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Supporting Information

A mitochondria targetable near-infrared fluorescence probe for GSH visual biological detection

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1. Characterization of probe JGP

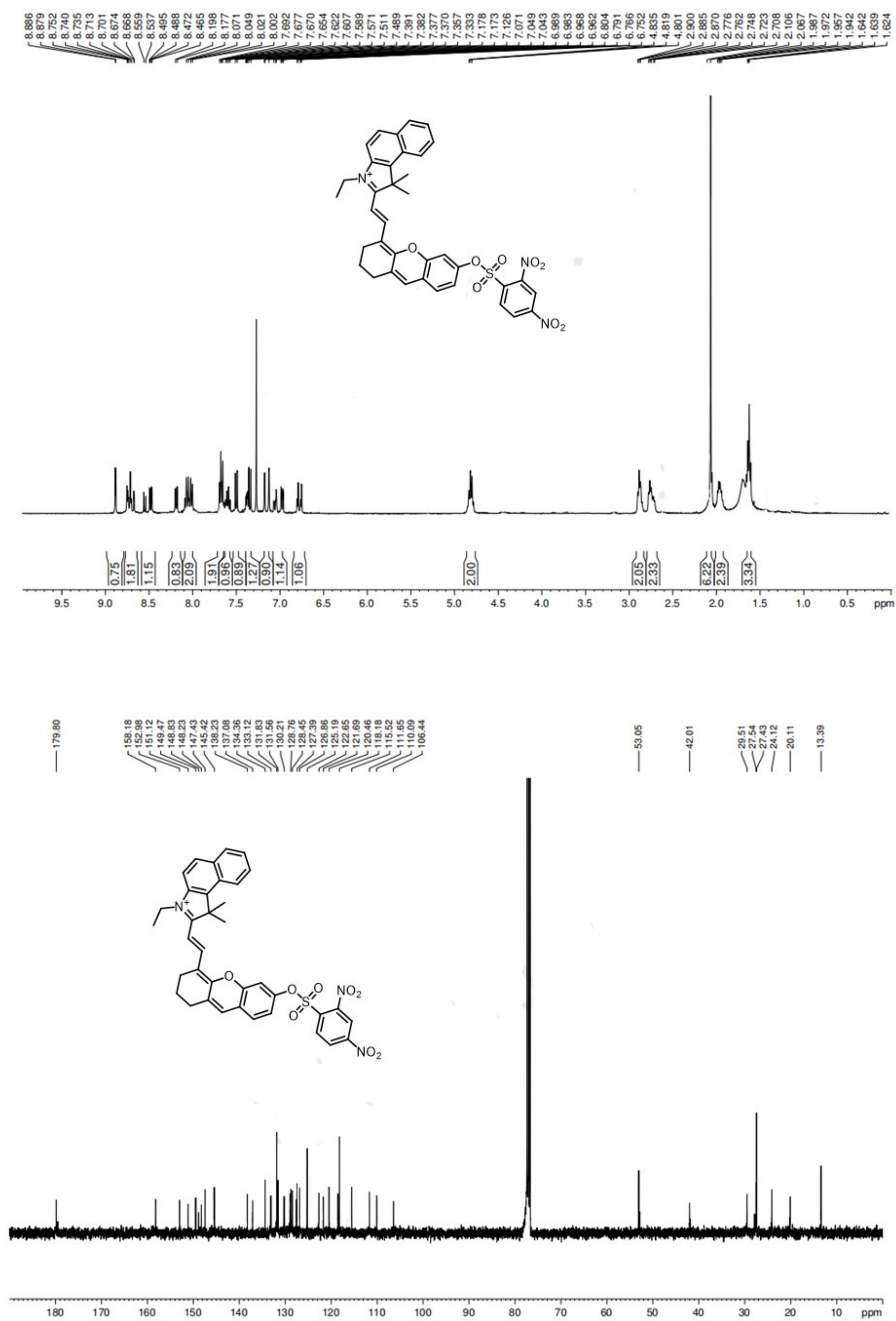

Fig. S1. ^{1}H NMR and ^{13}C NMR spectrum of **JGP** ($CDCl_3$).

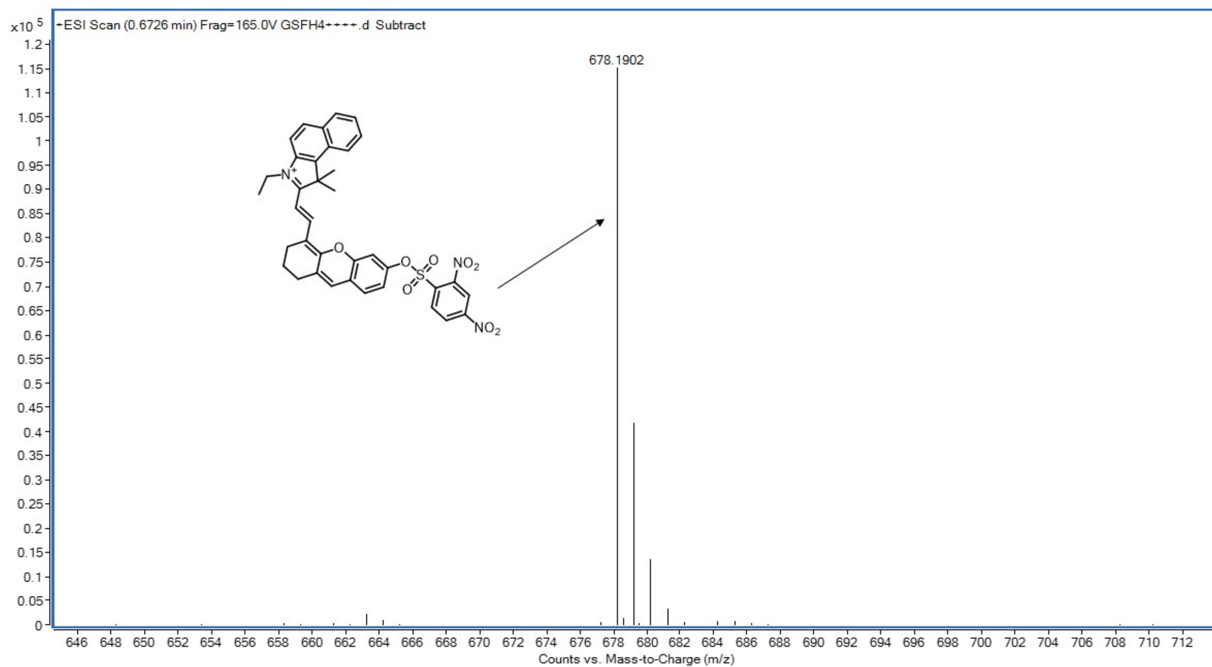

Fig. S2. HRMS-ESI spectrum of **JGP**.

2. ESI-MS test for mechanism of the reaction between JGP and GSH

JGP was dissolved in a phosphate buffer (CH_3CH_2OH:PBS, V:V=7.3, pH=7.4) and final concentration of **JGP** was 10 μM. Glutathione solution was added in to the solvent system (final concentration of GSH was 20 μM). After reacting for 5min, the reaction solvent was carried out for HRMS-ESI test (positive ion mode) without any further purification.

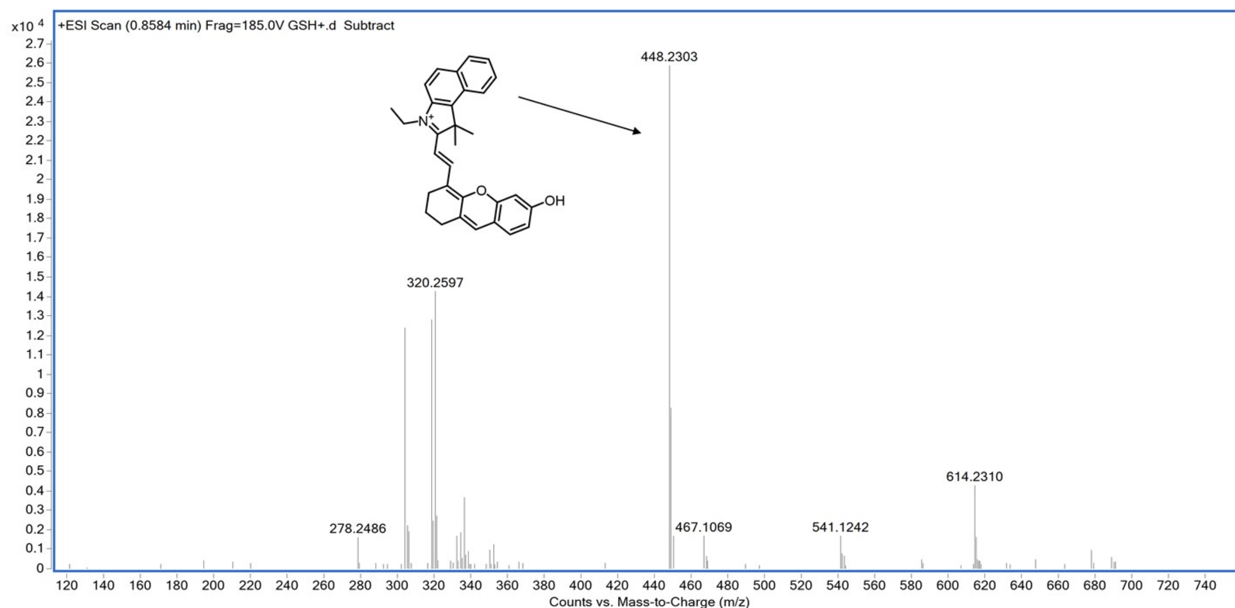

Fig. S3. HRMS-ESI spectrum of the reaction result between **JGP** and GSH.

3. Time-dependent fluorescence intensity test of probe JGP to GSH

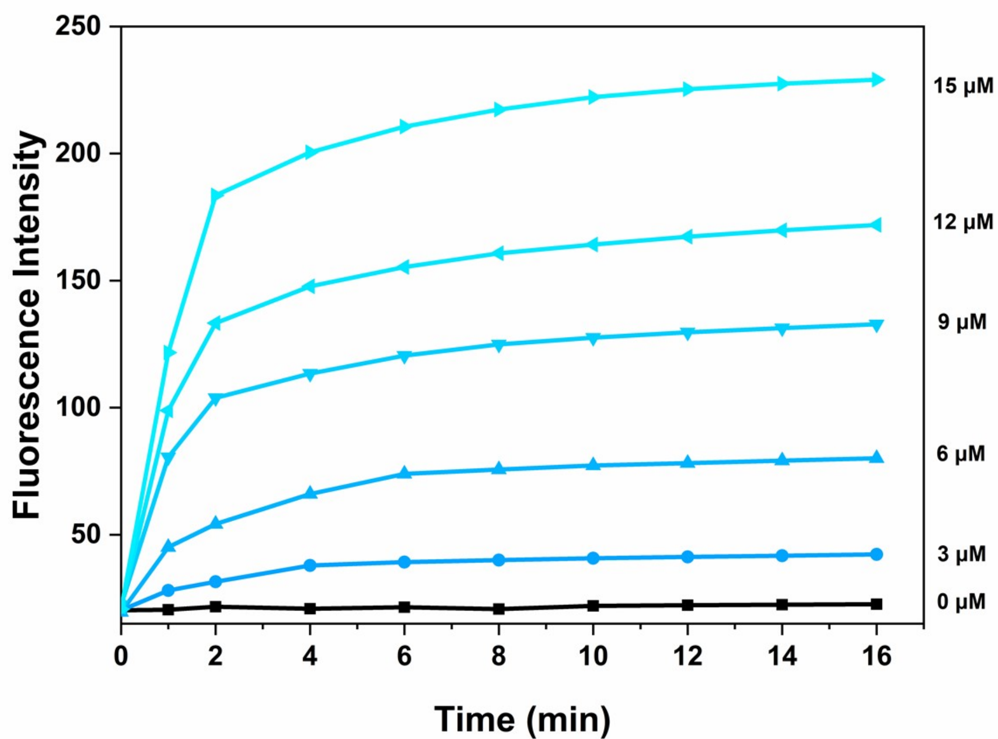

Fig. S4. Time-dependent fluorescence intensity of probe **JGP** (20 μM) after the addition of different concentration of GSH (0, 3, 6, 9, 12, and 15 μM) in PBS buffer (5mL, pH 7.4) (λ_{ex}=680 nm, λ_{em}=730 nm).

4. pH Test

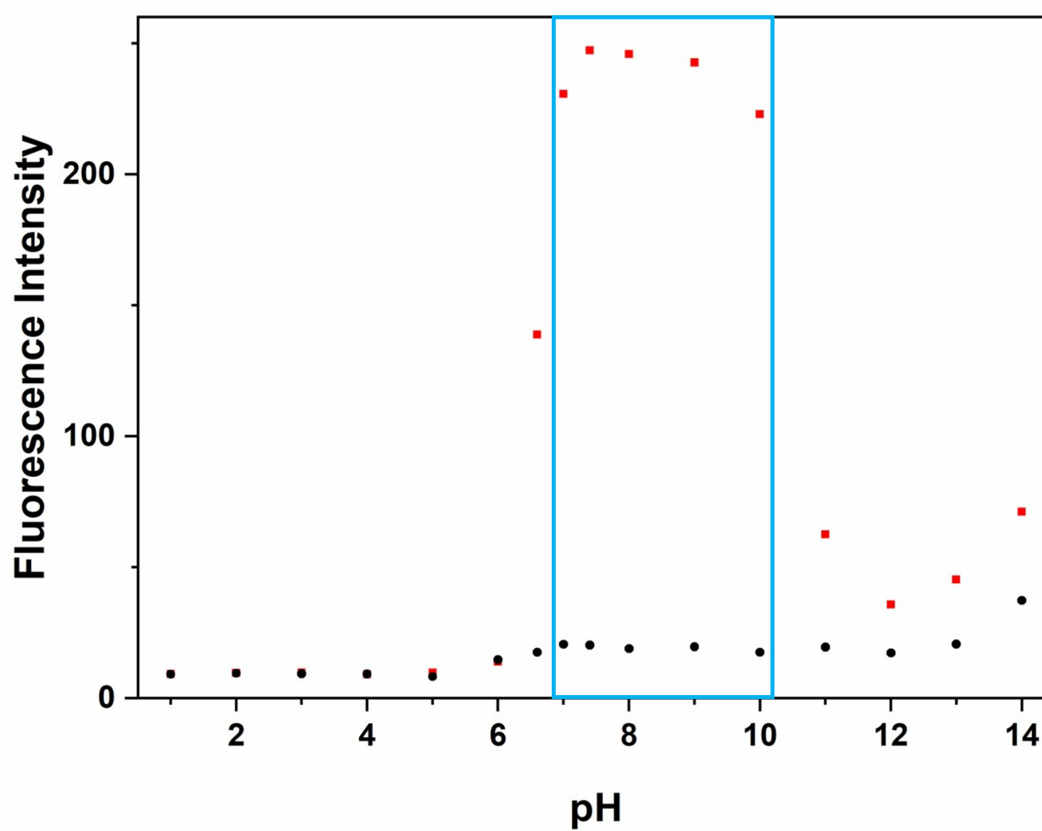

Fig. S5. pH effects on fluorescence intensity of probe **JGP** (dark points, 20 μM) and probe **JGP** (20 μM) + GSH (red squares, GSH concentration=15 μM). (λ_{ex}=680 nm, λ_{em}=730 nm; reaction time: 5min).

5. MTT Cytotoxicity Experiment

HL-60 (leukemia cells) A-549 (lung cancer cells), SMMC-7721 (hepatoma cells), MCF-7 (breast cancer cells), SW-480 (human colon cancer cells), and BEAS-2B (human normal lung epithelial cells) were formulated into single-cell suspensions in culture medium (DMEM) containing 10 % fetal bovine serum. Then the prepared cell suspension was inoculated into 96 well plates at 4000 cells per well. The volume of the culture medium per well was 100 μL. The adherent cells were inoculated for 12 to 24 h in advance. **JGP** dissolved in DMSO was added to the wells to get a concentration gradient (1.25, 2.5, 5 and 10 μM) and a final volume of 200 μL (three control groups for each treatment). After culturing for 24 h at 37 °C, the cultured cells adhered. Then 20 μL of 3-(4, 5-dimethylthiazol-2-yl)-5(3-carboxymethoxyphenyl)-2- (4-sulfopheny)-2H-tetrazolium (MTS) solution and 100 μL of the culture solution were added to each well, and three blank wells were set as the control groups. In order to make the reaction complete, the plate was incubated for 2-4 h and then tested by a multifunction microplate reader (MULTISKANFC).

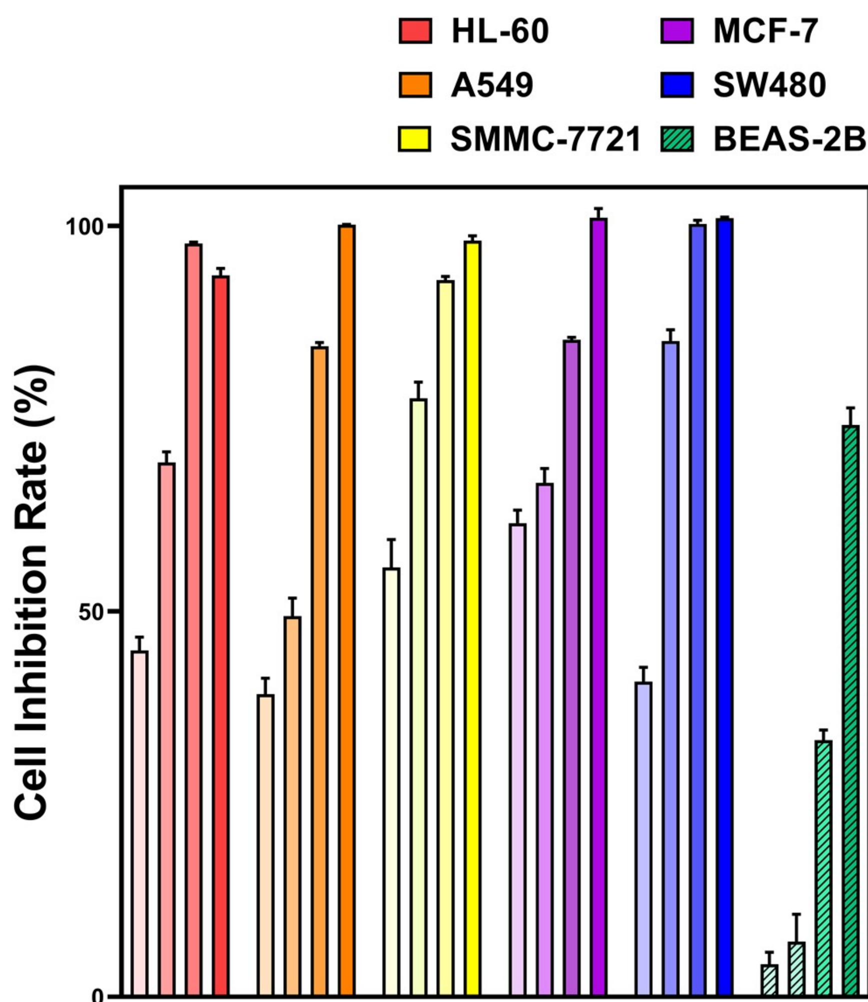

Fig. S6. Comparison of cell inhibition rates against five different tumor cells and BEAS-2B cells (concentration gradient from left to right: 1.25 μM, 2.5 μM, 5μM, 10 μM).