LOMA LINDA UNIVERSITY
School of Medicine

SURF Mentors 2024*

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 embyos)

Biochemistry

Christopher Perry

1) The fate and transport of contaminants associated with plastic debris in aqueous, soil, and sediment environments. Extracted micro- and nano-plastics will be screened for pesticides and organic contaminants using vibrational spectroscopy and mass spectroscopy. 💻+✋
2) Designing novel metal oxide catalysts for visible light degradation of microbial biofilms and organic contaminants. 💻+✋

Nathan Wall

1) Using radiation bystanders to explore how low dose radiation affects communication between cells via exosomes (tiny vesicles released by cells). 💻+✋
2) Developing new methods for the early detection and monitoring of colon cancer recurrence and progression using liquid biopsy with a particular emphasis on metastatic forms like peritoneal carcinomatosis. 💻+✋

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 Science

Christian Hurtz

Identifying and establishing personalized treatment approaches for acute lymphoblastic leukemia that are less toxic than commonly used chemotherapeutics. 💻+🖐, 💪

Perinatal Biology

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. 💻

Pharmacology

Erik Behringer

The fundamental and therapeutic mechanisms underlying optimal brain perfusion and cognition throughout life using comprehensive molecular and cellular analyses. 💻+🖐, 💪

Physiology

David Hessinger

The roles of voltage-gated ion channels in satiety and in adaptation to chronic hypoxia. 💻, 🖐, 💻+🖐

**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.*