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SANTA CRUZ BIOTECHNOLOGY, INC.

CD3-ε (h): 293T Lysate: sc-116055

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 (CD3-γ and CD3-ε), a heterodimer of δ and ε chains (CD3-δ and CD3-ε) and a homodimer of two ζ chains (CD3-ζ) or a heterodimer of ζ and η chains (CD3-ζ and CD3-η). CD3-ζ and CD3-η are encoded by the same gene, but differ in their carboxyl-terminal ends due to an alternative splicing event. CD3-γ, CD3-ε and CD3-δ each contain a single copy of a conserved immunoreceptor tyrosine-based activation motif (ITAM). In contrast, CD3-ζ 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 the ZAP-70 SH2 domains bound to CD3-ζ 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. Annu. Rev. 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 η 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 ε enhances its autophosphorylation and generates specific binding sites for SH2 domain-containing proteins. Mol. Cell. Biol. 15: 3171-3178.
7. Weiss, A. 1995. Signal transduction. 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.

CHROMOSOMAL LOCATION

Genetic locus: CD3E (human) mapping to 11q23.3.

PRODUCT

CD3-ε (h): 293T Lysate represents a lysate of human CD3-ε transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

APPLICATIONS

CD3-ε (h): 293T Lysate is suitable as a Western Blotting positive control for human reactive CD3-ε antibodies. Recommended use: 10-20 µl per lane.

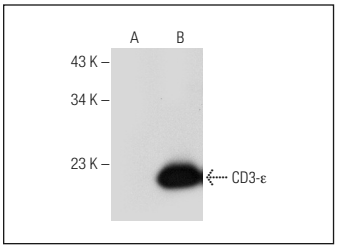
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

CD3-ε (G-5): sc-137096 is recommended as a positive control antibody for Western Blot analysis of enhanced human CD3-ε expression in CD3-ε transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

DATA



CD3-ε (G-5): sc-137096. Western blot analysis of CD3-ε expression in non-transfected: sc-117752 (**A**) and human CD3-ε transfected: sc-116055 (**B**) 293T whole cell lysates.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. 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.