

## Description of Additional Supplementary Files

**Title:** Supplementary Movie 1

**Description:** Continuous imaging of vesicle fusion labeled by VAMP2-pHmSarlet in an INS-1 cell corresponding to Fig. 4a.

**Title:** Supplementary Movie 2

**Description:** Continuous imaging of vesicle fusion labeled by VAMP2-pHmSarlet in a HT-22 mouse hippocampal neuronal cell corresponding to Fig. 4h.