



**S1 Fig. Longer exposure time increases signal-to-noise ratio of PER2::LUC rhythms.** (A) Brightfield image of SCN slice culture. Dotted lines indicate third ventricle (3V) and optic chiasm (OC). (B) PER2::LUC Intensity traces from single-cells imaged with 14.5 min exposure time (cf. Fig 1B for 29 min exposure time). Raw bioluminescence intensity traces and corresponding smoothed traces from short photoperiod (SP; anterior;  $n = 131$  cells; top and middle panel), and smoothed traces from long photoperiod (LP; anterior;  $n = 65$  cells; bottom panel). (C) Average amplitude and (D) number of cells from recordings with 14.5 min exposure time, for both LP (green squares, anterior & posterior:  $n = 6$ ), and SP (red dots; anterior:  $n = 5$ ; posterior:  $n = 8$ ). (E) Amplitude and (F) number of cells from the recordings with 29 min exposure time, for LP (green squares;  $n = 6$ ), and SP (red dots;  $n = 4$ ). Black bars indicate mean  $\pm$  SEM.