

RESEARCH POSTERS SATURDAY MORNING 9:30 am – 11:30 am

BIOMATERIALS

- 20 Fabrication of Conductive Scaffolds for Peripheral Nerve Regeneration Sahitya Allam, Michael Jaffe, Bryan Pfister
- 21 Homogenous Integration of Iron Oxide Nanoparticles into Cellulose Nanofibers William Breeding, Michael Mason
- 22 The Characterization of Peptide Hydrogels for Myocardial Regeneration Anthony Chirayath, Sugosh Anur, Peter Nguyen, Pamela Hitscherich, Eun Lee, Vivek Kumar
- 23 Modeling Fn Adsorption to PNIPAAm Substrates and Effects on Cell Function Katarina DiLillo, Christopher Anderson
- 24 Effects of citrate-coated platinum nanoparticles of different sizes on melanogenesis in MNT1 human melanoma cells Shilpi Goenka, Sai Sreenivasamurthy, SANFORD SIMON
- 25 Nanoparticle Containing sRAGE for Diabetic Wound Healing Hwan June Kang, Rick Cohen, Martin Yarmush, Francois Berthiaume
- 26 Control of Cytotoxic Release of K⁺ and Na⁺ from Bioactive Glass using ZnO Emily Krull, Aisling Coughlan
- 27 Optimizing an Electrospinning Process of Thermo-responsive PNIPAM-Collagen Composite Nanofibers for Cell Culture Rachel Young, Christopher Anderson, Lauren Anderson

BIOMECHANICS

- 30 The Effects of Blunt Impact Site and Speed on the Spatial and Temporal Deformation of the Brain Abdus Ali, Namas Chandra, Bryan Pfister
- 31 Scaling of Mild Blast Brain Injury from Rat to Human Soroush Assari, Kurosh Darvish
- 32 THROMBUS YIELD STRESS CALCULATION FROM LBM BASED ON INTRAVITAL LASER INJURY IMAGES IN MICE Vishnu Deep Chandran
- 33 Establishing a Protocol to Assess Rate of Force Development Scaling Factor (RFD-SF) In Children Daniela Davison, Benjamin Conner, Christopher Modlesky, Christopher Knight, Freeman Miller
- 34 Influence of Lamellar Elastic Modulus and Tissue Age on Single Osteon Fatigue Life George Pellegrino, Max Roman, J. Christopher Fritton
- 35 Real-Time Musculoskeletal Model Generation Using Motion Capture Data Aminah Tamimi, Emel Demircan

RESEARCH POSTERS SAT. MORNING

IMAGING

- 40 Resting State Functional Connectivity of Supplementary Motor Area in Spinal Cord Injury
Keerthana Deepti Karunakaran, Jie He, Jian Zhao, Jian-Ling Cui, Yu-Feng Zang, Zhong Zhang, Bharat Biswal
- 41 Assessment of Optical Transmission and Image Contrast at Infrared Wavelengths Using Tissue Simulating Phantoms
Mark Pierce, Khushbu Patel
- 42 Cell State Analyzer
Matthew Richtmyer, Aedan Hanna, Likhitha Musku, Frantz Fontin, Rene Schloss, Nada Boustany
- 43 Current Perspectives for the Use of Ballistic Photon Propagation and Detection in Medical Imaging
Jillian Senko, Kaitlyn Eddy, Michael Boaheng, Dr. Joseph Shahbazian, PhD

CARDIOVASCULAR

- 44 Chondroitin Sulfate Promotes Calcification in Aortic Valve Interstitial Vells
Jonathan Bramsen
- 45 Design of an In Vitro Myocardial Inflammation Model
Pamela Hitscherich, Eun Jung Lee
- 46 Point Electrical Stimulation Device for Engineered Tissues
Ansel Ueshiro, Jamee Simone, Stephen McGeever, Luke Parsons, Eun Jung Lee

CELLULAR AND MOLECULAR

- 50 Activating Endogenous Neural Stem Cells for Traumatic Brain Injury Treatment
Jeremy Anderson
- 51 Mechanisms of Traumatic Brain Injury and Regenerative Medicine
Xiaotang Ma, Yiming Cheng
- 52 Multiscale computer modeling can identify penumbral subzones
Alexandra Seidenstein, Adam Newton, William Lytton, Robert McDougal
- 53 Nuclear Translocation and Degradation of Target Proteins Using Engineered Intracellular Antibodies
Shiyao Wang, Yong Ku Cho
- 54 Dental Pulp Regeneration Using Novel Self-Assembling Peptides
William Gao, Saloni Patel, Peter Nguyen, Saul Weiner, Vivek Kumar
- 55 Engineering Nanofibrous Scaffolds for Bone Regeneration
Manisha Jassal, Radoslaw Junka, Xiaojun Yu
- 56 Fabricating Gelatin-Polycaprolactone Core-Shell Fibers by Coaxial Electrospinning
Jennifer Moy, Treena Arinze
- 57 Electrospun PCL-BFP1 Nanofiber Scaffold for Bone Regeneration
Xinchen Wu, Xiaojun Yu
- 58 Nanofibrous nerve conduit seeded with bone marrow stromal cells and cultured in bioreactors for enhancing peripheral nerve regeneration in vitro and in vivo
Gan Zhou, Xiaojun Yu

RESEARCH POSTERS SAT. MORNING

DEVICES

- 60 You, Me, and Debris: The Importance of Instrumentation Upkeep
John Vito d'Antonio-Bertagnolli, Chang Yaramothu, Tara Alvarez
- 61 Surgical Applications of Haptic Rendering Devices for Membrane Puncture Simulation
Avin Khera, Randy Lee, George Stetten
- 62 A Pressure Ulcer Patch Material Study for a Wearable Sensor
Benjamin Parent, Rachel Ooyama-Searls, Brittney Pachucki
- 63 Disposable Microfluidic Chip for Point-of-Care Blood Analysis
Nhi Phan, Tiffany Vo, Emily Richardson, Stephany Ruiz, Yitzhak Mendelson

NEURAL AND REHABILITATION

- 70 Characterization of cumulative subconcussive exposures of blunt and blast injury
Aswati Aravind, Mathew Long, Ashley Fitzsimmons, Namas Chandra, Vijayalakshmi Santhakumar, Kevin Pang, Bryan Pfister
- 71 Behavioral Economics of Positive and Negative Reinforcement in Rats after Mild Traumatic Brain Injury
Pelin Avcu, Swamini Sinha, Kevin Pang, Richard Servatius
- 72 An Investigation of Nonlinear Dynamics of Hippocampal REM Sleep EEG Using Lyapunov Exponent
Prawesh Dahal, Harry Blaise, Taikang Ning
- 73 System for Neurorehabilitation for Tactile Sensitivity
Kathleen Vizzard, Kristin DiStefano, Gary Drzewiecki, Andrew Dopp, Fatemeh Arab, Gokce Polack
- 74 Intraoperative Microrecording of the Substantia Nigra pars reticulata for Deep Brain Stimulation
Hanyan Li, George McConnell
- 75 Establishment and Characterization of Rodent Model of Repetitive Subconcussive Traumatic Brain Injury
Mathew Long, Viji Santhakumar, Kevin Pang, Bryan Pfister
- 76 Effect of low level blast insult on development of epilepsy
Bogumila Swietek, Maciej Skotak, Stephanie Iring, Namas Chandra, Vijayalakshmi Santhakumar
- 77 Vision Assistive Communication Device for Patients with Motor Impairment
Daniel Yasoshima, Thomas Cotton, Jilliana Zarzycki, Jeremiah Merkel

POSTER SESSION SATURDAY AFTERNOON 2 pm – 4 pm

BIOMATERIALS

- 1 Using Synthetic Biology to Engineer Inducible Hybrid Biomagnetic Materials Michael Behrens, Felicia Scott, Warren Ruder
- 2 Hydrogel-base Depo HIV Vaccine: Use of Multidomain Peptides for Sustained, High Density Antigen Presentation Henry Cabral
- 3 Silicone hydrogel contact lenses exploiting macromolecular memory for controlled and extended release of multiple ocular therapeutics Stephen DiPasquale, Mark Byrne
- 4 Effects of Body Weight Supported Treadmill Training on Forelimb In Spinal Cord Injury Rats Gabrielle Gehron, Brittany King, Shania Shaji, Jaclyn Witko, Jennifer Kadlowec, Anita Singh
- 5 Decellularized Native Extracellular Matrix Hydrogel For Pancreatic Tissue Engineering Soojin Kim, Andrea Alfonso, Pamela Hitscherich, Alice Eun Jung Lee
- 6 Vascular Targeted Chemophototherapy Mediated by Cationic Porphyrin-phospholipid Liposomes Dandan Luo, Jumin Geng, Nasi Li, Kevin Carter, Ekin Atilla-Gokcumen, Jonathan Lovell
- 7 Electroplating Additive Manufacturing Polymers for Biomedical Use Adam Mihalko, Davide Piovesan
- 8 Enhanced Ocular Drug Delivery using Self-assembling peptides Sruti Rachapudi, Peter Nguyen, Vivek Kumar
- 9 Blended Bio-Synthetic Hydrogels for Thermoresponsive Drug Release Jesse Ware IV, Jessie Allen, Jennifer Etter, Rachael Oldinski

BIOMECHANICS

- 10 Short-term High Fat Diet and Low Intensity Vibration had Different Effects on Articular Cartilage Thickness and Biochemistry in Older Compared to Younger Mice Kimberly DeCarr, Tee Pamon, Vihitaben Patel, Meilin Chan, Clinton Rubin
- 11 Wearable Sensors Show That Talking, Not Texting, Impairs Postural Control Alissa Johnson, Jennifer Etter, Christopher Petrillo, Wenzhe Chen, Joseph Nuzzolo, Ryan McGinnis
- 12 Investigate the Use of Hands to Accommodate for Confined COP Range Ala'a Al-rashdan , kiran Karunakaran, Dhruvitha Krishna , Peter Michael , Ghaith Androwis , Richard Foulds
- 13 Altered Biomechanical Properties of the L3-L4 Myofascial Tissue in Ankylosing Spondylitis Patients Allison White, Hannah Abbott, Kalyani Nair, Alfonse Masi
- 14 USING MUSCULOSKELETAL MODELS TO ESTIMATE THE PASSIVE JOINT STIFFNESS Andrea Zonnino, Fabrizio Sergi

POSTERS SATURDAY AFTERNOON

IMAGING

- 20 Automatic Segmentation of Ventricles from 2D Neonatal Ultrasound Data Robert Battikha, Robert Battikha
- 21 Implantable Tin Porphyrin-PEG Hydrogels with pH-responsive Fluorescence Haoyuan Huang
- 22 Detection of Cancerous Tissue in Lumpectomies Using Optical Coherence Tomography Ishaan Jain
- 23 Mid-Infrared Spectroscopic Monitoring of Engineered Cartilage Cell Culture Media Rutvin Kyada, Mugdha Padalkar, Farzad Yousefi, Miriam Unger, Nancy Pleshko
- 24 Altered structure in patients with classical trigeminal neuralgia Rui Yuan

CARDIOVASCULAR & RESPIRATORY

- 25 Modeling and assessment of myocardial oxygen balance during hemodilution and surgical blood loss using a novel approach Vignesh Balasubramanian, John Li, Dorene O'Hara, Mehmet Kaya
- 26 Systems-Level Modeling of Hemodynamic Responses to Hemorrhage and Fluid Infusion Ramin Bighamian, Bahram Parvinian, Christopher Scully, George Kramer, Jin-Oh Hahn
- 27 Cardiac Tissue Remodeling During Long Duration Space Travel and Heart Failure Aditya Hublikar, Dr. Gary Drzewiecki
- 28 Respiration Monitoring and Sleep Apnea Detection Using Fuzzy Logic Akrit Mudvari, Taikang Ning

CELLULAR & MOLECULAR

- 30 Lennard-Jones type pair-potential method for lipid bilayer membrane simulations in LAMMPS Szu-Pei Fu, Zhangli Peng, Hongyan Yuan, Ralph Kfoury, Yuan-Nan Young
- 31 Modulation of melanogenesis by a selective progesterone receptor modulator (SPRM) drug-asoprisnil in B16F10 murine melanoma cells Shilpi Goenka, Eloi Armengol, Sanford Simon
- 32 Modeling Population and Health of Mitochondria in Eukaryotic Cells Leo Sutter, Kellianne Kornick, Moumita Das
- 33 Biomechanical analysis of cell behaviors during neural plate convergent extension Deepthi Vijayraghavan, Lance Davidson

TISSUE ENGINEERING

- 40 Creation of less than 1 kPa stiffness gelatin methacrylate (GelMA) hydrogels for investigation of 3D encapsulated breast cancer cell behavior in physiological environments Sara Hopper, Emily Wilgocki, Kayla Barton, Susan Pomilla, Jason Nichol
- 41 Fibroblast chemotaxis in microfluidic maze QUANG-LONG PHAM, ROMAN VORONOV
- 42 Three-dimensional microtissues as in vitro model for personalized radiation therapy Yuting Qiu
- 43 Integration of 3D Printed Microvilli and Sensors into a Microfluidic Gut-on-a-Chip Model Veda Ravishankar, Yasasvini Santharam, Mayuri Patel, Joanne Chan, Jessica Yau, et. al.

POSTERS SATURDAY AFTERNOON

TISSUE ENGINEERING

- 44 Conversion of a 3D printer into a 3D Bioprinter Vivek Trivedi, Paul Davila, Akshay Sakariya, Abdallah Attia, German Hsu, Natalia Bismarck-Sandoval, Anthony Simbana, Matthew Armanious

DEVICES

- 45 Altera – Heart Rate Variability Analysis Software for Small Animal Models Chang Hwan Choi, Paul Kim, Sahithi Garikapati
- 46 Noninvasive Monitoring of Vascular Stiffness via Dual-Channel Photoplethysmography Taaha Jamkhanawala
- 47 Investigating the Use of Structured Light Imaging for 3-D Reconstruction of the Human Forearm for Automated Venipuncture. Josh Leipheimer, Max Balter, Alvin Chen, Tim Maguire, Martin Yarmush
- 48 GoPro Cameras for Tracking Movements Underwater Davide Piovesan, Sabrina Rider, Lillian Blum

NEURAL AND REHABILITATION

- 50 Air Bubble Dispersion and Coalescence Under Shock Loading Conditions: A Model for Cavitation Subhalakshmi Chandrasekaran, Eren Alay, Maciej Skotak, Namas Chandra
- 51 Denoising Techniques Reveal Neural Correlates of Modulation Masking Release in Auditory Cortex Sahil Chaubal, Antje Ihlefeld
- 52 Robots to wheelchairs: affordable BCI design Ashley Goreshnik, Brandon Smith, Yih-Choung Yu, Lisa Gabel
- 53 Discerning Familiar/Unfamiliar Faces Using EEG Xingyuan Guo, Ismail Jouny
- 54 Effectiveness of Augmented Reality Biofeedback in Balance and Gait Applications Andy Madore, Spencer Chorney, Nikki Sutliff, Jonathan Akins
- 55 Novel Concentric Ankle-Foot System for Lower Extremity Exoskeleton Erick Nunez
- 56 Home-based Exoskeleton for Neuromuscular Rehabilitation Nipun Patel, Kevin Abbruzzese, Richard Foulds, Sergei Adamovich
- 57 ChIP-seq Analysis of Top2b Function in Mouse Brain Development Misaal Patel
- 58 Assess auditory spatial attention using Functional Near-Infrared Spectroscopy (fNIRS) Antje Ihlefeld, Min Zhang

POSTER SESSION SUNDAY MORNING 9:30 am – 11:30 am

BIOMATERIALS

- 1 Cell Type Influences Local Delivery of Biomolecules from a Drug Delivery System Jumana Alhamdi
- 2 Analyzing Nitric Oxide Release Using Polymer Based System Rana Gbyli, Anna Mercaldi, Kagya Amoako
- 3 Development of a Gelatin Hydrogel for Brain Tissue Engineering Paul Gehret, Weili Ma, Won Suh
- 4 Study of PVP-capped gold and silver nanoparticles of different sizes on melanogenesis in human melanoma cells Shilpi Goenka, Sai Sreenivasamurthy, Ayesha Saad, Sanford Simon
- 5 Enzyme Immobilized in Poly(lactic-co-glycolic acid) Nanoparticles Showed Extended Activity Against *Pseudomonas aeruginosa* biofilms Chendong Han, James Goodwine, Fraser Leslie, Karin Sauer, Amber Doiron
- 6 Peptide Hydrogels for Hemostasis Karen Mandarina, Peter Nguyen, Vivek Kumar
- 7 Self-Directed Assembly of Optically Clear, In-Situ Forming Biodegradable Nanocarriers for the Controlled and Sustained Release of Ocular Therapeutics Laura Osorno, Mindy George-Weinstein, Mark Byrne
- 8 Glycosaminoglycan Mimic Derived from Cellulose for Tissue Engineering Applications Richard Vincent, Treena Arinze, George Collins, Willis Hammond
- 9 Comparative Cerebrospinal Fluid Modulator Toxicity Study In Vitro Rat Glioma Model Sonia Yevick, Jay Sy
- 10 Mechanical and Morphological Analysis of Cancer Cells on Nanostructured Substrates Liyuan Zheng

BIOMECHANICS

- 11 Augmented Reality System for Gait Rehabilitation of Amputee and Stroke Patients Craig Mills, Eric Ravinal, Garni Aroyan, Sophie Nothnagle
- 12 Impact induced nanostructural changes to neural myelin and cytoskeleton are detectable using X-ray Diffraction Ashley Eidsmore, Joseph Orgel, Rama Madhurapantula, Meng Wang, Charles Modrich, Pavel Dutov, Olga Antipova, Richard Linck, Jason McDonald, Sikhanda Satapathy
- 13 Vibrations of the Organ of Corti Complex Responsible for Passive Frequency Tuning Jessica Huhnke, Jonathan Becker, Wenxiao Zhou, Jong-Hoon Nam
- 14 Hemodynamic Impingement and the Initiation of Intracranial Side-wall Aneurysms Gerald Riccardello, Jr., Abhinav Changa, Fawaz Al-Mufti, I. Paul Singh, Chirag Gandhi, Max Roman, Charles Prestigiacomo

POSTERS SUNDAY MORNING

IMAGING

- 20 Multi-Spectral Confocal Microscopy of Rare-Earth-Doped Nanoparticles
Carolina Bobadilla Mendez, Michael Donzanti, Harini Kantamneni, Vidya Ganapathy, MeiChee Tan, Prabhas Moghe, Mark Pierce
- 21 Angiographic use of Optical Coherence Tomography
Jessica Nguyen, Tanner McFarland, Michaela Pigue, Joseph Shahbazian
- 22 Digital Cell State Analyzer
Matthew Richtmyer, Nada Boustany
- 23 Slit-based linear-array photoacoustic tomography system for vascular imaging in human
Yuehang Wang, Henry Miller, Jun Xia

CARDIOVASCULAR

- 24 Computational Model of Vascular Biomechanics with Smooth Muscle Function
Kristin DiStefano, Gary Drzewiecki
- 25 Heart Rate Variability as an Indicator of Neurological Function
Durga Sahithi Garikapati, Qihong Wang, Chang Choi, Hiren Modi, Nitish Thakor
- 26 Multiple Sensor Fusion for Non-Invasive Estimation of Central Aortic Blood Pressure Waveform
Zahra Ghasemi, Albert Lee, Hao-Min Cheng, Shih-Hsien Sung, Chen-Huan Chen, Ramakrishna Mukkamala, Jin-Oh Hahn
- 27 A Mathematical Model for the Role of $\text{N}^{2\text{O}^{3}}$ in Enhancing Nitric Oxide Following Nitrite Infusion
Yien Liu, Donald Buerk, Kenneth Barbee, Dov Jaron
- 28 New Approach to Mathematical Analysis of Linear and Nonlinear Models of the Arterial System
Verica Radisavljevic-Gajic, John K-J Li

CELLULAR & MOLECULAR

- 30 Improving expression of fusions of cell-penetrating peptides to protein cargo
Sayanee Adhikari, Zifan Gong, Dr. Amy J. Karlsson
- 31 Deploying Synthetic Biology to Study Quorum Sensing in a Biomimetic Microfluidic Biofilm
Ming-Cheng Chen, Sung-Ho Paek, Warren Ruder
- 32 Microcontact Printing on Shape Memory Polymers for Cell Culture Applications
Fred Donelson, Christopher Turner, James Henderson
- 33 Directed Evolution of a High Affinity and Specificity Antibody Targeting Phosphorylated Tau
Dan Li
- 34 Antibody-Conjugated Gold Nanoparticles for Targeted Treatment of Microbial Keratitis
Matthew Mahan, Daniel Goldstein, Carly Smith, Daniel Eversole, Timothy Meredith, Seth Pantanelli, Amber Doiron

TISSUE ENGINEERING

- 35 Improving a Microfluidic Device to Mimic Renal Physiology for Drug Modeling
Brian Philip, Gretchen Mahler
- 36 3D In Vitro Vascularized Liver Cancer Model
Derek Yip

POSTERS SUNDAY MORNING

DEVICES

- 40 A Novel Flow Sensor for a Smart Shunt System Mengdi Bao, Garrett Soler, Devina Jaiswal, Hitten Zaveri, Ryan Grant, Michael DiLuna, Hoshino Kazunori
- 41 A Pilot Experimental Study on Semi-Adaptive Medication Infusion Control Xin Jin, Junxi Zhu, Ramin Bighamian, Steven Shipley, Chang-Sei Kim, Jin-Oh Hahn
- 42 RNA-Seq Analysis Suite: an end-to-end pipeline for data analysis Nikhil Kumar, Li Cai
- 43 Preventing Bacterial Growth on Implanted Device with an Interfacial Metallic Film and X-rays Xiaojie Xun, Liyuan Zheng, Ming Su
- 44 Detection of 5-methylcytosine and cytosine on single-stranded DNA using nanopore Trang Vu, Julian Bello, Jiwook Shim
- 45 Single Cell Array for Population-based Subcellular Toxicity Assay Junfei Xia, Yuting Qiu, Xiaojie Xun, Liyuan Ma, Jingjiao Guan, Ming Su
- 46 A Drosophila Model to Examine Collective Migration during Retinogenesis Caroline Pena, Stephanie Zhang, Mildred Kamara, Tadmiri Venkatesh, Maribel Vazquez

NEURAL & REHABILITATION

- 50 Biological sex alterations in cortical thickness in Autism Spectrum Disorder: An analysis of Autism Brain Imaging Data Exchange II Azeezat Azeez, Xin Di, Bharat Biswal
- 51 Development of a Sit-to-Stand assistive device for individuals with lower limb muscle weakness Shaniel Bowen, Anthony Abbiati, Krystyna Gielo-Perczak, Shalabh Gupta, Malavika Suresh, Alexandros Mathioudakis
- 52 Quantitative Assessment of Trunk Independence for Individuals with Spinal Cord Injury Kamyar Momeni, Arvind Ramanujam, Erica Garbarini, Gail Forrest
- 53 Shoulder Mounted Gyroscopic Prosthesis for Assisting Arm Amputees During Walking Mitch Muller, Marko Popovic
- 54 Comodulation Masking Release: A Computational Model Matthew Ning, Antje Ihlefeld
- 55 Interstitial Fluid Flow Aligns Blood-Brain Barrier-Integrity Microvasculature Paul Partyka, Peter Galie
- 56 Spatial Resolution of Brain NADPH Oxidase-1 in Traumatic Brain Injury Daniel Younger, Matthew Kuriakose, Venkata Kakulavarapu, Stephanie Iring, Namas Chandra
- 57 The role of center frequency in informational masking Antje Ihlefeld, Min Zhang