



LOMA LINDA UNIVERSITY

School of Medicine

SURF Mentors 2025*

Key:

= computer-based (dry lab) projects

+ = projects have element of both bench (wet lab) and dry lab

= predominantly bench (wet lab) projects

= projects may involve animal work or use animal tissues or cells

Anatomy

Kerby Oberg

The molecular basis of limb outgrowth, patterning, asymmetry, and regeneration. Examining cis-regulatory modules (non-coding DNA involved in regulating nearby target genes) involved with regulating the signaling centers that control the three axes of limb asymmetry. + , (chick embryos)

Biochemistry

Danilo Boskovic

Bacterial effects on platelet functions. Switching between platelet roles in infection, inflammation or hemostasis.

+

Juli Unternahrer

Stem cells that cause recurrence of ovarian cancer using molecular biology and cell biology approaches to study the role of an embryonic program called epithelial-mesenchymal transition in making ovarian cancer cells more aggressive. +

Biomedical Engineering Sciences

Reinhard Schulte

Using biomedical engineering methods to study the effects of radiation on biological systems:

- 1) Lactic acid radiosensitization of cardiac cells to understand mechanisms of radiation-induced cardiac injury and potential therapeutic strategies to mitigate them. +
- 2) Development of a volatile organic compound detector for the diagnosis of cancer therapy and the monitoring of cancer treatment. +
- 3) Investigation of exosome transport of boron neutron capture therapy compounds with affinity for glioblastoma cancer stem cells. +
- 4) Experimental and computational nanodosimetry, including the measurement and simulation of energy deposition and the damage caused by ionizing radiation at the nanometer scale. +
- 5) FLASH (ultrahigh dose rate) radiation therapy studies with plasmid DNA to examine the effects of ultra-high dose rate radiation on DNA damage and repair. +

Cancer Sciences

Christian Hurtz

Identifying and establishing personalized treatment approaches for acute lymphoblastic leukemia that are less toxic than commonly used chemotherapeutics. 🖥️+👤, 🧪

Rameshwar Patil

Developing targeted nanodrugs and nanoparticles for brain tumor treatment and their investigation in in vitro (cell culture) and in vivo (animal models of brain tumors). 🖥️+👤, possibly 🧪

Microbiology and Molecular Genetics

Kylie Watts

Determining how *Pseudomonas* Aer2 chemoreceptors sense and signal the environment in response to dual independent ligands using an *E. coli* motility hijack model. 🖥️+👤

Pharmacology

Abu Ahmed

Investigating how hypoxia influences the remodeling of pulmonary artery smooth muscle cells and contributes to the onset of pulmonary hypertension. 🖥️+👤, 🧪

Sean Wilson

- 1) Exploring the impact of high-altitude hypoxia on developmental regulation of various tissues, including the development of novel biomarkers in hypoxia-related cardiovascular disease of the neonate. 🖥️+👤, 🧪 tissues
- 2) Using microscopy and computational biology to examine changes in cell signaling. 🖥️+👤, 🧪 tissue
- 3) Exploring how a nationwide in-school cycling education program has positive impact on youth mental health and wellness. 🖥️

DaLiao Xiao

Determining the effect of maternal e-cigarette exposure during pregnancy on fetal cardiovascular and brain development and the potential role of epigenetic molecular mechanisms underlying e-cigarette exposure-induced neuron- and cardio-vascular dysfunctional phenotype in offspring. 🖥️+👤, 🧪

Physiology

Arlin Blood

Determining whether the vagus nerve helps to orchestrate development of the lungs and brainstem in fetal sheep during the third trimester of pregnancy. 🧪, 🧪 tissue

David Hessinger

The role of ion channels in controlling nematocyst discharge in sea anemone tentacles using patch-clamp electrophysiology and/or bioinformatics. 🖥️, 🧪, 🧪 (sea anemones)

Chris Wilson

Understanding cardiac and respiratory control in developing humans and animals using natural, bioelectric stimulation (in contrast to traditional drug therapy) for treating inflammation in pulmonary and cardiovascular disease. 🖥️, 🧪, 🧪

**You may list an alternative LLU faculty member on your SURF application if that faculty member has agreed to mentor you in the event that your SURF application is successful.*