FUNGAL PHYSIOLOGY

Candida puts RNA at the tip

The generation of cell polarity is a fundamental feature of eukaryotic cells and the basis for many biological processes, such as cell division and differentiation. One mechanism for achieving cell polarity is through the localization of specific mRNAs. In yeast, RNA localization is best exemplified by the *Saccharomyces cerevisiae* She system, which moves a set of mRNAs from the mother cell to the bud. Now, Elson and colleagues, writing in a recent issue of *PLoS Genetics*, describe a related RNA transport system that has a role in hyphal development and invasive growth in the human fungal pathogen *Candida albicans*.

> She3-bound RNAs accumulate in the tips of hyphae and in yeast buds

Elson and colleagues identified the *C. albicans* orthologue of She3, a component of the She system, and used RNA immunoprecipitation and whole-genome analysis to reveal a set of 40 mRNAs that are selectively bound by *C. albicans* She3. The genes encoded by these RNAs are involved in many different processes, including mitosis, filamentous growth and ion transport. She3-bound RNAs accumulate in the tips of hyphae and in yeast buds in wild-type *C. albicans* but not in a *she3*Δ deletion strain. Of note, the sets of She-transported RNAs in *C. albicans* and *S. cerevisiae* are largely distinct. These observations suggest that the overall mechanism of transport is likely to be conserved between these two yeasts, but the cargo mRNAs have diverged considerably.

Inactivation of the She system in *C. albicans* (achieved by deletion of *SHE3*) results in defects in filamentous growth. Hyphae of a *she3*Δ mutant strain show subtle morphological defects in liquid culture. Defects are more striking on solid media, on which *she3*Δ cells form aberrant colonies lacking the peripheral filaments that are formed by wild-type *C. albicans*. This defect is associated with a failure to form invasive hyphae and a decreased ability to damage mammalian epithelial cells.

These results provide a glimpse of how asymmetrical division is established in *C. albicans* hyphae and what biological role it has; however, the precise molecular mechanism of transport and the functions of many of the transported RNAs remain to be determined.

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ORIGINAL RESEARCH PAPER Elson, S. L, Noble, S. M., Solis, N. V., Filler, S. G. & Johnson, A. D. An RNA transport system in *Candida albicans* regulates hyphal morphology and invasive growth. *PLoS Genet.* **5**, e1000664 (2009)