

CD3- ζ (FL-163): sc-20919

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 ($\gamma\epsilon$), a hetero-dimer of δ and ϵ chains ($\delta\epsilon$) and a homodimer of two ζ chains ($\zeta\zeta$) or a heterodimer of ζ and η chains ($\zeta\eta$). 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 the ZAP-70 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. 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.
4. 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.
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.

CHROMOSOMAL LOCATION

Genetic locus: CD247 (human) mapping to 1q24.2; Cd247 (mouse) mapping to 1 H2.3.

SOURCE

CD3- ζ (FL-163) is a rabbit polyclonal antibody raised against amino acids 1-163 representing full length CD3- ζ of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

CD3- ζ (FL-163) is recommended for detection of CD3- ζ of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

CD3- ζ (FL-163) is also recommended for detection of CD3- ζ in additional species, including porcine.

Suitable for use as control antibody for CD3- ζ siRNA (h): sc-29245, CD3- ζ/η siRNA (m): sc-42754, CD3- ζ shRNA Plasmid (h): sc-29245-SH, CD3- ζ/η shRNA Plasmid (m): sc-42754-SH, CD3- ζ shRNA (h) Lentiviral Particles: sc-29245-V and CD3- ζ/η shRNA (m) Lentiviral Particles: sc-42754-V.

Molecular Weight of CD3- ζ : 22 kDa.

Positive Controls: MOLT-4 cell lysate: sc-2233, Jurkat whole cell lysate: sc-2204 or mouse thymus extract: sc-2406.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Cheng, H., et al. 2005. Construction of a novel constitutively active chimeric EGFR to identify new targets for therapy. *Neoplasia* 7: 1065-1072.
2. Sourial-Bassillious, N., et al. 2006. Effect of TNF- α on CD3- ζ and MHC-1 in postnatal rat hippocampus. *Pediatr. Res.* 60: 377-381.
3. Srivastava, V., et al. 2011. Suppressors of cytokine signaling inhibit effector T cell responses during *Mycobacterium tuberculosis* infection. *Immunol. Cell Biol.* 89: 786-791.

RESEARCH USE

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



Try **CD3- ζ (6B10.2): sc-1239** or **CD3- ζ (E-3): sc-166435**, our highly recommended monoclonal alternatives to CD3- ζ (FL-163). Also, for AC, HRP, FITC, PE, Alexa Fluor® 488 and Alexa Fluor® 647 conjugates, see **CD3- ζ (6B10.2): sc-1239**.