

# CD3 (CD3-12): sc-59008

## BACKGROUND

The T cell antigen receptor (TCR) recognizes foreign antigens and translates such recognition events into intracellular signals that elicit a change in the cell from a dormant to an activated state. Much of this signaling process can be attributed to a multisubunit complex of proteins that associates directly with the TCR. This complex has been designated CD3 (Cluster of Differentiation 3). It is composed of five invariant polypeptide chains that associate to form three dimers: a heterodimer of gamma and epsilon chains ( $\gamma\epsilon$ ), a heterodimer of delta and epsilon chains ( $\delta\epsilon$ ) and a homodimer of two zeta chains ( $\zeta\zeta$ ) or a heterodimer of zeta and eta chains ( $\zeta\eta$ ). The zeta and eta chains are encoded by the same gene but differ in their carboxyl-terminal ends due to an alternative splicing event. The gamma, epsilon and delta chains each contain a single copy of a conserved immunoreceptor tyrosine-based activation motif (ITAM). In contrast, the zeta chain contains three consecutive copies of the same motif. Phosphorylated ITAMs act as docking sites for protein kinases such as ZAP-70 and Syk and are also capable of regulating their kinase activity. The crystal structure of ZAP-70s SH2 domains bound to the zeta chain ITAMs has been solved.

## REFERENCES

1. Exley, M., et al. 1991. Structure, assembly and intracellular transport of the T cell receptor for antigen. *Sem. Immunol.* 3: 283-297.
2. Weiss, A., et al. 1991. Signal transduction by the T cell antigen receptor. *Sem. Immunol.* 3: 313-324.
3. Chan, A.C., et al. 1994. The role of protein tyrosine kinases and protein tyrosine phosphatases in cell antigen receptor signal transduction. *Sem. Immunol.* 12: 555-592.
4. Aoe, T., et al. 1994. Different cytoplasmic structure of the CD3- $\zeta$  family dimer modulates the activation signal and function of T cells. *Intl. Immunol.* 6: 1671-1679.
5. Ohno, H., et al. 1994. Targeted disruption of the CD3- $\eta$  locus causes high lethality in mice: modulation of Oct-1 transcription on the opposite strand. *EMBO J.* 13: 1157-1165.
6. Neumeister, E.N., et al. 1995. Binding of ZAP-70 to phosphorylated T cell receptor  $\zeta$  and  $\epsilon$  enhances its autophosphorylation and generates specific binding sites for SH2 domain-containing proteins. *Mol. Cell. Biol.* 15: 3171-3178.
7. Weiss, A. 1995. Zapping tandem SH2 domains. *Nature* 377: 17-18.
8. Hatada, M.H., et al. 1995. Molecular basis for interaction of the protein tyrosine kinase ZAP-70 with the T cell receptor. *Nature* 377: 32-38.

## SOURCE

CD3 (CD3-12) is a rat monoclonal antibody raised against cytoplasmic epitope of CD3 with significant sequence similarity to a broad range of species.

## 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.

## APPLICATIONS

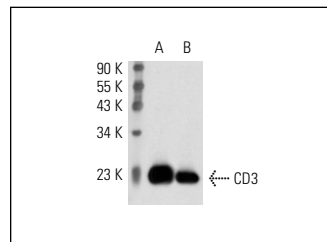
CD3 (CD3-12) is recommended for detection of CD3 of mouse, rat, human, equine, porcine and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)] and flow cytometry (1  $\mu$ g per  $1 \times 10^6$  cells).

Suitable for use as control antibody for CD3 siRNA (h): sc-29987, CD3 siRNA (m): sc-29988, CD3 shRNA Plasmid (h): sc-29987-SH, CD3 shRNA Plasmid (m): sc-29988-SH, CD3 shRNA (h) Lentiviral Particles: sc-29987-V and CD3 shRNA (m) Lentiviral Particles: sc-29988-V.

Molecular Weight of CD3: 25 kDa.

Positive Controls: mouse PBL, human PBL or HeLa whole cell lysate: sc-2200.

## DATA



CD3 (CD3-12): sc-59008. Western blot analysis of CD3 expression in MOLT-4 (A) and HuT 78 (B) whole cell lysates.

## 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.