10x GENOMICS Authorized Distributor

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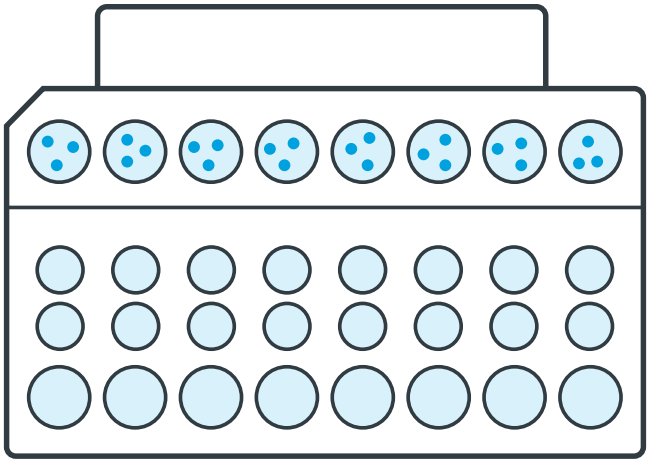
The power of single cell partitioning

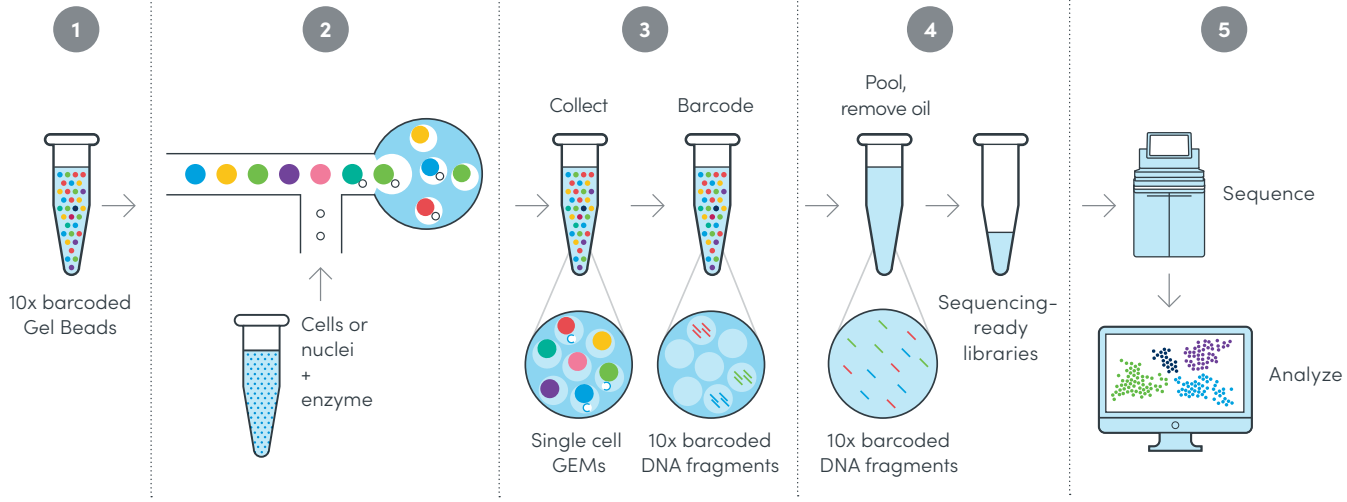
Massively parallel single cell sequencing lets researchers explore biology at true resolution.

The Chromium platform, powered by Next GEM technology, enables integrated analysis of single cells at massive scale. Our suite of Chromium Single Cell products can capture molecular readouts of cell activity in multiple dimensions, including gene expression, chromatin accessibility, cell surface proteins, immune clonotype, antigen specificity, and CRISPR edits. The key to this 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.



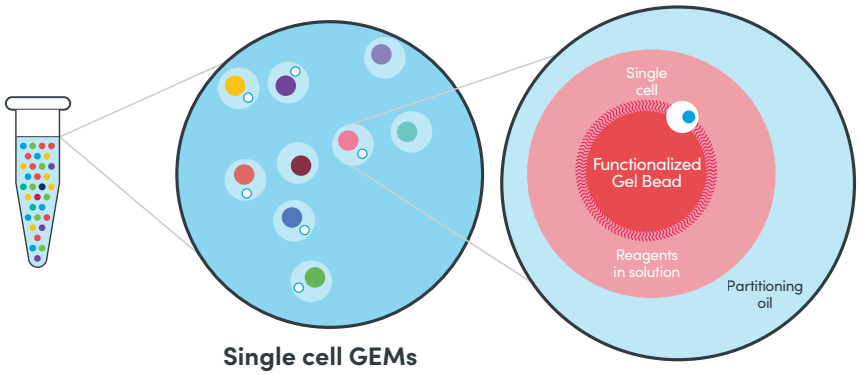
Next GEM technology

1. Every Chromium solution starts with a high-diversity pool of Gel Beads, each coated with a unique oligonucleotide barcode sequence, and functionalized sequences to capture molecules of interest.
2. Within the Chromium instrument, barcoded Gel Beads are mixed with cells or nuclei, enzymes, and partitioning oil to form tens of thousands of single cell emulsion droplets called "GEMs" (Gel Bead-in-emulsion).
3. Each GEM acts as an individual reaction droplet in which the Gel Beads are dissolved and molecules of interest from each cell are captured and barcoded.
4. After barcoding, all fragments from the same cell or nucleus share a common 10x Barcode. Barcoded fragments for hundreds to tens of thousands of cells are pooled for downstream reactions to create short-read sequencer compatible libraries.
5. After sequencing, turnkey bioinformatics tools use the identifying barcodes to map sequencing reads back to their single cell or nucleus of origin.



A GEM is a "Gel Bead-in-emulsion" droplet that encapsulates each micro-reaction within the Chromium instrument.

Here, we show a GEM with a single cell, reagents, and barcoded Gel Bead all partitioned within a single droplet.



Single cell GEMs

Chromium Single Cell Gene Expression

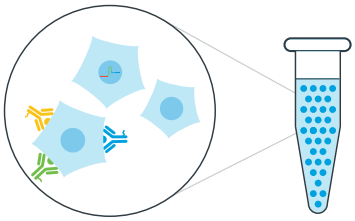
Gene expression profiling for characterization of tens of thousands of single cells:

- Identify rare cell types
- Atlas and characterize complex cell populations
- Understand cellular heterogeneity
- Discover new biomarkers

Compatible with Feature Barcode technology for multiomic analysis.
Targeted Gene Expression compatible.
Automated kit for Chromium Connect available.

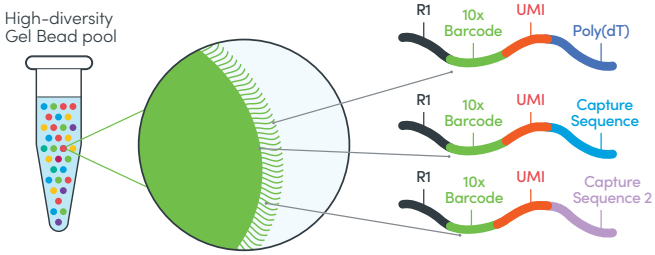
Sample input

- Cells or nuclei
- Flow-sorted cells
- Cells labeled with cell surface protein antibodies
- Cells expressing compatible CRISPR guides



Molecular barcoding and capture

- Capture and amplify 3′ mRNA
- Capture and identify cell surface proteins and CRISPR perturbations



Chromium Single Cell Immune Profiling

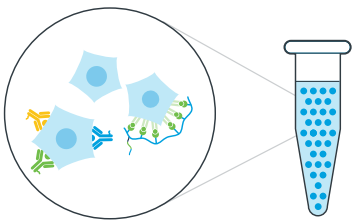
Paired, full-length receptor sequencing and gene expression profiling for tens of thousands of T and B cells:

- Profile immune cell repertoires
- Determine antigen specificity of B cells and T cells
- Characterize tissue microenvironments
- Go beyond traditional cytometry

Compatible with Feature Barcode technology for multiomic analysis.
Targeted Gene Expression compatible.

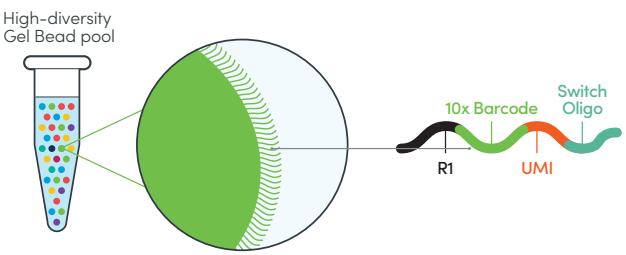
Sample input

- Cells
- Flow-sorted cells
- Cells labeled with cell surface protein antibodies
- Cells labeled for antigen specificity analysis



Molecular barcoding and capture

- Capture and amplify 5′ mRNA
- Capture and sequence paired, full-length BCR/TCR genes
- Capture and identify cell surface proteins and antigen-specific immune receptors



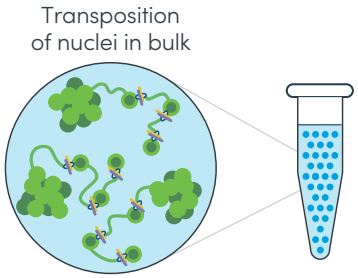
Chromium Single Cell Multiome ATAC + Gene Expression

Simultaneous gene expression and open chromatin profiling from the same cell for tens of thousands of cells:

- Link regulatory elements and target genes
- Characterize cell heterogeneity
- Discover new gene regulatory interactions
- Identify rare cell types

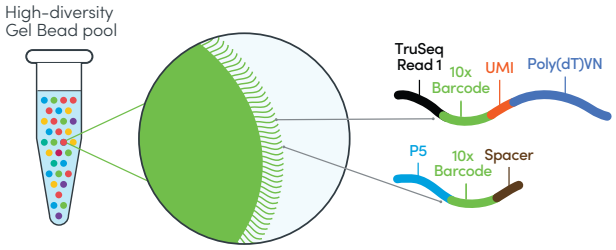
Sample input

- Nuclei treated with transposase



Molecular barcoding and capture

- Capture and amplify transposase-accessible DNA fragments
- Capture and amplify 3' mRNA



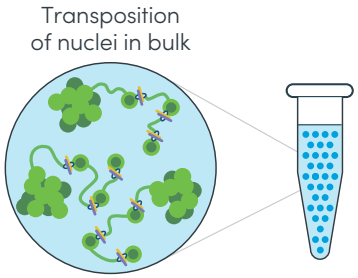
Chromium Single Cell ATAC

Assay for transposase-accessible chromatin (ATAC) for epigenomic analysis of tens of thousands of individual nuclei:

- Define cell types and states
- Catalog cell type–specific regulatory elements
- Identify important transcription factors
- Characterize gene regulatory networks

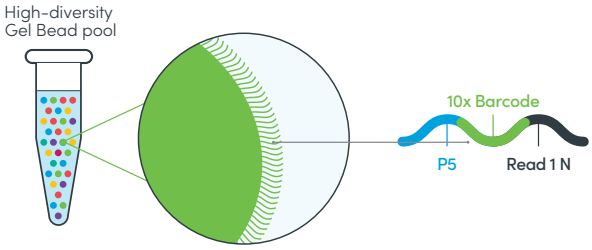
Sample input

- Nuclei treated with transposase



Molecular barcoding and capture

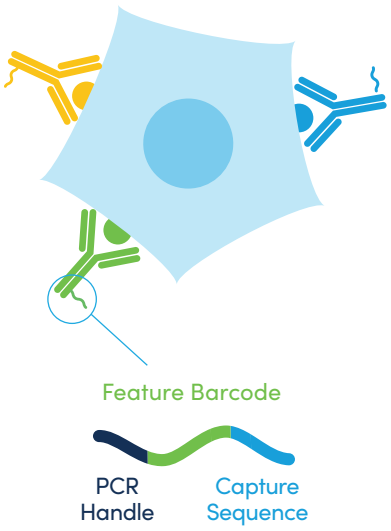
- Capture and amplify transposase-accessible DNA fragments



Extend your capabilities: Feature Barcode technology for multiomic analysis

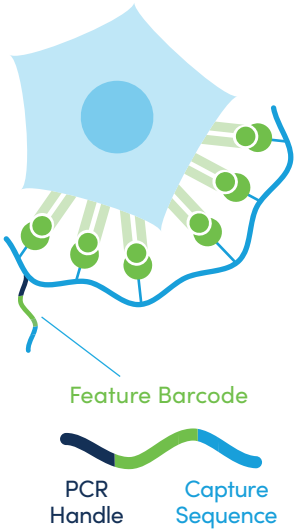
Simultaneously measure gene expression and additional cellular features in the same single cell using oligonucleotide barcode sequences.

Cell surface protein



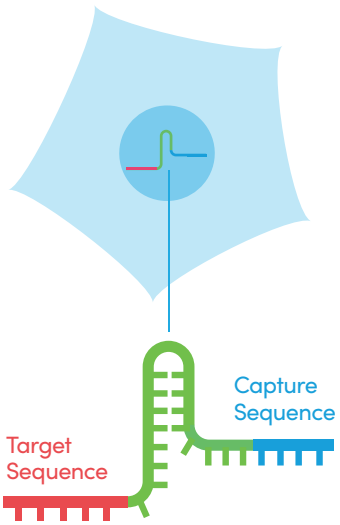
Labeled antibodies for cell surface protein analysis

Antigen specificity



Labeled peptide–MHC multimers to measure antigen specificity

CRISPR perturbations



Compatible CRISPR guides to link edits with cell phenotypes

Targeted Gene Expression

Use pre-designed or custom panels to enrich a targeted set of mRNAs from Chromium Single Cell Gene Expression or Chromium Single Cell Immune Profiling libraries.

Pre-designed and custom panels	Target enrichment	Sequencing

Human Pan-Cancer Panel
1,253 genes spanning 33 cancer types

Human Immunology Panel
1,056 genes probing immune-relevant cell types

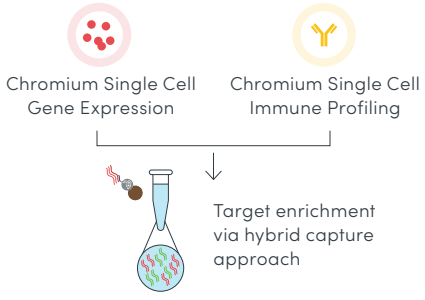
Human Gene Signature Panel
1,142 genes covering signaling pathways and drug targets

Human Neuroscience Panel
1,186 genes covering key neurodegenerative pathways

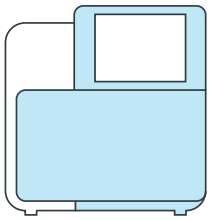
Custom Human Panels
10–1,500 user-defined genes

Customize pre-designed panels by adding up to 200 genes

Sample input
Whole transcriptome barcoded library



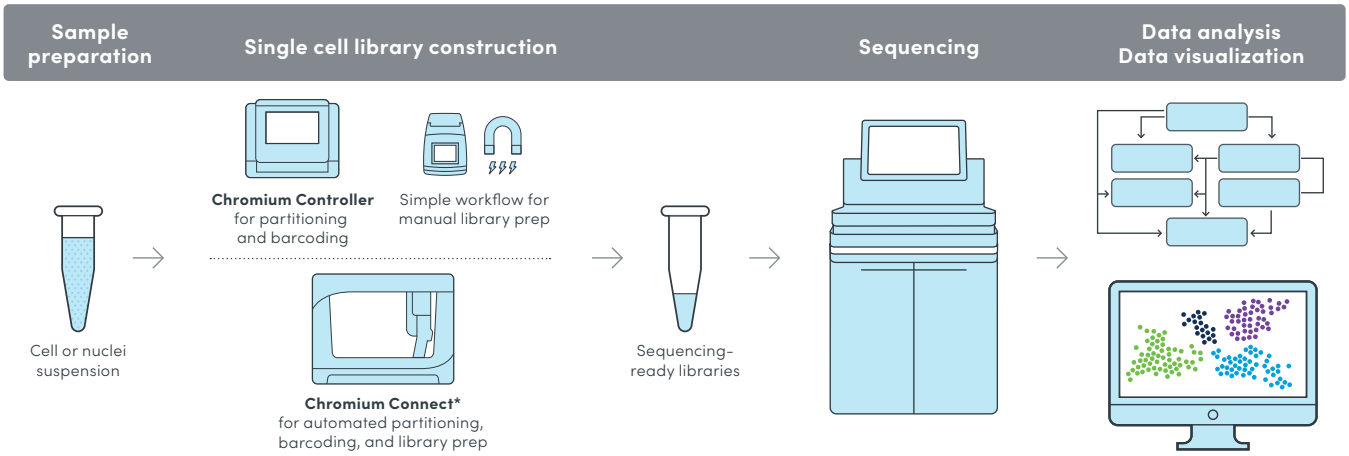
Validate discoveries or explore new hypotheses, all from the same cells



Reduce sequencing costs up to 90% compared to whole transcriptome analysis

Chromium single cell workflow

The Chromium platform is a transformative technology that fits easily into existing lab infrastructure. This end-to-end single cell sequencing solution includes sample preparation support and turnkey data analysis and visualization tools.



*Compatible with Chromium Single Cell Gene Expression.

Chromium instruments

Chromium Controller
Efficient partitioning of 500–80,000+ cells with low doublet rate and superior cell capture rate in a compact size.

Product information	
Product code	1000202, 1000204
Size of instrument	7.9" x 10.3" x 6.4"
Weight of instrument	12.5 lb (5.6 kg)

Chromium Connect
Consistent results with automated cell partitioning, barcoding, and library prep in a single instrument.

Product information	
Product code	1000171, 1000180
Size of instrument	42" x 28" x 35"
Weight of instrument	350 lb (158.8 kg)

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