Crystal structures of membrane proteins often reveal non-protein electron density at their hydrophobic surfaces. Sometimes this electron density is complete enough to allow a bound lipid or detergent molecule to be confidently assigned. This situation can be seen with the cardiolipin molecule bound to reaction centres from *Rhodobacter sphaeroides* (1). More usually, however, rather nondescript tubes of electron density are seen that could either be parts of lipids or detergents. The situation can even be more complicated if some proteins in the crystal bind a lipid at a given site, while others bind a detergent at the same site. In this case the resultant electron density is a mixture of them both. To try to resolve this situation we have used heavy atom labelled lipids and detergents in the crystallisation process and to help positively identify both bound lipids and detergents. This talk will describe this work using readily crystallisable test proteins with which to develop these methods. Some of this work using brominated phospholipids has been described elsewhere (2).

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References


2. Roszak, A. W., Gardiner, A. T., Isaacs, N. W., and Cogdell, R. J. 2007 Brominated lipids identify lipid binding sites on the surface of the reaction center from *Rhodobacter sphaeroides* Biochemistry 46, 2909-2916