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# Supporting Information



## Metal-Ion-Dependent Folding of a Uranyl-Specific DNAzyme: Insight into Function from Fluorescence Resonance Energy Transfer Studies

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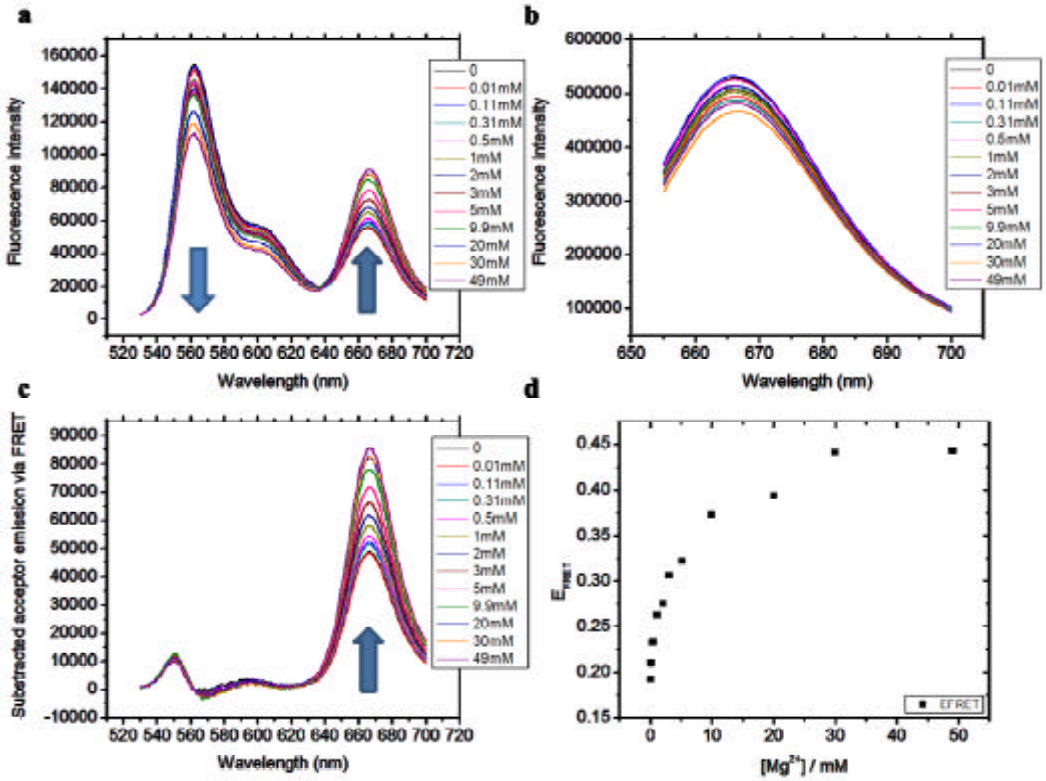


Figure S1. Sample emission spectra of Cy3 donor and Cy5 acceptor of the $UO_2^{2+}$-specific DNAzyme, and $E_{FRET}$ obtained by the $(ratio)_A$ method in the presence of incresing concentrations of metal ions. The sample spectra shown here are from $Mg^{2+}$ titrations in 50 mM NaNO3 and 50 mM Na-MES buffer (pH 5.5) containing 100 mM $[Na^+]$ when the stem II and III are labeled with Cy5 and Cy3, respectively (see the labeling scheme in Figure 1e): a) emission spectra of Cy3 (at 562 nm) and Cy5 (at 666 nm) when system is irradaited at Cy3 excitation wavelength of 513 nm. With increasing $Mg^{2+}$ concentration, the 562 nm peak intensity decreases while the 666 nm peak intensity increase, indicating an increased energy transfer process; b) emission spectra of Cy5 when system is irradaited at Cy5 excitation wavelength of 648 nm. With increasing $Mg^{2+}$ concentration, the 666 nm peak intensity decreases to a small extent, due to the small dilution effect; c) emission spectra of Cy5 after subtratcting Cy3 emmission contributions in a) above; d) A plot of $E_{FRET}$ against $Mg^{2+}$ concentration obtained from b) and c) using $(ratio)_A$ method. With increasing $Mg^{2+}$ concentration, the $E_{FRET}$ increases, indicating a folding process. The $E_{FRET}$ values obtained from the $(ratio)_A$ mthod excludes the dilution effect shown in the fluorescence spectra in a)-c), representing a more accurate FRET change.

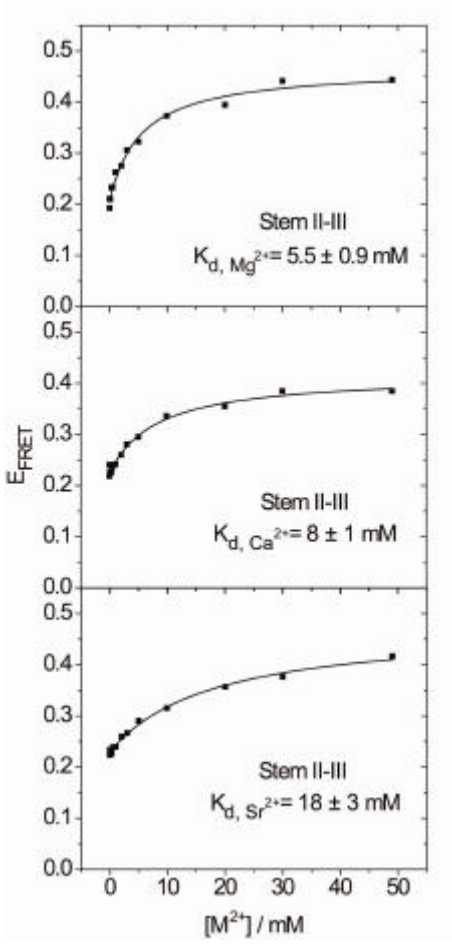


Figure S2. Plots of $E_{FRET}$ versus the concentrations of Group IIA metal-ions ($Mg^{2+}$, $Ca^{2+}$, $Sr^{2+}$) of the $UO_2^{2+}$-specific DNAzyme in 50 mM NaNO3 and 50 mM Na-MES buffer (pH 5.5) containing 100 mM [$Na^+$] when the stem II and III are labeled with Cy5 and Cy3, respectively (see the labeling scheme in Figure 1e).