

# BIOMEDICAL & VETERINARY SCIENCES

## GRADUATE PROGRAM



## ANNOUNCES

The Master of Science Seminar and Examination of

Maria Paz Buman Ruiz Diaz  
"Mixed Strain Identification of Porcine Reproductive and  
Respiratory Syndrome Virus in Multiplexed Samples using  
Nanopore Sequencing"

Tuesday, December 5<sup>th</sup>, 2023

9:00am

Classroom 100



## **Bio**

Maria was born in Asunción, Paraguay and moved to Washington, D.C. during Elementary School, where she spent most of her childhood. She eventually moved back to Paraguay for a few years where she began her veterinary education only to return to the U.S., where she ultimately received her DVM degree from VMCVM. She joined the Lahmers Lab right after finishing vet school in pursuit of a master's degree while preparing to apply for residencies in anatomic pathology. During her time here she has learned to appreciate the value of diagnostic research in veterinary medicine and hopes to continue collaborating with other researchers in the future. With the help of Dr. Lahmers and other mentors and friends, she is now headed to residency at Purdue University and hopes to stay in academia as a professor of anatomic pathology one day.

## **Funded by**

United States Department of Agriculture-NIFA  
National Pork Board  
VMCVM Office of Research and Graduate Studies

## **Awards and Academic Achievements**

Residency in Veterinary Pathology – Purdue University, 2024

## **Lay Language Abstract**

Porcine reproductive and respiratory syndrome virus (PRRSV) is a common, economically important pathogen in commercial swine production. The virus was first identified in the late 1980's during outbreaks in the United States and Europe. In female pigs, the disease is characterized by abortion storms, and the delivery of mummified fetuses or very weak, ill piglets. Neonates often display signs of pneumonia, respiratory distress, and many die from hypoxia. Surviving piglets are highly susceptible to other diseases and are unthrifty compared to other, unaffected piglets. Boars may show signs of respiratory disease and can also have decreased libido and reproductive success for months at a time. The virus is prone to mutating once a pig is infected, preventing herds from mounting sufficient immunity to protect against new, mutant strains. Identifying infected pigs early and accurately is crucial to managing PRRSV outbreaks. Currently available diagnostic tests for PRRSV have many limitations, thus we have developed a new diagnostic test using next-generation sequencing technology. Oxford Nanopore Technology (ONT) provides a commercially available nanopore sequencer, the MinION, that can read long DNA strands in real-time. With this technology we have expanded the area of the PRRSV genome that can be sequenced, which allows us to better identify and distinguish strains of PRRSV in infected, and vaccinated pigs. This new testing method will allow veterinarians and practitioners across the country to better identify and predict outbreaks in their herds, helping them develop better management strategies against PRRSV.

## **Presentations**

BMVS Symposium – 2023

## **Examination Graduate Committee**

### **Major Advisor/Chair:**

Kevin K. Lahmers, DVM, PhD, DACVP – Anatomic Pathology  
Full Professor of Anatomic Pathology  
Department of Biomedical Sciences and Pathobiology

### **Graduate Advising Committee Members:**

Tanya LeRoith, DVM, PhD, DACVP - Anatomic Pathology  
Clinical Professor of Anatomic Pathology  
Department of Biomedical Sciences and Pathobiology

Daniel Slade, PhD  
Associate Professor of Biochemistry  
Department of Biochemistry



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