

A Word from the Director



Greetings from the Center for Vector-Borne Disease,

As the fall semester winds down, I would like to highlight some accomplishments the Center for Vector-Borne Disease has met. This fall semester, we provided funding for three publications from faculty that are part of the center. We also provided partial funding to two graduate students who traveled to conferences to present their thesis research results. We started our first community outreach seminar, hosted by Dr. Beatriz Tapia, which was a rousing success. We also invited a speaker to give a virtual seminar presentation for the Biology Department Seminar Series. Multiple center faculty members got involved in submitting pre-proposals for the planned Western Gulf Center of Excellence, up for renewal from the CDC. And lastly, we welcomed two new graduate students in the Biology Masters Certificate Program, which is a certificate offered in conjunction with the Biology Department Master's program.

We hope these accomplishments will continue to promote the efforts and activities of the center in research, education, and outreach. As we continue to bring in new center members, our outreach and work will continue to expand. We look forward to 2022, which brings new challenges and opportunities to highlight the importance of vector-borne diseases in South Texas and beyond.

As we approach the holiday season, we like to wish all faculty, staff, and students at UTRGV a happy holiday season.

Research

Faculty Highlight

Featuring Dr. Beatriz Tapia

Beatriz Tapia, M.D., Ed.D., M.P.H., is an Associate Professor in the Department of Pediatrics and the Assistant Dean for Faculty Development at the University of Texas Rio Grande Valley in Harlingen, Texas. Dr. Tapia trained in occupational health and environmental medicine, health disparities, and health inequality at the JHSPH. Dr. Tapia was a fellow at the C.D.C Environmental Public Health Leadership Institute in 2011.

Dr. Tapia is a highly qualified expert that has contributed to environmental medicine, public health, and border health knowledge of the Texas-Mexico border region. As the South Texas Environmental Education Research (STEER) program director for the University of Texas Rio Grande Valley in Harlingen, she led various community-based participatory research in environmental health. She has specifically worked with the Hispanic population utilizing the promotora model for specific community need assessment and interventions in the United States and Mexico. She has been involved in arbovirus disease surveillance and prevention in the Rio Grande Valley in the last few years. Because of this work, Dr. Tapia is a founding member of the UTRGV Center for Vector-Borne Disease (CVBD), created in April 2018. Dr. Tapia currently serves as the U.S. Co-Chair for the Border 2020 US-Mexico Environmental Education Program.



Research

The Center for Vector-Borne Disease submitted several pre-proposals for the resubmission of renewal for the Western Gulf Center of Excellence in Vector-Borne Disease. Center members submitted a total of 12 pre-proposals, with seven different project PIs. There were six research proposals (including one pilot project) and six education/outreach proposals. Total funding requests was approximately \$3.8million, although we do not anticipate all the proposals getting accepted in the final proposal submitted to the CDC. If we get awarded these grants, they will expand the research activities, education, and outreach efforts in vector-borne disease at UTRGV.

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Center Members:

Dr. Christopher Vitek, Director
Sylvia Alafa, Program Specialist
Dr. Erin Schuenzel
Dr. John Thomas, III
Dr. Teresa Fera
Dr. Scott Gunn
Dr. Rupesh Kariyat
Dr. Tamer Oraby
Dr. John Vandenberg
Dr. Beatriz Tapia
Dr. Robin Choudhury
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Publications

Guerrero, C.D.; Hinojosa, S.; Vanegas, D.; Tapangan, N.; Guajardo, M.; Alaniz, S.; Cano, N.; Vitek, C.J.; Thomas, J.; Hernandez, V.; Garcia, J.; Bolling, B.G.; Qualls, W.A.; Tyler, R.; Olivarez, E. "Increasing Public Health Mosquito Surveillance in Hidalgo County, Texas to Monitor Vector and Arboviral Presence". *Pathogens* 2021,10, no. 8: 1022. <https://doi.org/10.3390/pathogens10081022>

Salinas, W.S.; Feria-Arroyo, T.P.; Vitek, C.J. Temperatures Influence Susceptibility to Insecticides in *Aedes aegypti* and *Aedes albopictus* (Diptera: Culicidae) Mosquitoes. *Pathogens* 2021, 10, 992. <https://doi.org/10.3390/pathogens10080992>

Sathler-Avelar R.; Vitelli-Avelar; Mattoso-Barbosa A.M.; Pascoal-Xavier M.A.; Elói-Santos S.M; Costa-Rocha I.A; Teixeira-Carvalho A.; Dick E.J.; VandeBerg J.F.; VandeBerg J.L.; Martins-Filho O.A.; Phenotypic and Functional Signatures of Peripheral Blood and Spleen Compartments of *Cynomolgus* Macaques Infected with *T. cruzi*: Associations with Cardiac Histopathological Characteristics. *Frontiers in Cellular and Infection Microbiology*. 2021, 14, July. doi.org/10.3389/fcimb.2021.701930

Mayton E.H.; Hernandez H.M.; Vitek C.J.; Christofferson R.C. A Method for Repeated, Longitudinal Sampling of Individual *Aedes aegypti* for Transmission Potential of Arboviruses. *Insects* 2021, 12, 4, 292, doi.org/10.3390/insects12040292

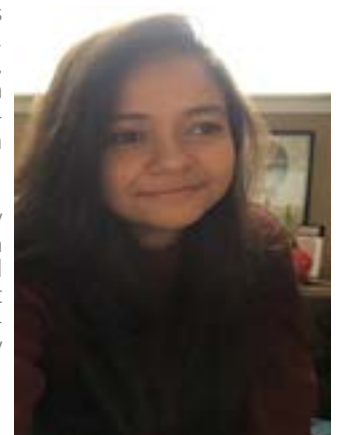
Education

Student Highlight

Mohini Moulick...

Mohini Moulick, who arrived in August to become an M.S. student in Biology, is working in Dr. John VandeBerg's laboratory on the sexual and vertical transmission of Zika virus in laboratory opossums (*Monodelphis domestica*). Unlike other mammals, laboratory opossums sustain the virus long-term after becoming infected. As in humans, the virus can be transmitted sexually and vertically, although the frequency of transmission via these routes in laboratory opossums is not known. Mohini's research is using ELISA, immunohistochemistry, and RT-PCR to determine the frequencies of transmission, and to determine whether the virus can be transmitted to progeny via the sperm of infected males.

Mohini's previous research as an undergraduate student at Concordia University Irvine used analytical chemistry methods to compare the variability of curcumin in different brands of turmeric with the variability of ibuprofen in different brands of ibuprofen. This research was conducted to determine the extent of variability of a natural medication by comparison with that of a manufactured medication, and to assess how the variability may affect potency. In addition, she has conducted volunteer work at the Marine Lab of Concordia University Irvine, providing care for marine animals and teaching children about them. She also has experience working in biochemistry laboratories with cyanobacteria and *E.coli*.



Student Updates

- Two new students joined the Vitek lab since Spring 2021. Neetu Khanal and Taylor Moya both started as new graduate students in Fall 2021. Neetu is from Nepal and originally was slated to start in Fall 2020, but COVID changed that. She was finally able to secure a passport and make her way here to start this year. Taylor is a former undergraduate from the lab, who is considering pursuing a career in research and medical entomology. She will use the master's program to determine if the path is one she wants to pursue. Lastly, one of Dr. Vitek's publication from this year ([Temperature influences susceptibility to insecticides in *Aedes aegypti* and *Aedes albopictus* \(Diptera: Culicidae\) mosquitoes](#)) had a former graduate student, Wendy Salinas, as the lead author.
- Two students in the Vector-Biology Certificate Program were selected through a competitive application process to participate in a 2022 Summer Research program in Japan. The students Clarissa De Leon and Xochitl Estrada are from Dr. Vitek's laboratory and plan to finish their Master's degree in 2022. They will be joining another eight students from the USA that will travel to Japan. Both students are excellent researchers and are currently choosing faculty in Japan with whom they wish to work. The program is part of the JSPS in Japan, which is the equivalent of the US NSF agency.

Education Updates

- New Graduate Vector Biology Degree - The Center for Vector-Borne Disease is happy to announce a new degree program in biology. Students obtaining a thesis master's degree in biology may join the Vector Biology degree program. This program will help provide specialized education in vectors, vector-biology, and vector-borne diseases. Interested students should apply no later than their first semester of the biology master's degree program. For information, contact Dr. Chris Vitek at christopher.vitek@utrgv.edu with the subject line of Graduate Vector Biology Degree.
- The Field Experiences in OneHealth course went virtual this past summer. Nearly thirty students from three campuses (UTMB, UTRGV, and TAMU) with faculty from all three campuses. The students included (MD, DVM, MS, MPH, DrPH, and combined degrees). This four-week course covered topics ranging from zoonotic diseases to proper wearing protective gear to giving a press conference in an outbreak. The UTRGV portion was led by Dr. Christopher Vitek, with Drs. George Yanev and John Thomas also delivering material in their area of expertise.

Outreach

Guest Speakers

October 14, 2021 - Dr. Joe Lewis, Department of Entomology & Department of Biochemistry Institute of Agricultural and Natural Resources from the University of Nebraska Lincoln presented on Regulation of Plant Defense responses to sap-sucking aphids.
<https://utrgv.zoom.us/rec/share/yzZpGEvllrlyYrRbpK-GJh-PYUQE9FUDLpA9CSMv1hCXwX8DIXLdqI2V28NGimJH.4obUEOs4kaiw5V07>

Access Passcode: e8p4H%hX

Community Outreach

The University of Texas Rio Grande Valley (UTRGV) Center for Vector-Borne Disease held its first public seminar on September 29, 2021. Dr. Beatriz Tapia, UTRGV associate professor in the Department of Pediatrics and Assistant Dean of Faculty Development at the UTRGV School of Medicine, gave the inaugural presentation. The presentation title, "Arboviruses in South Texas- Vulnerable Population". A total of 40 participants viewed the seminar, including employees from the Hidalgo County Health Department, the Texas Department of Health Services, the Tropical Texas Behavioral Health, and employees from vector-control agencies in local cities such as Brownsville, McAllen, and South Padre Island as well as the US Environmental Protection Agency (EPA) all helped make it a success.

Copy the link below to view the recording:

<https://utrgv.zoom.us/rec/share/dRgP5J9yYf9mayvKxwR5Fyx9m1XF5DgemrDgTma5h44aBOOdY7rgwTo5EUgBqm0F.E-TK8kRM-endxyVK>, use the passcode: 6FG1!p+P

The center plans to host another seminar for the public in the spring semester.

The Newsroom

To view the story, click on the title.

CVBD hosts community seminar on mosquitos prevention

September 29, 2021 With rain in the forecast for some parts of the Valley, residents are bracing themselves for an increase in pesky mosquitos.

UTRGV Center for Vector-Borne Disease to host community seminar on prevention, safety

Friday, September 10, 2021 - Rio Grande Valley, Texas - UTRGV's Center for Vector-Borne Disease is taking charge of the wet months that generate an explosion in the mosquito population in the Rio Grande Valley and the diseases they bring, using community outreach and education.

Expert share tips to control and avoid mosquitoes

Monday, July 19, 2021 - Rain in the forecast this week could lead to more mosquitos, and while it may be hard to get rid of them, there are some things you can do to keep them under control...

Feeling the pinch: Mosquito Season

Sunday, June 27, 2021 - Have you stepped outdoors only to be immediately greeted by a mosquito? UTRGV's Dr. Christopher Vitek explains why it seems there's more of these pests around and why it's important to avoid certain colored clothing outdoors.

Frisky Spiders: Tarantula sightings increase in the RGV

Wednesday, June 23, 2021 - Harlingen, Texas (KVEO) - What has eight legs and a need for love? Numerous tarantulas have made their appearance in parts of the Rio Grande Valley.

It's read bad: City works to fight mosquito surge

Friday, June 11, 2021 - Jose Lopez repairs septic tanks and says with all the recent rainfall he's been called several times to remove standing floodwater.

Behind the bite: How Hidalgo County is combating mosquito infestations

Thursday, June 10, 2021 - The warmer months often bring rains and rising temperatures which create the perfect breeding grounds for mosquitoes to thrive in stagnant waters, especially in a subtropical climate such as the Rio Grande Valley.



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