

**Monoclonal
Antibodies
Detecting
Human
Antigens**

B-D

CD34 (My10)

Pure Catalog No. 347660 100 Tests

CD34 (8G12)

Pure	Catalog No. 348050	100 Tests
FITC	Catalog No. 348053	100 Tests
PE	Catalog No. 348057	100 Tests
PerCP	Catalog No. 340430	50 Tests
PerCP-Cy5.5	Catalog No. 347203	50 Tests
PE-Cy7	Catalog No. 348791	100 Tests
APC	Catalog No. 340441	100 Tests

DESCRIPTION

Specificity

The CD34* antigen is a single-chain transmembrane glycoprotein, Mr 105 to 120 kilodaltons (kd). The antigen is associated with human hematopoietic progenitor cells and is a differentiation stage-specific leucocyte antigen.¹⁻⁶ Clone My10 and clone 8G12 recognize two distinct CD34 epitopes; at least three epitopes have been identified.^{1,4}

Antigen Distribution

The CD34 antigen is present on immature hematopoietic precursor cells and all hematopoietic colony-forming cells in bone marrow and blood, including unipotent (CFU-GM, BFU-E) and pluripotent progenitors (CFU-GEMM, CFU-Mix, and CFU-Blast).^{2,3,6-8} Terminal deoxynucleotidyl transferase-positive B- and T-lymphoid precursors in normal bone marrow are CD34⁺.^{2,9} The CD34 antigen is present on early myeloid cells that express the CD33 antigen but lack the CD14 and CD15 antigens and on early erythroid cells that express the CD71 antigen and dimly express the CD45 antigen.^{7,10,11} The CD34 antigen is also found on capillary endothelial cells and approximately 1% of human thymocytes.^{3,12} Normal peripheral blood lymphocytes, monocytes, granulocytes, and platelets do not express the CD34 antigen.^{1,3,6} CD34 antigen density is highest on early hematopoietic progenitor cells and decreases as cells mature. The antigen is absent on fully differentiated hematopoietic cells.^{3,7,13} Uncommitted CD34⁺ progenitor cells are CD38⁻ and lack lineage-specific antigens such as CD71, CD33, CD10, and CD5, while CD34⁺ cells that are lineage-committed express the CD38 antigen in high density.⁷ Most CD34⁺ cells reciprocally express either the CD45RO or CD45RA antigens, with the CD45RO⁺ population being the more primitive.⁵

Approximately 60% of acute B-lymphoid leukemias and acute myeloid leukemias (AML) and 1% to 5% of acute T-lymphoid leukemias express the CD34 antigen.^{3,14,15} The antigen is not expressed on chronic lymphoid leukemias or lymphomas.³

Clones

CD34 (Anti-HPCA[†]-1), clone My10, is derived from the hybridization of mouse Sp2/0-Ag14 cells with spleen cells of BALB/c mice immunized with the human cell line KG-1a.⁶

CD34 (Anti-HPCA-2), clone 8G12,¹⁶ is derived from the hybridization of mouse Sp2/0-Ag14 cells with spleen cells of BALB/c mice immunized with the human cell line KG-1a.¹

Ig Chain Composition

CD34 (clone My10) and CD34 (clone 8G12) are each composed of mouse IgG₁ heavy chains and kappa light chains.

PE-Cy7 and APC reagents are formulated at 5 µL per test.

**RESEARCH
APPLICATIONS**

Studies of:

- enrichment of progenitor cells by panning or cell sorting^{5,7,17,18}
- hematopoiesis and progenitor cells^{1,2,4-8,13,17-19}
- characterization of leukemias^{2,3,14,15,20}

* US Patent Nos. 4,714,680; 4,965,204; and 5,035,994

† Human progenitor cell antigen

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

**BECTON
DICKINSON**

BD Biosciences
2350 Qume Drive
San Jose, CA 95131-1807
Ordering Information (800) 223-8226; Customer Support Center (800) 448-2347
www.bdfacs.com

DIRECT IMMUNOFLUORESCENCE

Products/Amounts for Staining

CD34 (clone 8G12) FITC
Cat. No. 348053
20 µL/test

CD34 (clone 8G12) PE*
Cat. No. 348057
20 µL/test

CD34 (clone 8G12) PerCP†
Cat. No. 340430
20 µL/test

CD34 (clone 8G12) PerCP†-Cy5.5‡
Cat. No. 347203
20 µL/test

CD34 (clone 8G12) PE*-Cy7§
Cat. No. 348791
5 µL/test

CD34 (clone 8G12) APC*
Cat. No. 340441
5 µL/test

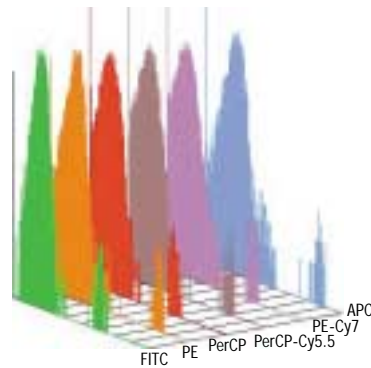
Method for Direct Immunofluorescence

Refer to our website (www.bdfacs.com) or contact your local BD representative for the lyse/wash method for direct immunofluorescence.

⚠ CAUTION: Higher levels of nonspecific staining can result when ammonium chloride lysis is used for cell preparation before staining.

Representative Data

Performed on a leucopheresis sample and gated on lymphocytes. Note that the y-axis is in log scale. Laser excitation is at 488 nm and 635 nm.



Analyzed with a FACS™ brand flow cytometer

HANDLING AND STORAGE

Clone My10: The monoclonal antibody is supplied as 100 µg purified immunoglobulin in 2.0 mL (50 µg/mL) of phosphate-buffered saline (PBS).

Clone 8G12: The monoclonal antibody is supplied as 50 µg purified immunoglobulin in 2.0 mL (25 µg/mL) of PBS. The FITC and PE conjugates are each supplied as 50 µg in 2.0 mL (25 µg/mL) of PBS. The PerCP conjugate is supplied as 50 µg in 1.0 mL (50 µg/mL) of PBS. The PerCP-Cy5.5 conjugate is supplied as 12.5 µg in 1.0 mL (12.5 µg/mL) of PBS. The PE-Cy7 conjugate is supplied as 25 µg in 0.5 mL (50 µg/mL) of PBS. The APC conjugate is supplied as 50 µg in 0.5 mL (100 µg/mL) of PBS. PBS contains gelatin and 0.1% sodium azide. Store vials at 2° to 8°C. Conjugated forms should **not** be frozen and should be protected from prolonged exposure to light. Each reagent is stable for the period shown on the bottle label when stored as directed.

WARRANTY

The product sold hereunder is warranted only to conform to the quantity and contents stated on the label at the time of delivery to the customer. There are no warranties, expressed or implied, that extend beyond the description on the label of the product. 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, personal injury, or economic loss caused by the product.

CHARACTERIZATION

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

* US Patent Nos. 4,520,110, 4,859,582, and 5,055,556; European Patent No. 76,695; and Canadian Patent No. 1,179,942

† US Patent No. 4,876,190

‡ US Patent Nos. 5,268,486; 5,486,616; 5,569,587; 5,569,766; and 5,627,027

§ Cy7 is licensed under US Patent Nos. 5,268,486; 5,486,616; 5,569,587; 5,569,766; and 5,627,027. PE-Cy7 is licensed under US Patent No. 4,542,104.

WARNING

Reagents contain sodium azide. Sodium azide is harmful if swallowed. Keep out of reach of children. Keep away from food, drink, and animal feedstuff. Wear suitable protective clothing. If swallowed, seek medical advice immediately and show this container or label. Contact with acids liberates very toxic gas. Azide compounds should be flushed with large volumes of water during disposal to avoid deposits in lead or copper plumbing where explosive conditions can develop.

REFERENCES

1. Lansdorp PM, Dougherty GJ, Humphries RK. CD34 epitopes. In: Knapp W, Dörken B, Gilks WR, et al, eds. *Leucocyte Typing IV: White Cell Differentiation Antigens*. New York, NY: Oxford University Press; 1989:826-827.
2. Loken MR, Shah VO, Dattilio KL, Civin CI. Flow cytometric analysis of human bone marrow. II. Normal B-lymphocyte development. *Blood*. 1987;70:1316-1324.
3. Civin CI, Trischmann TM, Fackler MJ, et al. Report on the CD34 cluster workshop. In: Knapp W, Dörken B, Gilks WR, et al, eds. *Leucocyte Typing IV: White Cell Differentiation Antigens*. New York, NY: Oxford University Press; 1989:818-825.
4. Peschel C, Köller U. Cluster report: CD34. In: Knapp W, Dörken B, Gilks W, et al, eds. *Leucocyte Typing IV: White Cell Differentiation Antigens*. New York, NY: Oxford University Press; 1989:817-818.
5. Lansdorp P, Sutherland H, Eaves C. Selective expression of CD45 isoforms on functional subpopulations of CD34⁺ hemopoietic cells from human bone marrow. *J Exp Med*. 1990;172:363-366.
6. Civin CI, Strauss LC, Brovall C, Fackler MJ, Schwartz JF, Shaper JH. Antigenic analysis of hematopoiesis. III. A hemopoietic progenitor cell surface antigen defined by a monoclonal antibody raised against KG-1a cells. *J Immunol*. 1984;133:157-165.
7. Terstappen LWMM, Huang S, Safford M, Lansdorp PM, Loken MR. Sequential generations of hematopoietic colonies derived from single nonlineage-committed CD34⁺CD38⁻ progenitor cells. *Blood*. 1991;77:1218-1227.
8. Siena S, Bregni M, Brando B, et al. Flow cytometry for clinical estimation of circulating hematopoietic progenitors for autologous transplantation in cancer patients. *Blood*. 1991;77:400-409.
9. Gore SD, Kastan MB, Civin CI. Normal human bone marrow precursors that express terminal deoxynucleotidyl transferase include T-cell precursors and possible lymphoid stem cells. *Blood*. 1991;77:1681-1690.
10. Andrews RG, Singer JW, Bernstein ID. Precursors of colony-forming cells in humans can be distinguished from colony-forming cells by expression of the CD33 and CD34 antigens and light scattering properties. *J Exp Med*. 1989;169:1721-1731.
11. Loken MR, Shah VO, Dattilio KL, Civin CI. Flow cytometric analysis of human bone marrow. I. Normal erythroid development. *Blood*. 1987;69:255-263.
12. Kurtzberg J, Denning SM, Nycum LM, Singer KH, Haynes BF. Immature human thymocytes can be driven to differentiate into nonlymphoid lineages by cytokines from thymic epithelial cells. *Proc Natl Acad Sci USA*. 1989;86:7575-7579.
13. Civin C, Banquerigo M, Strauss L, Loken MR. Antigenic analysis of hematopoiesis. VI. Characterization of MY-10-positive progenitor cells in normal human bone marrow. *Exp Hematol*. 1987;15:10-17.
14. Hurwitz CA, Loken MR, Graham ML, et al. Asynchronous antigen expression in B lineage acute lymphoblastic leukemia. *Blood*. 1988;72:299-307.
15. Terstappen LWMM, Safford M, Könemann S, et al. Flow cytometric characterization of acute myeloid leukemia. Part II. Phenotypic heterogeneity at diagnosis. *Leukemia*. 1992;6:70-80.
16. Greaves MF, Titley I, Colman SM, et al. CD34 cluster workshop report. In: Schlossman SF, Boumsell L, Gilks W, et al, eds. *Leucocyte Typing V: White Cell Differentiation Antigens*. New York, NY: Oxford University Press; 1995;1:840-846.
17. Lu L, Walker D, Broxmeyer H, Hoffman R, Hu W, Walker E. Characterization of adult human marrow hematopoietic progenitors is highly enriched by two-color cell sorting with My10 and major histocompatibility class II monoclonal antibodies. *J Immunol*. 1987;139:1823-1829.
18. Leary AG, Strauss LC, Civin CI, Ogawa M. Disparate differentiation in hemopoietic colonies derived from human paired progenitors. *Blood*. 1985;6:327-332.
19. Brocklebank AM, Sparrow RL. Enumeration of CD34⁺ cells in cord blood: a variation on a single-platform flow cytometric method based on the ISHAGE gating strategy. *Cytometry*. 2001;46:254-261.
20. Ryan D, Kossover S, Mitchell S, Frantz C, Hennessy L, Cohen H. Subpopulations of common acute lymphoblastic leukemia antigen-positive lymphoid cells in normal bone marrow identified by hematopoietic differentiation antigens. *Blood*. 1986;68:417-425.