Post-Docs, Students Take Top Honors at ASME NanoEngineering for Medicine and Biology Congress

Breakthrough research — from tissue-engineered human gut to bio-inspired robots — garnered Outstanding Student Paper Awards at the ASME NanoEngineering for Medicine and Biology (NEMB) Congress.

The Congress, held February 4 through 6 in Boston, focused on collaboration in the use of nanoscale engineering, medicine, and the life sciences to improve health care. The attendees represented a wide range of experts and peers, with 100 of the attendees hailing from countries spread from Singapore to Denmark. Programming included sessions in eight technical tracks and plenary sessions led by leading scientists, engineers, and clinicians in nanotechnology disciplines. Nanotechnology luminaries including Robert Langer of MIT and Chad Mirkin of Northwestern Univ. delivered plenary talks.

Award winners include:

Best Paper Award, Sponsored by ALine, Inc.

- Megan Creighton, Brown University, “Graphene Induced Adsorptive and Optical Artifacts During In Vitro Toxicology Assays”
- Ramona Gerwig, Natural and Medical Sciences Institute, Germany, “Advanced Recording, Stimulation, and Sensing Using MEA With PEDOT-CNT Micro-Electrodes”
- Mahama Traore, Virginia Tech, “A Microfluidic Tumor Model for Quantification of the Extravascular Transport of Live Autonomous Drug Particles (Bacteriabots)”
- Sebastien Uzel, MIT, “Orthogonal-Gradient-Generating Microfluidic Platform to Study and Direct Neuronal Differentiation, Axon Guidance or Cell Migration”

Outstanding Paper Award

- Daniel Bechstein, Stanford, Single Chip Microfluidically Partitioned Giant Magnetoresistive Sensor Arrays Enable Sample Multiplexing in Biosensing
- Suman Bose, MIT, Single-Step Ultrahigh Enrichment of Leukocytes From Whole Blood Enabled by Cell Rolling on Biomimetic Adhesive Surfaces
- Cara Buchanan, Virginia Tech, Tissue-Engineered Tumor Microvessels to Study Shear Stress-Mediated Angiogenesis
- Fulden Buyukozturk, Northeastern, Mechanistic Modeling of Lipid Based Drug Delivery Systems for Enabling Oral Delivery of Hydrophobic Drugs
- Allen Chen, Rice, Changes in Plasmonic Spectra of Metallic Nanoparticles Upon Cellular Interaction Through Time
- Weiqiang Chen, University of Michigan, Nanotopographic Surface for Efficient Capture of Circulating Tumor Cells without Using Capture Antibodies
- Zi Chen, Washington University, St. Louis, Mechanics Without Muscles: Fast Motion of the Venus flytrap and Bio-inspired Robotics
- Emily Day, Northwestern, Spherical Nucleic Acids for In Vivo Cancer Gene Regulation
• Baptiste Depalle, MIT, Influence of Carbonate Substitutions on Bone Apatite Mechanical Properties
• Rupak Dua, Florida International University, Enhancement of Interfacial Mechanical Properties of Tissue Engineered Cartilage to Bone Using Hydroxyapatite Nanoparticles
• Jonathan Freedman, Boston University, Tantalum Oxide Nanoparticles for Evaluation of Cartilage Health Using Computed Tomography
• Gavin Fullstone, University of Sheffield, Modeling the Transport of Nanoparticles Across the Blood-Brain Barrier
• Tristan Giesa, MIT, Natural Stiffening and Nanoconfinement Increase Flaw Tolerance Length Scales of Biological Fibers: Case Study of Spider Silk
• Jessie Jeon, MIT, In Vitro Extravasation Model to Study Tumor Cell Transmigration Across an Endothelial Monolayer
• Yanfei Jiang, Washington University, St. Louis, The Remarkable Clarity of Blackness: Measuring Nanoscopic Phase Separation of Membrane Rafts Below the Optical Resolution Limit
• Jonah Kaplan, Boston University, Three-Dimensional Superhydrophobic Biodegradable Electrospun Meshes for the Sustained Release of Hydrophilic Chemotherapy Agents
• Netanel Koren, Harvard, Shear Responsive Nano-Therapeutics for Targeted Drug Delivery
• Todd Lagus, Vanderbilt, Controlled Co-Encapsulation of Multiple Cell Types in Monodisperse Microdroplets
• Flavia Libonati, MIT, Effects of oim-Mutations on the Mechanical Behavior of Collagen-Hydroxyapatite Nanocomposites
• Negin Maftouni, University of Tehran, Multiscale Molecular Dynamics Simulation of Nanobio Membrane in Interaction with Protein
• Maria Milagros Avila Olias, University of Sheffield, Mimicking Biological Nanoparticles Cell Entry Using PMPC Polymersomes
• Colin Ng, Virginia Tech, Migratory 3D Single Cell Force Measurement on STEP Enabled Fibrous Nanonets
• Altug Ozcelikkale, Purdue, Effects of Freezing on Collagen Nanoscale Structure in Engineered Tissues
• Zhao Qin, MIT, Ice Crystal Fracture Enhanced by Carbon Dioxide
• Elisabeth Schwab, Max Planck Institute, A Quantitative Investigation of Bone Morphogenetic Protein 2 (BMP-2)-Signal Transduction on Gold Nanostructured Surfaces
• Yue Shao, University of Michigan, Spatiotemporally Coordinated Cellular Contractile Force Response Under Uniaxial Substrate Stretch
• Dmitry Shvartsman, Harvard, Sustained Delivery of VEGF Activates Reinnervation and Reperfusion in Ischemic Skeletal Muscles via NGF/GDNF Signaling
• Kang-Ho Song, University of Colorado, Microbubble-Assisted Sonoporation for In Vitro Delivery of siRNA to Breast Cancer Cells
• Jack Staunton, Arizona State, Mechanical Properties of Breast Cancer Cells Embedded in Collagen I Matrices
• Michelle Stolzoff, Boston University, Lipid-Coated Expansile Nanoparticles for Altered Circulation, Targeting and Treatment of Cancer
• Archana Swami, Brigham and Women's Hospital, Bone Targeted Nanoparticles for Spatio-Temporal Delivery of Therapeutics
• Lucas Ting, University of Washington, Platelet Activation and Contractility Under Shear Forces
• Anne van de Ven, The Methodist Health System, Leveraging Tumor-Specific Flow Conditions for Nanotherapeutics Delivery in Drug-Resistant Triple-Negative Breast Cancer
• Mandana Veiseh, Lawrence Berkeley National Laboratory, Hyaluronan-Based Microenvironmental Probes Distinguish Heterogeneous Breast Cancer Cell Subsets and Predict Their Invasive Behavior
• Huachuan Wang, The George Washington University, Molecular Simulations of Gold Nanojunctions in Alkanedithiol Solvent
• Xiaoning Wang, Boston University, Template-Assisted Fabrication of Hydrogel Nanoparticles for Use as Computed Tomography Contrast Agents
• Zhongying Wang, Brown, Chemical Transformations of Nanosilver in Biological Environments
• Ian Wong, Brigham and Women's Hospital, Emergence of Heterogeneous Invasion and Resistance After the Epithelial-Mesenchymal Transition