Expanded View Figures

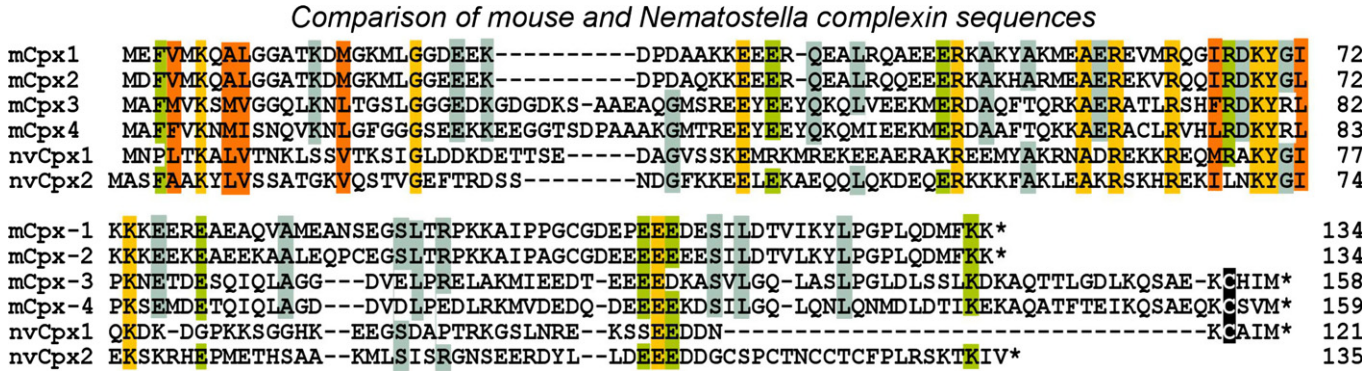

Figure EV1. Alignment of mouse and *Nematostella* complexin sequences.
Alignment of complexin sequences from mouse (mCpx1–4) and *Nematostella vectoriensis* (nvCpx1 and 2). Sequences are shown in single-letter amino acid code; residues shared by 6, 5, or 4 of the 6 sequences are highlighted in yellow, green, and blue, respectively. Conserved hydrophobic sequences are highlighted in red, and C-terminal cysteine residues that are presumably isoprenylated are displayed on a black background.

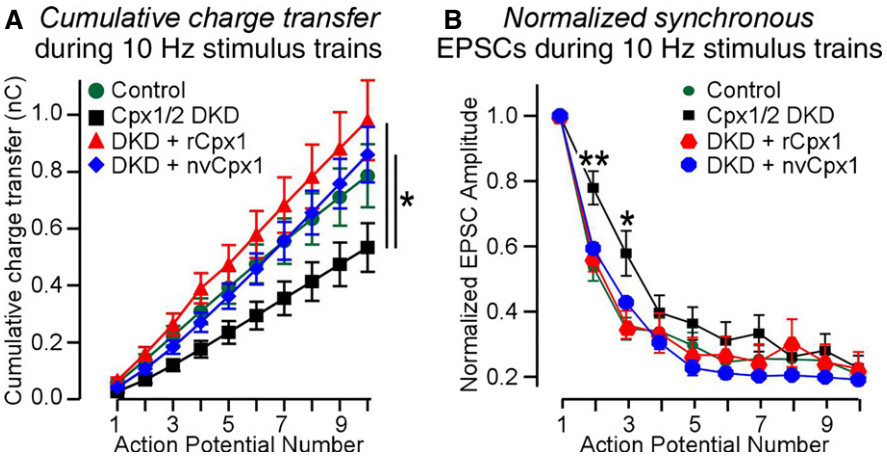

Figure EV2. Analysis of the kinetics of evoked NMDA receptor-dependent EPSCs (related to Fig 4E).

A The plot of cumulative charge transfer during the 10-Hz stimulus train as a function of the action potential number is recorded in WT cortical neurons that were infected with a control lentivirus (Control) or a lentivirus expressing complexin shRNAs (Cpx1/2 DKD) without or with co-expression of rCpx1 or nvCpx1.

B The degree of synaptic depression as a function of the action potential number is plotted as described for (A).

Data information: Data shown are means ± SEM; statistical assessments were performed by two-way ANOVA (A) or Student's *t*-test (B) comparing each condition to control (*$P < 0.05$; **$P < 0.01$). The data from the experiments shown in Fig 4E, and the number of neurons/cultures analyzed correspond to those listed in the legend to Fig 4E.

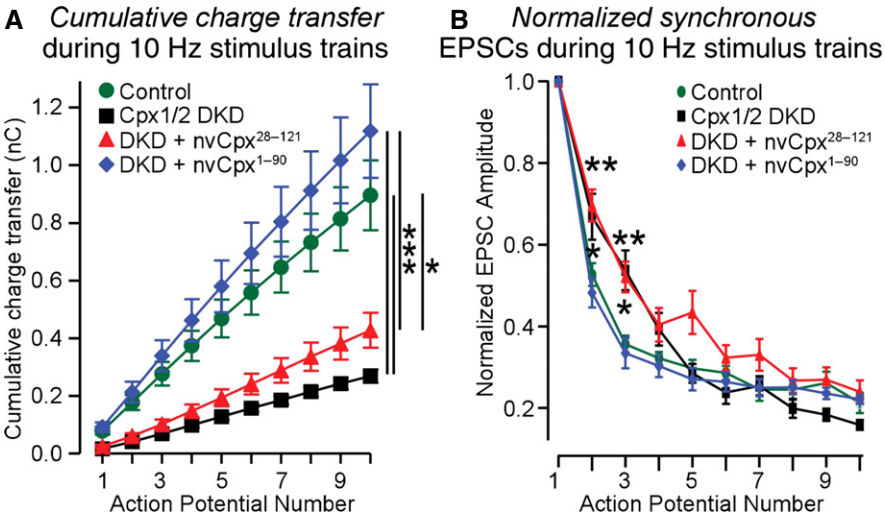

Figure EV3. Analysis of the kinetics of evoked NMDA receptor-dependent EPSCs (related to Fig 5E).

A The plot of cumulative charge transfer during the 10-Hz stimulus train as a function of the action potential number is recorded in WT cortical neurons that were infected with a control lentivirus (Control) or a lentivirus expressing complexin shRNAs (Cpx1/2 DKD) without or with co-expression of nvCpx$^{28\text{-}121}$ or nvCpx$^{1\text{-}90}$.

B The degree of synaptic depression as a function of the action potential number is plotted as described for (A).

Data information: Data shown are means ± SEM; statistical assessments were performed by two-way ANOVA (A) or Student's *t*-test (B) comparing each condition to control (*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$). The data from the experiments shown in Fig 5E, and the number of neurons/cultures analyzed correspond to those listed in the legend to Fig 5E.