

# Society of General Physiologists

eNewsletter Fall 2021



## 2021 SGP Symposium Report

### Ion Channels & Transporters in Immunity, Inflammation & Antitumor Immunity

In mid-September the SGP community came together for the 74th Annual SGP Symposium, our first in-person meeting since the pandemic began and the first international conference dedicated to the topic of ion channels and transporters (ICTs) in the immune system. The organizers, Stefan Feske and Bimal Desai, crafted an exciting program that brought together 142 scientists, 63 in person and 89 virtually. The meeting included 20 in-person and 17 remote speakers with a keynote, the annual Friends of Physiology Lecture, given by Michael Cahalan of UC Irvine. For more information about the Symposium, visit [sgp2021.com](http://sgp2021.com).

## Miriam Goodman receives the 2021 Sharona Gordon Award

Dr. Miriam Goodman is a leading scientist in the study of the biology of sensation and has published more than 60 papers in peer-reviewed journals. Dr. Goodman has served on several peer review panels and editorial boards, chaired international conferences, and received various awards recognizing her scientific contributions. Additionally, Dr. Goodman has worked to foster equity and inclusion throughout her career, in the laboratory, as an instructor, and an administrator. Dr. Goodman has designed and taught courses on Diversity and Inclusion in STEM with the goal of empowering scientists in academia and biotechnology alike. These courses shed light on hidden barriers to equity in science, such as the myth that science is a true meritocracy. By focusing on concrete actions, these courses empower individual scientists and institutions to promote the advancement of women and other underrepresented minorities in science. Other topics of these courses include addressing internal biases and acknowledging that being trained as a scientist does not undo your humanity. In recognition of these efforts, the Society of General Physiologists is thrilled to present to Dr. Miriam Goodman the 2021 Sharona Gordon Award.

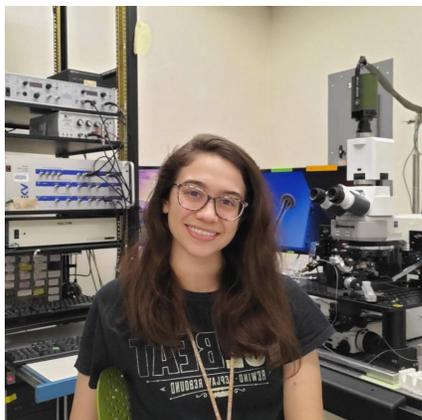
For more information about Dr. Goodman and the Sharona Gordon award, visit: [sgpweb.org/awards/sharona](http://sgpweb.org/awards/sharona)

## MBL Scholarship Recipients

Each year, SGP supports up to four trainees attending one of the following courses at the Woods Hole Marine Biological Laboratory: Embryology, Neural Systems and Behavior, Neurobiology, and Physiology. The recipients are each awarded a \$500 scholarship and a one-year SGP membership. Additionally, up to 4 honorable mentions can be named each year, who will also receive one-year memberships to SGP. For the 2021 summer courses, we received 23 applicants from fantastic candidates, from which we awarded 4 scholarships and 3 honorable mentions. Please find interviews with the 4 scholarship recipients below:

**Interview Questions:**

1. What are your current research interests?
  2. Could you share a little-known personal fun fact?
  3. What does receiving this scholarship mean to you?
- 



**Hannah Martin**

**Graduate student in the Neurobiology program at the University of Chicago**

**Fellowship recipient to attend the Neurobiology course**

1. Specialized sensory cell synapses with unique features to encode information
  2. My most recent hobby is turning old pillowcases into shirts
  3. This scholarship exposes me to the current big ideas and techniques and helps me refine my project direction and scientific approach
- 



**Priscilla Yavoo**

**Graduate student in the Neurobiology and Behavior Program at Stony Brook University**

**Fellowship recipient to attend the Neural Systems & Behavior course**

1. My current research focuses on the role of extrasynaptic GABA<sub>A</sub> receptors in the insular cortex but I am generally interested in how biological and environmental experiences disrupt neuronal networks and how to restore these networks.
  2. A fun fact is that I played rugby in college.
  3. This scholarship reinforces my confidence in my research and indicates that others find it as intriguing and relevant as I do.
- 

**Isabella Gaeta**

**Graduate student at Vanderbilt University**

**Fellowship recipient to attend the Physiology course**



1. I am interested in actin-based protrusion assembly, particularly how microvilli—protrusions that line the apical surface of epithelial cells—are formed.
  2. I used to participate in competitive jump roping.
  3. Receiving this scholarship means being part of a historic community committed to understanding fundamental biological principles.
- 



**Louis Prah**

**Postdoctoral fellow in Department of Bioengineering at the University of Pennsylvania**

**Fellowship recipient to attend the Embryology course**

1. My current research interests are in how the tree-like network of epithelial collecting ducts forms in the kidney through biochemical signaling and mechanical interactions with the surrounding mesenchyme. Human kidneys contain up to 2 million nephrons - structures that filter blood to produce urine and maintain ion and water balance - each with its own collecting duct. Low nephron number and congenital malformations of collecting ducts can cause chronic kidney disease. My research combines mouse embryology, tissue engineering, and live imaging to study how epithelial cells build these structures and to develop tools to achieve more lifelike collecting duct organization in kidney organoids.
  2. Music has always been one of my passions and I enjoy playing various styles of music on guitar and violin. I also performed with my college choir program and helped found an a cappella group during my freshman year.
  3. It is an honor to receive the SGP-MBL scholarship to support my participation the embryology course! This scholarship also helps support my research aspirations at the interface between engineering and developmental biology. I'm excited to continue my training in this field and, in turn, to train future scientists!
- 

**Honorable mentions:**

Annie Park (Neural Systems & Behavior), Manon Valet (Embryology) and Amelia Ralowicz (Neurobiology).

# SGP Upcoming Events

Save the date for the 2022 SGP Symposium:

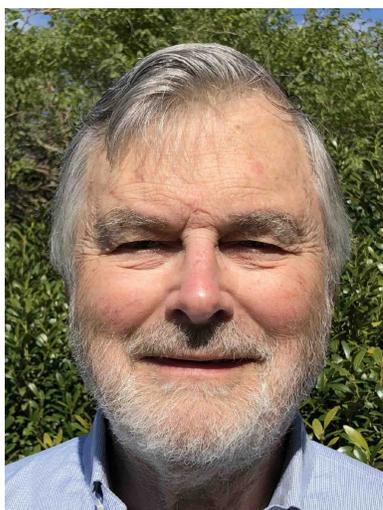
## **Channels in Context: Structure and Function of Ion Channels in Macromolecular Complexes and Native Cells**

Organized by Cathy Proenza and Matt Trudeau

To be held September 7-11, 2022 at the Marine Biological Laboratory in Woods Hole, MA. For more information, please visit: [sgpweb.org/2022symposium](http://sgpweb.org/2022symposium).

## ***New Feature!* Meet an SGP Pathfinder**

*We are very proud of the members who have built the SGP, pathfinders shaping our Society as it is today, a diverse and integrative community of scientists who share in the interest to make science advance. We are excited to support the young and up-and-coming talent, and also those who have paved the way before us, whose careers have shaped our research fields. In order to get to know them better, let's take a brief look at their scientific discoveries from their perspective.*



### **Professor Richard A. (Dick) Fluck**

**Biology Professor Emeritus at Franklin & Marshall College, Lancaster, PA**

**SGP member since 1975.**

***Interview of Dr. Fluck (RF) by Ana I. Fernández-Mariño (AFM)***

**AFM:** For those who don't know you: What was your research about?

**RF:** In my Ph.D. dissertation, "Acetylcholinesterase [AChE] Activity in Differentiating Muscle Cell Cultures," I described: a) an increase in AChE activity in the cultures when mononucleated myoblasts fuse to form myotubes, and b) the occurrence of AChE activity in a subpopulation of pre-fusion myoblasts. I did this research at the University of California, Berkeley, under the guidance of Richard C. Strohman (1967–1971).

While doing that research, I became interested in the potential roles of acetylcholine (ACh) in tissues other than nerve and muscle and in plants.

I did postdoctoral research at Ohio University (Athens, Ohio) in Mordecai (Mark) J. Jaffe's laboratory (1971–1974), identifying cholinesterase (ChE) activity in numerous plant species and finding that ChE activity is localized to the cell wall in seedlings of the mung bean (*Phaseolus aureus*).

Later on, in my own lab at Franklin & Marshall College (F&M), I identified AChE and ACh in *blastula* and during epiboly in embryos of the medaka fish (*Oryzias latipes*). During the ensuing 37 years (1974–2011), my students and I, along with several other collaborators, studied rhythmic contractions of the blastoderm of medaka embryos; electrical currents associated with rhythmic contractions of the blastoderm of medaka embryos; ooplasmic segregation and

cytokinesis in medaka embryos; the organization of microtubules in ooplasm; and the effects of gravity on a) the organization of microtubules near the vegetal pole of medaka embryos and b) the localization of the dorsoventral axis in medaka embryos.

I also collaborated with faculty in the Chemistry Department and students at F&M to a) synthesize choline analogs of indole-3-acetic acid (IAA) and related molecules and measure their effects on the elongation of pea (*Pisum sativum*) stem segments, and b) synthesize thiocholine derivatives of IAA and measure the rates of their hydrolysis by ChE extracted from pea stems.

**AFM:** You became a member of the SGP during your second year as an Assistant Professor and attended your first meeting at Woods Hole. How did that experience go?

**RF:** That's a funny story: When I left Lancaster, Pa., to attend my first Society meeting—and for my first visit to the MBL—the weather in Lancaster was hot and humid. However, when I stepped off the bus in Woods Hole, the weather was cold and windy, and I realized that I had not brought the right clothes.

I was grateful when Charles (Charlie) Barr, a physiologist at SUNY Brockport, loaned me a sweatshirt. Charlie would later mentor me on my teaching and encourage me to meet with Lionel Jaffe, who was then working at the MBL.

**AFM:** The '70s were a very exciting time for groundbreaking advances and discoveries in science and technology. Bill Gates and Paul Allen developed the BASIC program for the microcomputer Altair 8800. The United States and Soviet Union collaborated on the Apollo-Soyuz joint mission in 1972. And in the movie theaters, you could see *Jaws*! Which were the most relevant discoveries during this period and how did they affect your research?

**RF:** In 1972, the fluid mosaic model of cell membranes had just been described by S. J. Singer and G. L. Nicolson.

Light microscopy was undergoing a revolution, with developments in direct and indirect immunofluorescence, fluorescence microscopy, differential interference contrast microscopy, and video-enhanced contrast microscopy. Also, commercial scanning electron microscopes were becoming available. These advances—and short courses at the MBL—enabled my students and me to use indirect immunofluorescence and video-enhanced microscopy in our research. For example, I collaborated with Vivek Abraham and Andrew Miller to describe microtubule arrays during ooplasmic segregation in medaka embryos.

In 1977, E. B. Ridgway, J. C. Gilkey, and L. F. Jaffe, used the calcium-sensitive, bioluminescent molecule aequorin and a photomultiplier tube to detect and measure an explosive rise in free calcium in activating medaka eggs. Later, in 1991 at the Marine Biological Laboratory (MBL), Lionel Jaffe, Andrew Miller, and I used aequorin provided by Osamu Shimomura and an imaging photon detector to visualize 2 successive waves of faint luminescence moving along each of the first 3 cleavage furrows of medaka fish embryos.

In 1974, L. F. Jaffe and R. Nuccitelli reported the development and use of an ultrasensitive vibrating probe to measure steady extracellular currents near individual cells, e.g., developing eggs of the marine alga *Fucus furcatus*. I later collaborated with Lionel Jaffe in the National Vibrating Probe Facility at the MBL to measure electrical currents near the surface of rhythmically contracting medaka embryos.

**AFM:** Looking back, how did being part of the SGP impact your scientific career?

**RF:** The Society's annual meeting was invaluable to me as a teacher, especially in my upper-level course, "General Physiology," a course in which I focused on membranes, ion transport, the physiology of excitable cells, inter- and intracellular signaling, and cell division. I appreciated the narrow, deep focus of the annual meetings, the disciplinary diversity of the presenters, the small number of participants, and the intimacy of the MBL—all of which enabled me to go back to my students with renewed enthusiasm for my work with them.

The annual meetings also connected me with like-minded scientists who helped me develop as a teacher and researcher.

I'm very grateful that the meetings were held at the MBL, an institution that meant so much to my mentors and their mentors and that has meant so much to me. Also, for me—I had lived most of my life far from an ocean—the meetings gave me opportunities to experience the ocean, think about its teeming life, and remind myself of the research that biologists have done over the years and of their love for biology.

**AFM:** Thanks so much for sharing this wonderful part of your career with us. What an honor to start these new series with you!

*If you wish to contact our SGP Pathfinder, you can please email: [dick.fluck@fandm.edu](mailto:dick.fluck@fandm.edu)*

## SGP Council

### Officers

**President:** Crina Nimigean  
2020-2021

**President-Elect:** Jeanne Nerbonne  
2020-2021

**Secretary:** Andrew Harris  
2020-2022

**Treasurer:** Frank Horrigan  
2019-2021

### Councilors

Alessio Accardi, 2019-21

Antoniya Aleksandrova, 2020-21

Anne Carlson, 2021-23

Jorge Contreras, 2020-22

John Del Rosario, 2021-23

Michael Pusch, 2021-23

Janice L. Robertson, 2019-21

Valeria Vasquez, 2020-22



**Executive Director:** Gregory Malar

---

### SGP Mission Statement

The Society of General Physiologists is an inclusive, international scientific society whose goal is to advance the understanding of the fundamental physiological mechanisms and physical principles that govern the functioning of biological systems. In addition to promoting pioneering and innovative research, the Society advocates for education and training, and it is committed to increasing diversity in the scientific workforce.

---

[Click here to join SGP or Renew your Membership](#)

Society of General Physiologists | [Website](#)

Follow SGP on your favorite social media platform!

