BCHM 421/422 – 2021-2022

Project #2: Interactions between the nervous and immune systems control the generation of pain and serve to modulate the resulting inflammation. Neuropeptides secreted by sensory neurons that sense pain, called nociceptors, have been shown to either increase or decrease immune cell recruitment and activation after injury. We have now identified a novel neuropeptide (neuropeptide X) secreted by nociceptors that acts directly on immune cells at the site of injury/inflammation to alter their activation state. The goal of this project is to characterize this response using in vivo and in vitro methods.

Supervisor: Nader Ghasemlou

Project Title: Neuropeptide control of immune cell recruitment and activation

Project Goals: Determine activity of neuropeptide X on immune cells. Characterize immune cell receptors necessary to elicit a response from the neuropeptide. Identify intracellular pathways activated upon interaction of neuropeptide X with its cell-surface receptor(s).

Experimental Approaches: Cell cultures using primary and secondary (cell lines) immune cells (monocytes/macrophages, dendritic cells, neutrophils) will be established. Activity of neuropeptide X on cells will be assessed using immunohistochemistry and flow cytometry; siRNA will be used to knockdown the expression of specific receptors in immune cells. Western blotting will be used to identify intracellular pathways regulated by neuropeptide X.

References:

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