Supporting information

Rhodamine-based fluorescent probe bearing 8-hydroxyquinoline group for the highly selective detection of Hg2+ and its practical application in cells imaging

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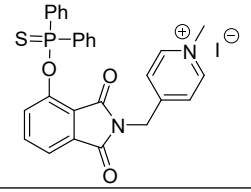
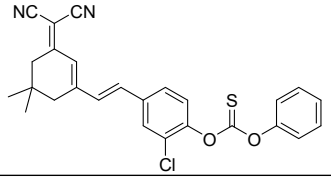
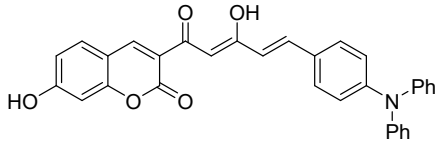
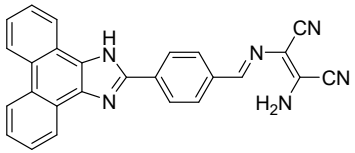
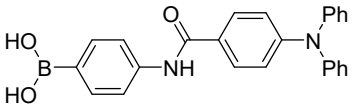
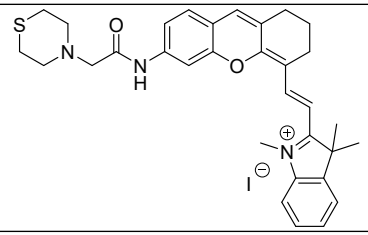
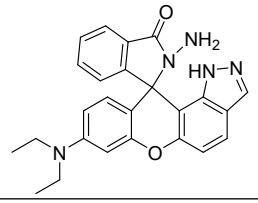
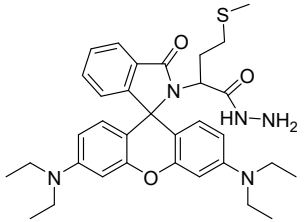
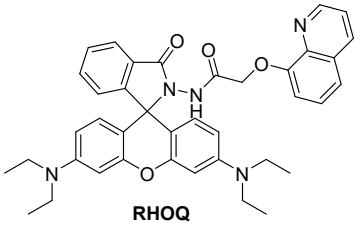
Table S1. Comparison of **RHOQ** with other Hg^{2+} probes.

Probe	$\lambda_{abs}/\lambda_{em}$ (nm)	linear range	LOD	Response time	Fluorescence enhancement ratio	Reference
	315/510	0-4 μM	0.51 μM	20 min	18-fold	A. Ren, W. Yao and D. Zhu, *Analyst*, 2023, **148**, 5882.
	424/585	0-50 μM	0.582 μM	12 min	4-fold	S. Pei, C. Li, X. Pei, X. Zhang, Y. Chi, W. Zeng, Y. Zhang, X. Liao and J. Chen, *Anal. Methods*, 2023, **15**, 3026.
	477/620	0-80 μM	0.224 μM	40 min	20-fold	J. Tian, X. Tian, S. Gong, Y. Liang, Z. Meng, W. Liu, X. Xu, Z. Wang and S. Wang, *Anal. Methods*, 2024, **16**, 1846.
	-/570	-	0.146 μM	< 5 s	-	M. Yu, T. Fu, W. Li, Y. Zhang, H. Wen, M. Zheng, M. Shi, C. Liu, M. Jin, K. Liu, L. Cai, B. Zhu and W. Sheng, *New J. Chem.*, 2023, **47**, 22103.
	-/440	1-4 μM	273 ppb	20 min	14-fold	L. Li, H. Ouyang, Z. Long, Q. Zhang, Y. Jiang, M. Cai, S. Xiong, S. Peng, G. Xu and Q. He, *Org. Biomol. Chem.*, 2023, **21**, 5560.

	615/674	0-25 μM	1.41 μM	< 1 min	-	S. Fang, L. Zhang, Y. Zhao, X. Zhang, L. Zhang, L. Chen, J. Yoon and S. Liu, *Sens. Actuators, B*, 2024, **411**, 135768.
	505/585	-	0.33 nM	40 min	150-fold	B. Du, Q. Li, K. Huang, Q. Wang and L. Liang, *J. Photochem. Photobiol., A*, 2023, **436**, 114419.
	565/585	0-200 μM	2.32 μM	10 min	-	D. Wu, M. Ma, M. Zhang, Y. Xiao, H. Yu, Y. Shao, X. Zhang, Z. Cheng and Y. Xiao, *Dyes Pigm.*, 2022, **198**, 110001.
 RHOQ		0-120 μM	9.67×10^{-8} M	< 2 min	550-fold	This work

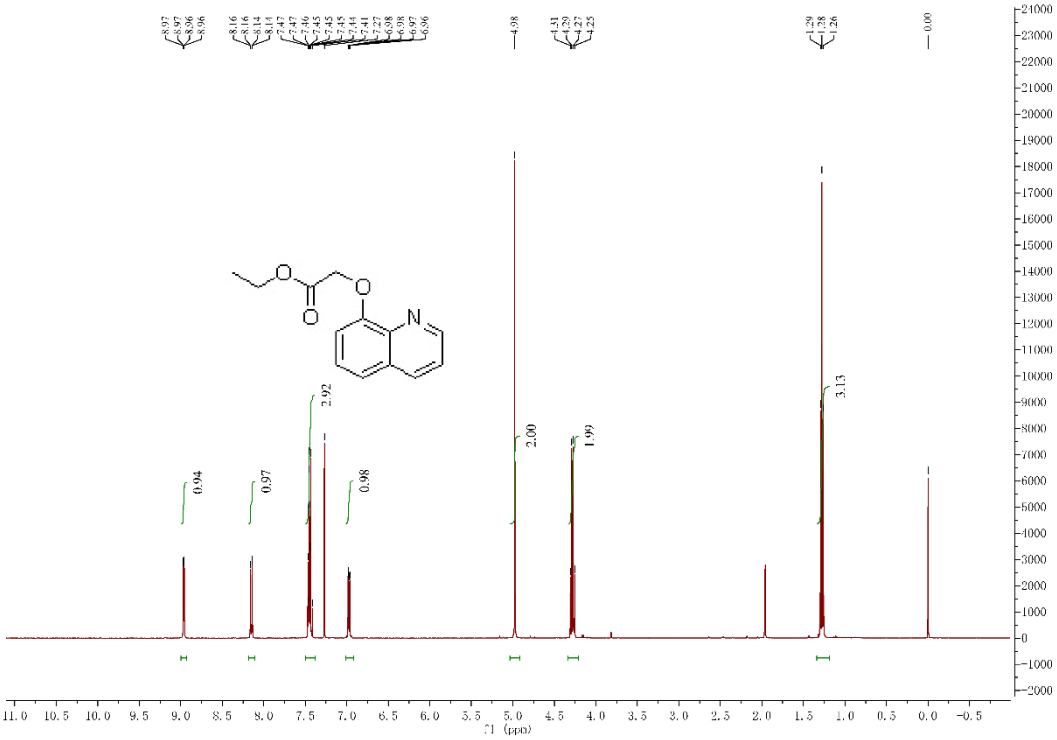


Figure S1. ^{1}H-NMR (400 MHz, $CDCl_3$) spectrum of compound **1**.

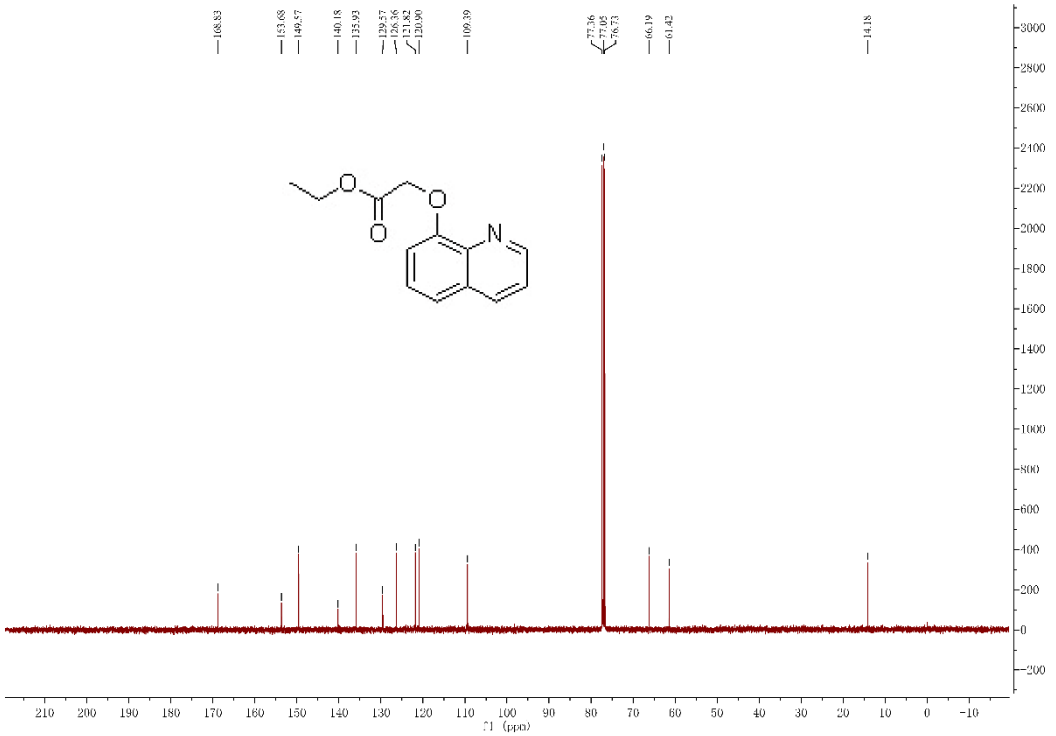


Figure S2. ^{13}C-NMR (100 MHz, $CDCl_3$) spectrum of compound **1**.

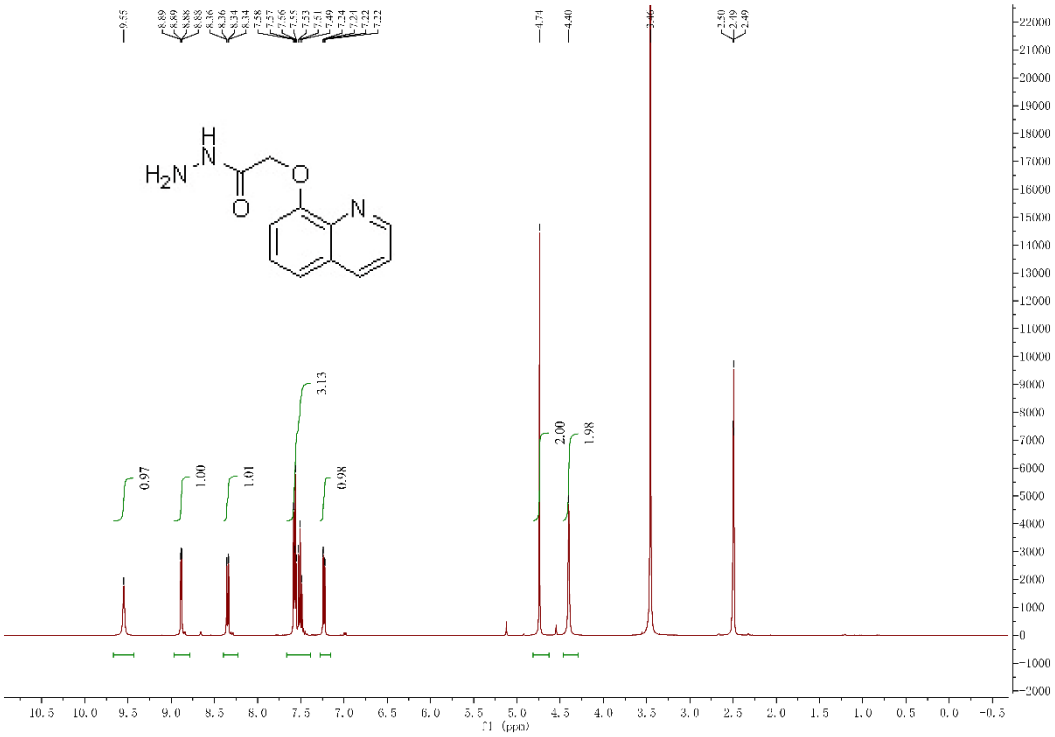


Figure S3. ^{1}H-NMR (400 MHz, DMSO-d_6) spectrum of compound **2**.

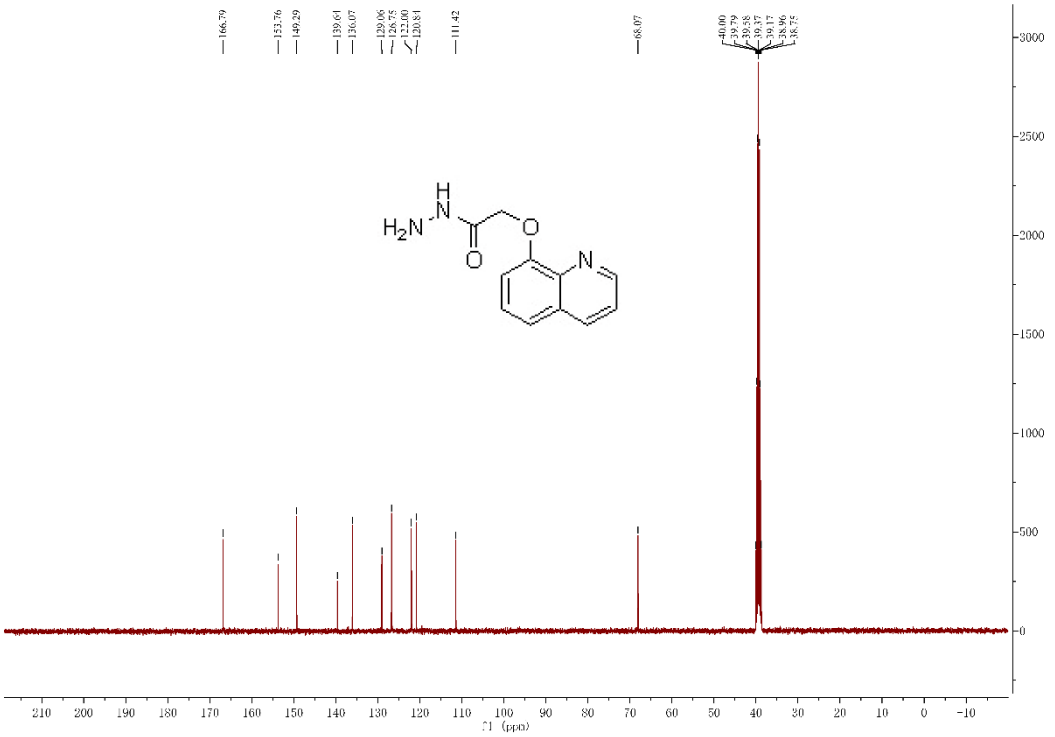


Figure S4. ^{13}C-NMR (100 MHz, DMSO-d_6) spectrum of compound **2**.

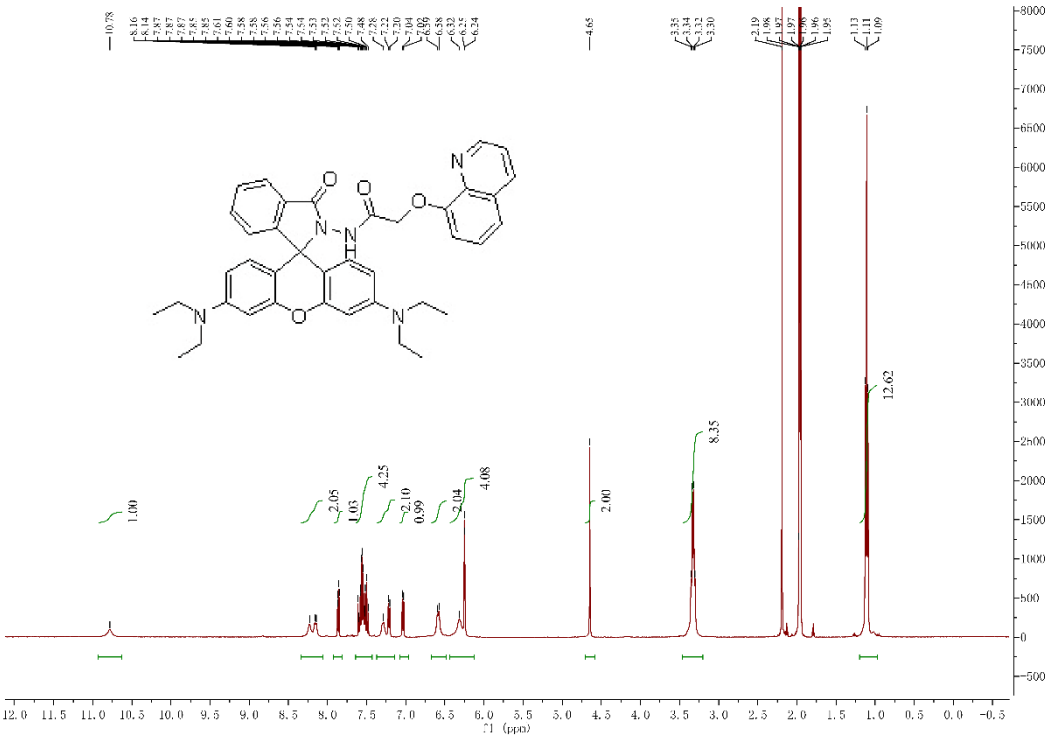


Figure S5. ^{1}H-NMR (400 MHz, CD_3CN) spectrum of probe **RHOQ**.

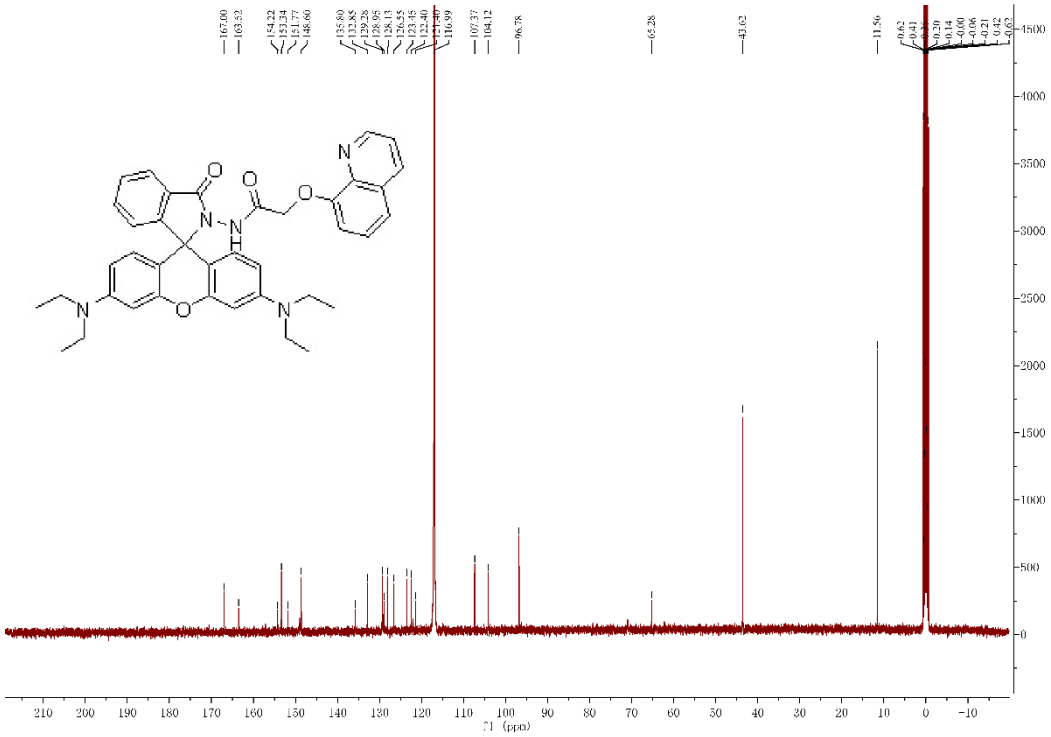


Figure S6. ^{13}C-NMR (100 MHz, CD_3CN) spectrum of probe **RHOQ**.

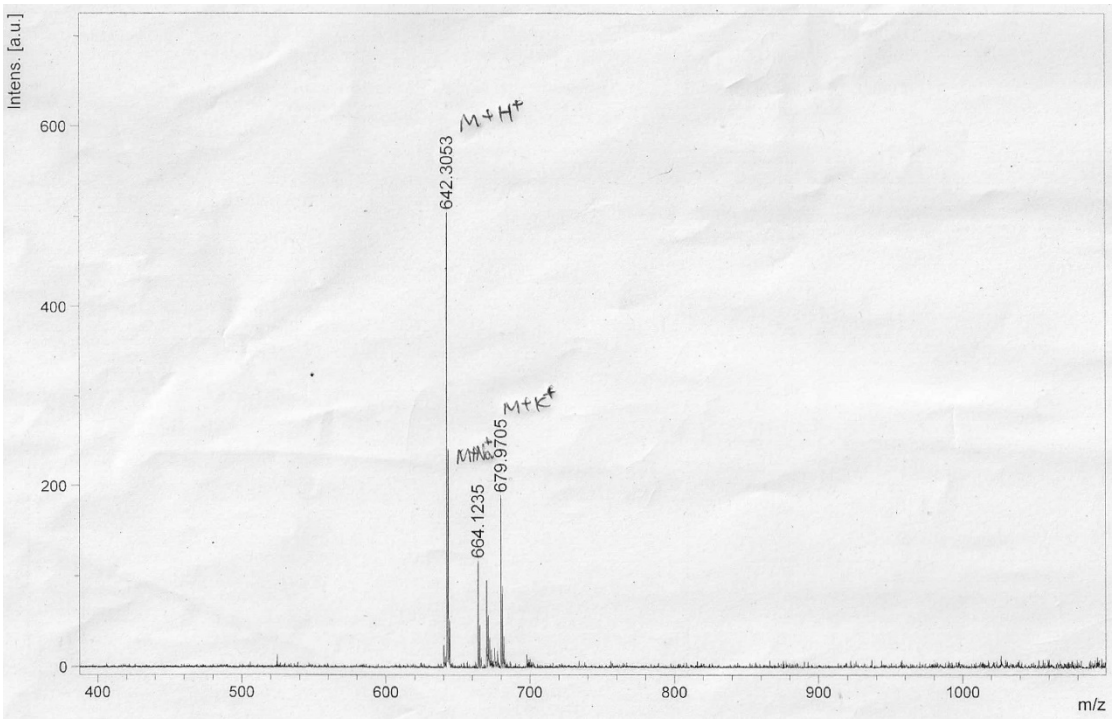


Figure S7. HRMS spectrum of probe **RHOQ**.

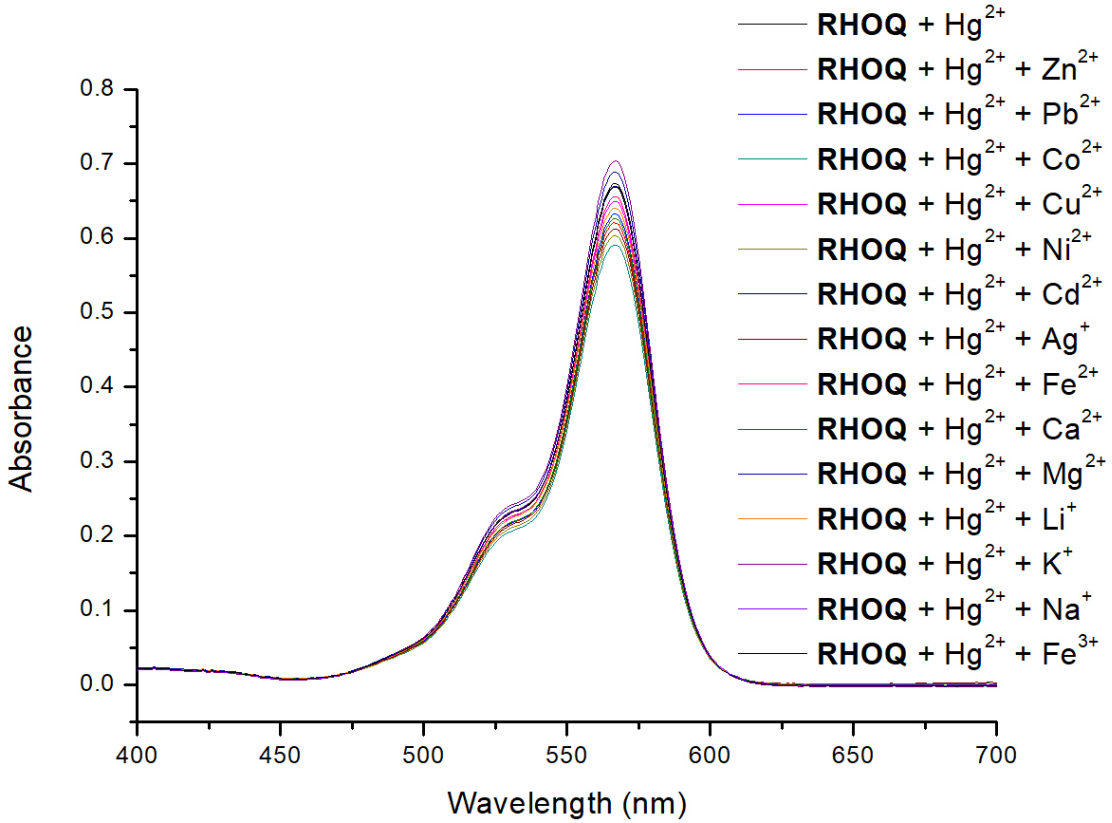


Figure S8. Absorption spectra of mixture of **RHOQ** (10 μM) and Hg^{2+} (40 equiv.) upon addition of different metal ions in MeOH-Tris buffer (20 mM, pH = 7.4, 1:9, v/v).

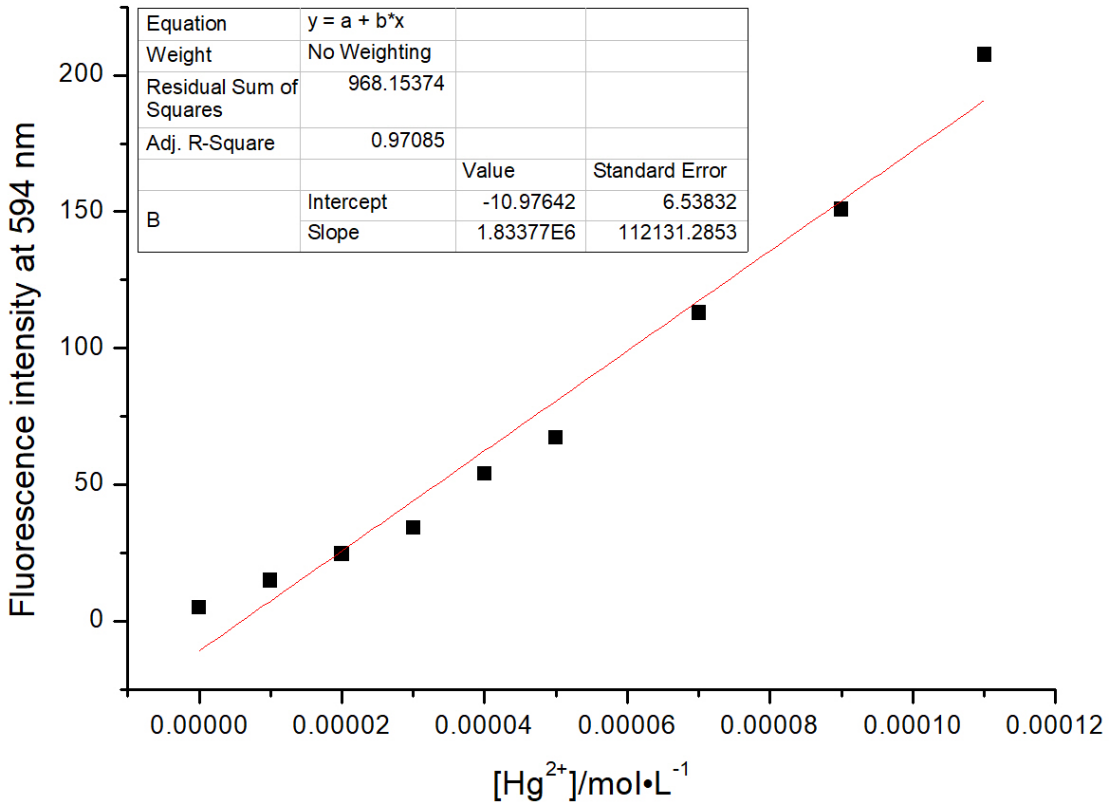


Figure S9. Fluorescence intensity at 594 nm of **RHOQ** (10 μM) as a function of concentration of Hg^{2+} (0-120 μM).

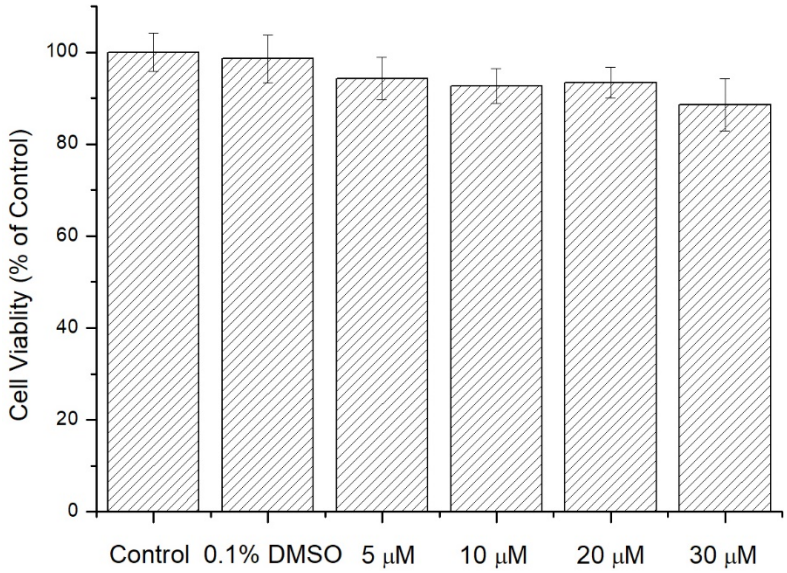


Figure S10. Cell viability of HeLa cells treated with various concentrations (0, 5, 10, 20, 30 μM) of **RHOQ** for 24 h. Cell viability was assessed by using the MTT assay. The results were presented as means ± SE with replicates n = 3.