

Supplemental material

Rational design of an environment-sensitive fluorescent probe for monitoring butyrylcholinesterase activity and its application in Alzheimer's Disease

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Contents:

1. Other figures
2. NMR and ESI-HRMS spectra

1. Other figures _____

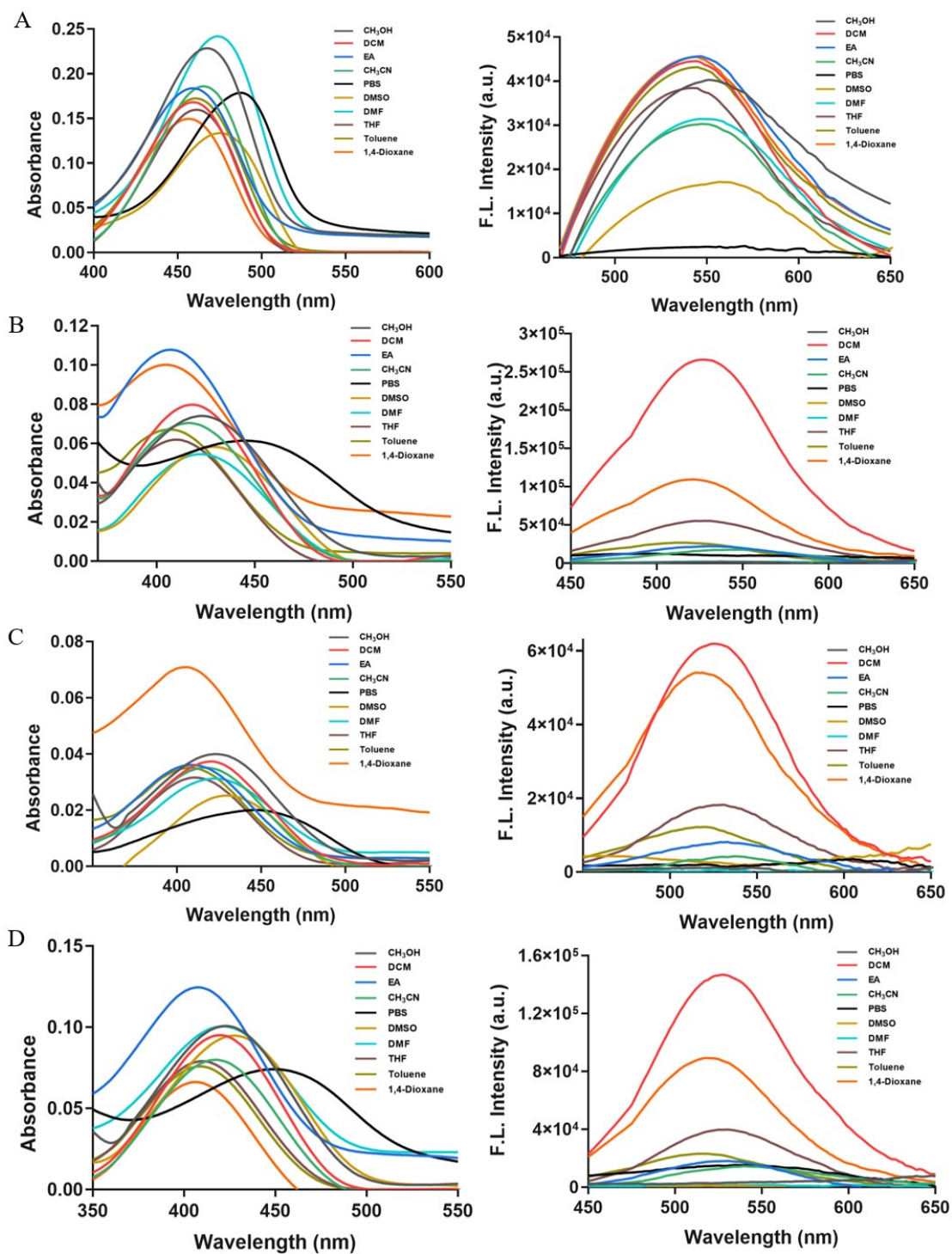


Fig. S1 UV absorption and fluorescence emission spectra of LY1 (A), LY2 (B), LY34 (C), LY36 (D) in different solvents.

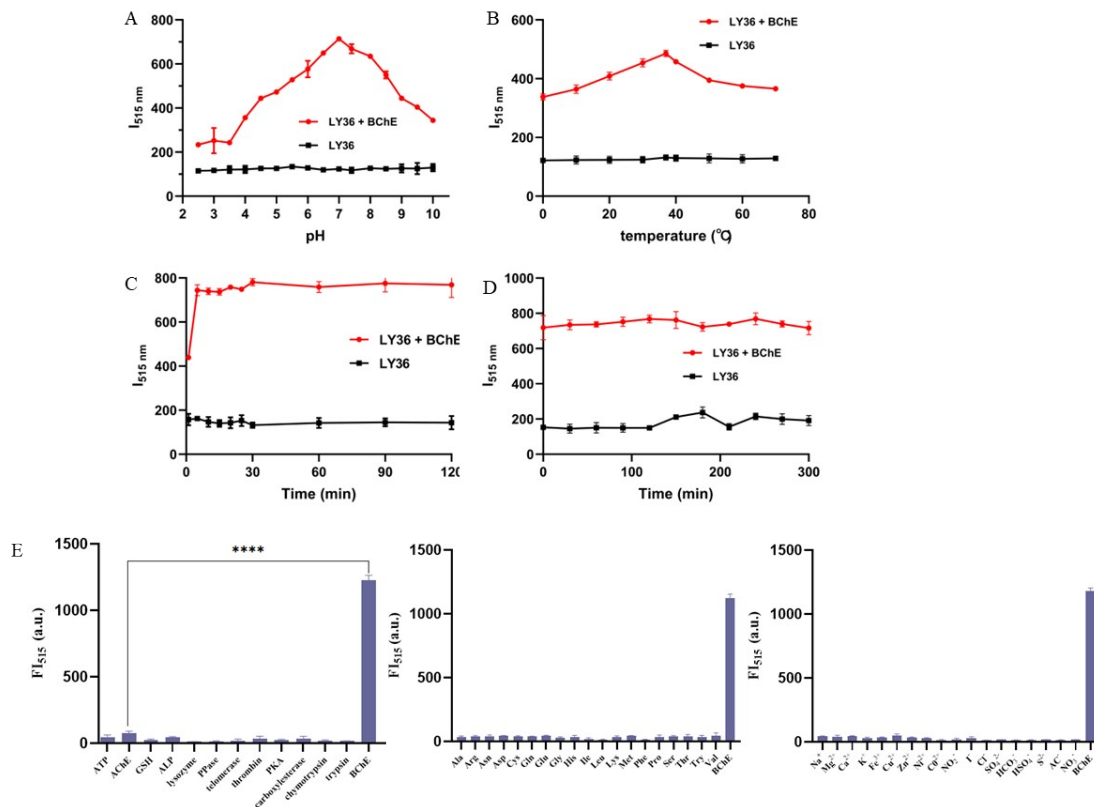


Fig. S2 (A) pH-dependent FI₅₁₅ of **LY36** before (black line) and after (red line) treatment with BChE for 30 min in PBS (10 mM, pH 2.5-10). (B) Temperature-dependent FI₅₁₅ of **LY36** before (black line) and after (red line) treatment with BChE in PBS from 0 to 70 °C. (C) Time-dependent FI₅₁₅ of **LY36** before (black line) and after (red line) treatment with BChE from 0 to 120 min in PBS (10 mM, pH 7.4). (D) FI₅₁₅ of **LY36** in the absence (black line) or presence (red line) of BChE under continuous excitation light irradiation at 37 °C in PBS buffer. (E) FI₅₁₅ changes of **LY36** upon treatment with different ions, amino acids and macromolecules. [**LY36**] = 500 nM, [BChE] = 500 nM, $\lambda_{\text{exc}} = 450$ nm. (Data are means \pm SEM, n = 3).

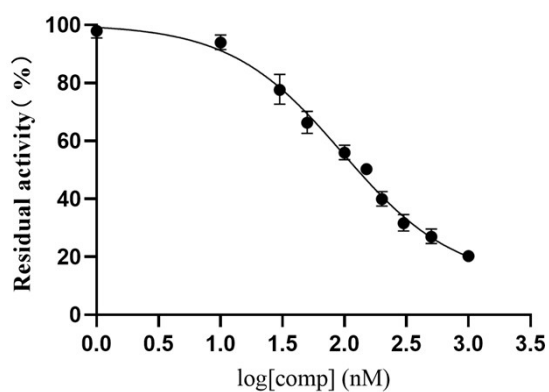


Fig. S3 Residual activity (%) of **LY36** against BChE at various concentrations. (Data are means \pm SEM, n = 3).

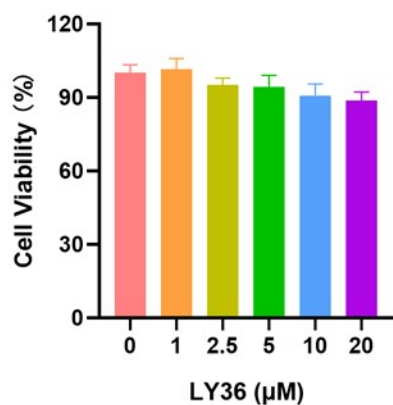


Fig. S4 Cell viability (%) of probe LY36 in SH-SY5Y cells after 24 h. (Data are means \pm SEM, n = 3).

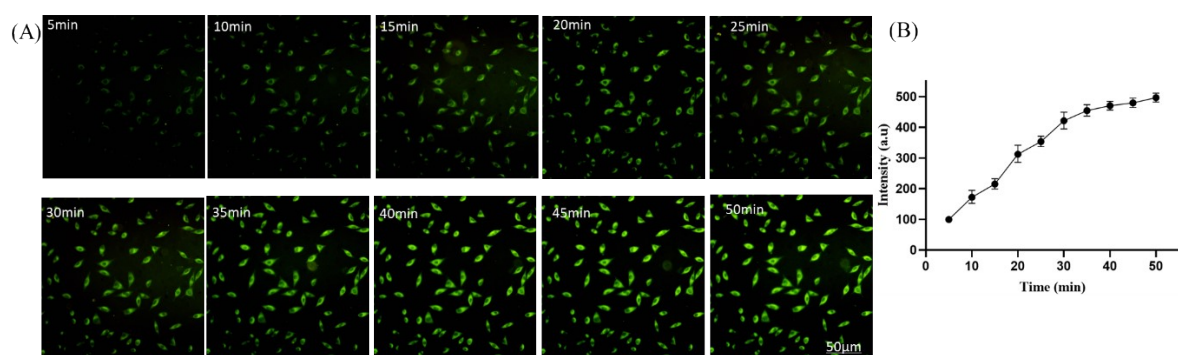


Fig. S5 (A) Real-time fluorescence imaging of SH-SY5Y cells after incubation with 5 μ M LY36 for 5-50 min. $\lambda_{\text{ex}} = 450$ nm, $\lambda_{\text{em}} = 480$ -540 nm. (B) Average fluorescence intensity of the corresponding cells. Scale bar = 50 μ m.

2. NMR and ESI-HRMS spectra

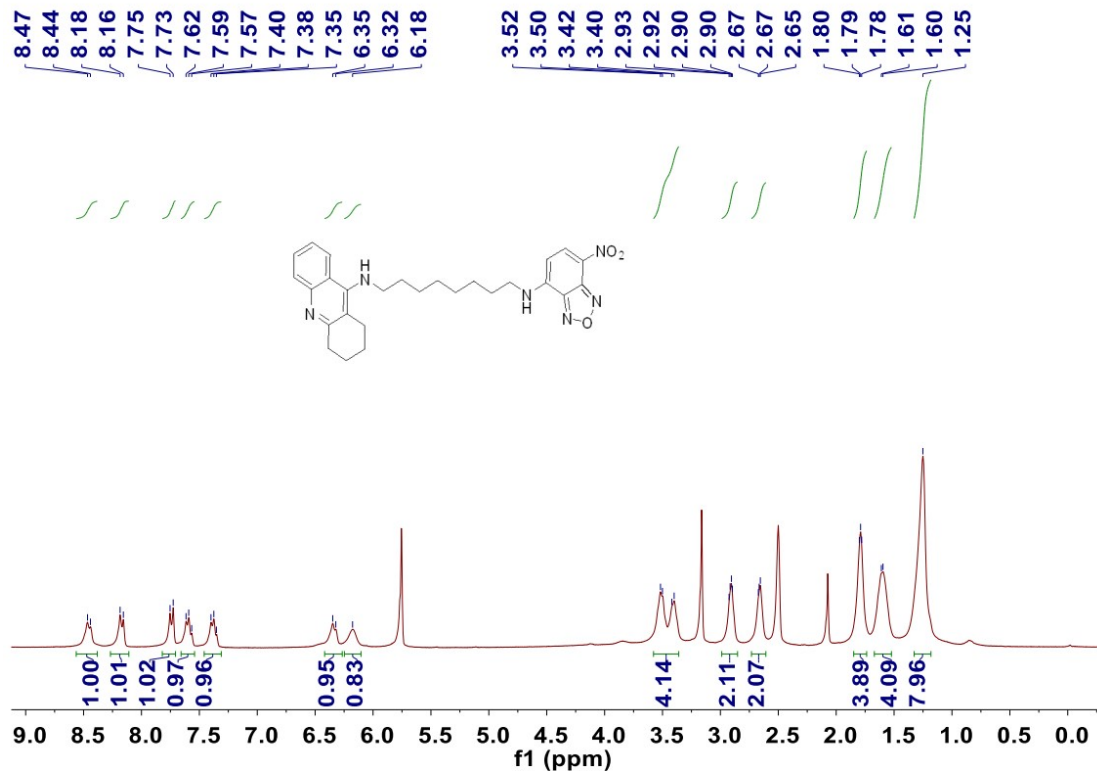


Fig. S6 ^1H NMR of LY1

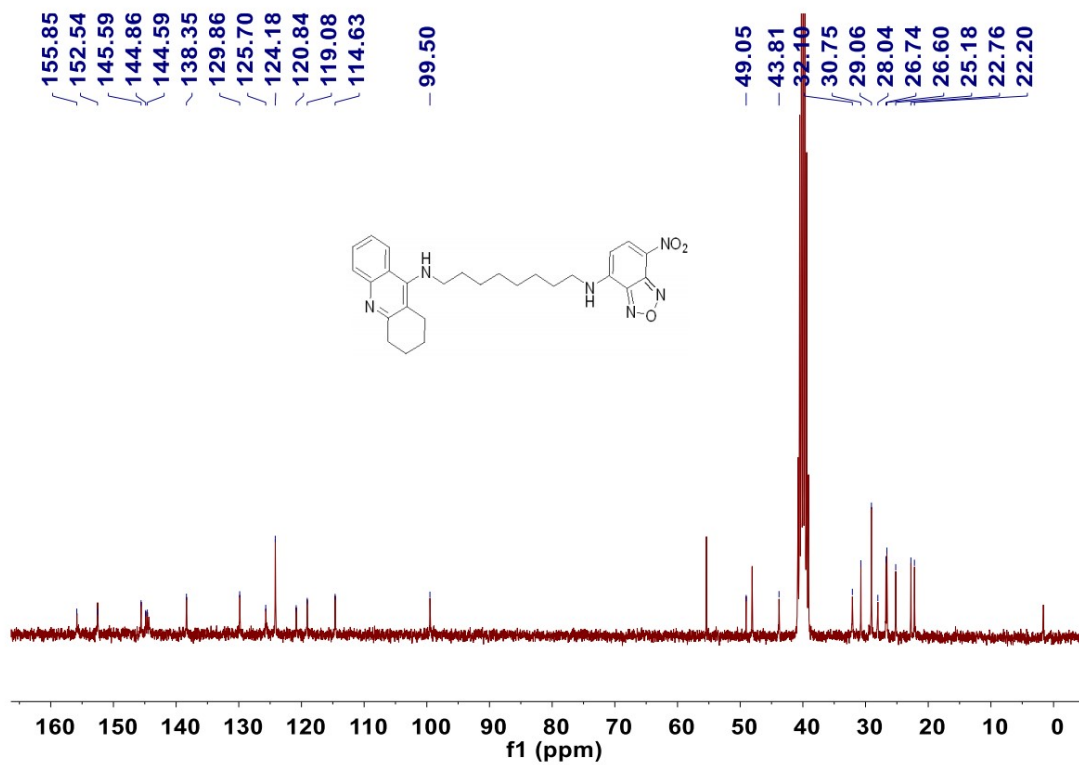


Fig. S7 ^{13}C NMR of LY1

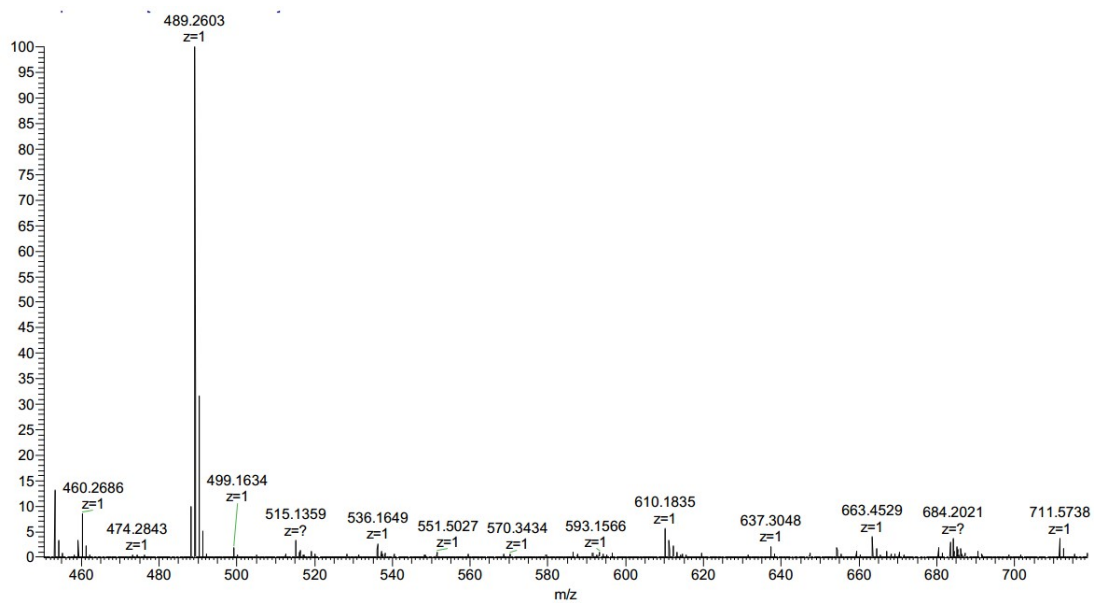


Fig. S8 HRMS of LY1

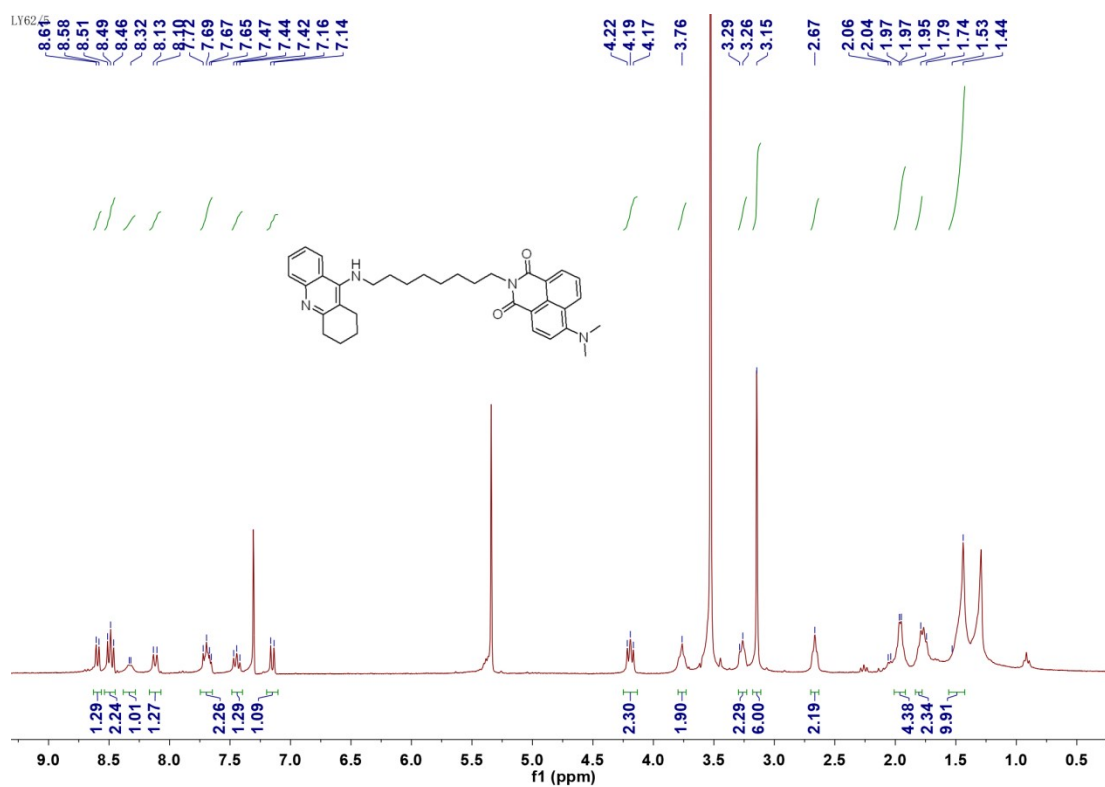


Fig. S9 ¹H NMR of LY2

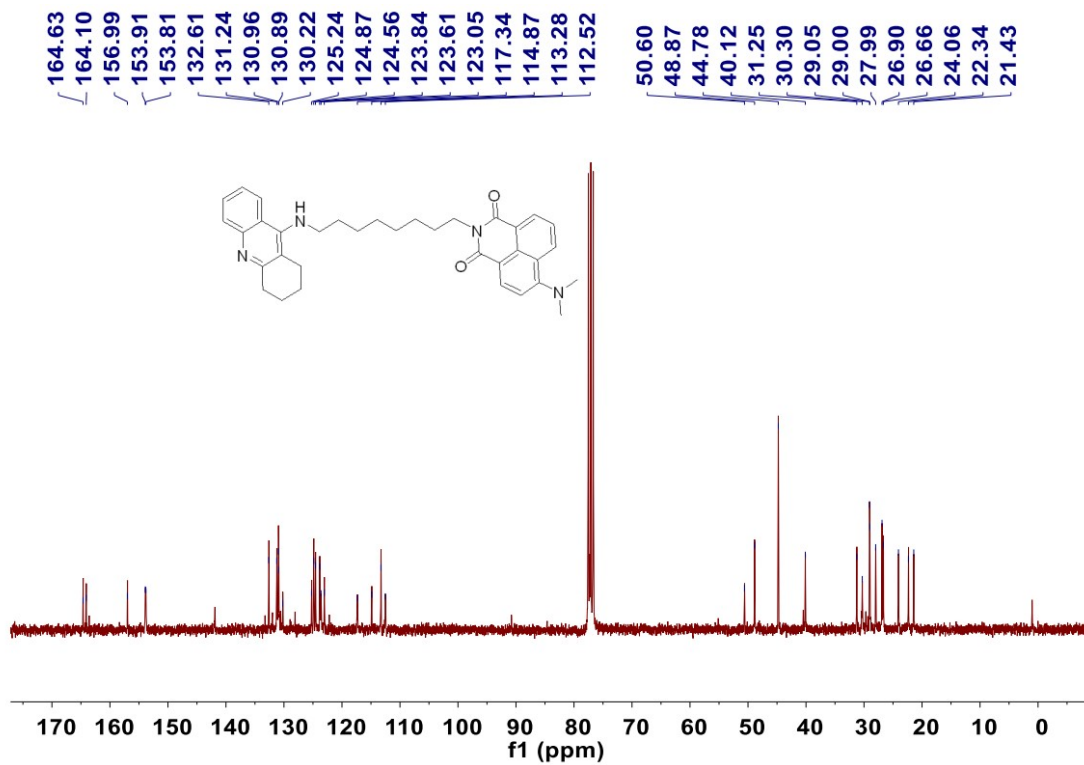


Fig. S10 ¹³C NMR of LY2

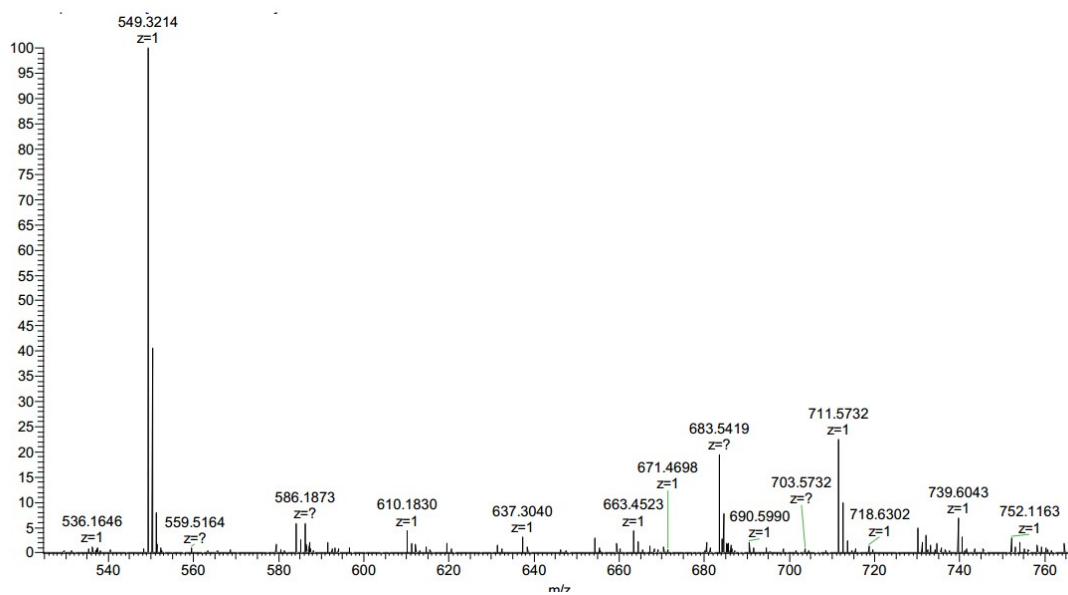


Fig. S11 HRMS of LY2

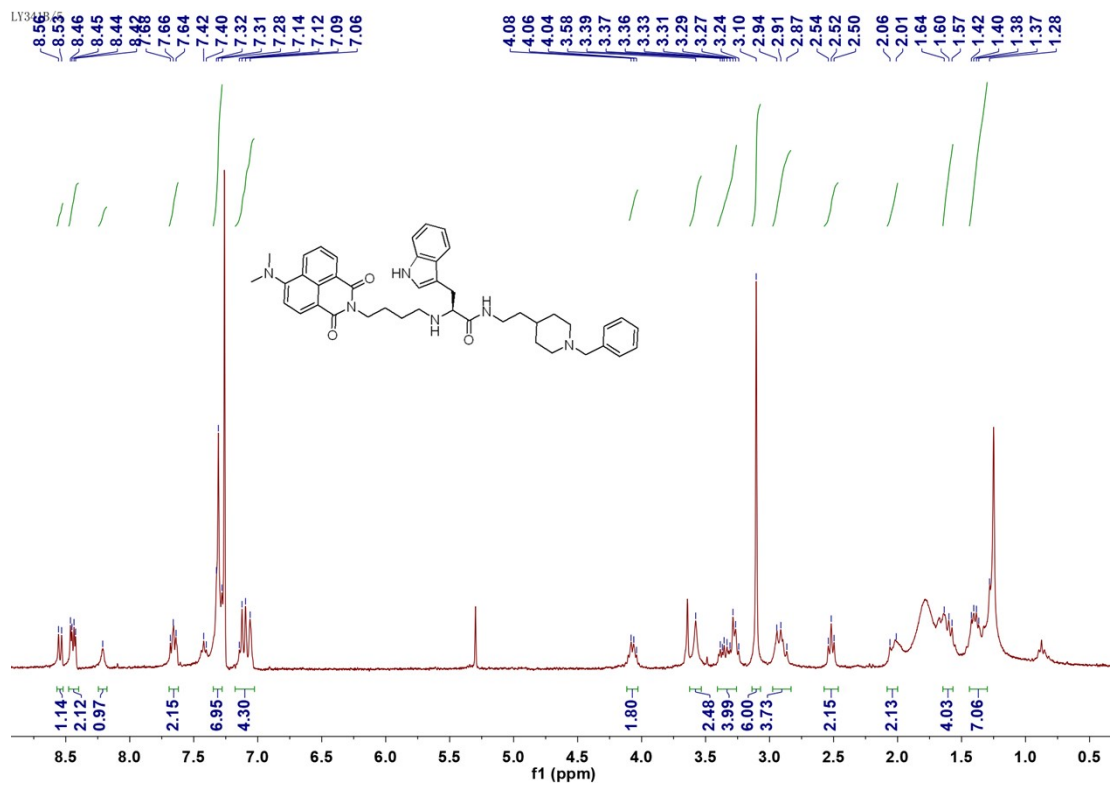


Fig. S12 ^1H NMR of LY34

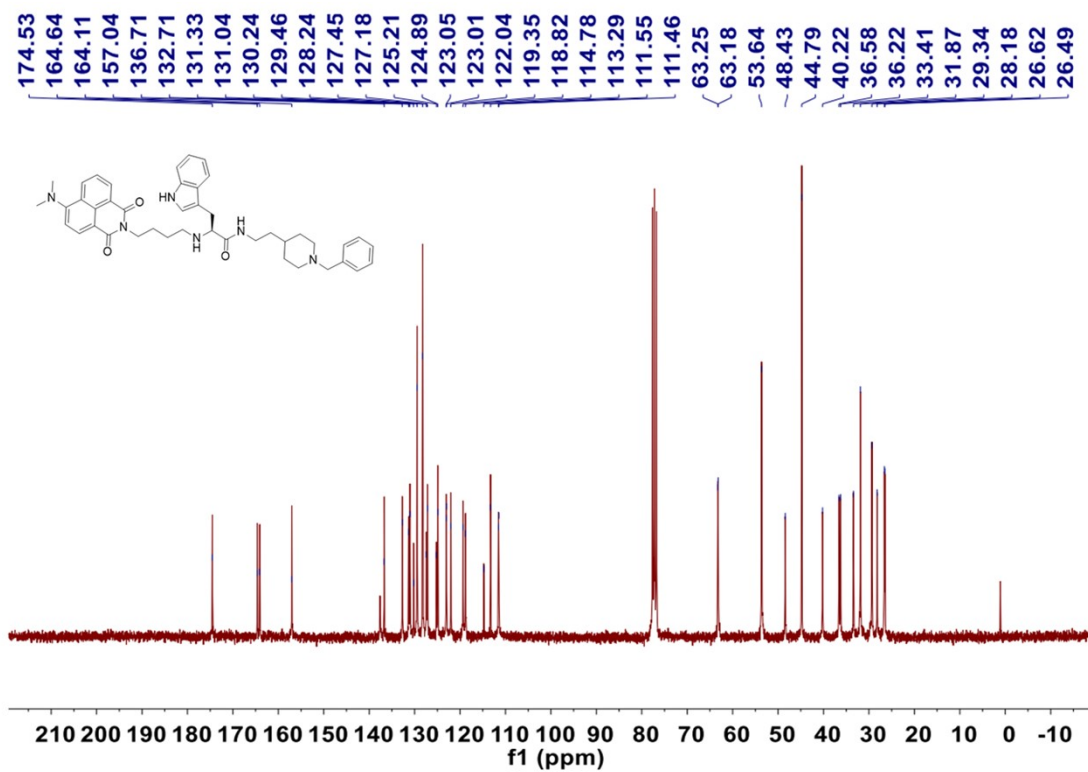


Fig. S13 ^{13}C NMR of LY34

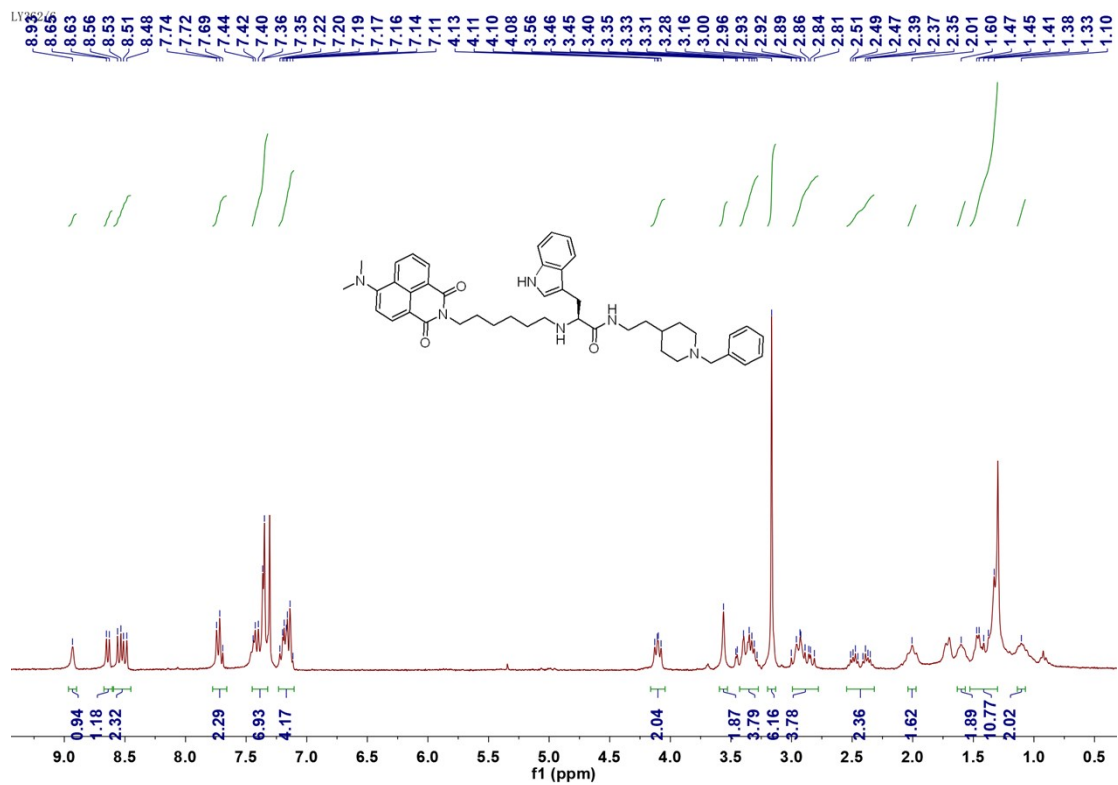


Fig. S14 ^1H NMR of LY36

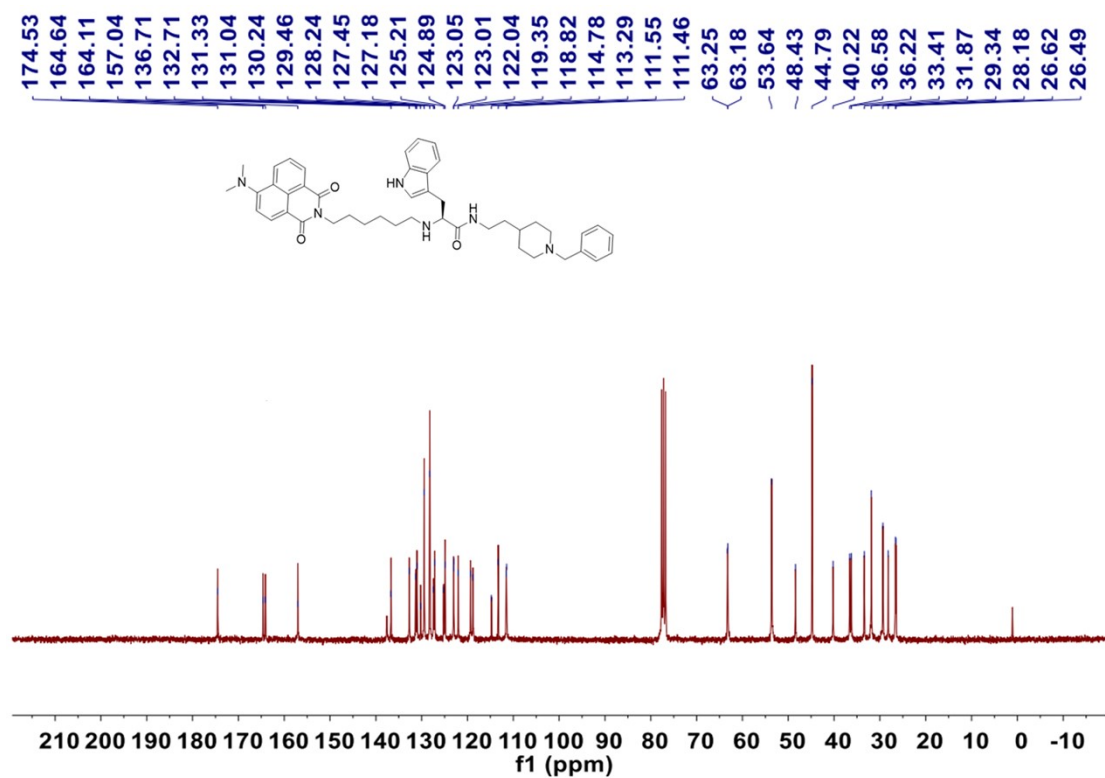


Fig. S15 ^{13}C NMR of LY36

LY36 #15 RT: 0.15 AV: 1 NL: 1.86E7
T: FTMS + p ESI Full ms [100.0000-1000.0000]

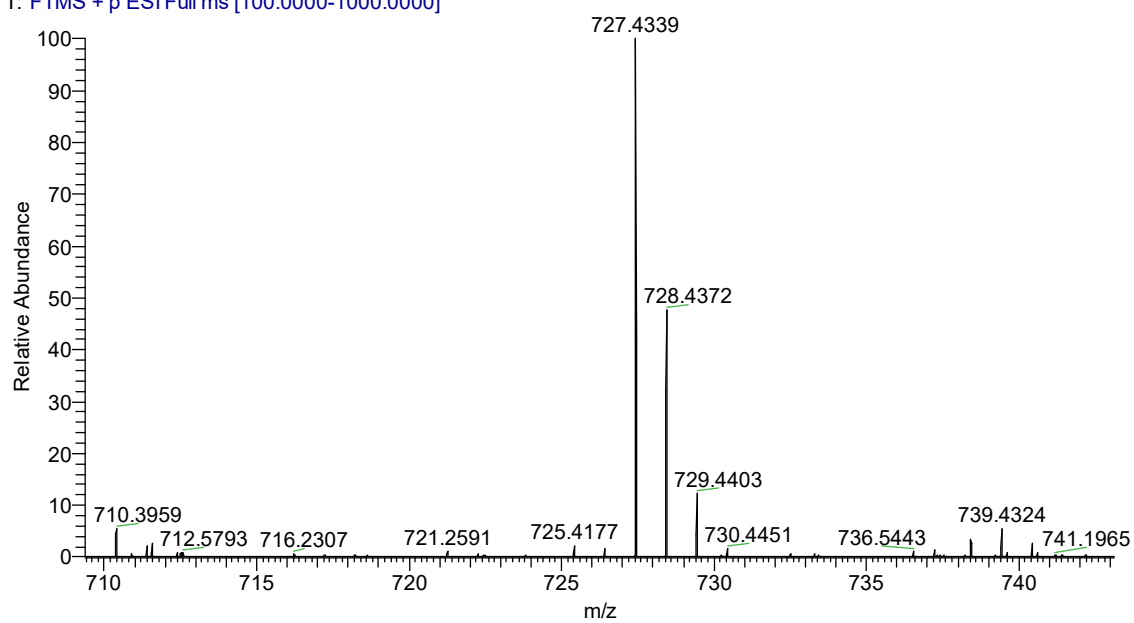


Fig. S16 ESI-HRMS of **LY36**