SANTA CRUZ BIOTECHNOLOGY, INC.

CD45 (YTH24.5): sc-59070

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The Power to Question

BACKGROUND

CD45 has been identified as a transmembrane glycoprotein, broadly expressed among hematopoietic cells. Multiple isoforms of CD45 are distributed throughout the immune system according to cell type. These isoforms arise because of alternative splicing of exons 4, 5 and 6. The corresponding protein domains are characterized by the binding of monoclonal antibodies specific for CD45RA (exon 4), CD45RB (exon 5), CD45RC (exon 6) and CD45RO (exons 4 to 6 spliced out). The variation in these isoforms is localized to the extracellular domain of CD45, while the intracellular domain is conserved. CD45 functions as a phosphotyrosine phosphatase, a vital component for efficient tyrosine phosphorylation induction by the TCR/CD3 complex. The tyrosine phosphatase activity of CD45 is contained within the conserved intracellular domain. Src and Syk family protein tyrosine kinases are utilized by the TCR/CD3 complex to initiate signaling cascades. Several members of these two families, including Lck, Fyn and ZAP-70, have been implicated as physiological substrates of CD45.

REFERENCES

1. Trowbridge, I.S. 1978. Interspecies spleen-myeloma hybrid producing monoclonal antibodies against mouse lymphocyte surface glycoprotein, T200. J. Exp. Med. 148: 313-323.
2. West, K.P., et al. 1986. The demonstration of B cell, T cell and myeloid antigens in paraffin sections. J. Pathol. 150: 89-101.
3. Streuli, M., et al. 1987. Differential usage of three exons generates at least five different mRNAs encoding human leukocyte common antigens. J. Exp. Med. 166: 1548-1566.
4. Hall, P.A., et al. 1987. New marker of B lymphocytes, MB2: comparison with other lymphocyte subset markers active in conventionally processed tissue sections. J. Clin. Pathol. 40: 151-156.
5. Poppema, S., et al. 1987. Monoclonal antibodies (MT1, MT2, MB1, MB2, MB3) reactive with leukocyte subsets in paraffin-embedded tissue sections. Am. J. Pathol. 127: 418-429.
6. Johnson, P., et al. 1989. Identification of the alternatively spliced exons of murine CD45 (T200) required for reactivity with B220 and other T200-restricted antibodies. J. Exp. Med. 169: 1179-1184.
7. Bazil, V., et al. 1989. Sialic acid-dependent epitopes of CD45 molecules of restricted cellular expression. Immunogenetics 29: 202-205.
8. Trowbridge, I.S., et al. 1994. CD45: an emerging role as a protein tyrosine phosphatase required for lymphocyte activation and development. Annu. Rev. Immunol. 12: 85-116.

CHROMOSOMAL LOCATION

Genetic locus: PTPRC (human) mapping to 1q31.3.

SOURCE

CD45 (YTH24.5) is a rat monoclonal antibody raised against T lymphocytes of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgG_{2b} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CD45 (YTH24.5) is available conjugated to either phycoerythrin (sc-59070 PE), fluorescein (sc-59070 FITC), Alexa Fluor® 488 (sc-59070 AF488), Alexa Fluor® 546 (sc-59070 AF546), Alexa Fluor® 594 (sc-59070 AF594) or Alexa Fluor® 647 (sc-59070 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-59070 AF680) or Alexa Fluor® 790 (sc-59070 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

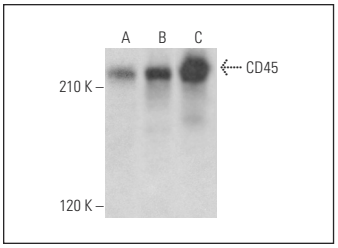
CD45 (YTH24.5) is recommended for detection of CD45 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and flow cytometry (1 µg per 1 x 10^6 cells).

Suitable for use as control antibody for CD45 siRNA (h): sc-29251, CD45 shRNA Plasmid (h): sc-29251-SH and CD45 shRNA (h) Lentiviral Particles: sc-29251-V.

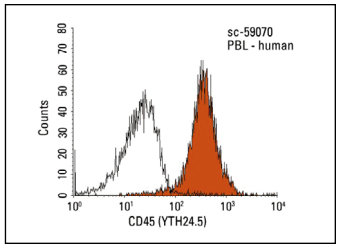
Molecular Weight of CD45: 180-220 kDa.

Positive Controls: Raji whole cell lysate: sc-364236, BJAB whole cell lysate: sc-2207 or GA-10 whole cell lysate: sc-364230.

DATA



CD45 (YTH24.5): sc-59070. Western blot analysis of CD45 expression in Raji (**A**), BJAB (**B**) and GA-10 (**C**) whole cell lysates.



CD45 (YTH24.5): sc-59070. Indirect FCM analysis of human peripheral blood leukocytes stained with CD45 (YTH24.5), followed by PE-conjugated goat anti-rat IgG: sc-3740. Black line histogram represents the isotype control, normal rat IgG_{2b}: sc-3884.

SELECT PRODUCT CITATIONS

1. Huang, X., et al. 2019. Arrayed microfluidic chip for detection of circulating tumor cells and evaluation of drug potency. Anal. Biochem. 564-565: 64-71.
2. Györfi, A.H., et al. 2021. Engrailed 1 coordinates cytoskeletal reorganization to induce myofibroblast differentiation. J. Exp. Med. 218: e20201916.

STORAGE

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