



Supplemental Figure 1. Comparison of somatic and nuclear fluorescent responses. **A.** Typical normalised rises in fluorescence evoked by a 5s 100 Hz train of action potentials for a neuron loaded with high affinity calcium indicator Oregon Green BAPTA-1 (50 μ M; $K_d \sim 210$ nM) and a neuron loaded with the moderate affinity indicator Fluo 5F (300 μ M; $K_d \sim 2$ μ M). Both neurons were co-loaded with the calcium insensitive red fluorescent indicator Alexa 594 (30 μ M) and data are plotted as $\Delta G/R$ in arbitrary units (A.U.). Note that the fluorescence response obtained with Oregon Green BAPTA-1 becomes asymptotic within 1 s, while the fluorescence response measured with Fluo 5F, and intracellular calcium, continues to rise during this period. This indicates that the Oregon Green BAPTA-1 response is asymptotic because the indicator is saturated. The Oregon Green BAPTA-1 fluorescence response for the soma and nucleus are replotted as G/R in **B**. The ratio of Oregon Green BAPTA-1 to Alexa 594 fluorescence (G/R) does not differ between compartments either at rest or when the indicator is saturated. This indicates that both the resting calcium and the quantum efficiency of the indicator are similar in the soma and nucleus.