**BD Multitest™**

**CD4/CD38/CD3/Anti–HLA-DR**

Catalog No. 340573  
50 Tests  
20 µL/test

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**RESEARCH APPLICATIONS**

Research applications include studies of:

- Activated T-helper cells in AIDS¹-²
- Activated T lymphocytes³-⁸

**DESCRIPTION**

**Specificity**

The CD4 antibody recognizes an antigen that interacts with class II molecules of the major histocompatibility complex (MHC) and is the primary receptor for the human immunodeficiency virus.⁹,¹⁰ The cytoplasmic portion of the antigen is associated with the protein tyrosine kinase p56lk.¹¹ The CD4 antigen can regulate the function of the CD3 antigen/T cell antigen receptor (TCR) complex.¹² CD4 also reacts with monocytes/macrophages that have an antigen density lower than that on helper/inducer T lymphocytes.¹³

The CD38 antibody recognizes an integral membrane glycoprotein, with a molecular weight of 45 kilodaltons (kDa), with a protein core of 35 kDa.¹⁴

The CD3 antibody recognizes the epsilon chain of the CD3 antigen/TCR complex.¹⁵ This complex is composed of at least six proteins that range in molecular weight from 20 to 30 kDa.¹⁶ The antigen recognized by the CD3 antibody is noncovalently associated with either α/β or γ/δ TCR (70 to 90 kDa).¹⁷

The Anti–HLA-DR antibody recognizes a human class II MHC antigen.¹⁸,¹⁹ The antigen is a transmembrane glycoprotein composed of α and β subunits that have molecular weights of 36 and 27 kDa, respectively.¹⁸,¹⁹ Anti–HLA-DR reacts with a nonpolymorphic HLA-DR epitope¹⁸-²⁰ and does not cross-react with HLA-DQ or HLA-DP molecules.²⁰

**Antigen distribution**

The CD4 antigen is expressed on the helper/inducer T-lymphocyte subset (CD3⁺CD4⁺) that comprises 28% to 58%²¹ of normal peripheral blood lymphocytes.²² It is also present on 80% to 95% of normal thymocytes.²² The CD4 antigen is present in low density on the cell surface of monocytes and in the cytoplasm of monocytes and macrophages (CD3⁺CD4⁺).¹³

The CD38 antigen is expressed on essentially all pre-B lymphocytes, plasma cells, and thymocytes.¹⁴ It is also present on activated T lymphocytes, natural killer (NK) lymphocytes, myeloblasts, and erythroblasts.¹⁴,²³-²⁸ The antigen is expressed during the early stages of T- and B-lymphocyte differentiation, is lost during the intermediate stages of maturation, and then reappears during the final stages of maturation.¹⁴,²⁸-³⁰ The CD38 antigen is expressed on 90% of CD34⁺ cells and is not expressed on pluripotent stem cells. Coexpression of CD38 antigen on CD34⁺ cells indicates lineage commitment

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of those cells. It is also expressed in T- and B-acute lymphoblastic leukemia, Burkitt's lymphoma, multiple myeloma, and acute myeloid leukemia. The CD3 antigen is expressed on 61% to 85% of normal peripheral blood lymphocytes, 65% to 85% of thymocytes, and on Purkinje cells in the cerebellum.

HLA-DR is expressed on B lymphocytes, monocytes, macrophages, activated T lymphocytes, activated NK lymphocytes, and human progenitor cells. It is also present on thymic epithelium, B-lymphocyte–dependent areas of spleen and lymph node, and B-cell lymphomas. The antigen is coexpressed with the CD1a antigen on Langerhans cells of the epidermis.

Clones

The CD4 antibody, clone SK3, is derived from hybridization of NS-1 mouse myeloma cells with spleen cells from BALB/c mice immunized with human peripheral blood T lymphocytes.

The CD38 antibody, clone HB7, is derived from hybridization of P3-X63-Ag8.653 mouse myeloma cells with spleen cells from BALB/c mice immunized with the BJAB cell line.

The CD3 antibody, clone SK7, is derived from hybridization of NS-1 mouse myeloma cells with spleen cells from BALB/c mice immunized with human thymocytes.

The Anti–HLA-DR antibody, clone L243, is derived from the hybridization of NS-1/1-Ag4 mouse myeloma cells with spleen cells from BALB/c mice immunized with the human lymphoblastoid B-cell line RPMI 8866.

Composition

The CD4, CD38, and CD3 antibodies are each composed of mouse IgG1 heavy chains and kappa light chains.

The Anti–HLA-DR antibody is composed of mouse IgG2a heavy chains and kappa light chains.

The BD Multitest reagent is supplied as a combination of CD4 FITC, CD38 PE, CD3 PerCP, and Anti–HLA-DR APC in 1.0 mL of phosphate buffered saline (PBS) containing bovine serum albumin (BSA), and 0.1% sodium azide.

PROCEDURE

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

1. Pipet 20 µL of monoclonal antibody into a labeled tube.
2. Add 50 µL of whole blood.
3. Vortex gently to mix and incubate for 15 minutes in the dark at room temperature (20°C–25°C).
4. Add 1 mL of 1X BD FACSTM lysing solution (Cat. No. 349202) to the tube. The volume of BD FACS lysing solution recommended has been optimized for use with this reagent.
5. Vortex gently and incubate for 15 to 30 minutes in the dark at room temperature. If samples are not analyzed immediately, mix thoroughly before analysis.

REPRESENTATIVE DATA

Performed on peripheral blood leukocytes using a BD FACSFluor™ flow cytometer with a gate set on the CD3+ lymphocyte fraction. Laser excitation is at 488 nm and 635 nm.
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 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


