

Supplementary Table 1

Th::Cre 7
NB *Th::Cre* 2
Wild-type 4
Total # of rats 13

Experiment (Figures)	Group	Number of rats used	Number of rats excluded & reason
Quantification of sensitivity of ChR2 expression in <i>Th::Cre</i> rats (Figure 1f)	<i>Th::Cre</i>	7	NA
Quantification of specificity of ChR2 expression in <i>Th::Cre</i> rats (Figure 1g)	<i>Th::Cre</i>	4	3 rat brain sections not stained with DAPI
ICSS behavior (Figure 1h)	<i>Th::Cre</i>	4	3 rats not tested in ICSS
ICSS behavior (Figure 1h)	NB <i>Th::Cre</i>	2	NA
ICSS behavior (Figure 1h)	Wild-type	3	1 rat did not complete Session 2
Group Functional Maps BOLD (Figure 2b and Supplementary Figure 2)	<i>Th::Cre</i>	5	2 rats removed due to MABP changes and inadequate MABP data
Group Functional Maps CBVw (Figure 2b and Supplementary Figure 2)	<i>Th::Cre</i>	6	1 rat removed due to poor anatomical image normalization
Group Functional Maps BOLD (Figure 2c)	Wild-type	4	NA
Group Functional Maps CBVw (Figure 2c)	Wild-type	4	NA
Group ROI analysis BOLD (Figure 3a, 3c and Supplementary Figure 4a)	<i>Th::Cre</i>	5	2 rats removed due to MABP changes and inadequate MABP data
Group ROI analysis BOLD (Figure 3a and Supplementary Figure 4a)	NB <i>Th::Cre</i>	2	NA
Group ROI analysis BOLD (Figure 3a and Supplementary Figure 4a)	Wild-type	4	NA
Group ROI analysis CBVw (Figure 3b, 3c and Supplementary Figure 4b)	<i>Th::Cre</i>	7	NA
Group ROI analysis CBVw (Figure 3b and Supplementary Figure 4b)	NB <i>Th::Cre</i>	2	NA
Group ROI analysis CBVw (Figure 3b and Supplementary Figure 4b)	Wild-type	4	NA
Forepaw analysis (Supplementary Figure 3)	Wild-type and NB <i>Th::Cre</i>	6	NA
fMRI time courses BOLD (Supplemenatry Figure 5)	<i>Th::Cre</i>	5	2 rats removed due to MABP changes and inadequate MABP data
fMRI time courses CBVw (Supplemenatry Figure 5)	<i>Th::Cre</i>	7	NA