Thiamine metabolism is critical for regulating correlated growth of dendrite arbors and neuronal somata

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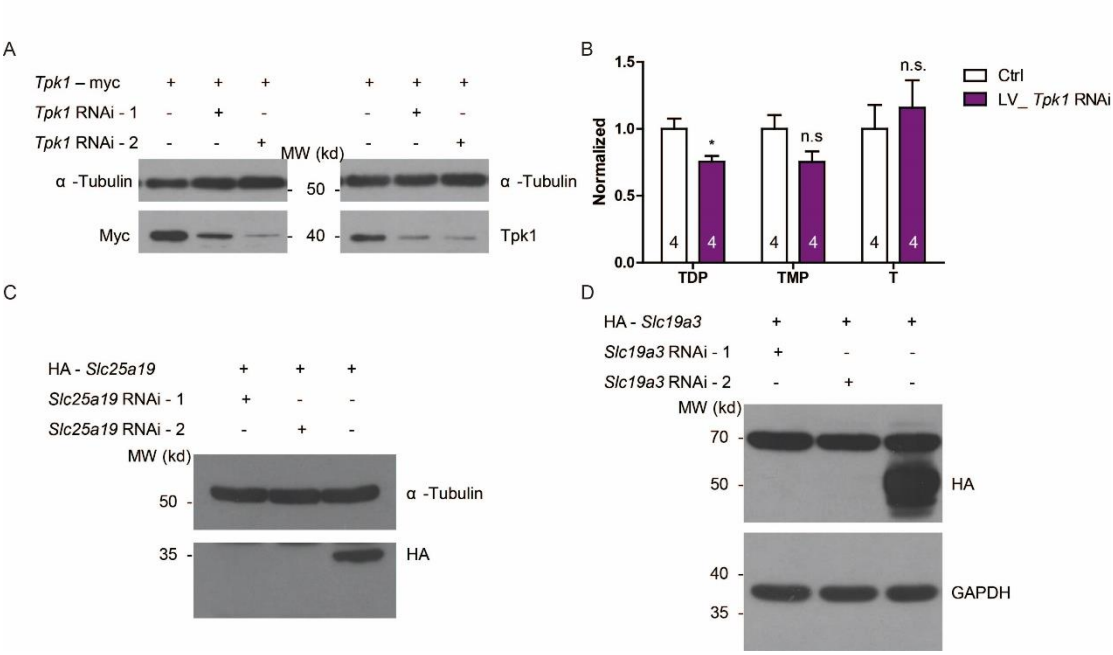
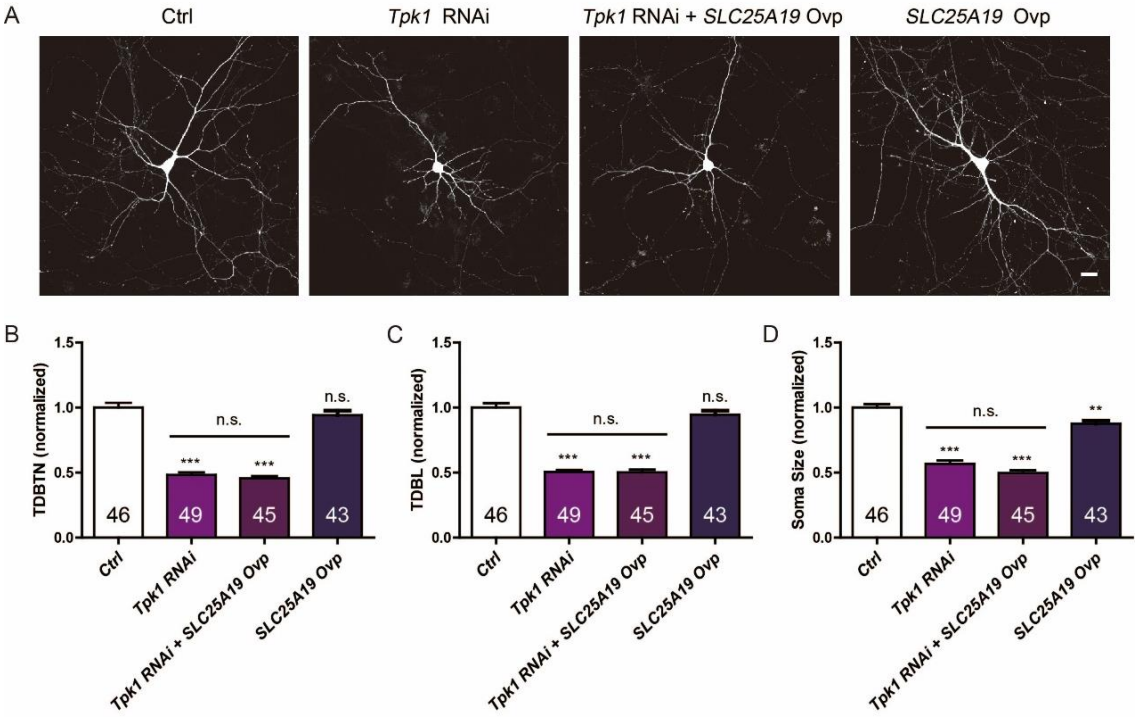
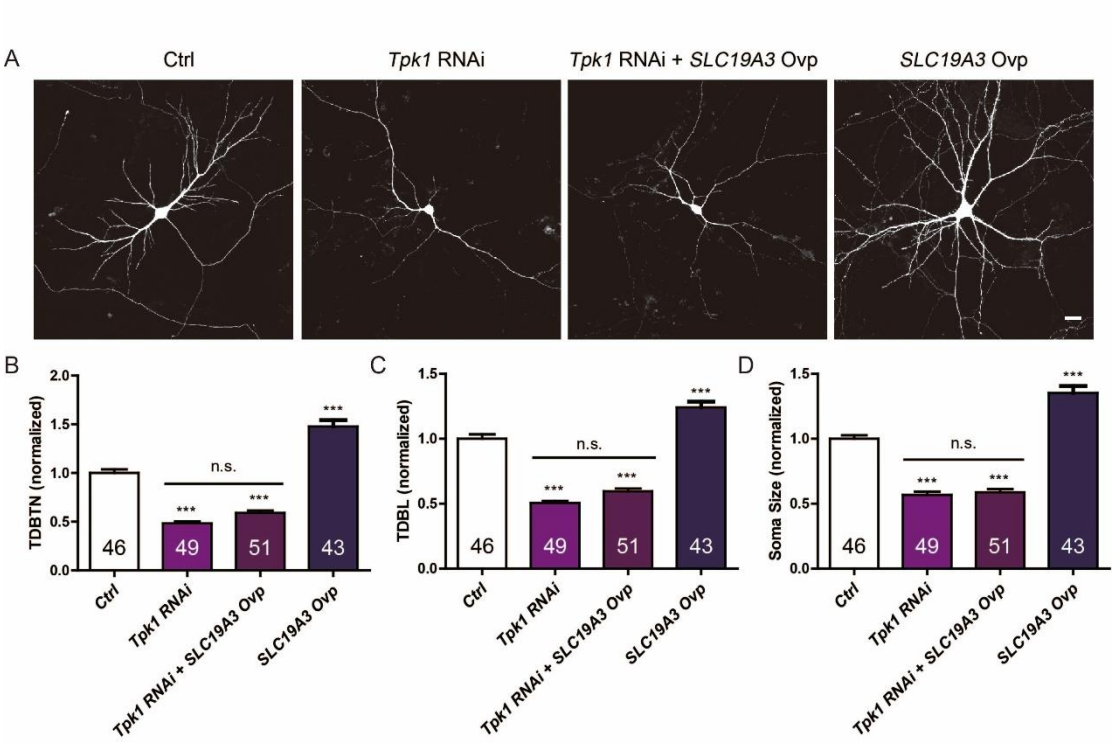


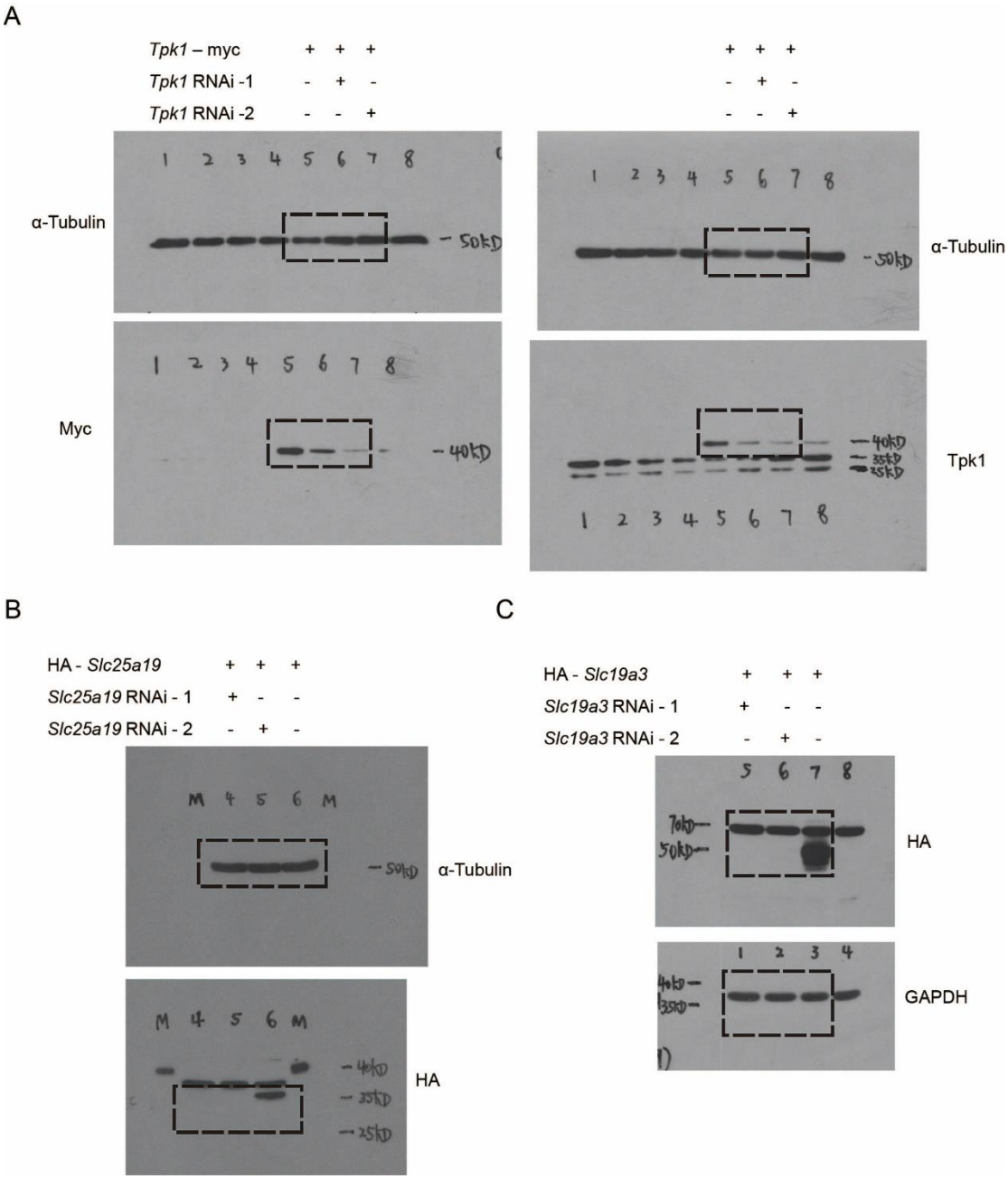
Supplementary Figure 1. Testing the knockdown effect of RNAi sequences. A. Western blot of Myc tag and Tpk1 level in N2A cells transfected with *Tpk1*-myc and/or *Tpk1* RNAi. B. TDP, TMP and T level in neurons infected by lentiviruses expressing control and *Tpk1* RNAi sequences from DIV4 to DIV11. TDP (0.75 ± 0.04, $P < 0.05$), TMP (0.75 ± 0.08, n.s.), T (1.16 ± 0.20, n.s.) in *Tpk1* RNAi neurons. N = 4 culture preparations, unpaired *t*-test. C. Western blot of HA tag in N2A cells transfected with HA-*Slc25a19* and/or *Slc25a19* RNAi. D. Western blot of HA tag in N2A cells transfected with HA-*Slc19a3* and/or *Slc19a3* RNAi. Cropped blots are presented here; full-length blots are presented in Supplementary Figure 4.



Supplementary Figure 2. Overexpression of human *SLC25A19* did not rescue the reduction of TDBTN, TDBL and soma size induced by *Tpk1* RNAi. A. Representative images of DIV10 neurons, conditions as indicated. B. Quantitation of TDBTN: Ctrl (1.00 ± 0.04), *Tpk1* RNAi (0.48 ± 0.02, $P < 0.001$ vs Ctrl), *Tpk1* RNAi + *SLC25A19* Ovp (0.46 ± 0.02, $P < 0.001$ vs Ctrl, n.s. vs *Tpk1* RNAi), *SLC25A19* Ovp (0.94 ± 0.03, n.s. vs Ctrl). C. Quantitation of TDBL: Ctrl (1.00 ± 0.03), *Tpk1* RNAi (0.51 ± 0.01, $P < 0.001$ vs Ctrl), *Tpk1* RNAi + *SLC25A19* Ovp (0.50 ± 0.02 $P < 0.001$ vs Ctrl, n.s. vs *Tpk1* RNAi), *SLC25A19* Ovp (0.95 ± 0.03, n.s. vs Ctrl). D. Quantitation of soma size: Ctrl (1.00 ± 0.03), *Tpk1* RNAi (0.57 ± 0.02, $P < 0.001$ vs Ctrl), *Tpk1* RNAi + *SLC25A19* Ovp (0.50 ± 0.02, $P < 0.001$ vs Ctrl, n.s. vs *Tpk1* RNAi), *SLC25A19* Ovp (0.88 ± 0.02, $P < 0.01$ vs Ctrl). One-way ANOVA followed by Tukey's post-test. Scale bar: 20 μm.



Supplementary Figure 3. Overexpression of human *SLC19A3* did not rescue the reduction of TDBTN, TDBL and soma size induced by *Tpk1* RNAi. A. Representative images of DIV10 neurons, conditions as indicated. B. Quantitation of TDBTN: Ctrl (1.00 ± 0.04), *Tpk1* RNAi (0.48 ± 0.02, $P < 0.001$ vs Ctrl), *Tpk1* RNAi + *SLC19A3* Ovp (0.59 ± 0.02, $P < 0.001$ vs Ctrl, n.s. vs *Tpk1* RNAi), *SLC19A3* Ovp (1.48 ± 0.07, $P < 0.001$ vs Ctrl). C. Quantitation of TDBL: Ctrl (1.00 ± 0.03), *Tpk1* RNAi (0.51 ± 0.01, $P < 0.001$ vs Ctrl), *Tpk1* RNAi + *SLC19A3* Ovp (0.60 ± 0.02 $P < 0.001$ vs Ctrl, n.s. vs *Tpk1* RNAi), *SLC19A3* Ovp (1.24 ± 0.04, $P < 0.001$ vs Ctrl). D. Quantitation of soma size: Ctrl (1.00 ± 0.03), *Tpk1* RNAi (0.57 ± 0.02, $P < 0.001$ vs Ctrl), *Tpk1* RNAi + *SLC19A3* Ovp (0.59 ± 0.02, $P < 0.001$ vs Ctrl, n.s. vs *Tpk1* RNAi), *SLC19A3* Ovp (1.35 ± 0.05, $P < 0.001$ vs Ctrl). Data for control and *Tpk1* RNAi neurons are the same as that shown in Supplementary Figure. 2. One-way ANOVA followed by Tukey's post-test. Scale bar: 20 μm.



Supplementary Figure 4. Full-length images of immunoblots presented in supplementary Figure 1. Full-length images of cropped immunoblots presented in Fig. S1A (A), Fig. S1C (B) and Fig. S1D (C) are shown.