

## Supplementary figure legend

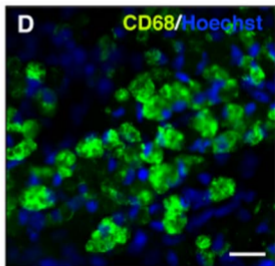
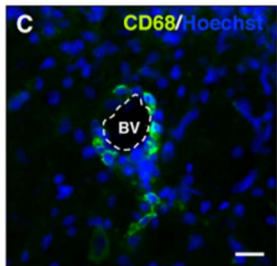
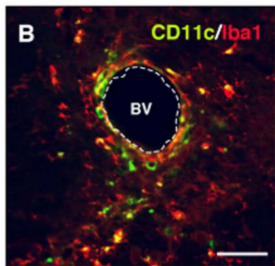
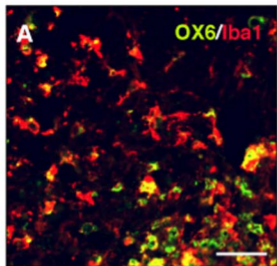
**Supplementary Figure 1.** Intranigral injection of poly(I:C) induces upregulation of MHC-II (OX-6) on Iba1+ microglial cells, perivascular and parenchymal dendritic cell activation and macrophage activation 12 days after the injection. (A-D) Confocal images showing Iba1<sup>+</sup>/MHC-II<sup>+</sup> microglial cells (A), CD11c<sup>+</sup>/Iba1<sup>+</sup> dendritic cells (B), perivascular and parenchymal CD68<sup>+</sup> macrophages (C-D). Scale bar: 50  $\mu$ m (A-B), 20  $\mu$ m (C-D). BV, blood vessels.

**Supplementary Figure 2.** Left panel: injection of poly(I:C) induces upregulation of TLR-3. Confocal images of immunofluorescent staining for TLR-3, TH, Iba1 and GFAP in the SN of rats injected with vehicle or 20  $\mu$ g poly(I:C) at 12 days after injection. **(A-B)** TLR-3 (green) was expressed in DA neurons (TH, red) within the SN in control animals (A). The neuronal expression of TLR3 was increased at 12 days after poly(I:C) injection. **(C-D)** TLR-3 (green) was weakly expressed by microglia (Iba1, red) in control animals (C) and it was upregulated at 12 days after poly(I:C) injection (D). **(E,F)** Astrocytes (GFAP, red) within the SN expressed TLR-3 (green) in control animals (E). Poly (I-C) induced upregulation of astrocytic TLR-3 **(F)**. Right panel: poly(I:C) induces overexpression of PSD-95 and NR1 in the striatum and cytosolic mislocalization of neuronal TDP-43 in the SN. **(G-J)** PSD-95 (red) and NR1 (green) were upregulated in the dorsolateral striatum after poly(I:C) injection. **(K-N)** In vehicle-injected animals, TDP-43 (red) was localized to the nucleus (Hoechst, blue) of neurons (NeuN, green) (K,M). After poly(I:C) injection, a high fraction of neurons in the SN showed a diffuse cytoplasmic TDP-43 staining (L,N). Sections were counterstained with Hoechst. Scale bar: 50  $\mu$ m (A-F), 25  $\mu$ m (insets A,E),

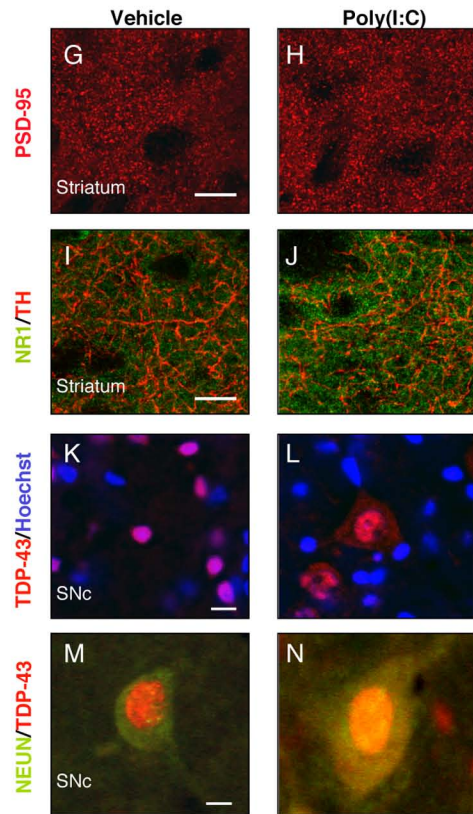
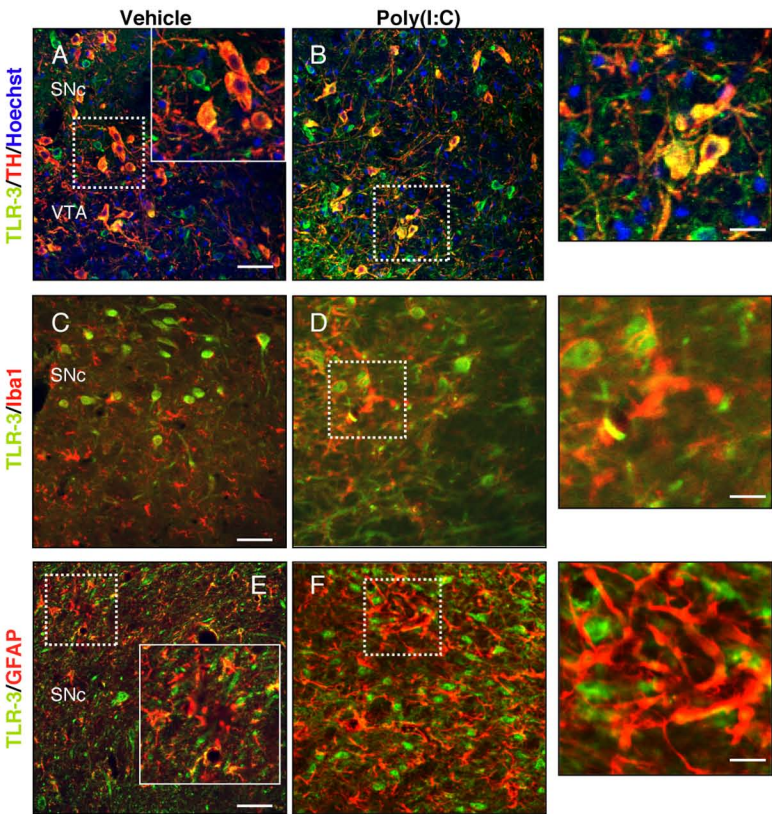
15  $\mu\text{m}$  (insets B,D,F), 10  $\mu\text{m}$  (G-N). SNc, Substantia nigra pars compacta. VTA, ventral tegmental area.

**Supplementary Figure 3. (A-B)** Unbiased stereological analysis of TH<sup>+</sup> and NeuN<sup>+</sup> in the SNc and VTA. (A) Unbiased stereological analysis indicates that rats exposed to poly(I:C) injection, followed by a low-dose injection of 6-OHDA, had significant reduction of TH<sup>+</sup> neurons in the SNc when compared to animals injected with low-dose 6-OHDA. The loss of TH<sup>+</sup> neurons was reflected in the loss of NeuN<sup>+</sup> neurons. (B) No loss of TH<sup>+</sup> or NeuN<sup>+</sup> neurons was detected in the VTA in any of the groups. Animals/group: vehicle/vehicle n=8, poly(I:C)/vehicle n=8, vehicle/6OHDA n=8, poly(I:C)/6OHDA n=8; \* p<0.05, \*\*\* p<0.001, One-way Anova. SNc, substantia nigra pars compacta; VTA, ventral tegmental area.

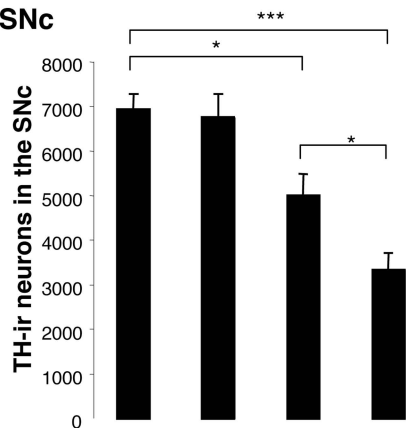
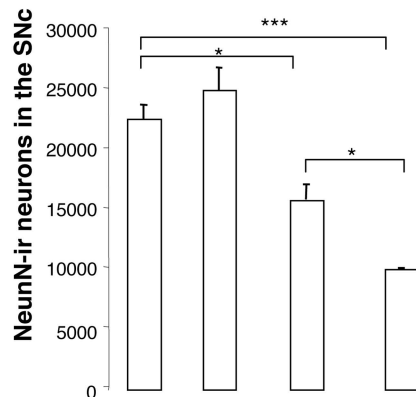
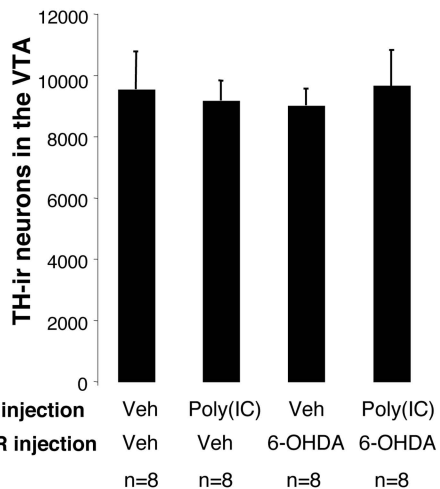
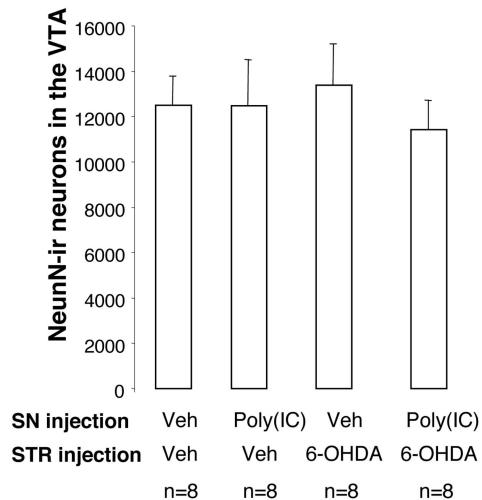
**Supplementary Figure 4. (A-F)** Intranigral injection of poly(I:C) followed by intrastriatal low-dose 6-OHDA induced microglial and astrocytic activation within the SN. Neuroinflammatory reaction was prominent in animals injected with poly(I:C) and low-dose 6-OHDA. (A-F) Confocal images of immunofluorescent staining for TH (red), Iba1 (green) (A-C) and GFAP (green) (D-F) in rats injected with vehicle (A,D), 5 $\mu\text{g}$  6-OHDA (B,E) or combined lesion with poly(I:C) and 6-OHDA (C-F). **(G-I)** Confocal images of immunofluorescent staining for TH (red) and GAD67 (green). In contrast to DA neuron loss, GAD67 immunostaining showed the absence of cell loss and alteration of GAD67 density following the injection of the viral mimic poly(I:C) combined with low-dose 6-OHDA. Scale bar: 100  $\mu\text{m}$  (A-C and G-I), 50  $\mu\text{m}$  (D-F), 50  $\mu\text{m}$  (insets).



Supplementary Figure 1



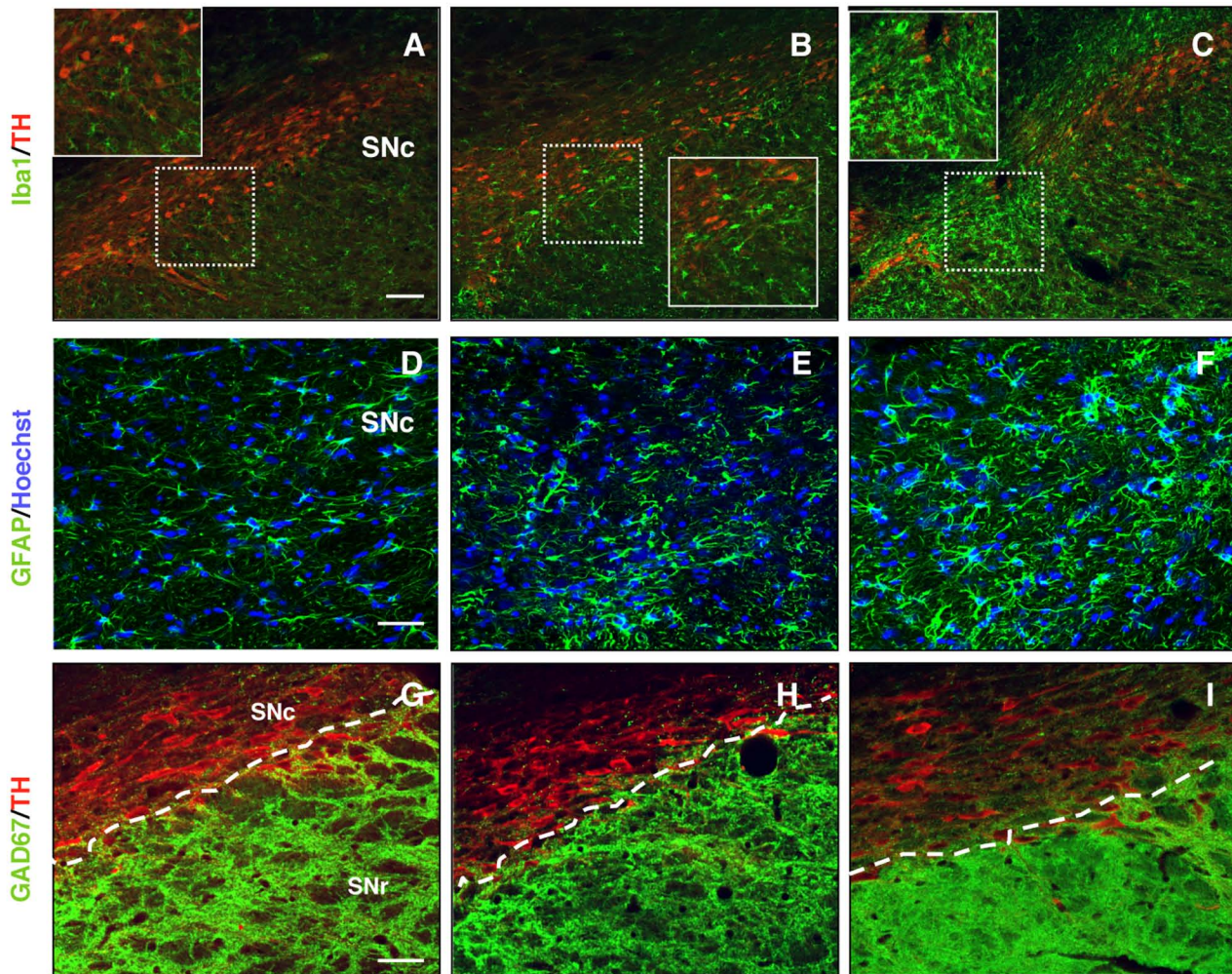
Supplementary Figure 2

**A****SNc****NeunN-ir neurons in the SNc****B****VTA****NeunN-ir neurons in the VTA**

Vehicle

6-OHDA

Poly IC/6-OHDA



Supplementary Figure 4