

# Monoclonal Antibody CD19

PN IM1313 – Purified – Freeze-dried – 0.2 mg – Clone J3-119

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

## SPECIFICITY

The CD19 antigen (also called B4) is a type I membrane glycoprotein with a molecular weight of 95 kDa (1, 2).

Its extracellular domain comprises 280 amino acids organized as two C2-type Ig-like domains separated by a smaller potentially disulfide-linked domain. The extensive cytoplasmic domain of CD19 contains nine conserved tyrosine residues, and several of these are located within potential src-homology region 2 (SH2)-binding sites.

CD19 is a signal transduction molecule that regulates lymphocyte development, activation, and differentiation (3, 4).

The molecule is expressed on all normal B lymphocytes including pro-B lymphocytes, but it is lost in maturation to plasma cells (3, 5).

It is also found on the surface of follicular dendritic cells, on the early cells of myelomonocytic lineage and on most stabilized B cell lines. It is not present on normal T lymphocytes, NK cells, monocytes, and granulocytes.

CD19 can be associated within the membrane to form hetero-oligomeric structures with other surface molecules including CD21, the complement receptor type 2 (CR2), and CD81 (TAPA-1) (6). The extracellular and transmembrane domains of CD19 are required for the interaction of this molecule with CD21 and CD81. Co-ligation of the CD19-CD21-CD81 complex with the surface IgM-B-cell antigen receptor (BCR) leads to the phosphorylation of CD19 by Syk (6, 7), followed by the recruitment, through tyrosine phosphorylated CD19, of positive signal transduction effectors such as phosphatidylinositol 3 kinase (PI3 kinase), Lyn, and Fyn (8, 9).

In vitro studies show that the CD19 antibodies have an inhibitory effect on the activation and proliferation of B lymphocytes. They also inhibit the B cell response after co-stimulation by anti-immunoglobulin and interleukin 4.

The J3-119 monoclonal antibody (mAb) reacts with B lymphocytes, not with T lymphocytes, monocytes or granulocytes. It stains mantle-zone and germinal-center lymphoid cells, as well as follicular dendritic cells.

Plasma cells are negative.

The J3-119 mAb has been assigned to the CD19 cluster of differentiation during the fourth International Workshop on Human Leucocyte Differentiation Antigens held in Vienna, Austria in 1989 (1, 2).

## REAGENT

Monoclonal Antibody CD19

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**Clone** J3-119

**Isotype** IgG1, mouse

**Immunogen** SKLY 18 lymphoma cells

**Hybridoma** NS1 x Balb/c spleen cells

**Source** Ascites fluid

**Purification** Ion exchange or affinity chromatography

**Buffer** 1 mg/mL bovine serum albumin in phosphate-buffered saline

## APPLICATION

Studies of CD19 positive cells by flow cytometry.

## STATEMENT OF WARNINGS

1. Specimens, samples and all material coming in contact with them should be handled as if capable of transmitting infection and disposed of with proper precautions.
2. Never pipet by mouth and avoid contact of samples with skin and mucous membranes.
3. Do not use antibody beyond the expiration date on the label.
4. Avoid microbial contamination of reagents or incorrect results might occur.
5. Use good laboratory practices when handling this reagent.

## STORAGE CONDITIONS AND

### STABILITY

This freeze-dried form may be stored at 2 – 8°C until the expiration date stated on the vial label.

No preservative has been added.

## REAGENT PREPARATION

Depending of usage, reconstitute with 1 mL of distilled water, with or without 0.1% sodium azide (w/v).

The reconstituted form including 0.1% sodium azide may be stored for up to one month at 2 – 8°C.

The reconstituted form without sodium azide can be stored at –20°C or less, until the expiration date stated on the vial label.

In this case, aliquotting is recommended to avoid multiple freezing / thawing cycles.

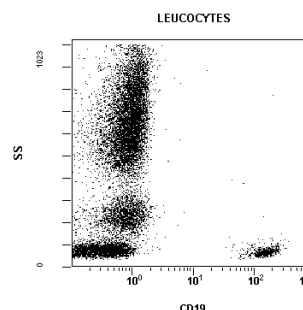
## PROCEDURE

For each application, it is recommended to establish the right range of antibody dilutions to be used for the experiment.

## EXAMPLE DATA

The histogram below is a biparametric representation, side scatter (SS) versus fluorescence intensity of a lysed normal whole blood sample. Indirect staining is with purified CD19 (PN IM1313) and PE-conjugated F(ab')<sub>2</sub> fragment goat anti-mouse IgG (PN IM0855).

Acquisition is with a COULTER® EPICS® XL™ flow cytometer. Analysis is with the CXP analysis software.



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## SELECTED RESEARCH REFERENCES

1. "CD Guide " Compiled by the organizing committee, 1989, Leucocyte Typing IV, White Cell Differentiation Antigens. W. Knapp, et al., Eds., Oxford University Press, 1078.
2. "Listing of all Fourth Workshop antibodies", 1989, Leucocyte Typing IV, White Cell Differentiation Antigens. W. Knapp, et al., Eds., Oxford University Press, 1094-1110.
3. Doody, G.M., Dempsey, P.W., Fearon, D.T., "Activation of B lymphocytes : integrating signals from CD19, CD22 and Fc $\gamma$ RIIb1", 1996, Cur. Opin. Immunol., 8, 378-382.
4. Pesando, J. M., Bouchard, L. S., McMaster, B. E., "CD19 is functionally and physically associated with surface immunoglobulin", 1989, J. Exp. Med., 170, 2159-2164.
5. Loken, M.R., Shah, V.O., Dattilio, K.L., Civin, C.I., "Flow cytometric analysis of human bone marrow. II. Normal B lymphocyte development", 1987, Blood, 70, 1316-1324.
6. Bradbury, L.E., Kansas, G.S., Levy, S., Evans, R.L., Tedder, T.F., "The CD19/CD21 signal transducing complex of human B lymphocytes includes the target of antiproliferative antibody-1 and Leu-13 molecules", 1992, J. Immunol., 149, 2841-2850.
7. Carter, R.H., Doody, G.M., Bolen, J.B., Fearon, D.T., "Membrane IgM-induced tyrosine phosphorylation of CD19 requires a CD19 domain that mediates association with components of the B cell antigen receptor complex", 1997, J. Immunol., 158, 3062-3069.
8. Tedder, T.F., Zhou, L.J., Engel, P., "The CD19/CD21 signal transduction complex of B lymphocytes", 1994, Immunol. Today, 15, 437-442.
9. Kurosaki, T., "Molecular mechanisms in B cell antigen receptor signaling", 1997, Curr. Opin. Immunol., 9, 309-318.

## PRODUCT AVAILABILITY

Monoclonal Antibody CD19  
PN IM1313 – Purified – Freeze-dried – 0.2 mg

For additional information in the USA, call 800-526-7694.

Outside the USA, contact your local Beckman Coulter representative.

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