

1 **Supporting material**

2 **Supporting Figure 1. VIP added to the medium halved in concentration after 2 hours.** The
3 percentage (black line) and concentration (grey line) of the remaining VIP in the culture medium
4 was measured using ELISA. After 2 hours, about half of the VIP remained and only 20 % of VIP
5 remained after 1 day.

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7 **Supporting Figure 2. VIP treatment during the late subjective night induced transient**

8 **shifts of PER2::*LUC* rhythms.** (A) Representative actogram of PER2::*LUC* expression shows
9 that on the day after VIP application, the SCN rhythm was advanced by several hours (*) and on
10 subsequent days established a smaller steady-state phase shift (black line). (B) Transient phase
11 shifts were significantly larger than steady-state shifts following VIP application around CT 20
12 (mean \pm SEM; $p < 0.05$, One-way ANOVA, $F_{1,16} = 6.17$), but not at other times.

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14 **Supporting Figure 3. VIP pulses rapidly changed the phase, but not the period of SCN**

15 **cultures.** The period before and after 10 μ M VIP treatment differed by less than 1 hour in most
16 SCN cultures (n=116 of 126). This is further evidence that VIP can entrain the SCN through
17 rapid shifts in the circadian oscillator.

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