

BioNews July-August 2020

Welcome to new Biology faculty!

The Biology Department welcomes two new professors: Sally Kim and Mona Wu Orr!

Professor Sally Kim will be teaching BIOL-191 Molecules, Genes and Cells in the Fall 2020 semester and BIOL-301 Molecular Neurobiology in Spring 2021.

A note about Prof. Kim's research and personal interests:

Zinc has emerged as an unexplored new major signaling ion for transmission of information within and between cells. Traditionally considered a metal responsible for catalytic and structural function, recent work suggests that zinc may be central to a better understanding of the fundamental biology and pathology of neurons.

As a neuroscientist, cell biologist and biophysicist, I want to understand the basic mechanisms of zinc signaling in neurons and bridge this understanding for potential translational applications for autism and neurodegeneration. By focusing on zinc-sensitive protein signaling pathways, my lab currently studies zinc's role via Shank3 in synaptic transmission using an interdisciplinary approach of molecular, cellular, biochemical, and optical methods.

Outside of lab, I enjoy reading, baking (I like to procrastinate-bake) & cooking, growing orchids, playing the violin, knitting, doing anything creative and hanging out with Rachel and Sophia (our mother-daughter Shih Tzu dynamic duo).

I'm thrilled to be joining you at Amherst College, and I can't wait to meet you virtually and (hopefully) in person sometime soon! Please reach out if you are interested in my research, have any questions, or just want to say hello.



Professor Mona Wu Orr will be teaching BIOL-331 Biochemistry in the Fall 2020 semester, and BIOL-191 Molecules, Genes and Cells in Spring 2021.

A note about Prof. Wu Orr's research and personal interests:

Small proteins (~50 amino acids or shorter) were previously overlooked in many bioinformatic and biochemical analysis. However, recent work demonstrates that small proteins are encoded across all domains of life and often play critical roles as cellular regulators. I am interested in how bacterial small proteins mediate responses to environmental stresses, particularly antibiotic exposure. My lab uses a



combination of biochemistry and genetics techniques to characterize a small protein that regulates an antibiotic efflux pump and to identify novel small proteins from bacterial pathogens. A better understanding of how these small proteins work could let us exploit their regulatory activities for the treatment of bacterial infections. Additionally, the lessons learned from these experiments will be valuable in the study of small proteins in other species.

In my spare time, I enjoy brewing kombucha, fermenting produce, and attempting sourdough bakes. Fermentation is just delicious microbial biochemistry!

Progress towards greater equity and inclusion in the Biology Department

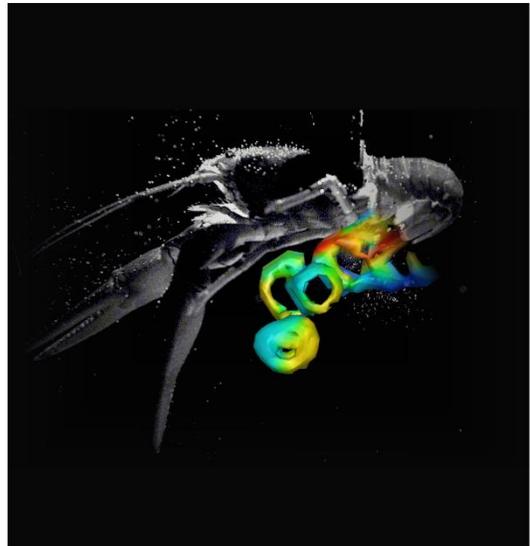
Many efforts have been made this summer to ensure that the Department of Biology is a welcoming place for all students! You can read more about some of these efforts [here](#). There is still lots of work to be done, and these efforts will continue in the coming months. We are always open to feedback from students about how to achieve this goal.

Welcome to new Biology chair Joe Trapani

Prof. Trapani assumed his new role as Biology Department chair on July 1, taking over from Prof. Goutte, who will be enjoying a well-deserved sabbatical this fall. Thanks to both of them for their service to the department!

New paper from the Clotfelter lab

Former thesis student Jocelyn Hunyadi '19 and Prof. Clotfelter, along with co-authors from the University of Massachusetts and the New Jersey Institute of Technology, [recently published a paper](#) in the *Journal of Experimental Biology*. They investigated the relationship between morphology and swimming performance in rusty crayfish, focusing on the tail-flip escape response that has been well-studied by neurobiologists. They also demonstrated the fluid dynamics underlying the escape response, which gives new insights into how aquatic animals move. Their work [was highlighted](#) in the "Inside JEB" section of the journal.



Three-dimensional visualization of the vortices shed by the crayfish tail

Bears and other mammals of the Pioneer Valley, oh my!

The *Daily Hampshire Gazette* [recently featured](#) work led by Dr. Thea Kristensen and her students, including Ainsley Mackenzie '22 and Rachel Lovejoy '23. Dr. K and her students are recruiting “citizen scientist” volunteers to contribute to a study of mammal diversity in the Pioneer Valley. Another [recent article](#) in the *The Republican* (Springfield, MA) featured Dr. K and her work with Amherst College students on estimating the size of the black bear population in western Massachusetts. Two websites, one dedicated to [black bears](#) and the other more broadly dedicated to all [mammals](#), are now ready for citizen scientists to add their observations. Members of the Biology community are encouraged to participate!



Black bear feeding on the Miller/Levin bird feeders

Mark your calendars!

The Biology Steering Committee is planning a welcome-back event: a biology-themed trivia event on Thursday, September 10th at 6:00 pm. Look for an email and Zoom invitation from the BSC in a few weeks! And if you are interested in learning more about the BSC's activities for this year, contact Sarah Gayer '21 (sgayer21@amherst.edu).

Biology faculty and staff meet-up

The whole faculty and staff of the Department of Biology met jointly on Zoom earlier this summer – for the first time! Here's the screenshot.



Enjoy the last days of summer, and we look forward to seeing you this fall!