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## **Résumés pour "Ecole Régulation et Dynamique des Membranes Biologiques." Porquerolles, France, 27-30 mai 2013**

### **Effects of lipids on membrane order level by using GUVs**

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A large set of data, obtained by various methods have revealed that biological membranes are laterally subdivided into domains enriched in specific lipid and protein components. The use of biophysical data, supplemented by analysis of synthetic membrane and plasma membrane (PM) with labeled lipids or environmentally sensitive fluorescent probe allows to describe different structural properties of the membrane.

Several possible states of membrane were thus identified: one called "liquid ordered" or lo, crystalline structure where the lipid chains are tight; the second one "the liquid disordered" or ld, fluid phase where the lipid diffusion is high; finally there is the "gel" phase, also called solid lamellar.

To study the spatial distribution of the different phases, we decided to analyze the plane surface of the membrane. We developed a methodology using multispectral confocal microscopy associated with the di-4-ANEPPDHQ probe which provides information about the order level of the membrane in which it is integrated. We produced model membrane vesicles, precisely giant unilamellar vesicles (GUVs) with particular lipidic composition, in order to obtain vesicles with lo, ld or lo/ld associated phases and labeled them with the fluorescent dye. This allowed us to record pictures of large membrane surface (5 to 15  $\mu\text{m}^2$ ), necessary to describe the spatial organization of the membrane order level. The dependence of the size and distribution of areas of different order level on the composition of GUVs was examined.