

**C1-4****Ceramide Synthase is Required for Lipid Raft Polarization  
and Filamentous Growth in Yeast**

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Sphingolipids are enriched in lipid rafts, which are thought to be involved in polarity development in a wide range of cells. The core structure of sphingolipids is ceramide. During our search for genes responsible for the morphogenetic switch of *Yarrowia lipolytica*, we found that the *Y. lipolytica* *LAG2* gene (*YLAG2*), a homologue of *Saccharomyces cerevisiae* *LAG1* encoding ceramide synthase, is required for the hyphal growth of *Y. lipolytica*. In addition, the *S. cerevisiae* ceramide synthases (Lag1p and Lac1p) were shown to be essential for the filamentous growth of the  $\Sigma$ 1278b genetic background strain. Furthermore, we demonstrated that the *Candida albicans* genes (*CaLAG1* and *CaLAC1*) homologous to *S. cerevisiae* *LAG1* are important for the hyphal growth of the yeast. Interestingly, homozygous *Calag1* $\Delta$  mutants could not polarize lipid rafts to growing hyphal tips, indicating that the lack of ceramide synthase lead to the disturbance of lipid raft polarization. We further investigated whether ceramide synthases from various organisms, including *Aspergillus nidulans* ceramide synthases (LagA and BarA), can functionally replace each other. Complementation tests revealed that *CaLAG1*, *YLAG1* and *lagA* are functional homologues of *S. cerevisiae* *LAG1* and *LAC1*, and *BarA* is functionally related with *YLAG2*. Taken together, these results suggest that ceramide synthases are required for the filamentous growth of yeast, but they may be different in substrate specificity or in their specific roles for the morphogenesis.