



OREGON NATIONAL  
PRIMATE  
Research Center

## OREGON NATIONAL PRIMATE RESEARCH CENTER

### PROVOST SCHOLARS

#### *Position Descriptions*

#### Summer, 2020

*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: Anna Roe, PhD**

*Oregon National Primate Research Center/OHSU: Division of Neuroscience*

How does the brain produce perception, thought, and behavior? The laboratory of Anna Roe studies how the functional modules of the cerebral cortex (roughly 200 um in size) underlie visual and tactile perception and mediate goal directed behavior. The lab's experimental approaches include the use of implanted 'windows on the brain', intrinsic optical imaging, single and multielectrode recording arrays, anatomical tracing techniques, intracortical brain stimulation with electrical, optogenetic and near infrared laser methods, fMRI, and visual and tactile illusions. The lab is very interested in technology development and brain-machine interfaces. One goal of this combined behavioral, functional, anatomical, and neuroengineering approach is in the development of future mind-machine interfaces that can restore or enhance function after injury.

*Fellowship candidates should anticipate working on analyzing large data sets (imaging, electrophysiological, and/or anatomical), be computer literate, and have budding interests in animal behavior, brain circuitry, and perception. Candidates with neuroscience, psychology, and/or engineering background and excellent computer skills are preferred.*

Learn more about the research being conducted by Dr. Roe at  
<http://www.ohsu.edu/xd/research/centers-institutes/onprc/scientific-discovery/scientists/Anna-Wang-Roe.cfm>

**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 at*

<http://www.ohsu.edu/people/larrysherman/02b1371a44e64745adee23343fdf439a>

**Mentor: Elinor Sullivan, PhD**

*Oregon National Primate Research Center/OHSU: Division of Neuroscience*

The Sullivan lab studies the influence of the environmental factors (maternal nutrition, maternal obesity, maternal stress) during gestation on offspring brain development and behavior. The primary focus is examining the influence of the metabolic and dietary environment on behavioral regulation with an emphasis on behaviors related to mental health and behavioral disorders, including anxiety, depression, attention deficit hyperactivity disorder (ADHD), and autism spectrum disorders (ASDs). One specific focus is the impact of exposure to maternal obesity and high-fat diet consumption during the perinatal period on the behavior, and physiology of the developing offspring using a non-human primate model.

*Students will learn about the fields of behavioral neuroscience and developmental origins. Specifically, students will learn about non-human primate behavior, methodologies for quantifying behavior, software for behavioral coding and statistical analysis. Opportunities will also be available to learn cellular and molecular techniques such as immunohistochemistry.*

Learn more!

<https://www.ohsu.edu/people/elinorsullivan/afe032779b02189f056c5fcf1bc79985>

**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. We recently joined the Vaccine and Gene Therapy Institute at OHSU to expand the vaccine efforts on the West Campus to include malaria research. We work closely with the Frueh lab to design novel vaccine candidates using the cytomegalovirus (CMV) vaccine platform in search of an effective malaria vaccine, and have implemented an insectary to allow for the generation of mosquito stages of the malaria parasite and other mosquito-based research. Our work ranges from completely in vitro (in a test tube) to using mouse and non-human primate (NHP) models (in vivo) and working with

mosquitoes. Current projects include: developing a NHP model for the relapsing human malaria, *Plasmodium vivax*; discovering antibodies that act within liver cells to target parasites; testing a vaccine candidate in NHPs; addressing limitations in our understanding of hypnozoite (dormant parasites in the liver) formation; and learning how gametocytes (sexual stage transmitted to mosquitoes) are infectious after relapse malaria.

*Students will have the opportunity to learn the basics of malaria culture, mosquito rearing and experimental techniques, 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 at: <https://www.ohsu.edu/vaccine-gene-therapy-institute/brandon-wilder-phd>

