Supporting Information

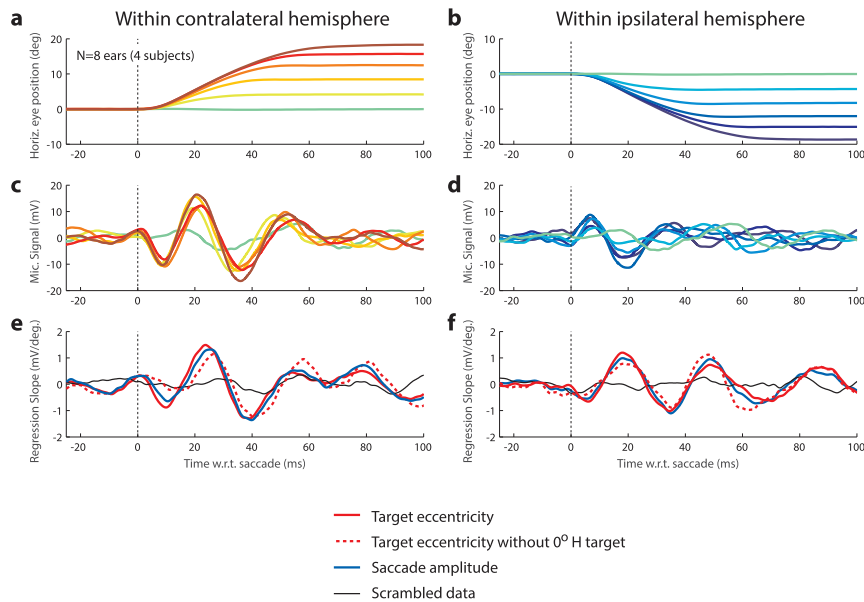## Gruters et al. 10.1073/pnas.1717948115

Fig. S1. We repeated the basic experiment in an additional eight ears in four subjects, sampling target locations more finely and analyzing the data within the contralateral (*A*, *C*, and *E*) and ipsilateral (*B*, *D*, and *F*) hemifields. The average horizontal components of saccades to the targets at locations 0°, 4°, 8°, 12°, 16°, and 20° in the contralateral (*A*) and ipsilateral (*B*) fields (aligned on saccade onset as in Fig. 2*D*; all saccades had a vertical component of 6° as well as their horizontal component) are shown. *C* and *D* show the average microphone voltages associated with these saccades (as in Fig. 2 *F* and *G*), and *E* and *F* show the slope of the regression relating the microphone voltage in each sample to the target eccentricity (red traces) or saccade amplitude (blue trace) on that trial in comparison to one scrambled run (red vs. black traces). The dashed red trace illustrates the slope if the results involving the target with only a vertical component (0° horizontal; green traces in *A–D*) are omitted from the regression. All three analysis variations produced similar results. deg, degrees; Horiz., horizontal; Mic., microphone.
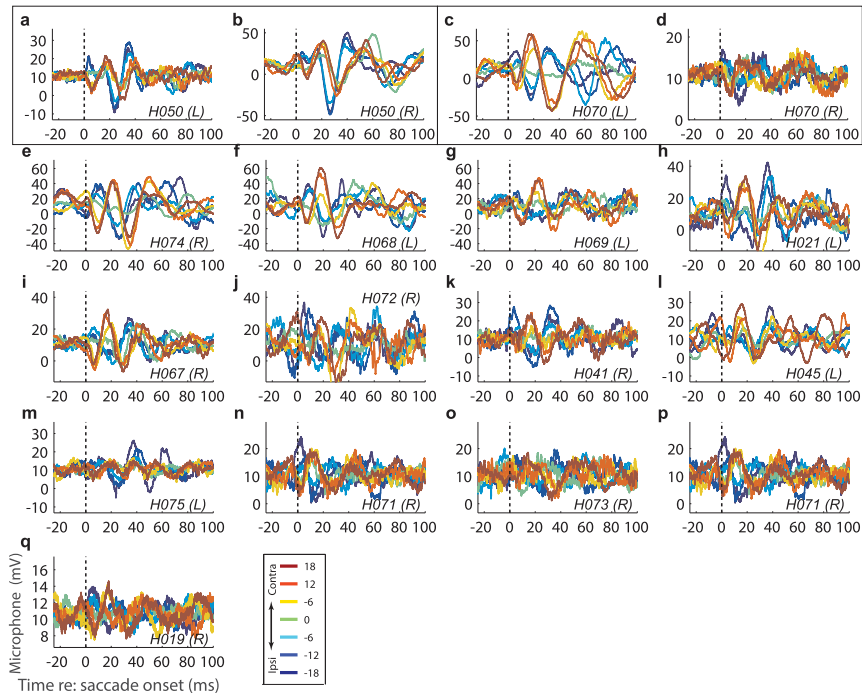
Fig. S2. (*A–Q*) Data from individual human subject ears. Conventions are the same as in Fig. 4. (*A–D*) Enclosed in boxes, data from different ears in the same two subjects are shown. We suspect variation in microphone placement within the ear canal may contribute to apparent individual differences in the EMREO signal-to-noise ratio, but this will require verification with follow-up studies. Contra, contralateral; Ipsi, ipsilateral; L, left; R, right.
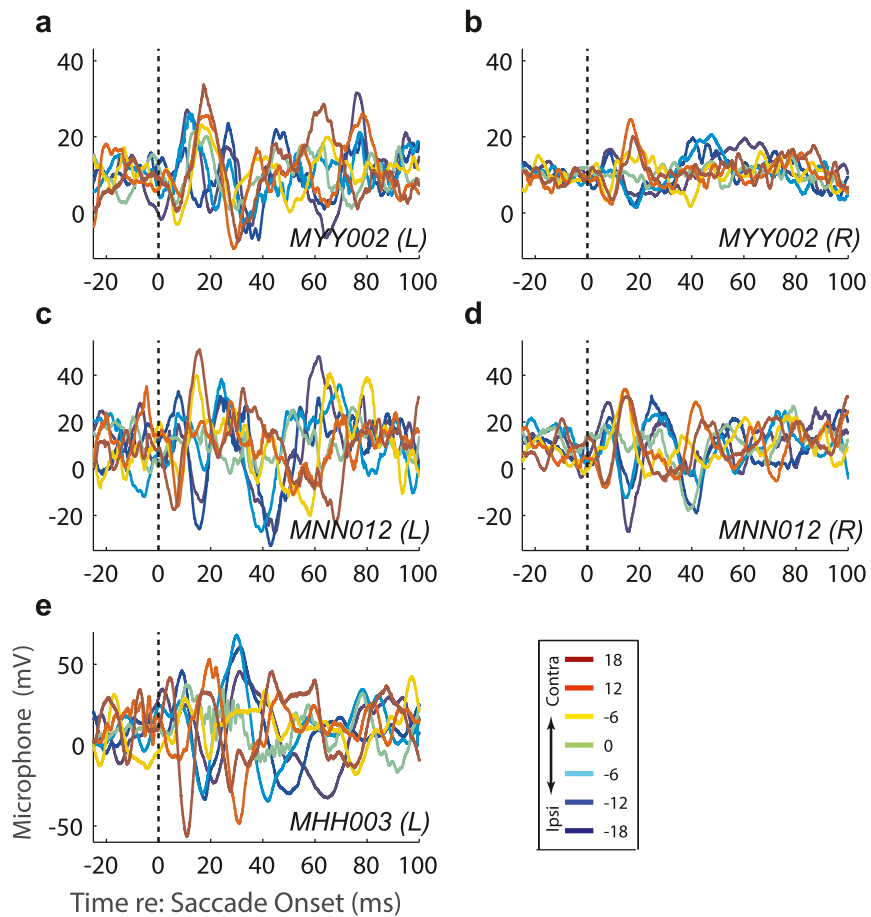
Fig. S3. (*A–E*) Individual subject results for all monkey ears. Analysis details are the same as for individual human subjects (Fig. S2). Contra, contralateral; Ipsi, ipsilateral; L, left; R, right.