

Faculty from the University of Washington and Fred Hutchinson Cancer Research Center participating in UW PREP program during the 2024-2025 academic year.

University of Washington

Biochemistry and Chemistry

David Baker, Ph.D. The Baker research group investigates how to predict the structures of naturally occurring biomolecules and interactions and to design new molecules with new and useful functions.

<http://www.bakerlab.org/>

Matt Bush, Ph.D. The Bush laboratory focuses on using mass spectrometry to understand the assembly and structures of large multiprotein complexes.

<http://depts.washington.edu/chem/people/faculty/bush.html>
<https://biophysicalms.org/>

Thelma Escobar, Ph.D. We are working to develop the next generation of diverse scientists with the intent to uncover the fundamental features of cellular identity and epigenetic inheritance

<https://sites.uw.edu/escobart/>

Rachel Klevit, Ph.D. The Klevit research group is directed towards an understanding of molecular recognition, with an emphasis on protein-protein interactions that play important roles in cancer and other human disease.

<https://www.klevitlab.org/>

Gabriele Varani, Ph.D./PREP Program Director. The Varani research group studies how proteins and ribonucleic acids interact with each other.

<http://depts.washington.edu/chem/people/faculty/varani.html>

Bioengineering

Pat Stayton, Ph.D. and Director, Molecular Design Institute, Director IMSD. The Stayton research group develops new biologic drug treatments and new diagnostic technologies.

https://bioe.uw.edu/portfolio-items/stayton/?_gl=1*8s9d5o*_ga*MTEoMDcxOTMyNS4xNzAwNTAxMTQ5*_ga_3T65WKOBM8*MTcwMDUwMjk2NC4yLjEuMTcwMDUwMzAyNi4wLjAuMA..*_ga_JLHM9WH4JV*MTcwMDUwMjk2NC4yLjEuMTcwMDUwMzAyNi4wLjAuMA..

Kelly Stevens, PhD. Our research seeks to hijack and rewire aspects of nature's developmental programs to control the processes by which cells assemble to form human systems. To do this, we use diverse tools taken from stem cell biology, tissue engineering, synthetic biology, micro/nanofabrication, and bioprinting.

https://bioe.uw.edu/portfolio-items/kelly-stevens/?_gl=1*131a76e*_ga*MTI3NjE4NjQzLjE3MDExMDYyNDA.*_ga_3T65WKOBM8*MTcwMTEwODQyOC4yLjEuMTcwMTEyMzM5My4wLjAuMA..*_ga_JLHM9WH4JV*MTcwMTEwODQyOC4yLjEuMTcwMTEyMzM5My4wLjAuMA..

Biological Structure

David Raible, PhD. The Raible lab is interested in how, during embryonic development, cells of the nervous system acquire their specific fates, so that they display the distinct characteristics necessary for their proper function.

<https://faculty.washington.edu/draible/>

Dept of Biological Structure and Washington National Primate Research Center

Wyeth Bair., Ph.D. My lab studies the neural encoding of sensory information in the primate visual system. We use artificial neural networks from machine learning as models to inspire novel and more effective experimental approaches in NHPs. We also are testing and developing novel multi-photon imaging approaches that aim to facilitate connectomics studies of the macaque visual cortex in collaboration with the Allen Institute for Brain Science.

https://sites.uw.edu/biostr/people/faculty/wyeth-bair/?_gl=1*16ws4tb*_ga*Njg3OTYxMjU1LjE2OTY1MjM1Mzg.*_ga_3T65WKOBM8*MTY5NjUzNTMyNS4zLjAuMTY5NjUzNTMyNS4wLjAuMA..*_ga_JLHM9WH4JV*MTY5NjUzNTMyNS4zLjAuMTY5NjUzNTMyNS4wLjAuMA..

Anitha Pasupathy, Ph.D. My lab investigates the neuronal basis of visual shape representation and object recognition in the awake, behaving monkey. We use high-density electrode recordings, computational modelling, behavioral manipulations and perturbation of brain activity by cooling, to ask how visual stimuli are represented in the mid and high level stages of the monkey brain and how these signals support our ability to recognize visual objects.

<https://depts.washington.edu/shapelab/home>

Biology

Horacio de la Iglesia, Ph.D. Our laboratory is interested in understanding how neural systems encode time and generate rhythmic physiological and behavioral outputs to adapt to the temporal structure of the environment. We use a comparative approach that capitalizes on animal models that range from the laboratory mouse to humans.

<https://www.biology.washington.edu/people/profile/horacio-de-la-iglesia>

Alexander Paredez, Ph.D. The Paredez research group focuses on the evolution at the molecular level of *Giardia* and on the different treatment options.

<http://paredezlab.biology.washington.edu/>

Comparative Medicine and Institute for Stem Cell and Regenerative Medicine

Julie Mathieu, Ph.D. Dr. Mathieu's research focuses on the factors governing cell fate decision in normal and pathological conditions. Her main goal is to understand how cancer cells exploit some of the unique properties of stem cells, such as self-renewing capacities and reliance on glucose as a source of energy.

<https://www.washington.edu/compmed/facultystaff/faculty-directory/julie-mathieu/>

Genome Sciences

William Stafford Noble, Ph.D. Our research group develops and applies computational techniques for modeling and understanding biological processes at the molecular level.

<https://noble.gs.washington.edu/>

Willie Swanson, Ph.D. The Swanson research group investigates a recurring observation in the study of reproductive proteins is their rapid, adaptive evolution.

http://depts.washington.edu/swansonw/Swanson_Lab/Overview.html

Medicine

Thomas Hawn, M.D./Ph.D. The Hawn lab is investigating immunologic mechanisms of disease pathogenesis with an emphasis on genetic, cellular, and molecular studies of the innate immune response.

<https://cerid.uw.edu/lab/hawn-lab>

Medicinal Chemistry

William Atkins, Ph.D. The Atkins research group focuses on the structure-function mechanism of glutathione S-transferases and cytochrome P450; they also investigate protein engineering of supramolecular aggregates.

<http://depts.washington.edu/wmatkins/ATKINSLAB/AtkinsLab.html>

Abhinav Nath, Ph.D. Abhi and his group are developing new and powerful methods to characterize and control protein dynamics, building on recent advances in biophysics, biochemistry and pharmacology from groups around the world. They focus on proteins involved in degenerative disorders (such as Alzheimer's disease), the oxidative stress response, and drug metabolism.

<http://faculty.washington.edu/anath/>

Medical Genetics

Paul Valdmanis, Ph.D. The Valdmanis lab studies genetic risk factors for neurodegenerative diseases such as Alzheimer's disease and Amyotrophic Lateral Sclerosis and gene therapy methods for therapeutic intervention.

<https://sites.google.com/view/valdmanislab>

Libin Xu, Ph.D. The Xu research group focuses on the role of lipid metabolism in human diseases, focusing on neurodevelopmental disorders and antibiotic resistance in bacteria; lipidomics by mass spectrometry; drug metabolisms.

<http://faculty.washington.edu/libinxu/>

David Hawkins Ph.D. Our research aims to understand the role the epigenome plays in determining cell fates. In this context, we employ computational and genome-wide methods to study histone modifications, DNA methylation, 3D genome architecture and expressed coding and non-coding RNAs, which are highly informative about gene regulation. We are also investigating how disease-associated variants at *cis*-regulatory elements alter activity and contribute to disease.

<https://www.hawkinslab.org/>

Microbiology

Michael Lagunoff, Ph.D. The Lagunoff research group studies the molecular biology of Kaposi's Sarcoma-associated Herpesvirus (KSHV) and the virally induced alteration of host cell metabolism.

<http://microbiology.washington.edu/users/michael-lagunoff>

Jason G. Smith, Ph.D. The Smith Lab is interested in uncovering the molecular mechanisms by which defensins modulate non-enveloped viral infection and understanding the role of these molecules in viral pathogenesis in vivo.

<http://faculty.washington.edu/jgsmith2/Welcome.html>

Joshua John Woodward, Ph.D. Research in the Woodward laboratory is focused on elucidating the interactions of bacterial pathogens with their hosts.

<https://www.woodwardlab.org/>

Shiu-Lok Hu, Ph.D. The Hu research group focuses on HIV pathogenesis and approaches for the prevention and treatment of AIDS.

<https://microbiology.washington.edu/users/shiu-lok-hu>

Pathology

Marshall Horwitz, M.D./Ph.D. and Director, MSTP. The Horwitz research group focuses on the genetic factors predisposing to hematopoietic malignancy and the clonal evolution of cancer.

<http://www.pathology.washington.edu/faculty/horwitz>

Pediatrics

Bruce E. Torbett, Ph.D., MSPH. The Torbett Lab studies HIV entry, evolution, and assembly at the genomic, biochemical and structural levels, as well as human hematopoietic stem cell resistance of HIV lentiviral vector entry.

<https://torbettlab.org/>

Pharmacology

Ning Zheng, Ph.D. The Zheng research group focuses on a superfamily of multi-component protein machines, known as cullin- RING ubiquitin ligases.

<http://depts.washington.edu/zhenglab/>

Richard Gardner, Ph.D. The Gardner research group focuses on how the cell regulates protein function through post-translational modifications.

<http://depts.washington.edu/phcol/faculty/gardner.php>

Garrett Stuber, Ph.D. The work of my lab studies the precise neural circuits that control both reward and aversive-related behavioral responses. By utilizing optogenetics, calcium imaging, and single cell sequencing, we aim to delineate the precise functional interactions between molecularly distinct neuronal populations that are critical for the generation of these critical behavioral states.

<https://pharmacology.uw.edu/team-member/garrett-stuber-phd/>

Larry Zweifel, Ph.D. The main focus of my research efforts are to define how specific genes influence neuronal connectivity and function within neural circuits that regulate innate and motivated behaviors with a special emphasis on genes linked to psychiatric disorders such as schizophrenia and depression.

<https://zweifellab.org/>

Fred Hutchinson Cancer Research Center

Basic Science

Sue Biggins, Ph.D. The Biggins Lab uses budding yeast to study chromosome segregation, the process by which chromosomes are distributed to new cells during cell division.

<http://research.fhcrc.org/biggin/en.html>

Jesse Bloom, Ph.D. The Bloom lab uses a combination of experiments and computation to study the evolution of viruses.

<https://research.fhcrc.org/bloom/en.html>

Jonathan Cooper, Ph.D. The Cooper Lab investigates proteins involved in the signaling pathways that allow cells to communicate with each other.

<http://research.fhcrc.org/cooper/en.html>

Michael Emerman, Ph.D. The Emerman Lab studies the molecular and evolutionary basis for the replication of HIV and related viruses, with an emphasis on the interaction of these viruses with their host cells.

<http://research.fhcrc.org/emerman/en.html>

Meghan Koch, Ph.D. We study maternal-fetal interactions, focusing on immunity, metabolism and the microbiota.

<https://research.fredhutch.org/koch/en/research.html>

Harmit Malik, Ph.D. The Malik Lab hunts for rapidly evolving proteins in order to understand how conflicts between genes affect human evolution.

<http://research.fhcrc.org/malik/en.html>

Barry Stoddard, Ph.D. The Stoddard Lab studies the structure and mechanism of enzymes, the body's catalysts of biological reactions, in order to harness them for use in biotechnology and medicine.

<http://research.fhcrc.org/stoddard/en.html>

Jihong Bai, Ph.D. The Bai Lab studies neuron communication at the molecular, cellular, and circuit levels.

<https://research.fhcrc.org/bai/en/lab-members.html>

Susan Parkhurst, Ph.D. The Parkhurst Lab uses multidisciplinary approaches to study dynamic cytoskeleton elements in wound repair and nucleoskeleton elements in global nuclear architecture/organization.

<http://research.fhcrc.org/parkhurst/en.html>

Gerry Smith, Ph.D. The Smith Lab studies DNA break repair and genetic recombination. Our goals are to determine the structures of DNA intermediates, the proteins and enzymes involved, and how they are controlled to promote recombination.

<https://research.fhcrc.org/smith/en.html>

Clinical Research

Peter Nelson, Ph.D. In the Peter Nelson Lab, investigators are working to uncover how prostate cancer forms.

<https://research.fhcrc.org/peternelson/en.html>

Human Biology

Denise Galloway, PhD. The Galloway Lab studies the mechanisms by which human papillomaviruses contribute to cancer, with an emphasis on types most likely to progress to cervical cancer.

<http://research.fhcrc.org/galloway/en.html>

Julie Overbaugh, PhD. The Overbaugh's laboratory has a long-standing interest in understanding the mechanisms of HIV transmission and pathogenesis.

<http://research.fhcrc.org/overbaugh/en.html>

Nina Salama, Ph.D. The Salama lab creates resources that may aid in drug discovery for treating bacterial infections associated with gastric cancer.

<http://research.fhcrc.org/salama/en.html>

Adam Geballe, M.D. The Geballe lab investigates the mechanisms by which large DNA viruses, such as human cytomegalovirus, are able to thwart host cellular defense systems.

<http://research.fhcrc.org/geballe/en.html>.

Program in Immunology

Aude Chapuis, M.D. Dr Chapuis is an oncologist who sees patients in the Bone Marrow Transplant and Immunotherapy services. She leads a laboratory employing a translational pipeline to improve T cell receptor (TCR) gene-engineered immunotherapy.

<https://research.fredhutch.org/chapuis/en.html>

Mark Headley, Ph.D. Our goal is to understand how dynamic interactions at the level of individual cells influence disease. We currently are focused on understanding how cells of the immune system participate in the process of lung metastasis of cancer (the spread of tumor cells from primary cancer sites to the lung).

https://research.fredhutch.org/headley/en.html?_ga=2.116671430.1524107385.1579214811-176338247.1537227993

Public Health Sciences

Paul Lampe, Ph.D. The Paul Lampe Lab attempts to discover early detection cancer biomarkers and investigates the control of cell growth at the cell biology level.

<http://research.fhcrc.org/lampe/en.html>

Vaccine AND Infectious Disease Division

Martin Prlic, Ph.D. The Prlic Lab primarily studies T cell and innate-like T cell responses in mucosal tissues with a particular interest in understanding how these cells function in different inflammatory environments including infections and cancer.

<https://research.fhcrc.org/prlic/en.html>

Justin J. Taylor, Ph.D. The Taylor lab aims to inform vaccine design by gaining a deeper understanding about the mechanisms limiting the generation of a protective B cell response.

<https://ciiid.washington.edu/people/justin-j-taylor-phd>