Supplementary Data

Label-free Fluorescent Detection of Ions, Proteins and Small Molecules Using Structure-Switching Aptamers, SYBR Gold and Exonuclease Ⅰ

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Table S-1. Potassium detection under different assay conditions.

Sample	Incubation time	Enzymatic reaction time (37℃)	$(F-F^0)/F^0$
original assay	20℃, 12 hr	40 min	0.73
modified assay 1	20℃, 1 hr	40 min	0.41
modified assay 2	20℃, 1 hr	10 min	0.59
modified assay 3	4℃, 15 min	40 min	0.49
modified assay 4	4℃, 15 min	10 min	0.43

For blank sample, $(F-F^0)/F^0=0$

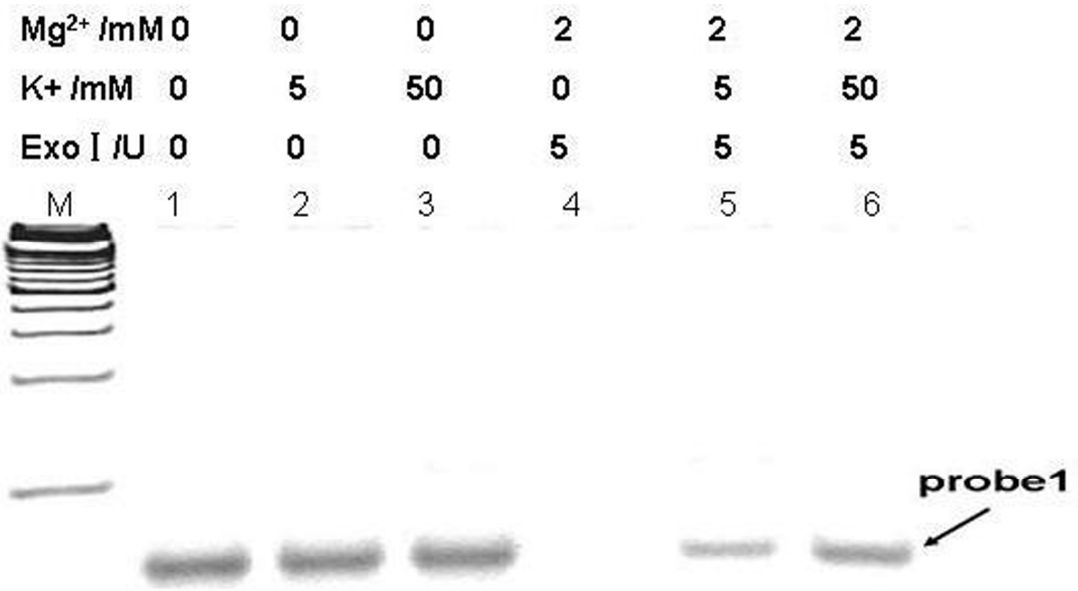

Figure S-1. PAGE image to show the increased resistance of probe 1 to Exo I digestion as the increases of the K^+ concentrations. 20% native PAGE gel was run under 70 V for 90 minutes.

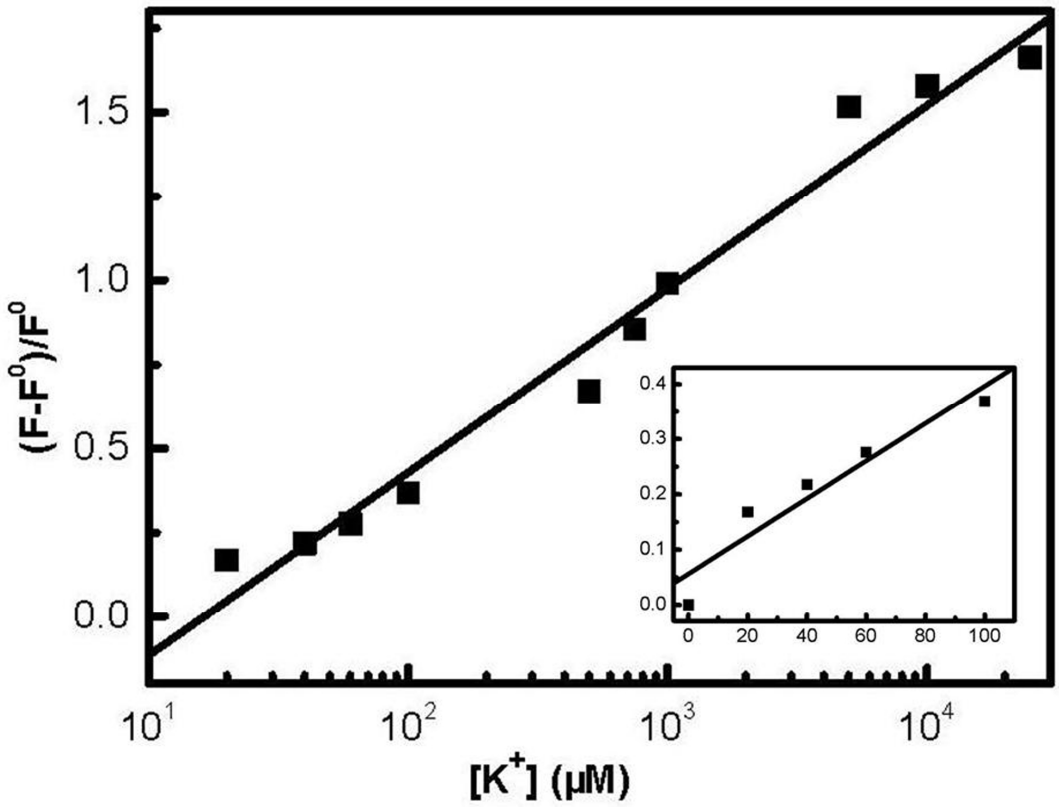

Figure S-2. Relative fluorescence intensities $(F-F^0)/F^0$ of the SYBR Gold/probe 1 mixture upon addition of different concentrations of K^+. F^0 and F stand for the fluorescent intensity in the absence and presence of potassium ions. The incubation time before adding Exo I and SYBR gold was 1 hr. All other assay conditions were as same as those described in the main text for K^+ detection.

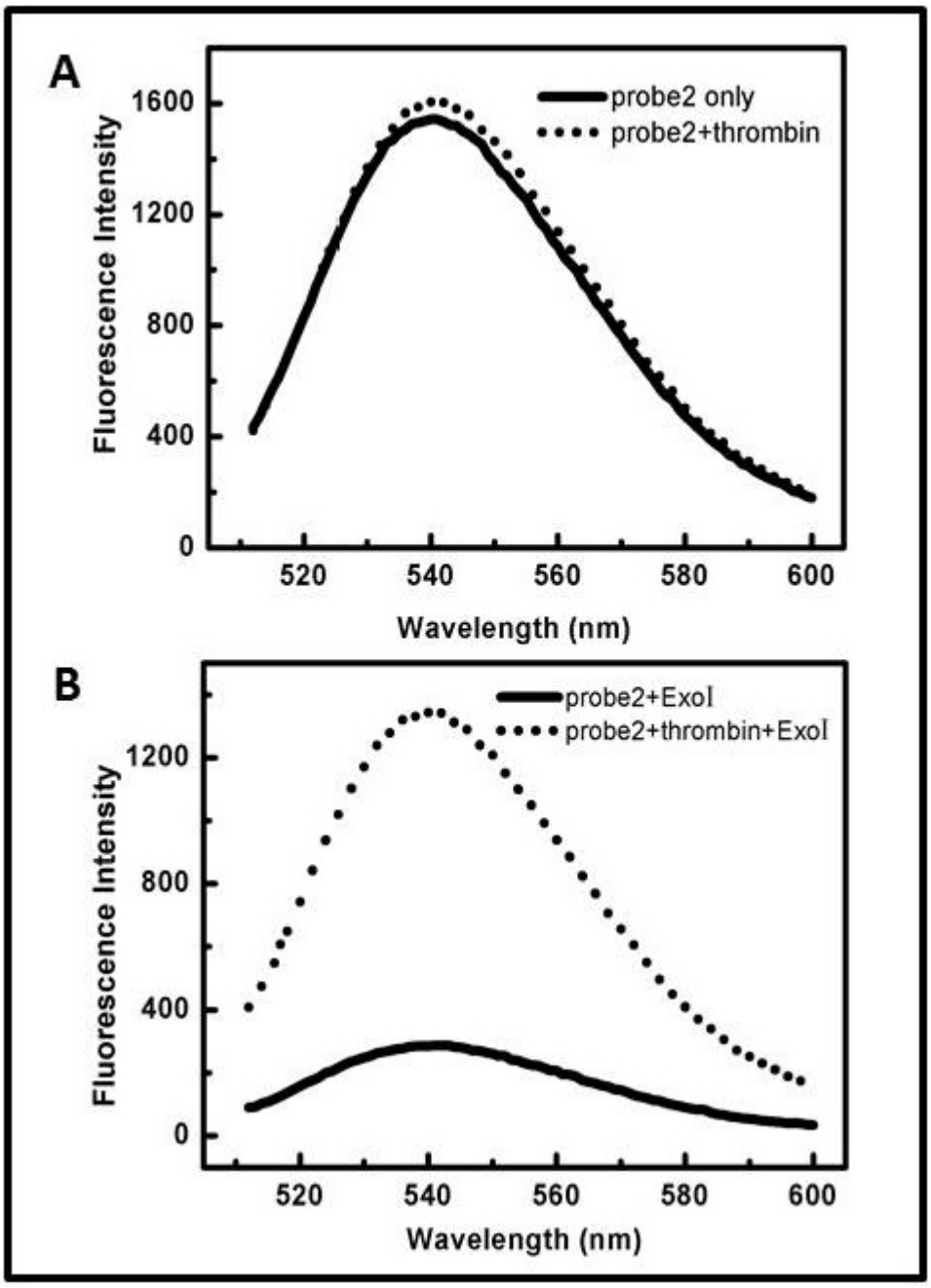

Figure S-3. General applicability of the detection strategy for thrombin detection: The fluorescence spectra of SYBR Gold/probe 2 mixture with or without 1 μM thrombin, without (A) or with (B) the Exo Ⅰ digestion involved.

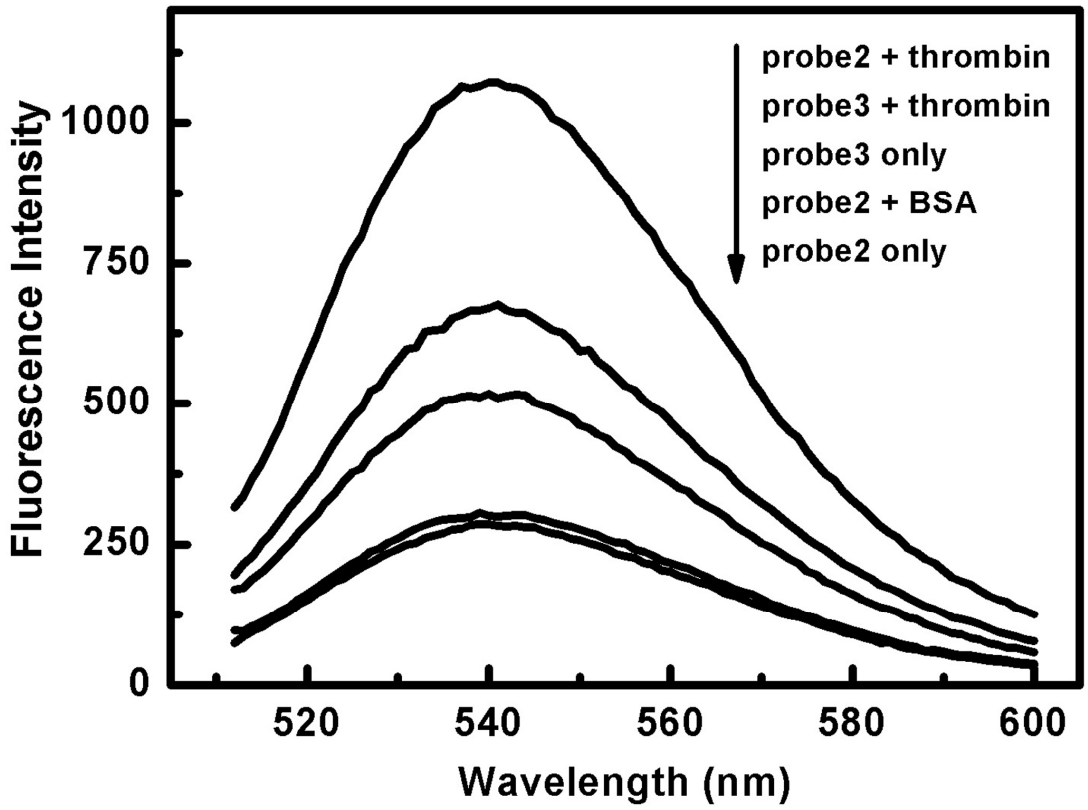

Figure S-4. The fluorescence spectra from solutions containing SYBR Gold, Exo Ⅰ, different targets, and different probes. All assay conditions were as same as those described in the main text for thrombin detection.

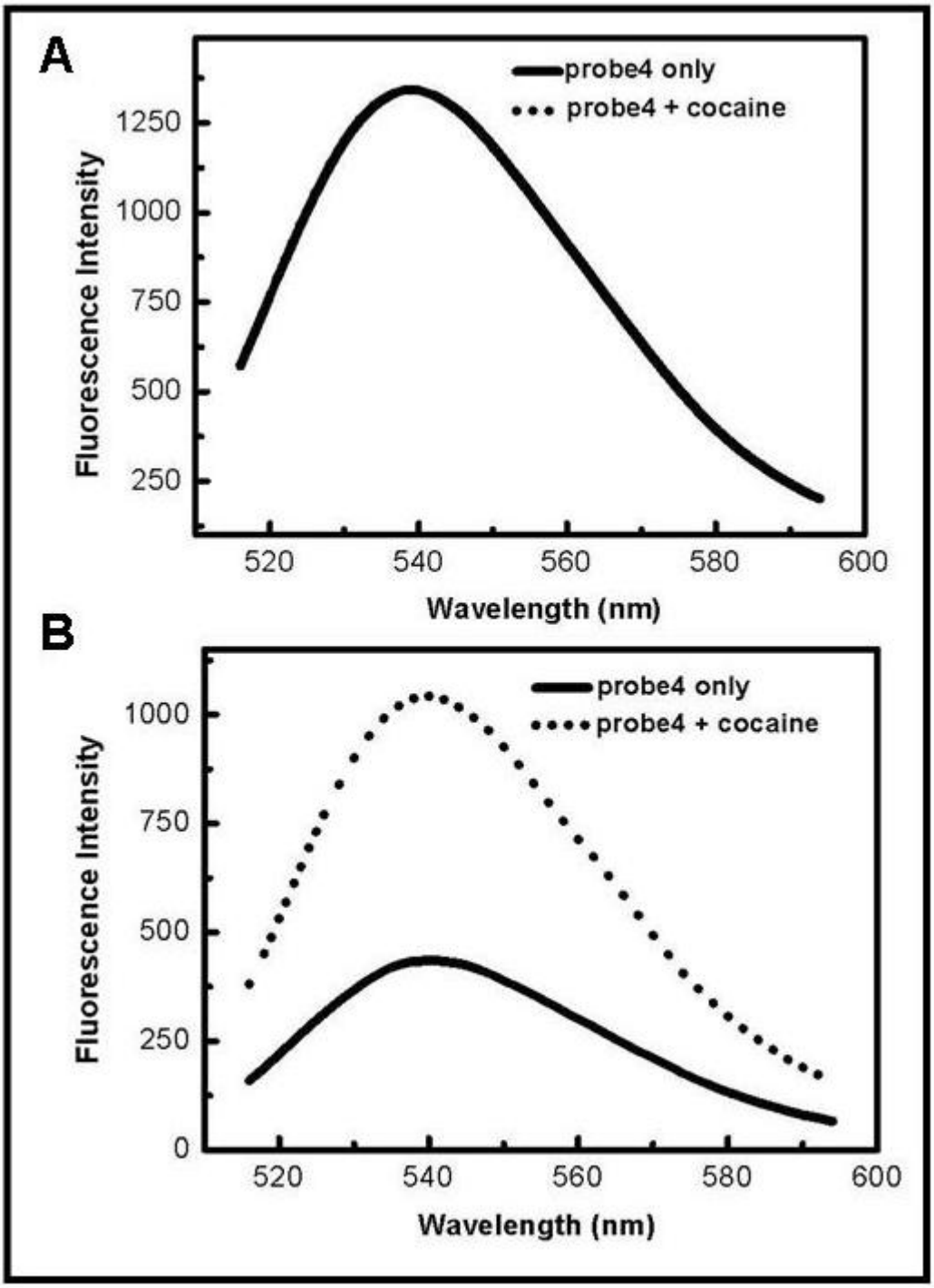

Figure S-5. General applicability of the detection strategy for cocaine detection: The fluorescence spectra of SYBR Gold/probe 4 mixture with or without 500 μM cocaine, without (A) or with (B) the Exo Ⅰ digestion involved. The solid line and the dotted line were overlapped with each other in A.

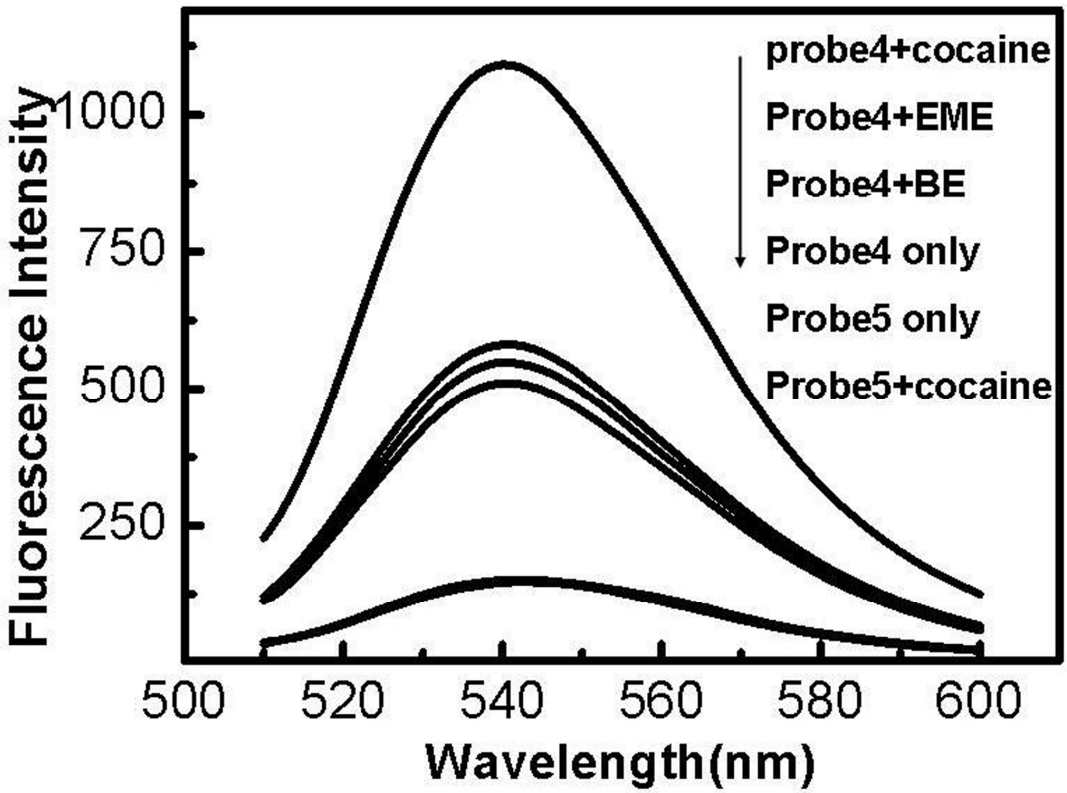

Figure S-6. The fluorescence spectra from solutions containing SYBR Gold, Exo Ⅰ, different targets, and different probes. All assay conditions were as same as those described in the main text for cocaine detection. EME (ecogonine methyl ester) and BE (benzoyl ecgonine) are all cocaine analogues.

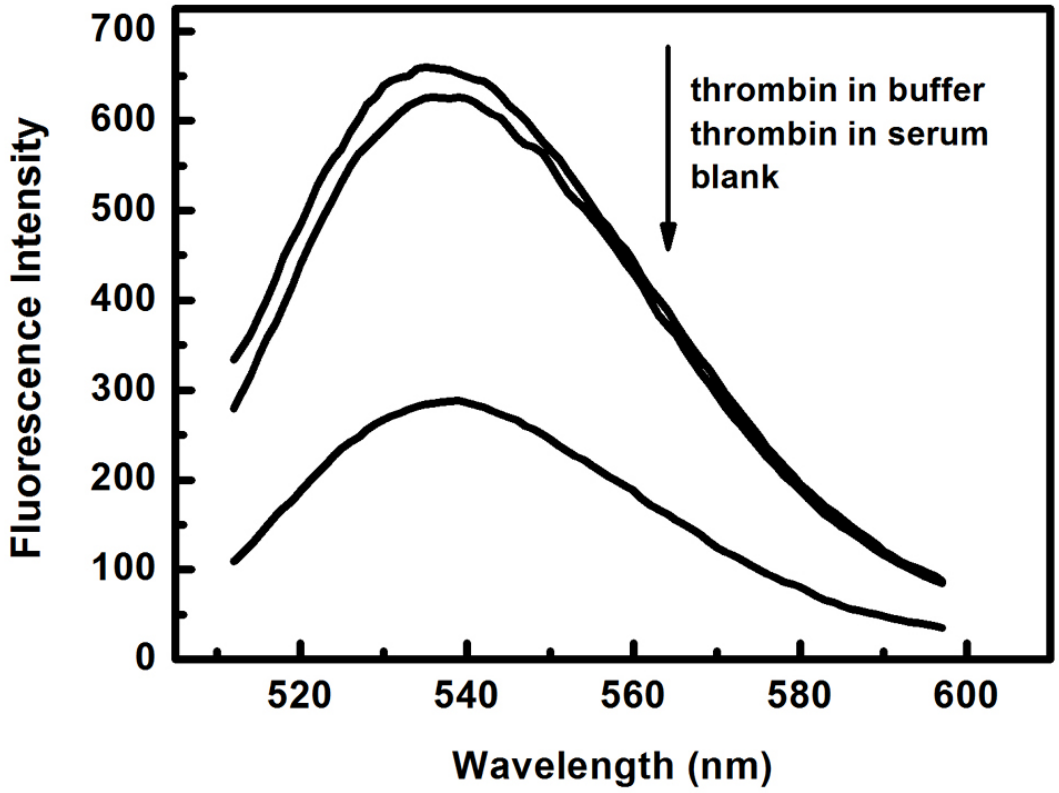

Figure S-7. The fluorescence spectra from solutions without or with 680 nM thrombin in buffer or in serum. All assay conditions were described in the main text.