Visium platform

Summary

The Visium platform* is a versatile and powerful spatial discovery solution from 10x Genomics designed to enable sequencing-based transcriptomic analysis while preserving spatial information from intact tissue sections. The Visium platform outputs whole transcriptome gene expression patterns that reveal insights about tissue architecture, microenvironments, and cell groups (1–3). The platform includes the Visium CytAssist instrument, consumables, and the Space Ranger and Loupe Browser software. Additionally, the platform is backed by the full support of 10x Genomics expertise, from tissue preparation to data analysis. It is compatible with both fresh frozen (FF), fixed frozen (FxF), and formalin-fixed, paraffin-embedded (FFPE) tissues.

**The Visium platform may be subsequently referred to as "Visium" for the remainder of this piece.*

Visium workflow

Visium's unique workflows, supported by the Visium CytAssist instrument and two robust chemistries, a 3' poly(A) capture-based chemistry and probe-based chemistry, enable whole transcriptome spatial profiling at single cell–scale resolution. This readout can also be combined with morphological staining across entire tissue sections to yield key insights from more sample types than ever before.

Central to the workflow is the Visium CytAssist instrument, adding flexibility and ease to sample preparations by allowing sectioning, deparaffinization (when needed for FFPE tissues), staining, and imaging (H&E or IF) to take place on glass slides. Up to two glass slides and a specialized Visium slide with two Capture Areas are placed in the CytAssist instrument and aligned such that the target tissue section regions are matched to Visium slide Capture Areas. Capture Area sizes range from 6.5 mm x 6.5 mm (Visium HD 3' and Visium HD WT Panel) to 11 mm x 11 mm (Visium HD WT Panel assay).

Before loading slides onto the CytAssist instrument for probe-based assays, samples are incubated with whole transcriptome probe sets specific to either the human or mouse genome, enabling hybridization and ligation of probe pairs to their targets. Alternatively, 3' poly(A) capture-based assays do not require this step. Once on the CytAssist instrument, probes or mRNA are captured on the Visium slide and prepared for barcoding and library construction.

Gene expression libraries are generated from each tissue section, then sequenced. Space Ranger pipelines translate sequencing data into gene expression–aligned images. Acquired data are easily transferred to perform visualization and further analysis with the 10x Genomics–provided Loupe Browser software.

Visium CytAssist instrument

Visium CytAssist is a compact, benchtop instrument that enables the transfer of ligated probes or transcripts from tissues on glass slides to spatially barcoded Visium slides. Compatible with H&E- or IF-stained FFPE, fresh frozen, and fixed frozen tissue sections, the CytAssist instrument allows for the use of pre-sectioned tissues in the Visium workflow and eliminates the need to directly section onto Visium slides.

A CytAssist run requires the loading of a single Visium Gene Expression slide with two Capture Areas into the CytAssist along with up to two input tissue slides containing the samples of interest. Within the instrument, brightfield images of the two input tissue slides are captured with fiducial reference points on the Visium Gene Expression slide to provide spatial orientation for data analysis. CytAssist facilitates final permeabilization of the input samples such that the ligated probes or transcripts are released from the tissue section on the glass slides and hybridized to the oligonucleotides present on the Capture Areas of the Visium slide. The remaining sample processing steps, starting with probe extension, occur outside of the CytAssist instrument, and follow a pre-optimized library preparation workflow for Visium applications.

10x Genomics is the only manufacturer of the Visium platform.

Unique platform characteristics

- Simplifies spatial transcriptomics workflows and generates best-in-class data with CytAssist-powered probe or transcript transfer from glass slides
- Enhances H&E morphology or IF protein data with high-resolution spatial transcriptomics from the same tissue section
- Compatible with a broad range of samples, including fresh frozen, fixed frozen, and FFPE tissues (such as archived FFPE blocks or pre-sectioned slides)
- Comprehensive and intuitive 10x Genomics data analysis and visualization tools complement fully portable data with open standard file formats, allowing scientists the freedom to use other analysis tools of their choice
- All critical and nonstandard reagents and slides are included in the kit
- Highly sensitive on a variety of tissue types
- Novel slide architecture contains Capture Areas arrayed with ~11 million 2 x 2 µm barcoded squares, powering continuous tissue coverage and single cell–scale spatial resolution
- Data is output at 2 µm, as well as multiple bin sizes, with 8 x 8 µm binning as the recommended starting point for visualization and analysis
- Powerful 3' poly(A) capture-based and probe-based chemistry options
- 2 (6.5 mm x 6.5 mm or 11 mm x 11 mm) Capture Areas per slide
- Third-party analysis compatibility with a growing ecosystem of R and Python community-developed tools

References

1. Ji AL, et al. Multimodal analysis of composition and spatial architecture in human squamous cell carcinoma. *Cell* 182: 497–514.e22 (2020). doi: 10.1016/j.cell.2020.05.039
2. Boyd DF, et al. Exuberant fibroblast activity compromises lung function via ADAMTS4. *Nature* 587: 466–471 (2020). doi: 10.1038/s41586-020-2877-5
3. Garcia-Alonso L, et al. Mapping the temporal and spatial dynamics of the human endometrium in vivo and in vitro. *Nat Genet* 53: 1698–1711 (2021). doi: 10.1038/s41588-021-00972-2

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Exemplary patents from 10x Genomics as of June 26, 2026

Country	Patent Number				
United States	US10,030,261	**United States**	US10,961,566	**United States**	US11,733,238
European Patent Office	EP2697391	**United States**	US10,996,219	**United States**	US11,739,372
Canada	2,832,678	**United States**	US11,001,878	**United States**	US11,739,381
People's Republic of China	CN103781918	**United States**	US11,001,879	**European Patent Office**	EP4139485
Japan	JP5916166	**United States**	US11,008,607	**Hong Kong**	HK1224342
Australia	AU2012241730	**United States**	US11,162,132	**United States**	US11,753,675
Korea	10-1994494	**United States**	US11,208,684	**United States**	US11,756,286
New Zealand	NZ616407	**United States**	US11,332,790	**United States**	US11,761,030
Mexico	MX340330	**United States**	US11,384,386	**United States**	US11,767,550
Russian Federation	2603074	**United States**	US11,479,809	**United States**	US11,768,175
South Africa	2013/07628	**United States**	US11,505,828	**United States**	US11,788,122
United States	US9,593,365	**United States**	US11,542,543	**United States**	US11,795,498
European Patent Office	EP2909337	**United States**	US11,549,138	**United States**	US11,795,507
Japan	JP6828007	**United States**	US11,560,587	**United States**	US11,827,935
European Patent Office	EP3280820	**United States**	US11,560,593	**United States**	US11,845,979
European Patent Office	EP3530752	**European Patent Office**	EP3013983	**People's Republic of China**	CN115023734
United States	US10,774,374	**European Patent Office**	EP3013984	**European Patent Office**	EP4151748
United States	US9,371,598	**European Patent Office**	EP3891300	**United States**	US11,859,178
United States	US10,308,982	**European Patent Office**	EP3916108	**United States**	US11,866,767
European Patent Office	EP2556171	**European Patent Office**	EP3901282	**United States**	US11,866,770
People's Republic of China	CN102834526	**European Patent Office**	EP4119677	**United States**	US11,873,482
Hong Kong	HK1182143	**United States**	US11,592,447	**United States**	US11,873,528
Japan	JP5893607	**United States**	US11,608,498	**People's Republic of China**	CN110249057B
Korea	KR101866401	**United States**	US11,608,520	**United States**	US11,891,654
Australia	AU2014203638	**United States**	US11,613,773	**United States**	US11,898,205
Australia	AU2011237729	**United States**	US11,618,897	**Hong Kong**	HK40062809
United States	US9,868,979	**United States**	US11,618,918	**Hong Kong**	HK40080403
United States	US9,879,313	**United States**	US11,624,063	**European Patent Office**	EP4087945
People's Republic of China	CN105849275	**United States**	US11,624,085	**European Patent Office**	EP4148145
United States	US10,472,669	**United States**	US11,624,086	**European Patent Office**	EP4062372
United States	US10,480,022	**United States**	US11,634,756	**European Patent Office**	EP4282977
United States	US10,494,667	**United States**	US11,649,485	**European Patent Office**	EP4219754
United States	US10,612,079	**United States**	US11,661,626	**European Patent Office**	EP4294571
United States	US10,619,196	**United States**	US11,680,260	**United States**	US11,926,867
United States	US10,662,467	**United States**	US11,692,218	**United States**	US11,933,957
United States	US10,662,468	**United States**	US11,702,693	**United States**	US11,959,130
United States	US10,914,730	**United States**	US11,702,698	**United States**	US11,959,076
United States	US10,962,532	**People's Republic of China**	CN115210760	**United States**	US11,970,739
United States	US10,983,113	**People's Republic of China**	CN114761992	**United States**	US11,981,958
European Patent Office	EP3511423	**United States**	US11,732,292	**United States**	US11,981,960
United States	US10,982,268	**United States**	US11,732,299	**United States**	US11,981,965

Exemplary patents from 10x Genomics as of June 26, 2026 (cont.)

Country	Patent Number	Country	Patent Number	Country	Patent Number
United States	US12,024,741	**United States**	US12,275,988	**European Patent Office**	EP4414459
United States	US12,031,177	**European Patent Office**	EP4158054	**European Patent Office**	EP4424843
People's Republic of China	CN111662960	**European Patent Office**	EP4058598	**People's Republic of China**	CN114885610
People's Republic of China	CN111500680	**United States**	US12,281,357	**United States**	US12,416,603
United States	US12,195,790	**United States**	US12,287,264	**United States**	US12,421,539
European Patent Office	EP4062373	**United States**	US12,297,487	**United States**	D1098124
United States	US12,203,134	**United States**	US12,297,488	**United States**	D1099947
European Patent Office	EP4200441	**United States**	US12,371,688	**United States**	D1100948
United States	US12,209,280	**United States**	US12,344,892	**European Patent Office**	EP4450639
United States	US12,229,974	**European Patent Office**	EP4421185	**People's Republic of China**	CN11197364
People's Republic of China	CN309131543	**United States**	US12,371,688	**United States**	US12,508,590
United States	D1064308	**United States**	US12,378,607	**European Patent Office**	EP4062316
United States	US12,234,505	**People's Republic of China**	CN113366117	**European Patent Office**	EP4430398
European Patent Office	EP4301870	**People's Republic of China**	CN113767175	**United States**	US12,529,094
European Patent Office	EP4347879	**United States**	US12,371,688	**European Patent Office**	EP3677692
United States	US12,241,060	**United States**	US12,378,607	**European Patent Office**	EP4081777
United States	US12,241,890	**United States**	US12,385,083	**United States**	12,566,113
United States	US12,249,085	**United States**	D1088016	**United States**	12,566,114
United States	US12,234,505	**United States**	US12,391,979	**People's Republic of China**	CN115038794
European Patent Office	EP3901280	**United States**	US12,391,980	**European Patent Office**	EP4206333
United States	D1069162	**European Patent Office**	EP4339299	**United States**	12,668,835
United States	US12,265,079	**United States**	US12,404,544		
United States	US12,270,077	**United States**	US12,406,364		

Visium platform specifications

Weight	Visium CytAssist: 18.3 lbs [8.3 kg]
Dimensions (W x D x H)	Visium CytAssist: 8” [203 mm] x 12.3” [313 mm] x 9.76” [248 mm] (12.3” [312 mm] with lid open; maximum height 13.1” [334 mm])
Electrical specifications	100–240 VAC, 50/60 Hz, 250 W Electrical requirements dependent on region/country
Operating temperature	64–82°F (18–28°C) Intended for use in a typical indoor laboratory environment.
Humidity	30–80% relative humidity (non-condensing)
Resolution	2 µm squares arrayed in continuous grid with no gaps between squares
Throughput	42 mm² per 6.5 mm x 6.5 mm Capture Area or 84 mm² per 30-minute CytAssist run 21 mm² per 11 mm x 11 mm Capture Area or 242 mm² per 30-minute CytAssist run Option to batch multiple samples in a single NGS run
Sample prep	8 hrs hands-on time over 2–3 days
Sample-type compatibility	**Visium HD 3’:** Fresh frozen **Visium HD WT Panel:** FFPE, fresh frozen, fixed frozen
Targets and plexy level	Whole transcriptome spatial gene expression **Human probe set:** ~18,000 genes **Mouse probe set:** ~21,000 genes **Rat probe set:** ~22,000 genes

Sole Source

I hereby confirm that 10x Genomics, Inc. is the exclusive manufacturer of Visium and the patents listed represent exemplary patents and patent applications from the 10x Genomics, Inc. portfolio.

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