

Electronic supplementary material

Neuroligins Differentially Mediate Subtype-Specific Synapse Formation in Pyramidal Neurons and Interneurons

Qiang-Qiang Xia¹, Jing Xu¹, Tai-Lin Liao¹, Jie Yu¹, Lei Shi², Jun Xia³, Jian-Hong Luo^{1*}, Junyu Xu^{1*}

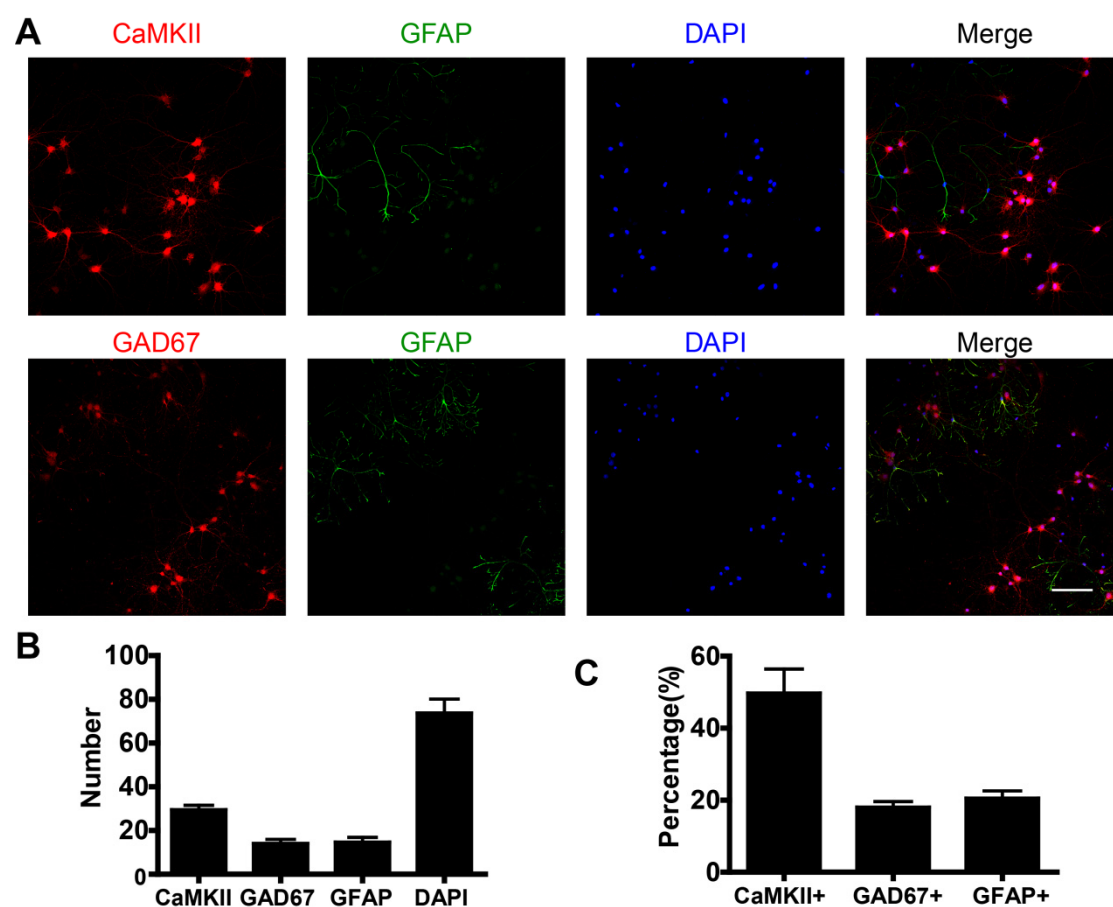


Fig. S1 Antibody testing in cultured cortical neurons as neuronal markers. **A** Representative images of neuronal markers. GFAP, astrocyte marker; DAPI, nuclear stain; CaMKII, pyramidal neuron marker; GAD67, interneuron marker, scale bar, 100 μ m. **B** Numbers of pyramidal neurons, interneurons, astrocytes, and total cells in one microscope field. **C** Percentages of pyramidal neuron (CaMKII⁺), interneurons

(GAD67⁺), and astrocytes (GFAP⁺) in culture.

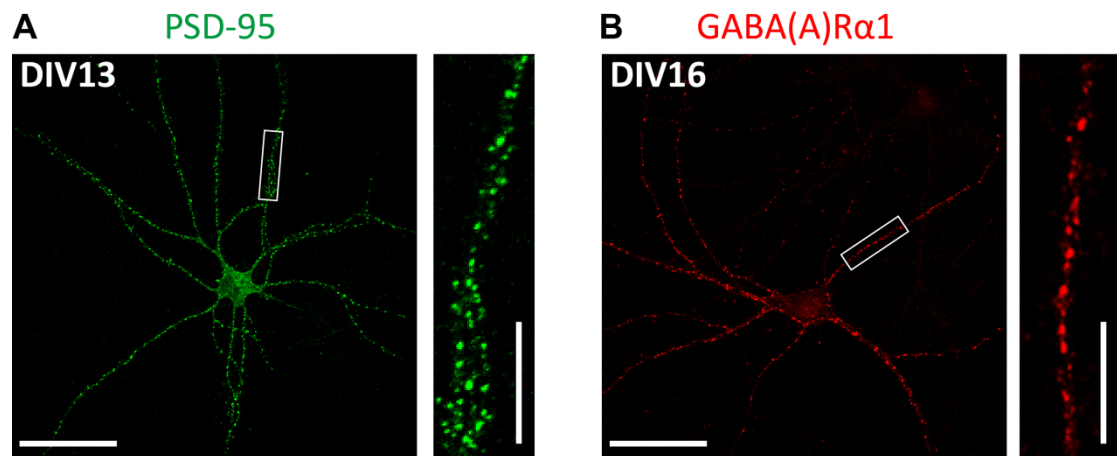


Fig. S2 Antibody testing in cultured cortical neurons as synapse markers. **A** Representative images for excitatory synapse marker PSD-95. **B** Representative images for the GABAergic synapse marker GABA(A)R α 1. Scale bars, 50 μ m for the original image and 10 μ m for the enlarged image.

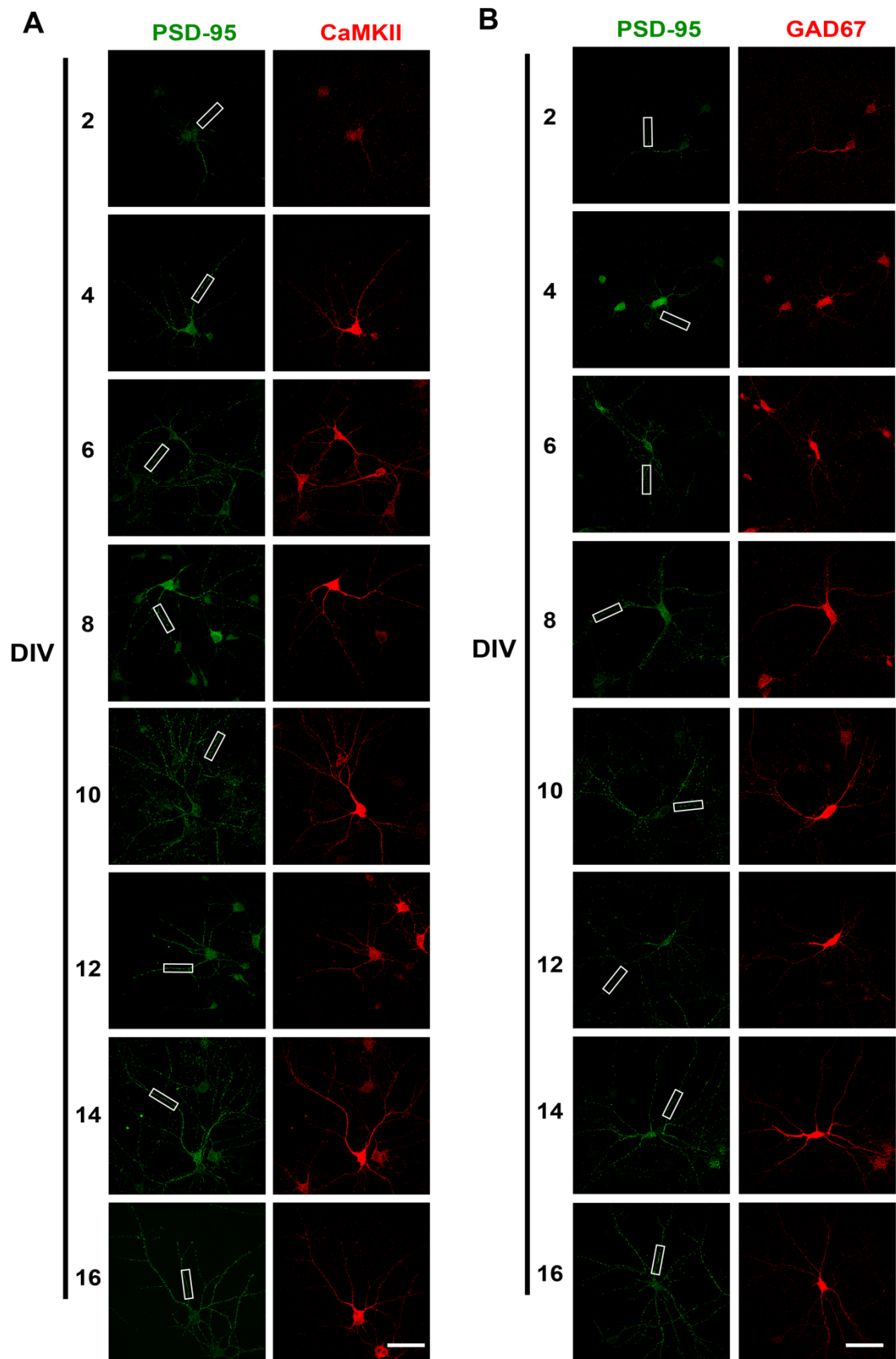


Fig. S3 Development of excitatory synapses in cultured cortical neurons. **A, B** Representative images of PSD-95 puncta from DIV 2 to DIV 16 in cultured cortical

pyramidal neurons (**A**) and interneurons (**B**). The frames are selected regions of the PSD-95 signal shown in Fig. 1A. CaMKII, pyramidal neuron marker; GAD67, interneuron marker; scale bars, 50 μm .

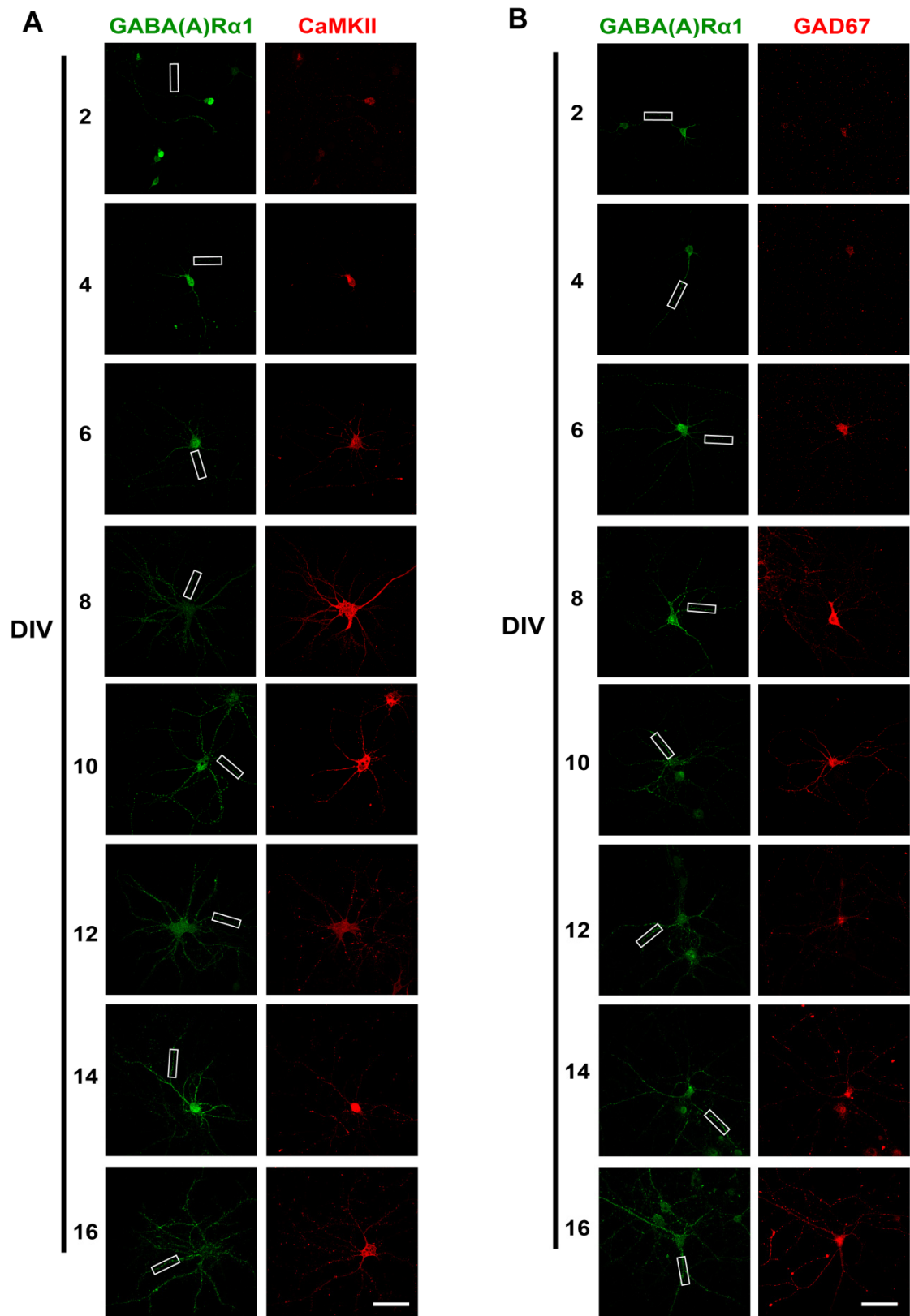


Fig. S4 Development of GABAergic synapses in cultured cortical neurons. **A, B** Representative images of GABA(A)R α 1 puncta from DIV 2 to DIV 16 in cultured cortical pyramidal neurons and interneurons. The frames are selected regions of the

GABA(A)R α 1 signal shown in **Fig. 1A**. CaMKII, pyramidal neuron marker; GAD67, interneuron marker; scale bars, 50 μ m.

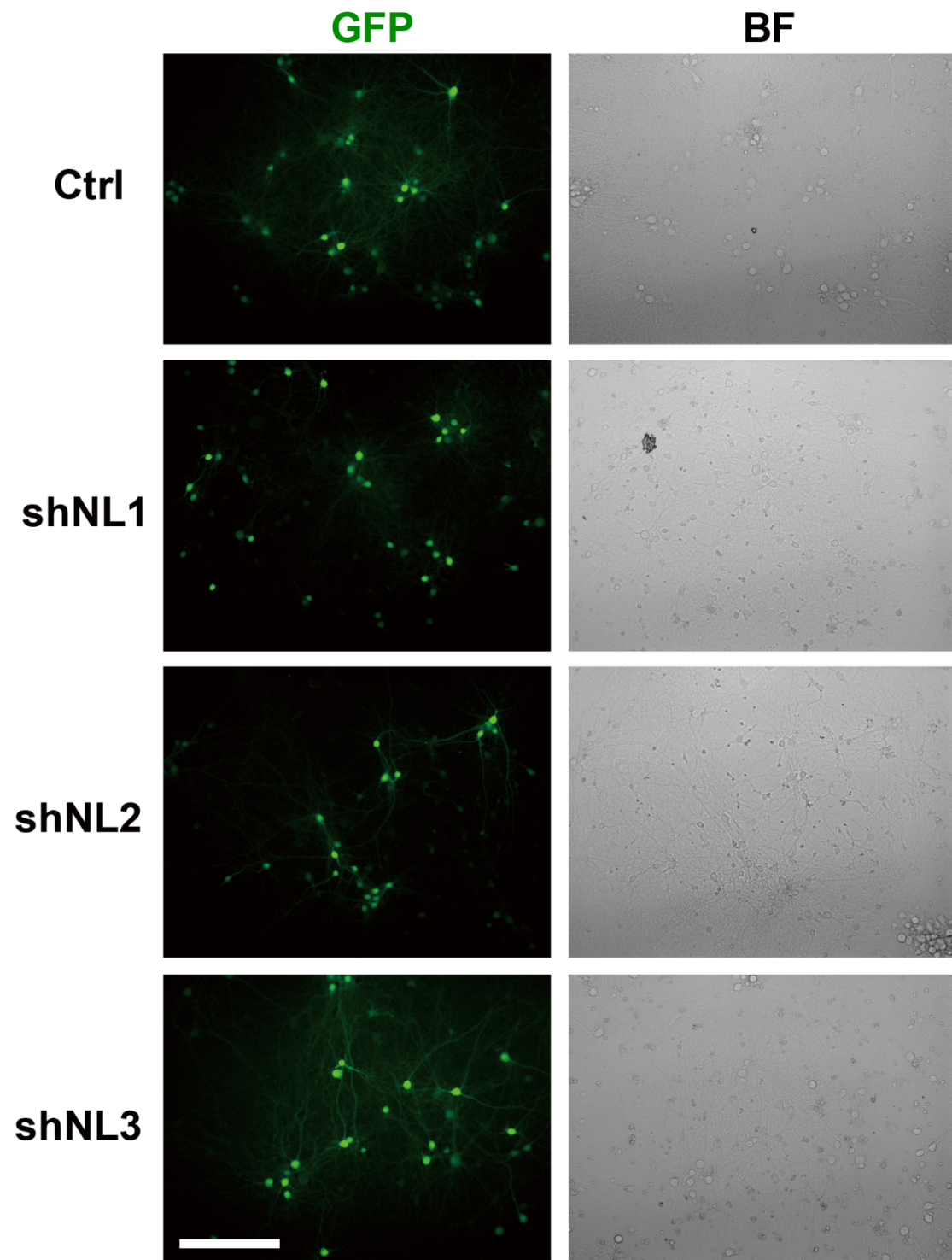


Fig. S5 Viral infection efficiency test in cultured cortical neurons. Representative images of lentivirus infection in cultured cortical neurons. GFP signal indicating the

successful infection of the neuron by lentivirus. BF, bright-field view. DIV 13. Scale bar, 50 μ m.

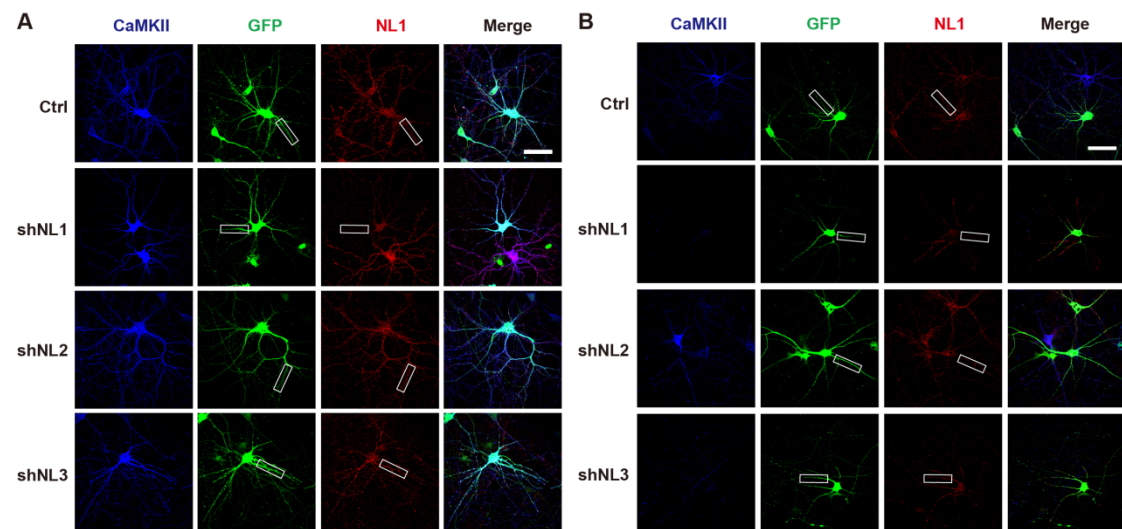


Fig. S6 NL1 puncta in cultured cortical neurons after shNL lentiviral infection. **A, B** Representative images of NL1 puncta in cultured cortical pyramidal neurons (**A**) and interneurons (**B**). CaMKII, pyramidal neuron marker; scale bars, 50 μ m. The frames are the selected regions whose enlarged images are shown in **Fig. 3**.

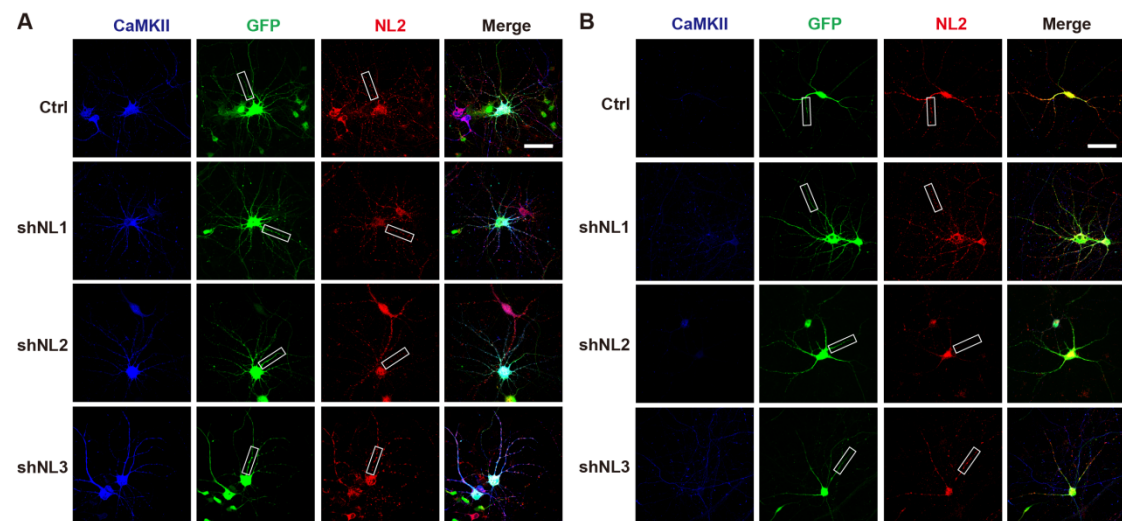


Fig. S7 NL2 puncta in cultured cortical neurons after shNL lentiviral infection. **A, B** Representative images of NL2 puncta in cultured cortical pyramidal neurons (**A**) and interneurons (**B**). CaMKII, pyramidal neuron marker; scale bars, 50 μ m. The frames

are the selected regions whose enlarged images are shown in **Fig. 3**.

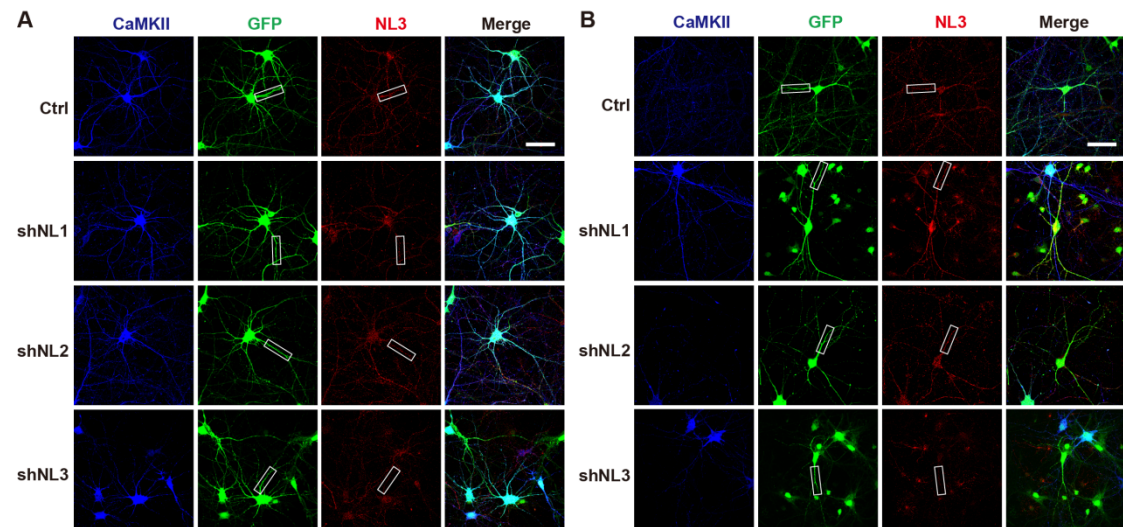


Fig. S8 NL3 puncta in cultured cortical neurons after shNL lentiviral infection. **A, B** Representative images of NL3 puncta in cultured cortical pyramidal neurons (**A**) and interneurons (**B**). CaMKII, pyramidal neuron marker; scale bars, 50 μm . The frames are the selected regions whose enlarged images are shown in **Fig. 3**.