Supporting Information

Tris(2-pyridylmethyl)amine (TPA) as a membrane-permeable chelator for interception of biological mobile zinc†

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† Electronic supplementary information (ESI) available.

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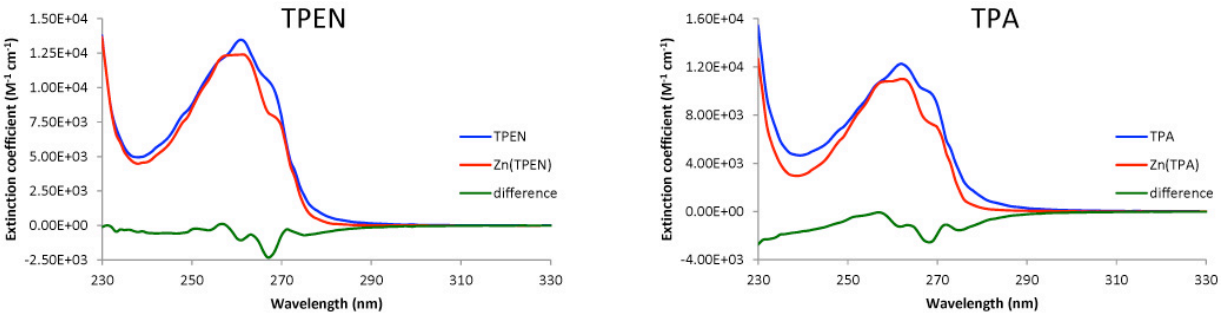

Fig. S1. Absorption spectra of chelator, the zinc chelator complex, and the difference spectra. Left: TPEN; right: TPA. Spectra were measured in pH 7.0 buffers containing 50 mM PIPES and 100 mM KCl.

Table S1. Peak positions (in nm) and extinction coefficients (in M^{-1} cm^{-1}) of chelator, the zinc chelator complex; sh denotes shoulder. Spectra were measured in pH 7.0 buffers containing 50 mM PIPES and 100 mM KCl.

TPEN	273 (sh, 4000), 268 (sh, 10000), 261 (13500), 257 (sh, 12200), 249 (sh, 8400), 243 (sh, 5900)
Zn(TPEN)	273 (sh, 3500), 270 (sh, 7200), 261 (12400), 258 (sh, 12300), 253 (sh, 10200), 249 (sh, 7900)
TPA	273 (sh, 5200), 269 (sh, 9600), 262 (12300), 258 (sh, 11000), 249 (sh, 7000)
Zn(TPA)	273 (sh, 4000), 270 (sh, 7000), 262 (11000), 258 (sh, 10800), 253 (sh, 8500), 249 (sh, 6200)

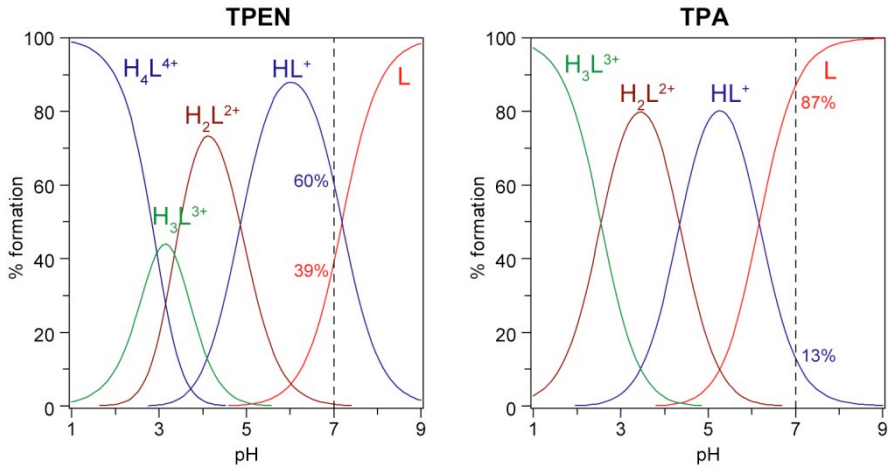

Fig. S2. Speciation plots of TPEN and TPA. The plots were constructed with data from ref 1 using HySS2009 software. The fractions of non-protonated (L, red) and mono-protonated (HL^+) species at pH 7.0 are labeled.

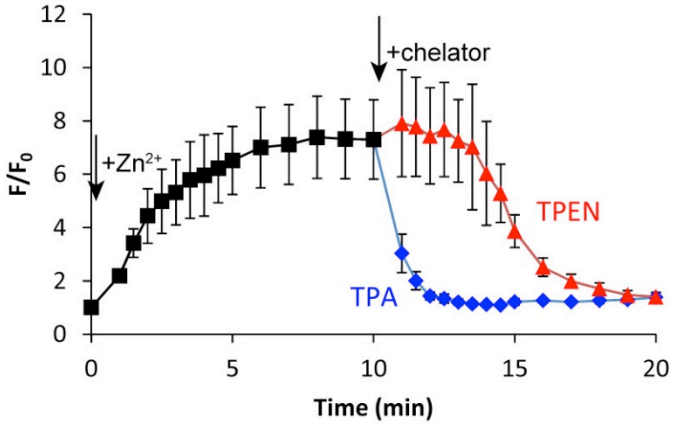

Fig. S3. TPA decreased zinc fluorescent signals faster than TPEN in the presence of ZPP1 (refs. 2-3) as the zinc sensor. HeLa cells were treated with 5 μM ZPP1 for 0.5 h. At t = 0 min, 20 μM zinc pyrithione was added to the culture dish, and at t = 10 min, 100 μM chelator (blue: TPA, red: TPEN) was added. The intracellular ZPP1 fluorescent signals were normalized to the levels before zinc addition. Signals from 4–8 cells in 2–4 culture dishes were averaged. Error bars represent standard errors of the mean.

References

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3 D. Buccella, J. A. Horowitz and S. J. Lippard, *J. Am. Chem. Soc.*, 2011, **133**, 4101-4114.