# Plant sphingolipids, from cytokinesis to membrane dynamics

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Sphingolipids were found in yeast and mammals to be essentials in several basic cellular functions such as endocytosis, protein transport, apoptosis and stress responses. A key step of the sphingolipid biosynthetic pathway is the acylation of long chain bases (LCBs) catalyzed by the sphingoid base N-acyl transferase or ceramide synthase. Three ceramide synthases homologues (named LOHs) have been identified in the model plant Arabidopsis with different acyl chain specificities (Markham et al. 2011). Pharmacological and genetic approaches demonstrated that very-long-acyl-chain (VLCFA)-sphingolipids are essentials for plant development. Acyl chain length is thought to be critical for biophysical properties of membrane in particular during cell division when active vesicular fusions are necessary. In vivo imaging of endomembrane and plasma membrane markers of VLCFA-depleted showed that sub-cellular trafficking and plasma membrane dynamics were altered during cytokinesis. In vitro analysis of the involvement of VLCFA-sphingolipid in vesicle fusion and aggregation will also be presented. Finally, a model presenting the specific role of sphingolipid acyl chain length in plant membranes will be discussed.