

Supplementary data

A Novel Nopinone-based Turn-on Fluorescent Probe for Hydrazine in Living Cells with High Selectivity

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Figure Captions.

Fig. S1. HRMS of compound **2**, compound **3** and probe **4**.

Fig. S2. ^1H and ^{13}C NMR spectra of compound **2**.

Fig. S3. ^1H and ^{13}C NMR spectra of compound **3**.

Fig. S4. ^1H and ^{13}C NMR spectra of probe **4**.

Fig. S5. MTT assay of Hela cells were incubated with 60, 80, 100, 120 and 150 μM probe **4** for 24 h.

Fig. S6. Time-dependent fluorescence changes of probe **4** (100 μM) upon addition of N_2H_4 (900 μM). (λ_{ex} = 300 nm, λ_{em} = 442nm).

Fig. S7. Absorption changes of Probe **4** (100 μM) with N_2H_4 (0-600 μM). All data were measured after 30 min of pretreatment of Probe **4** with N_2H_4 in ethanol/ H_2O (1/1, v/v) (10 mM phosphate buffer solution, pH = 7.4).

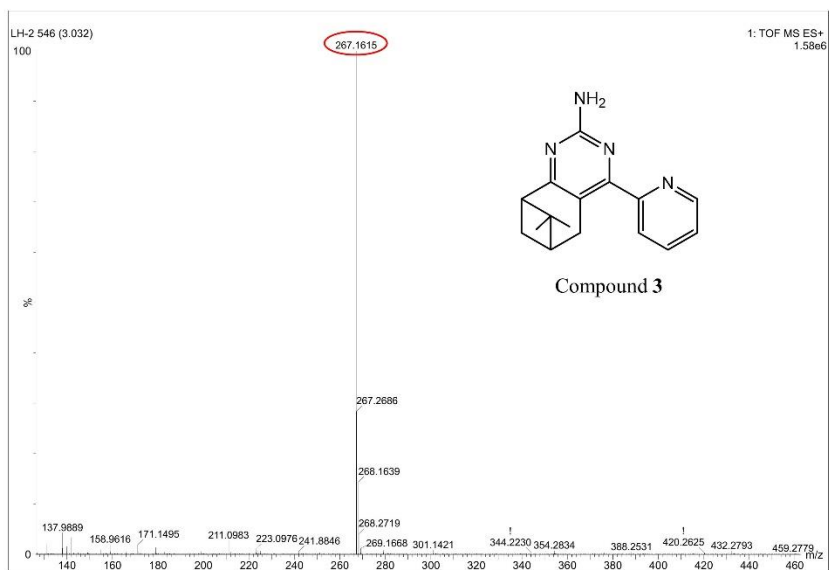
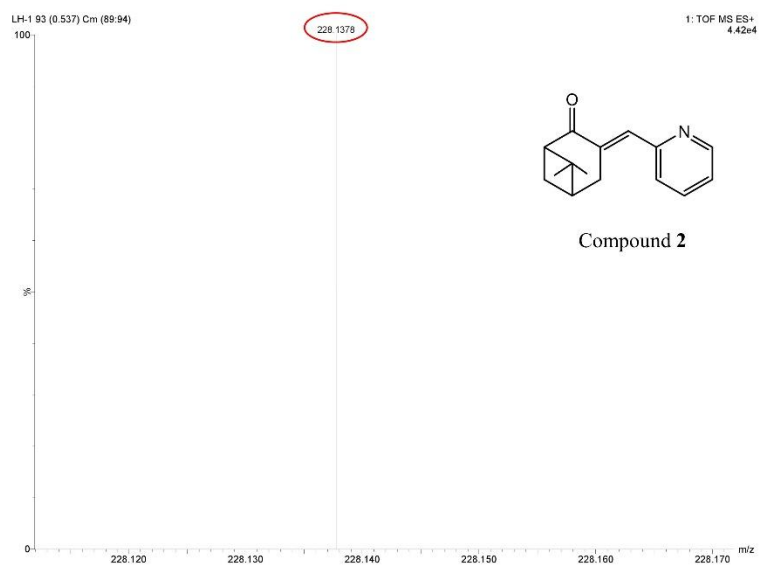
Fig. S8. Fluorescence emission spectra of Probe **4** (100 μM) before (black line) and after (red line) the addition of N_2H_4 (400 μM). (λ_{ex} = 300 nm, λ_{em} = 442nm).

Fig. S9. Absorption spectra of Probe **4** (100 μM) in the absence and presence of 600 μM hydrazine and Compound **3** in ethanol/ H_2O (1/1, v/v) (10 mM phosphate buffer solution, pH = 7.4).

Fig. S10. MTT assay of Hela cells were incubated with 0.2, 0.4, 0.6 and 0.8 M hydrazine for 12 and 24 h.

Fig. S11. Fluorescence spectra of 10, 20, 40, 60, 80 and 100 μM Probe **4** before (black bar) and after (red bar) the addition of 9 equiv. N_2H_4 .

Table S1. Comparison of probe **4** with other hydrazine probes.



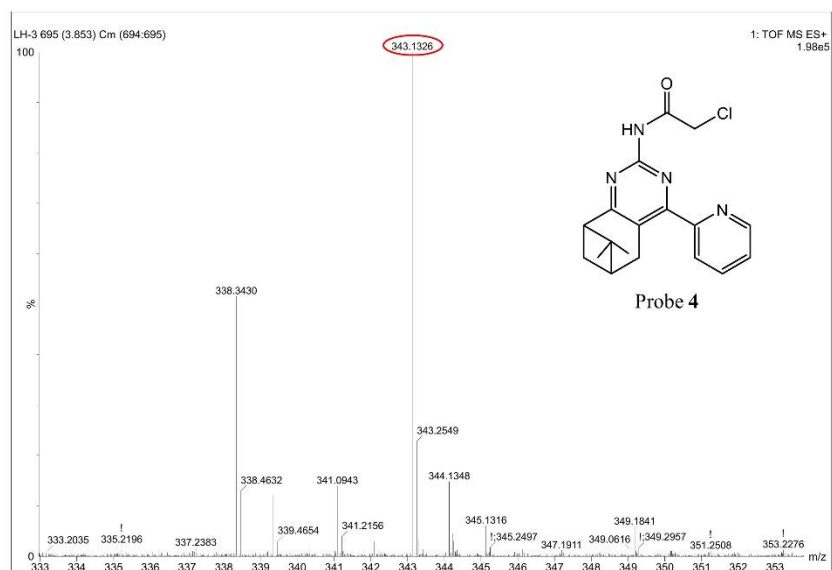
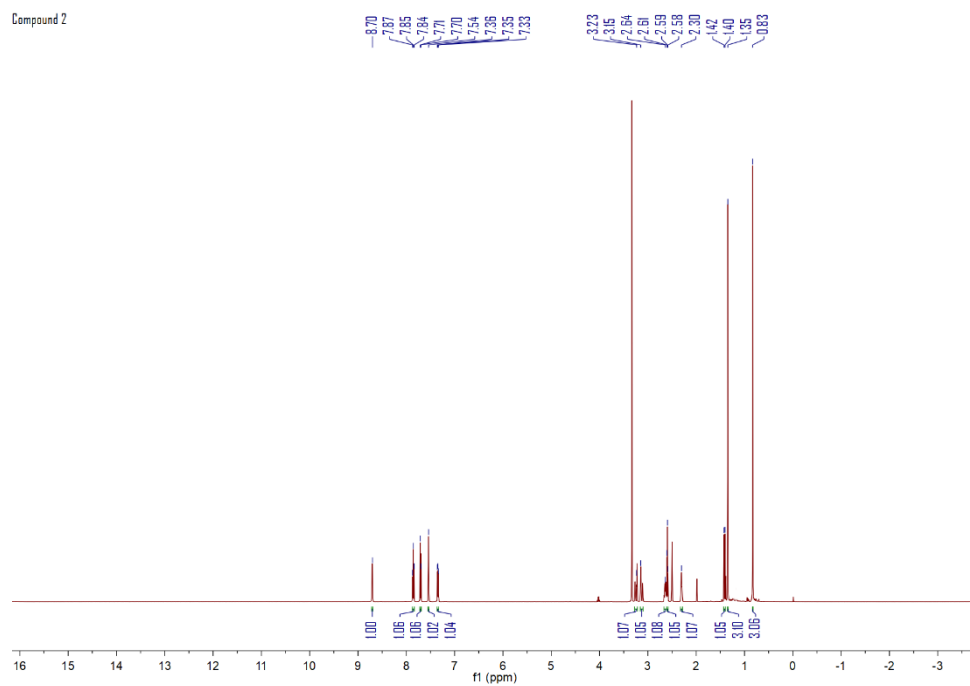


Fig. S1

Compound 2



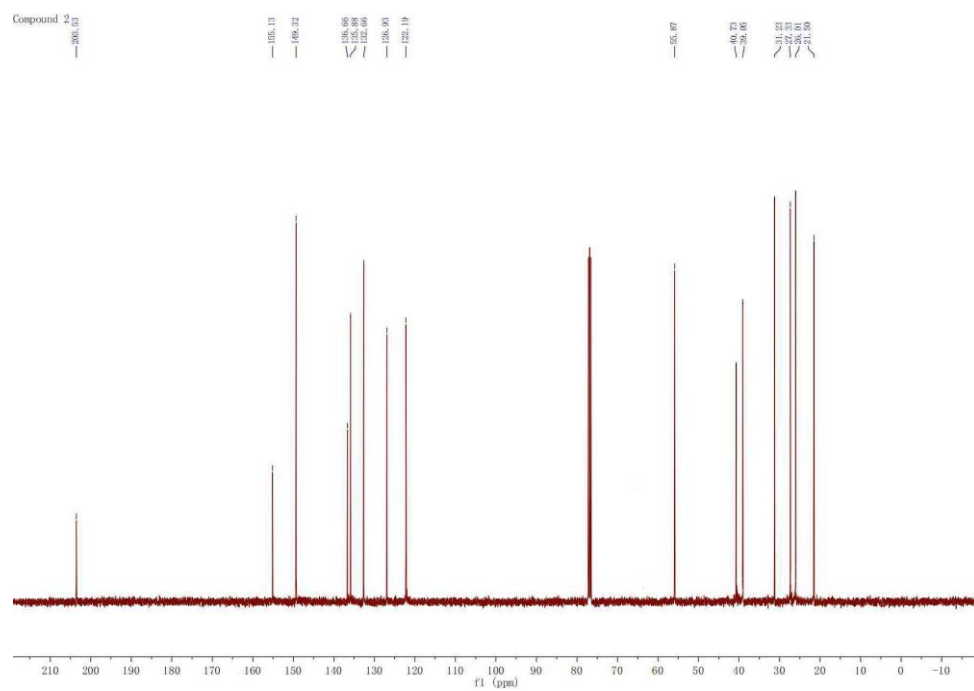
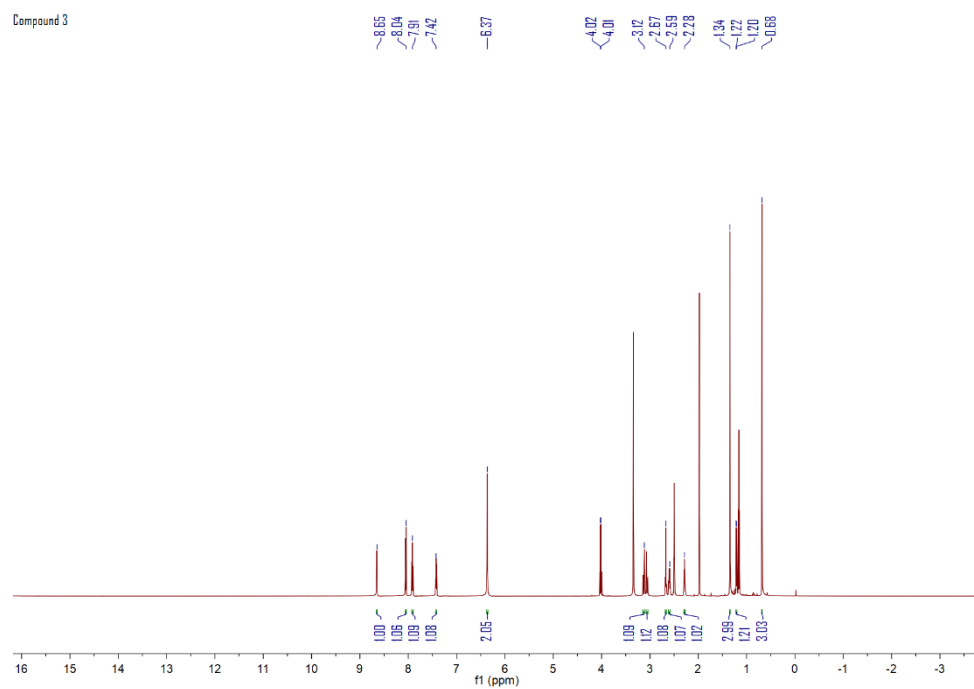


Fig. S2



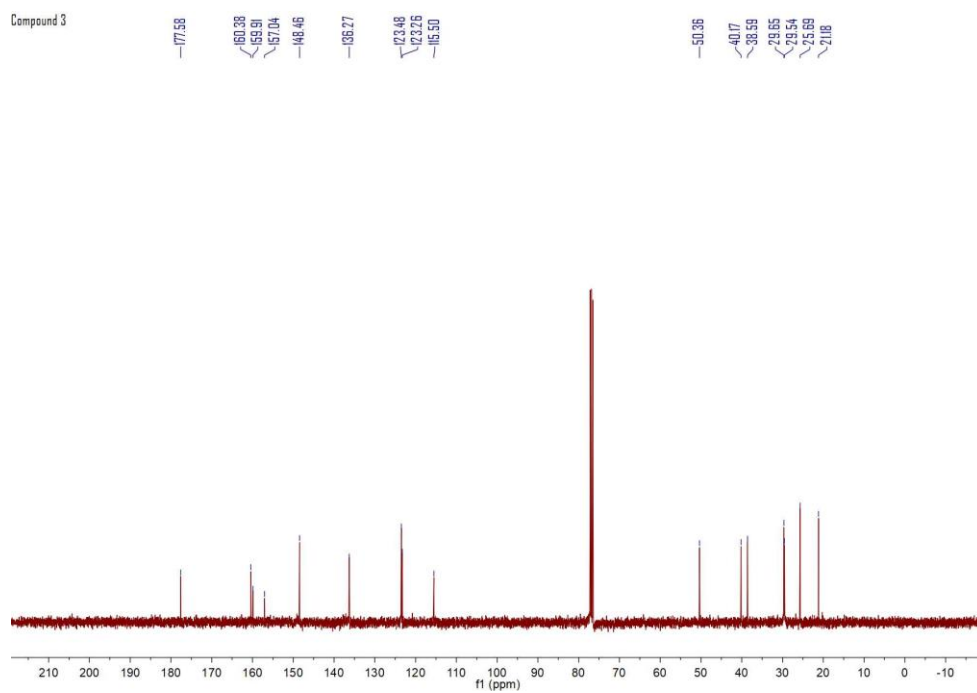
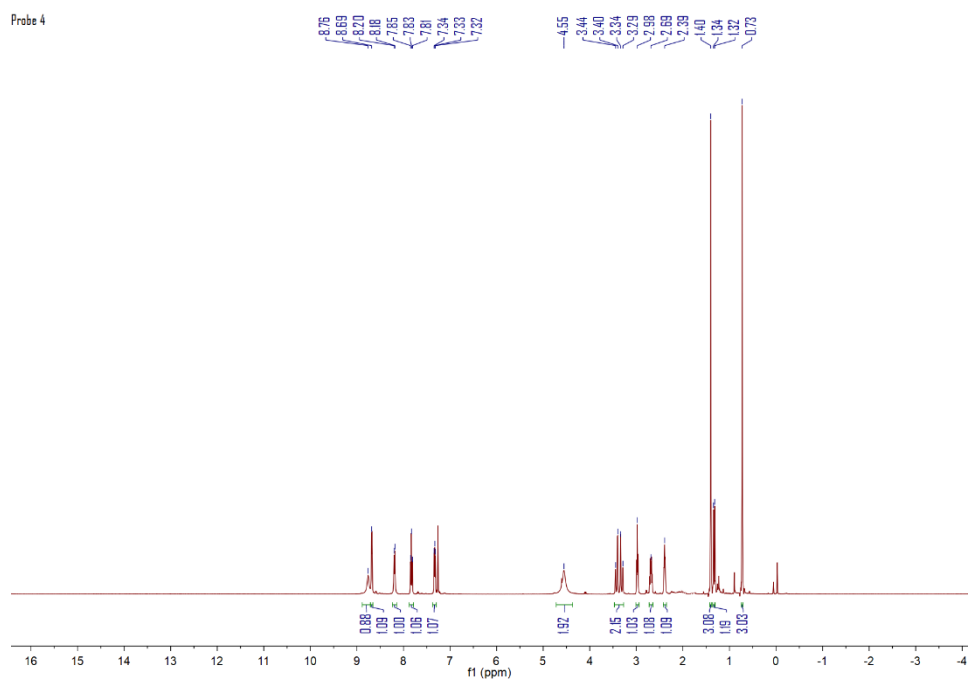


Fig. S3



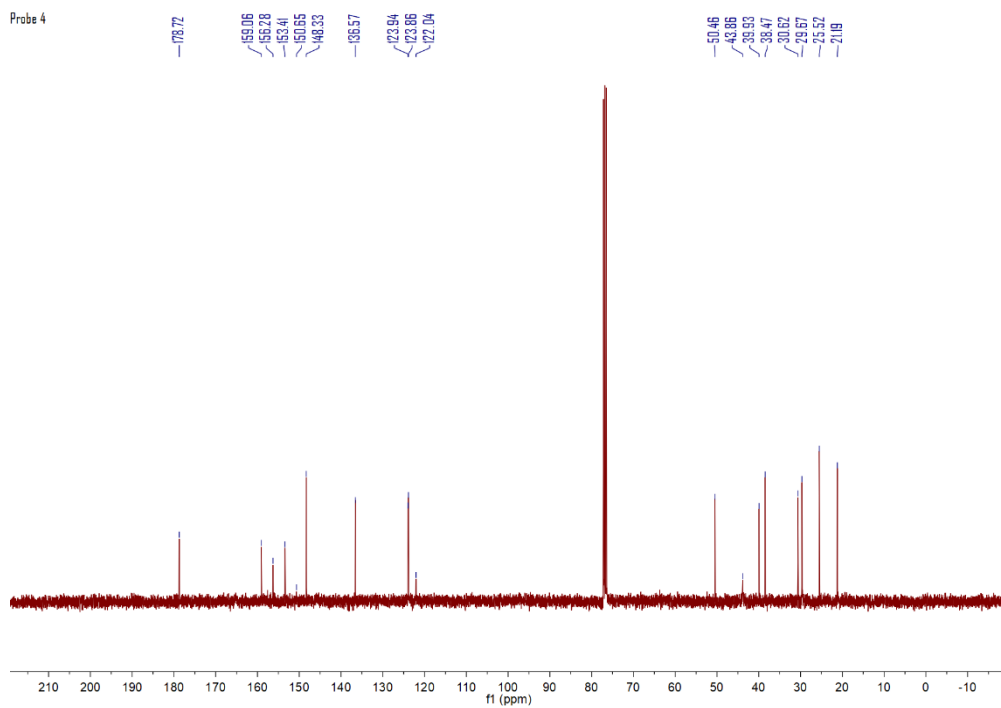


Fig. S4

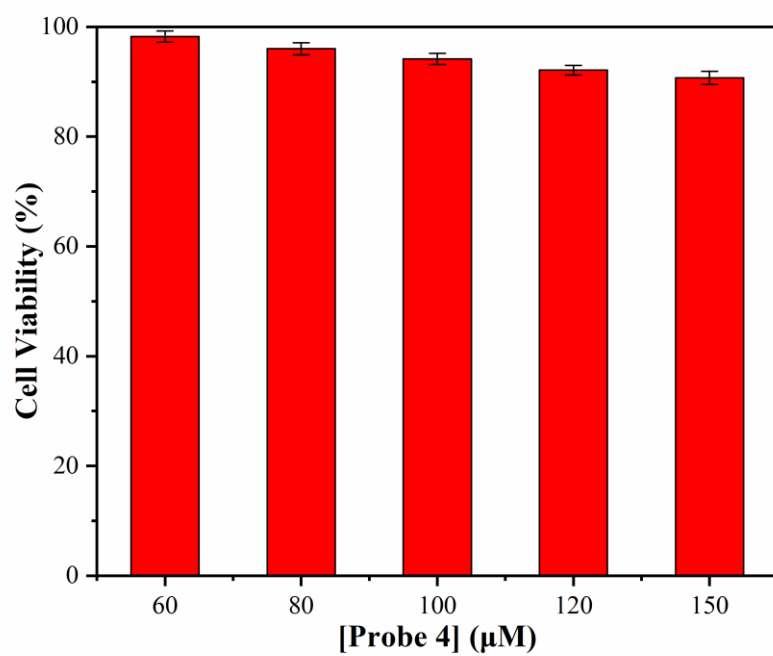


Fig. S5

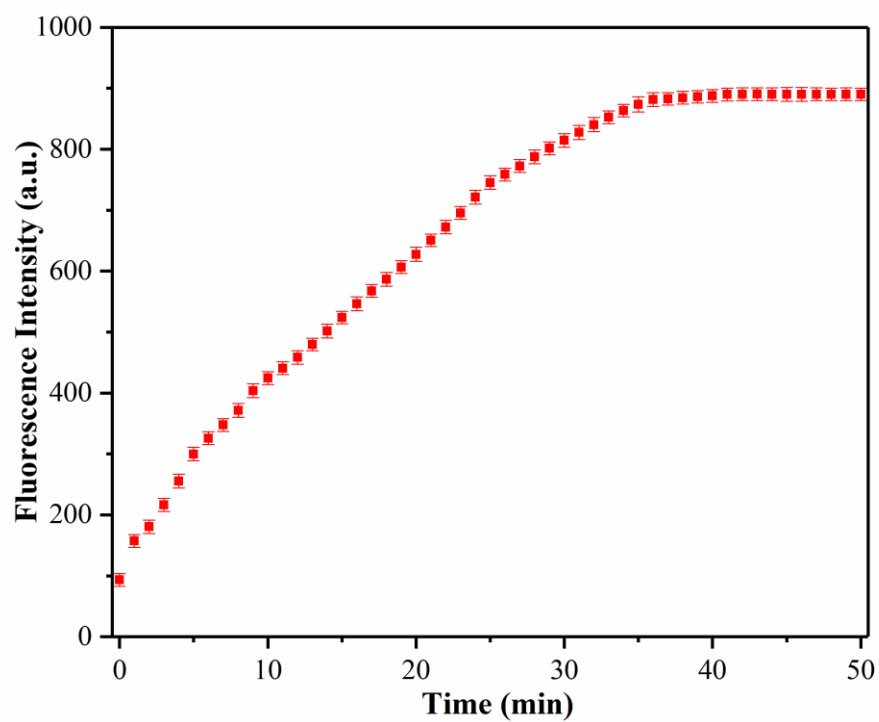


Fig. S6

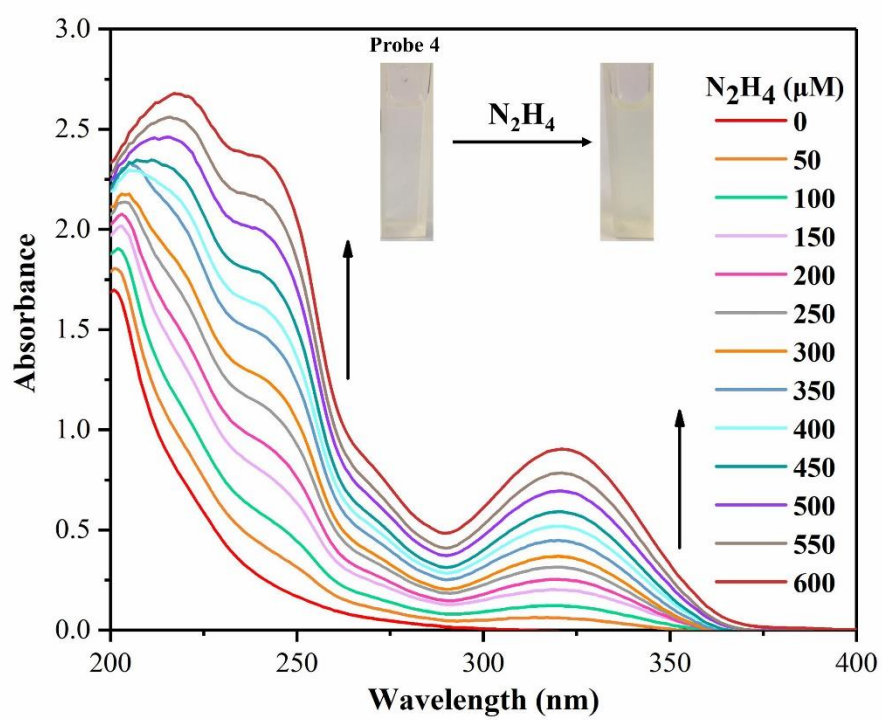


Fig. S7

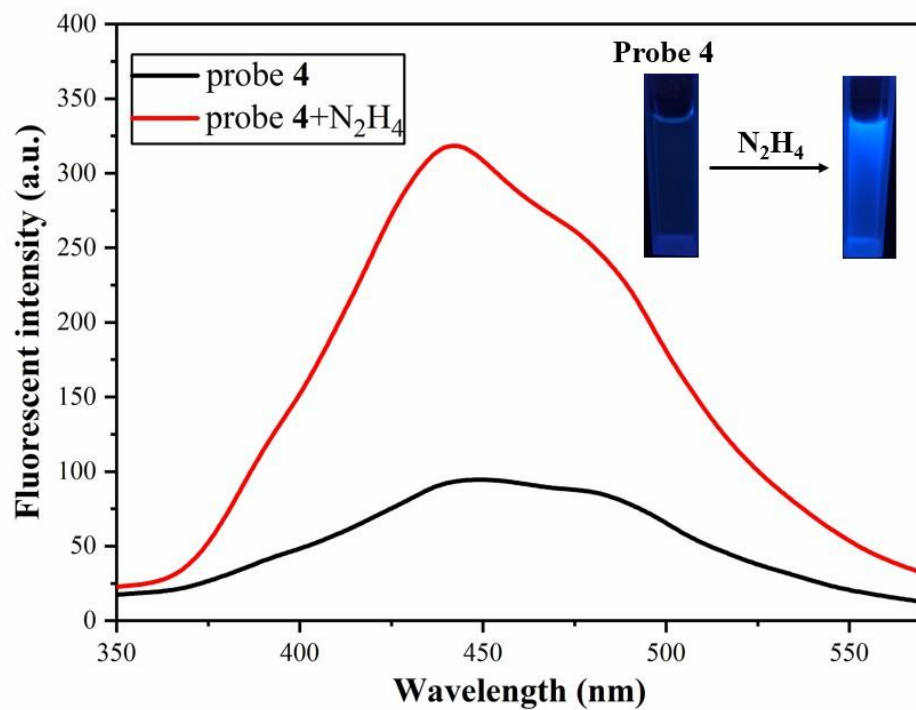


Fig. S8

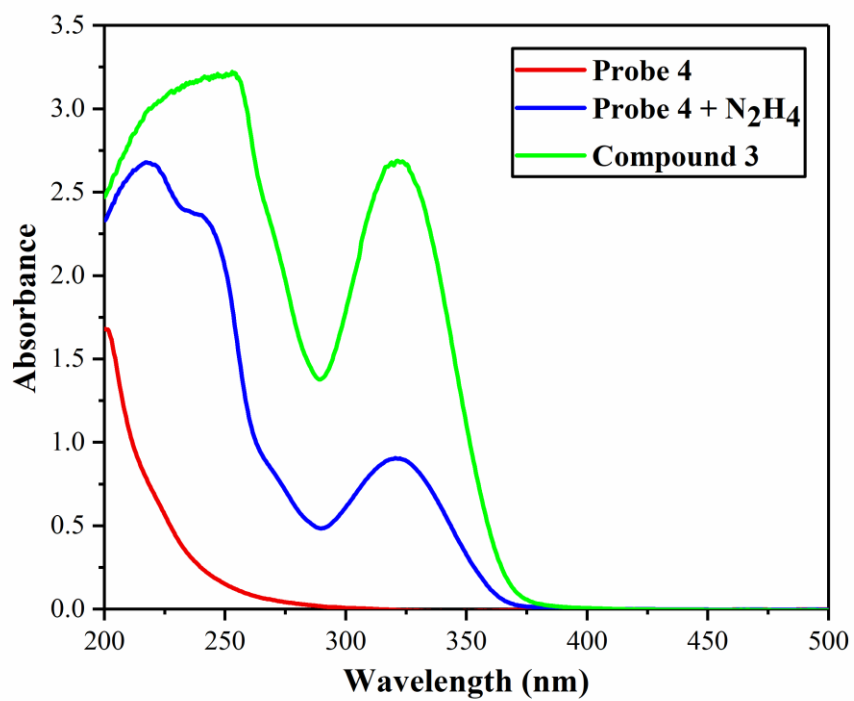


Fig. S9

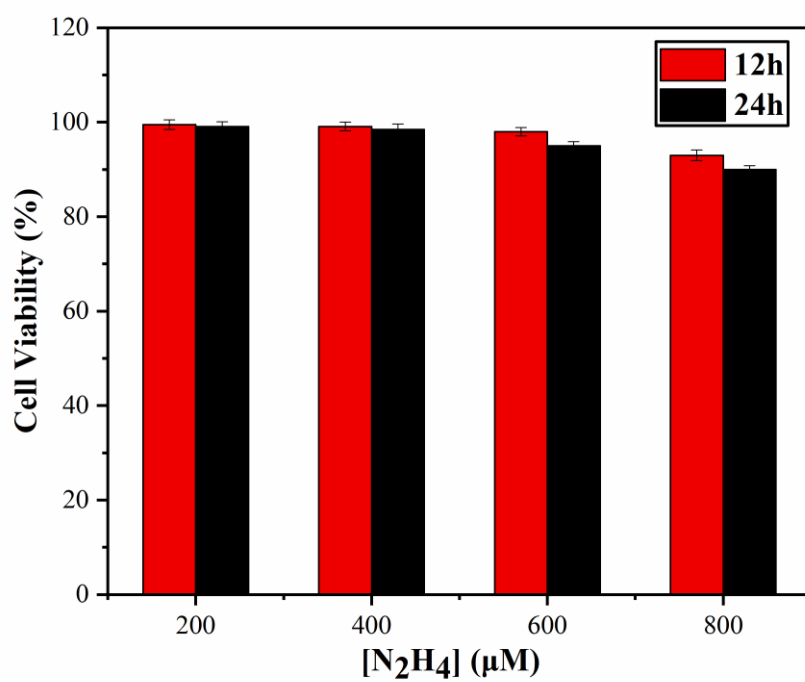


Fig. S10

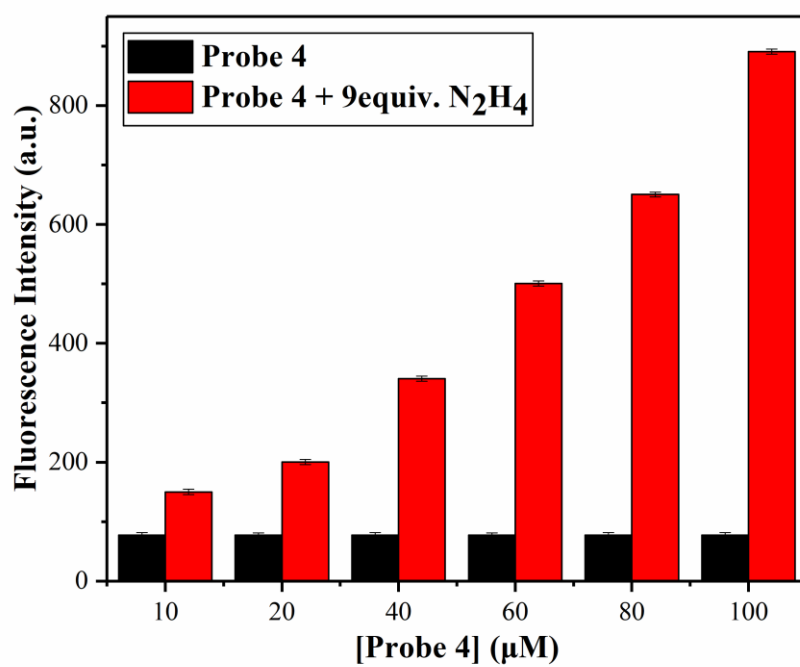
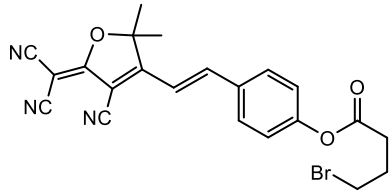
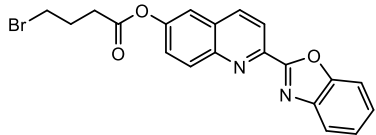
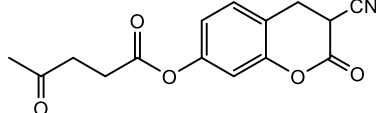
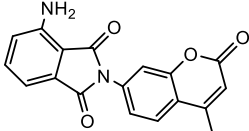
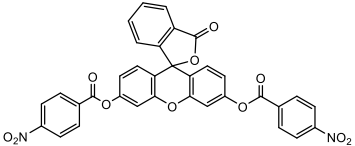
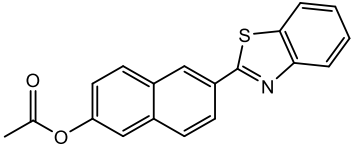
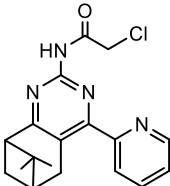


Fig. S11

Table S1. Comparison of probe **4** with other hydrazine probes.

Structures of Probes for N ₂ H ₄	Detection Mode	Solvent Medium	Amounts of Analytes	Limit of Detection	Cell Experiment	Reference No.
	Turn on	EtOH/HEPES (1/1)	9	2.9 μM	No	Z. Xu et al. Luminescence, 2017, 32(3): 466-470.
	Ratiometric	EtOH/PBS (1/5)	27	5.8 nM	Yes	Q. Wu et al. Talanta 195 (2019) 857–864
	Turn on	Acetate buffer (pH 4.5, 10 mM) /DMSO (3:7)	16	Not offered	No	Myung Gil Choi et al, Org. Lett., Vol. 13, No. 19, (2011) 5260-5263
	Ratiometric	DMSO/H ₂ O (7/3)	12	0.1 μM	Yes	Lei Cui et al, Anal. Chem. 2014, 86, 4611–4617
	Turn on	DMSO/PBS (8/2)	27	0.46 nM	Yes	Gongchun Li et al, J Fluoresc. (2017) 27: 323-329
	Ratiometric	DMSO/PBS (2/8)	24	0.96 μM	Yes	Chuang Liu et al, Spectrochimica Acta

						Part A: Molecular and Biomolecular Spectroscopy. 212 (2019) 42-47
	Turn on	EtOH/PBS (1/1)	54	1.03 μM	Yes	our work