

BD[®] OMICS-One Immune Profiler Protein Panel

CITE-seq discovery tool for single-cell studies



BD[®] OMICS-One Immune Profiler Protein Panel



One-tube convenience

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



Reliable

Accompanied by comprehensive performance test data



Ease of use

Lyophilized format; simply reconstitute to stain samples



Multomics enabled

Works along with RNA and multiplexing assays



Flexible

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



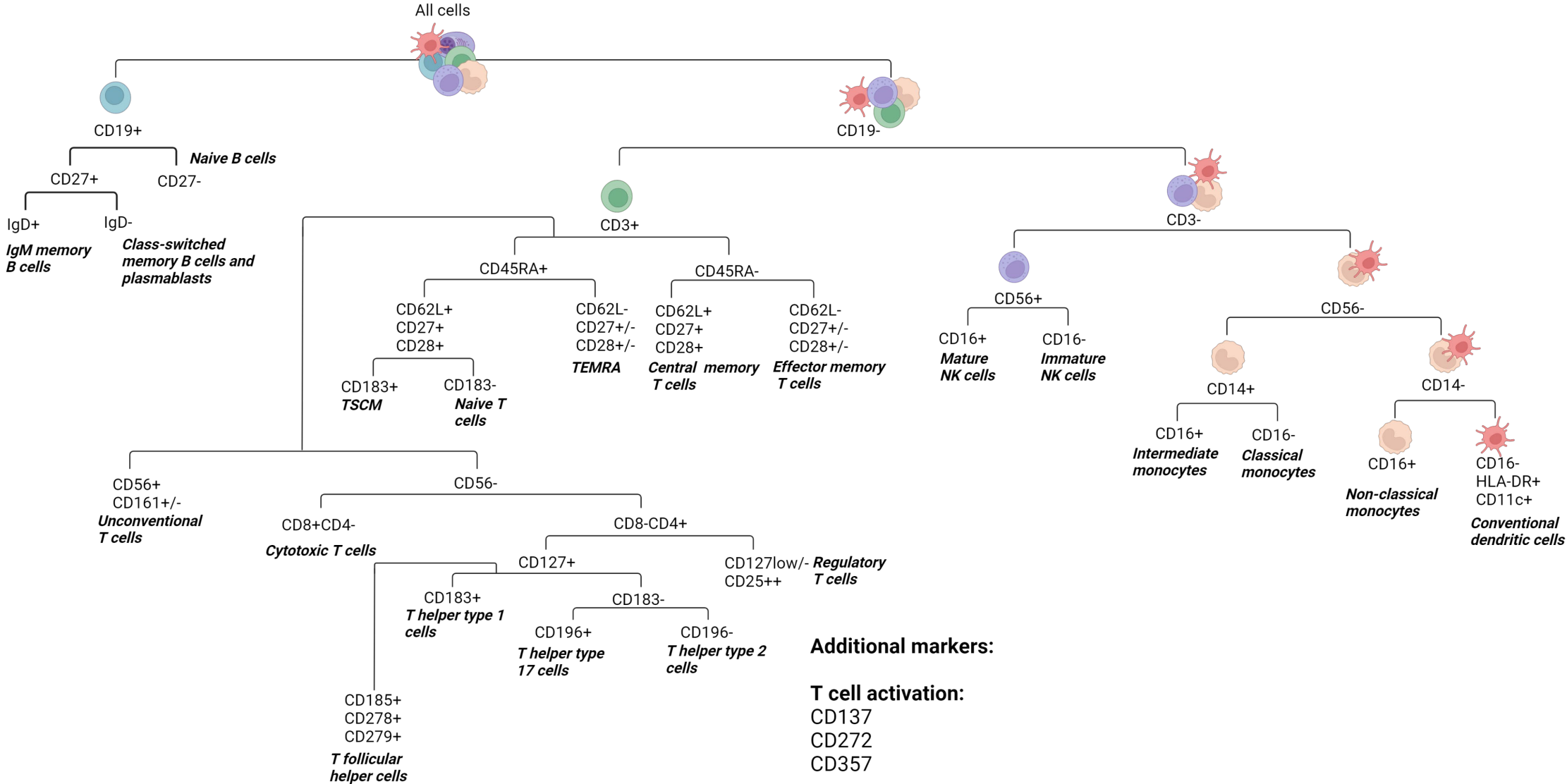
Great value

Manage your sequencing costs

Uncover 30 human immune markers in a single experiment

30 pre-titrated antibodies								
Specificity	Clone	Oligo ID	Specificity	Clone	Oligo ID	Specificity	Clone	Oligo ID
CD3	UCHT1	AHS0231	CD45RA	HI100	AHS0009	CD196 (CCR6)	11A9	AHS0034
CD4	SK3	AHS0032	CD56	NCAM16	AHS0019	CD197 (CCR7)	2-L1-A	AHS0273
CD8	SK1	AHS0228	CD62L	DREG-56	AHS0049	CD272	J168-540	AHS0052
CD11c	B-Ly6	AHS0056	CD127	HIL-7R-M21	AHS0028	CD278	DX29	AHS0012
CD14	MPHIP9	AHS0037	CD134	ACT35	AHS0013	CD279	EH12.1	AHS0014
CD16	3G8	AHS0053	CD137	4B4-1	AHS0003	CD357 (GITR)	V27-580	AHS0104
CD19	SJ25C1	AHS0030	CD161	HP-3G10	AHS0205	CD366 (TIM-3)	7D3	AHS0016
CD25	2A3	AHS0026	CD183 (CXCR3)	1C6/CXCR3	AHS0031	HLA-DR	G46-6	AHS0035
CD27	M-T271	AHS0025	CD185 (CXCR5)	RF8B2	AHS0039	IgD	IA6-2	AHS0058
CD28	L293	AHS0138	CD186 (CXCR6)	13B 1E5	AHS0148	IgM	G20-127	AHS0198

Cell type mapping with BD[®] OMICS-One Immune Profiler Protein Panel



Additional markers:

T cell activation:

- CD137
- CD272
- CD357



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

We developed the BD[®] OMICS-One IP Protein Panel by ensuring its performance was comparable to data generated by freshly prepared mixture of the same 30 specificities of our single vial BD[®] AbSeq Ab-Oligo Reagents.

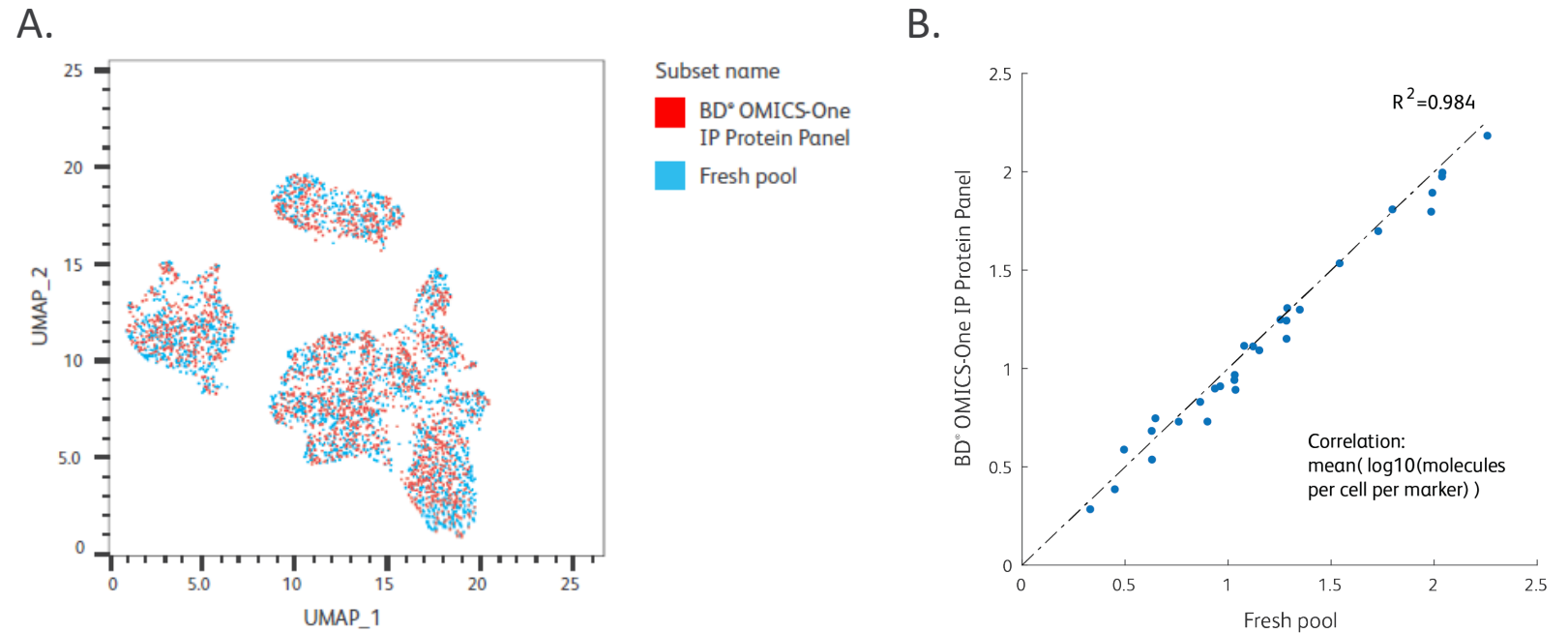


Figure 1. Similar performance between the BD[®] OMICS-One IP Protein Panel versus freshly pooled BD[®] AbSeq Antibodies

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 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.

Reliable performance

Ensuring optimal performance of antibodies when multiple antibodies are brought together in a panel is critical for immune discovery experiments. Our results demonstrate that all 30 specificities in the panel reliably detect their respective, individual targets.

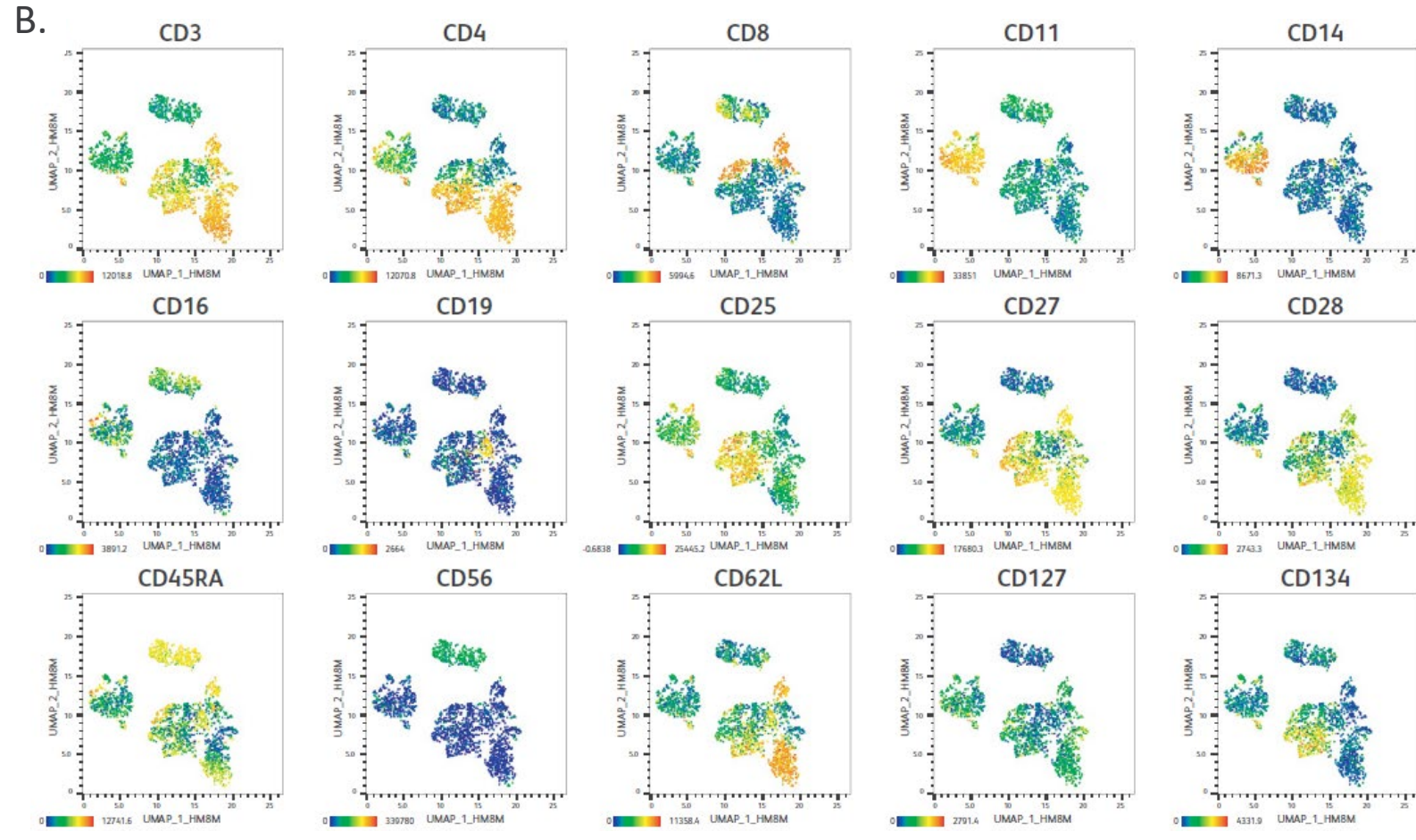
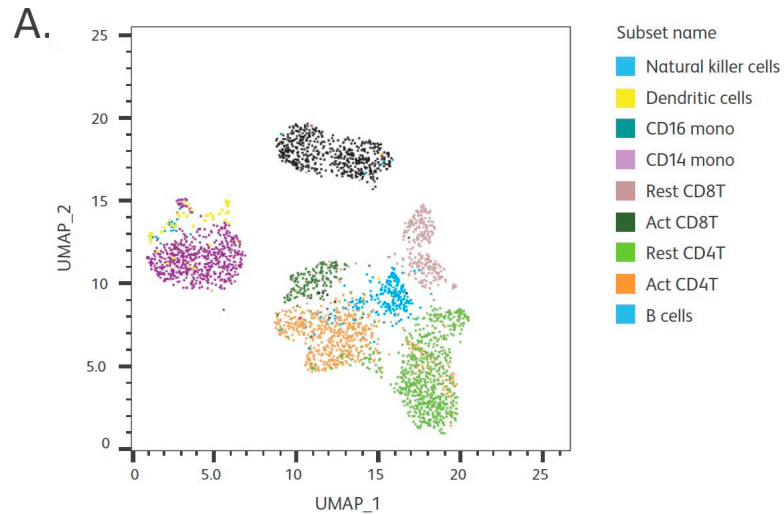


Figure 2. Performance of all 30 AbSeq specificities included in the BD® OMICS-One IP Protein Panel

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 of 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 2A showing the specificity of AbSeq detection for individual cell type.

Reliable performance (cont.)

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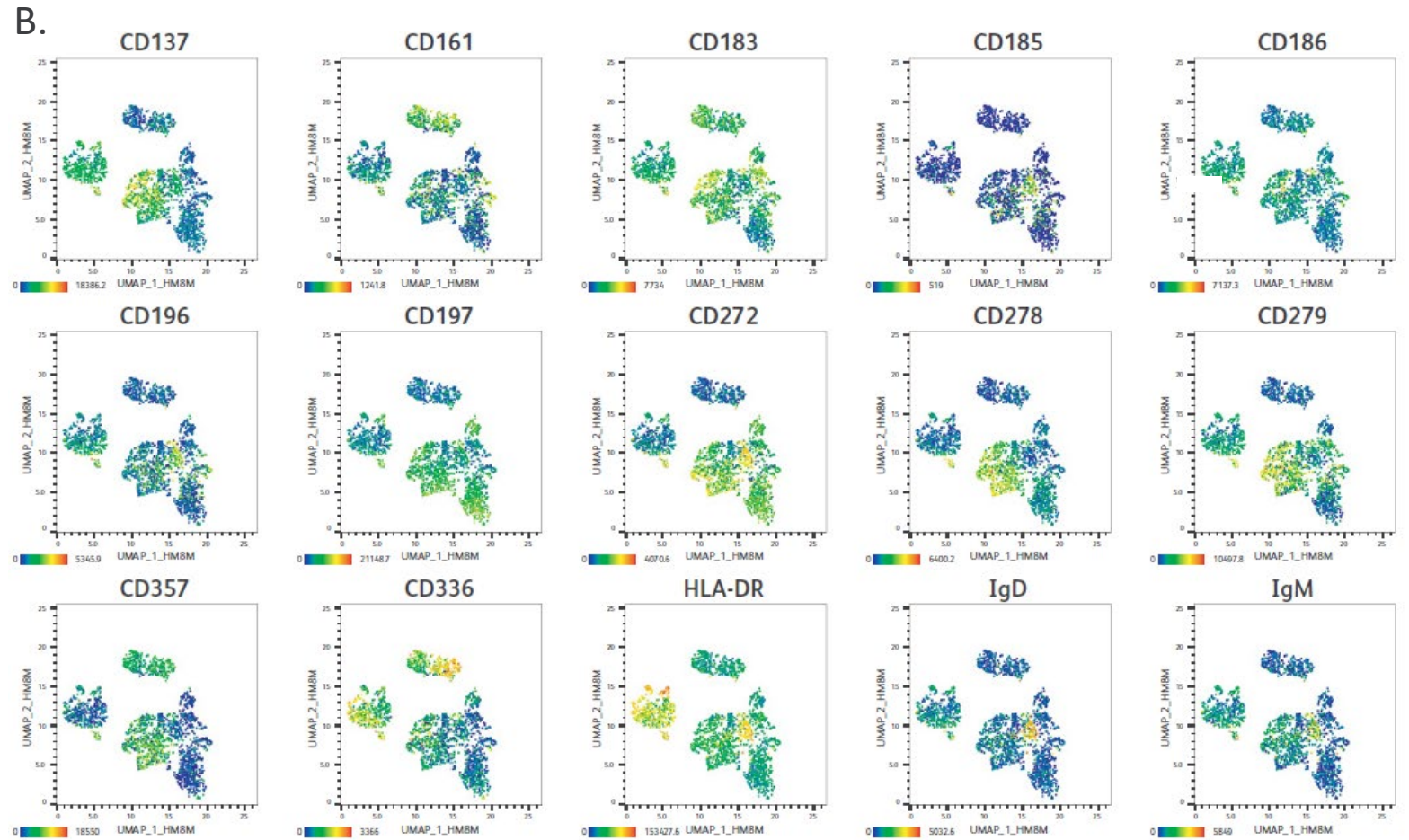
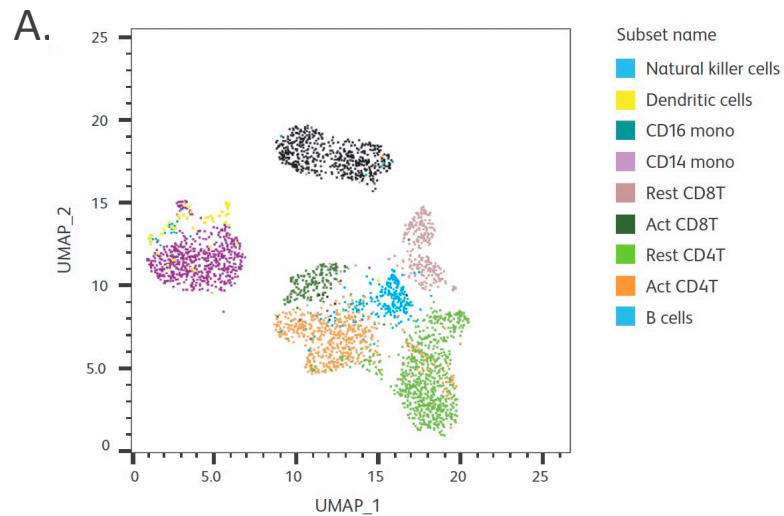
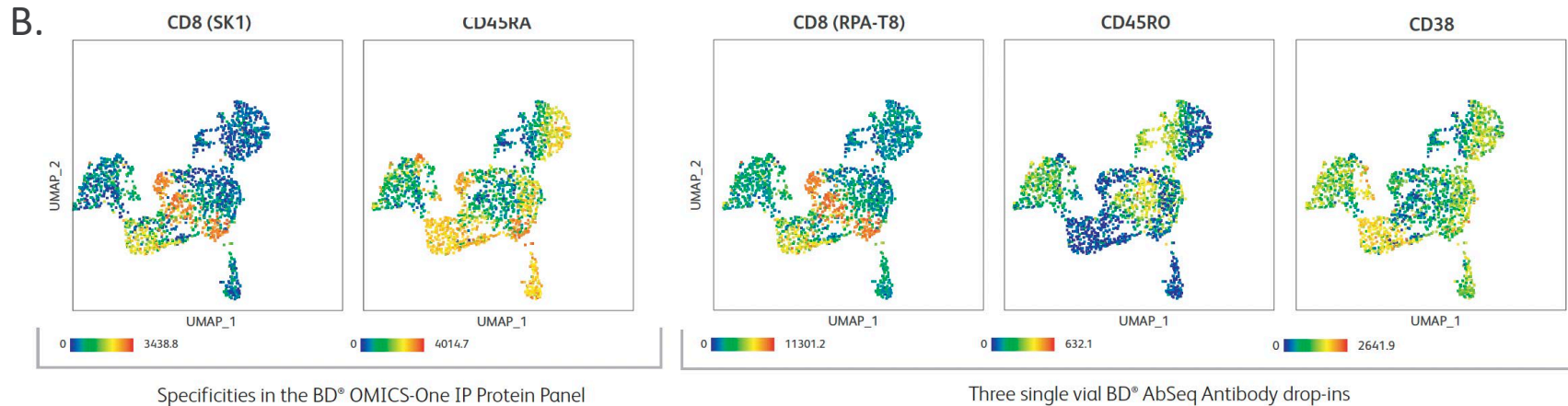
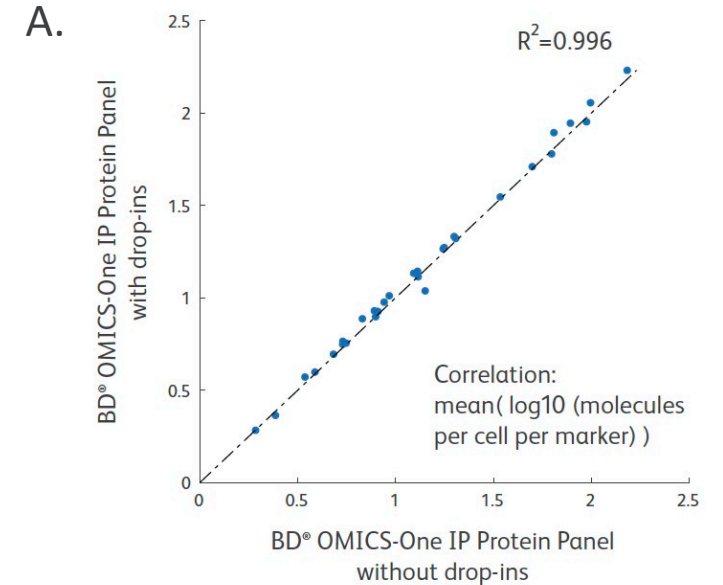


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Flexibility to add additional specificities of interest

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). Our results demonstrate that adding more BD[®] AbSeq Antibodies does not impact the performance of the panel or the added antibodies.



- CD8 (RPA-T8): different clones for same specificity of IP clone CD8 (SK1) showing a consistent staining pattern
- CD45RO: inverse correlation with CD45RA
- CD38: a commonly expressed antigen

Figure 3. 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 (top row) were assessed against the specificity of drop-ins CD8 (RPA-T8), CD45RO and CD38 (bottom row) 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 BD[®] OMICS-One IP Protein Panel had no adverse impact on experimental outcomes.

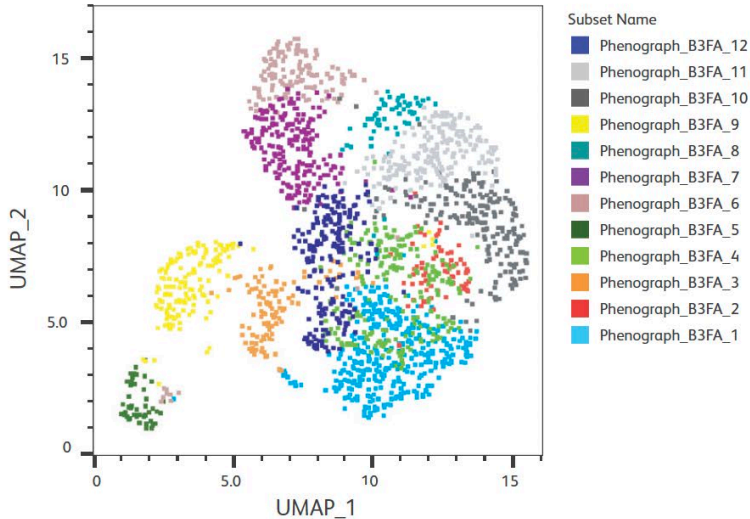
Multiomics and multiplexing enabled

The BD[®] OMICS-One IP Protein Panel is compatible and improves cell clustering when used alongside the WTA assay.

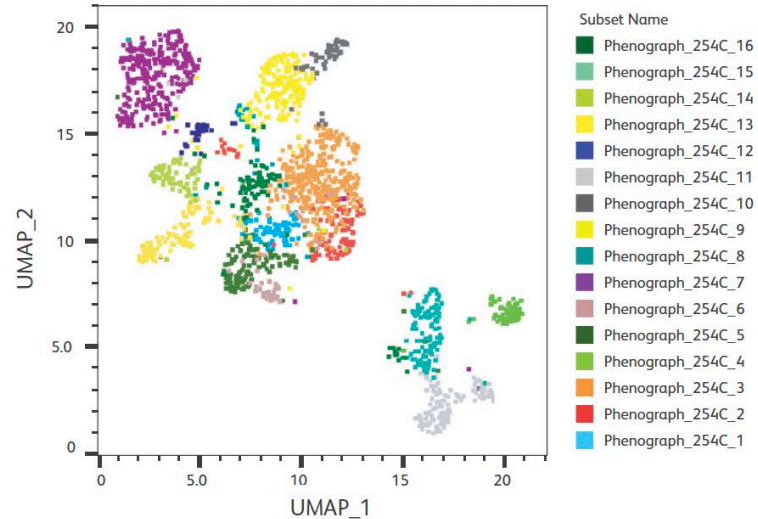
SMK staining does not impact BD[®] OMICS-One IP Protein Panel performance.

A.

mRNA driven UMAP phenograph clustering



mRNA + protein driven UMAP phenograph clustering



B.

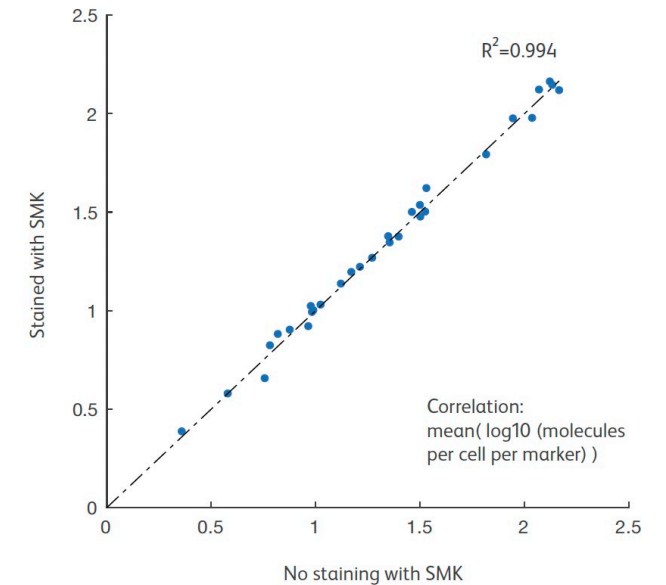


Figure 4. The BD[®] OMICS-One IP Protein Panel is designed to work with RNA and multiplexing assays

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 multiomic 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 multiomics 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 human 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

BD® OMICS-One IP products

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

Suggested companion products

Product Description	Cat. No.
Human BD Fc Block™	564220
BD Pharmingen™ Stain Buffer (FBS)	554656
BD Rhapsody™ Whole Transcriptome Analysis (WTA) Amplification Kit	633801
BD Rhapsody™ Targeted mRNA and AbSeq Amplification Kit	633774
BD Rhapsody™ TCR/BCR Next Amplification Kit	667058
BD Rhapsody™ cDNA Kit	633773
BD Rhapsody™ 8-lane cartridge	666262
BD Rhapsody™ Enhanced Cartridge Reagent V3	667052
BD® Human Single-Cell Multiplexing Kit	633781
Flex Single-Cell Multiplexing Kit A, Flex Sample Tag 1-6	633849
Flex Single-Cell Multiplexing Kit A, Flex Sample Tag 7-12	633850
Flex Single-Cell Multiplexing Kit A, Flex Sample Tag 13-18	633851
Flex Single-Cell Multiplexing Kit A, Flex Sample Tag 19-24	633852
BD Rhapsody™ HT Xpress Package	666625
BD Rhapsody™ Scanner	633701
BD Rhapsody™ Intracellular AbSeq Buffer Kit	570742
BD® Omics-Guard Sample Preservation Buffer	570911
BD® AbSeq Enhancer	570750
BD® RNase Inhibitor	570751



Thank you



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