Supplementary Materials

a)
**Figure S1.** (a) Synthesis of MTX. Reagents and conditions: a: i. (3-(piperidin-1-ylmethyl)phenyl) magnesium bromide, THF, 68°C, 38 h; ii. 5% TFA in DCM, r.t 30 min; b: Chloroacetic anhydride, pyridine, MeCN/DCM, r.t, 5 min, 0°C (b) Spectral analysis of MTX. \(^1\)H NMR (upper panel) (400 MHz, MeOD) \(\delta\) 7.70 (dd, \(J = 3.3, 1.8\) Hz, 2H), 7.52 (s, 1H), 7.47 – 7.43 (m, 1H), 7.42 (d, \(J = 9.5\) Hz, 1H), 7.37 (d, \(J = 9.2\) Hz, 1H), 7.20 (d, \(J = 9.5\) Hz, 1H), 7.11 (s, 1H), 6.92 (dd, \(J = 9.2, 2.1\) Hz, 1H), 6.88 (d, \(J = 2.0\) Hz, 1H), 4.00 (s, 2H), 3.86 (t, \(J = 6.3\) Hz, 2H), 3.77 (s, 2H), 3.61 (t, \(J = 6.2\) Hz, 2H), 3.34 (brs, 4H), 2.62 (s, 3H), 1.69 (dt, \(J = 10.9, 5.5\) Hz, 4H), 1.56 (d, \(J = 4.5\) Hz, 2H); \(^{13}\)C NMR (middle panel) (101 MHz, MeOD) \(\delta\) 170.00, 161.80, 160.38, 159.91, 159.38, 158.90, 139.20, 133.82, 133.75, 133.02, 132.96, 132.05, 130.17, 130.09, 118.35, 115.66, 115.22, 114.57, 98.74, 98.12, 64.01, 55.50, 52.55, 43.18, 39.89, 38.47, 26.51, 25.05.; HRMS (bottom panel) (ESI+) calculated for C\(_{30}\)H\(_{34}\)ClN\(_4\)O\(_2\)\(^+\) (M) 517.23648, found: 517.23640.

**Figure S2.** Mitochondrial staining of HEK293 cells and human primary fibroblasts with the thermosensitive MTY and MTX probes (a) The temperature-sensitive probe MTY (red) colocalizes with MitoTracker Green (MTG; green) as visualized at t0 and 2 hours after the labeling; (b) The temperature-sensitive probe MTX (red) colocalizes with MitoTracker Green (MTG; green) as visualized at t0 and 1 hour after the labeling; 1.2-1.5x zoomed images for human fibroblasts and 3x zoomed images for HEK293 cells are shown.