About sphingolipid metabolism Sphingolipids are essential components of the plasma membrane in all eukaryotic cells. S. cerevisiae cells make three complex sphingolipids: inositol-phosphoceramide, mannose-inositol-phosphoceramide, and mannose-2-ceramide2C). In the yeast plasma membrane sphingolipids concentrate with ergosterol to form lipid rafts, specialized membrane microdomains implicated in a variety of cellular processes, including sorting of membrane proteins and lipids, as well as organizing and regulating signaling cascades. Intermediates in sphingolipid biosynthesis have been shown to play important roles as signaling molecules and growth regulators. Sphingolipid long chain bases, dihydrosphingosineand phytosphingosine, have been implicated as secondary messengers in signaling pathways that regulate the heat stress response. Other intermediates, phytoceramide and long-chain base phosphates, have been shown to be components of the tightly-controlled ceramide/LCBP rheostat, which regulates cell growth. Since phosphoinositol-containing sphingolipids are unique to fungi, the sphingolipid biosynthesis pathway is considered a target for antifungal drugs.YPC1 and YDC1 are homologous genes that encode alkaline ceramidase. Ceramide is an intermediate in the sphingolipid biosynthesis pathway and has been shown in mammals to have a role in apoptosis and the stress response. Ceramidase activity is conserved in eukaryotic and prokaryotic systems. Ypc1p has specificity for phytoceramide while Ydc1p has specificity for dihydroceramide. In the presence of fumonisin B1, a mycotoxin and ceramide synthase inhibitor, Ypc1p has a acyl-CoA-independent reverse activity that results in ceramide production, and thus can function as a ceramide synthase. Dual activity of Ypc1p suggests the possibility that a salvage pathway to synthesize ceramides exists in yeast.