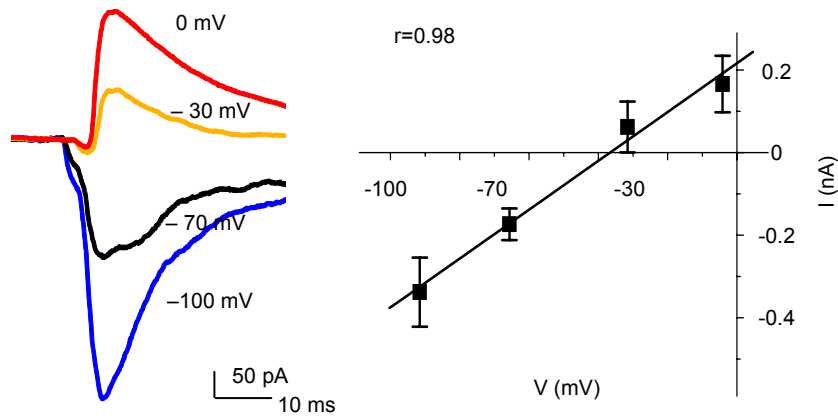


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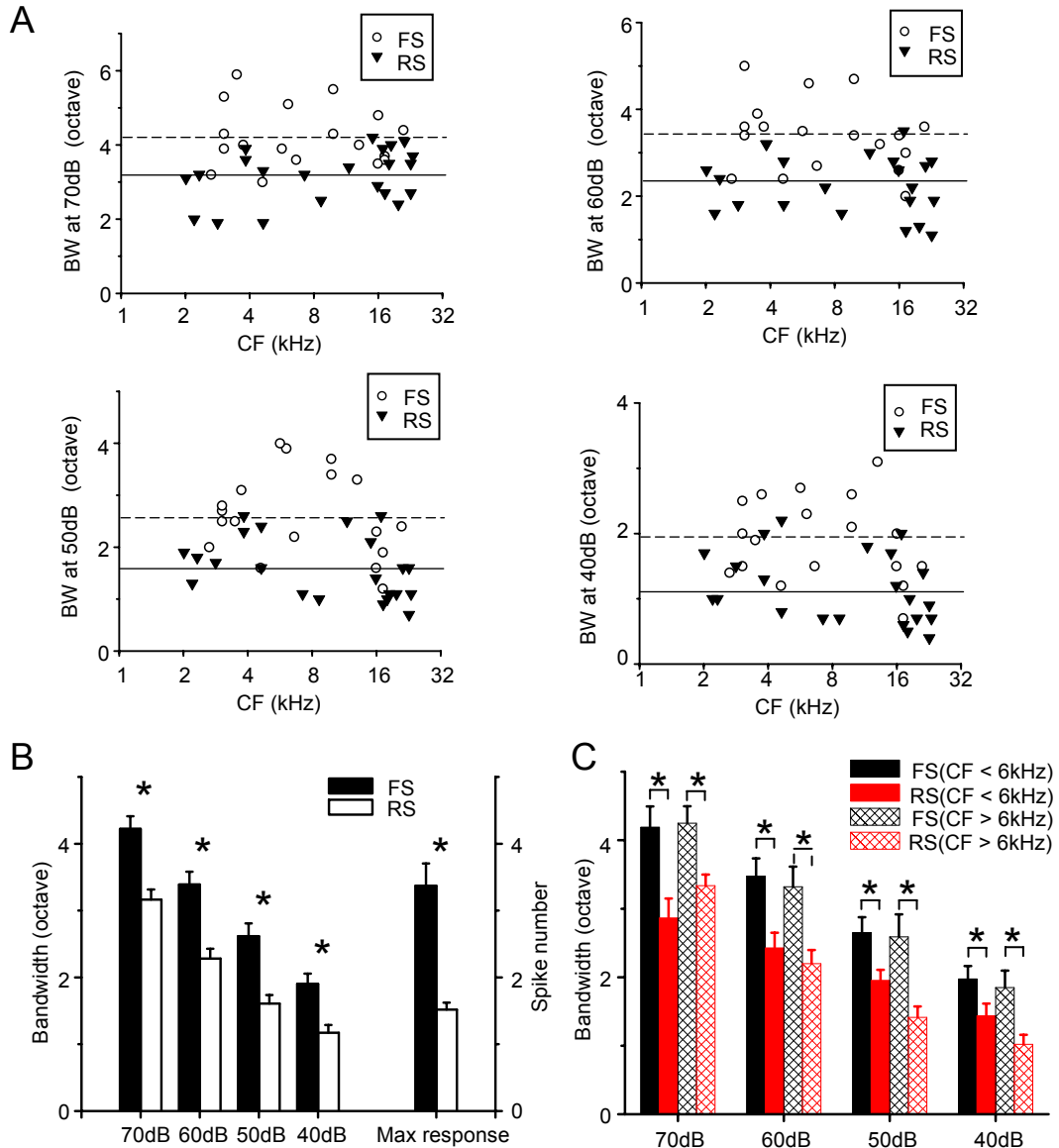
**Supplemental Data**

**Lateral Sharpening of Cortical Frequency Tuning by  
Approximately Balanced Inhibition**

**Guangying K. Wu, Robert Arbuckle, Bao-hua Liu, Huizhong W. Tao,  
and Li I. Zhang**

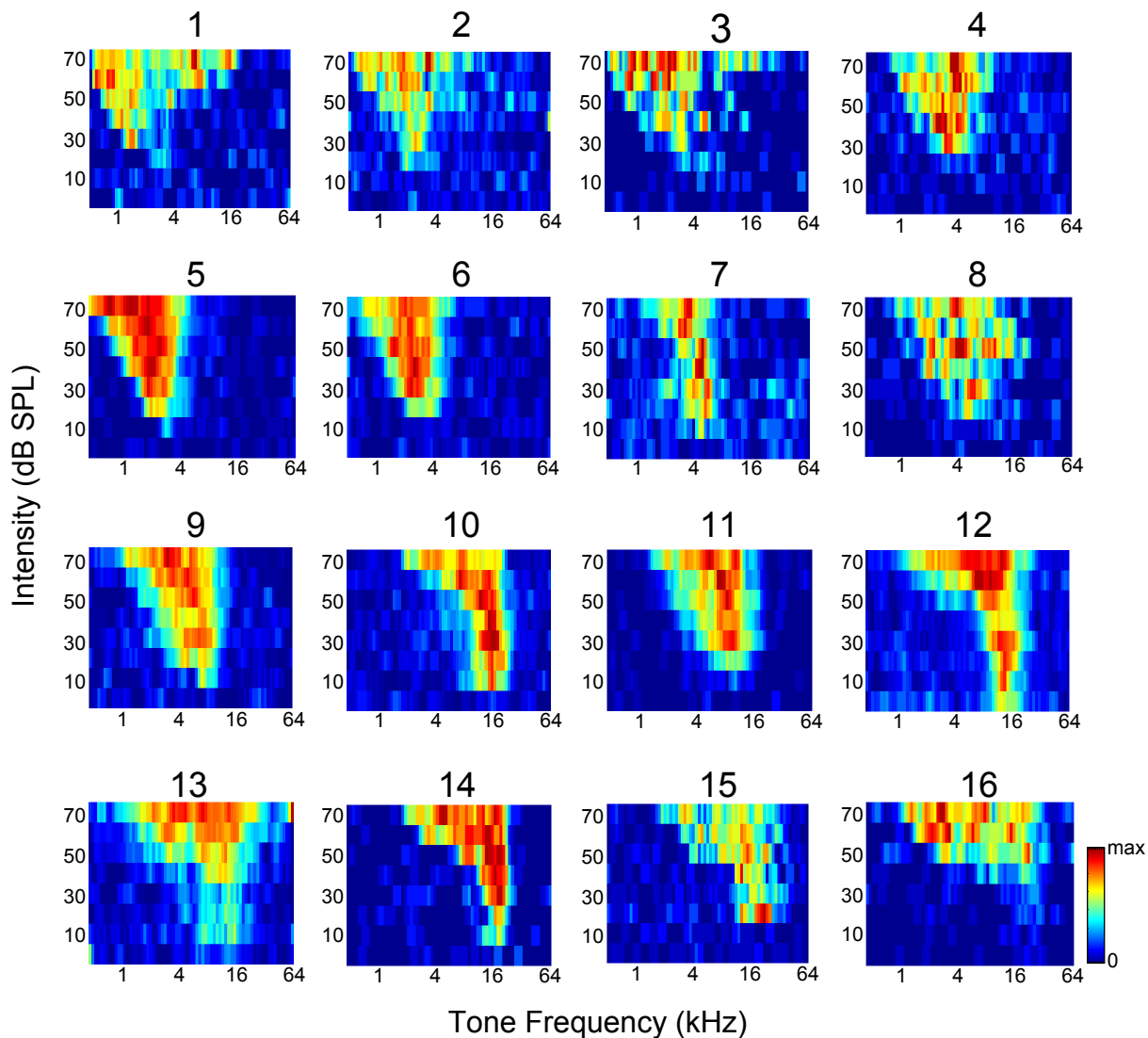


**Supplementary figure 1:** I-V relation from the neuron shown in Fig.1. Left, average synaptic currents (five repeats) evoked by a tone at 5.2kHz and 60 dB at different holding potentials as indicated. Right: I-V curves for currents averaged within the 20-22.5ms window after the stimulus onset. “r” is the correlation coefficient.

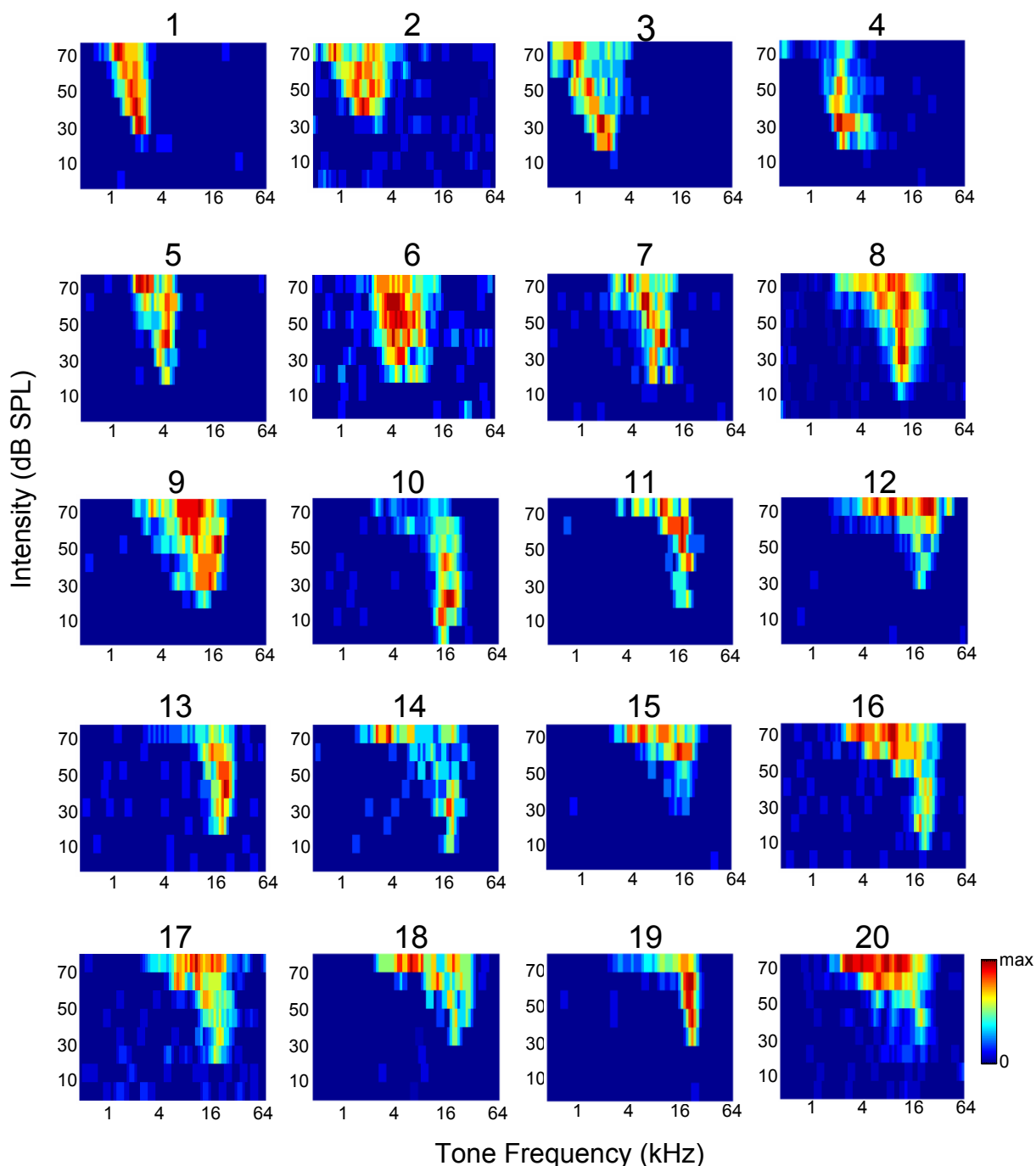


**Supplementary figure 2: Spike TRFs of regular-spike (RS) and fast-spike (FS) neurons.**

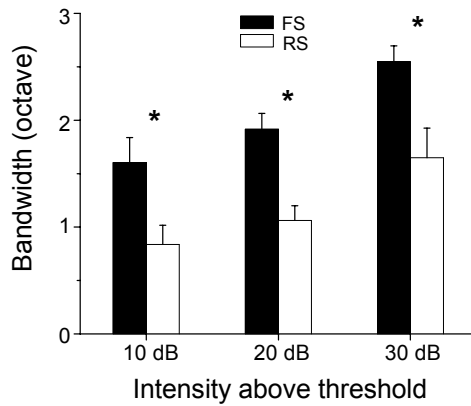
**A.** Bandwidths at various testing intensities (40-70 dB SPL) of loose-patch recorded cells were plotted according to their characteristic frequencies (CF). The dash or solid lines indicate the averaged bandwidths of FS or RS neurons, respectively. **B.** Summary of the averaged bandwidths. Right, maximum number of evoked spikes within 10-40 ms time window after the onset of the tone stimulus. (n=18 for FS and 22 for RS; \*: two-sample t-test,  $p < 0.005$ ). **C.** Summary of the averaged bandwidths into two sampling groups: CF < 6kHz and CF > 6kHz. (n=8 for FS & CF<6kHz, 8 for RS & CF<6kHz, 10 for FS & CF>6kHz. and 14 for RS & CF>6kHz, \*: two-sample t-test,  $p < 0.005$ ). Bar=SE.



**Supplementary figure 3:** Spike TRFs of FS neurons recorded with loose-patch technique. TRFs of sixteen cells (1-16) from eighteen recordings were shown in color maps. Each TRF was averaged from 2-5 repetitions. The max scales of the color bar are: 4 in (1), 1.67 in (2), 6 in (3), 6 in (4), 3.3 in (5), 2.7 in (6), 1.75 in (7), 3 in (8), 2.75 in (9), 3 in (10), 3 in (11), 5 in (12), 3 in (13), 3 in (14), 4 in (15), 1.75 in (16).



**Supplementary figure 4:** Spike TRFs of RS neurons recorded with loose-patch technique. TRFs of twenty cells (1-20) from twenty-two recordings were shown in color maps. Each TRF was averaged from 2-4 repetitions. The max scales of the color bar are: 2 in (1), 2 in (2), 1.5 in (3), 1.5 in (4), 0.8 in (5), 1.333 in (6), 2 in (7), 2 in (8), 1.5 in (9), 2.5 in (10), 0.667 in (11), 2 in (12), 1 in (13), 1 in (14), 1 in (15), 1.25 in (16), 1.667 in (17), 2 in (18), 1.333 in (19), 1.5 in (20). Among those cells, FS cells (15) and (11) were recorded from cortical sites close to RS (18) and (7) in the same animal preparations, respectively.



**Supplementary figure 5.** Bandwidths of spike tuning curves in FS (n = 18) and RS neurons (n = 22) at various intensities.

The spike TRF (obtained and averaged from loose-patch recording) of each cell at 10dB, 20dB, 30dB SPL above the spiking threshold were fitted using Gaussian function. The bandwidths of derived tuning curves at each intensity were then measured where the values were 1/e of the peak amplitude in the fitting curves. Bar = SEM. \*,  $p < 0.02$ , two-sample t-test)