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Engineering & Scientific Consulting

Sandra Grijalva, Ph.D.

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Professional Profile

Dr. Grijalva's area of expertise includes human biomechanics, occupant kinematics and kinetics, cardiac mechanics, and complex biological system testing. She has conducted a variety of experimental and computation research including the development of optical imaging systems and cardiac tissue characterization.

Prior to joining Exponent, Dr. Grijalva conducted research for the Walter H. Coulter Joint Department of Biomedical Engineering at Georgia Tech and Emory University. Her research focused on developing and testing models of engineered biological pacemaker tissues to treat heart rhythm disorders. Dr. Grijalva was awarded the National Institutes of Health (NIH) F31 Predoctoral Fellowship to conduct this research and served as the principal investigator. Her research projects included acquisition and analyses of optical-electrical conduction in heart muscle tissues and detection of spontaneous pacemaker activity using micro-electrode arrays. Dr. Grijalva also served as a mentor for undergraduate and high school students in Emory University SURE and PURSE program.

Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering, Georgia Institute of Technology (Georgia Tech), 2019

B.S., Biomedical Engineering, University of Arizona, 2014

National Institutes of Health F31 Fellow, 2017-2019

Alfred P. Sloan Foundation Fellow, 2016-2019

National Academy of Sciences Ford Foundation Fellow, 2014-2017

Prior Experience

Graduate Research Assistant, Emory University, August 2014 - September 2019

Research Intern, Translational Genomics Institute, June 2014 - August 2014

Undergraduate Research Assistant, University of Arizona, June 2012 - May 2014

Professional Affiliations

Board Chairman, STEP Student Expedition Program

American Society of Biomechanics (ASB)

Society of Automotive Engineers (SAE)

Languages

Spanish

Publications

Grijalva, SI, Gu J, Li J, Fernandez N, Fan J, Sung JH, Lee SY, Herndon C, Buckley EM, Park SJ, Fenton FH, Cho HC. Engineered Cardiac Pacemaker Nodes Created by TBX18 Gene Transfer Overcome Source–Sink Mismatch. Advanced Science 2019; 6: 1901099.

Park JS*, Grijalva SI*, Jung D, Li S, Junek GV, Chi T, Cho HC. Intracellular cardiomyocytes potential recording by planar electrode array and fibroblasts co-culturing on multi-modal CMOS chip. Biosensor Bioelectronics 2019; 144: 111626.

Gu J, Grijalva SI, Fernandez N, Kim E, Foster DB, Cho HC. Induced cardiac pacemaker cells survive metabolic stress owing to their low metabolic demand. Experimental and Molecular Medicine 2019; 51: 105.

Park JS*, Grijalva SI*, Aziz MK, Chi T, Li S, Sayegh MN, Wang A, Cho HC, Wang H. Multi-parametric cell profiling with a CMOS quad-modality cellular interfacing array for label-free fully automated drug screening. Lab on Chip 2019; 18: 3027.

Park JS, Aziz MK, Li S, Chi T, Grijalva SI, Sung JH, Cho HC, Wang H. 1024-Pixel CMOS Multimodality Joint Cellular Sensor/Stimulator Array for Real-Time Holistic Cellular Characterization and Cell-Based Drug Screening. IEEE Transactions on Biomedical Circuits and Systems 2018; 12: 80.

Hingorani D, Gonzalez S, Li J, Pagel M. Sensing Lanthanide Metal Content in Biological Tissues with Magnetic Resonance Spectroscopy. Sensors (Basel) 2013; 10: 13732.

Gonzalez S, Belle JL. The Development of an At-Risk Biosensor for Cardiovascular Disease. Biosensors Journal 2012; 1:1.

Presentations

Grijalva SI, Sung JH, Kim NK, Gu JN, Furman BW, Cho HC. Engineered cardiac pacemaker node as a model to study the native pacemaker tissue. Oral Presentation, Biomedical Engineering Society Conference, Atlanta, GA, 2018.

Grijalva SI, Sung JH, Kim NK, Gu JN, Li J, Furman BW, Cho HC. Induced pacemaker spheroids as a model of the heart sinoatrial node. Oral Presentation, Tissue Engineering and Regenerative Medicine International Society, Inc. Conference, Japan, Kyoto, 2018.

Grijalva SI, Sung JH, Furman BW, Han P, Li J, Cho HC. Induced pacemaker spheroids as a model to reverse-engineer the native sinoatrial node. Oral Presentation, American Heart Association Conference, Anaheim, CA, 2017.

Sung JH, Gonzalez SI, Li J, Wolfson D, Cho HC. Engineered biological pacing nodes created from induced pacemaker cells. Poster Presentation, American Heart Association Conference. New Orleans, MI, 2016.