

Figure 1 (1.5 column)

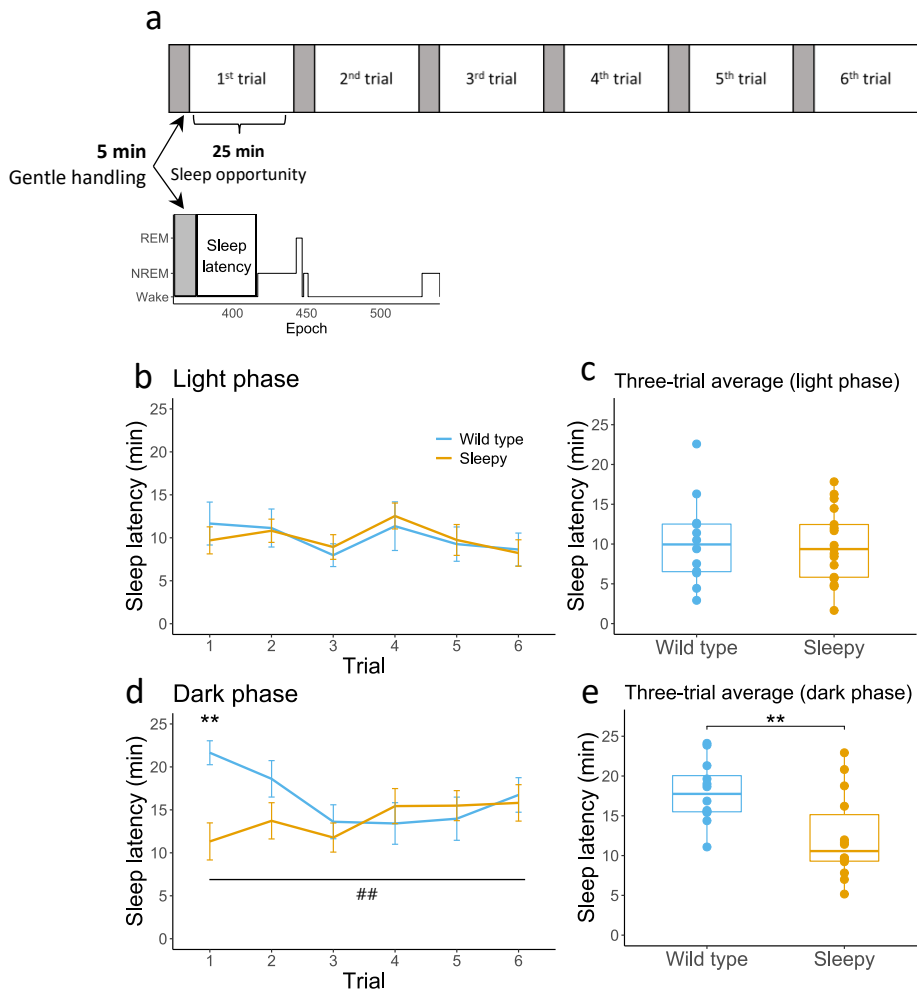


Fig. 1 | Shorter sleep latency of *Sleepy* mice on dark-phase MSLT. (a) Protocol of the mouse version of MSLT. (b, d) Average sleep latency for each trial of light-phase and dark-phase MSLT, respectively. ****** $P < 0.001$ by two-way repeated-measures ANOVA followed by Bonferroni test, **##** $P < 0.01$ for genotype-trial interaction. (c, e) Three-trial average of the sleep latency of *Sleepy* and wild-type mice in light-phase and dark-phase MSLT, respectively. ****** $P < 0.01$ by Wilcoxon rank sum test. *Sleepy* ($n = 17$ in light phase, $n = 14$ in dark phase), wild type ($n = 12$ in both phases). Line plots are expressed as mean \pm SEM. Box plots range from Q1 to Q3 quartile; horizontal lines indicate medians; whiskers represent minimum and maximum values of $1.5 \times$ interquartile range.

Figure 2 (1.5 column)

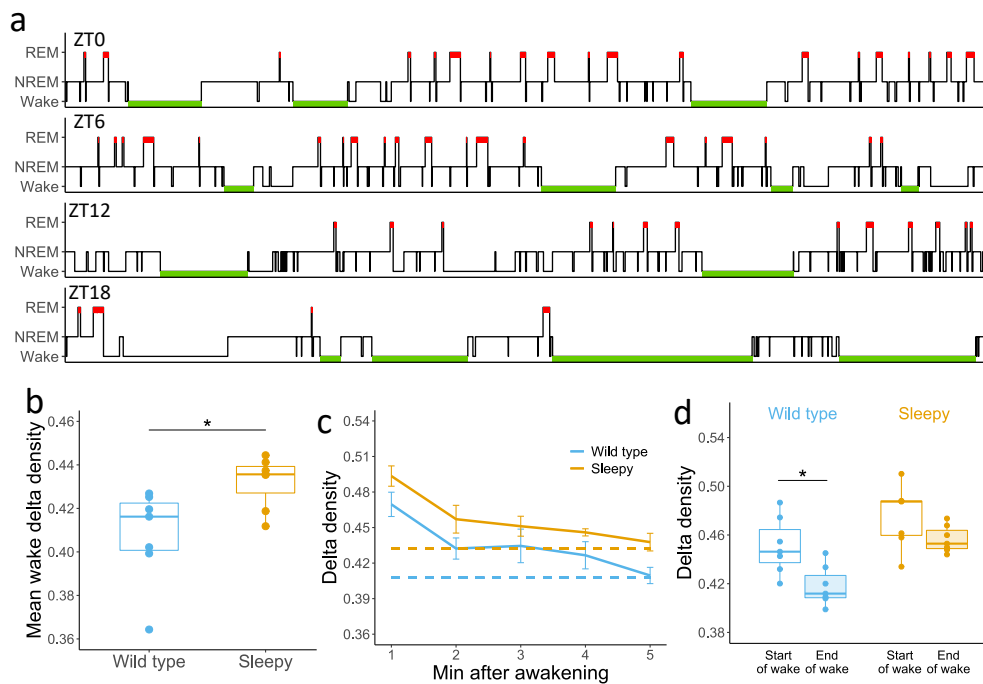


Fig. 2 | Reduced decay of EEG delta density in *Sleepy* mice during wake. (a) Hypnogram of a *Sleepy* mouse showing chosen wake episodes in 24 h. (b) Average wake EEG delta density of wild-type and *Sleepy* mice. * $p < 0.05$ by Wilcoxon rank sum test. (c) Time plot of wake EEG delta density during the first 5 min after awakening in wild-type and *Sleepy* mice, horizontal lines represent averages of wake delta density. (d) Average delta density of the first and last 2 min of each wild-type and *Sleepy* mice wake episode. * $p < 0.05$ by Wilcoxon signed rank test. *Sleepy* and wild type (each $n = 7$). Line plots are expressed as mean \pm SEM. Box plots range from Q1 to Q3 quartile; horizontal lines indicate medians; whiskers represent minimum and maximum values of $1.5 \times$ interquartile range.

Figure 3 (2 columns)

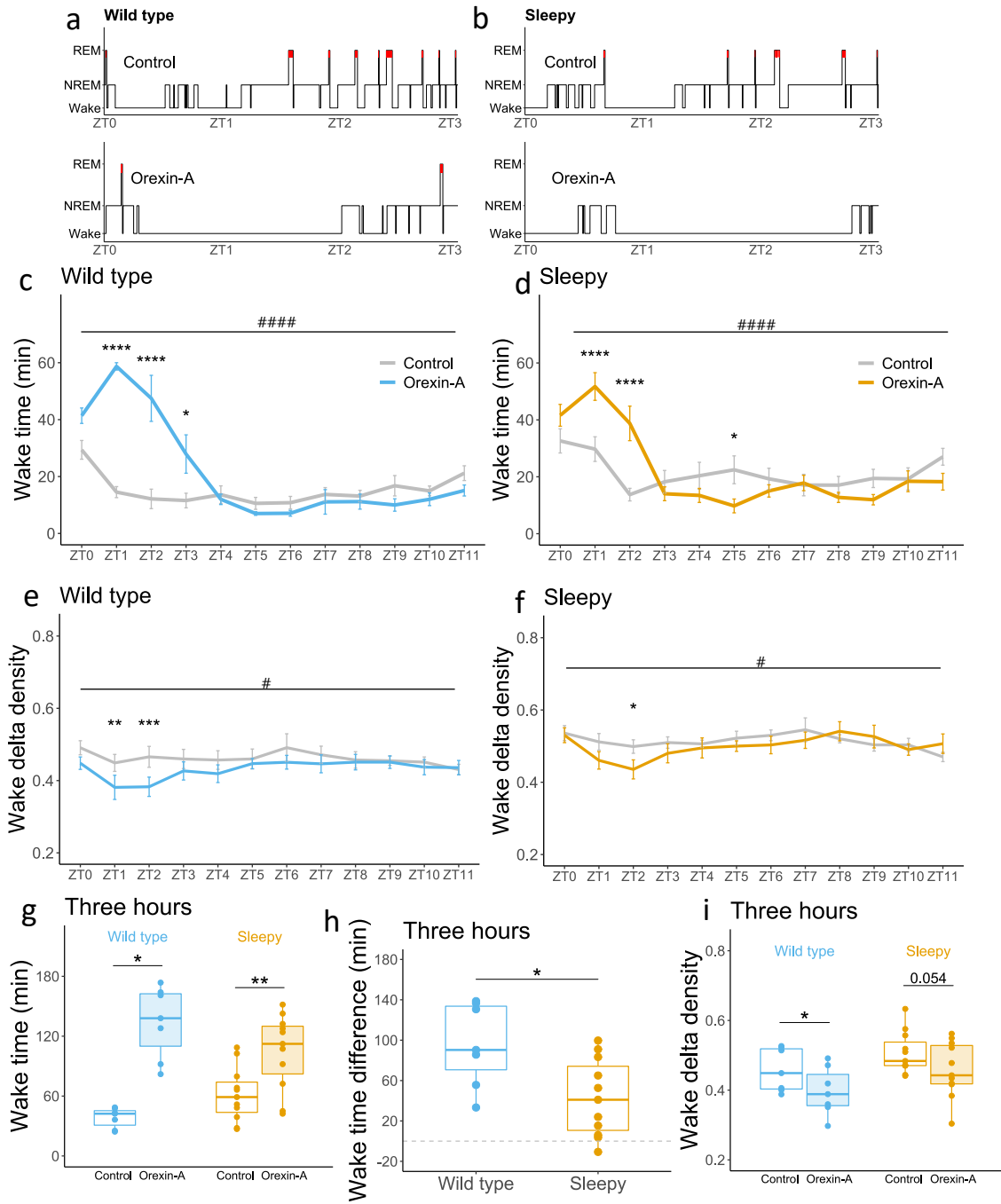


Fig. 3 | Increased wake time in wild-type and *Sleepy* mice after intracerebroventricular injection of orexin-A. Hypnograms of a wild-type (a) and a *Sleepy* (b) mouse after control and orexin-A injection (2 nmol/mouse). Hourly plots of wake time of wild-type (c) and *Sleepy* (d) mice after control and orexin-A injection at ZT0. *P<0.05, ****P<0.0001 by two-way repeated-measures ANOVA followed by Bonferroni test, ####P<0.0001 for drug-time interaction. Hourly plots of wake EEG delta density of wild-type (e) and *Sleepy* (f) mice after control and orexin-A injection at ZT0. *P<0.05, **P<0.01, ***P<0.001, by two-way repeated-measures ANOVA followed by Bonferroni test, #P<0.05 for drug-time interaction. (g) Wake time for 3 h after control and orexin-A injection. *P<0.05, **P<0.01 by Wilcoxon signed rank test. (h) Difference of wake time after control and orexin-A injection in wild-type and *Sleepy* mice. *P<0.05 by Wilcoxon rank sum test. wild-type (n=7), *Sleepy* (n=11). (i) Wake EEG delta density for 3 h after control and orexin-A injection. *P<0.05 by Wilcoxon signed rank test. line plots are expressed as mean \pm SEM. Box plots range from Q1 to Q3 quartile; horizontal lines indicate medians; whiskers represent minimum and maximum values of 1.5 \times interquartile range. Line plots are expressed as mean \pm SEM.

Figure 4 (1 column)

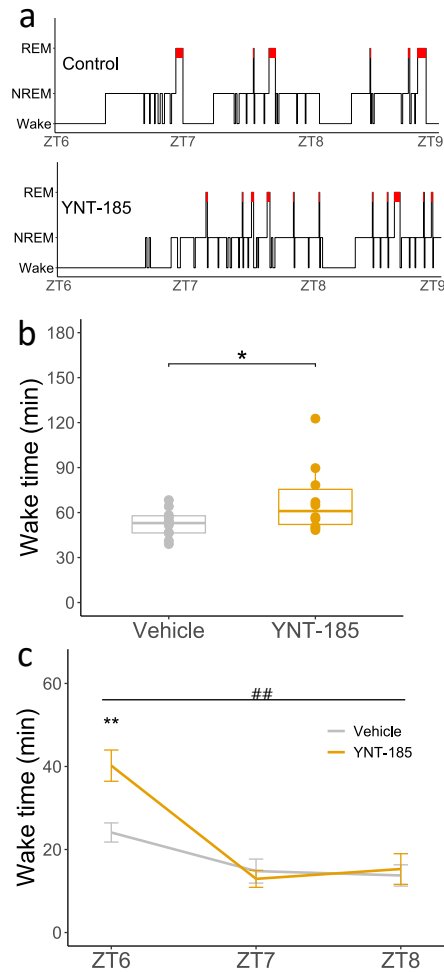


Fig. 4| Increased wake time in *Sleepy* mice after Intraperitoneal injection of YNT-185. (a) Hypnograms of a *Sleepy* mouse after YNT-185 (40 mg/kg) and vehicle injection at ZT6. (b) Wake time for 3 h after injection of YNT-185 and vehicle in *Sleepy* mice. * $P < 0.05$ by Wilcoxon signed rank test. (c) Hourly plot of wake time of *Sleepy* mice after YNT-185 and vehicle injection. ** $P < 0.01$ by two-way repeated-measures ANOVA followed by Bonferroni test, ## $P < 0.01$ for drug-time interaction. *Sleepy* ($n = 10$). line plots are expressed as mean \pm SEM. Box plots range from Q1 to Q3 quartile; horizontal lines indicate medians; whiskers represent minimum or maximum values of $1.5 \times$ interquartile range.