Supplementary data 3. Quantification of Ca^{2+} buffering capacity (κ)

The buffering capacity κ is defined as[22] the increase in the Ca^{2+} that is bound to buffers in a system relative to the amount of Ca^{2+} that will stay unbound upon a change in total Ca^{2+} of that system:

$$\kappa = \frac{d\left[CaB\right]}{d\left[Ca^{2+}\right]} \qquad \text{(eq. S7)}$$

Strictly this means that κ should quantify the full Ca^{2+}-buffering capacity of a system, irrespective of the buffering speed. However, in practice it is used to describe only the fast buffering capacity of a system. Generally, κ is determined using the 'added buffer' approach[22,23,24]. With this method one determines the $\Delta[Ca^{2+}]_{total}$ that is undetectable by the used dye due to the fast buffering of the system. It describes how much bigger the portion of ΔCa^{2+} that is rapidly bound by buffers in the system compared to the maximum portion that is detected by the dye. To compare κ's (determined by the added buffer method) between two experiments, one has to use dyes with similar kinetics because κ expresses the buffer capacity that is faster than the indicator. A faster indicator will yield a smaller κ. The decay in $[Ca^{2+}]$ that is detected by the dye after the peak in measured $[Ca^{2+}]$ is generally considered to result from slower mechanisms of $[Ca^{2+}]$ regulation (*e,g,*, extrusion) and is therefore not included in κ (even if it is binding of Ca^{2+} to a buffer).