SANTA CRUZ BIOTECHNOLOGY, INC.

CD3 (21-L5): sc-1175

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 γ and ε chains (γε), a heterodimer of δ and ε chains (δε) and a homodimer of two ζ chains (ζζ) or a heterodimer of ζ and η chains (ζη). The ζ and η chains are encoded by the same gene but differ in their carboxyl-terminal ends due to an alternative splicing event. The γ, ε and δ chains each contain a single copy of a conserved immunoreceptor tyrosine-based activation motif (ITAM). In contrast, the ζ 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-70's SH2 domains bound to the ζ chain ITAMs has been solved.

REFERENCES

1. Exley, M., et al. 1991. Structure, assembly and intracellular transport of the T cell receptor for antigen. Semin. Immunol. 3: 283-297.
2. Weiss, A., et al. 1991. Signal transduction by the T cell antigen receptor. Semin. 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. Semin. Immunol. 12: 555-592.
4. Aoe, T., et al. 1994. Different cytoplasmic structure of the CD3-ζ family dimer modulates the activation signal and function of T cells. Int. Immunol. 6: 1671-1679.
5. Ohno, H., et al. 1994. Targeted disruption of the CD3-ζ 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 ζ and η enhances its autophosphorylation and generates specific binding sites for SH2 domain-containing proteins. Mol. Cell. Biol. 15: 3171-3178.
7. 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 (21-L5) is a mouse monoclonal antibody raised against CD3 of human origin.

PRODUCT

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

CD3 (21-L5) is available conjugated to fluorescein (sc-1175 FITC), 200 µg/ml, for IF, IHC(P) and FCM.

APPLICATIONS

CD3 (21-L5) is recommended for detection of CD3 of human origin by immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10^6 cells).

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

Molecular Weight of CD3: 25 kDa.

SELECT PRODUCT CITATIONS

1. Milia, E., et al. 1996. The aminoterminal phosphotyrosine binding domain of Shc associates with ZAP-70 and mediates TCR dependent gene activation. Oncogene 13: 767-775.
2. Sagawa, K., et al. 1997. The protein-tyrosine phosphatase SHP-2 associates with tyrosine-phosphorylated adhesion molecule PECAM-1 (CD31). J. Biol. Chem. 272: 31086-31091.
3. Hsu, A.L., et al. 2000. Novel function of phosphoinositide 3-kinase in T cell calcium signaling. J. Biol. Chem. 275: 16242-16250.
4. Gunzer, M., et al. 2000. Antigen presentation in extracellular matrix: interactions of T cells with dendritic cells are dynamic, short lived, and sequential. Immunity 13: 323-332.

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 for detailed protocols and support products.

CONJUGATES

See **CD3 (PC3/188A): sc-20047** for CD3 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.