There’s a Fungus Among Us: An Investigation of Endocytic Proteins
William Porter, Blake Commer, and Dr. Brian D. Shaw
Bioenvironmental Sciences, Department of Plant Pathology and Microbiology, Texas A&M University

Abstract

Aspergillus nidulans is a model organism for filamentous fungi. Little is known about how fungi grow. They grow in a polarized fashion with the newest cells being formed at the tip of finger-like projections known as hyphae. The current model of growth is known as endocytic recycling where some proteins are involved in the endocytosis of materials around the fungus and others place the endocytosed cargo at the tip, creating new growth. This research focused on the endocytic proteins involved in this process using A. nidulans.

Using fusion polymerase chain reactions (PCR), we were able to select key proteins thought to be involved with this process and tag them with Green Fluorescent Protein (GFP). Using fluorescent microscopy, we could then identify localization patterns of these proteins and assess whether or not they were likely to be associated with endocytosis. In this research we will be testing the hypothesis that AN1909 is associated with endocytic recycling.

Connections to Academic Knowledge

- Increased my understanding of genetics
- Increased my understanding of fungi
  - Life cycle
  - Reproduction
  - Anatomy
- Increased confidence with a microscope
- Learned Sterile Technique

Connections to Discipline

This project focused on genetics, biology, and plant pathology. Fungi are some of the most devastating plant pathogens. By understanding the cell biology of fungi, we will be able to better counter their roles as pathogens. The polarized tip growth is very specific to fungi. If we are able to discover how this process works we will then be able to halt it, solving many of the problems caused by fungi. Due to the use of PCR and genetic modification in this project, an understanding of genetics is required.

Relationship to Career Goals

This research experience has prepared me for pursuing a graduate degree in plant pathology. Working in the lab changed my career goals and I am now much more interested in pursuing research at higher levels.

References


Acknowledgements

Sponsors for high impact experiences for BESC and the BESC poster symposium include the Department of Plant Pathology and Microbiology, the College of Agriculture and Life Sciences, the Office of the Provost and Executive Vice President for Academic Affairs.