| Genotype | mEPSP (mV) | EPSP (mV) | QC (Stats *) | NLS QC (Stats *) | $I_R$ (MΩ) | RMP (mV) | n | Fig |
|---|---|---|---|---|---|---|---|---|
| $w^{1118}$ (Wild Type) | 0.86 ± 0.05 | 32.7 ± 1.4 | 40.5 ± 2.4 | 74.4 ± 5.8 | 6.4 ± 0.4 | -63.3 ± 0.9 | 23 | |
| *w; GluRIIA$^{SP16}$* | 0.34 ± 0.01 | 22.3 ± 0.7 | **66.9 ± 3.0** *** | **97.0 ± 4.9** ** | 7.0 ± 0.5 | -63.9 ± 0.7 | 19 | 1,3,4 6,7 |
| *$w^{1118}$, PhTx 10 min* | 0.41 ± 0.02 | 29.3 ± 1.1 | **73.6 ± 5.8** *** | **125.5 ± 12.2** ** | 5.0 ± 0.3 | -62.9 ± 0.5 | 11 | 1 |
| **Muscle and Neurons:** *C155/Y; Sca/+; BG57/+* | 0.83 ± 0.06 | 37.9 ± 1.0 | 48.5 ± 3.4 | 97.9 ± 7.5 | 8.8 ± 0.4 | -66.0 ± 0.9 | 15 | 4 |
| *C155/Y; Sca/+; BG57, GluRIII-RNAi/+* | 0.48 ± 0.02 | 34.5 ± 0.8 | **73.9 ± 2.7** *** | **139.7 ± 5.4** *** | 7.3 ± 0.6 | -63.7 ± 0.4 | 25 | 1,4,6 |
| *C155/Y; Sca/+; BG57/Csk-RNAi* | 0.92 ± 0.06 | 34.8 ± 1.3 | 39.0 ± 2.3 | 71.7 ± 5.0 | 5.9 ± 0.3 | -66.9 ± 1.3 | 10 | |
| *C155/Y; Sca/+; BG57, GluRIII-RNAi/Csk-RNAi* | 0.54 ± 0.04 | 23.4 ±2.4 | **43.0 ± 3.4** ns | **65.8 ± 7.4** ns | 5.8 ± 0.3 | -65.4 ± 1.2 | 13 | 1 |
| *Csk$^{c04256}$* | 0.80 ± 0.07 | 36.4 ± 1.8 | 47.9 ± 5.4 | 89.1 ± 12.0 | 6.0 ± 0.3 | -70.5 ± 1.7 | 11 | 3 |
| *GluRIIA$^{SP16}$; Csk$^{c04256}$* | 0.27 ± 0.01 | 15.7 ± 1.3 | **58.0 ± 4.7** ns | **75.7 ± 7.5** ns | 5.7 ± 0.4 | -63.2 ± 0.8 | 11 | 1 |
| *Csk$^{c04256}$, PhTx 10 min* | 0.47 ± 0.03 | 35.3 ± 2.0 | **76.5 ± 4.2** *** | **141.0 ± 11.4** ** | 5.3 ± 0.3 | -68.9 ± 1.2 | 10 | 1 |
| *Csk$^{c04256}$/Csk$^{j1D8}$* | 0.76 ± 0.06 | 29.7 ± 1.2 | 40.9 ± 2.6 | 67.1 ± 4.4 | 5.6 ± 0.3 | -66.8 ± 1.0 | 10 | 3 |
| *GluRIIA$^{SP16}$; Csk$^{c04256/j1D8}$* | 0.39 ± 0.02 | 14.1 ± 1.8 | **37.2 ± 5.2** ns | **47.1 ± 7.2** *(low) | 8.8 ± 0.7 | -68.5 ± 1.5 | 10 | 1 |
| *cac$^{S}$/+* | 0.74 ± 0.02 | 29.9 ± 1.4 | 42.1 ± 3.0 | 74.0± 7.0 | 5.0 ± 0.2 | -62.8 ± 0.6 | 25 | |
| *cac$^{S}$/+; GluRIIA$^{SP16}$* | 0.32 ± 0.01 | 15.9 ± 0.09 | **50.4 ± 3.3** * | 66.3 ± 5.1 | 5.8 ± 0.2 | -67.8 ± 0.8 | 31 | 1 |
| *Csk$^{j1D8}$/+* | 0.85 ± 0.08 | 32.1 ± 1.5 | 41.1 ± 4.0 | 75.6 ± 8.7 | 6.5 ± 0.7 | -63.7 ± 0.8 | 10 | |
| *GluRIIA$^{SP16}$; Csk$^{j1D8}$/+* | 0.32 ± 0.02 | 18.9 ± 1.2 | **61.7 ± 5.3** ** | 84.9 ± 8.7 | 7.7 ± 0.7 | -62.8 ± 0.7 | 11 | 1 |
| *cac$^{S}$/+;; Csk$^{j1D8}$/+* | 0.71 ± 0.02 | 32.2 ± 0.1 | 45.8 ± 2.0 | 82.4 ± 4.8 | 4.6 ± 0.3 | -63.5 ± 0.6 | 10 | |
| *cac$^{S}$/+; GluRIIA$^{SP16}$; Csk$^{j1D8}$/+* | 0.30 ± 0.02 | 9.8 ± 1.4 | **33.6 ± 5.1** *(low) | **40.0 ± 6.6** ***(low) | 6.8 ± 0.6 | -62.9 ± 0.8 | 11 | 1 |
| **Src64B Muscle:** *UAS-Src64B$^{UY1332}$/BG57* 25°C | 0.80 ± 0.05 | 35.3 ± 2.3 | 45.0 ± 2.7 | 96.7 ± 15.0 | 6.4 ± 0.4 | -65.9 ± 3.9 | 9 | |
| *GluRIIA$^{SP16}$; UAS-Src64B$^{UY1332}$/BG57* 25°C | 0.33 ± 0.01 | 17.2 ± 1.8 | **52.0 ± 4.8** ns | **63.1 ± 8.2** ns | 7.3 ± 0.4 | -66.2 ± 0.9 | 8 | 4 |
| **Src64B Neur.:** *C155; UAS-Src64B$^{UY1332}$* 25°C | 1.08 ± 0.06 | 35.4 ± 1.5 | 33.4 ± 2.3 | 64.2 ± 6.2 | 7.9 ± 0.8 | -65.7 ± 1.6 | 10 | |
| *C155; GluRIIA$^{SP16}$; UAS-Src64B$^{UY1332}$* 25°C | 0.43 ± 0.6 | 21.7 ± 2.1 | **60.6 ± 11.5** * | **89.1 ± 19.2** $^{p=0.2}$ | 7.5 ± 1.1 | -65.7 ± 1.2 | 8 | 4 |
| **Src42A Muscle:** *UAS-Src42A$^{WT}$; BG57/+* 18°C | 0.69 ± 0.03 | 31.1 ± 1.0 | 45.4 ± 2.2 | 80.3 ± 5.6 | 5.2 ± 0.4 | -63.0 ± 0.8 | 9 | |
| *UAS-Src42A$^{WT}$; GluRIIA$^{SP16}$; BG57/+* 18°C | 0.30 ± 0.02 | 15.8 ± 1.2 | **54.2 ± 4.4** ns | **70.4 ± 7.2** ns | 5.1 ± 0.4 | -61.9 ± 0.5 | 9 | 4 |
| **Src42A Muscle:** *UAS-Src42A$^{YF}$; MHC/+ 18°C* | 0.77 ± 0.07 | 31.5 ± 3.5 | 42.1 ± 5.2 | 75.9 ± 12.0 | 7.9 ± 0.7 | -65.9 ± 1.6 | 7 | |
| *UAS-Src42A$^{YF}$; GluRIIA$^{SP16}$; MHC/+* 18°C | 0.33 ± 0.02 | 17.0 ± 2.0 | **56.3 ± 8.1** ns | **77.6 ± 13.5** ns | 8.0 ± 0.7 | -62.9 ± 0.6 | 10 | 4 |
| **Src 42A Neur:** *OK371/+; UAS-Src42A$^{YF}$/+* 18°C | 0.89 ± 0.07 | 32.9 ± 1.2 | 38.7 ± 3.2 | 69.5 ± 6.4 | 5.8 ± 0.6 | -65.0 ± 0.9 | 10 | |
| *OK371, GluRIIA$^{SP16}$ /+, GluRIIA$^{SP16}$; UAS-Src42A$^{YF}$/+* 18°C | 0.35 ± 0.02 | 27.3 ± 1.9 | **81.0 ± 8.2** * | **134.6 ± 17.1** ** | 9.3 ± 0.8 | -62.0 ± 0.6 | 7 | 4 |
| *Src42A$^{k10108}$/+; Csk$^{c04256}$* | 0.75 ± 0.05 | 32.7 ± 1.7 | 45.4 ± 4.2 | 83.7 ± 7.7 | 5.1 ± 0.3 | -62.9 ± 0.6 | 9 | |
| *Src42A$^{k10108}$, GluRIIA$^{SP16}$/+, GluRIIA$^{SP16}$; Csk$^{c04256}$* | 0.37 ± 0.02 | 19.5 ± 5.0 | **54.2 ± 8.7** ns | 84.0 ± 11.5 | 5.9 ± 0.5 | -66.7 ± 0.9 | 12 | 4 |

| Genotype | mEPSP (mV) | EPSP (mV) | QC (Stats *) | NLS QC (Stats *) | $I_R$ (MΩ) | RMP (mV) | n | Fig |
|---|---|---|---|---|---|---|---|---|
| *Src64B$^{KO}$, Csk$^{c04256}$/+, Csk$^{j1D8}$* | 0.63 ± 0.05 | 29.7 ± 1.7 | 48.2 ± 4.2 | 82.8 ± 8.5 | 4.1 ± 0.1 | -63.1 ± 0.7 | 7 | |
| *GluRIIA$^{SP16}$; Src64B$^{KO}$, Csk$^{c04256}$/+, Csk$^{j1D8}$* | 0.32 ± 0.02 | 19.8 ± 1.1 | **63.8 ± 3.9** * | 86.9 ± 6.4 | 6.9 ± 0.4 | -66.4 ± 1.1 | 14 | 4 |
| *Src42A$^{k10108}$/+* | 0.89 ± 0.07 | 38.2 ± 1.1 | 44.9 ± 3.2 | 89.8 ± 7.1 | 6.3 ± 0.6 | -67.0 ± 1.2 | 10 | |
| *Src42A$^{k10108}$, GluRIIA$^{SP16}$/+, GluRIIA$^{SP16}$* | 0.41 ± 0.03 | 25.5 ± 2.8 | **64.3 ± 7.0** ** | 101.5 ± 12.9 | 6.8 ± 0.9 | -67.9 ± 1.7 | 14 | 4 |
| *Src64B$^{KO}$/+* | 0.90 ± 0.06 | 36.4 ± 1.6 | 41.3 ± 2.1 | 79.8 ± 5.2 | 5.8 ± 0.5 | -66.0 ± 1.4 | 9 | |
| *GluRIIA$^{SP16}$; Src64B$^{KO}$/+* | 0.42 ± 0.04 | 22.2 ± 2.5 | **58.6 ± 8.6** $^{p=0.08}$ | 89.2 ± 14.7 | 6.7 ± 0.5 | -64.3 ± 0.9 | 10 | 4 |
| **Musc & Neur:** *UAS-Csk-YFP/C155; Sca/+; BG57/+* | 1.04 ± 0.06 | 26.1 ± 0.2 | 25.2 ± 0.6 | 39.7 ± 1.0 | 6.9 ± 0.1 | -66.2 ± 0.2 | 11 | 5 |
| *UAS-Csk-YFP/C155; Sca/+; BG57, GluRIII-RNAi/+* | 0.52 ± 0.02 | 28.5 ± 3.5 | **54.7 ± 6.6** *** | **91.8 ± 14.5** *** | 5.7 ± 0.3 | -65.8 ± 1.1 | 9 | 5 |
| *UAS-Csk-YFP; Csk$^{c04256}$/Csk$^{j1D8}$* | 0.86 ± 0.03 | 36.3 ± 1.5 | 42.8 ± 2.2 | 83.3 ± 6.6 | 6.6 ± 0.3 | -66.5 ± 1.1 | 11 | |
| *UAS-Csk-YFP; GluRIIA$^{SP16}$; Csk$^{c04256/j1D8}$* | 0.38 ± 0.01 | 13.5 ± 1.7 | **35.1 ± 4.4** ns | **44.2 ± 6.3** ***(low) | 7.8 ± 0.5 | -63.4 ± 0.7 | 8 | 5 |
| **Mus Rescue:** *UAS-Csk-YFP; MyoD/+; Csk$^{c04256/j1D8}$* | 0.96 ± 0.07 | 35.0 ± 0.08 | 38.3 ± 3.6 | 72.6 ± 8.1 | 5.3 ± 0.4 | -65.2 ± 0.4 | 9 | |
| *UAS-Csk-YFP; MyoD het, GluRIIA$^{SP16}$; Csk$^{c04256/j1D8}$* | 0.43 ± 0.02 | 28.1 ± 1.7 | **67.1 ± 7.2** ** | **110.9 ± 16.0** * | 6.1 ± 0.4 | -65.2 ± 1.4 | 8 | 5 |
| **Neur. Rescue:** *UAS-Csk-YFP*; *OK371/+*; *Csk$^{c04256/j1D8}$* | 1.05 ± 0.08 | 40.8 ± 1.1 | 40.5 ± 3.1 | 80.7 ± 7.6 | 4.7 ± 0.3 | -72.6 ± 1.2 | 8 | |
| *UAS-Csk-YFP; OK371, GluRIIA$^{SP16}$/+, GluRIIA$^{SP16}$; Csk$^{c04256/j1D8}$* | 0.45 ± 0.4 | 26.6 ± 1.0 | **62.4 ± 6.0** ** | 99.1 ± 11.3 | 6.3 ± 0.6 | -63.5 ± 1.0 | 8 | 5 |
| **Muscle RNAi:** *BG57/Csk-RNAi* | 0.71 ± 0.06 | 33.3 ± 1.8 | 48.3 ± 2.9 | 85.1 ± 6.6 | 5.9 ± 0.6 | -68.9 ± 1.3 | 8 | |
| *GluRIIA$^{SP16}$; BG57/Csk-RNAi* | 0.36 ± 0.02 | 21.7 ± 1.3 | **62.9 ± 5.5** * | **90.8 ± 9.6** ns | 6.1 ± 0.2 | -64.8 ± 1.6 | 11 | 5 |
| **Neuronal RNAi:** *C155*/Y; *Csk-RNAi/+* | 0.81 ± 0.03 | 32.8 ± 1.5 | 42.1 ± 3.1 | 79.9 ± 8.2 | 4.6 ± 0.2 | -62.0 ± 0.4 | 7 | |
| *C155*/Y: *GluRIIA$^{SP16}$; Csk-RNAi/+* | 0.37 ± 0.03 | 26.6 ± 1.0 | **77.3 ± 8.4** *** | **124.6 ± 15.3** * | 5.9 ± 0.7 | -62.3 ± 0.5 | 9 | 5 |
| **Musc & Neur:** *C155/FasII$^{EP1462}$; Sca/+; BG57/+* | 0.57 ± 0.1 | 34.3 ± 1.1 | 63.1 ± 5.0 | 118.4 ± 10.1 | 4.9 ± 0.2 | -63.9 ± 0.8 | 8 | |
| *C155/FasII$^{EP1462}$; Sca/+; BG57, GluRIII-RNAi/+* | 0.36 ± 0.02 | 27.5 ± 0.7 | **78.5 ± 4.8** * | 126.0 ± 7.8 | 5.3 ± 0.5 | -63.1 ± 0.6 | 8 | 8 |
| **Muscle FasII O/E:** *FasII$^{EP1462}$; BG57/+* | 0.48 ± 0.02 | 33.2 ± 1.2 | 69.9 ± 3.4 | 124.3 ± 6.5 | 5.4 ± 0.6 | -66.4 ± 1.7 | 9 | |
| *FasII$^{EP1462}$; GluRIIA$^{SP16}$; BG57/+* | 0.22 ± 0.01 | 19.9 ± 1.3 | **90.5 ± 6.0** * | 125.7 ± 11.5 | 4.4 ± 0.3 | -63.7 ± 1.2 | 8 | 8 |
| **Neuron FasII O/E:** *C155/FasII$^{EP1462}$* | 1.01 ± 0.27 | 33.8 ± 1.4 | 41.7 ± 4.6 | 77.8 ± 9.0 | 5.5 ± 0.5 | -63.1 ± 1.2 | 8 | |
| *C155/FasII$^{EP1462}$; GluRIIA$^{SP16}$* | 0.32 ± 0.02 | 19.5 ± 1.6 | **64.3 ± 8.6** * | 91.2 ± 15.4 | 6.0 ± 0.5 | -63.9 ± 1.0 | 9 | 8 |
| *C155/Y; UAS-FasIIA-PEST+/Sca; BG57/+* | 0.74 ± 0.06 | 36.0 ± 3.1 | 50.1 ± 4.2 | 98.3 ± 11.7 | 8.1 ± 0.9 | -67.1 ±1.1 | 8 | |
| *C155/Y; UAS-FasIIA-PEST+/Sca; BG57, GluRIII-RNAi/+* | 0.38 ± 0.03 | 29.6 ± 2.2 | **80.1 ± 8.4** ** | 131.7 ± 16.3 | 11.3 ± 0.9 | -66.6 ± 3.3 | 8 | 8 |
| *C155/Y; UAS-FasIIA-PEST-/Sca; BG57/+* | 0.72 ± 0.3 | 33.7 ± 2.3 | 46.8 ± 3.1 | 87.6 ± 8.8 | 7.1 ± 0.3 | -65.5 ± 1.2 | 8 | |
| *C155/Y; UAS-FasIIA-PEST-/Sca; BG57, GluRIII-RNAi/+* | 0.56 ± 0.02 | 35.3 ± 1.2 | **63.6 ± 2.8** ** | **121.4 ± 7.0** * | 8.6 ± 0.8 | -64.8 ± 0.9 | 8 | 8 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *C155/Y; UAS-FasIIC/Sca; BG57/+* | 0.63 ± 0.08 | 24.2 ± 2.2 | 40.0 ± 2.9 | 60.5 ± 4.8 | 11.1 ± 1.4 | -62.3 ± 0.9 | 8 | |
| *C155/Y; UAS-FasIIC/Sca; BG57, GluRIII-RNAi/+* | 0.36 ± 0.04 | 23.6 ± 1.8 | **70.1 ± 2.6**$^{**}$ | **107.9 ± 13.5****| 8.7 ± 0.9 | -60.1 ± 0.5 | 9 | 8 |
| *FasII$^{EP1462}$/UAS-Csk-YFP;; BG57/+* | 0.50 ± 0.03 | 30.4 ± 1.6 | 61.0 ± 2.4 | 100.8 ± 4.8 | 6.1 ± 0.4 | -67.3 ± 1.9 | 8 | |
| *FasII$^{EP1462}$/UAS-Csk-YFP; GluRIIA$^{SP16}$; BG57 /+* | 0.29 ± 0.03 | 16.7 ± 1.0 | 61.5 ± 6.3 | 79.6 ± 8.8 | 7.0 ± 0.8 | -66.4 ± 2.5 | 8 | 8 |
| *FasII$^{e76}$/Y* | 1.17 ± 0.11 | 31.8 ± 1.0 | 28.4 ± 1.9 | 51.3 ± 3.7 | 7.8 ± 0.5 | -61.7 ± 0.5 | 9 | |
| *FasII$^{e76}$/Y; BG57, GluRIII-RNAi/+* | 0.60 ± 0.03 | 31.5 ± 1.3 | **53.6 ± 2.9** $^{***}$ | **97.7 ± 8.3** $^{**}$ | 6.5 ± 0.3 | -62.2 ± 0.4 | 12 | 8 |
| *FasII$^{e76}$/FasII$^{G293}$* | 0.75 ± 0.06 | 33.0 ± 1.1 | 45.8 ± 3.2 | 84.6 ± 6.0 | 6.4 ± 0.5 | -62.4 ± 0.8 | 9 | |
| *FasII$^{e76}$/FasII$^{G293}$; BG57, GluRIII-RNAi/+* | 0.44 ± 0.02 | 29.2 ± 1.7 | **66.1 ± 3.8** $^{**}$ | **112.8 ± 9.7** $^{*}$ | 7.1 ± 0.4 | -62.6 ± 0.5 | 9 | 8 |
| *C155/Y; FasII-RNAi$^{JF02918}$/Sca; BG57/+* | 0.70 ± 0.04 | 30.7 ±1.5 | 44.9 ± 2.1 | 77.6 ± 5.1 | 6.3 ± 0.4 | -64.0 ±0.8 | 8 | |
| *C155/Y; FasII-RNAi$^{JF02918}$/Sca; BG57, GluRIII-RNAi/+* | 0.42 ± 0.2 | 25.9 ± 1.4 | **62.9 ± 3.8**$^{*}$ | **99.8 ± 7.8**$^{*}$ | 6.0 ± 3.8 | -62.0 ± 0.5 | 11 | 8 |
| *C155/Y; FasII-RNAi$^{v36351}$/Sca; BG57/+* | 0.67 ± 0.04 | 25.6 ± 1.9 | 39.7 ± 0.1 | 63.1 ± 7.0 | 5.0 ± 0.3 | -62.4 ± 0.5 | 9 | |
| *C155/Y; FasII-RNAi$^{v36351}$/Sca; BG57, GluRIII-RNAi/+* | 0.33 ± 0.03 | 27.0 ± 1.0 | **85.3 ± 6.2**$^{***}$ | **135.8 ± 10.4**$^{***}$ | 4.4 ± 0.3 | -62.5 ± 0.8 | 7 | 8 |
| *FasII$^{e76}$; Csk$^{c04256/j1D8}$* | 0.94 ± 0.10 | 37.8 ± 1.5 | 42.6 ± 3.4 | 85.0 ± 5.4 | 6.9 ± 0.5 | -65.6 ± 1.1 | 8 | |
| *FasII$^{e76}$; GluRIIA$^{SP16}$; Csk$^{c04256/j1D8}$* | 0.48 ± 0.01 | 29.1 ± 1.9 | **60.1 ± 3.5** $^{**}$ | 99.5 ± 9.3 | 7.9 ± 0.7 | -66.2 ± 1.2 | 8 | 9 |

**S1 Table: Raw electrophysiological data measuring synaptic homeostasis.** For each experiment, a homeostatic challenge was utilized (*GluRIII* RNAi-mediated knock down, *GluRIIA$^{SP16}$* mutation, or PhTox). Control genotypes lack a homeostatic challenge and are paired next to genetically matched, challenged experimental genotypes. Values are mean ± SEM. mEPSP (average miniature excitatory postsynaptic potential); EPSP (average excitatory postsynaptic potential); QC (average quantal content); NLS QC (average QC corrected for non-linear summation); $I_R$ (average muscle input resistance); RMP (average resting membrane potential); n (number of NMJs recorded for the indicated genotype). Some Student T-Test comparisons to control (usually in row directly above) are provided for QC and NLS QC, highlighting results in the main text and figures. Specific *p* values or *p* value ranges match those in the text, figures, and figure legends, with $p < 0.05$ marked as significant ($^{\#}$ $p = 0.05$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$). Statistical tests marked with an accompanying '(low)' symbol indicated that QC or NLS QC is actually significantly depressed from baseline when there is a homeostatic challenge.

Various GAL4 drivers were used for *GAL4/UAS* expression experiments. The lines (and tissues) abbreviated in the table are as follows. All GAL4 drivers were used in a heterozygous condition.

*C155 – elaV(C155)-Gal4* (pan-neuronal, post-mitotic neurons)
*Sca – Scabrous-Gal4* (neuronal)
*OK371 – OK371-Gal4* (motor neurons)
*BG57 – BG57-Gal4* (also known as *C57-Gal4*; muscles)
*MHC – MHC-Gal4* (muscles)
*MyoD – MyoD-Gal4* (also known as *nau-Gal4*; muscles)