Pathogenic growth and mRNA localization in pathogenic fungus Candida albicans

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Candida albicans, an opportunistic fungal pathogen, can cause a wide variety of infections in humans, including more widespread infections in immunocompromised patients (Noble and Johnson, 2007). C. albicans can transition from a budding, circular form to an elongated hyphal form, which aids in host cell adhesion and invasion during infection (Elson et al., 2009). Certain proteins are found specifically at the elongated end, or tip, of hyphal cells which assist in these processes. The question is how do these proteins get to the tip? There are two potential mechanisms: protein transport and mRNA transport. In mRNA transport, mRNA, the DNA code for protein, is carried from the nucleus, which houses the DNA, to the hyphal tip by a transport protein where it is translated on site into protein. A transport protein, called She3, has been identified in C. albicans and is known to transport a subset of mRNAs to the hyphal tip (Elson et al., 2009). There may be an RNA-binding protein that carries the mRNA from the nucleus into the cytoplasm of the cell where She3 can be found, however, which protein that is remains unknown. One potential candidate for this RNA-binding protein is called Slr1. Slr1 is involved in cell growth and hyphal formation (Ariyachet et al., 2013) and associates with a fraction of the mRNAs transported by She3 (McBride lab, unpublished data). We wanted to investigate whether Slr1 was a functional component of the She3 mRNA transport system, and more specifically understand how Slr1 impacts the transport of She3 transported mRNAs to the hyphal tip.

To investigate this question, we used an approach referred to as fluorescent in situ

References

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