A.

Genotype	Period length (h) ± S.D.	Average power of rhythmicity	# of rhythmic flies/ total number tested
w^{1118}	23.40 ± 0.33	107.97	31/31
per^{01}	23.41 ± 2.33	37.50	23/100
tim-Gal4	24.21 ± 0.31	77.43	109/129
UAS-$Nab2^{IR}$	23.55 ± 0.30	158.13	30/31
UAS-$Atx2^{IR}$	23.63 ± 0.30	96.77	30/31
tim-Gal4 > UAS-$Nab2^{IR}$	24.17 ± 0.36	99.16	118/119
tim-Gal4 > UAS-$Atx2^{IR}$	24.07 ± 0.29	45.48	3/73
tim-Gal4 > UAS-$Nab2^{IR}$ + UAS-$Atx2^{IR}$	25.25 ± 0.97	30.50	15/40

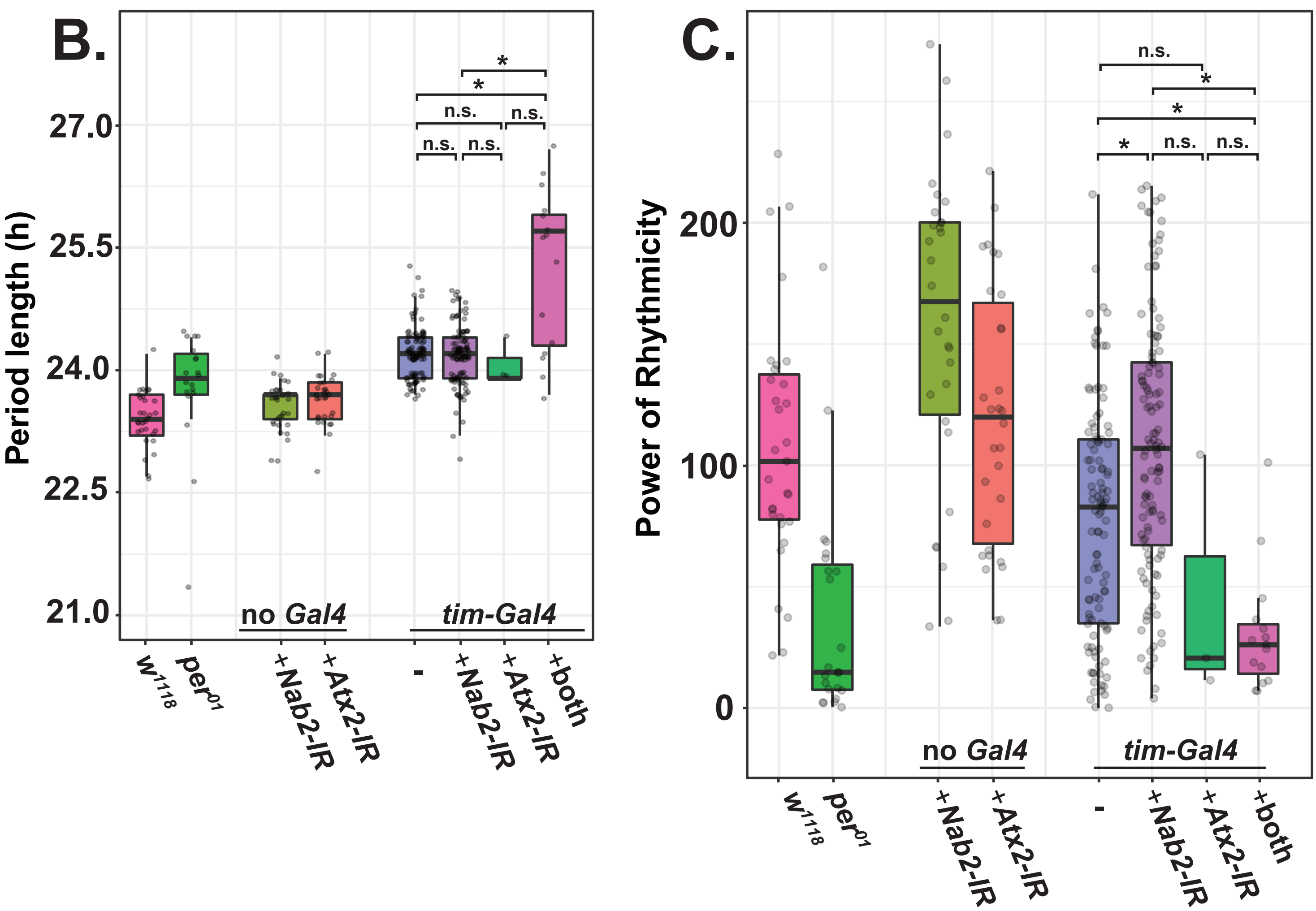

Figure S1: (Associated with Figure 3) Period length and power of rhythmicity of flies with RNAi depletion of Nab2, Atx2, or both RBPs in circadian neurons. (A) Free-running circadian period length, average power of rhythmicity, and rhythmic number were calculated using chi-squared periodograms and the Rethomics R package (GEISMANN, 2019). Only data from seven 24-hour dark periods was used to calculate circadian parameters. (B) Box and whisker plots showing median period length (hours), interquartile range, and min/max for each genotype. Data points for each

of the selected genotypes are also plotted. Decreased expression of both *Nab2* and *Atx2* in circadian neurons significantly extended period length compared to *tim-Gal4*,*UAS-Nab2IR*, or *UAS-Atx2IR* flies alone. (C) Box and whisker plots showing median power measurements, interquartile range, and min/maxfor each genotype. Data points for each of the selected genotypes are also plotted. The power of rhythmicity was significantly decreased for flies lacking both Nab2 and Atx2 in circadian neurons compared to *tim-Gal4* controls. The period length and power data was analyzed using non-parametric Kruskal Wallis tests and pairwise Wilcoxon Rank Sum tests with Bonferroni corrections for multiple comparisons (* = p < 0.01, n.s.=non-significant).