



Real world research at UMBS



At UMBS, the natural world is a living laboratory. Image: Jenny Kalejs

Since 1909, the U-M Biological Station — located at the tip of Michigan’s Lower Peninsula — has been at the vanguard of field-based education and ecological research. Ten thousand undeveloped acres of forest, fen, lake and coastal wetland serve as a classroom for faculty and students, and a living laboratory for researchers.

Undergraduates in our field courses learn science where it happens. Faculty experts challenge students to ask insightful ecological questions and seek answers through thoughtfully designed research projects. Increasingly interdisciplinary courses in art, chemistry, policy and the humanities prepare students to creatively address some of the world’s most complex environmental problems.

Our equipment and facilities, including a full-service analytical chemistry lab, dining hall and residential cabins, are available to students, faculty and researchers alike.

Learn more on our website: lsa.umich.edu/umbs

The Program in Biology offers eight majors with a wide range in specialization.

- Biology
- Biology, Health & Society
- Molecular, Cellular, and Developmental Biology
- Cellular and Molecular Biomedical Science
- Ecology, Evolution & Biodiversity
- Microbiology
- Plant Biology
- Neuroscience

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Program in Biology administrative staff:



(left to right) Anna Cihak, Keith Wittkopp, Kimberly Pavuk, Laura Curtis, Andrea Duenas.
Image: Suzanne Tainter

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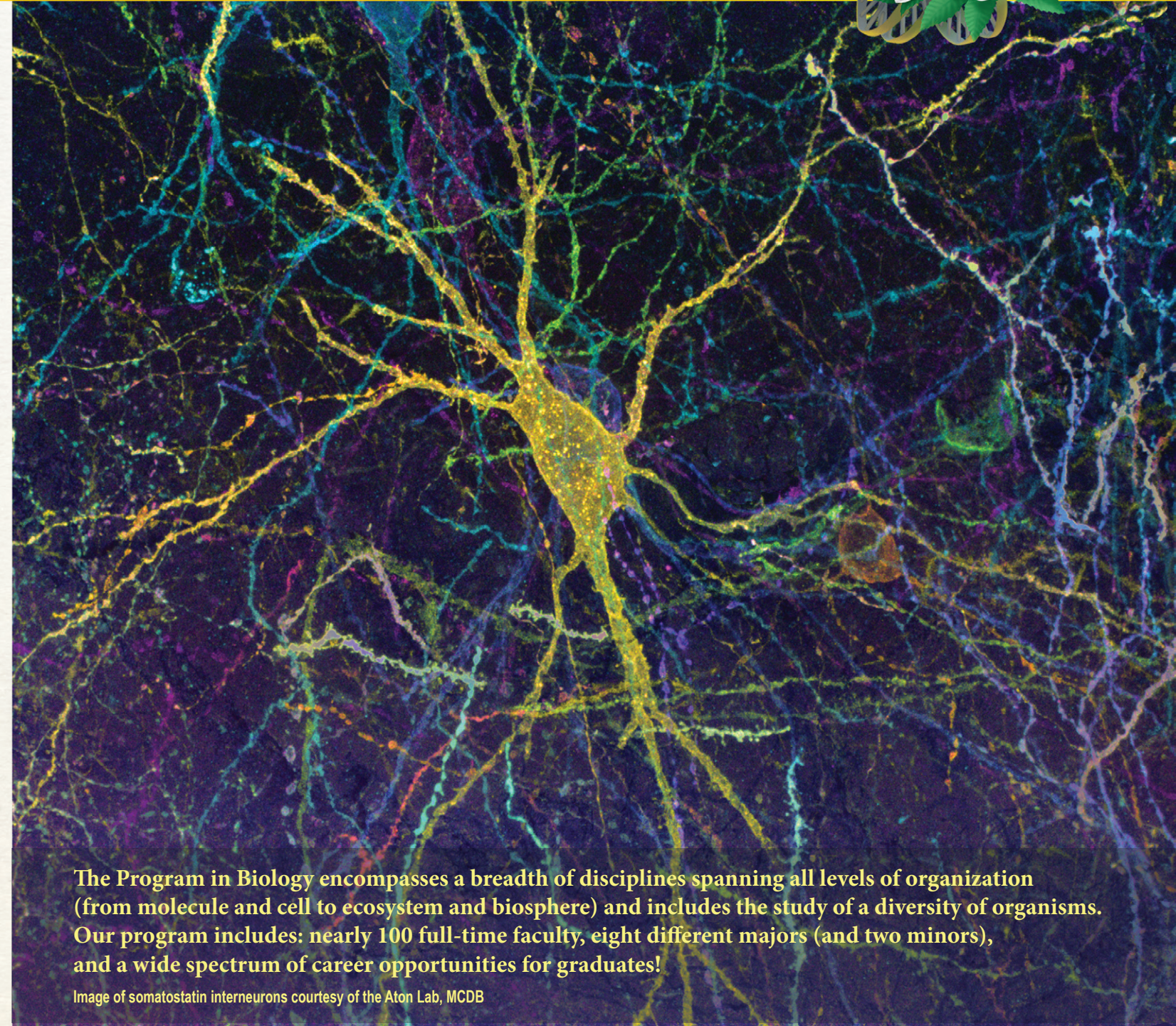
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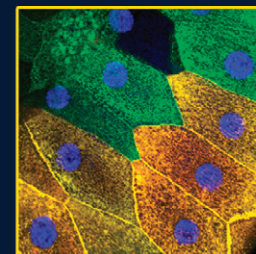
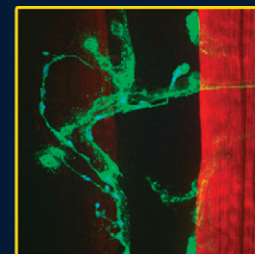
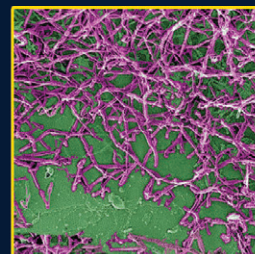
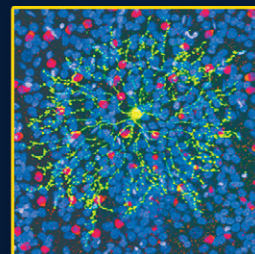
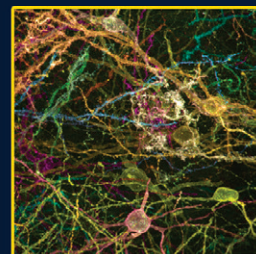
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The Program in Biology encompasses a breadth of disciplines spanning all levels of organization (from molecule and cell to ecosystem and biosphere) and includes the study of a diversity of organisms. Our program includes: nearly 100 full-time faculty, eight different majors (and two minors), and a wide spectrum of career opportunities for graduates!

Image of somatostatin interneurons courtesy of the Aton Lab, MCDB



Neuroscience undergrads follow many research pathways

What neurons control feeding behavior? How does sleep link emotion and memory? What neural connections are made in the brain as children learn to read? These very different research directions are all getting an assist from students in the Undergraduate Program in Neuroscience.



Julliana Ramirez-Matias

“Before coming to U-M, I didn’t really know what it meant to ‘do research,’ but I was curious,” explained Julliana Ramirez-Matias. During her first year, she worked with EEB Professor Elizabeth Tibbetts as part of the Undergraduate Research Opportunity Program [UROP]. Ramirez-Matias now works with Medical School professor David Olson and MCDB Assistant Professor Monica Dus on the neural circuitry underlying feeding behavior and energy expenditure.

She will be applying to MD/PhD programs “in hopes of becoming part of a growing team of physician-scientists. My father is from Guatemala, and he and my mother have made countless sacrifices to ensure that my sisters and I had opportunities that weren’t available to them. Their love and open-mindedness have been crucial for me to find my way toward a career in science.”

Image courtesy: Julliana Ramirez-Matias

Amy Ensing

In contrast Amy Ensing said, “I knew coming into college that I was really interested in research, so, before my sophomore year, I started looking into which labs were working on projects that interested me.” She joined MCDB Associate Professor Sara Aton’s lab on research on sleep and memory consolidation.

“One of my favorite memories from lab is when my mentor, Brittany Clawson, first showed me some preliminary figures that my work had contributed to. That was the first time it really hit me that I was doing work that was contributing to answering real questions in neuroscience. It made me really proud and excited to see even a small piece of everything coming together.”



Image courtesy: Amy Ensing

Lynn Eickholt

Lynn Eickholt also first found her way to research through UROP but has been interested in neuroscience since high school. Now working with Psychology Associate Professor Ioulia Kovelman, she is analyzing functional magnetic resonance images of brain regions at different time points as children learn to read. “I really enjoy analyzing neuroimaging data, which drives my passion for research.” She plays the baritone saxophone in the University Band and was excited to have one last concert in Hill Auditorium, though without an in-person audience. Her career plans include an MD/PhD and more neuroimaging.

Learn about their research, their involvement in peer tutoring, the Marching Band and other U-M organizations, favorite memories of U-M, and thoughts on the strange ending to their undergraduate days during a pandemic:

Read more>> myumi.ch/mn0Bo

Image credit: Suzanne Tainter



Undergrads coauthor groundbreaking paper in *Current Biology*



Ellery Wong and Sarah Bonello

Paper wasps eavesdrop on fighting rivals to rapidly assess potential opponents without personal risk. This new finding adds to mounting evidence that even mini-brained insects have an impressive capacity to learn, remember and make social deductions about others.

Keeping track of a network of individually differentiated social relationships is thought to be cognitively challenging and, until recently, was considered to be beyond the reach of insects like paper wasps, which have brains a million times smaller than the human brain.

But a growing body of evidence suggests that the miniature nervous systems of insects do not limit sophisticated behaviors. The capacity for complex insect behavior may be shaped more by social environment than brain size, according to Professor Elizabeth Tibbetts, who coauthored a paper published June 25, 2020 in the journal *Current Biology*, with recent undergraduate alumni Ellery Wong and Sarah Bonello.

Wong is an outreach and communications officer at the TAP Network (Transparency, Accountability and Participation for the 2030 Agenda), a network of over 250 civil society organizations focused on Sustainable Development Goal SDG16 for peace and justice. Bonello joined the Yale Forestry and Environmental Studies graduate program.

Read more>> myumi.ch/Nx573

Coloring Science grant leads to initiative to diversify scientific role models

“Many students of color struggle in large predominantly white institutions because of a feeling of detachment from the university community as a whole,” Nia Johnson, a graduate student in ecology and evolutionary biology, explained. “This feeling of detachment, or imposter syndrome, is often reinforced by course content seemingly unrelated to people from diverse cultural backgrounds. In order to help our students succeed, we as instructors need to be able to create an environment that not only evokes a feeling of acceptance but also belonging.”

To help diversify course content, the Justice, Equity, Diversity and Inclusion Committee of the Department of Ecology and Evolutionary Biology was awarded a Faculty Development Fund grant entitled “Coloring Science” from the University of Michigan Center for Research on Learning and Teaching. The aim of the grant is to increase the diversity of scientific role models presented to students in large enrollment biology classes at U-M.

Read more>> myumi.ch/bvNzZ



Jane Hinton, historical scientists collection

Museum scientists: Prepare for next pandemic now by preserving animal specimens in natural history collections

It’s been more than a year since the first cases were identified in China, yet the exact origins of the COVID-19 pandemic remain a mystery. Though strong evidence suggests that the responsible coronavirus originated in bats, how and when it crossed from wildlife into humans is unknown.

In a study published online Jan.12, 2021 in the journal *mBio*, an international team of 15 biologists say this lack of clarity has exposed a glaring weakness in the current approach to pandemic surveillance and response worldwide.

In most recent studies of animal-borne pathogens with the potential to spread



to humans, known as zoonotic pathogens, physical specimens of suspected wildlife hosts were not preserved. The practice of collecting and archiving specimens believed to harbor a virus, bacteria or parasite that’s under investigation is called host vouchering.

“Vouchered specimens should be considered the gold standard in host-pathogen studies and a key part of pandemic preparedness,” said Cody Thompson, co-lead author of the *mBio* paper and mammal collections manager at the University of Michigan Museum of Zoology.

Read more>> myumi.ch/mn0d1

Pipistrelle bats in Azerbaijan. Image: Nijat Hasanov