SANTA CRUZ BIOTECHNOLOGY, INC.

β-2-Microglobulin (B2M-01): sc-51509

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Major histocompatibility complex (MHC) class 1 molecules bind to antigens for presentation on the surface of cells. The proteasome is responsible for producing these antigens from the components of foreign pathogens. MHC class 1 molecules consist of an α heavy chain that contains three subdomains (α1, α2, α3), and a non-covalent associating light chain, known as β-2-Microglobulin. β-2-Microglobulin associates with the α3 subdomain of the α heavy chain and forms an immunoglobulin domain-like structure that mediates proper folding and expression of MHC class 1 molecules. The α1 and α2 domains of the α heavy chain form the peptide antigen-binding cleft. Mice that lack β-2-Microglobulin protein show a normal distribution of T cells, yet have no mature CD4-8$^+$ T cells and are defective in CD4-8$^+$ T cell-mediated cytotoxicity. Interferon-γ can stimulate production of β-2-Microglobulin transcripts. The human β-2-Microglobulin gene maps to chromosome 15q21-q22.2 and encodes a 119 amino acid protein. Mutations in the β-2-Microglobulin gene can enhance the progression of malignant melanoma phenotypes.

REFERENCES

1. Skjødt, K., et al. 1987. Isolation and characterization of chicken and turkey β-2-Microglobulin. Mol. Immunol. 23: 1301-1309.
2. Dunon, D., et al. 1990. T cell precursor migration towards β-2-Microglobulin is involved in thymus colonization of chicken embryos. EMBO J. 9: 3315-3322.
3. Zijlstra, M., et al. 1990. β-2-Microglobulin deficient mice lack CD4-8$^+$ cytolytic T cells. Nature 344: 742-746.
4. Solheim, J.C., et al. 1995. Conformational changes induced in the MHC class I molecule by peptide and β-2-Microglobulin. Immunol. Res. 14: 200-217.
5. Pamer, E., et al. 1998. Mechanisms of MHC class I-restricted antigen processing. Ann. Rev. Immunol. 16: 323-358.
6. Tsuyuki, Y., et al. 1998. IFN-γ induces coordinate expression of MHC class I-mediated antigen presentation machinery molecules in adult mouse Schwann cells. Neuroreport 9: 2071-2075.
7. Hicklin, D.J., et al. 1998. β-2-Microglobulin mutations, HLA class I antigen loss, and tumor progression in melanoma. J. Clin. Invest. 101: 2720-2729.
8. Drbal, K., et al. 2001. A proteolytically truncated form of free CD18, the common chain of leukocyte Integrins, as a novel marker of activated myeloid cells. Blood 98: 1561-1566.

CHROMOSOMAL LOCATION

Genetic locus: B2M (human) mapping to 15q21.1.

SOURCE

β-2-Microglobulin (B2M-01) is a mouse monoclonal antibody raised against purified β-2-Microglobulin of human origin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PRODUCT

Each vial contains 100 µg IgG_{2a} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Available as phycoerythrin (sc-51509 PE) or fluorescein (sc-51509 FITC) conjugates for flow cytometry, 100 tests.

APPLICATIONS

β-2-Microglobulin (B2M-01) is recommended for detection of soluble β-2-Microglobulin and β-2-Microglobulin associated with cell surface MHC Class I molecules and other membrane antigens of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1–2 µg per 100–500 µg of total protein (1 ml of cell lysate)] and flow cytometry (1 µg per 1 x 10^6 cells).

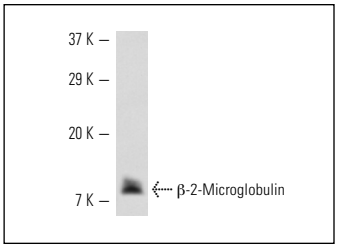
Molecular Weight of β-2-Microglobulin: 12 kDa.

Positive Controls: U-937 cell lysate: sc-2239, HeLa whole cell lysate: sc-2200 or CCRF-CEM cell lysate: sc-2225.

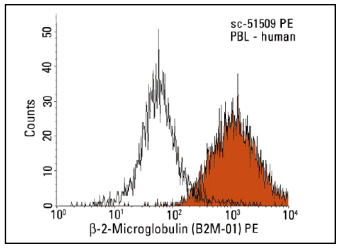
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



β-2-Microglobulin (B2M-01): sc-51509. Western blot analysis of β-2-Microglobulin expression in U-937 whole cell lysate.



β-2-Microglobulin (B2M-01): sc-51509. Indirect FCM analysis of human peripheral blood leukocytes stained with β-2-Microglobulin (B2M-01), followed by PE-conjugated goat anti-mouse IgG_{2a}: sc-3765. Black line histogram represents the isotype control, normal mouse IgG_{2a}: sc-3878.

SELECT PRODUCT CITATIONS

1. Heikkilä, O., et al. 2010. Internalization of coxsackievirus A9 is mediated by β2-microglobulin, dynamin, and Arf6 but not by caveolin-1 or clathrin. J. Virol. 84: 3666-3681.

RESEARCH USE

For research use only, not for use in diagnostic procedures.