

Electronic supplementary information

Packing DNA with Disc Shaped Bicelles

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The SAXS profiles from cationic bicelle/DNA complexes with 15% doping of DC-Chol, DPTAP and CTAB at 15% are shown in Fig. S1.

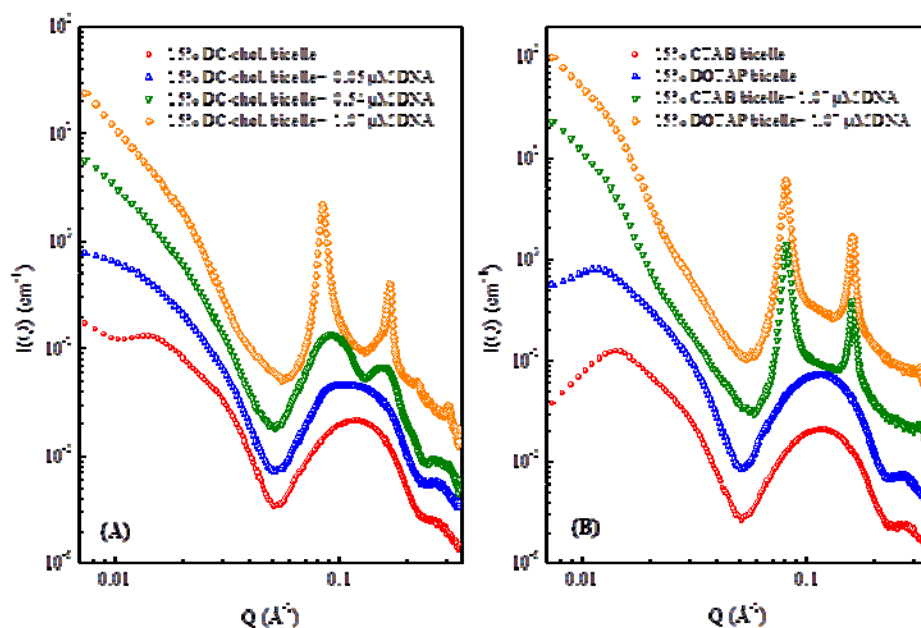


Fig. S1. (A) The SAXS results of 15% DC-chol Bicelle-DNA complexes as a function of different DNA concentration. (B) The SAXS results of 15% doped cationic DOTAP and CTAB bicelle without and with 1.07 μM DNA. Both DOTAP and CTAB bicelle-DNA complexes show almost the same profile.

The effect of the ionic strength was investigated by adding divalent ions, CaCl_2 . This was included in the supplement information. Fig. S1 shows the effect of adding divalent ions to the cationic bicelle-DNA complexes. As the concentration of CaCl_2 increases from 0 to 10, 50 and 100 mM, the d -spacing of the ordered complexes increases from 7.57 to 7.85, 8.16 and 8.32 nm. The presence of divalent ions tends only to loosen the binding between the DNA and the cationic bicelle slightly. Other than the slight changes in d -spacing, the main features of the scattering profiles are all similar. The diffraction peak intensities and peak widths seems to remain the same.

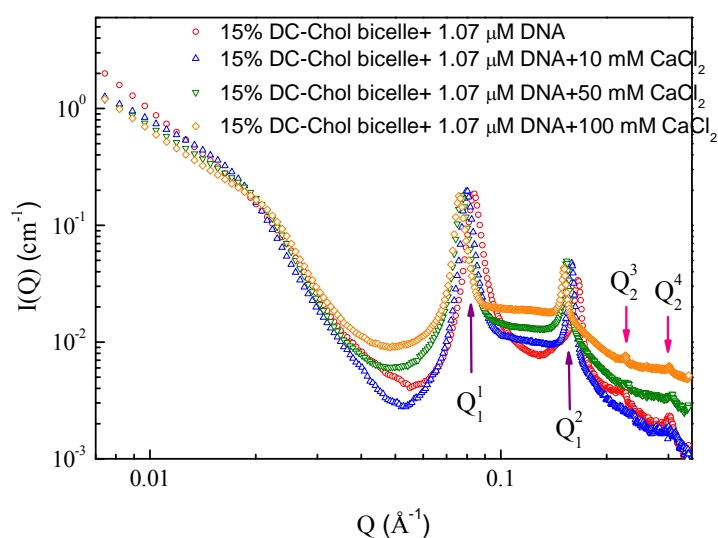


Fig. S2 The effect of adding divalent ions to the cationic bicelle-DNA complexes.

As measured by DLS, the hydrodynamic radius of the DPPC/diC7PC bicelle (10 mM DPPC + 3.33 mM diC7PC) is equal to 8.7 nm with a polydispersity of 3%. For the bicelle with 15% doping of DC-Cholesterol (8.5 mM DPPC + 1.5 mM DC-Chol + 3.33 mM diC7PC) has a hydrodynamic radius of 9.3 nm and a polydispersity of 56%. For the bicelle with 30% doping of DC-Cholesterol (7.0 mM DPPC + 3.0 mM DC-Chol + 3.33 mM diC7PC) has a hydrodynamic radius of 12 nm and a polydispersity of 46%. For the bicelle with 45% doping of DC-Cholesterol (5.5 mM DPPC + 4.5 mM DC-Chol + 3.33 mM diC7PC) has a hydrodynamic radius of 14.4 nm and a polydispersity of 32%. With different amounts of doping with DC-cholesterol, the measured hydrodynamic radii are all in the same size range about 10 nm, which corresponds well to the radius of about 10 nm of the DPPC/diC7PC

disc bicelle observed by TEM and SAXS.