(Figure 2). Memory-guided and visually-guided trials were randomly interleaved and electrical stimulation of the SNr occurred on 50% of all trials (randomly) at the time when the cue was provided to make a saccade (Figure 2e and f). The train lasted for 400ms. An example of the effects of SNr stimulation is shown for one site in Figure 4. The neuron recorded at this site was classified as a visual-delay-saccade neuron because of the reduced activity compared to baseline for all intervals of the delayed-saccade task (Figure 4a and b).

Introduction of electrical stimulation of the SNr at this site influenced both the direction and the amplitude of the saccades made. In this example, the effect of SNr stimulation however, was evident only during performance of saccades guided by memory. Visually-guided saccades were not influenced by the stimulation (cf., Figure 4c and d). In the example shown in Figure 4, memory-guided saccades made to the contralateral hemifield were affected mostly and ipsilateral saccades were slightly affected. Saccades made to the upper contralateral hemifield were often curved downward and contralaterally. Note also that there are fewer saccades made to the contralateral upward location. Furthermore, the endpoints of saccades made to the lower contralateral hemifield were often displaced upward relative to the endpoints of the saccades made in the no stimulation trials. In some ipsilateral trials, notably for the direction along the horizontal meridian, saccades were also less likely to occur with stimulation than without stimulation (Figure 4d, rightward horizontal location cf., cyan and black lines). This example illustrates the general observations we made with electrical stimulation of the SNr. Below we quantify three main effects across our