

# Single cell gene expression on more samples with no time constraints

## Single Cell Gene Expression Flex

Single cell RNA sequencing is increasingly being used to profile larger numbers of samples, corresponding to cohorts of patients or different perturbations, making an efficient and scalable workflow of paramount importance. Fixation with paraformaldehyde (PFA) allows samples to be collected, shipped to a central location, and analyzed without sacrificing integrity or data quality, creating new possibilities for sample accessibility, throughput, and batched analysis. This advanced chemistry also brings single cell profiling to FFPE tissue, expanding the range of accessible sample types. Profile up to a million fixed single cells at once with a scalable workflow that can be run on your schedule, while accommodating the needs of translational and clinical labs where fragile samples or time constraints would otherwise preclude analysis.

### Highlights

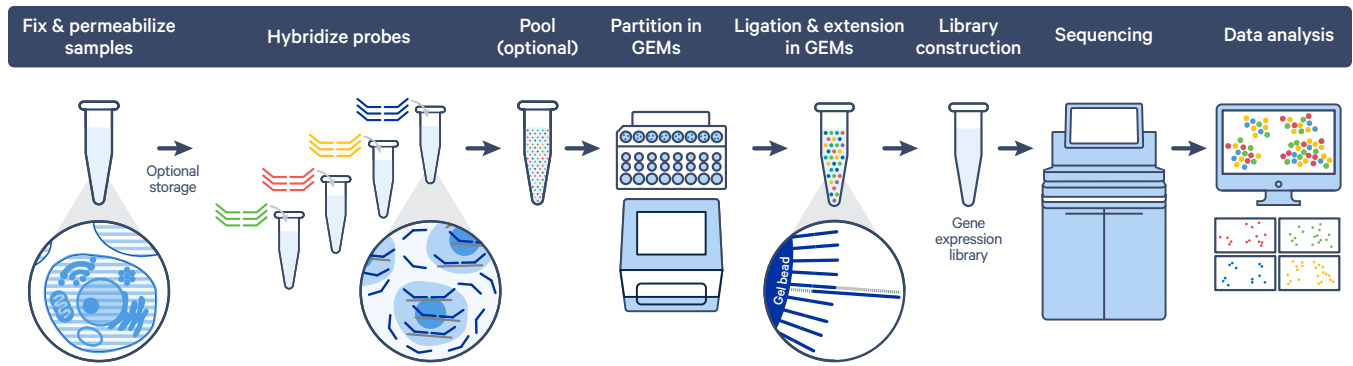
- Fix fresh samples at the point of collection to lock in biological states and preserve fragile cells
- Improve sample collection, preparation, and processing steps to streamline single cell workflows
- Reduce experimental variability and increase efficiency by batching and multiplexing samples
- Generate highly sensitive measurements of gene expression and cell surface proteins simultaneously
- Expand single cell possibilities with access to archived samples



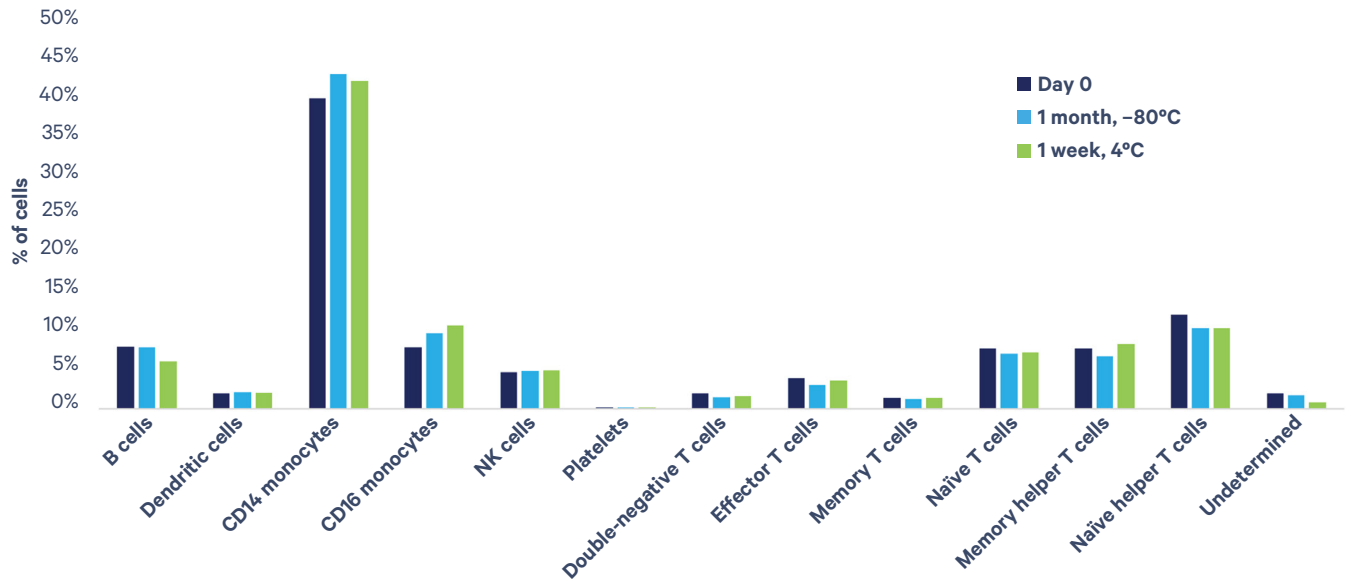
**Figure 1. Gene expression profiling on your schedule.** Chromium Single Cell Gene Expression Flex enables single cell gene expression studies on precious samples that were previously inaccessible because of logistical challenges in sample handling. Fixation at the point of sample collection preserves fragile biology and greatly streamlines workflows to provide critical insights on more samples.

## Product features

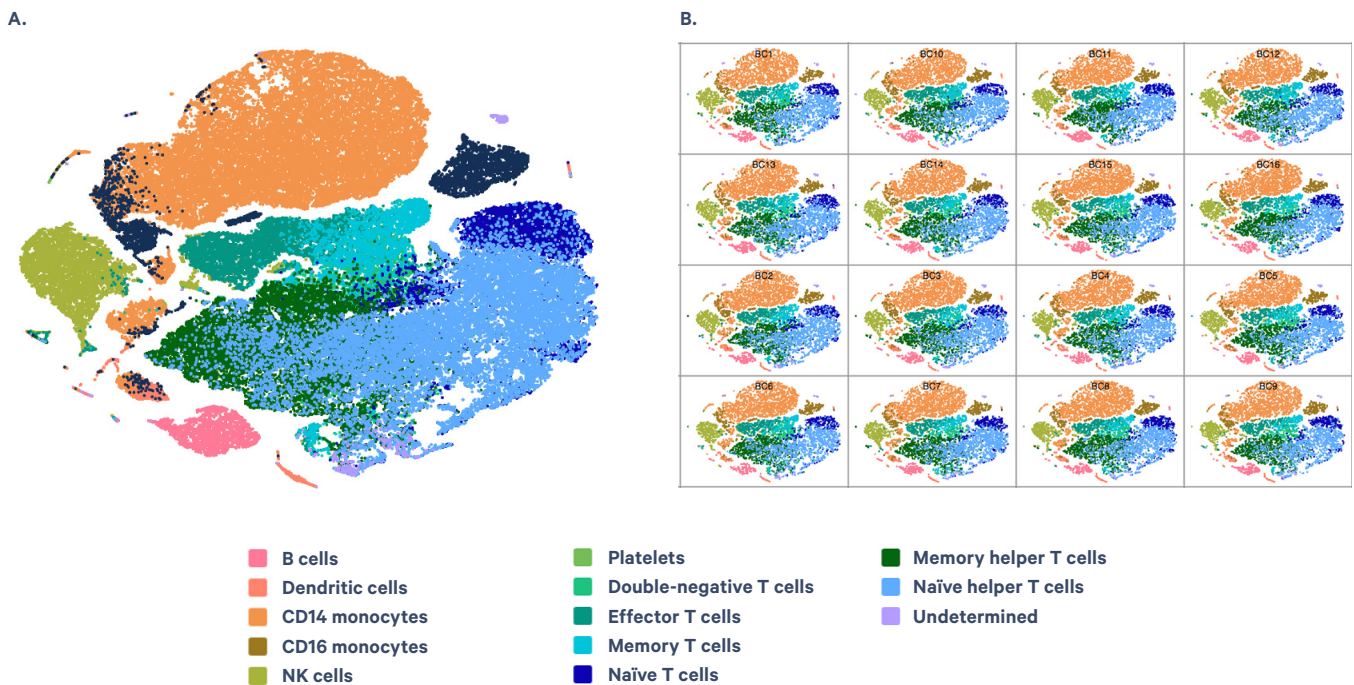
- Profile gene expression for thousands to hundreds of thousands of cells or nuclei with a sensitive probe-based method that captures the whole human or mouse transcriptome to detect even low-expressing genes
- Store samples without losing data quality, allowing you to batch samples in the same run and minimize experimental variability
- Choose your scale, with the flexibility to run 1–128 samples or up to 1 million cells per run with multiplexing
- Lock in cell state and then combine gene expression analysis with detection of hundreds of cell surface proteins at high resolution for ultra-high parameter multiomic cytometry
- Follow a ready-to-use, robust workflow with optimized, demonstrated protocols for diverse sample types, including cell lines, primary cells, and dissociated tissue containing fragile cells
- Bring single cell profiling to FFPE tissue from clinical trials or other translational studies



**Figure 2. Single Cell Gene Expression Flex enables an efficient and streamlined workflow for sample management and processing.** Cells are fixed and permeabilized and can be safely stored or transported without compromising data quality. Once ready to proceed, samples are hybridized to probe sets and may be processed individually (singleplex workflow) or pooled with up to 16 samples in a single lane of a Chromium chip (multiplex workflow). During GEM generation the probe sets are ligated and extended to incorporate unique barcodes. Sequencing libraries are then prepared, sequenced and analyzed using 10x Genomics Cell Ranger and Loupe Browser software tools.



**Figure 3. Storage stability of fixed samples.** Single cell gene expression profiling of human PBMCs, fixed and run immediately (Day 0), after storage at 4°C for one week, or after storage at -80°C for one month. Key populations of cell types are stable over time, demonstrating that the biology can be locked in with PFA fixation to enable transportation and storage, relieving constraints of running single cell experiments.



**Figure 4. Cell clustering of gene expression data from fixed samples.** Human PBMCs were fixed and split into 16 samples, each hybridized with a barcoded set of probes. Samples were pooled together and run on a single lane of a Chromium X chip. **A.** t-SNE plot showing 80,000 cells from all pools, overlaid together, with distinct clusters representing each cell type. **B.** t-SNE plots showing the same data split by barcode to demonstrate that there are no batch effects and that multiplexing is an effective strategy for reducing experimental variability while vastly increasing sample throughput for single cell experiments.

## Product specifications

- Singleplex samples: Efficiently partition 500–10,000 cells per channel and run up to 8 samples and 80,000 cells per chip
- Multiplex samples: Multiplex up to 16 samples and 128,000 cells per channel; Run 1–128 samples or up to 1 million cells in one run
- Cell size flexibility, no lower limits
- Compatible with fresh or PFA-fixed tissues, cells, and nuclei, as well as FFPE samples
- High cell capture rates of ~65%
- Low multiplet rates of 0.8% per 1,000 cells; up to 8% multiplet rate when a channel is fully multiplexed

Sample preparation products	Product code
Chromium Next GEM Single Cell Fixed RNA Sample Preparation Kit, 16 rxns	1000414

Chromium Nuclei Isolation Kit with RNase Inhibitor (optional)	1000494
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Gene expression profiling products	Product code
Chromium Fixed RNA Kit, Human Transcriptome, 4 rxns x 1 BC	1000474
Chromium Fixed RNA Kit, Human Transcriptome, 4 rxns x 4 BC	1000475
Chromium Fixed RNA Kit, Human Transcriptome, 4 rxns x 16 BC	1000476
Chromium Fixed RNA Kit, Human Transcriptome, 16 rxns x 16 BC	1000547
Chromium Fixed RNA Kit, Mouse Transcriptome, 4 rxns x 1 BC	1000495
Chromium Fixed RNA Kit, Mouse Transcriptome, 4 rxns x 4 BC	1000496
Chromium Fixed RNA Kit, Mouse Transcriptome, 4 rxns x 16 BC	1000497
Chromium Fixed RNA Kit, Mouse Transcriptome, 16 rxns x 16 BC	1000568
Chromium Next GEM Chip Q Single Cell Kit, 16 rxns	1000422
Chromium Next GEM Chip Q Single Cell Kit, 48 rxns	1000418
Dual Index Kit TS Set A, 96 rxns	1000251

Feature Barcode technology	Product code
Fixed RNA Feature Barcode Kit, 16 rxns	1000419

Dual Index Kit TT Set A, 96 rxns	1000215
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Instrument compatibility	Product code
Chromium iX & Accessory Kit, 12 Mo. Warranty	1000328

Chromium iX & Accessory Kit, 24 Mo. Warranty	1000329
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Chromium X & Accessory Kit, 12 Mo. Warranty	1000331
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Chromium X & Accessory Kit, 24 Mo. Warranty	1000332
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Software	
Cell Ranger	<a href="#">Download</a> <a href="#">Cloud analysis</a>

Loupe Browser	<a href="#">Download</a>
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Compatible partner products	
<a href="http://www.biolegend.com/totalseq">Biolegend TotalSeq™-B www.biolegend.com/totalseq</a>	<a href="#">Learn more</a>

## Contact us

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