CENTER FOR VECTOR-BORNE DISEASES
Volume 4, Issue 1- August 2024

NEWSLETTER

Dr. Vitek

A Word from the Director!

I am happy to announce that the Center for Vector-Borne Disease newsletter has relaunched, although if you are reading this you already know. We have some new faces in the center, including a new program coordinator, Ms. Kendra Lara. In addition, I am happy to welcome Dr. Sarah Maestas to UTRGV and to the Center for Vector-Borne Disease. As always, we have amazing students working with us in research, such as Ms. Emily Medelez. You can read about both of these amazing individuals below.

I am also happy to announce some new funding opportunities within the Center for Vector-Borne Disease. You will soon notice some changes to our website, and among those changes will be links for funding. We are continuing to offer funding for students to attend a conference for presenting their research as well as assisting with publication costs for faculty. However, we are now launching a funding program for pilot studies, with the goal of increasing research activity and funding. Center members are able to apply for up to $3,000 to fund a pilot study to collect data that will be used in a grant application. The link for this will also be found on the new CVBD website.

We hope to continue to share good news are students, faculty, and research. We have some amazing guest speakers coming up, as well as hopefully announcing a new community outreach seminar soon. Please keep an eye on our website and for future newsletters as we continue to highlight the vector and vector-borne disease work that is being done at UTRGV.

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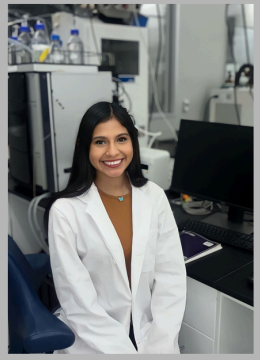
Faculty Highlight

Dr. Sarah Mays Maestas received her PhD from the University of Florida with an emphasis in Medical and Veterinary Entomology and conducted postdoctoral research at Texas A&M University before joining the UTRGV School of Integrative Biological and Chemical Sciences. Dr. Mays Maestas's research background is in zoonotic, vector-borne disease ecology, particularly focusing on tick and flea-borne pathogens. The focus of her dissertation work was understanding drivers of variation in ectoparasite and vector-borne pathogen communities in urban and rural habitats and investigating tick collection from feral swine as a tick and tick-borne pathogen surveillance tool. Her postdoctoral research included investigations of host and pathogen associations of soft tick species in south Texas.

Dr. Mays Maestas's current research focuses heavily on vector, host, and pathogen relationships; specifically, the role of native and introduced wildlife species as tick hosts and pathogen reservoirs and environmental factors affecting tick and pathogen abundance. Her work includes collaborative efforts with the USDA Cattle Fever Tick Research Unit; both undergraduate and graduate students in her laboratory are involved in collaborative research to investigate biological control options for cattle fever tick management and better understand environmental variables affecting cattle fever tick abundance. Additional research efforts include investigating vectors and reservoir hosts of pathogens affecting companion animal health in the RGV.

Dr. Sarah Mays Maestas and Crowley

Student Highlight



Emily Medelez

Emily Medelez is a first-generation graduate student researcher at the School of Integrative Biological and Chemical Sciences at the University of Texas Rio Grande Valley, where she obtained her bachelor's degree in Biological Sciences with a minor in Sociology and Summa Cum Laude Honors in 2022. After receiving her bachelor's, she had the opportunity to serve as a teaching assistant and graduate research assistant and has taught and mentored several undergraduate students. She is dedicated, hardworking, and always eager to learn.

She is currently working under the mentorship of Dr. Pushpa Soti and Dr. Christopher Vitek. Her research investigates how invasive plants affect mosquito behavior. The goal of this study is to provide valuable data to enhance control strategies to reduce the transmission of vector-borne diseases. She has shared her findings at multiple conferences such as the American Mosquito Control Association, Texas Hispanic Farmers and Ranchers Conference, the National and Regional Conferences of Minorities in Agriculture, Natural Resources, and Related Sciences, and the College of Science Annual Research Conference at the University of Texas Rio Grande Valley. She was awarded with the Alate Award which includes all travel expenses paid to present her work at the Entomological Society of America Annual Conference 2024. In addition, she won the Best Graduate Oral Presentation award at the UTRGV College of Science Annual Research Conference 2024. After her MS degree in Biological Sciences, she plans to further her education with a PhD in both ecological and entomological fields.

Publications

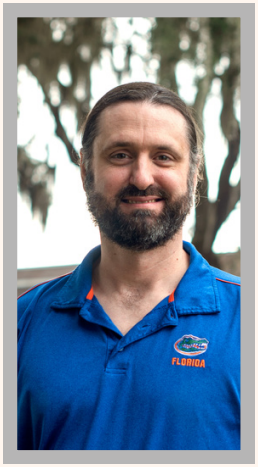
- Soghigian, J., Sither, C., Justi, S.A. Morinaga, G., Cassel, BK., Vitek, CJ., et al. Phylogenomics reveals the history of host use in mosquitoes. Nat Commun 14, 6252 (2023). https://doi.org/10.1038/s41467-023-41764-y
- Wilke, AB., Mhlanda, A., Kummer, AG., Vasquez, C., Moreno, M., Rodriguez, A., Vitek, CJ., Hamer, GL., Mutebi, JP., and Ajelli, M. 2023. Diel activity patterns in vector mosquito species in the urban environment: Implications for vector control strategies. PLOS Neglected Tropical Diseases. Volume 17, issue 1. https://doi.org/10.1371/journal.pntd.0011074
- Thomas J, Garcia J, Terry M, Mahaney S, Quintanilla O, Silva DC, Morales M, VandeBerg JL. Monodelphis domestica as a Fetal Intra-Cerebral Inoculation Model for Zika Virus Pathogenesis. Pathogens. 2023 May 19;12(5):733. doi: 10.3390/pathogens12050733. PMID: 37242404; PMCID: PMC10221844.

Outreach

Guest Speaker - October 3, 2024

Dr. Ted Burgess is a veterinary entomologist and Assistant Professor at the University of Florida. His primary research focus is on arthropod pests in animal production systems. Dr. Burgess applies a multidisciplinary approach to field and laboratory research, merging tools from arthropod physiology, toxicology, biochemistry, and behavioral ecology. His research efforts include investigations of features of pest biology that may be leveraged for control efforts or that contribute to economic loss or pathogen transmission, and development of sustainable chemical and biological control solutions for use in livestock systems.

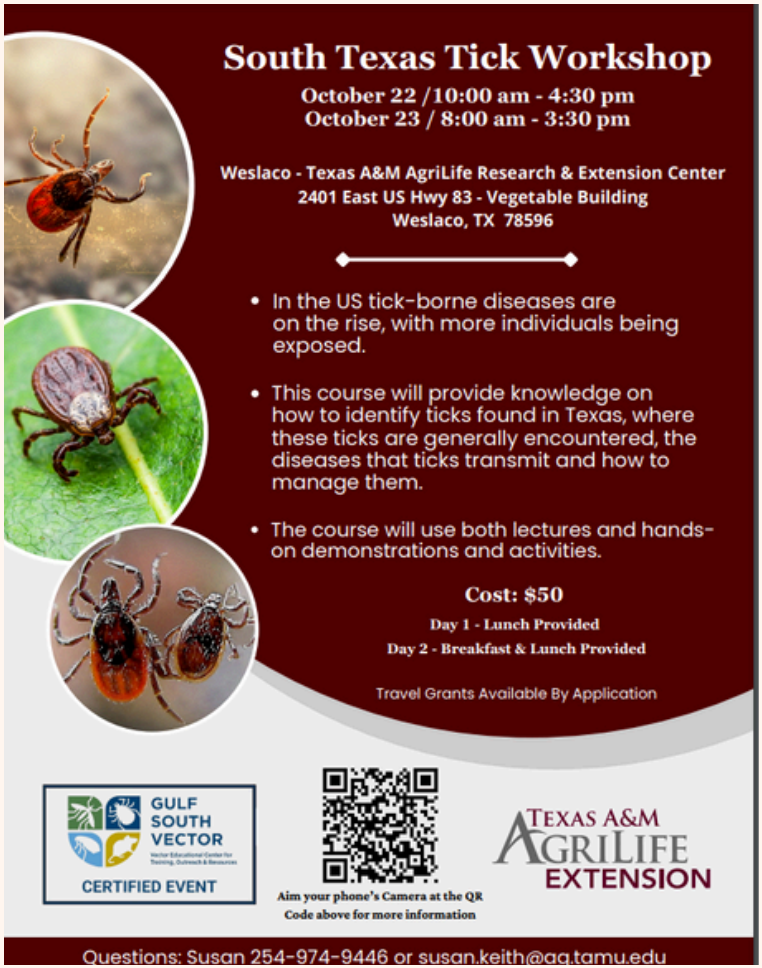
During his guest talk for the SIBCS research seminar, Dr. Burgess will discuss “Challenging old dogma to generate new strategies for vector control”.



Dr. Ted Burgess

South Texas Tick Workshop

October 22-23, 2024
Texas A&M AgriLife Research and Extension Center - Weslaco (Vegetable Building)
The registration fee is $50.00.
In the US tick-borne diseases are on the rise, with more individuals being exposed. This course will provide knowledge on how to identify ticks found in Texas, where these ticks are generally encountered, the diseases that ticks transmit and how to manage them. The course will use both lectures and hands-on demonstrations and activities.
Register at https://agriliferegister.tamu.edu/ento-ev-085
Travel grants are available by application and committee selection.
ACO, TDA and RS CEUs provided.



Current Grants

1. **United States Department of Agriculture Cooperative Agreement: Mass Production of Beneficial Insects for Control of the Brazilian Peppertree. Principal Investigator. 2024-2025. This project is exploring the potential of using biological control agents, similar to those used in ACP management, to combat the invasive plant, the Brazilian Peppertree. Research efforts will focus on exploring the efficacy of control agents, conducting quality assurance assays to ensure that non-target plants are not affected, and identifying the most effective method for rearing and releasing the agents.**
2. **United States Department of Agriculture Cooperative Agreement: Citrus Endophytes for Management of Asian Citrus Psyllids. Principal Investigator. 2024-2025. This project will explore utilizing a fungus to try to combat citrus greening, spread by the Asian Citrus Psyllid. The goal is to identify a cost and ecologically friendly control option for this crop disease and vector. Potential fungi will be reared and tested in this lab and well as with collaborators.**
3. **United States Department of Agriculture Cooperative Agreement: Biological Control of ACP in Texas. Principal Investigator. 2024-2025. This projects aim is to mass produce a parasitoid wasp to assist in the control of citrus greening. This work is being done in cooperation with multiple agencies and the LRGV and Louisianna. Reared insects will be shipping to partnering groups within the US to utilize to prevent the infection and spread of citrus greening.**
4. **United States Department of Agriculture Cooperative Agreement: Bi-National Partnership for the Biological Control of the Asian Citrus Psyllid along the Mexico Border. Principal Investigator. 2024-2025. This is a continuation of a long standing bi-national effort to control citrus greening. The vector (Asian Citrus Psyllid, or ACP) can be controlled through the release of a parasitoid wasp that parasitizes the psyllids, eventually killing them and preventing the spread of disease. This effort is focused on rearing psyllids and distributing them to partnering groups and agencies.**

The University of Texas Rio Grande Valley

Center Members

Dr. Christopher Vitek, Director
Kendra Lara, Program Specialist
Dr. Sarah Mays Maestas
Dr. Erin Schuenzel
Dr. John Thomas III
Dr. Teresa Feria
Dr. Tamer Oraby
Dr. John Vandeberg
Dr. Beatriz Tapia
Dr. Robin Choudhury
Dr. George Yanev
Dr.Nirakar Sahoo