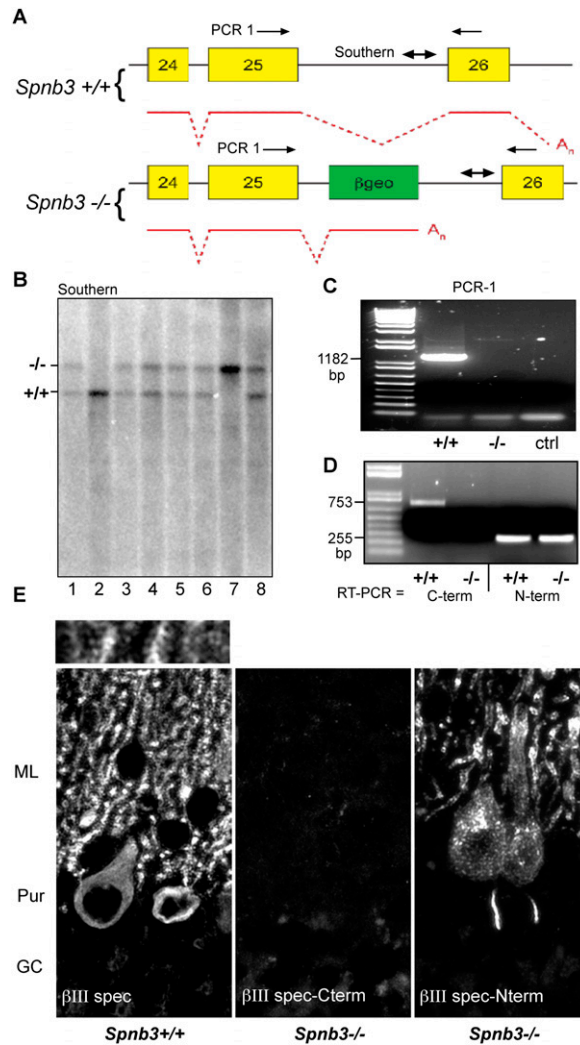
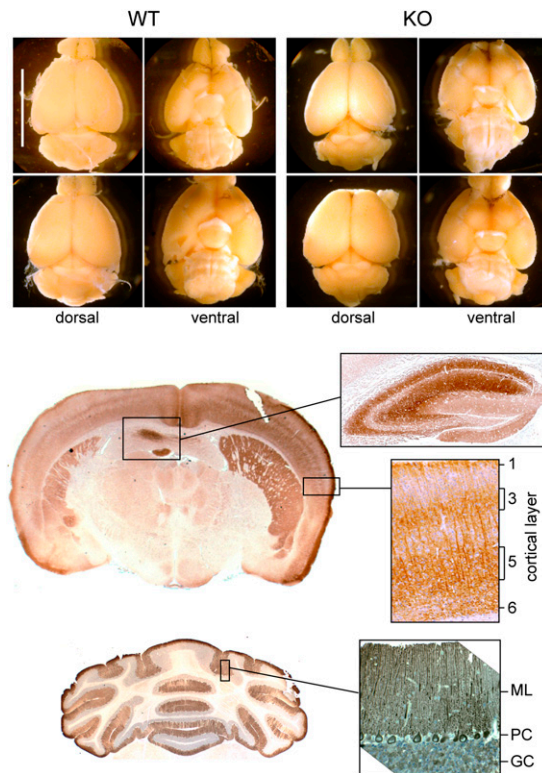


# Supporting Information

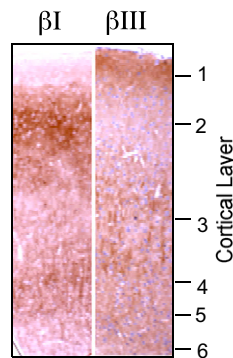
Stankewich et al. 10.1073/pnas.1001522107



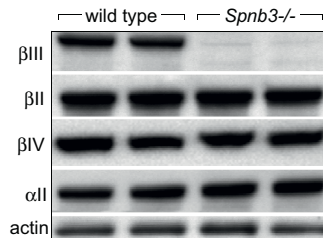
**Fig. S1.** Exon trapping of *Spnb3* generates mice lacking  $\beta$ III spectrin. (A) The location of the  $\beta$ geo insertion between exons 25 and 26 of the *Spnb3* gene. PCR1 was used to detect the WT gene; the double arrow marks the location of the hybridization probe used for Southern blotting. (B) Southern blot of eight littermates. Lanes 2 and 7 are homozygous for the WT and the exon-trapped  $\beta$ III spectrin gene, respectively. (C) PCR analysis of genomic DNA documenting the locus of the  $\beta$ geo insertion. (D) RT-PCR (nonquantitative) analysis demonstrating persistence of shortened mRNA transcripts of *Spnb3* in the exon-trapped animals. (E) Indirect immunofluorescence of PCs with antibodies directed to either the N- or the C-terminal portions of  $\beta$ III spectrin. The truncated  $\beta$ III spectrin product is aberrantly localized to the initial axon segment and into intracellular pools that remain uncharacterized and that in preliminary studies do not appear coincident with Golgi, lysosome, or aggresome markers. The truncated  $\beta$ III spectrin is present in whole brain extracts at a level  $\approx$ 1–3% of the normal level of WT  $\beta$ III spectrin.



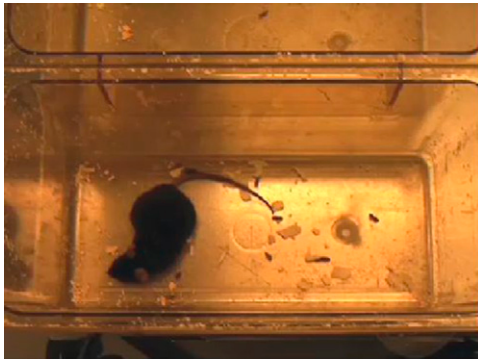
**Fig. S2.** *Spnb3*<sup>-/-</sup> mice display normal brain morphology. (Upper) The external appearance of brains in the *Spnb3*<sup>-/-</sup> mice (KO) is normal. (Lower)  $\beta$ III spectrin in the WT brain is concentrated in layers 1, 3, 5, and 6 of the neocortex, the hippocampus, and cerebellar PCs and dendrites in the molecular layer (ML), but absent in the granular layer (GC).



**Fig. S3.**  $\beta$ I and  $\beta$ III spectrin occupy complementary layers in the cortex. Cortical sections of WT mouse brain were immunostained for  $\beta$ I or  $\beta$ III spectrin. These two proteins occupy primarily complementary layers in the cortex with little overlap.



**Fig. S4.** Other spectrins do not compensate for the loss of  $\beta$ III spectrin. Duplicate brain homogenates from WT or *Spnb3*<sup>-/-</sup> animals were analyzed by Western blotting for the abundance of various spectrins. Note that the loss of  $\beta$ III spectrin does not affect the abundance of any of the other spectrins examined.



**Movie S1.** Seizure activity of the Spnb3<sup>-/-</sup> mouse.

[Movie S1](#)