



ENTOMOLOGICAL
SOCIETY OF AMERICA
PHYSIOLOGY, BIOCHEMISTRY, AND TOXICOLOGY

PBT SECTION NEWSLETTER



Q1 2024

TABLE OF CONTENTS

FROM THE LEADERSHIP

In this issue:

- From the Leadership
- Volunteer and Leadership Opportunities
- Member Spotlight
- ECP Spotlight
- PBT Student Spotlight
- PBT Awards
- PBT Job Opportunities

Adekunle Adesanya (Corteva Agriscience) and Edmund Norris (USDA ARS)

On behalf of the PBT leadership team, we are excited for the amazing interactions and connections that are happening within our section. We had a very engaging and well-attended Section meeting (networking and brainstorming session) at the 2023 National meeting in National Harbor with over 70 people in attendance.



This year, the main goal for the PBT leadership is to have a more vibrant and cohesive section that offers career and professional development opportunities to its membership, irrespective of their professional affiliation and career status. In line with this vision, the **PBT Quarterly Session Update and Newsletter** are being revived with special emphasis on spotlighting and showcasing PBT members. We encourage PBT members to connect with PBT leaders and representatives for any initiatives.

As PBT membership continues to expand, we encourage our members to [nominate and apply for ESA awards](#) across the Student, ECP, and Senior professional categories. We do recognize the need for more recognition of outstanding PBT members and professional development opportunities. These ideas require funding to be translated into realities. Hence, we are actively seeking for sponsors and donations to support PBT initiatives, events, and mixers. Donations are tax-deductible because we are a 501(c)3 organization. If you or the company/organization you work for is interested in sponsoring a student/ECP event (~\$1000-\$2500) or a PBT event (~\$1000-\$10000), [please contact us](#).

Congratulations to the PBT Students that won the President's Prize for their Oral and Poster presentations ([winners found here](#)). Likewise, congratulations to the winners of the PBT session

awards: **Mr. Abdulsalam Adegoke** (PBT Grad Student Travel Award), **Ms. Sonu Koirala B K** (PBT Grad Student Travel Award), **Dr. Shahid Karim** (PBT Recognition Award), and **Ms. Heena Puri** (ESA Lillian and Alex Feir Graduate Student Travel Award in Insect Physiology, Biochemistry, or Molecular Biology).



Volunteer and Leadership



Volunteer Needed for PBT Representative on ESA Books Editorial Board

The Books Editorial Board assists the books editor-in-chief with the evaluation of book proposals, soliciting book proposals, peer review, and more. The workload is typically light; the Board meets virtually once or twice per year. [Contact Matt Hudson](#) if you are interested in volunteering.

Volunteer Judges Needed for Internal Awards

PBT leadership is looking for volunteer judges (PBT members) to review submissions for our internal awards (PBT recognition award, student travel awards, and other awards as necessary). Please [contact Dr. Leslie Rault-Bucklin](#) if you are interested in volunteering. Your contribution would be greatly appreciated.

Are you seeking to contribute or actively get involved with PBT or ESA? Feel free to contact PBT President, [Adekunle Adesanya](#) or PBT Vice President, [Edmund Norris](#) to learn how to get involved!

Member Spotlight



Ana María Vélez Arango
Associate Professor in Insect Toxicology
University of Nebraska-Lincoln, Nebraska

I was born in Medellín, Colombia. My current position involves 60% research, 20% teaching, and 20% service. My research focuses on studying how insects respond and adapt to chemical stressors at three levels of biological organization, ranging from molecular mechanisms to effects on organisms and their populations. I teach two courses - one at the undergraduate level, "Toxins in the Environment," and another at the graduate level, "Insecticide Toxicology." I am also passionate about students' mental health and well-being, so I started incorporating mindfulness practices in my classes to help with stress management and create a more psychologically safe and enjoyable classroom. My service appointment mainly focuses on being a Diversity, Equity, Inclusion, and Belonging Fellow with the University of Nebraska-Lincoln Institute of Agriculture and Natural Resources, developing a framework for more equitable research. Additionally, I am the current President-Elect of PBT.



[Joanna Chiu](#)

Department of Entomology and Nematology, University of California, Davis

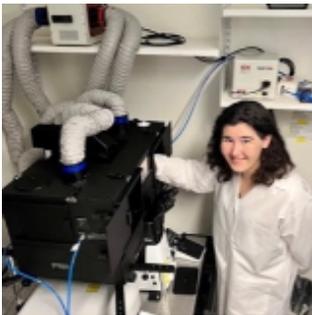
My research group investigates the molecular and cellular mechanisms that control insect circadian and seasonal rhythms using a combination of molecular genetics, biochemical, and omics approaches. The broader goal of our research is to understand why and how organisms alter their biology to adapt to their changing environment. My laboratory also leverages genomic approaches to study invasive insects with the goal of developing new strategies to control agricultural pests and

contribute to long-term global food security. My curiosity about the natural world inspires my research interest. There are always interesting questions that need to be answered and problems that need to be solved. In addition to my research, I am motivated to train the next generation of scientists and original thinkers. I encourage my trainees to pursue their passion, conduct research with a collaborative spirit, and explore a range of career paths, from entrepreneurship to academic research. I love seeing them get excited about their scientific discoveries and find their own paths to success.

I appreciate the leadership from ESA PBT on key issues in the scientific enterprise and higher education, specifically research rigor and reproducibility, scientific communication, and extension to increase public trust in science and inform policy, translation of science to agriculture and industry to benefit society and increasing diversity in STEM education and community.

I hope to make a positive impact in ESA PBT by leveraging my experience in research and higher education to mentor and support the next generation of diverse scientists. I also hope to engage with diverse stakeholders to promote evidence-based policy making in agriculture and public health.

ECP Spotlight



[Isobel Ronai](#)

HHMI Life Sciences Research Foundation Postdoctoral Fellow Harvard University

My research focuses on ticks of medical and veterinary importance, with the ultimate goal of combating tick-borne diseases. These diseases are a major issue in the United States, there are half a million cases of Lyme disease diagnosed and treated every year. I am currently investigating the molecular biology of the tick associated with Lyme disease, the blacklegged tick *Ixodes scapularis*. My interest in ticks was sparked when I learned about the threat posed by tick-borne diseases

both in the United States and globally. Since that time, I have been motivated to fill in key knowledge gaps that we have for the molecular biology of ticks, so that we can better combat tick-borne diseases. ESA and PBT have been an amazing 'home' for me to connect with fellow entomologists, even when I started my research career on the other side of the world, in Australia. When I participate in ESA activities one of my goals is to provide an international voice and perspective to them. I now serve ESA as the Early Career Professional for the International Branch both on the branch Governing Board and national committee.



Yan Yan

Research/Postdoctoral Fellow Department of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health

I am investigating the interactions between African malaria mosquitoes and the causative agents of malaria, malarial parasites. Given that malaria parasites must be transmitted by mosquitoes to infect humans, I am convinced that targeting the mosquito stage of malaria transmission holds immense promise for significantly reducing the global malaria burden. Hence, I have embarked on a quest to unravel the intricacies of malaria parasite survival, growth, and maturation within mosquitoes using the high throughput single cell RNA sequencing technology. I aim to decipher the crucial genetic factors involved in this intricate interplay between mosquitoes and parasites, thereby strategically targeting them during the mosquito stage.

My passion for entomology was ignited when I went to the most remote and preserved region of China to collect all different types of insects for my undergraduate lab. This hands-on experience left an indelible mark on me and remains one of my most cherished memories. As I delved deeper into entomology, I became aware of the pivotal role mosquitoes play in transmitting deadly diseases. The potential impact of my work in combating mosquito-borne diseases serves as a powerful driving force. Additionally, the daily pursuit of research, the excitement of uncovering new discoveries, and the collaborative spirit among colleagues continually inspire me. Moreover, mentoring graduate and undergraduate students further ignites my passion for entomology. ESA PBT stands out for its cohesive community. Upon joining PBT, I immediately felt a sense of support and camaraderie among fellow students, ECPs, and professors. Moving forward, I hope ESA PBT will continue to prioritize activities that facilitate networking opportunities between students and professors, as this fosters a collaborative and supportive environment for all members. I've received invaluable support from the PBT society through the Fair Travel Award and paper competition awards. Moving forward, I hope to see more talented trainees recognized for their outstanding contributions in research, teaching, and beyond. To this end, I am committed to offering guidance and support to early-career researchers and students, particularly those from diverse or disadvantaged backgrounds within the ESA PBT community. By doing so, we can cultivate a welcoming and supportive environment where all members can thrive and succeed.

PBT Student Spotlight



Festus Ajibefun

PhD Student

Dept. of Entomology, Kansas State University

As a dedicated member of the Entomological Society of America's Physiology, Biochemistry, and Toxicology (PBT) section, my research as a Graduate Research Assistant at Kansas State University, Manhattan, Kansas, represents the cutting edge in agricultural pest management. My interest in entomology was inspired by the dynamic relationship between agriculture and pest management. Daily, the pursuit of innovating for food security motivates me. My current focus is on elucidating the mechanism of exosome biogenesis in the southern corn rootworm *Diabrotica undecimpunctata howardi* and the use of exosomes to enhance RNA interference (RNAi) efficiency in refractory pest insects. Elucidating the secretive pathways of exosome formation and their cargo sorting mechanisms within the insect cells is a critical step towards revolutionizing pest management strategies. By enhancing RNAi effects, my research offers a promising avenue to mitigate the impact of insect pests, which annually leads to significant losses and hampers food security globally. The ability to control pest populations with precision conserves the ecological

balance and protects agricultural livelihoods. It reduces the reliance on chemical pesticides that pose health risks and threaten environmental integrity. From PBT, I expect a platform for scientific exchange and collaboration to advance entomology. In embodying the values and scientific fervor of PBT, my aim is to contribute innovative research findings, engage actively in PBT's mission, and foster collaboration. My aspirations are rooted in a belief that through advanced research and shared knowledge, we can craft a better blueprint for managing pest populations, ensuring a sustainable future for the generations to come.



[Sonu Koirala BK](#)

PhD Candidate

Entomology Department at Pennsylvania State University

My research is focused on examining the role of detoxification enzymes in bees by employing various molecular tools including gene cloning, protein expression, disc diffusion assays, enzymatic assays, X-ray crystallography, and site-directed mutagenesis. The functional characterization aids in understanding mechanisms involved in the metabolism of toxic compounds such as pesticides. Additionally, I am involved in a transcriptomic study on acaricide-resistant two-spotted spider mites (TSSM), identifying biological pathways and candidate genes crucial for understanding and managing acaricide resistance. These findings offer valuable insights into molecular mechanisms and potential gene targets for effective TSSM management. I am inspired by the curiosity of how insects use various mechanisms, specifically molecular weaponry, to combat multiple endogenous and exogenous chemical compounds and how such long-standing evolutionary mechanisms help insects develop resistance against agrochemicals. I expect the ESA PBT section to be a common platform for networking opportunities with other aspiring scientists, research updates, and advancements in insect physiology, biochemistry, and toxicology and their implications for pest management and pollinator conservation. Through my active involvement in ESA PBT section events, I aim to share my research insights and expertise, to foster a collaborative and dynamic community. As a Ph.D. student, I had an opportunity to mentor undergraduate students. By continuing such an endeavor in the future, I would like to help promote knowledge transfer and the growth of young researchers and pursue their careers in the PBT field of entomology.



[Aria Deluna](#)

PhD Student

University of Florida

My research focuses on the interaction between the microbiome of larval chironomids and *Vibrio cholerae*, the bacterial pathogen responsible for cholera, a diarrheal disease that threatens the safety of drinking water for up to 4 million people (about twice the population of New Mexico) annually. This deadly diarrheal disease predominantly affects people in developing countries, making it a pressing public health concern. By investigating the dynamics of this insect-microbe interaction, I aim to not only shed light on the life and transmission cycles of *V. cholerae*, but also contribute to broader insights into microbial community interactions. My motivation stems from the prospect of advancing scientific knowledge, which may serve as the foundational discoveries leading to practical solutions for this societal challenge. As a member of the Entomological Society of America's Physiology, Biochemistry, and Toxicology section, I anticipate opportunities to contribute to the collective knowledge within the field through sharing valuable research findings and foster collaborations between academic and industry researchers. Moreover, I am committed to inspiring curiosity, nurturing talent, and encouraging a collaborative spirit by mentoring undergraduate students across scientific disciplines. In the ESA PBT community, I aspire to leverage my expertise and leadership skills to drive positive change. Whether through advocating for diversity and inclusion, spearheading interdisciplinary initiatives, or addressing emerging challenges in insect physiology and toxicology, I am dedicated to advancing scientific excellence

and societal impact. My goal is to embody the qualities of a leader, innovator, and collaborator, driving transformative advancements and making a lasting impact within the scientific community and beyond.

PBT Awards



PBT Section Awards are now open for applications and due **June 1!** We encourage PBT members to apply to our two award types:

- "PBT Recognition Award in Insect Physiology, Biochemistry and Toxicology" for innovative research in PBT related areas. [View application criteria.](#)
- Graduate student travel awards to enhance the diversity of PBT section membership and at the ESA 2024 Annual Meeting. [View application criteria.](#)

PBT Job Opportunities

Take advantage of [ESA's Career Center](#) to refine your job skills, and browse positions in entomology, like the following:

- [Bioinsecticide Research Associate Investigator](#), Corteva Agriscience - Indianapolis, IN

*Inbox overload? [Edit your email subscriptions](#) and [tell us about yourself](#)
to receive only the most relevant content from ESA.*

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

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

[Terms & Conditions](#) | [Privacy Policy](#)