

October Edition

Oct 8th, 2021
Volume 3, Issue 2

COVID-19

[HUB AT HOPKINS](#)
[JHU COVID RESOURCE CENTER](#)
[JHM COVID-19 INTERNAL RESOURCE PANEL](#)
[MARYLAND DEPT OF HEALTH](#)
[CENTERS FOR DISEASE CONTROL](#)

Johns Hopkins has moved to Phase 3 of reopening efforts, resuming medium-risk activities but still relying on distancing and mask-wearing in addition to providing online alternatives to in-person activities.

Universal masking was reinstated July 30 due to a rise in cases associated with the delta variant; all personnel must wear masks in JHM facilities and outdoors when within six feet of others, regardless of vaccination status, unless alone in an office with the door closed.

Meetings and gatherings should be virtual whenever possible. Indoor events were revised in August to not exceed 25 people and outdoor events should not exceed 50 people. Food and drink should be individually wrapped in a “grab-and-go” fashion.

Depending on the state of COVID-19 cases in Maryland, Hopkins may review these guidelines later in the fall semester or in the spring, which will allow our planners to revisit scheduling the Physiology retreat!

If you experience COVID-19 symptoms, call the Johns Hopkins COVID-19 Call Center at **443-287-8500** for evaluation and guidance.

Booster Shots: Currently Hopkins is offering 3rd doses of COVID vaccines through MyChart to those 65 or older, with an underlying medical condition, or essential workers. Click the link above for more details.

[Flu shots](#) will be required by everyone by November 19.

Opportunities

Scholarship for women PhD students

The Philanthropic Educational Organization is a non-profit distributing scholarships of \$20,000 to women who put forth exemplary efforts in their academic endeavors and become role models for women who follow. Find more info [here](#)

UHS Wellness Small Grant Program

Have an idea for an initiative that would reduce stress, improve the quality of life for the student/trainee community, or create a supportive environment by bringing people together? Are you already involved in a program that supports the well-being of your fellow students/trainees but you need more funding to make it happen?

The UHS Office of Wellness and Health Promotion is seeking applications to [a small grant program](#) which will fund student or trainee-led well-being initiatives.

ASBMB Outreach/Communication Grant

To increase public appreciation and understanding of science by promoting events that encourage interactions between scientists and the community. The [award](#) is up to \$1,000 award.

Physiology Newsletter

They came, they researched, they defended Graduate student sendoffs

James Osei-Owusu moves on to postdoc position at Harvard Medical School in the Kruse lab

“I have really enjoyed my graduate study here. The relationships and bonds I have formed with members of this community have been priceless. And to think of it, I actually came into this program not knowing what to expect and hearing mainly about difficulties of graduate school. But I am glad it all turned out well. Yes, there were several challenges but the friendships, support, care, training from each one made it all worth it. Thank you, Physiology and all the best to everyone.



Left to right: Pingdewinde Sam (Psam), Ashley Stewart, and James Osei-Owusu were all members of the cohort of CMP graduate students who came to Hopkins in 2015. -Photo courtesy of James Osei-Owusu

Next Step: Postdoc in the lab of Dr. Andrew Kruse (Harvard Medical School – Department of Biological Chemistry and Molecular Pharmacology). The Kruse lab studies the molecular basis of transmembrane signaling through the use of biochemistry, pharmacological studies, and structural biology. This will be my new home.”

-Dr. James Osei-Owusu, PhD

“James is very special to our lab and people around him. He took risks and joined me the first day I arrived Hopkins in 2016. The lab was still in renovation. We did a lot of cleaning, organizing, and experiments in the improvised space together. He is the first pancake, but turns out to be an amazing success! Besides doing impactful and rigorous award-winning research on ion channels, he is our unofficial lab manager, keeps the lab running smoothly and helps new lab members settle in. The Qiu lab is so grateful for what he has done in the last five years, and wishes him the best in his postdoc fellowship at Harvard Medical School and beyond!

-Dr. Zhaozhu Qiu, PhD

Making sense of the senses: 2021 Nobel Prize hit close to home at Hopkins

Erica Avery

6th Year CMP Graduate Student, Claypool Lab

The topic of this year’s Nobel Prize in Physiology or Medicine is the discovery of receptors involved in our ability to sense certain stimuli, including temperature and touch. The Nobel Prize was awarded jointly to David Julius (University of California in San Francisco) and Ardem Patapoutian (Scripps Research, La Jolla, CA). The stories of both these discoveries link to Hopkins faculty.

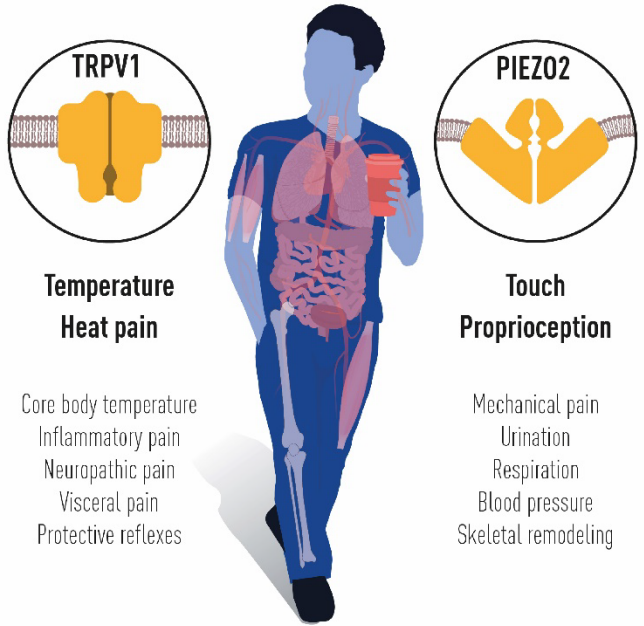
The first author of the 1997 Nature paper describing the cloning of the first mammalian TRP channel and its role in temperature sensing, TRPV1 (not yet named at the time) was Mike Caterina, then postdoc in the Julius lab. Mike is now professor and director of Biological Chemistry at Hopkins and continues to work on TRP channels. The channel acts as a receptor for capsaicin, the noxious stimulus found in chili peppers responsible for the heat sensation. The TRPV1 gene alone could confer capsaicin sensitivity. Understanding the action of capsaicin has since provided insights into pain signaling which has remained a focus of Mike Caterina’s lab at Hopkins. The team discovered the channel by using an unbiased functional screen with a cDNA library of candidate genes from sensory neurons transfected individually in HEK293 cells, insensitive to capsaicin, and then was able to use calcium imaging to see the candidate receptor’s activation upon addition of capsaicin. The discovery of TRPV1 was foundational, leading to discovery of additional temperature-sensing receptors and breakthroughs in our understanding of nociceptive pathways. Independently, both David Julius and Ardem Patapoutian used menthol (found in mint), which induces cold sensation, to identify its receptor, TRPM8. Additional TRP channels have been identified since—found to be activated by a range of different temperatures—and their roles have subsequently been investigated by many laboratories. The cloning of TRPV1 was the beginning of our understanding of how differences in temperature can induce electrical signals in the nervous system.

Sharing the prize this year is Ardem Patapoutian, who was postdoctoral mentor to Physiology’s very own Zhaozhu Qiu. Patapoutian’s lab worked to identify the receptors activated by mechanical stimuli. They inactivated a set of candidate genes one-by-one to find the gene responsible for mechanosensitivity. They identified a single gene, which when silenced, caused cells to become insensitive to poking with the micropipette. This ion channel, Piezo1, was soon followed by discovery of Piezo2. Sensory neurons

express high levels of Piezo2 and studies have established both Piezo channels are directly activated by the exerting pressure on cell membranes. Piezo2 is essential for the sense of touch and furthermore our sense of proprioception—the body’s sense of position and motion. Down the line, the Piezo channels are implicated in physiological functions of blood pressure, respiration and urinary bladder control. Zhaozhu is one of the coauthors in the publication cited on the Nobel Prize website for the 2014 paper “Piezo2 is the major transducer of mechanical forces for touch sensation in mice.” Congratulations, Zhaozhu!

However, that’s not all. The Drosophila TRP channel (the founding member of the TRP channel superfamily) was first sequenced and cloned by Craig Montell, a previous Hopkins faculty member, in the 1980s, although at the time, its function wasn’t completely understood. Drosophila genetics led to the trp mutant which was defective in ‘transient receptor potential’ in the fly eye, in response to light. After Montell joined the Biological Chemistry and Neuroscience departments at Hopkins in 1988, his group identified the human homolog of the Drosophila trp gene, TRPC1, in 1995 before leaving for UC Santa Barbara in 2013.

We’re lucky to be surrounded by such talented scientists here at Johns Hopkins and the announcement of the Nobel Prize is a time to celebrate the achievements of the community of scientists who have all been a part of contributing to the work on these ion channel discoveries.



The TRP and Piezo ion channels, sensors for environmental stimuli, were the two discoveries highlighted in this year’s Nobel Prize in Physiology or Medicine. -Photo courtesy of Nobel Prize website

Calendar

October is:

- National Disability Employment Awareness Month
- National Hispanic and Latinx Heritage Month (Sept 15 - Oct 15)
- Breast Cancer Awareness Month
- Down Syndrome Awareness Month
- Filipino-American History Month

Department Events

Oct 8: Department Research Seminar at Noon (Pluznick lab themed)

Mackenzie Kui

“Transcriptional regulation of renal GPCRs”

Nathan Zaidman, PhD

“Investigating the physiological role of Gpr116 in the kidney”

Oct 13: Guest Speaker Physiology Seminar at Noon

Speaker: James Calvet, PhD

Department of Biochemistry & Molecular Biology

University of Kansas Medical Center

“What is the role of calcium in polycystic kidney disease?”

Host: Dr. Guggino

Location: Mountcastle Auditorium

Oct 15: Journal Club at Noon

Yi (Henry) Cheng and Alex Maya Romero

Oct 22: Department Research Seminar at Noon (Claypool lab themed)

Wenjia Lou, PhD

Nanami Senoo, PhD

Oct 27: Guest Speaker Physiology Seminar at Noon

Speaker: Andreas Herrlich, MD/PhD

Washington University SOM

“Interorgan crosstalk: circulating Osteopontin released by injured kidney.”

Host: Dr. Pluznick

Location: Mountcastle Auditorium

Oct 29: Journal Club at Noon

Aanishaa Jhaldiyal and Junhua Yang

Other Events

Oct. 20: 5th Annual Excellence in Diversity Symposium

11am-3pm

Hosted by the Diversity

Postdoctoral Alliance Committee

[Register](#) by Oct 15

Welcome!

Two newborn Physiology babies!

Congratulations to dads Wenjia Lou of the Claypool lab and Monish Makena of the Rao lab and their wives on the births of their two new little ones!

Contact Us

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[Physiology Website](#)

Office of International Services moves to entirely online format indefinitely



Rajini Rao, PhD
Faculty

The Office of International Services (OIS) has permanently transitioned to a virtual/online service and has closed all in-person campus locations. They will be available by phone (667-208-7001) four days a week (M,Tu,Th,F), through an on-line self-service portal (iHopkins) or by email (ois@jhu.edu). According to their website, this change decreased their average email response time, increased advising contact hours (although no data were provided) and will establish “equity in service levels to students regardless of location, particularly in locations at which we did not have an office open on a full-time basis”. As a bonus, international students and fellows will enjoy the ability to reach OIS even “when it is too hot or cold or rainy or snowy outside!”

However, the response to this move was overwhelmingly negative by both Hopkins and non-Hopkins

academics alike. “Terrible thing”, “bad move” and “misguided decision” were some of the comments tweeted in response. The concern is that visa regulations vary from country to country and are highly complex and inflexible. Timely and clear communication is essential, and consequences of filing paperwork incorrectly, or late, can have drastic consequences. Combined with COVID travel restrictions, and the long wait times and uncertainty for visa processing, taking away a vital in-person service adds to the anxiety that our international students and fellows face. In addition, the closure sends the unwelcome message that international services are not a priority at Johns Hopkins. At many peer institutions, the international office is where students hang out, get a coffee and socialize with one another. This is especially important to ameliorate culture shock for those new to the U.S. and with few compatriots from their home land. Instead of closing their doors, the OIS should be nurturing a welcoming space for international students.

Please let us know your thoughts on the OIS move to remote-only services by completing a 1-question survey [here](#).



Happy National Hispanic and Latinx Heritage Month!



Photo courtesy of Manuella Ribas Andrade

Jessica Hernandez and Manuella Ribas Andrade
2nd Year CMP Graduate Student and 1st Year CMP Graduate Student (rotating), Kralli Lab

From September 15 to October 15, we celebrate the Hispanic and Latin community and recognize the achievements and contributions of leaders in the area. In the biomedical scientific research area, we have many outstanding Hispanic and Latin investigators that changed the world, including (but not limited to) Dr. Severo Ochoa who was the first Hispanic American to win [the Nobel Prize in physiology or medicine in 1959](#) and Dr. Mario Molina, who [shared the 1995 Nobel Prize in Chemistry](#) for his collaborative work on stratospheric chemistry. We should also recognize Dr. Albert Baez, the co-inventor of the x-ray reflection microscope and Dr. Serena Auñón-Chancellor, the first Hispanic physician to travel to space working on cancer and Parkinson’s disease research aboard the International Space Station (ISS).

Some additional Hispanic/Latinx researchers that we can recognize this month currently here in our department are Alex Maya-Romero, a Post-Baccalaureate Scholar at the Claypool’s lab from Puerto Rico; Jessica Hernandez, a second-year graduate student in CMP in the Kralli lab, originally from Guatemala; and Manuella Ribas Andrade, a first-year graduate student at CMP from Brazil! Maria del Carmen Vitery, CMP graduate student in the Qiu lab who died in 2019 was also a talented Peruvian scientist whose heritage we can honor this month, in addition to all the other previous trainees who have since moved on from Physiology who also shared Hispanic/Latinx heritage. If you feel like celebrating the Hispanic/Latinx culture with some food, several eateries at Hopkins are offering specialty menus throughout this month. You can read more about how Johns Hopkins is celebrating Hispanic and Latinx Heritage Month at [here](#).

Awards and Accomplishments

Post-doc, Dr. Junhua Yang, from the Qiu Lab won two career development awards: the American Heart Association (AHA) Career Development Award, and the Brain & Behavior Research Foundation (BBRF) Young Investigator Grant. Congratulations Junhua!

Erica Avery has received an Achievers Award in honor of National Disability Employment Awareness month (October). [She is being recognized](#) for her numerous contributions to the disability community. Congratulations Erica!

Publications

Manuscripts

A new paper from the **Sun lab**, [Nuclear export and translation of circular repeat-containing intronic RNA in C9ORF72-ALS/FTD](#), was recently published in *Nature Communications*. Their study “reveals an uncharacterized disease-causing RNA species mediated by repeat expansion and demonstrates the importance of RNA spatial localization to understand disease etiology” in ALS.

Hexanucleotide (GGGGCC) repeat expansion (HRE) in the intron 1 of the C9ORF72 gene is the most common genetic cause of both amyotrophic lateral sclerosis (ALS) and frontotemporal dementia (FTD). Repeat-containing RNA mediates toxicity through nuclear granules and dipeptide repeat (DPR) proteins produced by repeat-associated non-AUG translation. However, it remains unclear how the intron-localized repeats are exported and translated in the cytoplasm. Dr. Sun’s Lab applied single-molecule imaging approaches to visualize the C9ORF72 repetitive RNAs directly in cells to probe the molecular and biophysical properties of RNA granules and DPR biogenesis. They demonstrate that the spliced intron with G-rich repeats is stabilized in a circular form due to defective lariat debranching. The spliced circular intron, instead of pre-mRNA, serves as the translation template. Dr. Sun’s Lab showed the NXF1-NXT1 pathway plays an important role in the nuclear export of the circular intron and modulates toxic DPR production. This study revealed an uncharacterized disease-causing RNA species mediated by repeat expansion and demonstrates the importance of RNA spatial localization to understand disease etiology and may open new opportunities for therapeutic target design.

The newsletter needs YOU!

Interested in submitting a clip to the newsletter? Have a knack for writing? Got an idea you want to share? Any news you think we should highlight? Looking to beef up your CV? Or just have an announcement you want included? We’re looking for ***your*** contributions to the newsletter! Contact the newsletter team so you can be featured.