

## **FACULTY RESEARCH FUND**

**Award Date:** Spring 2016

**Proposal Title:** Development of a New Tool for Assessing Gene Function in Corn

**Principal Investigator:** Elizabeth Hood

College of Agriculture and Technology

## **Development of a New Tool for Assessing Gene Function in Corn**

Crop improvement for food and non-food uses requires intense research. The world's population will increase from its current 7.5 billion to 10 billion within the next 50-100 years. Because of the increases not only in number, but in the demand for meat rather than plant protein in the diet, the demand on agricultural output will double within the same time frame. Maize (corn) is one of the most important target crops for the application of biotechnology. However, time from conception to deployment of these new traits is very long. Thus, the Scope of this project is to develop a critical new tool that would allow faster throughput in the maize research laboratory for screening new genes that have utility for disease protection, insect protection or for pharmaceutical or industrial use. Making transgenic corn plants (plants that contain a new gene to give them a new trait) is a time-consuming and difficult process involving laborious tissue culture processes. Additionally, the standard method requires significant year-round greenhouse space to supply the large number of young embryos needed to receive the new genes. Overlain on this difficulty is the unknown outcome of whether a gene will work in the plant after waiting a year to screen the recovered plants. A system is needed to test the gene with its regulatory elements before putting it permanently in the plant. This tool will enable the researcher to determine the viability of the gene before embarking on the long process of generating transgenic plants. Further, the project will involve two undergraduate students who will gain valuable experiential learning in a laboratory setting. One of those students will be a summer intern supported by the Bridge program, which is funded by the National Science Foundation (PI: Malathi Srivatsan).