

# $\beta$ -2-Microglobulin (B2M-02): sc-51510

## 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  $\alpha$  heavy chain that contains three subdomains ( $\alpha 1$ ,  $\alpha 2$ ,  $\alpha 3$ ), and a non-covalent associating light chain, known as  $\beta$ -2-Microglobulin.  $\beta$ -2-Microglobulin associates with the  $\alpha 3$  subdomain of the  $\alpha$  heavy chain and forms an immunoglobulin domain-like structure that mediates proper folding and expression of MHC class 1 molecules. The  $\alpha 1$  and  $\alpha 2$  domains of the  $\alpha$  heavy chain form the peptide antigen-binding cleft. Mice that lack  $\beta$ -2-Microglobulin protein show a normal distribution of T cells, yet have no mature CD4-8<sup>+</sup> T cells and are defective in CD4-8<sup>+</sup> T cell-mediated cytotoxicity. Interferon- $\gamma$  can stimulate production of  $\beta$ -2-Microglobulin transcripts. The human  $\beta$ -2-Microglobulin gene maps to chromosome 15q21.1 and encodes a 119 amino acid protein. Mutations in the  $\beta$ -2-Microglobulin gene can enhance the progression of malignant melanoma phenotypes.

## REFERENCES

- Skjoldt, K., et al. 1987. Isolation and characterization of chicken and turkey  $\beta$ -2-Microglobulin. *Mol. Immunol.* 23: 1301-1309.
- Dunon, D., et al. 1990. T cell precursor migration towards  $\beta$ -2-Microglobulin is involved in thymus colonization of chicken embryos. *EMBO J.* 9: 3315-3322.
- Zijlstra, M., et al. 1990.  $\beta$ -2-Microglobulin deficient mice lack CD4-8<sup>+</sup> cytolytic T cells. *Nature* 344: 742-746.
- Solheim, J.C., et al. 1995. Conformational changes induced in the MHC class I molecule by peptide and  $\beta$ -2-Microglobulin. *Immunol. Res.* 14: 200-217.
- Pamer, E., et al. 1998. Mechanisms of MHC class I-restricted antigen processing. *Annu. Rev. Immunol.* 16: 323-358.
- Tsuyuki, Y., et al. 1998. IFN- $\gamma$  induces coordinate expression of MHC class I-mediated antigen presentation machinery molecules in adult mouse Schwann cells. *Neuroreport* 9: 2071-2075.

## CHROMOSOMAL LOCATION

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

## SOURCE

$\beta$ -2-Microglobulin (B2M-02) is a mouse monoclonal antibody raised against purified  $\beta$ -2-Microglobulin of human origin.

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>1</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## STORAGE

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

## APPLICATIONS

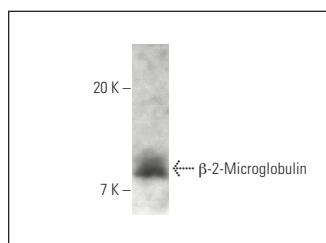
$\beta$ -2-Microglobulin (B2M-02) is recommended for detection of  $\beta$ -2-Microglobulin of human and porcine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)] and flow cytometry (1  $\mu$ g per 1 x 10<sup>6</sup> cells).

Suitable for use as control antibody for  $\beta$ -2-Microglobulin siRNA (h): sc-29592,  $\beta$ -2-Microglobulin shRNA Plasmid (h): sc-29592-SH and  $\beta$ -2-Microglobulin shRNA (h) Lentiviral Particles: sc-29592-V.

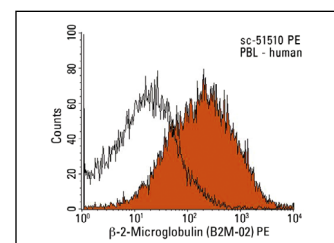
Molecular Weight of  $\beta$ -2-Microglobulin: 12 kDa.

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

## DATA



$\beta$ -2-Microglobulin (B2M-02): sc-51510. Western blot analysis of  $\beta$ -2-Microglobulin expression in U-937 whole cell lysate.



$\beta$ -2-Microglobulin (B2M-02): sc-51510. Indirect FCM analysis of human peripheral blood leukocytes stained with  $\beta$ -2-Microglobulin (B2M-02), followed by PE-conjugated goat anti-mouse IgG<sub>1</sub>: sc-3764. Black line histogram represents the isotype control, normal mouse IgG<sub>1</sub>: sc-3877.

## SELECT PRODUCT CITATIONS

- Nakamura, J., et al. 2017. Males without apparent alloimmunization could have HLA antibodies that recognize target HLA specificities expressed on cells. *HLA* 89: 285-292.
- Fischer, K., et al. 2019. Viable pigs after simultaneous inactivation of porcine MHC class I and three xenoreactive antigen genes GGTA1, CMAH and B4GALNT2. *Xenotransplantation* 27: e12560.
- Martens, G.R., et al. 2019. HLA class I-sensitized renal transplant patients have antibody binding to SLA class I epitopes. *Transplantation* 103: 1620-1629.

## RESEARCH USE

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



See  **$\beta$ -2-Microglobulin (G-10): sc-46697** for  $\beta$ -2-Microglobulin antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.