OREGON NATIONAL PRIMATE RESEARCH CENTER

PROVOST SCHOLARS

Position Descriptions

Summer, 2025

Research that takes place at ONPRC/OHSU is undertaken to improve understanding of human health and disease. Animal models are essential in this pursuit, and applicants need to be aware that in certain cases invasive animal procedures are necessary. Ethical issues associated with research in humans and other animals can evoke strong controversy, yet animal research is presently our only means of answering certain critical questions that we hope will lead to improved therapies and/or cures for disease. Federal law mandates adherence to regulations that ensure our research procedures are both humane and justified in terms of their contribution to knowledge and medical practice. Persons who apply for apprenticeship positions at ONPRC should support the ethical conduct of animal research that is carried out in compliance with federal laws and regulations.

Mentor: Kristine Coleman, PhD
Oregon National Primate Research Center/OHSU: Division of Comparative Medicine and Neuroscience

Dr. Coleman oversees the Behavioral Services Unit (BSU) at the ONPRC. This unit is responsible for attending to the behavioral and psychological needs of the monkeys at our facility. Research in the BSU is focused on examining ways to reduce stress and improve psychological well-being for laboratory primates. Such studies have included how differences in behavioral inhibition (shyness vs. boldness) affect stress-sensitivity in macaques, how predictability affects behavioral management practices, mate selection behavior and dominance in group-housed animals, and the effects of density on group dynamics.

The student/intern will learn behavioral methodology, including the design and use of ethograms, how to use software specifically designed for behavioral observation, and statistical methods. S/he will also learn about ways to promote welfare for captive animals, including pets. Finally, s/he will learn species-specific monkey behavior and will have the opportunity to use operant conditioning (positive reinforcement) to train monkeys to cooperate with husbandry and research procedures.

Learn more about Dr. Coleman's research here.

Mentor: Kathleen Grant, PhD
Oregon National Primate Research Center/OHSU: Division of Neuroscience

Cognitive functions such as memory, cognitive flexibility, self-control, learning and attention enable an individual to achieve favorable outcomes throughout the lifespan. Alcohol use and abuse has negative consequences on the cognitive functions such as decision making. In the Grant laboratory, we use non-human primates to study alcohol-drinking behavior, effects of chronic alcohol intake on behavioral flexibility and whether assessment of the predisposition to acquire habitual behaviors in individuals might help to predict heavy alcohol use.

Summer undergraduate research assistants participate in experimental work that was designed to explore and compare cognitive flexibility in male and female non-human primates. They will learn about cognitive testing and experiment design in animal models and how the experimental results are translated to human alcohol use disorders. Specific experiences include data acquisition and post-experimental data analysis.

Learn more about Dr. Grant's research here.

Mentor: Meaghan Hancock, PhD
Vaccine and Gene Therapy Institute

Dr Hancock's lab is interested in understanding the molecular mechanisms mediating latent viral infections, focused specifically on cytomegaloviruses (CMVs), including understanding the host and virus mechanisms surrounding the establishment, maintenance and reactivation from latency. Human CMV is a common virus that infects greater than 50% of the world's population, and normally causes benign childhood illness. However, HCMV can cause serious congenital infections and is a significant cause of morbidity and mortality in immunosuppressed individuals, such as those undergoing solid organ or hematopoietic transplantation. Therefore, understanding the mechanisms of how the virus enters and exits latency is key to preventing and treating CMV infections. Current studies in the lab focus on defining the role of HCMV-encoded microRNAs (miRNAs) in mediating aspects of latency and reactivation. Projects employ molecular and biological techniques to examine the targets of viral miRNAs and how they affect latency and reactivation in novel in vitro culture systems. Techniques include cell culture, molecular cloning, transfections, qRT-PCR, western blotting and recombineering to create mutant viruses.

The student trainee will learn how to culture human cells and infect with viruses, techniques in molecular cloning, transfections, qRT-PCR, western blotting and recombineering to create mutant viruses.

Learn more about Dr. Hancock's research here.

Mentor: Meredith Kelleher, PhD

Oregon National Primate Research Center/OHSU: Division of Reproductive & Developmental Sciences

Dr. Kelleher's research focuses on problems that can occur during pregnancy that result in preterm birth and poor outcomes for babies. We utilize clinically relevant non-human primate pregnancy models that are translational to human health and disease with the aim of reducing the burden of disease and disability caused by complications that occur during early life development. Current studies center on the early stages and mechanisms of infection that can cause preterm birth and fetal brain inflammation. We are also exploring new therapies for the treatment of hypoxia-ischemic brain injury at the time of birth.

The intern will perform cellular and molecular studies to examine mechanisms of preterm labor and fetal injury. The teacher/intern will have the opportunity to participate in studies designed to quantify expression of genes of interest, concentrations proteins by Western blot, and cellular localization of protein expression using immunohistochemistry.

Learn more about Dr. Kelleher's research here.

Mentor: Trevor McGill, PhD

Casey Eye Institute and Oregon National Primate Research Center/OHSU: Division of Neuroscience

The McGill lab is focused on age-related and inherited retinal degenerative diseases that cause people irreversible loss of eyesight. The research program is divided into three closely intersecting research areas: 1) the generation and development of improved NHP models of human retinal disease, 2) the continued development of improved experimental cell and gene therapies for diseases of the retina, and 3) understanding the ocular immune system, its impact on the effectiveness of prospective cell and gene therapies, and novel methods by which the immune system can be circumvented. Each of these projects utilize a combination of in vitro techniques including cell culture and gene editing, in vivo techniques that include surgical administration of prospective cell or gene therapy, multimodal retinal imaging, and retinal electrophysiology, and ex vivo techniques to evaluate the efficacy and tolerability of therapies correlated with possible immune system reactions.

The student will have the opportunity to learn general laboratory techniques including cell culture, gene editing, and will work closely with NHP tissue performing histology and immunofluorescence techniques along with appropriate microscopy methods. The student may also have the opportunity to work in vivo with NHPs as a part of ongoing retinal imaging.

Mentor: Victoria Roberts, PhD

Oregon National Primate Research Center/OHSU: Division of Reproductive & Developmental Sciences

The overall goal of the Roberts laboratory is to understand normal pregnancy, and to develop tools that will identify pregnancies that are compromised by placental dysfunction. Specifically, the group focuses on developing non-invasive methods to study and understand the placenta during pregnancy, and to correlate in vivo function with in vitro analysis post-delivery. In vivo ultrasound and Magnetic Resonance Imaging (MRI) techniques implemented in nonhuman primate models of perturbation (e.g., maternal dietary manipulation, Zika virus infection, and low oxygen environment), are used in combination with tissue collection for in vitro analysis of placental structure and function. This approach facilitates correlation of blood flow to the placenta, as the main determinant of maternal supply, with how the placenta functions to optimize nutrient and oxygen exchange to meet the needs of the developing baby. The lab uses tissue and cell culture models to understand: 1) early structural development and function of the placenta using a 3-dimensional organoid model, and 2) the characteristic differences between varying ages of rhesus macaque fibroblasts throughout gestation, and their transition into induced pluripotent stem cells.

The student will have the opportunity to participate in these ongoing studies, using techniques to manipulate cell growth environments, quantitate the expression of proteins by Western blot, and examine cellular localization of protein expression using immunohistochemistry. In addition, the student will have the opportunity to learn microscope techniques and perform various characterization assays.

Learn more about Dr. Roberts' research here.

Mentor: Larry Sherman, PhD

Oregon National Primate Research Center/OHSU: Division of Neuroscience

Dr. Sherman's lab is focused on understanding ways to promote the repair of the damaged nervous system in a number of conditions including multiple sclerosis, Alzheimer's Disease, and following chemical insults including cancer chemotherapy drugs and heavy drinking. The Sherman lab discovered that a sugar molecule, called hyaluronan (HA), regulates how neural stem cells and progenitor cells differentiate and proliferate, and that abnormal synthesis and degradation of HA prevents nervous system repair. A major goal of the lab is to develop novel strategies to promote nervous system repair by altering the catabolism of HA. They are currently looking at gene therapy, stem cell-based therapies, and drug discovery approaches to achieve this goal. The successful candidate will be expected to actively participate in designing, performing and interpreting data from these experiments. Candidates will be included on any publications arising from their time in the laboratory.

Learn more about Dr. Sherman's research here.

Mentor: Rebecca Skalsky, PhD
Vaccine & Gene Therapy Institute

Dr. Skalsky's lab is focused on understanding how chronic virus infections, such as Epstein-Barr virus infection, lead to the development of lymphoproliferative disease and cancers including B cell lymphoma. Elucidating molecular mechanisms that participate in virus-host dynamics is essential in developing approaches to prevent and treat viral disease. Current studies are centered on defining the role of RNA interference and non-coding RNAs in anti-viral responses, virus persistence, and oncogenic processes. Ongoing projects employ genome-wide molecular, biochemical, and bioinformatics-based strategies to examine how non-coding RNAs critically impact cell-state transitions and govern aspects of the viral life cycle that contribute to pathogenesis.

The intern will learn a variety of RNAi-centric molecular, biochemical, and/or bioinformatics methods to experimentally investigate targets of non-coding RNAs, specifically those produced by EBV and the non-human primate homolog, rhesus LCV. Wet-lab techniques include cell culture, qRT-PCR, molecular cloning, immunoblotting, and luciferase assays. Dry-lab techniques include sequencing data processing, generating/implementing work-flows for RNA-seq analysis, and visualization of transcriptomics datasets.

Learn more about Dr. Skalsky's research here.

Mentor: Brandon Wilder, PhD
Vaccine & Gene Therapy Institute/OHSU

The Wilder Lab uses a broad range of laboratory techniques to address one of the world's oldest and deadliest diseases: Malaria. Our work at the Vaccine and Gene Therapy Institute at OHSU aims to advance our understanding of the immune response to malaria infection and to develop vaccines and therapeutics to help drive malaria towards eradication. We work closely with multiple labs across campus and we have implemented an insectary that allows us to grow mosquitos and infect them with the malaria parasite to recapitulate the entire life cycle. Our work ranges from completely in vitro (in petri dishes) to using mouse, humanized mouse, and non-human primate (NHP) models (in vivo). Current projects include: using NHP models to understand the immunology behind malaria infection and protection from infection; discovering antibodies that act in unconventional ways and kill the liver stages of the malaria parasite; and testing new vaccine candidates in NHPs.

Students will have the opportunity to learn the basics of propagating the malaria parasite through mice and mosquitos, mosquito handling and dissecting, immunological techniques such as ELISA, and general laboratory techniques including PCR, Western Blots, and molecular cloning. Interested students may have the opportunity to work with rodents and/or NHPs as part of ongoing vaccine efforts.

Learn more about Dr. Wilder's research here.


Oregon National Primate Research Center