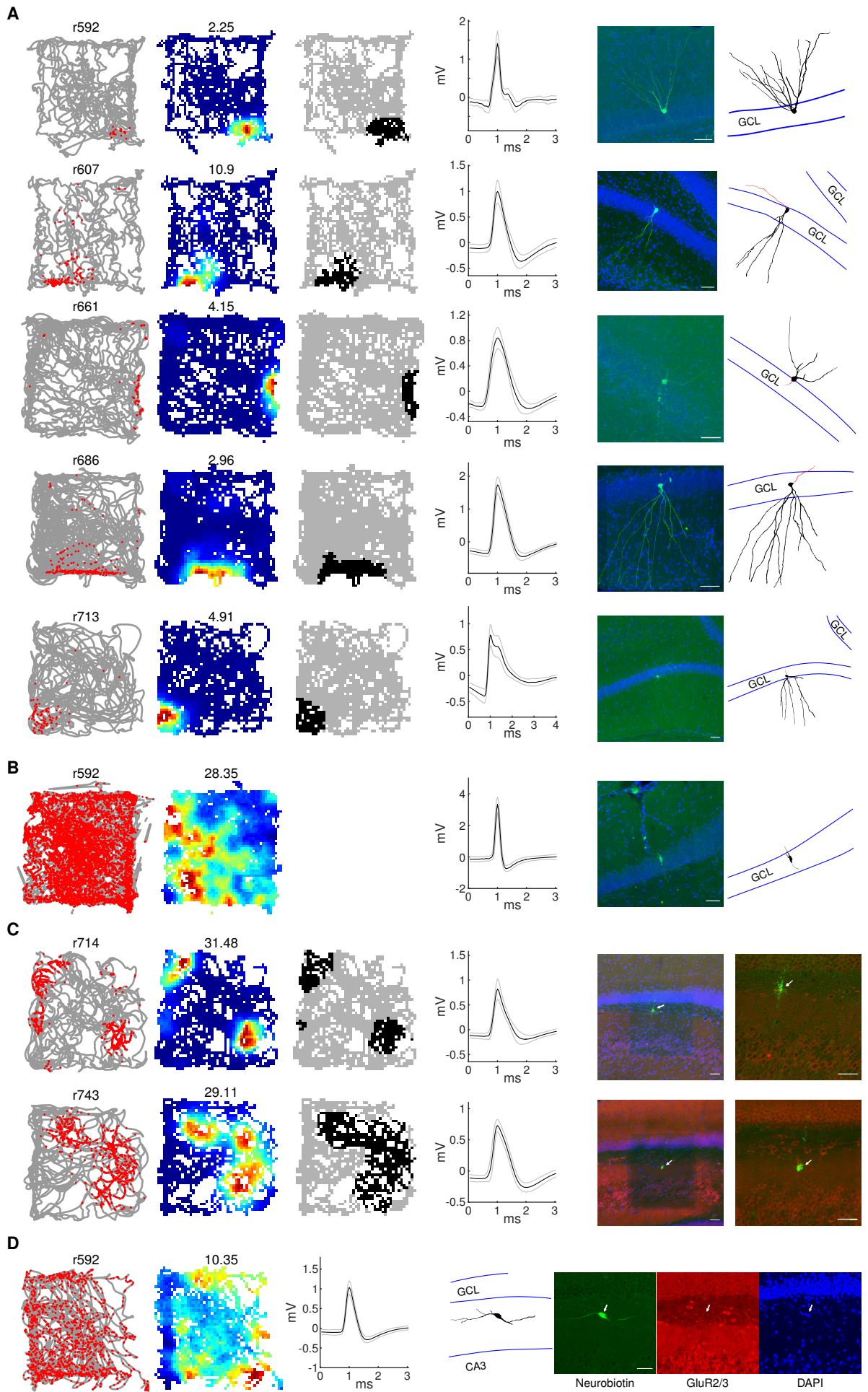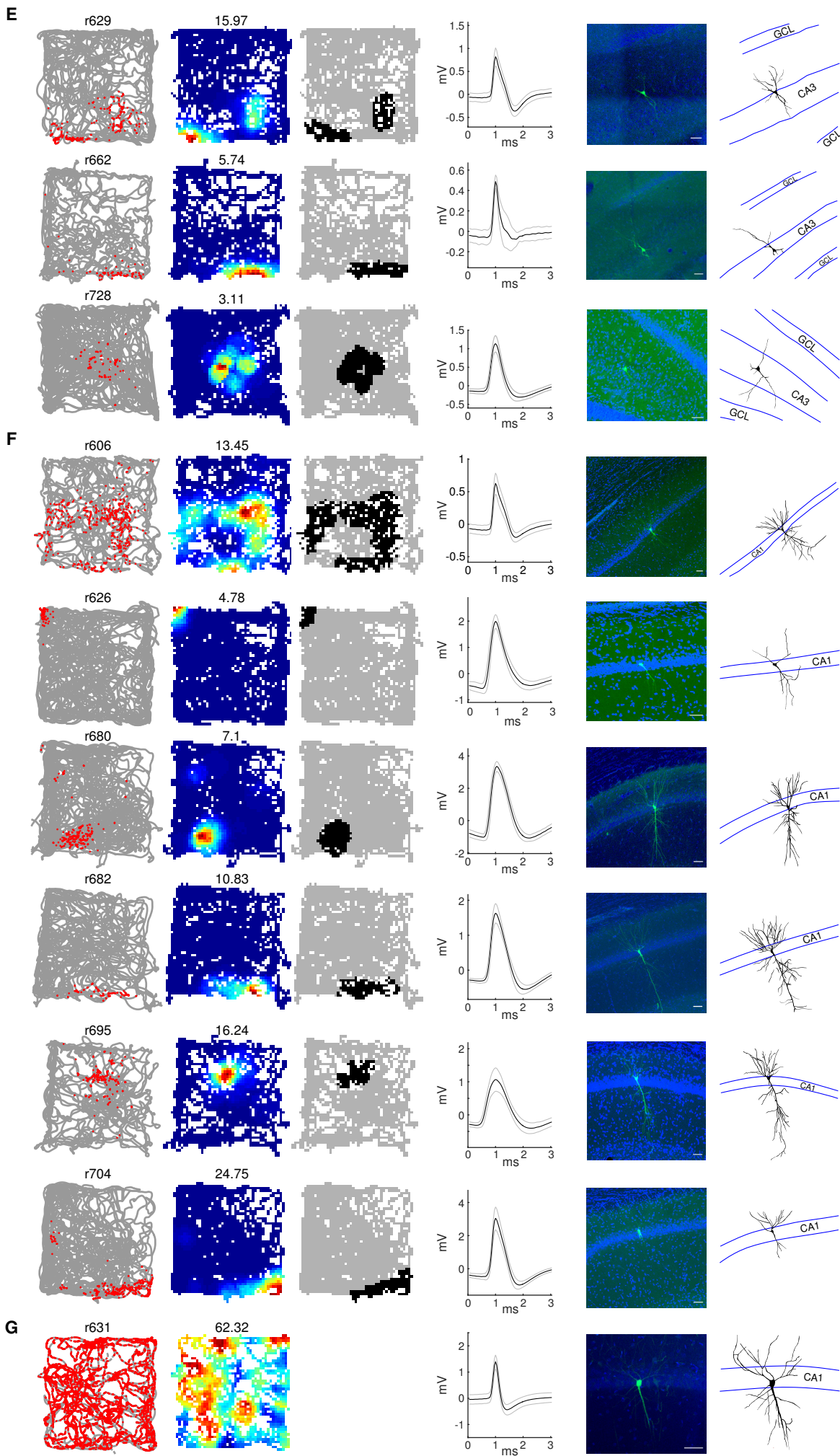**Data S1. Spatial firing of all cells; related to Figures 3-6**

A-G) All plots and rate maps of all juxtacellularly labeled hippocampal cells not illustrated in the main text. Convention is the same as Figures 5-6. A) Five granule cells. B) One putative interneuron in the GCL. C) Two putative mossy cells in the hilus. Arrows indicate the tracer deposits at the end of the glass electrodes (Duque and Zaborszky, 2006) in the hilus. One cell (bottom) was considered to have a single field using our field detection criteria, but the ratemap reveals multiple firing peaks, more similar to the multi-field firing of mossy cells than the clear single fields seen in identified granule cells. D) One hilar interneuron negative for GluR2/3. This cell did not show spatial selectivity and had low burstiness (6-ms burst index = 0.03). The mean firing rate of this cell was 4.43 Hz. E) Three CA3 cells. F) Six CA1 cells. G) One putative interneuron in CA1. H-J) Active cells from tetrode recordings, divided by random forests classification into hilus, GCL, and CA3. The spatial firing of all cells out of the 242 cells that were active in at least one environment is shown. H) 32 active cells classified as hilar recordings. Only one cell was silent in all four environments (3.03% of hilus cells) and is not shown. I) 25 active cells classified as GCL recordings; 87 cells that were silent in all environments (77.6% of GCL cells) are not shown. J) 59 active cells classified as CA3 recordings. 38 cells that were silent in all environments (39.2% of CA3 cells) are not shown. For all cells, the trajectory (gray) and spiking (red) is shown for all four foraging sessions. If significant spatial firing was detected in an environment, the rate map for that session was plotted below, with the peak firing rate of the cell between the two. On the left, the rat number (r) and tetrode number (tt) are listed for each cell.

E

r629   15.97

r662   5.74

r728   3.11

F

r606   13.45

r626   4.78

r680   7.1

r682   10.83

r695   16.24

r704   24.75

G

r631   62.32

3

r600 tt1	10.4734	9.9331	12.7185	8.7353
r600 tt1	22.6087	15.6226	27.7099	6.1947
r600 tt2	34.6154	9.5519	35.9654	
r600 tt2	24.5192	21.2755	30.3198	3.8686
r600 tt2	11.7143	10.9884		
r600 tt4	18.6	17.0079	3.0753	15.142
r599 tt7	4.7153	7.8295	7.156	
r599 tt8	2.4609	6.9059	2.8982	12.5926

r599 tt8	4.539			6.96
r599 tt8		6.6189	5.5629	9.2647
r599 tt13	3.6306	9.8294	11.9865	9.802
r599 tt13	14.8608	5.2941	10.9091	6.0759
r454 tt12	13.1494	6.9072	10.708	11.2133
r454 tt14	5.4362		7.2581	7.0866
r454 tt14	0.87121		5.1936	
r454 tt15	9.3195	19.6296	12.7734	6.7105

4

r532 tt4 8.4   10.267   12   12.9888

r386 tt6 20.152   7.7974   33   20.1492

r532 tt4 5.6637   2.7146   9.6032   9.1304

r386 tt7 8.1972   16.6321   3.1403   10.8711

r532 tt4 7.8378   7.9787   6.3402

r386 tt7 11.7811   11.3056   28.6066

r532 tt9 13.6111   12.2006   10.6479   20

r386 tt11 14.459   1.5371   2.7063

r532 tt13 3.3068   7.1383   13.3813   1.6147

r386 tt13 12.031   25.7447   16.2414   2.4112

r532 tt15 10.8219   4.1803   16.1638   7.0018

r386 tt13   4.0994   14.8495   10.3815

r532 tt15 3.1765   7.5342   2.3723   4.4118

r455 tt4 9.9787   21.4426   6.9512   5.9639

r532 tt16 22.9412   1.3966   4.8817   1.9203

r455 tt4 3.7367   12.0885   2.115   2.6706

5

r422 tt9   1.8868

r422 tt13   12.3988

r455 tt2   6.4343

r455 tt5   3.7725

r455 tt5   11.5868   3.9425

r455 tt2   2.3431   1.4778   9.4   12.4873

r455 tt2   2.1378   16.1372   0.58252

r455 tt5   1.3656

r455 tt5   7.6339