

Reveal New Spatial Insights in Neurobiology and Neuropathology Mouse Models with RNAscope™ ISH Assays



Your Genes. Your Way.

Easily interrogate just the genes you want in the combinations you need to achieve your research goals.

Select from a list of proven probes for cell type identification and add any additional RNA markers from an online catalog of 1000's of pre-designed neural probes. If we don't have the target you need, you can easily design a new custom probe using our expert probe design.

Your Success.

- Spatially interrogate neuronal cell subtypes and networks at single-cell resolution.
- Characterize changes in cellular localization and activation in health and disease states.
- Easily visualize GPCR target genes with high specificity.
- Uncover the role of unique splice variants, miRNAs, and circRNAs in spatial context.

RNAscope Probes for Mouse Cell Types

Mouse Neurons		
Cell Type	Top Probes	Reference RNAscope Probe Publications
Mature neurons	<i>Map2, Rbfox3, Tubb3</i>	<ul style="list-style-type: none"> • Meneghello et al., <i>Neuroscience</i>, 2015. • Nakazato et al., <i>Sec. Multiple Sclerosis and Neuroimmunology</i>, 2020. • Lorsch et al., <i>Nature neuroscience</i>, 2019.
Cholinergic neurons	<i>Ache, Chat, Slc18a3</i>	<ul style="list-style-type: none"> • Steinkellner, Thomas et al., <i>eNeuro</i>, 2019. • Skirzewski, M. et al., <i>Nature Communications</i>, 2022. • Francis, T. Chase et al., <i>Neuron</i>, 2019.
Dopaminergic neurons	<i>Slc6a3, Slc17a6, Th</i>	<ul style="list-style-type: none"> • Buck, Silas A et al., <i>The Journal of neuroscience</i>, 2021. • Venkataraman, A. et al., <i>Neuropsychopharmacology</i>, 2021. • Chefer, Vladimir I et al., <i>Neuropsychopharmacology</i>, 2013.
GABAergic neurons	<i>Gad1, Slc6a1, Slc32a1</i>	<ul style="list-style-type: none"> • Wang, Lei et al., <i>Neuropharmacology</i>, 2016. • Rizzi, Giorgio, and Kelly R Tan. <i>Cell reports</i>, 2019. • Szlaga, Agata et al., <i>Neuropharmacology</i>, 2022.
Glutamatergic neurons	<i>Gls, Slc17a6, Slc17a7</i>	<ul style="list-style-type: none"> • Maldonado et al., <i>Current biology</i>, 2021. • Kroeger et al., <i>Sleep</i>, 2022.
Serotonergic neurons	<i>Pet-1, Slc6a4, Tph</i>	<ul style="list-style-type: none"> • Xiao, Xing et al., <i>Nature communications</i>, 2021. • Kast, Ryan J et al., <i>ACS chemical neuroscience</i>, 2017.

RNAscope™ Probes for Mouse Cell Types *(continued)*

Mouse Glial, Oligodendrocytes, and Immune Cells		
Cell Type	Top Probes	Reference RNAscope Probe Publications
Astrocytes	<i>Aldh1l1, Aqp4, Gfap</i>	<ul style="list-style-type: none"> Boulay et al., <i>Cell discovery</i>, 2017. Mazumder et al., <i>iScience</i>, 2022. Becker-Krail et al., <i>Biological psychiatry</i>, 2022.
Brain microvascular endothelial cells	<i>Cd31, Cldn5, Vwf</i>	<ul style="list-style-type: none"> Chen, Michelle B et al., <i>Cell reports</i>, 2020. Dudek, Katarzyna A et al., <i>PNAS United States of America</i>, 2020. Liu, CC. et al., <i>Nature Neuroscience</i>, 2022.
Ependymal cells	<i>Cd24, Foxj1, Mia</i>	<ul style="list-style-type: none"> MacDonald, Adam et al., <i>Frontiers in cellular neuroscience</i>, 2021. Rodrigo A., Aida et al., <i>Developmental cell</i>, 2023.
Microglia	<i>Aif1, Cd68, Tmem119</i>	<ul style="list-style-type: none"> Lovatt et al., <i>Communications biology</i>, 2022. He, Baixuan et al., <i>FASEB journal</i>, 2020. Liu, Yu-Yan et al., <i>Neural regeneration research</i>, 2023.
Oligodendrocytes	<i>Mbp, Mog, Olig2</i>	<ul style="list-style-type: none"> Barak et al., <i>Nature neuroscience</i>, 2019. Flygt et al., <i>Journal of neurotrauma</i>, 2018. Losurdo et al., <i>Brain sciences</i>, 2020.
Pericytes	<i>Asma, Pdgfra, Rgs5</i>	<ul style="list-style-type: none"> Smyth, L.C.D. et al., <i>Communications Biology</i>, 2022. Ayloo, Swathi et al. <i>Neuron</i>, 2022. Chasseigneaux, S. et al., <i>Scientific Reports</i>, 2018.
T cells	<i>Cd3, Cd4, Cd8</i>	<ul style="list-style-type: none"> Rezzonico, M.G. et al., <i>Cell Rep</i>, 2021.
Schwann cells	<i>Gap43, Mpz, S100</i>	<ul style="list-style-type: none"> Renthal et al., <i>Neuron</i>, 2020. Shadrach et al., <i>iScience</i>, 2021. Matson et al., <i>Nature Communications</i>, 2022.
Mouse Neural Progenitor Cells		
Cell Type	Top Probes	Reference RNAscope Probe Publications
Immature neurons	<i>Dcx, Tbr1, Tubb3</i>	<ul style="list-style-type: none"> Wimalasena, Nivanthika K et al., <i>Experimental neurology</i>, 2023. Ghibaudi, Marco et al., <i>International journal of molecular sciences</i>, 2023. Kiyama, Takae et al., <i>Cell reports</i>, 2019.
Intermediate progenitors	<i>Ascl1, Eomes, Tbr2</i>	<ul style="list-style-type: none"> MacPherson, Melissa J et al., <i>Cell reports</i>, 2021. Hochgerner, H. et al., <i>Nature Neuroscience</i>, 2018. Velasco, S. et al., <i>Nature</i>, 2019.
Neuroepithelial cells	<i>Hes1, Nes, Notch1</i>	<ul style="list-style-type: none"> Marczenke, Maïke et al., <i>Development</i>, 2021. Li, Li et al., <i>Nature cell biology</i>, 2016.
Oligodendrocyte precursor cells	<i>Ng2, Pdgfra, Sox10</i>	<ul style="list-style-type: none"> Yao et al., <i>Neuron</i>, 2018. van Bruggen et al., <i>Developmental cell</i>, 2022. Falcão et al., <i>Nature medicine</i>, 2018.
Radial glia	<i>Hes1, Pax6, Tnc</i>	<ul style="list-style-type: none"> Song, Michael et al., <i>Nature</i>, 2020. Adams, K.L. et al., <i>Nature Communications</i>, 2020.

RNAscope™ Probes for Mouse Models of Neurodegeneration

Mouse Models of Neurodegeneration		
Disease Type	Top Probes	Reference RNAscope Probe Publications
Amyotrophic lateral sclerosis (ALS)*	<i>C9orf72, Sod1, Tnf</i>	<ul style="list-style-type: none"> • Wlaschin, J.J., et al., <i>Brain</i>, 2022. • Frick et al., <i>Acta Neuropathol Commun</i>, 2018. • Mifflin, L., et al., <i>PNAS</i>, 2021.
Alzheimer's Disease	<i>ApoE, App, Bace2, Il6, Mapt, Psen1, Tnf, Trem2</i>	<ul style="list-style-type: none"> • Rice, H.C., et al., <i>Mol. Neurodegener</i>, 2020. • Fitz, N.F., et al., <i>Mol. Neurodegener</i>, 2020. • Schultz, et al., <i>Neurobiology of disease</i>, 2018. • Huck et al., <i>Neurobiology of Pain</i>, 2022. • Voytyuk, I.M., et al., <i>Life Science Alliance</i>, 2018. • Reinhardt, L., et al., <i>Neurobiol Dis</i>, 2023. • Das, M., et al., <i>iScience</i>, 2021. • Alvarez-Vergara, M.I., et al., <i>Nat Comm</i>, 2021. • Huang, L., et al., <i>PLoS Biol</i>, 2021.
Huntington's Disease*	<i>Bdnf, Htt, Neat1</i>	<ul style="list-style-type: none"> • Gu, X., et al., <i>Neuron</i>, 2022 • Cheng, C.S., et al., <i>Hum Mol Genet</i>, 2018 • Lei, H.C., et al., <i>bioRxiv</i>, 2023
Parkinson's Disease	<i>Cacna1d, Casp3, Lrrk2, Mapt, Snca, Vglut2</i>	<ul style="list-style-type: none"> • Bellina, A., et al., <i>Cell Reports</i>, 2020. • Flygt, J.R., et al., <i>Jour of Neurotrauma</i>, 2018. • Pereira Luppi, M., et al., <i>Cell Reports</i>, 2021. • Benkert, J., et al., <i>Nat Comm</i>, 2019. • Johnson, N.R., et al., <i>Nat Comm</i>, 2023.

* repeat expansion probes can be designed

Hear what *customers* are saying about RNAscope



In our projects, we mainly use multiplex fluorescent assays combined with confocal microscopy on sectioned mouse brains. We are extremely pleased with the high resolution and the quality of the images we obtained. We compared RNAscope to other similar products developed recently and found that RNAscope sensitivity is much higher, the background is much lower, and assays are much easier to perform. Bio-Techne service and technical team is another important asset. They are fast to answer our purchasing and technical questions via email and are always attentive to our requests. I highly recommend the RNAscope Assay for any kind of multiplex ISH assay.

— **Assistant Professor**
Children's Hospital Los Angeles

About RNAscope™ Technology

RNAscope is the gold-standard for RNA *in situ* hybridization, backed by over 2,000 Neuroscience peer reviewed publications from around the globe.

- ✓ **Sensitive** – Industry leading single molecule sensitivity.
- ✓ **Specific** – Unrivaled target specificity.
- ✓ **Quantitative** – Accurately measure changes in gene expression *in situ*.
- ✓ **No instrument required** – Manual and automated assays available.

Getting Started is Easy



Extensive probe catalog

80,000 RNA probes in over 400 species.



Fast and flexible custom probe design

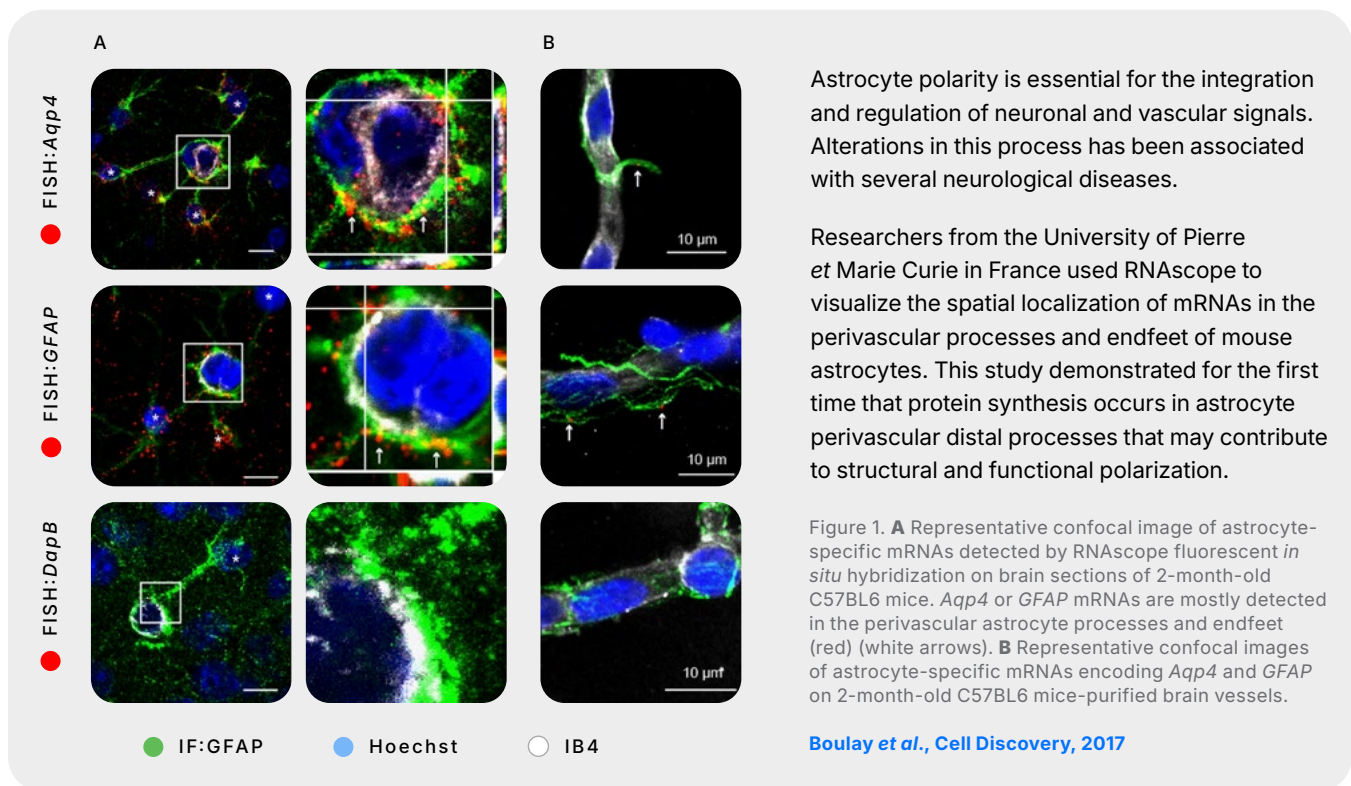
We can easily design probes for virtually ANY gene in ANY species for use in ANY tissue.



Expert technical support

PhD-level scientists with expertise in Neuroscience research.

Research Spotlight



Free Project Consultation with RNAscope Specialist

We have specialists that can assist you in configuring an RNA panel that includes just the genes you want and also assist in selecting the best RNAscope kit for your experimental design to achieve best results.



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