

Abstract Submitted
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Extraction of complementary from non-complementary DNA sequences through phase separation and centrifugation¹ TAIQUITHA ROBINS, Jackson State University, Jackson, MS, DACIA MCPHERSON, CHENHUI ZHU, Department of Physics, University of Colorado, Boulder, CO, MARK MORAN, DAVE WALBA, Department of Chemistry and Biochemistry, University of Colorado at Boulder, Boulder, CO, GIULIANO ZANCHETTA, TOMMASO BELLINI, Dipartimento di Chimica, Biochimica e Biotecnologie per la Medicina, Università di Milano, Milano, Italy, NOEL CLARK, Department of Physics and Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO — Double stranded deoxyribonucleic acid (DNA) is known to form lyotropic liquid crystal (LC) phases, nematic and then columnar with increasing DNA concentration in water. Single stranded (DNA) does not form liquid crystal phases. We study the phase separation of both long (900bp) and short (6-20bp) DNA. In the mixture solution of a self complementary sequences (scDNA) and non complementary sequences (nscDNA), the scDNA forms DNA double helices and hence forms LC phases while the nscDNA stays in the isotropic phase, the LC appearing in the form of phase separated droplets. We report results of the use of centrifugation to produce complete spatial segregation of complementary and noncomplementary DNA, based on their different LC-formation tendencies.

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