BD® OMICS-One Immune Profiler Protein Panel

CITE-seq discovery tool for single-cell studies

Performing CITE-seq experiments can be daunting. Reagent selection, handling and panel design are no trivial tasks for studies with multiple protein markers. The BD® OMICS-One Immune Profiler Protein Panel (BD® OMICS-One IP Protein Panel) is designed to help with your CITE-seq studies by enabling you to uncover 30 different immune markers in a single experiment.

Features

One-tube convenience
30 pre-titrated antibodies against major human immune markers in a single tube

Flexible
A great backbone panel that allows easy addition of more antibodies of interest

Multiomics enabled
Works along with RNA and multiplexing assays

Ease of use
Lyophilized format; simply reconstitute to stain samples

Reliable
Accompanied by comprehensive performance test data

Great value
Manage your sequencing costs

30 pre-titrated antibodies

Specificity	Clone	Specificity	Clone	Specificity	Clone
CD3	UCHT1	CD45RA	HI100	CD196 (CCR6)	11A9
CD4	SK3	CD56	NCAM16	CD197 (CCR7)	2-L1-A
CD8	SK1	CD62L	DREG-56	CD272	J168-540
CD11c	B-Ly6	CD127	HIL-7R-M21	CD278	DX29
CD14	MϕP9	CD134	ACT35	CD279	EH12.1
CD16	3G8	CD137	4B4-1	CD357 (GITR)	V27-580
CD19	SJ25C1	CD161	HP-3G10	CD366 (TIM-3)	7D3
CD25	2A3	CD183 (CXCR3)	1C6/CXCR3	HLA-DR	G46-6
CD27	M-T271	CD185 (CXCR5)	RF8B2	IgD	IA6-2
CD28	L293	CD186 (CXCR6)	13B 1E5	IgM	G20-127

Utilize our expertise and insights to manage the sequencing costs of your single cell experiments. Reach out to your local BD sales representative or contact our help desk **scomix@bd.com** to learn more about managing sequencing costs while using the BD® OMICS-One IP Protein Panel.

BD

Comparable performance to freshly pooled BD® AbSeq Antibody-Oligo Reagents

The BD® OMICS-One IP Protein Panel consists of 30 different specificities against major human immune markers combined in a single tube. We developed the BD® OMICS-One IP Protein Panel by ensuring its performance was comparable to data generated with a freshly prepared mixture of the same 30 specificities of our single vial BD® AbSeq Antibody-Oligo Reagents.

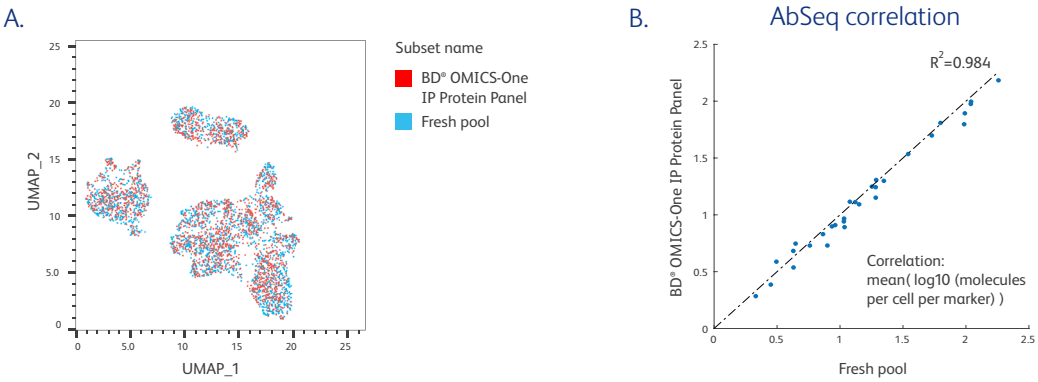


Figure 1. Similar performance between the BD® OMICS-One IP Protein Panel versus freshly pooled BD® AbSeq Antibodies. Following isolation from whole blood, peripheral blood mononuclear cells (PBMC) were split into resting (untreated) and activated (treated with CD3/CD28 for 24 hours) groups. A 1:1 mixture of the resting and activated cells were stained with either the BD® OMICS-One IP Protein Panel or a freshly prepared mixture of the same AbSeq specificities. Equal number of cells were then loaded onto BD Rhapsody™ Cartridges and AbSeq and whole transcriptome (WTA) libraries were generated and sequenced (n = 2 individual experiments for this study). Data were analyzed using SeqGeq™ Software. **A)** UMAP demonstrated strong overlap in the cell groups identified between the BD® OMICS-One IP Protein Panel and fresh BD® AbSeq Antibody-stained samples. **B)** The total number of AbSeq molecules detected by the BD® OMICS-One IP Protein Panel and fresh BD® AbSeq Antibody mixture showed a high correlation with R^2 greater than 0.98.

Flexibility to add additional specificities of interest

The BD® OMICS-One IP Protein Panel is designed to accommodate additional AbSeq specificities and our results demonstrate that adding more BD® AbSeq Antibodies does not impact the performance of the BD® OMICS-One IP Protein Panel or the added antibodies. We specifically chose three distinct specificities to demonstrate the above capability: CD38–a commonly expressed antigen; CD45RO–to test if this specificity complements the CD45RA already included in the panel; and RPA-T8 clone of CD8–to test if alternate clones of the same specificity can be added to the panel as the BD® OMICS-One IP Protein Panel already includes the SK1 clone of CD8.

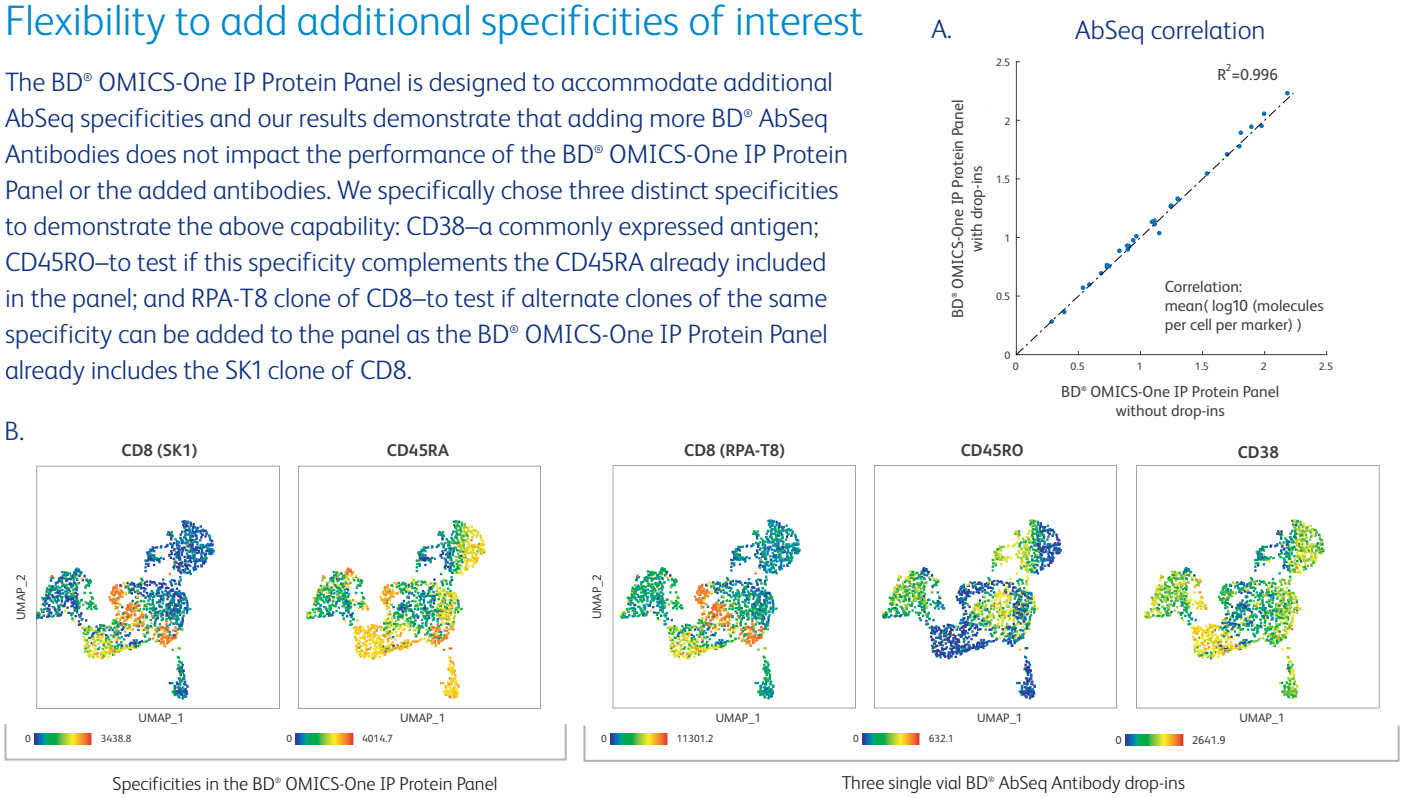
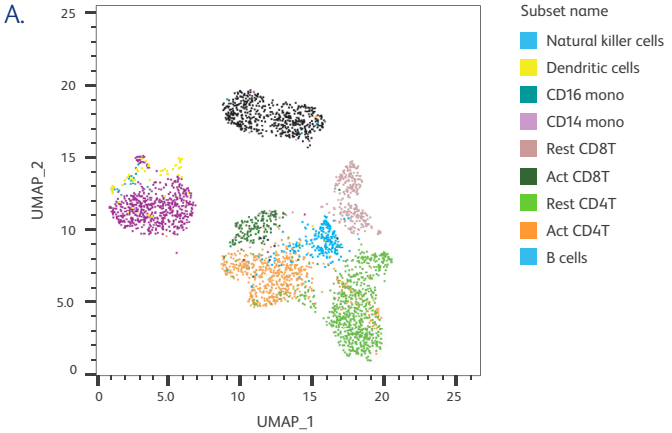


Figure 2. The BD® OMICS-One IP Protein Panel is a flexible backbone panel and accommodates additional AbSeq specificities. Three BD® AbSeq Antibodies were added and mixed with the reconstituted BD® OMICS-One IP Protein Panel pellet (n = 2). **A)** The BD® OMICS-One IP Protein Panel performance was not impacted by drop-ins as shown by high correlation (R^2 over 0.99 with or without drop-ins). **B)** The BD® OMICS-One IP Protein Panel specificities of CD8 (SK1) and CD45RA were assessed against the specificity of drop-ins CD8 (RPA-T8), CD45RO and CD38 and are shown in UMAP. Drop-in for CD38 detected cell types that are expected to be positive for CD38. Drop-in clone for CD8 (RPA-T8) showed a staining pattern very similar to the BD® OMICS-One IP Protein Panel clone (SK1) suggesting the high specificity of drop-in antibody as well as the compatibility of two clones for the same antigen. The contrasting expression pattern of CD45RO (drop-in) compared to CD45RA (BD® OMICS-One IP Protein Panel) further confirmed that adding the AbSeq specificities to the panel had no adverse impact on experimental outcomes.

Reliable performance

Ensuring optimal performance of antibodies when multiple antibodies are brought together in a panel is critical for immune discovery experiments. Keeping this in mind, we tested the performance of the individual 30 specificities included in the BD® OMICS-One IP Protein Panel against PBMCs from multiple donors. Our results demonstrate that all 30 specificities in the panel reliably detect their respective, individual targets.



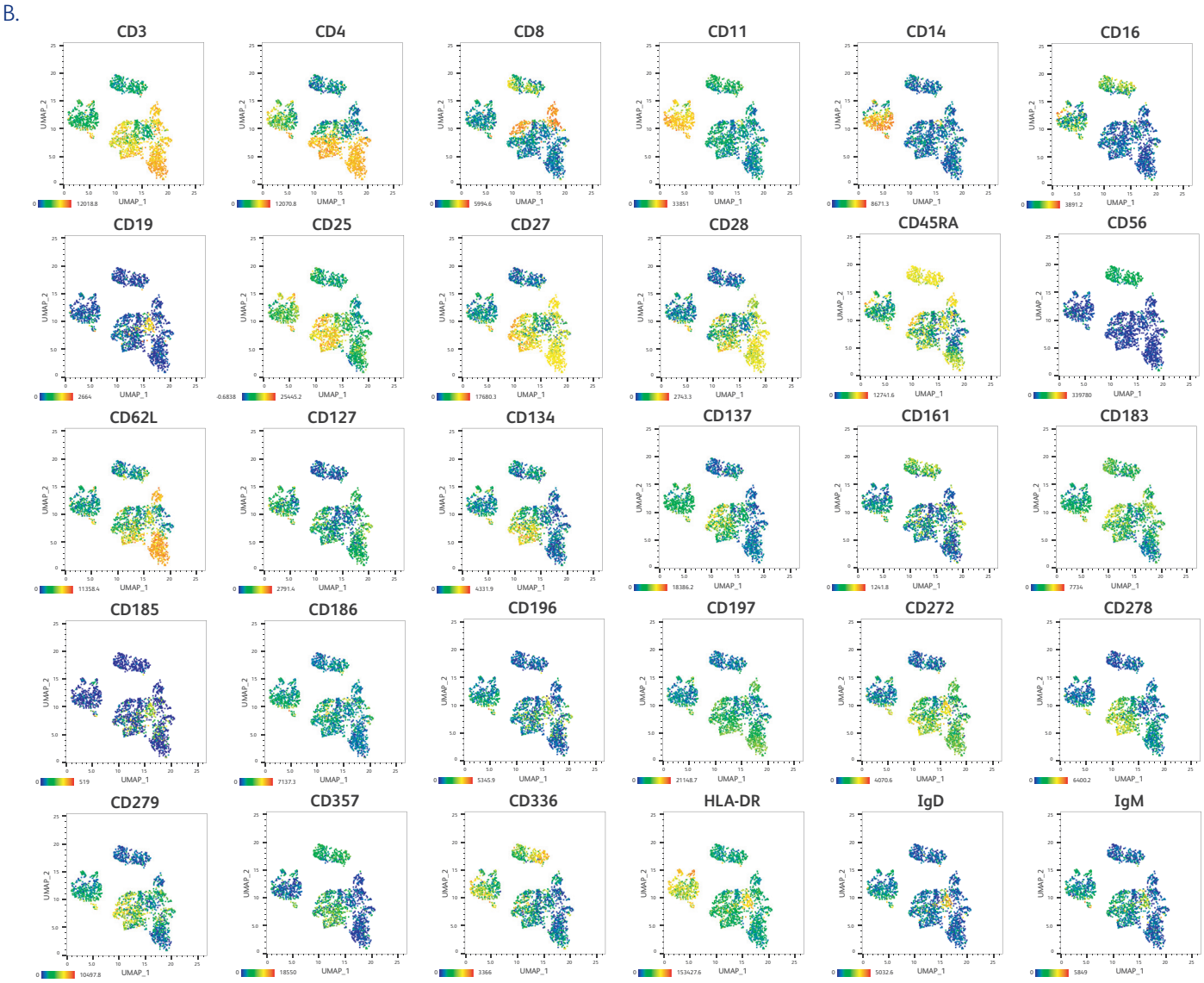
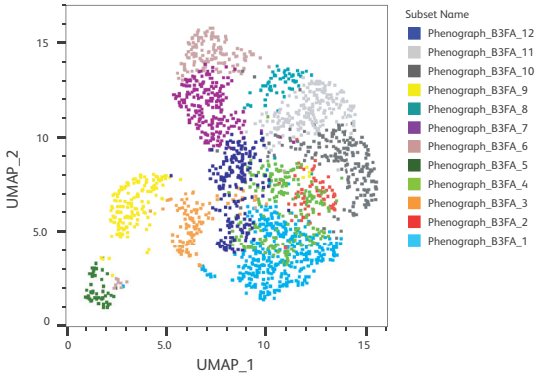


Figure 3. Performance of all 30 AbSeq specificities included in the BD® OMICS-One IP Protein Panel. PBMC were activated and prepared as described in Figure 1. After staining, cells were captured on the BD Rhapsody™ System and AbSeq and WTA libraries were generated and sequenced. To obtain over 80% sequencing saturation, the libraries were sequenced at 20,000 reads/cell for WTA and 30,000 reads/cell for AbSeq using the Illumina™ NextSeq™ High-Output Kit. Data were analyzed using SeqGeq Software. We repeated the above experiments with at least two different donors. The representative figures from one donor are shown here. **A)** Cell annotation on UMAP of resting + activated PBMCs resolved by the BD® OMICS-One IP Protein Panel antibodies and the WTA mRNA profile. **B)** Heat maps of each AbSeq clone from BD® OMICS-One IP Protein Panel on UMAP from Figure 3A showing the specificity of AbSeq detection for individual cell type.

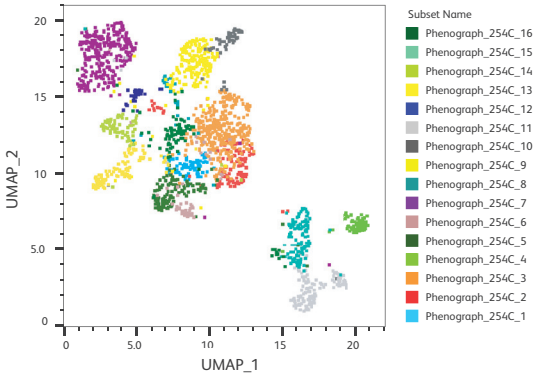
Multiomics and sample multiplexing enabled

Performing CITE-seq analyses can reveal deeper insights about your samples. In addition, performing such multiomic analyses on multiple samples together in a single experiment can reduce costs and most importantly help avoid inter-experimental batch effects. The BD® OMICS-One IP Protein Panel was developed to work seamlessly with BD Rhapsody™ RNA Assays and BD® Single-Cell Multiplexing Kits.

A. mRNA driven UMAP and phenograph clustering



mRNA+protein driven UMAP and phenograph clustering



B.

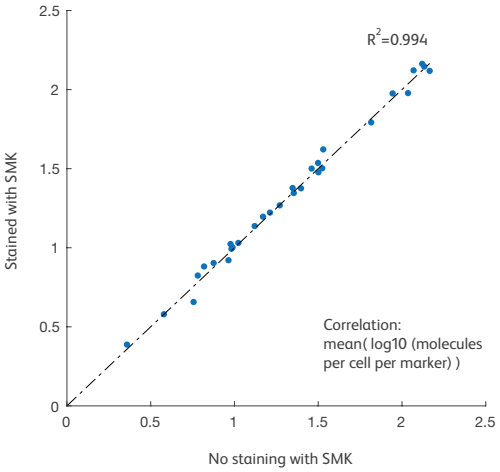


Figure 4. The BD® OMICS-One IP Protein Panel is designed to work with RNA and multiplexing assays. A) WTA and AbSeq libraries from BD® OMICS-One IP Protein Panel-stained cells (1:1 mixture of resting and activated PBMCs) were generated and sequenced. To illustrate the power of CITE-seq analysis, we analyzed the WTA data only (mRNA analysis) and compared with WTA + AbSeq data (mRNA and protein analysis). UMAP coordinates and unbiased clustering (phenograph) using only WTA (mRNA) data are shown on the left, while coordinates and annotations using WTA + AbSeq (mRNA and protein) data are shown on the right. With a CITE-seq approach, additional cell types were revealed offering deeper biological insights. **B)** To test the compatibility of the BD® Single-Cell Multiplexing Kit (SMK) and the BD® OMICS-One IP Protein Panel, we performed cell staining with the SMK and the BD® OMICS-One IP Protein Panel together and generated WTA, AbSeq and SMK libraries for sequencing. The expression of markers in the BD® OMICS-One IP Protein Panel was then compared to data generated in the absence of the SMK. These data showed that addition of the SMK does not impact the BD® OMICS-One IP Protein Panel as demonstrated by high correlation (R^2>0.99) between the BD® OMICS-One IP Protein Panel + WTA versus BD® OMICS-One IP Protein Panel + WTA + SMK.

Ordering information

Description	Cat. No.
BD® OMICS-One Immune Profiler Protein Panel	571970
BD® OMICS-One Immune Profiler Protein Panel + WTA	571971*
BD® OMICS-One Immune Profiler Protein Panel + WTA + TCR/BCR Next	571972*

* Orderable only online. For offline orders, please contact your local BD sales representative.

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BD Life Sciences, Milpitas, CA 95035, U.S.

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