Experimental Report

Proposal: **DIR-112** **Council:** 10/2012

Title: Neutron Reflectometry at the proteolipidomics border: the transmembrane K+-channel Kcv in a floating membrane

This proposal is a new proposal

Researh Area:

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Samples: fully deuterated phospholipids (DSPC, DPPC)
Cholesterol
GM1 ganglioside
K+ channel Kcv (MA-1D)

Instrument	Req. Days	All. Days	From	To
D17	3	3	26/06/2013	28/06/2013

Abstract:

The activities of integral membrane proteins are often affected by the structure of the lipid molecules surrounding them in the membrane. An important parameter is the hydrophobic thickness of the lipid bilayer, defined by the length of the lipid fatty acyl chains. Membrane proteins are not rigid entities, and deform to ensure good hydrophobic matching to the surrounding lipid bilayer. The aim of our experiment was to study the structural changes induced by the presence of a transmembrane protein, namely the K^+- channel Kcv (MA-1D), on model membranes as a function of membrane composition.

Different fully deuterated phospholipid model membrane systems have been deposited via vesicle fusion (supported DMPC, supported DMPC+cholesterol, supported DPPC) or via Langmuir-Blodgett/Langmuir-Schaefer technique (floating DPPC).

Each model system have been studied before and after protein incubation, obtained by injecting a protein solution directly in each measuring cell.

Preliminary result show a different affinity of the protein to different chains-length phospholipid membranes. Moreover the protein-membrane interaction is not trivial in presence of cholesterol.
As an example, we report the reflectivity spectra referred to a floating DPPC membrane before (Blue) and after the insertion of the protein (Green), in H_2O.