Monoclonal Antibodies Detecting Human Antigens

BD FastImmune™ Anti-Human IL-4 (3010.211)

Form	Catalog number
PE	340451

Product availability varies by region. Contact BD Biosciences Customer Support or your local sales representative for information.

RESEARCH APPLICATIONS

Research applications include studies of:

- Lymphocyte subsets based on cytokine expression[1-5]
- Disease pathogenesis[6-10]
- Activated lymphocytes[1,5,11]
- T_H1 and T_H2 lymphocytes[9,11]
- T-lymphocyte effector functions[3,5,11]
- Hematopoiesis[3,12-14]

DESCRIPTION

Specificity

The Anti-Human Interleukin-4 (Anti-Hu–IL-4) antibody recognizes a 15- to 19-kilodalton (kDa) glycoprotein.[12]

Antigen distribution

Originally described as a B cell growth factor (BCGF),[12,15] IL-4 is produced by activated helper $CD4^+$ T lymphocytes (T_H0 and T_H2),[16] $CD8^+$ T lymphocytes, basophils, and mast cells.[12,16,17] IL-4 is a pleiotropic cytokine which causes multiple immune responses.[12,15,18] IL-4 suppresses IL-2–mediated activation and natural killer (NK) cell proliferation.[19] IL-4 binds to a high-affinity cell-surface receptor (IL-4R) to exert its effects.[15] It promotes the growth and differentiation of activated human B lymphocytes and shares many biological functions with IL-13.[20] IL-4 regulates the growth of IL-3 dependent myeloid cell lines.[13]

Clone

The Anti-Hu–IL-4 antibody, clone 3010.211, is derived from the hybridization of Sp2/0 mouse cells with spleen cells from BALB/c mice immunized with recombinant human IL-4.

Composition

The Anti-Hu–IL-4 antibody is composed of mouse IgG_1 heavy chains and kappa light chains.

Product configuration

The following is supplied in phosphate buffered saline (PBS) containing a stabilizer and a preservative.

Form	Number of tests	Volume per test (µL)[a]	Amount provided (µg)	Total volume (mL)	Concentration (µg/mL)	Stabilizer	Preservative
PE	50	20	12.5	1.0	12.5	Gelatin	0.1% Sodium azide

a. Volume required to stain 10^6 cells.

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

Becton, Dickinson and Company
BD Biosciences
2350 Qume Drive
San Jose, CA 95131 USA

bdbiosciences.com
ResearchApplications@bd.com

11/2014 23-3239-04

PROCEDURE

Visit our website (bdbiosciences.com) or contact your local BD representative for the lyse/wash protocol for direct immunofluorescence.

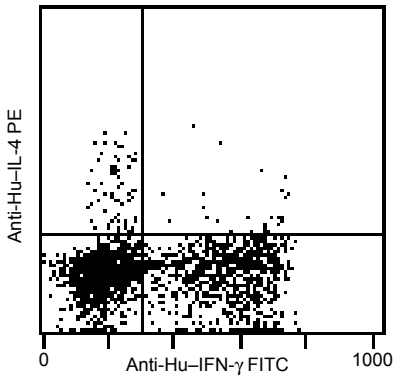
Abbreviated intracellular staining

1. After surface staining activated whole blood with fluorescent-conjugated monoclonal antibodies, lyse the red blood cells by adding 2 mL of 1X BD FACS™ lysing solution (Cat. No. 349202).
2. Vortex gently and incubate 5 to 10 minutes at room temperature.
3. Centrifuge at 500 x *g* for 5 minutes.
4. Add 500 µL of 1X BD FACS™ Permeabilizing Solution (Cat. No. 340457).
5. Vortex and incubate for 10 minutes at room temperature in the dark.
6. Wash by adding PBS containing 0.5% bovine serum albumin (BSA) and 0.1% sodium azide (NaN_3), and centrifuge for 5 minutes.
7. Add 20 µL of fluorescent-conjugated intracellular antibodies.
8. Vortex and incubate for 30 minutes at room temperature in the dark.
9. Repeat wash step.
10. Resuspend cells in 1% paraformaldehyde in PBS.

REPRESENTATIVE DATA

Flow cytometric analysis was performed on activated lysed whole blood with a gate set on the $CD3^+$ T-lymphocyte population. Laser excitation is at 488 nm. Representative data analyzed with a BD FACS™ brand flow cytometer is shown in the following figure.

Figure 1 Four-hour PMA + ionomycin–activated lysed whole blood analyzed with a BD FACS brand flow cytometer



HANDLING AND STORAGE

Store vials at 2°C–8°C. Conjugated forms should not be frozen. Protect from exposure to light. Each reagent is stable until the expiration date shown on the bottle label when stored as directed.

WARNING

All biological specimens and materials coming in contact with them are considered biohazards. Handle as if capable of transmitting infection[21,22] and dispose of with proper precautions in accordance with federal, state, and local regulations. Never pipette by mouth. Wear suitable protective clothing, eyewear, and gloves.

CHARACTERIZATION

To ensure consistently high-quality reagents, each lot of antibody is tested for conformance with characteristics of a standard reagent. Representative flow cytometric data is included in this data sheet.

WARRANTY

Unless otherwise indicated in any applicable BD general conditions of sale for non-US customers, the following warranty applies to the purchase of these products.

THE PRODUCTS SOLD HEREUNDER ARE WARRANTED ONLY TO CONFORM TO THE QUANTITY AND CONTENTS STATED ON THE LABEL OR IN THE PRODUCT LABELING AT THE TIME OF DELIVERY TO THE CUSTOMER. BD DISCLAIMS HEREBY ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE AND NONINFRINGEMENT. BD'S SOLE LIABILITY IS LIMITED TO EITHER REPLACEMENT OF THE PRODUCTS OR REFUND OF THE PURCHASE PRICE. BD IS NOT LIABLE FOR PROPERTY DAMAGE OR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING PERSONAL INJURY, OR ECONOMIC LOSS, CAUSED BY THE PRODUCT.

REFERENCES

1. Elson LH, Nutman TB, Metcalfe DD, Prussin C. Flow cytometric analysis for cytokine production identifies T-helper 1, T-helper 2, and T-helper 0 cells within the human $CD4^{+}CD27^{-}$ lymphocyte subpopulation. *J Immunol.* 1995;154:4294-4301.
2. Romagnani S, Del Prete G, Maggi E, et al. Human T_H1 and T_H2 subsets. *Int Arch Allergy Immunol.* 1992;99:242-245.
3. Powrie F, Coffman RL. Cytokine regulation of T-cell function: Potential for therapeutic intervention. *Immunol Today.* 1993;14:270-274.
4. Openshaw P, Murphy EE, Hosken NA, et al. Heterogeneity of intracellular cytokine synthesis at the single-cell level in polarized T helper 1 and T helper 2 populations. *J Exp Med.* 1995;182:1357-1367.
5. Picker LJ, Singh MK, Zdraveski Z, et al. Direct demonstration of cytokine synthesis heterogeneity among human memory/effector T cells by flow cytometry. *Blood.* 1995;86:1408-1419.
6. Maggi E, Mazzetti M, Ravina A, et al. Ability of HIV to promote a T_H1 to T_H0 shift and to replicate preferentially in T_H2 and T_H0 cells. *Science.* 1994;265:244-248.
7. Graziosi C, Pantaleo G, Gantt K, et al. Lack of evidence for the dichotomy of T_H1 and T_H2 predominance in HIV-infected individuals. *Science.* 1994;265:248-252.
8. Hyjek E, Lischner HW, Hyslop T, et al. Cytokine patterns during progression to AIDS in children with perinatal HIV infection. *J Immunol.* 1995;155:4060-4071.
9. Clerici M, Hakim FT, Venzon DJ, et al. Changes in interleukin-2 and interleukin-4 production in asymptomatic, human immunodeficiency virus-seropositive individuals. *J Clin Invest.* 1993;91:759-765.
10. Clerici M, Shearer GM. A $T_H1 \rightarrow T_H2$ switch is a critical step in the etiology of HIV infection. *Immunol Today.* 1993;14:107-110.
11. ElGhazali GEB, Paulie S, Andersson G, et al. Number of interleukin-4-and interferon-γ–secreting human T cells reactive with tetanus toxoid and the mycobacterial antigen PPD or phytohemagglutinin: Distinct response profiles depending on the type of antigen used for activation. *Eur J Immunol.* 1993;23:2740-2745.
12. Paul, WE. Interleukin-4: A prototypic immunoregulatory lymphokine. *Blood.* 1991;77:1859-1870.
13. Keegan AD, Nelms K, Wang L-M, Pierce JH, Paul WE. Interleukin 4 receptor: signaling mechanisms. *Immunol Today.* 1994;15:423-432.
14. Carding SR, Hayday AC, Bottomly K. Cytokines in T-cell development. *Immunol Today.* 1991;12:239-245.
15. Idzerda RL, March CJ, Mosley B, et al. Human interleukin 4 receptor confers biological responsiveness and defines a novel receptor superfamily. *J Exp Med.* 1990;171:861-873.
16. Street NE, Mosmann TR. Functional diversity of T lymphocytes due to secretion of different cytokine patterns. *FASEB Journal.* 1991;5:171-176.
17. Bradding P, Feather IH, Howarth PH, et al. Interleukin 4 is localized to and released by human mast cells. *J Exp Med.* 1992;176:1381-1386.
18. Elliott MJ, Gamble JR, Park LS, Vadas MA, Lopez AF. Inhibition of human monocyte adhesion by interleukin-4. *Blood.* 1991;77:2739-2745.
19. Nagler A, Lanier LL, Phillips JH. The effects of IL-4 on human natural killer cells: A potent regulator of IL-2 activation and proliferation. *J Immunol.* 1988;141:2349-2351.
20. Aversa G, Punnonen J, Cocks BG, et al. An interleukin 4 (IL-4) mutant protein inhibits both IL-4 or IL-13-induced human immunoglobulin G4 (IgG4) and IgE synthesis and B cell proliferation: Support for a common component shared by IL-4 and IL-13 receptors. *J Exp Med.* 1993;178:2213-2218.

21. *Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline — Third Edition.* Wayne, PA: Clinical and Laboratory Standards Institute; 2005. CLSI document M29-A3.

22. Centers for Disease Control. Perspectives in disease prevention and health promotion update: universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care settings. *MMWR*. 1988;37:377-388.

PATENTS AND TRADEMARKS