

BCHM 421/422 – 2018/2019

Project Outline: The goal of our work is to understand the contribution of circadian rhythms to nociception (or painful stimuli). In this project, we hope to isolate and profile sensory neurons at specific times of day.

Supervisor: Dr. Nader Ghasemlou

Project Title: Profiling circadian rhythms in sensory neurons

Keywords (3-5):

- 1. Circadian rhythms**
- 2. Pain**
- 3. Flow cytometry**
- 4. Microarray**
- 5. Bioinformatics**

Project Goals: The goal of this project is to 1) isolate single-cell populations of sensory neurons from the dorsal root ganglia of mice and 2) carry out microarray analysis of these cells.

Experimental Approaches: The student will use *surgical techniques* and *flow cytometry* to isolate sensory neurons from the dorsal root ganglia of mice; they will then carry out *bioinformatics* to assess changes in gene expression.

References:

- [Transcriptional profiling at whole population and single cell levels reveals somatosensory neuron molecular diversity.](#) Chiu IM, Barrett LB, Williams EK, Strochlic DE, Lee S, Weyer AD, Lou S, Bryman GS, Roberson DP, **Ghasemlou N**, Piccoli C, Ahat E, Wang V, Cobos EJ, Stucky CL, Ma Q, Liberles SD, Woolf CJ. *Elife*. 2014 Dec 19;3. doi: 10.7554/eLife.04660.
- [Circadian control of pain and neuroinflammation.](#) Segal JP, Tresidder KA, Bhatt C, Gilron I, **Ghasemlou N**. *J Neurosci Res*. 2017 Sep 2. doi: 10.1002/jnr.24150.
- [Chronobiology of chronic pain: focus on diurnal rhythmicity of neuropathic pain.](#) Gilron I, **Ghasemlou N**. *Curr Opin Support Palliat Care*. 2014 Dec;8(4):429-36.