

Supporting Information

Middleton *et al.* 10.1073/pnas.0809302105

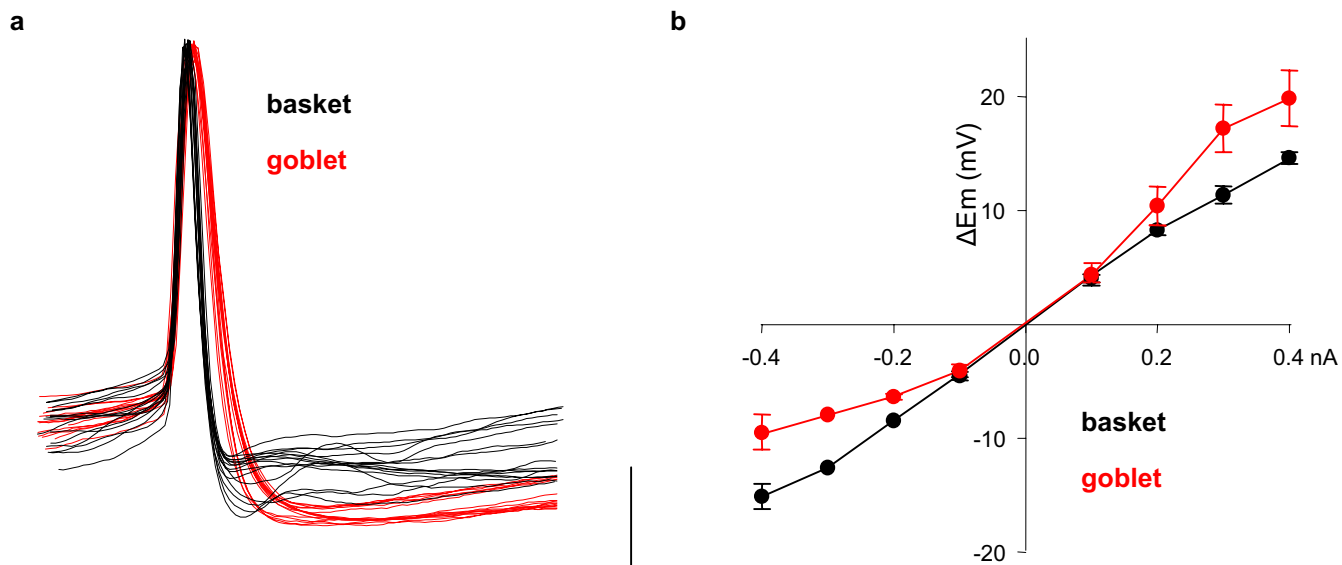


Fig. S1. Characterization of basket and goblet interneurons. (A) Superimposed traces normalized for amplitude demonstrate that action potentials in goblet cells (red) are characterized by their longer duration and are followed by a longer AHP as compared to those in basket cells (black). (B) Voltage-current relationship for basket (black, $n = 5$) and goblet (red, $n = 5$) cells, data are represent at each point as mean \pm SEM. (Scale bars, 10 mV and 2 ms.)

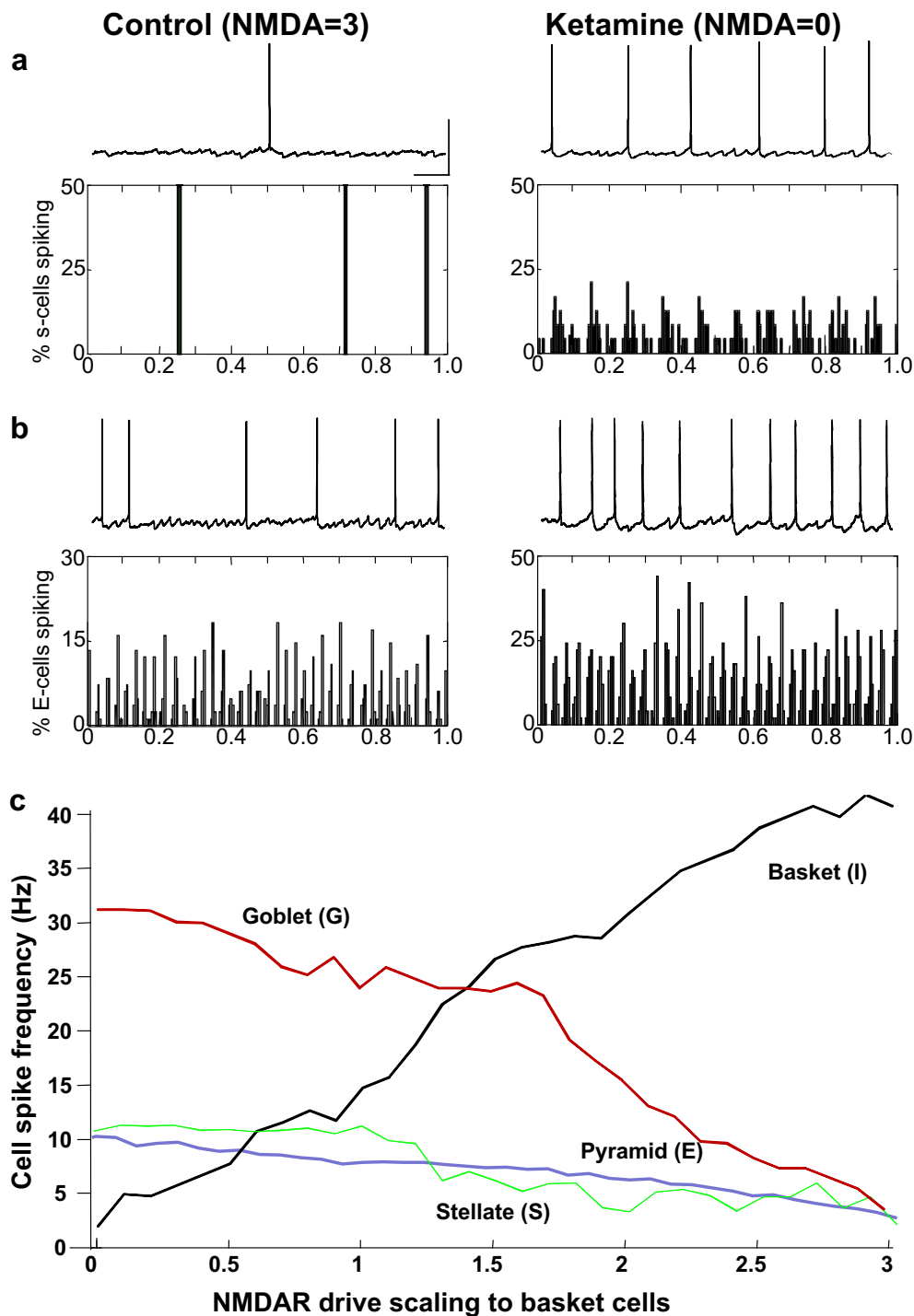


Fig. S2. Changes in neuronal subtype spike rates are accurately reproduced using a four-subtype analytical model. Using the network structure illustrated in Fig. 1, ketamine effects were modeled by a single manipulation—reduction in tonic drive to fast spiking basket cells. This change alone predicted the pattern of spike changes in all cells seen in experiment. (A) One second epoch, example traces from a stellate cell recorded in control experimental conditions and in the presence of ketamine. Graphs below show the percentage of stellate cells (s-cells) spiking at any given time during a 1 s simulation using the model. Note both experiment and model show large increase in spike rates for this cell type. (B) One second epoch, example traces from a LIII pyramidal cell recorded in control conditions and in the presence of ketamine. Graphs below show the percentage of pyramidal cells (E-cells) spiking at any given time during a 1 second simulation. Note, as with stellate cells, both experiment and model show large increase in spike rates in the presence of ketamine. Changes in spike rates for goblet (G) and basket (I) cells are shown in detail in Fig. 3. (C) Summary of the spike rate changes in each of the four cell subtypes used to construct the model. For a range of I-NMDA drive scales from 0 (“ketamine” condition) to 3.0 (“control” condition) a gradual increase in basket cell spike rates was seen. This increase in the degree of fast inhibition in the model network was accompanied by a decrease in spike rates for each other cell type (pyramidal cell, stellate cell and goblet).

Other Supporting Information Files

[SI Appendix](#)