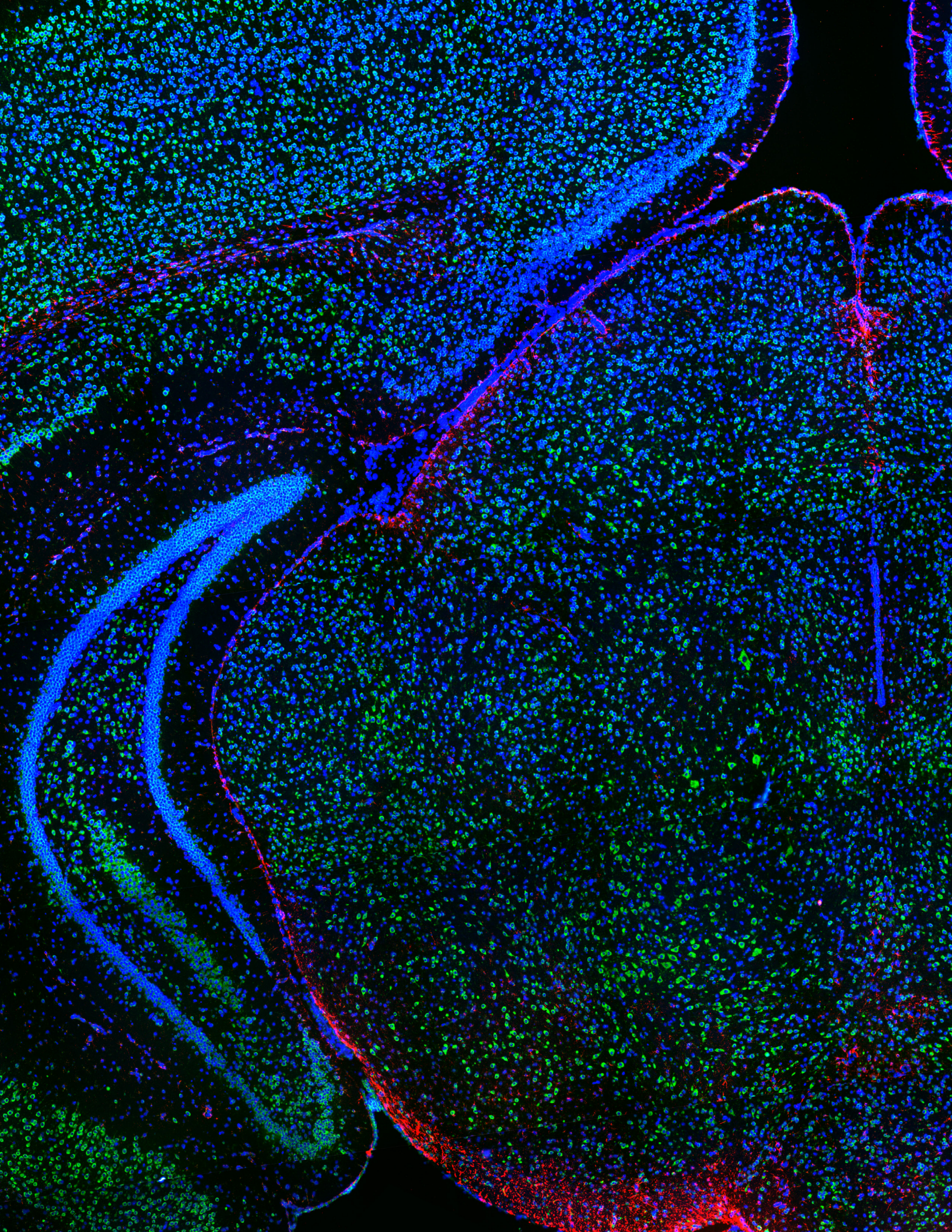




BRUKER SPATIAL BIOLOGY

Neuroscience Solutions

Neurodegeneration • Neuroinflammation • Neuronal Development



Addressing Complexity in Neuroscience Research

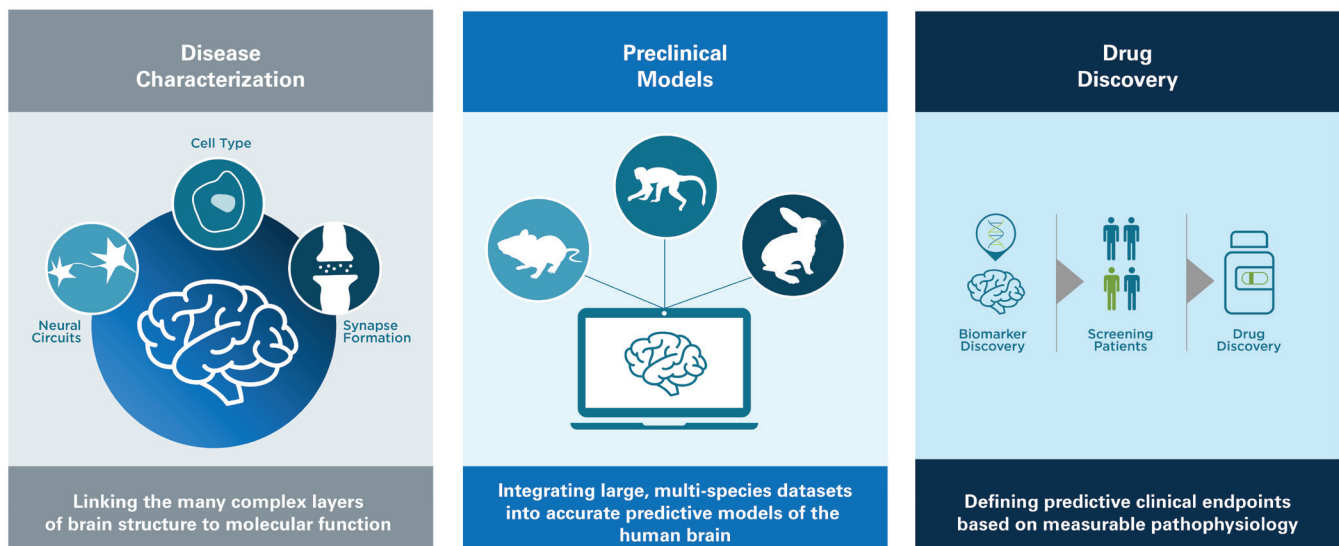
The central nervous system (CNS) is a highly complex and compartmentalized system, composed of diverse cell types interacting across spatial and temporal scales. Understanding these interactions is critical for unraveling the mechanisms of neurodevelopment, neurodegeneration, and neuroinflammation.

Progress is often hindered by limited access to high-quality brain samples, the difficulty of modeling human disease in animal systems, and the fact that the CNS immune response operates differently from the systemic immune system due to the selective permeability of the blood-brain barrier. Identifying robust biomarkers and therapeutic targets demands tools that can resolve molecular changes at both bulk and single-cell scales.

Bruker Spatial Biology offers integrated, fit-for-purpose solutions that enable you to interrogate the CNS across systems, from in vitro cultures and biofluids to complex tissue samples. Our platforms support your neuroscience research at every scale:

- nCounter® Analysis System: Rapidly quantify expression of up to 800 genes from a single sample for biomarker discovery and validation.
- GeoMx® Digital Spatial Profiler: Deeply profile transcript and protein expression across defined CNS regions with unmatched spatial multiomic coverage, enabling discovery of complex neurobiological signatures with confidence.
- CosMx® Spatial Molecular Imager: Map the whole transcriptome with subcellular resolution to gain a pathway-level understanding of neurobiology.
- CellScape™ Precise Spatial Proteomics platform: Leverage flexible, custom panels and high-resolution imaging for quantitative spatial proteomics across whole CNS sections.

With over 20 years of innovation in life science research tools, Bruker Spatial Biology is committed to advancing neuroscience by empowering researchers with the precision and flexibility you need for your unique research.



Creating Novel Solutions

One suite of tools. Unlimited potential.

Whether you are looking to discover and validate biomarkers for disease onset, progression, and treatment, study the immune response in the CNS, or create a cell and tissue atlas of the brain, Bruker Spatial Biology has you covered.

nCounter[®] Analysis System



Rapid, reproducible gene expression and multiomics insights for translational research

- Discover predictive and prognostic biomarkers
- Develop signatures associated with neurodegenerative and neuroinflammatory disorders
- Evaluate mechanisms of treatment response
- Monitor disease biomarkers in clinical trials
- Screen cells for drug development

CellScape[™] Precise Spatial Proteomics Platform



Straightforward, flexible quantitative spatial proteomics with best-in-class resolution

- Identify plaques and their spatial localization
- Map cell-cell interactions in brain tissue
- Probe rare/precious samples and save for later re-assay with additional markers
- Easily create customized panels for niche biomarker targets

CosMx[®] Spatial Molecular Imager



High fidelity spatial exploration of the whole transcriptome with subcellular resolution

- Discover unique functions of different cell types in the brain and peripheral nervous system
- Define cellular neighborhoods and cell-cell interactions
- Reveal functional, cellular, and temporal changes spatially with subcellular resolution
- Characterize axonal growth, neuronal migration, and synapse formation

GeoMx[®] Digital Spatial Profiler



Regionally customized high plex multiomics for high throughput spatial insights

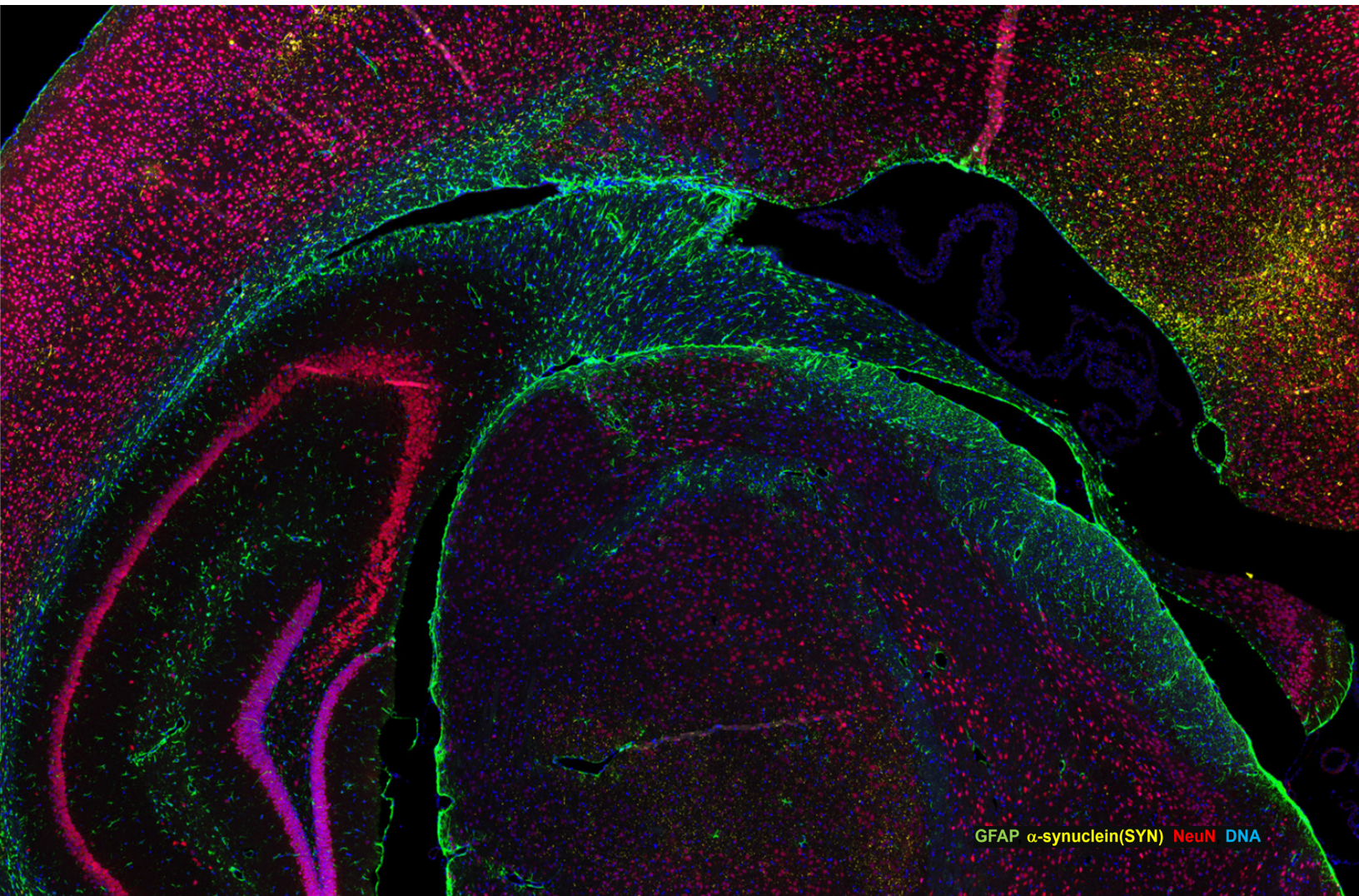
- Discover and develop spatial gene signatures
- Study the effect of plaques and neurofibrillary tangles on astrocytes and microglia
- Characterize the localized treatment response
- Study the localized response to infectious disease in the brain



SPOTLIGHT ON SUCCESS

“Bruker Spatial Biology instruments have revolutionized my translational neurobiology program. The GeoMx DSP is a workhorse in the lab for hypothesis testing. We use it to profile hundreds of proteins and up to the whole transcriptome in selected regions of interest across tissues of the central nervous system. We rely on the CosMx SMI to achieve true subcellular spatial analyses and uncover cell-cell interactions. The CellScape platform provides the high-resolution imaging of proteins that is necessary for biomarker validation and disease monitoring. All three instruments reliably generate high-quality data from frozen and FFPE mouse and human tissues, which is crucial for our translational research questions. Bruker’s consistent advancements in panel development and plexity are empowering neuroscientists to explore complex questions of today and the future.”

Miranda Orr, PhD, Associate Professor of Neurology,
Washington University School of Medicine in St. Louis



nCounter

Analysis System



Single platform, simple multiomics.

Accelerate your neuroscience research with confidence and peace of mind with the nCounter® Analysis System. Confidently profile gene expression in tissue, cell lysates, and biofluids to assess neuronal health and disease. Identify biomarkers or develop novel therapeutics using a platform with unparalleled flexibility in both content and throughput. With the nCounter Analysis System, you can rapidly translate discoveries into actionable insights that tackle neurological disorders.

Robust Performance

- Gold standard performance on FFPE
- No technical replicates required
- Five logs of dynamic range
- Broad sample compatibility
- No RT or enzymatic steps

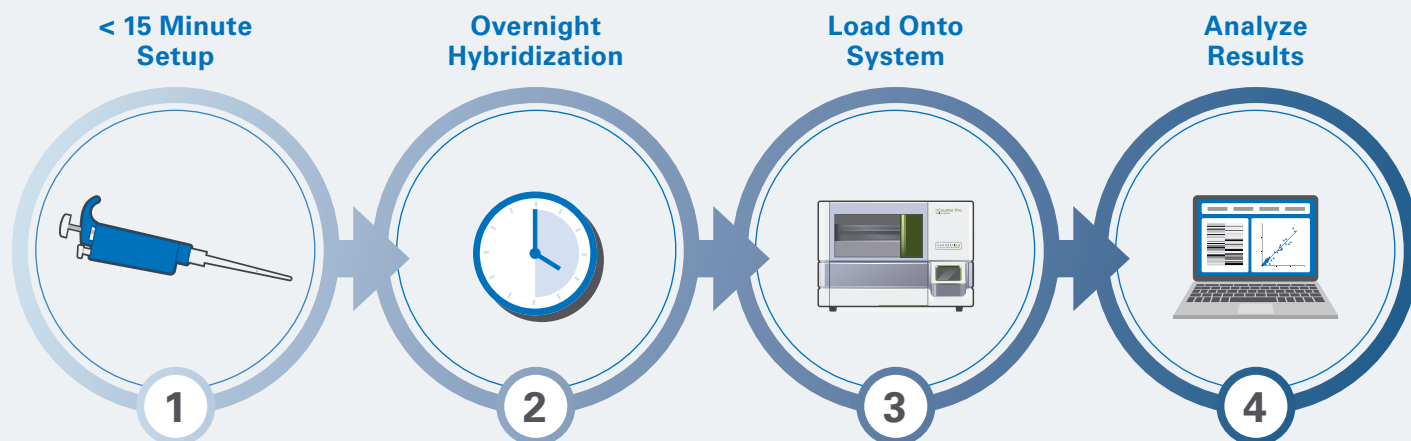
Flexible Assays

- Extensive ready-to-ship panel menu
- Guided by industry experts and the latest peer-reviewed literature
- Bioinformatics support for custom designs
- Customization of ready-to-ship panels with up to 55 targets

Efficient Workflow

- Less than 15 minutes hands-on-time
- Go from sample to answer in less than 24 hours
- Highly scalable set-up
- Simplified data analysis
- Minimal data storage required

Four Simple Steps Produce a Huge Amount of Data



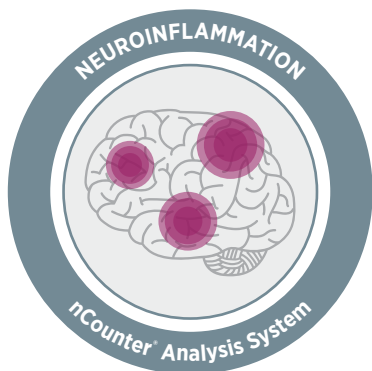
nCounter Neuroscience Panels

A large portfolio of expression panels with carefully curated content delivers insights into the biology of neuroinflammatory disorders, neurodegeneration, Alzheimer's disease, glial cells, and more.



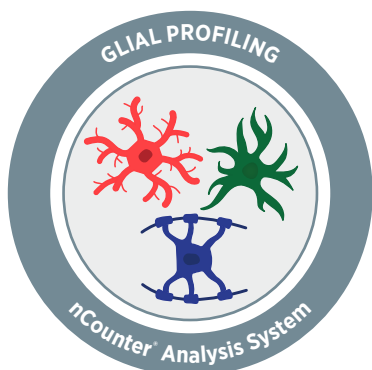
nCounter® Neuropathology Panel

- Profile 770 human or mouse genes involved in six fundamental areas of neurodegeneration
- Includes CNS cell typing signatures



nCounter® Neuroinflammation Panel

- Study neuroinflammatory disorders or CNS infections with assessment of 23 pathways across 770 human or mouse genes
- Includes CNS and immune cell typing signatures



nCounter® Glial Profiling Panel

- Decipher the role of astrocytes, microglia and oligodendrocytes in health and disease with a panel of 770 human or mouse genes
- Includes CNS and immune cell typing signatures



nCounter® Alzheimer's Disease Panel

- Curated gene list of 770 genes that assess 30 AD-associated gene co-expression modules
- Includes 23 neurodegeneration pathways and processes
- Available only as a custom, made-to-order panel

GeoMx

Digital Spatial Profiler



Multiomic Spatial Discovery Across the Brain

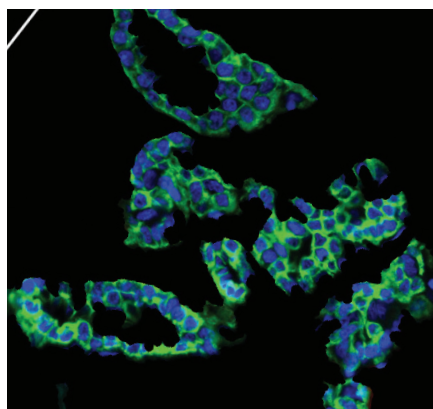
Unmatched Spatial Multiomic Plex, Powered by Biology-Driven Profiling

The GeoMx Digital Spatial Profiler (DSP) enables spatial profiling of RNA and protein expression across morphologically defined tissue compartments with the highest multiomic coverage available. With biology-guided region selection and customizable experimental design, you can uncover compartment-specific expression patterns associated with neurodegeneration, disease, immune response, cancer, and more.

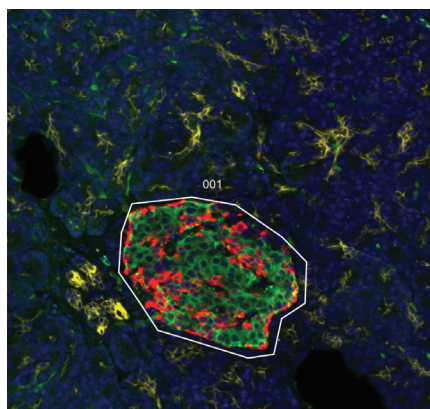
GeoMx supports whole transcriptome analysis, targeted protein panels, and simultaneous RNA/protein profiling on a single section. Analyze RNA and protein targets on the same slide to preserve spatial context and simplify multiomic data analysis.

Flexible, Scalable Workflows Designed for Discovery

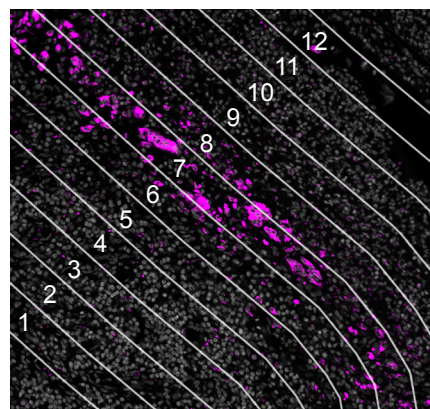
Easily profile FFPE or fresh frozen samples using immunofluorescence-guided segmentation to focus on the regions most relevant to your biological question. Our validated RNA and protein panels, automated workflows, and sequencing-based readout scale with your journey from pilot experiments to cohort studies, enabling reliable, hypothesis-driven discovery at every step.



Segmentation



Geometric Profiling

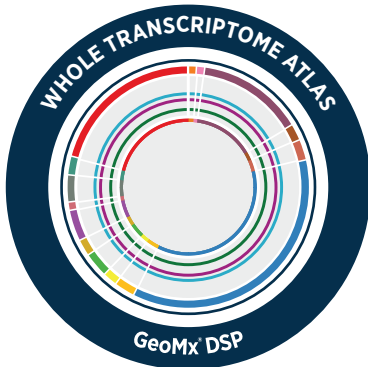


Contour

GeoMx Assays for Neuroscience

Flexible, Pre-Validated Content For Spatial Profiling

GeoMx RNA and protein assays can be performed separately or together on the same tissue section and include content curated for neuroscience research.



Whole Transcriptome Atlas

- Comprehensively spatially profile all protein-coding genes from human or mouse samples
- Spike-in up to 400 custom RNA targets including noncoding RNAs, exogenous sequences, and/or viral/bacterial transcripts
- Superior sensitivity: not reliant on poly-A pulldown
- Uses an Illumina NGS system for readout



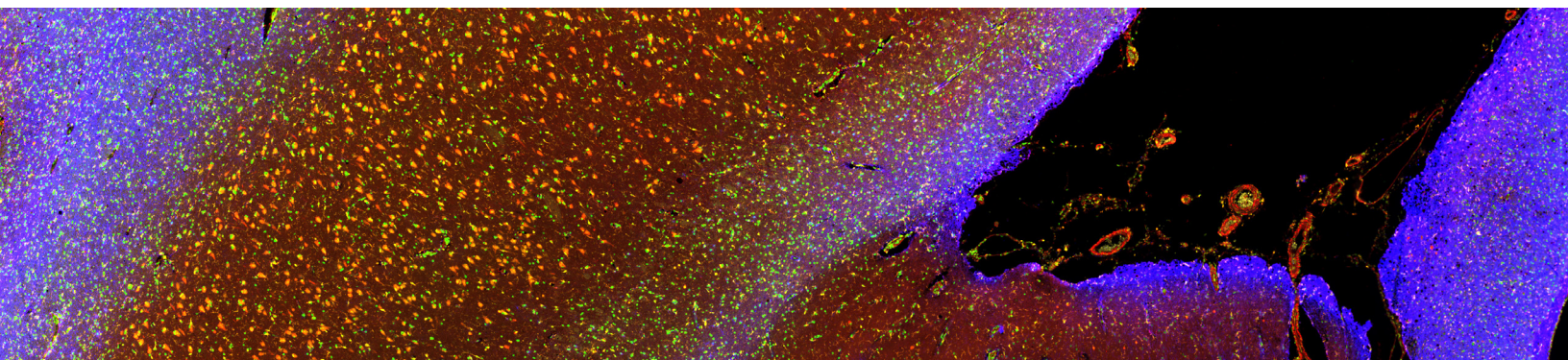
Neuroscience Protein Panels

- Take advantage of curated content that includes probes for protein targets involved in Alzheimer's Disease, Parkinson's Disease, and CNS cell biology
- Use a universal human or mouse core module and add-on up to 10 modules each containing probes for 6-10 protein targets
- Uses the nCounter Analysis System for readout



Discovery Proteome Atlas

- Profile over 1200 human proteins with the largest antibody-based single-cell spatial proteomic assay on the market
- Detect over 120 post-translational modifications
- Pathways targeted include those relevant to neuropathology, neuroinflammation, oncology, and immunology



CosMx

Spatial Molecular Imager



Single-cell whole transcriptome spatial discovery for brain mapping.

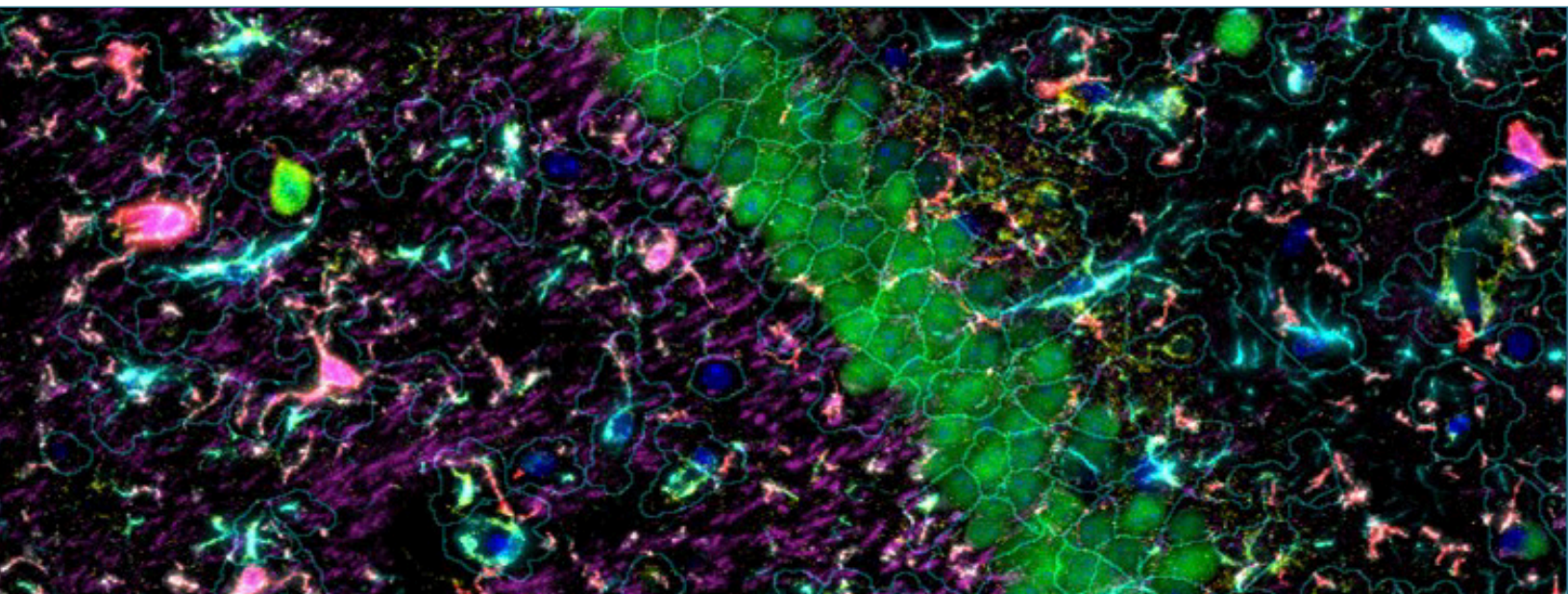
Deepen Your Understanding of CNS Biology

CosMx Spatial Molecular Imager (SMI) delivers unmatched sensitivity and the highest plex with subcellular resolution for spatial transcriptomics. The CosMx platform enables researchers to map the whole transcriptome plus 64+ protein targets simultaneously from a single FFPE section, supporting the spatial analysis of gene expression, cell-cell interactions, and pathway activity across complex CNS tissue.

Whether investigating neuroinflammation, neurodegeneration, or brain development, the CosMx platform combines precise cell segmentation with same-cell RNA and protein analysis to interrogate cell states, functions, and interactions at the pathway level. Downstream analysis is supported by the **AtoMx® Spatial Informatics Platform**, our cloud-hosted analysis suite that streamlines best-in-class cell segmentation, data processing, visualization, and pathway analysis.

Designed for Neuroscience Discovery

The newest addition to the CosMx platform, the **CosMx Human Whole Transcriptome Panel** enables discovery-driven neuroscience by capturing the whole transcriptome at subcellular resolution directly from FFPE brain tissue. Chart every pathway, cell type, and transcript within intact CNS architecture without the need for dissociation, amplification, or data stitching. Researchers can now explore ligand-receptor signaling, identify novel biomarkers with spatial localization, and understand cell behaviors involved in both brain development and neurodegeneration.

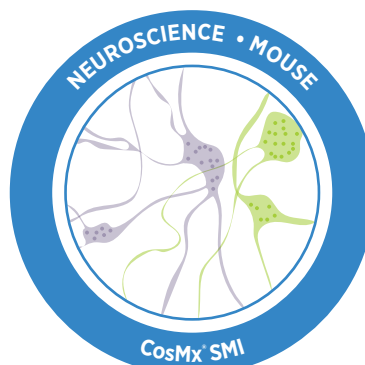


CosMx Assays for Neuroscience Research



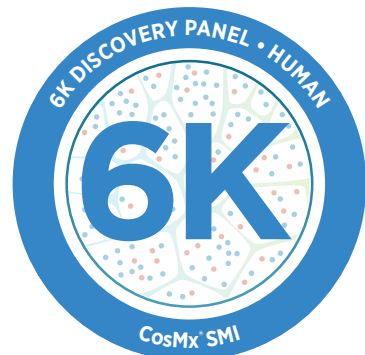
CosMx Human Universal Cell Characterization Panel

Get robust cell typing data and analyze cell-cell interactions with the CosMx Human Universal Cell Characterization Panel. Spatially profile the expression of 1000 highly curated targets at subcellular resolution and customize with up to 50 custom targets. Identify up to 100 unique ligand-receptor pairs that contribute to all aspects of tumorigenesis.



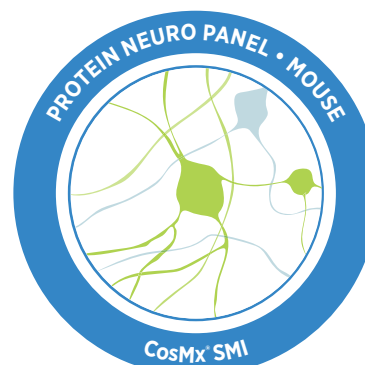
CosMx Mouse Neuroscience Panel

Profile the expression of 1000 RNA targets that enable the identification of 42 distinct cell types in the mouse brain and cover targets involved in the biology of neuroinflammatory and neurodegenerative diseases such as AML, Huntington's, Parkinson's, and Alzheimer's. Customize with up to 50 targets.



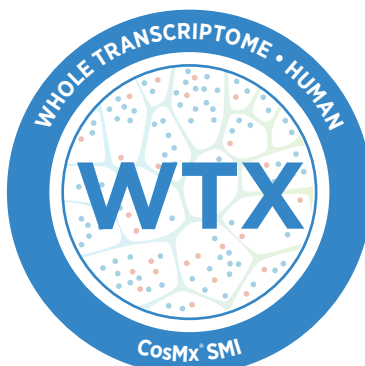
CosMx Human 6K Discovery Assay

Profile the expression of 6000 RNA targets to spatially analyze virtually the entire reactome. Capture unique genes and project direct pathway biology with subcellular resolution.



CosMx Mouse Protein Neuro Panel

Profile the expression of 64 protein targets in mouse models of Alzheimer's disease and other neurodegenerative disorders. Coverage includes markers for disease pathology, immune response, and neural, glial, and immune cell typing. Customize with up to 8 additional protein targets.



CosMx Human Whole Transcriptome Assay (WTX)

Reveal complete biology with subcellular whole transcriptome imaging for uncharted discoveries. With CosMx WTX, project complete pathway biology in space, map every cell-to-cell interaction at the individual transcript level, and discover the unknown and unexpected—all with best-in-class sensitivity and genomic breadth within a single intact FFPE tissue section.

CellScape

Precise
Spatial
Proteomics



Quantitative Spatial Proteomics for Whole-Slide Brain Imaging

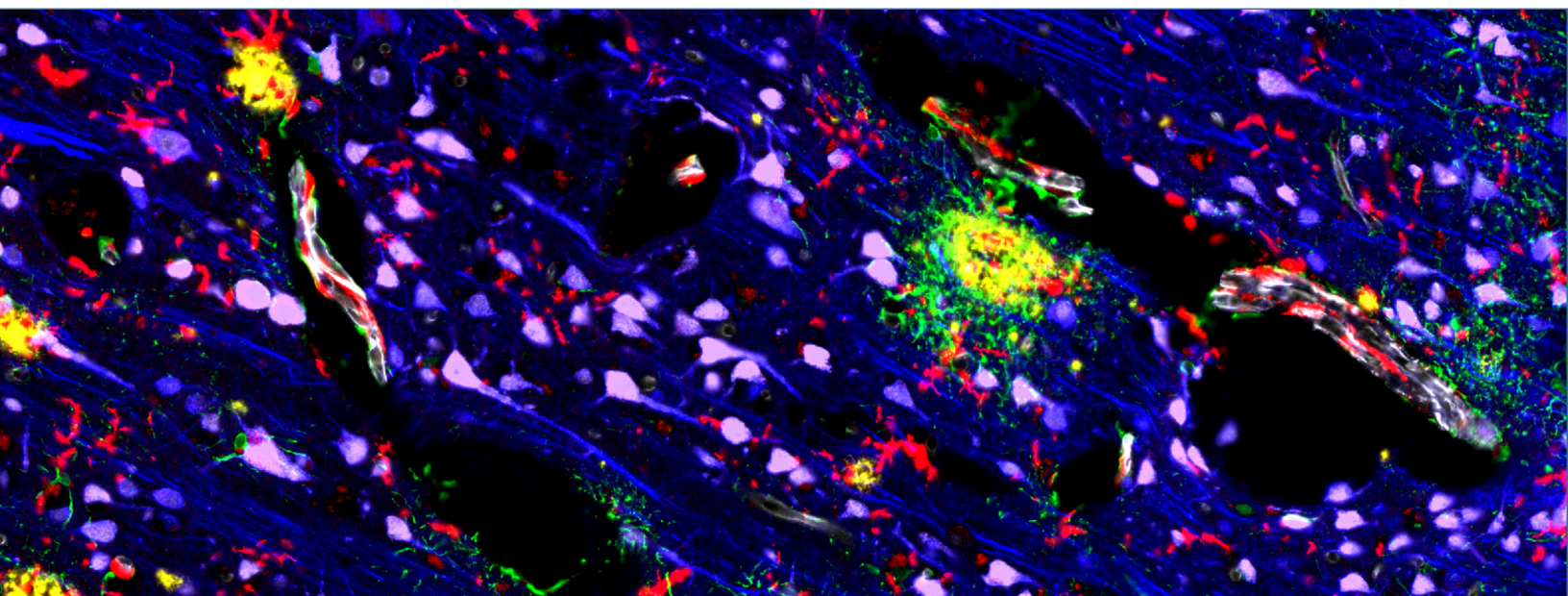
Track Cellular Dynamics in Complex Neural Tissue

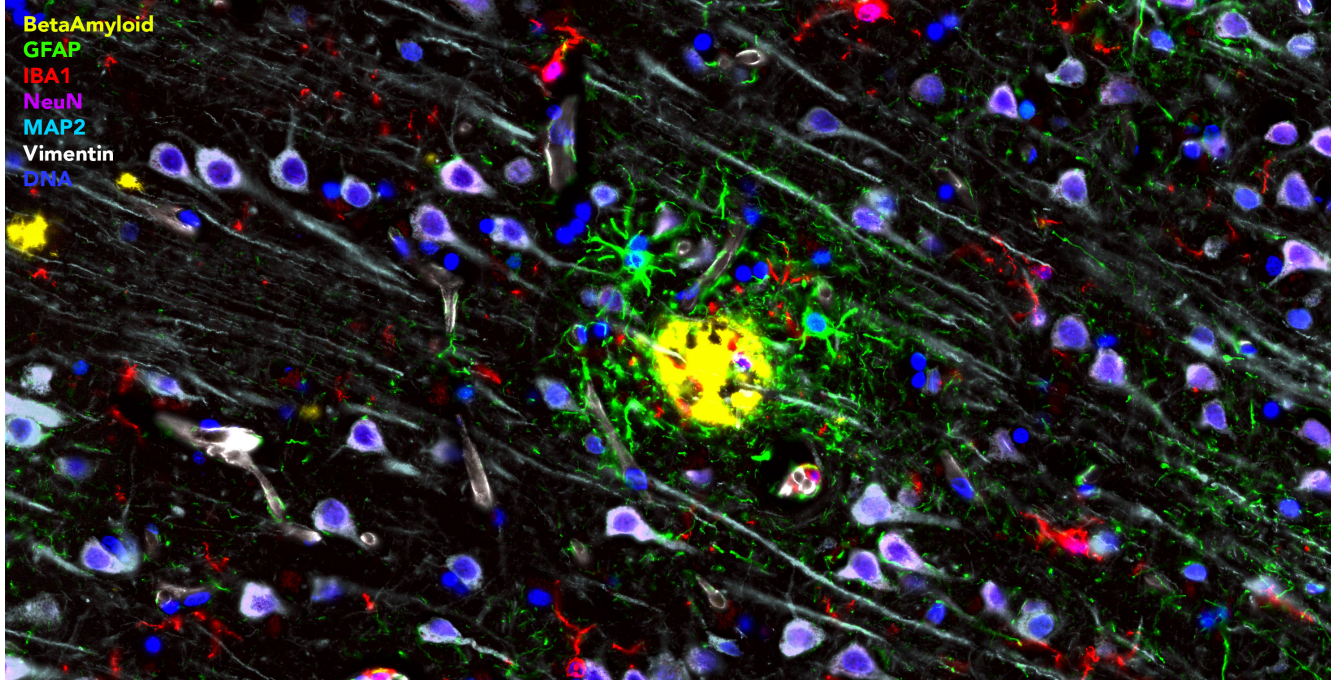
CellScape™ Precise Spatial Proteomics enables multiplexed protein imaging across entire brain sections while preserving spatial relationships between cell types, tissue structures, and molecular markers. With best-in-class optical resolution and a large imaging area, the CellScape platform allows researchers to visualize neuronal cell bodies, fine axonal protrusions, and glial or astrocytic filopodia, enabling accurate segmentation of morphologically complex CNS cell types.

Leverage gentle, direct immunofluorescence detection and customizable, rapid panel design to capture key biomarkers without extensive assay optimization. Advanced signal removal chemistry compatible with over 6000 commercially-available antibodies plus automated high dynamic range image capture make it easy to build custom assays that scale with your research needs.

Modularity at Any Time

The CellScape system gives you the flexibility to add new markers to previously imaged samples, enabling hypothesis testing on the same section over time. Seal and store slides between runs, test panels iteratively, or combine markers without starting over. The versatility of the CellScape platform makes whole-section proteomics accessible and adaptable for brain researchers.





Straightforward, Flexible Assay Design

Designing high-plex immunofluorescence panels on the CellScape platform is simple and accessible, leveraging commercially available, fluor-conjugated antibodies with no need for proprietary reagents.

Highlights of customizable CellScape assay design:

- **Gentle signal removal chemistry**

EpicIF™ signal removal enables iterative cyclic staining while preserving tissue quality and epitope stability.

- **Use off-the-shelf antibodies**

EpicIF technology is compatible with organic dyes in the rhodamine, cyanine, and BODIPY families, directly labeled to over 6,000 antibodies commercially available from major vendors.

- **Built-in exposure optimization**

CellScape high dynamic range (HDR) imaging automatically captures low- and high-intensity signals across exposures, removing the need to fine-tune exposure settings for each biomarker and preserving quantitative accuracy across the full intensity range.

- **Compatible with large tissue areas**

Image entire tissue sections or large arrays on standard glass slides—ideal for comprehensive neuroanatomical studies.

- **Assay expansion over time**

With data-driven assay expansion, you can easily test new markers on the same slide over time to extend the value of precious or limited CNS samples. Begin with small pilot panels to validate your targets, then expand to 20+, 40+, or 60+ plex without repeating sample prep.

[Learn more about CellScape assay design](#)



Integrating Platforms

Across the Neuroscience Research Continuum

By offering a portfolio of complementary solutions that span the entire neuroscience research continuum, Bruker Spatial Biology provides innovative tools that enable a multiomic, holistic view of CNS development, health, and disease. This deeper understanding of structure and function of the brain and the impact of different neural cell expression programs can be applied to multiple stages of neuroscience research, from discovery to preclinical models, translational research, and clinical trials.

| | Discovery | CNS Development | Disease Pathogenesis | Translational Research |
|------------------|---|---|--|---|
| Key Applications | <ul style="list-style-type: none">Cell atlasingTissue atlasingIdentification of novel cell typesLigand-receptor pair analysisCell-cell interaction analysisCell phenotypingCell state determination | <ul style="list-style-type: none">Stem cell differentiationBrain organoidsNeuronal developmentNeuronal aging and deathNeuronal migrationNeural network mappingSynapse formation | <ul style="list-style-type: none">Preclinical animal modelsDisease mechanismsDysregulationMetabolismNeurotransmitter ModulationToxicity Studies | <ul style="list-style-type: none">Novel target identificationBiomarker discovery and validationDrug development and Mechanism of Action (MOA) Studies |
| Key Platforms | GeoMx, CosMx, CellScape | GeoMx, CosMx, CellScape | nCounter, GeoMx, CosMx, CellScape | nCounter, GeoMx, CosMx, CellScape |

Data Analysis

Options for Discovery and Decision Making

Having access to a comprehensive range of analysis tools and services transforms your valuable data to bring insights, test hypotheses, and deliver publication-quality results. Expedite analysis and accelerate discoveries with on-system data analysis tools, secure cloud-based platforms, expert bioinformatics support, and data analysis services.



nSolver Analysis Software

- On-premises analysis tool
- Available at no charge
- Advanced Analysis Module for additional statistics



GeoMx DSP Data Analysis suite (DSPDA)

- On-instrument
- Data visualization and analysis

GeoScript Hub Open-Source Software

- Developed by Bruker Spatial Biology R&D
- Supplements capabilities of DSPDA



- A cloud-based, integrated informatics platform for spatial biology
- Analyze and visualize, large amounts of spatial multiomics data
- Preset analysis modules and pipelines
- Advanced analytics support global data sharing and collaboration

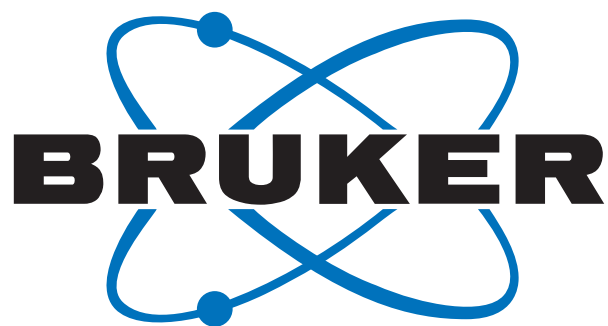


Data Analysis Service

- nCounter differential gene expression data fully analyzed

Spatial Data Analysis Service (sDAS):

- Work one-on-one with Bruker Spatial Biology computational biologists
- Fully interpreted GeoMx data to answer biological questions.



Bruker Spatial Biology | For more information, visit nanosttring.com/neuroscience

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