

The early response of *Candida albicans* filament induction is coupled with wholesale expression of the translation machinery

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Abstract

One of the main parameters involved in the yeast-to-hypha transition in *Candida albicans* is temperature, and this change is involved in its pathogenicity. A complete switch between yeast and hypha can be achieved by changing the temperature from 28°C to 37°C in Lee medium supplemented with serum. To compare the early transcriptional response of *C. albicans* to temperature, we have carried out a genome-wide analysis of the *C. albicans* response to temperature after a 2-min exposure at 37°C. Using a cDNA microarray method, we found changes in 1,120 genes, suggesting that the key time for controlling the dimorphic change occurs very early. The overrepresented categories of up-regulated genes consisted of transporters, transcription factor and translation initiation factors, ribosomal proteins, DNA-directed RNA polymerase, cell cycle and cell polarity, RNA helicase and genes encoding polyamine biosynthesis. The main categories of down-regulated genes included: carbohydrate metabolism, actin filament organization, electron transport and ATP biosynthesis, respiration, histone assembly, and ergosterol biosynthesis. Collectively, these results demonstrate that much of the gene regulation observed is during the early stage of yeast-to-hypha transition.