



ENTOMOLOGICAL
SOCIETY OF AMERICA
PHYSIOLOGY, BIOCHEMISTRY, AND TOXICOLOGY

PBT SECTION NEWSLETTER



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Dear PBT Section Members,

The Physiology, Biochemistry, & Toxicology (PBT) Section Governing Council is working toward a rewarding experience at [Entomology 2025](#) in Portland, Oregon, November 9-12. We hope to see you there!

Start planning your meeting experience now. See [all PBT sessions](#), including these high-impact PBT symposia:

Member Symposia

- [Genomics, Physiology, and IPM of Scale Insects](#)
- [Breaking Barriers in Insecticide Resistance: Honoring Prof. Jeff Scott's Career in Insect Toxicology](#)
- [Innovative Risk Assessment Methods for Biological Products' Impact on Non-Target Arthropods](#)
- [Emerging Model Systems Enabling Host-Microbial Science](#)

Section Symposia

- [PBT Business Meeting](#)
- [Bridging Fly Generations with Communication and Collaboration](#)
- [Bridging Generations of Innovative Diapause Research](#)
- [Coping Under Stress: Adaptive Strategies to Toxins by Arthropods](#)
- [From the Bench to the Field: Emerging Technologies to Advance Honey Bee Health](#)
- [Gene Drives: Transforming Pest Management for the Future](#)
- [Insect Cell Technologies for Innovative New Studies and Insecticide Development](#)
- [Molecular Genetics of Insect/Host Interactions](#)

Additionally, we have updated the content of our annual PBT networking and brainstorming meeting to include an interactive but informative listening session on the role of women in PBT.

PBT is still actively seeking partners to offer professional development opportunities and more recognition for outstanding PBT members and teams. If you have any innovative ideas or concepts that support this gesture, please reach out to any member of the PBT leadership team or email pbt@entsoc.org.

Edmund Norris
President, ESA PBT Section

Ana Maria Velez
Vice President, ESA PBT Section

Kris Silver
Treasurer, ESA PBT Section

Adekunle Adesanya
Past President, ESA PBT Section

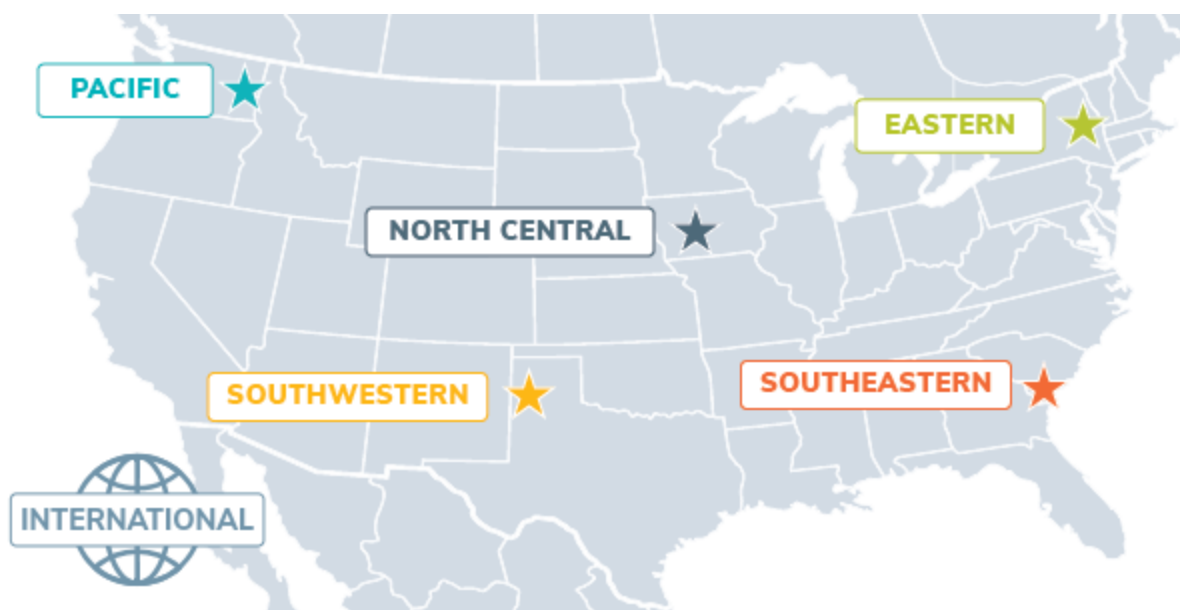
Meetings

Registration and Housing Still Open for Entomology 2025

Get ready for [Entomology 2025](#)! From **November 9-12**, Portland, Oregon will be buzzing with excitement as thousands of insect-science professionals gather for this unmissable event. [Claim your spot in Portland](#) and [make your travel reservations](#). Availability for specific room types and rates are beginning to run low, so book today!

Attendees will have the chance to learn from leading scientists and experts, explore innovative technologies, and discover new trends and evidence-based strategies. Peruse the [full scientific program](#) with more than 150 symposia and workshops and save your spot at the [ticketed events](#) that are sure to sell out.

Call for Symposia: 2026 Branch Meetings



Last week the [Eastern](#), [Southeastern](#), and [Southwestern](#) Branches opened their calls for symposia for their 2026 meetings, all with the deadline of **October 31**. Submissions for the [Pacific](#) and [North Central Branch](#) will open next month on **October 22**. Branch Meetings are a valuable way to connect with colleagues closer to home, spotlight issues unique to your area, and build collaborations that strengthen both local and national science. We encourage members of our Section to get involved.

Alerts

Call for Photos: National Insect Photographic Exhibition

Calling all insect photographers! ESA members and other photographers are invited to submit photos for the [National Insect Photographic Exhibition](#), organized by the Creative Camera Club of Lexington, Kentucky. You may enter up to four arthropod images. Images selected will be showcased at [Entomology 2025](#) in Portland, Oregon, on [Monday, November 10](#). Images may also be highlighted by ESA in "[Arthropod Photo of the Week](#)" on social media. The deadline for entry is **October 8**. [Learn more and submit your photos](#).

Stay Connected and Informed!

Share your news and stories and follow us for the latest updates on our social media channels. Your voice matters to us!

Find us on [LinkedIn](#) and [X](#). #ESAPBT Questions? Contact pbt@entsoc.org.

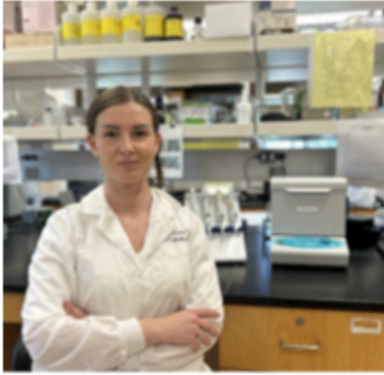
Volunteer and Leadership



Volunteer with PBT Year-Round

Are you seeking to contribute or actively get involved with PBT or ESA? PBT is always looking for passionate volunteers to participate in PBT business throughout the year and prepare for Entomology 2025. The PBT committee is also a great resource for helping members get involved with broader ESA leadership. To learn more, contact PBT President [Edmund Norris](#).

Member Spotlight



Top row, from left to right: [Marija Milosevic](#), University of Nebraska–Lincoln; [Molly Darlington](#), Minnesota Department of Agriculture; [Haley Fleetwood](#), University of Nebraska–Lincoln
Bottom row, from left to right: [Krystal Maya Maldonado](#), CINVESTAV; [Festus Ajibefun](#), Kansas State University

[Marija Milosevic](#), @marijamil_ent
Postdoctoral Research Associate, University of Nebraska–Lincoln

As far back as I can remember, I have been curious about nature, exploring my surroundings, reading encyclopedias as a child, and constantly asking "why?" and "how?" My first real encounter with entomology during my bachelor's studies felt like stepping into a hidden universe. I was captivated by how these tiny, often overlooked creatures shape our world, whether through pollinators like bees that sustain our food systems, pests that challenge global agriculture, or vectors of deadly diseases. What fascinated me most was their biology: complex and full of surprises. That moment marked the beginning of my journey into entomology.

I am currently conducting research in Dr. Velez's Insect Toxicology laboratory focused on understanding the systemic spread of RNA interference (RNAi) in the western corn rootworm, *Diabrotica virgifera virgifera* LeConte, a major corn pest. I investigate whether extracellular vesicles (EVs), nanosized carriers involved in cell-to-cell communication, play a role in transferring RNAi signals across insect tissues, integrating molecular biology tools and insect bioassays. Understanding how EVs mediate this process will improve the design and delivery of RNAi technologies, making them more effective. Such innovations have the potential to create highly specific, environmentally sustainable pest management strategies that support agriculture, protect ecosystems, and benefit society.

I decided to pursue a career in research because I am driven by curiosity and the desire to understand how things around me work. I was also fascinated by stories where unexpected events shaped the world. For example, Fleming's discovery of penicillin, where an accidental observation changed medicine, or the discovery of RNAi, one of the most powerful genetic tools, which arose from an unanticipated outcome from experiment with petunias. In entomology, I found the same sense of discovery. I realized I wanted a career where I could ask questions, experiment, and solve real-world problems.

Molly Darlington

Research Scientist, Minnesota Department of Agriculture

I earned my bachelor's in biology and Ph.D. in entomology from the University of Nebraska. My graduate research focused on RNAi traits in corn for western corn rootworm management, from a mechanistic and toxicological perspective, which is when I became involved with PBT. I originally planned to study plant breeding, but after taking an entomology course in undergrad and becoming involved with the department, I decided to switch gears and focus on entomology. I definitely was not the kid with an insect collection!

That said, I've developed a real passion for insect biodiversity. After my postdoctoral work, which was in part to monitor the distribution of a newly identified species, I've found a new hobby in searching for specific insects. A bit like geocaching but relying on ecology and biology instead of GPS. Whether I'm looking for bumblebees for Bumble Bee Atlas, monarch or swallowtail eggs to rear and release, or adding to my collection of new county detections of soybean gall midge (which I am proudly at two counties and one new state), it can be a real rush to finally locate a species you've been searching for, a feeling I probably don't need to explain to an audience of entomologists.

In my current role, I act as a technical advisor on pesticides for the state of Minnesota. Generally, my job involves implementing laws related to pesticides, providing expertise on technical issues and legislative proposals, crafting and promoting pesticide best management practices, and evaluating risk assessments for new pesticides seeking registration in the state. My current projects involve surface water quality, implementing laws related to PFAS in pesticide products, and investigating honey bee kill events. My advice to anyone planning to enter the regulatory or government space is to be an effective science communicator, possess adaptability and flexibility to learn quickly, and have an eye for detail.

Haley Fleetwood

Master's Student, University of Nebraska–Lincoln

I was always interested in math and science when I was a kid, but it wasn't until my chemistry class in high school that I decided to pursue a degree in STEM. I was first introduced to entomology through my introduction to forensic science course during my first semester at the University of Nebraska-Lincoln.

I later conducted a forensic entomology research project as part of UNL's Undergraduate Creative Activities and Research Experience program. This research project provided me with more exposure to the field and a greater interest and desire to pursue more opportunities within entomology.

My project revolves around developing and utilizing high-throughput screening methods for the discovery of novel mosquito-active compounds. I am screening natural products and synthetic chemical libraries on *Aedes aegypti* mosquito larvae and adults to test for contact and oral toxicity. This work can help increase the rate of discovery and development of novel insecticides.

I am motivated by the opportunity to do what I love every day. I find genuine excitement in getting to perform my research and knowing that my work can potentially make an impact not just within the field but also in communities impacted by mosquito-borne diseases around the world.

My advice for other PBT members pursuing a similar career would be to seek out opportunities to learn more and to not be afraid to step out of your comfort zone. It can be challenging and might not go the way you initially planned, but every setback is a learning opportunity. No matter where you're starting from, there is a place for you in this field.

Krystal Maya Maldonado, @Krystal_Maya_M, @krystalmayam.bsky.social

Principal Investigator, CINVSTAV

Growing up in a dengue-endemic zone in Mexico, I experienced mosquito-borne diseases firsthand, having contracted dengue twice and Zika fever once. This personal experience led me to focus on learning more about mosquitoes and their immune systems during my undergraduate research

internship. It was an eye-opening experience that revealed to me that mosquitoes, much like humans, possess an immune system to combat pathogens. I am still fascinated by the fact that mosquitoes, in their own way, can "get sick," and in certain cases, must decide whether to prioritize their immune response or reproduction. After this personal experience with mosquito-borne diseases, I decided to pursue a career focused on insect immune systems.

During my Ph.D. program, I studied how mosquitoes "remember" prior infections with the malaria parasite. Insects, including mosquitoes, lack classical immune memory mediated by antibodies. However, a previous exposure to a pathogen allows the insect to "remember" it and protect the mosquito in subsequent infections (i.e., innate immune memory). My work showed that blocking a DNA synthesis process called endoreplication disrupts the protective immune responses of the mosquito and alters Plasmodium infection, indicating that this process is a crucial mechanism involved in the innate immune memory of insects. Currently, I am leading a laboratory in Mexico focused on unraveling the interplay between insect immunity and metabolism, employing *Drosophila* and mosquitoes as model organisms.

Beyond the lab, I am motivated by the responsibility to make science accessible. My first publication made this clear when I had to explain my work to my parents, who do not speak English or have a scientific background. That experience inspired me to begin writing science communication articles and work to share science with the wider community. In collaboration with colleagues in schools and high schools, we have started an initiative to Spanish-speaking students to encourage new generations to pursue careers in science and disseminate information about the use of insects as research models, their importance as disease vectors, and their impacts on agriculture. It is incredibly rewarding to share what I do and see others discover something new about mosquitoes and other insects.

I come from a small town in Mexico, where one of the first barriers I faced was the lack of a nearby research center. I was fortunate to pursue a degree in biology thanks to the support of my parents. If someone had told me back then that one day I would be doing a postdoc at Johns Hopkins, attending ESA conferences, and eventually returning to my country to establish my own laboratory, I would not have believed it. Not because I did not believe in myself, but because it is simply not common for someone from such a small town, where, even today, there are probably only two scientists: my husband and me. But dreaming is valid, and with effort, dedication, and persistence, everything is possible. So, follow your dreams, be persistent, share your journey, and most importantly, enjoy what you do.

[Festus Ajibefun](#), @AjibefunFestus
Ph.D. Candidate, Kansas State University

My interest in science started with a fascination for solving practical problems through biology. I became drawn to entomology during my undergraduate years while studying insect involvement in forensic investigations. That spark deepened into a passion during my master of science degree at Auburn University, where I worked on repellency and antennal responses in German cockroaches. The ability to explore insect physiology and behavior through both applied and molecular approaches continues to drive my curiosity.

My Ph.D. research focuses on understanding the biogenesis of extracellular vesicles (EVs) in *Diabrotica undecimpunctata* cells and their role in RNA interference (RNAi) mechanisms. This work has implications for improving the delivery of RNAi-based pest control tools, offering a more sustainable alternative to chemical pesticides. By studying how insect cells produce and utilize EVs for gene silencing, we aim to enhance cross-species delivery strategies that can be applied to hard-to-target agricultural pests.

I chose a career in research because it offers the chance to explore fundamental biological questions while contributing to real-world agricultural solutions. The field of molecular entomology allows me to work at the intersection of innovation, sustainability, and food security—all of which align with my long-term goals. I'm motivated by the possibility of contributing to environmentally responsible pest control strategies. Each experiment brings me closer to understanding how we can harness biology to solve pressing agricultural challenges. I'm also inspired by opportunities to mentor students and represent underrepresented communities in STEM.

The advice I'd give to other PBT members interested in a similar career is to pursue your curiosity relentlessly, and to not be afraid to enter emerging or niche areas like EVs or molecular RNAi. Stay connected with mentors, seek out collaborative opportunities, and use professional networks like ESA PBT to build your path forward.

PBT Job Opportunities

Take advantage of ESA's [Career Center](#) to refine your job skills and browse positions in entomology. [Browse available positions.](#)

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Entomological Society of America (ESA), 170 Jennifer Road, Suite 230, Annapolis, MD 21401-3722 USA

(1)-301-731-4535 www.entsoc.org

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