

Supplementary Materials for **Normal sleep requires the astrocyte brain-type fatty acid binding protein FABP7**

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table S1. Age, body mass index, and sleepiness comparison between FABP7.T61M carriers and noncarriers. BMI: Body Mass Index; ESS: Epworth Sleepiness Scale. Values are \pm SEM.

<i>Genotype</i>	<i>Age</i>	<i>BMI</i>	<i>ESS</i>
<i>hFabp7.wt</i>	43.4 \pm 0.5	24.0 \pm 0.2	6.5 \pm 0.2
<i>hFabp7.T61M</i>	45.1 \pm 1.5	23.8 \pm 0.5	7.1 \pm 0.6

table S2. Health status comparison between FABP7.T61M carriers and noncarriers. Results for Short Form 36 Health Survey: VT (Vitality), PF (Physical Functioning), BP (Bodily Pain), GH (General Health), PR (Physical Role), ER (Emotional Role), SR (Social Role), MH (Mental Health); and for Zung Self-rating Depression Scale (SDS). ** $P < 0.01$. Values are \pm SEM.

<i>Genotype</i>	<i>VT</i>	<i>PF</i>	<i>BP</i>	<i>GH</i>	<i>PR</i>
<i>hFabp7.wt</i>	50.6 \pm 0.5	54.0 \pm 0.4	51.7 \pm 0.6	51.4 \pm 0.6	52.5 \pm 0.4
<i>hFabp7.T61M</i>	47.9 \pm 1.8	51.5 \pm 1.3	48.7 \pm 1.6	48.7 \pm 1.6	51.9 \pm 1.8

<i>Genotype</i>	<i>ER</i>	<i>SR</i>	<i>MH</i>	<i>SDS</i>
<i>hFabp7.wt</i>	51.9 \pm 0.5	52.8 \pm 0.5	50.7 \pm 0.6	36.4 \pm 0.4
<i>hFabp7.T61M</i>	49.7 \pm 1.9	51.7 \pm 1.3	50.6 \pm 1.5	39.9 \pm 1.1**

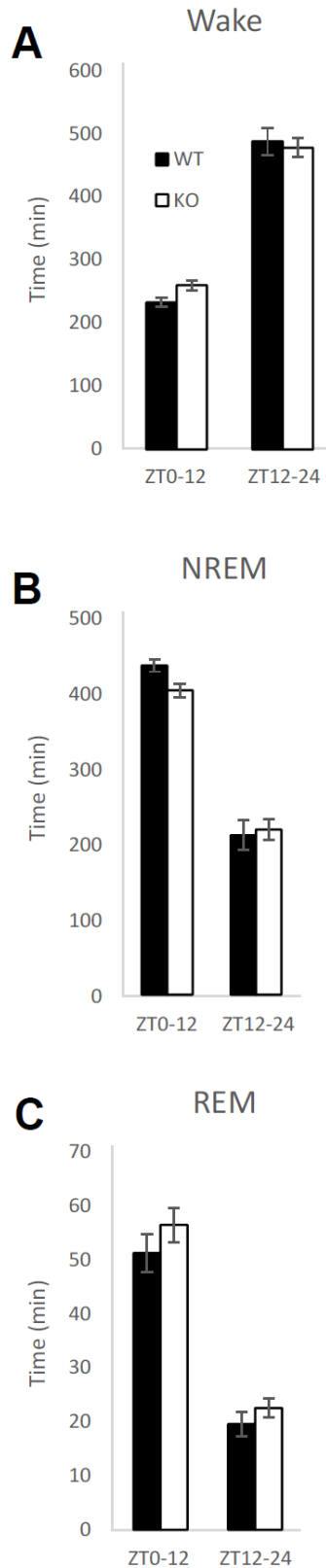


fig. S1. Baseline total sleep-wake time is not affected in *Fabp7* KO mice. Baseline wake time (A), NREM time (B), and REM time (C) in *Fabp7* KO mice (n = 8) compared to WT littermates (n = 7) shows no significant difference when binned into light period (ZT 0–12) and dark period (ZT 12–24). Error bars represent SEM.

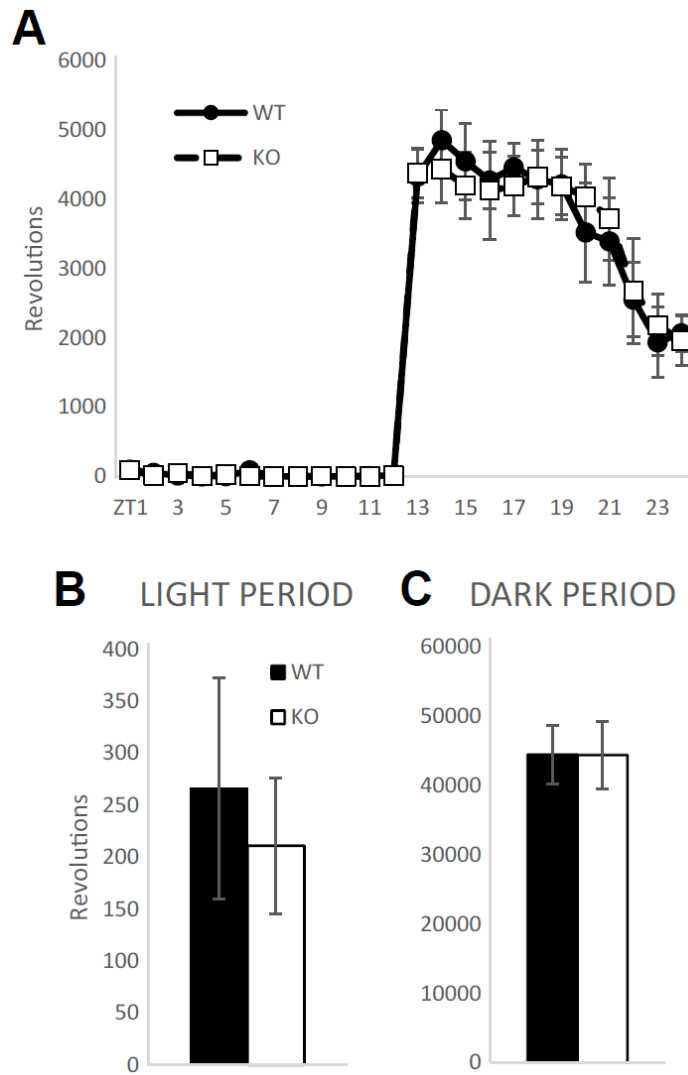


fig. S2. Locomotor running wheel activity is not affected in *Fabp7* KO mice. Diurnal hourly running wheel activity (**A**), and total revolutions show no significant differences when binned into the light period (**B**, ZT0-12) or in the dark period (**C**, ZT12-24) in *Fabp7* KO mice (n = 8) compared to WT littermates (n = 8). Error bars represent SEM.

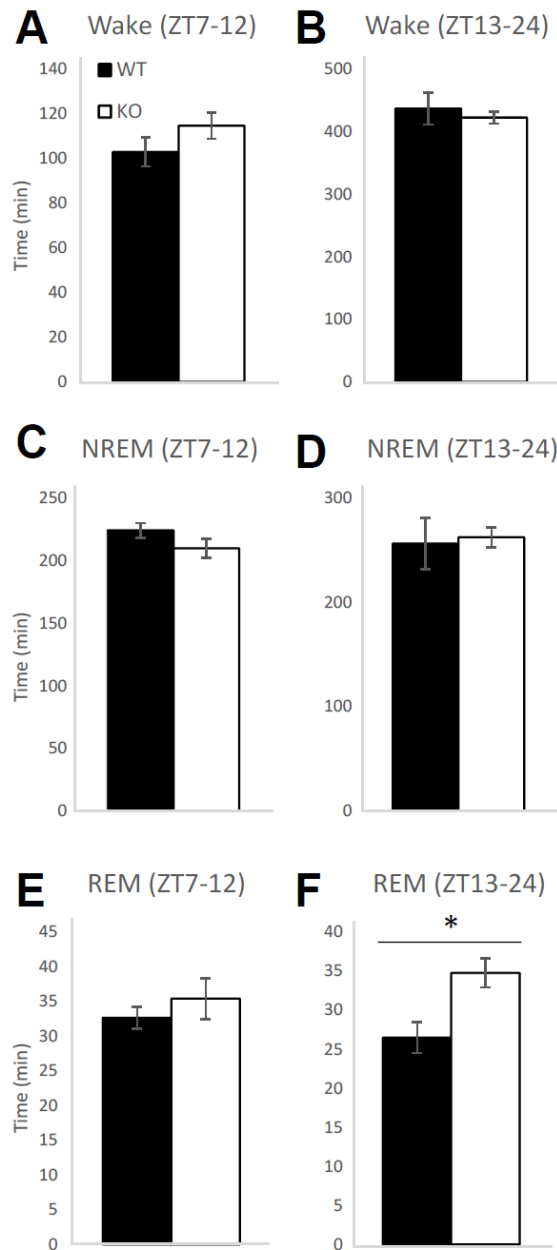


fig. S3. REM sleep time is increased in *Fabp7* KO mice during the recovery period following sleep deprivation. Wake time during the immediate recovery period (**A**, ZT 7–12) or in the subsequent dark period (**B**, ZT 13–24) following 6 hours of sleep deprivation is similar between *Fabp7* KO mice (n = 8) and WT littermates (n = 7). NREM sleep time is unaffected in the immediate recovery period (**C**) and subsequent dark period (**D**). REM sleep time is unaffected by *Fabp7* deficiency compared to WT in the immediate recovery period (**E**), but is significantly increased during the subsequent dark period (**F**). * $P < 0.05$. Error bars represent SEM.

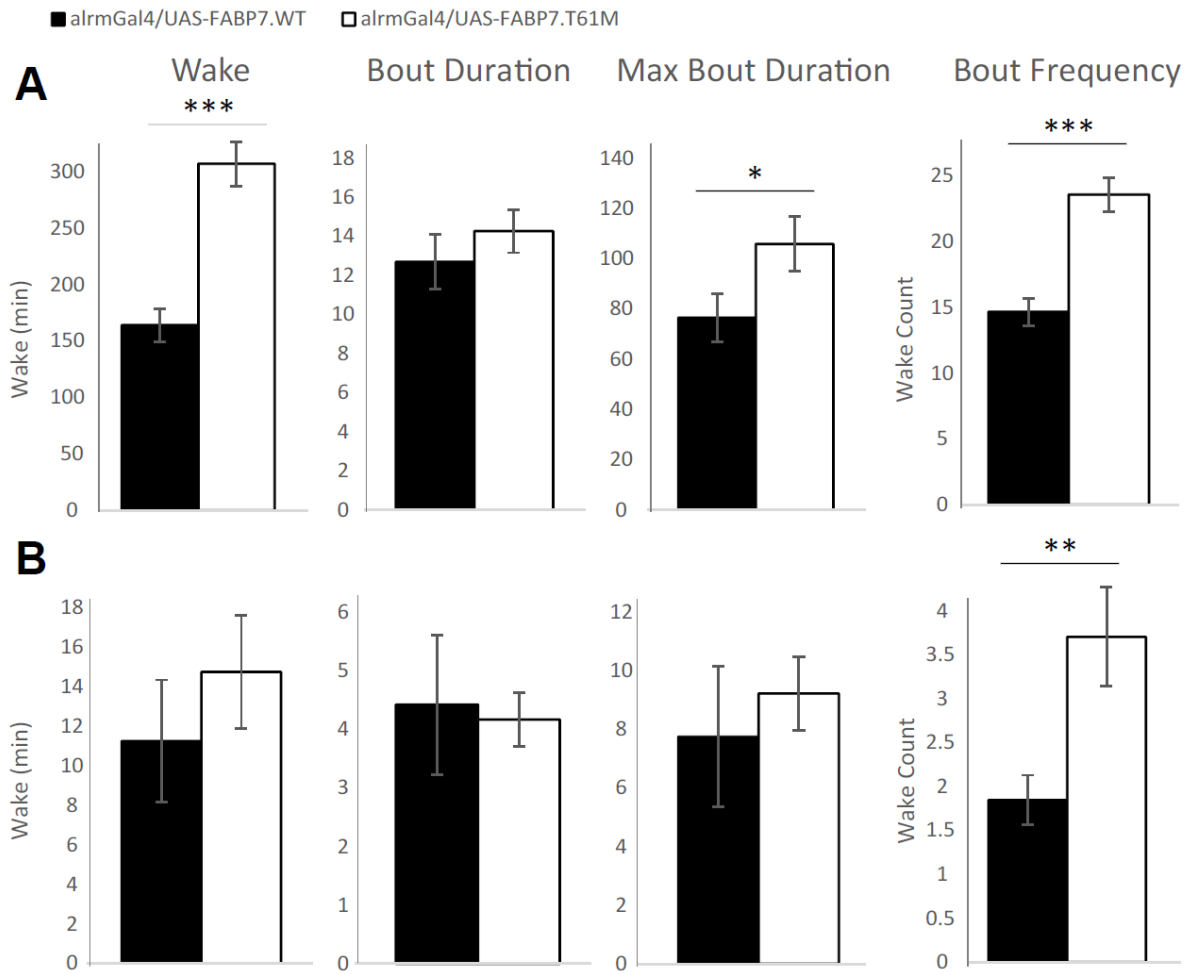


fig. S4. Overexpression of *FABP7.T61M* mutation in astrocytes fragments wake only during the daytime in *Drosophila*. Daytime (A) but not nighttime (B) wake was fragmented in female flies overexpressing *FABP7.T61M* compared to *FABP7.WT* using an astrocyte-specific (*Alrm-Gal4*) driver. Total wake, bout duration, maximum bout duration, and frequency of bouts are shown. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, $n = 32$ flies (WT), $n = 27$ flies (T61M). Error bars represent SEM.

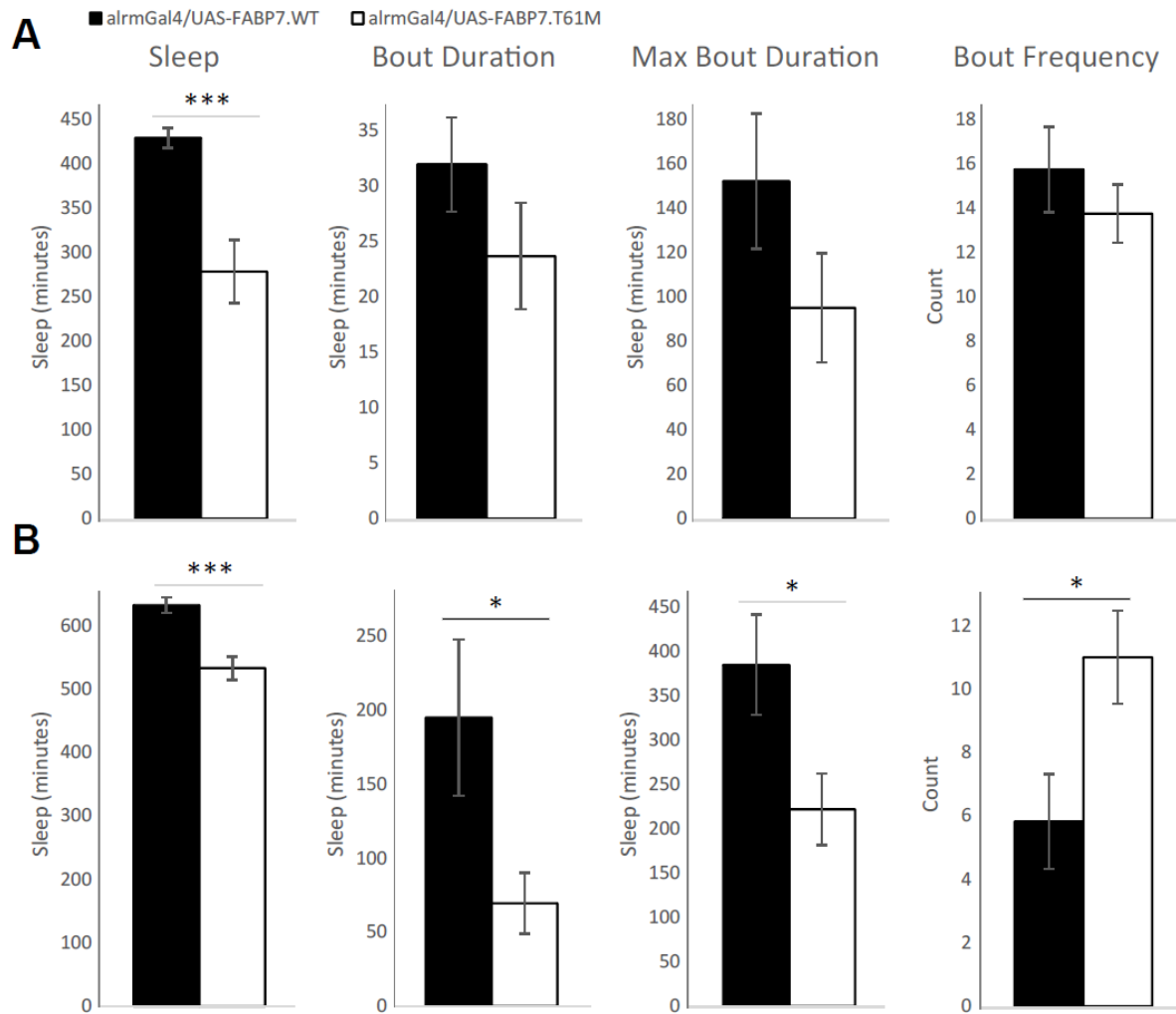


fig. S5. Overexpression of *FABP7.T61M* mutation in astrocytes in male flies also fragments sleep. Daytime (A) and nighttime (B) sleep was reduced, while nighttime sleep was fragmented, in male flies overexpressing *FABP7.T61M* compared to *FABP7.WT* using an astrocyte-specific (*Alm-Gal4*) driver. Total sleep, bout duration, maximum bout duration, and frequency of bouts are shown. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, $n = 32$ flies (WT), $n = 27$ flies (T61M). Error bars represent SEM.

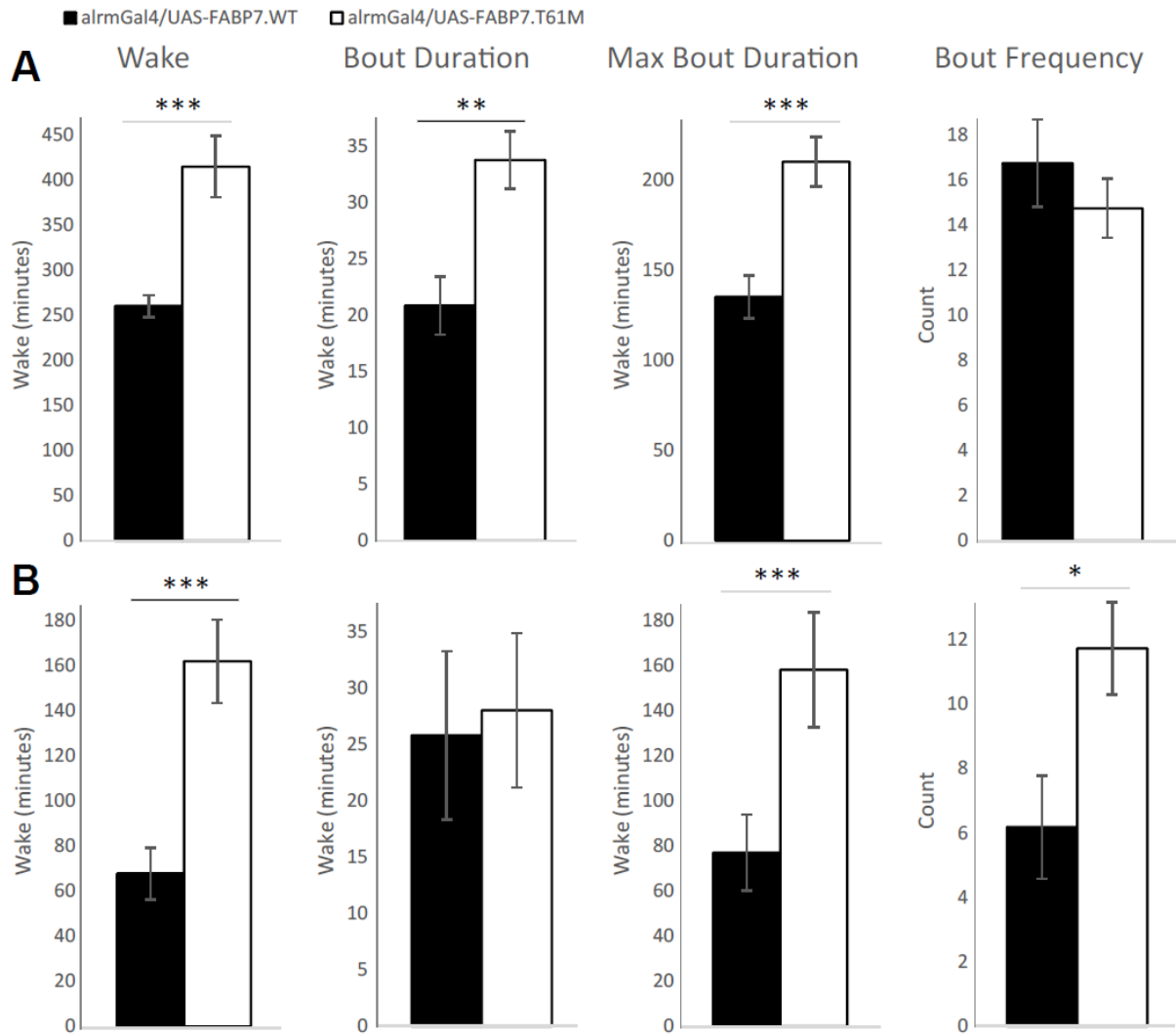


fig. S6. Overexpression of *FABP7.T61M* mutation in astrocytes in male flies also fragments wake. Daytime (A) and nighttime (B) wake was fragmented in male flies overexpressing *FABP7.T61M* compared to *FABP7.WT* using an astrocyte-specific (*Alm-Gal4*) driver. Total wake, bout duration, maximum bout duration, and frequency of bouts are shown. * $P < 0.05$, *** $P < 0.001$, $n = 11$ flies per group. Error bars represent SEM.

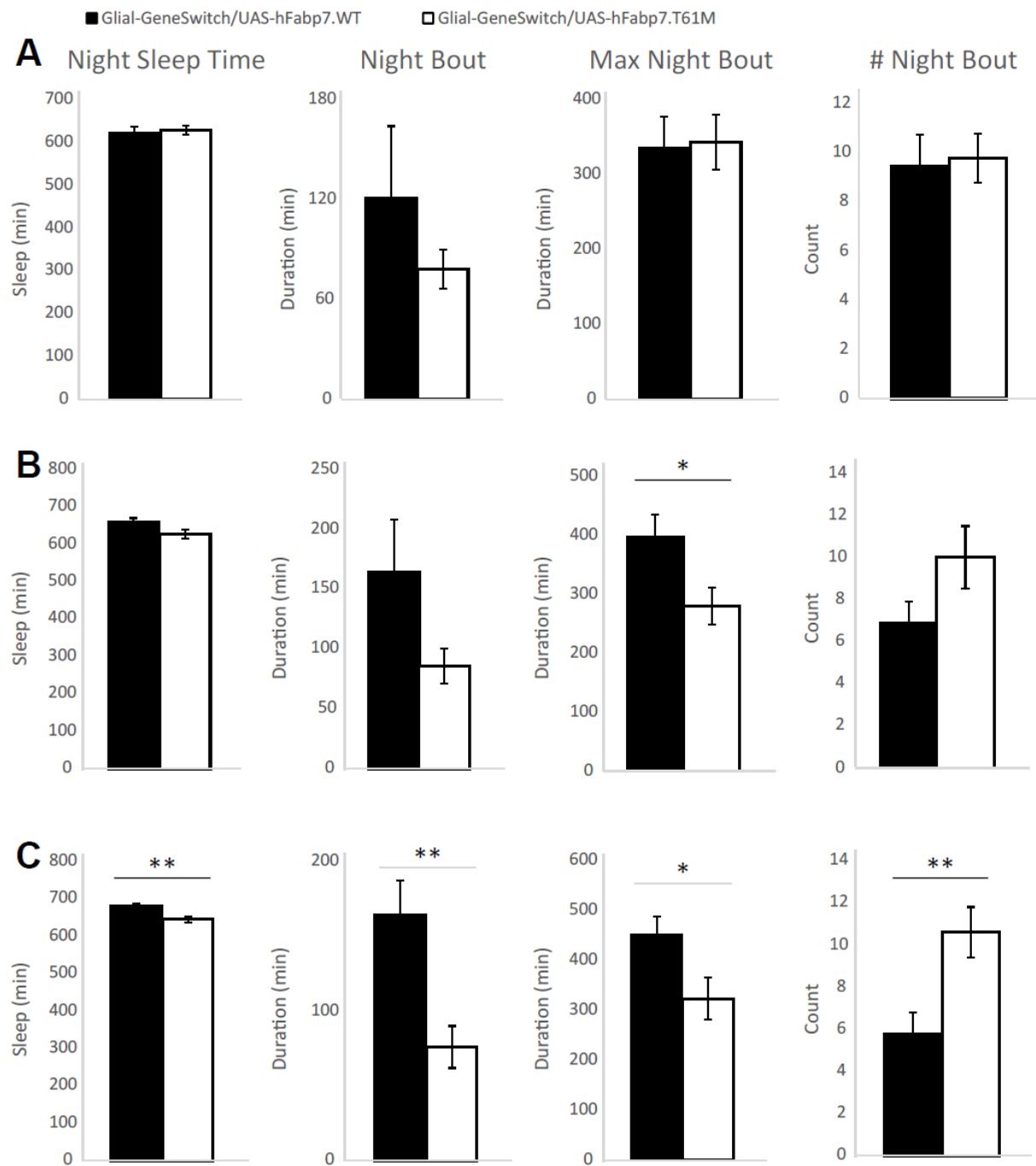


fig. S7. Conditional overexpression of *FABP7.T61M* mutation in glial cells of adult male flies also fragments sleep in *Drosophila*. Flies treated with vehicle (A), RU486 for 1 day (B), and RU486 for 4 days (C) show sleep was fragmented in *FABP7.T61M* compared to *FABP7.WT* using a Glial-GeneSwitch-Gal4 driver. Night-time total sleep, bout duration, maximum bout duration, and frequency of bouts are shown. * $P < 0.05$, ** $P < 0.01$, $n = 15$ flies (WT), $n = 13$ flies (T61M). Error bars represent SEM.