

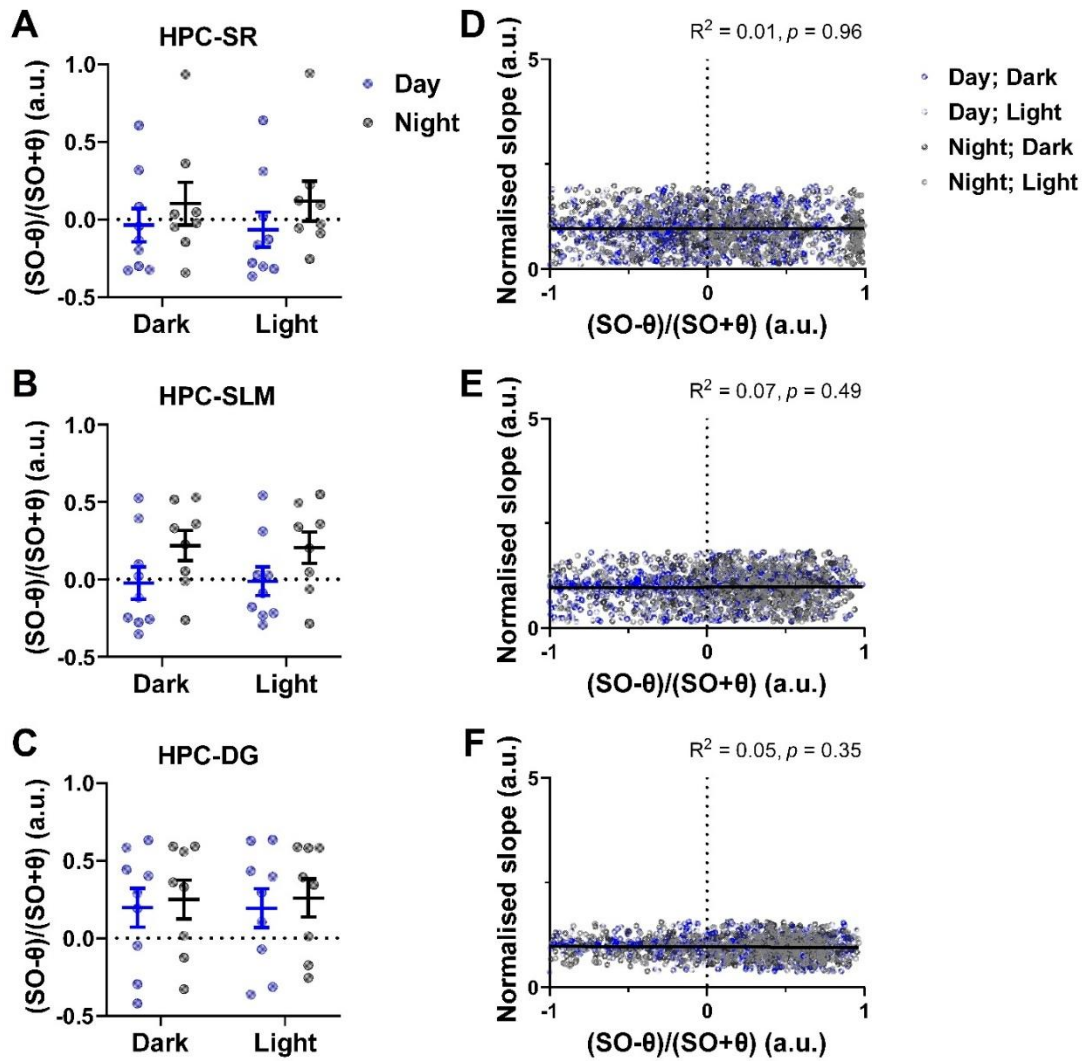


Figure S1. HPC oscillation dynamics and evoked response magnitude remain comparable across epochs of ocular illumination during subjective day versus night. **A-C)** Relative difference in slow oscillation (SO) and theta (θ) power ($\pm$ SEM) across epochs of light versus darkness for the SR (**A**), SLM (**B**) and DG (**C**) from animals recorded during mid-day ($n = 9$) or mid-night ($n = 8$). Each individual dot represents an animal average calculated across five seconds immediately before 120 trials of electrical stimulation (data from input-output protocol). Relationship between oscillation dynamics and the slope of the corresponding evoked responses across individual trials, plotted for the SR (**D**), SLM (**E**) and the DG (**F**), with data pooled across all tested animals and conditions (outlier trials excluded). Slopes are normalised to the per-animal mean value across each of the current intensities (100-300 μ A) used for stimulation. A regression line and its corresponding R^2 and p values are also shown. Data underlying **A-C** analysed by mixed effects ANOVA (time-of-day: $F_{SR}(1, 15) = 0.9$ $p = 0.4$; $F_{SLM}(1, 15) = 2.7$ $p = 0.1$; $F_{DG}(1, 15) = 0.1$ $p = 0.7$, light epochs: $F_{SR}(1, 15) = 0.2$ $p = 0.7$; $F_{SLM}(1, 15) = 0.000008$ $p = 1$; $F_{DG}(1, 15) = 0.09$ $p = 0.8$, time-of-day X light epochs: $F_{SR}(1, 15) = 2.2$ $p = 0.2$; $F_{SLM}(1, 15) = 1.0$ $p = 0.3$; $F_{DG}(1, 15) = 0.5$ $p = 0.5$). Data underlying **D-F** analysed by linear mixed model (SR: random (subject) effect $SD_{intercept} = 0.02$, 95% CI [0.02, 0.02]; $SD_{slope} = 0.1$, 95% CI [0.07, 0.2]; $SD_{correlation} = -1$, 95% CI [NaN, NaN]; fixed effect estimate $(SO-\theta)/(SO+\theta) = 0.002$, SE = 0.04, $t(1834) = 0.05$, $p = 0.96$, 95% CI [-0.07, 0.07], SLM: random (subject) effect $SD_{intercept} = 0.1$, 95% CI [0.08, 0.2]; $SD_{slope} = 0.04$, 95% CI [0.01, 0.1]; $SD_{correlation} = -1$,

95% CI [NaN, NaN]; fixed effect estimate(SO- θ)/(SO+ θ) = 0.02, SE = 0.02, $t(1834) = 0.7$, $p = 0.49$, 95% CI [-0.03, 0.06], DG: random (subject) effect $SD_{\text{intercept}} = 0.06$, 95% CI [0.04, 0.08]; $SD_{\text{slope}} = 0.001$, 95% CI [0.001, 0.001]; $SD_{\text{correlation}} = 1$, 95% CI [NaN, NaN]; fixed effect estimate(SO- θ)/(SO+ θ) = -0.01, SE = 0.02, $t(1834) = -0.9$, $p = 0.35$, 95% CI [-0.04, 0.02]).