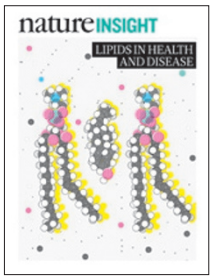
nature INSIGHT

LIPIDS IN HEALTH AND DISEASE

5 June 2014 / Vol 510 / Issue No 7503



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Lipids are small hydrophobic molecules that carry out a multitude of crucial roles. For example, they act as structural elements in biological membranes, they store energy and they function as signalling molecules in cellular response pathways. Disruption to their levels of expression — as occurs in obesity, diabetes, autoimmunity or inborn errors of lipid metabolism — leads to dysfunction and disease in many organs.

In this Insight, Joost Holthuis and Anant Menon begin by discussing the cellular pathways by which eukaryotic cells maintain a variety of lipid compositions in different organelles so that they can carry out their specialized tasks.

Next, Michael Maceyka and Sarah Spiegel discuss the molecular mechanisms by which the metabolites of sphingolipids exert their cell signalling and pathological functions.

Sphingolipid lysosomal storage disorders are characterized by the accumulation of glycosphingolipids in the late endocytic system. Frances Platt discusses insights into the cell biology of glycosphingolipid storage disorders and the development of treatments.

Vivian Peirce and colleagues then go on to highlight the biology of various types of adipose tissues, and their therapeutic potential in metabolic disease.

The Perspective by Gerald Shulman and colleagues discusses the roles of hepatic lipids in non-alcoholic fatty liver disease, which is now the most common liver disorder in the Western world.

Finally, Charles Serhan reviews the anti-inflammatory and immunoregulatory actions of omega-3-derived lipid resolving mediators and their therapeutic potential.

Joshua Finkelstein, Marie-Thérèse Heemels, Sadaf Shadan & Ursula Weiss
Senior Editors

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