Journal of Biomechanical Engineering

Editorial

2015 Summer Biomechanics, Bioengineering, and Biotransport Conference Student Paper Competition

Introduction

As in past years, a Student Paper Competition was held at the 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference (SB^3C). There were three competition levels: Ph.D., M.S., and B.S. The competition was divided into multiple technical areas to provide for a fair evaluation of student work. There were also cash awards for the top three student papers in each area. We are pleased to recognize the following awardees from the 2015 SB^3C.

B.S. Competition Winners

Design and Devices: Biotransport, Biofluid Mechanics.

First Place: **Kevin J. Warburton**, Boise State University, "Wear Simulator for Canine Total Hip Replacements."

Second Place: **Brett S. Klosterhoff**, Purdue University, "Quantitative Visualization of Drug Response of Breast Cancer Cells Within a Three-Dimensional Extracellular Matrix."

Third Place: **McKenna Drysdale**, University of Utah, "Material Property Testing of Carboxymethylated Hyaluronic Acid Hydrogel Polymer."

Human Dynamics, Injury, Tissue Mechanics, Cellular and Tissue Engineering.

First Place: **Nicholas A. Bianco**, University of Florida, "Can Measured Muscle Synergies Reconstruct Unmeasured Muscle Excitations?"

Second Place: **Justin A. Jones**, University of Utah, "The Temporal Change in Protein Biomarkers of Vitreous Humor Following Blast Trauma of the Visual System."

Third Place: **Nithya Vijayakumar**, Stanford University, "A Mechanical Model for Cortical Folding During Brain Development."

M.S. Competition Winners

Biofluids, Biotransport, Design and Devices.

First Place: **Rosamaria Tricarico**, University of Florida, "Elevated Wall Shear Stress Predicts Branch Graft Failure Following Chimney Endovascular Aortic Aneurysm Repair."

Second Place: **Jazmine Aira**, University of South Florida, "Image-Based 3D Morphometric Analysis of the Clavicle Intramedullary Canal in Male Population."

Third Place: **Daniela Velez-Rendon**, University of Illinois at Chicago, "Establishing in vivo Hemodynamic Baseline in a Normotensive Rat Model."

Dynamics, Injury, Cell and Tissue Mechanics.

First Place: **Erica E. Morrill**, Boise State University, "Accurate Prediction of Collagen Fiber Distribution Using FFT: A Validation Study."

Second Place: **Meghan Sylvia**, California Polytechnic State University, San Luis Obispo, CA, "Development of a Human Knee Joint Finite Element Model to Investigate Cartilage Stress During Walking in Obese and Normal Weight Adults."

Third Place: **Michael J. Raymond**, Rensselaer Polytechnic Institute, "Individual Cell-Based Morphological Analysis to Determine Chirality of Epithelial Morphogenesis."

Ph.D. Competition Winners—Digital Links Are Provided for Students Who Submitted Papers to This Special Issue

Biofluid Mechanics.

First Place: **Priya Nair**, Arizona State University, "Hemodynamic Characterization of Different Basilar Tip Aneurysm Templates Using Computational Fluid Dynamics."

Second Place: **Samira Jamalian**, Imperial College London, London, UK, "Suction Effect Produced by Active Contraction of Collecting Lymphatic Vessels Facilities Lymphatic Filling."

Third Place: **David Schreier**, University of Wisconsin–Madison, "Increased Red Blood Cell Stiffness Increases Pulmonary Vascular Resistance and Pulmonary Arterial Pressure."

Biotransport and Simulation.

First Place: **M. Owais Khan**, University of Toronto, Toronto, Canada, "CFD Simulation of Transition to Turbulence for Newtonian vs. Non-Newtonian Flow Through a Stenosis."

Second Place: **Michael J. Weiler**, Georgia Institute of Technology, "Reduced Lymphatic Function Correlates With Disease Progression in a Novel Single Vessel Ligation Model of Lymphedema."

Third Place: **Anne M. Römgens**, Eindhoven University of Technology, Eindhoven, The Netherlands, "Combined Experimental and Finite Element Analysis to Determine the Diffusion Coefficient Within and Between Human Skin Layers."

Cellular and Tissue Engineering.

First Place: **Feini Qu**, University of Pennsylvania, "Interstitial Cell Migration in Dense Connective Tissues Is Modulated by Matrix Microstructure and Micromechanics."

Second Place: **John T. Martin**, University of Pennsylvania, "In Vitro Growth Trajectory and In Vivo Implantation of Cell-Seeded and Disc-Like Angle Ply Structures for Total Disc Replacement."

Third Place: **Heather A. Cirka**, Worcester Polytechnic Institute, "Cells Alter Traction Force and Orientation in Response to Long-Term Cyclic Stretch."

Mechanics and Rehabilitation.

First Place: **Jenell Smith,** University of Pennsylvania, "Blocking Blood-Spinal Cord Barrier Breakdown Prevents the Development of Pain Following Nerve Root Compression Injury."

Second Place: **Sijia Zhang**, University of Pennsylvania, "Defining Collagen Fiber Mechanics in Neuron-Collagen Constructs Under Stretch Using Integrated Experimental & Modeling Approaches."

Third Place: **Christopher F. Ferrigno**, Rush University, "Redistribution of Knee Loads Using Auditory Feedback From Pressure Detecting Shoe Insoles."

Tissue Mechanics: Characterization.

First Place: **Spencer E. Szczesny**, University of Pennsylvania, "Evidence That Interfibrillar Load Transfer in Tendon Is Supported by a Network of Small Diameter Collagen Fibrils."

Second Place: **Kara E. Garcia**, Washington University in St. Louis, "Regional Contraction Shapes the Three-Dimensional Morphogenesis of the Embryonic Forebrain."

Third Place: **Elias R. Pavlatos**, The Ohio State University, "3D Strains in Posterior Sclera Using Ultrasound Speckle Tracking."

Tissue Mechanics: Injury and Repair.

First Place: **Devika M. Varma**, The City College of New York, "Thermoresponsive, Redox-Crosslinked Cellulosic Hydrogels Undergo In Situ Gelation and Restore Nucleus Pulposus Biomechanical Properties Post Nucleotomy."

Second Place: **Andrew P. Baumann**, University of Notre Dame, "Influence of Intracortical Porosity on the Fracture Susceptibility of Human Cortical Bone."

Third Place: **Robert J. Nims**, Columbia University, "A Multigenerational Collagen Damage Model Explains Engineered Cartilage Growth and Remodeling Phenomena."

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