Supplementary Materials

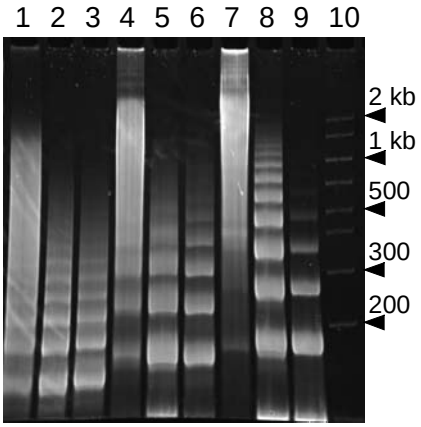

Figure S1. Polyacrylamide gel electrophoresis analysis of duplex lengths and differential mobilities for oligonucleotides assembled into duplexes with multiple nicks and gaps. Lanes 1-3, nicked-DNA from oligonucleotides N1 and N2 at strand stoichiometries of 1:1, 1:2, 1:4, respectively; lanes 4-6: nicked-gapped-DNA from oligonucleotides N1 and G2 at N1:G2 strand stoichiometries of 1:1, 1:2, 1:4, respectively; lanes 7-9: gapped-DNA from oligonucleotides G1 and G2 with G1:G2 strand stoichiometries of 1:1, 1:2, 1:4, respectively; lane 10, AmpliSize Molecular Ruler (Bio-Rad). Gel was 3.5% polyacrylamide with a running buffer of 1× TBE (pH 7.9).

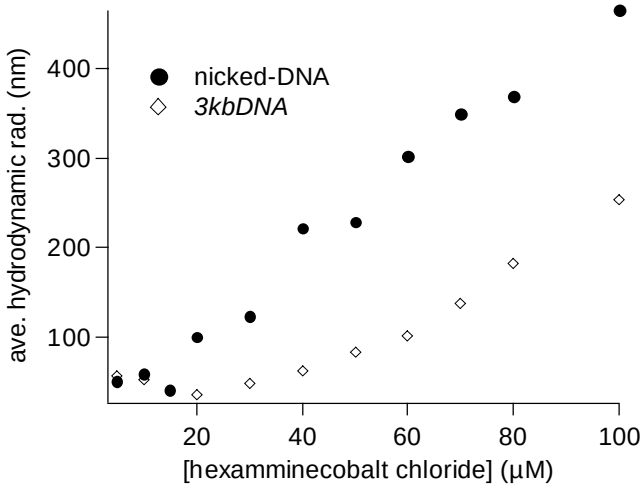

Figure S2. Hydrodynamic radius of nicked-DNA and *3kbDNA* condensate as a function of hexammine cobalt chloride concentration. The average hydrodynamic radius of the particles was calculated based on diffusion coefficients obtained by dynamic light scattering (Materials and Methods).

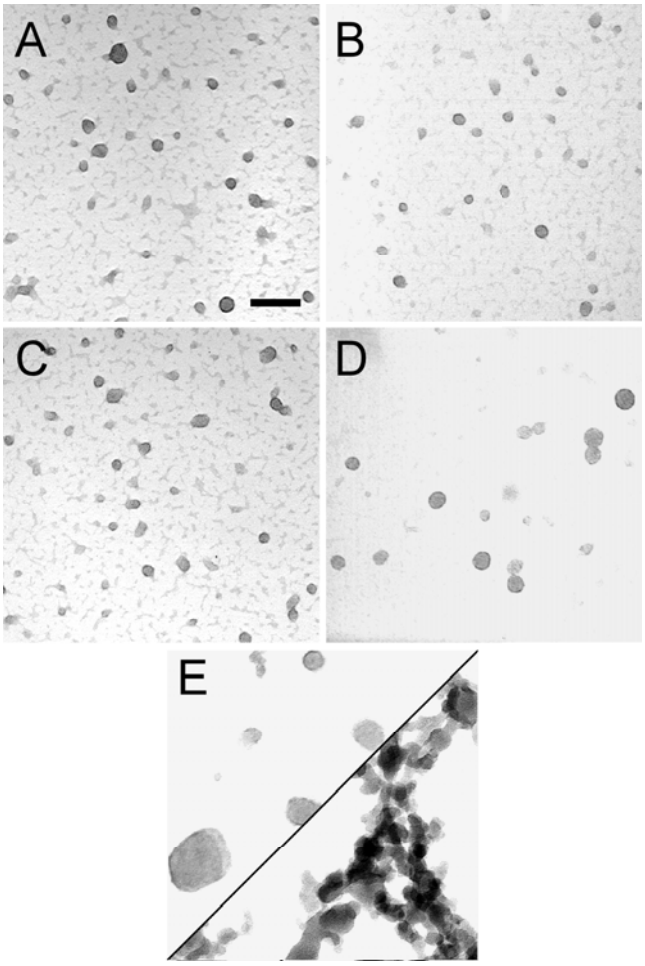

Figure S3. TEM images of particles formed by various DNA samples upon condensation with PLL. (**A**) Condensates formed by the nicked-DNA duplexes of oligonucleotides N1 and N2. (**B**) Condensates formed by the gapped-DNA duplexes of oligonucleotides G1 and G2. (**C**) Condensates formed by the nicked-gapped-DNA duplex of oligonucleotides N1 and G2. (**D**) Condensates formed by *3kbDNA.* (**E**) Condensates formed by 21-mer duplex. For all samples, DNA was 15 μM in base pair, and was condensed by mixing with PLL at a charge ratio of 1:2 (DNA phosphate:lysine) in 5 mM Bis-Tris, 50 μM EDTA (pH 7.0). Scale bar is 100 nm.

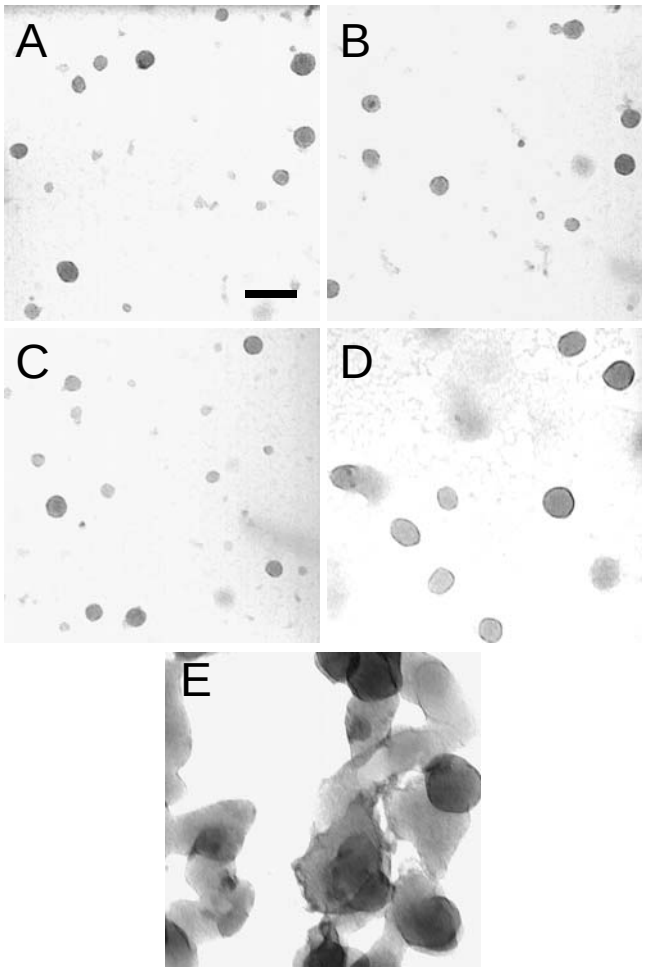

Figure S4. TEM images of particles formed by various DNA samples upon condensation with PEI. (**A**) Condensates formed by the nicked-DNA duplexes of oligonucleotides N1 and N2. (**B**) Condensates formed by the gapped-DNA duplexes of oligonucleotides G1 and G2. (**C**) Condensates formed by the nicked-gapped-DNA duplex of oligonucleotides N1 and G2. (**D**) Condensates formed by *3kbDNA.* (**E**) Condensates formed by 21-mer duplex. For all samples, DNA was 15 μM in base pair, and was condensed by mixing with PEI at a charge ratio of 1:2 (DNA phosphate:protonation site of PEI) in 5 mM Bis-Tris, 50 μM EDTA (pH 7.0). Scale bar is 100 nm.