

Posters**- Membrane structure and dynamics -****13-41****Using solid-state NMR to probe the order of unsaturated lipids in membranes, with and without cholesterol**

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DROSS (Dipolar Recoupling On axis with Scaling and Shape preservation) is a solid-state NMR technique optimized for measuring ^{13}C - ^1H dipolar couplings and order parameters in lipid membranes in the fluid phase (1). It was showed to be efficient in 1,2-dimyristoyl-sn-glycero-3-phosphocholine hydrated membranes. Here we show that it can also be applied to multilamellar vesicles containing unsaturated lipids, which are difficult to deuterate, or lipid mixtures, including cholesterol.

With such an approach we have been able to observe subtle phase changes by following the behavior of resonances around the double-bonds. Thereby, we have completed the picture of the *lo* phase obtained by ^2H NMR for DPPC (2) to POPC and DOPC which behave quite differently.

Because these observations are made with natural lipids and no external probe or isotopic labeling, our approach is compatible with observations of a *natural* biomembrane. In conclusion, we think that DROSS can be a useful tool to probe the existence of microdomains or rafts in biological membranes (3).

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- (3) Simons K & Ikonen E *Nature* **387**:569-572 (1997); Ahmed SN, Brown DA & London E *Biochemistry* **36**:10944-10953 (1997); Dietrich C, Bagatolli LA, Volovyk ZN, Thompson NL, Levi M, Jacobson K & Gratton E *Biophys. J.* **80**:1417-1428 (2001)