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Supplemental information

**Subiculum as a generator of sharp wave-ripples
in the rodent hippocampus**

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Fig.S1

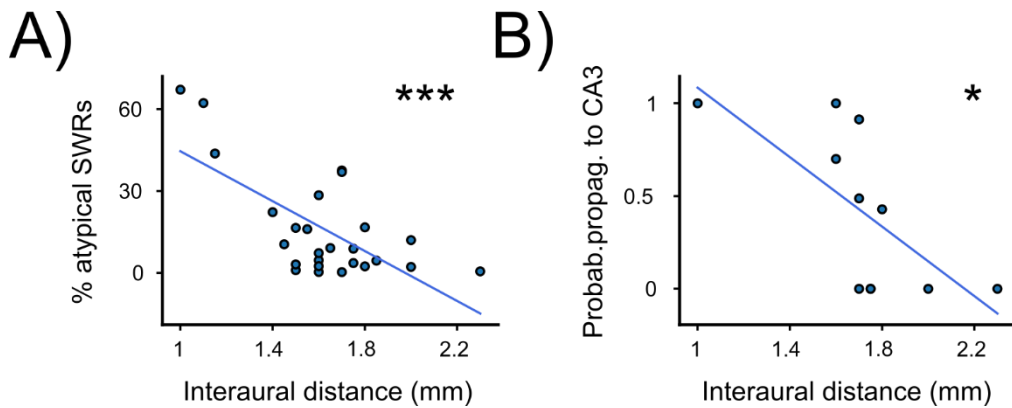


Fig.S1 Probability of atypical SWRs and their back-propagation depending on the dorsoventral axis. **A)** Estimated interaural distance plotted against the percentage of atypical SWRs in each slice and corresponding linear regression (*blue line*). This plot shows that the probability of SWRs with a putative origin downstream to CA3 is higher in slices from the most ventral part of the hippocampus (correlation coefficient $r=-0.67$, $p=0.0002$, $n=26$) in slices where atypical SWRs were observed (26 out of 40 slices from 27 mice). Atypical SWRs were virtually absent in slices with an interaural distance above 2.5-3 mm (data not shown). **B)** Estimated interaural distance plotted against the probability of atypical SWRs to back-propagate to CA3 in each slice and corresponding linear regression (*blue line*). This plot shows that a full back-propagation of atypical SWRs did also depend on the dorso-ventral location of slices (correlation coefficient $r=-0.67$, $p=0.023$, $n=11$) (11 slices from five mice). These analyses are based on the datasets shown in Fig.2 and Fig.4. Related to figure 2.

Fig.S2

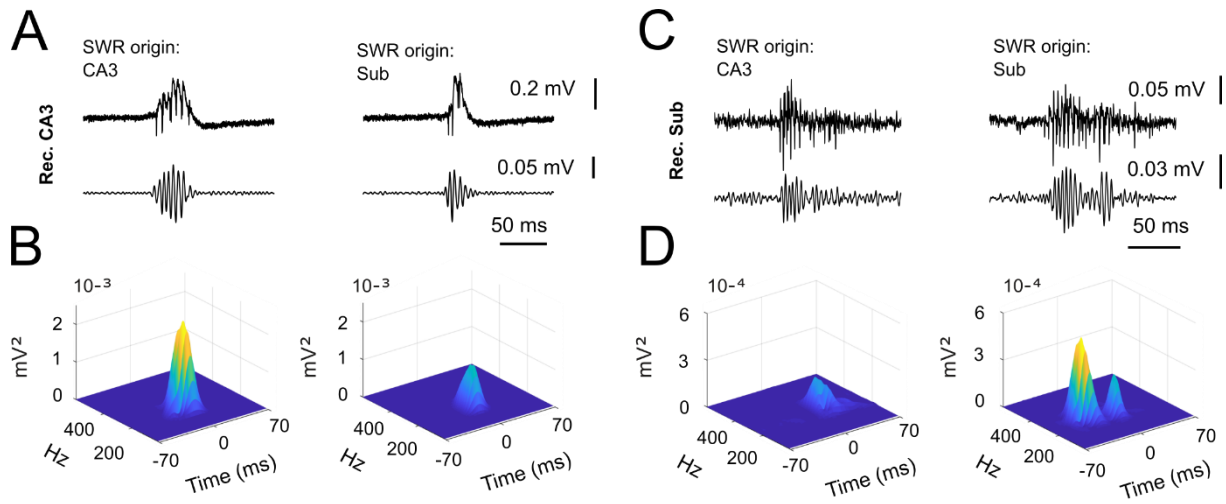


Fig.S2 Differences in the ripple component of SWRs at their apparent origin and after propagation **A)** Representative raw (*top*) and ripple-filtered (150-300 Hz) (*bottom*) signal from a CA3-LFP recording showing a SWR with apparent origin in CA3 (*left*) and in the subiculum (*right*). **B)** 3D spectrograms of the examples in A emphasizing the reduction in ripple power in SWRs originated far from the recording site. **C, D)** same as in A and B but here the signals represent recordings from the subiculum. Data from 8 slices from five mice were analyzed. Related to figure 2.

Fig.S3

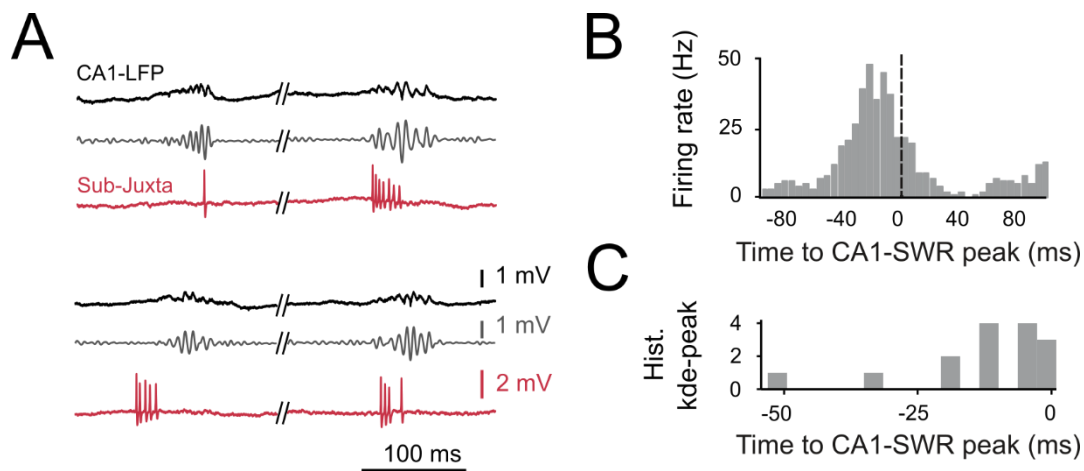


Fig.S3 Simultaneous CA1-LFP and subicular juxtacellular recordings showing that the firing of subicular neurons often precede the peak of SWRs detected in CA1 in vivo. Dataset obtained in head-fixed, awake mice. **A)** Four examples of raw (*black*) and ripple-filtered (100-220 Hz) (*grey*) CA1-LFP signals and their corresponding subicular juxtacellular signals (*red*) from one representative recording. **B)** Peri-SWR spike-time histogram (PSTH) for the recording shown in A. **C)** Histogram distribution of the kernel density estimate peak-time of the PSTH for each of the 15 recordings (from 11 mice). Note that, in a portion of recordings, the increased activity of subicular neurons reached its peak even tens of ms before the CA1-SWR peak. Related to figure 6.