



## 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](http://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

## Please consider a donation to help support:

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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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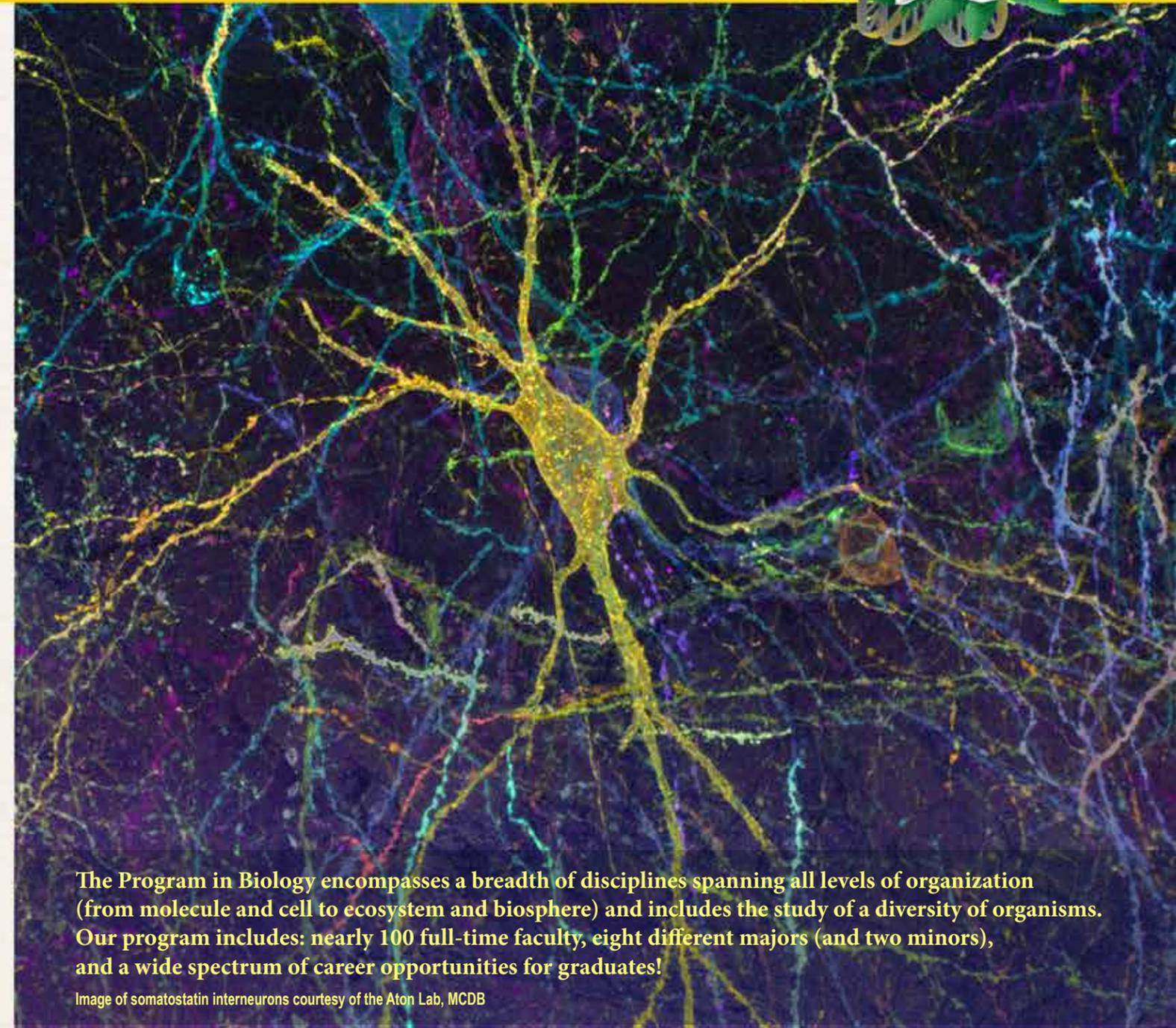
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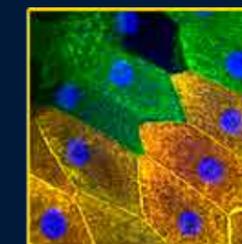
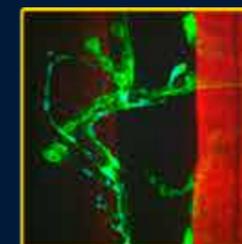
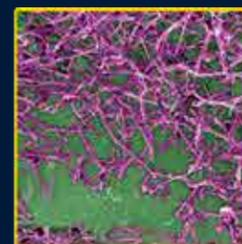
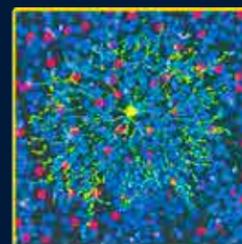
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The Program in Biology encompasses a breadth of disciplines spanning all levels of organization (from molecule and cell to ecosystem and biosphere) and includes the study of a diversity of organisms. Our program includes: nearly 100 full-time faculty, 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.

Read more 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](https://myumi.ch/mn0Bo)

Image credit: Suzanne Tainter

**Honors undergrad alum Lima finds her passion in urban ecology**



Sam Lima setting up cameras in Detroit. Image: Gabriel Gadsden

Growing up, Sam Lima was broadly interested in biology, but it wasn’t until college when she started learning about the many ecological and climate crises facing the world that she decided to study ecology. Her first exposure to the field of urban ecology was in the Applied Wildlife Ecology Lab, led by Professor Nyeema Harris – and that was when she found her niche within ecology.

Lima graduated from the College of Literature, Science, and the Arts Honors Program in ecology, evolution and biodiversity with Distinction from the University of Michigan in winter 2020. Her thesis was published Jan. 25, 2021 in the journal, *Frontiers in Ecology and Evolution*.

They investigated how cottontail rabbits (*Sylvilagus floridanus*) responded to different threats in the city of Detroit. “These threats included humans, coyotes (*Canis latrans*) and domestic dogs,” Lima explained. As an important prey resource, rabbits must stay alert to survive.

“My experience with the lab is what motivated me to apply to graduate school and continue to study ecology!” She will begin a doctoral program in wildlife biology in fall 2021.

Read more>> [myumi.ch/d07mK](https://myumi.ch/d07mK)

**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](https://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](https://myumi.ch/mn0d1)

Pipistrelle bats in Azerbaijan. Image: Nijat Hasanov