Supporting Information

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SI Text

As we were completing the experiments demonstrating normal FAA in *Per1*$^{-/-}$; *Per2*$^{-/-}$ double-mutant mice, it was reported that FAA was lacking in mice with a mutation in *Per2* (*Per2*^{Brdm1} allele; hybrid C57BL/6 × 129 background) (1). We were puzzled by the reported result, and one possibility we considered was that the loss of FAA might depend on the hybrid genetic background. On the other hand if, in fact, FAA was lost in *Per2* mutants but preserved in *Per1*$^{-/-}$; *Per2*$^{-/-}$ double mutants, it would indicate a complex but potentially revealing interaction between *Per* genes in FAA and perhaps clarify the relationship, if any, of FAA to circadian clocks.

To examine this possibility, we bred *Per2*$^{-/-}$ mice and wild-type littermates in a hybrid C57BL/6 × 129 background, and we monitored FAA as we did for *Bmal1*$^{-/-}$ and *Per1*$^{-/-}$; *Per2*$^{-/-}$ mice. We found that *Per2*$^{-/-}$ mice and their wild-type littermates exhibited comparable FAA (Fig. S2), but in this hybrid background FAA in general exhibited high interindividual variability. About 30% of all mice, whether wild type or *Per2*$^{-/-}$, showed weak or undetectable FAA, far more than what we had observed in the C57BL/6 or 129 backgrounds. Despite this variability, FAAs in the 2 genotypes were very similar in normalized average profile (Fig. S2*B*), the time course of appearance (Fig. S2*C*), and in the mean time of anticipation of the daily onset of food availability (Fig. S2*D*). We conclude that the *Per2* gene is not required for quantitatively normal FAA.

1. Feillet CA, et al. (2006) Lack of food anticipation in Per2 mutant mice. *Curr Biol* 16:2016–2022.

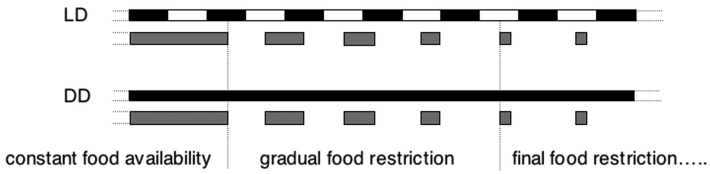

Fig. S1. Scheme of gradual temporal food restriction protocol in a light–dark cycle (LD; *Upper*) or constant darkness (DD; *Lower*). (*Upper*) Black and white horizontal bars represent times of lights off and on, respectively. Gray bars represent times of food availability, which change from constant to a final 3-h window over a 4-day interval. Note that once gradual food restriction begins, the time of onset of food availability is the same each day. (*Lower*) Black horizontal bar represents constant darkness. Gray bars represent times of food availability, as noted above.

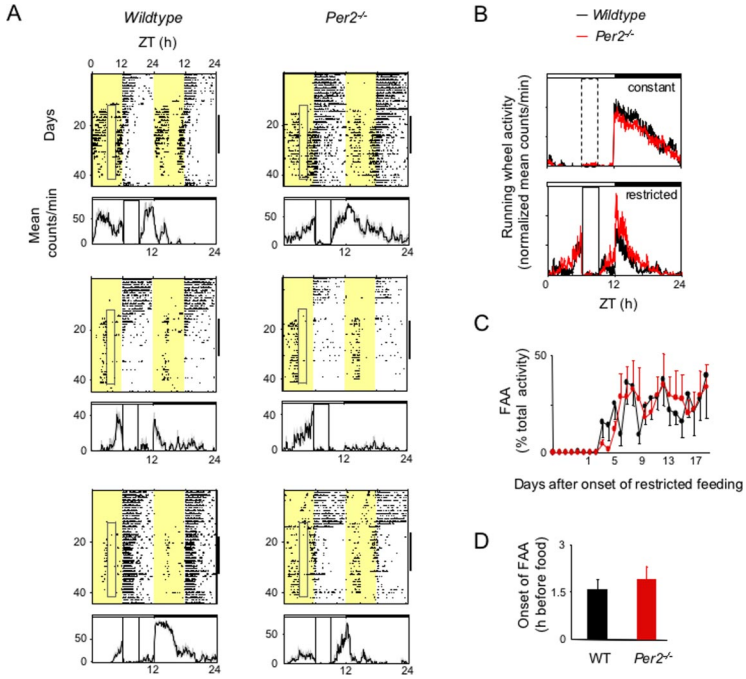

Fig. S2. Normal FAA in *Per2*$^{-/-}$ mice. (*A*) Representative double-plotted actograms of daily running-wheel activity of 3 *Per2*$^{-/-}$ mice and 3 wild-type littermates (as indicated) during constant food availability and under subsequent temporal food restriction. Data are displayed as in Fig. 1*A*. (*B*) Mean locomotor activity profiles of *Per2*$^{-/-}$ mice ($n = 7$) and wild-type littermates ($n = 5$) under constant food availability (*Upper*) and after subsequent temporal food restriction (*Lower*). Data are displayed as in Fig. 1*B*. (*C*) Time course of the development of FAA in *Per2*$^{-/-}$ mice ($n = 7$) and wild-type littermates ($n = 5$). Data are displayed as in Fig. 1*C*. (*D*) Number of hours by which FAA anticipated daily food availability in *Per2*$^{-/-}$ mice ($n = 7$) and wild-type littermates ($n = 5$). Data are displayed as in Fig. 1*D*. The difference between genotypes is not statistically significant.