**Calcium ions function as a booster of chromosome condensation**

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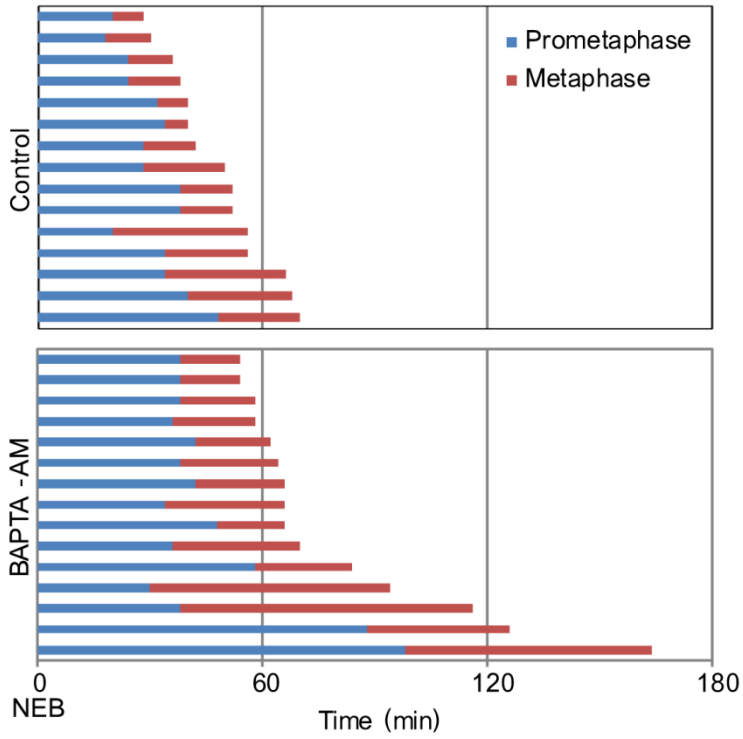
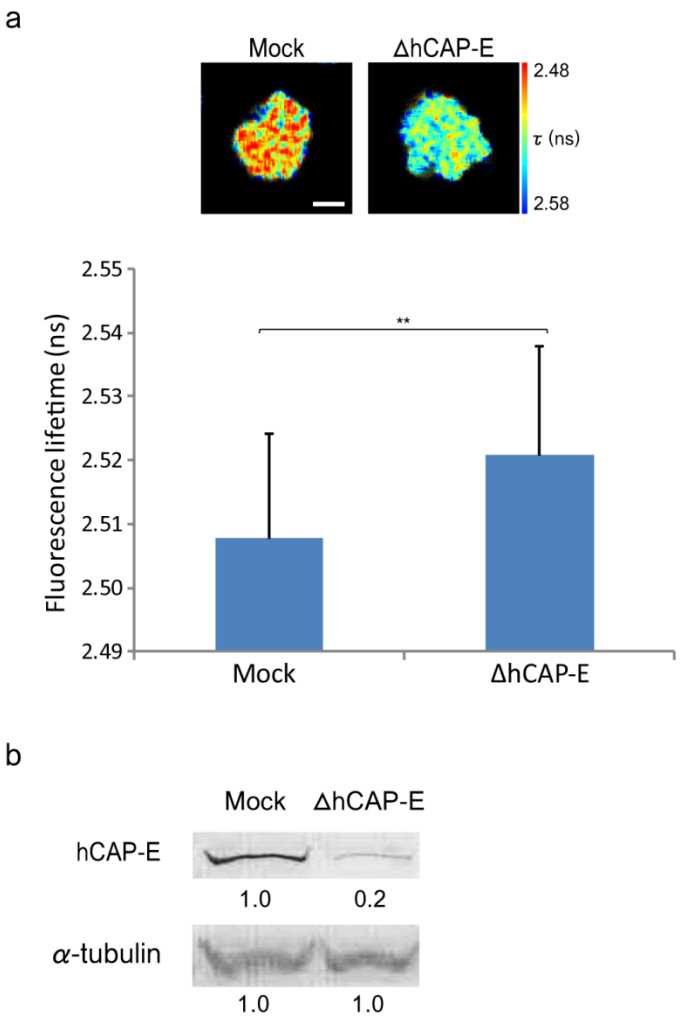
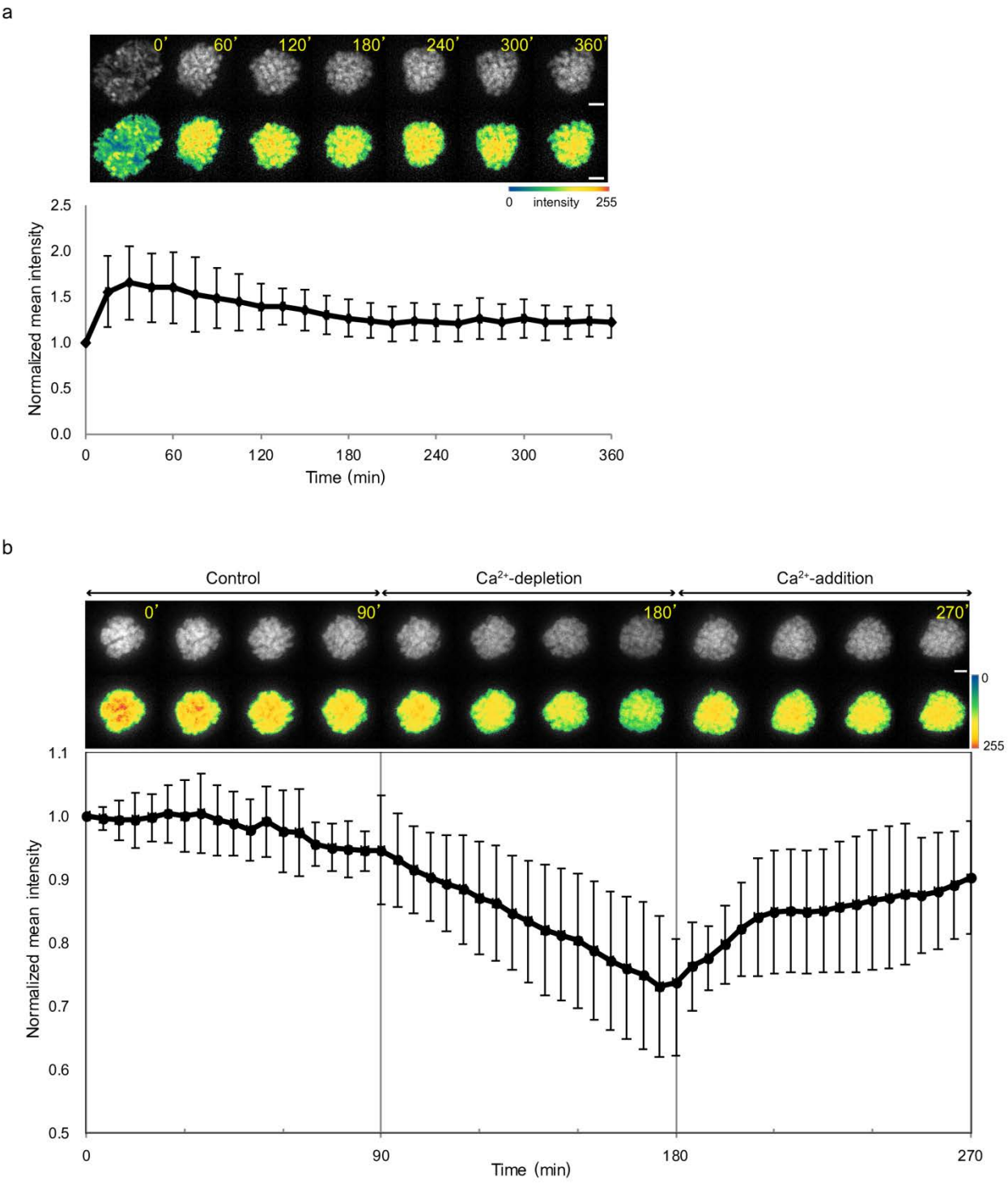



**Supplementary Figure 1.** Mitotic progression in 15 control and $Ca^{2+}$-depleted cells selected at random.



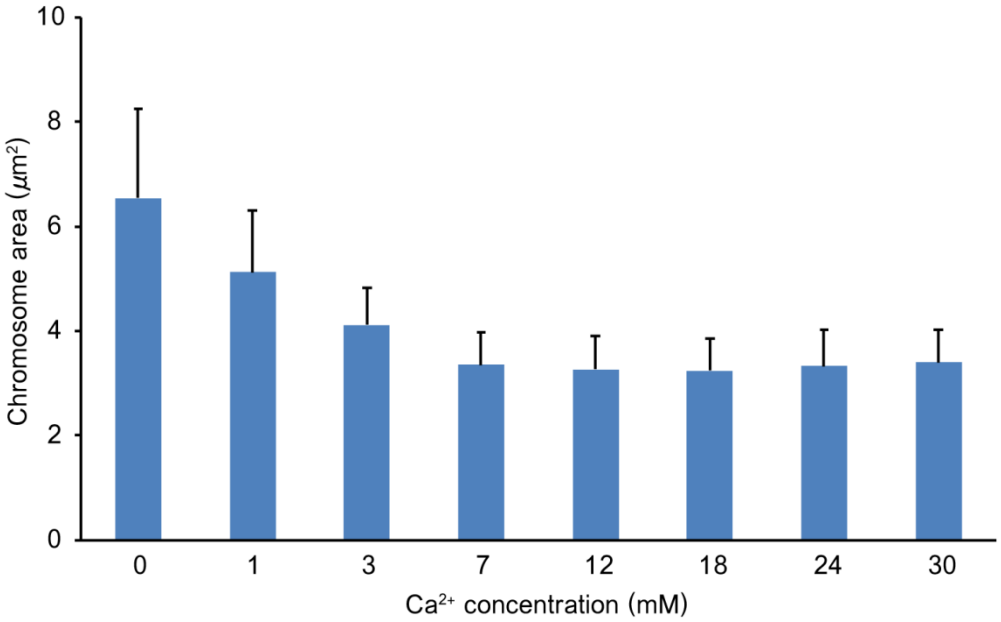

**Supplementary Figure 2.** (a) Compaction of chromosomes mitotic-arrested condensin-depleted (ΔhCAP-E) cells was quantified by FLIM-FRET analysis using 2P-FLIM with 920 nm excitation. Pseudocolours in the images represent fluorescence lifetime of EGFP. A column graph showed mean fluorescence lifetime from 25 cells in mock, 61 cells ΔhCAP-E. (b) Western blot of hCAP-E protein from whole cell extract of HeLa$^{WT}$ after the depletion of hCAP-E by siRNA transfection. Alpha-tubulin was used as control. The relative band intensity ratios to mock are shown below. Error bars indicate standard deviations. Bar, 5 μm.




**Supplement Figure 3.** Intracellular $Ca^{2+}$-altered chromatin compaction levels *in vivo*.

(**a**) Chromatin compaction levels of nocodazole-arrested $HeLa^{H1.2\text{-}GFP}$ cells were measured using fluorescent intensity of EGFP. Three-dimensional images of whole chromosomes starting from NEB were acquired every 15 min for 6 h. Plot graph

showing the quantification of chromosome condensation under mitotic arrest ($n$ = 6 cells). (**b**) Fluorescent images of mitotic arrested HeLa$^{H1.2\text{-}GFP}$ sequentially incubated in $Ca^{2+}$-depleted and $Ca^{2+}$-re-added medium. A graph represents the quantification of chromatin compaction levels as normalized mean fluorescent intensity of EGFP ($n$ = 15 cells). Error bars indicate standard deviations. Bar, 5 μm.




**Supplementary Figure 4.** Average area of PA chromosomes treated with XBE buffer containing various concentrations of $CaCl_2$ (*n* = 100 chromosomes).