UC Davis Department of Entomology and Nematology

Bug Bytes

...for alumni, faculty, students, staff and friends!

YEAR-END REVIEW 2025

Letter from the Chair and Vice-Chair

Joanna Chiu, Chair

Rachel Vannette, Vice-Chair

Greetings from UC Davis!

We recognize our roots. Since 1907, when Professor Woodworth of UC Berkeley taught the entomology class at “Davisville,” our researchers have continued to advance science and enhance society through the study of invertebrate biology. Our department has changed in the past century but we remain ready and eager to face the formidable challenges to a sustainable future. In the face of climate change, invasive species, food insecurity, and social inequity, our research in entomology and nematology and the training of our next generation is more important than ever.

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Why Medical Entomologist-Geneticist Geoffrey Attardo Targets Wetlands

Read about his innovative work **Page 3**.

What's Inside

Letter from the Chair (continued)

Our department has undergone significant changes since we accepted the responsibilities as chair and vice chair in the summer of 2023. We honored a wave of faculty retirements, accounting for a combined 247 years of service to our teaching, research and training programs. The legacies of Distinguished Professor Emeriti James Carey, Lynn Kimsey, Rick Karban, Jay Rosenheim, and Diane Ullman; Professor Emeriti Sharon Lawler and Becky Westerdahl, and Lecturer Emeritus Robert Kimsey continue in the knowledge they shared and the countless students they trained. While we sorely miss them, we are grateful that many are continuing to engage in our department's teaching and mentoring activities, especially in collaboration with junior faculty.

Not surprisingly, we are shorthanded, but are fortunate to have completed three successful faculty searches. We welcome assistant professors Marshall McMunn (started January 2024), Lisa Baik (started September 2025), and Rodolfo Probst, who will start in March 2026. We are excited about their visionary research and innovative teaching programs, which are already re-energizing our department.

In addition to personnel changes, our department has seen significant enhancement to our teaching infrastructure and resources. Briggs 122 and 158, with generous support from CA&ES, have been renovated top to bottom this past summer, enabling us to leverage new instructional technologies and improve classroom experiences. This renovation plan, 10 years in the making, was spearheaded by Distinguished Professor Steve Nadler, former chair.

Given the changes in our national landscape and the effects on higher education and scientific research, there is no doubt our department will face many challenges. However, with the dedication of our faculty, students, and staff, and the continued support and engagement of our large network of alumni and friends, we are confident our strong foundation in teaching, research, and service will continue to drive advancements in science and contribute to building solutions to challenges at the interface between invertebrates and human society.

Thank you for being a part of the Entomology and Nematology family. We look forward to seeing what we can achieve together in the coming year.

Warmly,

Joanna Chiu and Rachel Vannette
Department Chair and Vice-Chair

Geoffrey Attardo at Cache Creek.

Why Geoffrey Attardo Targets the Wetlands

Mosquito-borne diseases are a growing global problem due to an array of complex factors, says medical entomologist-geneticist Geofrey Attardo. “Many of these derive from human development, ecological disruption, and climate change. A historical method of mosquito control has been drainage and conversion of wetland ecosystems for agriculture and urban development to reduce mosquito populations and increase land productivity. Wetlands were stigmatized by western culture as sources of mosquitoes, disease, and sloth. It’s estimated that in California, more than 95 percent of the wetlands existing prior to western colonization have been drained and converted.”

“In contrast to these views, these ecosystems were an essential part of Californian Native American culture and considered sacred and treasured spaces. Native people relied on wetlands for clean water, abundant food, and raw materials for shelter, clothing, transportation, and ceremonial dress.

“Recent findings on the role that wetlands play in vector borne disease contradict the popular view that these ecosystems are sources of disease and that they could provide ecological services that regulate vector insect populations and reduce the risk of vector borne disease,” he says. “This is facilitated by the biodiversity of these ecosystems which produce abundant predatory species, create competition for resources, and provide alternative hosts for vectors.”

Cache Creek riparian area

“Proper restoration and care of wetlands can provide a multitude of benefits that address societal needs including restoration of biodiversity, improved water quality, disease transmission, carbon sequestration, flood control, and more. However, disruption, pollution, and degradation of wetlands can have the opposite effect.” Attardo and his colleagues, in collaboration with a traditional ecological knowledge practitioner, Diana Almendariz, are working to educate people about the essential ecological services wetlands provide, teach traditional methods of wetland restoration and care, and introduce people to the amazing hidden world of plants and invertebrates, to foster appreciation, care, and support for these essential habitats.

Lisa Baik

Spotlight on Lisa Baik, New Faculty Member

UC Davis alumna **Lisa Baik**, a former postdoctoral researcher at Yale University and described as a “brilliant scientist,” joined our faculty this fall, accepting a position as assistant professor of insect biology.

Her UC Davis roots run deep. As a UC Davis undergraduate, she double-majored, obtaining two degrees in 2011: a bachelor of science degree in neurobiology, physiology and behavior, and a bachelor of arts degree in psychology. Her other UC Davis connections:

- She was affiliated with the Early Start Lab, MIND Institute at the UC Davis Medical Center for almost four years, first as a research assistant in 2009 and advancing to junior specialist, 2011-2013.
- She is an alumna of the lab of molecular geneticist and physiologist **Joanna Chiu**, now professor and chair of ENT. In the Chiu lab, Baik investigated molecular and biochemical changes of circadian clock proteins in *Drosophila.*

Baik holds a doctorate (2019) in physiology and biophysics from UC Irvine.

At Yale University, she served as a postdoctoral researcher for six years in the Department of Molecular, Cellular and Developmental Biology. (See more at https://tinyurl.com/29tar2r9)

Mia Lippey: Outstanding Student

Mia Lippey

UC Davis doctoral candidate Mia Lippey, won the 2025 Outstanding Student Leadership Award, given by the Pacific Branch of the Entomological Society of America.

She is described as a "leader extraordinaire and an awe-inspiring entomologist who not only excels in leadership, but in research, academics, public service, science communication, computer programming, and scientific illustrations,”

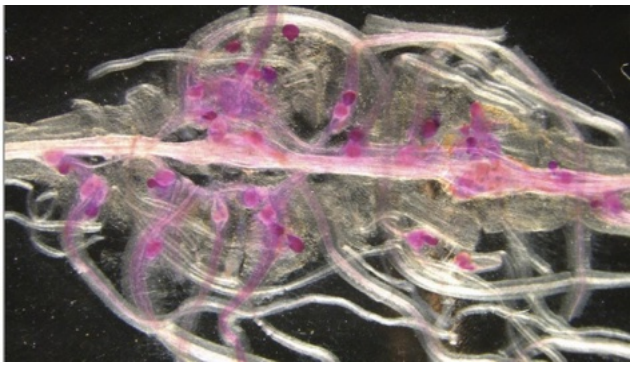
Her major professors are UC Davis distinguished professor emeritus Jay Rosenheim, an insect biologist, and assistant professor Emily Meineke, an urban landscape entomologist. She received a 2024 USDA AFRI NIFA Predoctoral Fellowship of $120,000. (See more at https://tinyurl.com/3sxu4n28)

Research Highlights:

A Key Nematode Discovery: 'How Plant-Parasitic Nematode Can Infect a Wide Range of Organisms’

UC Davis nematologists, including Valerie Williamson, professor emerita in the Department of Plant Pathology, and associate professor Shahid Siddique, Department of Entomology and Nematology, have long wondered how the plant-parasitic nematode, the Northern root-knot nematode, is able to infect such a wide range of organisms, from

monocots and dicots to annual crops and woody plants.



Nematodes infecting bean roots

Now a 15-member research team of international nematologists and biotechnologists, led by UC Davis nematologists, have gained insight into how the DNA of this nematode species, *Meloidogyne hapla*, facilitates their success.

The peer-reviewed research is online at https://tinyurl.com/44zx2eh2.

Trapdoor Discovery, Jason Bond Lab

Newly discovered trapdoor spider

Scientists in the Jason Bond lab discovered a new species of trapdoor spider that inhabits coastal sand dunes stretching from Monterey to California Baja, Mexico.

Doctoral candidate Emma "Em" Jochim and colleagues analyzed genomic DNA from two trapdoor spiders thought to be the same species, *Aptostichus simu,* and discovered they are not. Professor Bond named the new species *Aptostichus ramirezae* after arachnologist Martina Giselle Ramirez. The research article, published Oct. 22 in *Ecology and Evolution* is the work of Bond, Jochim, research scientist James Starrett, and Hanna Briggs, a 2025 UC Davis entomology graduate.

Ian Grettenberger: Targeting a Cole Crop Pest

Ian Grettenberger

Cooperative Extension agricultural entomologist Ian Grettenberger is serving as a project lead for the California Department of Food and Agriculture-funded project, “Improving Sustainability of Diamond Moth Management in Cruciferous Vegetables.”

CDFA reports that “This project will develop and promote best management practices for sustainable control of diamondback moth, the single most damaging pest of California’s $1.4 billion cole crop industry. Alternative management techniques are critically needed due to the pest’s resistance to a wide range of insecticides. This project focuses on pheromone mating disruption and the use of natural enemies to manage the pest at the landscape level. Outreach will be conducted in collaboration with the Grower-Shipper Association of Central California, the

California Leafy Greens Research Board, and pest control advisors."

Diamondback moth

The $1 million-funded project targets the diamondback moth, the single most damaging pest of the state's $1 billion cole crop industry. He is working with project leads are Ricky Lara of CDFA; UC Cooperative Extension Advisor Oleg Daugovish and Hamutahl Cohen, entomology advisor, both of Ventura County; Daniel Hasegawa of USDA; and Matt Grieshop, California Polytechnic State University

The larvae of the diamondback moth, sometimes called a "cabbage moth," chew the outer leaves of cole crops. Originally, pesticides were used to kill the moths but diamondbacks have developed resistance to many of the common chemicals.

Population Decline of Franklin's Bumble Bee Not Due to Pathogens

The mysterious population decline of the imperiled Franklin's bumble bee, which once flourished in a small area of northern California and southern Oregon, is not due to pathogens, but most likely to population bottlenecks and environmental issues, according to newly published research in the *Proceedings of the National Academy of Sciences* (PNAS).

Robbin Thorp and Franklin's bumble bee.

A team led by Rena Schweizer of the USDA-ARS Pollinating Insects Research Unit, Logan, Utah, collected whole-genome sequence data from museum specimens of *Bombus franklini*, spanning more than four decades, to reconstruct 300,000 years of the bee's genetic history. The Bohart Museum of Entomology provided most of the specimens.

The late UC Davis Distinguished Emeritus Professor Robbin Thorp monitored the *B. franklini* population for 21 years. Co-authors include UC Davis Distinguished Professor Emerita Lynn Kimsey and UC Davis doctoral alumnus Michael Branstetter of USDA/ARS.

Book Publications

Queen bee and workers

Honey Bee Biology: Brian Johnson, associate professor and a leading expert on the behavior, genomics and evolution of honey bees, authored a newly published 512-page book, "Honey Bee Biology (Princeton University Press).

Queen Bee Rearing: "All the buzz": is the long-awaited update of the landmark UC Davis-authored book, *Queen Bee Rearing and Bee Breeding* by Harry H. Laidlaw Jr. (1907-2003), "the father of bee genetics," and his former doctoral research mentee Robert E. Page Jr., now an internationally known bee geneticist.

Art of the Bee: The book, "The Art of the Bee: Shaping the Environment from Landscapes to Societies," authored by noted honey bee geneticist Robert E. Page Jr.--retired from administrative positions at UC Davis and Arizona State University--is now translated into the German language.

Honors and Awards

Joanna Chiu, professor and chair of our department was inducted as a Fellow of the Entomological Society of America at its 2025 meeting in Portland, Oregon.

Joanna Chiu (right) with ESA president Lina Bernaola

Among the other honors this year:

- Lynn Kimsey, Fellow of the California Academy of Sciences
- Jason Bond, Systematics, Evolution, and Biodiversity Award, Pacific Branch of Entomological Society of America (PBESA)
- Douglas Walsh, doctoral alumnus, C. W. Woodworth Award, PBESA
- Kaitai Liu, the Dr. Stephen Garczynski Undergraduate Research Scholarship, PBESA
- Jason Bond, professor, elected president of the American Arachnologist Society and selected executive associate dean, UC Davis College of Agricultural and Environmental Sciences
- Alison Blundell, doctoral candidate, Shahid Siddique lab, John M. Webster

Outstanding Student Award, Society of Nematologists

- Joseph Tauzer, manager of Harry H. Laidlaw Jr. Honey Bee Research Facility, outstanding service award from the UC Davis Staff Assembly
- Kathy Keatley Garvey, communications specialist, best news story, Association for Communication Excellence
- Carla-Christina “CC” Edwards, doctoral candidate in lab of Geoffrey Attardo, newly elected chair of the Young Professionals, American Mosquito Control Association

Alumni News

Hannah Burrack Wins Leigh Distinguished Alumni Award

UC Davis alumna Hannah Burrack, professor and chair of the Michigan State University and recipient of our department’s 2025 Thomas and Nina Leigh Distinguished Alumni Award, chronicled her career and thanked her collaborators at her recent seminar in the UC Davis Student Community Center.

Hannah Burrack at Leigh Seminar

In her talk, “Extending the Olive Branch: From Field Research to Entomology Leadership,” she discussed her work at UC Davis, North Carolina State University (NCSU), and at Michigan State. She has served as chair of the department since Jan. 1, 2022.

Burrack, a 2007 UC Davis doctoral alumna, studied with Professor Frank Zalom, now a UC Davis Distinguished Professor Emeritus (on recall). (More at https://tinyurl.com/3w6xpvbt)

Obituary
Bruce Eldridge, 1933-2025

Bruce Eldridge

UC Davis professor emeritus Bruce Eldridge (1933-2025), an internationally recognized medical entomologist whose military, academic and administrative career spanned more than six decades, died Feb. 5 in Davis at age 91. He joined the UC Davis entomology faculty in 1986, and directed the statewide UC Mosquito Research Program for 14 years.

He received the international Harry Hoogstraal Medal for Outstanding Achievement in Medical Entomology in 2007 from the American Society for Tropical Medicine and Hygiene. Eldridge pioneered research on the overwintering *Culex pipiens* mosquito and the St. Louis encephalitis virus. (See more at https://tinyurl.com/25sjcp5a)

James Carey Students Score Top Lang Prizes for 6 Consecutive Years

Students of UC Davis Distinguished Professor (now emeritus) James R. Carey have scored first-place awards in the UC Davis Library's Norma J. Lang Prize for Undergraduate Information Research for six consecutive years.

This year the judges awarded Miranda Do-Tran a $2000 cash prize for her well-researched and well-written research paper, "Midlife Hypertension and Dementia: The Shadow Link" that she completed in Carey's Longevity course.

Carey retired in June 2024 after a 45-year career at UC Davis, but came out of retirement last fall to teach the human development course pro-bono.
See more at https://tinyurl.com/4f6na7yx

Invest in Our Future

Your support helps us continue our tradition of excellence that is a hallmark of UC Davis Entomology and Nematology. Every gift, no matter the size, directly fuels the innovative research, transformative teaching, and exceptional student experience that defines our department.

Why Your Donation Matters

Student Success: Funds fellowships, travel grants for conference presentations, and essential undergraduate research stipends

Lexie Martin of Rachel Vannette lab

Support Research and Outreach

Sustains our research facilities including the UC Davis Bee Haven, Research Gardens, and other outdoor exhibits accessible to all and helps support our outreach events.

Iris Quaye of Jason Bond lab, "Bug Doctor" at Picnic Day

Visit:https://give.ucdavis.edu/AENM/GENFSOL and https://give.ucdavis.edu/AENM/ENTSTDT to learn more!