

CD40 (HM40-3): sc-20010

BACKGROUND

Resting B cells can be activated and clonally expanded into antibody-producing cells in response to a combination of cell contact and soluble signals provided by primed helper T (Th) cells. While cytokines IL-4 and IL-13 alone are inadequate for B cell activation, contact with Th cells seems to be sufficient for delivery of proliferative signals. A receptor ligand pair central to the transmission of this signal is CD40, expressed on the surface of B cells, together with CD40L, expressed on activated T cells. In the presence of such stimulus, IL-4 and IL-13 are capable of triggering immunoglobulin class switching and secretion of IgE. B cells are sensitive to these cytokines only subsequent to CD40/CD40L-driven DNA synthesis. A downstream mediator of the CD40 signaling pathway, designated CRAF, is a member of an expanding family of proteins that contain a conserved cysteine- and histidine-rich RING finger motif. Other members of the family include TRAF1 and TRAF2. The latter proteins have been shown to regulate TNF-R2 as well as CD40 signaling through activation of the NFκB family of transcription factors.

REFERENCES

1. Kehry, M.R., et al. 1994. B-cell activation by helper T-cell membranes. *Crit. Rev. Immunol.* 14: 221-238.
2. Hu, H.M., et al. 1994. A novel RING finger protein interacts with the cytoplasmic domain of CD40. *J. Biol. Chem.* 269: 30069-30072.
3. Rothe, M., et al. 1994. A novel family of putative signal transducers associated with the cytoplasmic domain of the 75 kDa tumor necrosis factor receptor. *Cell* 78: 681-682.
4. Gordon, J. 1995. CD40 and its ligand: central players in B lymphocyte survival, growth, and differentiation. *Blood Rev.* 9: 53-56.
5. Fuleihan, R., et al. 1995. Expression of the CD40 ligand in T lymphocytes and induction of IgE isotype switching. *Int. Arch. Allergy Immunol.* 107: 43-44.
6. Cheng, G., et al. 1995. Involvement of CRAF1, a relative of TRAF, in CD40 signaling. *Science* 267: 1494-1498.
7. Rothe, M., et al. 1995. TRAF2-mediated activation of NFκB by TNF receptor 2 and CD40. *Science* 269: 1424-1427.
8. Grandien, A., et al. 1996. Acquisition of CD40 expression during murine B cell differentiation. *Scand. J. Immunol.* 43: 47-55.

CHROMOSOMAL LOCATION

Genetic locus: Cd40 (mouse) mapping to 2 H3.

SOURCE

CD40 (HM40-3) is a Armenian hamster monoclonal antibody raised against (BALB/c x NZB) F1 mouse-derived lymphoma WEHI-231 cells.

PRODUCT

Each vial contains 200 µg IgM in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available azide-free for blocking of ligand binding and stimulation of B lymphocytes, sc-20010 L, 200 µg/0.1 ml.

APPLICATIONS

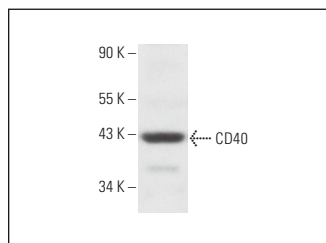
CD40 (HM40-3) is recommended for detection of CD40 of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 CD40 siRNA (m): sc-29998, CD40 shRNA Plasmid (m): sc-29998-SH and CD40 shRNA (m) Lentiviral Particles: sc-29998-V.

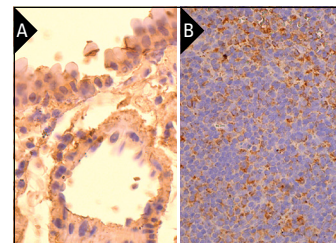
Molecular Weight of CD40: 43 kDa.

Positive Controls: mouse peripheral blood lysate.

DATA



CD40 (HM40-3): sc-20010. Western blot analysis of CD40 expression in mouse peripheral blood lysate.



CD40 (HM40-3): sc-20010. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse lung tissue showing membrane localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse spleen tissue showing cytoplasmic staining of cells in white pulp and cells in red pulp (B).

SELECT PRODUCT CITATIONS

1. Kissinger, S.T., et al. 2018. Oscillatory encoding of visual stimulus familiarity. *J. Neurosci.* 38: 6223-6240.
2. Girón-Pérez, D.A., et al. 2020. Myo1e modulates the recruitment of activated B cells to inguinal lymph nodes. *J. Cell Sci.* 133: jcs235275.
3. Pototskiy, E., et al. 2021. Downregulation of CD40L-CD40 attenuates seizure susceptibility and severity of seizures. *Sci. Rep.* 11: 17262.
4. Tiwari, P., et al. 2024. Effect of Diminazene Aceturate, an ACE2 activator, on platelet CD40L signaling induced glial activation in rat model of hypertension. *Int. Immunopharmacol.* 139: 112654.

STORAGE

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

RESEARCH USE

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