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Self-Assembly of DNA–Block Copolymer Micelles WEI QU, Northwestern University, XUAN JIANG, HAI-QUAN MAO, Johns Hopkins University, ERIK LUIJTEN, Northwestern University — Cationic–hydrophilic block copolymers have been developed as a potential carrier for use in gene delivery, displaying good transfection efficiency and biocompatibility. The cationic blocks effectively condense the DNA into a core surrounded by a protective and stabilizing corona formed by the hydrophilic blocks [Jiang *et al.*, J. Control. Release **122** 297–304 (2007)]. Although the DNA condensation induced by the cationic blocks can be understood from energetic considerations, the formation of micelles with distinct morphologies is more complicated, as it involves several competing interactions. We employ computer simulations to model this interplay of driving forces. By correlating our simulation results with experimental observations, we provide an understanding of the self-assembly process and determine the key structural and experimental parameters that influencing the morphology of the DNA–block copolymer micelles.

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