JGP Journal of General Physiology

EDITORIAL

2020: An unusual year

David A. Eisner

The current Editorial Team has been in post for about a year. When we began in January 2020, I had many concerns but overlooked the one that would have the greatest effect on our lives. At that time, a novel coronavirus had caused havoc in part of China and was beginning to be reported elsewhere. The rest, as they say, is history.

As scientists, we have had to deal with many of our laboratories being closed and, later, opening under restricted conditions. Face-to-face university teaching has virtually disappeared. Essentially all conventional conferences were canceled, and it is unclear when they will resume. While Zoom and other electronic platforms are a very efficient substitute, I still miss face-to-face discussions.

On a more positive note, the global pandemic has emphasized the importance of science to a much larger community than is normally the case. While the term "exponential" is commonplace in *JGP* articles, it now appears daily in mainstream newspapers. Membrane physiology is center stage when discussing how viruses enter cells. *JGP* had already recognized the importance of membrane physiology in the immune system by organizing a Special Issue on Ion Channels and Transporters in Immunity. This was linked to the Society of General Physiologists meeting organized by Stefan Feske and Bimal Desai. Ironically, this meeting and the Special Issue were early casualties of the pandemic. Both are now rescheduled, and the call for articles has appeared.

More generally, science and scientists are seen as the saviors of humanity for their role in developing vaccines. I hope that the public will continue to appreciate science even when the pandemic is over. We need to highlight the importance of physiology and other basic biomedical sciences in understanding and combatting other diseases. The relationship between science and politics in decision-making has also come into the spotlight. Many people are understandably confused by the fact that science cannot always offer definite advice. This applies to issues such as how much should movement and interactions of people be restricted to decrease viral spread. The general public has also been exposed to the concept of scientific modeling. *JGP* publishes many modeling studies. One aspect of such work is the extent to which models can be used to predict the results of new experiments. This is thrown into sharp relief in the COVID-19 arena by the use of models to predict disease and death rates.

Despite the unusual circumstances, I am pleased to be able to say that *JGP* has continued to operate as normal. On behalf of the editors, I would like to take this opportunity to thank the Rockefeller University Press staff for the way they have adapted to the new method of working from home, which has allowed this to occur. The regular editors' meeting (illustrated by the screenshot in Fig. 1) continues to be at the heart of the journal. Every submission is discussed when it is back from the reviewers, with the emphasis of helping authors to improve their paper. At some of our meetings, we have welcomed members of the Junior Faculty Networking Cohort. This is a group of junior faculty who have recently established their own laboratories. Each cohort has a mentor (Bob French, University of Calgary, for the group who began in 2020). The latest group has recently assembled under the mentorship of Rajini Rao (Johns Hopkins). *JGP* involves postdocs in the reviewing process and provides them with feedback on their reports. Please contact me if you wish to be added to the list of postdoctoral reviewers.

I would like to thank all the committed colleagues who have submitted or reviewed manuscripts for *JGP*. Many of our reviewers are members of the Editorial Advisory Board (EAB). The composition of the EAB changes each year as members finish their terms and new appointees join. It is a pleasure to welcome the new members, whose details are provided below.

Under normal circumstances I would be looking forward to meeting many of you at the Biophysical Society meeting. I can only hope that this treat has simply been deferred to 2022. For now, stay safe and stay publishing in *JGP*!

Editor-in-Chief, Journal of General Physiology.

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Figure 1. **A screenshot of a recent weekly editors meeting.** Photos show (left to right, top to bottom) Eduardo Ríos, David A. Eisner, Henk Granzier, Néstor Saiz (Scientific Managing Editor), Chris Lingle, Jeanne Nerbonne, Joe Mindell, Crina Nimigean, and Meighan Schreiber (Managing Editor).

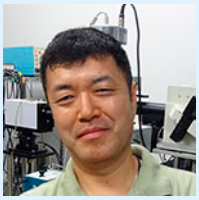
New Editorial Advisory Board members

Henry M. Colecraft

Henry M. Colecraft is a Professor in the Department of Physiology & Cellular Biophysics and the Department of Molecular Pharmacology and Therapeutics at Columbia University Irving Medical Center. He earned a BSc in Physiology from University of London King's College and a PhD in Pharmacology from the University of Rochester in the laboratory of Shey-Shing Sheu, with whom he studied muscarinic receptor signaling in heart cells. He conducted postdoctoral research on G-protein regulation of voltage-gated Ca^{2+} channels at Johns Hopkins University under the mentorship of the late David Yue. His research is focused on mechanistic understanding of the molecular physiology of ion channels and their regulation by accessory subunits, posttranslational modifications, and signaling molecules; the development of innovative tools to probe and manipulate ion channel functional expression; and understanding mechanisms underlying distinct ion channelopathies and devising new therapies for them. Photo courtesy of Columbia University Irving Medical Center.

Jorge E. Contreras

Jorge E. Contreras is an Associate Professor in the Department of Physiology and Membrane Biology at the University of California, Davis (UC Davis). The overall goal of his research is to identify the mechanisms involved in connexin channel gating, permeation, and regulation. His laboratory investigates molecular mechanisms of normal connexin channel function, as well as how these are affected by human mutations that produce channel dysfunction and disease. More recently, he has expanded his interests to study the roles of connexins and other large-pore channels, such as pannexins, in other human pathologies, including traumatic brain injury and cardiac disorders. Dr. Contreras received his doctoral degree from the Pontificia Universidad Católica de Chile; he conducted his dissertation research under the supervision of Juan Carlos Sáez and Michael V.L. Bennett. During this time, he discovered that connexin proteins, in addition to junctional channels (or gap junctions), form functional hemichannels at the plasma membrane that might play a pathophysiological role during ischemia. As a postdoctoral fellow with Dr. Miguel Holmgren at the National Institutes of Health (NIH), he focused his investigation on the study of gating mechanisms in cyclic nucleotide gated (CNG) channels. He found that unlike most voltage-gated potassium channels, the CNG channel gate is located at the selectivity filter, providing evidence of divergent gating mechanisms in structurally similar channels. He launched his independent research program at Rutgers University before moving in 2021 to UC Davis. Photo courtesy of Theanne Griffith.



Norio Fukuda

Norio Fukuda is an Associate Professor in the Department of Cell Physiology at The Jikei University School of Medicine, Tokyo, Japan. He received his first PhD in Physics/Biophysics from Waseda University, Tokyo, Japan, in 1999. As a postdoctoral fellow (2001–2004), he worked in Henk Granzier's laboratory to learn the sophisticated techniques for the analysis of sarcomere proteins, in particular the giant protein titin (connectin), in cardiac and skeletal muscles. Norio established his group at The Jikei University School of Medicine in 2005 to investigate sarcomere mechanics of cardiac and skeletal muscles under healthy and diseased conditions. Most notably, he disclosed the primary mechanisms of myofilament length-dependent activation in cardiac muscle, focusing on the coordinated roles of titin and thin filament proteins. In 2006 he received his second PhD in Physiology/Medicine from The Jikei University School of Medicine. Since then, he has learned nanotechnologies, developed a novel microscopic system that facilitates real-time high-precision imaging of single sarcomere movements and local $[Ca^{2+}]_i$ in living cardiomyocytes, and applied the novel system to analyze the complexity of sarcomere dynamics in myocytes in the beating mouse heart in vivo. The current research in his group comprises two prominent directions. The first is to elucidate the mechanisms of excitation–contraction coupling at nm precision in cardiomyocytes in vivo in health and disease. The second is to address the roles of "local heat" in physiological functions in excitable as well as nonexcitable cells by taking advantage of infrared laser irradiation and single-cell temperature mapping; both techniques were developed by his group. Norio has published 10 papers in *JGP*, 2 of which were featured in the Editorial section and 3 of which served as the journal cover article. In 2017 he received a top author award from *JGP*. Outside the laboratory, he enjoys fly-fishing in Japan and in the U.S. as an expert angler. Photo courtesy of Fuyu Kobirumaki-Shimozawa.

Zayd Khaliq

Zayd Khaliq a Senior Investigator at the National Institute of Neurological Disorders and Stroke (NINDS) at NIH. He received his BA in Physics from Dartmouth College and his PhD in Neuroscience from Northwestern University. His graduate thesis work was performed in the laboratory of Indira Raman, where he studied the initiation and propagation of action potentials in the axons of cerebellar Purkinje neurons. During his postdoctoral fellowship at Harvard Medical School in the laboratory of Bruce Bean, he studied the mechanisms of spontaneous action potential firing in dopamine-releasing neurons located in the ventral tegmental area and substantia nigra. At NIH, his laboratory exams the cellular physiology and circuit control of dopaminergic neurons and others in the basal ganglia/dopamine system that play an essential role in movement and motivated behaviors. Dysfunction of these neurons has been linked to a variety of brain disorders including addiction, schizophrenia, depression, and Parkinson's disease. To study this system, his laboratory takes a multi-disciplinary approach that includes electrophysiology, imaging, computational, anatomical, and behavioral approaches in transgenic mice to identify neuron cell types within the dopamine system. Photo courtesy NINDS/NIH.

Theresia Kraft

Theresia Kraft is Professor of Physiology at Hannover Medical School in Hannover, Germany. She obtained her PhD in 1990 at the University of Tübingen, Germany, where she studied skeletal muscle mechanics with Prof. Bernhard Brenner. Her postdoctoral studies with Dr. Leepo Yu at NIH, NIAMS led her to x-ray diffraction analysis of conformational changes of the acto-myosin complex. There she further extended her studies on the role of weak binding cross-bridge states during the force-generating cycle. Later in Hannover, she began to investigate the effects of missense mutations in the β-cardiac myosin isoform that are associated with hypertrophic cardiomyopathy (HCM). These studies were performed on slow skeletal muscle fibers from HCM patients. In collaboration with Jolanda van der Velden in Amsterdam, she extended her studies to biomechanical analysis of cardiomyocytes, which were isolated from cardiac muscle of HCM patients. Her present focus is on elucidating pathomechanisms of HCM, a cardiac disease that is caused by hundreds of different, mostly heterozygous, mutations in predominantly sarcomeric proteins. Besides biomechanical analysis of muscle function, she also uses analysis of transcriptional activity, mRNA, and protein expression in human adult and stem cell derived cardiomyocytes to address this. She and her group have evidence that burst-like, stochastic, and independent transcription of mutated and wild-type alleles of a mutated protein cause unequal allelic expression of that protein from cell to cell, which may lead to contractile imbalance among cardiomyocytes in HCM. Photo courtesy of Theresia Kraft.

Isabelle Marty

Isabelle Marty is a Research Director at INSERM, the French National Institute for Health and Medical Research. She is the head of the INSERM research team "Cellular Myology and Pathologies" in the Grenoble Institute of Neurosciences—France. After an initial training in Physics and Chemical sciences, leading to a graduation as ESPCI Paris chemical engineer, she got interested in biological sciences and obtained a Master's degree in Biochemistry and Biology at the Grenoble University-France, and then a PhD in the same field, working on the membrane topology of the mitochondrial ADP/ATP carrier. Her postdoc, performed in the field of muscle biology, working on the calcium channel RYR1, drove her toward human diseases and the cell biology of the muscle cells. Since this time, she has developed a strong partnership with AFM-Telethon, the French Muscular Dystrophy Association. Currently, she is developing research projects dedicated to a better understanding of skeletal muscle excitation–contraction coupling and its alterations in neuromuscular diseases, as well as on the traffic of proteins in muscle cells, based on biochemical studies of RYR1 and its partner triadin, calcium imaging, and live fluorescence proteins analysis. In addition, she has a strong interest in the development of therapies for RYR1-related muscle diseases, using both pharmacologic and gene therapy approaches. After 1 yr in D. Segal's laboratory (UC Davis), she is now developing CRISPR/Cas9–based gene therapy approaches to apply to RYR1 mutations. Photo courtesy of Isabelle Marty.

Ben Prosser

Ben Prosser is an Assistant Professor in Physiology and Associate Director of the Pennsylvania Muscle Institute (PMI) at the University of Pennsylvania Perelman School of Medicine (Penn). He received his PhD in Molecular Medicine from the University of Maryland School of Medicine in 2009, where he studied muscle electrophysiology in the laboratory of Martin Schneider, and performed postdoctoral training on cardiomyocyte mechanosignaling with Jon Lederer at the University of Maryland Biotechnology Institute. The Prosser laboratory opened in 2014 and focuses on the mechanobiology of the heart—the mechanisms that regulate the ability of the heart cell to generate force, and how external forces in turn feedback to influence myocyte physiology and pathology. The laboratory has used a combination of advanced light microscopy, biophysical, and engineering approaches to elucidate how the cytoskeleton—and in particular microtubules—regulate cardiomyocyte mechanics and mechanotransduction. In recognition of the laboratory's early work, Dr. Prosser was named the Outstanding Early Career Investigator by the American Heart Association and an Outstanding Young Investigator of the Penn School of Medicine in 2017. Starting in January of 2021, Dr. Prosser will serve as North American Coordinator of a Leducq Transatlantic Network of Excellence, an international research consortium focused on the role of the cytoskeleton in cardiac health and disease. Photo courtesy Ben Prosser.

Rajini Rao

Rajini Rao is Professor of Physiology at the Johns Hopkins University School of Medicine in Baltimore, MD. She received her PhD in Biochemistry (1988) at the University of Rochester, NY, and postdoctoral training in Genetics at Yale University before being recruited to Johns Hopkins University as Assistant Professor in 1993. Her laboratory investigates ion transporters, including secretory pathway Ca^{2+}-ATPases and endosomal Na^+/H^+ exchangers, with a focus on their role in human disorders, ranging from cancer and autism to neurodegeneration. Dr. Rao is an active educator and mentor. As director of the NIGMS-funded T32 training program in Cellular & Molecular Medicine, she oversees a multi-departmental graduate program with over 125 faculty and 130 PhD students. She has developed university-wide resources in teaching rigor and reproducibility, and career training as part of curriculum development for PhD students. Rao is a long-standing advocate for women in science, having chaired the Committee on Professional Opportunities for Women at the Biophysical Society for nearly a decade, and cofounded www.stemwomen.net, a site that raises awareness for gender disparity in STEM. She is a frequent panelist and speaker on gender equity and mentoring at local and international STEM venues. Rao has held multiple elected leadership roles in the Biophysical Society and ASBMB, chaired FASEB and Gordon conferences, and served on journal editorial boards and grant review panels at the NIH, Department of Defense, and HHMI, including the NIGMS Training, Workforce Development, and Diversity review panel for T32 training grants. Photo credit Johns Hopkins University.