

Interactions of Phospholipids with Integral Membrane Proteins; Use of Brominated Lipids

Aleksander W. Roszak^a, Alastair T. Gardiner^b, Richard J. Cogdell^b,
Neil W. Isaacs^a, ^a*Department of Chemistry and* ^b*Division of
Biochemistry and Molecular Biology, IBL, University of Glasgow,
Glasgow G12 8QQ, UK. E-mail: a.roszak@chem.gla.ac.uk*

The lipid environment of integral membrane proteins is important to their structure and function, but little is known about specific protein-lipid interactions. Knowledge of these will help in devising better protocols for solubilisation and crystallisation of membrane proteins. Although some lipids may co-purify with the protein and show as residual electron density, the detergent used in solubilisation can confuse the interpretation. By co-crystallising the protein with brominated lipids their binding sites can be distinguished.

We have located two lipid binding sites in a complex of the reaction centre (RC) from *Rb. sphaeroides* with the 1-Palmitoyl-2-Stearoyl(6,7)-dibromo-sn-glycero-3-Phosphocholine (Br-PC) based on single wavelength data. We are now producing complexes of RC with variety of brominated lipids changing the lipid headgroup, the number and positions of bromine atoms, and concentration of the lipid in co-crystallisation with RC. We would also like to perform MAD experiments for some of these complexes at the Br K-edge (around 13.47 keV) to improve the anomalous signal and also to assess the possibility of using this method to phase structures of integral membrane proteins. Results of these experiments will be described.

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Keywords: membrane protein crystallisation, brominated phospholipids, MAD and SAD experiments