

SickKids' Center for Advanced Single Cell Analysis

BD Rhapsody™ Single-Cell “Multi-omics” System Overview

- √ Simultaneously quantifies mRNA and protein in up to 40,000 single cells
 - Single cells are gently deposited into micro-wells without causing cellular stress (Figure 1)
 - Each well is then loaded with a BD™ Rhapsody bead that captures cellular mRNA and any oligos from BD Ab-Seq reagents and Sample Tags used to pre-label cell surface proteins
 - After cell separation the mRNA and BD™ Ab-Seq Oligos and Sample Tags captured from each cell are ready for cDNA synthesis and library preparation for Illumina sequencing (Figure 2)
 - A unique barcode on each bead allows each captured molecule to be matched to its respective cell

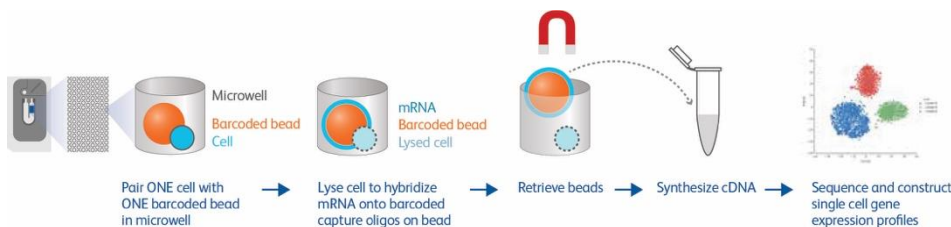


Figure 1: Overview of Rhapsody Workflow

- √ Performs automated cell counting to report on the number of viable cells captured, providing quality control information to inform library preparation and sequencing
- √ Use the Single Cell Multiplexing Kit to combine up to 12 different samples prior to single cell capture. Multiplexing will:
 - Reduce batch effects by simultaneously running multiple controls and experimental samples at the same time
 - Substantially reduce per sample costs for generating scRNA-Seq libraries
 - Improve detection and elimination of multipllets from the data
- √ Use BD™ Ab-Seq oligo-conjugated antibodies to simultaneously profile surface protein expression of single cells similar to flow cytometry (Figure 3)
 - Pre-label your cells with up to 40 Ab-Seq reagents to quantify cell surface proteins for deep immune phenotyping of each cell captured and sequenced
- √ Choose between whole transcriptome analysis (WTA) and gene-targeted assays:

Cat No.	Description	No. of genes
633802	Whole Transcriptome Assay (Human/Mouse)	N/A
633750	Immune Response Panel (Human)	399
633751	T-Cell Expression Panel (Human)	259
633752	Onco-Bc Panel (Human)	389
633753	Immune Response Panel (Mouse)	397
Inquire	Custom Targeted Panel (Human or Mouse)	2-400

- √ WTA and pre-designed panels can also be supplemented with custom targeted panels to enrich for or detect specific transcripts of interest

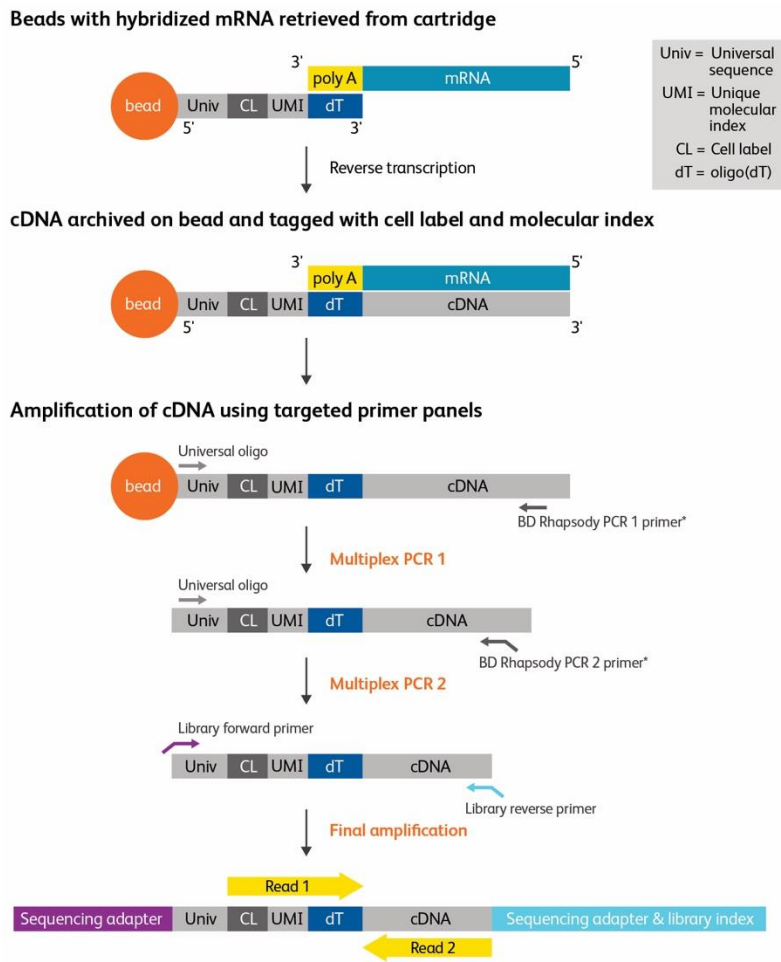


Figure 2. Library preparation from mRNA capture to sequencing-ready products.

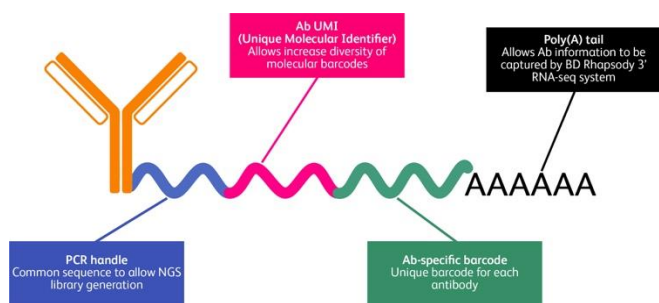


Figure 3. BD™ Ab-Seq antibody oligo design. The poly-A tail allows binding of the antibody by the capture beads.

BD has validated the use of up to 40 BD™ Ab-Seq antibodies simultaneously in combination with any of our kits. BD™ Ab-Seq reagents are pre-titrated to allow faster analysis.

Clients should purchase Ab-Seq reagents directly from BD. For a complete list of the available BD™ Ab-Seq portfolio, please click [here](#). BD also offers custom antibody-oligo conjugations (Custom BD™ Ab-Seq) for those not found in the BD catalogue. Please inquire with BD for pricing.

Learn More:
[BD Rhapsody™ Website](#)