

PN IM2757 Monoclonal Antibody CD138

Form	Freeze-dried	Clone	B-B4
Quantity	0.2 mg	Isotype	IgG1
Presentation	Unconjugated	Species	Mouse
Purity	Purified IgG		

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

SPECIFICITY

Syndecans are transmembrane proteoglycans characterized by an extracellular core protein bearing covalently linked glycosaminoglycans (GAG), which are long, unbranched carbohydrate polymers (1). Syndecans are a four member family in vertebrates, including syndecan-1 or CD138, syndecan-2 or fibroglycan, syndecan-3 or N-syndecan, and syndecan-4 or amphiglycan. Syndecans are abundant on the surface of all adherent mammalian cells (2).

CD138 / syndecan-1 protein backbone is a single chain molecule of 30.5 kDa (3). Five putative GAG attachment sites exist in the extracellular domain (3). The addition of GAG chains to the protein backbone of syndecans is constitutive and critical, since these provide all of the known extracellular ligand binding sites on syndecans (1). In general, GAG fine structure appears to reflect the cellular source of the syndecan.

Expression of CD138 / syndecan-1 in human hematopoietic cells is restricted to plasma cells in normal bone marrow (4, 3). 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 (2).

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, 3).

CD138 / syndecan-1 is proposed to have a variety of roles depending on the expressing cell types, and on the size and composition of carried heparan sulfates (3). It may act as an essential regulator of ligand-specific activation of primary signalling receptors at the

cell surface, by co-engagement of various accessory ligands (1).

In vitro and *in vivo* experiments indicate that tumor necrosis factor-alpha (TNF-α) 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 CD154) (5).

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 (2). Shed ectodomains are soluble and stable, and are found in acute human dermal wound fluids, suggesting physiological roles for the soluble proteoglycan ectodomain.

The core-protein shedding mechanism can be inhibited *in vitro* by use of inhibitors of metallo-proteinase activity (1).

The CD138 / syndecan-1 core protein can be cleaved *in vitro* by different proteases. For example, trypsin treatment results in complete disappearance of B-B4 reactivity (6) and releases 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 (7).

CD138 / syndecan-1 is known to be expressed by a variety of human cell lines, including Hodgkin's disease-derived cell lines, like L428 or KM-H2 (8).

APPLICATION

Flow cytometry.
Study of plasma cells.

BUFFER

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



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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. Aliquotting is recommended to avoid multiple freezing / thawing cycles.

PROCEDURE

Flow cytometry.

Use 10 µL of the reconstituted purified antibody per 5 x 10⁵ cells per test, or per 100 µL whole blood.

SELECTED RESEARCH REFERENCES

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