Research Electives

Developmental Biology Research Electives

During the fourth year, opportunities exist for many varieties of advanced clinical or research experiences. Research in the Department of Developmental Biology occurs in a highly collegial atmosphere and involves interdisciplinary collaborations between the members of the department as well as among investigators from different departments and centers throughout the School of Medicine, the College of Arts & Sciences, and the McKelvey School of Engineering. Developmental biology faculty have leading roles in several research centers, including the Center of Regenerative Medicine (https://regenerativemedicine.wustl.edu/), the Center for the Investigation of Membrane Excitability Diseases (https://sites.wustl.edu/cimed/), the Center for Cardiovascular Research (https://cardiovascularresearch.wustl.edu/), and the Hope Center (https://hopecenter.wustl.edu/). The department has a rich tradition of mentoring undergraduate, graduate and medical students as well as postdoctoral fellows. We are committed to creating a research environment in which our trainees reach their maximum scientific potential and career goals while addressing key outstanding questions and making important discoveries.

Douglas F. Covey, PhD
355 McDonnell Medical Sciences Building
Phone: 314-362-1726
Medicinal chemistry of steroids.

Aaron DiAntonio, MD, PhD
6301 Couch Biomedical Research Building
Phone: 314-362-9925
Neurodevelopment, neurodegeneration, and axon regeneration in Drosophila and mouse.

Geoff Goodhill, PhD
903A McDonnell Medical Sciences Building
Phone: 314-273-7691
The Goodhill Lab's overall goal is to understand the computational principles that underlie brain development using a combination of experimental and theoretical approaches. Previously, the lab has studied how growing nerve fibers detect and respond to molecular gradients to find their targets and how visual experience affects the development of maps in the developing brain. Currently, we are using the larval zebrafish as a model to understand the links between the development of patterns of brain activity and complex behaviors and to study how the development of brain and behavior is altered in autism spectrum disorders.

Shin-ichiro Imai, MD, PhD
362A McDonnell Medical Sciences Building
Phone: 314-362-7228
Molecular mechanisms of aging and longevity in mammals, particularly focusing on the tissue-specific functions of the mammalian NAD-dependent deacetylase Sirt1 and the physiological significance of systemic NAD biosynthesis mediated by Nampt (nicotinamide phosphoribosyltransferase) in an intimate connection between metabolism and aging.

Aaron N. Johnson, PhD
3602 Cancer Research Building
Phone: 314-273-1834
Molecular mechanisms of muscle development and regeneration.

Kerry Kornfeld, MD, PhD
3607 Cancer Research Building
Phone: 314-747-1480
Signal transduction during development; zinc metabolism; aging.

Kristen Kroll, PhD
320 McDonnell Medical Sciences Building
Phone: 314-362-7045
Transcriptional networks that regulate the formation of neurons in early embryos and embryonic stem cells; role of chromatin regulatory complexes in controlling pluripotency and differentiation.

Helen McNeill, PhD
305 McDonnell Medical Sciences Building
Phone: 314-273-3050
Our lab interests are focused on the cadherin family of molecules and their regulation of cellular polarity, growth, tissue organization and metabolism. The overall goal of our research is to understand how tissue growth and tissue organization are coordinated regulated. We are focusing on how Fat cadherins function in Hippo pathway-regulated growth control, planar cell polarity tissue organization, and metabolism in flies, mice and hydra. A second, new focus is studying how the nuclear envelope regulates gene expression and fertility.

Craig Micchelli, PhD
328 McDonnell Medical Sciences Building
Phone: 314-362-7036
Our lab studies the regulation of stem cell biology in development, homeostasis and disease.

Mayssa Mokalled, PhD
3601 Cancer Research Building
Phone: 314-273-1835
Spinal cord injury, degeneration and regeneration in zebrafish and mouse.

Samantha Morris, PhD
3316 Couch Biomedical Research Building
Phone: 314-747-8618
The focus of this lab is on stem cell and developmental biology. Our research focuses on dissecting the gene regulatory networks that define cell identity using the developing embryo and tissue regeneration as guides to engineer fate in vitro.

Jeanne M. Nerbonne, PhD
9900 Clinical Sciences Research Building
Phone: 314-362-2564
Structure, function and regulation of voltage-dependent ion channels in the cardiovascular and nervous systems; regulation of membrane excitability in health and disease.

David M. Ornitz, MD, PhD
3902 South Building
Phone: 314-362-3908
Regulation of cardiovascular, lung, skeletal, and inner ear development, injury response, and regeneration by fibroblast growth factors.

Liz Pollina, PhD
3830 North Medical Building
Phone: 314-362-7054
The Pollina Lab is broadly interested in identifying the molecular mechanisms that preserve longevity across the diverse cell types of the nervous system.

Lila Solnica-Krezel, PhD
3911A South Building
Phone: 314-362-8768
Genetic regulation of vertebrate embryogenesis; genetic mechanisms that regulate cell fates and movements during early vertebrate development using forward and reverse genetics in the zebrafish model and human embryonic stem cells.

Thorold W. Theunissen, PhD
3313 Couch Biomedical Research Building
Phone: 314-362-7054
The Theunissen lab seeks to understand the molecular mechanisms that regulate pluripotent stem cell states and to develop optimal conditions for the derivation, maintenance and differentiation of human ESCs and iPSCs. We also explore whether naive pluripotent stem cells can be used to model early human development and disease.

Tony Tsai, PhD
333 McDonnell Medical Sciences Building
Phone: 314-362-7054
The Tsai lab is interested in control principles of tissue patterning and morphogenesis during embryo development. We seek to understand how cells integrate biochemical and mechanical inputs to make reliable decisions on what cell types they become, where they migrate, and what structure they collectively build.

Andrew Yoo, PhD
361E McDonnell Medical Sciences Building
Phone: 314-362-1811
Cell fate control by microRNAs; neuronal reprogramming to generate human neurons; chromatin controlling factors and genetic pathways that regulate neurogenesis.