### Supplementary Fig.2

Temporal relationship between cortical and hippocampal frames were not significantly different between PRE and POST, and were not sensitive to frame definition parameters.  

**a** Average (mean ± s.e, $N = 20$ sleep sessions) cross-correlograms between cortical and hippocampal frame start times (Start) and between their end times (End) during PRE (black) and POST (red). Here the cortex was the reference, meaning a peak at a positive time would indicate the cortex leads the hippocampus. Bin size: 10 ms. There was no significant difference between PRE and POST at each time lag for either Start ($P \geq 0.12$, paired $t$-test) or End ($P \geq 0.11$).  

**b** Peak times of cross-correlograms between cortical and hippocampal frame end times in a sleep session, given different thresholds (see **Supplemental Fig.12** for details) to define cortical (CTX) and hippocampal (HP) frames. For a wide range of thresholds, the peak of the cross-correlogram appeared at 20–60 ms. The peak shifted to negative only if hippocampal threshold was too large. Examples (i–iv) of cross-correlograms at different parameters are shown on top. &: actual parameters used in the analysis.