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## **Supplementary Information**

## for

## Novel water-soluble quantum dots-neutral red fluorescence resonance energy transfer probe for the selective detection of megestrol acetate

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Figure S1. The fluorescence spectra of MPA-modified ZnS QDs (300  $\mu$ M) (a), NR (1.8  $\mu$ M) (b), and their mixture (c) in buffer solution (pH 8.5), excited at  $\lambda$ =300 nm.



Figure S2. Fluorescence quenching spectra of the  $\beta$ -CD-QDs-NR FRET fluorescence probe induced by various concentrations of 17 $\alpha$ -Hydroxyprogesterone (5H) (from a to g: 0, 60, 120, 180, 240, 300 and 360  $\mu$ M ) in buffer solution (pH 8.5).  $\beta$ -CD-modified ZnS QDs (300  $\mu$ M), NR (1.8  $\mu$ M), excited at  $\lambda$ =300 nm.



Figure S3. The fluorescence intensities of the  $\beta$ -CD-QDs-NR FRET fluorescence probe (at 435 nm) before and a fter interacting with the nine steroid hormones at three concentration levels (10, 60 and 180  $\mu$ M), respectively, in buffer solution (pH 8.5).  $\beta$ -CD-modified ZnS QDs (300  $\mu$ M), NR (1.8  $\mu$ M), excited at  $\lambda$ =300 nm. The results were the average of three repeats.



Figure S4. (A) The fluorescence decay curves of the  $\beta$ -CD-QDs-NR FRET fluorescence probe (300  $\mu$ M  $\beta$ -CD-QDs + 1.8  $\mu$ M NR) before and after interacting with 9H (60  $\mu$ M). (B) The representative fluorescence decay curves of the  $\beta$ -CD-QDs-NR FRET fluorescence probe (300  $\mu$ M  $\beta$ -CD-QDs + 1.8  $\mu$ M NR) before (a) and after (b) interacting with 5H (180  $\mu$ M), monitored at  $\lambda$ =564 nm.



Figure S5. The fluorescence intensities (at 564 nm) of the  $\beta$ -CD-QDs-NR FRET fluorescence probe before and after adding various ions, in the buffer solution (pH 8.5). The concentrations of the ions were 180  $\mu$ M,  $\beta$ -CD-modified ZnS QDs (300  $\mu$ M), NR (1.8  $\mu$ M), excited at  $\lambda$ =300 nm. The results were the average of three repeats.