

## Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: **Firing rates of an identified vIPAG GABAergic neuron recorded during sleep.**

The video shows an example optrode recording of a vIPAG GABAergic unit. EEG spectrogram, EMG amplitude, color-coded brain states, and firing rates are shown on the right. The time points of single spikes are represented as vertical lines on the bottom left. 10x speedup.

File Name: Supplementary Movie 2

Description: **Sleep-wake activity of vIPAG GABAergic neurons measured with calcium imaging.**

The video shows an example imaging session of vIPAG GABAergic neurons expressing GCaMP6 (left). EEG spectrogram, EMG amplitude, and  $\Delta F/F$  traces are shown on the right. The ROIs corresponding to the  $\Delta F/F$  traces are indicated by arrows in the imaging video. Scale bar, 100  $\mu\text{m}$ ; 10x speedup.