

2021 Dissertation Titles

- Ultrasound Viscoelastic Spectroscopy, Principal Investigator (P.I): Kirk Shung, Professor
- A Virtual Reality Exergaming System to Enhance Brain Health in Older Adults at Risk for Alzheimer's disease, P.I: Judy Pa, Assistant Professor

2020 Dissertation Titles

- New Approaches for Precisely Engineering Heterotypic Muscle Tissues by Naturally and Synthetically Controlling Cell Fate, P.I: Megan McCain, Assistant Professor
- Photoplethysmogram-based Biomarker for Assessing Risk of Vaso-occlusive Crisis in Sickle Cell Disease: Machine Learning Approaches, P.I: Michael Khoo, Professor
- Investigation of Preclinical Testing Methods for Total Ankle Replacements, P.I: Jill McNitt-Gray, Professor
- Characterization of Lenticulostriate Arteries using High-Resolution Black Blood MRI as an Early Imaging Biomarker for Vascular Cognitive Impairment and Dementia, P.I: Danny Wang, Professor
- On the electrophysiology of multielectrode recordings of the basal ganglia and thalamus to improve DBS therapy for children with secondary dystonia, P.I: Terence Sanger, Professor
- Understanding anti-angiogenic signaling and treatment for cancer through mechanistic modeling, P.I: Stacey Finley, Associate Professor
- The role of complexin carboxyl-terminus phosphorylation in SNARE-complex binding and exocytosis, P.I: Robert Chow, Professor
- Highly integrated 2D ultrasonic arrays and electronics for modular large apertures, p.i: qifa zhou, professor
- Ultrasound imaging and coherence estimation using spatial filters, p.i: jesse yen, associate professor
- Engineering Complementary In Vitro and Ex Vivo Cardiac Microphysiological Systems Towards Disease Modeling and Drug Screening, P.I: Megan McCain, Assistant Professor
- Engineering Modular Tools to Enhance Usability of Microphysiological Systems for Heart and Kidney Modeling, P.I: Megan McCain, Assistant Professor
- Bio-Driven Hypoxic Tumor Microdevice Platforms for Anti-Cancer Therapy Assessments, P.I: Keyue Shen, Assistant Professor
- Design and Evaluation of Implantable Next Generation Neural Interface Technologies for Neural Modulation and Prosthesis, P.I: Dong Song, Associate Professor
- insideOut: Estimating Joint Angles in Tendon-Driven Robots Using Artificial Neural Networks and Non-collocated Sensors, P.I: Francisco Valero-Cuevas, Professor
- Physiological Modeling of Neutrophil Dynamics with the Application of Anticancer Drug-Induced Neutropenia, P.I: David D'Argenio, Professor
- Experimental and Computational Models for Seizure Prediction, P.I: Dong Song, Associate Professor

2019 Dissertation Titles

- The Role of Complexin Carboxyl-Terminus Phosphorylation in SNARE-Complex Binding and Exocytosis, P.I: Robert Chow, Professor
- Design and Evaluation of Implantable Next Generation Neural Interface Technologies for Neural Modulation and Prosthesis, P.I: Dong Song, Associate Professor
- Bio-Driven Hypoxic Tumor Microdevice Platforms for Anti-Cancer Therapy Assessments, P.I: Keyue Shen, Assistant Professor
- Ultrasound Imaging and Coherence Estimation Using Spatial Filters, P.I: Jesse Yen, Associate Professor
- Engineering Modular Tools to Enhance Usability of Microphysiological Systems for Heart and Kidney Modeling, P.I: Megan McCain, Assistant Professor
- Engineering Complementary In Vitro and Ex Vivo Cardiac Microphysiological Systems Towards Disease Modeling and Drug Screening, P.I: Megan McCain, Assistant Professor
- Highly Integrated 2d Ultrasonic Arrays and Electronics for Modular Large Apertures, P.I: Qifa Zhou, Professor
- Understanding Anti-Angiogenic Signaling and Treatment for Cancer Through Mechanistic Modeling, P.I: Stacey Finley, Associate Professor
- Assessment of The Autonomic Cardiovascular Response to Mental Stress in Sickle Cell Disease, P.I: Michael Khoo, Professor
- On the Electrophysiology of Multielectrode Recordings of The Basal Ganglia and Thalamus to Improve DBS Therapy for Children with Secondary Dystonia, P.I: Terence Sanger, Professor
- Investigation of Preclinical Testing Methods for Total Ankle Replacements, P.I: Jill Mcnitt-Gray, Professor
- Photoplethysmogram-Based Biomarker for Assessing Risk of Vaso-Occlusive Crisis in Sickle Cell Disease: Machine Learning Approaches, P.I: Michael Khoo, Professor
- Characterization of Lenticulostriate Arteries Using High-Resolution Black Blood MRI As an Early Imaging Biomarker for Vascular Cognitive Impairment and Dementia, P.I: Danny Wang, Professor
- New Approaches for Precisely Engineering Heterotypic Muscle Tissues by Naturally and Synthetically Controlling Cell Fate, P.I: Megan McCain, Assistant Professor
- Radiofrequency Pulse Performance for Myocardial ASL, P.I: Krishna Nayak, Professor
- Multi-Region Recordings from The Hippocampus with Conformal Multi-Electrode Arrays, P.I: Dong Song, Associate Professor
- Developing Optical Instrumentation for Detecting Cutaneous Skin Perfusion Level Correcting Transcutaneous ICG Dilution Curve Cardiac Output Measurement, P.I: Jean-Michel Maarek, Professor
- Functional Consequences of Network Architecture in Rat Hippocampus: A Computational Study, P.I: Theodore Berger, Professor

- Virtual Surgeries as A Tool for Studying Motor Learning, P.I: Nicolas Schweighofer, Associate Professor
- Simulating Electrical Stimulation and Recording in A Multi-Scale Model of The Hippocampus, P.I: Theodore Berger, Professor
- Cerebrovascular Disease of White Matter in Patients with Chronic Anemia Syndrome, P.I: John Wood, Professor

2018 Dissertation Titles

- Unveiling the White Matter Microstructure In 22q11.2 Deletion Syndrome with Diffusion Magnetic Resonance Imaging, P.I: Paul Thompson, Professor
- Positive Airway Pressure Effects on Congestive Heart Failure and Cheyne-Stokes Respiration: A Computer Simulation Study, P.I: Michael Khoo, Professor
- Extracellular Matrix Regulation of Mitochondrial Function in Engineered Cardiac Myocytes, P.I: Megan McCain, Assistant Professor
- Development of A Toolbox for Global Functional Brain Imaging of Wake and Sleep States in Zebrafish, P.I: Scott Fraser, Professor
- Engineering Scalable Two- And Three-Dimensional Striated Muscle Microtissues For Human Disease Modeling, P.I: Megan McCain, Assistant Professor
- Estimation of Cognitive Brain Activity in Sickle Cell Disease Using Functional Near-Infrared Spectroscopy (Fnirs) And Dynamic Systems Modeling, P.I: Michael Khoo, Professor
- Enhancing Chimeric Antigen Receptor-Engineered Immune Cell Therapy with Synthetic Biology and Nanomedicine, P.I: Pin Wang, Professor
- Development of Fabrication Technologies for Robust Parylene Medical Implants, P.I: Ellis Meng, Professor
- A Medical Imaging Informatics-Based Human Performance Analytics System, P.I: Brent Liu, Associate Professor
- Mapping Water Exchange Rate Across Blood-Brain Barrier, P.I: Danny JJ Wang, Professor
- High Frequency Ultrasound Elastography And Its Biomedical Applications, P.I: Qifa Zhou, Professor
- Advanced Applications of High Frequency Single Beam Acoustic Tweezers in Fluid and Cell Mechanics, P.I: K. Kirk Shung, Professor
- Susceptibility Weighted MRI For the Evaluation of Brain Oxygenation and Brain Iron in Sickle Cell Disease, P.I: John Wood, Professor
- Applications of Graph Theory to Brain Connectivity Analysis, P.I: Richard Leahy, Professor
- Hierarchical Tactile Manipulation on A Haptic Manipulation Platform, P.I: Stefan Schaal, Professor

- Expanded Functionality and Scalability of Modular Fluidic and Instrumentation Components, P.I: Noah Malmstadt, Associate Professor
- Ultrasound-Mediated Mechanotransduction And Its Applications, P.I: Koping Shung, Professor

2017 Dissertation Titles

- Synthetic Aperture Imaging Platform Based on Cmos High Voltage 1 To 64 Multiplexer / De-Multiplexer for Ultrasound Guided Breast Biopsy Needle, P.I: Koping Shung, Professor
- Application of Small Molecules as Self-Reprogramming Agents for The Reconstruction of Musculoskeletal Tissues Within 3-D Tissue-Specific Scaffolds, P.I: Bo Han, Associate Professor Research
- Upper Extremity Control and Dynamics During Manual Wheelchair Propulsion at Different Speeds and Wheelchair Configurations, P.I: Jill Mcnitt-Gray, Professor
- Thin-Film Impedimetric Sensors for Chronic In Vivo Use: Design and Application to Hydrocephalus Treatment, P.I: Ellis Meng, Professor
- Mechanistic Model of Chimeric Antigen Receptor T Cell Activation, P.I: Pin Wang, Professor
- Penetrating Parylene Neural Probe Array for Dense, In Vivo, Chronic Recordings, P.I: Ellis Meng, Professor
- Facilitating Myocontrol For Children with Cerebral Palsy, P.I: Terry Sanger, Associate Professor
- High-Resolution Optical Instrumentation for Biosensing And Biomechanical Characterization, P.I: Andrea Armani, Professor
- Nonlinear Models for Hippocampal Synapses for Multi-Scale Modeling, P.I: Theodore Berger, Professor
- Development of Optical Instrumentation and Signal Analysis for Biomedical Applications, P.I: Andrea Armani, Professor
- Characterization of The Brain in Early Childhood., P.I: Natasha Lepore, Assistant Professor
- Model-Based Phenotyping of Obstructive Sleep Apnea in Overweight Adolescents for Personalized Theranostics, P.I: Michael Khoo, Professor
- Towards A High-Resolution Retinal Implant, P.I: David D'Argenio, Professor
- Imaging Informatics-Based Electronic Patient Record and Analysis System for Multiple Sclerosis Research, Treatment, And Disease Tracking., P.I: Brent J. Liu, Associate Professor
- Miniature Phased-Array Transducer for Colorectal Tissue Characterization During TEM Robotic Surgery and Forward-Looking Phased-Array Transducer for Intravascular Imaging, P.I: Koping Shung, Professor

- Advances in Intravascular Ultrasound (IVUS) -Based Technology, P.I: Qifa Zhou, Professor
- Regulation of Linear and Angular Impulse Generation: Implications for Athletic Performance, P.I: Jill Mcnitt-Gray, Professor
- Additive Manufacturing of Piezoelectric and Composite for Biomedical Applications, P.I: Qifa Zhou, Professor
- Parylene-Based Implantable Interfaces for Biomedical Applications, P.I: Ellis Meng, Professor
- Quantification of Cellular Properties Using Ultra-High Frequency Single-Beam Acoustic Tweezer, P.I: Koping Shung, Professor
- Manipulation of Rgcs Response Using Different Stimulation Strategies for Retinal Prosthesis, P.I: Scott Fraser, Professor
- A Percutaneously Implantable Wireless Neurostimulator For Treatment of Stress Urinary Incontinence, P.I: Gerald Loeb, Professor
- Estimating Liver Iron Noninvasively with High-Field MRI, P.I: John Wood, Associate Professor