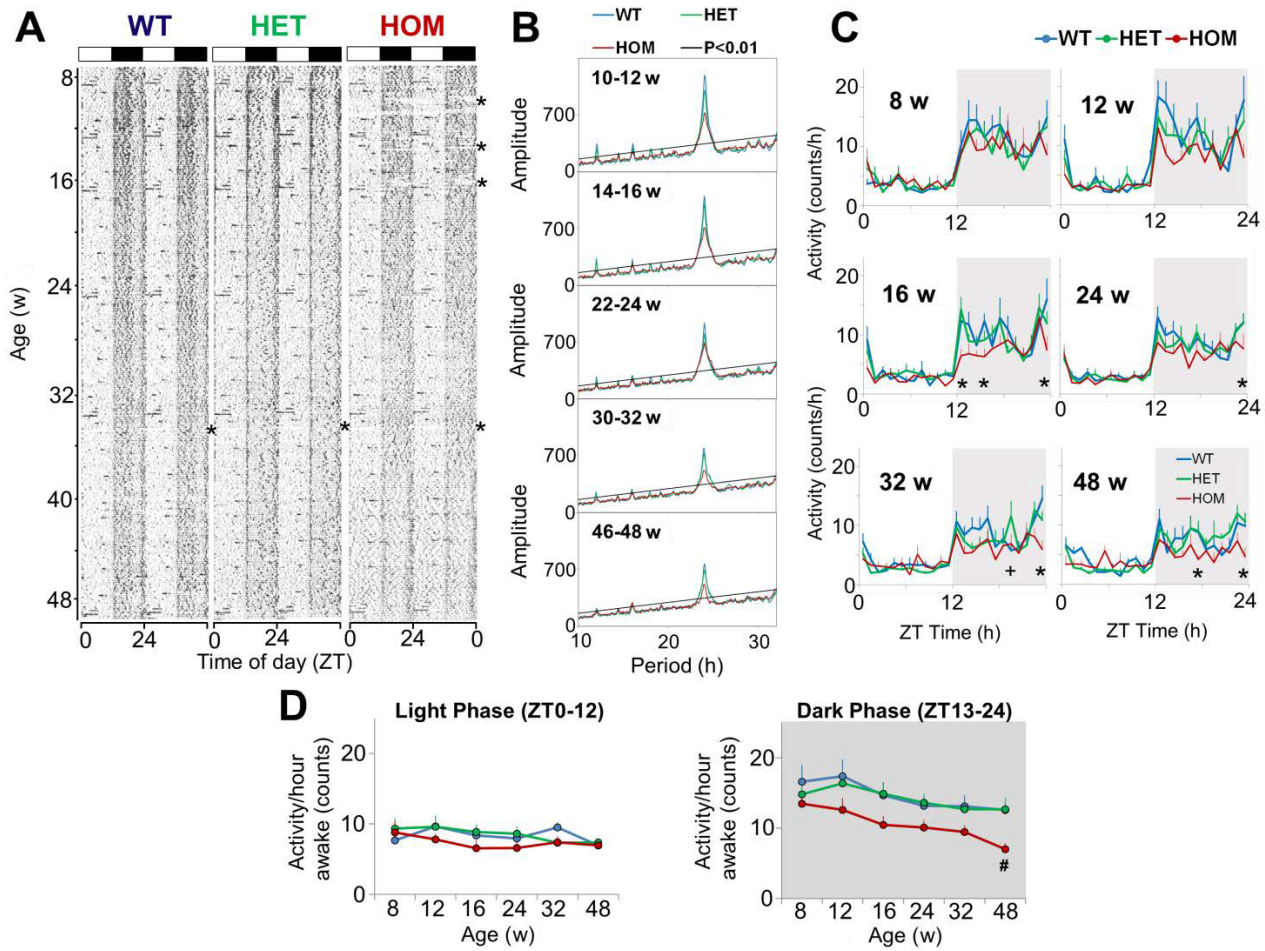

Figure S1. Diurnal activity rhythms during baseline recordings in HET, HOM, and WT zQ175 mice from 8-48 w of age. (A) Representative actogram double-plots for activity of WT, HET, and HOM zQ175 mice recorded continuously from ~8-48 w of age maintained under a 12:12 light/dark cycle (indicated by black and white bars at the top of the plot). Each horizontal line represents two consecutive 24-h periods in which the second half of each line is repeated on the first half of the following line. Asterisks indicate areas of the actogram where data loss occurred due to technical issues. (B) Chi-square periodogram analysis of the amplitude of diurnal rhythmicity in activity (10-35 h) for 14-d periods at 10-12, 14-16, 22-24, 30-32, and 46-48 w of age in male HET, HOM, and WT mice. Dotted lines indicate significance in periodicity ($P < 0.01$). Periodograms were calculated in 5-min bins based on the 14 d prior to the first SDep period. The periodogram at 8 w of age (6- to 8-w period) was omitted from the analysis because there were insufficient data available before this age to perform the analysis. (C) 24-h activity profiles (hourly time points) during baseline recordings from 8 to 48 w of age in HET, HOM, and WT zQ175 mice. For significance: + = WT versus HET; * = WT versus HOM ($P < 0.05$). (D) Activity per hour spent awake during the 12-h light (ZT0-12) and dark phase (ZT13-24) in WT, HET, and HOM zQ175 mice from 8-48 w of age. Values were calculated by dividing total activity by the total amount of waking time (h) during a 12-h light and dark baseline period. Values were calculated for each individual animal and then averaged for the three genotypes at each of the six ages. HET = heterozygous; HOM = homozygous; WT = wild-type; ZT = Zeitgeber time; # = HET versus HOM ($P < 0.05$).

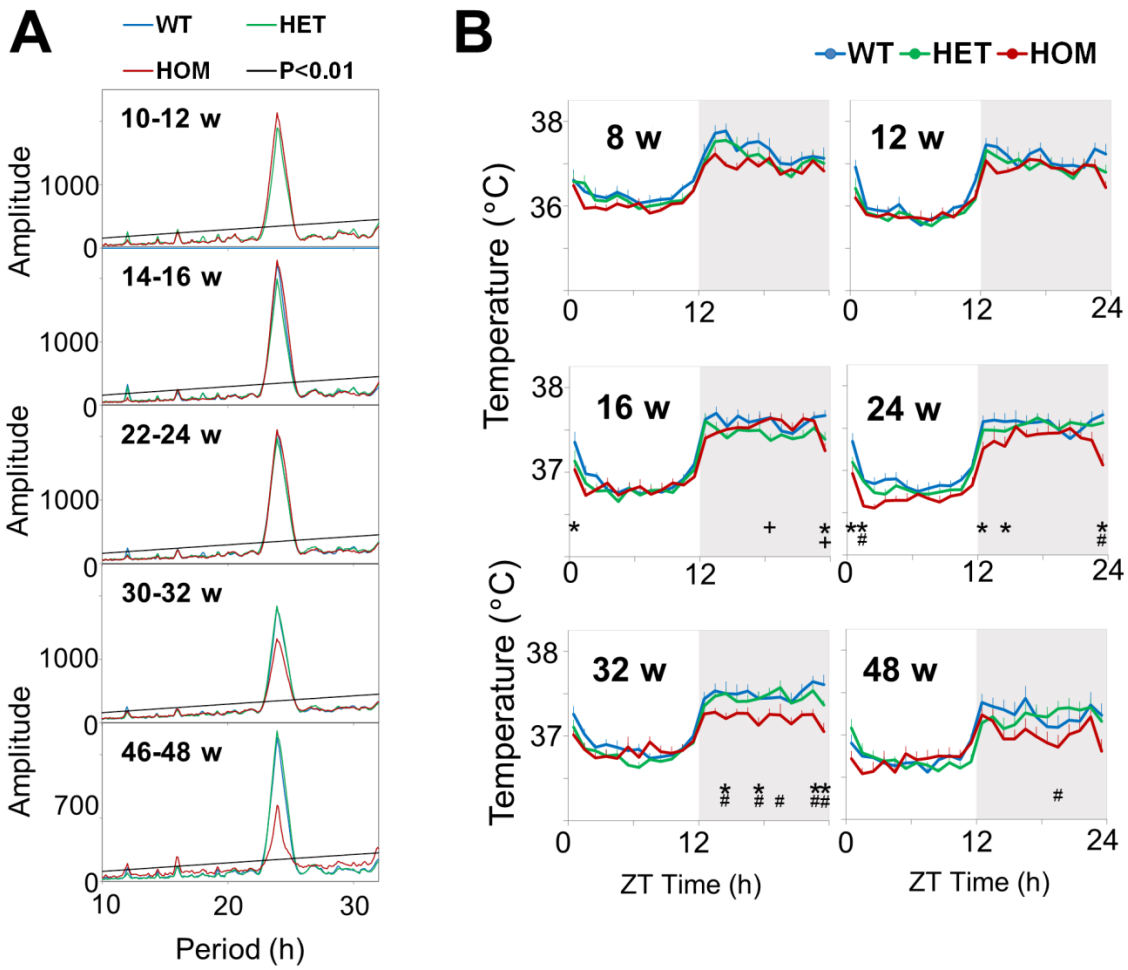

Figure S2. Diurnal rhythms in core body temperature are disrupted in zQ175 HOM mice. (A) Chi-square periodogram analysis of the amplitude of diurnal rhythmicity (10–35 h) of body temperature. Dotted diagonal line represents P < 0.01 significance level. (B) 48-h body temperature profiles during baseline recordings from 8 to 48 w of age for HET, HOM, and WT zQ175 mice. For significance: + = WT versus HET; * = WT versus HOM; # = HET versus HOM (P < 0.05). HET = heterozygous; HOM = homozygous; WT = wild-type.

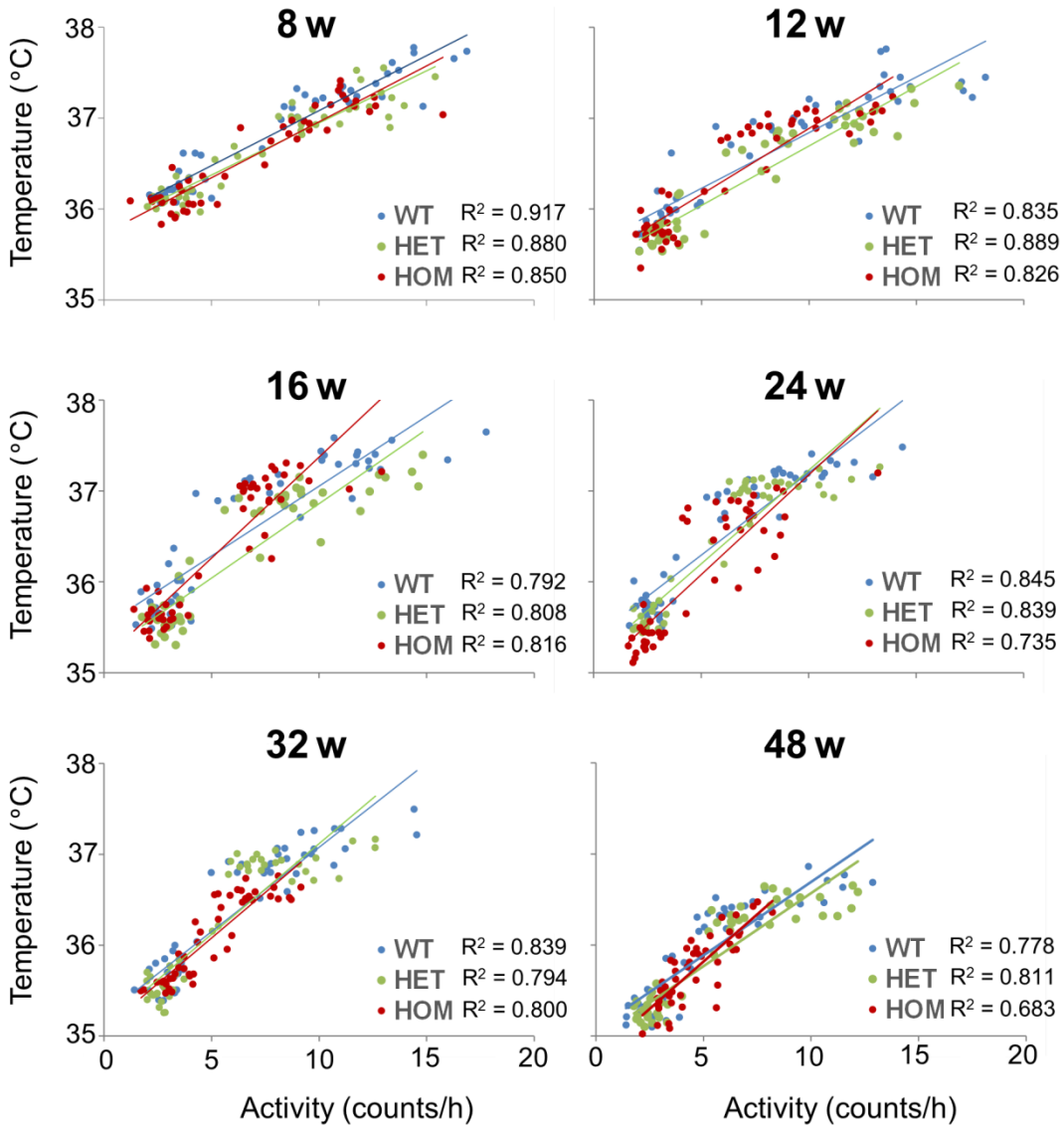

Figure S3. Correlation between body temperature and activity in WT, HET, and HOM zQ175 mice from 8 to 48 w of age. Data represent hourly average values of body temperature and activity counts across a 48-h baseline period. R^2 values and a linear trend line are shown for the correlation between temperature and activity for each of the genotypes across all ages.

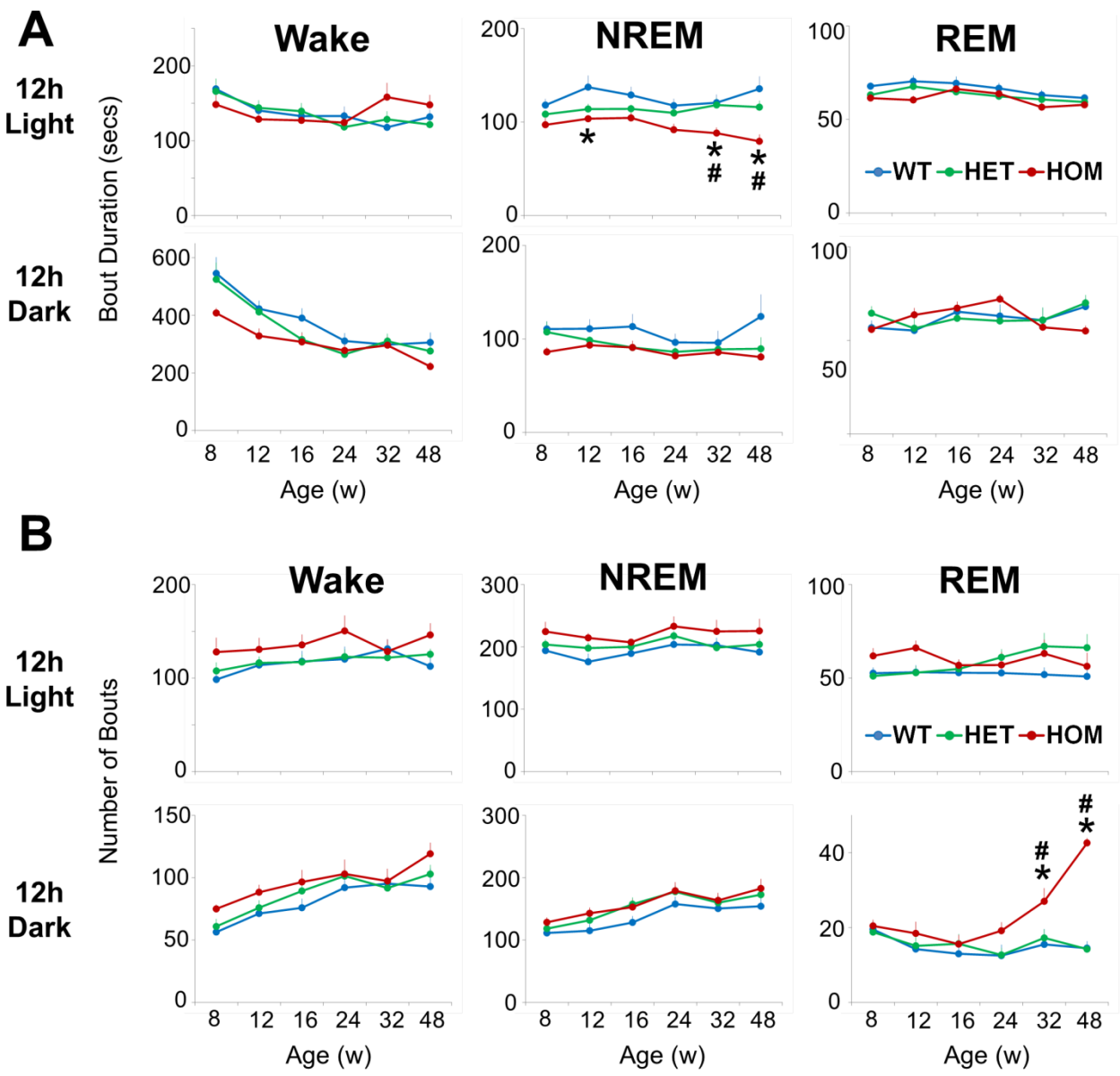

Figure S4. Sleep architecture in zQ175 mice. (A) Average bout durations for Wake (left column), NREM (center column), and REM (right column) during 12-h light and dark phase baseline recordings at 8 to 48 w of age in male HET, HOM, and WT mice (± SEM). (B) Average number of bouts for Wake (left column), NREM (center column) and REM (right column) during 12-h light and dark phase baseline at 8 to 48 w of age in male HET, HOM, and WT mice. For significance: + = WT versus HET; * = WT versus HOM; # = HET versus HOM ($P < 0.05$). HET = heterozygous; HOM = homozygous; NREM = nonrapid eye movement; REM = rapid eye movement; SEM = standard error of the mean; WT = wild-type.

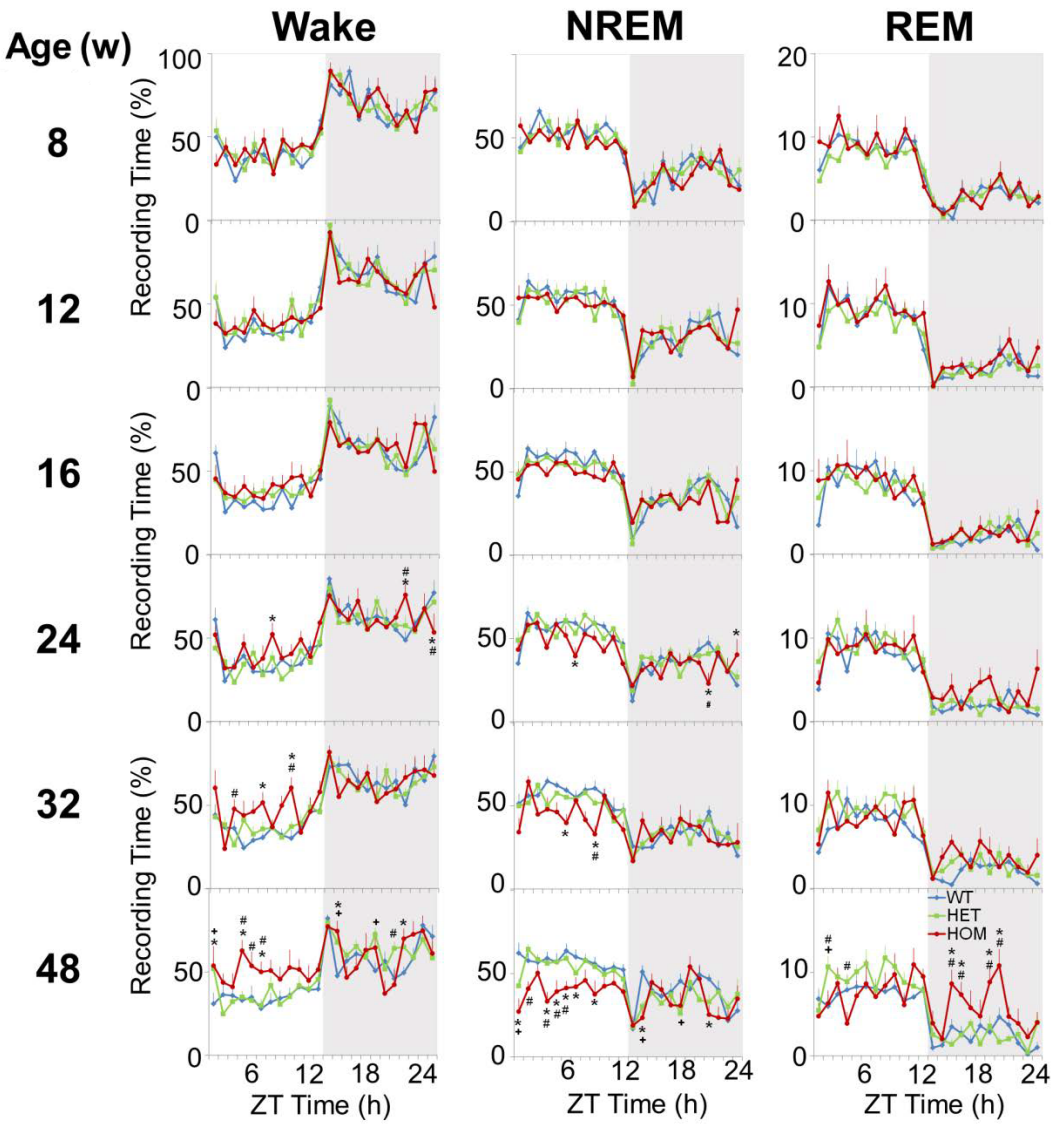

Figure S5. Hourly percent time in Wake (left column), NREM (center column), and REM (right column) during baseline at 8 to 48 w of age in male HET, HOM, and WT mice. For significance: + = WT versus HET; * = WT versus HOM; # = HET versus HOM ($P < 0.05$). HET = heterozygous; HOM = homozygous; NREM = nonrapid eye movement; REM = rapid eye movement; WT = wild-type.

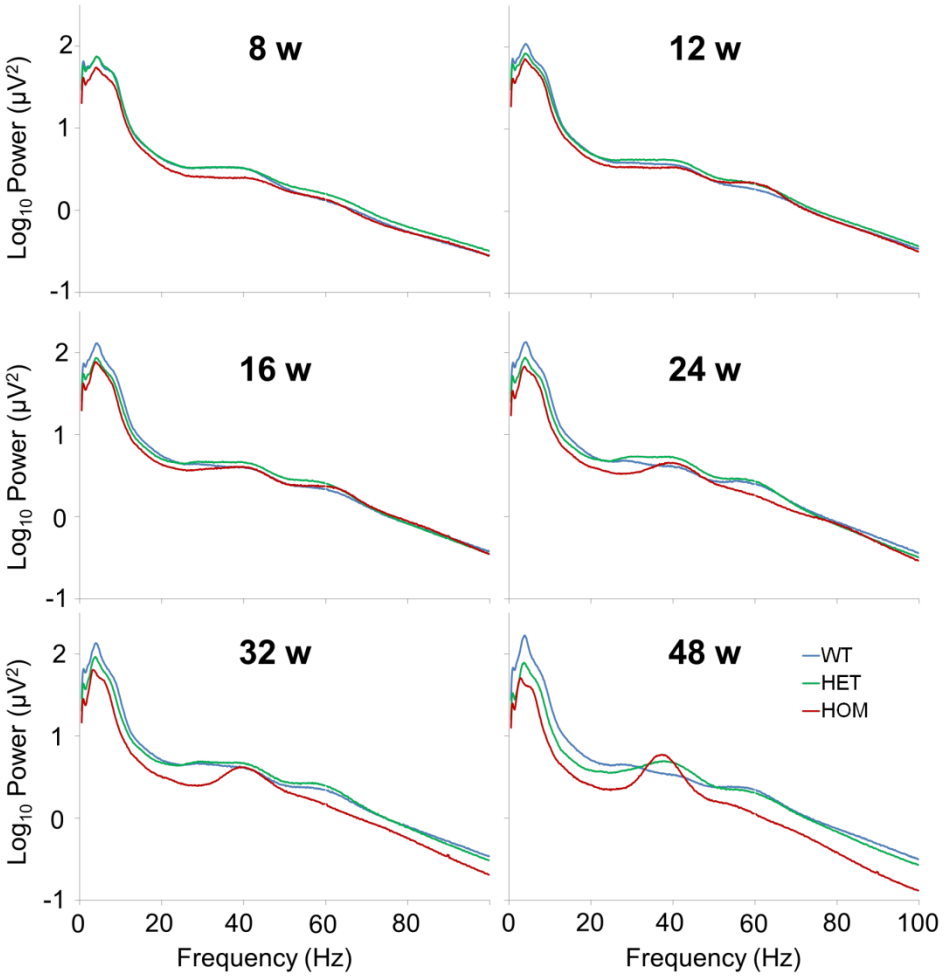

Figure S6. Raw EEG spectra (log values) during Wake in HET (green), HOM (red) and WT (blue) zQ175 mice from 8 to 48 w of age (values represent mean 24-h spectra, 0-100 Hz, 0.1 resolution). EEG = electroencephalograph; HET = heterozygous; HOM = homozygous; WT = wild-type.

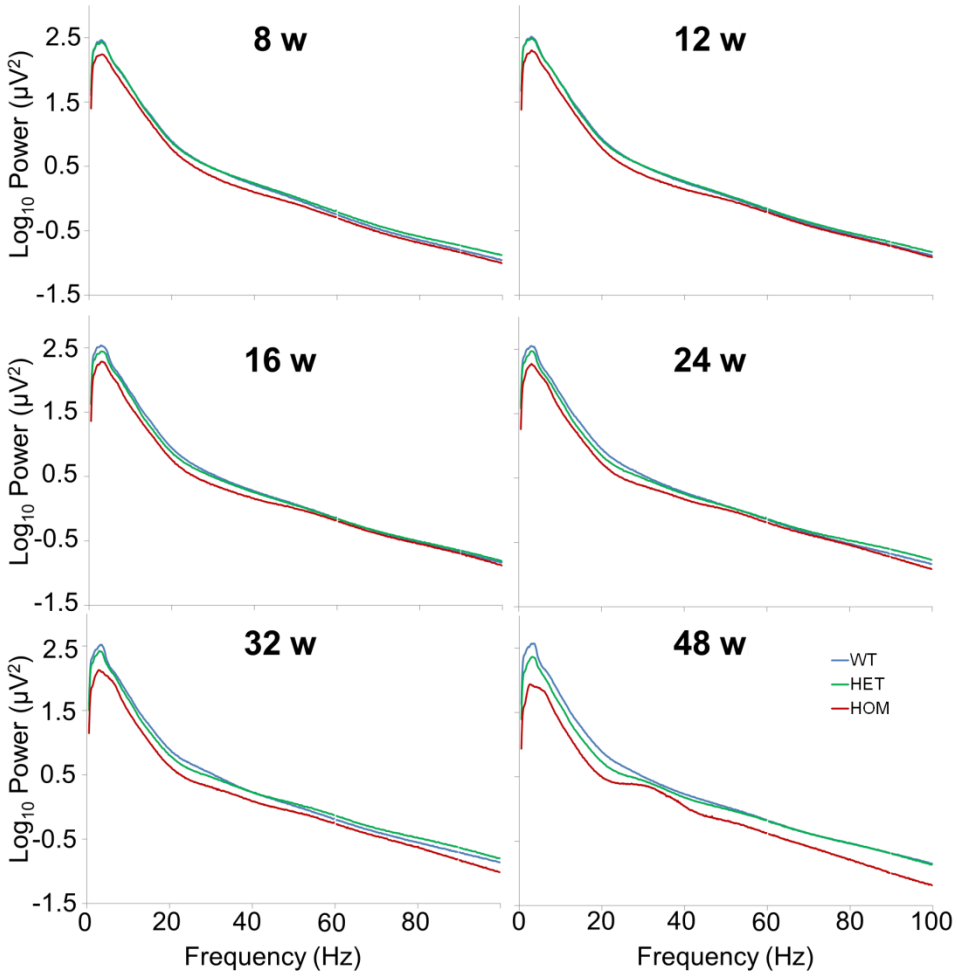

Figure S7. Raw EEG spectra (log values) during NREM sleep in HET (green), HOM (red) and WT (blue) zQ175 mice from 8 to 48 w of age (values represent mean 24-h spectra, 0-100 Hz, 0.1 resolution). EEG = electroencephalograph; HET = heterozygous; HOM = homozygous; NREM = nonrapid eye movement; WT = wild-type.

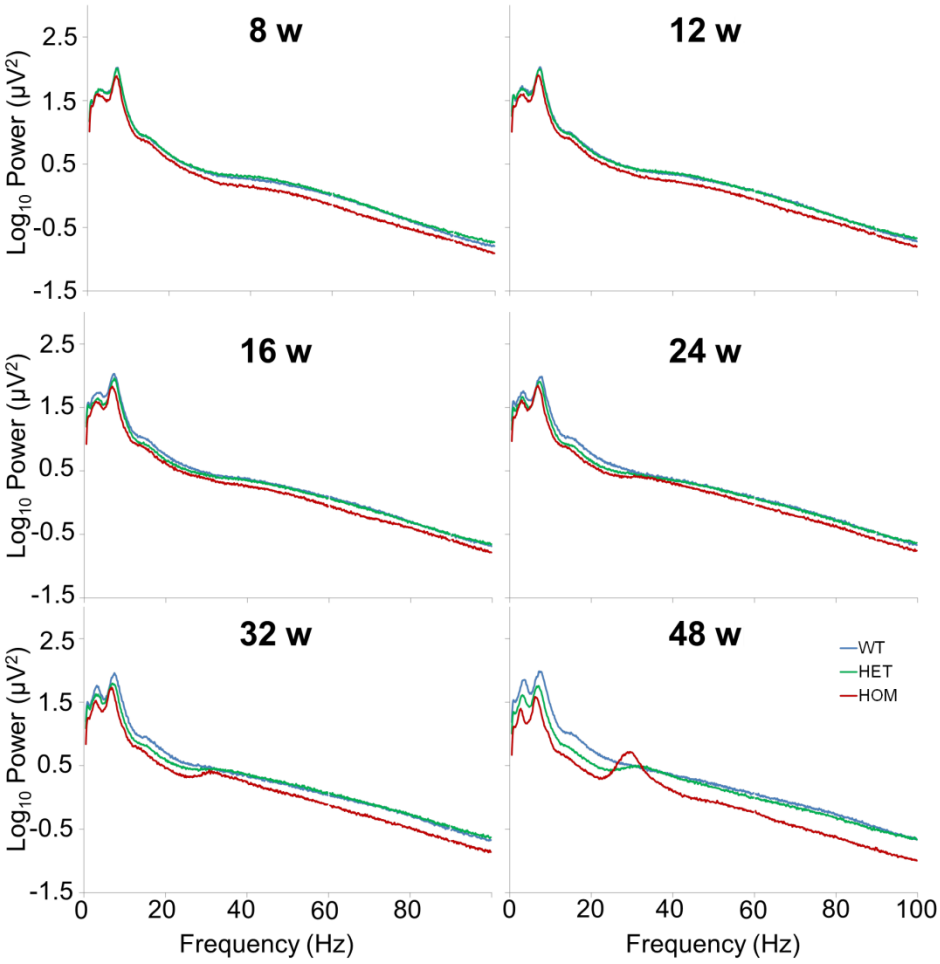

Figure S8. Raw EEG spectra (log values) during REM sleep in HET (green), HOM (red) and WT (blue) zQ175 mice from 8 to 48 w of age (values represent mean 24-h spectra, 0-100 Hz, 0.1 resolution). EEG = electroencephalograph; HET = heterozygous; HOM = homozygous; REM = rapid eye movement; WT = wild-type.