



	<b>Experiment title:</b> Structure and supramolecular organization of a new class of self-assembled polar headgroup substituted liposome DNA complexes for gene transfer	<b>Experiment number:</b> SC-2509
<b>Beamline:</b> ID02	<b>Date of experiment:</b> from: 11 December 2008 to: 15 December 2008	<b>Date of report:</b> 25 February 2016
<b>Shifts:</b> 12	<b>Local contact(s):</b> Anuj Shukla	<i>Received at ESRF:</i>
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### Report:

The experimental results have been published in the paper

M. Pisani, G. Mobbili, I. F. Placentino, A. Smorlesi, P. Bruni

“Biophysical Characterization of Complexes of DNA with Mixtures of the Neutral Lipids 1,2-Dioleoyl-sn-glycero-3-phosphoethanolamine-N-hexanoylamine or 1,2-Dioleoyl-sn-glycero-3-phosphoethanolamine-N-dodecanoylamine and 1,2-Dioleoyl-sn-glycero-3-phosphocholine in the Presence of Bivalent Metal Cations for DNA Transfection”

*J. Phys. Chem B*; 115 (34), 10198–10206 (2011)

whose abstract is reported below

*Neutral lipids have received up to now a little attention as genetic material carriers, despite some valuable features, such as the absence of toxicity and the high stability in serum of their complexes with DNA. We have prepared two quaternary complexes of DNA and mixtures of 1, 2-dioleoyl-sn-glycero-3-phosphoethanolamine-N-hexanoylamine (6PE) or 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine-N-dodecanoylamine (12PE) with DOPC in aqueous dispersions of bivalent metal cations (PE/DOPC\_DNA\_M<sup>2+</sup>). The aim was to evaluate the*

*effect of the amide moiety on the transfection efficiency. These complexes form in a self-assembled manner, the DNA condensation being promoted by the metal cations. Synchrotron X-ray diffraction analysis was used to determine the structure of the complexes, which exhibit the lamellar symmetry of the  $L_{\alpha}^c$  phase. The size and surface charge of the complexes have also been measured, and promising results of DNA transfections in vitro have been reported.*