

Supplementary Figure 1. *A*. One example where Ca^{2+} release was detected for 9 consecutive trials without priming in the beginning of the experiment. Note that the amplitude and spatial extent of the Ca^{2+} release wave only gradually diminished during the 9 trials. Tetanic stimulation at 100 Hz for 0.5 s; intertrial interval 15 s. *B*. The success rate of Ca^{2+} release without priming in the first half of experiments (59 %, $n = 148$) was compared to the success rate in the second half (15 %, $n = 86$). The success rate of release was significantly higher in the beginning of experiments ($\chi^2 = 18.95$, $p < .01$).

Supplementary Figure 2. Priming with action potentials is much more effective than other modes of priming measured using AUCs. *A, B, C*. The area under the curve (AUC) of the $\Delta F/F$ traces were normalized to the largest AUC value in a single sequence of successive trials, which were then averaged over multiple sequences, then compared using a one-way ANOVA and Tukey's multiple means comparison test; * denotes statistical significance compared to action potential priming at 4 Hz, 1 Hz, and 0.5 Hz at $p < .05$. *A*. Intertrial interval 2 min. The AUCs of the successful release events were significantly larger when APs were used at 0.5 – 4 Hz ($F = 45.8$, $p < .05$), compared to the magnitude using priming with SSD or NP, which were not significantly different from each other. *B*. Intertrial interval of 15 s. The magnitude of the successful release events were again larger when APs were used compared to priming with SSD or with SY or NP ($F = 19.2$, $p < .05$). *C*. In cells patched dendritically with intertrial interval of 15 s. Again, the mean AUC was significantly larger than the mean of both SSD and NP, while there was no significant difference between SSD and NP ($F = 63.3$, $p < .05$). *D, E, F*. The success rates of the different priming protocols as seen in panels *A, B*, and *C* of Fig. 6 were multiplied with the mean values of AUCs of the respective conditions in panels *A, B*, and *C* of this figure to provide a weighted measure of success for each method of priming. The resulting success rates were converted to x out of 100, then compared to each other using the χ^2 test for statistical significance set at $p < .01$; * denotes significant statistical difference compared to action potential priming protocols of 4 Hz, 1 Hz, and 0.5 Hz. *D*. The weighted success rates of the trials with AP priming at 2 min intervals were significantly higher compared to rates using SSD and NP. *E*. Weighted success rates using AP priming at 15 s intervals were significantly higher compared to rates using

SSD, SY, and NP. There was no significant difference among 0.25 Hz, SSD, SY, and NP.

F. The weighted success rates of the trials in cells patched on dendrites with intertrial intervals of 15 seconds primed with APs were significantly higher compared to SSD and NP.