

were directed to a target located in the hemifield contralateral to the recorded neuron. b Saccades were directed to the target located in the hemifield ipsilateral to the recorded neuron. Each tick is an action potential and each row of ticks is a trial. The spike density function ($\sigma=12\text{ms}$) is superimposed on the raster. The lines below the rasters are horizontal eye position (H eye) and vertical eye position (V eye). The arrows indicate the alignment of the traces. In each panel, the left trace is aligned on the onset of the target and the right trace is aligned on the saccade onset. c. XY position traces in no stimulation (black) and stimulation (cyan) trials. d. Same as in c for memory-guided saccades. The neuron recorded at this site was classified as a visual-delay-saccade neuron. Note that there is an asymmetry in saccade gain for ipsilateral and contralateral saccades for this monkey. We believe this is likely due to the damage resulting from repeated penetrations.

Figure 5. SNr stimulation alters the direction and amplitude of saccadic eye movements. a. In memory-guided saccades, at one stimulation site (the same as shown in Figure 3), saccades made to each target location is drawn as a vector arrow. Each black arrow is an average of at least 10 saccades. The outer circle is saccade amplitude with stimulation relative to saccade amplitude without stimulation (see text for computation). The cyan arrows are the average saccade vector (at least 10 trials) to a single target location with stimulation of the SNr. Note that the asymmetry in saccade gain is also evident in this plot. b. The angular difference between the saccade vector measured with and without