Faculty Name: Katja Brückner

Email: katja.brueckner@ucsf.edu

Phone Number: 415 476 3827

Department/Organization Affiliation: UCSF, Broad Center, Cell and Tissue Biology https://bruecknerlab.ucsf.edu

Preferred Method of Contact: email

Project Name(s): Neuronal regulation of self-renewing macrophages in the Drosophila model

General Topic (Keywords):

microenvironment, sensory stimulus, peripheral nervous system, blood cell, self-renewing macrophage, hematopoiesis, cell proliferation, cell adhesion, adaptation, signal transduction, Trp channels, model organism research, Drosophila melanogaster (fruitfly)

Project Description(s):

The Brückner laboratory at UCSF offers a summer project that investigates the nervous system as microenvironment of self-renewing macrophages. One of the outstanding questions in animal development and tissue homeostasis is how extrinsic sensory stimuli regulate signaling cascades and biological responses in stem cell niches and tissue microenvironments that lead to adaptation. Self-renewing macrophages provide important support during development and regeneration in many species. A similar population of macrophages has been identified in the model organism Drosophila melanogaster (fruitfly), where a functional dependence on the peripheral nervous system was found. The Brückner lab investigates this relationship by the following approaches. 1) Examine the biological effects of neuronal activation by a chemical agonist and a natural neuronal stimulus on macrophage behaviors. 2) Determine the molecular role of Trp channels, known to mediate a variety of sensations, in neuron-induced macrophage behaviors. 3) Pursue transcriptome analysis of neuron-induced molecular changes in macrophages, to identify specific transcription factors and/or upstream signaling pathways targeted by this regulation.
Desired Skills or Experience: Previous lab experience required, some experience with *Drosophila* preferred.

Time Commitment: Typically 2-3 months over the summer.

Preferred Starting Date: flexible