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Effect of Sterol Structure on Chain Ordering of an Unsaturated Phospholipid: A 2H-NMR Study of POPC/Sterol Membranes MEHRAN SHAGHAGHI, Physics Department, Simon Fraser University, JENIFER THE-WALT, Physics & MBB Departments, Simon Fraser University, MARTIN ZUCK-ERMANN, Physics Department, Simon Fraser University — The physical properties of biological membranes are considerably altered by the presence of sterols. In particular, sterols help to maintain the integrity of the cell by adjusting the fluidity of the plasma membrane. Cholesterol is in addition an important component of lipid rafts which are hypothesized to compartmentalize the cell membrane surface thereby making it possible for certain proteins to function. Using 2H-NMR spectroscopy, we studied the effect of a series of different sterols on the chain ordering of POPC, an unsaturated phospholipid present in eukaryotic cell membranes. We were able to assigned specific roles to the structural differences between the sterols by comparing the manner in which they affect the average lipid chain conformation of POPC.

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