

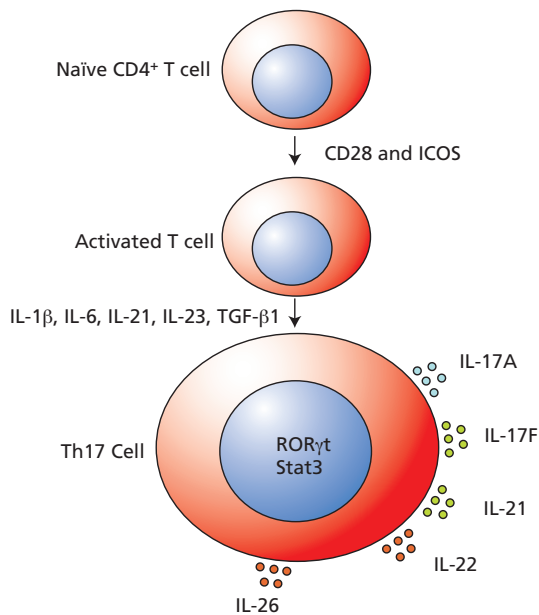
Human Th17 Research Products

A comprehensive portfolio for inflammation and autoimmunity research

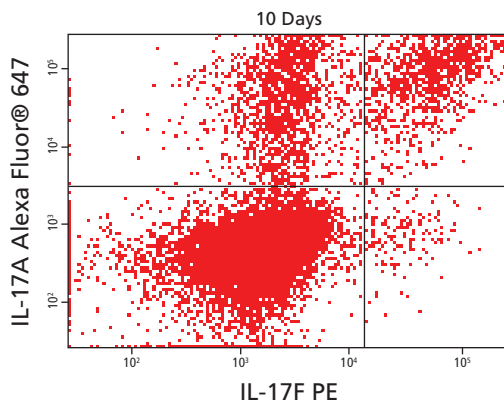
Features

Available in a wide selection of fluorochrome conjugates, to provide flexibility in panel design

Also offered in the BD Cytometric Bead Array (CBA) format for simultaneous quantitation of multiple analytes from a single sample



Th17 differentiation pathway. Induction of the Th17 lineage from a naïve T cell requires engagement of CD28 and ICOS in the presence of the appropriate cytokines. These cytokines promote expression of the signature Th17 cytokines via the ROR γ T and Stat3 transcription factors.



Cells polarized toward a Th17 phenotype were characterized for IL-17A and IL-17F expression, using the BD Cytotfix/Cytoperm protocol. Human PBMCs were stimulated with plate-bound anti-CD3, soluble anti-CD28, recombinant IL-1 β , recombinant IL-2, recombinant IL-6, recombinant IL-23, recombinant TGF- β , and neutralizing antibodies to IFN- γ and IL-4 for 10 days. Cells were re-stimulated with PMA/Ionomycin for 5 hours in the presence of BD GolgiStop™ (monensin) protein transport inhibitor prior to harvest, staining, and flow cytometric analysis.

The BD Biosciences portfolio of Th17-related reagents provides essential tools for inflammation and autoimmunity research. Measurement of the hallmark cytokines IL-17A, IL-17F, and IL-21 can provide insight into the function of this novel T helper cell subset.

BD Pharmingen™ IL-17A, IL-17F, and IL-21 reagents are available in ready-to-use fluorochrome-conjugated formats for multicolor flow cytometry. Additionally, they are available as BD™ Cytometric Bead Array (CBA) assays to enable simultaneous quantitation of multiple analytes, further enhancing research productivity by providing more data from less sample in a shorter time.

Quality monoclonal antibodies

Clone N49-653 reacts with recombinant and natural human IL-17A, also known as CTLA-8. Clone O33-782 reacts with human IL-17F. IL-17A and IL-17F are both members of the IL-17 family of proinflammatory cytokines that includes IL-17A, IL-17B, IL-17C, IL-17D, IL-17E (IL-25), and IL-17F.¹ IL-17A and IL-17F work in concert to enhance the Th17 response. However each has independent functions as well.

Antibody clone 3A3-N2.1 recognizes human IL-21, a protein involved in differentiation and maintenance of the Th17 response. IL-21 is also a regulatory cytokine involved in destroying virus-infected cells.

Maximum flexibility in multicolor experiment design

These antibodies use the BD Cytotfix/Cytoperm™ buffer system and staining protocol which are compatible with surface staining. The availability of IL-17A, IL-17F, and IL-21 antibodies in multiple fluorochrome-conjugated formats, along with a large catalog of surface marker antibodies, provides a robust system for designing a staining panel for flow cytometric analysis of Th17 cells.

More data from less sample with BD CBA assays

The BD CBA system makes it possible to quantitate IL-17A and its related factors IL-21 and the shared p40 subunit of IL-12 and IL-23 in human serum, plasma, and supernatant samples. The multiplex format significantly reduces sample requirements and experiment time. Multiplexing can also yield contextual answers that might be more relevant than single measurements. A single-plex assay is also available for detection of TGF- β 1 in acidified samples.

The BD CBA system works with flow cytometry to create a powerful multiple analyte (multiplex) assay system. It uses antibody-coated beads to capture analytes efficiently. Each bead has a unique fluorescence intensity. With the broad dynamic range of fluorescence detection offered by flow cytometry, multiple analytes can be run simultaneously in a single tube, significantly reducing sample requirements and experiment time.

Visit bdbiosciences.com/cba for more information.



Human Th17 Research Products - A comprehensive portfolio for inflammation and autoimmunity research

Th17 cells in inflammation and autoimmune response

A subset of helper T cells that produce IL-17A has been shown to have an important role in the induction of autoimmune tissue injury. These cells (called Th17 cells) are distinct from Th1 or Th2 cells, since they do not produce classical Th1 or Th2 cytokines such as IFN- γ or IL-4. They play a key role in human models of autoimmunity, and it has been suggested that the differentiation pathway of Th17 cells requires IL-1 β , IL-6, TGF- β , IL-21, and IL-23.²⁻⁴ RORC2 (the human analog of murine ROR γ T) is a key transcription factor involved in the induction of Th17 cells.² RORC2 expression can be upregulated by TGF- β alone, although it is not sufficient to induce IL-17 expression.³ Furthermore, it is believed that the relative balance of TGF- β in steady state would tilt the balance in favor of either Th17 or regulatory T-cell differentiation in diverse tissues.

Maintenance of a Th17 response primarily depends on IL-1 β , IL-23 (p19/p40), and TNF produced by antigen-presenting cells. IL-23 binds to the IL-23 receptor, which triggers downstream activation of STAT3 and subsequent production of IL-17A.

Since IL-17A leads to the induction of many proinflammatory factors such as TNF, IL-6, and IL-1 β , it has been suggested that Th17 cells might be responsible for the development and/or progression of autoimmune diseases such as systemic lupus erythematosus and multiple sclerosis.⁴

References

1. Aggarwal S, Gurney AL. IL-17: prototype member of an emerging cytokine family. *J Leukoc Biol.* 2002;71:1-8.
2. Yang L, Anderson DE, Baecher-Allan C, et al. IL-21 and TGF-beta are required for differentiation of human Th17 cells. *Nature.* 2008;454:350-352.
3. Manel N, Unutmaz D, Littman DR. The differentiation of human Th-17 cells requires transforming growth factor- β and induction of the nuclear receptor ROR γ T. *Nat Immunol.* 2008;9:641-649.
4. Volpe E, Servant N, Zollinger R, et al. A critical function for transforming growth factor- β , interleukin 23 and proinflammatory cytokines in driving and modulating human Th-17 responses. *Nat Immunol.* 2008;9:650-657.

Ordering Information - Antibody Product List

Description	React	Clone	Isotype	Apps	Format	Size	Cat. No.
IL-17A	Hu	N49-653	Ms IgG ₁ , κ	IC/FCM	Alexa Fluor® 488	25 tests	560489
					Alexa Fluor® 488	100 tests	560488
					Alexa Fluor® 647	25 tests	560491
					Alexa Fluor® 647	100 tests	560490
					Alexa Fluor® 700	50 tests	560613
					BD Horizon™ V450	50 tests	560610
					PE	25 tests	560487
					PE	100 tests	560486
					PerCP-Cy™5.5	100 tests	560799
IL-17F	Hu	O33-782	Ms IgG ₁ , κ	IC/FCM	Alexa Fluor® 488	25 tests	561332
					Alexa Fluor® 488	100 tests	561331
					Alexa Fluor® 647	25 tests	561334
					Alexa Fluor® 647	100 tests	561333
					PE	25 tests	561198
					PE	100 tests	561197
					PerCP-Cy5.5	25 tests	561336
					PerCP-Cy5.5	100 tests	561335
IL-21	Hu	3A3-N2.1	Ms IgG1	IC/FCM	Alexa Fluor® 647	100 tests	560493
				IC/FCM	PE	100 tests	560463
BD Cytofix/Cytoperm fixation/permeabilization kit				IC/FCM		250 tests	554714
BD Cytofix/Cytoperm fixation/permeabilization kit with BD GolgiPlug™				IC/FCM		250 tests	555028
BD Cytofix/Cytoperm fixation/permeabilization kit with BD GolgiStop				IC/FCM		250 tests	554715

BD Cytometric Bead Array Product List

Description	Size	Cat. No.
Human IL-1 β Flex Set (Bead B4)	100 tests	558279
Human IL-6 Flex Set (Bead A7)	100 tests	558276
Human IL-10 Flex Set (Bead B7)	100 tests	558274
Human IL-12/IL-23p40 Flex Set (Bead E5)	100 tests	560154
Human IL-17A Flex Set (Bead B5)	100 tests	560383
Human IL-21 Flex Set (Bead B8)	100 tests	560358
Human TGF- β 1 Single Plex Flex Set	100 tests	560429
Human Soluble Protein Master Buffer Kit	100 tests	558264
	500 tests	558265

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