

**IOTest
CD138-PC5**

REF A54191

100 tests; 1 mL
10 µL / test



**IOTest
Conjugated Antibody**



ENGLISH	Specifications
Specificity	CD138
Clone	B-A38
Hybridoma	X63 x balb/c
Immunogen	U266 cell line
Immunoglobulin	IgG1
Species	Mouse
Source	Ascites fluid or supernatant of in vitro cultured hybridoma cells
Purification	Affinity chromatography
Fluorochrome	R Phycoerythrin-Cyanine 5.1 (PC5)
Molar ratio	PC5 / Ig: 0.5 - 1.5
λ excitation	488 nm
Emission Peak	670 nm
Buffer	PBS pH 7.2 plus 2 mg / mL BSA and 0.1% NaN ₃

USE

This fluorochrome-conjugated antibody allows the identification and numeration of cell populations expressing the CD138 antigen present in human biological samples using flow cytometry.

PRINCIPLE

This test is based on the ability of specific monoclonal antibodies to bind to the antigenic determinants expressed by leucocytes. Specific staining of the leucocytes is performed by incubating the sample with the IOTest reagent. The red cells are then removed by lysis and the leucocytes, which are unaffected by this process, are analyzed by flow cytometry. The flow cytometer measures light diffusion and the fluorescence of cells. It makes possible the delimitation of the population of interest within the electronic window defined on a histogram, which correlates the orthogonal diffusion of light (Side Scatter or SS) and the diffusion of narrow-angle light (Forward Scatter or FS). Other histograms combining two of the different parameters available on the cytometer can be used as supports in the gating stage depending on the application chosen by the user. The fluorescence of the delimited cells is analyzed in order to distinguish the positively-stained events from the unstained ones. The results are expressed as a percentage of positive events in relation to all the events acquired by the gating.

EXAMPLES OF CLINICAL APPLICATIONS

CD138 or syndecan-1 is a transmembrane heparan sulphate-bearing proteoglycan that regulates adhesion, migration and growth factor activity (1). It is expressed on the surface of human pre-B cells and human plasma cells (1, 2) but is absent from mature B cells. It strongly reacts with all multiple myeloma (MM) cell lines (1 – 5), with tumor cells of primary effusion lymphoma (PEL) (6) and Reed-Sternberg cells of classic Hodgkin's disease (HD) (7). B-A38 monoclonal antibody is an optimal marker for plasma cells detection and may be considered for monitoring minimal residual disease (MRD) in multiple myeloma (3 – 5).

STORAGE AND STABILITY

The conjugated liquid forms must be kept at between 2 and 8°C and protected from light, before and after the vial has been opened. Stability of closed vial: see expiry date on vial. Stability of opened vial: the reagent is stable for 90 days.

REAGENT CONTENTS

Contact Beckman Coulter Customer Service to obtain the antibody concentration in the IOTest reagent.

EVIDENCE OF DETERIORATION

In case of packaging deterioration or if data obtained show some performance alteration, please contact your local distributor or use the following e-mail address :
immuno-techsup@beckmancoulter.com

PRECAUTIONS

1. Do not use the reagent beyond the expiry date.
2. Do not freeze.
3. Let it come to room temperature (18 – 25°C) before use.
4. Minimize exposure to light.
5. Avoid microbial contamination of the reagents, or false results may occur.
6. Antibody solutions containing sodium azide (NaN₃) should be handled with care. Do not take internally and avoid all contact with the skin, mucosa and eyes. Moreover, in an acid medium, sodium azide can form the potentially dangerous hydrazoic acid. If it needs to be disposed of, it is recommended that the reagent be diluted in a large volume of water before pouring it into the drainage system so as to avoid the accumulation of sodium azide in metal pipes and to prevent the risk of explosion.
7. All blood samples must be considered as potentially infectious and must be handled with care (in particular: the wearing of protective gloves, gowns and goggles).
8. Never pipet by mouth and avoid all contact of the samples with the skin, mucosa and eyes.
9. Blood tubes and disposable material used for handling should be disposed of in ad hoc containers intended for incineration.

SAMPLES

Venous blood must be taken using sterile tubes containing an EDTA salt as the anticoagulant. The samples should be kept at room temperature (18 – 25°C) and not shaken. The samples should be homogenized by gentle agitation prior to taking the test sample. The samples must be analyzed within 24 hours of venipuncture.

METHODOLOGY

NECESSARY MATERIAL NOT SUPPLIED

- Sampling tubes and material necessary for sampling.
- Automatic pipettes with disposable tips for 10, 100 and 500 µL.
- Plastic haemolysis tubes.
- Calibration beads:
Flow-Set Fluorospheres (Ref. 6607007) .

- Red cell lysis reagent with washing stage after lysis. For example: VersaLyse (Ref. A09777).
- Leucocyte fixation reagent. For example : IOTest 3 Fixative Solution (Ref. A07800).
- Mouse Isotypic control PC5: IOTest reagent (Ref. A07798).
- Buffer (PBS: 0.01 M sodium phosphate; 0.145 M sodium chloride; pH 7.2).
- Centrifuge.
- Automatic agitator (Vortex type).
- Flow cytometer.

PROCEDURE

NOTE: The procedure below is valid for standard applications. Sample and/or VersaLyse volumes for certain Beckman Coulter applications may be different. If such is the case, follow the instructions on the application's technical leaflet.

For each sample analyzed, in addition to the test tube, one control tube is required in which the cells are mixed in the presence of the isotypic control (Ref. A07798).

1. Add 10 µL of specific IOTest conjugated antibody to each test tube, and 10 µL of the isotypic control to each control tube.
2. Add 100 µL of the test sample to both tubes. Vortex the tubes gently.
3. Incubate for 15 to 20 minutes at room temperature (18 – 25°C), protected from light.
4. Then perform lysis of the red cells, if necessary, by following the recommendations of the lysis reagent used. For example, if you wish to use VersaLyse (Ref. A09777), refer to the leaflet and follow preferably the procedure called "with concomitant fixation", which consists in adding 1 mL of the "Fix-and-Lyse" mixture prepared extemporaneously. Vortex immediately for one second and incubate for 10 minutes at room temperature, protected from light. If the sample does not contain red cells, add 2 mL of PBS.
5. Centrifuge for 5 minutes at 150 x g at room temperature.
6. Remove the supernatant by aspiration.
7. Resuspend the cell pellet using 3 mL of PBS.
8. Repeat step 5.
9. Remove the supernatant by aspiration and resuspend the cell pellet using 0.5 mL or 1 mL of PBS. The preparations should be analyzed within 2 hours.

NOTE: In all cases, keep the preparations between 2 and 8°C and protected from light.

PERFORMANCE

Performance data are obtained using the procedure described above on 24 hour-old blood samples previously collected on sterile tubes with EDTA salt as anticoagulant. Analysis is performed within 2 hours following immunostaining.

SPECIFICITY

CD138 / syndecan-1 protein backbone is a single chain molecule of 30.5 kDa. Five putative glycosaminoglycans (GAG) attachment sites exist in the extracellular domain (1, 8, 9).

Expression of CD138 / syndecan-1 in human hematopoietic cells is restricted to plasma cells in normal bone marrow (1, 8, 9). Peripheral blood monocytes, T and B lymphocytes are not reactive to CD138. Tonsil cells and early B cell precursors in human bone marrow also are CD138-negative.

In other tissues, the expression of CD138 / syndecan-1 is actual during embryonic development, cellular differentiation, and tissue regeneration. For example, CD138 / syndecan-1 expression is highly regulated in endothelial cells when cutaneous wound healing occurs. During wound repair, syndecan-1 expression is transiently induced in newly-formed capillaries as well as in proliferating keratinocytes (9).

On the other hand, CD138 / syndecan-1 is expressed in a variety of mature tissues, including epithelial cells, endothelial cells, fibroblasts, keratinocytes and normal hepatocytes (1, 9).

In vitro and in vivo experiments indicate that tumor necrosis factor-alpha (TNF-alpha) specifically and dose-dependently down-regulates CD138 / syndecan-1 expression in endothelial cells, while inducing the expression of intercellular adhesion molecule-1 (ICAM-1 or CD54) (10).

Another way to regulate in vivo the expression of CD138 / syndecan-1 at the surface of the cell is the release of the syndecan ectodomain by proteolytic activity. This mechanism is known as core-protein shedding. It was shown that certain proteases (i.e. thrombin), and growth factors (i.e. epidermal growth factor) are able to accelerate shedding of the CD138 / syndecan-1 ectodomain (9).

The CD138 / syndecan-1 core protein can be cleaved in vitro by different proteases. For example, trypsin treatment results in the release of a core protein that is indistinguishable from that released spontaneously by cells. CD138 / syndecan-1 extracytoplasmic domain can also be cleaved in vitro by chymopapain (11).

The B-A38 monoclonal antibody was studied during the 8th HLDA Workshop on Human Leucocyte Differentiation Antigens, held in Adelaide, Australia, in 2004 (12).

LINEARITY

To test the linearity of staining of this reagent, a positive cell line (U266) and a negative cell line (RPMI8866) were mixed in different proportions with a constant final number of cells, so that the positive line/negative cell line ratio of the mixture ranged from 0 to 100%.

Aliquots were stained using the procedure described above and linear regression between the expected values and the observed values was calculated.

Specificity	Linear regression	Linearity (R ²)
CD138	Y = 0.9616 X + 1.43	0.998

EXPECTED VALUES

Each laboratory must compile a list of reference values based upon a group of healthy donors from the local population. This must be done by taking age, sex and ethnic group into account, as well as any other potential regional differences.

In our laboratories, the whole blood samples of 10 healthy adults were treated using the reagent described above. The results obtained for the count of the positive events of interest with this reagent are given in the tables below :

Lymphocytes	Number	Mean (%)	SD	CV (%)
CD138 +	10	0.54	0.69	129.06

Monocytes	Number	Mean (%)	SD	CV (%)
CD138 +	10	0.14	0.11	76.78

Granulocytes	Number	Mean (%)	SD	CV (%)
CD138 +	10	0.019	0.017	87.54

INTRA-LABORATORY REPRODUCIBILITY

On the same day and using the same cytometer, 12 measurements of the positivity of a sample containing positive cells (mixture of a positive cell line U266 and a negative cell line RPMI8866) were carried out. The results obtained are summarized in the following table:

Positive Cells	Number	Mean (%)	SD	CV (%)
CD138 +	12	54.73	0.95	1.73

LIMITATIONS OF THE TECHNIQUE

1. Flow cytometry may produce false results if the cytometer has not been aligned perfectly, if fluorescence leaks have not been correctly compensated for and if the regions have not been carefully positioned.
2. It is preferable to use a RBC lysis technique with a washing step as this reagent has not been optimized for "no wash" lysis techniques.

3. Accurate and reproducible results will be obtained as long as the procedures used are in accordance with the technical insert leaflet and compatible with good laboratory practices.
4. The conjugated antibody of this reagent is calibrated so as to offer the best specific signal/non-specific signal ratio. Therefore, it is important to adhere to the reagent volume/sample volume ratio in every test.
5. In the case of a hyperleucocytosis, dilute the blood in PBS so as to obtain a value of approximately 5×10^9 leucocytes/L.
6. In certain disease states, such as severe renal failure or haemoglobinopathies, lysis of red cells may be slow, incomplete or even impossible. In this case, it is recommended to isolate mononucleated cells using a density gradient (Ficoll, for example) prior to staining.
7. Due to the tandem structure of the fluorochrome, PC5 also emits light at 575 nm. This secondary emission peak varies from lot-to-lot of PC5. Therefore, for multi-color analysis, the compensation matrix should be carefully checked when changing the lot of a PC5-conjugate.

MISCELLANEOUS

See the Appendix for examples and references.

TRADEMARKS

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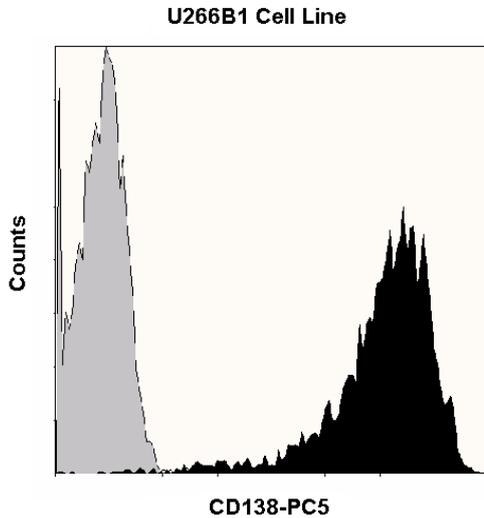


APPENDIX TO REF A54191

EXAMPLES

The graph below is a monoparametric representation of U266B1 cell Line. Staining is with IOTest CD138-PC5 Conjugated Antibody (Ref. A54191).

Analysis is performed with a CYTOMICS FC 500 flow cytometer equipped with CXP Analysis Software.



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