As in past years, a Student Paper Competition (SPC) was held at the 2022 Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C). These sessions have traditionally been a highlight of the conference. There are three competition levels: Ph.D., M.S., and B.S. levels, with more than 220 abstracts submitted across all competitions. Each competition is divided into multiple technical areas to evaluate student work fairly. The Ph.D.-level competition featured six in-person podium presentations with 36 presenting finalists, whereas the M.S.- and B.S.-level competitions have dedicated poster sessions with in-person and virtual entries. There were also cash awards for the top student papers in each area.

The 2022 ASME-BED/SB3C Student Paper Competition Committee, composed by Drs. Joao S. Soares (SPC Chair), Kristin Miller (Ph.D.-level SPC Chair), Megan Killian (M.S.-level SPC Chair), and Mariana Kersh (B.S.-level SPC Chair), thank all participating students, their coauthors and institutions, and the effort of 191 anonymous individuals from our community serving in diverse roles such as abstract reviewers, and in-person and virtual SPC judges. We also acknowledge sponsorship from ASME-BED, NIH, and NSF supporting the SPC. Without all these parts, the Student Paper Competition would not be such a great success and showcase high-quality research from our students.

We are pleased to recognize the following awardees from the 2022 SB3C Student Paper Competition:

**B.S. Competition Winners**

**Biofluid and Cardiovascular Mechanics**

- First Place: Yusuf Mastoor, University of Maryland, “Vascular Smooth Muscle Cell Alignment on Micropattern Alters Glucose Metabolism.”
- Runner-up: Tea Cohen, Stanford University, “4D Flow MRI Comparison of Surgical Grafts for Correction of Pulmonary Artery Aneurysms: A Case Study.”
- Runner-up: Noah Stevens, University of Michigan, “Estimation of Flow Data from Angiographic Time Series.”

**Device, Design, Tissue/Cell Engineering**


**Solid Mechanics**

- First Place: Kelly Ott, Virginia Commonwealth University, “Effect of Development Slow Elongation in Driving Hierarchical Collagen Fiber Formation in Engineered Tissues.”
- Runner-up: Margaret Easson, University of Connecticut Health Center, “Physicochemical Mechanisms of Bone Dissolution Play a Significant Role in Regulating Bone Composition and Function in Acidosis.”
- Runner-up: Rachel McLoughlin, University of Pittsburgh, “Exercise Therapy Does Not Alter Kinematic Repeatability in Individuals with Rotator Cuff Tears When Reaching Behind the Back.”

**M.S. Competition Winners**

**Solid and Biofluid Mechanics of Cardiovascular, Lung, and Soft Tissues**

- First Place: Louise Neave, University of Calgary, “Layer-Specific Aortic Aneurysm Biomimics Suggest Relationship Between Medial Stiffness and Interfacial Strength in Patients with Bicuspid Aortic Valve.”
- Runner-up: David Buchner, University of Stuttgart, “Spectral Analysis of Kinetic Energy in a Healthy Aorta.”
- Runner-up: Bronte Miller, University of Alabama, “Phosphorylation Patterns of Vascular Endothelial Growth Factor Receptor-2 and Angiogenesis Are Driven by Biomechanical Forces.”

**Musculoskeletal and Cardiovascular Mechanics, Tissue Engineering, and Biosensors**

- First Place: Alexandra Allan, University of Utah, “Development of a Continuum Damage Model to Predict Accumulation of Subfailure Damage in Tendons.”
Runner-up: Mary Kate Evans, University of Pennsylvania, “Non-Muscle Myosins Are Critical Regulators of Skeletal and Connective Tissue Formation.”
Runner-up: Shiyin Lim, University of California Berkeley, “Disc Geometry Measurement Methods Alter Reported Compressive Mechanics by up to 65%.”

**Ph.D. Competition Winners**

**Biofluid Mechanics and Cardiovascular Imaging**

First Place: Carly Donahue, University of Minnesota, “Patient-Specific Finite Element Modeling to Predict Clinical Risks of Percutaneous Pulmonary Valve Implantation.”
Runner-up: Tejas Patel, Michigan State University, “Computational Modeling of Cryoballoon Ablation for Pulmonary Vein Isolation.”
Runner-up: Sricharan Veeturi, University at Buffalo, “Radiomics Features on Contrast-Enhanced and Nonenhanced MRI Are Associated with Intracranial Aneurysmal Risk.”

**Tendon, Ligament, and Joint**

First Place: Sara Moshage, University of Illinois Urbana-Champaign, “Elastic Strength and Its Relation to Mineral Density in Juvenile Equine Bones of the Lower Limb.”
Runner-up: Ellen Bloom, University of Delaware, “Mechanical and Structural Changes Due to Tendon Overload in a Rat Model of Synergist Ablation.”
Runner-up: Danielle Howe, North Carolina State University, University of North Carolina-Chapel Hill, “Partial ACL Injury Location Impacts Biomechanics and Tissue Remodeling in a Skeletally Immature Porcine Model.”

**Tissue Engineering, Remodeling, and Emerging Areas**

First Place: Shuyang Fang, Columbia University, “Cervical Material Remodeling in Pregnancy Using a Nonhuman Primate Model.”
Runner-up: Shelby Mohr-Allen, University of Texas at Dallas, “Epithelial Fluid Secretion and Luminal Pressure Regulate the Patterns of Proliferation that Sculpt the Developing Bronchial Tree.”
Runner-up: Somdutta Chakraborty, University of Texas at Dallas, “Patterns of Tissue Stiffness Correlate with Distributions of Proliferation and Yap Activity Along the Embryonic Ureteric Tree.”

**Cardiovascular Solid Mechanics**

First Place: Samuel Boland, University of Minnesota, “Post-Stretch Behavior of Vascular Smooth Muscle Cells Depends on Strain-rate and Actomyosin Interactions.”
Runner-up: Alex Khang, University of Texas at Austin, “A 3D Computational Model of Aortic Valve Interstitial Cell Contractile Behavior Within a PEG Hydrogel Medium.”
Runner-up: Colton Ross, University of Oklahoma, “Tricuspid Valve Annulus Mechanics and Geometry in Newborns with Hypoplastic Left Heart Syndrome.”

**Orthopedic Bio-Engineering and Mechanotherapeutics**

First Place: Niamh Ward, National University of Ireland-Galway, “Mechanotherapeutics to Modulate the Foreign Body Response.”
Runner-up: Kyle Meadows, University of Delaware, “Large Animal Model of Meniscus Injury and Repair Shows Chondroprotection and Partially Restores Joint Kinematics as Measured via MRI.”
Runner-up: Meghana Pendyala, Rensselaer Polytechnic Institute, “Hyaluronan, PRG4, and Cytokine Production in Synoviocytes Is Sensitive to Cyclic Strain Magnitude.”

**Biosensors, Brain, and Injury**

First Place: Callie Weber, University of Maryland, “APOE E4 Genotype Decreases Barrier Function and Glucose Uptake in Induced Pluripotent Stem Cell-Derived Brain Microvascular Endothelial Cells.”
Runner-up: Xiaozhu Liu, Boston University, “Progressive Mechanical and Structural Changes in Anterior Cerebral Arteries with Alzheimer’s Disease.”
Runner-up: Jordan Escarcega, Washington University in St. Louis, “Comparison of Oscillatory Deformation Patterns Excited in the Human Brain In Vivo by Harmonic and Impulsive Skull Motion.”

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