Project Summary

This project revolved around the work that I have been working on for my lab project. I am interested in the mechanisms involved in wound healing of a rather large single-celled organism called *Stentor coeruleus*. This organism's specialty is that it can regenerate small fragments, 1/27th of its original size, into an entirely new cell. It also can sustain rather large wounds and heal them at drastic rates.

The experiments performed included lipid staining of the organism with Nile red and wounding by laser ablation. This approach was taken to see if vesicle trafficking is an active mechanism present for wound healing in *Stentor*. Time series experiments were performed along with z-stack images for each time point.

The image analysis performed was to collect the intensity signals per time point for the wounded areas. My hypothesis is that vesicle patching is an active mechanism in *Stentor*, and I expect to see an increase in intensity near the wound sites over time. This would imply that our stained lipid vesicles are being trafficked over to the wound site, and image intensity signals per time point would be a way to quantify this phenomenon.

The data collected image intensity over time was analyzed in Python by plotting the image intensity over time for each z-stack taken. The summary so far is that the z-stack positions closer to the surface appear to have an increase in signal intensity as hypothesized, although further experimenting is expected to know for certain.

Future analysis for this work includes performing partial differential equations, which can model how signal intensity changes over time and space. Also, ordinary differential equations to model the rate of change of signal intensity over time.