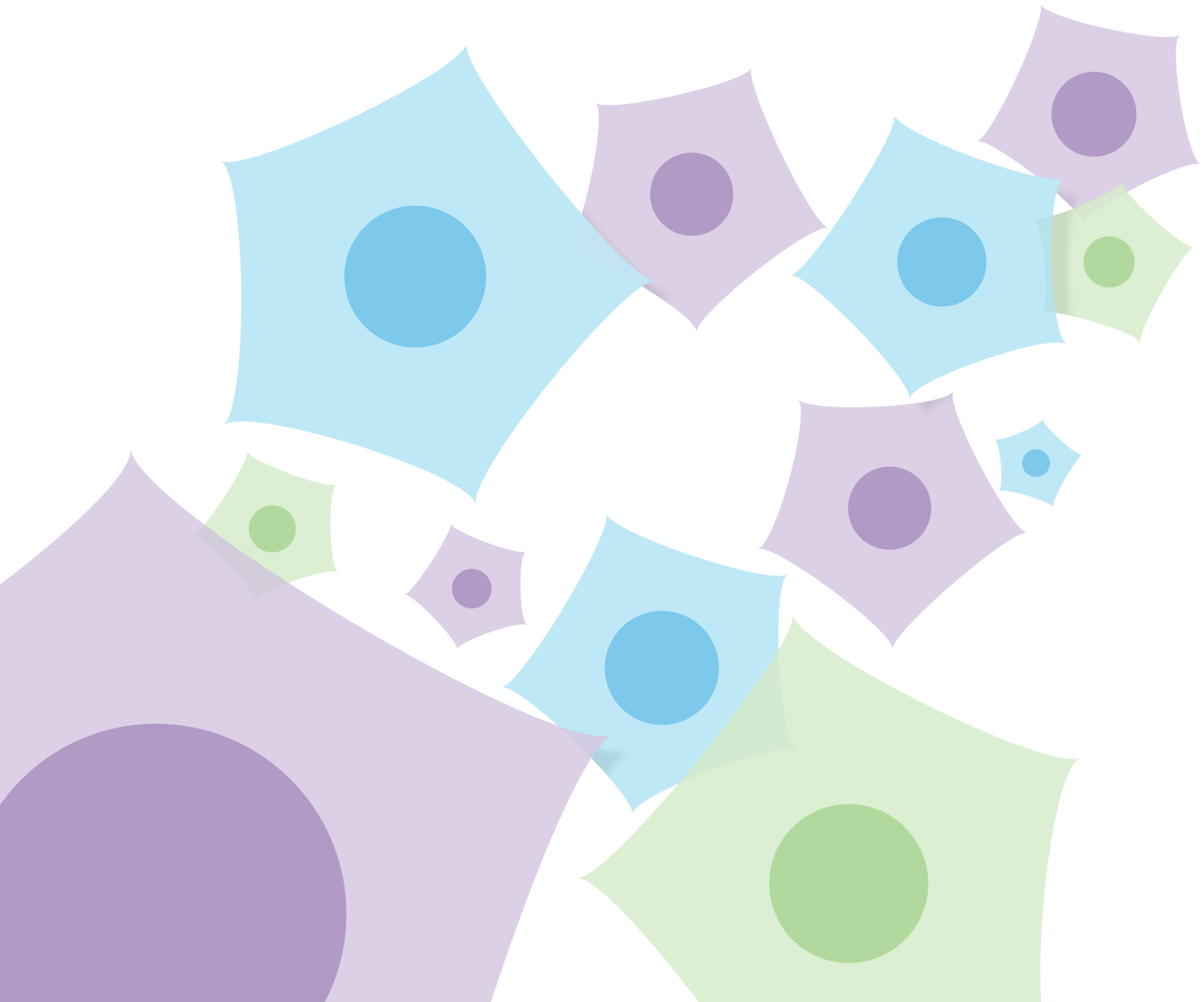
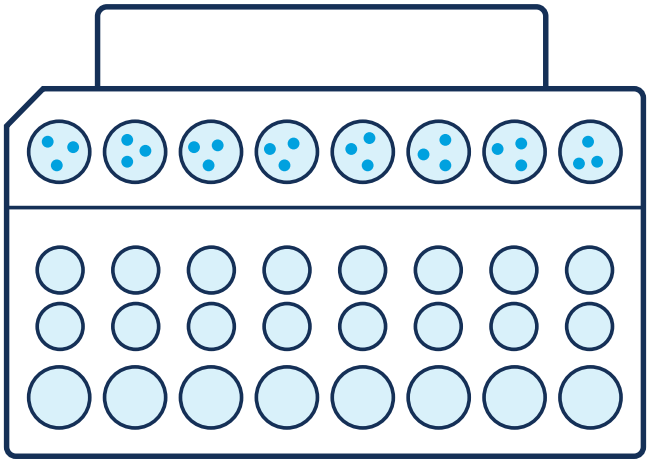
10x GENOMICS

The Power of Single Cell Partitioning



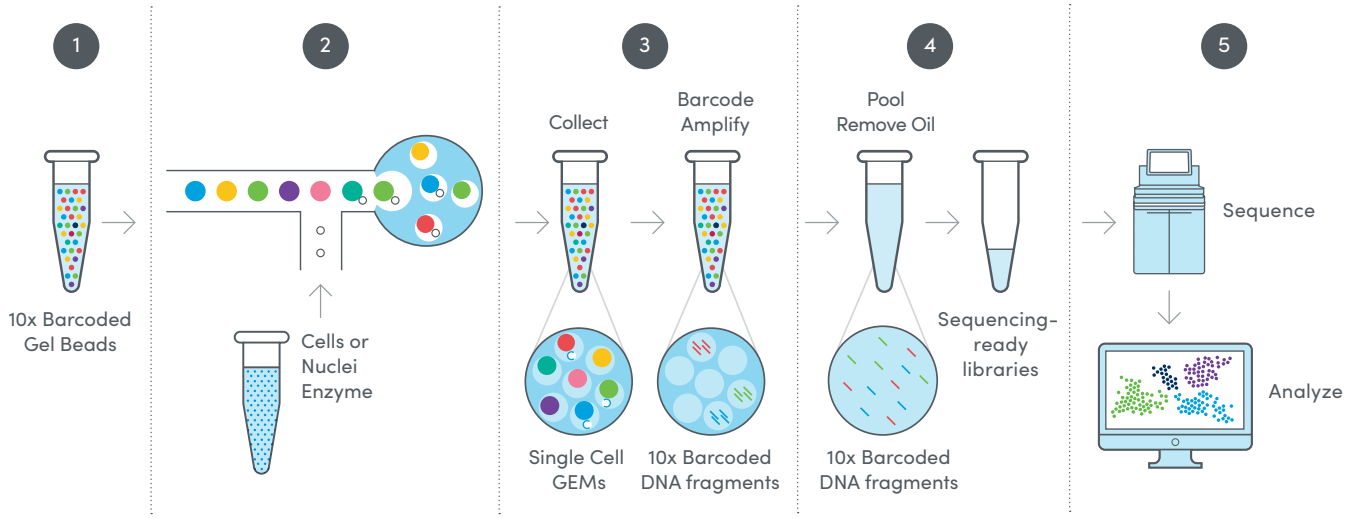
Massively parallel single cell sequencing lets researchers explore biology at true resolution.

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



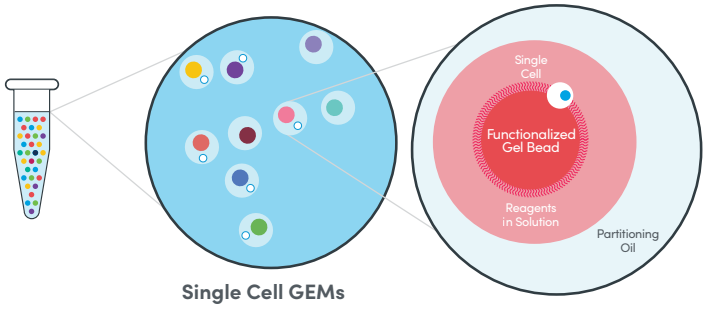
Next GEM technology

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 vesicle in which the Gel Beads are dissolved and molecules of interest from each cell are captured, barcoded, and amplified.
4. After amplification, all fragments from the same cell 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.



Chromium Single Cell Gene Expression Solution

Whole transcriptome profiling for characterization of tens of thousands of single cells

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

Feature Barcode technology compatible.
Automated kit for Chromium Connect available.

Chromium Single Cell Immune Profiling Solution

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

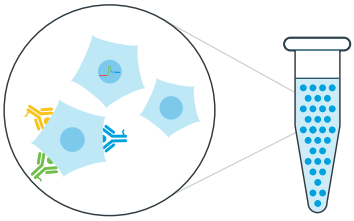
- Profile immune cell repertoires
- Determine antigen specificity of B cells and T cells
- Characterize tumor microenvironments
- Go beyond traditional cytometry

Feature Barcode technology compatible.

Chromium Single Cell ATAC Solution

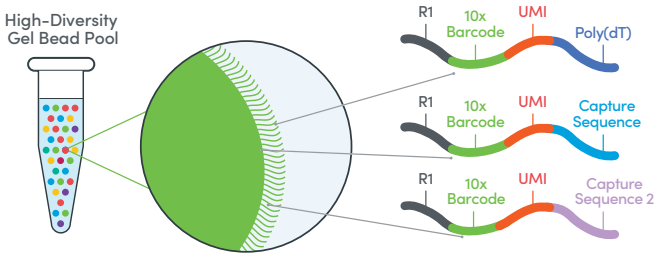
Assay for transposase accessible chromatin (ATAC) for epigenomic analysis of thousands of individual nuclei

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

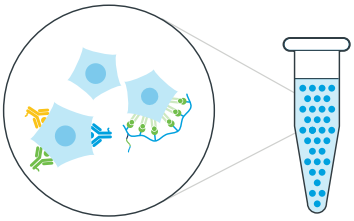


Sample input

- Cells
- Nuclei
- Flow-sorted cells
- Cells labeled with cell surface protein antibodies
- Cells labeled for CRISPR screening

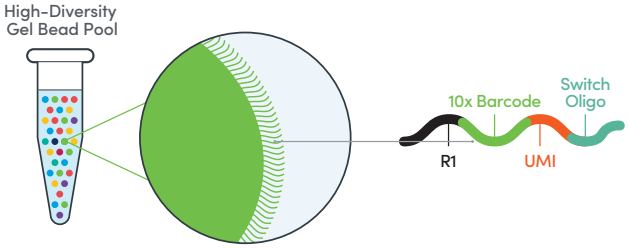


- Capture and amplify 3’ mRNA
- Capture and identify cell surface proteins and CRISPR perturbations

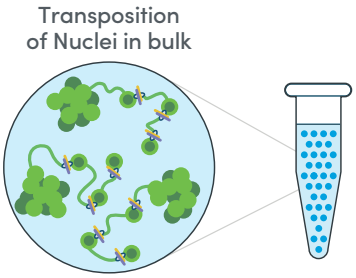


Sample input

- Cells
- Flow-sorted cells
- Cells labeled with cell surface protein antibodies
- Cells labeled with peptide-MHC multimers

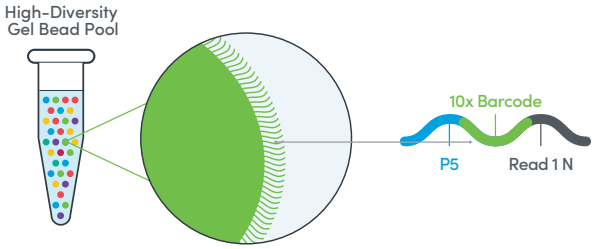


- Capture and sequence full-length BCR/TCR genes
- Capture and identify cell surface proteins, peptide-specific TCR, and antigen-specific BCR
- Capture and amplify 5’ mRNA



Sample input

- Nuclei treated with transposase

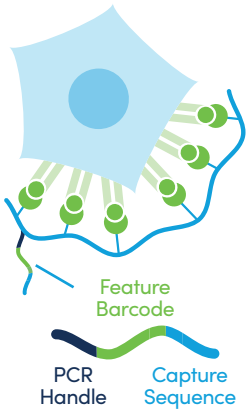


- Capture and amplify transposase accessible DNA fragments

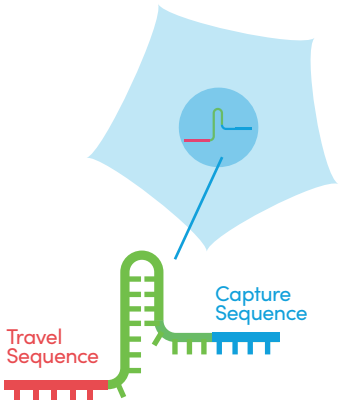
Feature Barcode technology

Extend your research using oligonucleotide barcode sequences to label additional cellular features in the same assay:

Antibodies for cell surface protein analysis



Peptide-MHC multimers to measure antigen specificity



Specific CRISPR perturbations for functional genomics screens

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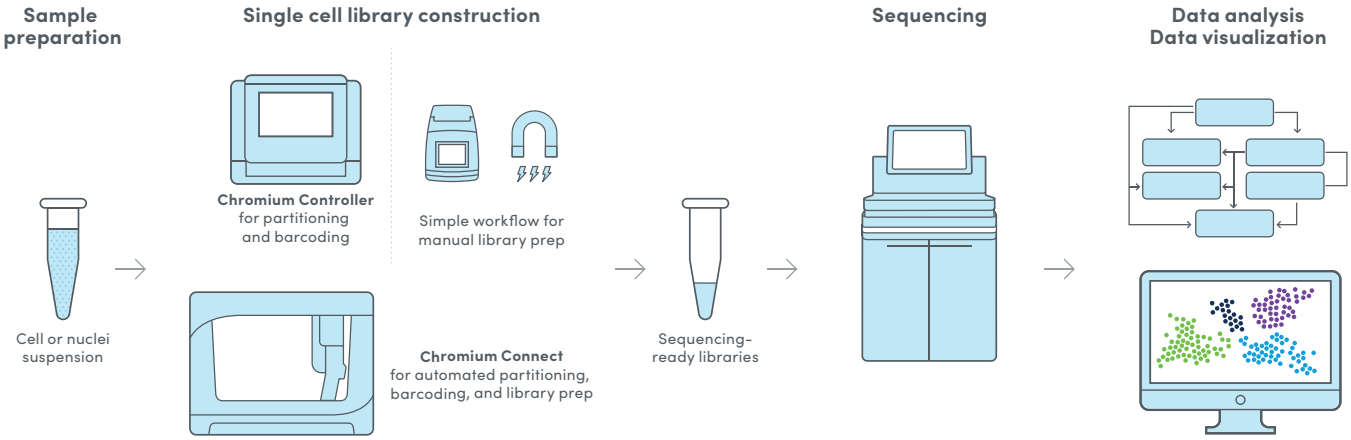
The Chromium platform is a transformative technology that fits easily into existing lab infrastructure. This end-to-end single cell sequencing solution includes sample preparation support and turnkey data analysis and visualization tools.



Compatible with the Chromium Single Cell Gene Expression Solution.

Chromium Controller

High-throughput analysis
Partition 100–80,000+ cells efficiently

Low doublet rate
Superior cell capture rate

Small footprint instrument
Fits on a standard lab bench

Chromium Connect

Generate consistent results
Reduce single cell data variability

Maximize lab productivity
Go from cells to sequencing-ready libraries

Integrated and validated
Cell partitioning, barcoding, and library prep

Compatible with the Chromium Single Cell Gene Expression Solution.

Contact us

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LIT000025 Rev H *The Power of Single Cell Partitioning*