

## **The use of deuteration in the study of gene delivery systems by neutron scattering**

**DJ Barlow, P Callow, G Fragneto, M Haertlein, V Laux, MJ Lawrence, I Parrot, J Talbot, P Timmins**

Vesicles formed from natural phospholipids have been overlooked as DNA delivery vectors because of the low affinity shown by zwitterionic lipids for DNA. Recent studies however have suggested that the interaction of DNA with zwitterionic lipids can be enhanced by the addition of physiological amounts of divalent ions such as calcium. The aim of the present work was to establish the existence and extent of such interactions using the technique of contrast matching (using deuterium substitution) in combination with neutron scattering. It is clear from these studies that calcium does promote interactions between zwitterionic phospholipids and DNA and that these systems might thus make suitable (non-toxic) vectors for gene delivery.