Supplementary materials for

A topographical atlas of α-synuclein dosage and cell type-specific expression in adult mouse brain and peripheral organs

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Snca Expression Atlas



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Supplementary Figure 1: Brain-wide heatmaps of *Snca* expression and αSyn protein

density. a) *Snca* intensity from RNAScope of a wild-type mouse binned into low (upper panel), medium (middle panel), and high intensity (lower panel) prior to generating the heatmaps. **b**) α Syn staining intensity of a *Snca^{NLS}* mouse binned into low (upper panel), medium (middle panel), and high intensity (lower panel) prior to generating the heatmaps.



Supplementary Figure 2: Brain-wide atlas of α Syn protein density and intensity. a) Coronal atlas of α Syn DAB staining (left) and ilastik segmentation (right). b) Sagittal atlas of α Syn ilastik segmentation following DAB staining. c) Quantification of α Syn density in targeted brain regions. d) Quantification of α Syn+ density and intensity from whole brain staining and imaging. Plotted as box plots with min to max bars.



Supplementary Figure 3: α Syn density and intensity of the lumbar spinal cord. a) Coronal plane chosen to assess different regions of the lumbar spinal cord in *Snca^{NLS}* mice (left) with annotations for the dorsal and ventral horns and ventral white matter (right) from a section stained for α Syn. Scale bar: 1,000µm. b) Merged micrographs from the dorsal horn (upper), ventral horn (middle), and ventral white matter (bottom) staining for neurons (left), astrocytes (middle left), microglia (middle right), and oligodendrocytes (right; different staining paradigm). From these, α Syn density (c) and intensity (d) were quantified. Scale bars: 75µm. Plotted as box plot with min to max bars. Two-way ANOVA with Tukey's post hoc, **** denotes p<0.0001.



Supplementary Figure 4: α Syn staining of the cervical spinal cord. a) Coronal plane chosen to assess different regions of the lumbar spinal cord in *Snca^{NLS}* mice (left) with annotations for the dorsal and ventral horns and ventral white matter (right) from a section stained for α Syn. Scale bar: 1,000µm. b) Merged micrographs from the dorsal horn (upper), ventral horn (middle), and ventral white matter (bottom) staining for neurons (left), astrocytes (middle left), microglia (middle right), and oligodendrocytes (right; different staining paradigm). Scale bars: 75µm.





Supplementary Figure 5: α Syn staining patterns throughout the spinal cord with neuronspecific markers for ChAT and Pax2. a) Coronal plane chosen to assess cervical (left) thoracic (middle) or lumbar (right) *Snca^{NLS}* spinal cord in the intermediolateral (upper), lamina X (middle), and ventral horn (lower) co-stained for α Syn and ChAT. Scale bar or coronal plane: 1000µm. Scale bars for immunofluorescent images: 75µm. b) Coronal plane chosen to assess cervical (left) thoracic (middle) or lumbar (right) *Snca^{NLS}* spinal cord in the dorsal horn (upper) and ventral horn (lower) co-stained for α Syn and Pax2. Scale bars: 75µm.



Supplementary Figure 6: Mining scRNA-Seq datasets to explore a Syn expression patterns in the mouse spinal cord, brain, and colon. a) UMAP plot from the Harmonized Atlas of Mouse Spinal Cord with a') Snca expression pattern and a") neuron-specific sub-clustering. b) tSNE plot from the Aging Mouse Brain dataset from the Broad Institute's Single Cell Portal with b') Snca expression pattern and b") neuron-specific sub-clustering from the study Dissecting Cell-Type Composition and Activity-Dependent Transcriptional State in Mammalian Brains by Massively Parallel Single-Nucleus RNA-Seq. c) tSNE plot from the Human and Mouse Enteric Nervous System at Single Cell Resolution from the Broad Institute's Single Cell Portal with c') Snca expression pattern and c") neuron-specific sub-clustering. ABC (arachnoid barrier cells), ARP (astrocyte-restricted precursors), CC (colonocyte), CPC (choroid plexus epithelial cells), CSF-cN (cerebrospinal fluid contacting neurons), DC (dendritic cells), EPC (ependymocytes), Excit- (excitatory neurons), HbVC (hemoglobin-expressing vascular cells), HypEPC (hypependymal cells), Inhib- (inhibitory neurons), Inter- (interneurons), MN (motor neurons), MNC (monocytes), NendC (neuroendocrine cells), Neut (neutrophils), NRP (neuronal-restricted precursors), NSC (neural stem cells), OEG (olfactory ensheathing glia), OPC (oligodendrocyte precursor cells), PC (pericytes), PGC (preganglionic cells), Sensory (sensory neurons), Stem (stem cells), SV (secretomotor/vasodilator neurons), TA (transit-amplifying cells), TNC (tanycytes), VLMC (vascular and leptomeningeal cells).

Supplementary Table 1 Antibodies used in this study with their application

Primary BD Bioxicross, 610787, Mose Immundhursesnee, asymuchin 1:200 BD Bioxicross, 610787, MitDAB_ISB08 Mose Immundhursesnee, cell-specific staining & immundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, issued period Primary DAPI Millipors Signa, 3881957, RRIDAB_232148 Goat Immundhursesnee, cell-specific staining & inmundhursesnee, issued syn 30 Atlas 1:000 Primary Flag (0DDDK)* Abex RRIDAB_232148 Mouse RRIDAB_232148 Immundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, second RRIDAB_257526 Mouse RRIDAB_257526 Immundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, cell-specific staining & inmundhursesnee, inmundhursesnee, second RRIDAB_257526 Immundhursesnee, cell-specific staining & inmundhursesnee, cell-specific sta		Antibodies (alphabetical)	Provider, Catalog #, RRID	Species	Application	Concentration
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Primary Cell Signaling RRUCAB_1904156 Rabbit RRUCAB_1904156 Rabbit RRUCAB_1904156 ENS Immunofluoresence cell-specific staining 1:1000 Calretinin Invitrogen, PA5.543560, RRUCAB_2924291 Got Immunofluoresence, cell-specific staining 1:1000 Choline acetyltransferase (ChAT) EMD Millipore, AB144P, RRUCAB_2922916 Got Immunofluoresence, cell-specific staining 1:1000 Flag (DDDOK)* Abcam, ab1257, RRUCAB_292126 Goat Immunofluoresence, cell-specific staining 1:1000 Flag (DDDOK)* Abcam, ab1257, RRUCAB_21448 Goat Immunofluoresence, cell-specific staining 1:1000 Flag (DDDOK)* Abcam, ab1257, RRUCAB_21448 Goat Immunofluoresence, cell-specific staining 1:100 RRUCAB_2000 RRUCAB_21448 Mouse Immunofluoresence, cell-specific staining 1:100 RRUCAB_204395 Rabbit Immunofluoresence, cell-specific staining 1:100 RRUCAB_204395 Rabbit Immunofluoresence, cell-specific staining 1:200 NeuN RRUCAB_2023056 Rabbit Immunofluoresence, cell-specific staining 1:200 NeuN RRUCAB_20235580 Goat		αSynuclein	BD Biosciences, 610787, RRID:AB_398108	Mouse	Immunofluoresence, cell-specific staining & Immunohistochemistry, αSyn DAB Atlas	1:1000
Calbindin D28K Invitrogen, PAS-85669, RRIDAB_2792808 Babbit Immunofluoresence, cell-specific staining 1:1000 Calcetinin Invitrogen, PAS-85669, RRIDAB_2642791 Oncleen Immunofluoresence, cell-specific staining 1:1000 Choline acetyltransferase (ChAT) RRIDAB_209751 Goat Immunofluoresence, cell-specific staining 1:1000 Flag (D000k)* RRIDAB_2929216 Goat Immunofluoresence, cell-specific staining 1:1000 Flag (D000k)* RRIDAB_2929216 Goat Immunofluoresence, cell-specific staining 1:1000 Flag (D000k)* RRIDAB_2929216 Goat Immunofluoresence, cell-specific staining 1:1000 Bia1 Fuglith Wako, 013- 19741, RRIDAB_2503055 Rabbit Immunofluoresence, cell-specific staining 1:1000 MIIID0PA Signa- RRIDAB_250227 Rabbit Immunofluoresence, cell-specific staining 1:1000 Pas2 RAD Systems, AF 2486 Goat Immunofluoresence, cell-specific staining 1:1000 Fuer All Signaling RRIDAB_252555 Goat Immunofluoresence, cell-specific staining 1:1000 Fuer All Signaling RRIDAB_2255554 Goat Mocue Signaling			Cell Signaling Technology, 4179, RRID:AB_1904156	Rabbit	ENS immunofluoresence	1:250
Calrettinin Invitrogen, PAS-143562, RRIDAB_2342791 Oricken Immunofluoresence, cell-specific staining 1:1000 Choline acetyltransferase (ChAT) EMD Millipore, AB144P, RRIDAB_2079751 Goat Immunofluoresence, cell-specific staining 1:200 DAPI Millipore Sigma, 09542 cell-specific staining 1:1000 Flag (0DDDK)* Abcam, ab1257, RRIDAB_20216 Goat Immunofluoresence, csyn 30 Atlas 4µg HuC/HuD RainDAB_201916 Goat Immunofluoresence, csyn 30 Atlas 1:100 Iba1 Fujifim Wako, 019- 19741, RRIDAB_208926 Rabbit Immunofluoresence, csyn ¹⁶⁵ Atlas 1:500 NeuN Technologies, 129435, RRIDAB_208935 Rabbit Immunofluoresence, csyn ¹⁶⁵ Atlas 1:500 NeuN Technologies, 129435, RRIDAB_208935 Rabbit Immunofluoresence, csyn ¹⁸⁵ Atlas 1:200 Olig2 R&D Systems, AF348 Goat Immunofluoresence, cell-specific staining 1:200 Tyrosine hydroxylase RRIDAB_2089228 Goat Immunofluoresence, cell-specific staining 1:200 Tyrosine hydroxylase RRIDAB_2235754 Mouse FN Immun		Calbindin D28K	Invitrogen, PA5-85669, RRID:AB_2792808	Rabbit	Immunofluoresence, cell-specific staining	1:1000
Primary Choline acetyltransferase (ChAT) EMD Millipore, AB144P, RRIDAB_2079751 Goat Immunofluoresence, cell-specific staining 1:000 Primary DAPI Millipore Sigma, 09542 Immunofluoresence, cell-specific staining 1:1000 Primary HuC/HuD Abcam, ab1277, RRIDAB_2021448 Goat Immunofluoresence, cs/m 30 Atlas 4µg HuC/HuD Thermorisither Scientific, A22121, RRIDAB_03050- RRIDAB_10807954 Rabbit Immunofluoresence, cs/m ¹⁵ Atlas 1:100 Millipore Sigma, 3831957, RRIDAB_10807954 Rabbit Immunofluoresence, cs/m ¹⁵ Atlas 1:500 NeuN Cell Signaling Technologies, 129435, RRIDAB_2557267 Mouse Immunofluoresence, cs/m 30 Atlas 1:100 Olig2 RRD Skytems, Ar248, Collig2 RRDAB_2557267 Mouse Immunofluoresence, cs/m 30 Atlas 1:200 Tuj1 (Bill-tubulin) Sigma-Aldrich, 18600, RRDAB_255666 Rabbit Immunofluoresence, cs/m 30 Atlas 1:200 Tug1 (Bill-tubulin) Sigma-Aldrich, 18600, RRDAB_2726607 Immunofluoresence, cs/m 30 Atlas 1:200 Tug1 (Bill-tubulin) Sigma-Aldrich, 18600, RRDAB_2726508 Rabbit Immunofluoresence, cell-specific staining		Calretinin	Invitrogen, PA5-143562, RRID:AB_2942791	Chicken	Immunofluoresence, cell-specific staining	1:1000
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Secondary NeuN Cell Signaling Technologies, 12943S, RRID:AB_263039S Rabbit Rabbit Immunofluoresence, cell-specific staining 1:1000 EnCor Biotechnology, MCA:1B7, RRID:AB_2572267 Mouse Immunofluoresence, aSyn 3D Atlas 5µg Olig2 R&D Systems, AF2418, RRID:AB_2157554 Goat Immunofluoresence, aSyn 3D Atlas 1:200 Pax2 R&D Systems, AF3364, SP, RRID:AB_2157554 Goat Immunofluoresence, cell-specific staining 1:200 Tuj1 (BII-tubulin) Sigma-Aldrich, T8660, RRID:AB_2728660 Rabbit Immunofluoresence, cell-specific staining 1:1000 Tuj1 (BII-tubulin) Sigma-Aldrich, T8660, RRID:AB_2728660 Mouse Immunofluoresence, cell-specific staining 1:1000 Tuj1 (BII-tubulin) Sigma-Aldrich, T8660, RRID:AB_2728560 Mouse Immunofluoresence, cell-specific staining 1:1000 Goat-anti-Mouse IgG (H+L) Alexa Fluor 488 Thermo Fisher Scientific, A:1104, RRID:AB_2535780 Mouse Immunofluoresence 1:500 Goat-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A:21144, RRID:AB_2535780 Mouse 1:500 Goat-anti-Mouse IgG (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A:21144, RRID:AB_2535780 Mouse </td <td></td> <td>Millipore Sigma, 3881957, RRID:AB_10807954</td> <td>Rabbit</td> <td>Immunofluoresence, αSyn^{NLS} Atlas</td> <td>1:500</td>			Millipore Sigma, 3881957, RRID:AB_10807954	Rabbit	Immunofluoresence, αSyn ^{NLS} Atlas	1:500
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Olig2R&D Systems, AF2418, RRID-AB_2157554GoatImmunofluoresence, cell-specific staining1:200Pax2R&D Systems, AF3364 SP, RRID-AB_10889228GoatImmunofluoresence, cell-specific staining1:200Sox9Abcarn, ab185966, RRID-AB_2728660RabbitImmunofluoresence, cell-specific staining1:1000Tuj1 (βIII-tubulin)Sigma-Aldrich, T8660, RRID-AB_30204MouseENS immunofluoresence, cell-specific staining1:1000Tyrosine hydroxylaseRID:AB_477590MouseENS immunofluoresence, cell-specific staining1:1000Tyrosine hydroxylaseRID:AB_2728600MouseENS immunofluoresence, cell-specific staining1:1000Goat-anti-Mouse IgG (H+L) Alexa Fluor 647Thermo Fisher Scientific, A-21144, RRID:AB_2535806Goat abbitImmunofluoresenceSecondaryGoat-anti-Mouse IgG 1Alexa Fluor 647Thermo Fisher Scientific, A-21224, RAD:AB_2535864MouseInstrumofluoresenceGoat-anti-Rabbit IgG (H+L) Alexa Fluor 647Invitrogen, A11010, RRID:AB_25358212MouseInstrumofluoresenceGoat-anti-Rubbit IgG (H+L) Alexa Fluor 647Invitrogen, A21121, RRID:AB_2535866MouseInstrumofluoresenceGoat-anti-Rubbit Alexa Fluor 546Invitrogen, A21121, RRID:AB_2358667MouseInmunofluoresenceGoat-anti-Rubbit Alexa Fluor 546Invitrogen, A21121, RRID:AB_2358621MouseInmunofluoresenceGoat-anti-Rubbit Alexa Fluor 546Invitrogen, A21121, RRID:AB_2336821MouseImmunofluoresenceGoat			EnCor Biotechnology, MCA-1B7, RRID:AB_2572267	Mouse	Immunofluoresence, αSyn 3D Atlas	5µg
Pax2 R&D Systems, AF3364- SP, RRID:AB_10889828 Goat Immunofluoresence, cell-specific staining 1:200 Sox9 Abcam, ab185966, RRID:AB_2728660 Rabbit Immunofluoresence, cell-specific staining 1:200 Tuj1 (βIII-tubulin) Sigma-Aldrich, T8660, RRID:AB_477590 Mouse ENS immunofluoresence, cell-specific staining 1:1000 Tyrosine hydroxylase RRID:AB_47590 Mouse ENS immunofluoresence, cell-specific staining 1:1000 Tyrosine hydroxylase RRID:AB_47590 Mouse ENS immunofluoresence, cell-specific staining 1:1000 Donkey-anti-Goat Alexa Fluor 488 A32814, RRID:AB_2530204 Goat Filor 1:1000 Goat-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A:21144, RRID:AB_2535780 Mouse Inmunofluoresence Goat-anti-Mouse IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, A:21244, RRID:AB_2535866 Inmunofluoresence 1:500 Goat-anti-Mouse IgG 1Alexa Fluor 647 Invitrogen, A21121, RRID:AB_2535764 Mouse Inmunofluoresence 1:1000 Goat-anti-Mouse IgG 1Alexa Fluor 647 Invitrogen, A21121, RRID:AB_2535764 Mouse 1:1000 Goat-anti-Mouse IgG 1Alexa Fluor 488 <td>Olig2</td> <td>R&D Systems, AF2418,</td> <td>Goat</td> <td>Immunofluoresence,</td> <td>1:200</td>		Olig2	R&D Systems, AF2418,	Goat	Immunofluoresence,	1:200
Sox9 Abcam, ab185966, RRD:AB_2728660 Rabbit Rabbit Immunofluoresence, cell-specific staining 1:1000 Tuj1 (βIII-tubulin) Sigma-Aldrich, T8660, RRD:AB_277590 Mouse ENS 1:500 Tyrosine hydroxylase Millipore, AB152, RRD:AB_30204 Rabbit Immunofluoresence, cell-specific staining 1:1000 Donkey-anti-Goat Alexa Fluor 488 A32814, Fluor 488 Goat Goat Goat Goat-anti-Mouse IgG (H+L) Alexa Fluor 568 ThermoFisher Scientific, RRD:AB_2752838 Mouse Immunofluoresence, cell-specific staining 1:1000 Secondary Goat-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A-21144, RRD:AB_2535780 Mouse Immunofluoresence 1:500 Secondary Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, RRD:AB_2535812 Mouse Immunofluoresence 1:500 Goat-anti-Chicken IgY (H+L) Alexa Fluor 647 ThermoFisher Scientific, A-21449, RRD:AB_2535866 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRD:AB_2535764 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRD:AB_253621 Mouse 1:1000		Pax2	R&D Systems, AF3364- SP, RRID:AB_10889828	Goat	Immunofluoresence, cell-specific staining	1:200
Tuj1 (βll-tubulin) Sigma-Aldrich, T8660, RRID:AB_477590 Mouse immunofluoresence, cell-specific staining 1:500 Tyrosine hydroxylase Millipore, AB152, RRID:AB_390204 Rabbit Immunofluoresence, cell-specific staining 1:1000 Donkey-anti-Goat Alexa Fluor 488 A32814, Fluor 488 Goat Goat Goat 1:1000 Goat-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A-11001, RRID:AB_253069 Mouse Thermo Fisher Scientific, A-21144, RRID:AB_2535780 Mouse 1:500 Donkey-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A-21144, RRID:AB_2535780 Mouse 1:500 Goat-anti-Mouse IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, R37115, RRID:AB_2535780 Mouse 1:500 Goat-anti-Mouse IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, A-21244, RRID:AB_2535861 Immunofluoresence 1:500 Goat-anti-Mouse IgG 1 Alexa Fluor 647 Invitrogen, A21121, RRID:AB_2535764 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2535764 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A21121, RRID:AB_235764 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A21121, RRID:AB_2353764 Mouse 1:1000		Sox9	Abcam, ab185966,	Rabbit	Immunofluoresence,	1:1000
Tyrosine hydroxylase Millipore, AB152, RRID:AB_390204 Rabbit Immunofluoresence, cell-specific staining 1:1000 Donkey-anti-Goat Alexa Fluor 488 A32814, RRID:AB_2762838 Goat Goat 1:1000 Goat-anti-Mouse IgG (H+L) Alexa Fluor 488 Thermo Fisher Scientific, A-11001, RRID:AB_253069 Mouse 1:500 Goat-anti-Mouse IgG 2b Alexa Fluor 568 Thermo Fisher Scientific, A-21104, RRID:AB_2535780 Mouse 1:500 Donkey-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A-21104, RRID:AB_2535780 Mouse 1:500 Goat-anti-Mouse IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, R37115, RRID:AB_2535812 Mouse 1:500 Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A-21244, RRID:AB_2535812 Rabbit Immunofluoresence Goat-anti-Mouse IgG1 Alexa Fluor 647 Invitrogen, A21121, RRID:AB_2535764 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2534077 Rabbit 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2536821 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_253667 Mouse 1:1000		Tuj1 (βIII-tubulin)	Sigma-Aldrich, T8660, RRID:AB_477590	Mouse	ENS	1:500
ThermoFisher Scientific, Donkey-anti-Goat Alexa Fluor 488 Goat-anti-Mouse IgG (H+L) Alexa Fluor 488 Thermo Fisher Scientific, A-11001, RRID:AB_2534069 Goat Goat-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A-21144, RRID:AB_253780 Mouse RRID:AB_253780 Donkey-anti-Mouse IgG (H+L) Alexa Fluor 568 Thermo Fisher Scientific, A-21144, RRID:AB_2535780 Mouse RRID:AB_2535643 1:500 Donkey-anti-Mouse Alexa Fluor 594 ThermoFisher Scientific, R37115, RRID:AB_25356543 Mouse RRID:AB_2535812 1:500 Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, A-21244, RRID:AB_2535812 Immunofluoresence Goat-anti-Chicken IgY (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A-21449, RRID:AB_2535764 Chicken RRID:AB_2535764 Goat-anti-Mouse IgG1 Alexa Fluor 488 Invitrogen, A11010, RRID:AB_2536764 Mouse Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2536764 Mouse VectaStain Elite ABC Peroxidase Kit Vector Laboratories, PK- G102, RRID:AB_233821 Mouse Immunohistochemistry, aSyn DAB Atlas DAB Substrate Kit, Peroxidase Weetor Laboratories, SK- Immunohistochemistry, Mouse Immunohistochemistry,		Tyrosine hydroxylase	Millipore, AB152, RRID:AB 390204	Rabbit	Immunofluoresence, cell-specific staining	1:1000
Interme Fisher Goat-anti-Mouse IgG (H+L) Alexa Fluor 488 Thermo Fisher Scientific, A-11001, RRID:AB_253780 Mouse Goat-anti-Mouse IgG2b Alexa Fluor 568 Thermo Fisher Secondary Goat-anti-Mouse Alexa Fluor 594 Thermo Fisher Scientific, A-21144, RRID:AB_2535780 Mouse Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, A-21244, RRID:AB_2535812 Immunofluoresence Goat-anti-Chicken IgY (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A-21449, RRID:AB_2535866 Mouse Goat-anti-Mouse IgG1 Alexa Fluor 647 Invitrogen, A21121, RRID:AB_2535764 Mouse Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A21121, RRID:AB_2535764 Mouse Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A211010, RRID:AB_253507 Mouse Staining Kits VectaStain Elite ABC Peroxidase Vector Laboratories, SK- Mouse Immunohistochemistry, aSyn DAB Atlas	Secondary	Donkey-anti-Goat Alexa Fluor 488	ThermoFisher Scientific, A32814, BRID:AB 2762838	Goat	- Immunofluoresence	1:500
Goat-anti-Mouse IgG2b Alexa Fluor 568 Thermo Fisher Scientific, A-21144, RRID:AB_2535780 Mouse Array Instance 1:500 Secondary Donkey-anti-Mouse Alexa Fluor 594 ThermoFisher Scientific, R37115, RRID:AB_2556543 Mouse Array Instance 1:500 Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, A-21244, RRID:AB_2535812 Instance Immunofluoresence Goat-anti-Chicken IgY (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A-21449, RRID:AB_2535866 Chicken RRID:AB_2535866 Immunofluoresence Goat-anti-Mouse IgG1 Alexa Fluor 488 Invitrogen, A21121, RRID:AB_2535764 Mouse 1:1000 Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2534077 Rabbit 1:1000 Staining Kits VectaStain Elite ABC Peroxidase Vector Laboratories, SK- Mouse Immunohistochemistry, αSyn DAB Atlas -		Goat-anti-Mouse IgG (H+L) Alexa Fluor 488	Thermo Fisher Scientific, A-11001, RRID:AB_2534069			
Secondary Donkey-anti-Mouse Alexa Fluor 594 ThermoFisher Scientific, RRID:AB_2556543 Immunofluoresence Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647 ThermoFisher Scientific, A-21244, RRID:AB_2535812 Immunofluoresence Goat-anti-Chicken IgY (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A-21449, RRID:AB_2535866 Chicken Goat-anti-Mouse IgG1 Alexa Fluor 488 Invitrogen, A21121, RRID:AB_2535764 Mouse Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2534077 Mouse Staining Kits VectaStain Elite ABC Peroxidase Vector Laboratories, SK- Mouse		Goat-anti-Mouse IgG2b Alexa Fluor 568	Thermo Fisher Scientific, A-21144, RRID:AB_2535780	Mouse		
Statining Kits Vectos Laboratories, SK- Immunohistochemistry, User Statining Kits		Donkey-anti-Mouse Alexa Fluor 594	ThermoFisher Scientific, R37115, RRID:AB_2556543			
Goat-anti-Chicken IgY (H+L) Alexa Fluor 647 Thermo Fisher Scientific, A-21449, RRID:AB_2535866 Chicken Mouse Goat-anti-Mouse IgG1 Alexa Fluor 488 Invitrogen, A21121, RRID:AB_2535764 Mouse Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2534077 Mouse VectaStain Elite ABC Peroxidase Kit Vector Laboratories, PK- 6102, RRID:AB_2336821 Mouse DAB Substrate Kit, Peroxidase Vector Laboratories, SK- Immunohistochemistry, urgyn DAB Atlas -		Goat-anti-Rabbit IgG (H+L) Alexa Fluor 647	ThermoFisher Scientific, A-21244, RRID:AB_2535812	Rabbit		
Goat-anti-Mouse IgG1 Alexa Fluor 488 Invitrogen, A21121, RRID:AB_2535764 Mouse Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2534077 Mabbit VectaStain Elite ABC Peroxidase Kit Vector Laboratories, PK- 6102, RRID:AB_2336821 Mouse DAB Substrate Kit, Peroxidase Vector Laboratories, SK- Immunohistochemistry, usyn DAB Atlas -		Goat-anti-Chicken IgY (H+L) Alexa Fluor 647	Thermo Fisher Scientific, A-21449, RRID:AB_2535866	Chicken		
Goat-anti-Rabbit Alexa Fluor 546 Invitrogen, A11010, RRID:AB_2534077 Rabbit Staining Kits VectaStain Elite ABC Peroxidase Kit Vector Laboratories, PK- 6102, RRID:AB_2336821 Mouse Immunohistochemistry, αSyn DAB Atlas DAB Substrate Kit, Peroxidase Vector Laboratories, SK- Immunohistochemistry, Immunohistochemistry, Immunohistochemistry,		Goat-anti-Mouse IgG1 Alexa Fluor 488	Invitrogen, A21121, RRID:AB_2535764	Mouse		1:1000
VectaStain Elite ABC Peroxidase Vector Laboratories, PK- 6102, RRID:AB_2336821 Mouse Immunohistochemistry, αSyn DAB Atlas DAB Substrate Kit, Peroxidase Vector Laboratories, SK- Immunohistochemistry,		Goat-anti-Rabbit Alexa Fluor 546	Invitrogen, A11010, RRID:AB_2534077	Rabbit		
DAB Substrate Kit, Peroxidase Vector Laboratories, SK- Immunohistochemistry,	Staining Kits	VectaStain Elite ABC Peroxidase Kit	Vector Laboratories, PK- 6102, RRID:AB_2336821	Mouse	Immunohistochemistry, αSyn DAB Atlas	-
HRP, with Nickel (3,3 - 4100, RRID:AB_2336382 αSyn DAB Atlas diaminobenzidine)		DAB Substrate Kit, Peroxidase HRP, with Nickel (3,3'- diaminobenzidine)	Vector Laboratories, SK- 4100, RRID:AB_2336382		Immunohistochemistry, αSyn DAB Atlas	-

*this antibody has since been discontinued