IOTest® CD207 (Langerin)-PE

PN IM3577 – 100 tests – 20 µL / test – Clone DCGM4

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

SPECIFICITY

The CD207 antigen (Langerin) is a C-type lectin described as selectively expressed by Langerhans cells (LC), a subset of dendritic cells (DC) (1-3). CD207 is a glycoprotein of 40 kDa predominantly N-glycosylated, containing no disulfide bonds. Its expression, restricted to the Langerhans cell lineage, is demonstrated at the surface membrane as well as in Birbeck granules, those organelles specific for LCs (2).

Several lines of evidence (1) indicate that CD207 is a specific marker for the acquisition of the Langerhans cell phenotype, and that it is down-regulated beyond the LC maturation stage. Also, Langerin is not involved in antigen delivery into the MHC class II pathway but might play a role in antigen capture:

- CD207 is present only in epidermis and airway epithelia;
- It is never detected in purified DCs, when isolated from peripheral blood, lymph nodes or thymus;
- $CD1a^+$ DCs derived from cord blood $CD34^+$ cell cultures in the presence of GM-CSF and TNFα express Langerin between day 8 and 12;
- DCs derived from peripheral blood monocytes cultured with GM-CSF and IL-4 do not express the CD207 antigen;
- signals like TGFβ known to induce in vitro a LC phenotype up-regulate CD207 expression. Signals known to trigger DC maturation down-regulate CD207 expression;
- CD207 ligation triggers endocytosis as rapid as that mediated by the Mannose Receptor;
- CD207-mediated rapid endocytosis does not intersect with translocation of MHC class II molecules;
- CD207 is directly involved in antigen capture and its subsequent endocytosis may induce the formation of Birbeck granules (2).

The DCGM4 monoclonal antibody (mAb) exclusively stains immature DCs of the LC lineage (1). Unlike Lag antibody, DCGM4 is directed to a surface epitope of CD207. In flow cytometry, both intracytoplasmic and surface membrane stainings are observed (1). DCGM4 mAb acts as a ligand for Langerin, triggering rapid endocytosis within 20 minutes at 37°C (1). This antibody has been used in:

- Intracellular immunofluorescence assays analyzed by confocal microscopy (1);
- In flow cytometry, to determine the differentiation of $CD1a^+$ / $CD11c^+$ subset of blood DCs into LCs (4).

The DCGM4 mAb has been assigned to the CD207 cluster of differentiation at the 7th International Workshop on Human Leucocyte Differentiation Antigens in Harrogate, England, in 2000 (5).

REAGENT

IOTest CD207 (Langerin)-PE Conjugated Antibody

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Clone	DCGM4
Isotype	IgG1
Species	Mouse
Immunogen	CD34-derived dendritic cells
Hybridoma	SP2/0 x Balb/c
Source	Ascites fluid
Purification	Ion exchange or affinity chromatography
Conjugation	R-phycoerythrin (PE) is conjugated at 0.5 – 1.5 moles of PE per mole of Ig.

Excitation wavelength: 488 nm
Maximum emission wavelength: 575 nm
Main emission color: orange-red

Buffer 2 mg/mL bovine serum albumin in phosphate-buffered saline containing 0.1% sodium azide.

APPLICATION

Flow cytometry

Note: CD207 (Langerin) belongs to the Calcium (C-Type) lectin's family. The DCGM4 mAb's binding is Calcium dependent (2).

STATEMENT OF WARNINGS

1. This reagent contains 0.1% sodium azide. Sodium azide under acid conditions yields hydrazoic acid, an extremely toxic compound. Azide compounds should be flushed with running water while being discarded. These precautions are recommended to avoid deposits in metal piping in which explosive conditions can develop. If skin or eye contact occurs, wash excessively with water.
2. 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.
3. Never pipet by mouth and avoid contact of samples with skin and mucous membranes.
4. Do not use antibody beyond the expiration date on the label.
5. Do not expose reagents to strong light during storage or incubation.
6. Avoid microbial contamination of reagents or incorrect results might occur.
7. Use good laboratory practices when handling this reagent.

STORAGE CONDITIONS AND STABILITY

This reagent is stable up to the expiration date when stored at 2 – 8°C in the dark. Do not freeze.

REAGENT PREPARATION

No reconstitution is necessary. This monoclonal antibody may be used directly from the vial. Bring reagent to 18 – 25°C prior to use.

PROCEDURE

This reagent is designed for flow cytometry.
A wash is required to yield optimal results.
Assay volume: 20 µL per 5 x 10^5 cells in one test, or per 100 µL whole blood.

SELECTED RESEARCH REFERENCES

1. Valladeau, J., Duvert-Frances, V., Pin, J-J., Dezutter-Dambuyant, C., Vincent, C., Massacrier, C., Vincent, J., Yoneda, K., Banchereau, J., Caux, C., Davoust, J., Saeland, S., "The monoclonal antibody DCGM4 recognizes Langerin, a protein specific of Langerhans cells, and is rapidly internalized from the cell surface", 1999, Eur. J. Immunol., 29, 2695-2704.
2. Valladeau, J., Ravel, O., Dezutter-Dambuyant, C., Moore, K., Kleijmeer, M., Liu, Y., Duvert-Frances, V., Vincent, C., Schmitt, D., Davoust, J., Caux, C., Lebecque, S., Saeland, S., "Langerin, a novel C-type lectin specific to Langerhans cells, is an endocytic receptor that induces the formation of Birbeck granules", 2000, Immunity, 12, 71-81.
3. Kashihara, M., Ueda, M., Horiguchi, Y., Furukawa, F., Hanaoka, M., Imamura, S., "A monoclonal antibody specifically reactive to human Langerhans cells", 1986, J. Invest. Dermatol., 87, 602-607.
4. Ito, T., Inaba, M., Inaba, K., Toki, J., Sogo, S., Iguchi, T., Adachi, Y., Yamaguchi, K., Amakawa, R., Valladeau, J., Saeland, S., Fukuhara, S., Ikehara, S., "A $CD1a^+$/$CD11c^+$ subset of human blood dendritic cells is a direct precursor of Langerhans cells", 1999, J. Immunol., 163, 1409-1419.
5. Saeland, S., Valladeau, J., "CD207 (Langerin) workshop Report", 2002, Leucocyte Typing VII, White Cell Differentiation Antigens. D. Mason, et al., Eds., Oxford University Press, 306-307.

PRODUCT AVAILABILITY

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