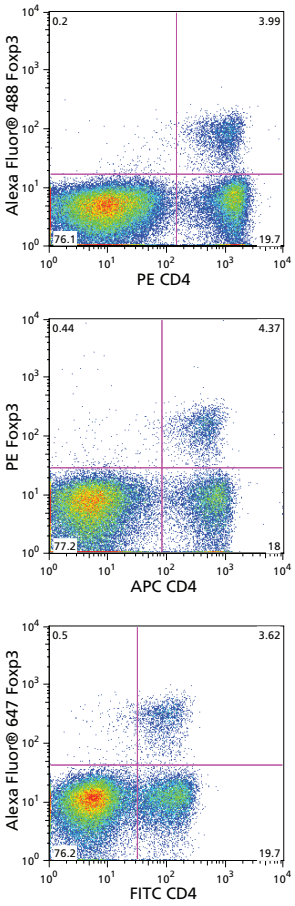
Mouse Foxp3
Monoclonal antibodies

Features

- Useful for the identification of mouse regulatory T cells
- Available in a wide selection of fluorochrome-conjugated antibodies, including Alexa Fluor® 488, Alexa Fluor® 647, and PE
- Optimized buffer system that is compatible with many antibodies to cell surface markers and cytokines such as IL-17A



Detection of CD4⁺ and Foxp3⁺ Treg cells in BALB/c mouse splenocytes. BALB/c mouse splenocytes were surface-stained with Rat Anti-Mouse CD4 (PE, APC, or FITC), clone RM4-5 (Cat. Nos. 553048, 553051, or 553047). They were then fixed and permeabilized using the BD Pharmingen™ Mouse Foxp3 Buffer Set (Cat. No. 560409), followed by intracellular staining with Alexa Fluor® 488 Rat Anti-Mouse Foxp3 (Cat. No. 560403, 0.12 µg/test), PE Rat Anti-Mouse Foxp3 (Cat. No. 560408, 0.25 µg/test), or Alexa Fluor® 647 Rat Anti-Mouse Foxp3 (Cat. No. 560401, 0.03 µg/test). The dot plots were derived from the gated events based on light scattering characteristics of lymphocytes. Flow cytometry was performed on a BD FACSCalibur™ system.

The BD Mouse Foxp3 antibody and buffer system allows the study of not only mouse regulatory T cells, but also the emerging area of regulatory T cell plasticity. This system is compatible with several markers, including CD4, CD25, IL-17A, and interferon-γ.

Mouse Foxp3 antibody (clone MF23) conjugates and simple buffer system

The new BD Pharmingen™ mouse Foxp3 monoclonal antibody (clone MF23) reacts with the mouse Foxp3 transcription factor, a member of the forkhead (or winged) helix family of transcription factors.[1,2] Immunoblotting with MF23 antibody has confirmed that it recognizes an epitope between amino acids 1 and 87 in the N-terminal domain.

Available conjugates include Alexa Fluor® 488, Alexa Fluor® 647, and PE formats to enable maximum flexibility for design of multicolor panels in combination with any of our family of BD FACS™ brand flow cytometers. The buffer system fixes and permeabilizes cells in just a few simple steps.

Regulatory T cells

Regulatory T cells (Tregs) play a critical role in the maintenance of immunological self-tolerance and the suppression of excessive immune response. Early studies in mice demonstrated that adult thymectomy followed by several rounds of sublethal irradiation of normal mice produces autoimmune thyroiditis and type I diabetes. This autoimmunity could be prevented by the inoculation of normal T cells from syngeneic hosts.[3]

Subsequent studies aimed to further characterize the autoimmune suppressive T cells identified CD25 as a phenotypic marker. In mice, all CD25⁺ cells are considered to be Treg cells in contrast to humans, where a subset of CD25⁺ cells are considered to be Tregs.[4]

Types of Treg cells include natural CD4⁺ Treg cells, Th3 cells, Tr1 cells, and CD8⁺ Treg cells. Natural Treg cells are developed primarily in the thymus from positively selected thymocytes with a relatively high avidity for self-antigens. Approximately 5–10% of peripheral CD4⁺ cells are CD4⁺ CD25⁺ Tregs, and can first be seen at the single-positive stage of T-lymphocyte development.[5,6] The percentage of Tregs has been reported to vary by mouse strain.[7]

Visit **bdbiosciences.com/treg** for more information.

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Discovery of Mouse Foxp3

Foxp3 was originally identified as the defective gene in the mouse strain Scurfy. Scurfy mice develop a lymphoproliferative disorder which is typically fatal within one month after birth. Similarities between the mouse disease model and the autoimmunity/inflammation produced by Treg depletion prompted researchers to examine the role of Foxp3 in Tregs.[1,3]

The resulting studies revealed that mouse $CD4^+CD25^+$ T cells express Foxp3, but other thymocytes do not. Ectopic retroviral transduction of the Foxp3 gene into $CD4^+CD25^-$ T cells can convert them into $CD4^+CD25^+$ cells. These cells are also able to function as Tregs suppressing proliferation of other T cells in vitro and inhibiting the development of mouse autoimmune disease.[1]

Foxp3 as a Treg marker

Foxp3 (also known as scurfin) is a defining marker for Tregs in both mouse and human cells. A 50–55 kDa member of the forkhead (or winged) helix family of transcription factors, Foxp3 is critical for the differentiation of α/β TCR-positive T cells into Tregs in the thymus.[3] Foxp3 is believed to regulate Treg development and function through the suppression of cytokines such as interleukin-2 (IL-2) and interferon-γ (IFN-γ). Foxp3 is also reported to up-regulate CD25, CTLA4 (Cytotoxic T-Lymphocyte Associated Antigen-4), and GITR (glucocorticoid-induced tumor necrosis factor receptor).[8]

References:

1. Hori S, Nomura T, Sakaguchi S. Control of regulatory T cell development by the transcription factor Foxp3. *Science*. 2003;299:1057-1061.
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4. Liu W, Putnam AL, Xu-Yu Z, et al. CD127 expression inversely correlates with Foxp3 and suppressive function of human $CD4^+$ T reg cells. *J Exp Med*. 2006;203:1701-1711.
5. Piccirillo CA, Thornton AM. Cornerstone of peripheral tolerance: naturally occurring $CD4^+$ $CD25^+$ regulatory T cells. *Trends Immunol*. 2004;25:374-380.
6. Smith TR, Kumar V. Revival of $CD8^+$ Treg-mediated suppression. *Trends Immunol*. 2008;29: 337-342.
7. Feuerer M, Jiang W, Holler PD, et al. Enhanced thymic selection of $Foxp3^+$ regulatory T cells in the NOD mouse model of autoimmune diabetes. *Proc Natl Acad Sci U S A*. 2007;104:18181-18186.
8. Ono M, Yaguchi H, Ohkura N, et al. Foxp3 controls regulatory T-cell function by interacting with AML1/Runx1. *Nature*. 2007;446:685-689.

For more information on BD Biosciences regulatory T cell offerings, visit **bdbiosciences.com/treg**.

Ordering Information

Description	Clone	Isotype	Format	Size	Cat. No.
Mouse Foxp3	MF23	Rat $IgG_{2b,\ \kappa}$	Alexa Fluor® 488	0.025 mg	**560407**
				0.1 mg	**560403**
			Alexa Fluor® 647	0.025 mg	**560402**
				0.1 mg	**560401**
			PE	0.025 mg	**560414**
				0.1 mg	**560408**
Mouse Foxp3 Buffer Set				100 tests	**560409**

Related Products

Description	Clone	Isotype	Format	Size	Cat. No.
Mouse TH17/Treg Phenotyping Kit Contents include Mouse Th17/Treg Phenotyping Cocktail (CD4 PerCP-Cy™5.5, IL-17A PE, Foxp3 Alexa Fluor® 647), Mouse Foxp3 buffers, BD GolgiStop™ Protein Transport Inhibitor				50 tests	**560767**
Mouse CD4	RM4-5	Rat $IgG_{2a,\ \kappa}$	APC	0.1 mg	**553051**
			FITC	0.5 mg	**553047**
			PE	0.1 mg	**553048**
Mouse CD25	PC61	Rat $IgG_{1,\ \lambda}$	APC	0.1 mg	**557192**
			PE	0.2 mg	**553866**
Rat $IgG_{2b,\ \kappa}$	A95-1	Rat $IgG_{2b,\ \kappa}$	Purified	0.25 mg	**559478**
			Alexa Fluor® 488	0.1 mg	**557726**
			PE	0.1 mg	**556925**
BD PharmLyse™ Lysing Buffer (10x concentrate)				100 mL	**555899**
BD Pharmingen™ Stain Buffer (FBS)				500 mL	**554656**

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