



**Supplementary Figure 1** Raster plots and peri-stimulus time histograms (PSTH) showing the spikes evoked in a single unit by a subset of stimuli (unit: 1027LF215, 50 repetitions, 1-ms PSTH bins). **(A)** Responses evoked by leading *targets* under the standard paradigm when lead and lag sounds were of equal length. **(B)** Responses evoked by lagging *targets* under the standard paradigm. **(C)** Responses evoked by lagging *targets* when the length of the *lag-alone* segment was experimentally increased to 12 ms (1.5, 3 and 6 ms delays) or decreased to 6 ms (12 and 24 ms delays). **(D)** Responses evoked by single *targets* presented from the center of the cell's spatial receptive field (10° azimuth, 25° elevation). Each PSTH was normalized using the maximum number of spikes evoked by this single *target* **(D)**.