

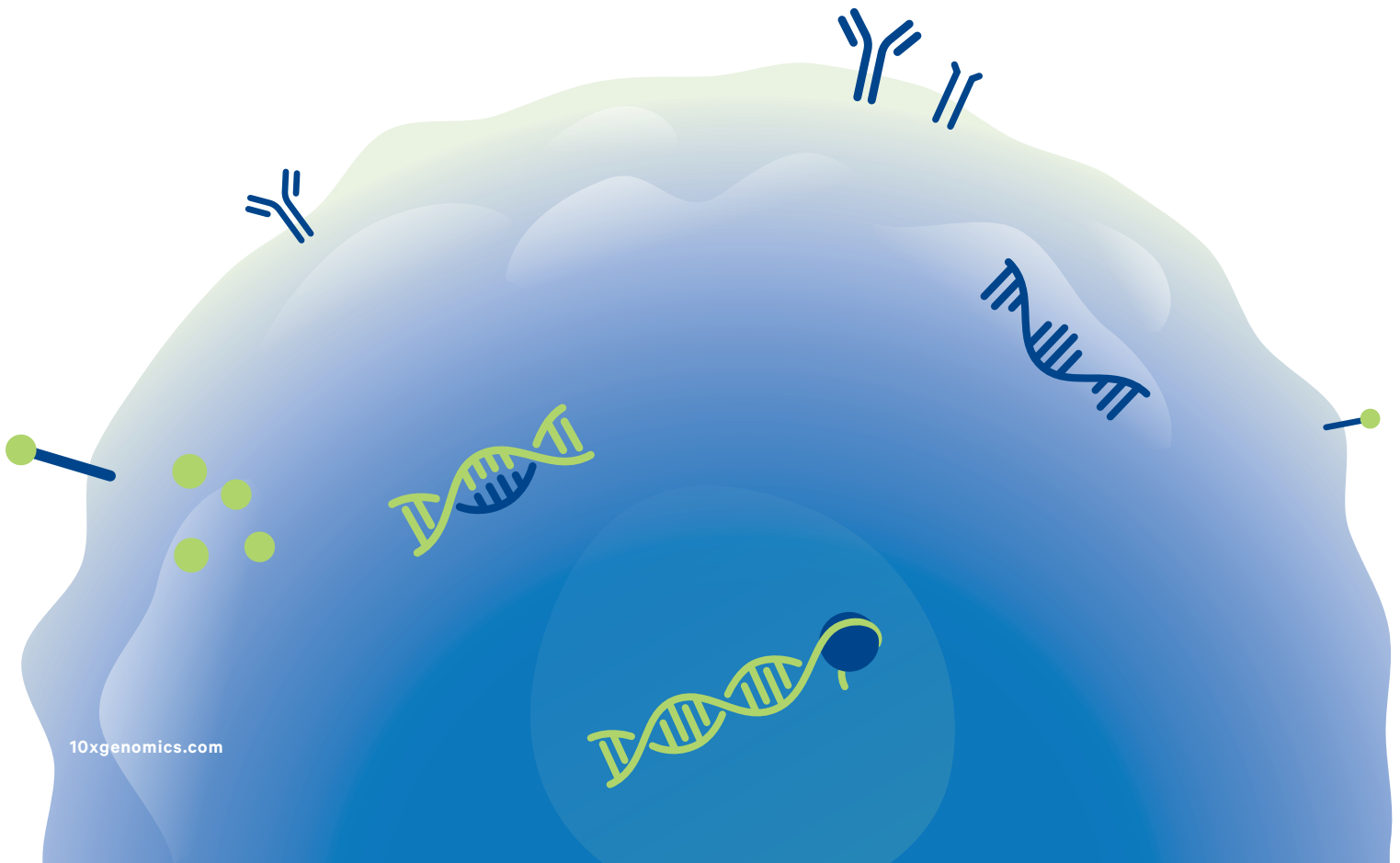
Single Cell Buyer's Guide

Gene Expression

Immune Profiling

Epigenomic Profiling

Protein Expression



Introduction

Why single cell sequencing?

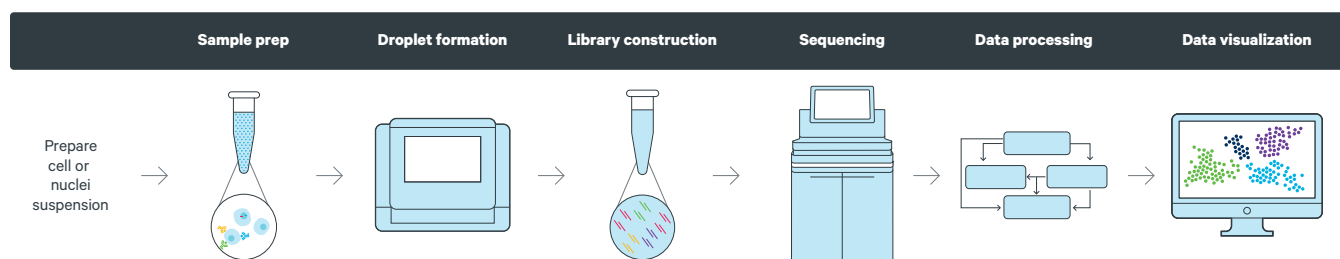
Cell heterogeneity is a key contributor to biological complexity that is often masked by bulk techniques, like RNA sequencing (RNA-seq) or microarray analysis. Rather than providing an average snapshot of how cells work, single cell sequencing technology gives researchers the ability to more fully characterize tissue heterogeneity, identify rare cell types, and dissect molecular mechanisms cell by cell. This high level of resolution leads to groundbreaking insights, as evidenced by over 2,250 publications featuring 10x Genomics technology, the majority of which use single cell approaches.

Single cell publications featuring 10x Genomics technology



How does it work?

Single cell sequencing starts with a suspension of single cells or nuclei. Droplets containing a single cell or nucleus are generated using advanced microfluidics with a Chromium instrument. Library construction follows a streamlined workflow. After sequencing, data can be processed and analyzed using our integrated data analysis pipelines and visualization software—intuitive enough for novice users yet powerful enough for the experts. Support resources provide guidance for the entire workflow, from sample preparation to data analysis.



Tackle your single cell experiments confidently with personalized support and detailed guidance across an end-to-end workflow.

Single cell product offerings

10x Genomics provides robust solutions that let you analyze gene and protein expression, perform comprehensive immune phenotyping, and map regions of open chromatin, all at single cell resolution.

Gene Expression

Perform molecular and cellular characterization of cells at scale with single cell RNA-sequencing for whole transcriptome or targeted gene expression.

Immune Profiling

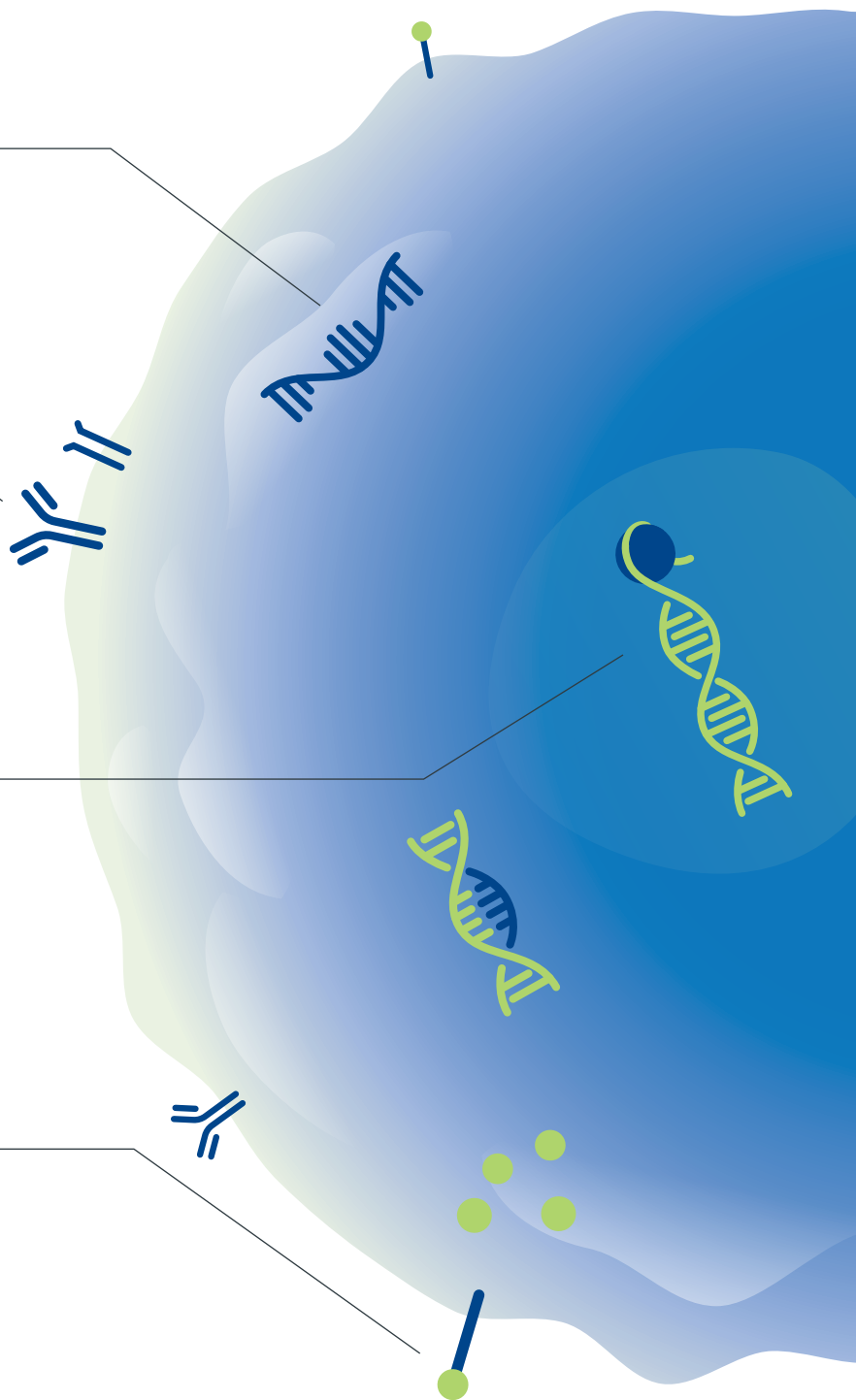
Gain a comprehensive view of the immune system with paired, full-length receptor sequences from T and/or B cells, surface protein expression, antigen specificity, and gene expression, all from a single cell.

Epigenomic Profiling

Uncover hidden insights with single cell epigenomic profiling using the assay for transposase-accessible chromatin, ATAC-seq, alone or in combination with single cell RNA-seq to simultaneously measure chromatin accessibility and gene expression.

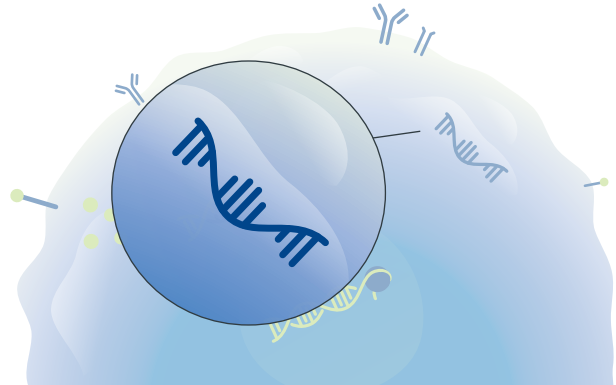
Protein Expression

Reveal cell phenotypes and uncover functional information at single cell resolution with simultaneous measurement of hundreds of cell surface proteins and gene expression.



Single Cell Gene Expression

Characterize cellular heterogeneity, explore mechanisms driving development and disease, and trace cell lineages with comprehensive 3'- or 5'-based transcriptome sequencing at single cell resolution for hundreds to tens of thousands of cells.

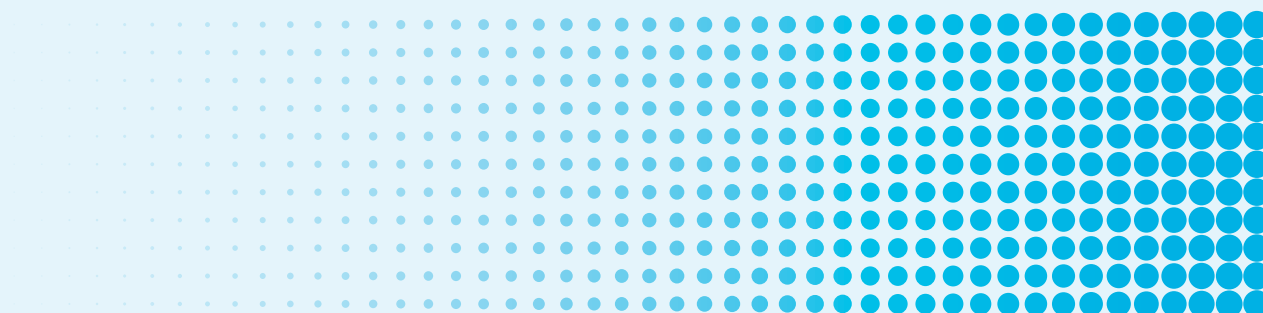


At-a-glance comparison

	Single Cell Gene Expression	Single Cell Immune Profiling	Single Cell Multiome ATAC + Gene Expression
Description	A flexible solution providing 3' gene expression with multiomic capabilities	Enhanced immune profiling combining 5' gene expression with multiomic profiling	Multiomic profiling of 3' gene expression and open chromatin
Additional multiomic capabilities	Cell Surface Protein CRISPR Screening	Cell Surface Protein Antigen Specificity BCR/TCR sequencing	-
Extensions	Sample multiplexing Automated workflow	Automated workflow	-
Targeted gene expression panels	Yes (human only)	Yes (human only)	-
Sample & species compatibility	Cells or nuclei Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Demonstrated on multiple species, including human, mouse, and rat	Cells Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Amplification of human or mouse TCR/BCR sequences Demonstrated on multiple species, including human and mouse	Nuclei Demonstrated with cell lines, primary cells, cryopreserved samples, and fresh- and flash-frozen tissue Demonstrated on multiple species, including human, mouse, and rat
Analysis software	Cell Ranger Cloud Analysis	Cell Ranger Cloud Analysis	Cell Ranger ARC
Visualization software	Loupe Browser	Loupe Browser Loupe V(D)J Browser	Loupe Browser
Resources	Product sheet Kits and part numbers	Product sheet Kits and part numbers	Product sheet Kits and part numbers

Match the scale you need

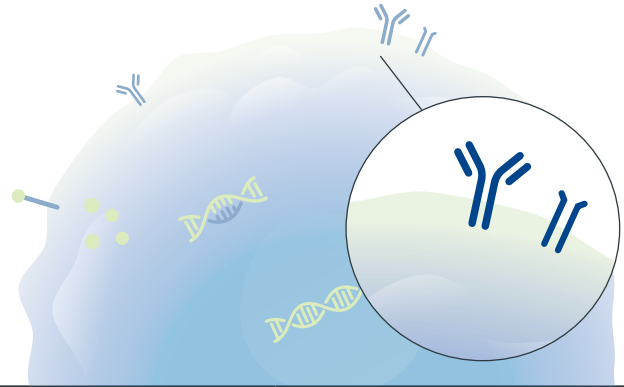
From pilot experiments to comprehensive translational studies, Single Cell Gene Expression lets you scale up or down with ease. Choose the kit that works for you and your research aims.



Small scale	Standard scale	Large scale
<ul style="list-style-type: none"> • Analysis of 100–1,000 cells per sample; up to 4 samples per chip • Preliminary data for pilot studies or grant applications • Optimization of experimental design or sample preparation • Studies with low cell throughput needs 	<ul style="list-style-type: none"> • Analysis of 500–10,000 cells per sample; up to 8 samples per chip • Comprehensive cell or tissue characterization • Rare cell type detection • Analysis of precious samples with limited cell number • Most research applications 	<ul style="list-style-type: none"> • Analysis of 500–30,000 cells per sample; up to 96 samples per chip • In-depth characterization of numerous complex samples • Large-scale single cell CRISPR screens • Analysis of rare cell types that require higher cell throughput • Multi-sample or time course validation studies
Product: Chromium Single Cell Gene Expression LT	Product: Chromium Single Cell Gene Expression	Products: Chromium Single Cell Gene Expression + 3' CellPlex for sample multiplexing

Single Cell Immune Profiling

Reveal the full diversity of the immune system to understand clonal expansion, accelerate immunotherapy, and investigate disease states.

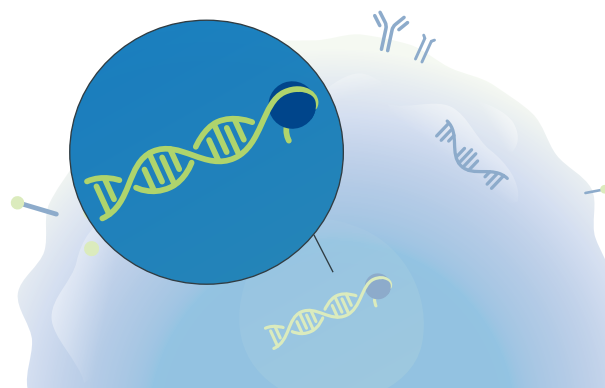


At-a-glance comparison

	Immune Receptor Profiling	Immune Receptor Mapping	Single Cell 5' Gene Expression
Description	Perform BCR/TCR sequencing to obtain paired, full-length receptor sequences from T cells and/or B cells with complete isotype resolution	Determine antigen specificity by mapping B- and T-cell receptors with antigens at scale	Study innate and adaptive immunity by combining single cell 5' gene expression with multiomic profiling
Additional multiomic capabilities	Antigen Specificity Gene Expression Cell Surface Protein	BCR/TCR sequencing Gene Expression Cell Surface Protein	Antigen Specificity BCR/TCR sequencing Cell Surface Protein
Extensions	Automated workflow	-	Automated workflow
Targeted gene expression panels	Yes (human only)	Yes (human only)	Yes (human only)
Sample compatibility	Whole cells Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Amplification of human or mouse TCR/BCR sequences Demonstrated on multiple species, including human and mouse	Whole cells Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Amplification of human or mouse TCR/BCR sequences Compatible across species, including mouse and human	Whole cells Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Demonstrated on multiple species, including human and mouse
Analysis software	Cell Ranger Cloud Analysis	Cell Ranger	Cell Ranger Cloud Analysis
Visualization software	Loupe Browser Loupe V(D)J Browser	Loupe Browser Loupe V(D)J Browser	Loupe Browser Loupe V(D)J Browser
Resources	Product sheet Kits and part numbers	Product sheet Kits and part numbers	Product sheet Kits and part numbers

Single Cell Epigenomic Profiling

Unmask epigenomic profiles, explore gene regulatory interactions, and resolve cell lineage relationships to transform your understanding of biology and uncover hidden insights.

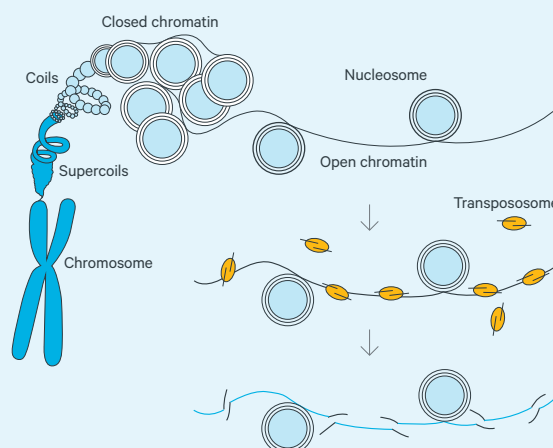


At-a-glance comparison

	Single Cell Multiome ATAC + Gene Expression	Single Cell ATAC
Description	Simultaneously profile single cell 3' gene expression and open chromatin from the same nucleus	Profile chromatin accessibility with single cell resolution
Chromatin accessibility profiling	Yes	Yes
Transcriptional profiling	Yes	No
Sample & species compatibility	Nuclei Demonstrated with cell lines, primary cells, cryopreserved samples, and fresh- and flash-frozen tissue Demonstrated on multiple species, including human and mouse	Nuclei Demonstrated with cell lines, primary cells, cryopreserved samples, and fresh- and flash-frozen tissue Demonstrated on multiple species, including human and mouse
Analysis software	Cell Ranger ARC	Cell Ranger ATAC
Visualization software	Loupe Browser	Loupe Browser
Resources	Product sheet Kits and part numbers	Product sheet Kits and part numbers

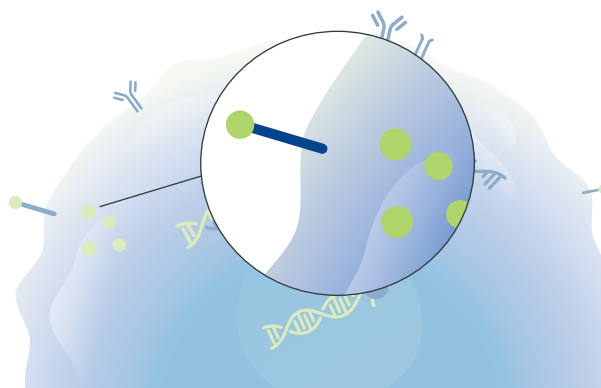
Why ATAC-seq?

The assay for transposase-accessible chromatin (ATAC) is a sequencing method that surveys the physical structure of the genome by identifying regions of open chromatin, where regulatory sequences are accessible to DNA-binding proteins. Single cell ATAC-seq can provide information about gene regulatory elements, including their cell-type specificity and binding site motifs.



Single Cell Protein Expression

Comprehensively resolve cell types and phenotypes, validate your single cell RNA-seq, and unravel cell signaling pathways to explore molecular mechanisms or transform drug discovery.

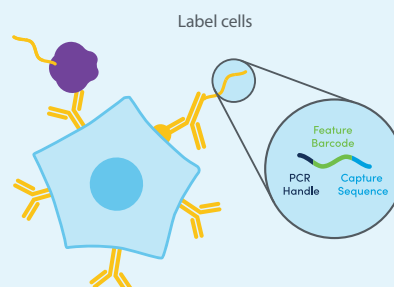


At-a-glance comparison

	Single Cell Gene Expression	Single Cell Immune Profiling
Description	A flexible multiomic solution providing single cell 3' gene expression and cell surface protein profiling	Enhanced immune profiling combining single cell 5' gene expression with cell surface protein profiling
Additional multiomic capabilities	-	Antigen Specificity BCR/TCR sequencing
Extensions	Sample multiplexing	-
Targeted gene expression panels	Yes (human only)	Yes (human only)
Sample & species compatibility	Cells Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Demonstrated on multiple species, including human and mouse	Cells Tested on diverse sample types, including cell lines, primary cells, and dissociated fresh tissue Amplification of human or mouse TCR/BCR sequences Demonstrated on multiple species, including human and mouse
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Enabling multiomic cytometry

Unlike traditional flow cytometry, Single Cell Protein Expression from 10x Genomics uses Feature Barcode technology, leveraging oligonucleotide-tagged antibodies to simultaneously measure hundreds of proteins at once. With a sequencing-based readout, multiomic cytometry enables combined gene expression and protein profiling at single cell resolution for comprehensive cellular phenotyping at scale.



Instrumentation that works for you

Key to our single cell sequencing technology is the ability to generate tens of thousands of single cell partitions, each containing an identifying barcode for downstream analysis. The Chromium Controller and Chromium Connect instruments use advanced microfluidics to perform single cell partitioning and barcoding in a matter of minutes.



One system, many single cell approaches

Run any of our single cell products for gene expression, protein expression, immune profiling, or epigenomic analysis on a single convenient instrument that easily integrates into existing laboratory infrastructure.

[Learn more about the Chromium Controller](#)

Automate your single cell workflows

Chromium Connect provides automation of the full single cell gene expression and immune profiling workflows, including cell partitioning and library construction, letting you go from single cell suspensions to up to eight sequencing-ready libraries with walk-away convenience.

[Learn more about Chromium Connect](#)



Resources from 10x Genomics

We are dedicated to helping you get the most out of your 10x Genomics system by offering multiple helpful resources:

Technology brochure

Discover the power of single cell partitioning and learn how Next GEM technology enables integrated analysis of single cells at massive scale.

[Learn more](#) →

10x Genomics publications

Get inspired by more than 2,250 peer-reviewed publications and search papers by product, research area, or sample type.

[Learn more](#) →

Support

Visit the support site for documentation, software, and datasets that will help you get the most out of your 10x Genomics products.

[Learn more](#) →

10x Genomics compatible products

Access our list of key partner products that have been certified compatible to work with our various solutions.

[Learn more](#) →

10x Genomics library

Learn more about what you can do with our single cell solutions from our collection of product literature, application notes, and scientific posters.

[Learn more](#) →

10x Blog

Keep up to date with the 10x Genomics Blog, where you'll find everything from tips and tricks to the latest 10x news.

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