



Supplementary figure 1

## **Supplementary Material**

### *Supplementary Figure 1: Basic response properties*

We measured frequency response areas (FRAs) from responses to tone bursts with varying frequency and intensity, as illustrated for a typical neuron in panel a. For our population of neurons, the best frequencies (BFs) were clustered between 500 and 2000 Hz, with a median value of 1120 Hz (see inset). We also measured the noise delay functions (NDFs) of the neurons from responses to binaural noise bursts with different ITDs, as illustrated for a typical neuron in panel b (the thickness of the line indicates the standard error of the mean response across 8 trials). From these NDFs, we extracted the best ITD, i.e. the ITD that evoked the highest spike rate. For our population of neurons, the distribution of best ITDs was clustered around the edge of the physiological limit for gerbils, corresponding to a sound located contralateral to the recording site (135  $\mu$ s; (Maki and Furukawa, 2005)) with a median value of 101  $\mu$ s (panel c).