

2023 SBES Symposium Schedule at a Glance

8:00 – 8:30 AM	Registration, Poster Set-Up, and Breakfast <i>Atrium</i>		
8:30 – 9:00 AM	Welcome/Opening Remarks & Sponsor Introductions <i>Atrium</i>		
9:00 – 10:15 AM	Translational Cancer I <i>G101 A</i>	Biomechanics I <i>G101 B</i>	Transportation Safety <i>1101</i>
10:15 – 10:30 AM	Morning Break		
10:30 – 11:00 AM	Sponsor Session: Exponent <i>G101 A</i>	Sponsor Session: ESi <i>G101 B</i>	
11:00 - 11:30 AM	Lightning Talks Session #1 <i>1102</i>		
11:00 – 12:00 PM	Poster Session #1 <i>Atrium</i>		
12:00 – 1:30 PM	Networking Lunch <i>Atrium / 1101</i>		
12:30 - 1:30 PM	Sponsor Session: Cook Medical <i>Atrium</i>		
1:30 - 2:00 PM	Lightning Talks Session #2 <i>1102</i>		
1:30 - 2:30 PM	Poster Session #2 <i>Atrium</i>		
2:30 – 3:45 PM	Translational Cancer II <i>G101 A</i>	Biomechanics II <i>G101 B</i>	Biomaterials & Dyn.Controls <i>1101</i>
3:45 – 4:00 PM	Afternoon Break <i>Atrium</i>		
4:00 – 5:15 PM	Tissue Engineering <i>G101 A</i>	Neuroengineering <i>G101 B</i>	Biomedical Imaging <i>1101</i>
5:15 – 5:30 PM	Award Ceremony & Closing Remarks <i>Atrium</i>		
5:30 – 6:30 PM	Post-Symposium Networking Event <i>Atrium</i>		

Oral Presentations 1 9:00 AM – 10:15 AM

Session Topic: Translational Cancer I

Room: G101 A

Faculty Facilitator: Dr. Joanne Tuohy | Student Facilitator: Kailee David

Time	Presenter	Primary Advisor(s)	Abstract Title
9:00 - 9:15	Naciye Atay	Jennifer Munson	Effects Of Radiation on Transport and Hyaluronan Degradation in GBM
9:15 - 9:30	Sabrina Campelo	Rafael Davalos	High-Frequency Irreversible Electroporation as a Mono- And Combinatorial Therapy for Treating Rodents with Malignant Gliomas
9:30 - 9:45	Savieay Ezparza	Jennifer Munson	Spatiotemporal Microvascular Remodeling Following High-Frequency Irreversible Electroporation in a 4T1 Mouse Model
9:45 - 10:00	Cora Esparza	Jennifer Munson	Investigating Location as a Driver of Interstitial Fluid Flow, Invasion, And Delivery
10:00-10:15	Callum McGrath	Boris Pasche	Frequency Shifting Amplitude Modulated Radiofrequency Electromagnetic Fields Abrogates Antiproliferative Effect

Session Topic: Biomechanics I

Room: G101 B

Faculty Facilitator: Dr. Caitlyn Collins | Student Facilitator: Madison Marks

Time	Presenter	Primary Advisor(s)	Abstract Title
9:00 - 9:15	Hana Chan	Andrew Kemper	Occupant Kinetics and Muscle Responses of Relaxed and Braced Small Female and Mid-Size Male Volunteers in Low-Speed Frontal Sled Tests
9:15 - 9:30	Jenna Mesisca	Robin Queen	Load Variability During a Stop Jump is Higher in Female Patients with an Aclr
9:30 - 9:45	Ryan McNeill	Steve Rowson	Clinical Eye Tracking and Pupillometer Measures in Athletes
9:45 - 10:00	Chitra Meduri	Vincent Wang	Thermal And Mechanical Effects of Focused Ultrasound in Murine Achilles Tendons
10:00-10:15	Luis Poveda	Ashley Weaver	Injury Risk Prediction in Lunar Terrain Vehicle Extra-Vehicular Activities

Oral Presentations 1 9:00 AM – 10:15 AM

Session Topic: Transportation Safety

Room: 1101

Faculty Facilitator: Dr. Miguel Perez | Student Facilitator: Andrea Robinson

Time	Presenter	Primary Advisor(s)	Abstract Title
9:00 - 9:15	Andrew Galloway	Zac Doerzaph	Assessing Effects of Object Detection Performance on Possible Crash Outcomes for an Automated Driving System in Intersection Collision Scenarios
9:15 - 9:30	Martha Gizaw	Miguel Perez	Vehicle Operation and Driving Exposure Characteristics of Sleep Disorder Patients – A Naturalistic Driving Data Analysis
9:30 - 9:45	Sparsh Jain	Miguel Perez	Evaluation Of Impairment on Driving Behavior
9:45 - 10:00	Katelyn Kleinschmidt	Luke Rixinger	Characterizing Intersection Encounters Using Real-World Data to Analyze Intersection Advance Driver Assist Systems
10:00-10:15	Mariette Metrey	Miguel Perez	Compensatory Vehicle Control Techniques Exhibited by Drivers After Arthroscopic Rotator Cuff Surgery
10:15-10:30	Jacob Valente	Miguel Perez	Feasibility Of Passive In-Vehicle Respiration Rate Detection

Poster Session 1 11:00-12:00 PM

Poster #	Presenter	Abstract Title
1	Darnell Campbell	Breast Biopsy Deployment System
2	Zachary Congress	The Impact of Bioink Formulation on Cell Phenotype in Dlp Printed Hydrogels
3	Eugene Ablordeppey	Mechanical Characterization of Pectus Bars for Use in Nuss Procedure to Treat Pectus Excavatum: A Comparative Study
4	Preeya Achari	Determination Of Biomechanical Effects of Histotripsy on Osteosarcoma in a Canine Comparative Oncology Model
5	Laurence Bangert	Do Females Have a Higher Risk of Suffering Tibia Fractures in Frontal Car Crashes?
6	Juliette Caffrey	Finite Element Model of an Ovine Thorax for the High-Rate Non-Penetrating Blunt Impact Environment
7	Logan Dickinson	Proof Of Concept and Analysis of a Novel Implant for Plantar Plate Repair
8	Ty Holcomb	Relationship Between Tackle Form and Head Kinematics in Youth Football
9	Theresa Libera	Kinematics Knee Asymmetry after Total Knee Arthroplasty
10	Seth Mischo	An Analysis of Airbag Deployment Applied to an Out-Of-Position Seated 50Th Percentile Male Human Body Model
11	Julia-Grace Polich	Development of a Human Foot-Ankle Surrogate for Use in Footwear Testing Methodology
12	Giovanny Romero	Head Impact Exposure Differences Between Women's and Men's Artistic Gymnastics
13	Abigail Swenson	Cognitive Outcomes of Head Impact Exposure in Youth Ice Hockey
14	Chad Arledge	Transfer Learning of Permeability Changes in Brain Metastasis Post Radiotherapy
15	Leonardo Bezerra	Machine Learning Classification of Head Impact Severity Based on Changes in Brain Connectivity
16	Mohammadreza Khodaei	Alteration In Brain Functional Network States Associated with Cravings for Alcohol in Abstaining Individuals
17	Delanie Lynch	Investigating Weight Loss Associated Change in Muscle and Bone as Assessed by CT
18	Joshua Stapleton	Associations Between Weight, Bone Mineral Density and Bone Marrow Adipose Tissue in Older Adults with Obesity
19	Aileen Suarez	A Longitudinal Study of The Anatomical Changes of The Pregnant Murine Vagina Using Magnetic Resonance Imaging
20	Fahim Mobin	Investigating The Variability in Pressure-Volume Relationships During Hemorrhage and Aortic Occlusion
21	Joshua Cheng	Sensor-Integrated Body-On-A-Chip Platform with Real-Time Monitoring of Organoid Function
22	Shuyu Zhang	A Slim, Pulse-Driven Microfluidic Pump for Insulin Delivery

23	Ian Wadsworth	Effects Of Symmetric and Asymmetric Salt Conditions on a Selective Solid-State Nanopore Assay
24	De'Yana Hines	Cranial Osteopathic Manipulation Alters Alzheimer's Disease Phenotype in Transgenic Rats
25	Benjamin Maas	Investigating Neurocomputational Mechanisms Encoding Subjective Feelings
26	Amirah Wright	The Development of Chronic Pain Symptoms in a Preclinical Model of Blast Neurotrauma
27	Jonathan Diaz	Exploring Hibernation Mechanisms Through the Lens of Human Organoid Models
28	Jennifer Hammel	A Novel In Vitro Meningeal Lymphatic Barrier Model: Crosstalk Modulates Response to Taxane Chemotherapy
29	L. Madison Kirk	The Impact of FAK Phosphorylation Instigated Through Cell-ECM Interaction on The Amelioration of HSC Activation through n-3 PUFA Supplementation
30	Siyuan Li	The Effect of Tissue-Specific Microenvironments on Bone and Cartilage Microtissue Formation
31	Ritu Ramamurthy	Human Liver Tissue Equivalents (HLtes): A Novel Platform for Studying the Impact of Aav Gene Therapy on The Liver
32	Ryosuke Yokosawa	A Temporal Cellular Responses of Oligodendrocyte Precursor Cells After Applied Overpressure
33	Julio Arroyo	Characterization Of Lethal Pulsed Electric Fields For In Vitro Tumor Spheroids
34	Sarah Hall	Nanoparticle-Mediated Histotripsy for the Treatment of Breast Cancer
35	Victor Lopez	Development Of Miniature High Frequency Transducers for Small Animal Histotripsy Studies
36	Spencer Phillips	Photothermal Ablation of Intracellularly Infected Cancer Cells
37	Samantha Short	Characterizing Effects of Tumor Treating Fields on Cell-Extracellular Matrix Biophysics
38	Morgan Dean	Evaluation Of Roadside Crash Injury Metrics in Oblique Crashes Using Event Data Recorder Data

Lightning Talk 1 11:00 AM – 11:30 AM

Session Topic: Tissue & Cardiovascular Engineering

Room: 1102

Faculty Facilitator: Dr. John Chappell | Student Facilitator: Victor Lopez

Time	Presenter	Primary Advisor(s)	Abstract Title
11:00-11:10	Kailee David	Rafael Davalos	Computational Modeling of Pulsed Field Ablation to Treat Atrial Fibrillation
11:10-11:20	Sai Lasya Agasthya Reddy	Shay Soker	Assessing the Remodeling Effects of Bapn and Marimastat Inhibitors on Microenvironment Using an Ex-Vivo Lx-2 Organoid Model
11:20-11:30	Sara Elnahas	Eli Vlasisavljevich	Towards the Use of Histotripsy as a Tissue Selective Ablation Modality Accurate Skeletal Surrogates

Lightning Talk 2 1:30 PM – 2:00 PM

Session Topic: Biomechanics & Transportation Safety

Room: 1102

Faculty Facilitator: Dr. Ellie Rahbar | Student Facilitator: Shuyu Zhang

Time	Presenter	Primary Advisor(s)	Abstract Title
1:30-1:40	Julia Damron	Andrew Kemper	Tensile Material Properties of Human Costal Cartilage Perichondrium
1:40-1:50	Eugene Crump	Luke Riexinger	Meta-Analysis of Real-World Crash Benefit of Lane Support Systems
1:50-2:00	Ryan Gellner	Steve Rowson	Lower Dentition Position Influences Instrumented Mouthguard Measurement Error

Poster Session 2 1:30-2:30 PM

Poster #	Presenter	Abstract Title
1	Casey Clark	Gelatin Nanoparticle Based Bioink for Dynamic Light Projection Bioprinting of Skin Tissue Constructs
2	Brandon Eberl	Red Blood Cell Surface Potential Modulation During Oxidative Stress
3	William Armstrong	Subject-Specific Finite Element Modeling of The Proximal Femur: Incorporating Morphing and Material Properties for Improved Biomechanical Analysis
4	Samuel Bianco	Comparison Of Head, Neck, And Chest Injury Risks Between Front and Rear Seated Hybrid Iii 50th-Percentile Male Atds in Matched Frontal Ncap
5	Emma Coltoff	The International Spine Biomechanics Consortium (Isbc): An Inter-Laboratory Study of Spine Biomechanical Testing Best Practices
6	Katie Geary	A 1:1 Mechanical Property Analysis of Human Femoral Bone to Additively Manufactured Metamaterial Surrogate Coupons
7	Thomas Jeong	Development Of Subject-Specific Models to Investigate Effects of Long-Duration Spaceflight on Spine Injury Risk
8	Madison Marks	Integrating Athlete Perspectives with Biomechanics to Inform Head Impact Safety in Youth Football
9	Carly Norris	Regional Disparities in Intracranial Pressure During Blast Exposure
10	Andrea Robinson	Development And Validation of a Simplified and Detailed Average Female Finite Element Model
11	Nicole Stark	Headform Friction Coefficients and Implication on Helmet Testing
12	Sophia Zoch	Driver Head Kinematics in Grassroots Dirt Track Racing Crashes: A Pilot Analysis
13	Seha Ay	Privacy-Preserving Deep Learning with The Gerchberg-Saxton Algorithm
14	Georgina Flynn-Smith	Normalization Technique for Quantitative Ultrasound Image Analysis of The Thoracolumbar Fascia
15	Zhen Lin	Investigate Functional Connectivity in Mouse Brain During Resting State Using Wide-Field Optical Mapping
16	Kedar Madi	Morphometric Changes of The Insula Between Acute and Chronic Phases of Sports-Related Concussion are Associated with Changes in Measures of Physical and Psychological Symptoms
17	Ziyu Su	Attention2Minority: A Salient Instance Inference-Based Multiple Instance Learning for Classifying Small Lesions in Whole Slide Images
18	Linda Liu	Investigation of Effects of Avf Hemodynamics on Drug-Coated Balloon Delivery
19	Antonio Renaldo	Investigating The Relationship Between Bleeding, Clotting, And Coagulopathy During Automated Partial REBOA Strategies in a Highly Lethal Porcine Hemorrhage Model
20	Alexia Stettinius	Focused Ultrasound Extraction (Fuse) For DNA Release from Timber Tissue

21	Dorothea Erxleben	Solid-State Nanopore Analysis of Heavy Chain-Modified Hyaluronan as a Translational Marker of Inflammation
22	Jeremy Decker	Investigation Of Temporal Links Between Cortical Neural Dynamics and Gsr in Sleep
23	Zhengzhi Liu	Livable Wage for Graduate Students at Virginia Tech
24	Jamie Nelson	Decoding Past Mental States
25	Audra Barnes	Pericyte Recruitment to The Endothelium at the Maternal-Fetal Interface During Preeclampsia
26	Timothy Dobroski	Biomimetic Vascular Scaffold with Sustained Angiogenic Factor Delivery Accelerates Vascularization and Renal Tissue Formation In Vivo.
27	Rhea John	Recapitulation Of Alzheimer's Disease Microenvironment Using an In Vitro Meningeal Lymphatics Model
28	Tim Leach	Novel In Vitro 3D Airway Culture Model for The Evaluation of Tobacco Products
29	Dariya Lizanets	In Vitro Assessment of Radiation Exposure on Primary Human Bronchial Epithelial Cells
30	Vikram Surendran	A 3D Multi-Cellular Co-Culture Model for Airway Wall Remodeling Studies
31	Raffae Ahmad	Targeting Intracellular Fusobacterium with Electro-Antibacterial-Therapy
32	Jessica Gannon	Investigation Of Histotripsy Pancreas Ablation in An In-Vivo Porcine Model
33	Edward Jacobs	Rapid Electroporation-Dependent Tissue Prediction in Canine Lung Tumors
34	Xiang Pan	Control Of Tetraploid Cancer Cell Evolution Under Different Tumor Microenvironments
35	Zaid Salameh	Harnessing The Electrochemical Effects of Electroporation-Based Therapies to Enhance an Anti-Tumor Immune Response
36	Allison Guettler	Pelvis And Lumbar Spine Damage to Pmhs in The Rear Seat During Frontal Crash Sled Tests

Oral Presentations 2 2:30 PM – 3:45 PM

Session Topic: Translational Cancer II

Room: G101 A

Faculty Facilitator: Dr. Eli Vlaisavljevich | Student Facilitator: Sabrina Campelo

Time	Presenter	Primary Advisor(s)	Abstract Title
2:30-2:45	Dylan Pearson	Eli Vlaisavljevich	Nanoparticle-Mediated Histotripsy and Acoustic Droplet Vaporization Using Perfluorocarbon-Filled Nanoparticles
2:45-3:00	Lauren Ruger	Eli Vlaisavljevich	Improvements Towards Complete Histotripsy Ablation of Osteosarcoma Tumors: Ex Vivo And In Vivo Analyses
3:00-3:15	Sofie Saunier	Rafael Davalos	Effects Of High-Frequency Irreversible Electroporation for The Treatment of Breast Cancer
3:15-3:30	Hannah Schwenker	Eli Vlaisavljevich	Effects of Dose and Distance on Intra-Abdominal Histotripsy Ablation

Session Topic: Biomechanics II

Room: G101 B

Faculty Facilitator: Dr. Ashley Weaver | Student Facilitator: Amirah Wright

Time	Presenter	Primary Advisor(s)	Abstract Title
2:30-2:45	Nicholas Pritchard	Jillian Urban, Joel Stitzel	The Effect of Safety Modifications on Head Kinematics Women's Artistic Gymnastics Experienced During Common Skills In
2:45-3:00	Tyana Scott	Robin Queen	Differences In Load Symmetry Between Healthy Older Adults and Total Knee Arthroplasty Patients
3:00-3:15	Michael Teater	Robin Queen	The Impact of Sex and Varying Horizontal Approach on Limb Stiffness and Limb Stiffness Asymmetry During Landing
3:15-3:30	Jorjie Wilson	Robin Queen	Load Symmetry During Gait Following Total Knee Arthroplasty Compared to Controls
3:30-3:45	Bryana Vasquez	Robin Queen	The Impact of Biofeedback on Limb Stiffness and Knee Joint Power in Aclr Patients

Oral Presentations 2 2:30 PM – 3:45 PM

Session Topic: Biomaterials and Dynamic Controls

Room: 1101

Faculty Facilitator: Dr. Aaron Goldstein | Student Facilitator: Ryosuke Yokosawa

Time	Presenter	Primary Advisor(s)	Abstract Title
2:30-2:45	Joshua Bowlby	Emmanuel Opara	Engineering Adiponectin Microparticles to Stimulate Stem Cells to Secrete Exosomes for Treatment of Cell-Free Treatment of Diseases
2:45-3:00	Jun Tae Huh	Sang Jin Lee	Tissue-Specific Bioink System Mediated by Photo-Crosslinkable Heparin for Cell-Based Bioprinting Applications
3:00-3:15	Zerin Khan	Scott Verbridge	Development Of an Injectable Hydrogel Platform to Capture and Eradicate Glioblastoma Cells with Chemical and Physical Stimuli
3:15-3:30	Noah Showalter	Pamela VandeVord	Blast Injury Platform For In Vitro Models
3:30-3:45	Mulham Soudan	Philip Brown	Position Evaluation of Robotic Surgery Platform for In Situ 3D Printing

Oral Presentations 3 4:00 PM – 5:15 PM

Session Topic: Tissue Engineering

Room: G101 A

Faculty Facilitator: Dr. Monet Roberts | Student Facilitator: Sara Elnahas

Time	Presenter	Primary Advisor(s)	Abstract Title
4:00-4:15	Laith Al-Jaouni	Scott Verbridge	In Vitro Astrocyte Remodeling of Extracellular Matrix Following Mild Traumatic Brain Injury
4:15-4:30	Isabelle Mehochko	Eli Vlaisavljevich	Focused Ultrasound Extraction (Fuse) For Ffpe DNA Extraction
4:30-4:45	Kelsey Willson	Anthony Atala	Pre-Organized Cellular Components in Bioprinted Skin Improving Long Term Functionality of Full Thickness Wounds
4:45-5:00	Patricia Thomas	Scott Gayzik	Characterizing And Modeling Ovine Adipose Tissue for Studying Npbi
5:00-5:15	Benjamin Hezrony	Philip Brown	Towards Micromechanically Accurate Skeletal Surrogates

Session Topic: Neuroengineering

Room: G101 B

Faculty Facilitator: Dr. Pam VandeVord | Student Facilitator: Katelyn Kleinschmidt

Time	Presenter	Primary Advisor(s)	Abstract Title
4:00-4:15	Brendan Arnold	Pamela VandeVord	Automated Rat Grimace Scale for The Assessment of Pain
4:15-4:30	Ross Fontana	Kenneth Kishida	Characterization Of The 'Background Current' Within Fast Scan Cyclic Voltammetry Data
4:30-4:45	Gavin Vess	Sujith Vijayan	Neural Dynamics of Mental Imagery, Visual Perception, and Rem Sleep
4:45-5:00	Jessica Wilkes	Pamela VandeVord	The Role of Injury Mechanism in Neurogenesis Following Repeated Mild Traumatic Brain Injury in The Dentate Gyrus
5:00-5:15	Tanner Filben	Jillian Urban, Joel Stitzel	Evaluation Of Technique and Fatigue as Determinants of Head Kinematics During Soccer Heading

Oral Presentations 3 4:00 PM – 5:15 PM

Session Topic: Biomedical Imaging

Room: 1101

Faculty Facilitator: Dr. Oleg Kim | Student Facilitator: Julio Arroyo

Time	Presenter	Primary Advisor(s)	Abstract Title
4:00-4:15	Ghaidaa Al Khafaji	Vincent Wang	Run Length Texture Analysis of Thoracolumbar Fascia Sonographic Images: A Comparison of Subjects with And Without Low Back Pain (Lbp)
4:15-4:30	Sarah Crimmins	Vincent Wang	Quantitative Image Texture Analysis of Sonographic Images of Patellar Tendons of Collegiate Basketball Players
4:30-4:45	Austin Moore	Scott Gayzik	Development and Validation of Subject Specific Lumbar Vertebral Models
4:45-5:00	David Norfleet	Stephen LaConte	Mechanisms of the Default Mode Network During a Go/Nogo Task and The Inefficiency of An Open- Loop Design Model
5:00-5:15	Robyn Hanson	Robin Queen	Total Ankle Arthroplasty Improves Gait Symmetry