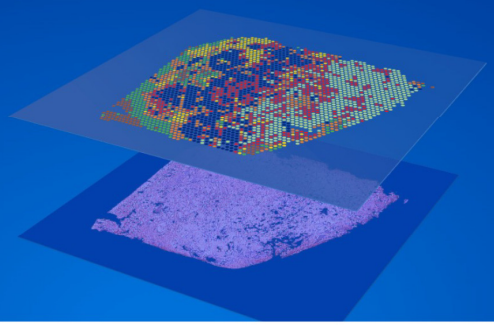
Visium Spatial Gene Expression

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

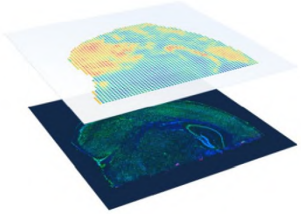
FFPE

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.

- 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

Download Product Sheet



Immunofluorescence

Protein co-detection

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

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

Download Product Sheet
View Product Page

Expanded sample access

Visium CytAssist-enabled workflow

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

- 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

Download Instrument Brochure
View Product Page

Proven results

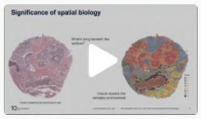
Videos

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

View all

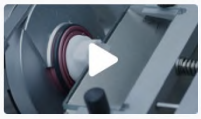
Publications

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

View all

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.

Workflow

1

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

2

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

3

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

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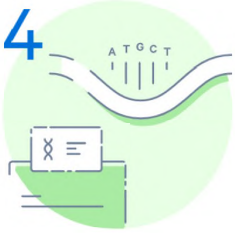

Sequence

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 View details >	Single Cell Gene Expression View details >	Single Cell Immune Profiling View details >	Single Cell ATAC 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

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Get started

View Pricing

Visium Spatial

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Questions? We're here to help

support@10xgenomics.com

+1 925 401 7300

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