Mississippi State University
College of Veterinary Medicine
Potential SRE Mentors for 2020

Hossam Abdelhamed, DVM, Ph.D. (CVM Basic Sciences)
Research on my lab focuses on molecular mechanism of foodborne human pathogen, *Listeria monocytogenes*. We are currently investigating the role of transcription regulator in promoting *L. monocytogenes* intracellular replication and virulence. We are also interested in the molecular mechanisms associated with the development and persistence of antibiotic resistance in the aquatic environment.

Cooper Brookshire, DVM, MS, DACVPM (CVM Clinical Sciences)
My research primarily includes epidemiological studies involving antimicrobial resistance, One Health, wildlife, or clinical questions relevant to Shelter Medicine.

Russell Carr, PhD (Basic Sciences)
My research focuses on developmental neurotoxicity. Our current efforts are investigating the persistent effects on brain function, structure, and neurochemistry that results from developmental exposure to either low levels of pesticides or to marijuana.

Janice Chambers, PhD (CVM Basic Sciences)
Our main research focus is the development of novel antidotes for poisoning by organophosphates, a group of compounds that includes nerve agents and some insecticides. In laboratory animal tests, our novel antidotes, invented at MSU, are showing promise at entering the brain and protecting the brain, which the currently approved antidote cannot do.

Jesse Grady, DVM, MS (CVM Clinical Sciences) & Holli Seitz PhD, MPH (Dept Communication/SSRC)
Drs. Grady and Seitz research involves exploring the communication factors that affect how pet owners make decisions regarding their pet. Most recently they developed a survey instrument called the VAPI that measure's a pet owner's desire for control of their pet's healthcare (autonomy) and the factors that affect that desire. Future research will involve exploring how communication techniques/strategies affect what decisions pet owners make during appointments in conjunction with their VAPI score. Techniques employed include qualitative interviewing skills, qualtrics survey software, and qualitative data coding. These skills are useful in not only veterinary communication research but also have applications in population medicine and public health research as well.

Trey Howell, PhD (CVM Basic Science)
Research in the Howell Lab is geared toward gaining a better understanding of the impact of environmental exposures, specifically pesticide exposures, on overall metabolic function. Specifically, we are interested in pesticide-mediated perturbations which may alter the pathogenesis and co-morbidities of metabolic diseases such as obesity and type 2

diabetes. Current projects include effects of organochlorine pesticide exposure on diabetic wound healing (NIH R21 funded) and on non-alcoholic fatty liver disease (NIH R15 funded) using both in vivo and in vitro models.

Michael Jaffe, DVM, DVM, MS, CCRP (CVM Clinical Sciences)
Laser tissue welding is a sutureless method of tissue healing involving the use of a near-infrared laser and gold nanorod/collagen composites. My research will focus on ex vivo (and possibly in vivo) work examining a variety of tissue sources treated in this manner. Work will involve harvesting ex vivo tissue, treating the tissue with the laser and nanocomposite, and collecting data as a prelude to possible in vivo applications.

Barbara Kaplan, PhD (CVM Basic Sciences)
The focus of my lab is to understand how drugs or chemicals affect immunity. Our main projects involve effects of marijuana compounds or environmental chemicals on autoimmune diseases, but we are also trying to characterize marijuana compound effects in canine immune cells.

Attila Karsi, PhD (CVM Basic Sciences)
Dr. Karsi's research is focused on exploring virulence mechanisms of bacterial fish pathogens, development of live attenuated vaccines, and understanding fish-bacteria interactions.

Lesya Pinchuk, MD, PhD (CVM Basic Sciences)
Initially, we documented active uptake of *E. ictaluri* WT and two LAVs in B cells by flow cytometry and light microscopy. Then, we observed the *E. ictaluri* strains-induced phagosome and/or phagolysosome formation in the cytoplasm of catfish magnetically sorted IgM^+ B cells. Assessment of DC-like L/$CD207^+$ cells in the haemopoietic tissues of catfish: isolation of cells from blood, head kidney and spleen; hematopoietic cell culture; harvest and enrichment of catfish DC-like cells.

Lauren Priddy, PhD (Agricultural and Biological Engineering)
The Priddy Lab studies hydrogel biomaterials for the delivery of antimicrobial therapeutics such as bacteriophage to combat osteomyelitis, and fabricates customized, load-bearing thermoplastic polymer scaffolds for bone healing applications. The long-term objectives of our research are to explore how the presence of infection alters bone healing and to effectively co-deliver antimicrobial and osteoinductive factors for treating challenging cases of osteomyelitis when there is significant loss of bone tissue.

Matt K. Ross, PhD (Department of Basic Sciences)
We are interested in the mechanisms by which toxins, both foreign to the body and those formed in cells as we age, contribute to inflammation and vascular disease. We are especially interested in the intersection of inflammation and lipid metabolism in innate immune cells called macrophages and how this interaction leads to pathology.

Graham Rosser, PhD (CVM Basic Sciences)

My research focuses on understanding the life cycles of trematode and myxozoan parasites, studying their impacts on aquaculture, & identifying potential management strategies.

Keun Seok Seo and Joo Youn Park, DVM, PhD (CVM Basic Sciences)
Our research interest is to understand pathogenesis of *Staphylococcus aureus* and translate basic knowledge to develop therapeutic approaches including vaccine, novel antimicrobial compounds, CRISPER-Cas9 phage, and antibiotics. Currently, we are performing several extramural funds including NIH COBRE and industry grants to evaluate new therapeutics using both in vivo and in vitro models.

David R Smith, DVM, PhD, DVCVPM (CVM Pathobiology and Population Medicine)
Dr. Smith is a veterinary epidemiologist with primary interest in how to design and manage cattle production systems to optimize cattle health and food safety. He is particularly interested in methods to keep cattle healthy to avoid the need for antimicrobial therapy. His research methods include system dynamics modeling, observational research, and randomized clinical trials.

Amelia Woolums, DVM, MVSc, PhD, DACVIM, DACVM (CVM Pathobiology and Population Medicine)
Respiratory disease in cattle, also known as "bovine respiratory disease (BRD)", is the research focus In the laboratory of Dr. Amelia Woolums. Dr. Woolums and her students and collaborators work to determine which vaccines and other management practices are most effective to prevent BRD, what characteristics of cattle best help them resist BRD, and how the use of antimicrobials influences antimicrobial resistance in BRD. Tools used in the Woolums lab include a variety of approaches related to immunology, virology, and bacteriology.