

Neuron, Volume 76

Supplemental Information

**Inactivation of the Parietal Reach Region Causes
Optic Ataxia, Impairing Reaches but Not Saccades**

Eun Jung Hwang, Markus Hauschild, Melanie Wilke, and Richard A. Andersen

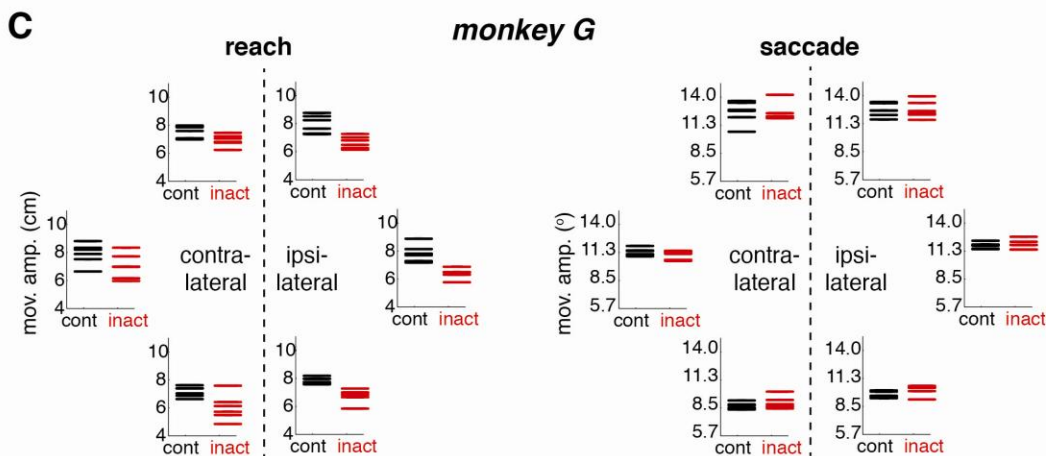
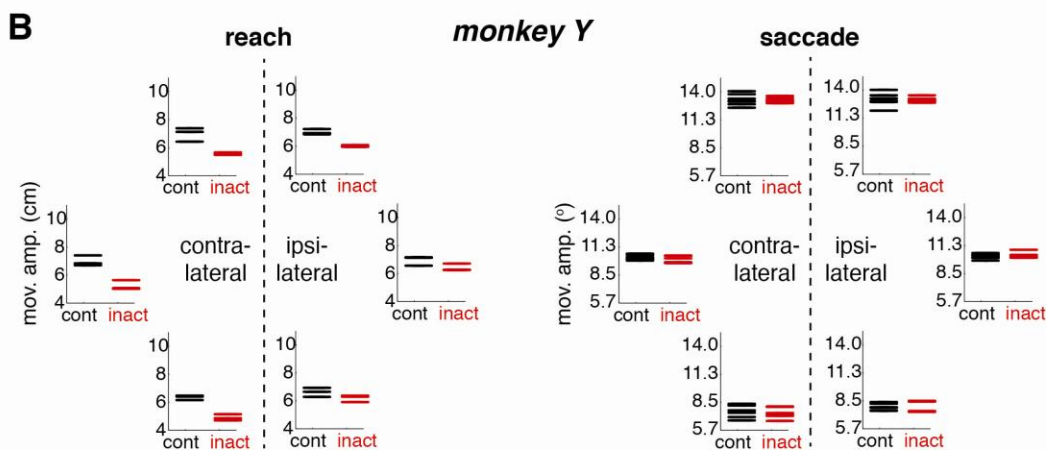
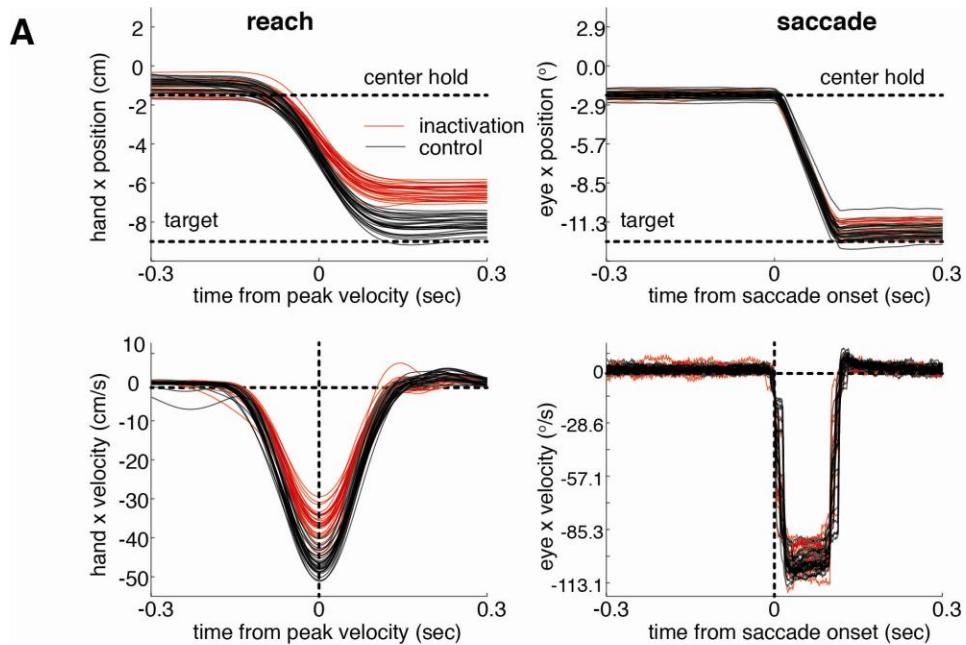


Figure S1, related to Figure 2. A. Sample hand and eye traces. Left. X position and velocity of hand aligned to the peak velocity for the memory-guided reach target on the left in the inactivation (red) and control (black) sessions shown in **Figure 2B. Right.** X position and velocity of eyes aligned to the saccade onset for the memory-guided saccade target on the left in the inactivation and control sessions shown in **Figure 2B. B-C. The average inactivation effects of individual sessions.** The average movement amplitude for each target location in the reach and saccade tasks of individual sessions. Each horizontal bar represents the average amplitude of each session.

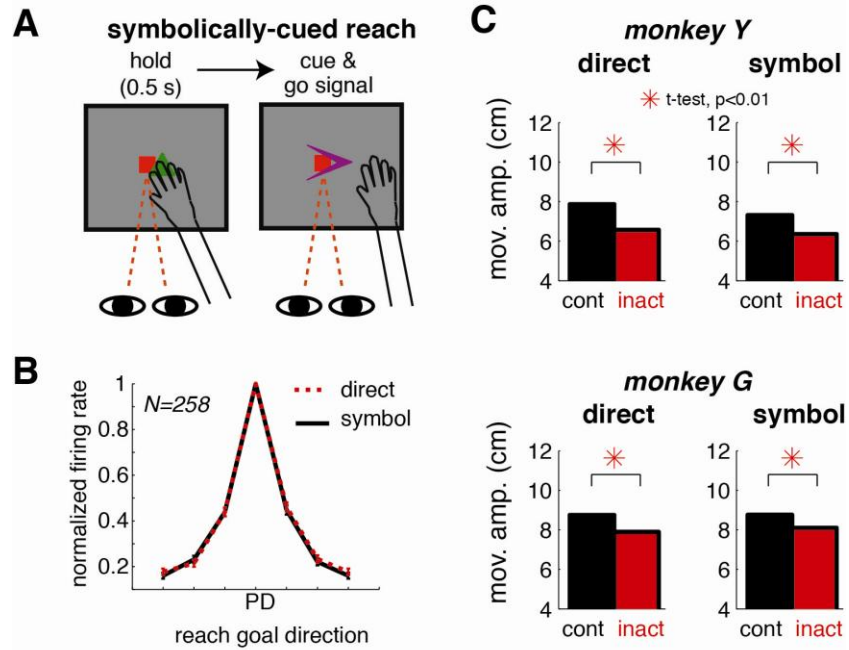


Figure S2. PRR inactivation causes deficits in symbol-guided reaches. **A.** Symbolically-cued reach task. The monkey was required to reach in the direction of the arrow, while fixating on the red square. **B** Average tuning curve (mean±s.e.m.) of 258 PRR neurons in the directly versus symbolically-cued reach tasks. **C.** Average reach amplitude (mean±s.e.m.) across all inactivation (red) versus control (black) trials. Trials including all 6 targets were combined.

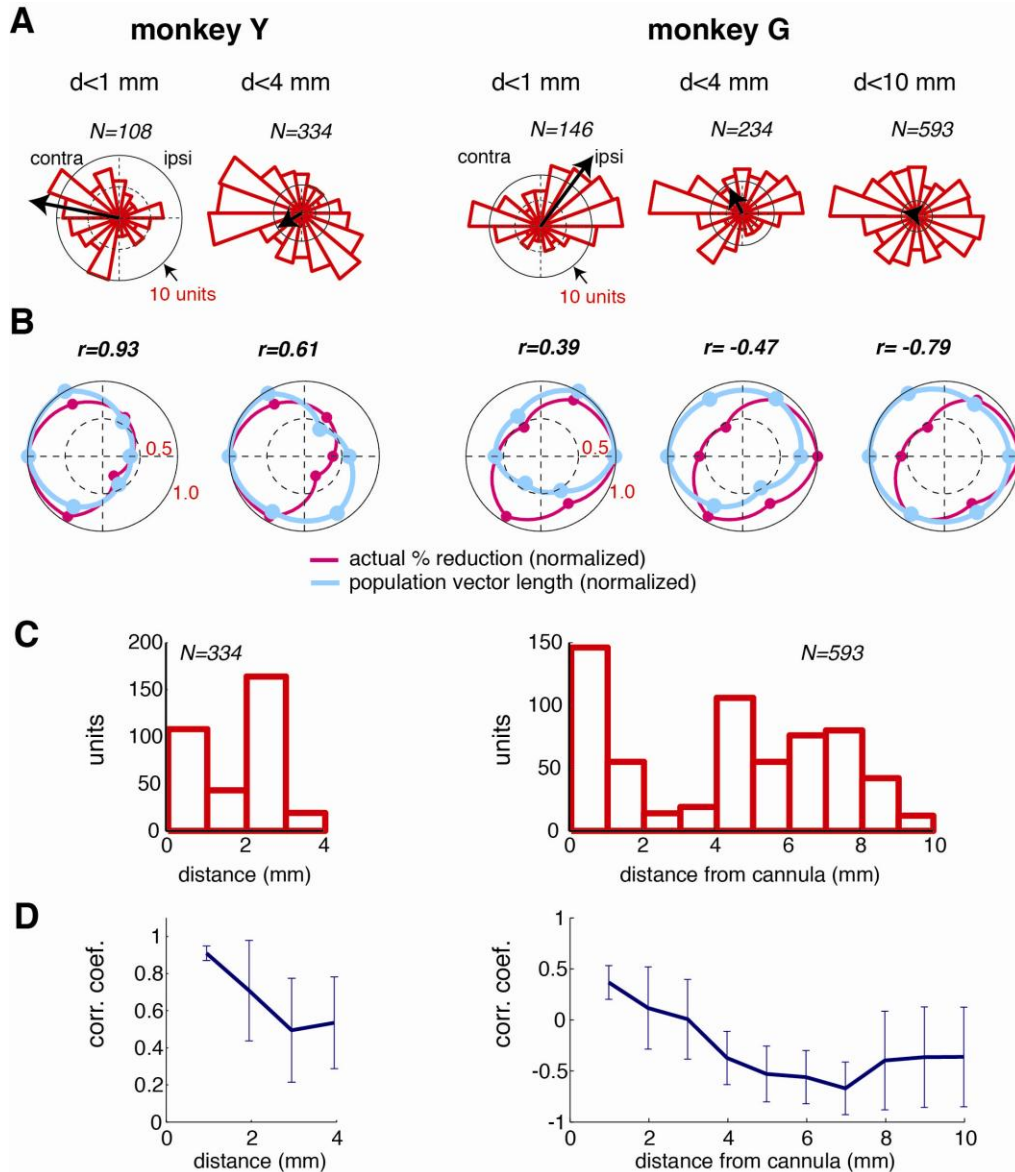


Figure S3, related to Figure 4. Correlation between inactivation effect and spiking activity as a function of distance from the cannula. A. Histograms of the preferred direction of the spiking units for populations delimited by the specified distance constraint. **B.** Population vector amplitude versus inactivation effect. The corresponding correlation coefficients are indicated. **C.** Histogram of the distance between spiking units and the inactivation cannula. **D.** Correlation coefficient between the population vector amplitude and the reach amplitude reduction (mean±s.e.m.), as a function of the distance from the injection cannula.

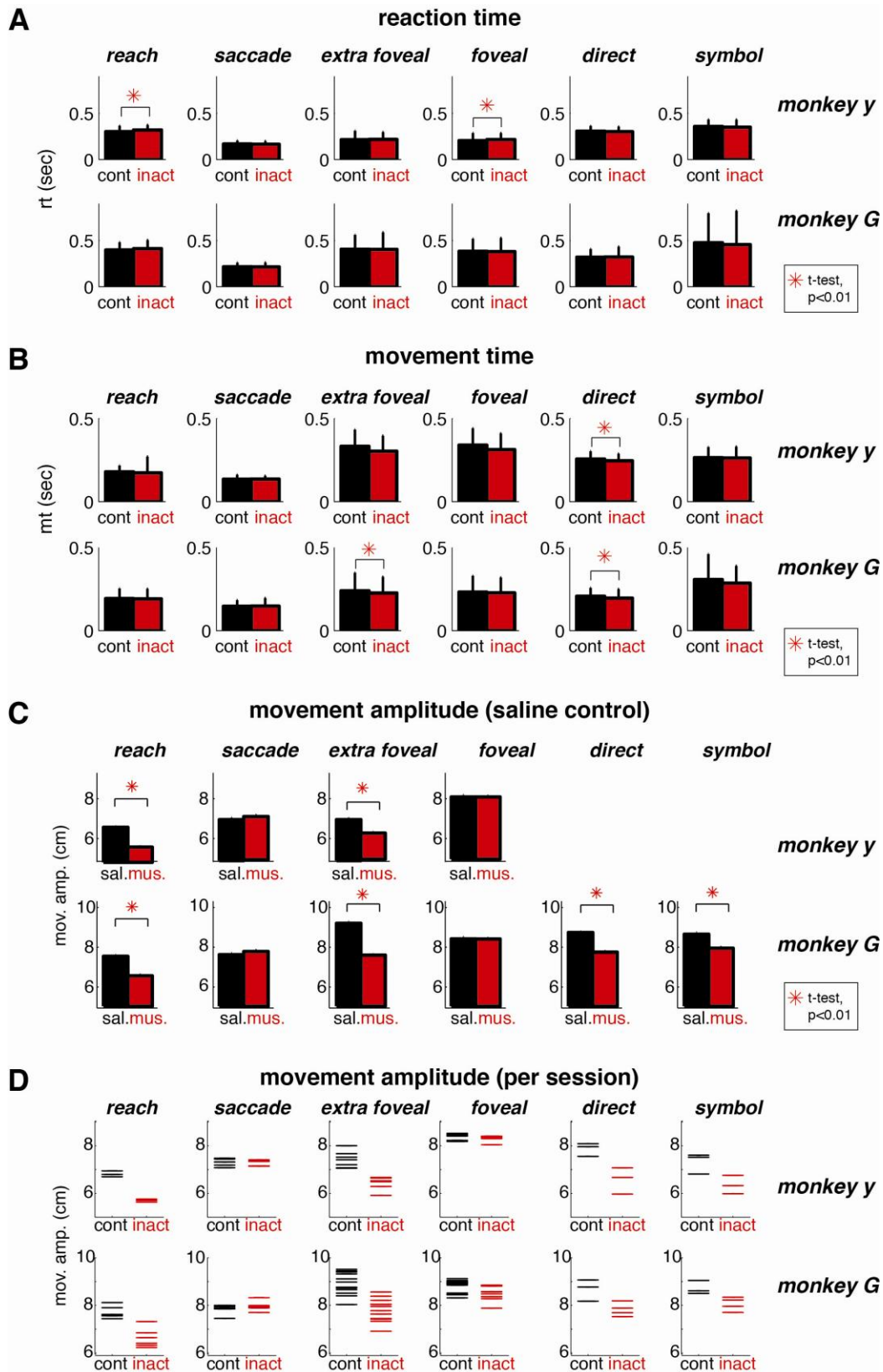


Figure S4. Various control data analysis. A-B. The PRR inactivation did not affect the reaction and movement times. The average reaction time and movement time (mean±s.e.m.) for control versus inactivation trials in each of the six task conditions, for each monkey. **C. Saline injection control.** Average movement amplitude (mean±s.e.m.) in the saline injection control versus muscimol injection sessions. Monkey Y performed 2 saline injection control sessions for both the reach versus saccade, and extrafoveal versus foveal task conditions. Monkey G performed, 4, 3, and 2 saline injection control sessions for the reach versus saccade, extrafoveal versus foveal, and direct versus symbol task conditions, respectively. **D.** The average movement amplitude across all trials in each task of individual sessions.

Table S1. The summary of experimental parameters in inactivation sessions

Subject	Date	Interval from previous vs next control (days)		Cannula depth (mm)	Muscimol amount (μ l)	Post-injection time task begins vs ends (minutes)		Task
Monkey G	12/7/10	1	1	3.5	3.5	50	158	Set 1
	12/9/10	1	1	4	4.3	35	162	Set 1
	12/12/10	2		3.5	4.3	35	131	Set 1
	12/14/10		1	4	5	35	133	Set 1
	12/16/10	1	1	4.5	5	35	97	Set 1
	12/18/10	1	1	3,5	5	35	140	Set 1
	4/17/11	1	1	4	5	43	57	Set 2
	4/19/11	1	1	4	5	41	170	Set 2
	4/21/11	1	1	4	5	42	146	Set 2
	4/23/11	1	1	4	5	41	156	Set 2
	4/25/11	1	6	4	5	49	179	Set 2
	5/2/11	1	1	4	5	50	184	Set 2
	5/4/11	1	3	4	5	45	192	Set 2
	5/8/11	1	1	4	5	45	182	Set 2
	5/10/11	1	1	4	5	50	186	Set 3
	5/12/11	1		4	10	45	132	Set 2&3
	5/13/11	2	1	4	10	48	185	Set 2&3
	5/15/11	1	1	4	10	44	194	Set 2&3
5/17/11	1	1	4	10	44	132	Set 1*	
Monkey Y	10/14/10	1		4	5	43	169	Set 1*
	10/19/10		1	4	5	40	130	Set 1*
	10/21/10	1	7	4	5	35	143	Set 1
	11/29/10	1	1	4	5	36	157	Set 1
	12/1/10	1	1	4	5	35	158	Set 1
	12/3/10	1		4.5	5	35	101	Set 2
	4/29/11		1	4	5	41	126	Set 2
	5/1/11	1	1	4	5	43	144	Set 2
	5/6/11	1	9	4	5	40	126	Set 2
	5/16/11	1	1	4	5	43	139	Set 2
	5/18/11	1	1	4	5	42	135	Set 2
	5/20/11	1	1	4	5	43	135	Set 2
	5/25/11	1	1	4	5	60	95	Set 3
	5/27/11	1	1	4	5	60	100	Set 3
	5/29/11	1		4	5	60	96	Set 3

Set 1 : memory-guided reaches and saccades, Set1* : saccades only

Set 2 : foveal and extrafoveal reaches

Set 3 : directly and symbolically-guided reaches