

Lipid Domains in Biological Membranes

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Sphingolipids (SLs) have emerged as an important class of lipids due to their bioactive role in a number of cellular events and in disease. The evidence that several SL species participate in the formation of lipid domains and that this might underlie their biological mechanism of action has fostered research in the biophysical aspects of bioactive SLs. However, studies addressing the biophysical implications of SLs under physiological conditions are still missing. The present study shows that increase in ceramide levels upon activation of TNF receptor drives profound changes in membrane properties through the formation of highly-ordered Ceramide-enriched domains. We further show that these domains exist in intracellular vesicles that colocalize with endocytic markers. Our results link the biophysical changes induced by Ceramides to important cell processes and emphasize the existence of Ceramide-enriched vesicles with distinctive biophysical properties that might function as intracellular signaling platforms.

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