Supplemental Figures

Supplemental Figure 1. Verification of *Calcr*^{cre} mouse strain. Representative ISH images showing *Calcr* (green) and *Cre* (red) signal in the arcuate nucleus of wildtype (**A**) and Calcr^{cre} (**B**) mice. **A**' and **B**' are more magnified images of the area indicated by the dotted rectangles in **A** and **B**. Blue is DAPI. Scale bar = 50 µm (**A,B**) and 10 µm (**A',B'**). 3v = 3rd ventricle.

Supplemental Figure 2. Leptin-stimulated pSTAT3 in DMH, LHA and NTS Calcr neurons from Calcr$^{eGFP\text{-}L10a}$ and LepRb^{Calcr}KO mice. Representative images showing colocalization of pSTAT3-IR (purple) with GFP-IR (green) in the dorsomedial hypothalamus (DMH), lateral hypothalamic area (LHA) and nucleus of the solitary tract (NTS) of four-week-old Calcr$^{eGFP\text{-}L10a}$ (left panels) and LepRb^{Calcr}KO (right panels) mice treated with leptin (5mg/kg, i.p.) for 90 minutes. Arrowheads indicate colocalized neurons.

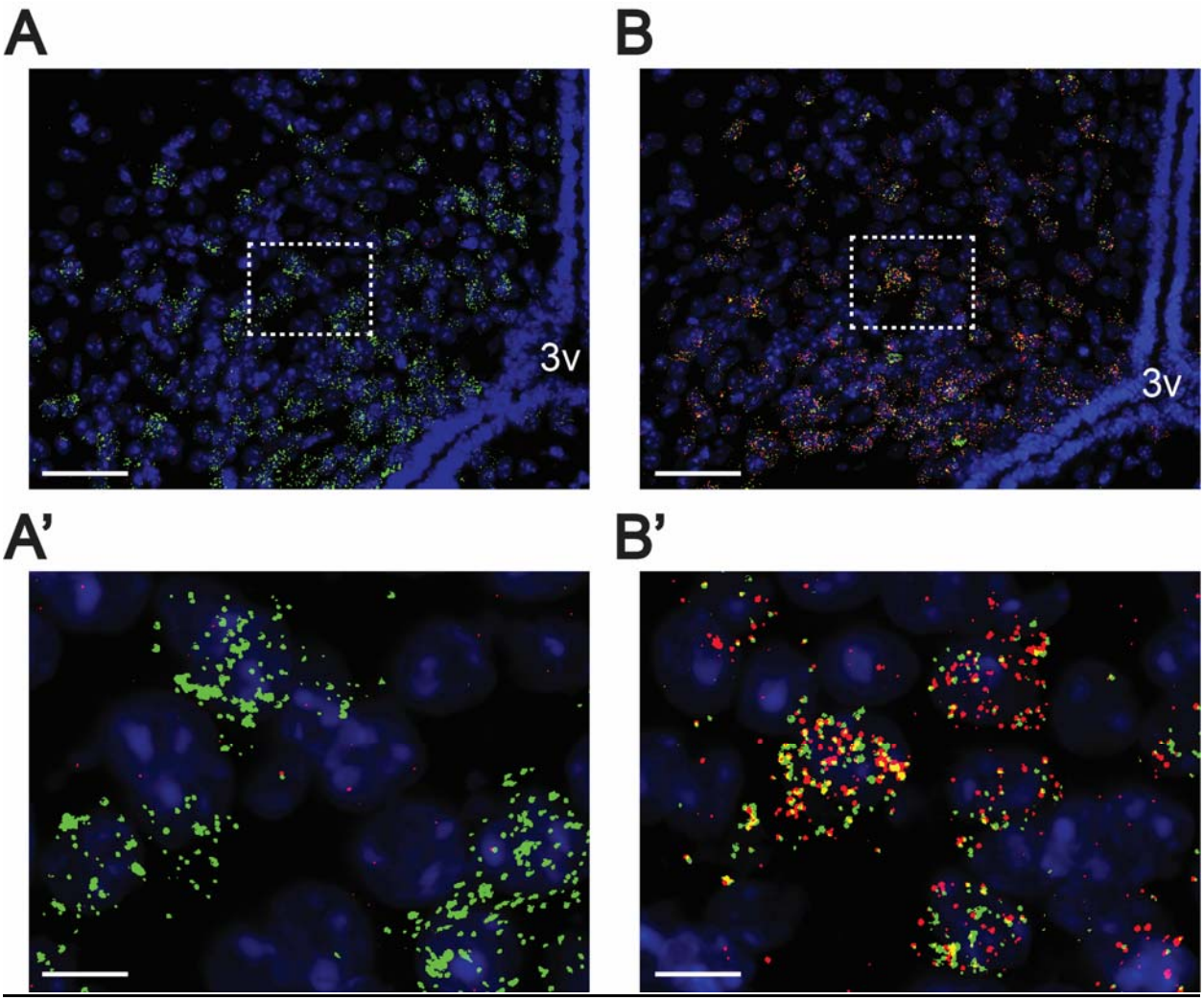
Supplemental Figure 3. Leptin action via LepRb^{Calcr} neurons controls energy balance. Shown are body weight at ages 4-12 weeks (**A**), body composition at 14-15 weeks of age (**B,C**), serum leptin concentrations at 10 weeks of age (**D**), body length from 5-11 weeks of age (**E**), and cumulative food intake from 5-12 weeks of age (**F**) for female Calcr$^{eGFP\text{-}L10a}$ (Control) and LepRb^{Calcr}KO mice. *p<0.05; **p<0.01; ***p<0.001; ****p<0.0001 by ANOVA (A, F) or t-test (all other panels).

Supplemental Figure 4. Relatively preserved glycemic control in LepRb^{Calcr}KO mice. Shown are blood glucose concentrations (mean +/-SEM) from 4-12 weeks of age (**A**), serum insulin concentrations at 10 weeks of age **(B**), glycemic excursions during GTT (2g/kg glucose; i.p.) at 12 weeks of age (**C**) and ITT (1 U/kg insulin; i.p.) and area under the curve for ITT (**D, E**) at 13 weeks of age for female Calcr$^{eGFP\text{-}L10a}$ (Control) and LepRb^{Calcr}KO mice. Mean +/- SEM is shown for B-D. All panels: *p<0.05; **p<0.01; by t-test.

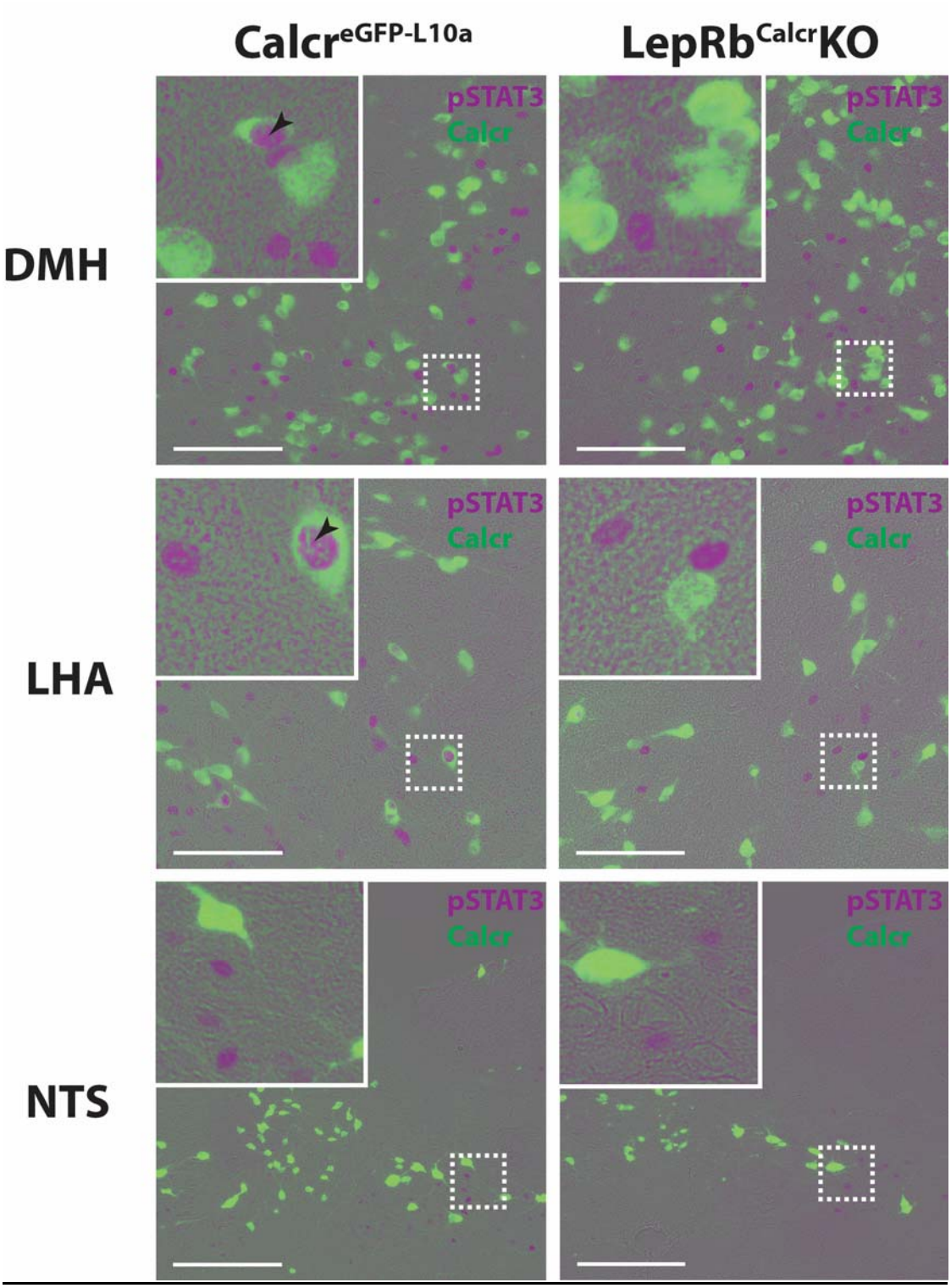
Supplemental Figure 5. Colocalization of ARC Calcr neurons with NPY but not POMC neurons. (**A**) Shown are representative tdTomato (red, left panel, Calcr), GFP (green, middle, NPY), and merged (right panel) images from the ARC of Calcr^{tdTomato}NPY^{GFP} mice. (**B**) Shown are representative GFP (green, left panel, Calcr), dsRed (red, middle, POMC), and merged (right panel) images from the ARC of Calcr^{GFP}POMC^{dsRed} mice.

Supplemental Figure 6. Medial basal ARC cFos in leptin-deficient and LepRb^{Calcr}KO mice. Shown are representative images of cFos-IR (black) in the ARC of control (left), LepRb^{Calcr}KO (middle) and *Lep*$^{ob/ob}$ (*ob/ob*, right) mice. Scale bar=200 μm.

Supplemental Figure 1.



Supplemental Figure 2.



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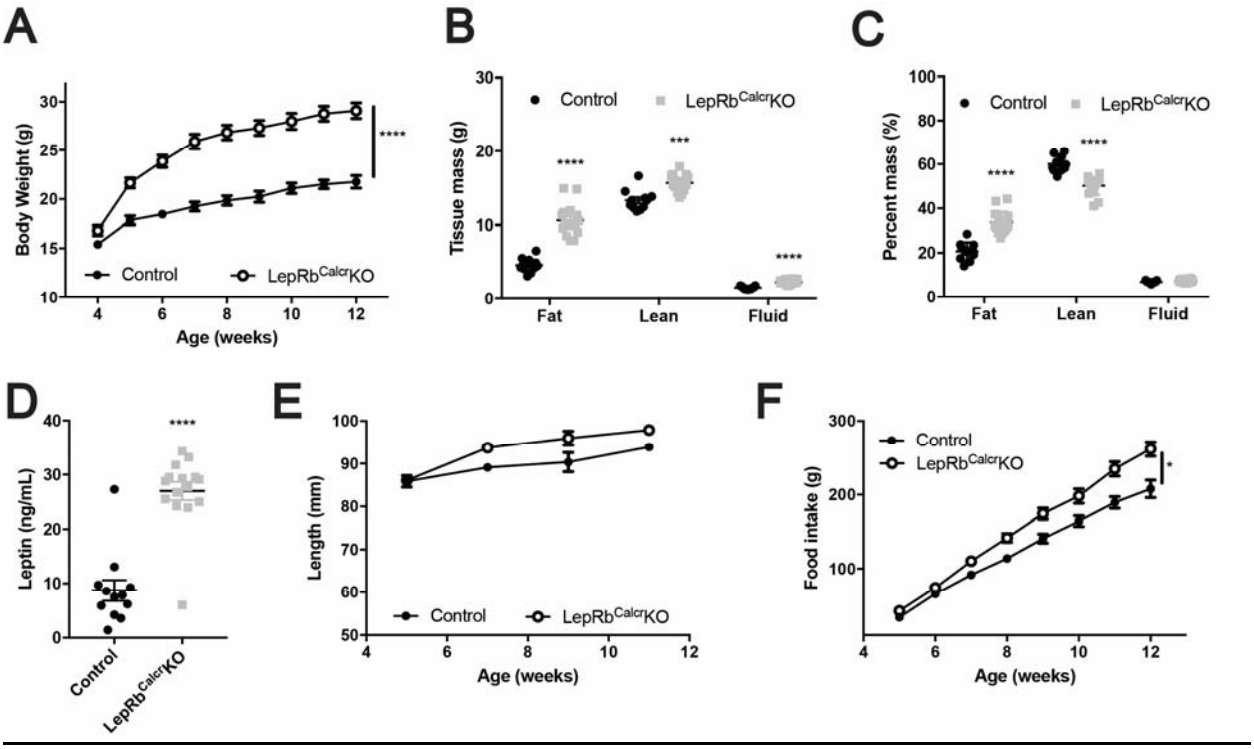

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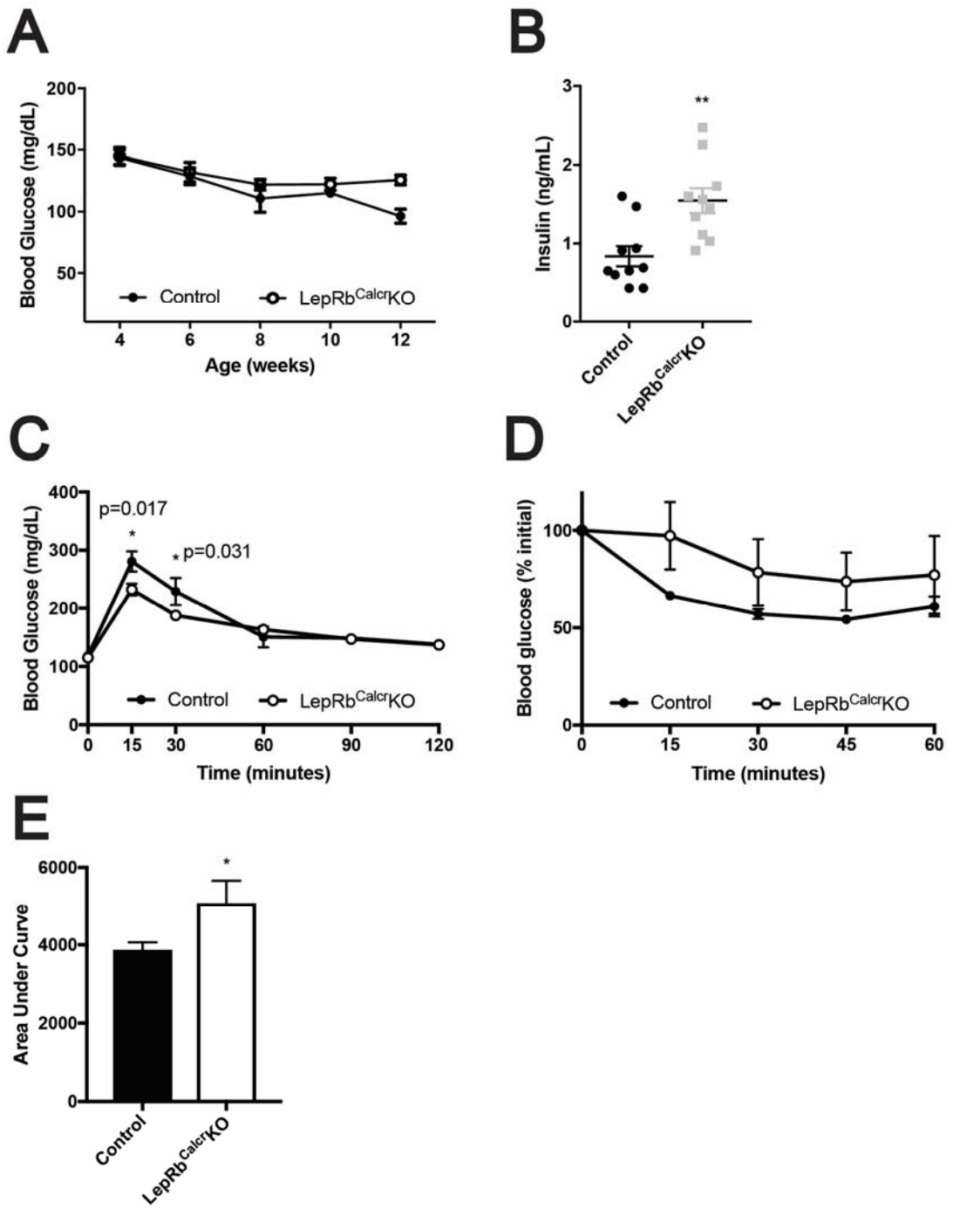

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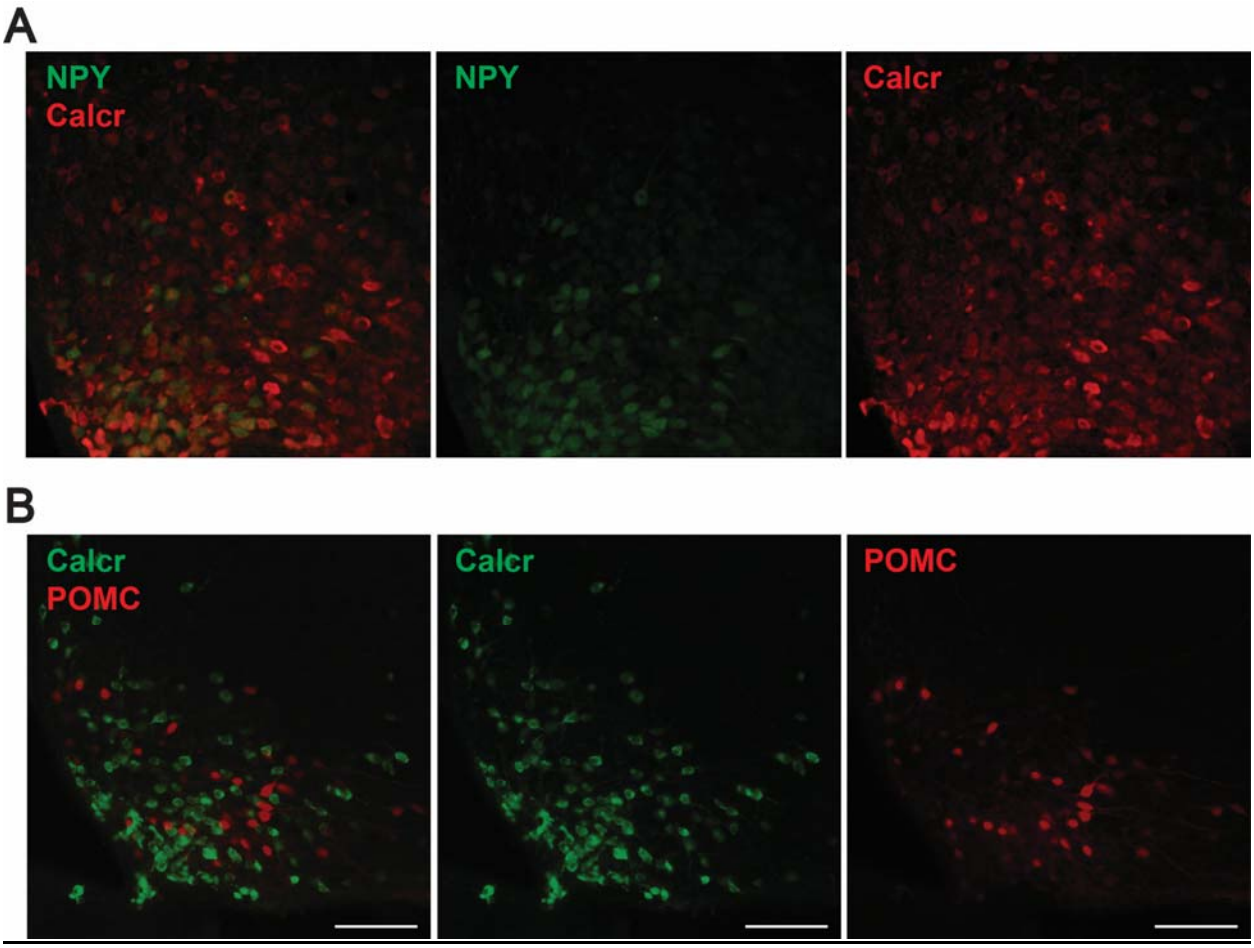

Supplemental Figure 6.