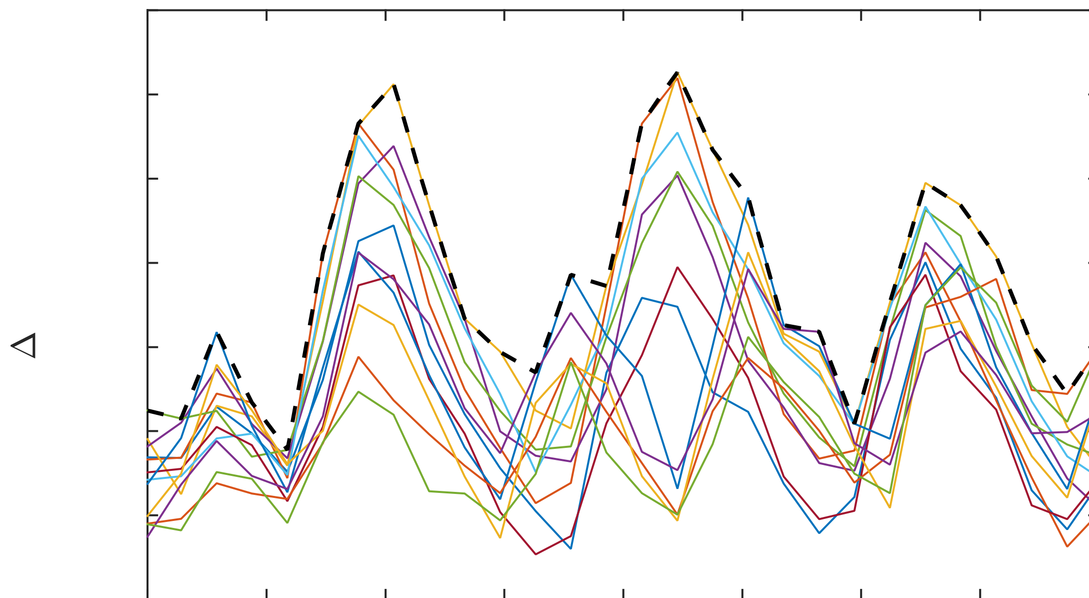
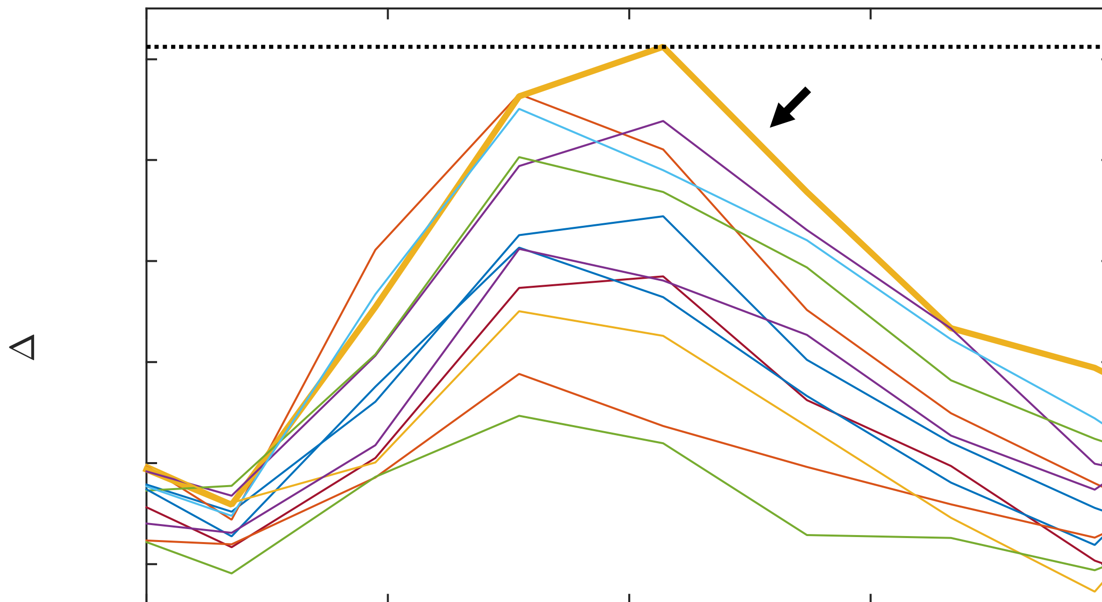
Supporting Information



Supplementary Figure 1: Identification of calcium spikes by algorithmic prescreening. Simultaneous individual cell traces (*multiple colors*) were overlaid and a maximum intensity curve (*black dashed line*) was computed. This line was used to automatically screened events based on peak width and prominence. In this case, the middle two peaks (~0.2 $\Delta F/F_0$) were accepted while the ends (~0.05 and ~0.13) were rejected. Note that this approach was chosen to be conservative to only include events with clear fluorescence responses in at least one of the cells for comparison of synchrony among the cells. It may be that some of the other fluorescence changes (like the right most one) are actually calcium signals as well.



Supplementary Figure 2: Template cell selection and amplitude identification. To determine cell synchrony in calcium spikes, simultaneous individual cell traces (*multiple colors*) were overlaid and the cell exhibiting the maximum value of $\Delta F/F_0$ was chosen as the template cell (*bolded orange line; arrow*). The peak value of this cell was used as the amplitude of the event (*dashed line*; in this case, ~0.21). The similarity metric was used to determine whether events were synchronous with the template cell in an intensity-independent way. In this particular case, all cells were determined to be synchronous.