Overview of Prof. Sharon Doty’s Plant Microbiology Laboratory

The main areas of research in my lab are phytoremediation, plant growth-promoting endophytes, and bioenergy, using the tools of molecular microbiology, biochemistry, and plant molecular biology. Phytoremediation is the use of plants to treat environmental pollutants. Since phytoremediation is considered too slow and is often inhibited by the toxicity of the pollutants, my lab is focused on improving phytoremediation through partnerships with pollutant-degrading bacteria. Beneficial microbes that live within plants are termed endophytes. Some of these naturally-occurring bacteria can degrade pollutants. Others can fix atmospheric nitrogen, providing usable nitrogen to the host plant. Many endophytes produce plant hormones that dramatically increase plant growth. Using N-fixing endophytes to increase biomass can lead to greater environmental sustainability of bioenergy production.