specified

NANO AND MICRO TECHNOLOGIES
Track Chair: Erkin Seker – University of CA Davis - eseker@ucdavis.edu
Track Chair: Akhilesh Gaharwar – Texas A&M - gaharwar@tamu.edu
- 3D Printing and Bioprinting Micro/Nano Methods and Approaches
- Advances in Micro/Nano Biomaterials and Biosystems
- Biomaterials Integration with Micro/Nano Chips and Devices
- Bioinspired/Biomimetic Micro/Nano Devices and Systems
- In Situ Tissue Regeneration via Micro/Nano Engineered Technologies
- Micro/Nano Fluidic Engineering, Lab-on-Chip and Organ-on-Chip Systems
- Micro/Nano Technologies for Cancer Detection, Diagnosis, or Therapy
- Micro/Nano Tools for Immune Engineering and Immune Modulation
- Micro/Nano Tools for Precision Medicine
- Micro/Nano Technologies in Molecular and Cellular Bioengineering, Medicine and Biology (Genomics, Proteomics)
- Micro/Nano Tools for Neuroscience Research and Neuroengineering
- Molecular Sensors and Nanodevices for Diagnostics and Biomedical Imaging
- Microporous and Mesoporous Biomaterials for Regenerative Medicine and Therapeutic Delivery
- Nanoengineered Biomaterials for Regenerative Medicine and Therapeutic Delivery
- Nanotechnologies for Global Health Technologies and Systems
- Nanotechnologies for Drug, Protein and Gene Delivery
- Other / Non-specified (Implantable systems, flexible/wearable systems, 3D printing/bioprinting, tools to study and manipulate the microbiome, courses and training approaches, etc.)

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NEURAL ENGINEERING

Track Chair: Ayseguil Gunduz – University of Florida - agunduz@bme.ufl.edu
Track Chair: Kyle Lampe – University of Virginia - bj2n@virginia.edu

- Computational Neural Modeling
- Delivery of Molecules in the Central Nervous System
- Glial Cell Engineering
- Micro/Nano Tools in Neurosciences
- Neural Decoding and Control
- Neural Device Interfaces
- Neural Disease and Injury: Modeling and Therapeutics
- Neural Stem/Progenitor Cell Engineering
- Neuroimaging
- Neuromodulation: Brain and Spinal Cord Stimulation
- Neuromodulation: Peripheral Nerve Stimulation
- Neurorehabilitation
- Neuromuscular Biomechanics and Biomechanics of Brain Disorders
- Neuro-regenerative Engineering
- Other / Non-specified

ORTHOPAEDIC AND REHABILITATION ENGINEERING

Track Chair: Lin Han – Drexel University - lh536@drexel.edu
Track Chair: Robby Bowles – University of Utah - robert.bowles@utah.edu

- Articular Cartilage, Meniscus and Joints
- Bone
- Imaging Techniques for Musculoskeletal System
- Musculoskeletal Robotics and Biomechatronics in Rehabilitation
- Musculoskeletal Stem Cell Engineering
- Musculoskeletal Tissue Engineering
- Orthopaedic and Rehabilitation Engineering: Implant and Prosthetic Biomechanics
- Orthopedic: Mechanobiology and Mechanotransduction
- Rehabilitation Engineering: Implantable Devices
- Rehabilitation: Blast Injury and Spinal Cord Injury
- Spine and Intervertebral Disc
- Other / Non-specified

RESPIRATORY BIOENGINEERING

Track Chair: Keith Cook – Carnegie Mellon Univ - keicook@andrew.cmu.edu
Track Chair: Victor Varner – University of Texas Dallas - vdv@utdallas.edu

- Bioengineering Approaches to Lung Development, Regeneration, Repair and Replacement
- Imaging the Respiratory System
- Mechanics of the Respiratory System
- Modeling of the Respiratory System
- Respiratory Devices
- Respiratory Drug Delivery
- Respiratory Mechanobiology
- Translational Respiratory Engineering
- Other / Non-specified

STEM CELL ENGINEERING

Track Chair: Sara Nunes Vasconcelos – University of Toronto – sara.vasconcelos@utoronto.ca
Track Chair: Anna Grosberg – University of CA Irvine - grosberg@uci.edu

- Advanced Biomanufacturing and Translation of Stem Cell-Derived Therapies and Tissues
- Cardiovascular Regeneration and Stem Cells
- Engineering Organoid Development & Morphogenesis
- Engineering the Stem Cell Microenvironment
- Gastrointestinal Stem Cell Engineering
- Hematopoietic Stem Cell Engineering
- Mechanobiology of Stem Cell Engineering
- Musculoskeletal Stem Cell Engineering
- Neural Stem/Progenitor Cell Engineering
- Reprogramming/Directed Differentiation in Stem Cell Engineering
- Respiratory Stem Cell Engineering
- Stem Cells and Disease Modeling
- Stem Cell Systems Biology & Bioinformatics
- Stem Cells in Tissue Engineering
- Other / Non-specified

TISSUE ENGINEERING

Track Chair: Adam Engler – University of CA San Diego - aengler@ucsd.edu
Track Chair: Eduardo Silva – University of CA Davis - esilva@ucdavis.edu

- Advanced Biomanufacturing in Tissue Engineering
- Biomechanics of Engineered Tissues
- Cardiovascular Tissue Engineering
- Gene and Drug Delivery to Engineered Tissues
- Engineering Multi-cellular Systems
- Engineering Replacement Tissues
- Engineering Tissue Interfaces
- Imaging Techniques in Tissue Engineering
- Immunoengineering of Engineered Tissues
- Developmental Biology and Morphogenesis of Engineered Tissues
- Mechanobiology of Engineered Tissues
- Musculoskeletal Tissue Engineering
- Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering
- Neural and Neurovascular Tissue Engineering
- Organ-on-Chip for Regenerative Medicine
- 3D Bioprinting and Patterning of Tissues
- Stem Cells in Tissue Engineering
- Other / Non-specified

TRANSLATIONAL BIOMEDICAL ENGINEERING

Track Chair: Colin Drummond - Case Western Reserve Univ - cxd@case.edu
Track Chair: Zhen Gu – University of CA Los Angeles - guzhen@ucla.edu

- Cell Therapeutics Biomanufacturing
- Imaging Technologies in Clinical Translation
- Interventional devices and robotics
- Implantable and wearable sensors
- Micro/Nano Tools in Medicine
- Preclinical Models, GMP, GLP, FDA, and Unexpected Challenges
- Prototype clinical evaluation
- Tissue/Organoid Biofabrication
- Other / Non-specified

UNDERGRADUATE RESEARCH & DESIGN

Track Chair: Rachel Childers – University of Oklahoma - rachel.childers@ou.edu
Track Chair: Alexis Ortiz-Rosario – Ohio State Univ - ortiz-rosario.1@osu.edu

- Summer research submissions opens - July 15, 2020
- Submission deadline – July 30, 2020
- Undergraduates are welcome to submit for consideration in both the general program in addition to the special undergraduate (REU) program

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