BD Rhapsody™ HT Single-Cell Analysis System

Fast track single-cell research without compromise

Increase throughput. Decrease time to answer. No compromise.

Single-cell analysis technologies are important tools utilized to understand the intricacies and heterogeneity of cellular populations and cellular systems. Cell-specific information gathered using these tools, which is lacking when using traditional genome-wide techniques, allows deeper insights from hundreds of thousands of cells at single-cell resolution.

The BD Rhapsody™ HT Single-Cell Analysis System allows flexible sample processing and cell capture from hundreds to hundreds of thousands of single-cells using a gentle and robust microwell-based cartridge technology and multitier barcoding system enabled by BD Rhapsody™ Enhanced Bead Technology. Multiple samples can be processed in a single run when utilizing BD multiplexing antibodies. The captured cellular information is utilized to generate various types of libraries for next-generation sequencing applications providing accelerated time to insight.

See how it works

Answer your biological questions and have confidence in every experiment with the BD Rhapsody™ HT Single-Cell Analysis System

Simple single-cell capture

- Prepare single-cell suspensions
- Capture single cells
- Synthesize cDNA

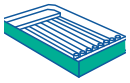
Three ways to proceed with a flexible workflow

Store
Keep cell capture beads for later processing

NGS library prep
Prepare on your own

Transport
Send cell capture beads to a core facility or sequencing provider

BD Rhapsody™ System quality and high throughput



Flexible cartridge design

- Up to 8 tests per cartridge
- Partial use of cartridge enables:
  - Running more or different types of experiments
  - Processing samples together or on different days

Low multiplet rate per lane

- 2.5% @ 10,000 cell load
- 5.2% @ 25,000 cell load
- 13.2% @ 55,000 cell load
- 20.9% @ 100,000 cell load

Minimal batch effects

- Consistent, reliable results with technical, biological, site-to-site and user-to-user replicates

Subsample beads

- Creates flexibility with experimental design
- Tool to measure sample quality
- Share beads across sites with collaborators

Archive beads

- Equivalent data obtained from fresh beads and stored beads (stable for up to 1 year at 4°C)
- Support flexible and collaborative workflow approach
- Backup for underperformed or failed library preps

Maintain sample integrity

Gentle microwell technology

No sample loss due to clogging of channels

Recover cells with disparate size and morphology, including fragile cell types

Expanded throughput

Easily run million-cell studies

Capable of capturing more than 640,000 cells per cartridge

Up to 80% cell capture rate

(for certain cell types)

Visual workflow QC

Save time and sequencing cost

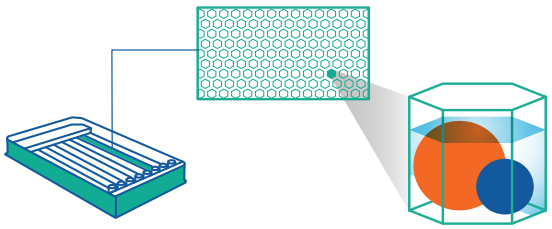
Make real-time decisions before sequencing

Be certain about your cell capture with every single-cell experiment

High cell capture and low multiplet rate across high cell inputs

Desired number of cells	Live cells loaded**	Viable cells captured in well with a bead	Capture rate
55,000*	58,385	49,956	0.86
65,000*	68,996	58,839	0.85
85,000*	90,197	76,621	0.85
100,000*	106,156	86,919	0.82

*Mix of Jurkat and Ramos cells
**BD Rhapsody™ Scanner hemocytometer count



Microwell
Barcoded bead
Viable cell

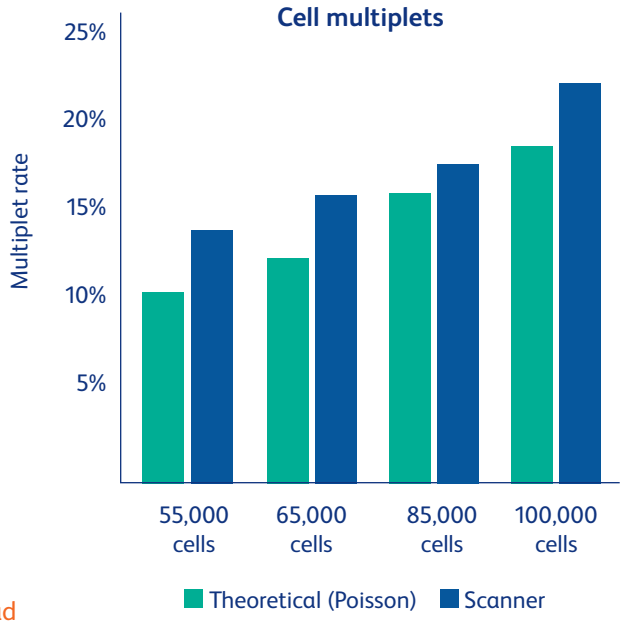
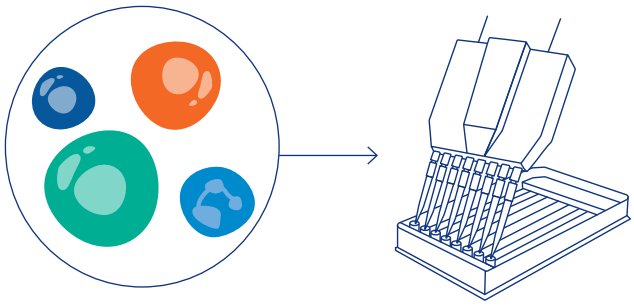


Figure 1. Two cell types (Jurkat, sample tag 1-6 and Ramos, sample tag 7-12) were sample tagged, pooled and loaded in duplicate at 55,000, 65,000, 85,000 or 100,000 cells per lane on two 8-lane cartridges. Cell capture rates were high and multiplet rates were low at all cell load concentrations. The BD Rhapsody™ Scanner provides a measure of actual multiplet rate for cells loaded onto each lane in the 8-lane cartridge. Capture rates from the scanner were recorded over 80%. The mutiplet rate for 100,000 cell input was 20.9%. Results may vary based on cell type and isolation method.

Cell types with disparate size and morphology recovered in similar proportion to input concentration



Neutrophils (10–14 µm)
K562 (16 µm)
Jurkat (11 µm)
BT549 (20 µm)

*Neutrophils isolated using negative magnetic enrichment

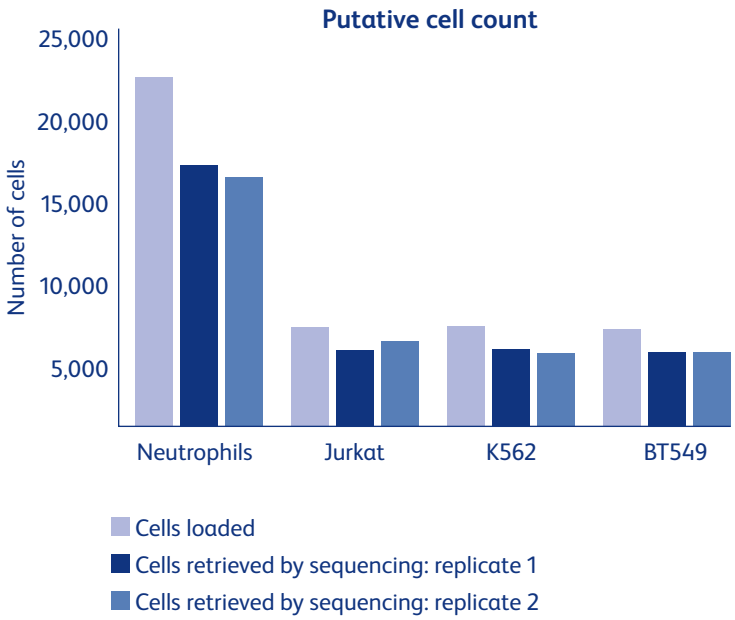


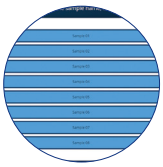
Figure 2. Large, medium and small cells were loaded into duplicate lanes of a BD Rhapsody™ 8-Lane Cartridge. Jurkat, K562 and BT549 cells were loaded at a given ratio (1:1:1) and neutrophils were loaded separately. The ratio of cells recovered from sequencing was compared, revealing that the cell types were recovered in similar proportions to those loaded into the cartridge despite different cell sizes, including neutrophils. Furthermore, cells were recovered in matched input ratios at sequencing indicating faithful capture of cells of different sizes and morphologies.

Confidence in every experiment with the BD Rhapsody™ Scanner visual workflow QC

The BD Rhapsody™ Scanner can be used to provide quality control measures at different stages of the workflow by direct imaging through an intuitive user interface for a multi-sample workflow.

Experimental setup – Enter sample and experiment information to track samples throughout the single-cell workflow

Scan and status – Watch the status of the lanes being scanned in real time

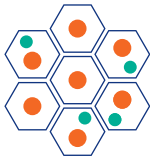


Multi-sample selection – Allow users to select and name up to eight lanes for processing using the cartridge scan workflow

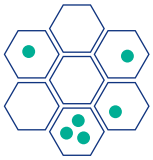
Image analysis – Review the scanner quality metrics and make informed decisions on whether to proceed with library prep

Visual confirmation of cell capture

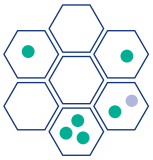
The viability of the input cell sample and success of each step of the cartridge workflow can be confirmed, giving the user the power to decide whether to change course or troubleshoot, if necessary, before expensive downstream sequencing.



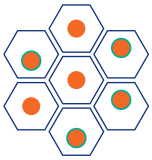
Cell retention



Cell multiplet rate



Viability of cells before lysis



Ability to estimate the number of cells retrieved by sequencing

● Bead ● Viable cell ● Nonviable cell ● Captured cellular information on bead

As desired

Choose desired BD Rhapsody™ NGS Library Prep Kit and proceed to library prep, sequencing and data analysis

Not as desired

Do not proceed to library prep

✓ Save time ✓ Save effort ✓ Save money by troubleshooting single-cell capture

Track performance of workflows day to day or between various study sites, confidently every time

A complete single-cell multiomics solution

BD Rhapsody™ Single-Cell Multiplexing Kit

Up to 24 sample tags

CITE-Seq using BD® AbSeq Ab-Oligos

BD® AbSeq Single-Vial Reagents

BD® OMICS-One Panels

Custom BD® AbSeq Antibodies

BD Rhapsody™ HT Xpress System

Single-cell capture, bead-based mRNA isolation and bead retrieval

BD Rhapsody™ HT Single-Cell Analysis System

Single-cell capture, bead-based mRNA isolation, bead retrieval with imaging and cell workflow QC. Includes the BD Rhapsody™ Scanner.

BD Rhapsody™ NGS Library Prep Kits

BD Rhapsody™ Whole Transcriptome Analysis Amplification Kit

BD Rhapsody™ Targeted mRNA Kit and AbSeq Amplification Kit

BD Rhapsody™ TCR/BCR Next Amplification Kit

BD Rhapsody™ ATAC-Seq Reagent and Amplification Kits

Bioinformatics

Intuitive and scalable data analysis with the BD Rhapsody™ Analysis Pipeline

Supporting you in your single-cell experiments

At BD Biosciences, we pride ourselves on our excellent product and technical support. All our products are backed by our >50 years of single-cell expertise and support resources. Combining years of collective knowledge with diverse research and clinical laboratory experience, our application and field service teams provide timely, professional application and instrument support. They can address questions related to instruments, software and reagents across a broad range of applications. Experts can be dispatched to your site when needed for periodic preventative maintenance.

Getting help from single-cell experts

Visit us at **scomix.bd.com** to view our resource library, learning center and FAQs or to file a ticket for help.

In need of instrument technical support

BD technical service support is here to help with instrument support. Contact us by phone at 877.232.8995, prompt 2, then prompt 1, 5 a.m. to 5 p.m. PT or online at **bdbiosciences.com/en-us/support/contact-us** to fill out a Service Web Form.

Ordering the BD Rhapsody™ HT Xpress Single-Cell Analysis System

To request a quote or place an order, visit **bdbiosciences.com** or contact your local BD sales representative.

Ordering information

BD Rhapsody™ HT Single-Cell Analysis System	
Description	Cat. No.
BD Rhapsody™ HT Xpress Package*	666625
BD Rhapsody™ Scanner	633701
Reagents	
BD Rhapsody™ 8-Lane Cartridge	666262
BD Rhapsody™ Enhanced Cartridge Reagent Kit, v3.0	667052
BD Rhapsody™ cDNA Kit	633773

*Includes the BD Rhapsody™ P8x1200-µL Pipette – HTX and Hamilton® 60-mL Waste Reservoirs

For a complete list of single-cell assays and reagents, visit **bdbiosciences.com**

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

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