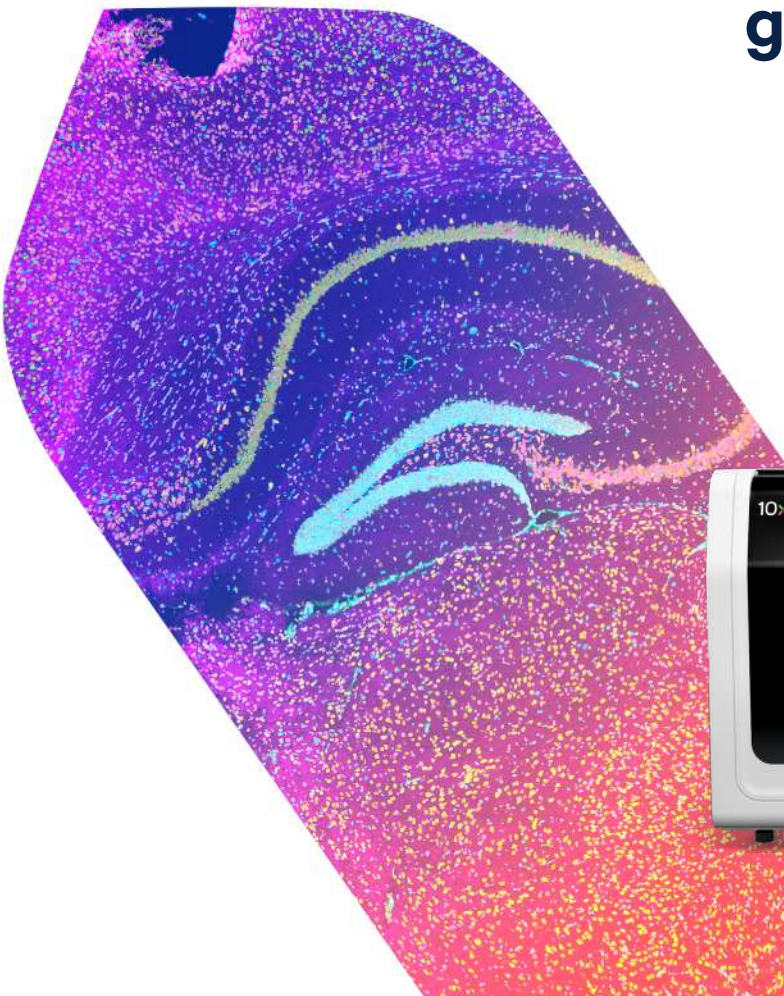


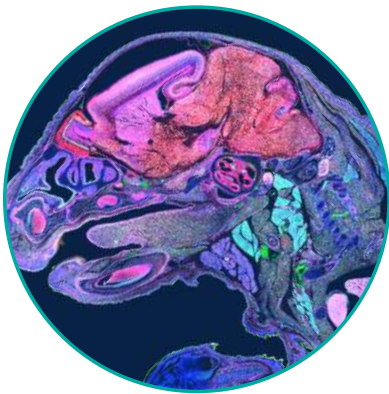
**Xenium:** Single Cell Spatial Transcriptomics

# Uniting histology and single cell gene expression

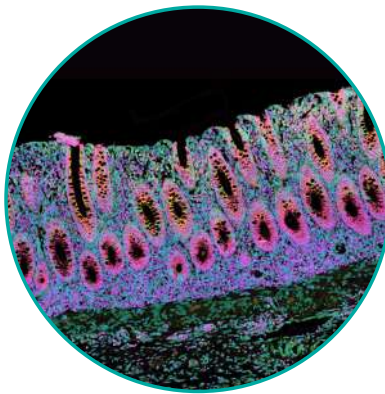


# High-resolution and massively multiplexed spatial analysis makes the impossible possible

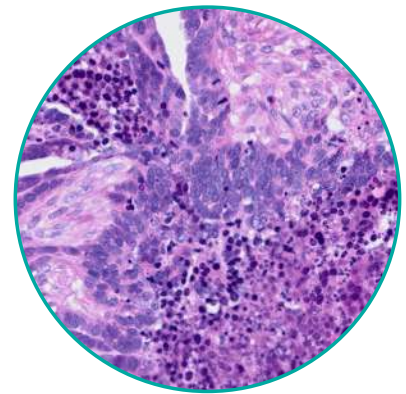
Xenium builds on our years of innovation in single cell and spatial technologies to deliver the most advanced end-to-end single cell spatial imaging platform on the market. The purpose-built design makes it easy to go from tissue section to data with an automated analyzer, curated and/or custom panels, and intuitive visualization and analysis software.



Analyze and visualize the expression of up to 5,000 genes within single cells in their native tissue context from FFPE or fresh frozen sections



Get greater confidence in transcript-to-cell assignments with precise cell segmentation using multiple morphology features



Unite histopathology insights with your single cell spatial imaging data on the same tissue section

## The ultimate single cell spatial biology experience

Industry-leading speed and throughput

Highly sensitive and specific padlock chemistry

Diverse panel menu to fit any research need

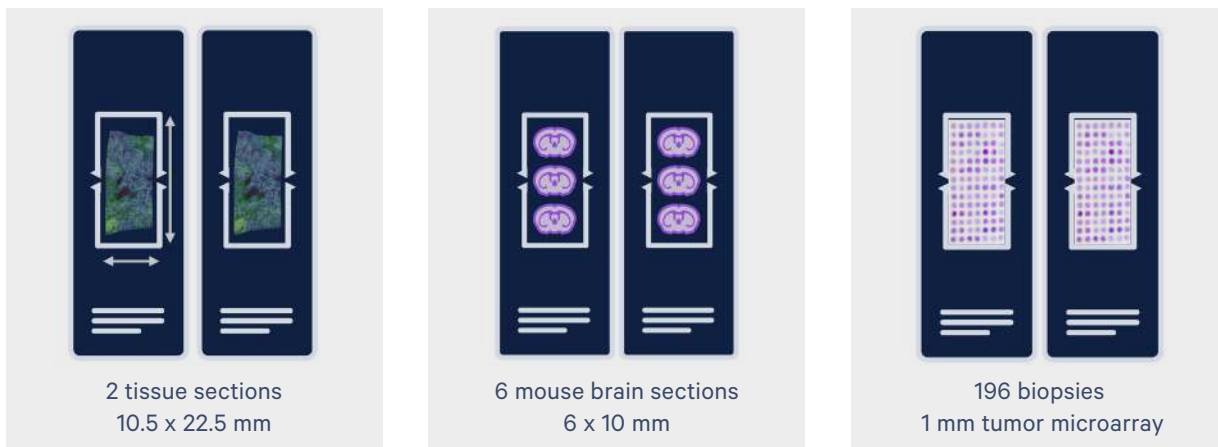
Fast & easy workflow with no tissue optimization

Post-run section compatibility with immunofluorescence (IF), H&E, and Visium

Intuitive analysis, data visualization, and exploration

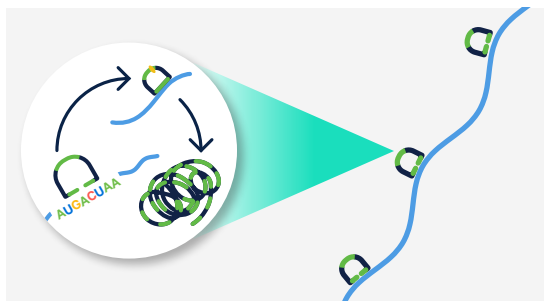
## Industry-leading speed and throughput

A large analyzable area provides maximum flexibility and the ability to profile up to 5,000 genes in up to 472 mm<sup>2</sup> of tissue in ≤ 6 days (or get even faster analysis times with < 500-gene panels).



## Highly sensitive and specific padlock chemistry

The Xenium platform's unique probe chemistry uses a dual hybridization and ligation chemistry. This stringent four-factor authentication approach provides specific and sensitive binding without the off-target issues associated with single-probe probe-gene approaches or the limitations associated with probe-tiling approaches.

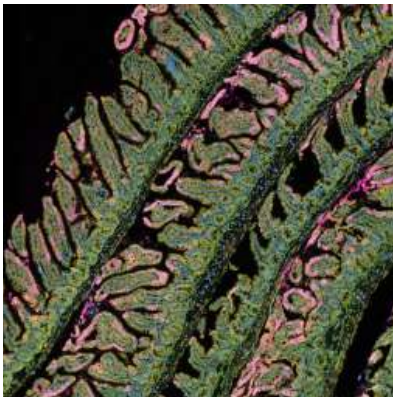


- ✓ Exhibits high sensitivity comparable to scRNA-seq
- ✓ Offers high specificity to ensure low false discovery rate
- ✓ Distinguishes high-homology transcripts
- ✓ Interrogates unique biology (e.g., isoforms)
- ✓ Reliably captures short genes and degraded FFPE transcripts
- ✓ Tunable detection for high expressors

# Diverse panel menu to fit any research need

## Pre-designed panels

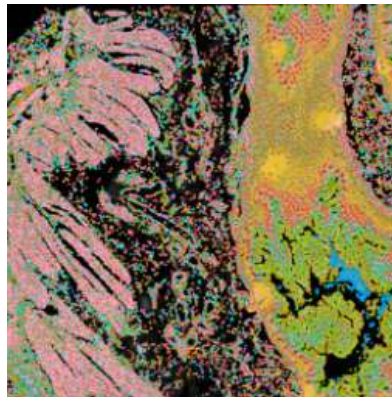
These ready-to-ship panels have been extensively tested by 10x Genomics on healthy and diseased fresh frozen and FFPE tissues.



### 5,000-gene panels

Add up to 100 custom genes

Map human or mouse biological pathways, receptor–ligand pairs, cell–cell interactions, biomarkers, and more



### < 500-gene panels

Add up to 100 custom genes

Tissue- and application-specific human and mouse panels, including human immuno-oncology and multi-tissue panels



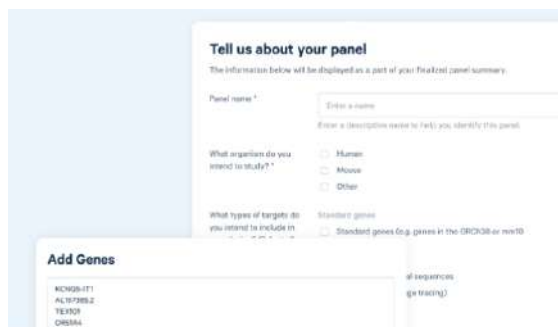
[See the full list of panels](#)

[Or design your own fully custom panel](#)

**In development: Simultaneous protein detection & more!**

## Custom panels

The Custom Panel Designer makes it easy to add genes to a pre-designed panel or design a fully customized panel. Simply input your genes of interest, and we'll provide feedback and recommendations to optimize your panel.

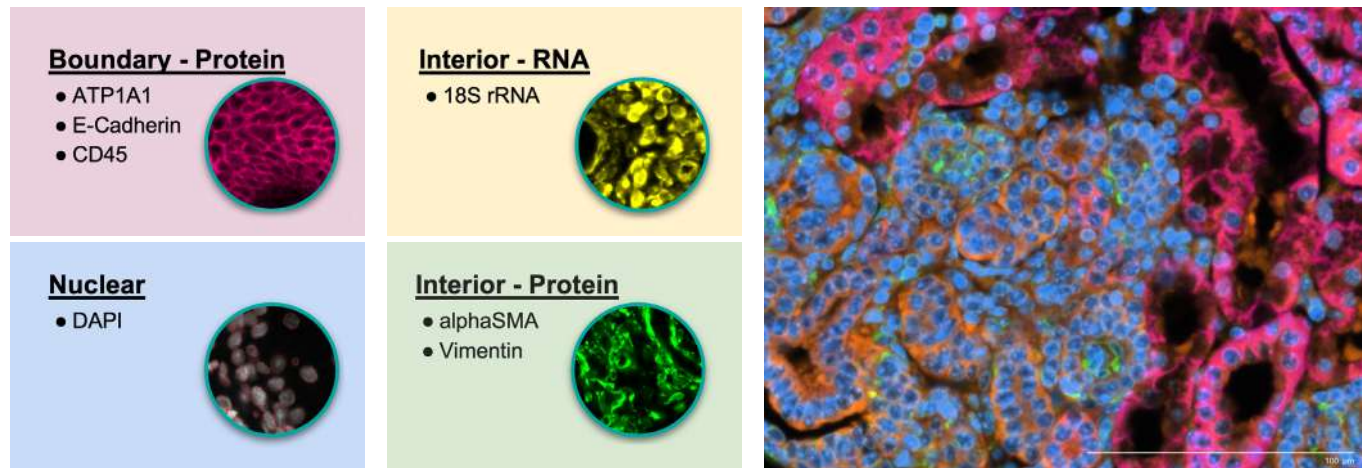


- ✓ Select up to 480 genes of your choice for a fully customized panel
- ✓ Design probes for special applications (isoforms, fusions, viral/bacterial sequences, protein tags, and fluorescent reporters)
- ✓ Target diploid eukaryotic species, xenografts, and most species with well-annotated transcriptomes
- ✓ Designed and delivered in 4–6 weeks

# Integrated, precise multimodal cell segmentation

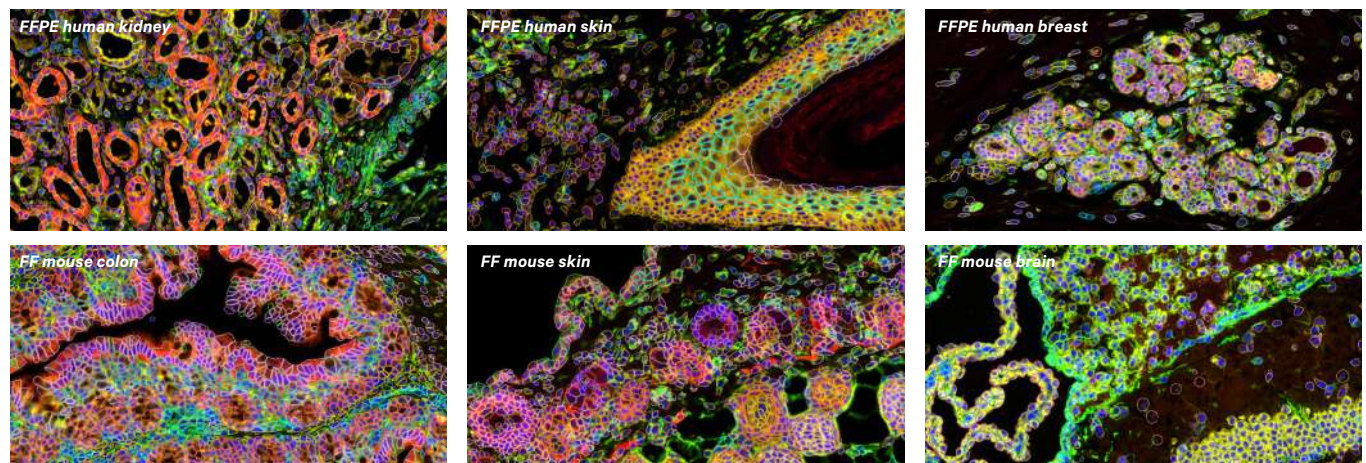
Xenium Cell Segmentation delivers precise cell segmentation and transcript-to-cell assignments by leveraging multiple morphological stains and a highly advanced purpose-built algorithm. This approach offers researchers highly accurate cell segmentation across a broad range of human and mouse tissues, in both FF and FFPE samples, using a single kit with a simple and integrated workflow.

## Optimized morphological stains



Stain with markers for cellular morphology

See how this approach provides accurate multimodal cell segmentation across a multitude of tissue types, including:

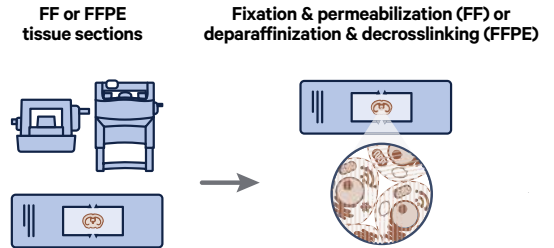


# Fast and simple workflow

Go from tissue block to instrument start in only 3 days with less than 7 hours of hands-on time.

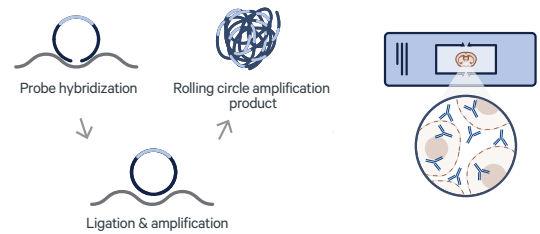
## 1 Sample preparation

The Xenium workflow starts with sectioning tissues onto a Xenium slide. The sections are then treated to preserve and access the RNA with circularizable DNA probes.



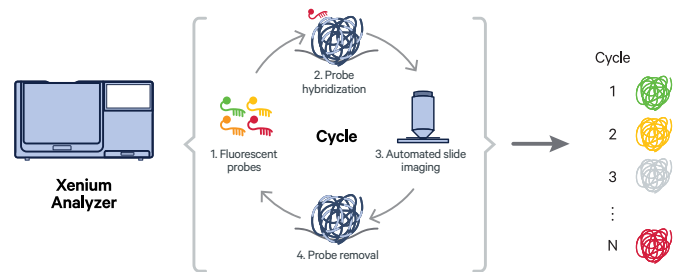
## 2 Probe hybridization, ligation and amplification, and optional multimodal staining

The DNA probes contain a gene-specific barcode sequence flanked by two regions that independently hybridize to the target RNA. Ligation of the probe ends to each other then generates a circular DNA probe, which is enzymatically amplified. If multimodal cell segmentation is being used, the tissue will then be stained with interior, nuclear, and membrane stains.



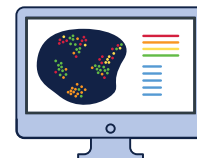
## 3 Fluorescent probe hybridization, imaging, and decoding

Next, on the Xenium Analyzer, the sample undergoes successive rounds of fluorescent probe hybridization, imaging, and removal. An optical signature specific to each RNA transcript within the sample is generated, enabling identification of the target gene in real time.

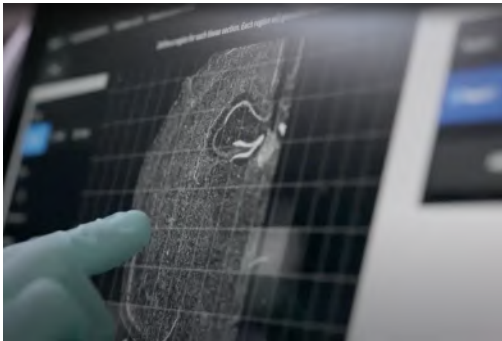


## 4 Data visualization

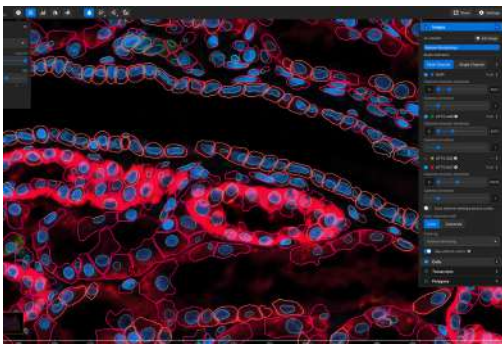
After a run completes, the data is immediately available for exploration. Visualize an entire unified image with overlaid morphology, segmentation, cell typing, and transcript density at any scale with Xenium Explorer.



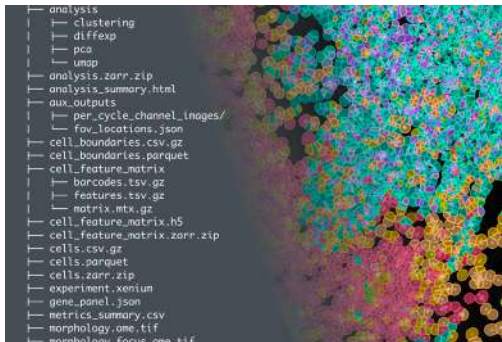
## Immediate access to insights



**Xenium Onboard Analysis** automatically processes data during a run, meaning that interpretable data is ready locally the moment your run is done.



**Xenium Explorer**, our intuitive visualization software, allows for seamless exploration of your data. Visualize a unified image of your entire tissue section with overlaid morphology, segmentation, cell typing, and transcript density at any scale.



**Xenium Ranger** analysis pipelines give you the flexibility to further refine your data for your research needs, then continue your analysis journey in Xenium Explorer.

## Freedom to store and analyze your data however you choose

- ✓ Keep full ownership of your data at no extra cost, and transfer it from the instrument to the storage location of your choosing
- ✓ Export Xenium data in open file formats that can be seamlessly used in third-party tools for filtering, clustering, trajectory analysis, and beyond

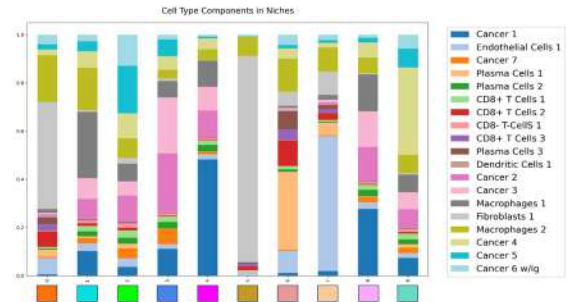
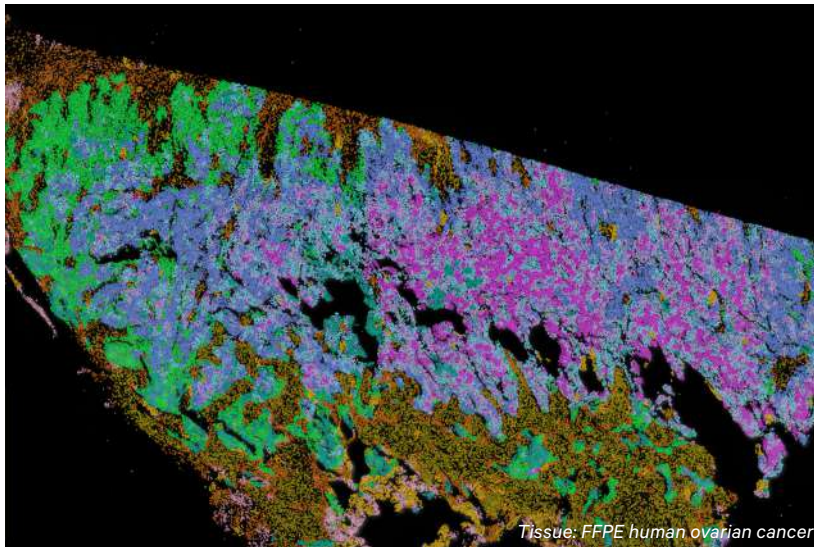


[Explore Xenium datasets](#)

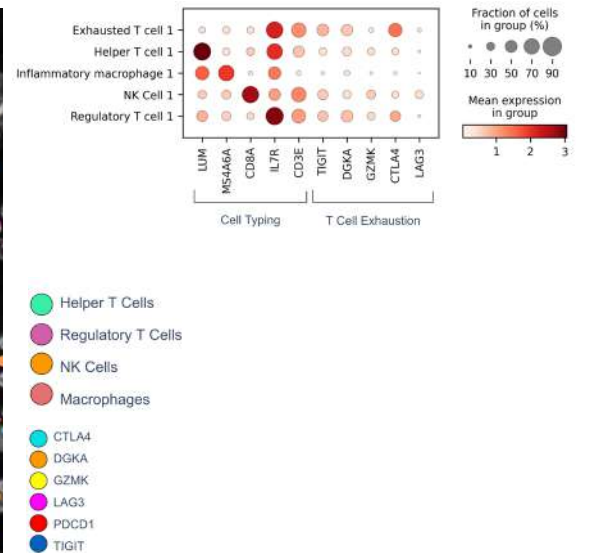
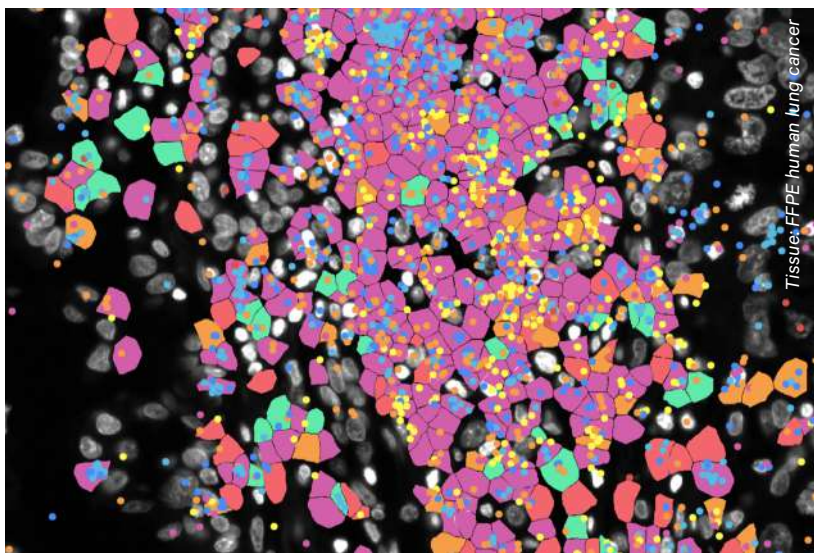
# Xenium in action

High-resolution spatial mapping on the Xenium In Situ platform enables identification of cellular neighborhoods all the way down to individual cell-cell interactions, providing unparalleled insights into complex biological processes.

## Identify distinct spatial niches with different cell compositions

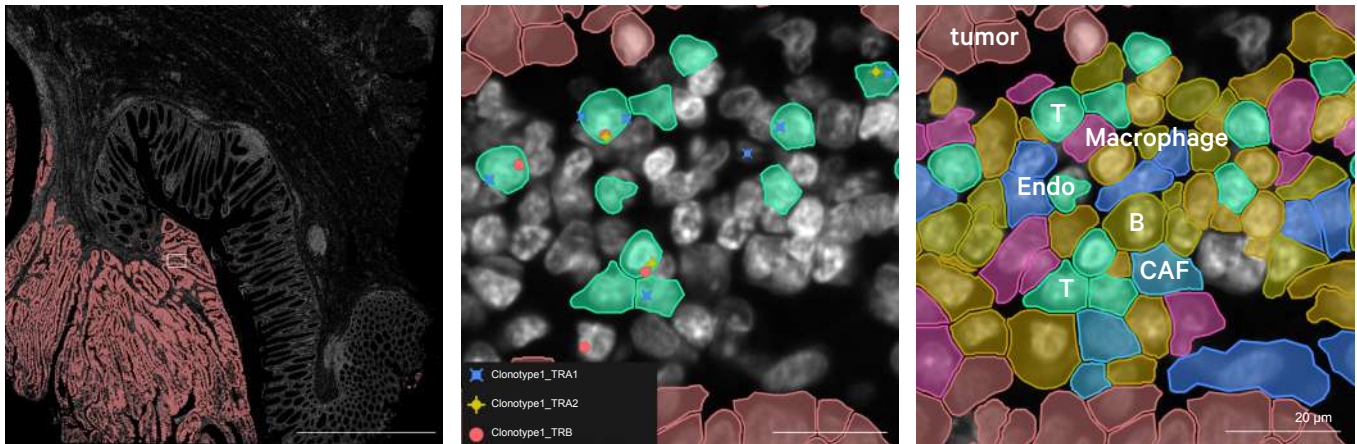


## Deeply characterize cell states within the tissue microenvironment





## Pair with single cell immune profiling and design custom probes to track clonally expanded immune cells in the tissue context



## Xenium Xplorers are generating powerful results

The Xenium platform allows researchers to deepen their understanding of both healthy and diseased tissue through high-plex RNA and multiplexed protein detection at subcellular resolution. The utility of Xenium is demonstrated in numerous publications for:

- Identifying a clinically relevant mechanism that sensitizes diffuse midline glioma to radiation therapy <sup>1</sup>
- Revealing the stepwise molecular and cellular progression of lung adenocarcinoma <sup>2</sup>
- Providing new insights into the spatial niches that underlie pulmonary fibrosis pathology and progression <sup>3</sup>
- Identifying the role of Dkk2 in the Wnt pathway and its potential role in cleft palate <sup>4</sup>
- Characterizing new, spatially defined potential biomarkers for future development of immunotherapies in breast cancer <sup>5</sup>
- Revealing novel pathological compartments within multiple sclerosis lesions and identifying potential therapeutic targets <sup>6</sup>
- Combining single cell and spatial analysis to create a spatiotemporal developmental atlas of human lungs <sup>7</sup>

Explore more Xenium publications on our website.



Search Xenium publications

# Xenium Analyzer specifications

Item	Product number
Xenium Analyzer	1000481
Vibration Isolation Table	1000531
Warranty / Service Plan	1000482



<b>Weight</b>	Xenium Analyzer: ~550 lb [249.5 kg] Xenium analysis computer: ~57 lb [25.8 kg] Vibration Isolation Table: ~500 lb [226.8 kg]
<b>Dimensions (L X W X H)</b>	Xenium Analyzer: 52.5" [133.3 cm] x 27" [68.5 cm] x 31" [78.7 cm] (59" [149.8 cm] with door open) Xenium analysis computer: 7" [17.8 cm] x 26.5" [67.3 cm] x 18" [45.7 cm]
<b>Electrical specifications</b>	200–240 VAC, 50–60Hz, 6 A* *Electrical requirements dependent on region/country
<b>Operating temperature</b>	19–25°C (66–77°F) Use in a typical indoor laboratory environment. Extreme temperature conditions will affect the sensitive reagents used with the instrument.
<b>Humidity</b>	30–80% Relative Humidity (non-condensing).
<b>Resolution</b>	< 30-nm XY localization precision and < 100-nm Z localization precision.
<b>Throughput</b>	Analyze up to 236 mm <sup>2</sup> of tissue per slide and up to 1,400 mm <sup>2</sup> per week (for nuclei-based segmentation).
<b>Sample type compatibility</b>	FF and FFPE tissue sections.
<b>Gene expression and multiplex capacity</b>	Currently supports detection of 50–5,000 genes, with platform future-proofed to support additional capabilities including in-line multiplex protein detection.
<b>Cell segmentation</b>	Automated multimodal cell segmentation solution validated for human and mouse FF and FFPE tissues.

## World-class service and support

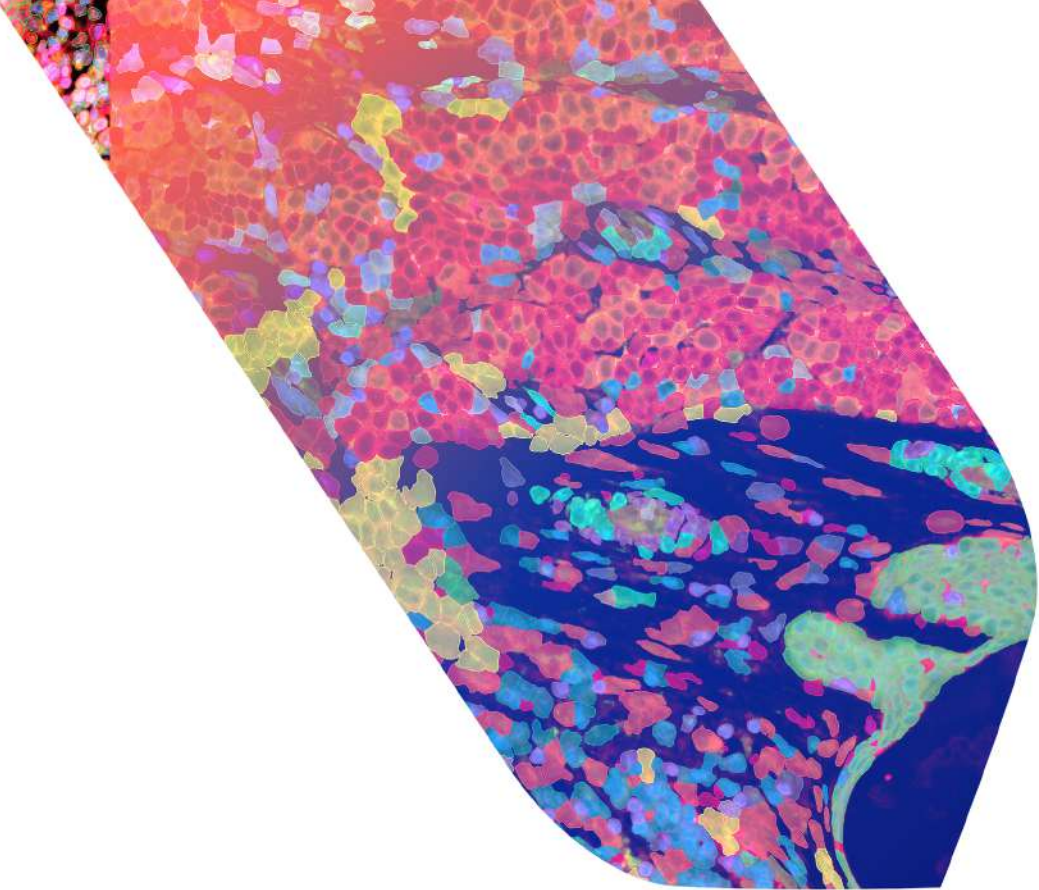
Our global customer support, technical support, and field service teams are here to help you every step of the way. Our 12-month comprehensive Xenium Analyzer warranty and service plan includes corrective & preventive maintenance, normal wear and tear parts replacements, and application support.



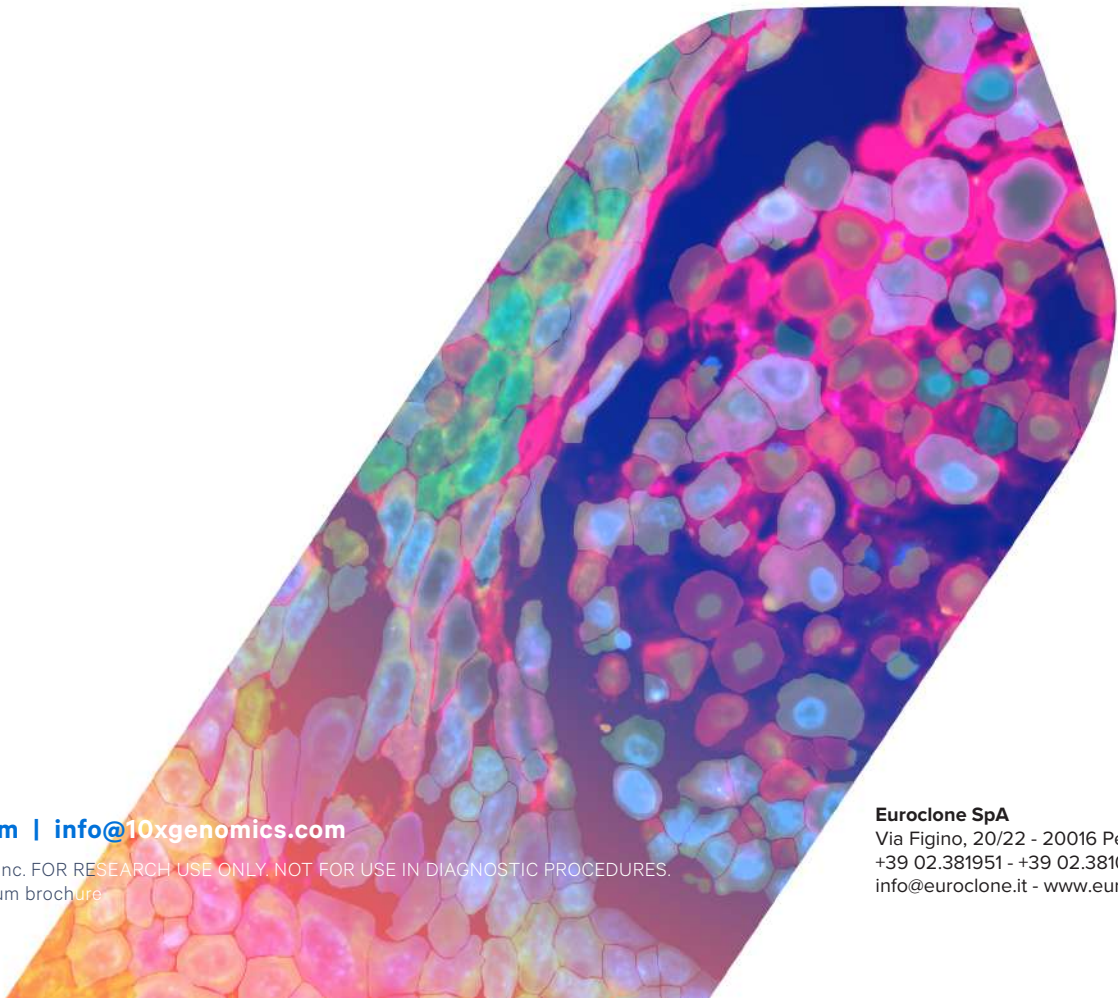
[Access comprehensive support resources including user guides, software downloads, and more.](#)

## References

1. Mangoli A, et al. Ataxia-telangiectasia mutated (Atm) disruption sensitizes spatially-directed H3.3K27M/TP53 diffuse midline gliomas to radiation therapy. *bioRxiv* (2023). doi: 10.1101/2023.10.18.562892
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3. Vannan A, et al. Image-based spatial transcriptomics identifies molecular niche dysregulation associated with distal lung remodeling in pulmonary fibrosis. *bioRxiv* (2023). doi: 10.1101/2023.12.15.571954
4. Pina JO, et al. Spatial multiomics reveal the role of Wnt modulator, Dkk2, in palatogenesis. *J Dent Res* (2024). doi: 10.1177/00220345241256600
5. Wang N, et al. Spatial single-cell transcriptomic analysis in breast cancer reveals potential biomarkers for PD-1 blockade therapy. *Research Square* (2024). doi: 10.21203/rs.3.rs-4376986/v1
6. Kukanja P, et al. Cellular architecture of evolving neuroinflammatory lesions and multiple sclerosis pathology. *Cell* 187: 1990-2009.e19 (2024). doi: 10.1016/j.cell.2024.02.030
7. Quach H, et al. Early human fetal lung atlas reveals the temporal dynamics of epithelial cell plasticity. *Nat Commun* 15: 5898 (2024). doi: 10.1038/s41467-024-50281-5



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