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Gabor J. Tigyi, MD, PhD

Van Vleet Professor

Valeria Vasquez, PhD

Assistant Professor

DR. JONATHAN JAGGAR

ORGANIZES FASEB SRC ON SMOOTH MUSCLE

Dr. Jonathan Jaggar, Maury W. Bronstein Endowed Professor of Physiology, is serving as conference co-organizer for the FASEB Science Research Conference (SRC) on Smooth Muscle that will be held July 14-19, 2019, at the West Palm Beach Marriott in West Palm Beach, Florida. The focus topic of this conference is to discuss and promote cutting-edge science in physiological signaling, functions, and pathological alterations of smooth muscle cells. The conference's keynote speaker is Dr. John G. McCarron, Professor at the University of Strathclyde's Institute of Pharmacy and Biomedical Sciences in Glasgow, Scotland. Dr. Jaggar received an NIH R13 grant that will be used to fund this SRC. To learn more about the FASEB SRC, please contact Dr. Jaggar at jjagg@uthsc.edu, or visit the conference microsite at src.faseb.org/smooth-muscle. Advance registration for the conference ends May 29, 2019, and the last day to register is June 22, 2019.

DR. JAGGAR HAS PAPER ACCEPTED IN THE JOURNAL OF GENERAL PHYSIOLOGY

Dr. Jonathan Jaggar's co-authored paper entitled "Ano1 mediated pressure-sensitive contraction frequency changes in mouse lymphatic collecting vessels" was recently accepted for publication in the Journal of General Physiology. The cite for the article will be Zaweija S, Castorena J, Gui P, Li M, Buley S, Jaggar JH, Rock J, Davis M. Ano1 mediated pressure-sensitive contraction frequency changes in mouse lymphatic collecting vessels. *J Gen Physio.* (in press). For more information, please contact Dr. Jaggar at jjagg@uthsc.edu.



DR. JAGGAR SERVES ON NIH R13 STUDY SECTION

In February 2019, Dr. Jonathan Jaggar served on the Study Section for "Pilot Projects Investigating Understudied G Protein-Coupled Receptors, Ion Channels, and Protein Kinases." NIH study sections offer scholars the opportunity to review grant applications via Integrated Review Groups (IRGs), Chartered Study Sections, or Special Emphasis Panels. NIH R13 grants are purposed to support high quality scientific conferences that are relevant to the NIH's mission and to the public health. A conference is defined as a symposium, seminar, workshop, or any other organized and formal meeting, whether conducted face-to-face or via the internet, where individuals assemble (or meet virtually) for the primary purpose to exchange technical information and views or explore or clarify a defined subject, problem, or area of knowledge, whether or not a published report results from such meeting. The NIH recognizes the value to members of the research community and all other interested parties in supporting such forums. For more information, please contact Dr. Jaggar at jjagg@uthsc.edu.



DR. VALERIA VÁSQUEZ

PUBLISHES ARTICLE IN NATURE COMMUNICATIONS

Dr. Valeria Vásquez, Assistant Professor of Physiology, recently had an article accepted in Nature Communications. Dr. Vásquez serves as corresponding author for the publication, which is entitled “Dietary fatty acids fine-tune piezo1 mechanical response.” (rdcu.be/bqOUB) The article’s abstract states, “Mechanosensitive ion channels rely on membrane composition to transduce physical stimuli into electrical signals. The Piezo1 channel mediates mechano-electrical transduction and regulates crucial physiological processes, including vascular architecture and remodeling, cell migration, and erythrocyte volume. The identity of the membrane components that modulate Piezo1 function remain largely unknown. Using lipid profiling analyses, we here identify dietary fatty acids that tune Piezo1 mechanical response. We find that margaric acid, a saturated fatty acid present in dairy products and fish, inhibits Piezo1 activation and polyunsaturated fatty acids (PUFAs), present in fish oils, modulate channel inactivation. Force measurements reveal that margaric acid increases membrane bending stiffness, whereas PUFAs decrease it. Here, we use fatty acid supplementation to abrogate the phenotype of gain-of-function Piezo1 mutations causing human dehydrated hereditary stomatocytosis. Beyond Piezo1, our findings demonstrate that cell-intrinsic lipid profile and changes in the fatty acid metabolism can dictate the cell’s response to mechanical cues.”



Dr. Vásquez received her PhD in Molecular Physiology and Biological Physics from the University of Virginia while working in the lab of Dr. Eduardo Perozo. Dr. Vásquez did her postdoctoral training in the lab of Dr. Miriam B. Goodman at Stanford University where she worked with the mechano-electrical transduction channel complex present in *C. elegans* touch receptor neurons. She joined the University of Tennessee Health Science Center as Assistant Professor in the Department of Physiology in March 2014, and her current research focuses on understanding the functional and structural basis of mechano-dependent gating of the ion channels responsible for touch, pain, and proprioception. The publication is forthcoming, but the cite will be Romero LO, Massey AE, Mata-Daboin AD, Sierra-Valdez FJ, Chauhan SC, Cordero-Morales JF, Vásquez V. Dietary fatty acids fine-tune piezo1 mechanical response. Nat Commun. (13 March 2019, in press). For more information, please contact Dr. Vásquez at vvasquez@uthsc.edu. To learn more about Dr. Vásquez’s research, please visit corderovasquezlab.com or [youtube.com/watch?v=gN6LloXHJk8&feature=youtu.be](https://www.youtube.com/watch?v=gN6LloXHJk8&feature=youtu.be).

DR. PRIYA MURALIDHARAN

AWARDED A 2019 NEUROSCIENCE POSTDOCTORAL/RESEARCH ASSOCIATE AWARD

Dr. Priya Muralidharan, a postdoc in Dr. Jonathan Jaggar’s lab, has been awarded a Neuroscience Postdoctoral/Research Associate Award from the UTHSC Neuroscience Institute for calendar year 2019. This award provides a total of \$15,000 toward salary and fringe. Dr. Muralidharan is also eligible for a \$500 travel award supplement in 2019, which is awarded contingent on being the first author of a submitted abstract and/or invited speaker at any scientific meeting. Dr. Muralidharan was the first author on two publications, a 2016 article in Scientific Reports and a 2017 review article in Clinical and Experimental Pharmacology and Physiology and received postdoctoral training in Dr. Jonathan Jaggar’s laboratory at UTHSC since January 2016, where she studies the regulation of vascular contractility by smooth muscle and endothelial cell ion channels.

Dr. Muralidharan received her PhD in Physiology from the University of Western Australia in September 2015, where she worked in the laboratory of Dr. Livia Hool. During her doctoral studies, Dr. Muralidharan studied human L-type calcium channels, with a specific focus on identifying potential redox sensitive sites on the human L-type calcium channel protein. She designed mutant constructs of the channel, expressed human proteins in human embryonic kidney (HEK293) cells, and performed single channel patch-clamp electrophysiology on liposomes containing the purified channel protein. Her long-term research goal is to understand the role of various ion channels in vasculature. For more information, please contact Dr. Muralidharan at pmuralid@uthsc.edu. To learn more about the Neuroscience Institute at UTHSC, please visit uthsc.edu/neuroscience.



DR. GABOR TIGYI

PUBLISHES ARTICLES IN THE JOURNAL OF LIPID RESEARCH AND NATURE CHEMICAL BIOLOGY

Dr. Gabor Tigyi, Harriet S. Van Vleet Chair in Oncology Research and Professor of Physiology, had articles recently published in the Journal of Lipid Research and Nature Chemical Biology, respectively. The first, entitled “Lysophosphatidic acid type 2 receptor agonists in targeted drug development offer broad therapeutic potential,” will appear in the March 2019 issue of the Journal of Lipid Research. The second, “Optical control of sphingosine-1-phosphate formation and function,” is scheduled to appear in an upcoming issue of Nature Chemical Biology. The full cite for the first article is Tigyi GJ, Johnson LR, Lee SC, Norman DD, Szabo E, Balogh A, Thompson K, Boler AL, McCool SW. Lysophosphatidic acid type 2 receptor agonists in targeted drug development offer broad therapeutic potential. *J Lipid Res* 2019; Mar; 60(3):464-474. The full cite for the second article is Morstein J, Hill RZ, Novak AJE, Feng S, Norman DD, Donthamsetti PC, Frank JA, Harayama T, Williams BM, Parrill AL, Tigyi GJ, Rizeman H, Isacoff EY, Bautista DM, Trauner D. Optical control of sphingosine-1-phosphate formation and function. *Nature Chem Biol* 2018; in press.



nature
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biology

Dr. Tigyi’s research is aimed at elucidating the structure and function as well as the signal transduction mechanism of a family of endogenous phospholipids with growth factor-like properties. Dr. Tigyi’s group has made pioneering contributions to the current understand of the pharmacology of phospholipid growth factors. Dr. Tigyi has been with the University of Tennessee Health Science Center since 1992, has been Harriet Van Vleet Chair in Oncology Research since 2006, and has been Professor of Physiology since 1999. To learn more about Dr. Tigyi’s research, please contact him at gtigyi@uthsc.edu.

DRS. JULIO CORDERO-MORALES AND VALERIA VASQUEZ

WILL PRESENT AT JOINT MEETING

Drs. Julio Cordero-Morales and Valeria Vasquez will be presenting at the Joint Meeting of the Society of General Physiologists and the Latin American Society of Biophysicists, which will be held September 4-7, 2019, in Valparaiso, Chile. The theme of the Joint Meeting is “Structural Basis of Electrical Signaling in the Heart and the Nervous System,” and the keynote lecture will be presented by Dr. Francisco Bezanilla. Lillian Eichelberger Cannon Professor in the Department of Biochemistry and Molecular Biology at the University of Chicago. Dr. Cordero stated that this Joint Meeting is especially important for PIs that use electrophysiology because this field is attractive to students and postdocs and because Chilean electrophysiologists are among the best in the world. For more information about the Joint Meeting, please visit dev.4id.cl/sobla2019. To learn more, please contact Dr. Cordero-Morales (jcordero@uthsc.edu) or Dr. Vasquez (vvasquez@uthsc.edu). The Joint Meeting will be hosted by the Sociedad de Biofísicos Latinoamericanos, the Centro Interdisciplinario de Neurociencia de Valparaiso, the Universidad de Valparaiso (Chile), and the Society of General Physiologists.



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