

CD28 (3H1179): sc-70612

BACKGROUND

T cell proliferation and lymphokine production are triggered by occupation of the TCR by antigen, followed by a costimulatory signal that is delivered by a ligand expressed on antigen presenting cells. The B7-related cell surface proteins CD80 (B7-1) and CD86 (B7-2) are expressed on antigen presenting cells, bind the homologous T cell receptors CD28 and CTLA-4 (cytotoxic T lymphocyte-associated protein-4) and trigger costimulatory signals for optimal T cell activation. CTLA-4 shares 31% overall amino acid identity with CD28 and it has been proposed that CD28 and CTLA-4 are functionally redundant. SLAMF is a novel receptor on T cells that, when engaged, potentiates T cell expansion in a CD28-independent manner. B7, also designated BB1, is another ligand or counterreceptor for CD28 and CTLA-4 that is expressed on the antigen-presenting cell.

REFERENCES

1. Chambers, C.A., et al. 1997. Lymphoproliferation in CTLA-4-deficient mice is mediated by costimulation-dependent activation of CD4⁺ T cells. *Immunity* 7: 885-895.
2. Deshpande, M., et al. 2002. A novel CD28 mRNA variant and simultaneous presence of various CD28 mRNA isoforms in human T lymphocytes. *Hum. Immunol.* 63: 20-23.
3. Krummel, M.F. and Allison, J.P. 2011. Pillars article: CD28 and CTLA-4 have opposing effects on the response of T cells to stimulation. *The journal of experimental medicine.* 195: 182: 459-465. *J. Immunol.* 187: 3459-3465.
4. Körmendy, D., et al. 2013. Impact of the CTLA-4/CD28 axis on the processes of joint inflammation in rheumatoid arthritis. *Arthritis Rheum.* 65: 81-87.
5. Yu, X., et al. 2013. Artificial antigen-presenting cells plus IL-15 and IL-21 efficiently induce melanoma-specific cytotoxic CD8⁺ CD28⁺ T lymphocyte responses. *Asian Pac. J. Trop. Med.* 6: 467-472.
6. Ewing, M.M., et al. 2013. T-cell co-stimulation by CD28-CD80/86 and its negative regulator CTLA-4 strongly influence accelerated atherosclerosis development. *Int. J. Cardiol.* 168: 1965-1974.
7. Chen, L. and Flies, D.B. 2013. Molecular mechanisms of T cell co-stimulation and co-inhibition. *Nat. Rev. Immunol.* 13: 227-242.

CHROMOSOMAL LOCATION

Genetic locus: CD28 (human) mapping to 2q33.2; Cd28 (mouse) mapping to 1 C2.

SOURCE

CD28 (3H1179) is a rat monoclonal antibody raised against peripheral blood T-cells of human origin.

PRODUCT

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

RESEARCH USE

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

APPLICATIONS

CD28 (3H1179) is recommended for detection of CD28 of mouse, rat and 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)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10⁶ cells).

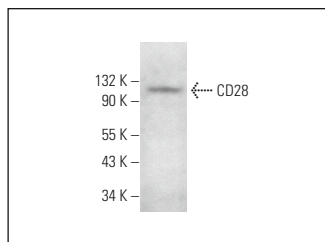
Suitable for use as control antibody for CD28 siRNA (h): sc-29983, CD28 siRNA (m): sc-29982, CD28 shRNA Plasmid (h): sc-29983-SH, CD28 shRNA Plasmid (m): sc-29982-SH, CD28 shRNA (h) Lentiviral Particles: sc-29983-V and CD28 shRNA (m) Lentiviral Particles: sc-29982-V.

Molecular Weight of CD28 monomer: 44 kDa.

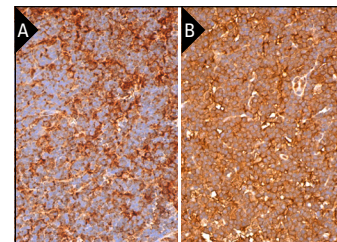
Molecular Weight of CD28 homodimer: 90 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204 or C6 whole cell lysate: sc-364373.

DATA



CD28 (3H1179): sc-70612. Western blot analysis of CD28 expression in C6 whole cell lysate.



CD28 (3H1179): sc-70612. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse lymph node tissue showing cytoplasmic staining of cells in non-germinal center (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded rat lymph node tissue showing membrane and cytoplasmic staining of cells in germinal center and cells in non-germinal center (B).

SELECT PRODUCT CITATIONS

1. Zhang, R., et al. 2021. Retinoblastoma cell-derived Twist protein promotes regulatory T cell development. *Cancer Immunol. Immunother.* 70: 1037-1048.
2. Ruan, H., et al. 2021. Flightless I homolog reverses enzalutamide resistance through PD-L1-mediated immune evasion in prostate cancer. *Cancer Immunol. Res.* 9: 838-852.
3. Wang, Q., et al. 2022. Circadian protein CLOCK modulates regulatory B cell functions of nurses engaging day-night shift rotation. *Cell. Signal.* 96: 110362.

STORAGE

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