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Letter to the Editor

Linking Energy Metabolism, Calcium, Chromatin Condensation and Cell Cycle

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KEY WORDS

ATP, calcium, chromatin condensation, fluorescence microscopy, histones, mitochondria, mitosis, sodium azide

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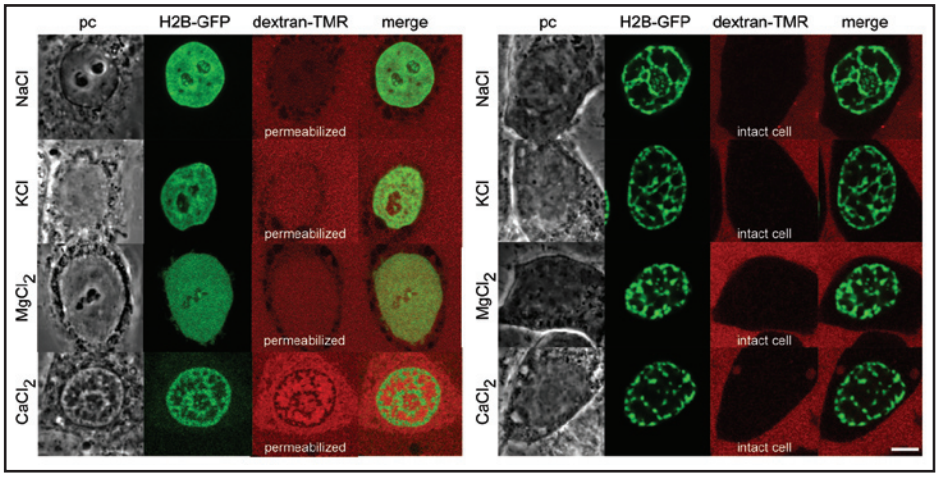

Figure S1. Effect of different cations combined with digitonin permeabilization on chromatin condensation. The effect of digitonin visualized in living HeLa cells was controlled by the exclusion or not of fluorescently labeled 10 kDa dextrans added to the cell medium. In permeabilized cells the dextrans reach also the nucleus (left panel) and the effect of the different ions is displayed as in Figure 1. In intact cells all of the hyperosmolar ion solutions (250 mM) induce chromatin condensation (right panel). Scalebar 5 μm. pc = phase contrast.

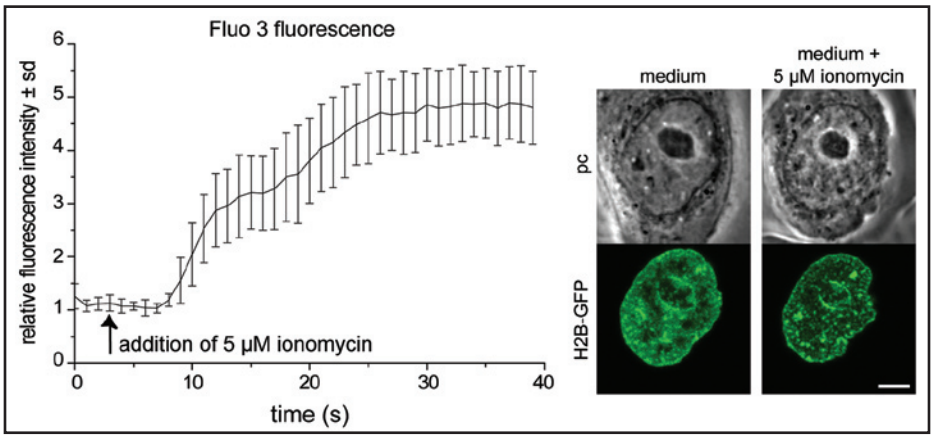

Figure S2. Extracellular calcium influx triggered by ionomycin causes chromatin condensation. Adding ionomycin (5 μM; Calbiochem) to the medium of living cells results in a transport of extracellular calcium to the cellular interior. The fluorescence intensity increase of Fluo 3 displays the maximal intensity of the calcium sensor with the highest intracellular calcium concentration. Our measurements (mean nuclear fluorescence intensity, n=10 cells ± standard deviation) show a five-fold increase of the Fluo 3 fluorescence over the basic fluorescence intensity in untreated cells. The influx of extracellular calcium causes also chromatin condensation, which is shown in the images. Scalebar 5 μm. pc = phase contrast.

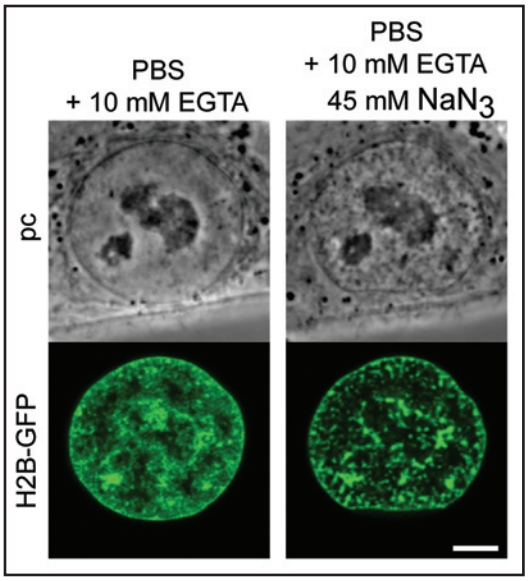

Figure S3. NaN_3 induces chromatin condensation independent of extracellular calcium. The condensation of chromatin using NaN_3 is also achieved in a calcium free buffer, which excludes extracellular calcium as a possible source for the intracellular calcium rise. The cells were incubated in PBS supplemented with 10 mM EGTA for 15 min to deplete extracellular calcium and subsequently 45 mM NaN_3 was added. Scalebar 5 μm. pc = phase contrast.