Clinical trial research on the efficacy of service dogs for veterans with PTSD

This project will elucidate the clinical impact of service dogs for military Veterans with PTSD, as well as the biobehavioral mechanisms of action and characteristics that moderate efficacy.

Students will participate in data collation, supply preparation, sample receipt, and data entry, as well as other project-related tasks. Students will gain hands-on experience in research management from many angles, through concept development, working with human participants (remotely via telephone, email, and text message), as well as data management. This is a unique opportunity that offers a high level of interdisciplinary research project experience.

Maggie O'Haire, PhD (she/her/hers)

Associate Dean for Research
Professor
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

OHAIRE lab

Characterizing cognitive aging in dogs

Some aging dogs develops cognitive impairments similar to those in Alzheimer's disease. However, there are currently no established objective tests for measuring cognitive functioning in older dogs. In this project we have developed a set of short problem-solving measures which are used to measure various aspects of cognitive function in dogs.

Students will participate in administration of these tests at diverse locations, including at our campus-based research laboratory, at local dog daycares, and in animal shelters.

Evan MacLean, PhD (he/him/his)

Associate Professor
Director, Arizona Canine Cognition Center
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

Canine Cognition Center

Comparative and Evolutionary Analysis of Vertebrate Genes

Students will work as part of an ongoing, international project which provides standardized gene nomenclature for vertebrate species. Standardized gene nomenclature is used to ensure that researchers and clinicians can unambiguously identify and communicate about genes commonly used in human health, veterinary medicine and agricultural production. Research students will work collaboratively to identify vertebrate gene sets of interest to the group, compare them to genes from other vertebrate species, and provide gene nomenclature to public, online resources. This research combines elements of genetics, molecular biology, genomics, comparative biology and evolutionary biology, although no advanced training in these fields is required.

Note: as this is a comparative project, it can encompass farm and vertebrate animal data sets, including horse, bovine, sheep, pig, chicken and fish.

Fiona McCarthy, PhD

Professor
Animal and Comparative Biomedical Sciences
THE UNIVERSITY OF ARIZONA

[Faculty profile](#)

The mechanism linking fatty liver with insulin resistance and hypertension

Students can choose to participate in one of multiple ongoing projects in the lab that use surgical, viral, and genetic models to understand how the liver affects blood pressure and insulin sensitivity. Another project is focused on drug development.

Benjamin Renquist, PhD

Associate Professor
Animal and Comparative Biomedical Sciences
THE UNIVERSITY OF ARIZONA

Faculty Profile

Disease diagnostics in crustaceans

Infectious diseases are a bottleneck in the growth and sustainability of crustacean farming worldwide. The research focus of the lab involves: (i) pathogen discovery and developing diagnostic tools and (ii) developing antiviral therapies against viral diseases in fish and crustaceans. The laboratory uses histopathological and molecular tools in disease diagnostics of crustaceans.

Students who are interested in aquatic animal disease research and diagnostics will be working on one of the multiple projects in the laboratory.

Arun K Dhar, PhD

Professor
Animal and Comparative Biomedical Sciences
THE UNIVERSITY OF ARIZONA

[Faculty Profile](#)
[Lab Page](#)

Developmental and Genetic Influences on Working Dog Cognition

The project aims to conduct a genome-wide association study (GWAS) in over 500 assistance dogs to identify specific genetic variants linked to their cognitive, behavioral, and temperament traits.

Students will be trained on and assist with behavioral data collection (including hands-on handling of dogs during cognition testing at Canine Companions' Santa Rosa campus), data entry, and coding of videos. They be an integral member of the team as they explore the behavior and cognition of adolescent dogs, and its impact on their journey to become highly trained assistance dogs.

requires travel out of Tucson for a few weeks

Emily Bray, PhD, CAAB (she/her/hers)

Assistant Professor
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

BRAY lab

Thinking of Pets Buffers Against Psychological Pain via Perceptions of Unconditional Love

Consumers turn to companion animals in times of distress, often equating the role of their pet to that of a close friend or family member. However, we still know little about how much relationships with pets buffer against psychological pain or the mechanisms behind this. We evaluated the effects of thinking of a beloved animal companion on the experience of psychological pain. Across all three studies, such thoughts decreased perceptions of psychological pain in comparison to control conditions. Surprisingly, thinking of a beloved pet was more effective at buffering psychological pain than thinking of a beloved person, an effect mediated by perceptions of unconditional love. Our findings highlight how emotional bonds with pets may protect against psychological adversity and point to the key role played by perceptions of unconditional love in this process.

Martin Reimann, PhD (he/him/his)

Associate Professor
Eller College of Management
THE UNIVERSITY OF ARIZONA

[Faculty Profile](#)

One Health Approach to Investigate Streptococcus equi subsp. zooepidemicus among shelter dogs in Pima County, Arizona

Over the last year, the Pima Animal Care Center (PACC) has had experienced at least four different outbreaks of Streptococcus zooepidemicus in dogs, which has resulted in PACC closing down for weeks, costing tens of thousands of dollars, and resulted in the deaths of at least 5 dogs. To help prevent future outbreaks, the Cooper laboratory has been working with PACC, Pima County Health Department, and TGen (Flagstaff) to conduct a One Health based surveillance of the PACC environment, shelter animals, PACC workers, and the Tucson community to assess transmission of the S. zooepidemicus in the dogs at PACC. Our goal is to gain a better understanding of the transmission dynamics of this potentially fatal canine disease, as there have been numerous outbreaks in shelters in California, Arizona, Texas, and Florida over the last year.

Kerry Cooper, PhD (he/him/his)

Assistant Professor
Animal and Comparative Biological Sciences
THE UNIVERSITY OF ARIZONA

[Faculty Profile](#)

Mechanisms underlying stress-induced maternal effects in a passerine bird

The influence of the mother on an offspring's phenotype is one of the most ubiquitous and important sources of organismal variation. The evolution of adaptive maternal effects often seems remarkable as females often modify offspring phenotype and behavior to precisely match current ecological conditions. Stress-induced maternal programming has lifelong effects on offspring phenotype, it suggests the possibility that adaptive maternal effects may utilize conserved stress-induced pathways to induce the species-specific traits that are most adaptive under stressful conditions. Maternal signals of stress alter gene expression via epigenetic modifications which ultimately influences the distribution of glucocorticoid receptors. Early developmental conditions often also have permanent effects on investment in costly organs, particularly the brain. These effects may be key to understanding how adaptive maternal effects evolve and can also provide insight into the evolution of inflexible behavioral traits, such as animal personality. Our lab is testing these ideas by comparing how exposure to maternal stress during oogenesis influences brain morphology, hypothalamic-pituitary-adrenal axis programming and behavior in a passerine species, the zebra finch.

Renee Duckworth, PhD

Professor
Ecology and Evolutionary Biology
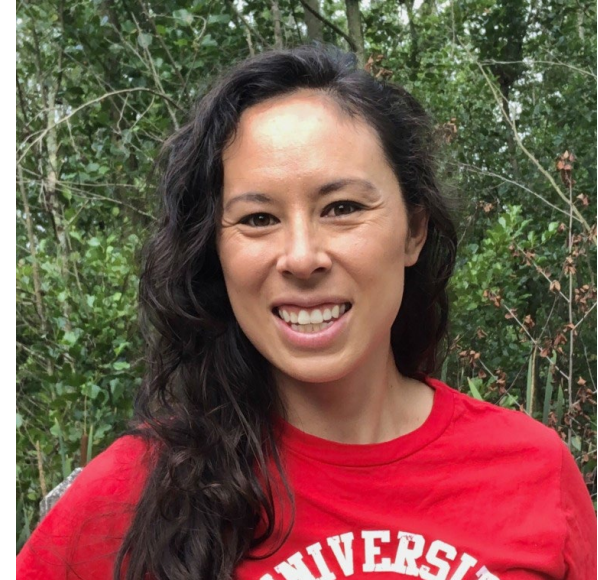THE UNIVERSITY OF ARIZONA

[Faculty Profile](#)

Tick-borne disease in Southern Arizona and/or Development of a diagnostic assay for avian pox

Two project available to choose from:

1. One is studying the distribution and prevalence of ticks in Arizona that vector a Rickettsia pathogen. This project will involve studying the hosts of ticks, their distribution, and whether they are vectors of disease.

2. Another project will involve working with samples from Galapagos birds trying to develop a diagnostic test for avian pox, an emerging disease on the islands.

Sabrina McNew, PhD

Assistant Professor
Ecology and Evolutionary Biology
THE UNIVERSITY OF ARIZONA

Faculty Profile

Collective and individual behavior and cognition in social insects

How do animals solve complex tasks, either individually or collectively through their interactions? We use social insect colonies (bumble bees, honey bees and ants) as model systems in the laboratory and in the field, as well as using mathematical and individual-based modeling approaches, and investigate contexts such as search & resource retrieval, contests, and task allocation. Specific projects in 2024 include (a) studying how experience, skill, and body size interact to affect individual and collective contest outcomes, (b) how animals search and orient over uneven terrain with different surface structures individually and collectively, and (c) finding what strategies are used to achieve collective robustness to individual error or environmental perturbation in foraging & communicating ants.


Anna Dornhaus, PhD
Professor
Ecology and Evolutionary Biology
THE UNIVERSITY OF ARIZONA

Faculty Profile

Therapeutic development against viruses, fungi, Alzheimer's and cancer

The students will participate in one of the research programs focusing on therapeutic development against viruses, fungi, Alzheimer's and cancer. Hand-on experiments include assay design, high throughput screening, protein science, enzymology, and animal models.
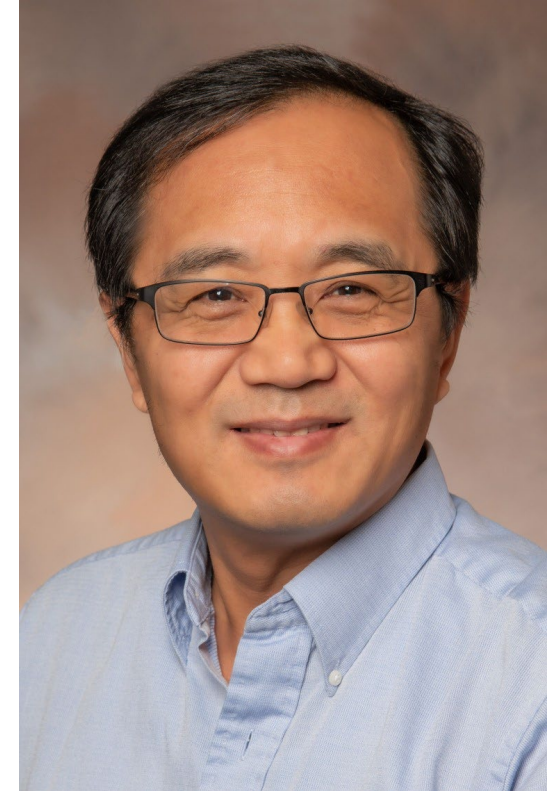
Hongmin Li, PhD

Professor
Pharmacology and Toxicology
THE UNIVERSITY OF ARIZONA

Faculty Profile

Surgical simulation

Students will be working on the development of a surgical model for simulation training and education, this might include a portion of a large model or a small project with something easier that can be placed in simulation surgical training.

Fernando Amitrano, DVM (he/him/his)

Assistant Professor of Practice
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

[Faculty Profile](#)

In Vitro to In Vivo Extrapolation of Toxicant Effects on Ovarian Function

Approximately 7.5 million American women are unable to become pregnant or carry a baby to term (impaired fecundity). Any environmental exposure that causes damage to the ovarian follicle has the potential to impair fecundity in women. There is little available data on toxicant exposure and related mechanistic toxicology studies in the nonhuman primate, the closest laboratory animal model to humans. The student will work on generating lab-based data on the physiological and toxicant-induced behavior of ovarian follicles in both species, using phthalate as a model toxicant, to create computational models capable of effectively predicting ovarian follicle responses to chemical insults in nonhuman primates. The tight coupling of computational and lab-based domains will provide the needed communication pathways to develop translational models for IVIVE as well as cross-species extrapolations in reproductive toxicology.

Zelieann Craig, PhD

Associate Professor
Animal and Comparative Biological Sciences
THE UNIVERSITY OF ARIZONA

Faculty Profile

Veterinary Public Health Competencies

I am working on a task force of the Alliance of Veterinary Public Health Educators (AVPHE) to develop veterinary public health competencies for the veterinary curriculum. As part of this project, we plan to create and distribute a Delphi survey to veterinary practitioners to gather their input on veterinary public health competency needs for Day 1 ready veterinarians. Students will work on creating and distributing the Delphi survey. There will be two rounds of distribution and the student will be required to create the original survey, distribute the survey, analyze the responses, refine the survey based on the responses, and redistribute the survey. This is based on the methodology from a previous publication. The student would be co-mentored along with Dr. Rist.

Mentor will be remote, student will be working on Main Campus

Jennifer Wishnie, DVM, MSc, MPH, DACVPM (she/her/hers)

Associate Professor of Practice
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

Faculty Profile

Pharmacological and behavioral characterization of a novel brain permeable Cdk5 inhibitor

This project aims to comprehensively characterize the pharmacological and behavioral effects of a newly developed Cdk5 inhibitor (Umfress et al, Front Pharmacol 2022 12:13:863762) in preclinical mouse models. Cyclin-dependent kinase 5 (Cdk5) is a key regulator of neuronal function and has been implicated in various neurological disorders, including Alzheimer's disease, depression, and anxiety. By selectively inhibiting Cdk5 activity, this novel inhibitor could be a potential therapeutic intervention for these conditions. The project will utilize a range of behavioral assays in mouse models to assess the impact of the Cdk5 inhibitor on cognition, mood, and other relevant behaviors. Additionally, biochemical, and molecular assays may be employed to elucidate the underlying neural mechanisms responsible for any observed behavioral changes.

mentor lab is located within the College of Medicine in Phoenix

James Bibb, PhD

Chair, Department of Translational Neurosciences
THE UNIVERSITY OF ARIZONA

Faculty Profile

1000 Canine (1K-9) SARS-CoV-2 Surveillance Study

The purpose of this study is to learn more about how COVID-19 impacts dogs that live and work in different settings. Many studies have shown that dogs and other animals can be infected with SARS-CoV-2 (the virus that causes COVID-19), but there have not been any cases of dogs spreading the virus back to people. This study focuses on dogs and their life experiences related to COVID-19. This study will include dogs in Arizona that live and work in different places (e.g., pet dogs, dogs in shelters, therapy dogs, herding dogs, and police dogs). We hope that information from this study will help in developing new guidance that will prevent the spread of the virus to other dogs in the future.

mentor is not affiliated with UA, and is based in Flagstaff

Hayley Yaglom

Epidemiologist III
Pathogen and Microbiome Division
TGen

Faculty Profile

Formation of the human-equine bond during training of wild mustangs

This project will focus on the unique bonds created between horses and humans formed during training wild mustangs.

Luise King, DVM, PhD

Assistant Professor of Practice
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

Faculty Profile

Cognitive basis of flower foraging in bees

Bees are a model system for the study of cognition in invertebrates. This laboratory project involves evaluation of learning and sensory biases involved in acquiring nectar and/or pollen from artificial flowers. Students will engage in event recording of live bees in laboratory arenas and analyses of videos.

Daniel Papaj, PhD

Professor
Ecology and Evolutionary Biology
THE UNIVERSITY OF ARIZONA

Faculty Profile

THE UNIVERSITY OF ARIZONA
College of Veterinary Medicine

Immune Alterations During Reproductive Senescence

This project will evaluate changes in the immune system during chronological and reproductive aging in mouse models that have genetic risk factors for neurodegenerative diseases.

Kathleen Rodgers, PhD

Professor
Pharmacology
THE UNIVERSITY OF ARIZONA

[Faculty Profile](#)

Drug repurposing effect on regeneration of nerve, skin, intestine, and bone injuries: In-vivo and in-vitro models.

Our drug repurposing efforts have persisted toward treatment in addition to diagnosis. We have published relevant findings for the use of U.S. FDA-approved 4-aminopyridine (4-AP) and erythropoietin (EPO) in the treatment of peripheral nerve, skin, intestine, and bone injuries. With a focus on trauma and trauma-related injuries, we have begun clinical trials including: -Gaining approval and funding to pursue first-ever trials for 4-AP to diagnose nerve continuity in severely traumatized patients. -Exploring ways to address wound-healing problems with 4-AP.   -Initial translational work to use EPO for gastrointestinal problems ranging from postoperative ileus to ulcerative colitis and Crohn's disease in children.   These exciting projects show the possibilities of translating applied discoveries in health care to human populations in desperate need of treatments for untreatable conditions.

Prem Kumar Govindappa, PhD

Assistant Research Professor
Orthopedics
THE UNIVERSITY OF ARIZONA

Faculty Profile

Global distribution of animal and zoonotic tuberculosis & Understanding the role of environmental bacterial reservoirs for animal diseases

Two projects will be available: 1. Global distribution of animal and zoonotic tuberculosis   This project will include researching the literature and contributing for a systematic review to study the global distribution of both animal and zoonotic tuberculosis. The student will become familiar with the published literature, the research methods used, develop critical thinking skills, and make an intellectual contribution to the field.   2. Understanding the role of environmental bacterial reservoirs for animal diseases This project includes laboratory experiments to study if bacterial pathogens that cause animal diseases of societal importance can live in plants consumed by these animals. The project will involve lab experiments in BSL-2P. After training, the student will become familiar with biosafety protocols associated with a BSL-2P setting, take care of plants during the experiment, and participate in the data collection involving bacterial DNA/RNA extraction.

Liliana Salvador, PhD

Assistant Professor
Animal and Comparative Biomedical Sciences
THE UNIVERSITY OF ARIZONA

Faculty Profile

Colony-wide analyses of transgenic mouse models of Neurodegenerative Diseases

To address knowledge gaps regarding genetic risk penetrance and advance translatability of transgenic mouse models, we are utilizing a translational animal data management system recapitulating core aspects of human clinical trials: unique mouse IDs linked to all tissue samples and analytic outcomes. Transgenic mice carrying risk factors for Alzheimer's Disease, Parkinson's Disease, MS, and ALS are bred and longitudinally tracked for identification and analysis of susceptible and resilient subpopulations through population-level studies on monthly weights, clinical observations, and survival rates.

Roberta Diaz Brinton, PhD (she/her/hers)

Director
Center for Innovation in Brain Science
THE UNIVERSITY OF ARIZONA

Faculty Profile

The University of Arizona
College of Veterinary Medicine

Characterizing the Microbiome of Shelter Animals

The overall goal of this project is to establish a baseline gut microbiome of various types of shelter animals, and then assess alterations of the gut microbiome due to the presence of different enteric pathogens, different treatments for the enteric pathogens, or other commonly given non-treatment medications like antianxiety medication. Shelter animals often commonly harbor distinctive veterinary diseases not commonly seen in household pets that will often require unique medications to treat these infections. Furthermore, the kenneling of these animals leads to high levels of anxiety, this is often mitigated with antianxiety or other types of medications.   Working with shelter animals provides a unique opportunity to address our overall goal: understanding the gut microbiome and how infection and medications impacts it allows us to develop methods to promote better health and wellbeing of shelter animals.

Margarethe Cooper, PhD

Associate Professor of Practice,
Animal and Comparative Biomedical Sciences
THE UNIVERSITY OF ARIZONA

Faculty Profile

Insulin dysregulation: placental changes and foal health

Equine metabolic syndrome (EMS), characterized by insulin dysregulation, is the leading cause of laminitis, and is one of the most prevalent diseases facing equine practitioners. There is a gap in knowledge of the effects of maternal insulin dysregulation on short and long-term placental and foal health outcomes which hinder development of timely and appropriate interventions. This study will investigate the role that maternal EMS has on placental function and foal periparturient, metabolic and health outcomes to identify biomarkers of disease and to develop effective treatment and management strategies. Our overall approach is to compare histopathological scoring and gene expression in placentas of mares with and without EMS, and to identify associations between the mare's metabolic status, placental function, and foal health outcomes important to the equine industry.

Elaine Norton, DVM, MS, PhD, DACVIM-LA

Assistant Professor,
Animal and Comparative Biomedical Sciences
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

Faculty Profile

Development of molecular diagnostic assay

PCR Assay development for detection of infectious pathogens of animals

Yan Zhang, DVM, PhD, DACVM

Director,
Arizona Veterinary Diagnostic Laboratory
THE UNIVERSITY OF ARIZONA

Faculty Profile

Increasing Educational Access: Bridging the Technological Divide in Veterinary Sciences

The study is to determine the impact of Augmented Reality simulations on student engagement in veterinary sciences. We will track student engagement through eye and body movement, pre-post surveys and interviews on the extent the activities impact student interest and educational achievement. The hope is to pilot these activities with the HiVE students to scale up to offer activities to pre-vet students.

Athena Ganchorre, PhD

Assistant Dean, Diversity, Equity & Inclusion
Student Affairs
College of Veterinary Medicine
THE UNIVERSITY OF ARIZONA

Faculty Profile