Electronic Supplementary Information (ESI) for

An azidocoumarin-based fluorescent probe for imaging lysosomal hydrogen sulfide in living cells

Qiao-Ling Xie, Wei Liu, Xian-Jun Liu, Fan Ouyang, Yong-Qing Kuang*, and Jian-Hui Jiang*

State Key Laboratory of Chemo/Biosensing & Chemometrics, Institute of Chemical Biology & Nanomedicine, College of Chemistry & Chemical Engineering, Hunan University, Changsha 410082, China

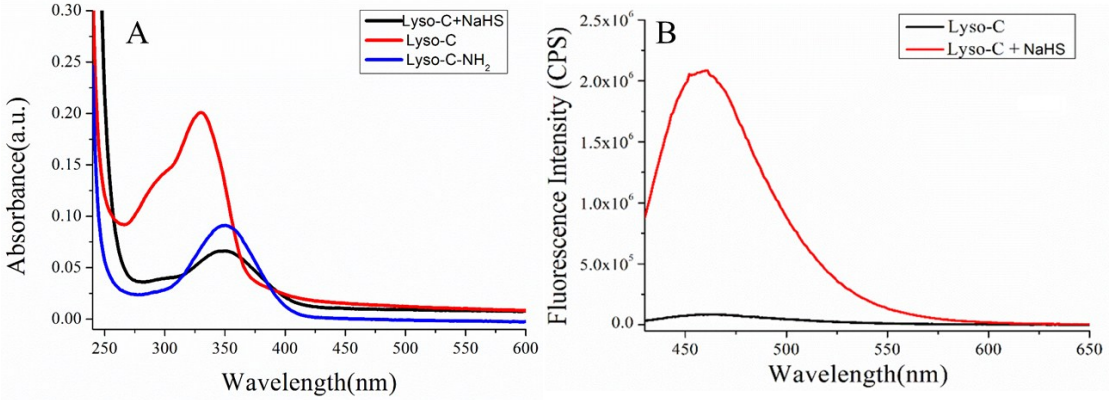

Fig. S1 A) UV-vis response of probe Lyso-C toward H_2S in aqueous solution. Red line: Lyso-C (10 μM); black line: the mixture of Lyso-C (10 μM) with NaHS (50 μM); blue line: reference sample of Lyso-C-NH_2 (10 μM); B) Fluorescence response of probe Lyso-C toward H_2S in aqueous solution. Black line: Lyso-C (10 μM); red line: the mixture of Lyso-C (10 μM) with NaHS (50 μM).

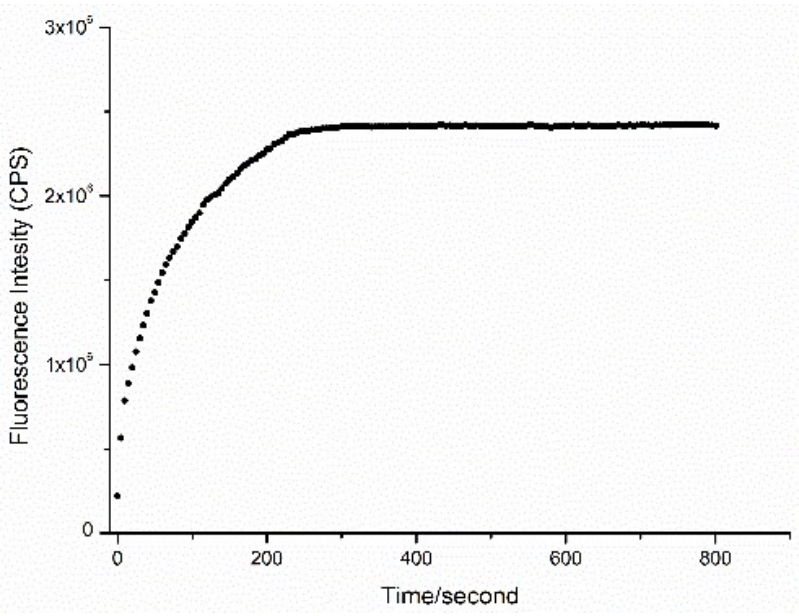

Fig. S2 Time-dependent fluorescence intensity change of probe Lyso-C (10 μM) at 458 nm in response to NaHS (30 μM), λ_{ex} = 355 nm.

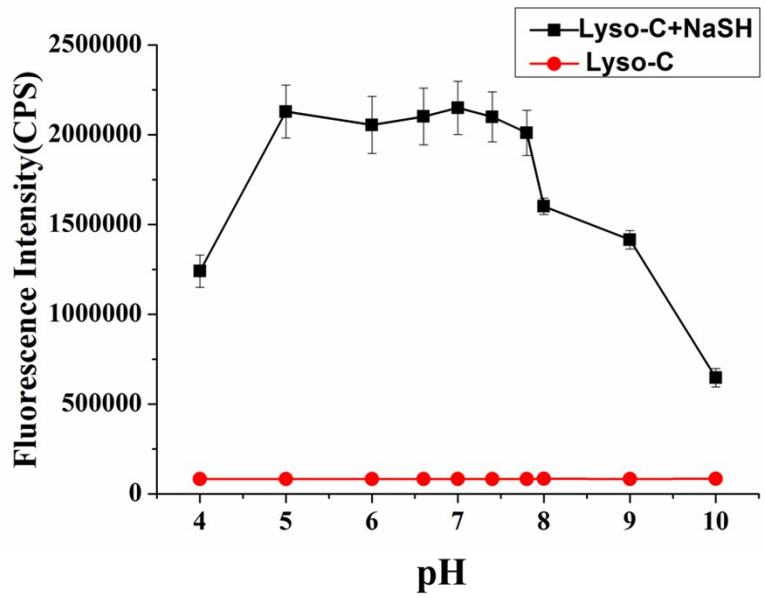

Fig. S3 Effects of pH on the response of probe Lyso-C (10 μM) toward NaHS (30 μM), λ_{ex} = 355 nm, λ_{em} = 458 nm.

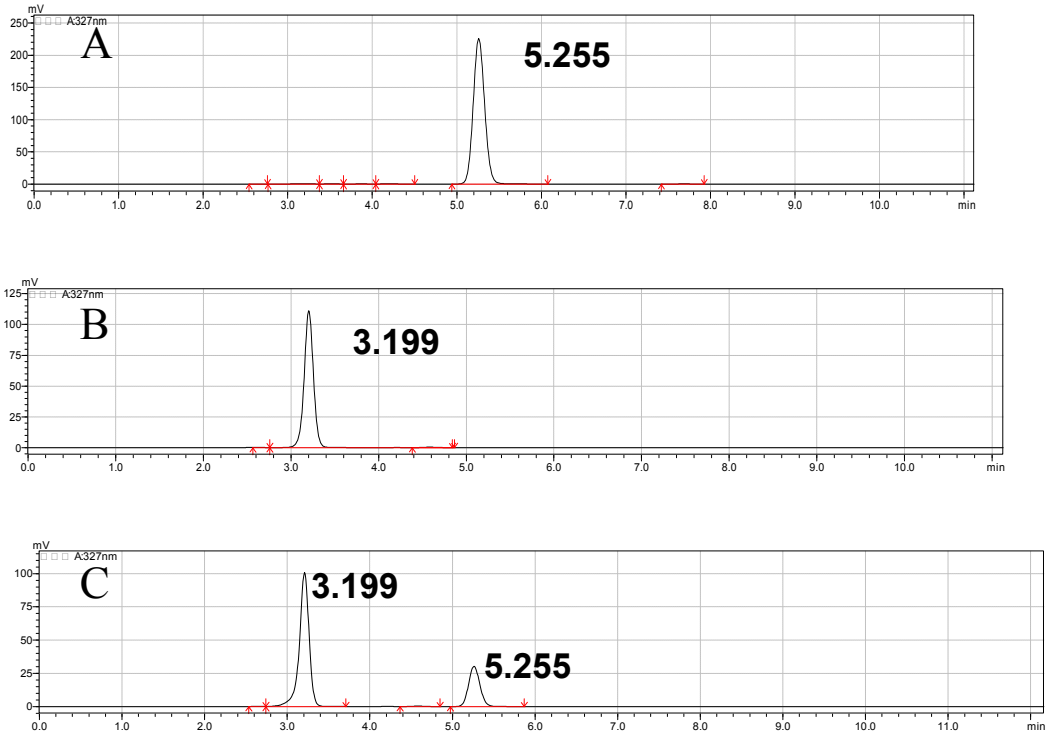

Fig. S4 HPLC profiles: A) 100 μM Lyso-C; B) 100 μM Lyso-C-NH_2; C) the reaction mixture of 100 μM Lyso-C with 50 μM NaHS. Detection: UV-vis (327 nm) detector. Flow rate: 1.0 mL/min. Temperature: 30 °C. Injection volume: 10 μL. Mobile phase: MeOH/Water = 80/20 (v/v).

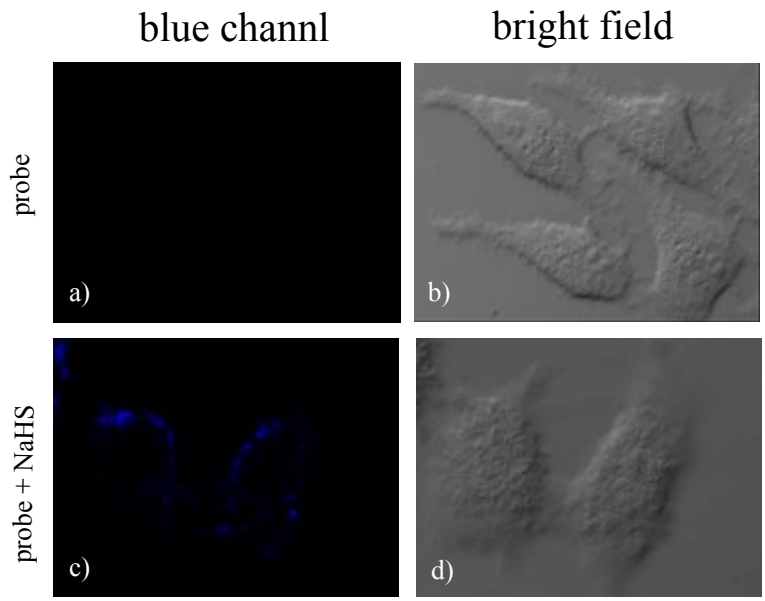

Fig. S5 Fluorescence imaging of H_2S in HepG-2 cells: (a) HepG-2 cells incubated with probe Lyso-C (10 μM) for 30 min; (b) HepG-2 cells incubated with probe Lyso-C (10 μM) for 30 min followed by incubation with NaHS (50 μM) for another 30 min; (d) Bright-field image of HepG-2 cells in (c).

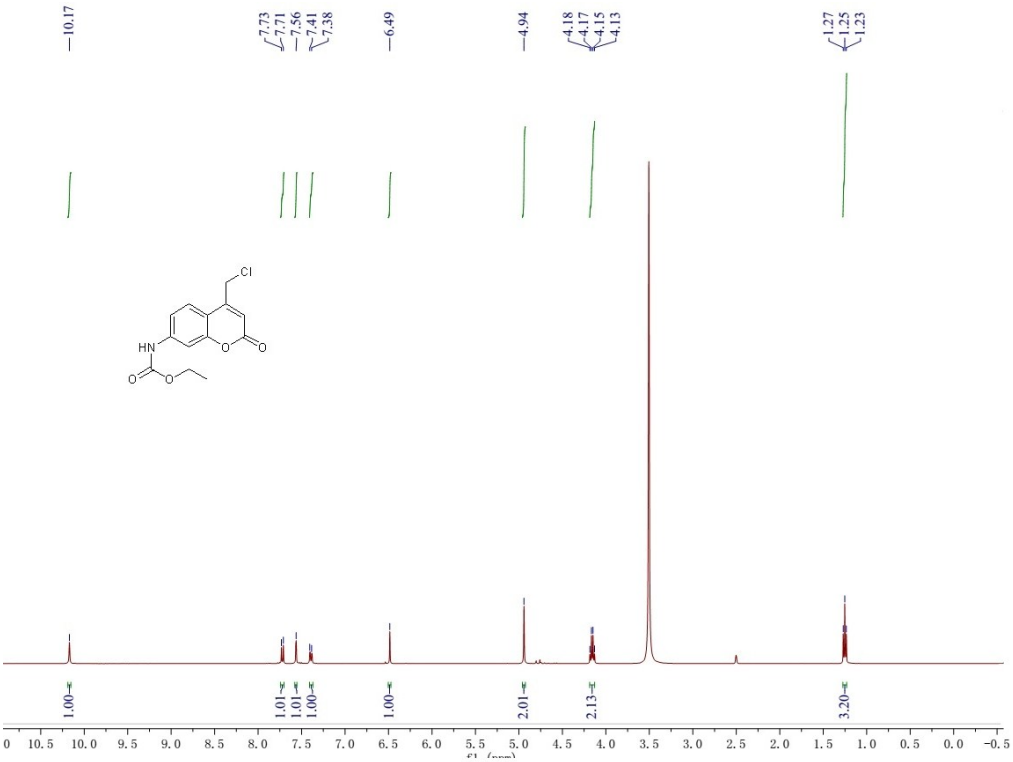

Fig. S6 ^{1}H NMR spectrum of compound **1** in DMSO-d_6

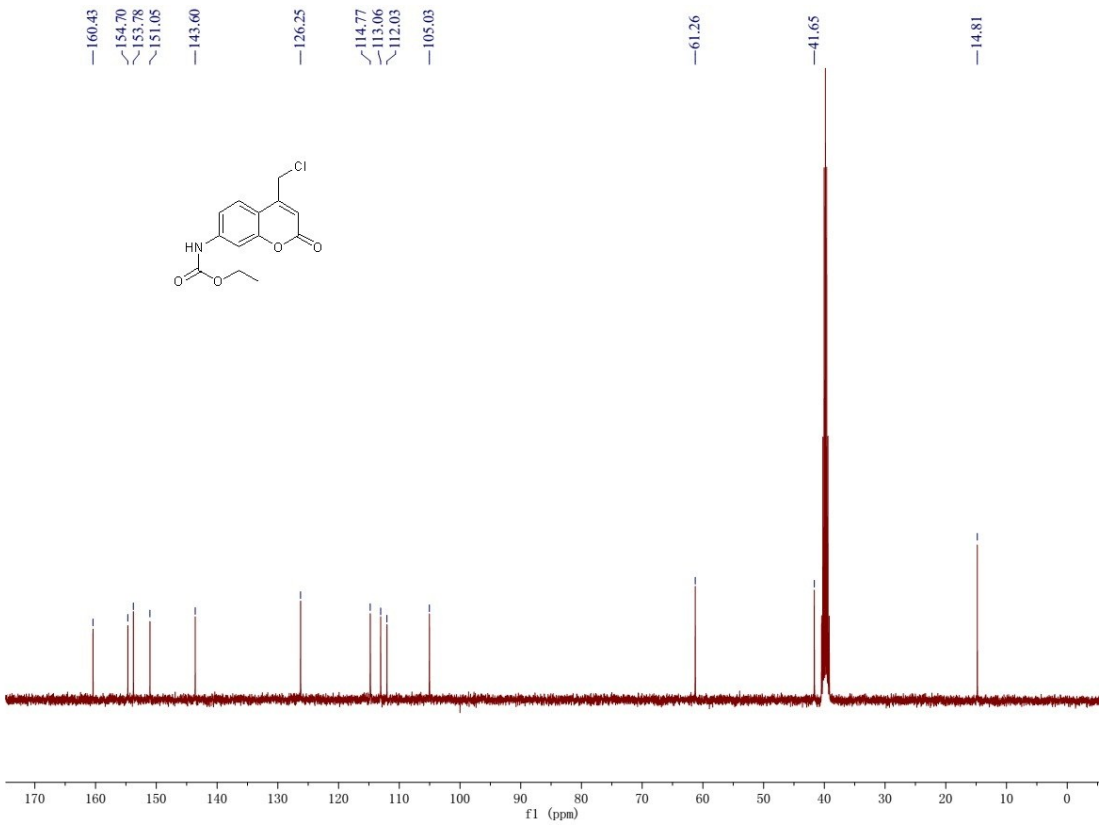

Fig. S7 ^{13}C NMR spectrum of compound **1** in DMSO-d_6

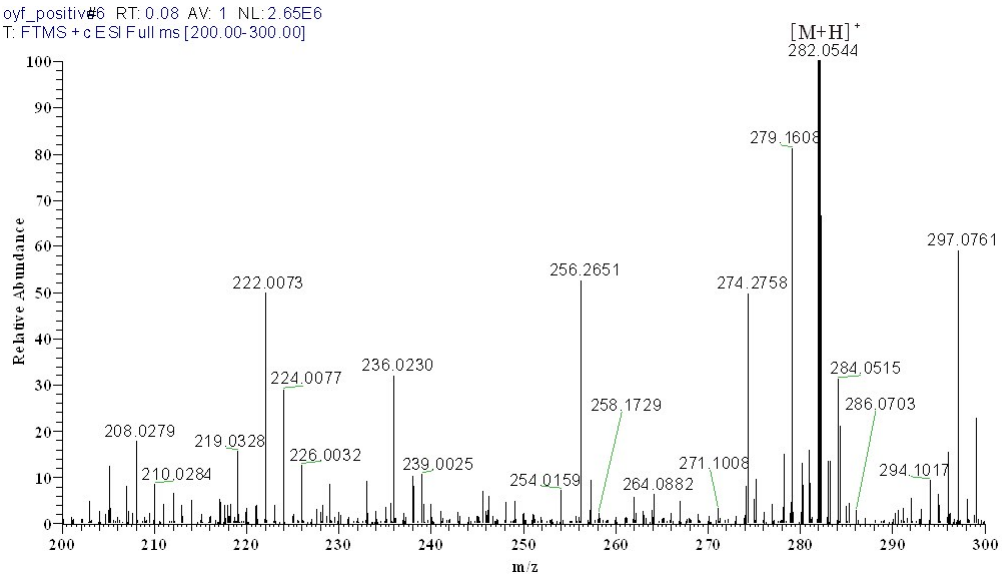

Fig. S8 MS spectrum of compound 1

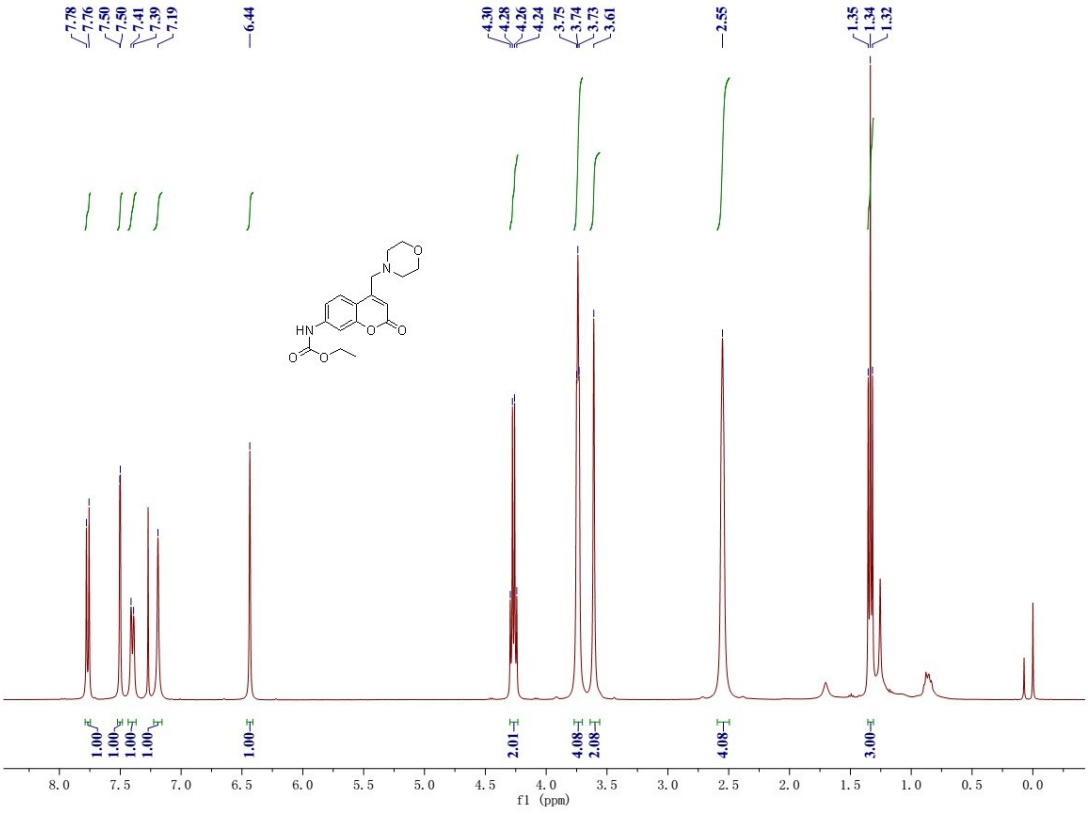

Fig. S9 ^{1}H NMR spectrum of compound **2** in $CDCl_3$

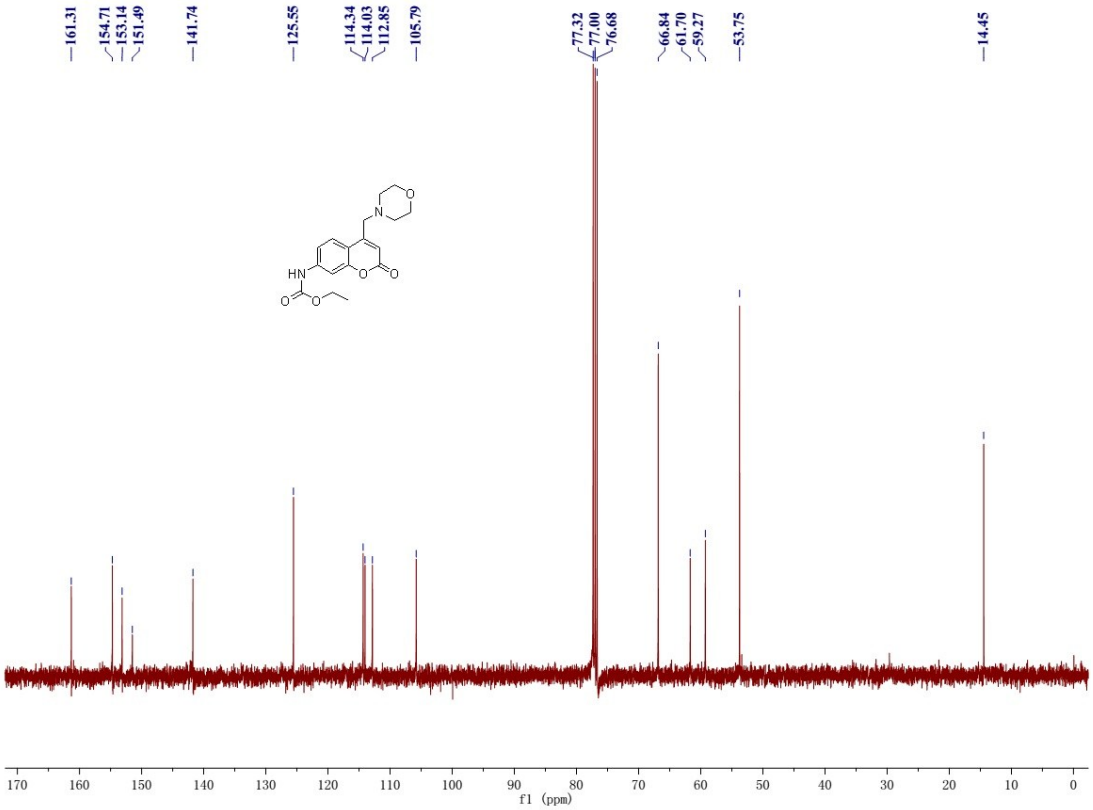

Fig. S10 ^{13}C NMR spectrum of compound **2** in $CDCl_3$

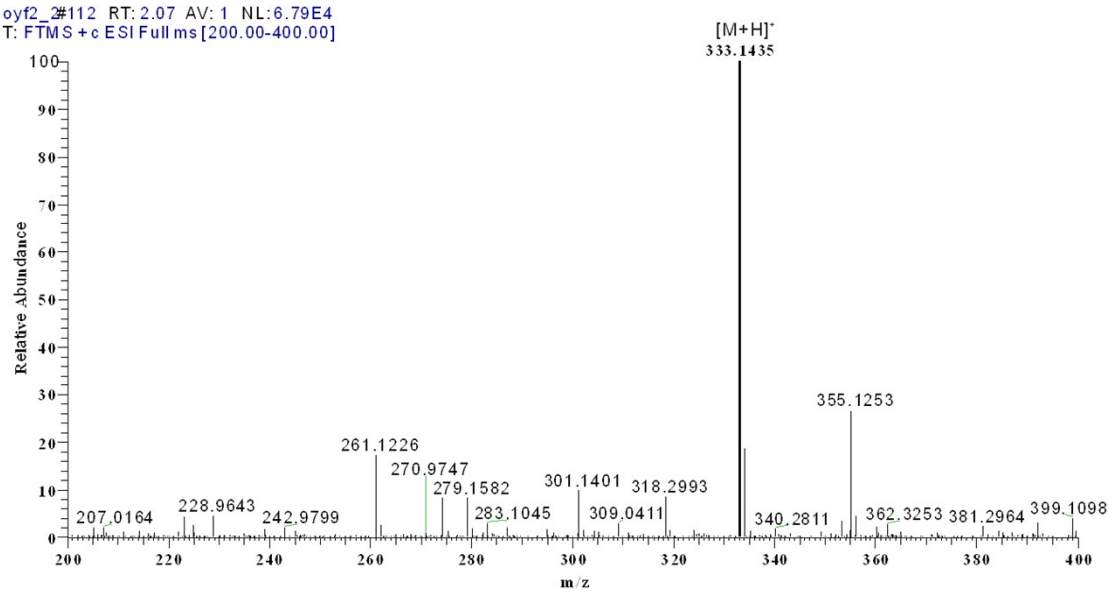

Fig. S11 MS spectrum of compound 2

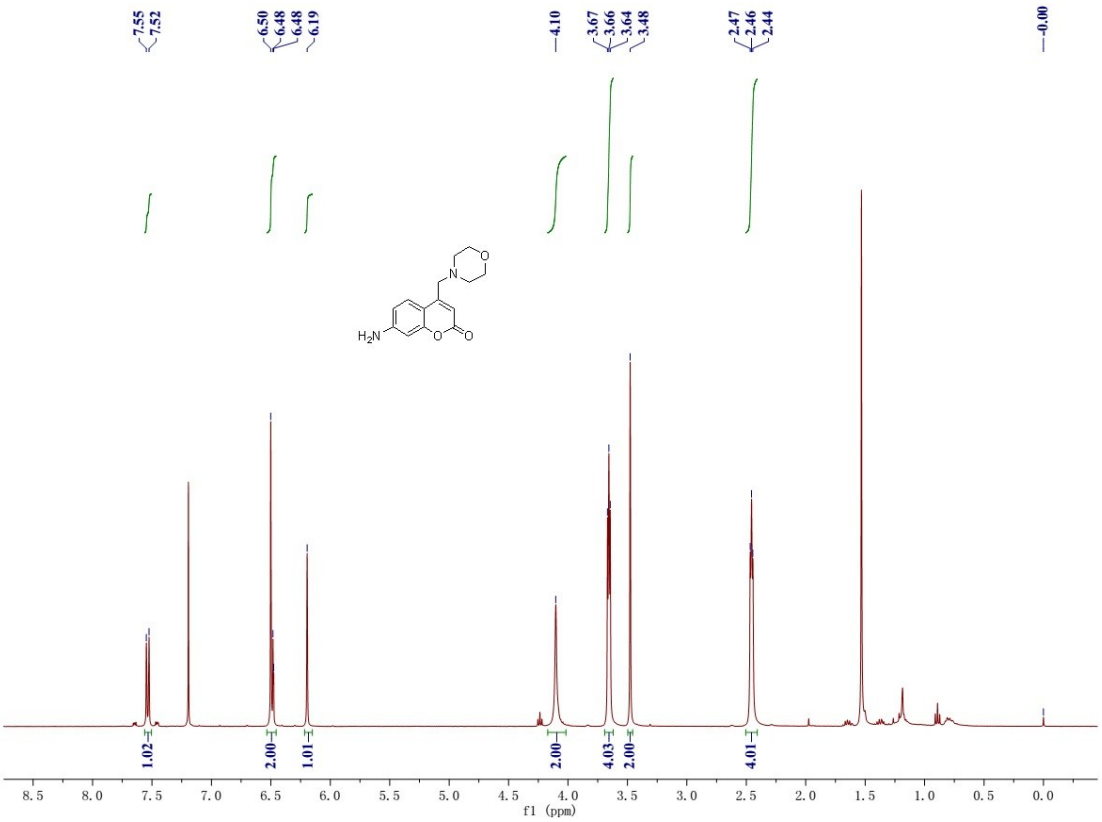

Fig. S12 ^{1}H NMR spectrum of Lyso-C-NH_2 in $CDCl_3$

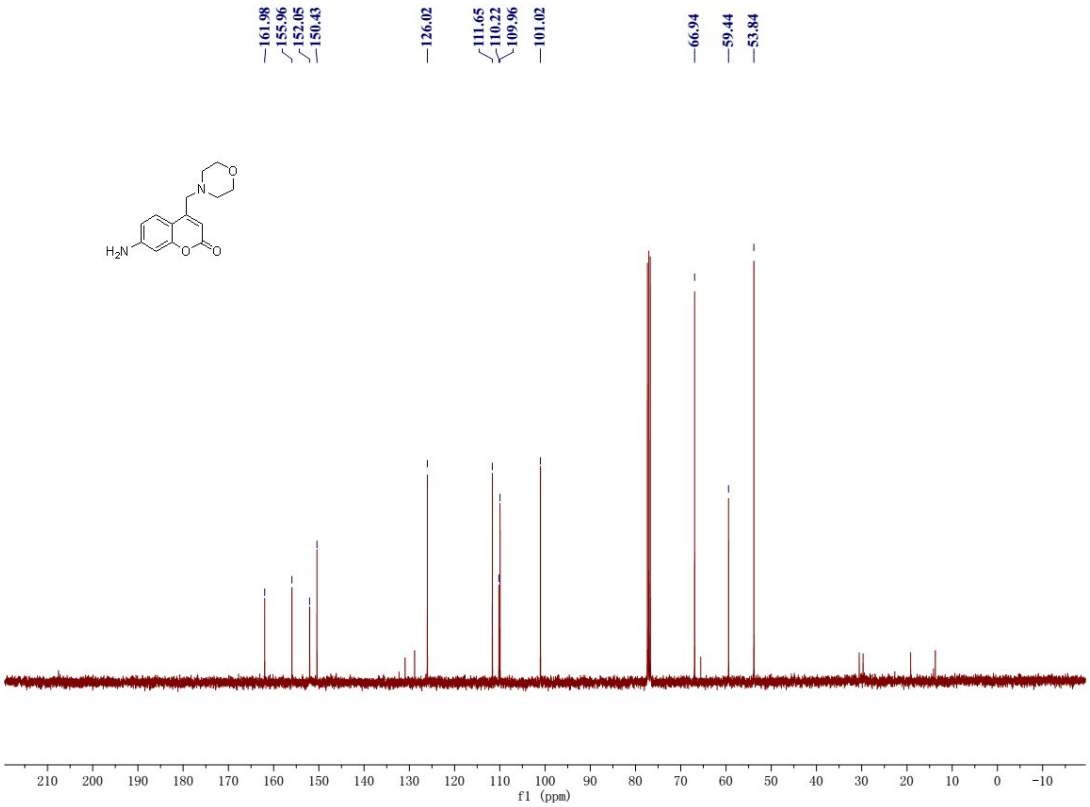

Fig. S13 ^{13}C NMR spectrum of Lyso-C-NH_2 in $CDCl_3$

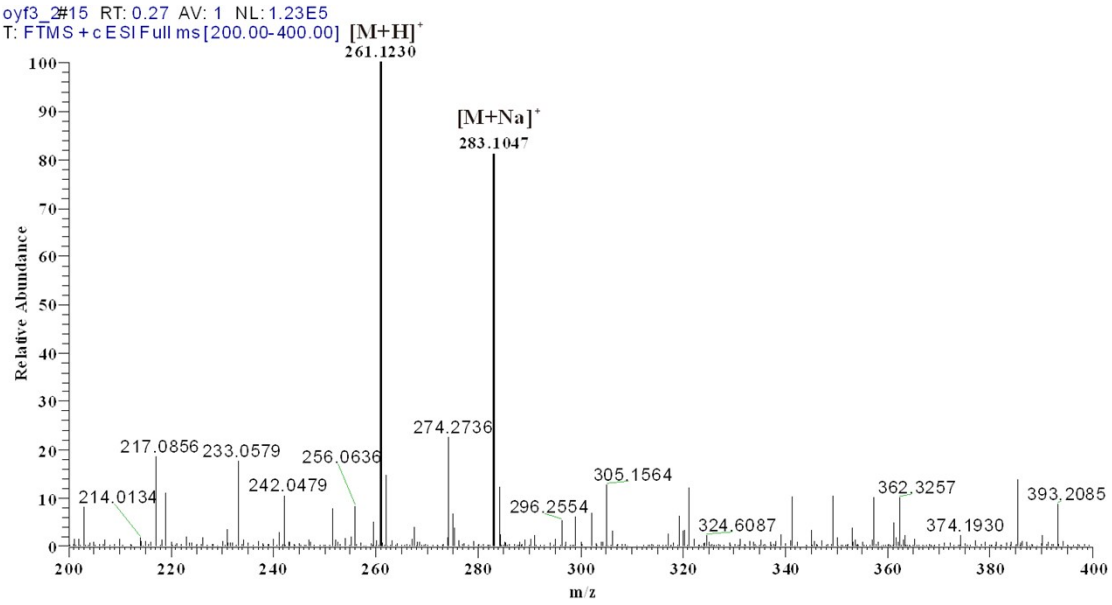

Fig. S14 MS spectrum of Lyso-C-NH_2 in MeOH

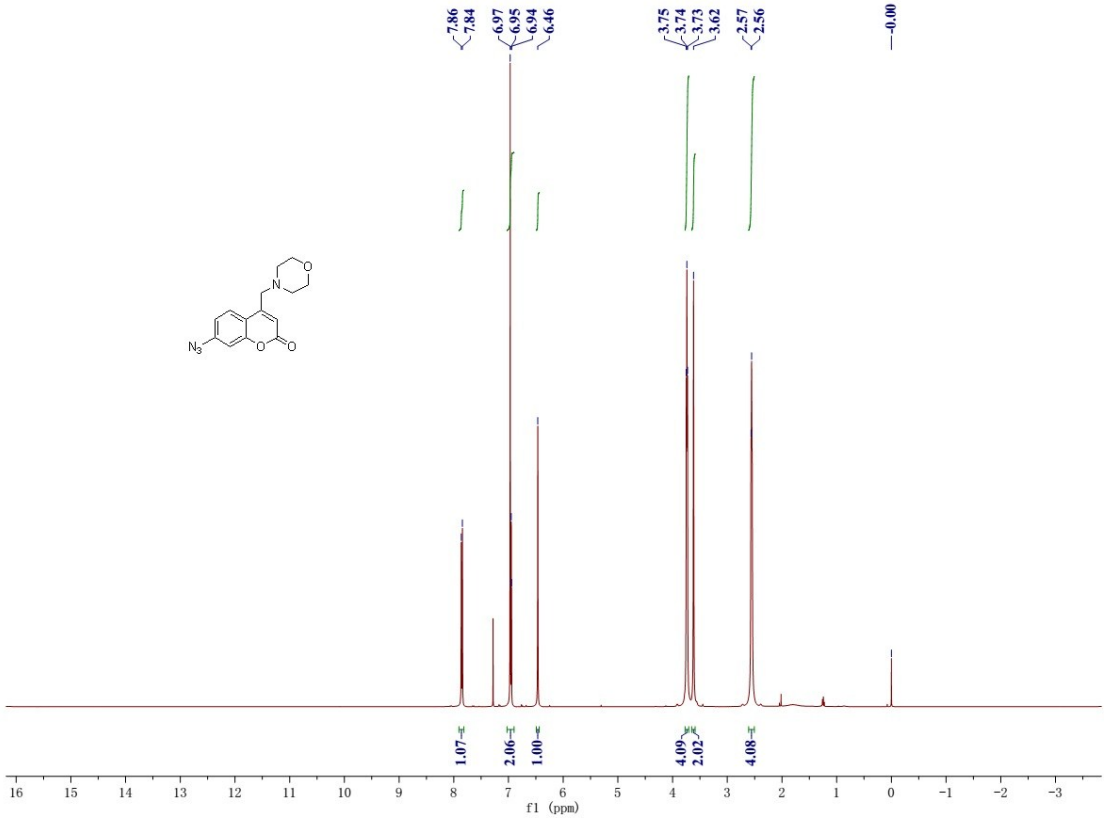

Fig. S15 ^{1}H NMR spectrum of Lyso-C in $CDCl_3$

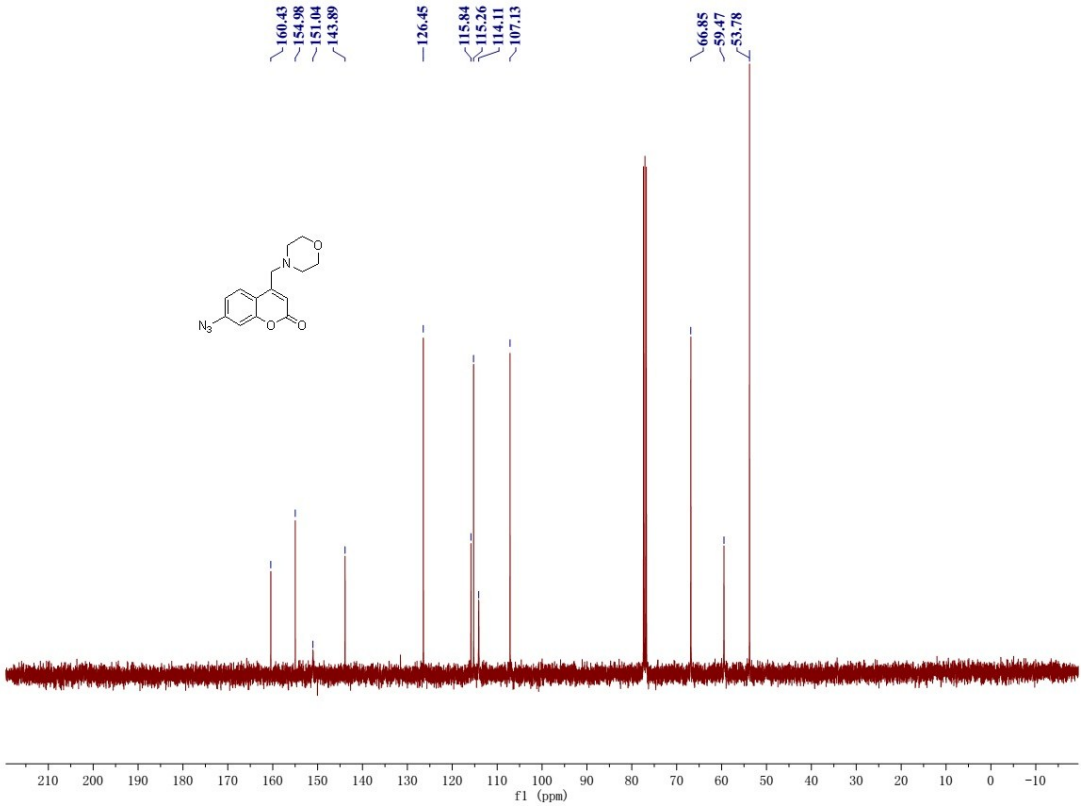

Fig. S16 ^{13}C NMR spectrum of Lyso-C in $CDCl_3$

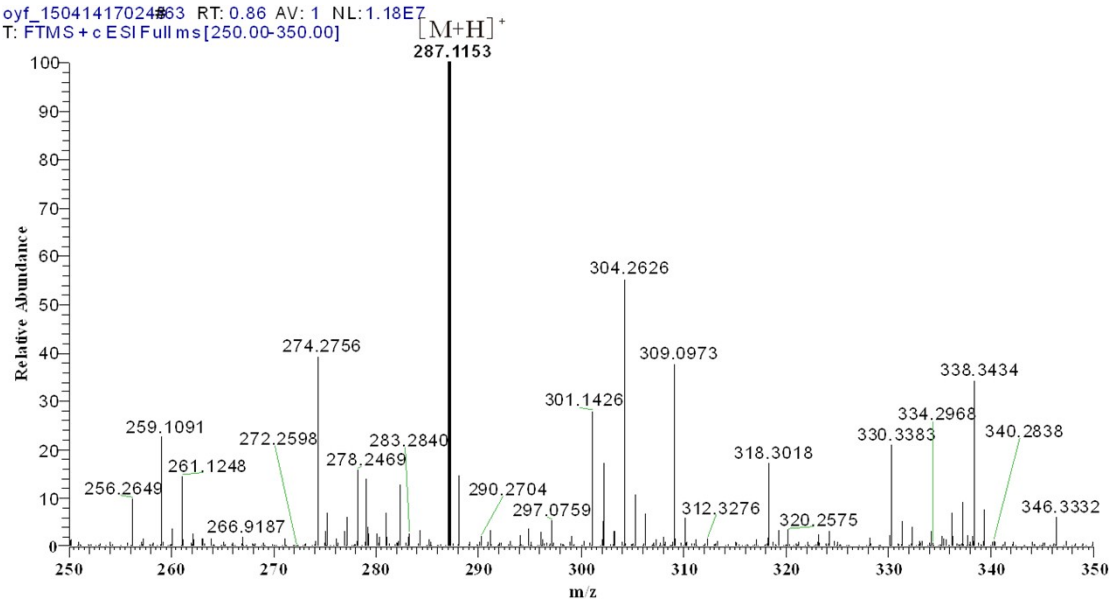

Fig. S17 MS spectrum of Lyso-C in MeOH

Table S1. Comparison of probe Lyso-C with other reported lysosome-targeted H_2S-responsive fluorescence probes.

Linear range	Limit of detection	Response time	Literature
0 - 100 μM	0.48 μM	20 min	Liu et al., *Org. Lett.*, 2013, **15**, 2310-2313
Not mentioned	Not mentioned	30 min	Qiao et al, *RSC Adv*., 2014, **4**, 25790-25794.
0−10 μM	0.5 μM	60 min	Yang et al, *Anal. Chem*., 2014, **86**, 7508-7515.
25–2500 μM	0.70 μM	Not mentioned	Feng et al, *Talanta* 2017, **167**, 134-142.
0–300 μM	7.9×10^{-7} M	30 min	Zou et al, *Chem. Commun*., 2014, **50**, 13833.
Not mentioned	0.43 μM	Not mentioned	Zhang et al, *Terahedron* 2015, **71**, 8572-8576.
Not mentioned	3.2 μM	5 min	Liu et al, *Chem. Commun*., 2016, **52**, 7016-7019.
0-20 μM	37 nM	5 min	This work