Histological assessment of optogenetic tools to study fronto-visual and fronto-parietal cortical networks in the rhesus macaque.

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Supplementary Figure S1
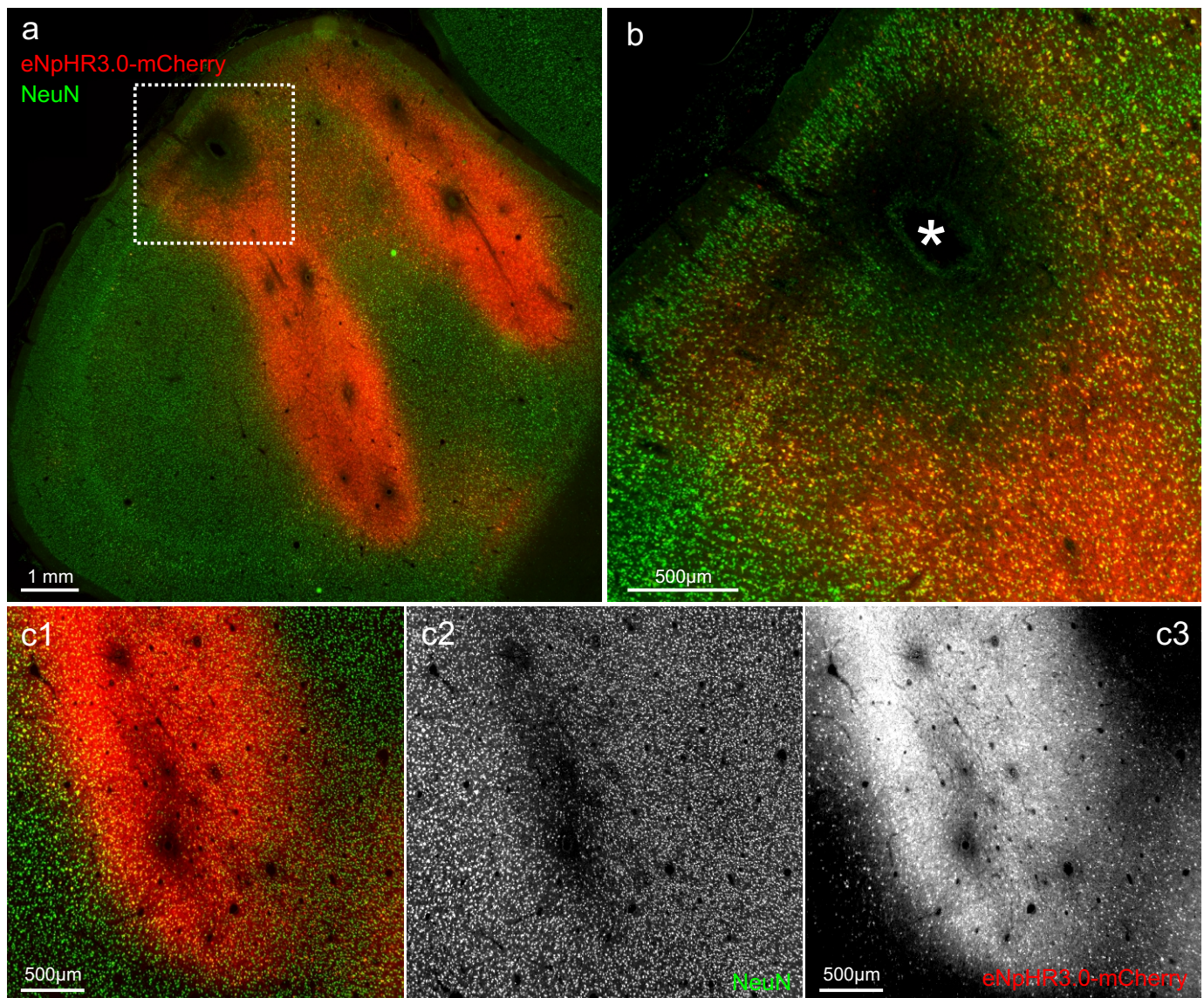
Supplementary Figure S1
Pathologies resulting from a long-term eNpHR3.0-mCherry expression in area FEF.

(**a**) A coronal section of the area FEF in monkey H, which was injected with the eNpHR3.0-mCherry virus, revealed with mCherry immunofluorescence (pseudocolored in red) and counterstained with NeuN (pseudocolored in green). Boxed area is shown in higher magnification in (**b**); note lower cell density due to potential cell loss around a putative blood vessel (marked with an asterisk).
In **c1-3**, eNpHR3.0-mCherry expression in FEF in the same animal but from a different anterior-posterior location (same section as shown in Fig. 2a). As in a/b, note locally lower cell density indicative of potential pathological changes; color scheme same as in a/b.

Supplementary Table S2

Animal ID Opsin Area injected	Brain structure	Cell count	# of section counted	Mean (± SE) cell count per structure	Mean (± SE) cell density per mm^2
G hChR2-EYFP **PMd**	*Posterior Parietal Cortex* *MIP* *Area 5* *Area 7m* *Thalamus* *VA + VL + MD* *RT* *Caudate nucleus*	 100 53 161 7 0 1	 n = 9 n = 9 n = 9 n = 7 n = 7 n = 6	 10.2 ± 0.98 5.89 ± 1.15 17.9 ± 1.39 1.0 ± 0.44 0 0.17 ± 0.17	 0.63 ± 0.06 0.52 ± 0.09 0.97 ± 0.08 0.0 0.0 0.0
O hChR2-EYFP **PMd**	*Posterior Parietal Cortex* *MIP* *Area 5* *Area 7m* *Thalamus* *VA + VL + MD* *RT* *Caudate nucleus*	 210 80 51 7 0 0	 n = 8 n = 8 n = 8 n = 6 n = 6 n = 6	 26.2 ± 2.66 10.0 ± 1.67 6.37 ± 0.99 1.17 ± 0.4 0 0	 1.62 ± 0.12 0.76 ± 0.12 0.38 ± 0.06 0.0 0.0 0.0
O eNpHR3.0-mCherry **FEF**	*Posterior Parietal Cortex* *LIP* *Temporal area* *MT* *Thalamus* *VA* *MD* *VL* *Caudate nucleus*	 615 130 237 502 330 28	 n = 7 n = 7 n = 1 n = 3 n = 3 n = 2	 87.86 ± 7.35 18.57 ± 2.35 - 167.3 ± 71.9 110 ± 51.1 14 ± 6	 4.85 ± 0.47 0.82 ± 0.09 30.8 9.3 ± 4.73 3.0 ± 1.28 1.3 ± 0.08
H eNpHR3.0-mCherry **FEF**	*Posterior Parietal Cortex* *LIP* *Temporal area* *MT* *Superior colliculus*	 594 79 34	 n = 7 n = 7 n = 3	 84.86 ± 16.16 11.29 ± 1.94 11.33 ± 0.33	 3.31 ± 0.59 0.48 ± 0.09 1.85 ± 0.04

Supplementary Table S2
Rretrogradely labeled neurons in parietal and temporal target areas and selected subcortical structures.

A summary of cell count resulting from eNpHR3.0-mCherry virus injection in area FEF (monkey O and H) and hChR2-EYFP virus injection in area PMd (monkey G and O). Indicated brain structures (column 2) were identified in consecutive coronal sections (number of inspected sections specified in column 4), the area was measured, and cells within the area were counted. Column 3 provides the sum of cells found throughout the inspected area, and column 5 shows the average number of cells per each 50 μm section. Column 6 provides the average cell density for each area. Values are presented as mean ± standard error of the mean.
Abbreviations: MIP -medial intraparietal area, LIP – lateral intraparietal area, Area 5 - superior parietal lobule area, 7m – medial parietal area, MT - medial temporal area, VA -ventral anterior nucleus, MD - medial dorsal nucleus, VL - ventral lateral nucleus, RT - reticular nucleus.