Network responses to changes in extracellular saline concentration and temperature in the lobster *Homarus americanus*

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As a result of climate change, salinity levels in the ocean are becoming more extreme and ocean temperatures are rising. Changes in the water cycle, including changes in precipitation and evaporation, mean that some regions are becoming less salty while others become saltier. The Atlantic Ocean is experiencing a basin-wide increase in salinity (Sathyanarayanan et al., 2021). As such, the individual and combinatorial effects of temperature and salinity levels on the nervous system of the American lobster are of interest as these environmental trends progress. Generating data quantifying these effects provides insight and allows us to make predictions about how these environmental perturbations will influence the physiology of the lobster.

To measure the effects of these environmental perturbations on the nervous system of the lobster, I focused my research on the stomatogastric nervous system of the lobster *Homarus Americanus*. The stomatogastric nervous system (STNS) controls the motion of the crustation foregut and is controlled by the stomatogastric ganglion (STG) (Marder & Bucher, 2007). Motor neurons contained in the STNS control two central pattern generators (CPGs) which are neural circuits that produce rhythmic output even in the absence of a rhythmic input. My focus this summer was on the pyloric rhythm, the CPG which

References:

Marder, E., & Bucher, D. (2007). Understanding circuit dynamics using the stomatogastric nervous system of lobsters and crabs. *Annual review of physiology*, 69(1), 291-316.

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