Poster Presentation
The Effect of Bacterial Inoculants on the Heat Stress Response of Corn
Morgan Hare
Faculty Mentor: Sue Hum-Musser
Biology

Our project goal is to compare the growth and analyze gene expression of corn plants that have been inoculated with bacterial inoculants and exposed to heat stress. Some bacteria can promote the growth of plants. The MicroAZ bacterial inoculant contains two strains of Azospirillum bacteria. These bacteria can improve root systems and fix atmospheric nitrogen into a form usable by plants. This results in the ability for greater plant nutrient uptake and therefore, an increase in the yield. The MicroAF inoculant contain a variety of bacteria and may promote plant growth and help ward of plant diseases.

This experiment is part of a larger project examining the total gene expression in corn plants. My main focus was the effect of the inoculants on plant leaf tissue under heat stress. First I inoculated corn plant seeds with MicroAZ and MicroAF separately, and grew them at room temperature (25°C) for two weeks. I then exposed half of the seedlings to a heat shock (35°C) for 16 hours in the dark. The other half of the seedlings were left at room temperature. Then I examined gene expression of the leaf tissue. This was completed by extracting the RNA, synthesizing cDNA and running real-time quantitative polymerase chain reaction. There were different levels of gene expression in a variety of genes due to the two distinct bacterial inoculants, along with heat or room temperature growing environments. Ultimately, the overall determination of the effects of MicroAZ and MicroAF on corn plant growth and response to heat stress is important in the search of more environmental friendly methods to increase crop yield to meet the rising demand of food to feed the vastly growing world population.