

Supplementary information

Title: Behavioral impairment in SHATI/NAT8L knockout mice *via* dysfunction of myelination development

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Figure S1. Deletion of SHATI/NAT8L induced several behavioral deficits in mice.

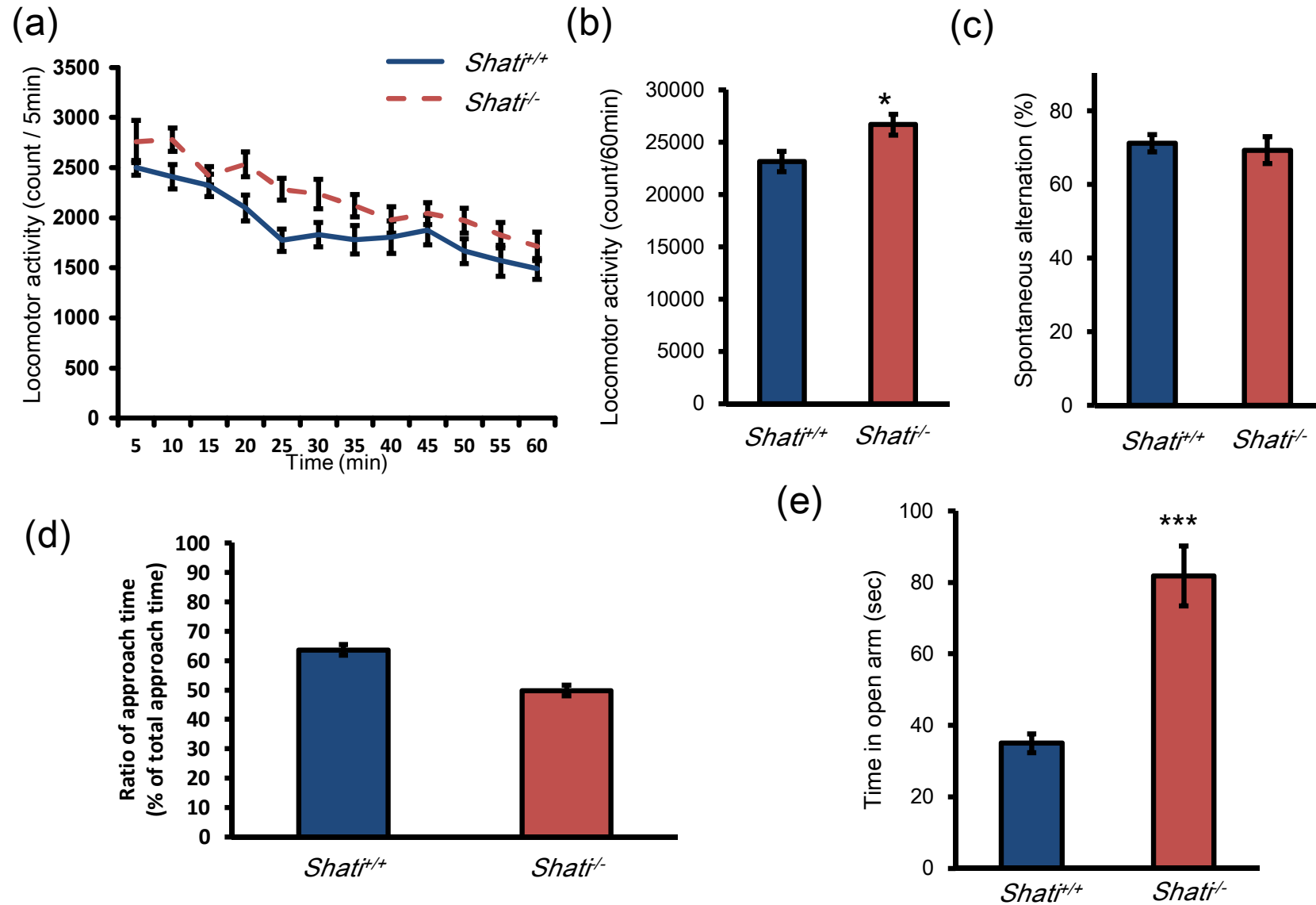


Figure S2. The full-length blots of the cropped pictures shown in Fig.1d

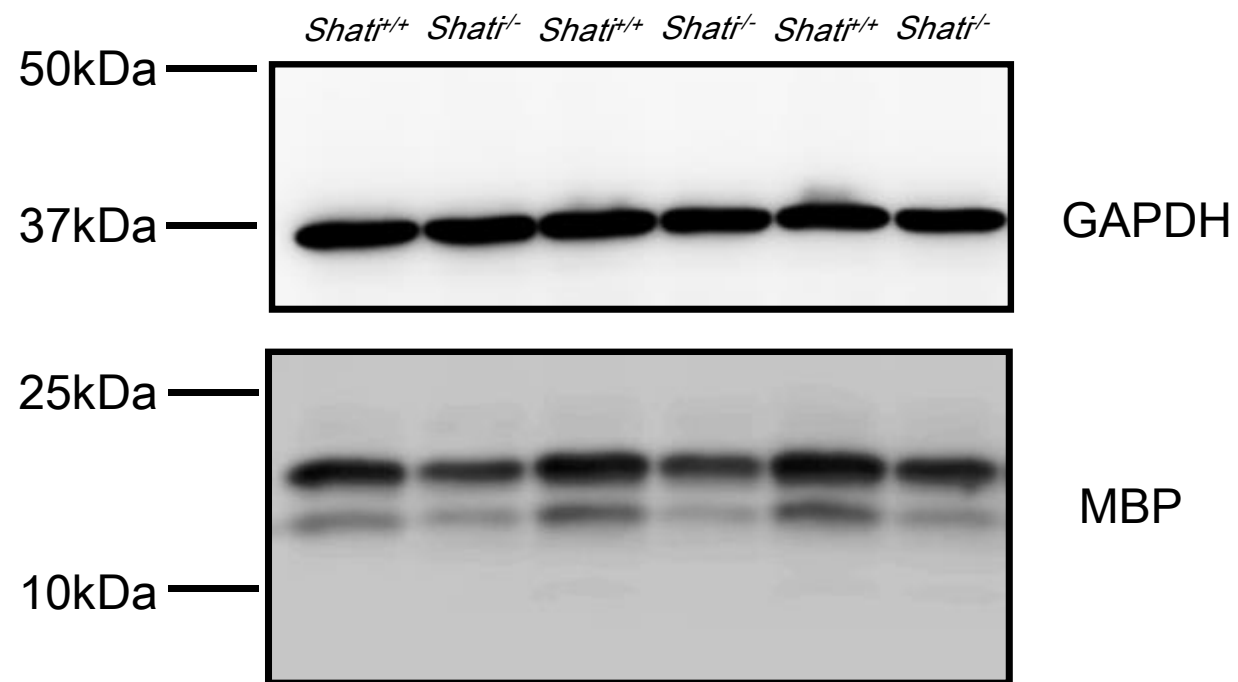


Figure S3. The full-length blots of the cropped pictures shown in Fig.1e

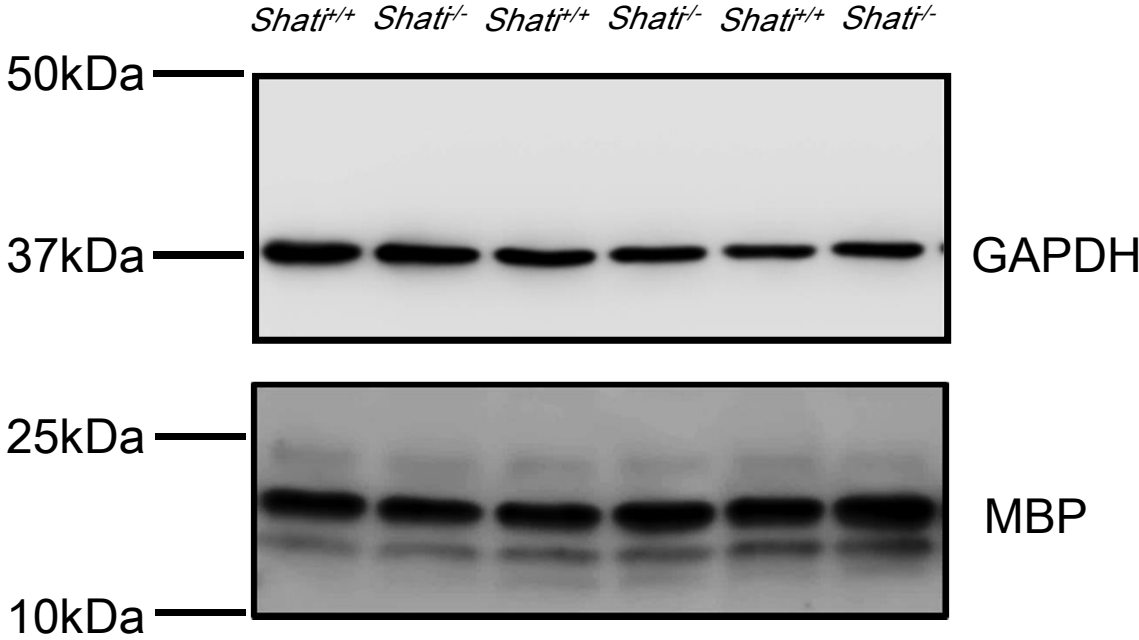


Figure S4. The full-length blots of the cropped pictures shown in Fig.4a

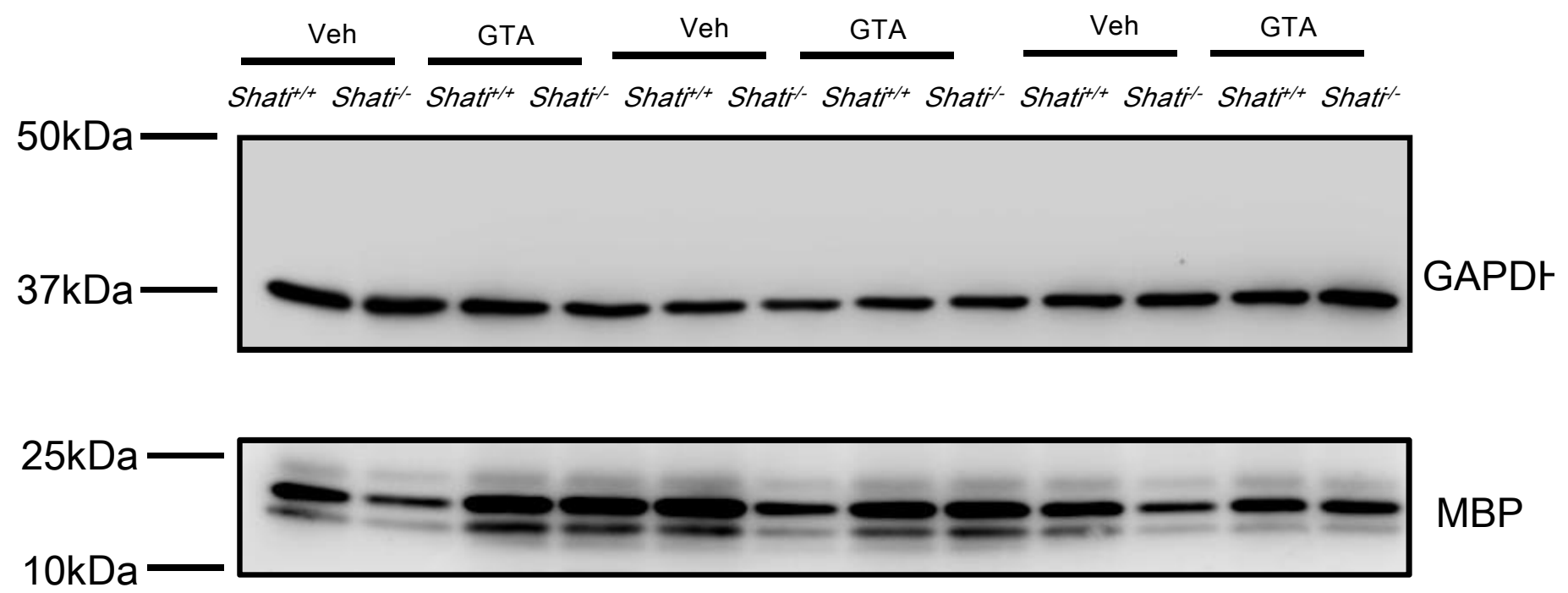


Figure S5. TUNEL staining of the brain

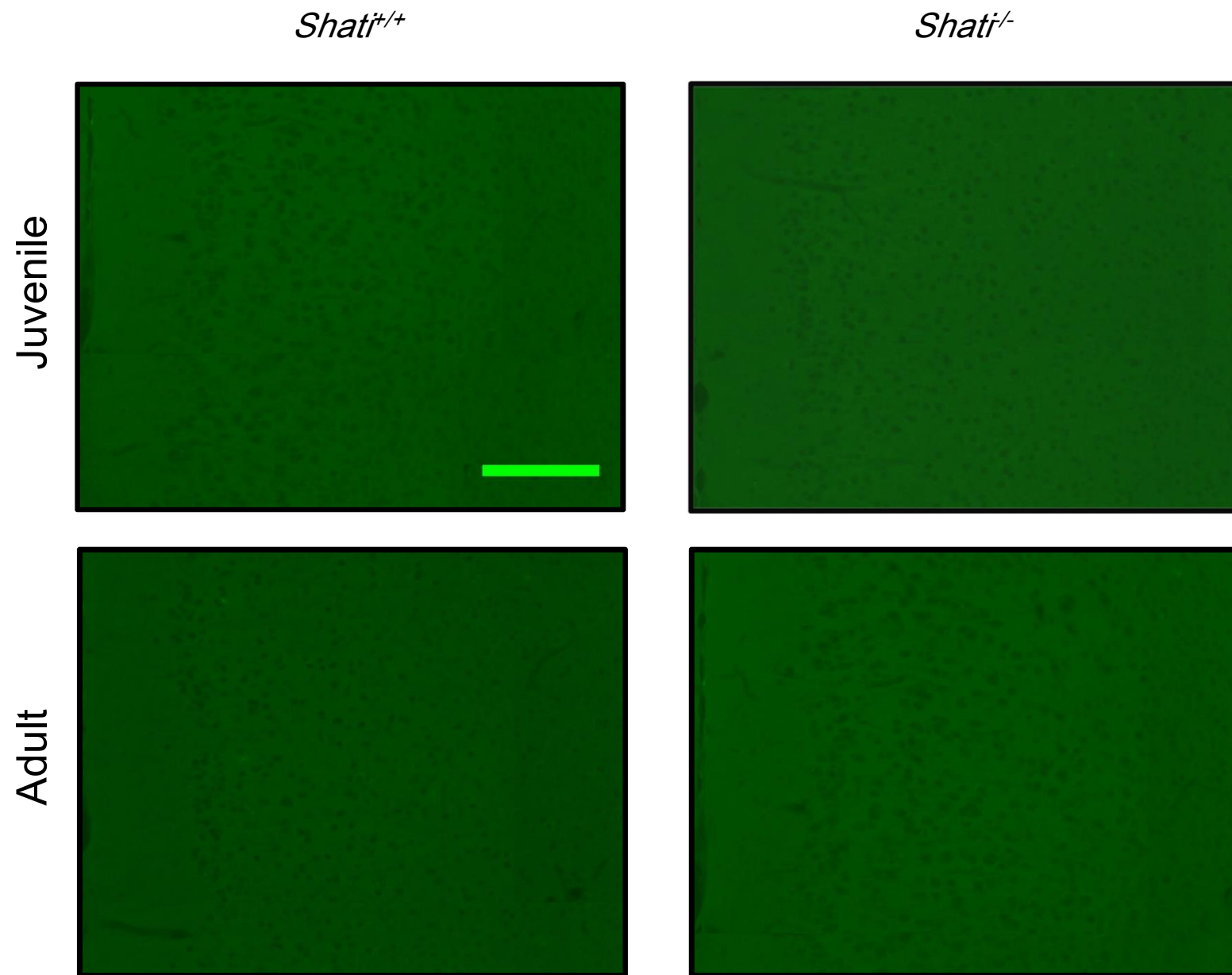
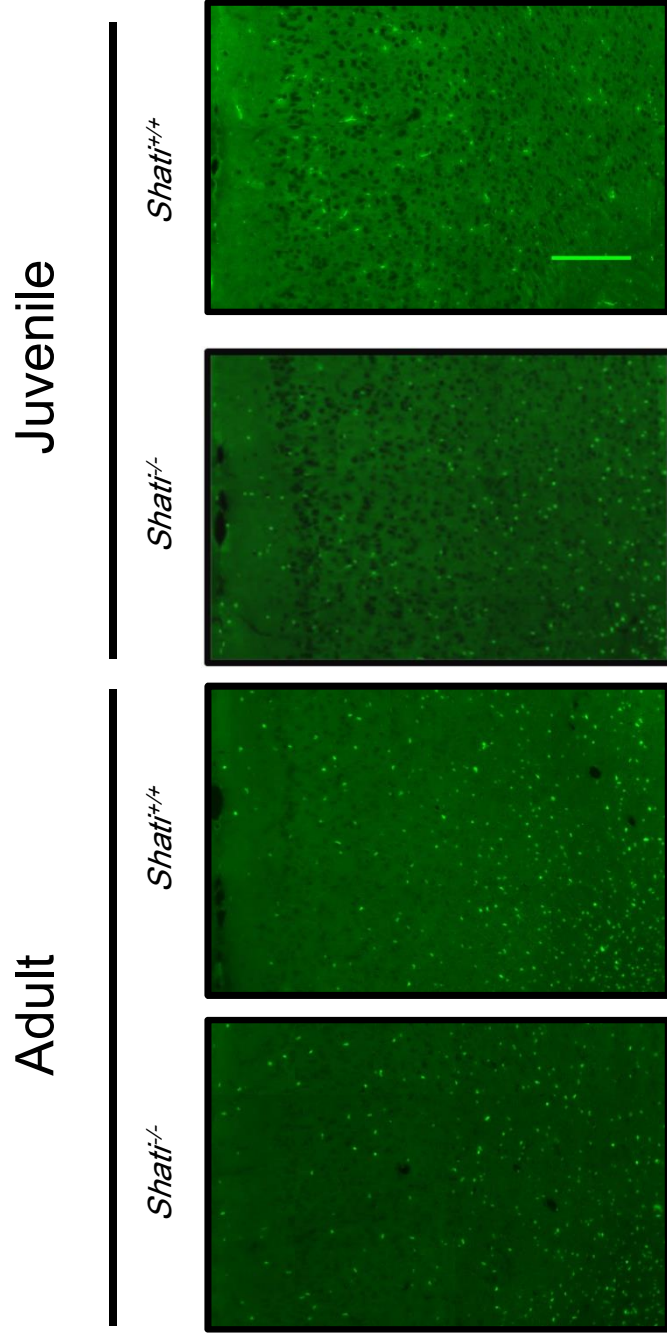


Figure S6. Immunostaining of the brain

Olig2



NeuN

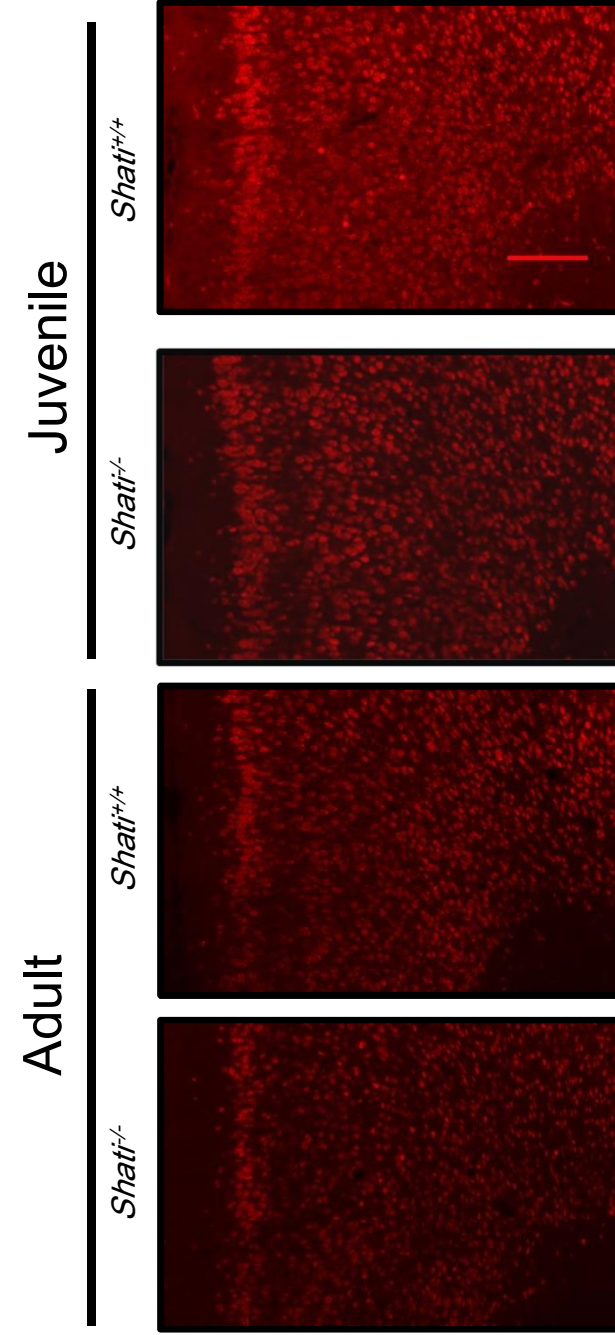
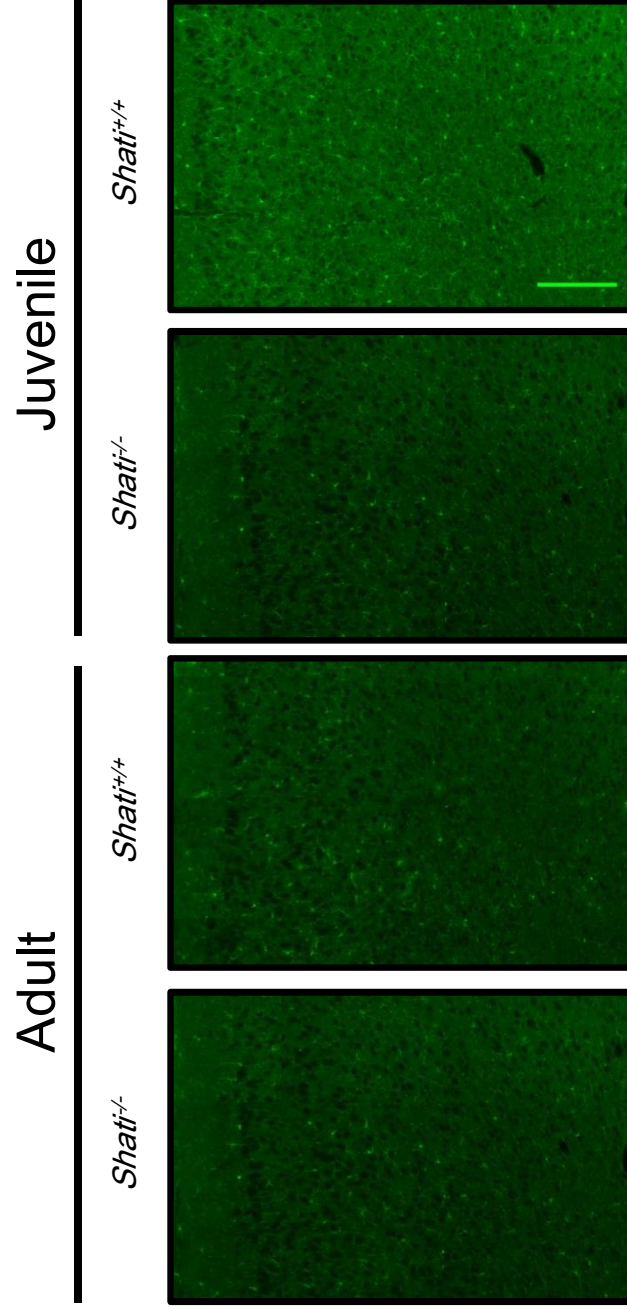
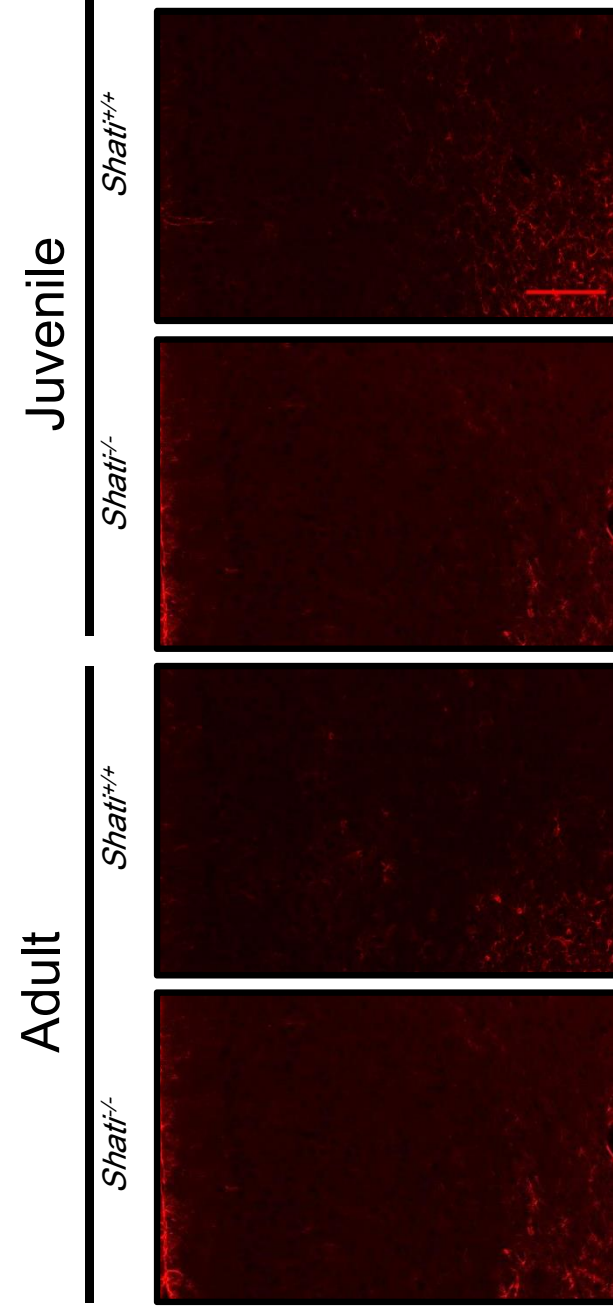


Figure S7. Immunostaining of the brain

Iba1



GFAP



Supplementary Figure S1. Deletion of SHATI/NAT8L induced several behavioral deficits in mice. (a,b) *Shati*^{-/-} mice showed hyper activity in a novel environment compared with *Shati*^{+/+} mice. Values represent the mean ± SEM. (n = 15). *p < 0.05 vs. *Shati*^{+/+} mice (Student's t test) (c) No difference in spontaneous alternation behavior in the Y-maze test between *Shati*^{+/+} and *Shati*^{-/-} mice. Values represent the mean ± SEM. (n = 9). (d) In three-chambered social interaction test, a novel object was placed in a wire cage in the chamber on one side, and a stranger mouse (C57BL/6J) was placed in a wire cage in the chamber on the other side. *Shati*^{-/-} mice were more interested to a novel object, but not to a stranger mouse compared with *Shati*^{+/+} mice. Values represent the mean ± S.E.M. (n = 9). ***p < 0.001 vs. *Shati*^{+/+} mice (Student's t test). (e) *Shati*^{-/-} mice spent long duration in the open arms of the elevated plus-maze test compared with *Shati*^{+/+} mice. Values represent the mean ± S.E.M. (n = 9) ***p < 0.001 vs. *Shati*^{+/+} mice (Student's t test)

Supplementary Figure S2. The full-length blots of the cropped pictures shown in Fig.1d

Supplementary Figure S3. The full-length blots of the cropped pictures shown in Fig.1e

Supplementary Figure S4. The full-length blots of the cropped pictures shown in Fig.4a

Supplementary Figure S5. TUNEL staining of the brain

Apoptosis cell in juvenile (3 weeks old) and adult (10 weeks old) *Shati*^{+/+} and *Shati*^{-/-} mice was detected by TUNEL staining. Scale bars in the figure = 200 μm

Supplementary Figure S6. Immunostaining of the brain

The expression pattern of Olig2 and NeuN in juvenile (3 weeks old) and adult (10 weeks old) *Shati*^{+/+} and *Shati*^{-/-} mice was detected by immunohistochemistry analysis. Scale bars in the figure = 100 μm

Supplementary Figure S7. Immunostaining of the brain

The expression pattern of Iba1 and GFAP in juvenile (3 weeks old) and adult (10 weeks old) *Shati*^{+/+} and *Shati*^{-/-} mice was detected by immunohistochemistry analysis. Scale bars in the figure = 100 μm