Can Strand Displacement Take Place in DNA Triplex?

Qian Li, Cheng Tian, Xiang Li & Chengde Mao*

Department of Chemistry, Purdue University, West Lafayette, IN 47907, USA

mao@purdue.edu

Supporting Information

Experimental Methods.

Oligonucleotides. All strands were purchased from Integrated DNA Technologies, Inc. and used without further purification. DNA Sequences:

H strand: 5'-TTCCTTTCTCCTTCTTTTAACTATTTTCTTCCTCTTTCCTTGTTACATTGCACACT-3';

S strand: 5'-AAGGAAAGAGGAAGAAAA-3';

M strand: 5'-AGTGTGCAATGTAACAAGGAAAGAGGA-3';

L strand: 5'-AGTGTGCAATGTAACAAGGAAAGAGGAAGAAAA-3.

Formation of DNA complexes. 2 μM DNA (H+S) or (H+M) or (H+L) were prepared in TAE/Mg^{2+} buffer [containing 40 mM Tris, 20 mM acetic acid, 2 mM EDTA, and 12.5 mM $Mg(CH_3COO)_2$, pH 8.0] by cooling the DNA solution from 95 ºC to room temperature for 2 hrs. For triplex strand displacement, pH of the duplex solution was adjusted to 5.0 by adding 1.0 M HCl, and then equal molar of invading strand L was added to the solution.

Native gel electrophoresis. 15% native polyacrylamide (19:1 acrylamide/bisacrylamide) gel was run at room temperature at pH=8.0 (TAE/Mg^{2+} buffer) or pH=5.0 [containing 20 mM acetic acid, 2 mM EDTA, and 12.5 mM $Mg(CH_3COO)_2$, pH 8.0]. After electrophoresis, the gels were stained with Stains-All (Sigma) and scanned with an HP scanner. Please note that strand displacement was not stopped and could continue during electrophoresis.

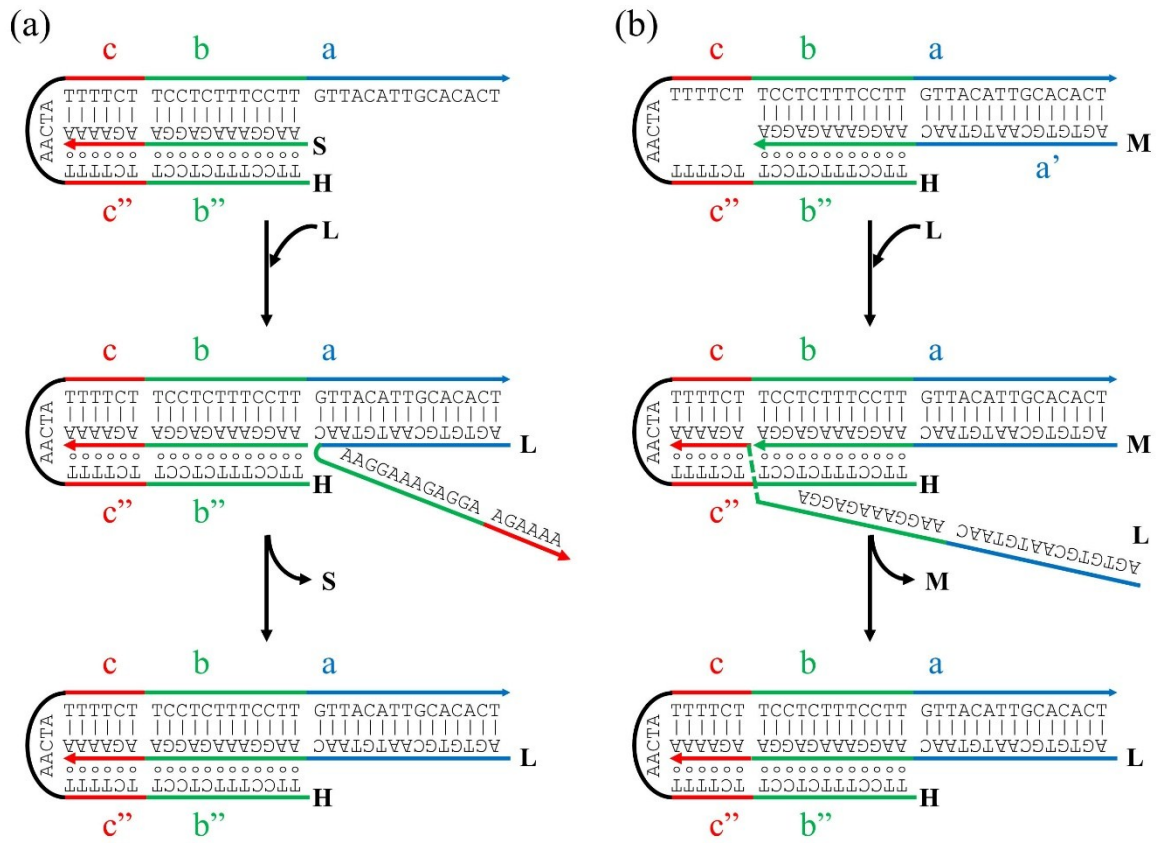

Figure S1. Schemes of strand displacement for system 1 (a) and system (2) at pH 5.0.

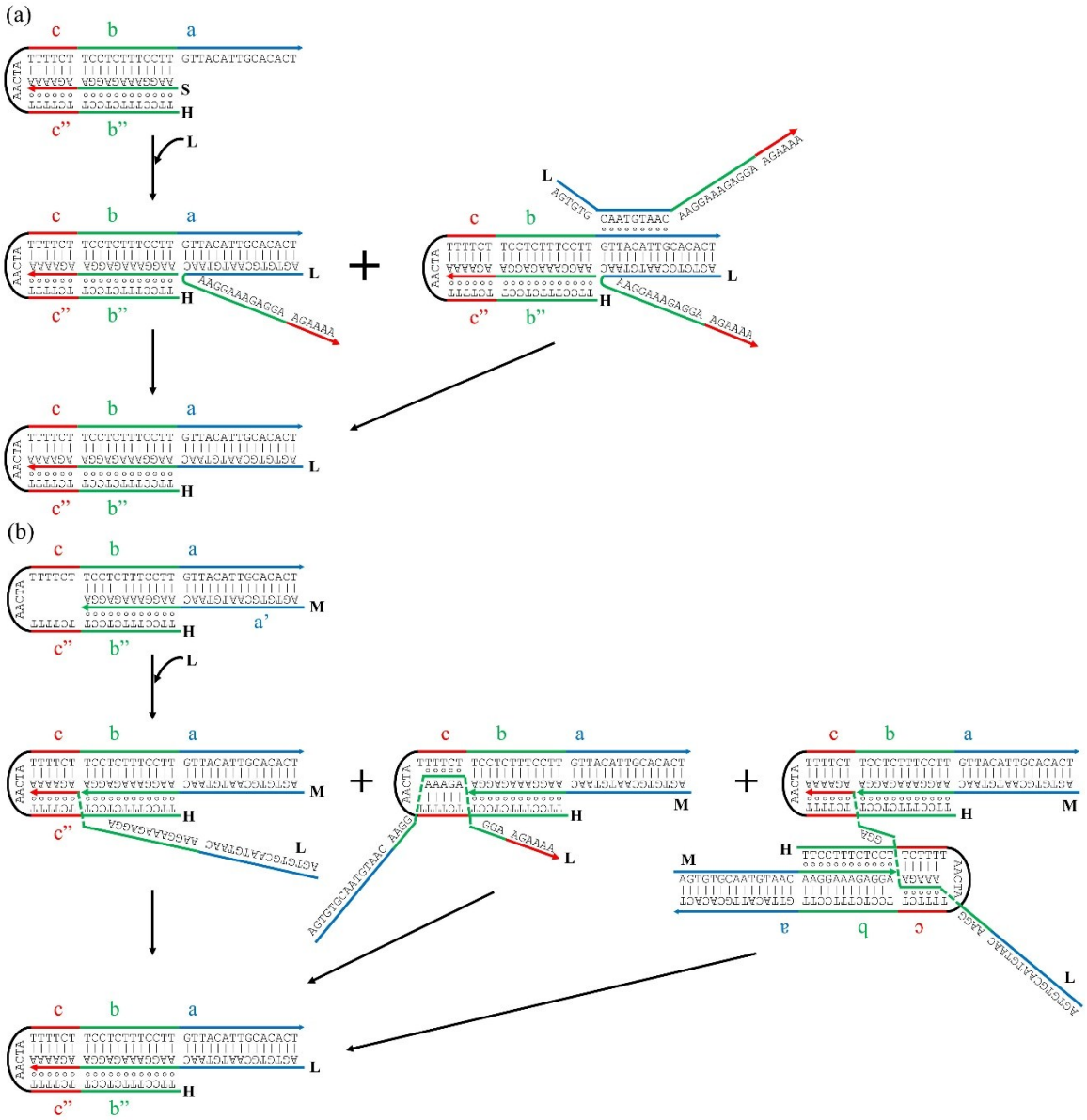

Figure S2. Schemes of side reactions of strand displacement for system 1 (a) and system (2) at pH 5.0.