

## Summary of McBride Lab Research at Bowdoin College:

Our lab studies the organism *Candida albicans*, a fungus typically found within the humans, which means that this fungus is likely found within you. *Candida albicans* is a fungus that can cause afflictions ranging from minor infections to severe bloodstream infections and even death in immunocompromised individuals. Recent medical advances, such as the development of aggressive chemotherapies, as well as novel organ transplantations, result in an increased number of immunocompromised patients that are more susceptible to candidiasis, an infection of *Candida albicans* that results in high mortality rates of up to 40%. In addition, these infections result in an estimated \$1 billion in Medicare costs each year. Studying the mechanisms by which this fungus infects humans is important due to an increase in the susceptible patient population as well as the increasing resistance of *Candida albicans* to antifungal drugs.

The ability of *Candida albicans* to infect individuals depends on a change in morphology between round yeast-form cells and elongated “hyphal” cells. Hyphal formation is associated with *Candida albicans*’ ability to infect human cells because these elongated fungal cells damage and invade the human host, and additionally help the fungus escape from the human immune system. Our lab is interested in a specific protein (which we call Slr1) that is implicated in the ability of *Candida albicans* to cause disease. Undergraduates, such as me, at Bowdoin College, work in Professor McBride’s lab performing studies, using a variety of laboratory techniques, on our protein of interest to try to elucidate the function of Slr1 and how this protein impacts the infectiousness of the fungus. Personally, I spent my senior year working on an honors thesis in the McBride lab investigating where our protein of interest resides within the cell.



Below are some photos of our work:

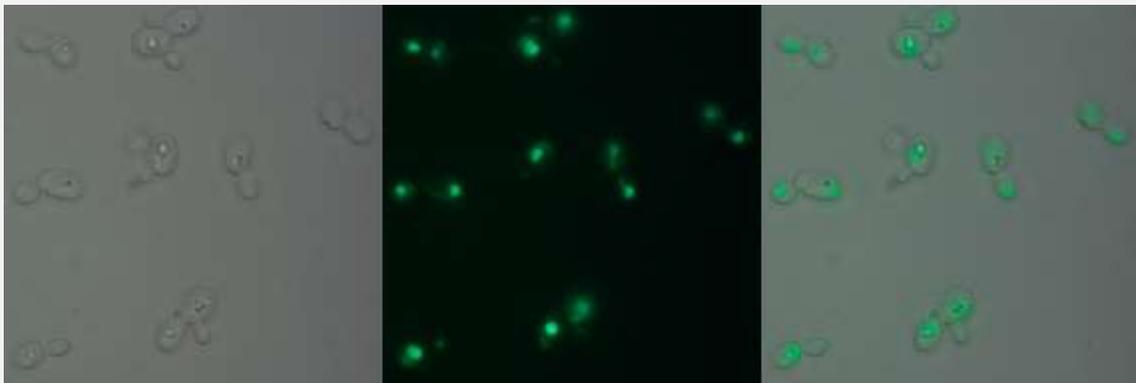


**Fig. 1: *Candida albicans* cell morphology**  
Budding yeast (left) and hyphal (right) forms are shown.

**Brightfield**

**GFP (green**

**fluorescence) Merged Brightfield and GFP**



**Fig. 2** This is a microscopy image that I took of *Candida albicans* yeast-form cells (left), yeast-form cells with our protein of interest tagged with a green fluorescent protein (middle) and a merge of the two images (right).



McBride Lab dinner  
2016 with current  
and former honors  
thesis students,  
independent study  
students and summer  
research students  
(with representation  
from the classes of  
2015-2018)