

Med School Watercooler

NEWS FROM FREDERICK P. WHIDDON COLLEGE OF MEDICINE
AT THE UNIVERSITY OF SOUTH ALABAMA

Friday, June 5, 2020

Macaluso's research aims to prevent cat scratch disease and other illnesses

Kevin R. Macaluso, Ph.D., professor and Locke Distinguished Chair of Microbiology and Immunology at the University of South Alabama College of Medicine, is among the authors of a research article accepted for publication in *Microbial Pathogenesis*.

The article, "A non-coding RNA controls the transcription of a gene encoding a DNA binding protein that modulates biofilm development in *Bartonella henselae*" will be included in an upcoming edition of the peer-reviewed journal.

Bartonella henselae (*B. henselae*) is a bacterium that can infect humans and cats. It is transmitted by the cat flea from one cat to another and to humans by the scratch of a cat. This bacterium causes cat scratch disease and other serious health conditions including bacterial, bloodstream and heart valve infections.

More than 12,500 people are diagnosed with cat scratch disease in the United States annually, according to a 2016 Centers for Disease Control and Prevention study. The incidence of cat scratch disease during the study period was highest in children between the ages of 5 and 9. The CDC estimates the annual medical cost for cat scratch disease in the U.S. to be nearly \$10 million each year.

The research article describes how the bacterium *B. henselae* persists in both humans and cat fleas in a structure known as a biofilm. Understanding new genetic mechanisms by which bacteria, including *B. henselae*, initiate biofilm formation is critical for understanding how it causes disease in humans, according to the authors.

Biofilms are a collective of one or more types of microorganisms that can grow on different surfaces. Microorganisms that form biofilms include bacteria and fungi.

The report, authored by Udoka Okaro, Sierra George, Sabrina Valdes, Macaluso and Burt Anderson, will enable further studies to optimize efforts to prevent the initial steps in which bacteria aggregate to form a biofilm. This could help prevent the transmission of the bacterium from one cat to another and from cats to humans.

Data presented within the article, according to the scientists, are the first to identify and experimentally characterize a transcriptional regulator and RNA responsible for biofilm formation in *B. henselae*. The work was done in collaboration with researchers at the University of South Florida School of



In this file photo from fall 2019, Kevin Macaluso, Ph.D., works in the lab.

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Medicine.

Microbial Pathogenesis is an international journal which publishes original contributions and reviews about the molecular and cellular mechanisms of infectious diseases. It covers microbiology, host-pathogen interaction and immunology related to infectious agents, including bacteria, fungi, viruses and protozoa. It also accepts papers in the field of clinical microbiology.

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Thursday, June 4, 2020

Richards performs surgeries, provides medical education in Ecuador



William Richards, M.D., professor and chair of surgery at the USA College of Medicine, and surgeon Esteban Moscoso, M.D., performed surgeries together in Ecuador.

William Richards, M.D., recently traveled to Ecuador to perform a resection on a rare tumor, helping a long-time friend gain experience with the procedure. While there, he performed other surgeries and spoke to local medical groups to provide education.

Richards, professor and chair of surgery at the University of South Alabama College of Medicine and director of the USA Surgical Weight Loss Center, has traveled to Ecuador five times since 1995 to give presentations to the Ecuadorian Society of Laparoscopic Surgery as well as students at the medical school there. He has also performed a number of operations during his visits.

Richards visits Ecuador in part because of his long-time friendship with Esteban Moscoso, M.D., a surgeon and a fellow of the American College of Surgeons. The two met in 1992 when Moscoso asked if he could observe Richards perform laparoscopic surgeries. According to Richards, these types of surgeries are as important in Ecuador as in the United States because they help people return to work quicker. The pair have also operated together to give Moscoso experience with various other types of surgery.

Richards' most recent trip was to help Moscoso operate on a man with an adrenal tumor, which was causing severe hypertension, that could lead to a stroke or heart attack if not removed. Moscoso did not have a great deal of experience resecting this type of tumor, so he reached out to his friend. Richards said adrenal tumors are fairly rare, but the case went well, and the patient no longer has hypertension.

Ironically, the patient was someone that Richards had met during a previous visit to Ecuador 20-years prior. The two share a love of collecting butterflies, and the patient had shared some of his butterfly collection with Richards not knowing that they would meet again under different circumstances.

During his most recent visit, Richards spent eight days in Ecuador, operated on

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several additional patients and gave lectures to medical students, surgeons, and residents.

"Besides being a surgeon, I also have the opportunity to help patients indirectly as a medical educator," Richards said. "While in Ecuador, I helped a friend learn how to do a more advanced cases and provide more surgical options for his patients.

Now, he's teaching other surgeons how to do these procedures."

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Monday, June 1, 2020

Hermance joins USA department of microbiology and immunology



Meghan Hermance, Ph.D., assistant professor of microbiology and immunology, examines arthropod-borne viruses.

A passion for research and a strong desire to share knowledge with others led Meghan Hermance, Ph.D., to a career in the basic sciences within academic medical centers. She joined the faculty of the University of South Alabama College of Medicine in May as an assistant professor in the department of microbiology and immunology.

Basic science research helps contribute to better ways to predict, prevent, diagnose and treat diseases.

"Dr. Hermance is an excellent addition to our faculty, bringing expertise in virology and immunology that will strengthen the research and teaching mission of the university," said Kevin R. Macaluso, Ph.D., professor and Locke Distinguished Chair of Microbiology and Immunology at USA's College of Medicine.

Hermance trained in one of the leading U.S. laboratories examining unique aspects of emerging arthropod-borne viruses, Macaluso said. Arthropod-borne viruses, also known as arboviruses, are transmitted to humans primarily through the bites of infected mosquitoes, ticks, sand flies or midges, all of which are all prevalent throughout the Gulf Coast region.

Hermance most recently served as a research scientist in the department of microbiology and immunology at State University of New York (SUNY) Upstate Medical University in Syracuse, New York. Her postdoctoral fellowship was completed at the University of Texas Medical Branch in the department of pathology in Galveston, Texas.

Her research interests are centered on the interface between the arthropod and

mammalian host, identifying the factors essential for transmission of pathogens and subsequent illness. Focusing on emerging or potentially introduced viral pathogens, Hermance's research, Macaluso said, will help lay the groundwork for the development of diagnostic and interventional strategies for emerging arboviruses.

"I've always hoped to have the opportunity to be in a research and teaching environment with the ability to research, teach courses and train students," Hermance said. "Training the next generation of scientists is so important."

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