Department of Organismic & Evolutionary Biology Harvard University



Annual Report 2025-2026

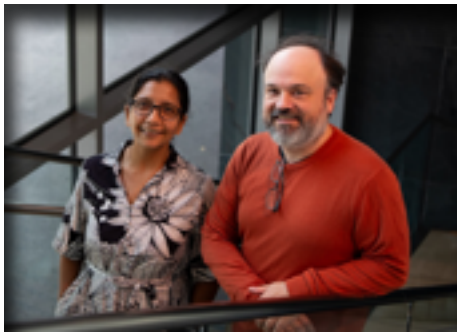


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Co-Chairs' Message

The 2025-2026 academic year was an eventful one at OEB, and we are delighted by the opportunity to look back and celebrate the journey.



MELISSA AJA

Mansi Srivastava
Benjamin de Bivort
DEPARTMENT CO-CHAIRS

A particular high note was welcoming Mandë Holford and Carrie Albertin as OEB's newest faculty members. Mandë studies the evolution and function of venom, particularly in molluscs, including cephalopods (squids, octopuses and their kin). Carrie specializes in understanding how the impressive nervous system of cephalopods evolved. Together, they are nucleating a revived Marine Biology scholarly cluster within OEB. Both also serve as Curators of Malacology at the Museum of Comparative Zoology (MCZ). We are also thrilled with Jim Mallet's reappointment as a Professor in Residence in OEB. Jim is an evolutionary biologist renowned for posing the question "what on Earth are species?" His work on *Heliconius* butterflies and other insects challenges orthodoxies around species definitions and dynamics. We're looking forward to more exciting science from Jim and his lab.

Our graduate students and IB concentrators achieved many milestones. Fourteen Ph.D. candidates successfully defended their theses in rooms filled with family, friends, mentors, and joy. Our G4 class presented their progress at the G4 Symposium, giving us a sampling of the many subfields of biology represented within OEB. Sixty-four sophomores joined as IB concentrators, while 43 seniors lined up in Tercentenary Theater to receive their degrees at Commencement.

We had many opportunities to come together as a community. Highlights included OEB alumnus Neil Shubin delivering three Prather Lectures that integrated paleontology and developmental genetics to reveal our fishy past. The research community gathered at the Arnold Arboretum for a short, but meaningful, retreat that helped connect many in OEB. We continued our public education mission with Evolution Day, which brought 100 high school students into 12 labs to see science done firsthand, with 9 students joining labs for term-time research.

All of our successes—and there have been many—come from the hard work of the people of OEB. We know that this past year has been challenging for every member of our community, some acutely. Researchers faced the volatility of grant funds, the graduate program saw a large reduction in admissions, students and teaching staff navigated strikes, and administrative staff awaited the outcomes of workforce reorganization. We are in awe of your perseverance through these obstacles and ever grateful for your camaraderie and passion for biology research and teaching. We are looking forward to the coming academic year particularly because we get to work with our OEB friends and family.

Reach out to us if we can be of help, or just to say hello!



On the cover: Photo by Marjorie Awai of *Nautilus pompilius*, an ancient cephalopod featured in a study published in *Current Biology* led by Professor Gonzalo Giribet and Professor David Combosch of the Marine Laboratory at the University of Guam.

Congratulations to our Graduates!



KATHERINE ANGIER

Termite communities in the Republic of the Congo: Drivers of diversity and ecological impacts (Gonzalo Giribet and Andrew Davies, Co-Advisors)

BRIDGET BICKNER

Evolution of discrete reproductive strategies in *Phlox* (Polemoniaceae) (Robin Hopkins and Elena Kramer, Co-Advisors)





NIKHIL CHARI

Deciphering the relationships between climate change, plant root exudation, and the terrestrial carbon sink (Benton Taylor, Advisor)

CHRISTOPHER GRASSA

Establishing a genetic system for studying cannabis domestication (James Mallet, Advisor)





ZHE HE SEO

Weak polymers, strong impact: How pectin hydrogels control embolism spread in plant water transport (N. Michele Holbrook, Advisor)

EVAN HOCKRIDGE

Seeing the forest between the trees: The ecology of open-canopy ecosystems in Central African rainforest mosaics (Andrew Davies, Advisor)





I-TING HUANG

Microbial evolution through the lens of metagenomics and archaeogenetics (Colleen Cavanaugh and Christina Warinner (HEB), Co-Advisors)

Congratulations to our Graduates!



SHRADDHA LALL

Genetic and evolutionary basis of behavioral variability in *Drosophila melanogaster* (Benjamin de Bivort, Advisor)

ARIANNA LORD

An integrative approach to velvet worm biodiversity and systematics (Gonzalo Giribet, Advisor)





JULI MAYORGA

Pseudoscorpion systematics & phylogenetics: Exploring the effects of accelerated rates of evolution on both ancient and recent diversification (Gonzalo Giribet, Advisor)

GRACE PISANO

Development and evolution of Ranunculaceae flowers (Elena Kramer, Advisor)





JARED RICHARDS

The marine biosphere during the Great Ordovician Biodiversification Event — Quantitative insights from the early Ordovician Fezouata Shale biota of Morocco (Javier Ortega-Hernández, Advisor)

AMBER ROCK

Embryonic plasticity through evolution and development in the acoel, *Hofstenia miamia* (Mansi Srivastava, Advisor)





MAYA WOOLFOLK

The evolution of neonatal vocal behavior in deer mice (Cliff Tabin (HMS) and Hopi Hoekstra, Co-Advisors)

Research Highlights

~ A misidentified fossil in the MCZ has emerged as a major find in early animal evolution. First described in 1865 as a caterpillar, *Palaeocampa anthrax* was later reclassified as a worm, millipede, and marine polychaete. Now, 130 years later, a study led by **Richard Knecht** (PhD '25 and Associate of the MCZ) reveals its true identity: the first-known nonmarine lobopodian and the earliest one ever discovered. Lobopodians are extinct, soft-bodied creatures that bridge the evolutionary gap between a primitive worm-like ancestor and modern arthropods, once thought to be exclusively marine from Cambrian marine deposits. The study, published in *Communications Biology,* redescribes *Palaeocampa* using 43 specimens from the fossil sites Mazon Creek in the United States and Montceau-les-Mines in France. Advanced imaging and chemical analyses revealed key anatomical traits, including legs on every trunk segment and nearly 1,000 bristle-like spines, some bearing chemical residues consistent with defensive toxins. These features confirmed its lobopodian identity, suggested adaptation to freshwater or amphibious environments, and revealed that *Palaeocampa* predates the famous Burgess Shale lobopodians by nearly fifty years. Its reclassification also confirms Montceau-les-Mines fossil site as a nonmarine site and highlights the enduring scientific value of re-examining historical museum collections. *Palaeocamp*a sat for decades a mere few feet from the office of Professor Stephen Jay Gould, MCZ curator and author who popularized the Cambrian oddities in his book, *Wonderful Life*.

~ Neuroscientists have long known that the basal ganglia play a central role in controlling movement. Now, a study published in *Nature Neuroscience* reveals that this brain system relies on two fundamentally different neural codes to guide behavior: one that supports recently learned movements and another that accompanies innate, natural behaviors. The research was led by Postdoctoral Fellow **Kiah Hardcastle** and Professor **Bence Ölveczky**. The team—which included Postdoctoral Fellow **Ugne Klibaite** and Ph.D. candidate **Cheshta Bhatia**—focused on the dorsolateral striatum (DLS), a region of the basal ganglia known to be important for learned motor skills. Using implanted electrodes combined with motion-tracking technology, the researchers recorded neural activity in rats as they freely explored their environment and performed a trained lever-pressing task. The recordings revealed that the DLS encoded movements in strikingly different ways

Faculty Awards

- Pardis Sabeti elected member of the National Academy of Science.

- Bence Ölveczky co-awarded the Simons Foundation Autism Research Initiative Autism Rat Models Consortium 2.0 Award with Naoshige Uchida (Professor of Molecular and Cellular Biology) for their work on neural circuit mechanisms underlying social interactions in autism rat models.

- Michael Desai awarded an ERC Synergy Grant from the European Research Council for the project titled, "CoEvolve," a collaborative project with Professors Michael Lässig and Professor Florian Klein at the University of Cologne, and Professor Aleksandra Walczak at the Centre National de la Recherche Scientifique, France.

- L. Mahadevan elected member of the National Academy of Science.

- David Haig named Officer of the Order of Australia (AO) by the Department of the Prime Minister and Cabinet of the Australian Government.

- Pardis Sabeti and collaborator, Christian Happi of Redeemer's University in Nigeria, awarded the "100&Change" $100 million grant by The MacArthur Foundation for their Sentinel Project, a collaboration between the Broad Institute and the Institute of Genomics and Global Health in Nigeria.

- L. Mahadevan named inaugural recipient of the Suzanne Eaton Physics of Life Award from Physics of Life, Dresden University of Technology.

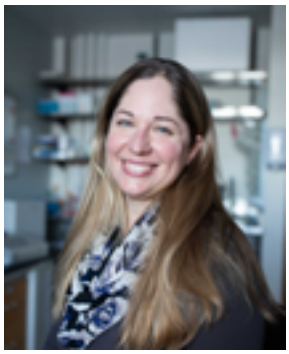
- Stephanie Pierce and Postdoctoral Researcher, Peter Bishop, recipients of the Division of Earth Sciences-Life & Environments Through Time award from the National Science Foundation for the project titled, "Integrating fossils, anatomy, and physics to unravel the interplay between body size and locomotor ecology in the ancient forerunners of amphibians."

depending on the behavioral context. The basal ganglia appears to switch back and forth between being an essential actor and a mere observer rather than shutting down completely, according to Hardcastle. Because the basal ganglia sit deep within the brain and are implicated in disorders such as Parkinson's disease, Huntington's disease, and Tourette's syndrome, the discovery of dual movement codes may help clarify how disruptions in this system lead to distinct motor symptoms.

~ Nautiloids are ancient, externally shelled cephalopods that diverged from octopuses and squids over 400 million years ago and once dominated the oceans. Today, only a few species survive in the Southern Indo-Pacific, several protected under CITES Appendix II due to over-exploitation. Despite their evolutionary importance, basic aspects of nautilus biology, including sex determination, have remained poorly understood. Evidence from other species long suggested that cephalopods shared an ancient ZZ/Z0 system, with males carrying two identical sex chromosomes and females just one, thought to date back nearly 480 million years. A study published in *Current Biology* has overturned these assumptions. Led by Professor **Gonzalo Giribet** and Professor David Combosch of the University of Guam Marine Laboratory, an international team found the first evidence of an XX/XY system in modern chambered nautiluses, similar to humans, with males as the heterogametic sex. Analyzing three genomic datasets from six nautiloid species across nine populations, the researchers used Bayesian analyses, sex-specific genome coverage, and heterozygosity patterns to identify chromosome 4 as the X chromosome and five additional Y-linked regions containing 36 male-enriched genes, many tied to reproductive functions. Though limited by the absence of a chromosome-level male genome, the findings reshape our understanding of cephalopod genetics and have implications for both sex chromosome evolution and conservation of vulnerable nautilus species.

~ The Burgess Shale of British Columbia is famous for preserving delicate soft tissues rarely captured in the fossil record, offering rare insights into how early animals lived and moved. A study published in *BMC Biology* draws on this exceptional record to reconstruct limb function in *Olenoides serratus*, one of the site's most abundant and well-preserved trilobites. The research, led by Postdoctoral Fellow **Sarah Losso,** illuminates the behavior and biomechanics of one of Earth's earliest and most successful animal groups. Trilobites are well known from their hard exoskeletons, but their soft limbs are almost never preserved, leaving major gaps in understanding how they fed, walked, and interacted with their environment. Losso and co-author Professor **Javier Ortega-Hernández** analyzed 156 fossilized limbs from 28 *O. serratus* specimens to reconstruct limb movement and range of motion in unprecedented detail through 3D digital models. They compared *O. serratus* to modern arthropods like horseshoe crabs, which share similar seafloor habitats but belong to a different arthropod lineage. The analysis revealed that *O. serratus* had a simpler yet highly effective limb design, capable of walking, burrowing, handling food, and lifting the body above the sediment. The study also identified specialized male appendages for mating and gills attached to each leg for respiration—together painting a picture of trilobites as agile, versatile animals that actively shaped early marine ecosystems over 500 million years ago.

Welcome Carrie Albertin



Carrie Albertin joins OEB as Assistant Professor and Curator of Malacology at the MCZ. Carrie's lab investigates one of biology's most fascinating questions: how do new forms and features evolve?

Using soft-bodied cephalopods—squid and octopus—as model systems, Carrie's lab explores the evolutionary and developmental origins of biological novelty in animals. To do this, Carrie and her team have developed a set of tools to study cephalopod biology, from sequencing, assembling, and annotating genomes to developing husbandry protocols and genome editing techniques. With these tools, the team is now exploring how body axes—anteroposterior, dorsoventral, and proximodistal—are established and patterned during development. They are also probing the formation of the cephalopod nervous system, the largest and most complex amongst invertebrates, tracing how it emerges during embryogenesis and continues to develop beyond it.

Five Questions

Harvard Magazine's "Five Questions," a quick-hit interview with Harvard's thinkers, doers, and leaders, featured four OEB Professors.



Professor Brian D Farrell, Curator of Entomology in the MCZ, discussed his work on the coevolution of insects and plants, with a special emphasis on beetles.

Professor Peter Girguis explored his research on how marine organisms survive and thrive in the ocean, particularly in deep-sea and extreme environments, such as hydrothermal vents.





Professor Javier Ortega-Hernández, Curator of Invertebrate Paleontology in the MCZ, focused on his research examining the origins and evolution of invertebrate life, mainly on the remarkable biodiversity that emerged during the Paleozoic Era.

Professor, Emeritus, Andrew H Knoll, discussed his research on the early history of life and the evolution of Earth's surface environments from the Archean and Proterozoic eons (approximately 4 billion years ago to 541 million years ago).



~ Nearly 2,400 meters below the surface of the Central Pacific Ocean, scientists have discovered a new species of deep-sea limpet. During the 2023 expedition aboard the E/V Nautilus, researchers using the ROV Hercules found a wood fragment off Johnston Atoll hosting a dense biological community, including a population of pale, thick-shelled limpets. Postdoctoral Fellow **Paula Rodríguez-Flores** quickly recognized them as new species. In the study published in *Molluscan Research*, Professor **Gonzalo Giribet** led a team of researchers from OEB and the MCZ who formally described the species as *Pectinodonta nautilus*, named for the vessel involved in its discovery. The team analyzed 79 individuals using micro-CT scanning, 3D modeling, and DNA analysis. *P. nautilus* belongs to the family Pectinodontidae, a rare group adapted to living on "wood falls." The species is large for its family, with smooth, thick shells and oversized radular teeth adapted for feeding on bacteria-rich wood. Genetic analysis links it most closely to species from New Zealand and the western Pacific. The presence of multiple size classes suggests the wood fall supported several generations, highlighting the ecological importance of these transient deep-sea habitats. The study contributes new insight into biodiversity, dispersal, and evolution in one of Earth's least explored environments.

~ Parasites may be among the most diverse organisms on Earth, yet many remain undocumented. A discovery tucked away in a museum collection has revealed an entirely new kind of host–parasite relationship: ticks feeding on a fish. In a study published by the Entomological Society of America, PhD candidate **Kaylin Chong** reports the first known instance of ticks associated with a fish host. Two female hard ticks were found embedded in the skin of a preserved electric eel (*Electrophorus varii)* from the Amazon Basin. One specimen was identified as *Amblyomma cajennense sensu stricto*, a species previously known to feed only on terrestrial vertebrates. Ticks are notorious generalists, parasitizing mammals, birds, and reptiles worldwide—but fish had never appeared on their host list. The interconnection likely reflects opportunistic feeding, yet it dramatically expands what scientists thought possible in tick ecology. While reviewing digital records from the MCZ, Chong noticed a 2009 note attached to an electric eel specimen mentioning ticks burrowed in the skin. More than a decade later, the preserved eel still bore the ticks, allowing for detailed imaging and identification. The finding underscores the untapped scientific value of natural history collections, showing how museums can preserve rare ecological interactions that challenge long-standing assumptions about biodiversity.

~ A new study published in *eLife* suggests that the complex folds of the mammalian brain may arise from surprisingly simple physical principles rather than species-specific genetic programs alone. An international team of researchers including Professor **L Mahadevan,** show that mechanical forces generated during brain growth are sufficient to produce the distinctive patterns of cortical

folding seen across mammals. The cerebral cortex—the brain's outer layer—expands dramatically during early development, forming the ridges and grooves associated with higher cognitive function. To understand how these folds form and why they vary among species, the researchers combined physical experiments, computer simulations, and comparative anatomical analyses. Using MRI scans of a newborn ferret, a fetal macaque, and a fetal human, the team built two-layer gel models that mimic the growing brain. When the outer layer of the gel swelled, it folded in ways strikingly similar to real brains. The researchers also developed three-dimensional computational models based on differential growth and compared these results with real and experimental brains using geometric morphometrics. Across all approaches, the findings converged on the same conclusion: cortical folding can be explained by a basic mechanical instability driven by uneven growth. The study suggests that differences in folding patterns across species arise from variations in growth rates and initial brain geometry rather than fundamentally different mechanisms.

~ Tiny question mark–shaped markings etched into ancient shells are not random damage but evidence of one of Earth's oldest known parasites, according to a study published in *iScience*. The study, led by **Karma Nanglu**, former postdoctoral fellow now assistant professor at the University of California, Riverside, and Professor **Javier Ortega-Hernández**, used high-resolution 3D micro-CT scanning to identify trace fossils left by 480-million-year-old parasitic marine bristle worms that are still known to infest oysters today. The team analyzed fossilized bivalves from Morocco, a region renowned for its exceptionally preserved Ordovician marine life. Scans revealed distinctive curved etchings on and within the shells, often appearing multiple times on a single specimen. The fossils belonged to early clam relatives that lived during a period of rapid ecological intensification, when predation, mobility, and parasitism were expanding across marine ecosystems. Comparisons with modern specimens revealed an exact match between the fossil traces and those produced by spionid worms, soft-bodied parasites that burrow into the shells of oysters and mussels without consuming their flesh. The traces document the worms' life cycle, from larval settlement to deeper burrowing as they grow. The findings suggest remarkable evolutionary stability by a parasitic strategy that has survived multiple mass extinction events largely unchanged. Additional contributors included Postdoctoral Fellow **Sarah Losso** ('24) and PhD candidate **Madeleine Waskom**.

~ Fossilized spiny limbs from ancient Moroccan rocks

Faculty in the News

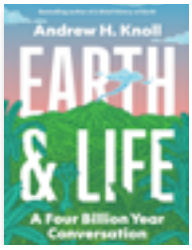


Professor Benjamin de Bivort joined the podcast, *Extraordinary Universe.* In the episode "Genetics," he discusses what it means to decode DNA and, having done it, what can it really say?

Professor Peter Girguis took viewers on a voyage to the limits of life in the PBS NOVA feature, "*Extremophiles, the Deep Sea, and Alien Life.*"



Recent Books by Faculty



Earth & Life: A Four Billion Year Conversation, **Andrew H Knoll.** The epic story of a planetary conversation four billion years in the making. *Princeton University Press*



New Perspectives in Ornithology, **Scott V Edwards.** Extraordinary and inspiring new insights into how birds work and key technological advancements in ornithology. *Oxford University Press*



Integrative Fish Biomechanics, **George Lauder et al.** An exploration of the intricate hydrodynamics and biomechanics of fish feeding, swimming, and terrestrial locomotion. *Academic Press*



The Lifting Gales of Spring, **David Haig.** The stories of eighty Australian students who attended Harvard Medical School in 1876, before Australia was a country. *Harvard University Press*

Researchers Awards

- **J. Antonio Guzmán Q.** (J Cavender-Bares) awarded the Harvard Data Science Initiative Postdoctoral Research Fund to develop the research platform, HERBSHARE (HERBarium Spectral Hub for Advancing Research and Exploration).
- **Esteban Ramirez Chueca** (C Davis) awarded the Burke Museum Collections Study Grant for the project, "Halophyte diversity and coastal change in the Pacific Northwest: Bioindicators for the global metaherbarium."
- **Divya Ramesh** (G Lauder) recipient of the mentoring award from The Ingenuity Project for outstanding mentorship of high school students.
- **Kiah Hardcastle** (B Ölveczky) awarded the NIN/NINDS fund for the project, "From exploration to expertise: Mechanisms of eotor learning in cortico-basal ganglia circuits."
- **Ugne Klibaite** (B Ölveczky) awarded the Simons Foundation International, LTD award for the project, "The emergence of social deficits in rat models of ASD."
- **Jessica Stock** (C Albertin) recipient of the Human Frontier Science Program award for the project, "Molecular and morphogenetic characterization of early neurogenesis in cephalopods."
- **Victoria Watson-Zink** (C Extavour) recipient of the Howard Hughes Medical Institute award for the project, "Identification of terrestrially adaptive genes in direct-developing land crabs."
- **Peter Bishop** (S Pierce) co-recipient with Professor Stephanie Pierce of the Division of Earth Sciences-Life & Environments Through Time award from the National Science Foundation for the project, "Integrating fossils, anatomy, and physics to unravel the interplay

are pushing the origin of sea scorpions much deeper into Earth's past, revealing that these predators were already highly specialized nearly half a billion years ago. A study in *Proceedings of the Royal Society B* reports definitive eurypterid remains from the Fezouata Biota, a key Early Ordovician fossil deposit. The fossils consist of heavily armored, jointed appendages with alternating long and short spines and a sharply curved terminal claw—hunting limbs belonging to eurypterids, extinct aquatic arthropods closely related to modern spiders and scorpions. The team, led by Peter Van Roy of Ghent University and co-authors PhD candidate **Jared Richards** and Professor **Javier Ortega-Hernández**, described a new species, *Carcinosoma aurorae*, belonging to carcinosomatids, advanced sea scorpions with scorpion-like bodies and powerful grasping limbs. Teeth-like structures at the limb bases form a serrated feeding surface, pointing to a predatory lifestyle rather than filter feeding. The anatomy shows eurypterids had already diversified into different ecological roles—active swimmers and bottom crawlers—early on. Since the Moroccan fossils represent swimming forms, major eurypterid lineages must have originated earlier than previously documented, likely during the Cambrian period. Additional cuticle fragments suggest multiple species coexisted, and body lengths of 20-30cm mark them as formidable predators, reshaping our understanding of early chelicerate evolution and post-Cambrian predator communities

~ A new global analysis suggests some of the world's richest concentrations of medicinal plants occur where humans have lived the longest, highlighting how deeply cultural knowledge and biodiversity have co-evolved. The study, published in *Current Biology*, shows human history plays a central role in shaping today's medicinal plants. Researchers analyzed over 357,000 vascular plant species across 369 regions worldwide, identifying more than 32,000 with documented medicinal uses, roughly nine percent of all vascular plants used in medicines, ointments, fragrances, and intoxicants. Medicinal plant diversity generally follows global biodiversity patterns, peaking near the equator and declining toward the poles. But notable exceptions emerged: India, Nepal, Myanmar, and China contain far more medicinal species than their overall plant diversity would predict, aligning with long-standing healing traditions like Ayurveda and traditional Chinese medicine. Lead author **Nawal Shrestha**, former research associate and now an assistant professor at Kathmandu University, and co-author Professor **Charles Davis** attribute this to centuries of accumulated cultural knowledge. Conversely, biodiversity hotspots like the Andes, Madagascar, Western Australia, New Guinea, and South Africa's Cape Provinces showed lower-than-expected medicinal plant diversity, possibly reflecting historical disruptions or undocumented knowledge rather than fewer resources. The strongest predictor of medicinal plant richness was length of human occupation, notably in sub-Saharan Africa, underscoring both the deep historical roots and fragility of plant-based medicine systems.

~ Researchers have discovered that embryonic cells long thought to be developmentally locked in can still generate an entire animal on their own. In the three-banded panther worm (*Hofstenia miamia*), embryos normally divide into four cells: two smaller micromeres destined for brain, throat, and skin, and two larger macromeres destined for gut and stem cells. PhD candidate **Amber Rock**, working with Professor **Mansi Srivastava**, isolated a single macromere expecting it to fail. Instead, at both the 2- and 4-cell stage, isolated cells developed into complete, fertile worms. Published in *Current Biology*, the finding is the first documented case of a cell from an asymmetric, fate-specifying division retaining full totipotency. This is unexpected because *H. miamia* follows an invariant cleavage program, in which cell fates are thought to be fixed almost immediately. Using transgenic Tuba::Kaede worms with photoconvertible fluorescent markers, Rock dissected and recombined embryos at the 2-, 4-, and 8-cell stages, tracking transplanted cells as they integrated into new positions and generated nearly every adult cell type. Unlike sea urchin embryos, which self-sort when disturbed, *Hofstenia* cells instead changed fate to rebuild the animal. Nascent RNA labeling showed zygotic gene activation begins 48–72 hours after laying, suggesting maternal contributions, not new gene activity, sustain this early totipotency

~ A chance discovery on a Moroccan hillside is challenging long-held assumptions about mysterious wrinkle-like textures preserved in ancient rocks. In 2016, geologist **Rowan Martindale**, former postdoctoral fellow in Professor Emeritus **Andrew Knoll's** lab and now at The University of Texas at Austin's Jackson School of Geosciences, spotted a slab of sedimentary rock etched with elephant-skin-like ridges while hiking in Morocco. She recognized the pattern as fossilized microbial mats dating back more than 180 million years to the Early Jurassic. But the rocks had formed nearly 600 feet below the ocean's surface. Conventional wisdom holds that such microbial wrinkle structures form only in shallow, sunlit waters or in stressed environments following mass extinctions; in deepwater settings, geologists typically attribute similar ridges to underwater landslides. In a new paper in *Geology*, Martindale and co-authors, including Professor **Peter Girguis**, an expert in modern deep-sea chemosynthetic communities, propose a different explanation: an underwater landslide delivered nutrients that fueled chemosynthetic microbial mats on the seafloor, rather than carving the wrinkles directly. These microbes derived energy from chemicals rather than sunlight and may have released toxic sulfur compounds that deterred predators, similar to mats found on modern whale falls. The findings suggest chemosynthetic microbial fossils may be far more common than previously recognized, with some potentially misclassified due to imprecise terminology around "wrinkly" rock textures.

~ Freezing fruit flies for storage has long been unreliable,

Alumni News



OEB alums, **Ben Goulet-Scott** (PhD '22, R Hopkins) and **Jacob Suissa** (PhD '23, N Friedman) had a record year with their nonprofit, Let's Botanize. Jacob and Ben began their endeavour as an Instagram account in 2020. With more than 179,000 followers' support, they grew their interactive account into an organization dedicated to combating the climate and biodiversity crises by spreading curiosity, knowledge, and appreciation of plants. During 2026 they appeared on the episode, "Let's Botanize," on the New York Botanical Garden's podcast, *Plant People*, and published their first book, "Let's Botanize: 101 Ways to Connect with Plants," featured on WGBH's "Everyone's A Botanist." Ben, Higher Education & Laboratory Coordinator at the Harvard Forest and Jacob, Assistant Professor at The University of Tennessee, are devoted to making botany fun and accessible for everyone!





OEB alum **Wendy Valencia-Montoya** (PhD '25, N Pierce) was the recipient of two distinguished awards: the Harold M. Weintraub Award from the Fred Hutch Cancer Center, and the Theodosius Dobzhansky Prize, which is awarded annually by the Society for the Study of Evolution to recognize the accomplishments and future promise of an outstanding early-career evolutionary biologist. Wendy is currently a Junior Fellow in the Harvard Society of Fellows.

but a simple swap of one chemical for another may finally solve the problem. A new study in *Biology Letters* reports a breakthrough in cryopreserving the common fruit fly, *Drosophila melanogaster*, addressing one of the lab world's most persistent challenges: reliably freezing and reviving the species. Professor **Benjamin de Bivort** and researchers from the Center for Brain Science found that replacing limonene with a related compound, fenchone, during embryo preparation dramatically improves survival after freezing. While cryopreservation is routine for organisms like bacteria and yeast, fly embryos have historically struggled to survive it. Embryos treated with fenchone absorbed protective chemicals far more effectively, producing a sixfold increase in egg-to-adult survival—from the traditional 0.5–2% range to rates exceeding 10%. Applying the method, the researchers successfully revived genetically valuable fly populations after 12 months in liquid nitrogen, with no significant genetic loss. Drosophila are a cornerstone of genetics and developmental research, but maintaining live colonies demands constant labor and risks subtly altering a population's genetics over time through unintended selection. A dependable freezing method could replace endless breeding cycles with stable, long-term storage. Further refinements are needed before cryopreservation can fully replace traditional colony maintenance, but the findings open the door to more efficient preservation—not just for fruit flies, but potentially for other insect species important to research and agriculture.

~ While cleaning a Cambrian arthropod fossil under a microscope, Research Scientist **Rudy Lerosey-Aubril** noticed something unusual: a claw where an antenna

Graduate Student Awards

- Lily Shapiro (G Giribet) awarded the Putnam Expedition Grant from the Museum of Comparative Zoology for the project, "Characterizing the *Eoperipatus* velvet worms of Singapore."

- Andrea Appleton (E Kramer) Recipient of the Botanical Society America Vernon I. Cheadle Student Travel Award for the project titled, "Morphological and developmental novelties within the intricate androecium of *Loasaceae*."

- Laura Ostrowsky (J Cavender-Bares) recipient of the Cunin/Sigal Award from the Arnold Arboretum for the project, "How do *Acer rubrum* populations from a wide latitudinal gradient differ in regenerative success in a forest understory experiment?"

- Lucrecia Aguilar (A Davies) recipient of the Camille Goblet Foundation Research Award for the project titled, "Synthesizing human-lion dynamics across scales to promote socioecological systems of coexistence."

- Edna Rodríguez Sánchez (J Ortega-Hernández) awarded the President's Prize for the talk titled, "Re-evaluating the Cambrian chelicerate *Molaria*" at the 69th Annual Meeting of the Palaeontological Association.

- Andrea Appleton (E Kramer) recipient of the Research Scholar Award from the Arnold Arboretum for the project, "Androecial evolution, development, and diversity across Cornales."

- Laura Ostrowsky (J Cavender-Bares) awarded the Salata Institute Summer Research Funding Program for the project, "Investigating plasticity in leaf morphological traits across a light gradient in tree canopies."

- Gabe Effiong (R Hopkins) awarded the Student Expedition Fellowship from the Havard University Herbaria for the project, "Population genetic structure, floral polymorphism, and reinforcement in *Phlox pilosa*."

- Ian Hughes (P Girguis) awarded the Lewis and Clark Fund for Exploration and Field Research from the American Philosophical Society for the project, "Exploring an ecologically critical seagrass symbiosis in Barbados and Antigua."

- Ryan Schmidt-Knapik (C Davis) awarded the Student Expedition Fellowship from the Havard University Herbaria for the project, "Systematics, evolution, and ecology of *Verbascum* (Scrophulariaceae): a new model clade for studying introgression and invasive species."

- Sebastian Martinez-Salazar (E Kramer) awarded the Jens Aubrey Westengard Scholarship from Harvard Faculty of Arts and Sciences for the project, "Exploring changes in nectar spur number in *Tropaeolum* using two key species from South America."

- Laura Ostrowsky (J Cavender-Bares) awarded the Student Expedition Fellowship from the Havard University Herbaria for the project, "How do *Acer rubrum* populations from a wide latitudinal gradient differ in regenerative success in a forest understory experiment?"

should be. That claw turned out to be the oldest chelicera ever found. In a study published in *Nature*, Lerosey-Aubril and Associate Professor **Javier Ortega-Hernández** describe *Megachelicerax cousteaui*, a 500-million-year-old sea predator discovered in Utah's West Desert. It is the oldest known chelicerate—the arthropod group that includes spiders, scorpions, horseshoe crabs, and sea spiders—pushing back the group's evolutionary history by 20 million years. At just over 8 centimeters long, *M. cousteaui* has a head shield and nine body segments, with six pairs of head appendages for feeding and sensing, and plate-like gill structures resembling those of modern horseshoe crabs. Its defining feature is a pincer-like chelicera, the grasping appendage that distinguishes chelicerates from insects. Despite a rich Cambrian fossil record, no unambiguous chelicerate had previously been found from that era; the earliest known examples dated to roughly 480 million years ago. The fossil suggests that by the mid-Cambrian, oceans already held arthropods with anatomical complexity rivaling modern forms—though chelicerates remained ecologically inconspicuous for millions of years before eventually colonizing land. Today, chelicerates comprise more than 120,000 living species inhabiting both terrestrial and aquatic ecosystems

~ For every two living vertebrates on Earth, one is a fish—95% of them ray-finned species like salmon, tuna, and trout, comprising roughly 35,000 species across nearly every aquatic environment. Yet little is known about the diversity of their brains. A new study in *Proceedings of the Royal Society B*, led by Postdoctoral Fellow **Rodrigo Tinoco Figueroa** and co-author Professor **Stephanie Pierce**, used CT scanning to examine the brains of 87 ray-finned fish species across more than 70 families. The results revealed enormous variation in brain size, shape, and endocast structure—the mold of the internal skull cavity. The key measure was the Brain Endocast Coefficient, comparing brain volume to intracranial space. In most vertebrates, brains fill the skull cavity snugly. In ray-finned fishes, this consistency disappears: most cluster around 40–50% occupancy, but some brains fill less than 5% of the cavity. This variation correlates with habitat—deep-sea fishes tend toward proportionally smaller brains, with remaining space housing cerebrospinal fluid, blood vessels, and specialized tissue. Brain proportions also shift dramatically with age in some species. In coelacanths, the brain fills nearly the entire cavity in youth but shrinks to just 4% in adults. The findings challenge assumptions that endocast shape reliably reflects brain anatomy, showing the two can evolve along entirely separate trajectories in fish.

Commencement 2026

The 2026 Commencement ceremonies were held on May 28th. We were all very excited to witness our 14 amazing graduating PhDs walk and celebrate with their mentors, peers, family, and the community. Congratulations graduates!



Welcome 2026 G1s

- Elinor Fajer (Benton Taylor, Advisor)
- Samantha Kratman (Peter Girguis, Advisor)
- Henry Sharpe (Stephanie Pierce, Advisor)
- Priya Tomerlin (Mansi Srivastava, Advisor)
- Cecilia Vanden Heuvel (N Michele Holbrook, Advisor)
- Miranda Vogt (Carrie Albertin, Advisor)

~ Deep in the marine world lives an enigmatic creature challenging our understanding of early animal evolution. The three-banded panther worm, *Hofstenia miamia*, belongs to a mysterious group called acoels. A new study published in *eLife,* reveals these seemingly simple worms have a sophisticated reproductive life history—including laying eggs through their mouths. Led by Postdoctoral Fellow **Vikram Chandra**, the team also included a second co-lead, former undergraduate **Samantha Tseng**, and co-authors Professor **Mansi Srivastava** and Postdoctoral Fellow **Allison Kann** and Researcher **Diana Marcela Bolanos Rodriguez.** Because acoels are likely the closest living relatives to the common ancestor of all bilaterally symmetric animals, including humans, their biology offers a rare window into how complex organ systems evolved. Tracking worms from single-celled zygotes to adulthood, researchers found reproductive organs emerge in a strict, size-determined sequence: penis first, then seminal vesicle, then ovaries. This "size-associated program" held even under stress—starved, shrinking worms lost organs

Diversity, Inclusion & Belonging

The DIB Committee hosted students from Cambridge Rindge and Latin School (CRLS) for Evolution Day. With support from members in OEB, MCZ, and Harvard Public School Partnerships, students participated in mini-rotations in OEB labs and in the MCZ and HUH collections learning much about the research happening in OEB.

DIB hosted Sarah S. Richardson, Aramont Professor of the History of Science and Professor of Studies of Women, Gender and Sexuality, Harvard University, for the OEB in Society Seminar. Richardson delivered the talk, "Sex Contextualism in Practice." The Committee continued to host LGBTQIA+Friends social events, monthly tea hours with the OEB community, and published several great issues of the OEB Community Newsletter. The OEB Working Group on Indigenous Community Partnerships led a campus tour in coorporation with the Harvard University Native American Program (HUNAP) to foster an understanding of Harvard's history with Indigenous communities and encourage researchers to think about how their research either takes place on Indigenous land or involves species related to the history and culture of Indigenous communities.

in the exact reverse order, and regenerating worms regrew them in the same sequence, suggesting one underlying blueprint links body size to organ growth. The worms also showed unexpected reproductive flexibility: despite lacking sperm-storage organs, they retained viable sperm for months, and isolated worms could self-fertilize. Using high-resolution imaging, researchers filmed worms loading eggs into their pharynges and expelling them through their mouths. Worms also withheld egg-laying when food was scarce and often laid eggs communally alongside others.

~ Despite having no legs and a long tube-like form, certain snakes can rise nearly straight upright, lifting more than 70% of their body length into the air without toppling. Brown tree snakes and scrub pythons, for instance, use this ability to bridge gaps between branches—the biological equivalent of balancing a floppy noodle on its end. Until now, no one fully understood how they managed it. But, a study in the *Journal of the Royal Society Interface*, led by Professor **L. Mahadevan** combined biology, physics, and mathematics to uncover the trick: snakes don't control their whole body at once. Instead, they concentrate muscular effort in a small boundary layer near the base, keeping the rest of the body nearly vertical, where gravity has little leverage to topple them. Holding the pose requires only modest muscle force, but staying upright demands significantly more effort — explaining the slow swaying visible in an erect snake. The findings carry practical implications beyond biology. Engineers designing soft robots, medical devices, or other flexible structures that must stand tall or reach far could apply the same principle: concentrating control where it matters most rather than managing an entire structure uniformly.

~ Is the long-held idea that hummingbirds prefer red, tubular flowers true? A study led by PhD candidate **Patrick McKenzie**, published in *Current Biology*, reveals that the migratory nature of ruby-throated hummingbirds drives the phenomenon. Tracking flowering times and hummingbird movement across the Eastern seaboard at scale isn't possible through traditional fieldwork, so McKenzie turned to iNaturalist, a community science platform with millions of user-submitted observations. He assembled a dataset of roughly 1.7 million observations, using AI to classify flower color—red, blue, green, or yellow—from posted images. The study found that for all colors except red and orange, blooming advanced northward at a steady pace through spring, starting in the South early in the year and reaching the Northeast by May and June. In March and April, before hummingbirds migrated north, no red or orange flowers were blooming in the Eastern U.S. Once ruby-throated hummingbirds arrived, red and orange blooms appeared in near-perfect timing and location. This is the first documented case of such a color-based seasonal lag. On the West Coast, where Anna's hummingbirds live year-round, the pattern doesn't occur—suggesting red and orange flowers evolved to bloom in sync with migratory hummingbird arrival. McKenzie was invited to the podcast *A Way to Garden* where he discussed his findings.

~ Harvard University Herbaria was one of more than 170 institutions spread across 40 countries that contributed to the sixth edition of the Royal Botanic Garden, Kew, "State of the World's Plants and Fungi" report. Professor **Jeannine Cavender-Bares,** Director of the Herbaria, led work testing reflectance spectroscopy—a technique that measures how light bounces off leaf tissue—on pressed herbarium specimens. Her team found that spectral data from preserved leaves could

predict functional traits, such as leaf mass per area, nearly as accurately as data from freshly pressed material, opening the door to mining vast herbarium collections for global ecological insights. The results, published in *New Phytologist*, are one of two studies from the Herbaria highlighted in the report. The second study, led by PhD candidate **Ryan Schmidt-Knapik** and Professor **Charles Davis**, published in *New Phytologist* examined more than two million digitized specimens from the north-eastern United States. Analyzing records from 9,247 collectors, they uncovered six shared collecting habits—such as favoring peak growing seasons and easy-to-identify species—that have quietly skewed botanical records for over a century. Together, their studies underscore a broader theme: digitized collections are turning historic plant specimens into powerful tools for understanding both ecology and the human biases embedded in scientific data.

~ For more than 270 million years, trilobites were among Earth's most successful and diverse creatures, with over 22,000 known species spanning the Paleozoic Era. Yet one fundamental question about their survival has remained debated: how did they breathe? A new study led by Postdoctoral Fellow **Sarah Losso**, published in *Biology Letters*, provides strong evidence that feather-like structures on trilobite limbs functioned as gills. Trilobites had biramous limbs, with an inner walking leg and an outer branch bearing thin, hair-like filaments called lamellae. Researchers debated whether these had enough surface area to support respiration. The team, including Professor **Javier Ortega-Hernández**, built 3D models of exopodites from Olenoides serratus and Triarthrus eatoni, then expanded analysis to nine additional species spanning the Cambrian to Silurian. Lamellar surface area increased exponentially with body size—not through more filaments, but through longer ones, mirroring growth patterns in modern aquatic arthropods. Comparing these measurements to living species like horseshoe crabs and thalassinid shrimp, researchers found trilobites' surface-area-to-biomass ratios overlapped substantially with modern crustaceans, indicating comparable oxygen-extraction capacity. The findings also revealed varied respiratory strategies: some species maximized surface area to survive low-oxygen environments, while others may have supplemented respiration elsewhere, suggesting differing metabolic demands across trilobite lineages.

OEB Retreat

Members of the OEB research community — including faculty, postdocs, and graduate students — gathered at the Weld Hill Research Building on the Arnold Arboretum campus on Friday, April 24th for the department's annual retreat. The day began with an iNaturalist bioblitz in the Arboretum, where participants explored and documented local biodiversity, followed by lunch and a lively trivia session. The retreat concluded with a creative science fair challenge with teams using craft materials and tri-fold boards to design and present science-fair style projects.



Integrative Biology (IB)

IB Awards & Honors



Kainoa Paul (Andrew Davies) was awarded the Michael Rockefeller Traveling Fellowship for the project titled, "Exploring stewardship and community along Aotearoa's Te Araroa,'The Long Pathway'." Kinoa will travel to Aotearoa New Zealand for research.



Lauren Bartel (Scott Edwards) was awarded the Bowdoin Prize for Outstanding Undergraduate Essay in the Natural Sciences for the essay titled, "The mutation rate of de novo structural variants in the Florida Scrub-Jay, *Aphelocoma coerulescens*, estimated using long-read trip sequencing."



Asher Montgomery (Andrew Berry) was awarded the Michael Rockefeller Traveling Fellowship. Asher will spend the year in Nepal for research.

Congratulations 2026 OEB-IB Graduates!

- Lauren Bartel (Scott Edwards)
- Ellie Fithian (Andrew Davies)
- Addason Harris (Peter Girguis)
- Ross Noble (Paul Moorcroft)
- Kainoa Paul (Andrew Davies)
- Ashwin Sivakumar (Scott Edwards)
- Angel Zhang (Andrew Davies)



Ashwin Sivakumar (Scott Edwards) has been named a Marshall Scholar. Ashwin serves on the advisory board for the Pasadena Audubon Society and the student board of the Harvard Museums of Science and Culture.

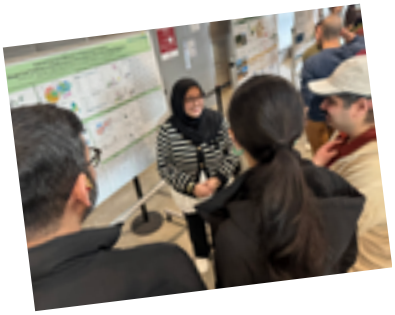


Jiajie "Angel" Zhang (Andrew Davies) has been named a Schwarzman Scholar.

IB Poster Session

The 2026 Senior Thesis Poster Session took place April 7th in the Northwest Building. Attendees enjoyed engaging with graduating students on 20 posters covering a wide range of topics.









OEB Field Trips



OEB 51: Biology and Evolution of Invertebrate Animals

Cassandra Extavour and Gonzalo Giribet

OEB 51 visited a new field station: the Keys Marine Lab on Long Key in the Florida Keys. With state-of-the-art boats and direct access to the water, students explored the invertebrate diversity of the Middle Keys. Because the macrofauna was not as abundant as in previous years' visits to the Smithsonian Tropical Research Institute in Panama, students made great discoveries among the smallest invertebrates that live in association with other invertebrates, such as sponges—which are abundant in the Florida Keys and serve as a home to many small worms—crustaceans, and other animals. The trip was an amazing experience, especially for many students who snorkeled for the first time! Students found lots of interesting invertebrates, as well as a good number of shorebirds.

OEB 56: Geobiology and the History of Life

Javier Ortega-Hernández

OEB 56 spent spring break trekking across Utah, discovering paleontological and geological wonders. Students examined rare microbial communities in the Great Salt Lake, explored various Cambrian-aged localities in Western Utah, and witnessed Clay Holman, owner of A New Dig, excavate and uncover fresh fossiliferous layers of the mid-Cambrian Wheeler Formation teeming with trilobites! The group visited the Gray Marjum site, the flagship quarry with soft-tissue preservation in the area, discovered upper Cambrian stromatolites atop a hill, and explored the base of the Ordovician-aged Fossil Mountain. Students marvelled at the dramatic sedimentology of Arches National Park and walked on the footsteps of dinosaurs. After several days in the field, staff at the Natural History Museum of Utah gave behind-the-scenes tours of historical specimens, dinosaur skulls, and a sneak peak of a new tyrannosaurid species.



OEB 190: Biology and Diversity of Birds
Scott Edwards

OEB 190 traveled to southern Arizona to witness desert sites, elevational gradients in vegetation, and bird diversity. Students visited many locations in the state including: the Florida Field Station, Saguaro National Park (a world-famous birdwatching spot), Madera Canyon, Chiracahua National Monument and Chiracahua Desert Museum, and the world famous Southwest Research Station in Portal run by the American Museum of Natural History in NYC. Students observed many local birds such as Elf owls, Hepatic Tanagers, Painted Redstarts, and high-elevation species like Pygmy Nuthatches and Yellow-eyed Juncos. With permission from the State of Arizona Game and Fish Department, students conducted mist netting to see birds up close and record the sounds of local species. The trip ended with a visit to the Paton Center for Hummingbirds where they encountered spectacular Violet-crowned Hummingbirds. The trip was an excellent introduction to the diversity of birds in our borderland regions of the desert southwest!



OEB Staff News

Welcome New Staff

- Yvonne Burke, Research Assistant, Lauder Lab
- Christian Carrasco, Laboratory Technician, Holford Lab
- Mariam Gelashvili, Laboratory Technician, Holford Lab
- Rebecca Lerdau, Research Assistant, Holbrook Lab
- Julia Lucey, Research Assistant, Albertin Lab
- Shaadi Mehr, Informatics Project Lead, Holford Lab
- McKenna Smith, Research Assistant, Girguis Lab

Milestones in Service

5 Years of Service:

- Janelle Batista, Financial Analyst, OEB Administration
- Tiara Borneman, OEB Administration
- Tulika Deb, Research Assistant, Fly Facility

30 Years of Service:

- Wendy Heywood, Communications Specialist, OEB Administration

Event Highlights

2025-2026 Seminar Series

Fall 2025

- Fuwen Wei, Professor in Wildlife Ecology and Conservation Biology, Institute of Zoology, Chinese Academy of Science
- Kim Calders, Associate Professor, Bioscience Engineering, Ghent University
- Liam Revell, Professor of Biology, University of Massachusetts, Boston
- Evan Fricke, Ecologist and Research Scientist, Department of Civil and Environmental Engineering, MIT
- Sarah S. Richardson, Aramont Professor of the History of Science and Professor of Studies of Women, Gender and Sexuality, Harvard University
- David Obura, Director, CORDIO, East Africa

Spring 2026

- Shayla L. Monroe, Assistant Professor of Anthropology, Harvard University
- Samuel H. Church, Assistant Professor, New York University
- Karla Kaun, Associate Professor, Department of Neuroscience, Brown University
- Michael Long, Thomas and Suzanne Murphy Professor of Neuroscience and Physiology, NYU Grossman School of Medicine
- David Reich, Professor of Genetics and Human Evolutionary Biology, Harvard University

Upcoming Seminars: 2026-2027

Fall 2026

- Javier Ortega-Hernández, Associate Professor, Curator of Invertebrate Paleontology in the MCZ, Harvard University
- Randi Rotjan, Associate Professor of Biology, Tufts University
- Richard Prum, William Robertson Coe Professor of Ecology & Evolutionary Biology, Yale University
- Michael Baym, Associate Professor of Biomedical Informatics, Harvard University
- Wenjing Xu, Assistant Professor, University of Massachusetts, Amherst
- Sally Seraphin, Assistant Professor of Neuroscience, Trinity College

Spring 2027

- Sarah Beery, Homer A Burnell Career Development Professor, Assistant Professor [AI+D], MIT
- Brady Weissbourd, Thomas D & Virginia W Cabot Career Development Professor, MIT
- Colin Orian, Professor of Biology and Urban & Environmental Policy & Planning, Tufts University
- Anthony Geneva, Assistant Professor, Rutgers University

Visit OEB Seminars for updates.

Prather Lecture Series

OEB hosted the 2026 Prather Lecture Series, April 15-17, 2026, with Dr. Neil H Shubin, Robert R Bensley Distinguished Service Professor of Organismal Biology and Anatomy, The University of Chicago, and President-Elect of the National Academy of Sciences. Dr. Shubin delivered two departmental lectures, "The Origin of Walking" and "Fossils, Genes, and the Origin of Limbs," and a public lecture titled, "Your Inner Fish Revisited: New Insights into our Fishy Past," which was co-hosted with the Harvard Museum of Natural History. The Prather Lecture Series is co-sponsored by OEB and MCB. The lecture series honors John McClellan Prather (1864-1938) a zoologist and educator who primarily taught science at the high school level. Prather earned an A.B. at Harvard in 1894 and an A.M. at Harvard in 1896.

Selected Faculty Publications 2025-2026

- C Holzinger et al. including **Carrie B Albertin** (2025) Characterization of C2H2 superfamily expansions in cephalopods and their contribution to nervous system evolution. *iScience* 28(10), 113561 DOI: 10.1016/j.isci.2025.113561
- **Jeannine Cavender-Bares** et al. (2025) Spectral biology across scales in changing environments. *Ecology* 106(7) DOI: 10.1002/ecy.70078
- **Jeannine Cavender-Bares** et al. (2026) Next-generation specimen digitization: capturing reflectance spectra from the world's herbaria for modeling plant biology across time, space, and taxa. *New Phytol* 251(2) DOI: 10.1111/nph.70645
- TC Coverdale et al. including **Andrew B Davies** (2025) Quantifying aboveground herbaceous biomass in grassy ecosystems: a comparison of field and high-resolution UAV-LiDAR approaches. *Zool Soc London* 12(1), 38-57. DOI: 10.1002/rse2.70023
- EM Bradford et al. including **Andrew B Davies** (2025) Natural forest clearings enable the persistence of stable spotted hyena populations in Congo basin rainforests. *Biotropica* DOI: 10.1111/btp.70065
- AY Chin et al. including **Andrew B Davies** (2026) Limited elephant impacts on baobabs despite increasing elephant densities in a newly established protected area. *Conserv Sci Pract* 8(7), e70320 DOI: 10.1111/csp2.70320
- S Peng et al. including **Charles C Davis** (2025) Climate change intensifies plant-pollinator mismatch and increases secondary extinction risk for plants in northern latitudes. *PNAS* 122(40), e2506265122 DOI: 10.1073/pnas.2506265122
- **Charles C Davis** et al. (2026) Integrating humans into biodiversity science through ethnobiodiversity informatics. *Curr Biol* 36(15), PR863-R874 DOI: 10.1016/j.cub.2026.05.062
- A Bates et al. including **Benjamin L de Bivort** (2026) Distributed control circuits across a brain-and-cord connectome. *Nature* 656, 957-970 DOI: 10.1038/s41586-026-10735-w
- E Versace and **Benjamin L de Bivort** (2026) Multiple weak biases support adaptive choices without prior experience: a self-supervised strategy. *Proce R Soc B* 293, 2064 DOI: 10.1098/rspb.2025.1878
- RT Maloney et al. including **Benjamin L de Bivort** (2026) Drift in individual behavioral phenotype as a strategy for unpredictable worlds. *eLife* 13, RP103585 DOI: 10.7554/eLife.103585.3
- S. Pai et al. including **Michael M Desai** (2026) Sex decreases the pleiotropic costs of local adaptation by purging hitchhiking load. *Science* 392(6796), 415-420 DOI: 10.1126/science.aec9708
- A N'Guessan et al. including **Michael M Desai** (2026) Parallel but distinct adaptive routes in the budding and fission yeasts after 10,000 generations of experimental evolution. *Nat Ecol & Evol* 10, 765-778 DOI: 10.1038/s41559-026-03017-1
- K Rijal et al. including **Michael M Desai** (2026) Inferring genotype-phenotype maps using attention models. *PNAS Nexus* 5(3), 046 DOI: 10.1098/pnasnexus/pgag046
- TM Pegan et al. including **Scott V Edwards** (2025) The value of structural variants to conservation genomics in the pangenome era. *J Hered* esaf098. DOI: 10.1093/jhered/esaf098
- **Scott V Edwards** et al. (2025) Multispecies pangenomes reveal a pervasive influence of population size in structural variation. *Science* 390(6778) DOI: 10.1126/science.adw1931
- E Ospivoa et al. including **Scott V Edwards** (2026) Convergent and lineage-specific genomic changes shape adaptations in sugar-consuming birds. *Science* 391(6788) DOI: 10.1126/science.adt1522
- S Ghosh et al. including **Cassandra G Extavour** (2025) Mechanical mechanisms of morphogenesis as potential substrates for evolutionary change. *Semin Cell Dev Biol* 175, 103645 DOI: 10.1016/j.semcdb.2025.103645.
- JA Kao et al. including **Cassandra G Extavour** (2026) The dynamic evolution of panarthropod germ cell specification mechanisms. *Development* 153(7), dev205168 DOI: 10.1242/dev.205168
- C Kuyyamudi et al. including **Cassandra G Extavour** (2026 Heterotypic intercellular adhesion tunes efficiency of cell-on-cell migration. *PNAS* 123(24), e2524496123 DOI: 10.1073/pnas.2524496123
- AM Hernandez and **Brian D Farrell** (2025) Get a grip: evaluating the importance of different beetle tarsal structures in landing attachment. *J Exp Biol* 228(15) DOI: 10.1242/jeb.249823
- S Kim and **Brian D Farrell** (2026) *Tetraopes* milkweed beetle genomes elucidate the adaptive basis of a temperate coevolutionary radiation. *Mol Ecol Res* 26(3),e70117 DOI: 10.1111/1755-0988.70117
- S Kim and **Brian D Farrell** (2026) Target enrichment museomics of the Asian long-horned beetle and its relatives (Cerambycidae: *Anoplophora*) reveals two independent origins of life in the cold. *Sys Entomol* 50(1), 139-153 DOI: 10.1111/syen.12647
- JP Fortin and **William E Friedman** (2025) A stomate by any other name? The open question of hornwort gametophytic pores, their homology, and implications for the evolution of stomates. *New Phytol* 245(1), 40-48 DOI: 10.1111/nph.20094
- JS Suissa et al. including **William E Friedman** (2025) Ontogenetic correlates, not direct adaptation, explain the evolution of stelar morphology *New Phyto* 245(2), 465-479 DOI: 10.1111/nph.20185
- J Liu et al. including **Peter R Girguis** (2025) Clumped isotopes of methane trace bioenergetics in the environment. *SciAdv* 11(26), eadu1401 DOI: 10.1126/sciadv.adu1401
- C Breusing et al. including **Peter R Girguis** (2025) Contrasting genomic responses of hydrothermal vent animals and their symbionts to population decline after the Hunga volcanic eruption. *Mol Ecol* 34(21), e70126 DOI: 10.1111/mec.70126
- A Unzueta-Martínez et al. including **Peter R Girguis** (2026) Coexpression among eastern oyster host and microbiome genes suggests coordinated regulation of calcifying fluid chemistry.

PNAS 123(11), e2521539123 DOI: 10.1073/pnas.2521539123

- H Torrado et al. including **Gonzalo Giribet** (2025) Nautilus sex determination is unique among cephalopods. Cur Biol 35(18), 4561-4569 DOI: 10.1016/j.cub.2025.07.047
- A Lord et al. including **Gonzalo Giribet** (2026) Genomic species delimitation reveals sympatry in Tasmanian egg-laying velvet worms (Onchophora: Peripatopsidae: Ooperipatellus Ruhberg, 1985). *Invert Sys* 40(1), IS25038 DOI: 10.1071/IS25038
- E Frigyik et al. including **Gonzalo Giribet** (2026) An inordinate fondness for Zalmoxis: explosive evolution of Zalmoxidae (Arachnida, Opiliones) goes undetected in Kanaky| New Caledonia. *Invert Sys* 40(30), IS25101 DOI: 10.1071/IS25101
- **David A Haig** (2025) "Cooperation and conflict in Metazoan Development: Toward a Neo-Darwinian Embryology." *The Paradox of the Organism: Adaptation and Internal Conflict,* edited by JA Ågren and MM Patten, Harvard University Press, p125-199. JSTOR, DOI: 10.2307/jj.3092014.9
- **David A Haig** (2025) Mutational selection: fragile sites, replicative stress, and genome evolution. *Evol Biol* 52, 40-60. DOI: 10.1007/s11692-024-09644-5
- **David A Haig** (2026) Collective enforcement of S-RNase-based self-incompatibility. *New Phytol* 251(4), 1654-1656 DOI: 10.1111/nph.71359
- W Wong et al. including **Daniel L Hartl** (2025) *MalKinID*: A classification model for identifying malaria parasite genealogical relationships using identity-by-descent. *Genetics* 229(2), iyae197 DOI: 10.1093/genetics/iyae197
- **Daniel L Hartl** (2026) Crossing paths and avoiding catastrophe-an outsider's inside view of yeast genetics. *FEMS Yeast Research* 26, foag009 DOI: 10.1093/femsyr/foag009
- I Ullah et al. including **Daniel L Hartl** (2026) Cellular and molecular basis of *Pf*Coronin function in artemisinin resistance in *Plasmodium falciparum*. Nat Comm 17, 6151 DOI: 10.1038/s41467-026-72834-6
- MH Mai et al. including **N Michele Holbrook** (2025) Secreting salt glands constrain cuticle fracture to enhance desalination efficiency. *PNAS* 122(45), e2505598122 DOI: 10.1073/pnas.2505598122
- A Manandhar et al. including **N Michele Holbrook** (2026) Visualizing physical interactions between guard and epidermal cells during light-induced stomatal opening in 2 angiosperms. *Plant Physiol* 200(1), kiaf644 DOI: 10.1093/plphys/kiaf644
- Z He et al. including **N Michele Holbrook** (2026) Pectin removal in Acer rubrum increases pit membrane compliance and embolism propagation. *Plant Physiol* 201(4), kiag441 DOI: 10.1093/plphys/kiag441
- S Mehr et al. including **Mandë Holford** (2026) A proposed unified, scalable platform for integrative research on venomous species. *GigaScience* giaf153 DOI: 10.1093/gigascience/giaf153
- F Achimba et al. including **Mandë Holford** (2026) Molecular arms race classifier for decrypting venom peptide and ion channel interactions. *Digital Discovery* 5(6), 2575-2590 DOI: 10.1039/d5dd00498e
- GA Burgin et al. including **Robin Hopkins** (2025) The genetic architecture of quantitative variation in the self-incompatibility response within *Phlox drummondii* (Polemoniaceae). *Genetics* 231(1), iyaf132 DOI: 10.1093/genetics/iyaf132
- GA Burgin, NF Lewis and **Robin Hopkins** (2026) A lectin receptor-like kinase controls self-pollen recognition in *Phlox*. *PNAS* 123(8), e2525299123 DOI: 10.1073/pnas.252599123
- PF McKenzie, SH Church and **Robin Hopkins** (2026) High-throughput iNaturalist image analysis reveals flower color divergence in *Monarda fistulosa*. *Am Nat* 208(1),101-109 DOI: 10.1086/739413
- IT Liao et al. including **Elena Kramer** (2025) The developmental basis of floral nectary diversity and evolution. *New Phytol* 246, 2462-2477. DOI: 10.1111/nph.70141
- Y Gong et al. including **Elena Kramer** (2025) Nectar, the original cocktail: an introduction to a Virtual Issue. *New Phytol* 248, 1101-1104 DOI: 10.1111/nph.70585
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Wendy Heywood, Communications Specialist



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The Department of Organismic & Evolutionary Biology
Faculty of Arts and Sciences
Harvard University
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Cambridge, MA 02138