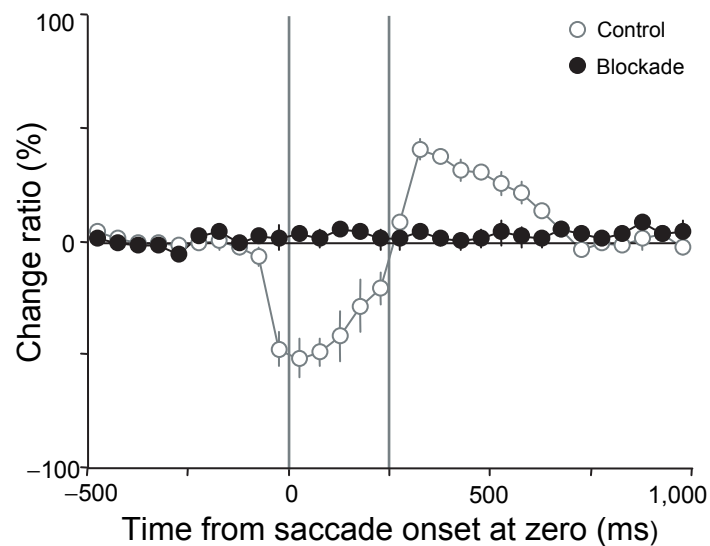


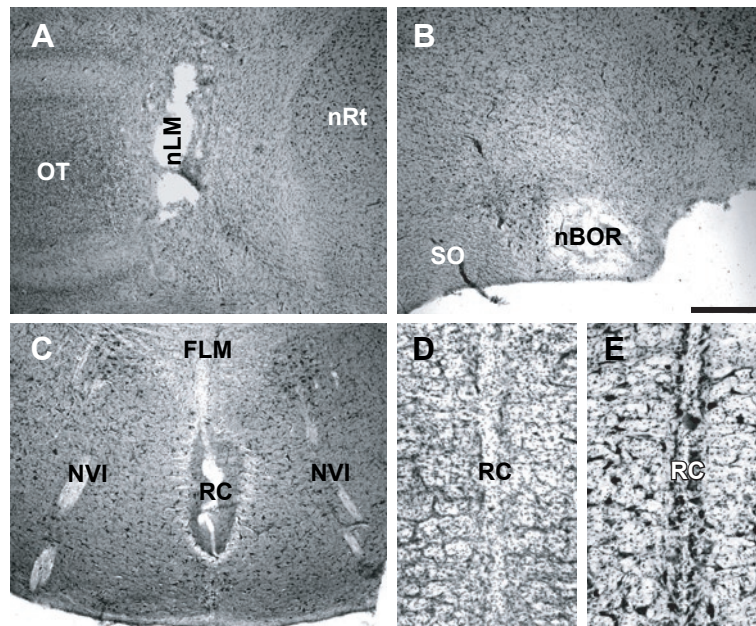
Corollary discharge circuits for saccadic modulation of the pigeon visual system

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Supplementary Figure 1 Effects of nOPT blockade on peri-saccadic inhibition and enhancement of visual neurons in the telencephalic hyperpallium. When the pigeon confronted stationary gratings, firing rates in 6 telencephalic cells examined began to decrease 67 ms before saccade onset and enhanced 275 ms after saccade onset (open circles). Peri-saccadic responses in these cells were abolished 1–5 min after injecting GABA (80–120 nl) into nOPT (filled circles) and recovered in 5–10 min. The change ratio (%) of firing rates is plotted against the time from saccade onset at zero. Open and filled circles show peri-saccadic responses measured before and during inactivation of nOPT. Vertical lines delimit saccadic duration. Error bars = \pm s.e.m., time bin = 50 ms.



Supplementary Figure 2 Photomicrographs of pigeon's brain cross-sections showing lesions of the neural structures under study. Electrolytic lesions were shown in the nucleus lentiformis mesencephali (nLM) at A5.75 (**A**), the nucleus of the basal optic root (nBOR) at A4.50 (**B**), and the raphe complex (RC) at A0.25 (**C**), demonstrating that these structures were almost completely destroyed. The RC was also chemically lesioned with kainic acid (**D**). Comparison of lesioned (**D**) and control (**E**) sections indicates that almost all of raphe cells were killed. Other abbreviations: FLM, Fasciculus longitudinalis medialis; nRt, Nucleus rotundus; NVI, Nervus abducens; OT, Optic tectum; SO, Stratum opticum. Sections were counterstained with cresyl violet. Scale bar = 500 μm in A–C and 200 μm in D and E.

Supplementary Table 1

The number of neurons examined in 5 brain regions under various conditions

Experimental conditions \ Brain regions	TEL	nOPT	nLM	nBOR	Raphe
Peri-saccadic recording	20	70	20	20	49*
Effects of electrolytic or chemical blockade	6	63	12	12	
Responses to electrical stimulation			15	15	40
Total	26	133	47	47	49

* The 49 raphe neurons studied during saccades include the 40 cells examined for responses to antidromic activation of nBOR or nLM. Abbreviations: TEL, Telencephalic hyperpallium; nOPT, Nucleus opticus principalis thalami; nLM, Nucleus lentiformis mesencephali; nBOR, Nucleus of the basal optic root; Raphe, Brainstem raphe complex.