

Supplemental Movies

Spontaneous and Evoked Release Are Independently Regulated at Individual Active Zones

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Supplemental Movie Captions

Movie 1. Spontaneous vesicle fusion events in a portion of a muscle 4 NMJ detected with postsynaptic myrGCaMP5. Unprocessed myrGCaMP5 fluorescence (left), background subtracted signal (middle), and overlay (right) are shown. Ca^{2+} event peaks in the background subtracted channel are presented in a color grade ranging from red (brightest) to blue (darkest). Images were acquired at 35Hz.

Movie 2. Total spontaneous Ca^{2+} activity in a single muscle 4 NMJ detected over the course of an experimental session is shown. The location of each ROI identified during the imaging session is indicated by circles. The “activity level” of each ROI is initially set to zero, increases by 1 every time a spontaneous release event occurs, decays exponentially with a time constant ($\tau = 2$ sec), and is indicated by both the size and color of the ROI (hot and cold colors indicate high and low activity levels, respectively). The relatively slow exponential decay makes it easy to see when ROIs have been coactive within the recent past and overlaps of the exaggerated ROI areas highlight spatial co-activation. The stamp on the upper left shows the time course of events over the acquisition period (binned into $\Delta = 0.25$ sec intervals).

Movie 3. Spontaneous vesicle fusion events can occur at the same ROI without a substantial refractory period. The peaks of the Ca^{2+} events shown are separated by 800 msec.

Movie 4. Spontaneous and evoked activity detected at a single muscle 4 NMJ. Red and blue circles indicate evoked and spontaneous activity levels, respectively. The white rectangle indicates stimulation event times. The stamp on the upper left shows the time course of events over the acquisition period.

Movie 5. A spontaneous vesicle fusion event is immediately followed by an evoked fusion event at the same ROI, indicating both modes of fusion can occur at the same active zone. The interval between the event peaks is 809 msec.