



BD CD64 (10.1)

Monoclonal Antibodies Detecting Human Antigens

Form	Catalog number
------	----------------

PE	644385
----	--------

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

Research Applications

Research applications include studies of:

- Inflammatory response¹
- Neutrophil and monocyte function^{1,2}
- Dendritic cell function³
- Sepsis⁴
- Vaccine development⁵
- Cancer therapy⁶

Description

Specificity

The CD64 antibody recognizes the 72-kilodalton (kDa) human FcγRI that can bind monomeric IgG.^{1,2}

Antigen distribution

The CD64 antigen is one of three Fc receptors for immunoglobulins, including human FcγRII (CD32 antigen) and human FcγRIII (CD16 antigen), present on the surface of leucocytes.^{1,2} While FcγRII and FcγRIII are low-affinity receptors for immunoglobulin, FcγRI bind with high affinity.^{1,2} Structurally, the CD64 antigen possesses an extracellular region of 292 amino acids with three C2 set Ig-like domains, a 21-amino acid transmembrane region, and a charged cytoplasmic tail of 61 amino acids.^{1,2} Stable expression of FcγRI requires coexpression of the IgG-binding α-chain as an oligomeric complex with the FcR γ-chain homodimer.⁷

CD64, a key receptor in the development of immune responses, has a dual role as a low-affinity receptor for IgG₃ and a high-affinity receptor for IgG_{2a} linking innate and adaptive immunities.

The CD64 antigen is expressed on monocytes, macrophages, at low levels on polymorphonuclear neutrophils (PMNs),^{1,2} and on a subpopulation of circulating dendritic cells.³ CD64 is an early granulomonocytic lineage marker on CD34⁺ hematopoietic progenitors.⁸ Soluble human FcγRI molecules have been found in human serum.⁹ Three genes have been characterized for FcγRI, each gene consisting of six exons, spanning 9.5 kilobases, and localized to chromosome 1.^{9,10}

Clone

The CD64 antibody, clone 10.1, is derived from a fusion of Sp2/0-Ag14 cells with spleen cells from a BALB/c mouse that was immunized first with 2 x 10⁷ rheumatoid synovial fluid cells and on subsequent occasions with 1.5 x 10⁷ fibronectin-purified human monocytes obtained from pools of blood group-matched donors.¹¹

Composition

The CD64 antibody is composed of mouse IgG₁ heavy chains and kappa light chains.

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

Product configuration

The following reagent is supplied in buffer containing a stabilizer and a preservative.

Form	Number of tests	Volume per test (μL)	Amount provided (μg)	Total volume (mL)	Concentration (μg/mL)	Stabilizer	Preservative
PE	50	20	25	1.0	25	BSA	0.1% Sodium azide

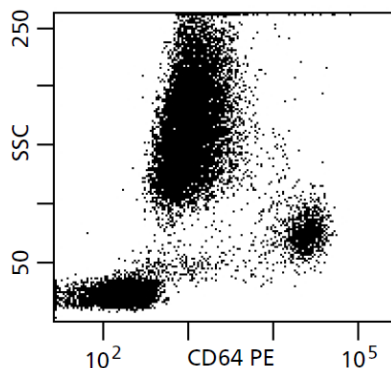
Procedure

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

Representative Data

Flow cytometric analysis was performed on whole blood. Laser excitation was at 488 nm.

Figure 1 Representative data analyzed with a BD flow cytometer



Handling and Storage

Store vials at 2–8 °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^{12,13} 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.

	Warning
	H317: May cause an allergic skin reaction.
Prevention	P261: Avoid breathing dust/fume/gas/mist/vapors/spray. P272: Contaminated work clothing should not be allowed out of the workplace. P280: Wear protective gloves/protective clothing/eye protection/face protection.

	Warning
Response	P302+P352: IF ON SKIN: Wash with plenty of water. P333+P313: If skin irritation or rash occurs: Get medical advice/attention. P321: Specific treatment (see supplemental first aid instructions on Safety Data Sheet). P321: Specific treatment (see Safety Data Sheet). P362+P364: Take off contaminated clothing and wash it before reuse.
Disposal	P501: Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Go to regdocs.bd.com to download the Safety Data Sheet.

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. van de Winkel JG, Capel PJ. Human IgG Fc receptor heterogeneity: molecular aspects and clinical implications. *Immunol Today*. 1993;14:215-221.
2. van de Winkel JG, Anderson CL. Biology of human immunoglobulin G Fc receptors. *J Leukoc Biol*. 1991;49:511-524.
3. Fanger NA, Wardwell K, Shen L, Tedder TF, Guyre PM. Type I (CD64) and type II (CD32) Fc gamma receptor-mediated phagocytosis by human blood dendritic cells. *J Immunol*. 1996;157:541-548.
4. Davis BH, Bigelow NC, Curnutte JT, Ornvold K. Neutrophil CD64 expression: potential diagnostic indicator of acute inflammation and therapeutic monitor of interferon- γ therapy. *Lab Hematol*. 1995;1:3-12.
5. Gosselin EJ, Wardwell K, Gosselin DR, Alter N, Fisher JL, Guyre PM. Enhanced antigen presentation using human Fc gamma receptor (monocyte/macrophage)-specific immunogens. *J Immunol*. 1992;149:3477-3481.
6. Valerius T, Repp R, de Wit TP, et al. Involvement of the high-affinity receptor for IgG (Fc gamma RI; CD64) in enhanced tumor cell cytotoxicity of neutrophils during granulocyte colony-stimulating factor therapy. *Blood*. 1993;82:931-939.
7. van Vugt MJ, Heijnen IAFM, Capel PJ, et al. FcR gamma-chain is essential for both surface expression and function of human Fc gamma RI (CD64) in vivo. *Blood*. 1996;87:3593-3599.
8. Olweus J, Terstappen LWMM, Thompson PA, Lund-Johansen F. Expression and function of receptors for stem cell factor and erythropoietin during lineage commitment of human hematopoietic progenitor cells.

Blood. 1996;88:1594-1607.

9. Ernst LK, van de Winkel JG, Chiu IM, Anderson CL. Three genes for the human high affinity Fc receptor for IgG (Fc gamma RI) encode four distinct transcription products. *J Biol Chem*. 1992;267:15692-15700.
10. van de Winkel JG, Ernst LK, Anderson CL, Chiu IM. Gene organization of the human high affinity receptor for IgG, Fc gamma RI (CD64). Characterization and evidence for a second gene. *J Biol Chem*. 1991;266:13449-13455.
11. Dougherty GJ, Selvendran Y, Murdoch S, Palmer DG, Hogg N. The human mononuclear phagocyte high-affinity Fc receptor, FcRI, defined by a monoclonal antibody, 10.1. *Eur J Immunol*. 1987;17:1453-1459.
12. *Protection of Laboratory Workers from Occupationally Acquired Infections; Approved Guideline—Fourth Edition*. Wayne, PA: Clinical and Laboratory Standards Institute; 2014. CLSI document M29-A4.
13. Centers for Disease Control and Prevention. 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings.
<https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html>. Accessed March 12, 2019.

Patents and Trademarks

For US patents that may apply, see bd.com/patents.

BD and the BD Logo are trademarks of Becton, Dickinson and Company or its affiliates. All other trademarks are the property of their respective owners. © 2024 BD. All rights reserved.

Contact Information

Becton, Dickinson and Company

BD Biosciences

155 North McCarthy Boulevard

Milpitas, California 95035 USA

bdbiosciences.com

ResearchApplications@bd.com