

Population Encoding by Circadian Clock Neurons Organizes Circadian Behavior

Abbreviated title: Population Encoding by Circadian Clock Neurons

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Supplementary Material

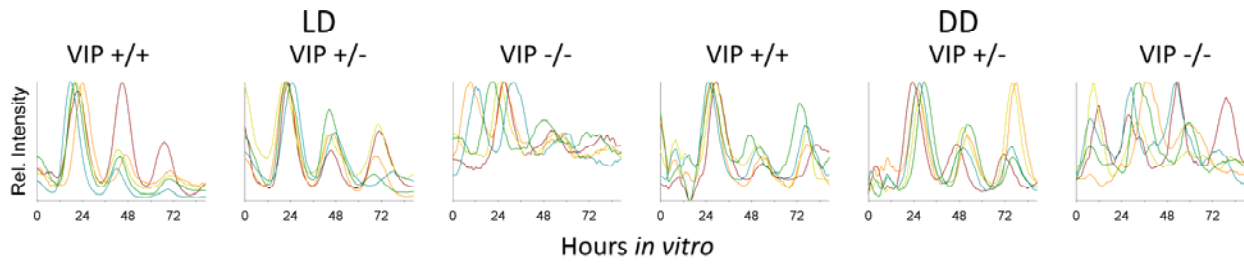
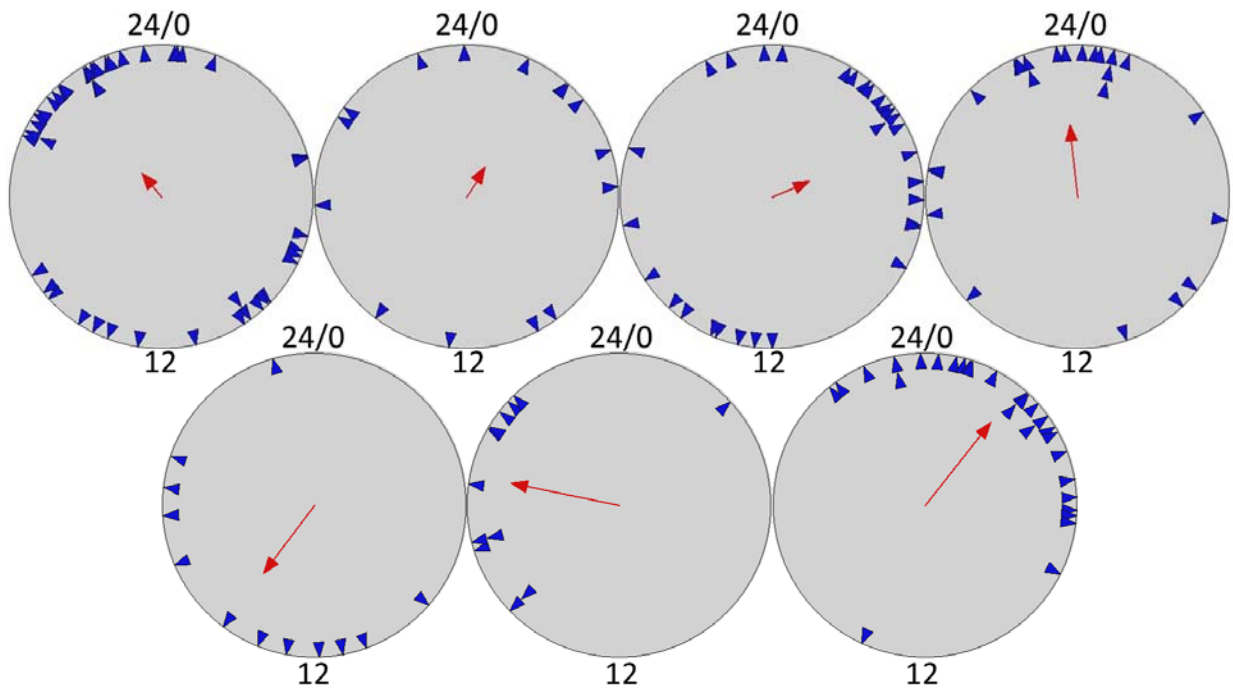
Supplementary Figure 1 Representative examples of *Per1*:GFP rhythms from 5 neurons in an SCN slice from each of the *VIP* genotypes maintained in LD (*left*) and in DD (*right*).

Supplementary Figure 2 Rayleigh plots of rhythmic neuron phases in SCN slices from *VIP*^{-/-} mice in DD (N = 7). Blue arrowheads represent the 50% peak rising phases of individual neurons. Red arrows indicate the mean phase vectors of neurons within each slice, where arrow length is inversely proportional to the neuronal phase variance, and arrow direction indicates timing. Scale indicates time *ex vivo* in hours.

Supplementary Figure 3 Plot of the percent of rhythmic neurons (3+ peaks) per SCN slice for mice of all *VIP* genotypes maintained in LD (*left*) and in DD (*right*). LD: *VIP*^{+/+} (N = 5), *VIP*^{+/-} (N = 5) and *VIP*^{-/-} (N = 4); DD: *VIP*^{+/+} (N = 6), *VIP*^{+/-} (N = 8) and *VIP*^{-/-} (N = 7). Error bars represent SEM.

Supplementary Movie 1 Real-time confocal imaging of *Per1*::GFP reporter fluorescence from a representative *VIP*^{+/+} mouse over 90 consecutive hours.

Supplementary Movie 2 Real-time confocal imaging of *Per1*::GFP reporter fluorescence from a representative *VIP*^{-/-} mouse over 90 consecutive hours.

Supplementary Fig. 1**Supplementary Fig. 2**

Supplementary Fig. 3

