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Supporting Material

Conformational transition of giant DNA in a confined space surrounded by a phospholipid membrane

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SUPPLEMENTARY MATERIAL

Movies of fluorescent-labeled T4 DNA molecules in a DOPE droplet are shown. T4 DNAs labeled with YOYO-1 in 10 mM Tris-HCl, pH 7.4, 100 mM KCl, with and without Mg^{2+} and spermine, were encapsulated in the droplets. Each movie shows one droplet at the center of the image, within which there are several tens of T4 DNA molecules.

Movie S1; in Mg^{2+} 0 mM, spermine 0 mM

T4 DNA molecules are in the inner aqueous phase (not membrane-bound) and have a coiled conformation.

Movie S2; in Mg^{2+} 10 mM, spermine 0 mM

The focus is first on the bottom surface of a droplet. Several T4 DNA molecules, which have an elongated conformation with intra-chain motion on the inner surface of the membrane, are apparent. The focus is then moved to the center of the droplet in the z-axis. Several T4 DNA molecules are located along the periphery of the droplet, are bound to the inner surface of the membrane, and show an elongated conformation.

Movie S3; in Mg^{2+} 0 mM, spermine 1.5 mM

T4 DNAs have a compact conformation, and are mainly located in the aqueous phase in the droplet. The weak bright field image is superimposed to visualize the droplet easily.

Movie S4; in Mg^{2+} 10 mM, spermine 1.5 mM

T4 DNAs are located on the inner surface of the membrane, and have an unfolded and elongated conformation. The movie first focuses on the bottom surface of the droplet. One T4 DNA molecule, which is at the focus and has an unfolded and elongated conformation on the membrane surface, is apparent. The focus is then moved up along the z-axis.