OREGON NATIONAL PRIMATE RESEARCH CENTER

UNDERGRADUATE SUMMER FELLOWSHIPS

Position Descriptions

Summer, 2026

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: Verginia Cuzon Carlson, PhD
Oregon National Primate Research Center/OHSU: Division of Neuroscience

Research in the Cuzon Carlson laboratory focuses on how mature and developing neuronal circuits are modulated by drugs of abuse, particularly alcohol. Our long-term goal is to contribute to the understanding of addiction and fetal alcohol spectrum disorders in order to reveal novel routes of therapeutic interventions for individuals with FASD or struggling with alcoholism. We focus on brain areas such as the dorsal striatum that are involved in cognition, decision-making, and behavioral control that may contribute to addiction. The laboratory uses a multidisciplinary approach including molecular biology techniques, patch clamp electrophysiology, genetic approaches using optogenetics and transgenic mouse lines, and behavioral paradigms to address our two overarching questions.

Our first area of emphasis is to understand the neural mechanisms that underlie the transition from acute drug exposure to chronic exposures that lead to addiction, tolerance, and dependence. To this end we want to gain a better understanding of the cellular and molecular mechanisms of GABAergic and glutamatergic synaptic plasticity in the striatum, its role in action-outcome and stimulus-response learning that we hypothesize plays a role in the development of addiction. The effects of chronic ethanol exposure have been examined in multiple animal models including “Drinking in the Dark” and chronic intermittent exposure to ethanol via vapor in mice, as well as ethanol drinking for over a year in a non-human primate model. From these studies, it has been revealed that the GABAergic system in the dorsal striatum is particularly susceptible to the effects of ethanol. Using to advantage transgenic mouse lines as well as optogenetic and chemogenetic technology we test the hypothesis that specific GABAergic synapses are more susceptible to the effects of ethanol exposure than others within the subregions of the dorsal striatum and that by manipulating these circuits we can alter the operant responding to ethanol.

The second question examines the development of dorsal striatal circuitry and how teratogens, such as alcohol, disrupt normal circuit development. For this project, we use a mouse model that mimics exposure to ethanol spanning the entire human gestational period. We examine the effect of fetal alcohol on the GABAergic and glutamatergic neurotransmission and synaptic plasticity of the dorsal striatum as well as their contribution to behavioral abnormalities observed in Fetal Alcohol Spectrum Disorder such as altered decision-making processes, are determined.

Fellowship candidates should anticipate working directly with mice, analyzing large data sets, be computer literate, and have budding interests in animal behavior, brain circuitry, and addiction research.

Learn more about Dr. Cuzon Carlson’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 have negative consequences on 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: Meredith Kelleher, PhD
Oregon National Primate Research Center/OHSU: Division of Reproductive & Developmental Biology

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 projects.

Mentor: Afam Okoye, PhD
Vaccine and Gene Therapy Insititute/OHSU

There are an estimated 38 million people worldwide are currently living with human immunodeficiency virus (HIV) infection, with 1.2 million people living with HIV in the USA. Although antiretroviral therapy (ART) can suppress virus replication, it cannot cure the infection. Dr. Okoye's lab is focused on understanding the barriers to achieving a cure for HIV infection and developing therapeutic interventions to limit the need for lifelong ART in people living with HIV. Current studies are centered on utilizing the nonhuman primate model of simian immunodeficiency virus (HIV) infection to identify where the virus persists during ART and determine where and how the virus reactivates after ART is stopped. Additional projects involve the use of immunotherapy and/or therapeutic vaccines to improve anti-viral immunity during ART to determine whether this can provide for remission from virus replication after ART is stopped.

The teacher/intern will learn to perform flow cytometry assays and how to analyze and process immunological data, including how to mine and graph data for meaning. Additional techniques include the isolation, quantification and freezing of immune cells from study samples and running assays on cells and fluids.

Learn more about Dr. Okoye's research here.

Mentor: Rebecca Skalsky, PhD
Vaccine & Gene Therapy Institute/OHSU

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.