

Figure	Sample size (n)	Statistical test	P value
Fig. 1i	VGAT, n = 5 PV, n = 5 SST, n = 4	one-way ANOVA	Near, F(2,11) = 7.231, p= 0.0099 Turkey's multiple comparisons test: VGAT vs. PV, p = 0.0136 VGAT vs. SST, p = 0.9688 PV vs. SST, p = 0.0288 Far, F(2,11) = 0.7875, p= 0.4790 Turkey's multiple comparisons test: VGAT vs. PV, p = 0.4478 VGAT vs. SST, p = 0.8406 PV vs. SST, p = 0.8140
Fig. 1j	VGAT, n = 5 PV, n = 5 SST, n = 4	one-way ANOVA	Near, F(2,11) = 8.127, p= 0.0068 Turkey's multiple comparisons test: VGAT vs. PV, p = 0.0064 VGAT vs. SST, p = 0.6341 PV vs. SST, p = 0.0463 Far, F(2,11) = 9.238, p= 0.0044 Turkey's multiple comparisons test: VGAT vs. PV, p = 0.0055 VGAT vs. SST, p = 0.0184 PV vs. SST, p = 0.8800
Fig. 3c	n = 5	two-way RM ANOVA	Ipsi: Intensity, F(5,20) = 1.935, p = 0.1332 Laser, F(1,4) = 3.750, p = 0.1249 Intensity x laser, F(5,20) = 0.6586, p = 0.6588 Cont: Intensity, F(5,20) = 3.005, p = 0.0350 Laser, F(1,4) = 0.0271, p = 0.8773 Intensity x laser, F(5,20) = 1.002, p = 0.4420 Mono: Intensity, F(5,20) = 0.7633, p = 0.5869 Laser, F(1,4) = 0.1817, p = 0.6918 Intensity x laser, F(5,20) = 0.5713, p = 0.7211
Fig. 3d	n = 8	two-way RM ANOVA	Ipsi: Intensity, F(5,35) = 17.53, p < 0.0001 Laser, F(1,7) = 71.03, p < 0.0001 Intensity x laser, F(5,35) = 18.09, p < 0.0001 Cont: Intensity, F(5,35) = 5.198, p = 0.0011 Laser, F(1,7) = 41.89, p = 0.0003 Intensity x laser, F(5,35) = 6.722, p = 0.0002

			<p>Mono:</p> <p>Intensity, $F(5,35) = 3.351$, $p = 0.0141$</p> <p>Laser, $F(1,7) = 109.8$, $p < 0.0001$</p> <p>Intensity x laser,</p> <p>$F(5,35) = 5.932$, $p = 0.0005$</p>
Fig. 3e	n = 9	two-way RM ANOVA	<p>Ipsi:</p> <p>Intensity, $F(5,40) = 2.910$, $p = 0.0248$</p> <p>Laser, $F(1,8) = 29.31$, $p = 0.0006$</p> <p>Intensity x laser,</p> <p>$F(5,40) = 15.29$, $p < 0.0001$</p> <p>Cont:</p> <p>Intensity, $F(5,40) = 1.101$, $p = 0.3751$</p> <p>Laser, $F(1,8) = 64.49$, $p < 0.0001$</p> <p>Intensity x laser,</p> <p>$F(5,40) = 6.553$, $p = 0.0002$</p> <p>Mono:</p> <p>Intensity, $F(5,40) = 0.3742$, $p = 0.8622$</p> <p>Laser, $F(1,8) = 19.47$, $p = 0.0022$</p> <p>Intensity x laser,</p> <p>$F(5,40) = 1.536$, $p = 0.2005$</p>
Fig. 3f	n = 4	two-way RM ANOVA	<p>Ipsi:</p> <p>Intensity, $F(5,15) = 3.855$, $p = 0.0191$</p> <p>Laser, $F(1,3) = 451.0$, $p = 0.0002$</p> <p>Intensity x laser,</p> <p>$F(5,15) = 6.415$, $p = 0.0022$</p> <p>Cont:</p> <p>Intensity, $F(5,15) = 3.156$, $p = 0.0383$</p> <p>Laser, $F(1,3) = 95.32$, $p = 0.0023$</p> <p>Intensity x laser,</p> <p>$F(5,15) = 6.670$, $p = 0.0019$</p> <p>Mono:</p> <p>Intensity, $F(5,15) = 3.002$, $p = 0.0450$</p> <p>Laser, $F(1,3) = 42.01$, $p = 0.0075$</p> <p>Intensity x laser,</p> <p>$F(5,15) = 6.357$, $p = 0.0023$</p>
Fig. 4c	n = 4	two-way RM ANOVA	<p>Ipsi:</p> <p>Intensity, $F(5,15) = 0.6802$, $p = 0.6453$</p> <p>Laser, $F(1,3) = 0.4660$, $p = 0.5438$</p> <p>Intensity x laser,</p> <p>$F(5,15) = 1.831$, $p = 0.1671$</p> <p>Cont:</p> <p>Intensity, $F(5,15) = 1.623$, $p = 0.2142$</p> <p>Laser, $F(1,3) = 0.7631$, $p = 0.4467$</p> <p>Intensity x laser,</p> <p>$F(5,15) = 0.8962$, $p = 0.5105$</p> <p>Mono:</p> <p>Intensity, $F(5,15) = 0.4859$, $p = 0.8006$</p> <p>Laser, $F(1,3) = 0.2675$, $p = 0.6407$</p>

			Intensity x laser, $F(5,15) = 0.4055, p = 0.8375$
Fig. 4d	n = 9	two-way RM ANOVA	Ipsi: Intensity, $F(5,40) = 1.155, p = 0.3479$ Laser, $F(1,8) = 33.18, p = 0.0004$ Intensity x laser, $F(5,40) = 2.636, p = 0.0376$ Cont: Intensity, $F(5,40) = 0.5663, p = 0.7252$ Laser, $F(1,8) = 18.13, p = 0.0028$ Intensity x laser, $F(5,40) = 1.171, p = 0.3405$ Mono: Intensity, $F(5,40) = 0.9449, p = 0.4628$ Laser, $F(1,8) = 3.528, p = 0.0972$ Intensity x laser, $F(5,40) = 0.7674, p = 0.5788$
			WT: Intensity, $F(5,20) = 0.8214, p = 0.5489$ Laser, $F(1,4) = 2.154, p = 0.2161$ Intensity x laser, $F(5,20) = 0.4149, p = 0.8328$ VGAT: Intensity, $F(5,35) = 8.678, p < 0.0001$ Laser, $F(1,7) = 36.63, p = 0.0004$ Intensity x laser, $F(5,35) = 9.294, p < 0.0001$ PV: Intensity, $F(5,40) = 2.770, p = 0.0306$ Laser, $F(1,8) = 18.06, p = 0.0028$ Intensity x laser, $F(5,40) = 5.765, p = 0.0004$ SST: Intensity, $F(5,15) = 3.404, p = 0.0297$ Laser, $F(1,3) = 20.02, p = 0.0208$ Intensity x laser, $F(5,15) = 1.919, p = 0.1507$
Fig. 5b	EYFP, n = 4 ChR2, n = 9	two-way RM ANOVA	EYFP: Intensity, $F(5,15) = 0.8877, p = 0.5134$ Laser, $F(1,3) = 0.4197, p = 0.5633$ Intensity x laser, $F(5,15) = 1.741, p = 0.1860$ ChR2: Intensity, $F(5,40) = 0.8546, p = 0.5198$ Laser, $F(1,8) = 14.49, p = 0.0052$ Intensity x laser, $F(5,40) = 1.116, p = 0.3693$

Fig. 6c	n = 4	Paired t-test	ipsi, p = 0.5773, cont, p = 0.2240, ODI, p = 0.4934
Fig. 6d	n = 5	Paired t-test	ipsi, p = 0.0131, cont, p = 0.6121, ODI, p = 0.0398

Table S1. Summary of statistical analysis.