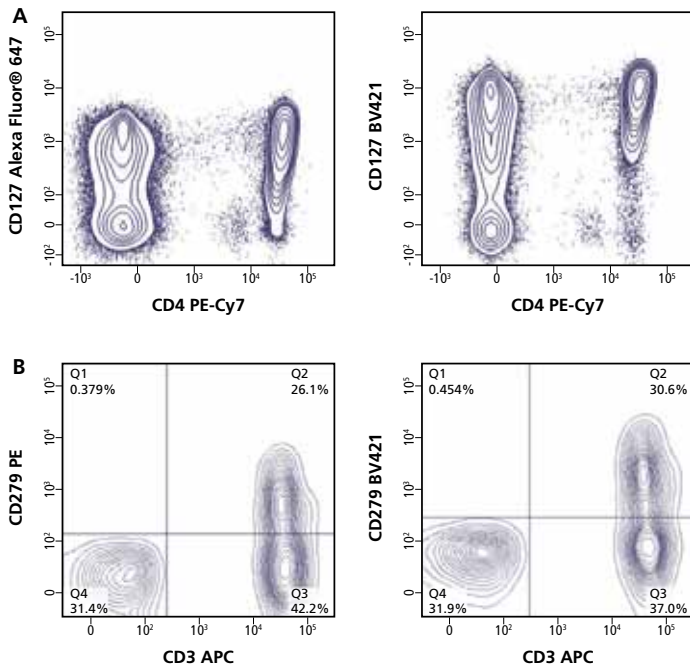


BD Horizon Brilliant™ Dyes

See what nature is hiding

Welcome to a more colorful worldSM

Across the past 40 years flow cytometry solutions have kept pace with the accelerating speed of discovery in life sciences. In 2012, BD acquired Sirigen Ltd, a company that pioneered the development of unique polymer dyes that are very bright and photostable.



Example of improved resolution obtained when using BD Horizon Brilliant Dyes

- A. Cells stained with Hu CD4 PE-Cy7™ and CD127 Alexa Fluor® 647 or BV421.
- B. Cells stained with Hu CD3 APC and CD279 PE or BV421.

BD Horizon Brilliant™ Violet Dyes

Since introducing BD Horizon Brilliant™ Violet 421, BD has expanded the Brilliant Violet portfolio considerably. There are now six dyes in all, which have been enthusiastically adopted by the flow community.

BD Horizon Brilliant™ Violet 421 (BV421)

(Ex max 407 nm/ Em max 421 nm) is a polymer-based dye excited by the violet laser and is one of the brightest fluorochromes offered by BD Biosciences.

BD Horizon Brilliant™ Violet 510 (BV510)

(Ex max 405 nm/ Em max 510 nm) is a polymer-based dye that is brighter than BD Horizon™ V500.

BD Horizon Brilliant™ Violet 605 (BV605)

(Ex max 407 nm/Em max 602 nm) is a tandem fluorochrome that combines BD Horizon BV421 and an acceptor dye with an Em Max at 602 nm.

BD Horizon Brilliant™ Violet 650 (BV650)

(Ex max 407 nm/Em max 650 nm) is a tandem fluorochrome of BD Horizon BV421 and an acceptor dye with an Em Max at 650-nm.

BD Horizon Brilliant™ Violet 711 (BV711)

(Ex max 407 nm/Em max 711 nm) is a tandem fluorochrome of BD Horizon BV421 and an acceptor dye with an Em Max at 711 nm.

BD Horizon Brilliant™ Violet 786 (BV786)

(Ex max 407 nm/Em max 786 nm) is a tandem fluorochrome of BD Horizon BV421 and an acceptor dye with an Em Max at 786 nm.

This catalog is dedicated to the products of that acquisition. Sold today by BD Biosciences as BD Horizon Brilliant™ dyes these products efficiently convert collected excitation light to emitted light at a higher wavelength, enabling scientists to identify cell populations with a broader range of receptor density than was previously possible. Simply put, these dyes enable resolution of cell populations that were previously obscured, opening new avenues of investigation and a deeper level of biological study using flow cytometry.

BD Horizon Brilliant™ Ultraviolet Dyes

BD Horizon Brilliant Ultraviolet reagents were developed exclusively by BD Biosciences to expand the multicolor capabilities of flow cytometers equipped with 355-nm lasers. These dyes allow markers to be spread across more lasers, reducing the overall compensation requirements of a multicolor panel.

BD Horizon Brilliant™ Ultraviolet 395 (BUV395)

BUV395 has virtually no spillover into any other detector, and other fluorochromes have little to no spillover into the BUV395 detector, allowing for further simplification, while expanding options for panel design.

BD Horizon Brilliant™ Ultraviolet 737 (BUV737)

BUV737 is a tandem dye that combines BUV395 and an acceptor dye with an emission max at 737nm.

BD Horizon Brilliant™ Blue Dyes

BD Horizon Brilliant™ Blue 515 (BB515) (Ex max 490 nm/Em max 515 nm) is up to seven times brighter than FITC and has less spillover into neighboring channels.

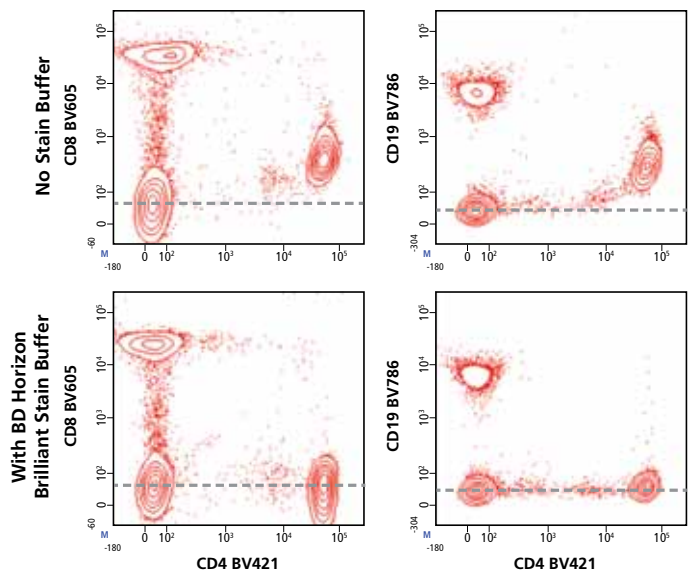
Compatible with standard surface and intracellular staining protocols

BD Horizon Brilliant dyes are compatible with standard buffers used in surface and intracellular staining protocols. These reagents also demonstrate compatibility in paraformaldehyde-based fixatives and both EDTA and heparin blood collection tubes. Buffer compatibility also is clone-dependent, so some reagents might not be compatible with all buffer systems.

We are grateful to the Sirigen team who brought these pioneering products to market and to you, the flow community, who have popularized them. We look forward to supporting your future research with tools that assist you with your endeavors to understand disease and improve the human condition.

BD Horizon Brilliant™ Stain Buffer

The full range of BD Horizon Brilliant Violet and Ultraviolet dyes has recently been enhanced by an innovative BD Biosciences proprietary staining buffer, to resolve possible dye-to-dye interactions observed when testing BD reagents as well as reagents from another company. Using the dye and buffer combination has been shown to produce consistently predictable results both in rigorous testing at BD and in tests performed by numerous key opinion leaders around the world. Constantly innovating on products we deliver to our customers is part of our ongoing commitment to help you achieve reliable and consistent results.



Enhanced performance of BV reagents

In this example, lysed human whole blood samples were stained with BV421-conjugated CD4 and BV605-conjugated CD8 with and without BD Horizon Brilliant stain buffer. Staining cells in the presence of BD Horizon Brilliant stain buffer restored populations to their expected locations.

BD Horizon Brilliant™ Violet 421

BD Horizon Brilliant™ Violet 421 (BV421) is one of the brightest dyes offered by BD. The brightness of the dye makes it particularly useful in multicolor applications in which it can be used to better resolve dim populations.

BV421 is a base polymer dye that brings phycoerythrin (PE) level brightness to the violet laser. The BV421 conjugates are, on average, 10 times brighter than Pacific Blue™ conjugates and can be 2–3 times brighter than PE conjugates (Table 1, Figure 3). With maximum emission peaks at 421 nm and 448 nm, BV421 is compatible with the standard BD Horizon™ V450 filter set (for example, 450/50 nm) (Figure 1).

Excellent population resolution

In many cases, the typical violet excitable dyes are not bright enough to adequately resolve dim populations when compared to existing bright fluorochromes such as PE or Alexa Fluor® 647. However, as shown in Table 1, the BV421 polymer is a very bright fluorochrome that provides excellent population resolution when coupled to antibodies directed at low antigen density markers. This fluorochrome brightness, in conjunction with the low spillover of other fluors into it, contributes to the BV421 conjugates providing equal or superior resolution to dyes excited by the blue and red lasers.

The example on the following page compares the staining of CD25 and CD127 labeled with BV421 to that of PE and Alexa Fluor® 647 respectively, in a 7-color panel used to identify regulatory T cells. Two different panels were run in parallel: one contained CD25 BV421 and CD127 Alexa Fluor® 647 (Figures 2C and 2D) and the other contained CD25 PE and CD127 BV421 (Figures 2A and 2B). The dot plots demonstrate how using CD25 BV421 resulted in complete separation between the CD25 negative and positive populations compared to the PE conjugate. The brightness of these two BV421 conjugates allows for easy and unequivocal identification of the CD25^{bright}CD127^{dim} population (regulatory T cells) as shown in Figures 2B and 2D.

BD Horizon™ BV421	
Relative Brightness	Very Bright
Ex (max)	405 nm
Em (max)	421 nm
Filter	450/40
Compatible BD Biosciences instruments	All BD flow cytometers with a violet laser: BD FACSCanto™ II, BD FACSVerser™, BD™ LSR platform, BD FACSAria™ platform, BD Influx™
Alternative fluorochromes	BD Horizon™ V450, Alexa Fluor® 405, VioBlue®, eFluor® 450, Pacific Blue™

Reagent	Clone	Fluorochrome	Stain Index
CD4	RPA-T4	BV421	561
		Pacific Blue™	24
		PE	142
CD8	RPA-T8	BV421	782
		Pacific Blue™	29
		PE	198
CD127	hIL-7R-M21	BV421	55
		PE	14

Table 1. Lysed whole blood from a single donor stained with CD4, CD8, or CD127 conjugated to BV421, PE, or Pacific Blue™, run on a BD LSRFortessa™ flow cytometer. All conjugates were run at optimal concentration.

Data shown was gated on lymphocytes. Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

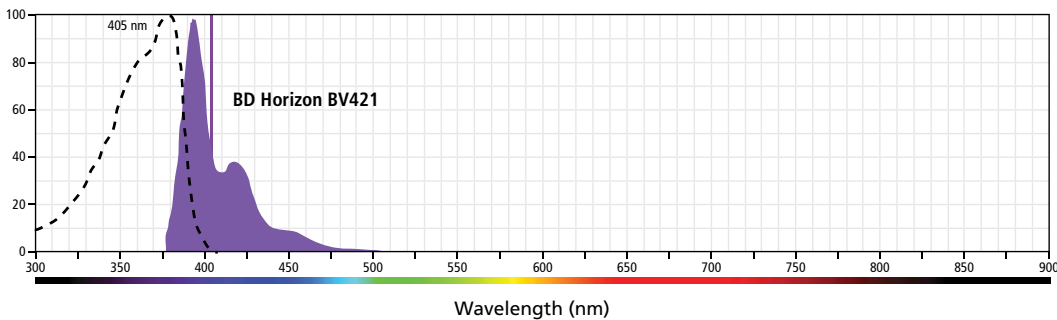


Figure 1. Excitation and emission profile of BV421.

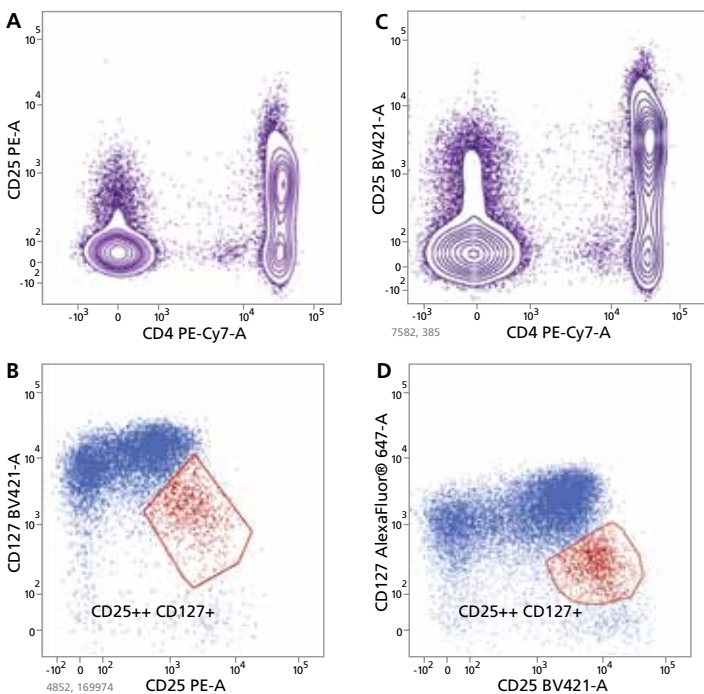


Figure 2. A, B. Lysed whole blood stained with CD3 V500, CD4 PE-Cy7™, CD8 PerCP-Cy5.5, CD45RA APC, HLA-DR APC-H7, CD25 PE, and CD127 BV421. C, D. Lysed whole blood stained with CD3 V500, CD4 PE-Cy7, CD8 PerCP-Cy5.5, CD45RA PE, HLA-DR APC-H7, CD127 Alexa Fluor® 647, and CD25 BV421. The events in Figures 2A and 2C were gated on CD3⁺ lymphocytes. The events in Figures 2B and 2D were gated on CD3⁺CD4⁺ lymphocytes. All data was run on a BD FACVerse flow cytometer.

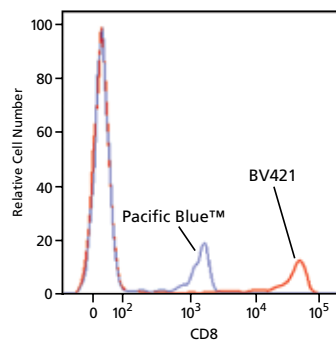


Figure 3. Lysed whole blood stained with CD8 BV421 or Pacific Blue™.

BD Horizon Brilliant™ Violet 421

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD1a	Hu	HI149	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563938
CD2	Hu	RPA-2.10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562667
				FCM	RUO	BD Horizon BV421	100 tests	BDB562639
CD3	Bab, Cyno, Rhe Hu	SP34-2	Mouse IgG ₁ , λ	FCM	RUO	BD Horizon BV421	50 tests	BDB562877
				FCM	RUO	BD Horizon BV421	25 tests	BDB563797
		UCHT1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563798
				FCM	RUO	BD Horizon BV421	25 tests	BDB562427
				FCM	RUO	BD Horizon BV421	100 tests	BDB562426
CD4	Hu	RPA-T4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562425
				FCM	RUO	BD Horizon BV421	100 tests	BDB562424
		Hu, NHP	L200	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests
CD5	Hu	UCHT2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562646
CD7	Hu	M-T701	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562635
CD8	Hu	RPA-T8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562429
				FCM	RUO	BD Horizon BV421	100 tests	BDB562428
CD10	Hu	HI10A	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562902
CD11a	Bab, Cyno, Hu, Rhe	HI111	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563936
CD11b/Mac-1	Hu	ICRF44	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562632
CD11c	Hu	B-LY6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562561
CD13	Hu	WM15	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562596
CD14	Hu	MqP9	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB563744
				FCM	RUO	BD Horizon BV421	100 tests	BDB563743
CD15s	Hu	CSLEX1	Mouse IgM, κ	FCM	RUO	BD Horizon BV421	50 tests	BDB563912
CD16	Hu	3G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562878
				FCM	RUO	BD Horizon BV421	100 tests	BDB562874
CD18	Hu	6.7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562871
CD19	Hu	HIB19	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562441
				FCM	RUO	BD Horizon BV421	100 tests	BDB562440
CD20	Hu	H1	Mouse IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563346
				FCM	RUO	BD Horizon BV421	100 tests	BDB562873
CD21	Hu	2H7	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562966
CD22	Hu	B-LY4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562966
CD23	Hu	M-L233	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562707
CD24	Hu	ML5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562789
CD25	Hu	M-A251	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562443
				FCM	RUO	BD Horizon BV421	100 tests	BDB562442
CD27	Hu	M-T271	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562514
				FCM	RUO	BD Horizon BV421	100 tests	BDB562513
CD28	Hu	CD28.2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562613
CD30	Hu	BERH8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562876
CD33	Hu	WM53	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562854
CD34	Hu	581	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562577
CD38	Hu	HIT2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562445
				FCM	RUO	BD Horizon BV421	100 tests	BDB562444
CD39	Hu	TU66	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563679
CD41b	Hu	HIP2	Mouse IgG ₃ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB563312
CD43	Hu	1G10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562916
CD44	Hu	G44-26	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562890
CD45	Hu	HI30	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB563880
				FCM	RUO	BD Horizon BV421	100 tests	BDB563879
CD45RA	Hu	HI100	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562885
CD45RO	Hu	UCHL1	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562649
				FCM	RUO	BD Horizon BV421	100 tests	BDB562641
CD47	Hu	B6H12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563760

BD Horizon Brilliant™ Violet 421

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD48	Hu	TÜ145	Mouse IgM, κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562718
CD49F	Hu	GOH3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562598
				FCM	RUO	BD Horizon BV421	100 tests	BDB562582
CD56	Hu	NCAM16.2	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562752
				FCM	RUO	BD Horizon BV421	100 tests	BDB562751
CD62E	Hu	68-5H11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563360
CD62L	Hu	DREG-56	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563862
CD64	Hu	10.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562872
CD66	Hu	B1.1/CD66	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562741
CD66b	Hu	G10F5	Mouse IgM, κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562940
CD69	Bab, Cyno, Rhe	FN50	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562883
				FCM	RUO	BD Horizon BV421	100 tests	BDB562884
CD73	Hu	AD2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562431
				FCM	RUO	BD Horizon BV421	100 tests	BDB562430
CD79A	Hu	HM47	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562852
CD83	Hu	HB15E	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562630
CD86	Hu	2331 (FUN-1)	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562433
				FCM	RUO	BD Horizon BV421	100 tests	BDB562432
CD90	Hu	5E10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB562556
CD95	Bab, Cyno, Rhe	DX2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562648
CD107A	Hu	H4A3	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562623
CD110	Hu	1.6.1	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562672
CD117	Hu	104D2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563856
				FCM	RUO	BD Horizon BV421	25 tests	BDB562435
				FCM	RUO	BD Horizon BV421	100 tests	BDB562434
CD122 Receptor β	Hu	MIK- BETA3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562887
				FCM	RUO	BD Horizon BV421	50 tests	BDB563362
CD123	Hu	7G3	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB563362
				FCM	RUO	BD Horizon BV421	50 tests	BDB562517
CD127	Hu	HIL7R-M21.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562437
				FCM	RUO	BD Horizon BV421	100 tests	BDB562436
CD132	Hu	AG184	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562881
CD138	Hu	MI15	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562935
CD140a	Hu	ALPHA R1	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562799
CD147	Hu	HIM6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562583
CD150	Hu	A12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562875
CD152	Hu	BN13	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562743
CD154	Hu	TRAP1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563886
CD161	Hu	DX12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562615
CD163	Hu	GHI/61	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562643
CD166	Hu	3A6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562936
CD183	Hu	1C6/CXCR3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562558
CD184	Hu	12G5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562448
CD193	Hu	5E10	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562570
CD194	Hu	1G1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562579
CD195	Hu	2D7/CCR5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562576
CD196 (CCR6)	Hu	11A9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562515
CD197 (CCR7)	Hu	150503	Mouse IgG2a	FCM	RUO	BD Horizon BV421	50 tests	BDB562555
CD221	Hu	1H7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562593
CD235a	Hu	GA-R2 (HIR2)	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562938
CD271	Hu	C40-1457	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562562
CD273	Hu	MIH18	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563842
CD274	Hu	MIH1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563738
CD278	Hu	DX29	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562901

BD Horizon Brilliant™ Violet 421

Human and Non Human Primate (NHP) *continued*

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD279 (PD-1)	Hu	EH12.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562516
CD294	Hu	BM16	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562992
CD326	Hu	EBA-1	Mouse IgG1, λ	FCM	RUO	BD Horizon BV421	50 tests	BDB563180
CD338	Hu	5D3	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562740
Akt (pS473)	Hu, Ms	M89-61	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562599
B7-H4	Hu	MIH43	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562786
Cutaneous Lymphocyte Antigen (CLA)	Hu	HECA-452	Rat IgM, κ	FCM	RUO	BD Horizon BV421	100 tests	BDB563961
CXCR5	Hu	RF8B2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562747
EGF-R	Hu	EGFR.1	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB563343
Erk1/Erk2 (pT202/pY204)	Hu	20A	Mouse IgG ₁	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562981
EZH2	Hu, Ms, Rat, Dog, Chick	11/EZH2	Mouse IgG ₁	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562963
GATA3	Hu, Ms	L50-823	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563349
GM-CSF	Hu	BVD2-21C11	Rat IgG2a	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562930
Granzyme B	Hu	GB11	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563389
HLA-DR	Hu	G46-6	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	25 tests	BDB562805
				FCM	RUO	BD Horizon BV421	100 tests	BDB562804
IFN γ	Hu	B27	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562988
Ig, κ light chain	Hu	G20-193	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562619
Ig, λ light chain	Hu	JDC-12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562893
IgD	Hu	IA6-2	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562518
IgG	Hu	G18-145	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562581
IgM	Hu	G20-127	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562618
IL-2	Hu	5344.111	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562914
IL-4	Hu	8D4-8	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562986
IL-6	Hu	MQ2-13A5	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563279
IL-8	Hu	G265-8	Mouse IgG _{2b}	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563310
IL-13	Hu	JES10-5A2	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563580
IL-17A	Hu	N49-653	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562933
ILT7 (CD85G)	Hu	17G10.2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562578
KI-67	Hu	B56	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562899
Lgr5 (N-Terminal)	Hu	8F2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562925
MIP-1 β	Hu	D21-1351	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562900
Oct-2	Hu, Ms	9A2	Rat IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563196
Pax-5	Hu, Ms	1H9	Rat IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563190
Perforin	Hu	DELTA G9	Mouse IgG _{2b} , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563393
SSEA-3	Hu	MC-631	Rat IgM	FCM	RUO	BD Horizon BV421	50 tests	BDB562706
Stat1 (pY701)	Hu, Ms	4A	Mouse IgG _{2a}	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562985
Stat5 (pY694)	Hu	47/STAT5(PY694)	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562984
T-bet	Hu, Ms	O4-46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB563318
TGF β 1	Hu	TW4-9E7	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562962
TNF	Hu	MAB11	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562783
TRA-1-60	Hu	TRA-1-60	Mouse IgM, κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562711
$\gamma\delta$ T-Cell Receptor	Hu	B1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562560
XBP-1S	Hu, Ms	Q3-695	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563382

BD Horizon Brilliant™ Violet 421

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD1d	Ms	1B1	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562712
CD3e	Ms	145-2C11	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562600
CD4	Ms	GK1.5	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562891
CD5	Ms	53-7.3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562739
CD8a	Ms	53-6.7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563898
CD11a	Ms	2D7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562918
CD11b	Ms	M1/70	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562605
CD11c	Ms	HL3	Armenian Hamster IgG2, λ	FCM	RUO	BD Horizon BV421	50 µg	BDB562782
CD16/CD32	Ms	2.4G2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562896
CD18	Ms	C71/16	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562931
CD19	Ms	1D3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562701
CD21/CD35	Ms	7G6	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562756
CD23	Ms	B3B4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562929
CD24	Ms	M1/69	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562563
CD25	Ms	PC61	Rat IgG1, λ	FCM	RUO	BD Horizon BV421	50 µg	BDB562606
CD28	Ms	37.51	Syrian Hamster IgG2, λ1	FCM	RUO	BD Horizon BV421	50 µg	BDB562764
CD31	Ms	MEC 13.3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562939
CD34	Ms	RAM34	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562608
CD38	Ms	90	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562768
CD40	Ms	23-Mar	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562846
CD41	Ms	MWREG30	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562957
CD45	Ms	30-F11	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563890
CD45.2	Ms	104	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562895
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562922
CD45RB	Ms	16A	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562849
CD48	Ms	HM48-1	Armenian Hamster IgG1, λ3	FCM	RUO	BD Horizon BV421	50 µg	BDB562745
CD49b/Pan NK cells	Ms	DX5	Rat IgM, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563063
CD61	Ms	2C9.G2	Armenian Hamster IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562917
CD62L	Ms	MEL-14	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562910
CD69	Ms	H1.2F3	Armenian Hamster IgG1, λ3	FCM	RUO	BD Horizon BV421	50 µg	BDB562920
CD70	Ms	FR70	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562908
CD71	Ms	C2 (aka C2F2)	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562716
CD80	Ms	16-10A1	Armenian Hamster IgG2, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562611
CD90.1	Ms, Rat	OX-7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563770
CD93	Ms	AA4.1	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563806
CD95	Ms	JO2	Armenian Hamster IgG2, λ	FCM	RUO	BD Horizon BV421	50 µg	BDB562633
CD103	Ms	M290	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562771
CD117	Ms	2B8	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562609
CD121b	Ms	4.00E+02	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562926
CD122	Ms	TM-BETA 1	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562960
CD127	Ms	SB/199	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562959
CD135	Ms	A2F10.1	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562898
CD138	Ms	281-2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562610

BD Horizon Brilliant™ Violet 421

Mouse *continued*

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD140a	Ms	APA5	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562774
CD144	Ms	11D4.1	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562795
CD147	Ms	RL73	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562934
CD150	Ms	Q38-480	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562811
CD162	Ms	2PH1	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562807
CD183	Ms	CXCR3-173	Armenian Hamster IgG1	FCM	RUO	BD Horizon BV421	50 µg	BDB562937
CD184	Ms	2B11/CXCR4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562738
CD197 (CCR7)	Ms	4B12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562675
CD276	Ms	MIH32	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562634
CD279	Ms	J43	Armenian Hamster IgG2, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562584
CD314	Ms	CX5	Rat IgG ₁	FCM	RUO	BD Horizon BV421	50 µg	BDB562800
CD326	Ms	G8.8	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563214
CD335 (NKp46)	Ms	29A1.4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562850
CD357 (GITR)	Ms	DTA-1	Rat IgG _{2b}	FCM	RUO	BD Horizon BV421	100 µg	BDB563391
Akt (pS473)	Hu, Ms	M89-61	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562599
CXCR5	Ms	2G8	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562889
EZH2	Hu, Dog, Chick, Ms, Rat	11/EZH2	Mouse IgG1	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562963
F4/80-like receptor	Ms	6F12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563900
Flk-1	Ms	AVAS 12Alpha1	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562941
Foxp3	Ms	MF23	Rat IgG _{2b}	FCM	RUO	BD Horizon BV421	50 µg	BDB562996
GATA3	Hu, Ms	L50-823	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563349
H-2Kb	Ms	AF6-88.5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562942
I-A/I-E	Ms	M5/114.15.2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562564
I-Ab	Ms	AF6-120.1	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562928
Ig, κ light chain	Ms	187.1	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562888
IgG1	Ms	A85-1	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562580
IgM	Ms	R6-60.2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562595
IL-2	Ms	JES6-5H4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562969
IL-4	Ms	11B11	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV421	50 µg	BDB562915
IL-10	Ms	JES5-16E3	Rat IgG _{2b}	IC/FCM	RUO	BD Horizon BV421	50 µg	BDB563276
IL-17A	Ms	TC11-18H10	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB563354
KLRG1	Ms	2F1	Syrian Hamster IgG2, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562897
LPAM-1	Ms	DATK 32	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562943
Ly-6A/E	Ms	D7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562729
Ly-6C	Ms	AL-21	Rat IgM, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562727
Ly-6G	Ms	1A8	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562737
Ly-6G/Ly-6C	Ms	RB6-8C5	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562709
NK-1.1	Ms	PK136	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562921
Oct-2	Hu, Ms	9A2	Rat IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563196
Pax-5	Hu, Ms	1H9	Rat IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563190
RORγT	Ms	Q31-378	Mouse IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV421	50 µg	BDB562894
Siglec-F	Ms	E50-2440	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562681
SSEA-1	Ms	MC480	Mouse IgM, κ	FCM	RUO	BD Horizon BV421	50 tests	BDB562705
Stat1 (pY701)	Hu, Ms	4A	Mouse IgG _{2b}	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB562985
T-B Cell Activation Antigen	Ms	GL7	Rat IgM, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562967
T-bet	Hu, Ms	O4-46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV421	50 tests	BDB563318
TCR βchain	Ms	H57-597	Armenian Hamster IgG2, λ	FCM	RUO	BD Horizon BV421	50 µg	BDB562839
γδ T-Cell Receptor	Ms	GL3	Armenian Hamster IgG2, κ	FCM	RUO	BD Horizon BV421	50 µg	BDB562892
Vα2 TCR	Ms	B20.1	Rat IgG _{2a} , λ	FCM	RUO	BD Horizon BV421	50 µg	BDB562944
TNF	Ms	MP6-XT22	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV421	50 µg	BDB563387
XBP-1S	Hu, Ms	Q3-695	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV421	50 tests	BDB563382

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG1, κ Isotype Control	A19-3	Armenian Hamster IgG1, κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562601
Armenian Hamster IgG1, λ Isotype Control	G235-2356	Armenian Hamster IgG1, λ.1	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562919
Armenian Hamster IgG2, κ Isotype Control	B81-3	Armenian Hamster IgG2, κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562612
Armenian Hamster IgG2, λ Isotype Control	HA4/8	Armenian Hamster IgG2, λ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562629
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562438
Mouse IgG2a, κ Isotype Control	G155-178	Mouse IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562439
Mouse IgG2a, κ Isotype Control	MOPC-173	Mouse IgG _{2a} , κ	IC/FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB563464
Mouse IgG2b, κ Isotype Control	27-35	Mouse IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562748
Mouse IgG3, κ Isotype Control	J606	Mouse IgG ₃ , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB563314
Mouse IgM, κ Isotype Control	G155-228	Mouse IgM, κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562704
Rat IgG1, κ Isotype Control	R3-34	Rat IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562868
Rat IgG1, λ Isotype Control	A110-1	Rat IgG ₁ , λ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562604
Rat IgG2a, κ Isotype Control	R35-95	Rat IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562602
Rat IgG2a, λ Isotype Control	B39-4	Rat IgG _{2a} , λ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562965
Rat IgG2b, κ Isotype Control	R35-38	Rat IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562603
Rat IgM, κ Isotype Control	R4-22	Rat IgM, κ	FCM, ICtrl	RUO	BD Horizon BV421	50 µg	BDB562708

BD Horizon Brilliant™ Violet 510

BD Horizon Brilliant™ Violet 510 (BV510) is brighter than currently available fluorochromes in the BD Horizon™ V500 detector.

BV510 is a base polymer dye that is often brighter than FITC (Table 1). With maximum emission at 510 nm, BV510 is compatible with the standard BD Horizon V500 filter set (for example, 525/50 nm) (Figure 1).

Use in multicolor applications

Although BD Horizon V500 and BV510 can be used interchangeably, there might be instances when one dye has an advantage over the other. This is especially true in multicolor panel design, for which dye selection is key to obtaining accurate data. One of the first rules of panel design is to place dim markers on bright dyes and reserve highly expressed markers for dimmer dyes. BV510 is much brighter than BD Horizon V500, making it a better choice for lowly expressed antigens or when detecting dim populations. BV510 will provide better population resolution, leading to more accurately resolved populations.

Another very important rule in panel design is to minimize spillover. Whenever more than one marker is expressed on a single cell, the presence of the other fluorescent reagents can contribute significant optical background in proportion to their brightness. Even with proper compensation, if a large amount of unwanted signal spills over into a neighboring detector where a dim signal is to be detected, resolution sensitivity might be lowered and the populations might not be accurately resolved. Due to its spectral profile, BV510 will have more spillover into the BD Horizon Brilliant™ Violet 605 (BV605) detector than will BD Horizon V500. If detecting a dim marker in the BV605 detector, and a bright marker in the BD Horizon V500/BV510 detector, BD Horizon V500 might actually be a better choice due to less spillover.

BV510 and BD Horizon V500 are excellent dyes for the second channel of the violet laser. BV510 is most useful for resolving dim populations and can easily be multiplexed with BV421. BD Horizon V500 can be used for highly expressed antigens when spillover into neighboring channels may be of greater concern than brightness.

BD Horizon™ BV510	
Relative Brightness	Moderate
Ex (max)	405 nm
Em (max)	510 nm
Filter	525/50
Compatible BD Biosciences instruments	All BD flow cytometers with a violet laser: BD FACSCanto II, BD FACSVerser, BD LSR platform, BD FACSAria platform, BD Influx
Alternative fluorochromes	BD Horizon V500, Pacific Orange™, AmCyan, Krome Orange™, VioGreen™

Marker	Stain Index	
	BD Horizon BV510	FITC
Hu CD4	219	108
Hu CD19	48	23
Ms CD4	57	31
Ms CD11c	13	11

Table 1. BD Horizon BV510 and FITC reagents of the same clone were run to compare the stain index.

Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Violet 510

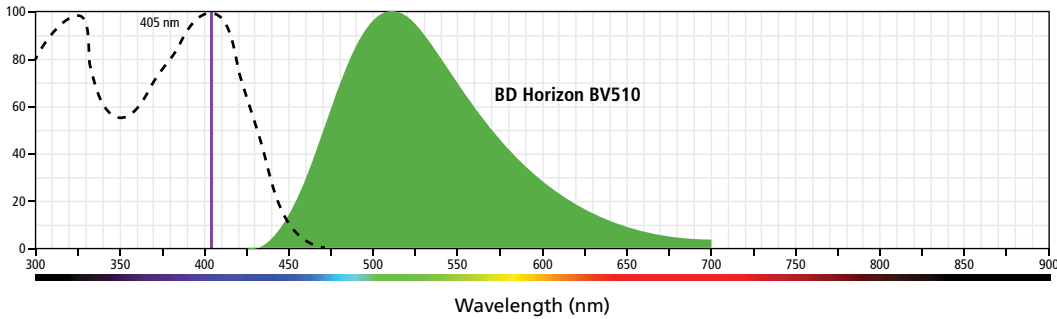


Figure 1. Excitation and emission profile of BV510.

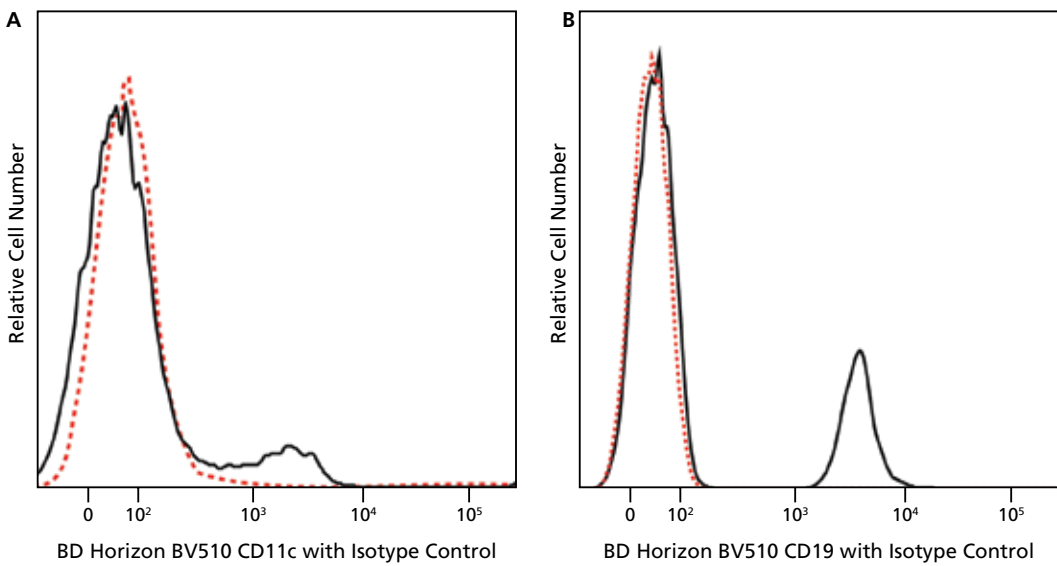


Figure 2. Panel A shows BALB/c mouse splenocytes stained with mouse CD11c BD Horizon BV510 (black line) or an isotype control (red dashed line). Panel B shows lysed whole blood stained with human CD19 BD Horizon BV510. Data shown was gated on lymphocytes and was overlaid with the isotype control.

BD Horizon Brilliant™ Violet 510

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD1a	Hu	HI149	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563482
				FCM	RUO	BD Horizon BV510	100 tests	BDB563481
CD1d	Hu	CD1D42	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563507
				FCM	RUO	BD Horizon BV510	100 tests	BDB563506
CD3	Hu	UCHT1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563109
CD4	Hu	SK3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB562971
				FCM	RUO	BD Horizon BV510	100 tests	BDB562970
CD5	Hu, NHP	L200	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563094
				FCM	RUO	BD Horizon BV510	25 tests	BDB563380
CD7	Hu	M-T701	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563650
				FCM	RUO	BD Horizon BV510	100 tests	BDB563381
CD8	Hu	RPA-T8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563256
		SK1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563919
CD9	Hu	M-L13	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563640
CD10	Hu	HI10A	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563032
CD11a	Hu	HI111	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563480
				FCM	RUO	BD Horizon BV510	100 tests	BDB563479
CD11b/Mac-1	Hu	ICRF44	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563088
CD11c	Hu	B-LY6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563026
CD14	Hu	M P-9	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563079
CD15	Hu	W6D3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563141
CD16	Hu	3G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563829
				FCM	RUO	BD Horizon BV510	100 tests	BDB563830
CD19	Hu	SJ25C1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB562953
				FCM	RUO	BD Horizon BV510	100 tests	BDB562947
CD20	Hu	2H7	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563067
		H1	Mouse IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563347
CD24	Hu	ML5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563035
CD25	Hu	M-A251	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563351
				FCM	RUO	BD Horizon BV510	100 tests	BDB563352
CD27	Hu	L128	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563090
				FCM	RUO	BD Horizon BV510	100 tests	BDB563092
CD28	Hu	CD28.2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563075
CD29	Hu	MAR4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563514
				FCM	RUO	BD Horizon BV510	100 tests	BDB563513
CD31	Hu	WM59	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563454
CD33	Hu	WM53	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563257
CD38	Hu	HIT2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563251
CD40	Hu	5C3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563456
CD41a	Hu	HIP8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563250
CD43	Hu	1G10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563377
CD44	Hu	G44-26	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563029
CD45	Bab, Cyno, Rhe	D058-1283	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563530
	Hu	HI-30	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563204
CD45RA	Hu	HI100	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563031
CD45RO	Hu	UCHL1	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563215
CD49d	Hu	9F10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563458

BD Horizon Brilliant™ Violet 510

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD49f	Hu	GoH3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563271
CD52	Hu	4C8	Mouse IgG ₃ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563305
CD56	Hu	NCAM16.2	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563041
CD62L	Hu	DREG-56	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563203
CD64	Hu	10.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563459
CD73	Hu	AD2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563198
CD77	Hu	5B5	Mouse IgM, κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563630
CD80	Hu	L307.4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563084
CD83	Hu	HB15E	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563223
CD86	Hu	2331 (FUN-1)	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	25 tests	BDB563460
				FCM	RUO	BD Horizon BV510	100 tests	BDB563461
CD90	Hu	5E10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563070
CD105	Hu	266	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563264
CD107a	Hu	H4A3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563078
CD122	Hu	MIK- BETA3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563093
CD123	Hu	9F5	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563072
CD127	Hu	HIL-7R-M21	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563086
CD132	Hu	TUGH4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563446
CD138	Hu	MI15	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563091
CD141	Hu	1A4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563298
CD146	Hu	P1H12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563255
CD147	Hu	HIM6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563249
CD161	Hu	DX12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563212
CD193	Hu	5.00E+08	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563071
CD194	Hu	1G1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563066
CD196	Hu	11A9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563241
CD197	Hu	3D12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563449
CD200	Hu	MRC OX-104	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563254
CD203c	Hu	NP4D6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563297
CD238	Hu	BRIC 203	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563475
CD271	Hu	C40-1457	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563451
CD279 (PD-1)	Hu	EH12.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563076
CD314	Hu	1D11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563266
CD326	Hu	EBA-1	Mouse IgG1, λ	FCM	RUO	BD Horizon BV510	50 tests	BDB563181
BrdU	Hu, Ms	3D4	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563445
CXCR5	Hu	RF8B2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563105
Cytokeratin	Hu	CAM5.2	Mouse IgG _{2a}	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563613
Disialylganglioside GD2	Hu	14.G2A	Mouse IgG _{2a}	FCM	RUO	BD Horizon BV510	50 tests	BDB563440
EGF Receptor	Hu	EGFR.1	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563344
Granzyme B	Hu	GB11	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563388
HLA-DR	Hu	G46-6	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563083
IFN _γ	Hu	B27	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563287
Ig, κ light chain	Hu	G20-193	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563213
Ig, λ light chain	Hu	JDC-12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563537
IgD	Hu	IA6-2	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563034
IgG	Hu	G18-145	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563247
IgM	Hu	G20-127	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563113

BD Horizon Brilliant™ Violet 510

Human and Non Human Primate (NHP) *continued*

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
IL-2	Hu	5,344,111	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563265
IL-8	Hu	G265-8	Mouse IgG _{2b}	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563311
IL-17A	Hu	N49-653	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563295
Invariant NK T-cell	Hu	6B11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563267
Ki-67	Hu	B56	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563462
Lgr5 (N-terminal)	Hu	8F2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563211
Oct-3/4	Hu, Ms	40/OCT-3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563524
Pax-5	Hu, Ms	1H9	Rat IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563191
TCR αβ	Hu	T10B9.1A-31	Mouse IgM, κ	FCM	RUO	BD Horizon BV510	100 tests	BDB563625
Tra-1-60	Hu	TRA-1-60	Mouse IgM, κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563188
Trop-2	Hu	162-46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563244
TSLP Receptor	Hu	1F11/TSLPR	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563340

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD1d	Ms	1B1	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563189
CD3e	Ms	145-2C11	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563024
CD4	Ms	RM4-5	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563106
CD5	Ms	53-7.3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563069
CD8a	Ms	53-6.7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563068
CD11a	Ms	M17/4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563669
CD11b	Ms	M1/70	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB562950
CD11c	Ms	HL3	Armenian Hamster IgG1, λ2	FCM	RUO	BD Horizon BV510	50 µg	BDB562949
CD19	Ms	1D3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB562956
CD21/CD35	Ms	7G6	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563175
CD23	Ms	B3B4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563200
CD24	Ms	M1/69	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563115
CD25	Ms	PC61	Rat IgG1, λ	FCM	RUO	BD Horizon BV510	50 µg	BDB563037
CD27	Ms	LG.3A10	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563605
CD31	Ms	MEC 13.3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563089
CD43	Ms	S7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	100 µg	BDB563206
CD44	Ms	IM7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563114
CD45	Ms	30-F11	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563891
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563103
CD48	Ms	HM48-1	Armenian Hamster IgG1, λ3	FCM	RUO	BD Horizon BV510	50 µg	BDB563536
CD62L	Ms	MEL-14	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563117
CD69	Ms	H1.2F3	Armenian Hamster IgG1, λ3	FCM	RUO	BD Horizon BV510	50 µg	BDB563030
CD71	Ms	C2	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563112
CD83	Ms	MICHEL-19	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563222
CD86	Ms	GL1	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563077
CD95	Ms	JO2	Armenian Hamster IgG2, λ2	FCM	RUO	BD Horizon BV510	50 µg	BDB563646
CD103	Ms	M290	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563087
CD127	Ms	SB/199	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563353
CD138	Ms	2B1-2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563192
CD162	Ms	2PH1	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563448
CD184	Ms	2B11/CXCR4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563468
CD326	Ms	G8.8	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563216
CD335 (Nkp46)	Ms	29A1.4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563455
F4/80-Like Receptor	Ms	6F12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563633

BD Horizon Brilliant™ Violet 510

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
IgD	Ms	11-26C.2A	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563110
IgE	Ms	R35-72	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563097
IgM	Ms	R6-60.2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563118
IL-10	Ms	JES5-16E3	Rat IgG _{2b}	IC/FCM	RUO	BD Horizon BV510	50 µg	BDB563277
Ly-6G	Ms	RB6-8C5	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563040
NK-1.1	Ms	PK136	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563096
Oct-3/4	Hu, Ms	40/OCT-3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV510	50 tests	BDB563524
Pax-5	Hu, Ms	1H9	Rat IgG _{2a} , κ	IC/FCM	RUO	BD Horizon BV510	50 tests	BDB563191
TCR β Chain	Ms	H57-597	Armenian Hamster IgG2, λ1	FCM	RUO	BD Horizon BV510	50 µg	BDB563221
TCR γδ	Ms	GL3	Armenian Hamster IgG2, κ	FCM	RUO	BD Horizon BV510	50 µg	BDB563218
TNF	Ms	MP6-XT22	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV510	50 µg	BDB563386

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG1, κ Isotype Control	A19-3	Armenian Hamster IgG1, κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563197
Armenian Hamster IgG1, λ Isotype Control	G235-2356	Armenian Hamster IgG1, λ1	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB562954
Armenian Hamster IgG2, κ Isotype Control	B81-3	Armenian Hamster IgG2, κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563202
Armenian Hamster IgG2, λ Isotype Control	HA4/8	Armenian Hamster IgG2, λ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563085
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB562946
Mouse IgG2a, κ Isotype Control	G155-178	Mouse IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563027
	MOPC-173	Mouse IgG _{2a} , κ	IC/FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563483
Mouse IgG2b, κ Isotype Control	27-35	Mouse IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563025
Mouse IgG3, κ Isotype Control	J606	Mouse IgG ₃ , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563273
Mouse IgM, κ, Isotype Control	G155-228	Mouse IgM, κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563082
Rat IgG1, κ Isotype Control	R3-34	Rat IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563039
Rat IgG1, λ Isotype Control	A110-1	Rat IgG ₁ , λ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563270
Rat IgG2a, κ Isotype Control	R35-95	Rat IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB562952
Rat IgG2b, κ Isotype Control	R35-38	Rat IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB562951
Rat IgM, κ Isotype Control	R4-22	Rat IgM, κ	FCM, ICtrl	RUO	BD Horizon BV510	50 µg	BDB563080

BD Horizon Brilliant™ Violet 605

The BD Horizon Brilliant™ Violet 605 (BV605) dye provides an additional bright color choice for the violet laser.

BV605 is a tandem fluorochrome consisting of BV421 and an acceptor dye with an emission maximum of 602 nm. The BV605 antibody conjugates show brightness similar to equivalent PE reagents, providing an additional bright dye choice for the violet laser (Table 1). With an excitation maximum of 407 nm and emission maximum of 602 nm, BV605 is excited by the violet laser and can be detected with standard filter sets (Figure 1).

Multicolor considerations

Due to the excitation of the acceptor dye by the green (532-nm) and yellow-green (561-nm) lasers, there will be significant spillover into the PE and BD Horizon™ PE-CF594 detectors off the green or yellow-green lasers. Additionally, there will be spectral overlap into the BV510 and BV650 detectors. However, the spillover can be corrected through compensation as with any other dye combination.

BD Horizon™ BV605	
Relative Brightness	Bright
Ex (max)	405 nm
Em (max)	602 nm
Filter	610/20
Compatible BD Biosciences instruments	All BD flow cytometers with a violet laser, 3 PMTs minimum, and an appropriate filter: BD LSR platform, BD FACSAria platform, BD Influx
Alternative fluorochromes	Qdot® 605, eFluor® 605NC

Specificity	Clone	Fluorochrome	Stain Index
CD4	RPA-T4	BV605	225
		PE	196
CD19	SJ25C1	BV605	142
		PE	85
CD27	L128	BV605	149
		PE	82
CD38	HB7	BV605	18
		PE	18
CD127	hIL-7R-M21	BV605	9.5
		PE	16

Table 1. Stain Index comparison. Lysed whole blood stained with human CD4, CD19, CD27, CD38, or CD127 BV605 or PE, run on a BD™ LSR II flow cytometer (using a 610/20-nm filter on the violet laser and a 575/26-nm filter on the blue laser).

All conjugates were run at optimal concentration. Data shown was gated on lymphocytes. Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Violet 605

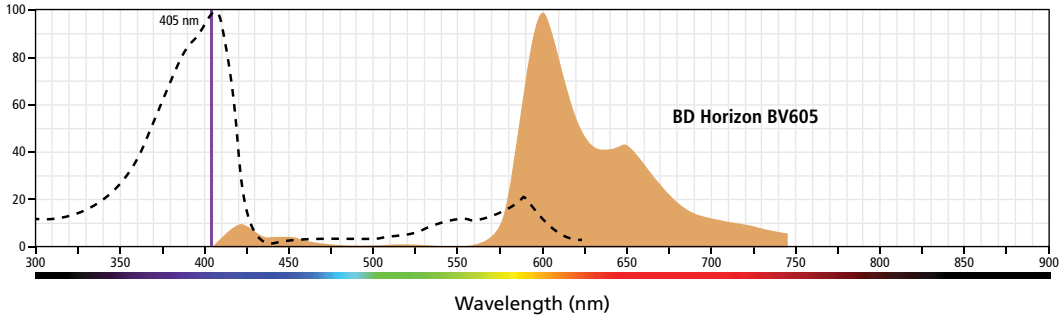


Figure 1. Excitation and emission profile of BV605.

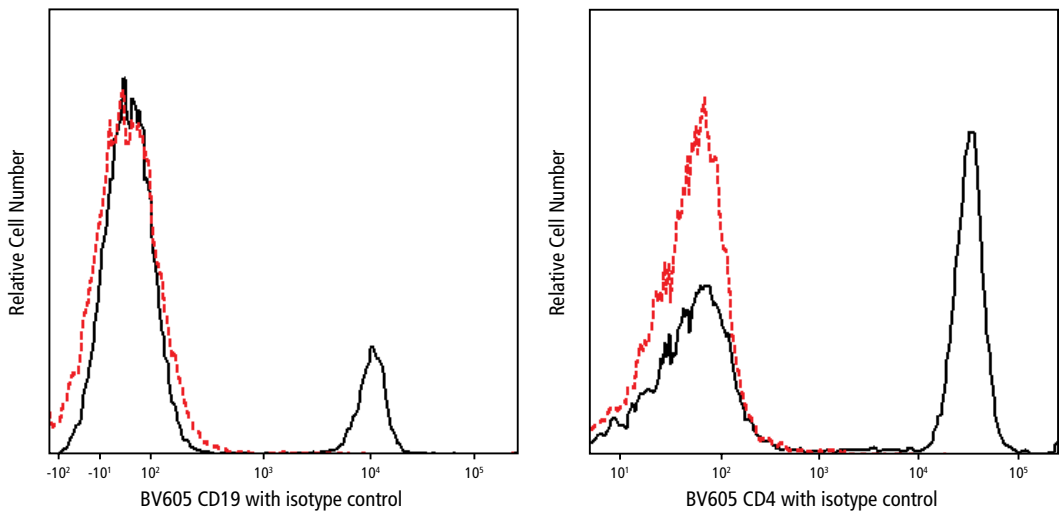


Figure 2. Lysed whole blood stained with human CD19 or CD4 BV605. Data shown was gated on lymphocytes and was overlaid with the isotype control.

BD Horizon Brilliant™ Violet 605

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3	Bab, Cyno, Hu, Rhe	SP34-2	Mouse IgG ₁ , λ	FCM	RUO	BD Horizon BV605	50 tests	BDB562994
	Hu	SK7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB563217
					FCM	RUO	BD Horizon BV605	100 tests
CD4	Bab, Cyno, Rhe	L200	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562843
	Hu	RPA-T4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562659
					FCM	RUO	BD Horizon BV605	100 tests
CD5	Hu	UCHT2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563945
CD10	Hu	HI10A	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB562978
CD11b/Mac-1	Hu	ICRF44	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562723
				FCM	RUO	BD Horizon BV605	100 tests	BDB562721
CD15	Hu	W6D3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562979
				FCM	RUO	BD Horizon BV605	100 tests	BDB562980
CD16	Hu	3G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB563173
				FCM	RUO	BD Horizon BV605	100 tests	BDB563172
CD19	Hu	SJ25C1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562654
				FCM	RUO	BD Horizon BV605	100 tests	BDB562653
CD20	Hu	2H7	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563783
CD24	Hu	ML5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB562788
CD25	Hu	2A3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562661
				FCM	RUO	BD Horizon BV605	100 tests	BDB562660
CD27	Hu	L128	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562656
				FCM	RUO	BD Horizon BV605	100 tests	BDB562655
CD28	Hu	CD28.2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB562976
CD31	Hu	WM59	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562855
CD36	Hu	CB38	Mouse IgM, κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563518
CD38	Hu	HB7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562666
				FCM	RUO	BD Horizon BV605	100 tests	BDB562665
CD43	Hu	1G10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563378
CD44	Hu	G44-26	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB562991
CD45RA	Hu	HI100	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562886
CD45RO	Hu	UCHL1	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562790
				FCM	RUO	BD Horizon BV605	100 tests	BDB562791
CD47	Hu	B6H12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563759
CD56	Hu	NCAM16.2	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562779
				FCM	RUO	BD Horizon BV605	100 tests	BDB562780
CD62E	Hu	68-5H11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563359
CD62L	Hu	DREG-56	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562720
				FCM	RUO	BD Horizon BV605	100 tests	BDB562719
CD69	Hu	FN50	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB562989
CD73	Hu	AD2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563199
CD80	Hu	L307.4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563315

BD Horizon Brilliant™ Violet 605

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD86	Hu	2331 (FUN-1)	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB562999
CD90	Hu	5E10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562686
				FCM	RUO	BD Horizon BV605	100 tests	BDB562685
CD105	Hu	266	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562664
CD106	Hu	51-10C9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563307
CD117	Hu	104D2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562687
CD127	Hu	HIL-7R-M21	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562662
CD138	Hu	MI15	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563294
CD147	Hu	HIM6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563248
CD161	Hu	DX12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	100 tests	BDB563863
CD194	Hu	1G1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562906
CD195	Hu	2D7/CCR5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563379
CD196 (CCR6)	Hu	11A9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562724
CD197 (CCR7)	Hu	3D12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563711
CD200	Hu	MRC OX-104	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562853
CD279 (PD-1)	Hu	EH12.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563245
CD326	Hhu	EBA-1	Mouse IgG ₁ , λ	FCM	RUO	BD Horizon BV605	50 tests	BDB563182
HLA-DR	Hu	G46-6	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	25 tests	BDB562844
				FCM	RUO	BD Horizon BV605	100 tests	BDB562845
IFN _γ	Hu	B27	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV605	50 tests	BDB562974
Ig, κ light chain	Hu	G20-193	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562851
Ig, λ light chain	Hu	JDC-12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563292
IgD	Hu	IA6-2	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563313
IgG	Hu	G18-145	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563246
IgM	Hu	G20-127	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB562977
IL-2	Hu	5344.111	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV605	50 tests	BDB563947
SSEA-4	Hu	MC813-70	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563119
Tra-1-60	Hu	TRA-1-60	Mouse IgM, κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563187
TSLP Receptor	Hu	1F11/TSLPR	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 tests	BDB563341

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3e	Ms	145-2C11	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563004
CD4	Ms	RM4-5	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563151
CD5	Ms	53-7.3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563194
CD8a	Ms	53-6.7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563152
CD11b	Ms	M1/70	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563015
CD11c	Ms	HL3	Armenian Hamster IgG1, λ2	FCM	RUO	BD Horizon BV605	50 µg	BDB563057
CD16/CD32	Ms	2.4G2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563006
CD19	Ms	1D3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563148
CD21/CD35	Ms	7G6	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563176
CD23	Ms	B3B4	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563201
CD24	Ms	M1/69	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563060
CD25	Ms	PC61	Rat IgG ₁ , λ	FCM	RUO	BD Horizon BV605	50 µg	BDB563061
CD27	Ms	LG.3A10	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563365
CD41	Ms	MWREG30	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563317
CD43	Ms	S7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	100 µg	BDB563205
CD44	Ms	IM7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563058
CD45	Ms	30-F11	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563053

BD Horizon Brilliant™ Violet 605

Mouse continued

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD45.1	Ms	A20	Mouse IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563010
CD45.2	Ms	104	Mouse IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563051
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563708
CD62L	Ms	MEL-14	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563252
CD69	Ms	H1.2F3	Armenian Hamster IgG1, λ	FCM	RUO	BD Horizon BV605	50 µg	BDB563290
CD71	Ms	C2	Rat IgG ₁ κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563013
CD83	Ms	MICHEL-19	Rat IgG ₁ κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563253
CD86	Ms	GL1	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563055
CD90.2	Ms	53-2.1	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563008
CD117	Ms	2B8	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563146
CD138	Ms	281-2	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563147
Erythroid Cells	Ms	TER-119	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563323
I-A/I-E	Ms	M5/114.15.2	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563413
IgD	Ms	11-26C.2A	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563003
IgG1	Ms	A85-1	Rat IgG ₁ κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563285
IL-2	Ms	JES6-5H4	Rat IgG _{2b}	IC/FCM	RUO	BD Horizon BV605	50 µg	BDB563911
Ly-6A/E	Ms	D7	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563288
Ly6C	Ms	AL-21	Rat IgM, κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563011
Ly6G	Ms	1A8	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563005
Ly-6G/Ly-6C	Ms	RB6-8C5	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563299
NK-1.1	Ms	PK136	Mouse IgG _{2a} κ	FCM	RUO	BD Horizon BV605	50 µg	BDB563220
Vα2 TCR	Ms	B20.1	Rat IgG _{2a} λ	FCM	RUO	BD Horizon BV605	50 µg	BDB563286

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG1, κ Isotype Control	A19-3	Armenian Hamster IgG1, κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563009
Armenian Hamster IgG1, λ Isotype Control	G235-2356	Armenian Hamster IgG1, λ1	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563054
Armenian Hamster IgG2, κ Isotype Control	B81-3	Armenian Hamster IgG2, κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563012
Armenian Hamster IgG2, λ Isotype Control	HA4/8	Armenian Hamster IgG2, λ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563056
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB562652
Mouse IgG3, κ Isotype Control	J606	Mouse IgG ₃ κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563274
Mouse IgM Isotype Control	G155-228	Mouse IgM, κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563517
Rat IgG1, κ Isotype Control	R3-34	Rat IgG ₁ κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB562993
Rat IgG1, λ Isotype Control	A110-1	Rat IgG ₁ λ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB562987
Rat IgG2a, κ Isotype Control	R35-95	Rat IgG _{2a} κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563144
Rat IgG2a, λ Isotype Control	B39-4	Rat IgG _{2a} λ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB562998
Rat IgG2b, κ Isotype Control	R35-38	Rat IgG _{2b} κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563145
Rat IgM, κ Isotype Control	R4-22	Rat IgM, κ	FCM, ICtrl	RUO	BD Horizon BV605	50 µg	BDB563062

BD Horizon Brilliant™ Violet 650

BD Horizon Brilliant™ Violet 650 (BV650) is the fourth dye in the BD Horizon Brilliant Violet family of dyes, providing more options for multicolor panel design.

BV650 is a tandem fluorochrome of BV421 and an acceptor dye with an emission maximum of 650 nm. It can be excited by the violet laser and detected in a filter used to detect APC-like dyes (for example, a 660/20-nm filter) (Figure 1). Not only does BV650 provide an additional choice for multicolor panel design, its brightness makes it an optimal choice for dim markers such as CD127 (Figure 2).

Multicolor considerations

Due to the excitation and emission characteristics of the acceptor dye, there might be moderate spillover into the APC and Alexa Fluor® 700 detectors. However, the spillover can be corrected through compensation, as with any other dye combination.

BD Horizon™ BV650	
Relative Brightness	Very Bright
Ex (max)	405 nm
Em (max)	650 nm
Filter	660/20
Compatible BD Biosciences instruments	All BD flow cytometers with a violet laser, 3 PMTs minimum, and an appropriate filter: BD™ LSR platform, BD FACSAria™ platform, BD Influx™
Alternative fluorochromes	Qdot® 655, eFluor® 650NC

Specificity	Stain Index	
	BD Horizon BV650	PE
Human CD127	15	6

Table 1. Stain index comparison of CD127 stained with BV650 and PE reagents. Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Violet 650

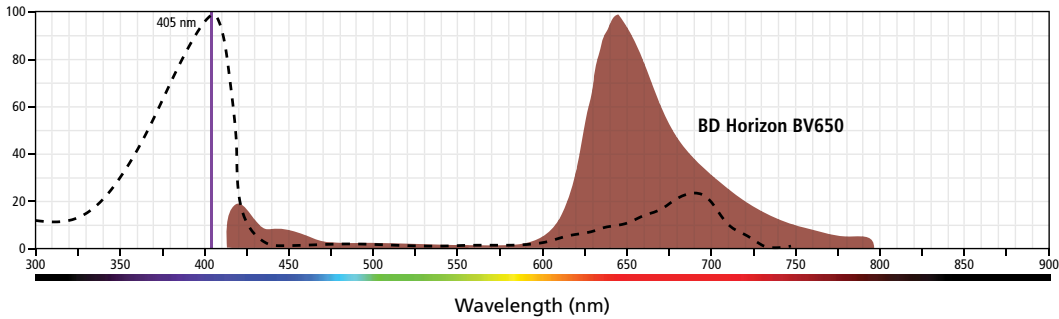


Figure 1. Excitation and emission profile of BV650.

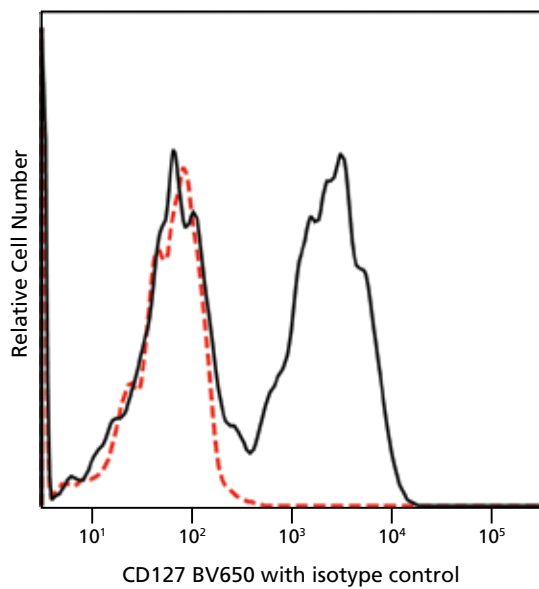


Figure 2. Lysed whole blood stained with human CD127 BV650. Data shown was gated on lymphocytes and overlaid with the isotype control.

BD Horizon Brilliant™ Violet 650

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3	Hu	UCHT1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563851
					RUO	BD Horizon BV650	100 tests	BDB563852
	Hu, NHP	SP34-2	Mouse IgG ₁ , λ	FCM	RUO	BD Horizon BV650	50 tests	BDB563916
CD4	Hu, NHP	L200	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563737
CD8	Hu	RPA-T8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563822
					RUO	BD Horizon BV650	100 tests	BDB563821
CD10	Hu	HI10A	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563734
CD11c	Hu	B-LY6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563403
					RUO	BD Horizon BV650	100 tests	BDB563404
CD14	Hu	M5E2	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563420
					RUO	BD Horizon BV650	100 tests	BDB563419
CD16	Hu	3G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563691
					RUO	BD Horizon BV650	100 tests	BDB563692
CD19	Hu	SJ25-C1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563227
					RUO	BD Horizon BV650	100 tests	BDB563226
CD20	Hu	2H7	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563779
					RUO	BD Horizon BV650	100 tests	BDB563780
CD24	Hu	ML5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563720
CD25	Hu	M-A251	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563718
					RUO	BD Horizon BV650	100 tests	BDB563719
CD27	Hu	L128	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563229
					RUO	BD Horizon BV650	100 tests	BDB563228
CD45	Hu	HI30	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563717
CD45RO	Hu	UCHL1	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563749
					RUO	BD Horizon BV650	100 tests	BDB563750
CD49f	Hu	GOH3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563706
					RUO	BD Horizon BV650	100 tests	BDB563707
CD62L	Hu	DREG-56	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563808
CD69	Hu	FN50	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563835
CD86	Hu	2331 (FUN-1)	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	25 tests	BDB563411
					RUO	BD Horizon BV650	100 tests	BDB563412
CD105	Hu	266	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563466
CD117	Hu	104D2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563859
CD123	Hu	7G3	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563405
CD127	Hu	HIL-7R-M21	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563225
CD132	Hu	TUGH4	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563406
CD134	Hu	ACT35	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563658
CD135	Hu	4G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563909
CD161	Hu	DX12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563864
CD196 (CCR6)	Hu	11A9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563922
CD197 (CCR7)	Hu	3D12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563407

BD Horizon Brilliant™ Violet 650

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD273	Hu	MIH18	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	100 tests	BDB563844
CD278	Hu	DX29	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563832
CD314 (NKG2D)	Hu	1D11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563408
CD335 (NKp46)	Hu	9E2/NKP46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 tests	BDB563230
IFN _γ	Hu	4S.B3	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV650	50 tests	BDB563416
IL-2	Hu	5344.111	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV650	50 tests	BDB563467
IL-17A	Hu	N49-653	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV650	50 tests	BDB563746
Ki-67	Hu	B56	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV650	50 tests	BDB563757
TNF	Hu	MAB11	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV650	50 tests	BDB563418

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD4	Ms	GK1.5	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563232
		RM4-5	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563747
CD8a	Ms	53-6.7	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563234
CD11b	Ms	M1/70	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563402
CD19	Ms	1D3	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563235
CD24	Ms	M1/69	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563545
CD45	Ms	30-F11	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563410
CD45.1	Ms	A20	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563754
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563893
CD62P	Ms	RB40.34	Rat IgG1, λ	FCM	RUO	BD Horizon BV650	50 µg	BDB563897
CD80	Ms	16-10A1	Armenian Hamster IgG2, κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563687
CD90.1	Ms, Rat	OX-7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563771
CD93	Ms	AA4.1	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563807
CD117	Ms	2B8	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563399
Erythroid cells	Ms	TER-119	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563850
I-A/I-E	Ms	M5/114.15.2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV650	50 µg	BDB563415
IFN _γ	Ms	XMG1.2	Rat IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV650	50 µg	BDB563854
TNF	Ms	MP6-XT22	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV650	50 µg	BDB563943

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG2, κ Isotype Control	B81-3	Armenian Hamster IgG2, κ	FCM, ICtrl	RUO	BD Horizon BV650	50 µg	BDB563860
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV650	50 µg	BDB563231
Mouse IgG2a, κ Isotype Control	G155-178	Mouse IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV650	50 µg	BDB563417
Rat IgG1, κ Isotype Control	R3-34	Rat IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV650	50 µg	BDB563848
Rat IgG1, λ Isotype Control	A110-1	Rat IgG ₁ , λ	FCM	RUO	BD Horizon BV650	50 µg	BDB563906
Rat IgG2a, κ Isotype Control	R35-95	Rat IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV650	50 µg	BDB563236
Rat IgG2b, κ Isotype Control	R35-38	Rat IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV650	50 µg	BDB563233

BD Horizon Brilliant™ Violet 711

BD Horizon Brilliant™ Violet 711 (BV711), the fifth dye in the BD Horizon Brilliant Violet family of dyes, offers an additional bright choice for the violet laser.

BV711 is a tandem fluorochrome of BV421 and an acceptor dye with an Em Max at 711 nm. It can be excited by the violet laser and detected in a filter used to detect Cy™5.5 and Alexa Fluor® 700-like dyes (for example, a 710/50-nm filter) (Figure 1). Not only does BV711 provide an additional choice for multicolor panel design, its brightness makes it an optimal choice for dim markers such as CD335 (NKp46) and CD19 (Figure 2).

Multicolor considerations

BV711 will also have moderate spillover into the BV650 detector. Because of the excitation and emission characteristics of the acceptor dye, there might be moderate spillover into the Alexa Fluor® 700 and PerCP-Cy5.5 detectors. However, the spillover can be corrected through compensation, as with any other dye combination.

BD Horizon™ BV711	
Relative Brightness	Very Bright
Ex (max)	405 nm
Em (max)	711 nm
Filter	710/50
Compatible BD Biosciences instruments	All BD flow cytometers with a violet laser, 3 PMTs minimum and an appropriate filter: BD™ LSR platform, BD FACSAria™ platform, BD Influx™
Alternative fluorochromes	Qdot® 705, eFluor® 700NC

Specificity	Stain Index	
	BD Horizon BV711	FITC
Human CD4	256	45
Human CD19	131	22

Table 1. Stain index comparison of CD4 and CD19 stained with BV711 and FITC reagents.

Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Violet 711

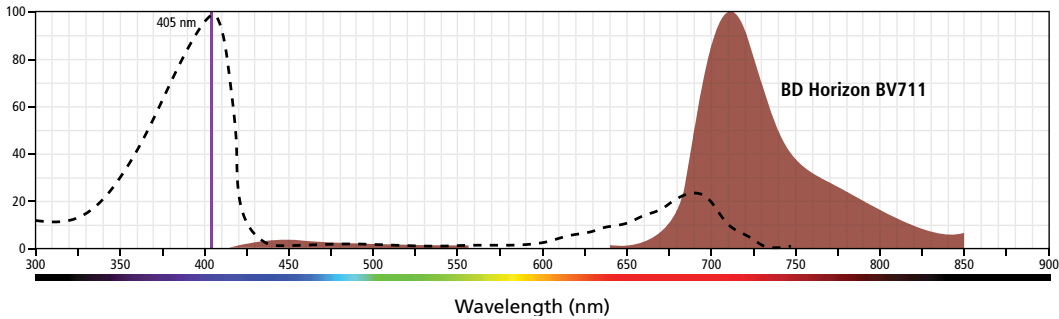


Figure 1. Excitation and emission profile of BV711.

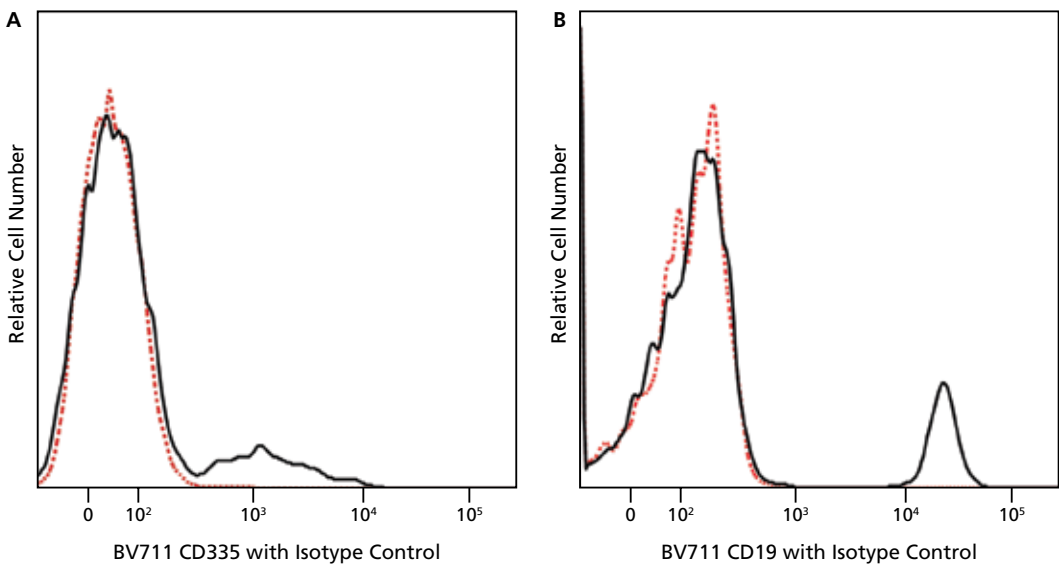


Figure 2. Lysed whole blood stained with human CD335 (NKp46) BV711 (A) or CD19 BV711 (B). Data shown was gated on lymphocytes and overlaid with the isotype control.

BD Horizon Brilliant™ Violet 711

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3	Hu	UCHT1	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563724
				FCM	RUO	BD Horizon BV711	100 tests	BDB563725
CD4	Hu	SK3	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563033
				FCM	RUO	BD Horizon BV711	100 tests	BDB563028
		Hu, NHP	L200	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests
CD5	Hu	UCHT2	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563170
CD8	Hu	RPA-T8	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563676
				FCM	RUO	BD Horizon BV711	100 tests	BDB563677
CD11c	Hu	B-LY6	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563130
CD14	Hu	MqP9	Mouse IgG _{2b} κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563373
				FCM	RUO	BD Horizon BV711	100 tests	BDB563372
CD15	Hu	W6D3	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563142
CD15s	Hu	CSLEX1	Mouse IgM κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563910
CD16	Hu	3G8	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563127
CD19	Hu	SJ25C1	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563038
				FCM	RUO	BD Horizon BV711	100 tests	BDB563036
CD20	Hu	2H7	Mouse IgG _{2b} κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563126
CD21	Hu	B-LY4	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563163
CD24	Hu	ML5	Mouse IgG _{2a} κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563371
				FCM	RUO	BD Horizon BV711	100 tests	BDB563401
CD25	Hu	2A3	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563159
CD27	Hu	L128	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563167
CD28	Hu	CD28.2	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563131
CD33	Hu	WM53	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563171
CD38	Hu	HIT2	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563965
CD40	Hu	5C3	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563397
CD45RA	Hu	HI100	Mouse IgG _{2b} κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563733
CD45RO	Hu	UCHL1	Mouse IgG _{2a} κ	FCM	RUO	BD Horizon BV711	25 tests	BDB563723
				FCM	RUO	BD Horizon BV711	100 tests	BDB563722
CD47	Hu	B6H12	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563761
CD49d	Hu	9F10	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563177
CD56	Hu	NCAM16.2	Mouse IgG _{2b} κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563169
CD62E	Hu	68-5H11	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563358
CD69	Hu	FN50	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563836
CD86	Hu	2331 (FUN-1)	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563158
CD95	Hu	DX2	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563132
CD96	Hu	6F9	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563174
CD103	Hu	BER-ACT8	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563162
CD123	Hu	9F5	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563161
CD127	Hu	HIL-7R-M21	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563165
CD132	Hu	AG184	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563129
CD134	Hu	ACT35	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563664
CD135	Hu	4G8	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563908
CD138	Hu	MI15	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563184
CD141	Hu	1A4	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563155
CD146	Hu	P1H12	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563186
CD158a	Hu	HP-3E4	Mouse IgM κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563183
CD161	Hu	DX12	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563865
CD183	Hu	1C6/CXCR3	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563156
CD195	Hu	2D7/CCR5	Mouse IgG _{2a} κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563395
CD196 (CCR6)	Hu	11A9	Mouse IgG ₁ κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563923
CD197 (CCR7)	Hu	3D12	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563712
		BDB150503	Mouse IgG _{2a}	FCM	RUO	BD Horizon BV711	50 tests	BDB563921

BD Horizon Brilliant™ Violet 711

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD278	Hu	DX29	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563833
CD314 (NKG2D)	Hu	1D11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563688
CD335 (NKP46)	Hu	9E2/NKP46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563043
CD337 (NKP30)	Hu	P30-15	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	100 tests	BDB563383
HLA-DR	Hu	G46-6	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563696
IL-2	Hu	5344.111	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV711	50 tests	BDB563946
Invariant NK T-cell	Hu	6B11	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563268
Ki-67	Hu	B56	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV711	50 tests	BDB563755
T-bet	Hu, Ms	O4-46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563320
TSLP Receptor	Hu	1F11/TSLPR	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563342

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3e	Ms	145-2C11	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563123
CD4	Ms	GK1.5	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563050
		RM4-5	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563726
CD8a	Ms	53-6.7	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563046
CD11b	Ms	M1/70	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563168
CD11c	Ms	HL3	Armenian Hamster IgG1, λ2	FCM	RUO	BD Horizon BV711	50 µg	BDB563048
CD19	Ms	1D3	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563157
CD24	Ms	M1/69	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563450
CD45	Ms	30-F11	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563709
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563892
CD83	Ms	MICHEL-19	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563136
CD90.1	Ms, Rat	OX-7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563772
CD117	Ms	2B8	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563160
CD138	Ms	281-2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563193
CD223	Ms	C9B7W	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563179
CD274	Ms	MIH5	Rat IgG _{2a} , λ	FCM	RUO	BD Horizon BV711	50 µg	BDB563369
CD314 (NKG2D)	Ms	CX5	Rat IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563694
CD326	Ms	G8.8	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563134
CD357	Ms	DTA-1	Rat IgG _{2b} , λ	FCM	RUO	BD Horizon BV711	100 µg	BDB563390
γδ T-cell Receptor	Ms	GL3	Armenian Hamster IgG2, κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563994
I-A/I-E	Ms	M5/114.15.2	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BV711	50 µg	BDB563414
T-bet	Hu, Ms	O4-46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV711	50 tests	BDB563320
TCR Beta Chain	Ms	H57-597	Armenian Hamster IgG2, λ1	FCM	RUO	BD Horizon BV711	50 µg	BDB563135
TNF	Ms	MP6-XT22	Rat IgG ₁	IC/FCM	RUO	BD Horizon BV711	50 µg	BDB563944

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG1, κ Isotype Control	A19-3	Armenian Hamster IgG1, κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563128
Armenian Hamster IgG1, λ1 Isotype Control	G235-2356	Armenian Hamster IgG1, λ1	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563049
Armenian Hamster IgG2, λ Isotype Control	HA4/8	Armenian Hamster IgG2, λ1	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563348
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563044
Mouse IgG2a, κ Isotype Control	G155-178	Mouse IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563345
Mouse IgG2b, κ, Isotype Control	27-35	Mouse IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563125
Mouse IgM, κ, Isotype Control	G155-228	Mouse IgM, κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563164
Rat IgG1, κ Isotype Control	R3-34	Rat IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563283
Rat IgG2a, κ Isotype Control	R35-95	Rat IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563047
Rat IgG2a, λ Isotype Control	B39-4	Rat IgG _{2a} , λ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563394
Rat IgG2b, κ Isotype Control	R35-38	Rat IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563045
Rat IgM, κ Isotype Control	R4-22	Rat IgM, κ	FCM, ICtrl	RUO	BD Horizon BV711	50 µg	BDB563139

BD Horizon Brilliant™ Violet 786

BD Horizon Brilliant™ Violet 786 (BV786), offers an additional choice for multicolor panel design. Due to its far red emission profile, it will have little spectral overlap into the other violet detectors.

BD Horizon BV786 is a tandem fluorochrome of BV421 and an acceptor dye with an emission maximum of 786 nm. BV786 offers a bright choice for the sixth detector off the violet laser.

It can be excited by the violet laser and detected in a filter used to detect Cy7-like dyes (for example, a 780/60-nm filter) (Figure 1). Not only does BV786 provide an additional choice for multicolor panel design, its brightness makes it an optimal choice for dim markers such as CD127 and CD335 (NKp46).

BD Horizon™ BV786	
Relative Brightness	Bright
Ex (max)	405 nm
Em (max)	786 nm
Filter	780/60
Compatible BD Biosciences instruments	All BD flow cytometers with a violet laser, 3 PMTs minimum, and an appropriate filter: BD™ LSR platform, BD FACSAria™ platform, BD Influx™
Alternative fluorochromes	Qdot® 800

Specificity	Stain Index	
	BD Horizon BV786	FITC
Human CD127	24	14
Human CD19	104	20
Human CD27	91	97
Human CD335	5	8
Human CD8	115	40

Table 1. Stain index comparison of CD127, CD19, CD27, CD335, and CD8 stained with BV786 and FITC reagents.

Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Violet 786

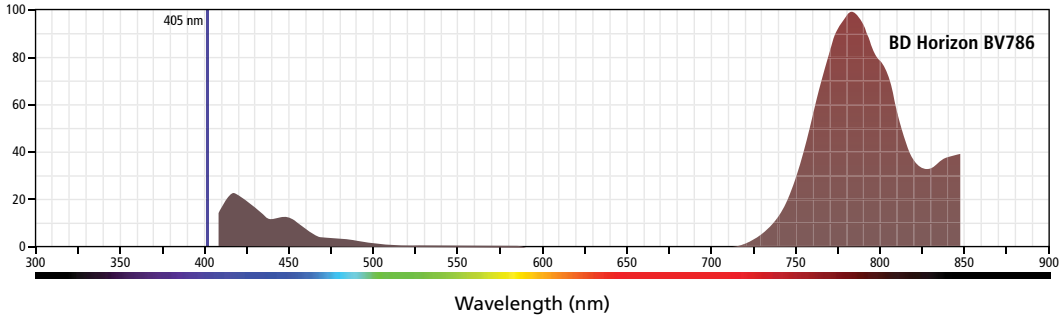


Figure 1. Excitation and emission profile of BV786.

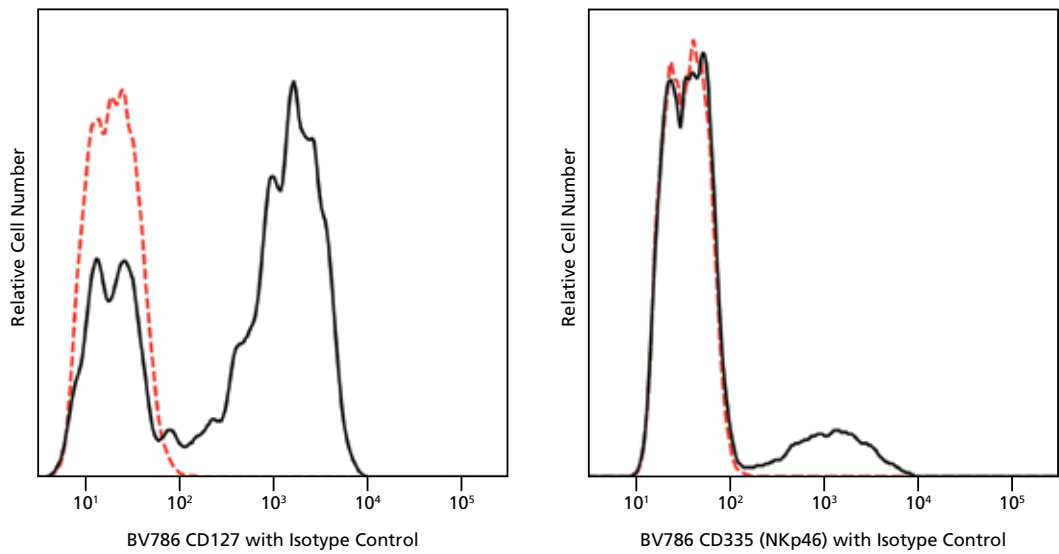


Figure 2. Lysed whole blood stained with human CD127 or CD335 (NKp46) BV786. Data shown was gated on lymphocytes and overlaid with the isotype control.

BD Horizon Brilliant™ Violet 786

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3	Hu	SK7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563799
				FCM	RUO	BD Horizon BV786	100 tests	BDB563800
	Hu, NHP	SP34-2	Mouse IgG ₁ , λ	FCM	RUO	BD Horizon BV786	50 tests	BDB563918
CD4	Hu, NHP	L200	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563914
CD8	Hu	RPA-T8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563824
				FCM	RUO	BD Horizon BV786	100 tests	BDB563823
CD14	Hu	M5E2	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563699
				FCM	RUO	BD Horizon BV786	100 tests	BDB563698
CD15	Hu	HI98	Mouse IgM, κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563838
CD16	Hu	3G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563689
				FCM	RUO	BD Horizon BV786	100 tests	BDB563690
CD19	Hu	SJ25C1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563326
				FCM	RUO	BD Horizon BV786	100 tests	BDB563325
CD25	Hu	M-A251	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563700
				FCM	RUO	BD Horizon BV786	100 tests	BDB563701
CD27	Hu	L128	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563328
				FCM	RUO	BD Horizon BV786	100 tests	BDB563327
CD38	Hu	HB7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563964
CD45	Hu	HI30	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563716
		NHP	D058-1283	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests
CD47	Hu	B6H12	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563758
CD62P	Hu	AK-4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	25 tests	BDB563714
				FCM	RUO	BD Horizon BV786	100 tests	BDB563715
CD69	Hu	FN50	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563834
CD107a	Hu	H4A3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563869
CD127	Hu	HIL-7R-M21	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563324
CD196 (CCR6)	Hu	11A9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563704
CD197 (CCR7)	Hu	3D12	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563710
CD273	Hu	MIH18	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563843
CD274	Hu	MIH1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	100 tests	BDB563739
CD279	Hu	EH12.1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563789
CD335 (NKP46)	Hu	9E2/NKP46	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BV786	50 tests	BDB563329
IFN _γ	Hu	4S.B3	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV786	50 tests	BDB563731
IL-17A	Hu	N49-653	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV786	50 tests	BDB563745
Ki-67	Hu	B56	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BV786	50 tests	BDB563756

BD Horizon Brilliant™ Violet 786

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD4	Ms	GK1.5	Rat IgG _{2b} κ	FCM	RUO	BD Horizon BV786	50 µg	BDB563331
		RM4-5	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV786	50 µg	BDB563727
CD8a	Ms	53-6.7	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV786	50 µg	BDB563332
CD11c	Ms	HL3	Armenian Hamster IgG1, λ2	FCM	RUO	BD Horizon BV786	50 µg	BDB563735
CD19	Ms	1D3	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV786	50 µg	BDB563333
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV786	50 µg	BDB563894
IFN _γ	Ms	XMG1.2	Rat IgG ₁ κ	IC/FCM	RUO	BD Horizon BV786	50 µg	BDB563773
IgD	Ms	11-26C.2A	Rat IgG _{2a} κ	FCM	RUO	BD Horizon BV786	50 µg	BDB563618

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG1, λ Isotype Control	G235-2356	Armenian Hamster IgG1, λ1	FCM, ICtrl	RUO	BD Horizon BV786	50 µg	BDB563751
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ κ	FCM, ICtrl	RUO	BD Horizon BV786	50 µg	BDB563330
Mouse IgG2a, κ Isotype Control	G155-178	Mouse IgG _{2a} κ	FCM, ICtrl	RUO	BD Horizon BV786	50 µg	BDB563732
Rat IgG1, κ Isotype Control	R3-34	Rat IgG ₁ κ	FCM, ICtrl	RUO	BD Horizon BV786	50 µg	BDB563847
Rat IgG2a, κ Isotype Control	R35-95	Rat IgG _{2a} κ	FCM, ICtrl	RUO	BD Horizon BV786	50 µg	BDB563335
Rat IgG2b, κ Isotype Control	R35-38	Rat IgG _{2b} κ	FCM, ICtrl	RUO	BD Horizon BV786	50 µg	BDB563334

BD Horizon Brilliant™ Ultraviolet 395

BD Horizon Brilliant™ Ultraviolet 395 (BUV395) is a UV-excitable dye that has been developed exclusively by BD Biosciences to expand the multicolor capabilities of flow cytometers equipped with a 355-nm laser. Not only does this dye provide an additional color, it is an optimal dye for multicolor flow cytometry because it has little to no spillover into any other detector.

Currently available UV-excitable fluorochromes are so dim that they are not practical for immunophenotyping applications. However, BUV395 is bright, providing great resolution for bright markers such as CD4 as well as dimmer markers such as CD56 (Figure 2). In many cases, BUV395 reagents are brighter than FITC reagents (Table 1).

With an excitation maximum of 348 nm and an emission maximum of 395 nm, BUV395 can be excited by the 355-nm laser and detected with a 379/28 filter (Figure 1). This dye is not recommended for instruments equipped with a 375-nm laser.

Virtually no compensation requirements

BUV395 is an optimal dye for multicolor flow cytometry because it has virtually no spillover into any other detector (Table 2). Additionally, other fluorochromes have little to no spillover into the BUV395 detector. BUV395 allows you to add an additional color to a panel without increasing the complexity of compensation requirements.

More choice and flexibility for multicolor panel design

BUV395 provides more choices for multicolor flow cytometry, making multicolor panel design easier and more accessible. Using BUV395 with other fluorochromes offered by BD Biosciences allows you to detect 16 fluorescence parameters from a single sample.

Managing spillover between reagents can be one of the more difficult elements of multicolor panel design. By spreading markers over multiple lasers, the overall compensation requirements of a panel can be reduced. For example, by assigning one marker to each laser, a 5-color panel with minimal compensation requirements can be run on an instrument equipped with UV, violet, blue, red, and yellow-green lasers. The availability of UV-excitable reagents makes it easier to design panels with less spillover. This diminishes one of the most difficult elements of multicolor panel design.

BD Horizon™ BUV395	
Relative Brightness	Moderate
Ex (max)	348 nm
Em (max)	395 nm
Filter	379/28
Compatible BD Biosciences instruments	All BD flow cytometers with a 355-nm ultraviolet laser: BD™ LSR platform
Alternative fluorochromes	None

Specificity	Stain Index	
	BD Horizon BUV395	FITC
Human CD4	223	52
Human CD56	21	10

Table 1. Stain index comparison of CD4 and CD56 stained with BUV395 and FITC reagents.

Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Ultraviolet 395

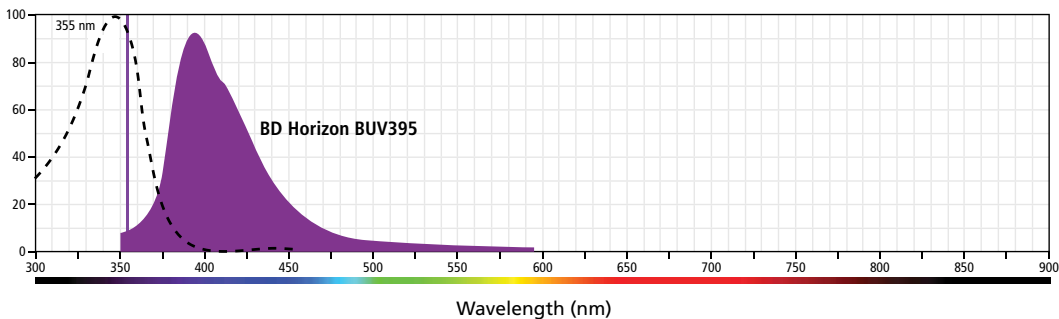


Figure 1. Excitation and emission profile of BUV395.

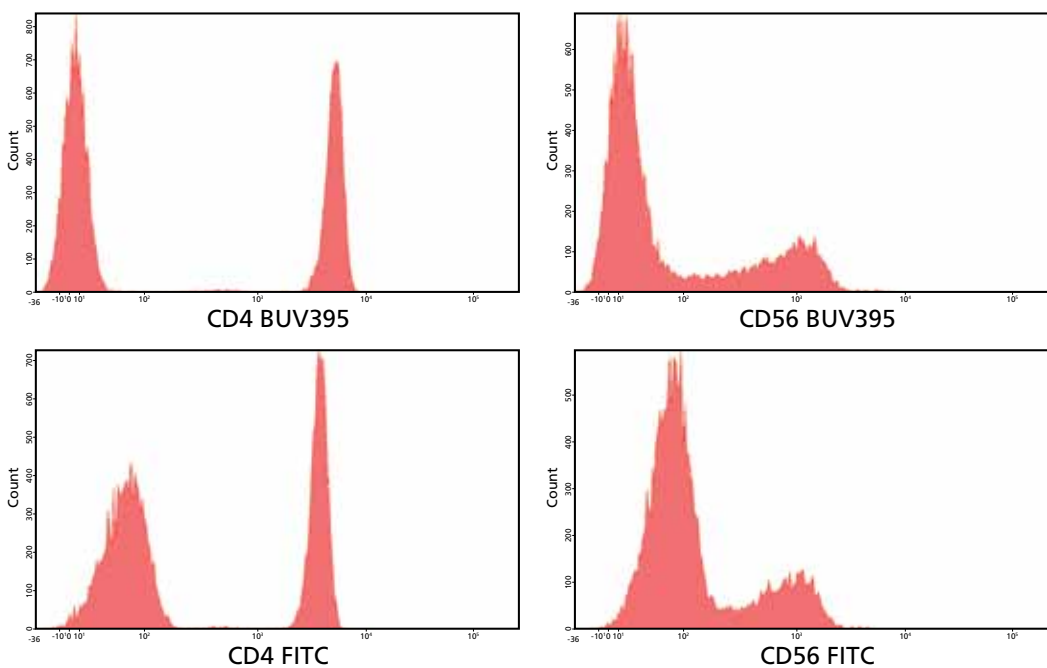


Figure 2. Lysed whole blood stained with CD4 or CD56 in BUV395 or FITC formats. Data shown was gated on lymphocytes. BUV395 was excited by a 355-nm laser and FITC was excited by a 488-nm laser.

Laser		BUV395 %spillover into other channels					
Violet		BV421	BV510	BV605	BV650	BV711	BV786
	BUV395	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%
Blue		FITC	PE	PE-CF594	PE-Cy™5	PerCP-Cy™5.5	PE-Cy™7
	BUV395	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Red					APC	Alexa Fluor® 700	APC-Cy7
	BUV395				0.0%	0.0%	0.0%

Table 2. BUV395 spillover into other channels.

BD Horizon Brilliant™ Ultraviolet 395

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD2	Hu	RPA-2.10	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon B.UV395	25 tests	BDB563820
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563819
CD3	Hu	UCHT1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563548
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563546
CD4	Hu	SK3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563552
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563550
CD7	Hu	M-T701	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	100 tests	BDB563845
CD8	Hu	RPA-T8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563796
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563795
CD10	Hu	HI10A	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	100 tests	BDB563871
CD11c	Hu	B-LY6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563788
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563787
CD14	Hu	MqP9	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563562
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563561
CD15	Hu	HI98	Mouse IgM, κ	FCM	RUO	BD Horizon BUV395	100 tests	BDB563872
CD16	Hu	3G8	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563784
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563785
CD19	Hu	SJ25C1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563551
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563549
CD20	Hu	2H7	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563781
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563782
CD24	Hu	ML5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BUV395	100 tests	BDB563818
CD27	Hu	L128	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563816
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563815
CD34	Hu	581	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	100 tests	BDB563778
CD38	Hu	HB7	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563812
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563811
CD45	Hu	HI30	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563791
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563792
CD56	Hu	NCAM16.2	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BUV395	25 tests	BDB563555
				FCM	RUO	BD Horizon BUV395	100 tests	BDB563554
CD105	Hu	266	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	50 tests	BDB563803
CD184	Bab, Cyno, Hu, Rhe	12G5	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BUV395	50 tests	BDB563924
CD235a	Hu	GA-R2 (HIR2)	Mouse IgG _{2b} , κ	FCM	RUO	BD Horizon BUV395	50 tests	BDB563810
IFN-γ	Hu	B27	Mouse IgG ₁ , κ	IC/FCM	RUO	BD Horizon BUV395	50 tests	BDB563563
IgD	Hu	IA6-2	Mouse IgG _{2a} , κ	FCM	RUO	BD Horizon BUV395	50 tests	BDB563813
IgM	Hu	G20-127	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV395	50 tests	BDB563903

BD Horizon Brilliant™ Ultraviolet 395

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3e	Ms	145-2C11	Armenian Hamster IgG1, κ	FCM	RUO	BD Horizon BUV395	50 µg	BDB563565
CD8a	Ms	53-6.7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BUV395	50 µg	BDB563786
CD19	Ms	1D3	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BUV395	50 µg	BDB563557
CD45R/B220	Ms	RA3-6B2	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BUV395	50 µg	BDB563793

Isotype Controls

DESCRIPTION	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
Armenian Hamster IgG₁, κ Isotype Control	A19-3	Armenian Hamster IgG1, κ	FCM, ICtrl	RUO	BD Horizon BUV395	50 µg	BDB563559
Mouse IgG1, κ Isotype Control	X40	Mouse IgG ₁ , κ	FCM, ICtrl	RUO	BD Horizon BUV395	50 µg	BDB563547
Mouse IgG2a, κ Isotype Control	G155-178	Mouse IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BUV395	50 µg	BDB563809
Mouse IgG2b, κ Isotype Control	27-35	Mouse IgG _{2b} , κ	FCM, ICtrl	RUO	BD Horizon BUV395	50 µg	BDB563558
Mouse IgM, κ Isotype Control	G155-228	Mouse IgM, κ	FCM, ICtrl	RUO	BD Horizon BUV395	50 µg	BDB563866
Rat IgG_{2a}, κ Isotype Control	R35-95	Rat IgG _{2a} , κ	FCM, ICtrl	RUO	BD Horizon BUV395	50 µg	BDB563556

BD Horizon Brilliant™ Ultraviolet 737

The BD Horizon Brilliant™ Ultraviolet 737 (BUV737) is an additional dye developed exclusively by BD Biosciences for flow cytometers equipped with a 355-nm laser.

BUV737 is a tandem dye that combines BUV395 and an acceptor dye with an emission maximum of 737 nm. BUV737 can be excited by the 355-nm laser and detected with a 740/35 filter (Figure 1). This dye is not recommended for instruments equipped with a 375-nm laser.

This dye is bright, providing great resolution for bright markers as well as dimmer markers such as CD127 (Figure 2). In most cases, BUV737 reagents will be brighter than FITC and BUV395 reagents.

BUV737 is an additional dye that can be excited by the 355-nm laser, increasing flexibility in multicolor panel design.

Multicolor considerations

The dye has very little spillover into most detectors, making it optimal for multicolor panels. However, due to the excitation of the acceptor dye by other laser lines, there may be significant spillover into channels detecting Alexa Fluor® 700-like dyes (for example, 712/20-nm filter) (Table 2).

BD Horizon™ BUV737	
Relative Brightness	Bright
Ex (max)	348 nm
Em (max)	737 nm
Filter	740/35
Compatible BD Biosciences instruments	All BD flow cytometers with a 355-nm ultraviolet laser: BD™ LSR platforms
Alternative fluorochromes	None

Specificity	Stain Index	
	BD Horizon BUV737	FITC
Human CD4	249	57
Human CD19	127	61
Human CD127	13	5

Table 1. Stain index comparison of CD4, CD19, and CD127 stained with BUV737 or FITC reagents.

Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

BD Horizon Brilliant™ Ultraviolet 737

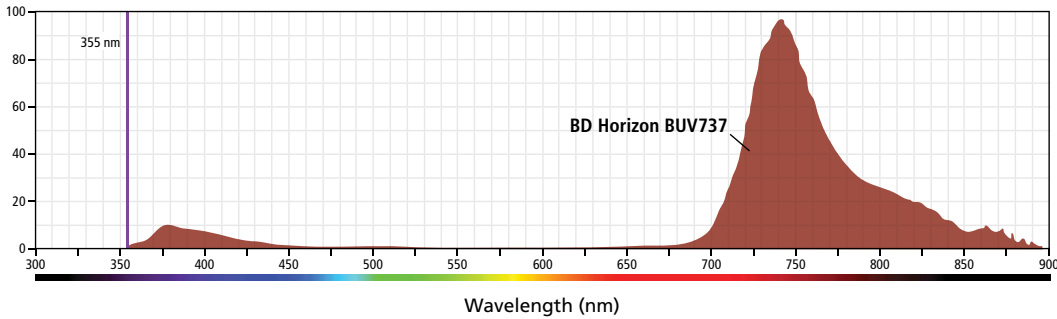


Figure 1. Excitation and emission profile of BUV737.

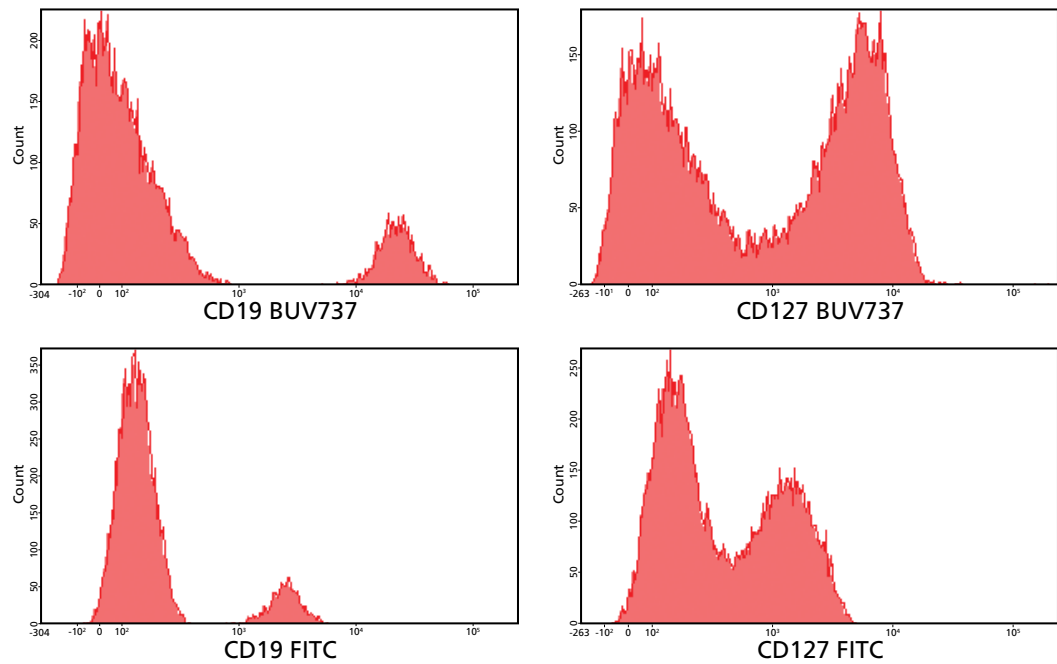


Figure 2. Lysed whole blood stained with CD19 or CD127 in BUV737 or FITC formats. Data shown was gated on lymphocytes. BUV737 was excited by a 355-nm laser and FITC was excited by a 488-nm laser.

Laser		BUV737 %Spillover into other channels					
		BV421	BV510	BV605	BV650	BV711	BV786
Violet							
	BUV737	0%	0%	0%	0%	4%	3%
Blue							
	BUV737	0%	0%	0%	0%	2%	9%
Red					APC	Alexa Fluor® 700	APC-Cy7
	BUV737				1%	45%	11%

Table 2. BUV737 spillover into other channels.

BD Horizon Brilliant™ Ultraviolet 737

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3	Hu	UCHT1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV737	25 tests	BDB564308
				FCM	RUO	BD Horizon BUV737	100 tests	BDB564307
CD4	Hu	SK3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV737	25 tests	BDB564306
				FCM	RUO	BD Horizon BUV737	100 tests	BDB564305
CD25	Hu	SJ25C1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV737	25 tests	BDB564304
				FCM	RUO	BD Horizon BUV737	100 tests	BDB564303
CD27	Hu	L128	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV737	25 tests	BDB564302
				FCM	RUO	BD Horizon BUV737	100 tests	BDB564301
CD127	Hu	hIL-7R-M21	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BUV737	50 tests	BDB564300

Isotype Controls

DESCRIPTION	CLONE	APPS	REG	FORMAT	SIZE	CAT. NO.
Mouse IgG ₁ , κ Isotype Control	X40	FCM, ICtrl	RUO	BD Horizon BUV737	50 µg	BDB564299

BD Horizon Brilliant™ Blue 515

BD Horizon Brilliant™ Blue 515 (BB515) was developed exclusively by BD Biosciences as a brighter alternative to FITC. Compared to FITC, this dye also has less spillover into the PE channel, making it more optimal for multicolor flow cytometry.

BD Horizon BB515 is up to seven times brighter than FITC and has less spillover into neighboring channels (Table 1 and 2, Figure 2). The dye is optimal for dimmer markers, such as CD25, for which better resolution improves the quality of a panel. CD25 FITC or CD25 BB515 was used to identify regulatory T cells (Tregs) in a panel including CD4 APC, CD127 PE, and CD3 PerCP-Cy5.5. While both panels resolve the Treg population, the panel including CD25 BB515 shows significantly better separation of the CD25 positive cells from the CD25 negative cells (Figure 3). FoxP3 transcripts have been identified in CD4⁺CD25^{hi}CD127^{dim} cells, and optimal

resolution of these markers is necessary to identify the various subsets within the panel. The FITC format is too dim to fully resolve the CD25 bright cells from the intermediates. However, the brightness of BD Horizon BB515 provides excellent resolution with optimal identification of the Treg population. This provides more flexibility in panel design; previously the FITC channel had to be reserved for highly expressed markers. With the introduction of the BD Horizon BB515 format, researchers can now use this channel to optimally resolve both dimly and highly expressed markers.

BD Horizon™ BB515	
Relative Brightness	Brightest
Ex (max)	490 nm
Em (max)	515 nm
Filter	530/30
Compatible BD Biosciences instruments	All BD flow cytometers with a blue laser: BD Accuri™ C6, BD FACSCalibur™, BD FACSVerse™, BD FACSCanto™ II, BD LSRFortessa™, BD FACSAria™, BD Influx™, BD FACSJazz™
Alternative fluorochromes	FITC, Alexa Fluor® 488

Specificity	Stain Index		
	BB515	FITC	Alexa Fluor® 488
Human CD3	302	43	81
Human CD4	174	47	58
Human CD19	85	16	15
Mouse CD8a	86	24	50
Mouse CD11b	68	15	26

Table 1. BD Horizon BB515, Alexa Fluor® 488, and FITC reagents of the same clone were run side by side to compare the stain index.

Relative stain index values are dependent on the instrument configuration, including lasers, filters, and laser power.

	Spillover Into		
	BV510	PE	PE-CF594
Human CD4 BB515	2%	20%	6%
Human CD4 FITC	6%	27%	9%

Table 2. Spillover into various detectors comparing BD Horizon BB515 and FITC.

Whole blood samples stained with human CD4 BB515 or FITC were analyzed on a BD LSRFortessa system, and spillover was measured in the BV510, PE, and PE-CF594 detectors. This table is meant to show a relative comparison between the dyes, since spillover values obtained can vary depending on the filter used and PMT voltage.

BD Horizon Brilliant™ Blue 515

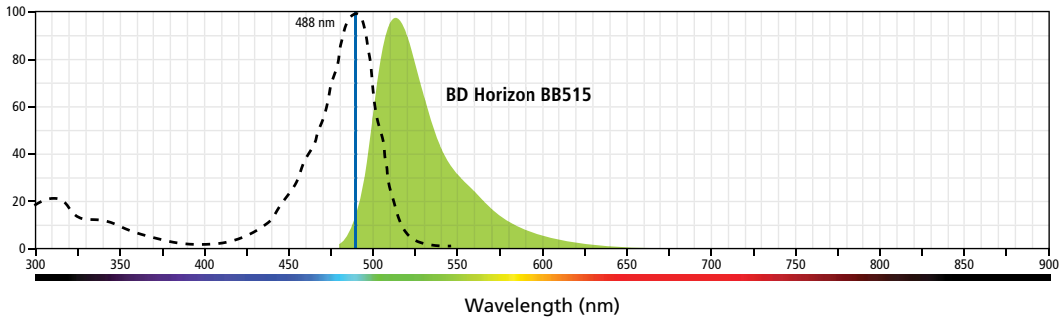


Figure 1. Absorption and emission spectra.
Ex Max: 490, Em Max: 515

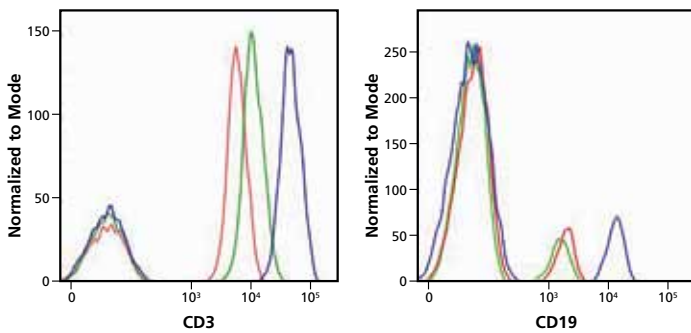


Figure 2. Lysed whole blood stained with Hu CD3 or CD19 FITC (red), BB515 (blue), or Alexa Fluor® 488 (green).
Data shown was gated on lymphocytes.

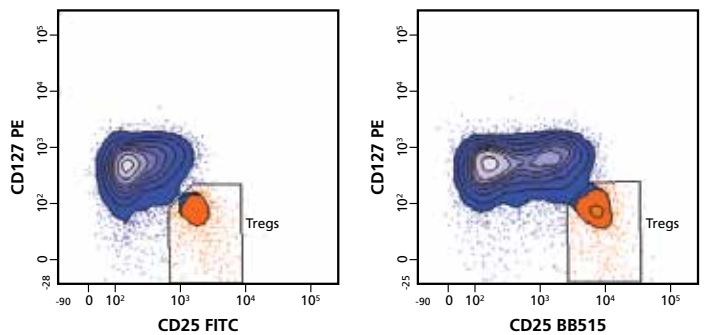


Figure 3. Whole blood was stained with Hu CD4 APC, CD127 PE, CD3 PerCP-Cy5.5, and CD25 FITC or CD25 BB515, and analyzed on a BD FACSVerse flow cytometer.
Data shown was gated on CD4⁺CD3⁺ lymphocytes.

BD Horizon Brilliant™ Blue 515

Human and Non Human Primate (NHP)

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD3	Hu	UCHT1	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564466
				FCM	RUO	BD Horizon BB515	100 tests	BDB564465
CD4	Hu	RPA-T4	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564420
				FCM	RUO	BD Horizon BB515	100 tests	BDB564419
CD11c	Hu	B-ly6	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564491
				FCM	RUO	BD Horizon BB515	100 tests	BDB564490
CD19	Hu	HIB19	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564457
				FCM	RUO	BD Horizon BB515	100 tests	BDB564456
CD25	Hu	2A3	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564468
				FCM	RUO	BD Horizon BB515	100 tests	BDB564467
CD28	Hu	CD28.2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564493
				FCM	RUO	BD Horizon BB515	100 tests	BDB564492
CD38	Hu	HIT2	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564499
				FCM	RUO	BD Horizon BB515	100 tests	BDB564498
CD56	Hu	B159	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	25 tests	BDB564489
				FCM	RUO	BD Horizon BB515	100 tests	BDB564488
CD127	Hu	HIL-7R-m21	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	50 tests	BDB564423
CD196 (CCR6)	Hu	11A9	Mouse IgG ₁ , κ	FCM	RUO	BD Horizon BB515	50 tests	BDB564479

Mouse

DESCRIPTION	REACT	CLONE	ISOTYPE	APPS	REG	FORMAT	SIZE	CAT. NO.
CD8a	Ms	53-6.7	Rat IgG _{2a} , κ	FCM	RUO	BD Horizon BB515	25 µg	BDB564459
				FCM	RUO	BD Horizon BB515	0.1 mg	BDB564422
CD11b	Ms	M1/70	Rat IgG _{2b} , κ	FCM	RUO	BD Horizon BB515	25 µg	BDB564455
				FCM	RUO	BD Horizon BB515	0.1 mg	BDB564454
CD25	Ms	PC61	Rat IgG ₁ , λ	FCM	RUO	BD Horizon BB515	25 µg	BDB564458
				FCM	RUO	BD Horizon BB515	0.1 mg	BDB564424

Isotype Controls

DESCRIPTION	CLONE	APPS	REG	FORMAT	SIZE	CAT. NO.
Mouse IgG1	X40	FCM, ICtrl	RUO	BD Horizon BB515	0.1 mg	BDB564416
Rat IgG2a, κ	R35-95	FCM, ICtrl	RUO	BD Horizon BB515	0.1 mg	BDB564418
Rat IgG2b, κ	R35-38	FCM, ICtrl	RUO	BD Horizon BB515	0.1 mg	BDB564421
Rat IgG1, λ	A110-1	FCM, ICtrl	RUO	BD Horizon BB515	0.1 mg	BDB564417

Streptavidin Reagents

DESCRIPTION	APPS	REG	FORMAT	SIZE	CAT. NO.
Streptavidin	FCM	RUO	BD Horizon BB515	100 µg	BDB564453
	FCM	RUO	BD Horizon BUV395	100 µg	BDB564176
	FCM	RUO	BD Horizon BUV737	100 µg	BDB564293
	FCM	RUO	BD Horizon BV421	100 µg	BDB563259
	FCM	RUO	BD Horizon BV510	100 µg	BDB563261
	FCM	RUO	BD Horizon BV605	100 µg	BDB563260
	FCM	RUO	BD Horizon BV650	100 µg	BDB563855
	FCM	RUO	BD Horizon BV711	100 µg	BDB563262
	FCM	RUO	BD Horizon BV786	100 µg	BDB563858

BD LSRFortessa™ X-20 System

Five-Color Panels Designed for Minimal Compensation

In this experiment, a five-laser BD LSRFortessa™ X-20 flow cytometer was used in combination with BD reagents to design panels that are optimized for minimal compensation and optimal signal by selecting one bright fluorochrome per laser. Three different panels are shown: human T cell, human B cell, and mouse B cell.

Protocol

PBMCs were prepared by using Ficoll-Paque™ Plus according to the manufacturer's directions and incubated with antibodies at room temperature protected from light for 20 minutes, washed, and acquired on a BD LSRFortessa X-20 flow cytometer. Single cells were identified by gating on FSC-A vs FSC-H. Lymphocytes were then identified based on FSC vs SSC and further analyzed as described in the subsequent figures.

For mouse experiments, C57BL6 spleen was harvested into a single-cell suspension using a cell strainer and syringe plunger. Red blood cells were lysed using BD Pharm Lyse™ lysing buffer (Cat. No. BDB555899) on ice for 2 minutes. Cells were subsequently washed, stained with antibodies for 30 minutes on ice, washed, and acquired on a BD LSRFortessa X-20 flow cytometer.

Analyzer Configuration

Laser	Filter	Fluorochrome	Human T-Cell Panel	Human B-Cell Panel	Mouse B-Cell Panel
Blue 488 nm	530/30	FITC	CD8	IgD	IgD
Yellow-Green 561 nm	610/20	PE-CF594	CD27	CD38	IgM
Red 640 nm	670/30	APC	CD45RA	IgM	CD21
Violet 405 nm	450/40	BV421	CD3	CD27	CD23
Ultraviolet 355 nm	379/28	BUV395	CD4	CD19	CD19

Compensation*

Fluorochrome	(-)% Fluorochrome	% Compensation
FITC		0.00%
PE-CF594	BV421	0.00%
APC		0.00%
BUV395		0.00%
BV421		0.02%
PE-CF594	FITC	0.00%
APC		0.04%
BUV395		0.00%
BV421		0.00%
FITC	PE-CF594	0.29%
APC		1.39%
BUV395		0.00%
BV421		0.00%
FITC	APC	0.00%
PE-CF594		0.03%
BUV395		0.00%
BV421		1.57%
FITC	BUV395	0.00%
PE-CF594		0.00%
APC		0.24%

*Representative compensation values. Compensation varies as a function of PMT voltage.

BD LSRFortessa™ X-20 System

Five-Color Panels Designed for Minimal Compensation

Data

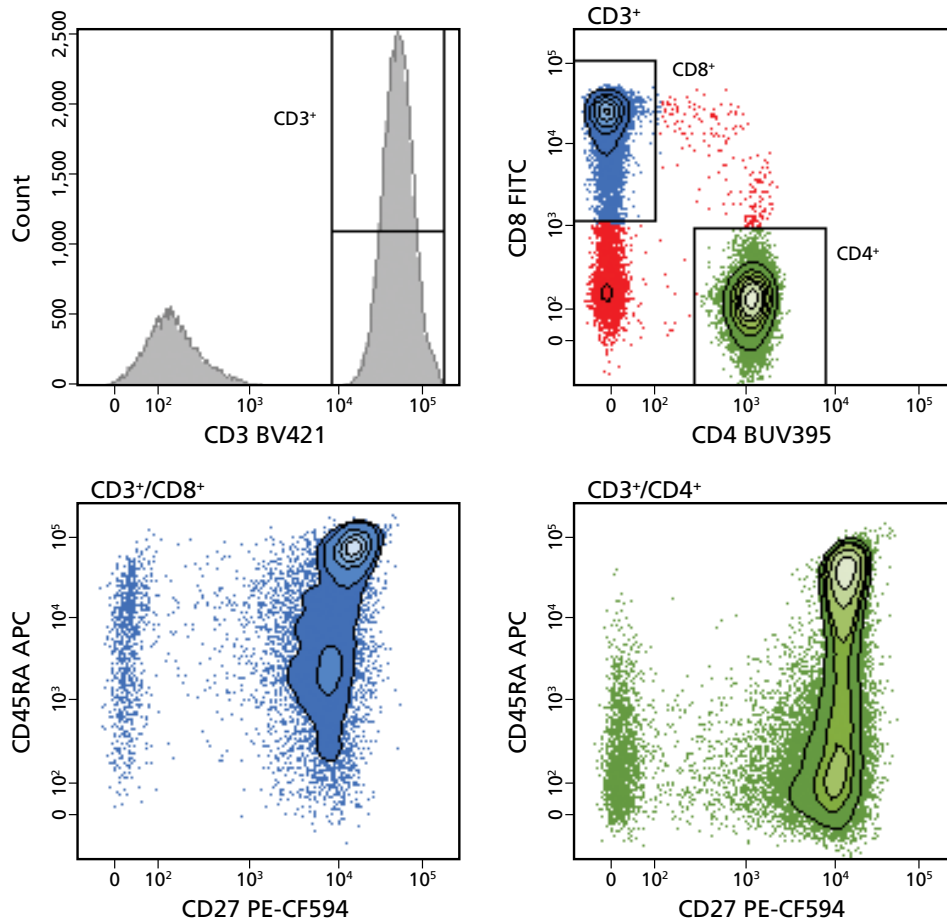


Figure 1. Analysis of Human Naïve, Effector, and Memory T Cells.

Human PBMCs were stained with CD4 BUV395, CD8 FITC, CD3 BV421, CD27 PE-CF594, and CD45RA APC. Singlet lymphocytes were discriminated based on light scatter properties, and the CD3⁺ population was identified (top left). Traditional CD4 and CD8 T-cell subsets can be gated on from the CD3⁺ lymphocyte population (top right). Within the CD8⁺ (bottom left) and CD4⁺ (bottom right) T-cell subsets, naïve (CD27⁺CD45RA⁻), memory (CD27⁻CD45RA⁺), and effector (CD45⁺/CD27⁻) T cells can be identified.

BD LSRFortessa™ X-20 System

Five-Color Panels Designed for Minimal Compensation

Data

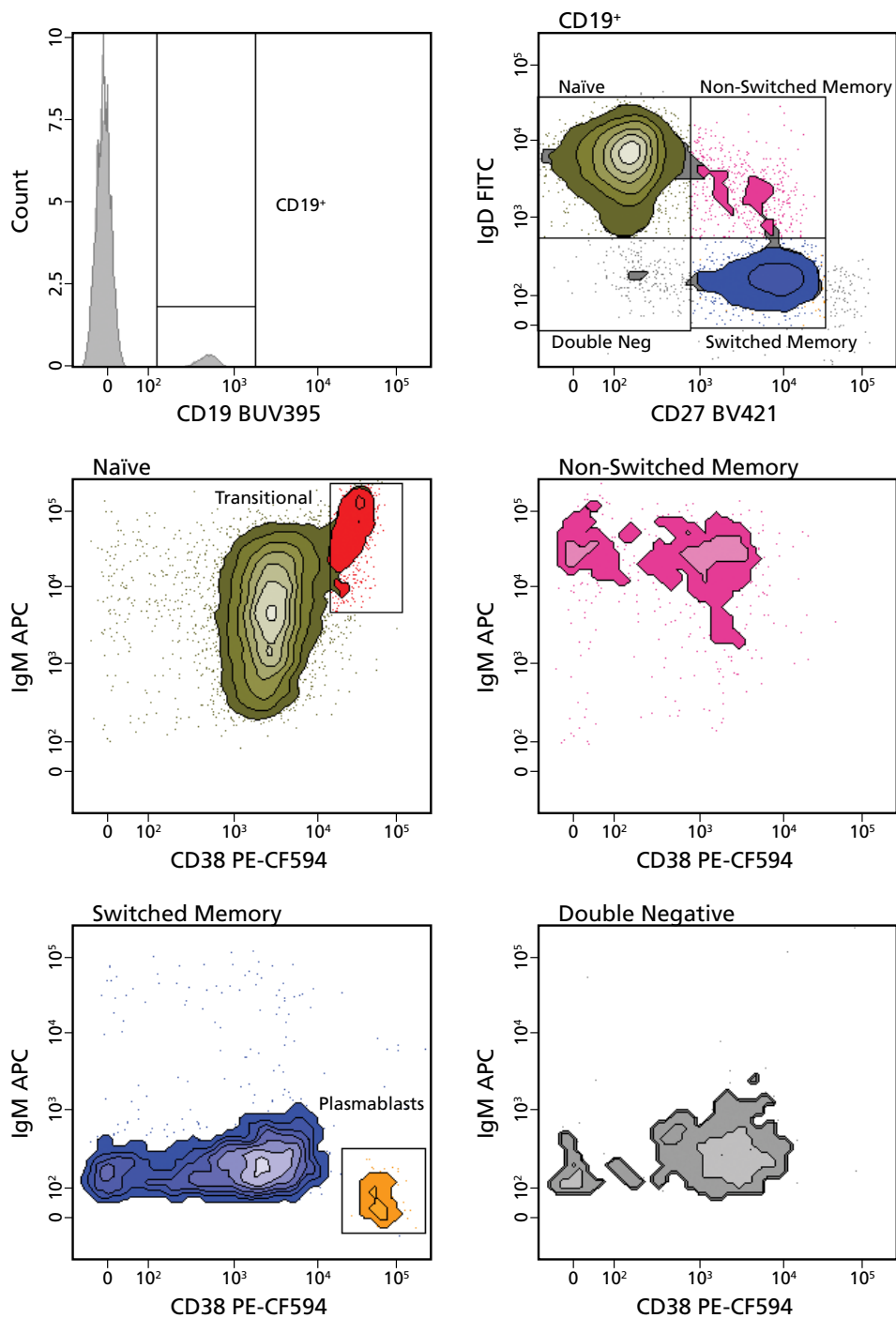


Figure 2. Analysis of Human B-Cell Subsets.

Human PBMCs were stained with CD19 BUV395, CD27 BV421, IgD FITC, CD38 PE-CF594, and IgM APC. Singlet lymphocytes were discriminated based on light scatter properties, and the CD19⁺ population was identified (top left). Naïve, non-switched, switched memory, and double negative B-cell subsets can be identified from the CD19⁺ lymphocyte population based on expression of CD27 and IgD (top right). Within all subsets, IgM vs CD38 expression was analyzed (middle and bottom). Within the naïve B-cell subset (middle left), transitional B cells can be identified as IgM⁺CD38⁺⁺. Within the switched memory subset (bottom left), plasmablasts can be identified as IgM⁺CD38⁺⁺.

BD LSRFortessa™ X-20 System

Five-Color Panels Designed for Minimal Compensation

Data

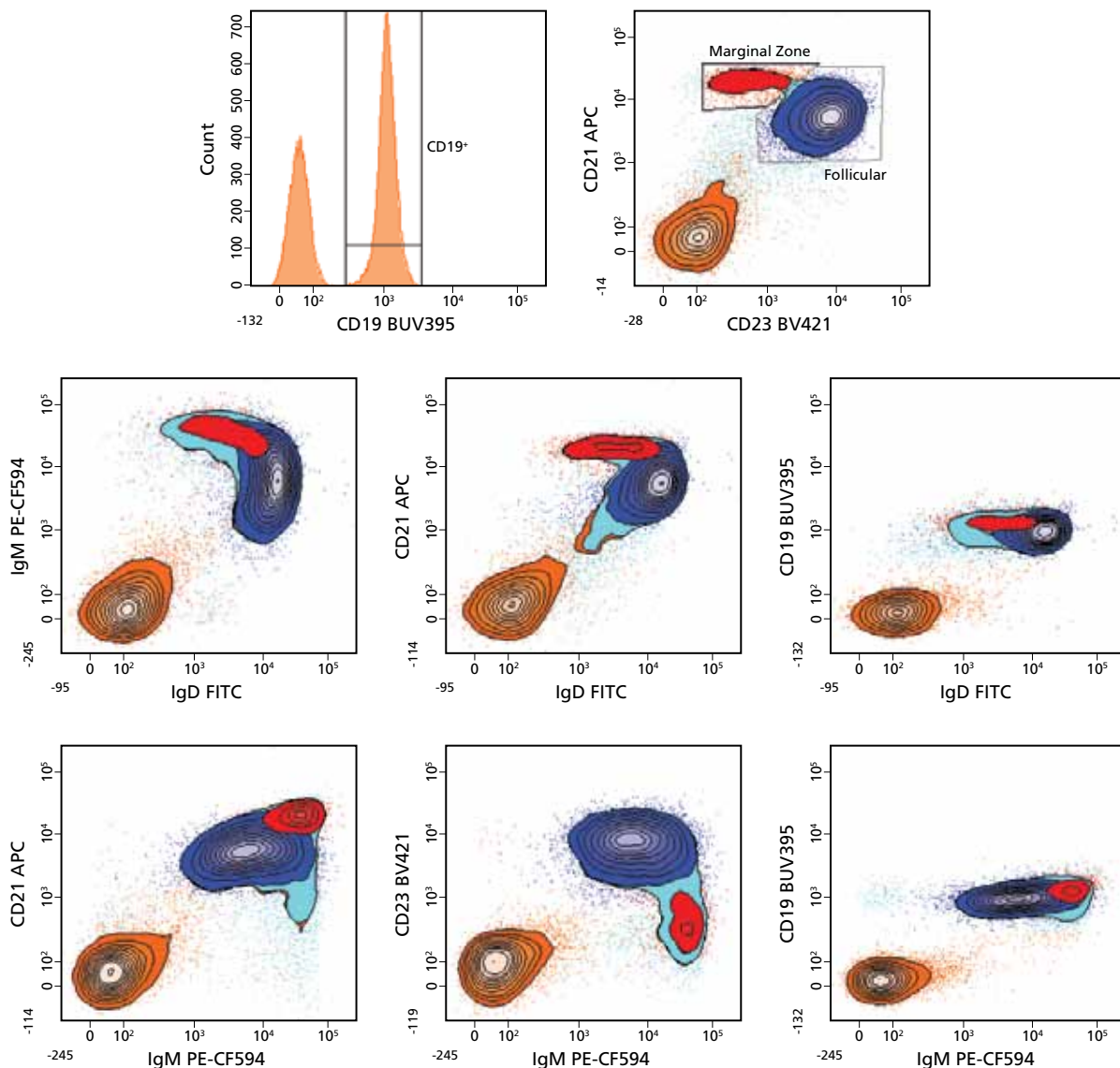


Figure 3. Analysis of Mouse Marginal Zone and Follicular B Cells.

C57BL/6 splenocytes were stained with CD19 BUV395, CD23 BV421, IgD FITC, IgM PE-CF594, and CD21 APC. CD19⁺ B cells (top left) can be subdivided into follicular and marginal zone cells based on expression of CD23 and CD21 (top right). The variable expression of CD21, CD23, IgM, and IgD is shown for the two subsets in the middle and bottom rows. The marginal zone cells show higher expression of IgM and CD21 compared to the follicular cells. In comparison, the expression of CD23 and IgD is higher on the follicular cells.

Conclusion

The five-laser configuration of the BD LSRFortessa X-20 system, combined with novel BD Horizon Brilliant Violet and BD Horizon Brilliant Ultraviolet reagents, enables optimal panel design based on antigen density and fluorochrome brightness while optimizing signal by using all five lasers simultaneously.

BD LSRFortessa™ X-20

Fifteen-Color Immunophenotyping

In this experiment, the BD LSRFortessa X-20 system was used in combination with BD reagents to stain human peripheral blood mononuclear cells (PBMCs) for analysis of common T-cell, B-cell, NK-cell, dendritic-cell (DC), and monocyte subsets. Three different gating strategies enabled identification of T cells, NK-T cells, and regulatory T cells (Tregs); B cells, NK cells, and DCs; and monocytes. The five-laser configuration of the BD LSRFortessa X-20 flow cytometer combined with novel BD Horizon Brilliant Violet and BD Horizon Brilliant Ultraviolet reagents enables optimal panel design based on antigen density and fluorochrome brightness.

Protocol

PBMCs were isolated by preparing a mononuclear cell fraction using Ficoll-Paque Plus. Briefly, 15 mL of whole blood was diluted with 15 mL of phosphate buffered saline (PBS) + 2% fetal bovine serum (FBS). The entire 30 mL of diluted blood was layered over 15 mL of Ficoll-Paque Plus in a 50-mL Falcon® tube. Blood was centrifuged at 400g for 30 minutes at room temperature with the brake off. PBMCs were removed from the plasma-Ficoll interface and washed

twice with BD Pharmingen™ stain buffer. Cells were counted and aliquoted at 1 x 10⁶ cells per tube and incubated with antibodies on ice for 20 minutes, washed, and acquired on a BD LSRFortessa X-20 flow cytometer. Single cells were identified by gating on FSC-A vs FSC-H. Lymphocytes or monocytes were then identified based on FSC vs SSC and further analyzed as described in the subsequent figures.

Instrument Configuration

Laser	Filter	Fluorochrome	Specificity	Clone
Blue 488 nm	530/30	FITC	CD57	HNK-1
	695/40	PerCP-Cy5.5	CD3	SK7
Yellow-Green 561 nm	586/15	PE	CD11c	S-HCL-3
	610/20	BD Horizon PE-CF594	CD16	3G8
	780/60	PE-Cy7	CD33	P67.6
Red 640 nm	670/30	APC	CD56	NCAM16.2
	730/45	Alexa Fluor® 700	CD20	2H7
	780/60	APC-H7	HLA-DR	L243
Violet 405 nm	450/40	BD Horizon BV421	CD123	9F5
	525/50	BD Horizon V500	CD14	MφP9
	610/20	BD Horizon BV605	CD25	2A3
	660/20	BD Horizon BV650	CD335 (NKp46)	9E2/Nkp46
	710/50	BD Horizon BV711	CD8	RPA-T8
780/60	BD Horizon BV786	CD19	SI25C1	
Ultraviolet 355 nm	379/28	BD Horizon BUV395	CD4	SK3

BD LSRFortessa™ X-20

Fifteen-Color Immunophenotyping

Data

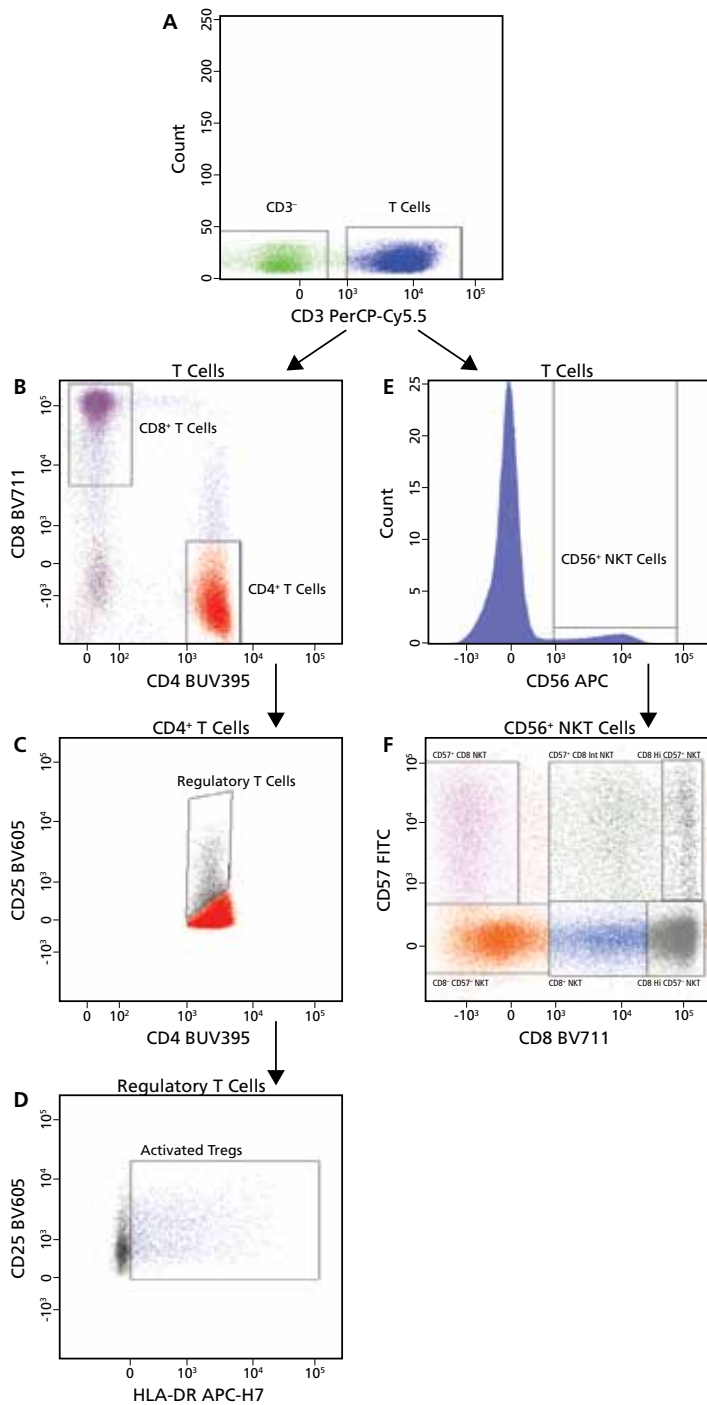


Figure 1. Distinguishing helper and cytotoxic T cells, Tregs, and NK-T cells.

The CD3⁺ population (A) contains traditional CD4 and CD8 T cells in addition to Tregs and natural killer T cells. Gating on CD4⁺ T cells (B) allows the identification of CD25⁺ Tregs (C) that can be further analyzed for activation based on HLA-DR expression (D). Natural killer T cells are characterized by CD56 expression within the CD3⁺ subset (E). With the use of multicolor flow cytometry, we can identify NK-T-cell subsets based on CD57 and CD8 expression (F).

BD LSRFortessa™ X-20

Fifteen-Color Immunophenotyping

Data

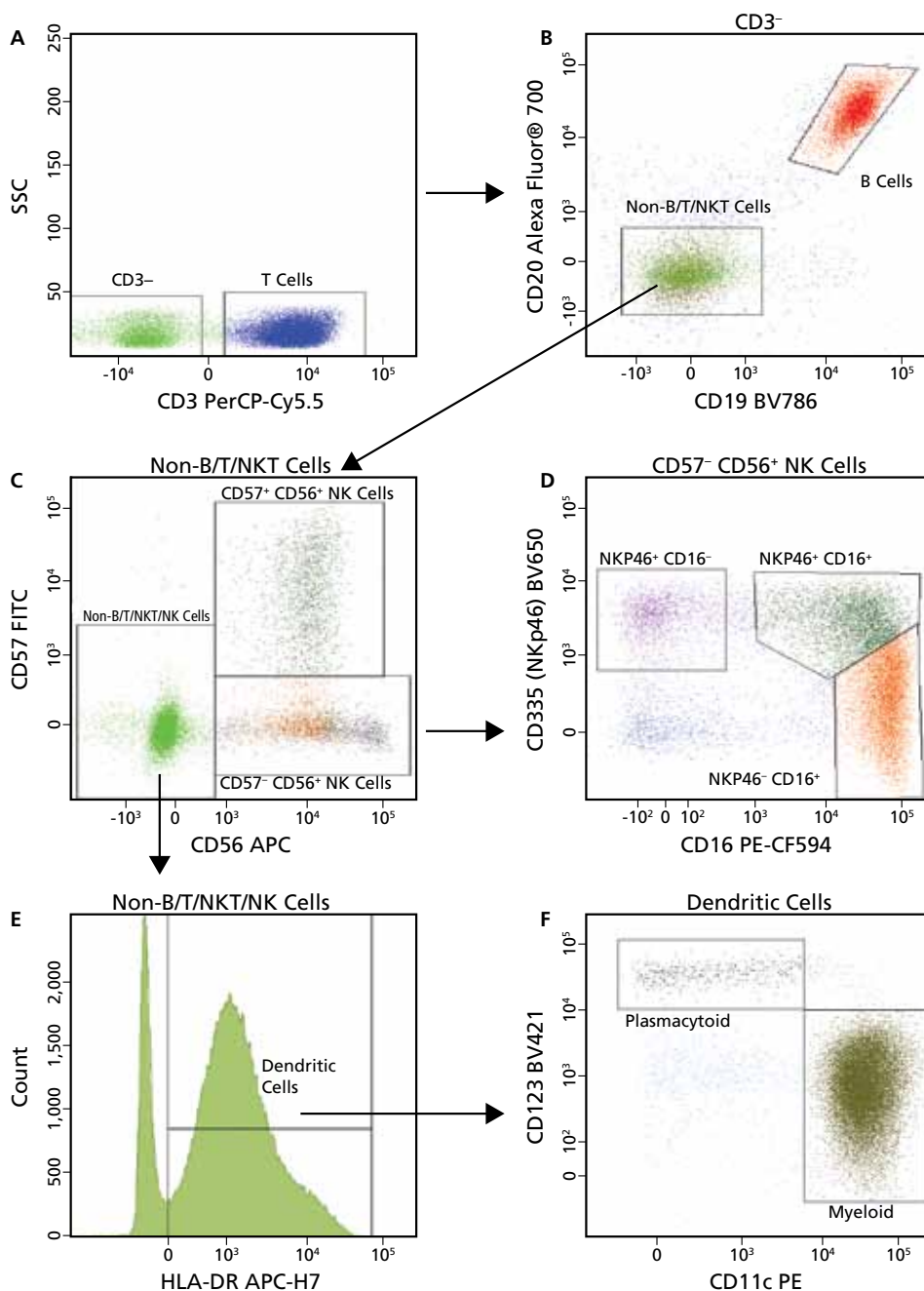


Figure 2. Distinguishing B cells, NK cells, and DC subsets.

Gating CD3⁻ negative cells (A) allows for identification of B cells, NK cells, and DCs. CD19 and CD20 identify the B-cell population, while cells negative for CD19/CD20/CD3 (B) include NK cells and DCs (C). CD56 and CD57 identify functionally distinct mature NK cell populations from other subsets of NK cells based on CD16 and CD335 expression (D). Remaining PBMCs contain dendritic cells that can be identified as CD123^{hi}CD11c⁻ plasmacytoid and CD123⁻CD11c^{hi} myeloid subsets (E, F).

BD LSRFortessa™ X-20

Fifteen-Color Immunophenotyping

Data

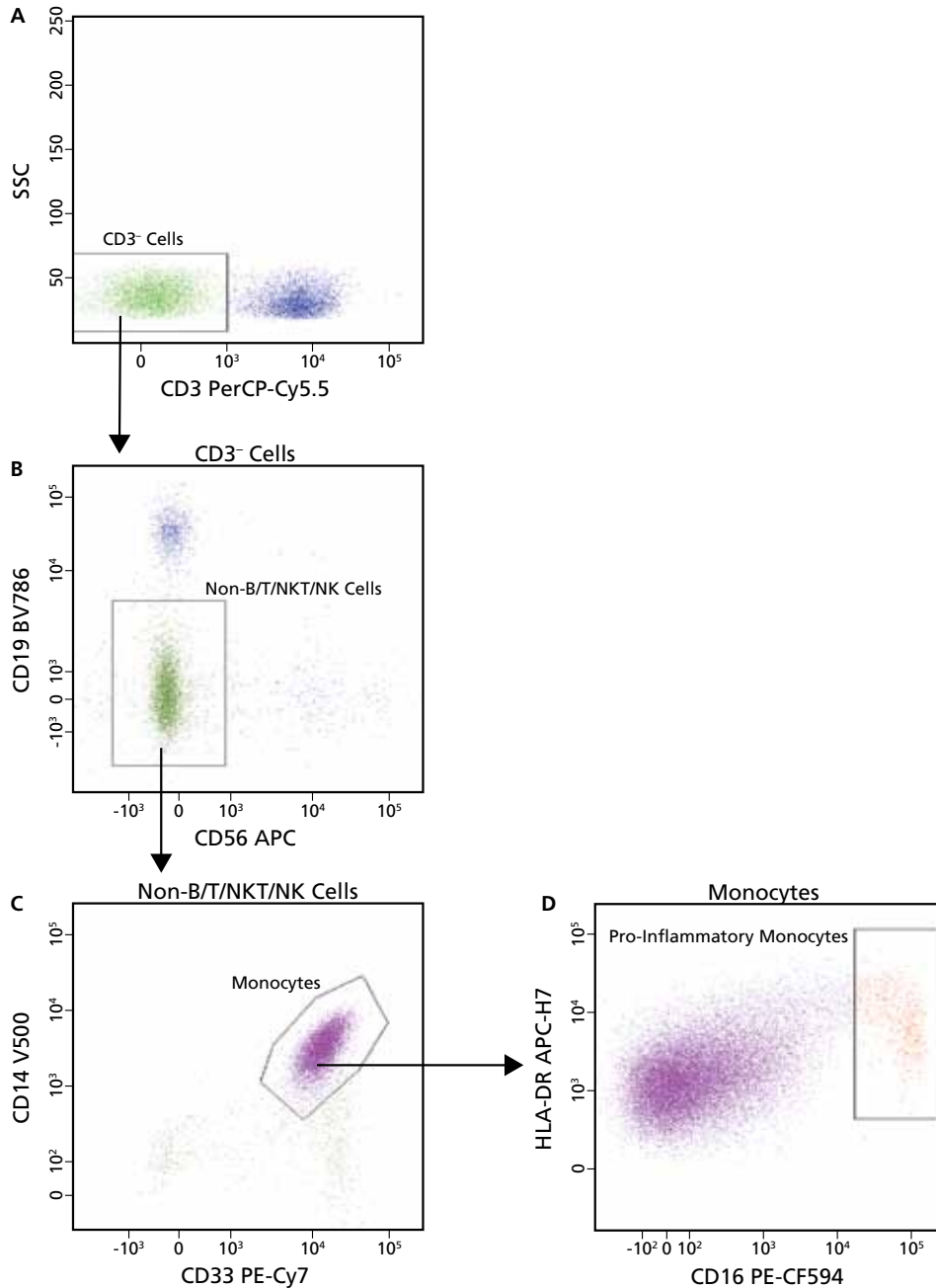


Figure 3. Identification of pro-inflammatory monocytes.

Monocyte gates based on light scatter can be further refined by gating out T, B, and NK cells based on CD3, CD19, and CD56 respectively (A, B). Monocytes are clearly identified based on CD14 and CD33 expression (C). Pro-inflammatory monocytes are identified as CD16^{hi}HLA-DR^{hi} cells (D).

Conclusion

A five-laser BD LSRFortessa X-20 system and BD flow cytometry reagents enable high-order multiplexing of results. In this 15-color example, we were able to subset PBMCs into 7 unique populations.

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APC-Cy7: US patent 5,714,386

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