Supplementary Table 1. AP firing frequency in WT and *TDP* mice (3-week old), in the absence and presence of PTX.

Current-injected (pA)	WT (n= 53)	*TDP* (n =58)	WT+PTX (n = 40)	*TDP*+PTX (n = 50)
0	0	0	0	0.35 ± 0.35
200	14.67 ± 1.14	21.9 ± 0.87	27.63 ± 1.26	29.5 ± 2.04
400	37.36 ± 1.42	45.91 ± 1.20	51.56 ± 1.75	54.65 ± 2.50
600	51.84± 1.66	62.63 ± 1.65	68.06 ± 2.15	73.2 ± 3.09

Supplementary Table 2. AP firing frequency in WT and *TDP* mice (15-week old).

Current-injected (pA)	WT	*TDP*
0	0	0
200	25.3 ± 3.2	29.9 ± 3.4
400	57.2 ± 4.3	65.8 ± 4.7
600	74.4 ± 4.2	89.1 ± 5.0

Supplementary Table 3. Dendritic bleb analysis in *TDP::YFP* and *YFP* control mice.

Top table shows the bleb density analysis and bottom table shows the bleb size analysis.

Bleb density (number in 22500 μm^2)	*YFP*	*TDP::YFP*
6 week	0 ± 0	1.19 ± 0.74
9 week	0 ± 0	6.00 ± 1.07
15 week	0 ± 0	1.57 ± 0.37

Bleb size (μm^2)	*YFP*	*TDP::YFP*
6 week	0 ± 0	6.92 ± 0.99
9 week	0 ± 0	14.86 ± 1.47
15 week	0 ± 0	13.02 ± 3.19

Supplementary Table 4. Ubiquitin pathology in M1 cortex of *TDP* mice.

Ubiquitin positive neuron number	WT	*TDP*
6 week	0 ± 0	1.76 ± 0.36
9 week	0 ± 0	6.47 ± 0.72
15 week	0 ± 0	39.61 ± 1.70