SANTA CRUZ BIOTECHNOLOGY, INC.

ZAP-70 (1E7.2): sc-32760

BACKGROUND

The activation of T lymphocytes by antigens is mediated by the T cell receptor (TCR) which is a multisubunit complex assembled from at least six different genes. The TCR subunits include the Ti α and β chains, the CD3 γ, δ and ε chains and a ζ-containing homodimer or heterodimer. The disulfide-linked Ti α-β heterodimer is responsible for antigen recognition, but the short five amino acid cytoplasmic domains of Ti α and β are unlikely to be sufficient to couple to intracellular signaling pathways. In contrast, the structured features of the CD3 and ζ subunits suggest a role in signal transduction. Of these, the ζ chain, which is expressed as either a homodimer or heterodimer, has a short extracellular domain of only nine amino acids, but a larger 113 amino acid cytoplasmic domain. A tyrosine phosphoprotein, ZAP-70, has been identified that associates with ζ and undergoes tyrosine phosphorylation following TCR stimulation.

CHROMOSOMAL LOCATION

Genetic locus: ZAP70 (human) mapping to 2q11.2; Zap70 (mouse) mapping to 1B.

SOURCE

ZAP-70 (1E7.2) is a mouse monoclonal antibody raised against amino acids 282-307 of ZAP-70 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

ZAP-70 (1E7.2) is available conjugated to agarose (sc-32760 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-32760 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-32760 PE), fluorescein (sc-32760 FITC), Alexa Fluor® 488 (sc-32760 AF488), Alexa Fluor® 546 (sc-32760 AF546), Alexa Fluor® 594 (sc-32760 AF594) or Alexa Fluor® 647 (sc-32760 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-32760 AF680) or Alexa Fluor® 790 (sc-32760 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

APPLICATIONS

ZAP-70 (1E7.2) is recommended for detection of ZAP-70 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], 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 ZAP-70 siRNA (h): sc-29526, ZAP-70 siRNA (m): sc-36867, ZAP-70 shRNA Plasmid (h): sc-29526-SH, ZAP-70 shRNA Plasmid (m): sc-36867-SH, ZAP-70 shRNA (h) Lentiviral Particles: sc-29526-V and ZAP-70 shRNA (m) Lentiviral Particles: sc-36867-V.

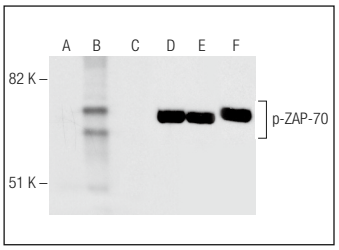
Molecular Weight of ZAP-70: 70 kDa.

Positive Controls: BYDP whole cell lysate: sc-364368, MOLT-4 cell lysate: sc-2233 or CCRF-CEM cell lysate: sc-2225.

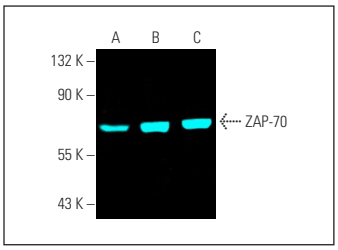
STORAGE

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

DATA



Western blot analysis of ZAP-70 phosphorylation in untreated (**A**,**D**), pervanadate treated (**B**,**E**) and pervanadate and lambda protein phosphatase (sc-200312A) treated (**C**,**F**) Jurkat whole cell lysates. Antibodies tested include p-ZAP-70 (Tyr 493): sc-101823 (**A**,**B**,**C**) and ZAP-70 (1E7.2): sc-32760 (**D**,**E**,**F**).



ZAP-70 (1E7.2) Alexa Fluor® 647: sc-32760 AF647. Direct fluorescent western blot analysis of ZAP-70 expression in CCRF-CEM (**A**), BYDP (**B**) and MOLT-4 (**C**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.

SELECT PRODUCT CITATIONS

1. Fallone, C.A. 2000. Epidemiology of the antibiotic resistance of *Helicobacter pylori* in Canada. Can. J. Gastroenterol. 14: 879-882.
2. Barboza, L., et al. 2013. A deficient translocation of CD3ζ, ZAP-70 and Grb2 to lipid raft, as a hallmark of defective adaptive immune response during chronic hepatitis B infection. Cell. Immunol. 284: 9-19.
3. Markwart, R., et al. 2014. Immunosuppression after sepsis: systemic inflammation and sepsis induce a loss of naïve T-cells but no enduring cell-autonomous defects in T-cell function. PLoS ONE 9: e115094.
4. Zou, Q., et al. 2015. T cell development involves TRAF3IP3-mediated ERK signaling in the Golgi. J. Exp. Med. 212: 1323-1336.
5. Moogk, D., et al. 2016. Constitutive lck activity drives sensitivity differences between $CD8^+$ memory T-cell subsets. J. Immunol. 197: 644-654.
6. Geibler, K., et al. 2017. Functional characterization of T-cells from palatine tonsils in patients with chronic tonsillitis. PLoS ONE 12: e0183214.
7. Zhou, X., et al. 2019. The deubiquitinase Otub1 controls the activation of $CD8^+$ T cells and NK cells by regulating IL-15-mediated priming. Nat. Immunol. 20: 879-889.
8. Luckey, M.A., et al. 2020. SOCS3 is a suppressor of γc cytokine signaling and constrains generation of murine $Foxp3^+$ regulatory T cells. Eur. J. Immunol. 50: 986-999.
9. Sasai, M., et al. 2021. Uncovering a novel role of PLCβ4 in selectively mediating TCR signaling in $CD8^+$ but not $CD4^+$ T cells. J. Exp. Med. 218: e20201763.
10. Schultz, A., et al. 2022. A cysteine residue within the kinase domain of Zap70 regulates Lck activity and proximal TCR signaling. Cells 11: 2723.

RESEARCH USE

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