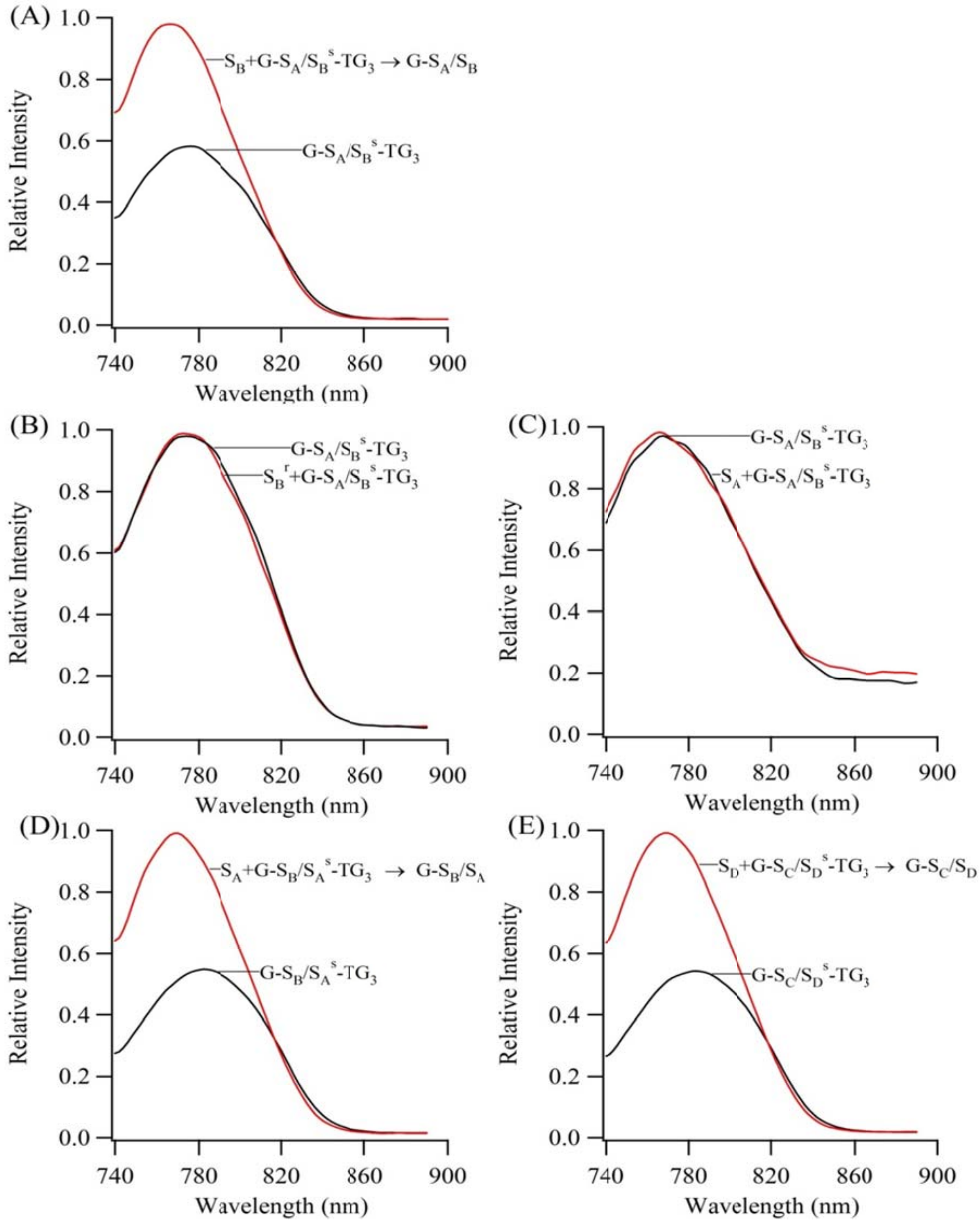

Figure 1S: Emission spectra associated with the reactions of the cluster conjugates of (A) G-S_A/S_B^s-TG_3 with S_B, (B) G-S_A/S_B^s-TG_3 with S_B^r (5'-TCCAGCGGCGGG-3'), (C) G-S_A/S_B^s-TG_3 with S_A (5'-AGGTCGCCGCCC-3'), (D) G-S_B/S_A^s-TG_3 with S_A, and (E) G-S_C/S_D^s-TG_3 with S_D. For (B) and (C), the lack of spectral response is attributed to targets that do not complement the recognition component S_A. As in (A), (D) and (E) show that target recognition of their complementary sites produces higher emission, indicating that the three cases share a common basis in hybridization.

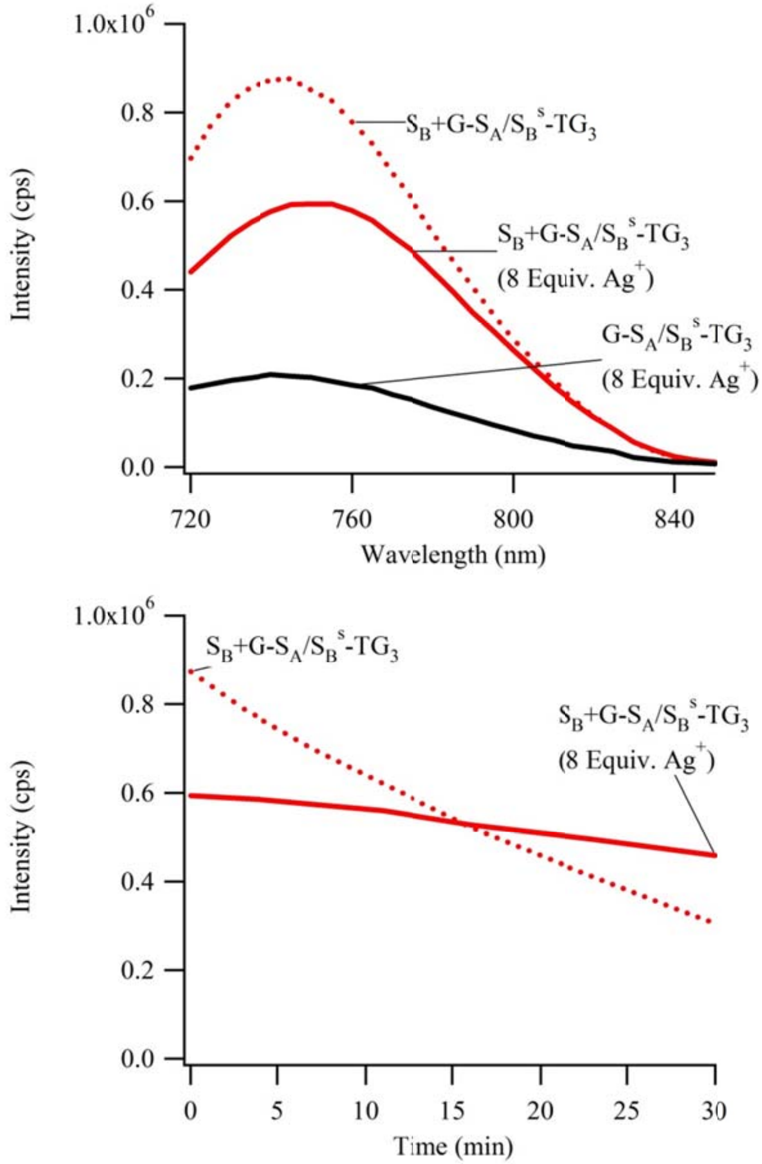

Figure 2S: (Top) Emission spectra for the clusters conjugated with G-S_A before (solid black line) and after (solid red line) exchange of S_B^s-TG_3 with S_B in a buffer with 10% serum and with 8 additional equivalents of Ag^+. Relative to the cluster conjugate with G-S_A/S_B without additional Ag^+ (dotted red line), the emission is lowered with additional Ag^+. (Bottom) Time-dependent intensity changes associated with the cluster complex with G-S_A/S_B in buffers with 10% serum with (solid red line) and without (dotted red line) an additional 8 equivalents of Ag^+.

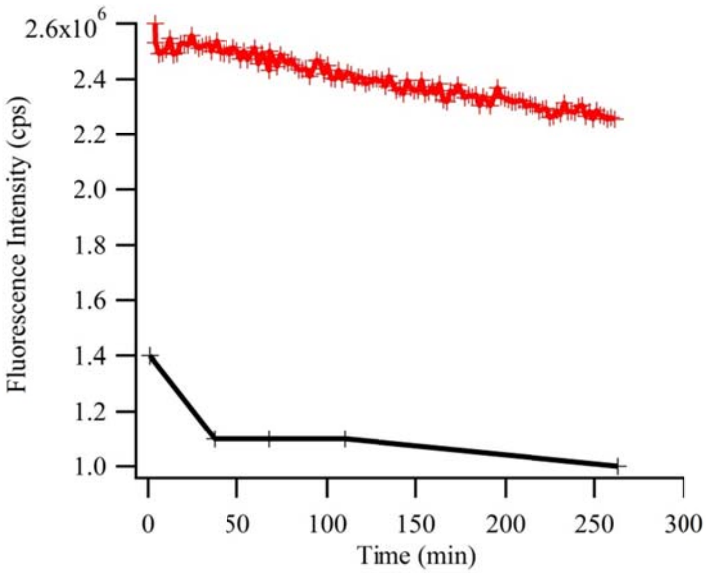

Figure 3S: Time profiles of the emission from the clusters bound to G-S_A/S_B (red) and G-S_A/S_B^s-TG_3 (black). Over the 4 hour time period, the signal for the former diminishes by 10% and the signal for the latter decreases 7%. Given the relatively rapid fluorescence changes that accompany strand exchange, the clusters are effectively stable in this available window of detection.