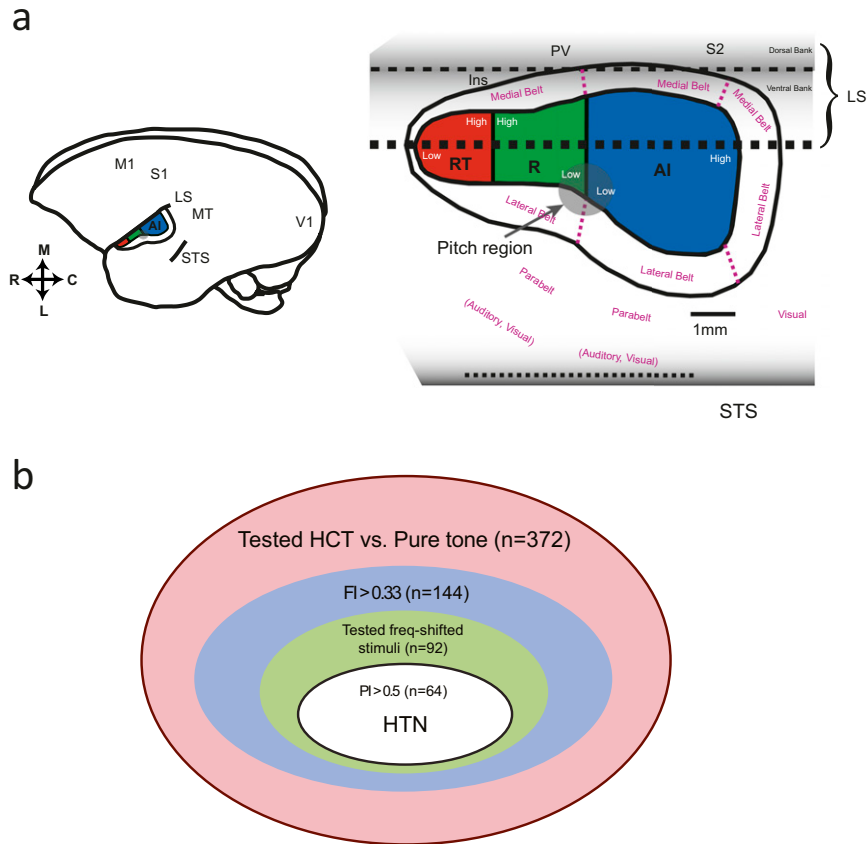
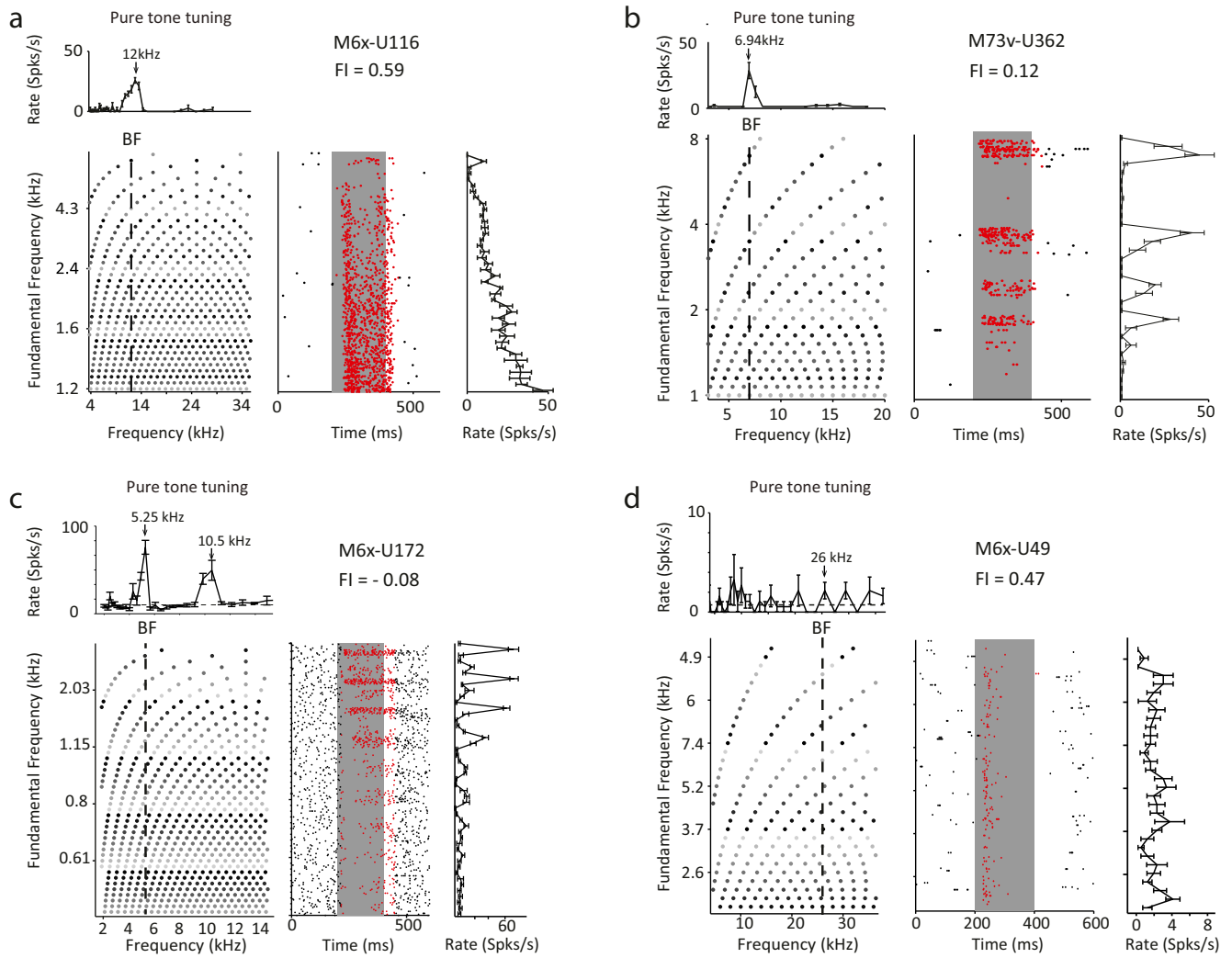


# Supporting Information

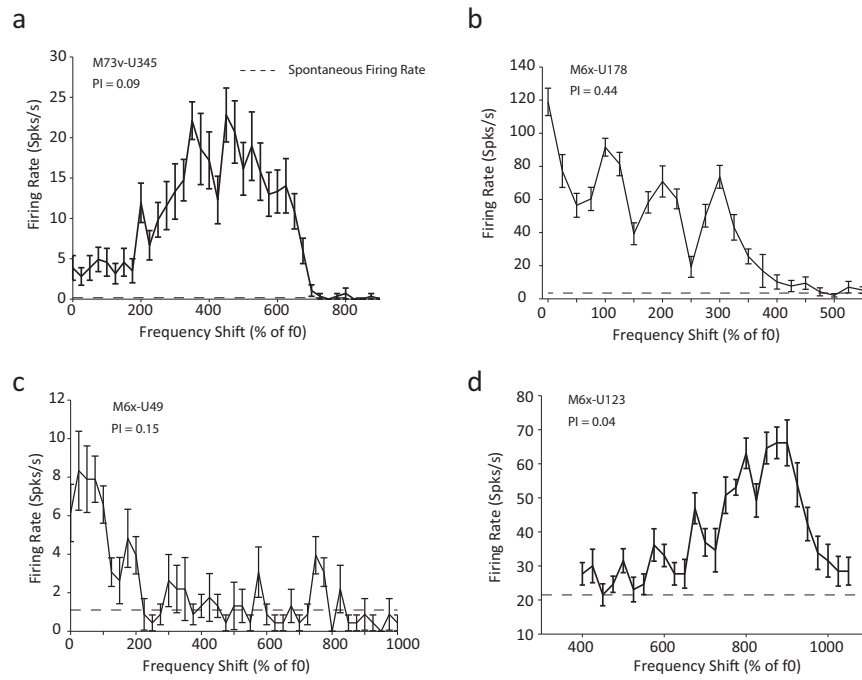
Feng and Wang 10.1073/pnas.1607519114



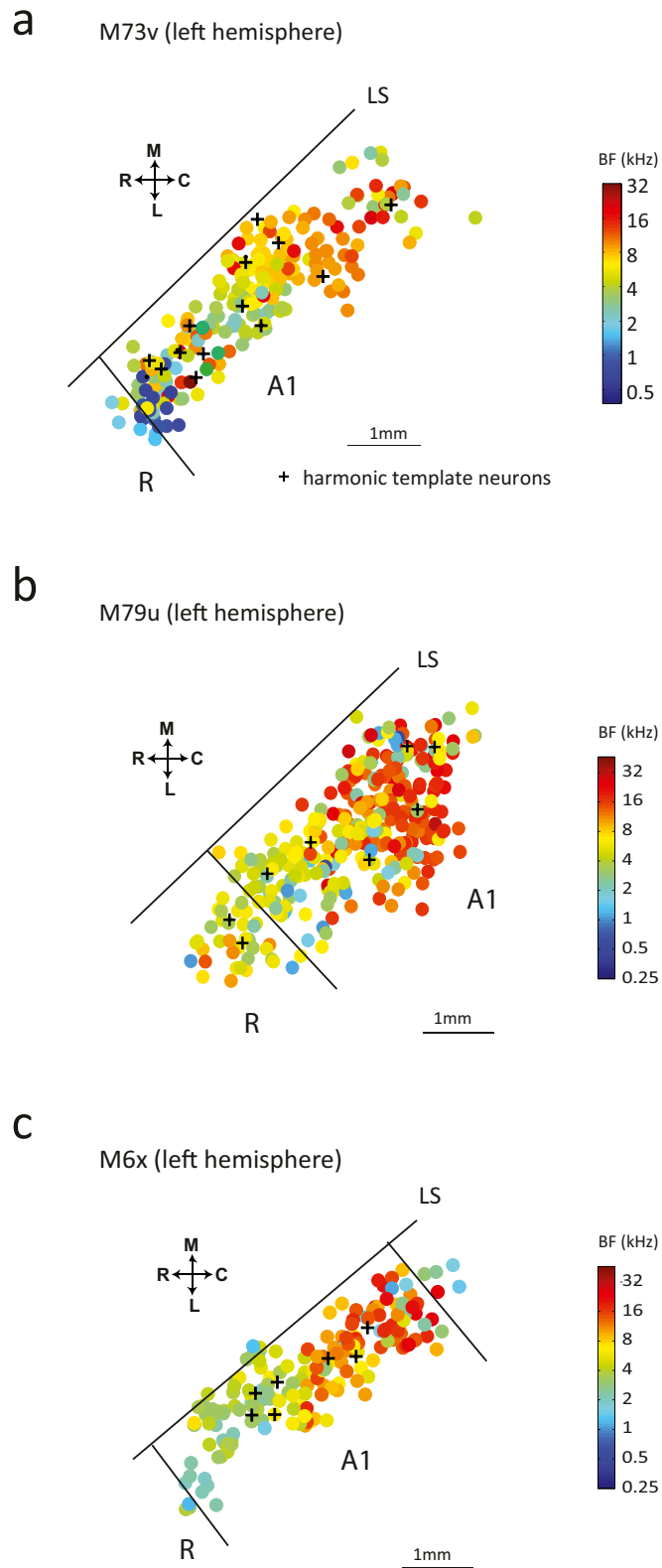
**Fig. S1.** (A) A schematic drawing showing the organization of marmoset auditory cortex and the location of pitch region. Adapted from refs. 27 and 64. *Inset* shows the location of auditory cortex on the marmoset brain. C, caudal; Ins, insula; L, lateral; LS, lateral sulcus; M, medial; M1, primary motor cortex; MT, middle-temporal area; PV, parietal ventral area; RT, rostral temporal field; S1, primary somatosensory cortex; STS, superior temporal sulcus; S2, secondary somatosensory cortex. (B) A Venn diagram illustrating the criteria of identifying HTNs. C, caudal; L, lateral; LS, lateral sulcus; M, medial; RT, rostral-temporal.



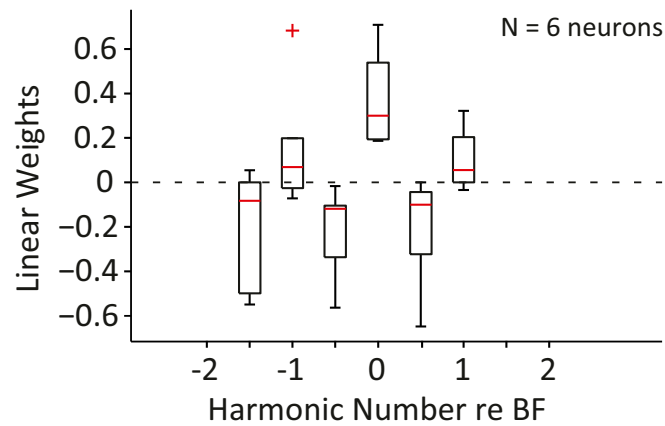
**Fig. S2.** Examples of diverse responses to HCTs by non-HTNs. (A–D) Four examples of non-HTNs. (Lower Left) Spectral components of HCTs (y axis:  $f_0$ ; x axis: frequency of individual harmonics), (Lower Center) raster plot of responses to HCTs in Lower Left, and (Lower Right) averaged firing rates at different  $f_0$  derived from the raster plot. In the HCT spectra plots, each row represents an HCT, with a dot representing a harmonic in the stimulus. The black dashed lines indicate BF, corresponding to the frequency with the maximal firing rate in the pure tone tuning (Upper). Error bars represent SD of the mean firing rate.



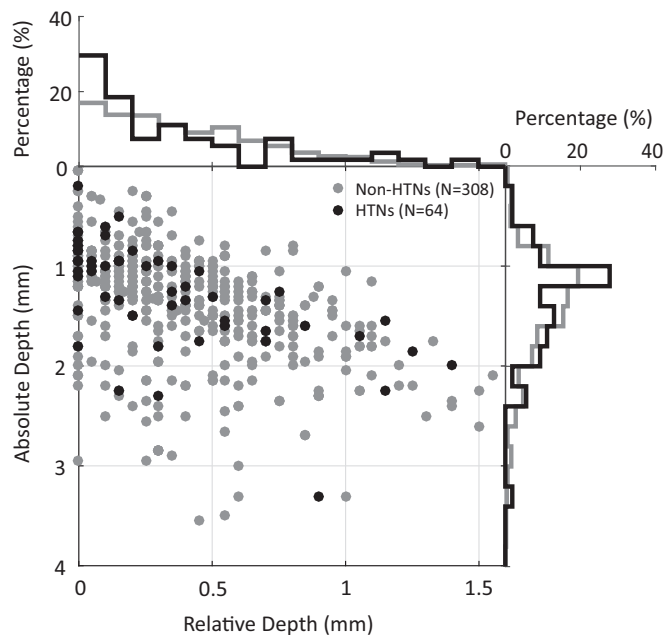
**Fig. 53.** Additional examples of responses to frequency shifts by non-HTNs. (A–D) The responses of non-HTNs to HCTs and spectrally shifted tones. Error bars represent SD of the mean firing rate. The black dashed lines indicate the spontaneous firing rate.



**Fig. S4.** Distributions of the BF and locations of HTNs in marmoset A1. (A–C) Additional tonotopic maps of three hemispheres of two marmosets reported here. HTNs (black crosses) are distributed across a broad frequency range in A1 and R. C, caudal; L, lateral; LS, lateral sulcus; M, medial.



**Fig. S5.** The distribution of estimated linear weights from six neurons at six components, including BF and two adjacent harmonics in the preferred template, as well as three components between those harmonics. *x* Axis shows the harmonic number of each component in relation to BF. The space between components was  $Bf_0/2$ . Only integer numbers are harmonics in the template. Other numbers were components at frequencies between two adjacent harmonics in the template. The red lines represent the medians. The boxes indicate the upper and lower quartiles. Error bars show the upper and lower extremes. The red plus symbol indicates outliers.



**Fig. S6.** Distribution of absolute depth (from dura surface) and relative depth (from first neuron encountered) of HTNs (black dots;  $n = 64$ ) and non-HTNs (gray dots;  $n = 308$ ). Histograms of absolute and relative depths are shown on the margins. The medians of the relative depth are 0.2 and 0.3 mm for HTNs and non-HTNs, respectively. The median of the absolute depth is 1.25 mm for both groups.