

**anti-CD28**

Cat #: HM1074  
Rabbit polyclonal IgG  
0.2 µg/µl, store at 4 °C

For research use only

**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. CD28 is one of the most important costimulatory receptors necessary for full T lymphocyte activation. B7 and B7-related cell surface proteins CD80 (B7-1) and CD86 (B7-2) expressed on antigen presenting cells bind the CD28 and CTLA-4 (cytotoxic T lymphocyte-associated protein-4) and trigger costimulatory signals for optimal T cell activation. CD28 costimulation is essential for CD4-positive T-cell proliferation, survival, interleukin-2 production, and T-helper type-2 (Th2) development. CD28 engagement by B7 can also generate TCR-independent signals leading to IkappaB kinase and NF-kappaB activation.

**SPECIFICITY**

This antibody reacts with CD28 of mouse, rat and human origin by Western blotting, immunoprecipitation and immunohistochemistry; non cross-reactive with CTLA-4.

**IMMUNOGEN**

A peptide at the carboxy terminus of human CD28.

**STORAGE**

This antibody is stable for 12 months when stored at 2-8°C.

**REFERENCES**

1. Aruffo, A. and Seed, B. (1987) Molecular cloning of a CD28 cDNA by a high-efficiency COS cell expression system. *Proc. Natl. Acad. Sci. U.S.A.* 84, 8573-8577.
2. Schwartz, R.H. 1992. Costimulation of T lymphocytes: the role of CD28, CTLA-4, and B7/BB1 in interleukin-2 production and immunotherapy. *Cell* 71: 1065-1068.
3. Peach, R.J., Bajorath, J., Naemura, J., Leytze, G., Greene, J., Aruffo, A., and Linsley, P.S. 1995. Both extracellular immunoglobulin-like domains of CD80 contain residues critical for binding T cell surface receptors CTLA-4 and CD28. *J. Biol. Chem.* 270: 21181-21187.
4. Fargeas, C.A., Truneh, A., Reddy, M., Hurle, M., Sweet, R., and Sekaly, R.P. 1995. Identification of residues in the V domain of CD80 (B7-1) implicated in functional interactions with CD28 and CTLA4. *J. Exp. Med.* 182: 667-675.
5. Gribben, J.G., Freeman, G.J., Boussiotis, V.A., Rennert, P., Jellis, C.L., Greenfield, E., Barber, M., Restivo, V.A. Jr., Ke, X., Gray, G.S., and Nadler, L.M. 1995. CTLA4 mediates antigenspecific apoptosis of human T cells. *Proc. Natl. Acad. Sci. USA* 92: 811-815.
6. Cocks, B.G., Chang, C.-C.J., Carballido, J.M., Yssel, H., de Vries, J.E., and Aversa, G. 1995. A novel receptor involved in T-cell activation. *Nature* 376: 260-263.
7. Harlan, D.M., Abe, R., Lee, K.P., and June, C.H. 1995. Potential roles of the B7 and CD28 receptor families in autoimmunity and immune evasion. *Clin. Immunol. Immunopath.* 75: 99-111.

8. Lenschow, D.J., Walunas, T.L. and Bluestone, J.A. (1996) CD28/B7 system of T cell costimulation. *Annu. Rev. Immunol.* 14, 233-258
9. Appleman, L.J., van Puijenbroek, A.A., Shu, K.M., Nadler, L.M. and Boussiotis, V.A. (2002) CD28 costimulation mediates down-regulation of p27kip1 and cell cycle progression by activation of the PI3K/PKB signaling pathway in primary human T cells. *J. Immunol.* 168, 2729-2736.
10. Frauwirth, K.A., Riley, J.L., Harris, M.H., Parry, R.V., Rathmell, J.C., Plas, D.R., Elstrom, R.L., June, C.H. and Thompson, C.B. (2002) The CD28 signaling pathway regulates glucose metabolism. *Immunity* 16, 769-777.
11. Marinari, B., Costanzo, A., Marzano, V., Piccolella, E. and Tuosto, L. (2004) CD28 delivers a unique signal leading to the selective recruitment of RelA and p52 NF-kappaB subunits on IL-8 and Bcl-xL gene promoters. *Proc. Natl. Acad. Sci. U.S.A.* 101, 6098-6103.

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