

Reid Chunn, Harris-Stowe State University

Faculty Mentor: Guy Genin, Mechanical Engineering and Materials Science

Project Title: *Creating a micro-stepping apparatus using Arduino/Matlab.*

Reid is studying how cardiomyocyte cells react and adapt under various tensions and stresses (e.g. electrical). His career plans involve the transportation industry; his goal is to innovate transportation by increasing efficiency with frontier-like eclectic ideas dealing with vehicle power plants, aerodynamics, friction coefficients, etc.

Thomas Ellison, Washington University in St. Louis

Faculty Mentor: Lucia Strader, Biology

Project Title: *Mutation of an F-box protein in Arabidopsis causes auxin resistance.*

Thomas is investigating a mutation in the F-box protein of *Arabidopsis* which has been linked to auxin resistance. The F-box protein is a component of the SCF complex which, when it has bound auxin, targets AUX/IAA repressors for degradation. AUX/IAA repressors inhibit auxin response factors (ARFs), so the presence of auxin leads to the activation of auxin-responsive genes. Thomas is also developing a novel procedure for studying the mechanical properties of *Arabidopsis* hypocotyls. After graduating, Thomas plans to pursue a master's degree in biological engineering and continue his research in either the academic or industrial sectors.

Pranav Maddula, Washington University of St. Louis

Faculty Mentor: Liz Haswell, Biology

Project Title: *Computational assessment of genetic and geographic diversity of mechanosensitive ion channels in Arabidopsis thaliana.*

Pranav's research involves identifying, analyzing and characterizing SNPs in the PIEZO and MSL family of mechanosensitive ion channel proteins in order to map the environmental mutations and geographic divergence of *Arabidopsis* lines. In the future, he would like to pursue a career in the biomedical industry.

Alexis Scott, Alabama State University

Faculty Mentor: Ram Dixit, Biology

Project Title: *Developing artificial scaffolds for growing plant cells.*

Alexis is researching different plant scaffolding materials. The goal of the research is to devise a way to exert known forces on the scaffolds, so that the plant cells will also feel those forces

without damaging the cells. In the future, Alexis would like to continue researching and attend graduate school.

Logan Verheyen, St. Louis University

Faculty Mentor: Marcus Foston, Energy, Environmental, and Chemical Engineering

Project Title: *Exploring preparation of cellulose nanowhisker reinforced gelatin hydrogels.*

Logan's research involves developing a scaffold upon which to grow specific plant tissue to allow researchers to avoid growing entire plants to conduct studies. The project involves reinforcing gelatin hydrogels with cellulose nanowhiskers, and subsequent mechanical analysis of the final products. In the future, Logan intends to pursue an MD PhD in biomedical engineering and practice as a medical specialist. The specific field is undefined at this point.