

**BRUKER SPATIAL BIOLOGY**

# **GeoMx<sup>®</sup> Digital Spatial Profiler**

Measure Where Biology Happens

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.

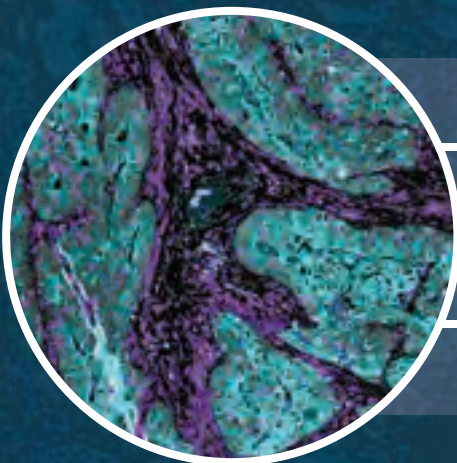


# HETEROGENEITY RESOLVED WITH SPECIFICITY

## Spatially resolve tissue cell populations with functional segmentation

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 analysis, 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

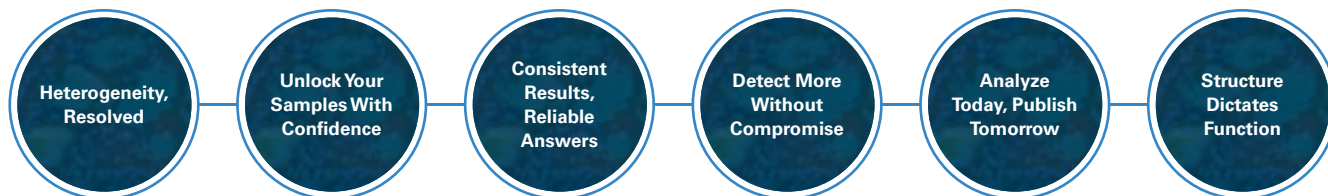


+	Spatial	-
-	Plex	+
-	Quantitation	+
-	Precision	+

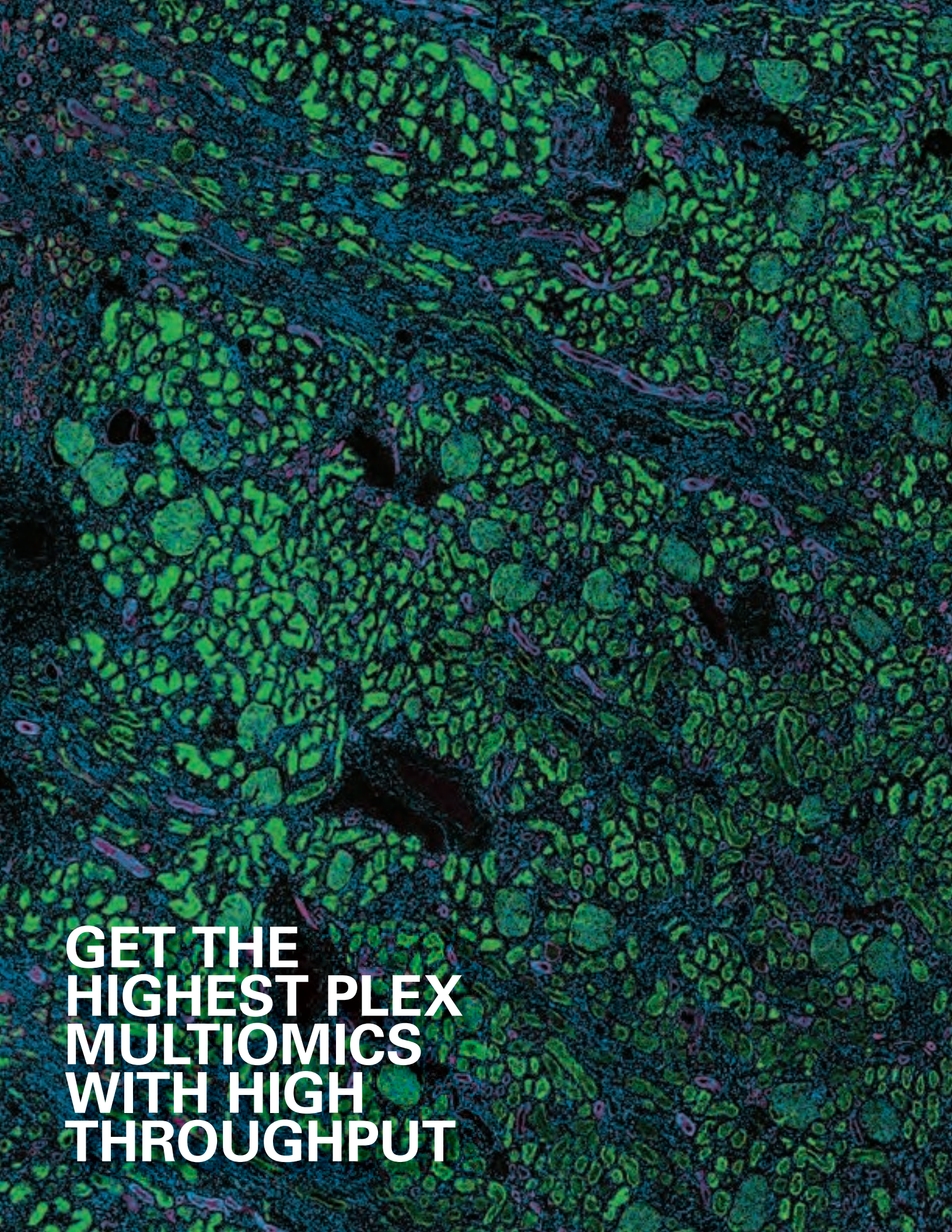
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# GeoMx Digital Spatial Profiler

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 Multiomics** by combining both Protein and RNA assays on the same slide.







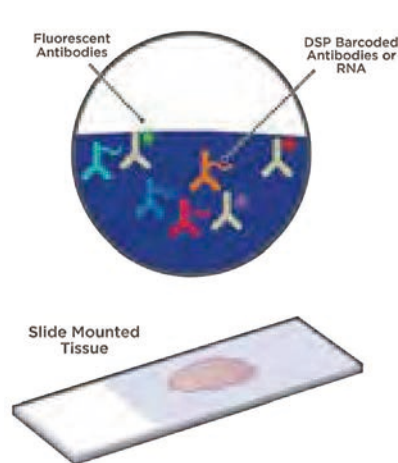
**GET THE  
HIGHEST PLEX  
MULTIOMICS  
WITH HIGH  
THROUGHPUT**



# 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.



\* Can be automated

1

### Sample Prep

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

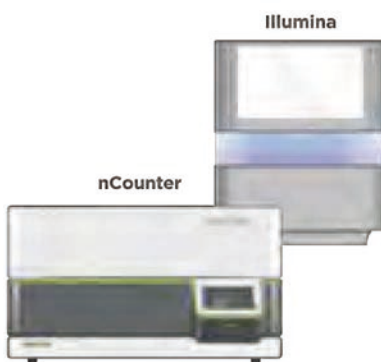
GeoMx<sup>®</sup>  
Digital Spatial Profiler



2

### Profile

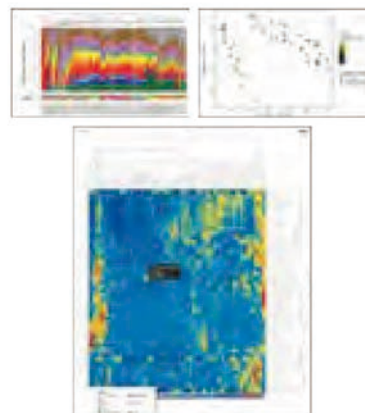
Image and profile RNA and Protein with GeoMx DSP.



3

### Count

Count barcodes on the nCounter<sup>®</sup> Analysis System or sequence with NGS.



4

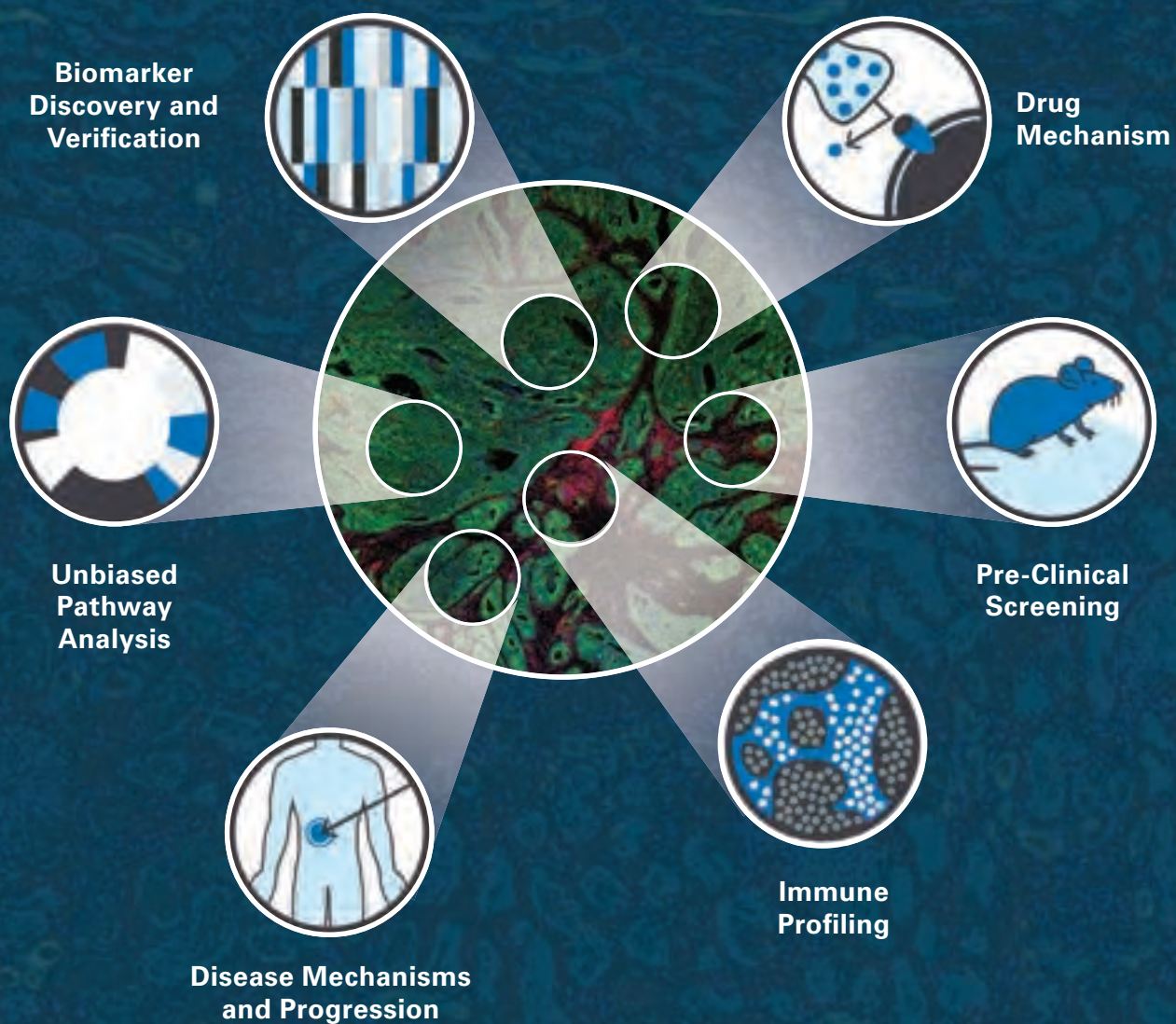
### Analyze

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

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# Enabling Your Research with the Most Flexible Spatial Solutions

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.





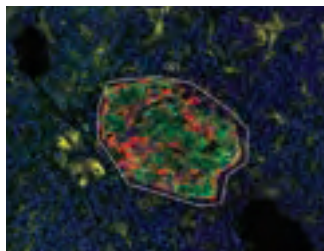
# Locate Your Regions of Interest

## Understand Tissue Structure with Flexibility



### Geometric Profiling

Profile with any geometric shape to characterize distinct tissue regions.

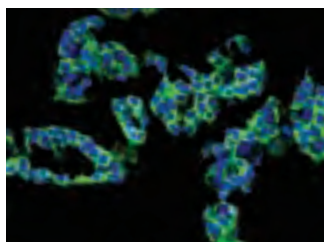


The Islet of Langerhans is geometrically profiled with Insulin, glucagon and PanCK morphology markers.

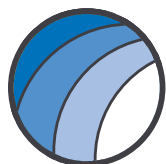


### Segment Profiling

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

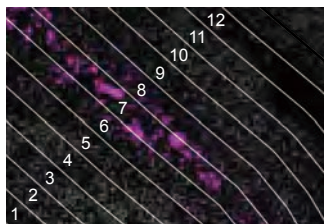


A 5 µm section of kidney depicts the proximal convoluted tubule. This section has been segment profiled guided by CD10 and CD31 morphology marker staining.

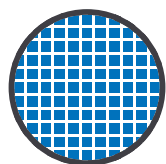


### Contour Profiling

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

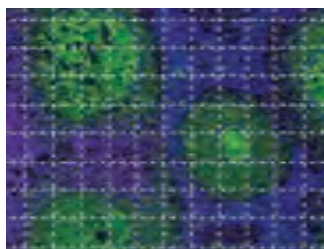


The invasive margins of two colorectal tumor samples are analyzed using contour segments extending into the tumor and outside the tumor into the stroma and profiled with 1400+ RNA probes with NGS read out.

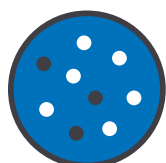


### Gridded Profiling

Perform rigorous spatial mapping using a tunable grid pattern.

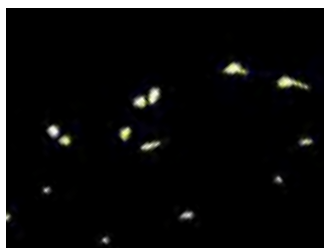


Gridded protein profiling of a tonsil section, stained with morphology markers CD3, CD20 and PanCK.



### 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

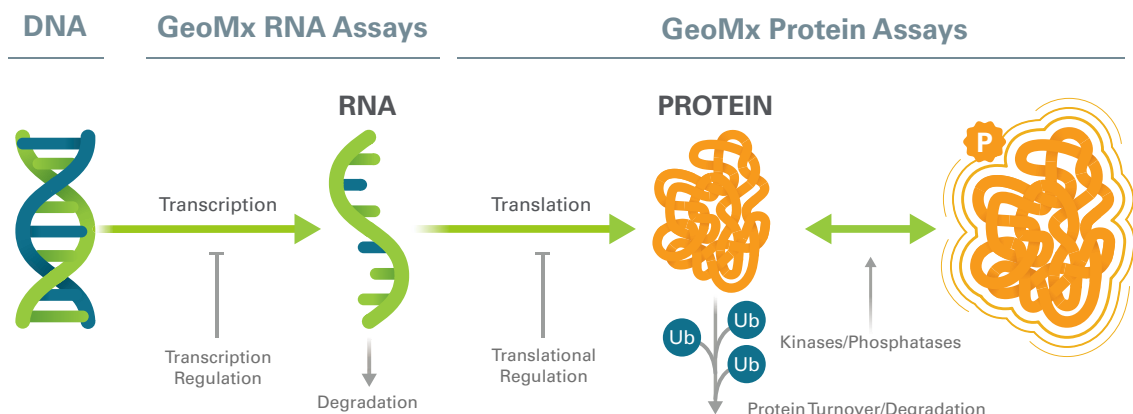
GeoMx<sup>®</sup> protein assays enable unprecedented biomarker discovery with the ability to profile over 570 proteins simultaneously with NGS readout. For targeted discovery, nCounter readout assays are modular and optimized for robust performance across a variety of sample types. All assays are customizable to meet your research needs.



Learn more <https://nanosttring.com/products/geomx-digital-spatial-profiler/geomx-protein-assays/>

## High-plex Multiomics Meets Spatial Biology with GeoMx DSP

Simplify your spatial multiomic workflow with multimodal, co-detection of RNA and Protein from the same tissue section. Combine the GeoMx Whole Transcriptome Assay (18,000+ transcripts) with the GeoMx IO Proteome Atlas Assay (570+ proteins) to gain a complete picture of biology all the way from transcription to protein activation.



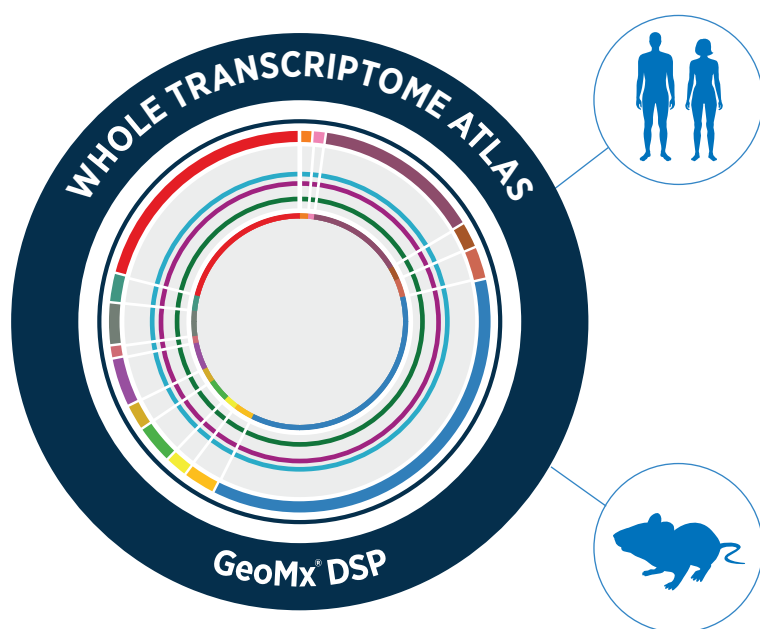
Learn more <https://nanosttring.com/products/geomx-digital-spatial-profiler/spatial-multiomics-enabled-with-geomx-dsp/>



# GeoMx<sup>®</sup> 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

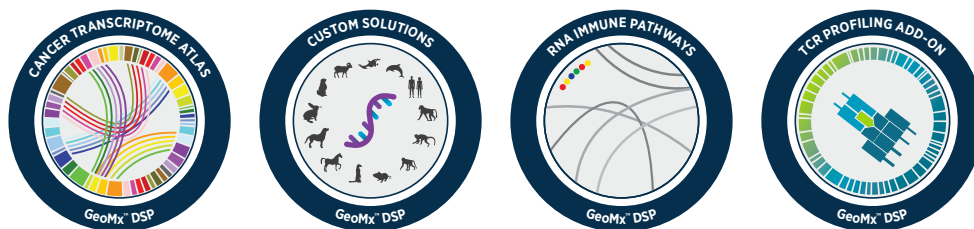
Customization

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 Targeted Cancer Transcriptome Atlases for human and canine and a TCR Profiling add-on panel that can be layered on top of the Whole Transcriptome or Cancer Transcriptome Atlases. Customize any panel or design your own panel of up to 400 targets for any species.



Learn more <https://nanosttring.com/products/geomx-digital-spatial-profiler/geomx-rna-assays/>



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# Explore Your Data

## GeoMx<sup>®</sup> 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**

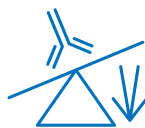
**Data QC and normalization**

**Visualize pathway analysis, differential expression, heatmaps and more!**

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## GeoScript<sup>™</sup> 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**

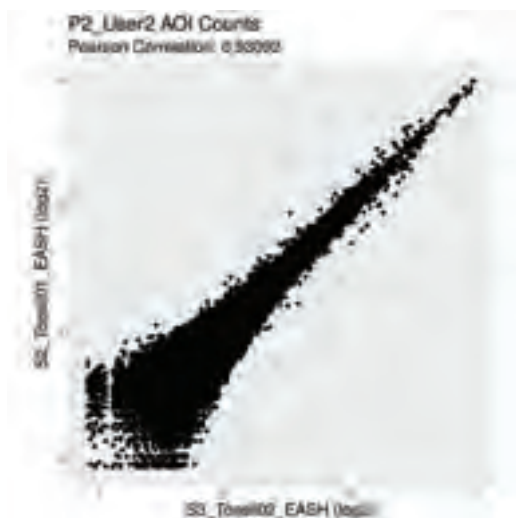
**Learn more** <https://nanosstring.com/products/geomx-digital-spatial-profiler/geoscript-hub/>



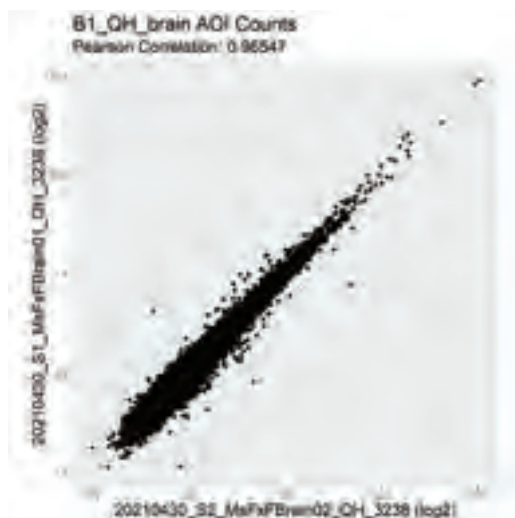
# Consistent Results, Reliable Answers

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

Human FFPE Tonsil



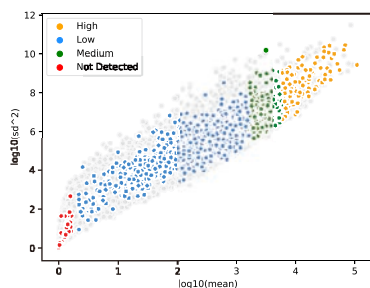
Mouse Fixed Frozen Brain



## Detect More with Sensitivity

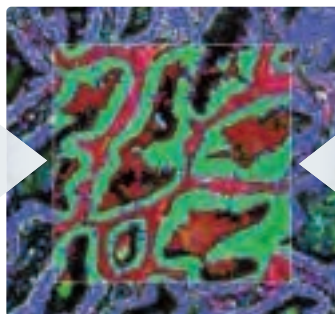
GeoMx<sup>®</sup> DSP detects the most relevant low to high expressing genes. Detect only the targets that matter in the regions that matter.

Dynamic Expression Range

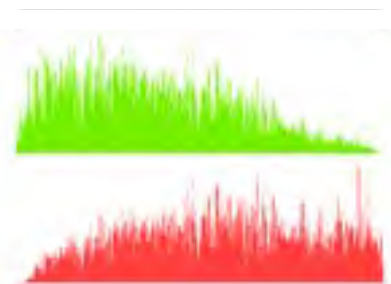


Expression bins defined using TCGA NSCLC data

Non-Small Cell Lung Cancer



Tumor Profile



Immune Profile



# Product 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
GeoMx® DSP Reagents	Image Export	Single-channel pyramidal TIFF; monochrome or color images (JPEG, PNG, WEBP); multi-channel pyramidal, stitched OME-TIFF
	Supported Analytes	Protein and RNA
GeoMx® Data Analysis Software	Chemistry Multiplexing Platform Capabilities	Up to 96 plex for nCounter, 20K plex for NGS
	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

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