

The Illumina Bio-Rad Single-Cell Sequencing Solution

Robust and scalable single-cell sequencing



Gain new insight into single-cell gene expression

With the ddSEQ™ Single-Cell Isolator and the SureCell™ WTA 3' Library Prep Kit

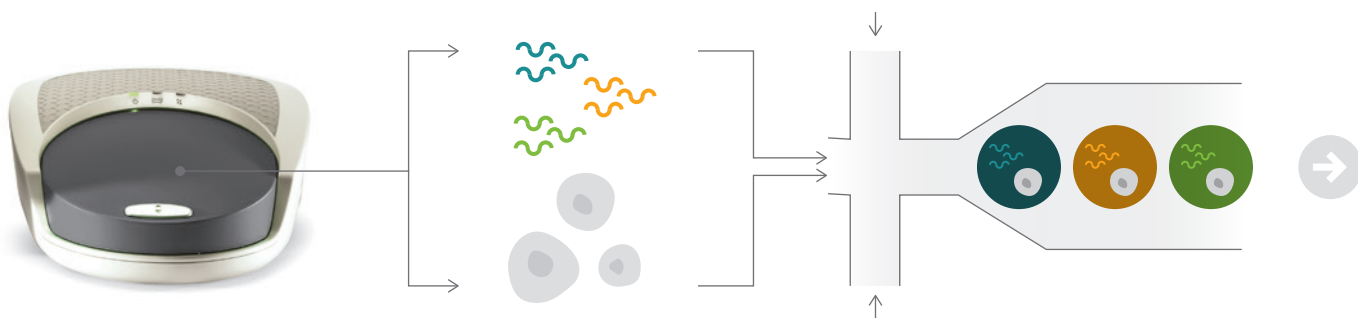
Single-cell RNA sequencing (RNA-Seq) provides deep insight into cell function, disease progression, and therapeutic efficacy by allowing researchers to differentiate individual cells in heterogeneous populations. The Illumina Bio-Rad Single-Cell Sequencing Solution is a robust, scalable, and user-friendly workflow, developed by the industry leaders in sequencing and Droplet Digital™ technologies, that allows transcriptome profiling of hundreds to tens of thousands of single cells in a single experiment.

This system offers:

- An end-to-end single-cell sequencing solution
- Sensitive and unbiased characterization of transcriptional signatures
- Scalable cell processing to accommodate a wide range of experimental designs
- Simple yet powerful data analysis options
- Accessible platform to enable groundbreaking research

A streamlined and fully supported end-to-end single-cell sequencing solution

The SureCell WTA 3' Library Prep Kit provides all reagents required for single-cell isolation and barcoding using the ddSEQ Single-Cell Isolator and library preparation with Nextera® technology, while the BaseSpace® Sequence Hub enables simplified run setup and push-button bioinformatics data analysis.



<5

min Use the ddSEQ Single-Cell Isolator to isolate tens of thousands of cells in a single day.

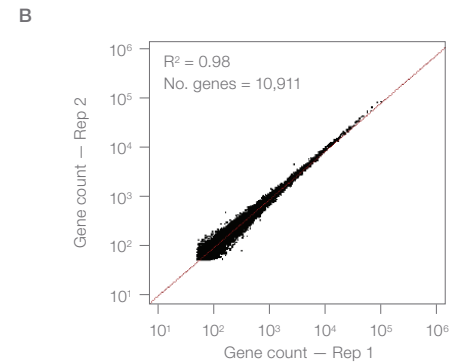
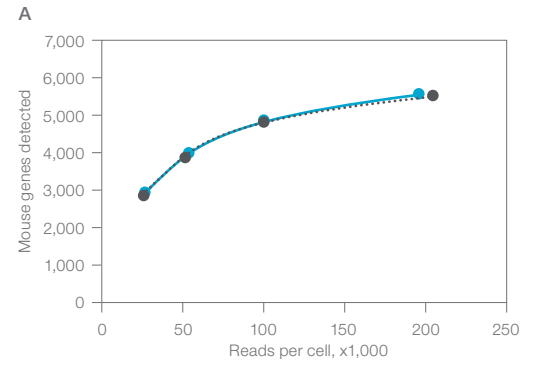
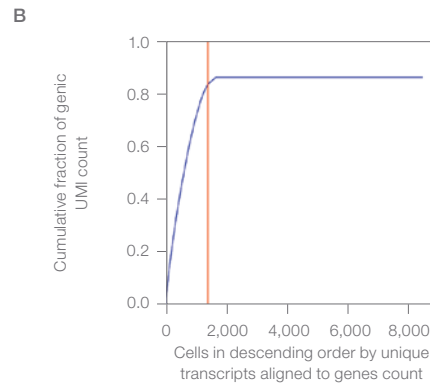
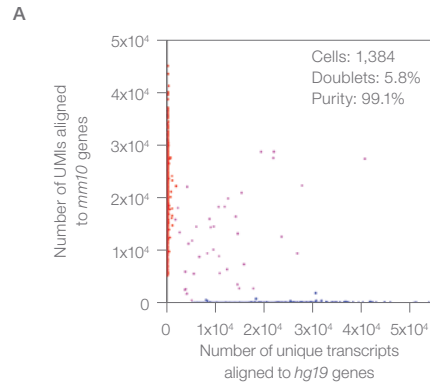
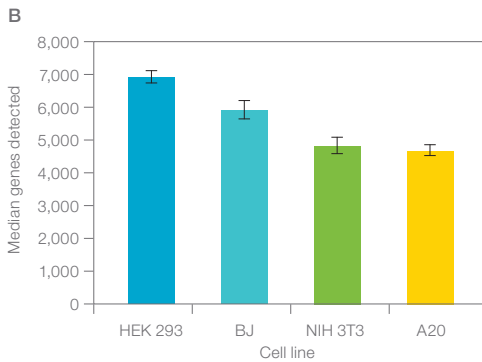
Scalable, flexible single-cell isolation

- Process up to four samples in <5 min
- Encapsulate hundreds to thousands of cells per sample and tens of thousands of cells per day
- Generate stable and uniform droplets for robust cell lysis and efficient barcoding with Droplet Digital technology

High-quality data

A

Cell Line	Species	Cell Type	Average Cell Diameter, μm
HEK 293	Human	Embryonic kidney	20
NIH 3T3	Mouse	Embryonic fibroblast	15
A20	Mouse	B lymphocyte	10
BJ	Human	Foreskin fibroblast	25



Unbiased, cell size agnostic RNA-Seq

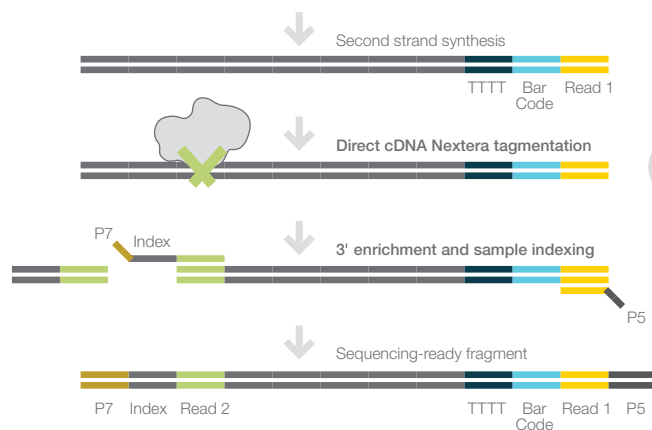
HEK 293, NIH 3T3, A20, and BJ cells were processed using the SureCell 3' WTA Library Prep Kit. **A**, cell sizes as measured by the TC20™ Automated Cell Counter; **B**, the median number of genes detected per cell is shown.

Confident single-cell transcript identification

HEK 293 and NIH 3T3 cells were analyzed in a mixed species experiment. **A**, plot of human and mouse unique transcripts detected in a mixed species sample. The low percentage of cell barcodes (5.8%) containing transcripts mapping to both human and mouse demonstrates efficient single-cell isolation with low doublets and high purity (99%). **B**, plot of cumulated fraction of genic transcripts assigned to cell barcodes. The inflection point (knee) is used to determine the number of barcoded cells detected, indicating high fraction of transcripts assigned to single cells.

Highly sensitive and reproducible results

Replicate samples were processed and sequenced on a NextSeq 550 run. **A**, sequencing reads were sub-sampled to various reads per cell ranging from 25,000 to 200,000 reads. The median number of genes detected per cell is plotted for each sequencing depth. **B**, total gene counts for each human gene were summed across all NIH 3T3 cells. Linear regression fit of summed gene counts between replicates from a ddSEQ M Cartridge shows high reproducibility. Rep 1 (●—●); Rep 2 (●—●).

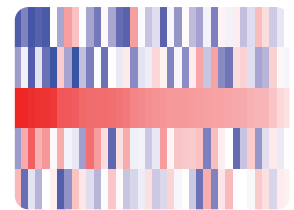


BaseSpace®
SEQUENCE HUB

Store data and monitor runs in real time.

Automatic data upload to BaseSpace Sequence Hub

Simplified data analysis with BaseSpace Apps



Rapid and streamlined library preparation

- Prepare libraries without shearing or pre-amplification using Nextera technology
- Sequence up to 24 samples with Illumina indices
- Detect more genes with sensitive assay chemistry

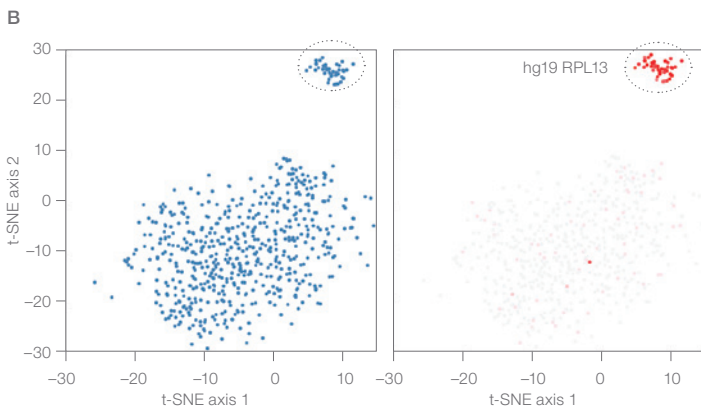
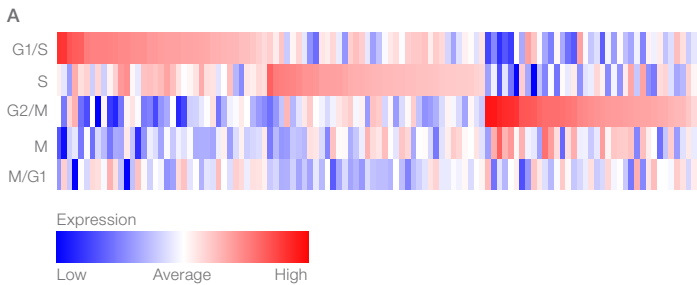
Completely integrated sequencing and data analysis

- Experience streamlined, push-button data analysis with the single-cell analysis BaseSpace app
- Analyze, visualize, and share data easily
- Trust in secure and scalable cloud-based data analysis and storage

Simple, yet powerful, data analysis options

The single-cell analysis BaseSpace app enables streamlined primary and secondary analysis including:

- Push-button data analysis setup
- Convenient sequencing QC metrics
- Easy assignment of unique transcripts to single cells
- Exportable gene expression matrices
- High dimensional analysis for identification of subpopulations and differentially expressed genes



Powerful data analysis tools. The single-cell analysis BaseSpace app provides a suite of data analysis options including heat maps and t-SNE analysis. **A**, cell cycle profiling of proliferating HEK 293 cells using expression of markers associated with each major cell cycle phase. **B**, t-SNE analysis of a mixture of HEK 293 and NIH 3T3 cells. Human cells (representing 7% of the total cell population) are identified as a distinct cluster in t-SNE analysis based on gene expression profile (left). Cells color-coded by gene expression of human *Rpl13* (right) confirm the identity of the sub-population.

A complete solution built and supported by technology leaders

The Illumina Bio-Rad Single-Cell Sequencing Solution leverages Illumina's expertise in library preparation and sequencing and Bio-Rad's industry-leading Droplet Digital technology to provide an integrated, scalable, and fully supported single-cell RNA-Seq workflow. Technical support can be obtained from a single source, eliminating the need to seek support from multiple vendors. Full workflow support is available from isolation through sequencing and analysis.

Visit bio-rad.com/singlecell for more information.

The purchase of this product conveys to the purchaser the limited, non-transferable right to use the product only to perform internal research in the field of single cell analysis and with Bio-Rad's ddSEQ Single-Cell Isolator for the sole benefit of the purchaser. No right to resell this product or any of its components is conveyed expressly, by implication, or by estoppel. This product is for internal research purposes only and is not for use in commercial applications of any kind, including, without limitation, quality control and commercial services such as reporting the results of purchaser's activities for a fee or other form of consideration. The product and its use are covered by one or more patents owned by or licensed to Bio-Rad Laboratories, Inc., including U.S. patents 7,772,287 and 9,216,392, and corresponding U.S. and non-U.S. patent applications.

For Research Use Only. Not for use in diagnostic procedures.

© 2016 Illumina, Inc. | Bio-Rad Laboratories, Inc. All rights reserved.
Pub No. 1076-2016-011 Current as of 29 September 2016
Bulletin 6855 Ver A 16-0903 1016

illumina®

BIO-RAD