**Supplementary Figure Legends**

**Supplementary Fig. 1.** Expression of syt7B* and syt 1 in transfected neurons. *(A and B)* Fluorescence images of transfected hippocampal neurons expressing mutated short synaptotagmin 7 (Syt7B*; panel a) or synaptotagmin 1 (Syt 1; panel b). Neurons were stained with FM1-43 under stimulation to visualize active presynaptic nerve terminals; merged images of ECFP and FM1-43 fluorescence signals are shown on the right to visualize the presence of transfected synaptotagmin 7 variants in nerve terminals.

**Supplementary Fig. 2.** Co-localization of immunoreactivity against GFP and synaptophysin in transfected neurons. *(A-D)* Transfected cultures were stained with an antibody against GFP that recognizes the ECFP fusion proteins, in addition to an antibody against synaptophysin, a marker for presynaptic terminals. We see similar staining patterns for GFP in syt7A (A), syt7B (B), syt7B* (C) and syt 1 (D) cultures (left column). There is some diffuse axonal staining, however the transfected proteins are concentrated in punctate regions that co-localize with synaptophysin (middle and right columns) indicating they are targeted to presynaptic terminals.