GeoMx®
Digital Spatial Profiler

nanoString

A **BRUKER** COMPANY

Heterogeneity Resolved with **Specificity**

## Spatially resolve tissue cell populations with functional segementation

Understanding tissue heterogeneity is crucial to studying developmental biology, disease pathogenesis, and response to treatment. Bridging the gap between tissue imaging and molecular profiling technologies such as single cell anaysis, the GeoMx® Digital Spatial Profiler (DSP) allows you to unlock novel biological insights with spatial multiomics.

In situ Visualization Technology (FISH/ IHC)

Molecular Profiling Technologies
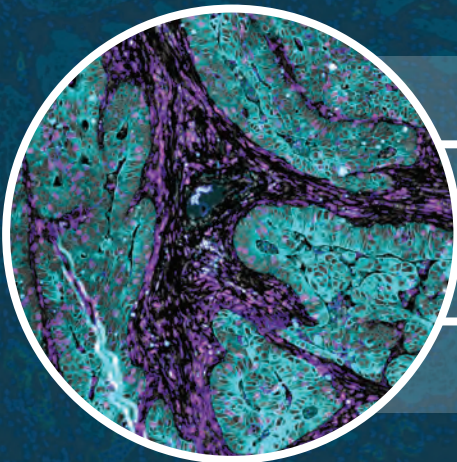
In situ Visualization		Molecular Profiling
+	Spatial	−
−	Plex	+
−	Quantitation	+
−	Precision	+

Introducing

GeoMx®
Digital Spatial Profiler

GeoMx DSP seamlessly enables spatial transcriptomics and proteomics with a workflow that combines standard pathology and molecular profiling with efficient data analysis.

GeoMx RNA assays enable quantitative, spatial analysis of 100s of transcripts up to the whole transcriptome from a single section of FFPE or fresh frozen tissue.

GeoMx Protein assays enable targeted spatial profiling of 100s of proteins from FFPE tissue sections.

GeoMx DSP also enables Spatial Proteogenomics by combining both Protein and RNA assays on the same slide.

HETEROGENEITY, RESOLVED

UNLOCK YOUR SAMPLES WITH CONFIDENCE

CONSISTENT RESULTS, RELIABLE ANSWERS

DETECT MORE WITHOUT COMPROMISE

ANALYZE TODAY, PUBLISH TOMORROW

STRUCTURE DICTATES FUNCTION

The Path is Clear
GeoMx® DSP Workflow

Using standard IHC methodologies, tissue sections are stained with a mixture of fluorescently-labeled and DNA-barcoded antibodies. Once imaging and profiling is complete, GeoMx DSP stores data from each region of interest (ROI) after the expression of a target is quantified.

1 Sample Prep*

Fluorescent Antibodies

DSP Barcoded Antibodies or RNA

Slide Mounted Tissue
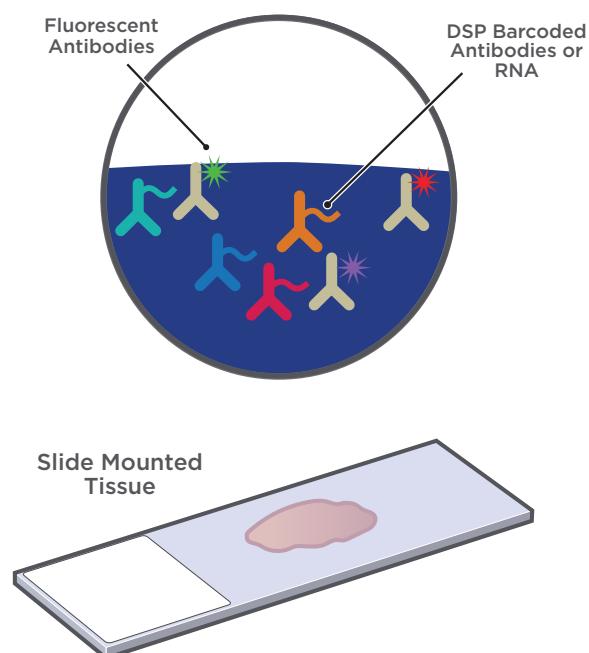
Any sample, FFPE or fresh frozen, use any morphology marker, detect RNA and/or Protein.

*Can be automated.

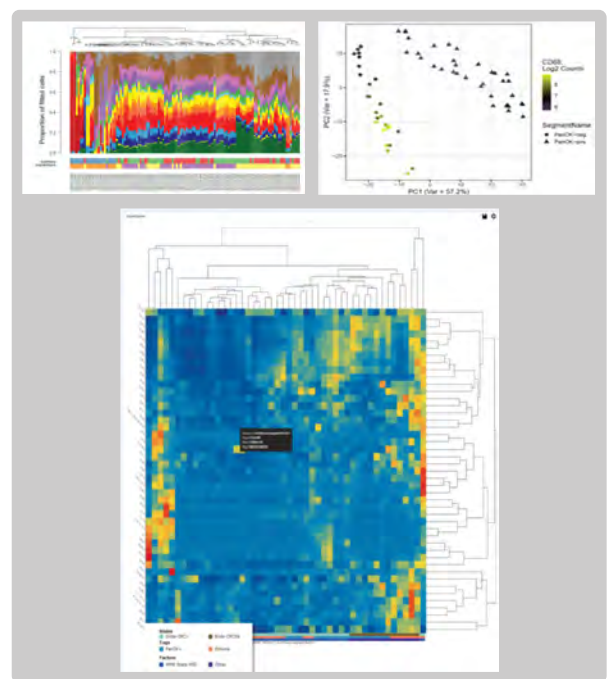### 2 Profile

GeoMx® Digital Spatial Profiler

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GeoMx

Image and profile RNA and Protein with GeoMx DSP.

Illumina
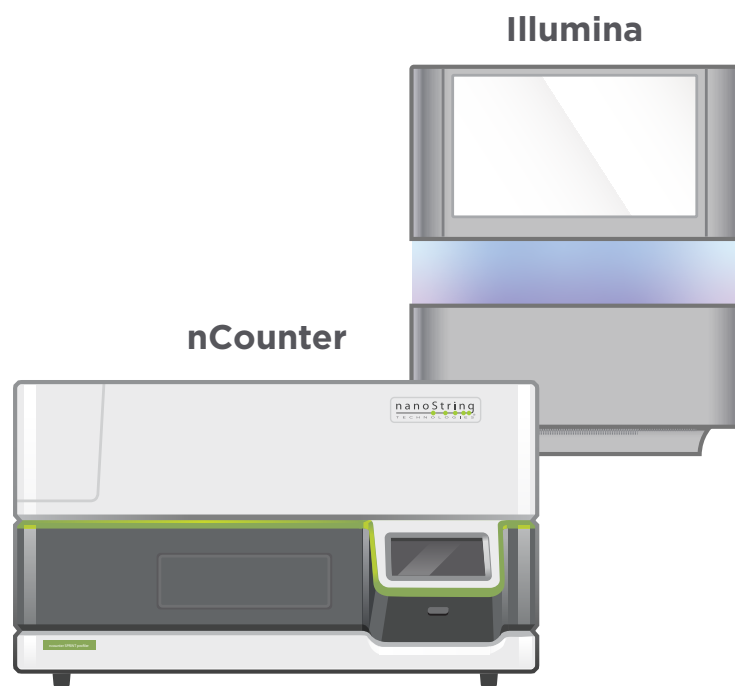
nCounter

Count barcodes on the nCounter® Analysis System or sequence with NGS.

Pre-defined data processing pipelines and interactive data analysis accelerate biological insight.

Enabling Your Research with the Most Flexible Spatial Solution

Whether you are a discovery or translational researcher, the GeoMx® DSP is the most flexible spatial solution designed to conform to your ever-changing research needs.

GeoMx DSP combines standard immunofluorescent techniques with molecular profiling technology to perform highly multiplexed, spatially resolved experiments.
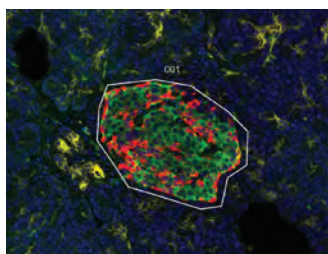
Tissue Atlasing

Unbiased Pathway Analysis

Biomarker Discovery and Validation

Immune Profiling
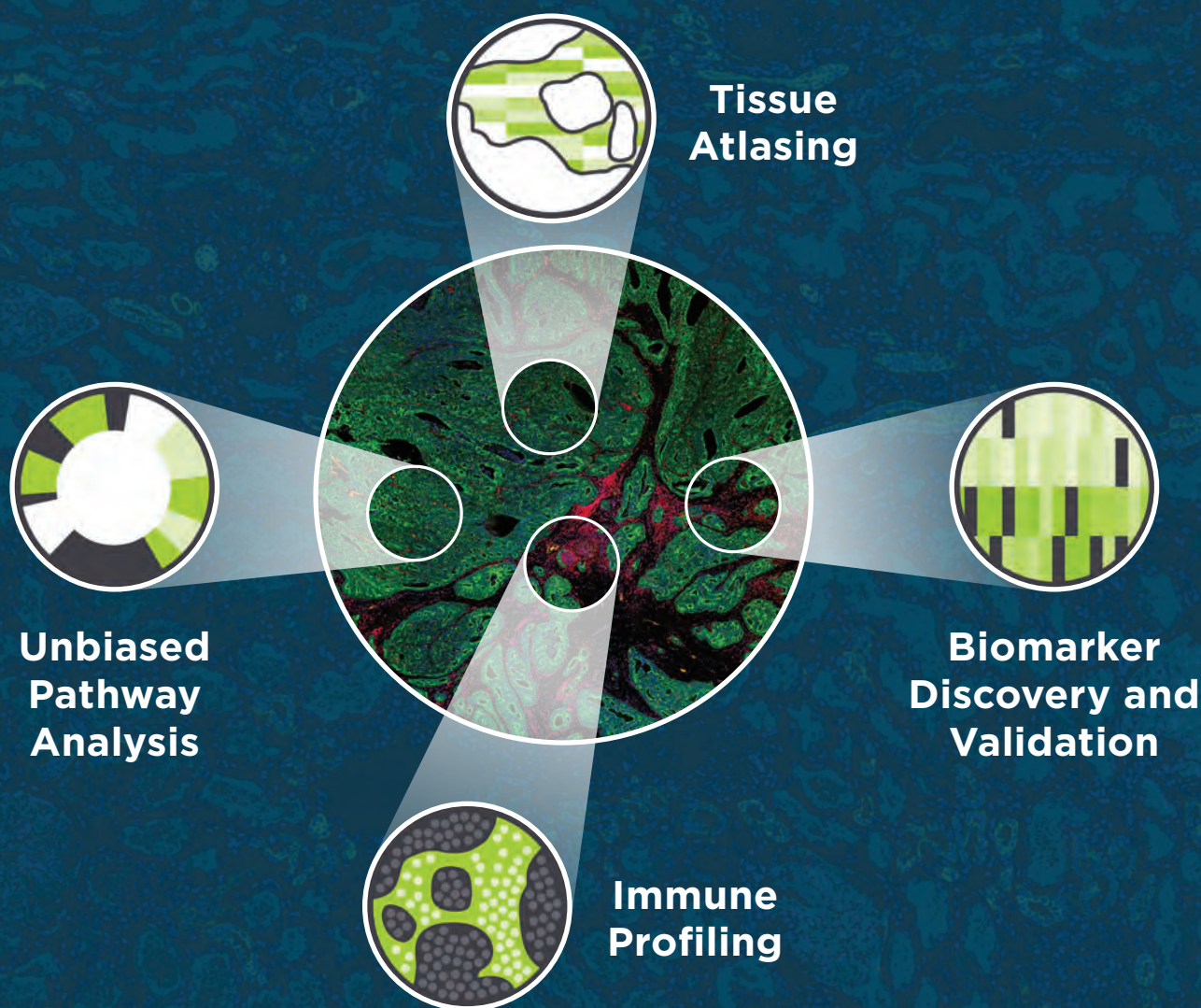
Locate Your Regions of Interest

Understand Tissue Structure with Flexibilty

Geometric Profiling

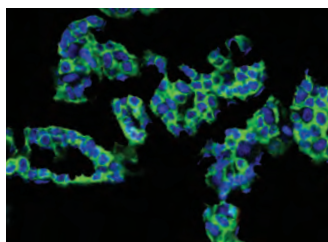Profile with any geometric shape to characterize distinct tissue regions.

The Islet of Langherans is geometrically profiled with Insulin, glucagon and PanCK morphology markers.

Segment Profiling

Identify and profile distinct biological compartments within a region of interest (ROI).

A 5 µm section of kidney depicts the proximal convoluted tubule. This section has been segment profiled guided by CD10 and CD31 morphology marker staining.
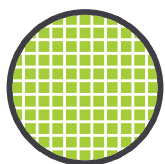
Conture Profiling

Evaluate how proximity affects biological response and the local microenvironment around a central structure using radiating ROIs.
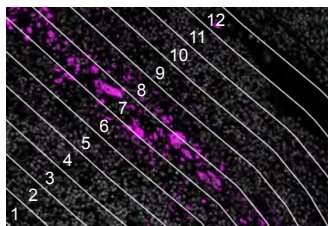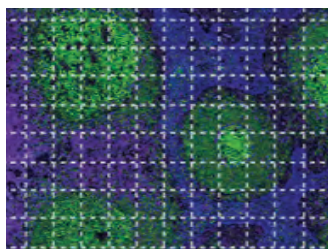

The invasive margins of two colorectal tumor samples are analyzed using contour segments extending into the tumor and outside the tumor into the stroma and profiled with 1400+ RNA probes with NGS read out.
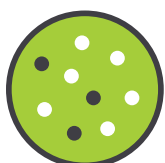
Gridded Profiling

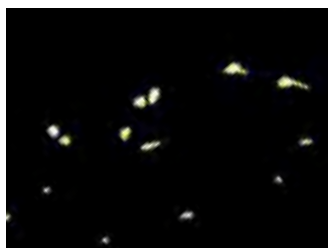Perform rigorous spatial mapping using a tunable grid pattern.

Gridded protein profiling of a tonsil section, stained with morphology markers CD3, CD20 and PanCK.

Cell Type Specific Profiling

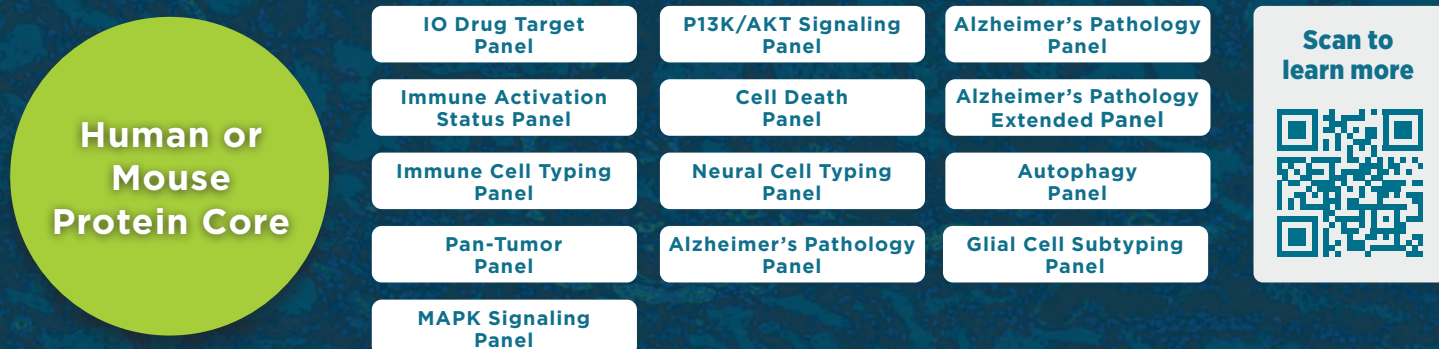Reveal the function of cell populations guided by cell type specific morphology markers.

Paneth Cells from the Colon, stained with morphology marker 5-HT.

Flexible, Pre-Validated Protein Content
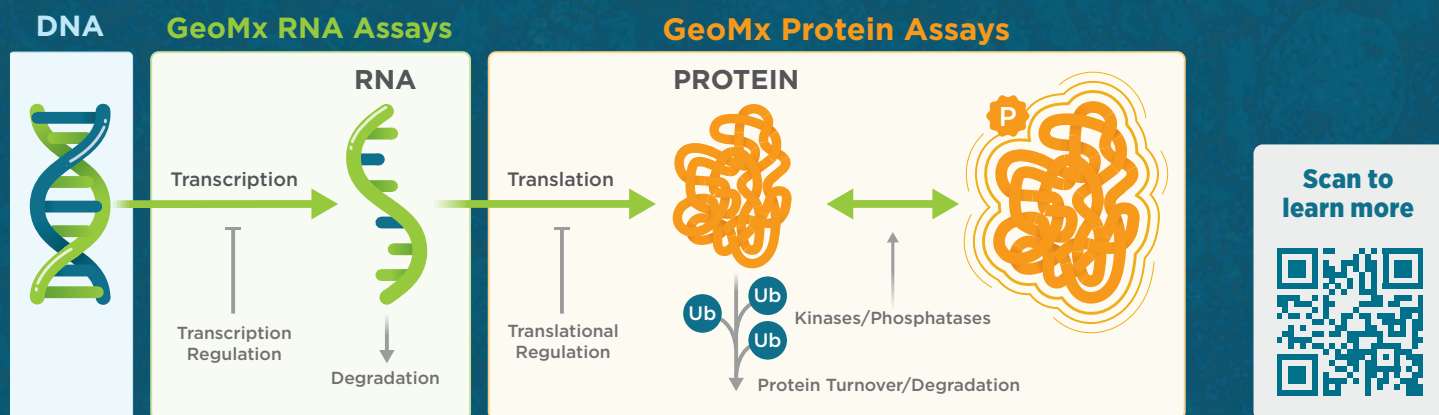## to Fit a Range of Research Needs

GeoMx® protein assays are modular and optimized for robust performance across a variety of sample types. Choose your readout method and the core of your choice. For readout on the nCounter® Analysis System, add on up to 6 modules plus as many as 10 custom targets of choice. For NGS readout, add on as many different modules as you prefer plus up to 10 custom targets of choice.

Available content covers immunology, immuno-oncology, and neuroscience with a rapidly growing portfolio.

Human or Mouse Protein Core

IO Drug Target Panel	P13K/AKT Signaling Panel	Alzheimer's Pathology Panel
Immune Activation Status Panel	Cell Death Panel	Alzheimer's Pathology Extended Panel
Immune Cell Typing Panel	Neural Cell Typing Panel	Autophagy Panel
Pan-Tumor Panel	Alzheimer's Pathology Panel	Glial Cell Subtyping Panel
MAPK Signaling Panel		

Scan to learn more

# Proteogenomics Meets Spatial Biology with GeoMx DSP

Simplify your spatial proteogenomic workflow with multimodal, co-detection of RNA and Protein from the same tissue section. Combine the GeoMx RNA Assays and GeoMx Protein Assays to gain a complete picture of biology all the way from transcription to protein activation.

DNA — **GeoMx RNA Assays** — RNA — **GeoMx Protein Assays** — PROTEIN

Transcription — Transcription Regulation — Degradation — Translation — Translational Regulation — Ub — Kinases/Phosphatases — Protein Turnover/Degradation

Scan to learn more

GeoMx® Whole Transcriptome Atlases
## Spatial Resolution for Any Target

The GeoMx Whole Transcriptome Atlas (WTA) provides an unbiased, spatial view of all protein-coding genes by leveraging the power of NGS. Whether you are mapping the architecture of tissue or exploring the regulation of morphological features, WTA delivers the highest sensitivity for spatial whole transcriptomics on FFPE tissues.
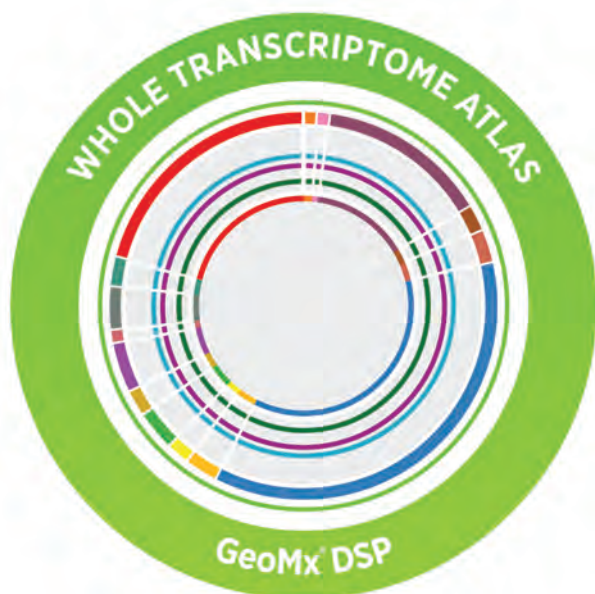
✔ **Non-Poly-A pulldown, whole transcriptome assay**

✔ **Complete coverage**

✔ **Visualize morphology**

✔ **Streamline workflows**

✔ **Customization**

✔ **Minimal sequencing**

✔ **Co-detection with protein**

Explore More GeoMx RNA Assays

GeoMx RNA assays include an immune pathways panel for nCounter readout that allows for profiling of up to 84 human RNAs, including probes for the Tumor Inflammation Signature (TIS) and the ability to add up to 10 targets of interest and 2 additional controls. For higher plex spatial transcriptomics, take advantage of NGS readout and choose from the targeted Cancer Transcriptome Atlas or design a Custom RNA Assay of up to 400 targets from any species.
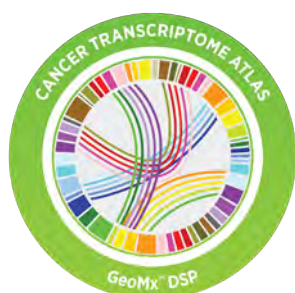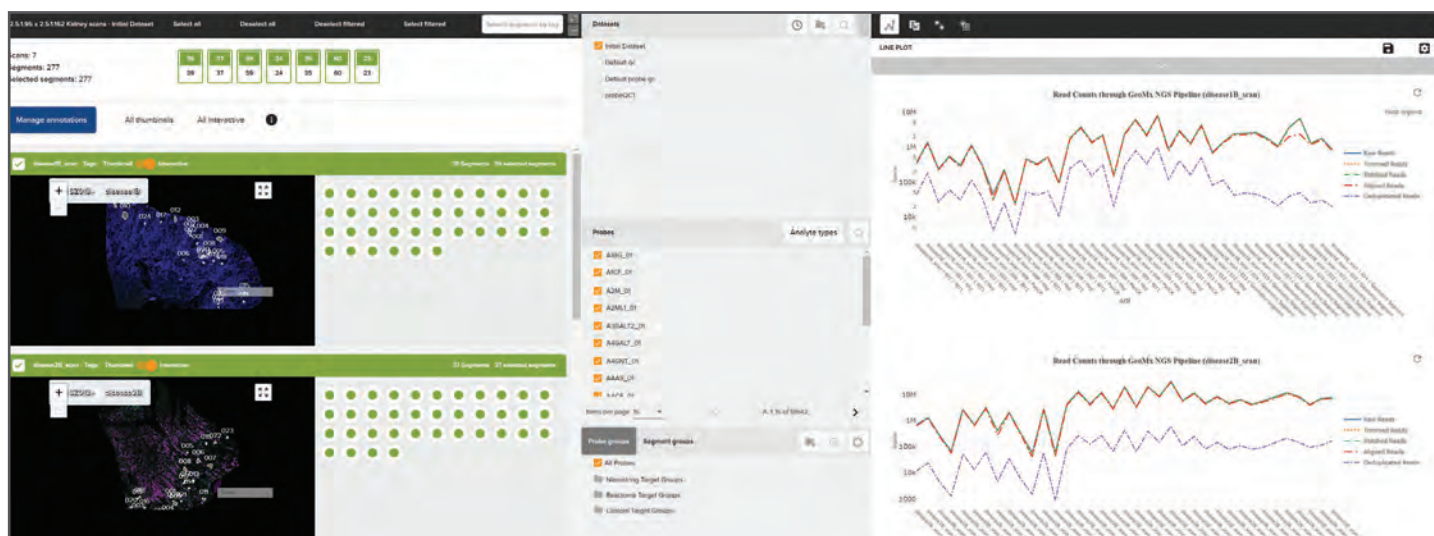

Scan to learn more

Explore Your Data

GeoMx® Data Analysis Suite (DSPDA)

DSPDA is an interactive data analysis suite that connects quantitative data to spatial context to provide a seamless experimental workflow.

Visualize your counts based on your ROI selection

Data QC and normalization

Visualize pathway analysis, differential expression, heatmaps and more!

GeoScript™ Hub

NanoString has validated and released code packages to the open-source community; Explore GeoScript Hub to see how these tools can be used to configure data analysis pipelines.
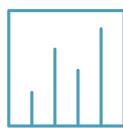
Normalization for Protein

RNA Negative Normalization
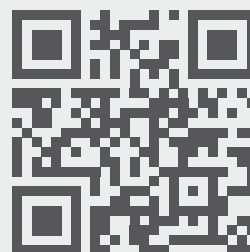
Spatial Decon

Dimension Reduction

Volcano Plot

Cell-Type Contouring

Scan to learn more about the GeoScript Hub

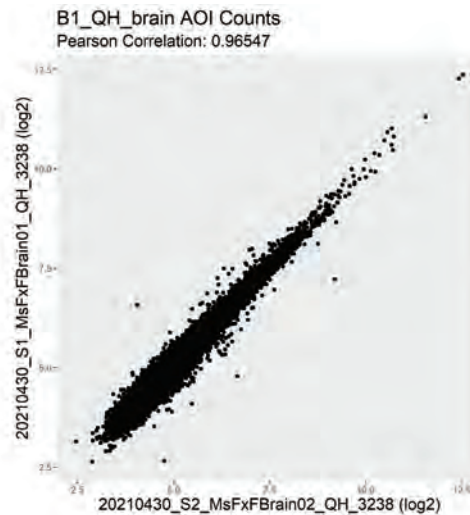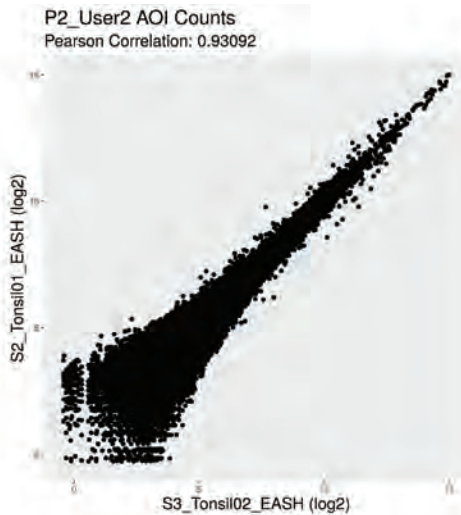FOR RESEARCH USE ONLY. Not for use in diagnostic procedures.

Consistent Results, Reliable Answers

Multi-Sample Analysis and Cohort Studies Made Easy with Unmatched Reproducibility and Scalability
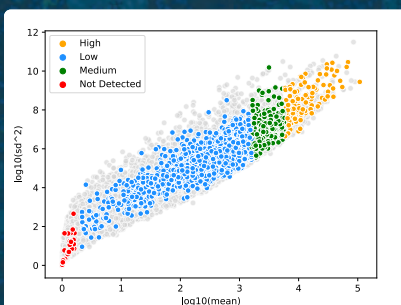
Human FFPE Tonsil

Mouse Fixed Frozen Brain

Proven reproducibility between slides, users, and instruments with the Whole Transcriptome Atlas.
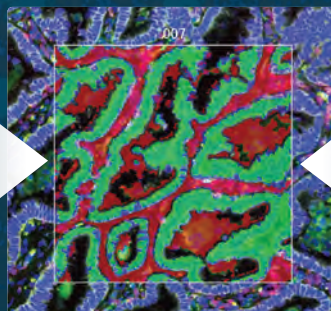
Detect More with Sensitivity

GeoMx® DSP detects the most relevant low to high expressing genes. Detect only the targets that matter in the regions that matter.
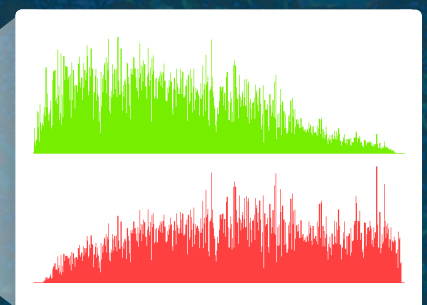
Dynamic Expression Range

Expression bins defined using TCGA NSCLC data

Non-Small Cell Lung Cancer

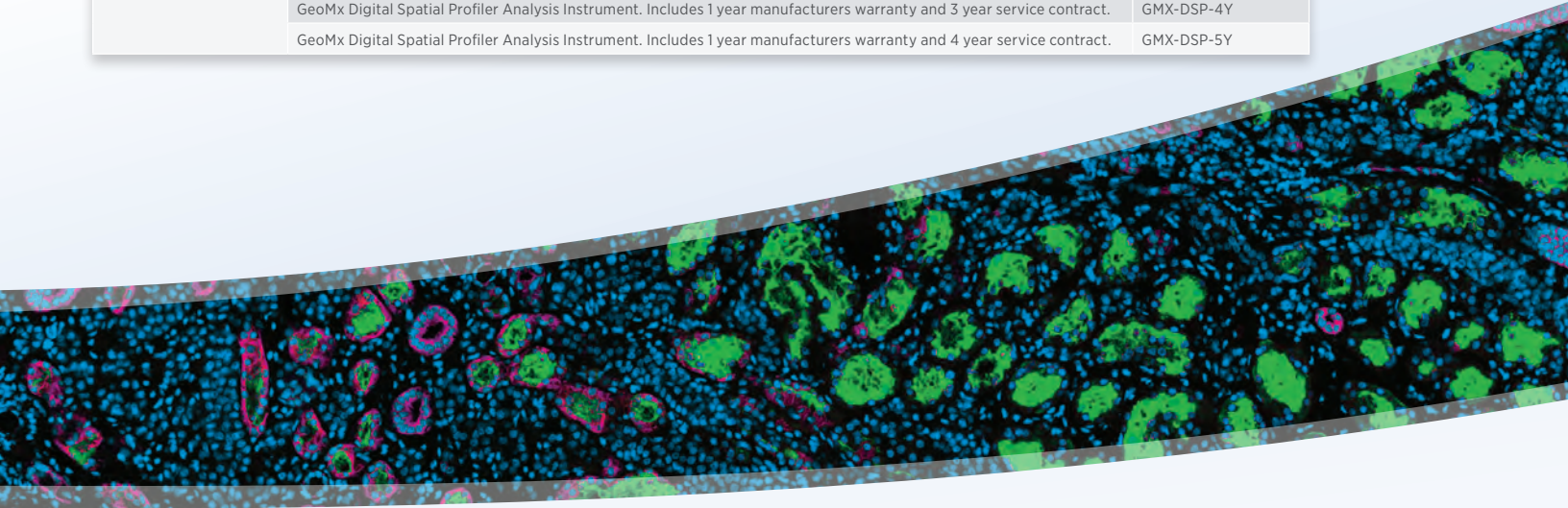

Tumor Profile

Immune Profile

Specifications

Category	Feature	Specification
GeoMx® DSP Instrument	Sample Throughput	Up to 8 slides/day (at 12 ROIs per slide, 10 mm by 10 mm scan area)
	Minimum UV Illumination Area	10 µm diameter
	Resolution	20X 0.45 NA objective
	Imaging Modes	Fluorescence
	Imaging Channels (representative dyes)	4 fluorescent channels: (FITC/SYTO13/AF488), (CY3/AF532/PE/SYTO83), (TxRed/AF594), (CY5/AF647/Dylight 650)
	Imaging channels (em center wavelength/bandpass)	516/23, 564/15, 623/30, 683/30
	Slide Capacity	Four 1 x 3 inch slides
	On Instrument Data Storage Capacity	8TB (> 300 10 mm x 10 mm 4 channel slide images)
	Long Term Data Storage	Customer-provided fileshare (local network)
	ROI Definition	On-instrument or via web browser
	ROI Selection	Geometric, Segmentation, Cell Type Specific Phenotype, Contouring, Gridding
	Instrument Dimensions	Actual: 30" x 29" x 24"/76 cm x 73 cm x 61 cm
	Instrument Weight	220 lb/100 kg
	Power source	110-240 VAC, 50/60Hz, 440VA
	Readout Instrument Compatability	nCounter Analysis System, Illumina NGS
	Image Export	Single-channel pyramidal TIFF; monochrome or color images (JPEG, PNG, WEBP); multicannel pyramidal, stitched OME- TIFF
GeoMx DSP Reagents	Supported Analytes	Protein and RNA
	Chemistry Multiplexing Platform Capabilities	Up to 96 plex for nCounter, 20K plex for NGS
GeoMx Data Analysis Software	Data Visualization and Analysis	Intuitive and interactive interface that automatically connects quantitative readout with spatial information. Workflow includes QC and normalization. Visualization include clusters, heatmaps, volcano plots, bar graphs, box plots, strip plots, scatter plots, correlation plots.
	Data Export	.xlsx file format for raw or calibrated data
	Image Export	.svg format for visualization plots

Instrument Information

Product	Description	Catalog Number
GeoMx Digital Spatial Profiler	GeoMx Digital Spatial Profiler Analysis Instrument. Includes 1 year manufacturers warranty.	GMX-DSP-1Y
	GeoMx Digital Spatial Profiler Analysis Instrument. Includes 1 year manufacturers warranty and 1 year service contract.	GMX-DSP-2Y
	GeoMx Digital Spatial Profiler Analysis Instrument. Includes 1 year manufacturers warranty and 2 year service contract.	GMX-DSP-3Y
	GeoMx Digital Spatial Profiler Analysis Instrument. Includes 1 year manufacturers warranty and 3 year service contract.	GMX-DSP-4Y
	GeoMx Digital Spatial Profiler Analysis Instrument. Includes 1 year manufacturers warranty and 4 year service contract.	GMX-DSP-5Y

For more information, visit nanostring.com/GeoMxDSP

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