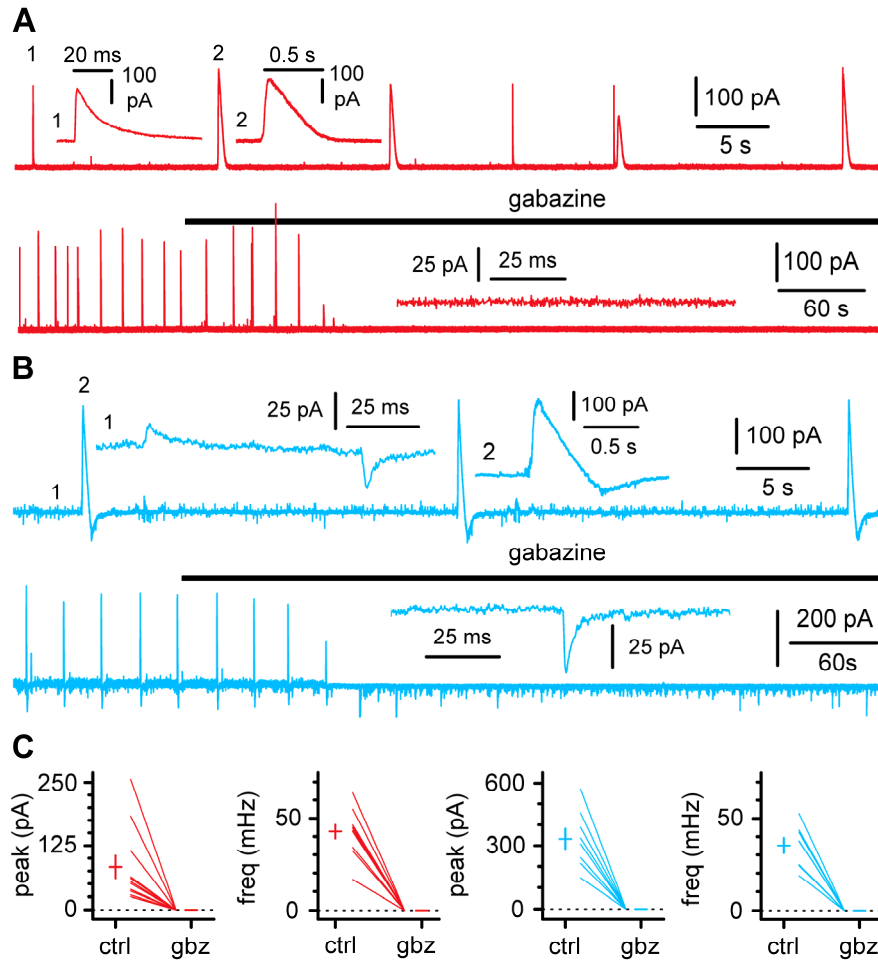


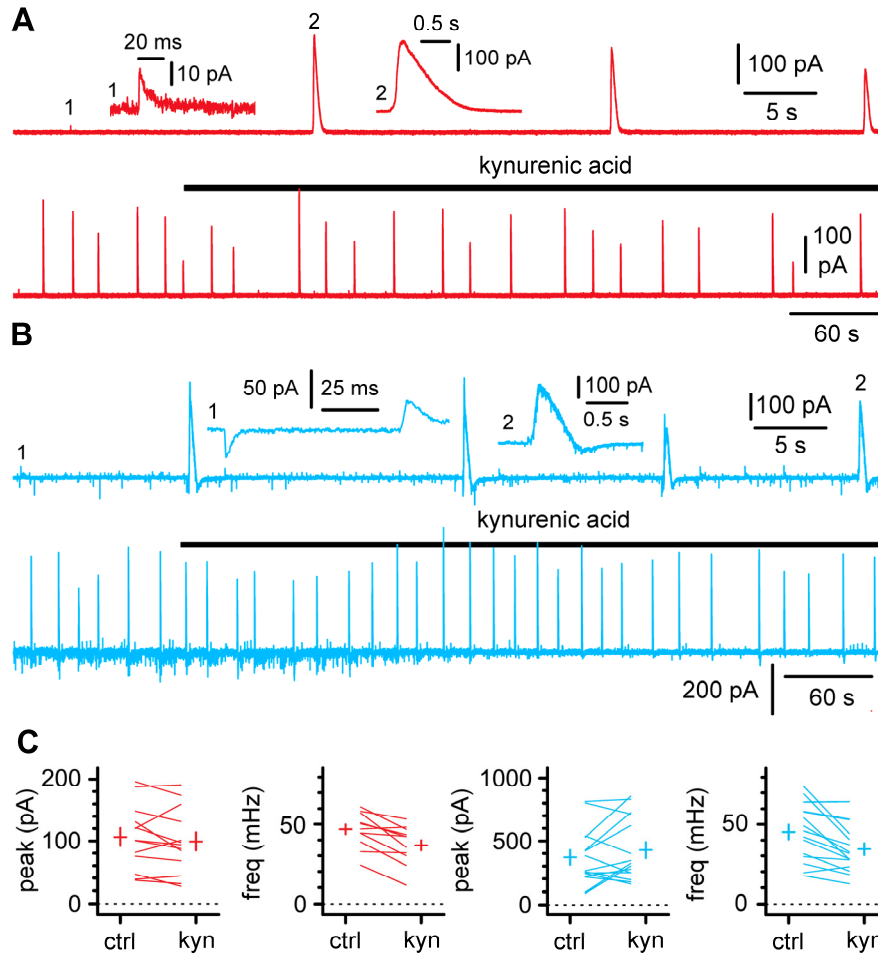
Suppl Fig 1. Anatomical characteristics of several reconstructed Cajal-Retzius cells. Notice the consistent presence of a unique main dendrite (red) and the axonal emergence (black) at the opposite pole of the soma. Notice also the variability of dendritic orientation: although several cells had the main dendrite oriented parallel to the fissure (dashed line), more complex trajectories were also found. Notice also that the dendrite could develop either towards the CA3 subfield or in the opposite direction.



Suppl Fig 2. 4-AP-induced GABAergic synchronization is mediated by GABA_A receptors in Cajal-Retzius cells (red) and stratum lacunosum-moleculare interneurons (blue). **(A):** Upper panel: voltage-clamp recordings at -35 mV from a CR. Insets show spontaneous events (1=non epileptiform, and 2=epileptiform) at a larger temporal scale. Notice the absence of spontaneous inward currents. Lower panel: full blockade of epileptiform outward currents by gabazine. Notice in the inset the complete absence of spontaneous activity. **(B):** Similar experiment recorded in an interneuron. Notice in the upper panel the presence of spontaneous non-epileptiform events of both outward and inward directions (1, shown enlarged in the inset). Epileptiform events (2, also shown enlarged in the inset) are biphasic, as described by Zsiros et al. (2007). Lower panel: notice the residual non epileptiform inward currents

during the perfusion of gabazine. (C): Summary plots from several experiments indicating the effect of gabazine on the amplitude and frequency of epileptiform events in Cajal-Retzius cells and interneurons.

Mean \pm SE are shown by the horizontal and vertical bars, respectively.



Suppl Fig 3. 4-AP-induced epileptiform currents are not mediated by ionotropic glutamate receptors in Cajal-Retzius cells (red) and stratum lacunosum-moleculare interneurons (blue). **(A)**: Upper panel: voltage-clamp recordings at -35 mV from a CR. Insets show spontaneous events (1=non epileptiform, and 2=epileptiform) at a larger temporal scale. Notice the absence of spontaneous inward currents. Lower panel: kynurenic acid does not affect the amplitude of epileptiform outward currents. **(B)**: Similar experiment recorded in an interneuron. Notice in the upper panel the presence of spontaneous non-epileptiform events of both outward and inward directions (1, shown enlarged in the inset). Epileptiform events (2, also shown enlarged in the inset) are biphasic, as described by Zsiros et al. (2007). Lower panel: notice that kynurenic acid selectively blocks non-epileptiform inward currents, but leaves the

amplitude of epileptiform outward currents unaffected. (C): Summary plots indicating the effect of kynurenic acid on the amplitude and frequency of epileptiform events in Cajal-Retzius cells and interneurons. Mean \pm SE are shown by the horizontal and vertical bars, respectively.