

CD3- ζ (6B10.2): sc-1239

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 ($\gamma\epsilon$), a heterodimer 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

- Exley, M., et al. 1991. Structure, assembly and intracellular transport of the T cell receptor for antigen. *Semin. Immunol.* 3: 283-297.
- Weiss, A., et al. 1991. Signal transduction by the T cell antigen receptor. *Semin. Immunol.* 3: 313-324.

CHROMOSOMAL LOCATION

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

SOURCE

CD3- ζ (6B10.2) is a mouse monoclonal antibody raised against amino acids 89-105 mapping within a cytoplasmic domain of CD3- ζ of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CD3- ζ (6B10.2) is available conjugated to agarose (sc-1239 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-1239 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-1239 PE), fluorescein (sc-1239 FITC), Alexa Fluor[®] 488 (sc-1239 AF488), Alexa Fluor[®] 546 (sc-1239 AF546), Alexa Fluor[®] 594 (sc-1239 AF594) or Alexa Fluor[®] 647 (sc-1239 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-1239 AF680) or Alexa Fluor[®] 790 (sc-1239 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

In addition, CD3- ζ (6B10.2) is available conjugated to either Alexa Fluor[®] 405 (sc-1239 AF405, 200 μ g/ml) or PerCP (sc-1239 PerCP), 100 tests in 2 ml, for IF, IHC(P) and FCM.

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RESEARCH USE

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

APPLICATIONS

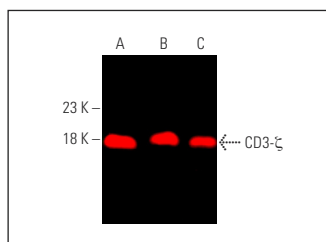
CD3- ζ (6B10.2) is recommended for detection of CD3- ζ of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 μ g per 1 x 10⁶ cells).

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.

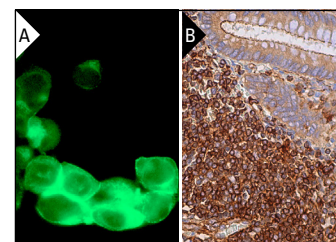
Molecular Weight of CD3- ζ : 22 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, CCRF-CEM cell lysate: sc-2225 or SUP-T1 whole cell lysate: sc-364796.

DATA



CD3- ζ (6B10.2): sc-1239. Near-infrared western blot analysis of CD3- ζ expression in Jurkat (A), CCRF-CEM (B) and SUP-T1 (C) whole cell lysates. Blocked with UltraCruz[®] Blocking Reagent: sc-516214. Detection reagent used: m-IgG κ BP-CFL 790: sc-516181.



CD3- ζ (6B10.2): sc-1239. Immunofluorescence staining of methanol-fixed Jurkat cells showing membrane staining (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human appendix tissue showing membrane and cytoplasmic staining of lymphoid cells (B).

SELECT PRODUCT CITATIONS

- Becker, K., et al. 1996. Targeted expression of human O⁶-methylguanine-DNA methyltransferase (MGMT) in transgenic mice protects against tumor initiation in two-stage skin carcinogenesis. *Cancer Res.* 56: 3244-9324.
- Levring, T.B., et al. 2019. Tumor necrosis factor induces rapid down-regulation of TXNIP in human T cells. *Sci. Rep.* 9: 16725.
- Ma, X., et al. 2020. Interleukin-23 engineering improves CAR T cell function in solid tumors. *Nat. Biotechnol.* 38: 448-459.
- Lanz, A.L., et al. 2021. Allosteric activation of T cell antigen receptor signaling by quaternary structure relaxation. *Cell Rep.* 36: 109375.
- Saitoh, K., et al. 2022. STAP-2 is a novel positive regulator of TCR-proximal signals. *J. Immunol.* 209: 57-68.
- Horkova, V., et al. 2023. Unique roles of co-receptor-bound LCK in helper and cytotoxic T cells. *Nat. Immunol.* 24: 174-185.

STORAGE

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