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Visium Spatial Gene Expression

Map the whole transcriptome within the tissue context

Visium Spatial Gene Expression is a next-generation molecular profiling solution for classifying tissue based on total mRNA. Map the whole transcriptome with morphological context in FFPE or fresh frozen tissues to discover novel insights into normal development, disease pathology, and clinical translational research.

View Pricing

See how it works ▶

Resources: [Product Catalog](#) | [Fresh Frozen Product Sheet](#) | [FFPE Product Sheet](#) | [App Note](#) | [Spike-in Probes for Custom Genes](#)

Access more sample types
Compatible with both FFPE and fresh frozen tissue samples.

Whole tissue section profiling
No need to select regions of interest—analyze the whole transcriptome from an entire section.

High cellular resolution
1–10 cell resolution on average per spot depending on tissue type.

Diverse sample compatibility
Demonstrated data on a diverse set of organs across species (human, mouse, rat, and more).

Protein co-detection
Combine whole transcriptome spatial analysis with immunofluorescence protein detection.

Streamlined data analysis
Combine histological and gene expression data with easy-to-use software.

Explore what you can do

Gain a complete view of disease complexity

Discover new biomarkers

Map the spatial organization of cell atlases

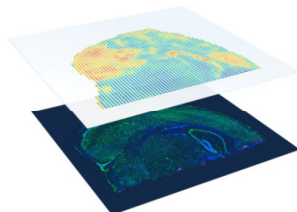
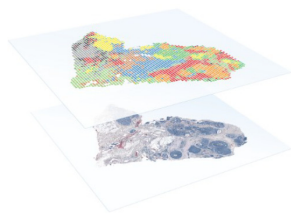
Identify spatiotemporal gene expression patterns

More than a tissue slide

Captured by FireShot Pro: 13 December 2024, 10:03:17
<https://getfireshot.com>

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FFPE

FFPE compatibility

Combine the benefits of histological techniques with the massive throughput and discovery power of RNA sequencing to detect the whole transcriptome in FFPE samples.

[Download Product Sheet](#)

- ✓ Detect the whole transcriptome across entire FFPE tissue sections with high sensitivity and specificity
- ✓ Profile archival FFPE tissue samples to discover new biomarkers
- ✓ Compatible with two Capture Area sizes for more flexibility

Immunofluorescence

Protein co-detection

Enable discovery of novel cell types and their spatial organization by combining immunofluorescence and whole transcriptome spatial gene expression.

[Download Product Sheet](#)

[View Product Page](#)

- ✓ Explore transcriptome and protein relationships with simultaneous spatial detection
- ✓ Discover new tissue biomarkers with cell-type specificity

Expedited sample access

Visium CytAssist-enabled workflow

With Visium CytAssist you can profile pre-sectioned tissues using the Visium for FFPE gene expression workflow.

[Download Instrument Brochure](#)

[View Product Page](#)

- ✓ Start from FFPE blocks or pre-sectioned tissues on glass slides
- ✓ Pre-screen to find the most biologically significant tissue sections
- ✓ Integrates seamlessly with standard histology workflows

Proven results

Videos

Watch to learn how customers are using Visium Spatial Gene Expression.

[View all](#)

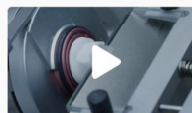
Publications

Resources



Learn more about Visium Spatial Gene Expression

10x Genomics, May 2022



See how oncology translational researchers are using Visium Spatial Gene Expression

Elizabeth Jaffee, Elana Fertig, and Luciane Kagohara, Johns Hopkins University

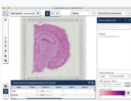


Spatial Experiment Design, Sample Prep, & Workflow

John Lee, PhD, May 2022

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Our end-to-end solution

 Visium Spatial capture slides Easily adoptable within existing lab infrastructure, no need for a new instrument.	 Visium Spatial Gene Expression reagents Our reagent kits let you capture whole transcriptome gene expression with spatial resolution across an entire tissue section.	 Analysis and visualization software Space Ranger > Our analysis pipelines Loupe Browser > Our visualization software	 World-class technical and customer support Support hub > Get the help you need with our expert support team, reachable by phone or e-mail.
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Workflow



Prepare your sample

Embed, section, and place fresh frozen or FFPE tissue onto a Capture Area of the gene expression slide. Each Capture Area has thousands of barcoded spots containing millions of capture oligonucleotides with spatial barcodes unique to that spot.

RESOURCES

[Tissue Preparation Guide](#)
[Fresh Frozen Tissues Tested](#)
[Fresh Frozen How-To Videos](#)
[FFPE Tissues Tested](#)
[FFPE How-To Videos](#)

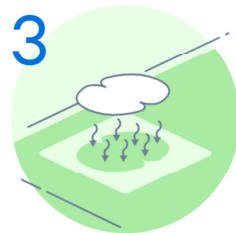


Stain and image the tissue

Use standard fixation and staining techniques, including hematoxylin and eosin (H&E) staining, to visualize tissue sections on slides using a brightfield microscope and immunofluorescence (IF) staining to visualize protein detection in tissue sections on slides using a fluorescent microscope.

RESOURCES

[Fresh Frozen Imaging Guidelines](#)
[Fresh Frozen User Guide](#)
[FFPE Imaging Guidelines](#)
[FFPE User Guide](#)



Permeabilize tissue and construct library

For fresh frozen tissue, the tissue is permeabilized to release mRNA from the cells, which binds to the spatially barcoded oligonucleotides present on the spots. A reverse transcription reaction produces cDNA from the captured mRNA. The barcoded cDNA is then pooled for downstream processing to generate a sequencing-ready library. For FFPE tissues, tissue is permeabilized to release ligated probe pairs from the cells, which bind to the spatially barcoded oligonucleotides present on the spots. Spatial barcodes are added via an extension reaction. The barcoded molecules are then pooled for downstream processing to generate a sequencing-ready library.

RESOURCES

[Fresh Frozen User Guide](#)
[FFPE User Guide](#)



Sequence

The resulting 10x barcoded library is compatible with standard NGS short-read sequencing on Illumina sequencers for massive transcriptional profiling of entire tissue sections.

RESOURCES

[Fresh Frozen Sequencing Requirements](#)
[FFPE Sequencing Requirements](#)



Analyze and visualize your data

Use our Space Ranger analysis software to process your spatial gene and protein expression data and interactively explore the results with our Loupe Browser visualization software.

DO I NEED TO BE A BIOINFORMATICIAN TO USE LOUPE?

Loupe is a point-and-click software that's easy for anyone to download and use.

RESOURCES

[Space Ranger Analysis Pipelines](#)
[Loupe Visualization Software](#)
[Downloadable Datasets](#)

Frequently asked questions

What does Visium Spatial Gene Expression enable you to do?	+
What types of samples are compatible?	+
Is this a proven technology?	+
How do I analyze my Visium Spatial Gene Expression data?	+
Does the Visium assay require tissue optimization?	+
What tissue stains are compatible with Visium Spatial Gene Expression?	+

Related products

[Compare Products](#) >

Products	Spatial Gene Expression	Single Cell Gene Expression	Single Cell Immune Profiling	Single Cell ATAC
	View details >	View details >	View details >	View details >
Capabilities	3' whole transcriptome gene expression Compatible with FFPE and fresh frozen tissue sections	3' whole transcriptome gene expression Sample multiplexing	Paired full-length TCR / BCR sequencing 5' whole transcriptome gene expression	Epigenomic landscape by open chromatin profiling
Extensions	Immunofluorescence protein co-detection Visium CytAssist Gene and Protein Expression	Cell Surface Protein CRISPR Screening Sample multiplexing	Cell Surface Protein Antigen Specificity CRISPR Screening	-
Instruments	Visium CytAssist	Chromium X Series	Chromium X Series	Chromium X Series



Get started

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Spatial**

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