is a common fungal pathogen in humans that can colonize and infiltrate a majority of internal organs which can lead to life-threatening infections for people who are immunocompromised [1, 2]. Infection is linked to the transformation of

protein structure is crucial for the essential structure of cells.

Previous students in the McBride lab discovered that a mutant Slr1 protein clumps together, forming protein "aggregates". Protein aggregation is a process associated with numerous 's yeast, a protein called Pin3 plays a role in helping

protein aggregation [6,7]. At higher temperatures, there is a higher level of protein aggregation [6,7]. Additionally, cells without Pin3 have been observed to reproduce at a decreased rate at high temperatures. In a similar protein to Pin3 binds to the mutant Slr1 protein but no further testing has been done to understand the role of this interaction until this summer.

The purpose of my research project this summer was to test whether Pin3 plays a role in protein aggregation in and forms aggregates in the same place as the mutant Slr1. To test this hypothesis, I produced DNA to visualize Pin3 and integrated it into cells with the help of my lab mates Izzy Lockhart and Imani Myers. The strains that we created were a green-fluorescent protein (GFP) tagged Pin3 for normal or higher than normal levels and a red-fluorescent protein (mScarlet) tagged slr1-6SA. We then imaged these strains when it was in yeast form and hyphal form at 120 and 210 minutes.

Initial results indicate that Pin3 localizes in foci for overexpressed strains compared to a more even distribution in the cytoplasm at lower levels for both yeast and hyphal form. In overexpressed Pin3 strains, Pin3 localizes at the budding tip in both yeast and hyphal forms. For normal Pin3 level strains, Pin3 localized in the cytoplasm for both yeast and hyphal forms. There were nuclear blocklession misleaglessian in strains with slr1-6

but should be investigated further. These findings contribute to the knowledge of the cellular mechanisms of $\ \ .$

- 1. Candida infections of the mouth, throat, and esophagus | Fungal Diseases | CDC. 2021 Feb 25. https://www.cdc.gov/fungal/diseases/candidiasis/thrush/index.html
- 2. Buchacz K, Lau B, Jing Y, Bosch R, Abraham AG, Gill MJ, Silverberg MJ, Goedert JJ, Sterling TR, Althoff KN, et al. Incidence of AIDS-Defining Opportunistic Infections in a Multicohort Analysis of HIV-infected Persons in the United States and Canada, 2000–2010. The Journal of Infectious Diseases. 2016;214(6):862–872. doi:10.1093/infdis/jiw085
- 3. Lo HJ, Köhler JR, DiDomenico B, Loebenberg D, Cacciapuoti A, Fink GR. Nonfilamentous mutants are avirulent. Cell. 1997;90(5):939–949. doi:10.1016/s0092-8674(00)80358-x
- 4. Ariyachet C, Beißel C, Li X, Lorrey S, Mackenzie O, Martin PM, O'Brien K, Pholcharee T, Sim S, Krebber H, et al. Post-translational modification directs nuclear and hyphal tip localization of mRNA-binding protein Slr1. Molecular Microbiology. 2017;104(3):499–519. doi:10.1111/mmi.13643
- 5. Disorders F on N and NS, Policy B on HS, Medicine I of. Protein Aggregation. National Academies Press (US); 2013 [accessed 2023 Feb 28]. https://www.ncbi.nlm.nih.gov/books/NBK208522BK2 S