

# Consistent single cell gene expression results with an automated workflow

## Automated Single Cell Gene Expression

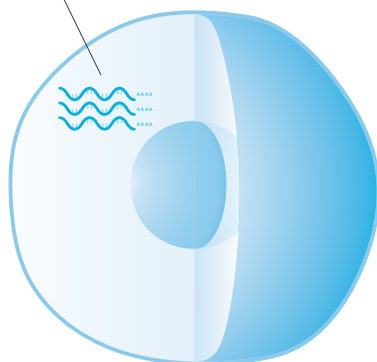
With Chromium Connect and the Single Cell 3' Gene Expression workflow, you can generate consistent and reproducible results across experiments and across users. From assessing tumor heterogeneity and stem cell composition, to dissecting neuronal populations—the technological advancements provided by Chromium Single Cell Gene Expression for Chromium Connect, along with turnkey software tools, allow you to maximize insight from any sample type.

### Highlights

- Increase consistency and reproducibility in single cell gene expression data across users and sites
- Combine integrated and validated workflows with minimal hands-on time to optimize laboratory productivity
- Characterize cell populations, cell types, cell states, and more on a cell-by-cell basis, with walk-away convenience
- Automate your single cell gene expression workflow and go from cells to sequencing-ready libraries in one day

Profile whole transcriptome gene expression (3' detection)

A.



B.

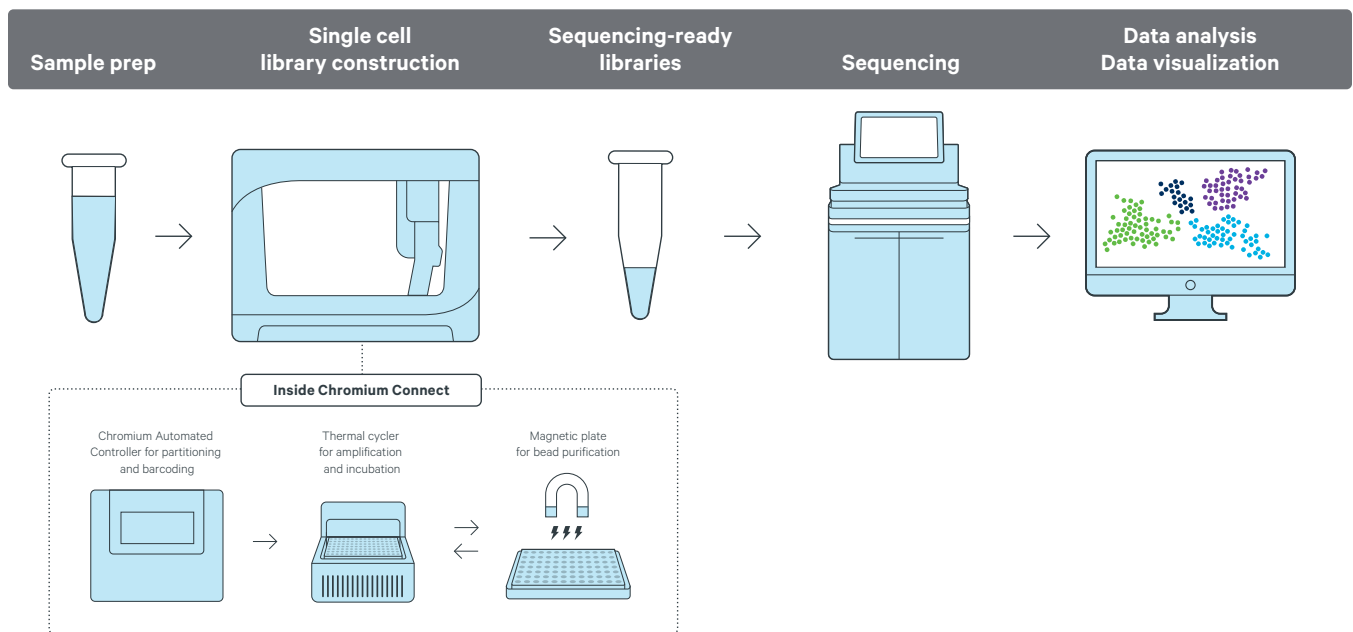
### Benefits with automation

Hands-on time	▼ 80%
Pipetting steps	▼ 90%
Interaction points	▼ 70%
Walk-away time	▲ 80%

**Figure 1. Increase productivity and minimize technical variation with an automated single cell gene expression workflow.** **A.** Profile whole transcriptome 3' gene expression at the single cell level for hundreds to tens of thousands of cells. **B.** Streamline your laboratory operations, reduce human error, and improve laboratory efficiency. Run your single cell gene expression experiments with confidence using integrated and validated workflows.

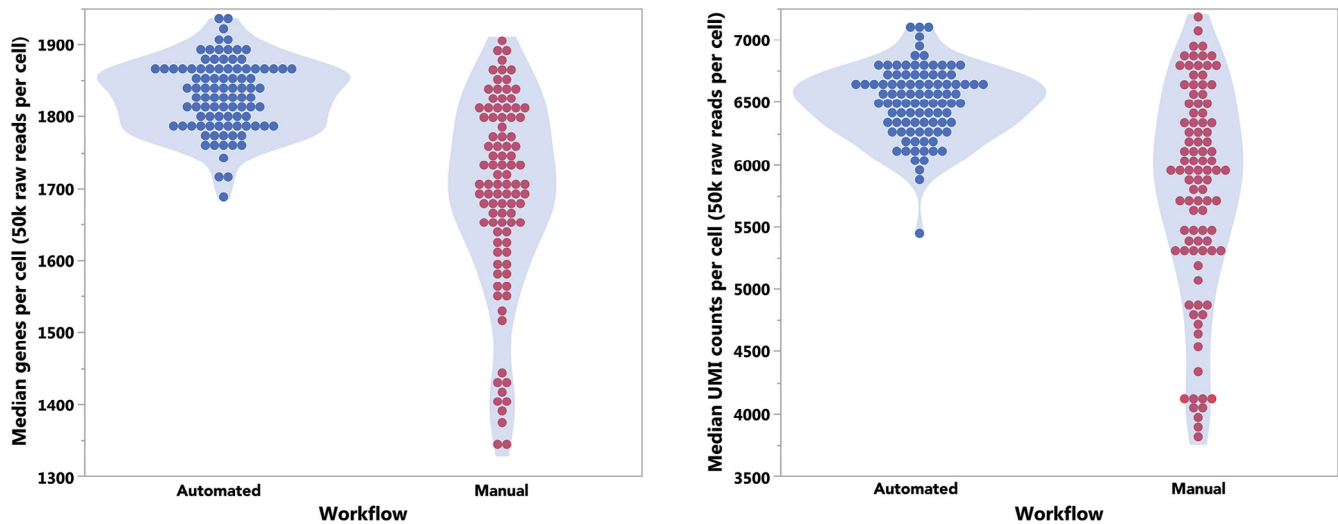
## Product features

- Leverage fully integrated automation for consistent and reproducible single cell gene expression results across experiments, users, and sites
- Utilize pre-aliquoted, automation-specific reagents that are color-coded and 2D barcoded for error-proof reagent tracking and loading to minimize waste and streamline laboratory operations
- Process from 1 to 8 samples, without wasted reagents, eliminating the need to batch and accelerating time to results
- Run fully integrated and automated workflows, with < 1 hour of hands-on time and 8 hours of freedom to optimize laboratory productivity
- Accommodates varied sample types, including whole cells and nuclei from cell lines, primary cells, and dissociated fresh tissue to support a diverse set of experimental needs

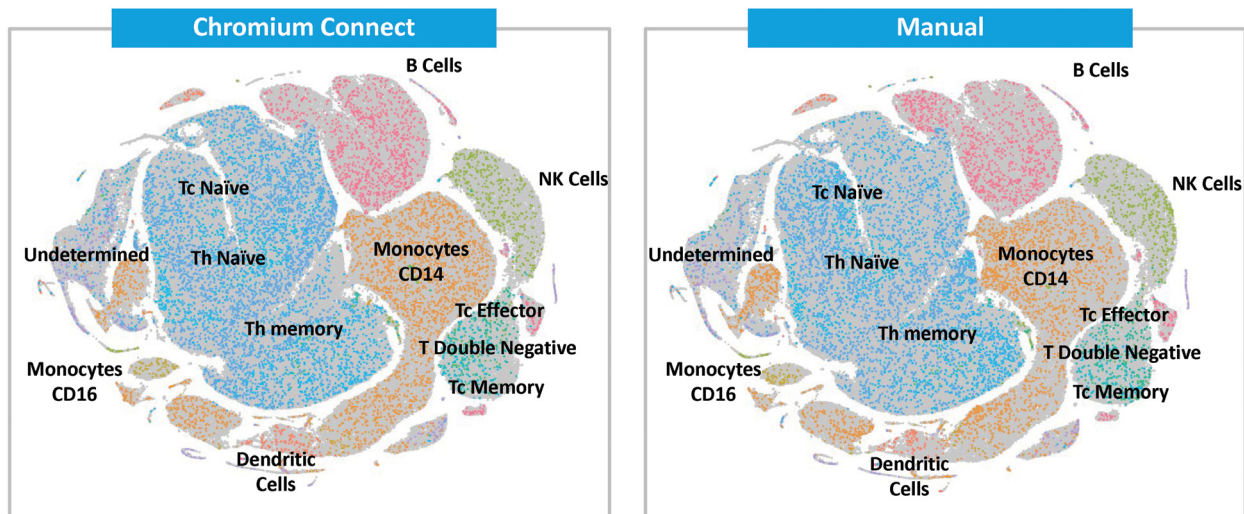


**Figure 2. Consistent and reproducible results with walk-away convenience with an Automated Single Cell 3' Gene Expression workflow.**

Start with a single cell or nuclei suspension and leverage the automated workflow and pre-programmed steps for reagent loading, liquid handling, sample cleanup, incubation and cycling reactions, and library preparation. Final libraries are compatible with short-read sequencers. Process data with Cell Ranger, and visualize cellular heterogeneity with Loupe Browser, our fully integrated and easy-to-use analysis and visualization software.



**Figure 3. Reproducible single cell sequencing data with Chromium Connect.** Comparison of single cell gene expression data reproducibility for manual vs. automated library preparation workflows. Median genes per cell and median UMI counts per cell (50,000 raw reads per cell) for 500–10,000 cells each from human peripheral blood mononuclear cell (PBMC) samples (96 samples each for automated and manual workflows: 32 replicates with 500 cell target, 32 replicates with 1000 cell target, and 32 replicates with 10,000 cell target). Chromium Connect shows high data consistency across channels and across instruments.



**Figure 4. Detect all major blood cell types discerned with an Automated Single Cell 3' Gene Expression workflow.** Automated Single Cell Gene Expression discerns all major PBMC types comparably to the manual workflow. Single cell barcode t-SNE plots of gene expression data from 10,000 PBMCs prepared with the Chromium Connect and manual workflows. Data was analyzed by Cell Ranger and visualized using Loupe Browser. Representative results displayed for 10,000 PBMCs per channel, from one channel, one instrument, and one user. Major cell populations in each cluster were identified via marker gene expression.

## Research areas

- Oncology
- Neuroscience
- Immunology
- Developmental Biology
- Stem Cell Biology

## Applications

- Tumor Heterogeneity
- Cell Differentiation and Lineage Tracing
- Therapeutic Response and Resistance
- Biomarker Discovery
- Target Validation
- Cell Atlasing

Products	Product code
Chromium Next GEM Automated Single Cell 3' Library and Gel Bead Kit v3.1, 24 rxns	1000141
Chromium Next GEM Automated Single Cell 3' Library and Gel Bead Kit v3.1, 4 rxns	1000147
Chromium Next GEM Chip G Automated Single Cell Kit, 48 rxns	1000136
Chromium Next GEM Chip G Automated Single Cell Kit, 16 rxns	1000146
Single Index Kit T Set A, 96 rxns	1000213
Chromium Connect Instrument with 12-month warranty	1000171
Chromium Connect Instrument with 24-month warranty	1000180
Chromium Connect HEPA CAP (optional)	1000174
Chromium Connect Assurance Plan Additional 12 months full coverage	1000173
Cell Ranger	<a href="https://go.10xgenomics.com/scRNA-3/cell-ranger">go.10xgenomics.com/scRNA-3/cell-ranger</a>
Loupe Browser	<a href="https://go.10xgenomics.com/scRNA-3/loupe-cell">go.10xgenomics.com/scRNA-3/loupe-cell</a>

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LIT000065 - Rev B - Product Sheet - Automated Single Cell Gene Expression

