Supporting Information

de Kock and Sakmann 10.1073/pnas.0904143106

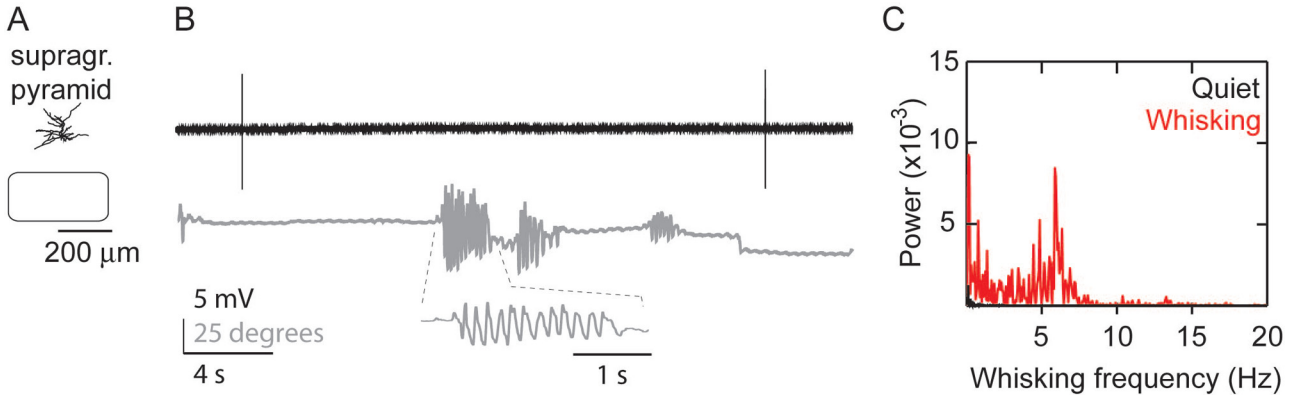

Fig. S1. Spiking frequency in primary somatosensory cortex is typically low and does not correlate to whisker movement. (*A*) Neurolucida reconstruction of supragranular pyramidal neuron in coronal view (contour represents B1 barrel). (*B*) Action potential spiking (band-pass filtered from 300–9,000 Hz) and whisker tracking during juxtasomal recording of same supragranular pyramid in primary somatosensory cortex. (*C*) Power spectrum for quiet and whisking episodes.

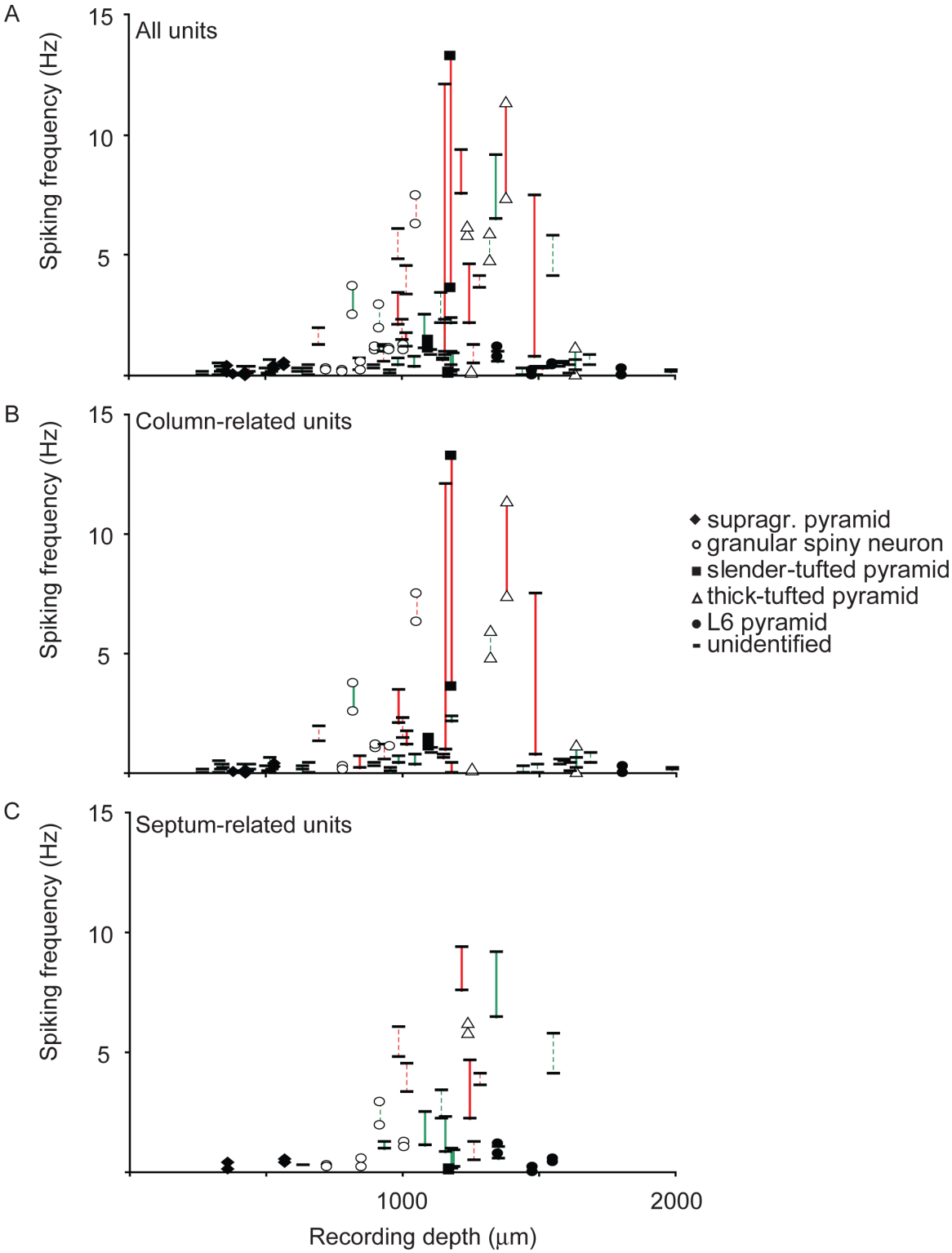

Fig. S2. Change in spiking frequency is observed in both septal and column related neurons. (*A*) Correlation of spiking frequency during quiet and whisking episodes with respect to recording depth (see Fig. 2*C*). In *B* and *C*, units were subcategorized in either column-related (*B*) or septum-related (*C*) units, respectively. Barrel or septal location of unidentified neurons was determined by using location of identified neurons on same electrode track.

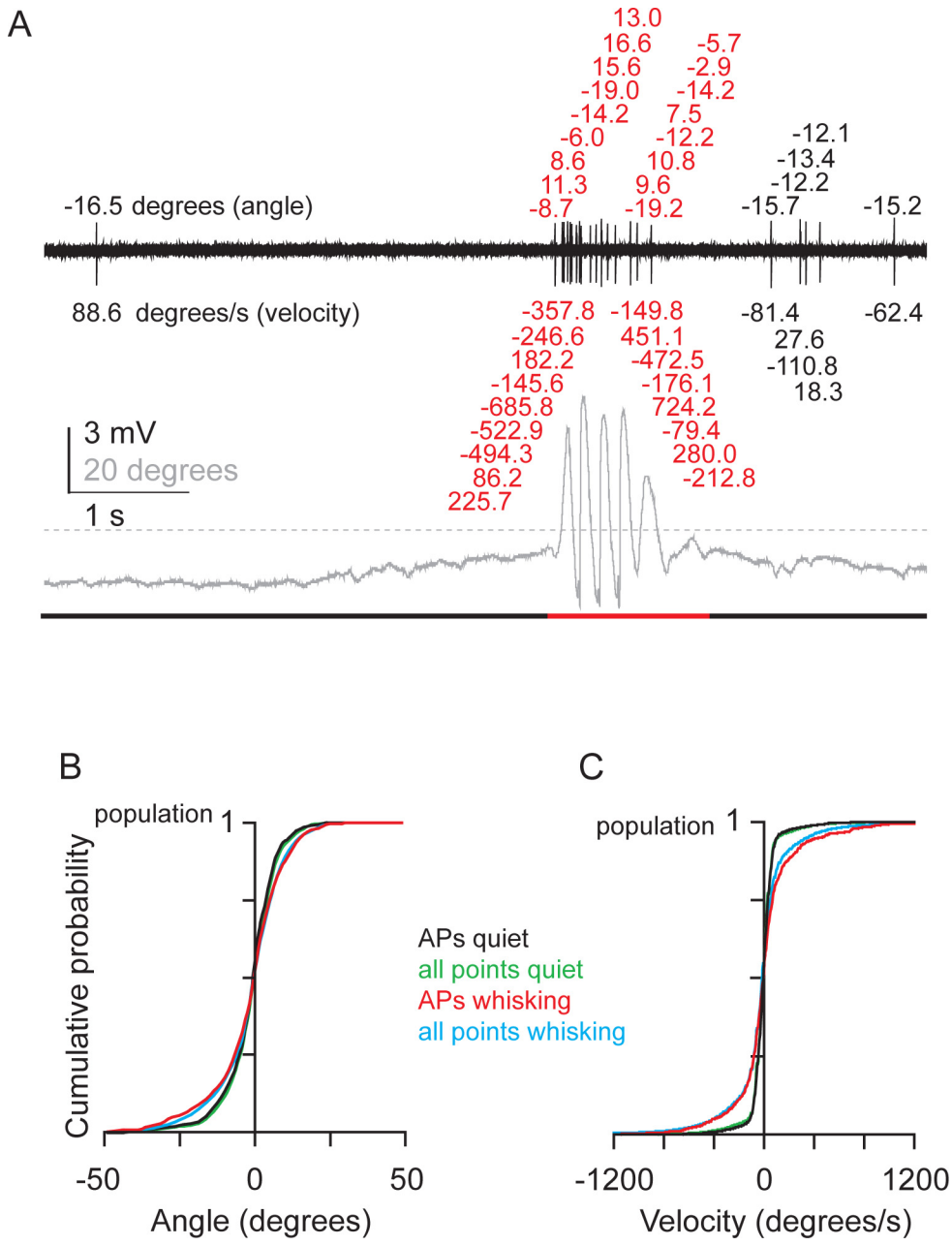

Fig. S3. Spike times correlate weakly to whisker position and velocity. (*A*) Example trace illustrating the range of whisker position during spiking. Black and red episodes represent quiet and whisking episodes, respectively (see *Methods*). (*B*) Cumulative angle distribution during quiet and whisking episodes for the population taking into account all points (green and blue) or times when only spike occurred (black and red), respectively. (*C*) Analogous to *B*, but for whisker velocity.

Table S1. Spiking frequencies (avg ± SD in Hz) with number of observations in parentheses and recording depth [avg ± SD in μm] in brackets

Neurons	Urethane	Awake quiet identified	Awake whisking identified	Awake quiet all units	Awake whisking all units
Supragranular pyramids	0.39 ± 0.56 (22) [393 ± 109]	0.31 ± 0.21 (5)	0.18 ± 0.16 (5)	0.28 ± 0.28 (23) [466 ± 116]	0.22 ± 0.40 (22)
Granular spiny neurons	0.58 ± 0.36 (15) [834 ± 116]	1.93 ± 2.02 (9)	1.77 ± 2.29 (9)	1.35 ± 1.72 (15) [899 ± 85]	1.36 ± 1.90 (14)
Slender-tufted pyramids	1.08 ± 0.38 (16) [1126 ± 116]	1.62 ± 1.81 (3)	4.94 ± 7.22 (3)	1.88 ± 1.71 (25) [1122 ± 88]	3.04 ± 3.77 (23)
Thick-tufted pyramids	3.27 ± 1.63 (23) [1238 ± 76]	4.12 ± 3.22 (5)	4.53 ± 4.84 (5)	2.93 ± 3.08 (15) [1415 ± 120]	3.52 ± 3.68 (13)
L6	0.47 ± 0.46 (15) [1537 ± 102]	0.52 ± 0.47 (4)	0.32 ± 0.38 (4)	0.47 ± 0.35 (10) [1627 ± 174]	0.34 ± 0.24 (10)

Unidentified neurons were categorized based on recording depth, taking into account the depth of layers as determined by de Kock et al. [de Kock CP, Bruno RM, Spors H, Sakmann B (2007) Layer and cell type specific suprathreshold stimulus representation in primary somatosensory cortex. *J Physiol* 581:139–154].