UVM BIOLOGY DEPARTMENT

2023/2024 NEWSLETTER

May, 2024

Winning photo from our Art of Biology contest, by Anna Schmidt

A letter from the Chair of Biology:

It is wonderful each year to celebrate Biology's graduate students who have recently completed their M.S. and Ph.D. degrees at the Graduate College's May Commencement Ceremony. This year we celebrated two new Ph.D. colleagues: Caroline Dumas (advised by Alicia Ebert and Bryan Ballif), and Helaina Stergas (advised by Alicia Ebert); and three new M.S. colleagues: Phoebe Cousens (advised by Bryan Ballif), Kylie Finnegan (advised by Brent Lockwood), and Jacob Sorrentino (advised by Sara Helms Cahan). Each year we try to take a picture of the group in attendance (seen here and in MLS). This year our graduates were particularly fortunate to have Professor Ebert leading, with assistance by Phoebe, a botanical adventure in the identification and characterization of four-leaf clovers. Indeed, many four-leaf clovers were found, with Kylie finding her first (and several others) before the picture was taken.

Biology Represents at UVM's 2024 Graduate College Commencement Ceremony.
Left to right: Bryan Ballif, Phoebe Cousens, Caroline Dumas, Kylie Finnegan, Helaina Stergas, Alicia Ebert, Brent Lockwood.

In this Edition...

Part of the graduation ceremony involves the hooding of students. As you all likely know, academic hoods have a long and somewhat convolulted history which has been detailed by several scholars (1, see reference). Many years ago, hoods were used by monk-scholars (think Mendel) for at least two primary reasons: to keep one's head warm (some were lined with fur), and in some cases to collect alms (for the poor and/or poor monk-scholar). So, graduates, if you stay in Vermont or somewhere cool, you now have another option for winter head gear. We also anticipate that your hood will bring you a few more shekels, although perhaps not directly as a collection mechanism. Nevertheless, as I have done for many years as a marshal at the Graduate College Commencement, I will throw dollar coins in the hoods of our biology graduates after they have crossed the stage at the hooding ceremony... one more incentive for timely publication and completion of your work! They will be your first dollars earned with your graduate degree.

We always look forward to hearing both from our undergraduate and graduate alumns. Please come back to visit (wearing your hood or not)! Indeed, we will anticipate a chance to see you one day as an accomplished alumn at Honors Day. You can read in this newsletter about our wonderful 2024 accomplished alums, Chris Pacheco and Amy Seidl, whom we celebrated this year, and who gave wonderful presentations to the department. You will also read of the wonderful research made possible by gifts from so many of our gracious alumns. Finally, as I complete my chair responsibilities for the department, I send my best wishes and encourage all to Stay Lucky!

Sincere regards,
Bryan Ballif

1) https://www.ghlilley.com.au/blogs/news/what-is-an-academic-hood

UVM Bio Department Dives into the Music Industry

Whale pictures by Dr. Laura May-Collado

One of our very own labs has recently tapped into the music industry. Dr. Laura May-Collado's lab collaborated in the making of a new album. As Dr. May-Collado announced, "I am excited to share with you a collaboration between my lab and musicians from Costa Rica, some of whom are Grammy recipients and the Costa Rican National Symphony, in creating an album that merges our whale recordings with their artistry. We hope this album can help people connect with nature in ways they can truly relate, music! The album is titled Sonidos de Osa, one of our main study sites." Give the album a listen to hear the majestic sounds that went from a scientific recording to a soothing melody.

Read more about May-Collado's research in this UVM feature:
https://www.uvm.edu/news/story/listening-leviathans

Intern Gillian Kimmel

Butterfly drawer from the invertebrate collection

Intern Lauren Manning

A Glimpse into the Natural History Collections

by Lauren Manning and Gillian Kimmel

This January, I joined the Natural History Collections internship as a biology major in order to gain more research experience. I did not exactly know what to expect going into it, but it is a hidden gem on campus, to say the least. And the best part? You don't even have to be a STEM major to be involved. I showed up on my first day, and my friend, Gillian, who is an English and Film double major, was sitting at the table next to me. Gillian also did not know what to expect and was totally in the dark about what lab and research experience in the biology world is like. In just one short semester, we both have learned so much about curatorial work in the life sciences realm. With only two weeks left in the internship, we started talking about it, and here is what Gillian had to say about her experiences as a nonSTEM major in a very science oriented experience:

Lauren: "How did you find out about this internship?"

Gillian: I found out about it through my roommate who took this internship last semester as an art history major. I was apprehensive at first, but I ended up doing a film project for one of my classes where I interviewed program director Sara Helms Cahan and got a one on one tour of the collection. A few days later I had to register for classes, and on a whim I signed up for the internship. After I got my first glimpse into what the possibilities of it were, I was hooked.

A skeleton from the collection being pieced together, bone by bone.

Lauren: "What types of things do you do for the internship?

Gillian: We started off rehousing eggs that are over a century old. The eggs are really fragile and have to be relocated to Delehanty Hall, so we had to build homemade cotton and styrofoam nests for them. It was super cool seeing what egg belonged to what type of bird.

Lauren: Truly. I was able to rehouse some ostrich eggs and even an alligator egg. I never thought going into this that I'd get to have the experience of seeing an egg collection boasting so many unique species.

A Glimpse into the Natural History Collections

Ostrich eggs from Pember egg collection.

Gillian: The second thing we did was the craziest but also the most interesting for me. We had to dissect different species of rodents, collecting liver and heart tissue as well as their skulls. I was definitely nervous going into it, but it actually wasn't as gross as I thought. It was super cool because I learned what a heart looked like inside of a body and how to identify the liver from the other organs. The next thing we did was catalog species of insects. Like the eggs, most of them were also very old, from the early or mid 1900s. Some of them were crazy looking, like the giant rhinoceros beetles from South America.

Lauren: How do you feel being a non-biology major in such a biology heavy internship?

Gillian: I was definitely intimidated at first because I thought I would be missing a lot of crucial information that I would need to succeed in the internship, but I quickly learned that wasn't the case. The only slight roadblock was my lack of experience with Excel which was a bit overwhelming at first, but I got the hang of it pretty quickly; it's really just a matter of sitting down and doing it. You really don't need any STEM experience for this internship.

Lauren: Would you recommend this internship to other students?

Gillian: I 100% would recommend. Not only have I gotten to learn so much, but it's so different than anything I've ever done or probably will do again, especially since I'm not going down a STEM based career path. Even if I was, it would still be amazing to have this experience and it would look really great on resumes.

Lauren: Any final thoughts?

Gillian: This internship is also really cool because the interns are having a direct impact on the science world. For example, the rodents' tissues are studied to see the effects of climate change on these organisms. They are also used to analyze how vector borne pathogens like ticks affect them. Blundell itself, the building that currently houses many of our collections, is super cool too, filled with all sorts of specimens, some that are centuries old. There's so much work to be done in the museum, so there is ample opportunity for prospective students.

Dragonflies from the invertebrate collection

A Glimpse into the Natural History Collections

And I couldn't agree more. Every person involved in these projects is helping out immensely, plus, there are just so many different aspects of the museum you can dive right into and explore. There is no shortage of work to be done, so the more the merrier. Every intern has their work cut out for them, and yet it doesn't feel like work. I often find myself forgetting that I am doing this for credit! Ultimately, I am so glad I got to have this experience, and if I had one regret, it would be that I wished I had known about it sooner!

For more information on the Natural History Collections, check out this documentary by Gillian Kimmel!: Link Here

beetles from the invertebrate collection

Cicada from the invertebrate collection under a stereo microscope.

Just a few of the many eggs from the Pember egg collection.

Meet Lauren Berkley:
Graduate TA of the Year Award Winner for 2024!

Lauren is a Master's student in Dr. Martinson's lab. She studies vector-borne pathogens in white-tailed deer, moose, and caribou via PCR analysis of tissue samples. She is also the teaching assistant for the Natural History Collections Internship courses and is involved with the Biology department Social Committee. In her free time, Lauren likes to explore the outdoors, play guitar, and bake. She is defending her thesis on May 20th, where she then wants to pursue a DVM/PhD to work as a veterinary epidemiologist!

A note from the Curator:

Natural history collections are the repositories of irreplaceable specimens that document patterns of biodiversity across time and space, from our backyards to the far corners of the globe. Preserving a record of the past becomes ever more crucial as habitat loss, environmental pollution, and global climate change drive rapid, massive, potentially irreversible changes in natural systems. As one of the oldest and largest collections of animal specimens from New England, the Thompson Zoological collection is at the forefront of biodiversity research and conservation in Vermont and beyond.

We are also training the next generation of environmental stewards. In just two short years, our internship program has introduced over 55 UVM students to the wonders of nature, and the hard work needed to document and preserve them. Their enthusiastic efforts have transformed the collections from a neglected, sleepy place to a constant hive of activity and progress, and they have gained invaluable skills they will be able to bring with them to future careers.

If you are in the greater Burlington area, be on the lookout for a fantastic new monthly lecture and field walk series, "Talks and Walks on UVM's Wild Side" co-sponsored by the UVM Natural History Museum, the UVM Natural Areas, and the Field Naturalist program.

All of our efforts in research, education and outreach rely on the generous support of donors who value our mission and impact. If you are interested in helping to support our work, please visit our webpage and click on the big green donation button!

All the best,
Sara Helms Cahan

BilDS
Biological Data Science
a Graduate Training Program
at the University of Vermont

QuEST Program Transitions to BilDS

With continued institutional support from UVM, the QuEST program is transitioning to the Biological Data Science (BilDS) program. This evolution is a strategic step towards broadening and enhancing interdisciplinary graduate education at UVM. The Quantitative and Evolutionary STEM Training (QuEST) program was proudly sponsored by the NSF Research Traineeship (NRT) from September 1, 2017, to August 31, 2023.

The BilDS program will continue QuEST's legacy of building a diverse, interconnected academic and social community. We remain dedicated to empowering scientists who are eager to address environmental and global health challenges with a similar structure in coursework, JEDI training, professional development, and community-building activities.

QuEST Funded 4-12 Weeks of Spring/ Summer 2023 Internships For 4 UVM Biology Ph.D Trainees

Andrew McCracken

4 weeks	**July-August, 2023**
Sponsor	Hakai Institute
Location	Seattle, WA
Topic	Investigating the Transmission of Sea Star Wasting Disease in the Pacific Northwest"

Anna Schmidt

12 weeks	**March-June, 2023**
Sponsor	Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) Department of Plankton and Microbial Ecology
Location	Neuglobsow, Germany
Topic	Studying zooplankton daily migration behavior using experimental mesocosms

QuEST Funded 4-12 Weeks of Spring/ Summer 2023 Internships For 4 UVM Biology Ph.D Trainees *(Continued.)*

THE SAINSBURY LABORATORY UNIVERSITY OF CAMBRIDGE

Csenge Petak

8 weeks	**May-July, 2023**
Sponsor	The Sainsbury Laboratory, University of Cambridge
Location	Cambridge, UK
Topic	The evolution of plant development in a variable environment

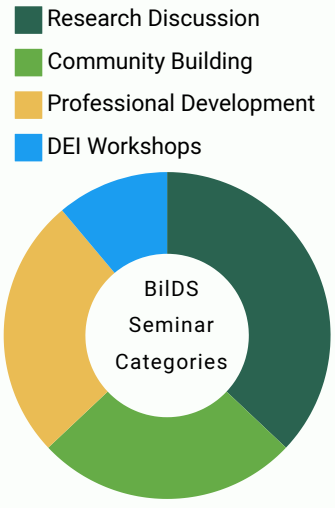
LUCY PARSONS LABS

Dan Munteanu

8 weeks	**July-August, 2023**
Sponsor	Food Not Cops, Lucy Parsons Labs
Location	Remote
Topic	The city is a complex system

Learn More about BilDS: www.uvm.edu/quest @UVM_BilDS BilDS.Program@uvm.edu

BilDS Seminars Spark Interdisciplinary Communication and Cross-Unit Collaboration



During the 2023-2024 academic year, the BilDS program (formerly known as QuEST) offered a robust schedule of 27 seminars accessible to all graduate students and faculty. The series featured 10 research presentations and discussions with 16 guest speakers drawn from 6 UVM academic units: the Rubenstein School of Natural Resources, Computer Science, Biology, Plant Biology, Biomedical and Health Sciences, Cellular, Molecular and Biomedical Sciences. Additionally, the program organized 7 professional development workshops focusing on science communications and career path development. 7 community-building activities were also designed to create the sense of belonging and a supportive academic community in the BilDS program. The BilDS program also held 3 DEI workshops in partnership with the CAS Dean's Office and the UVM Interfaith Center.

Join the BilDS Program For AY24-25 Cohort!

Are you a current or incoming UVM Ph.D. student interested in building data-driven solutions for Global and Environmental Health? Join BilDS to be part of a culturally sensitive and Interdisciplinary academic community! *Applications are currently assessed on a rolling basis.*

For more info, please visit **https://www.uvm.edu/quest/admissions**

Anna Schmidt: Fialho Award winner 2024 shares her experience doing research in Germany this past year

Anna is a 3rd year PhD candidate in the Biology Department, advised by Dr. Jason Stockwell

“Last year, I participated in five months of fieldwork at the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) Department of Plankton and Microbial Ecology in Neuglobsow, Germany. I received internship funding through UVM's Quantitative and Evolutionary STEM Training (QuEST) (now BilDS) Program. I also successfully applied for research funding through two funded proposals through the European Union AQUACOSM-plus Transnational Access program.

During my time in Germany, I participated in two large-scale mesocosm experiments to investigate the contribution of zooplankton diel vertical migration to downwards carbon fluxes in lakes. IGB has a large aquatic mesocosm platform called the LakeLab where we performed these experiments. The LakeLab is composed of 24 cylindrical units which are each 9-m in diameter and 20-m deep and isolated from Lake Stechlin in which they are situated. The large scale of these experimental "mini lakes" allows us to perform replicated experiments at a scale relevant to natural lake processes. During our 6-week spring experiment, we manipulated densities of fish in the mesocosms and investigated the cascading impacts on lower trophic levels and carbon fluxes. During our 8-week summer experiment, a different experimental design allowed us to investigate both top-down and bottom-up impacts of different fish and nutrient treatments on the food web.

Anna Schmidt: Fialho Award winner 2024 shares her experience doing research in Germany this past year

I led a team of students during both experiments to conduct sampling of the mesocosms. We sampled day and night to investigate the daily migration behavior of zooplankton in response to the treatments and also collected samples for phytoplankton, carbon, and other water quality parameters. I had the opportunity to present some of our preliminary results at the 3rd International Symposium on Aquatic Mesocosm-Based Research last November in Antalya, Turkiye, and our team continues to move along with our data analyses!

For me, the most valuable part of this experience was having the opportunity to work with collaborators from all over the world. During my stay at IGB, several other research groups from Estonia, Turkiye, Switzerland, etc. came to study various aspects of the mesocosm experiments. We all lived together at a guest house and got to know each other over many group dinners and barbeques after long days of sampling. I am very grateful to have had this experience and want to thank the UVM QuEST (BilDS) program for providing the internship support which allowed me to initiate this collaboration!”

PUMPKIN CARVING CONTEST

The yearly biology department pumpkin contest came back in full force this past Halloween. The spooky jack o'lanterns were on full display in Marsh Life, presenting their fun and topical designs to everyone who crossed their path. Ultimately, it was the Ballif Lab's pumpkin who stole the show, winning first place.

The winning pumpkin, turned into a wicked witch by The Ballif Lab, received 59 total votes.

Selfie of the winners, Taylor Bean (far left), Phoebe Cousens (middle left), Dr. Ballif (top right), and Daniel Penados Richter (bottom right) with their witchy pumpkin.

Tied for second place, with 36 votes each, were Matt Futia (left picture, left) and Anna Schmidt (left picture, right) and Gwen Ellis (right picture, left) and Emily Dombrowski (right picture, right) with their DNA tree pumpkin.

In third place, with 35 votes, Dr. Ebert (left) and Collin Macloed (right) with their pumpkin.

Graduate Student Thesis Defenses

Helaina Stergas, PhD

Ebert Lab

"Compensatory Mechanisms in Eye Development: Critical overlapping roles of Crk and Nck adaptor proteins in the zebrafish retina"

Caroline Dumas, PhD

Ebert & Ballif Labs

"The roles of PlexinA2-Semaphorin6a Bi-Directional Signaling in Zebrafish Eye Development"

Jacob Sorrentino, MS

Helms Cahan Lab

"The Population Genetics of Four Ant Species in a Fragmented Urgan Environment"

Lauren Berkeley, MS

Martinson Lab

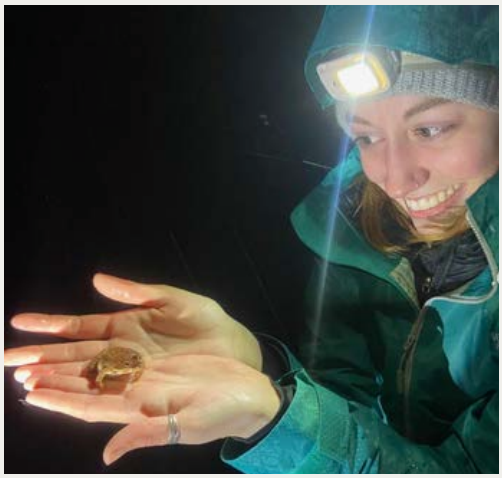
"Looking North and Thinking Ahead: Understanding the Range Expansion of Vector-Borne Cervid Pathogens"

Graduate Student Thesis Defenses

Phoebe Cousens, MS

Ballif Lab

"Identification of Novel SH Protein Phosphorylation-Dependent Binding Partners and Interaction Mechanisms"



Kylie Finnegan, MS

Lockwood Lab

"Elucidating the Genetic and Molecular Mechanisms Underlying Thermal Tolerance in Embryonic Drosophila melanogaster"

Thanks to the graduate students on the Biology Social Committee for organizing fun events throughout the year!

A Jeopardy game during the holiday potluck brought fun to the whole department!

2023 Undergraduate Summer Research Awards

The following students are recipients of the Kay Klieman Larrabee Summer Research Award. We would like to thank the alumni donors whose funds supported the following undergraduate students in their summer research in the Biology Department, providing stipends and funds for their research supplies.

Franny Oppenheimer
May-Collado Lab
"The song repertoire of BSG Humpback Whales breeding off the western coast of Panama from 2007 through 2023"

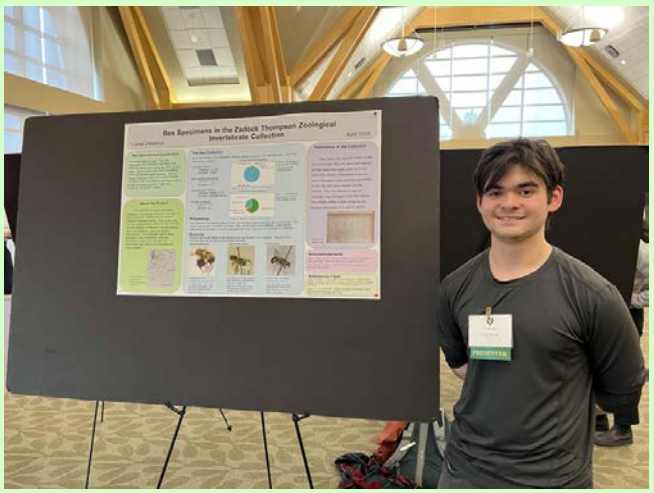
Macy Ingersoll
Stanley Lab
"Unravelling hunger's influence: investigating the effects of dopaminergic modulation of amino acid taste sensitivity in Drosophila Melanogaster"

Taylor Bean
Ballif and Ebert Labs
"Molecular mechanisms of the early eyefield cohesion in the developing zebrafish"

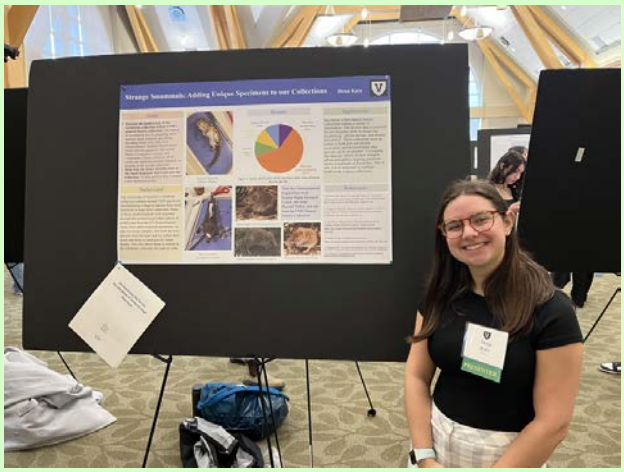
Catherine Fauver
Ballif Lab
"Sub-cellular vharacterization of a phenotypic truncation allele of DCBLD2 and bioinformatic analysis of the tissue-specific compensation potential of DCBLD1 and 2 in zebrafish development"

Undergraduate Student Research Compilation

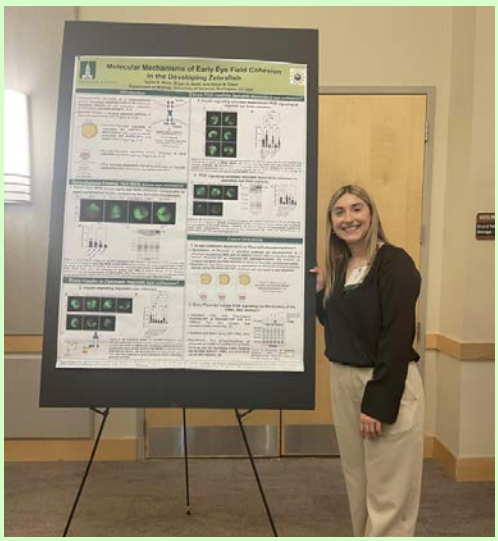
Ruby Higgins from Dr. Martinson's lab



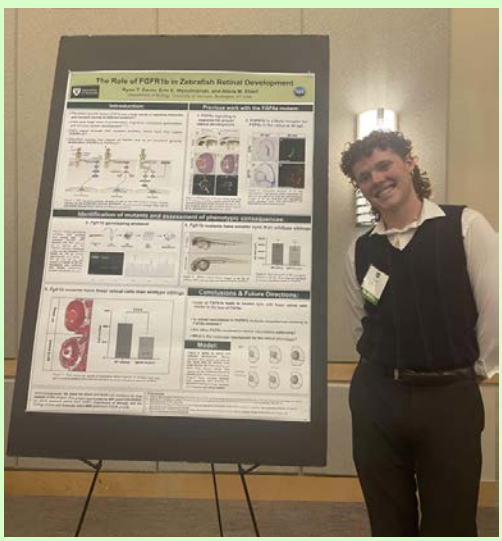
Natural History Collections Intern
Lucas Chestnut



Natural History Collections Intern
Dena Katz

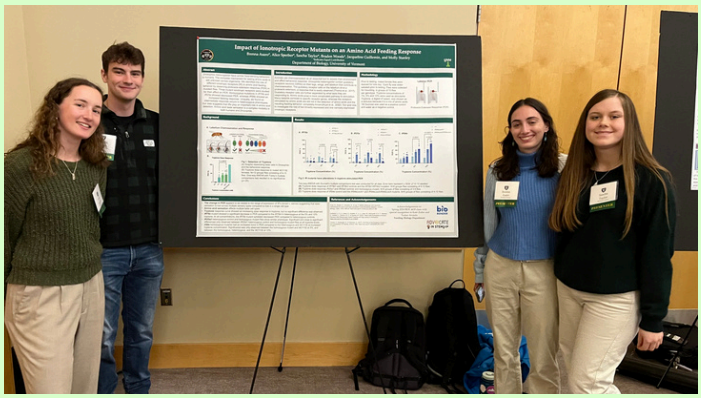


Taylor Bean from Dr. Ballif's lab

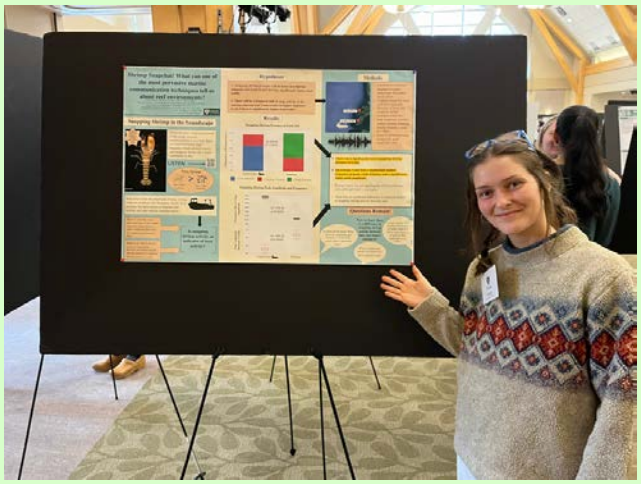


Ryan Davin from Dr. Ebert's lab

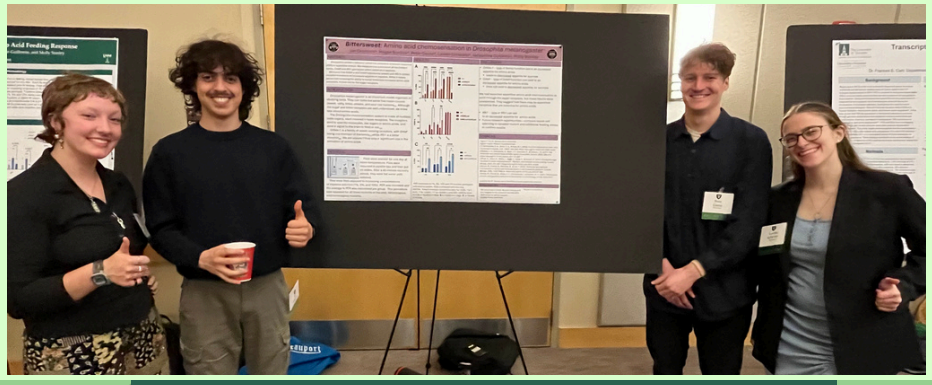
Undergraduate Student Research Compilation



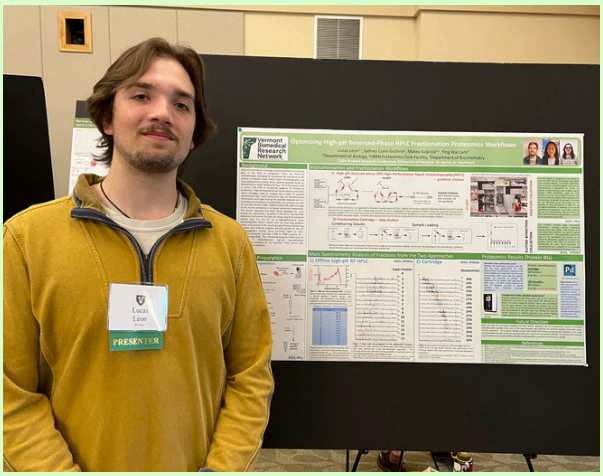
Students in the Advanced Genetics CURE class
Alice Sperber, Braden Woods, Brenna Asaro, Sascha Taylor



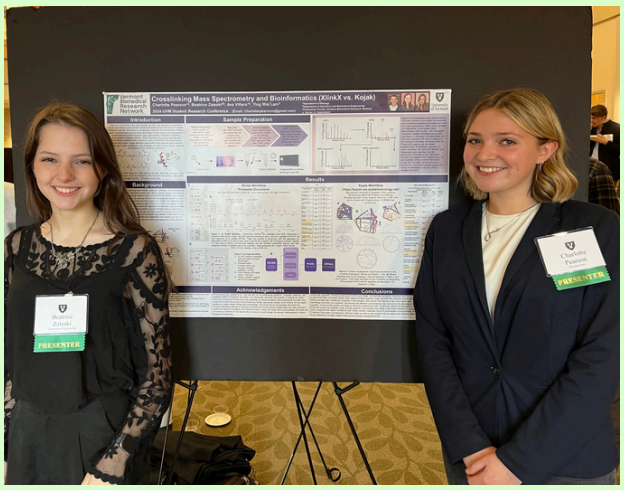
Student in the Soundscapes CURE class
Nicole Hardy



Students in the Advanced Genetics CURE class
Megan Burdick, Ian Orsmond, Peter Gause, Lauren Schwartz



Proteomics Intern
Lucas Leon



Proteomics Interns
Beatrice Zaleski, Charlotte Pearson

Beta Beta Beta Biological Honor Society

Congratulations to our graduating Seniors:

Molly Hoppa

Christina Anastasia

Gabrielle Flory

Lauren Frampton

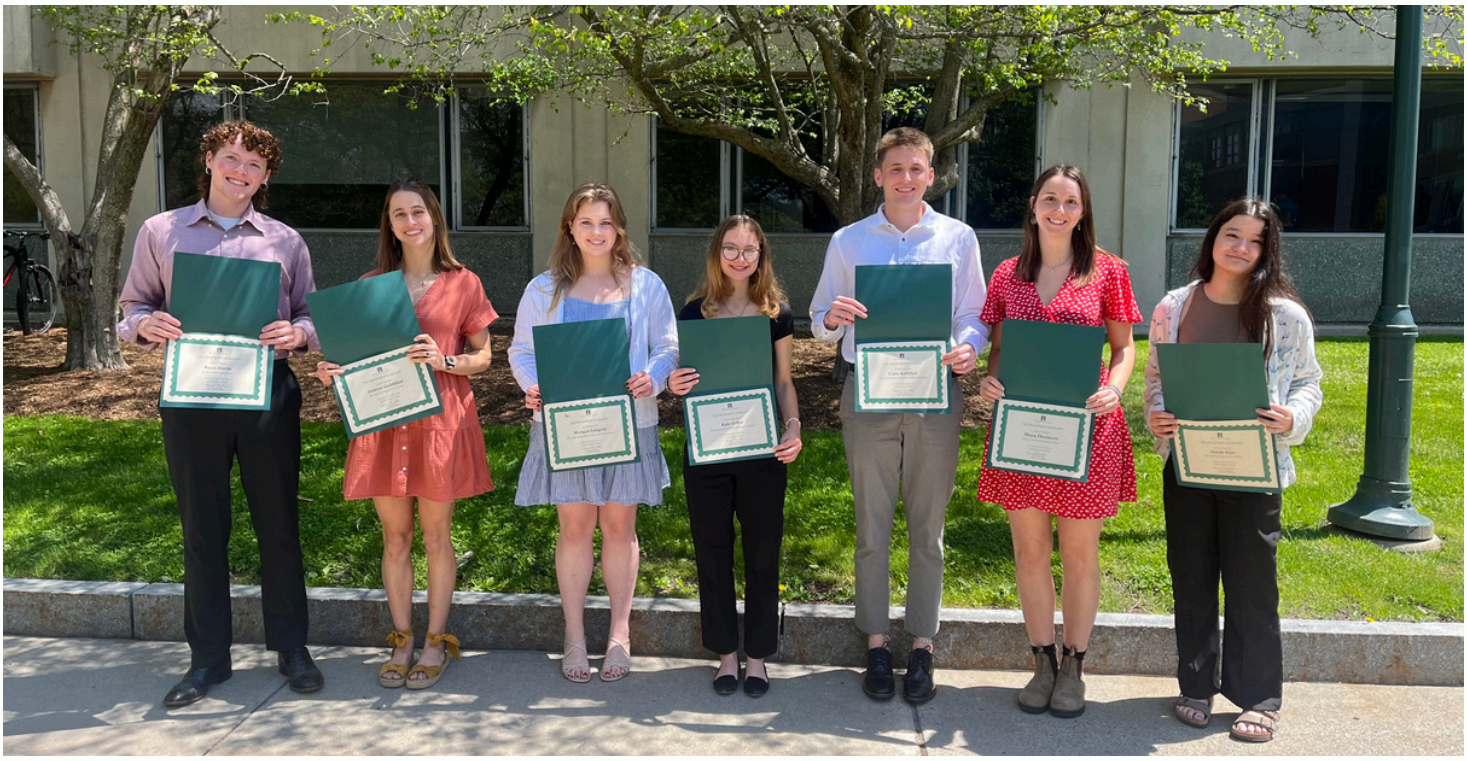
Skyler Kolbe

Isabella deKluyver

Josie Beauregard

Maya Tomson

2024 Outstanding Graduating Senior Awards



George M Happ Awards in Biology: **Justine Goldblatt & Sarah Kim**

This award is presented to a student with outstanding academic performance in Biology after Dr. Happ who arrived at the University of Vermont as a Professor and Chair of the Department of Zoology in 1978.

George Perkins Marsh Award in Ecology and Evolution: **Morgan Gregory**

This award is presented to a student doing research in Ecology and Evolution, named after George Perkins Marsh who is regarded as the founder of the environmental movement.

Joan M. Herbers Award in Biology: **Maya Thomson**

This award is presented to a high-achieving Biology student doing research after Dr. Joan M. Herbers, the first tenure-track female professor in the history of the Biology Department.

Bernd Heinrich Award in Physiology or Evolution: **Liam Kelliher & Kaitlyn Zoller**

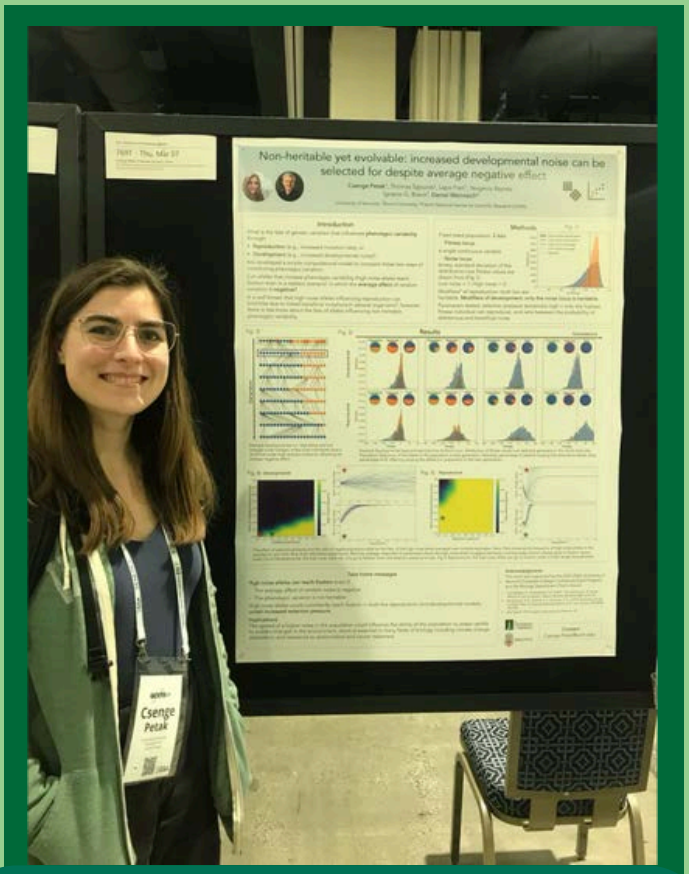
This award is given to a student doing research in the area of Physiology or Evolution after Dr. Bernd Heinrich, Emeritus Professor of Biology, often regarded as one of the world's foremost naturalists.

Kurt Milton Pickett Award in Biology: **Ryan Davin**

This award is given to a high-achieving student doing research in memory of Dr. Kurt Milton Picket who was a Professor in the Biology Department from 2007-2011.

2023 Chair's Award Winners

Supporting graduate student conference attendance



Csenge Petak, Allied Genetics Conference, Washington DC

Csenge Petak: "I was very fortunate to be able to present my research at The Allied Genetics Conference (TAGC) in Washington, D.C. in March thanks to the Graduate College Conference Grant Program and the Biology Department Chair's Award. This year, the conference span a wide range of topic, including developmental genetics, ecological genetics and genomics, evo-devo, gene regulation, and population and evolutionary genetics, all of which were closely related to one or more chapters of my PhD, especially to the one I was presenting at the conference. I attended plenty of inspiring talks, especially on"Evolution on the chromosomal scale" and "Deleterious mutation", and I met with a couple of researchers in my field that I will most likely be reaching out to in the future about potential collaboration and job opportunities. I got a lot of interest during the poster session, there were some great questions! My poster was presenting results of a computational population genetics model that my collaborators and I have developed to investigate the fate of an allele that increases the phenotypic variation among the carriers or the offspring of the carriers in the population under different parameter settings. I really enjoyed my time at TAGC and I am looking forward to where this project will take me next."

Matt Futia, American Fisheries Society, New York

Matt Futia: "I had the opportunity to attend and present at the annual meeting for the New York Chapter of the American Fisheries Society with support from the Biology Chairs Award. The conference focused on New York waterbodies, which included a wide range of systems from the Great Lakes to the Atlantic Ocean. The broad extent of waterbodies covered brought together researchers with various perspectives and provided me with multiple opportunities to network with professionals from academia (e.g., Cornell University, SUNY College of Environmental Science and Forestry), state agencies (New York Department of Environmental Conservation), federal agencies (US Geological Survey, US Fish and Wildlife Service), and non-profit organizations (e.g., The Nature Conservancy, Trout Unlimited). I presented a chapter of my dissertation in which I developed a framework to evaluate movement models that assess the regional distribution of fish using acoustic telemetry. This framework can help researchers better understand fish behavior and movement and thereby facilitate management and conservation actions."

ART OF BIOLOGY PHOTO CONTEST

This year we held our13th annual installment of the Art of Biology photo contest, hosted by the UVM Biology Department. For the contest, students are encouraged to submit photos that they've taken in their time researching within the department, and the entries voted on by faculty, staff, and students.

-Anna Schmidt, 1st Place Winner
Cover Photo

"This photo shows a freshwater jellyfish (Craspedacusta sowerbii) swimming near the surface of a freshwater mesocosm in Lake Stechlin, Germany. At this hydromedusa stage, these jellyfish are around 2.5 cm in diameter and can become abundant when water temperatures rise in the summer. They use their stinging tentacles to paralyze and prey upon zooplankton in the water column, and thus may influence zooplankton abundance and composition. Our project investigated the impact of planktivory by these jellyfish and planktivorous fish on zooplankton migration behaviors and ecosystem function. Photo taken (very precariously) with an iPhone XR from right above the water surface.

-Christian Arntsen, tied for 2nd Place

Tasting light:
optogenetic stimulation of Drosophila melanogaster taste neurons. In the Stanley Lab, we can genetically manipulate fruit flies so they express light-activated proteins called channelrhodopsins in specific neuronal populations. This image depicts a fly being exposed to red light stimulation which can activate an excitatory channelrhodopsin known as Chrimson. We can express Chrimson in certain taste cells and directly activate them with red light exposure to learn how they contribute to feeding behaviors. Image taken with an iPhone camera through a dissection microscope.

ART OF BIOLOGY PHOTO CONTEST

Continued

-Maia Austin, tied for 2nd Place

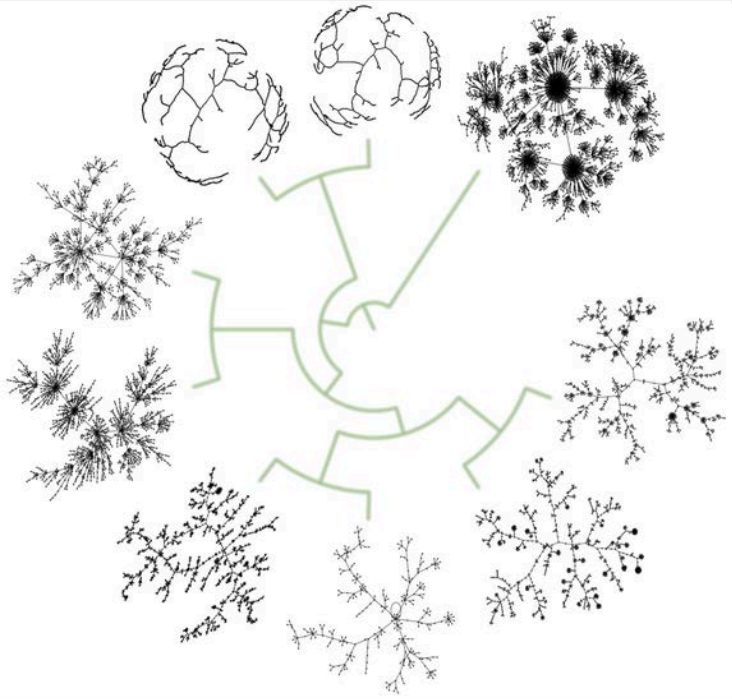
A mother-calf pair of bottlenose dolphins (Tursiops truncatus) playing in the wake of a passing boat in Bocas del Toro Archipelago, Panama. Bottlenose dolphins have complex fission-fusion social networks with high levels of socialization between groups. They also use social sounds called whistles to communicate with each other and convey their identity. We are currently investigating how these social associations and whistles are connected and how they can be used to better understand the group dynamics of these dolphins. They are part of a resident population that lives in the archipelago year-round, making them easy to monitor over time.

-Alison Hall

Now you see me, now you don't.
On the right is a stone fly, and on the left is a caddisfly barely peeping its antennae out of is protective casing. Both invertebrate species are indicators of health steam communities. These critters were collected during a field sampling experience with Vermont high school students to learn about water quality in their local area following the historic flooding in July, 2023.

ART OF BIOLOGY PHOTO CONTEST

Continued



-Csenge Petak

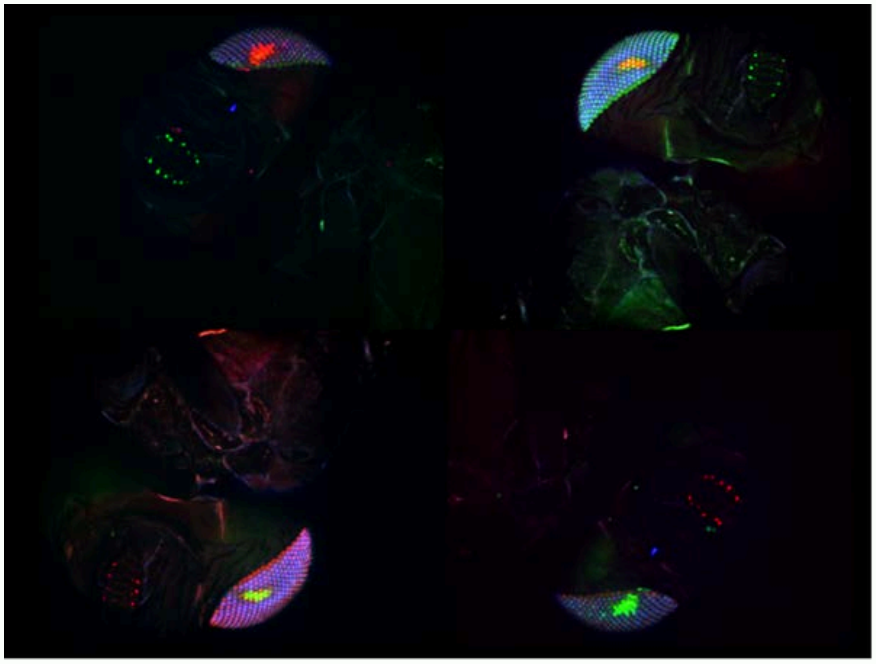
Still Alife with flowers and a tree:
My research investigates the evolution of development and evolvability using computational evolutionary algorithms. Here we can see the emergence of life-like structures from local interactions with simple cellular automata rules. These patterns have been used as target developmental trajectories for simulated gene regulatory networks and tell the story of how some phenotypes are inherently easier to be generated by certain developmental systems, which leads to interesting and novel evolutionary dynamics. The technique used to create this image was a combination of dendrogram and network visualization packages in Python.

-Erica Griggs

Captured during a summer field trip in 2023, this Wood Turtle (Glyptemys insculpta) was spotted during a survey conducted by the Orianne Society to monitor Vermont's wood turtle population. These turtles are designated as a Species of Greatest Conservation Need and a species of special concern in Vermont. This snapshot, taken with an iPhone, documents a moment of conservation in action.

ART OF BIOLOGY PHOTO CONTEST

Continued



-Jacqueline Guillemin

Proboscis Pop Art:
Male Drosophila melanogaster expressing green fluorescent protein in their IR94e neurons and red fluorescent protein in their eyes. Flies were positioned in nail polish and imaged via sCMOS camera on a 3i Spinning disc Confocal station with red, green, and blue filters. Post-processed in Slidebook to highlight fluorescence and autofluorescence. Arranged and red-green inverted in Inkscape. This image represents the elegant genetic tools I use to understand chemosensory behaviors in Drosophila.

A photo from Shelburne Farms where our department celebrated retirements and accomplishments!

Dr. Joaquin Nunez joins the Department

The UVM biology department warmly welcomes Dr. Joaquin Nunez as the newest faculty member to hop on board. Born in Havana, Cuba, Dr. Nunez grew up in Bogota, Colombia, for most of his childhood. Dr. Nunez completed an associate's degree at Miami Dade College and a bachelor's degree at the University of Miami, where he studied patterns of genetic variation in mitochondrial genomes of fish living in polluted habitats.

This work led to his discovery of, in Dr. Nunez's words, "the natural marriage between genetics and the environment", which inspired him to pursue a Ph.D. at Brown University. There, he studied barnacles residing on rocky intertidal, uncovering multiple genes that experience natural selection and that encode ecologically important traits. This work led Dr. Nunez to the University of Virginia where he conducted his postdoctoral research looking at drosophilids (fruit flies) living in seasonal environments.These seasonal environments along with their broad range of genetic diversity, creates the perfect recipe for further exploring the idea of rapid adaptive evolution.

Now, Dr. Nunez's lab works with barnacles, drosophilids, ants, and sea urchins to better understand the mechanisms of rapid evolution. Dr. Nunez emphasizes that a better understanding of rapid evolution will be pivotal to predict how organisms may respond to climate change.

Dr. Nunez joined UVM in June of 2023 through the Henderson/Harris Fellowship, a Fellow-to-Faculty program of the College of Arts and Sciences. This program recruits passionate, experienced individuals who come from underrepresented backgrounds to work and conduct research at UVM. As a queer, Hispanic immigrant, Dr. Nunez brings a unique perspective to the field of biology and our department. The UVM Biology Department is excited to welcome Dr. Nunez to its ranks For more information on Dr. Nunez's research, check out his website: **https://www.jcbnunez.org/**

Read more about Dr. Nunez joining Biology here: https://www.uvm.edu/news/cas/biology/dr-joaquin-nunez-joins-biology-faculty

Dr. Stevens with two collaborators on Chagas disease research, Dr. Monroy Escobar (left), Dr. Dorn (right)

Dr. Stevens in Naj Tunich caves with students looking new species of Chagas vectors in a world heritage site. (from left: Robin Hicks, Lori, Julia Hobson Barker and Lisa Stevens-Goodnight.

Professor Lori Stevens Retires after 36 years in the Biology Department

Dr. Stevens started at UVM as an Assistant Professor in 1988. Dr. Stevens shared her expertise in evolutionary biology and population genetics through teaching and research, studying host-parasite interactions with a focus on Chagas disease vectors. To date, she has published 79 scientific papers, 8 book chapters, and received nearly 15 million dollars in funding from the National Science Foundation (NSF). Dr. Stevens has built cross-cultural connections through her interdisciplinary research and has mentored students at all levels. Dr. Stevens shares, "*I really enjoyed all aspects of teaching, including infectious diseases as well as dog and human genetics. I especially enjoyed the opportunity to mentor both undergraduate and undergraduate students in students including through the math-bio program, EBioMe and McNair.*" Dr. Stevens also co-directored the QuEST graduate training program. This April, we held a seminar to honor Dr. Stevens, where Two collaborators, Dr. Maria Carlota Monroy Escobar from the Universidad de San Carlos de Guatemala and Dr. Patricia Dorn from Loyola University New Orleans, spoke about their research on Chagas disease in Guatemala, which will continue to have a positive impact for years to come. Dr. Stevens received a well-deserved standing ovation at the seminar! Dr. Stevens has also been a mentor to junior faculty and a key member of the department and broader UVM community who will be sorely missed.

Congratulations on all of your accomplishments and happy retirement!

Read a feature story on Dr. Stevens HERE

Left to Right: Rosalind Renfrew, Wildlife Diversity Program Manager, Vermont Fish and Wildlife Department; Julie Moore, Secretary of the Agency of Natural Resources; C. William (Bill) Kilpatrick; Allan Strong, Professor of Wildlife, Rubinstein School, UVM, and Chair of Vermont Endangered Species Committee (photo by Mark LaBarr)

Dr. Kilpatrick on a field trip in the Northeast Kingdom (photo by Tyson Benoit)

Dr. Kilpatrick, Vermont Mammalogist and former UVM Professor Recognized for Conservation Work

Biology emeritus professor Dr. C. William "Bill" recently received the Sally Laughlin Award from the Vermont Agency of Natural Resources. He is deemed a 'local hero' by several news outlets as he contributed decades worth of work for the greater understanding and protection of Vermont's wildlife. Dr. Kilpatrick's long list of accomplishments include conducting field work in several continents, contributing to the discovery and description of the Laotian rock rat, and having a species of deer mouse, *Peromyscus kilpatrick*, named after him. As he was once told, "for a biologist, it's better to see your name in italics than lights".

The following links provide more information on Dr. Kilpatrick's background and accomplishments:

http://anr.vermont.gov/content/vermont-mammologist-recognized-endangered-species-conservation

https://original.newsbreak.com/@vermont-updates-1665640/3184062372408-local-hero-vermont-s-dr-kilpatrick-honored-for-decades-of-wildlife-conservation

https://vtdigger.org/2023/10/31/longtime-uvm-professor-honored-for-work-with-vermont-endangered-species/

Lab Coordinator Leigh Sweet Wins CAS Staff Award for Superior Performance Before Retirement

Leigh Sweet in Marsh Life Science

The UVM Biology Department is proud to announce that Leigh Sweet, a member of our staff for 37 years, won the CAS Staff Award for Superior Performance before his retirement this spring. Leigh first came to UVM in his undergraduate majoring in biology in 1985. Leigh ended up working as a lab technician in several labs, conributing to important research, and in 2012, became the lab coordinator in Biology. Leigh did everything from allowing the classes and labs in Marsh Life Science to run smoothly to organizing the Natural History Museum on campus. He handled the fire that took place in the Natural History Museum building, and he also organized all of the museum specimens with undergraduate student Lily Duerr. His favorite part of his job was interacting with the students and helping them conduct the research and learn the material they need to set them up for success. After years of hard work and contributing to the growth of the Biology Department, Leigh is extremely grateful to have been presented with the well-deserved award. He looks forward to traveling and working on house projects as his post-retirement plans, including creating a spot to mount his award. He is also excited to continue focusing on his hobbies, some of which include woodworking, beekeeping, and gardening. Leigh also plans to continue his behind-the-scenes lighting and photography work with the Lyric Theater.

The Biology Department thanks Leigh for his years of hard work and wonderful contributions that have shaped the department into what it is today. Congratulations on the award and happy retirement!

Professor Alison Brody receives the 2024 George V. Kidder Outstanding Faculty Award

Dr. Alison Brody (left) with her former student Dr. Amy Seidl at the Biology Honors Awards

The UVM Biology Department is proud to announce that Dr. Alison Brody was named the 2024 recipient of the George V. Kidder Outstanding Faculty Award. This award is given annually to one full-time UVM faculty member by the Alumni Association, recognizing excellence in teaching and extraordinary contributions to the enrichment of campus life. Dr. Brody has been a dedicated professor in our department for 29 years and we are glad to see her extraordinary contributions recognized at this level. From the full article, “Professor Brody embodies the spirit of the Kidder Award. She is an impeccable scholar, outstanding mentor and teacher, and generous university citizen. But more than that, Alison is incredibly kind, gracious, and giving.” At a recent celebration event, many faculty and students echoed these statements, emphasizing that Dr. Brody’s mentorship is exemplary, unique, and very impactful.

You can read the full article published here: LINK

Congratulations on the award and thank you for all that you contribute to our community!

2024 Accomplished Alumni

Accomplished Graduate Student Alum:

Dr. Amy Seidl

Amy completed a PhD in Ecology and Evolutionary Biology with Dr. Alison Brody. Afterwards, Amy joined the Environmental Studies Faculty at Middlebury College.Dr. Seidl has published two books, entitled Early Spring: An Ecologist and Her Children Wake to a Warming World (Beacon Press, 2009), and Finding Higher Ground: Adaptation in the Age of Warming (Beacon Press, 2012). Amy joined the Environmental Studies faculty at UVM in 2012 and became its co-director in 2016. In 2018, Amy was promoted to Senior Lecturer in the Rubenstein School of Environment and Natural Resources and continued to broaden her teaching and scholarship in Environmental Studies. In 2020, Amy was awarded the President's Distinguished Senior Lecturer Award for her work at UVM. In 2022, Amy founded the Fellowship for Restoration Ecologies and Cultures (REC) with her colleague Cheryl Morse. REC is a year-long approach to the study of restoration and is funded by the Henry David Thoreau Foundation as a project in green workforce development.

Accomplished Undergraduate Student Alum:

Dr. Chris Pacheco

Dr. Pacheco worked in Dr. Judith Van Houten's lab at UVM as a chemistry major. He obtained his PhD in neuroscience at the University of Michigan and subsequently worked MIT before moving outside of academia, Dr. Pacheco has worked in gene therapy (Cell Genesys), robotics (HighRes Biosolutions), diagnostics (Roche) and currently builds biotech companies within the venture capital community (Polaris and Alloy Therapeutics).As a first-generation college student and the son of working-class Columbian immigrant, Dr. Pacheco has a passion for supporting underrepresented scientists and their quest to test their scientific hypotheses in a translational setting. He believes in the democratization of scientific tools for drug discovery both from the platform of technology and access-to-industry approaches. He has spent his career advocating for, mentoring, and building relationships across academic, industrial, and financial communities to empower the development of therapeutics by the broader scientific community.

UVM Biology Alumni Updates

Dr. Susan Perkins

Accomplished Graduate Alum 2023.

After receiving this award last year, Dr. Perkins visited us to give a seminar where she spoke about her career as a Parasitologist, from conducting research on malaria hosts to curating a museum exhibit on microbes. Dr. Perkins is pictured here at MLS with Dr. Ellen Martinsen and her two graduate students (Lauren Berkeley and Erica Griggs) who are also Parasitologists.

Max Kravitz, Class of 2012

Max responded to last year's newsletter with his incredible pumpkin carving that would have beat all of ours!! Thanks for sending along, we love to hear from our alum!

Samuel Cranston, Class of 2023

Sam graduated last spring after completing a summer research Kay Fellowship and a senior thesis in the Martinsen Lab.
Sam is now Lab Manager in the Murphy Lab at Boston University, a lab focusing on Sickle Cell Disease.
http://murphylaboratory.com/sam-cranston/

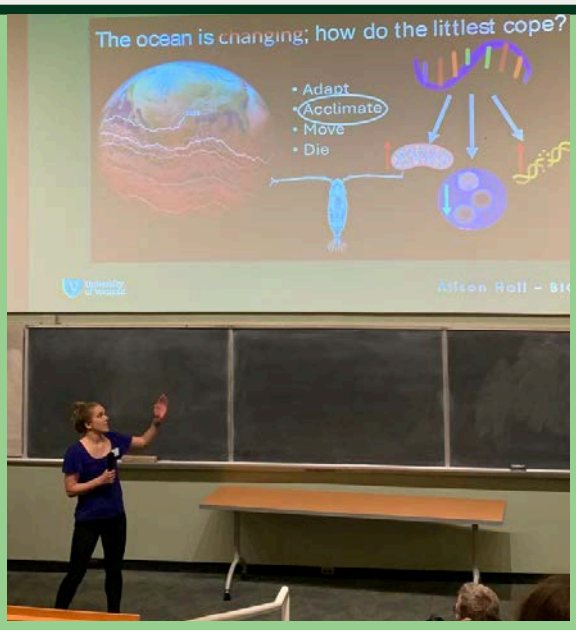
SciComm Challenge:

Graduate students compete in the 3-Minute Thesis Competition

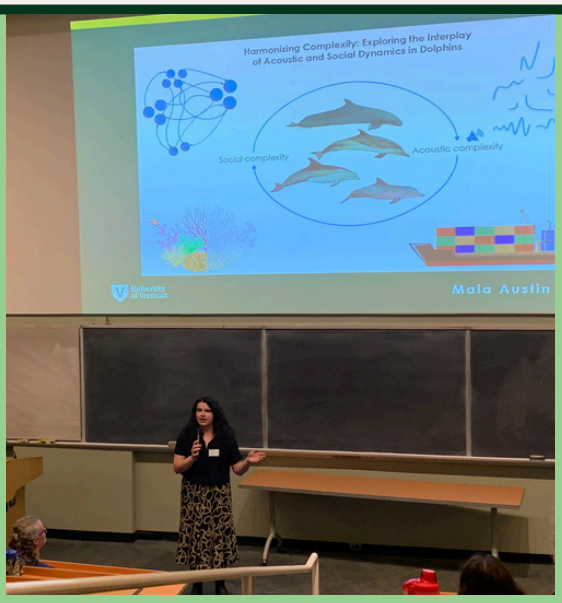
This year UVM held it's first annual 3-Minute Thesis Competition, challenging graduate students to briefly but effectively communicate their research with only 1 slide.

Alison Hall won 1st Place!

Alison Hall presenting.



Maia Austin presenting.



SciComm Intern

Students receive internship credit hours for science communication work

Lauren Manning ‘24 is a Biology major with minors in Chemistry, Art, and Reporting and Documentary Storytelling. She co-produced the department newsletter along with Dr. Molly Stanley. She also wrote articles for the department website and co-ran the department Instagram. Outside of the SciComm internship, Lauren was a Natural History Collections intern and illustrated for the UVM *Headwaters* environmental magazine. She used to also be a TA for introductory Biology. Off campus, Lauren can be found working at Ben and Jerry’s, scooping ice cream and decorating ice cream cakes. In her free time, Lauren enjoys rollerblading, painting, drawing, and snowboarding!

The Science Communications Internship was started in spring 2023 and aims to provide students with the opportunity to engage in scientific media communications. The overall goal for the internship is to create content for department news across various platforms such as the official website, social media, and this newsletter publication. Interns can expect to conduct interviews, write articles, create social media posts, and apply their photography or graphic design skills.

Contact Dr. Molly Stanley, the faculty advisor, for more information: Molly.stanley@uvm.edu

Thank You to Our Recent Donors!

We would like to sincerely thank you for your contributions over the last two years. Your support has made a significant impact in the lives of our students, particularly in the aftermath of a global pandemic.

Supporting undergraduate research at UVM ensures students the opportunity to work side-by-side with faculty to advance technology, change policies, build understanding, and improve lives.

Please consider donating to Biology: Donate Here

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Connect with Alumni & Share Updates!

Join UVM's global alumni network: www.UVMConnect.org

Are you a UVM Biology alumni with an interesting story or update to share? Our SciComm interns would love to hear from you! Please email us at BiologyMedia@uvm.edu

Thank you to all of the Biology Department students, faculty, and staff that contributed to this newsletter!