

# ZAP-70 (4H386): sc-73279

## 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 T $\alpha$  and  $\beta$  chains, the CD3  $\gamma$ ,  $\delta$  and  $\epsilon$  chains and a  $\zeta$ -containing homodimer or heterodimer. The disulfide-linked T $\alpha$ - $\beta$  heterodimer is responsible for antigen recognition, but the short five amino acid cytoplasmic domains of T $\alpha$  and  $\beta$  are unlikely to be sufficient to couple to intracellular signaling pathways. In contrast, the structured features of the CD3 and  $\zeta$  subunits suggest a role in signal transduction. Of these, the  $\zeta$  chain, which is expressed as either a homodimer or heterodimer, has a short extracellular domain of only 9 amino acids, but a larger 113 amino acid cytoplasmic domain. A tyrosine phosphoprotein, ZAP-70, has been identified that associates with  $\zeta$  and undergoes tyrosine phosphorylation following TCR stimulation.

## REFERENCES

- Clevers, H., et al. 1988. The T cell receptor/CD3 complex: a dynamic protein ensemble. *Annu. Rev. Immunol.* 6: 629-662.
- Baniyash, M., et al. 1988. Disulfide linkage of the  $\zeta$  and  $\eta$  chains of the T cell receptor. Possible identification of two structural classes of receptors. *J. Biol. Chem.* 263: 9874-9878.
- Baniyash, M., et al. 1988. The T cell antigen receptor  $\zeta$  chain is tyrosine phosphorylated upon activation. *J. Biol. Chem.* 263: 18225-18230.
- Baniyash, M., et al. 1989. The isolation and characterization of the murine T cell antigen receptor  $\zeta$  chain gene. *J. Biol. Chem.* 264: 13252-13257.
- Frank, S.J., et al. 1990. The structure and signaling function of the invariant T cell receptor components. *Semin. Immunol.* 2: 89-97.
- Clayton, L.K., et al. 1991. CD3  $\eta$  and CD3  $\zeta$  are alternatively spliced products of a common genetic locus and are transcriptionally and/or post-transcriptionally regulated during T-cell development. *Proc. Natl. Acad. Sci. USA* 88: 5202-5206.
- Chan, A.C., et al. 1991. The TCR  $\zeta$  chain is associated with a tyrosine kinase and upon T cell antigen receptor stimulation associates with ZAP-70, a 70-kDa tyrosine phosphoprotein. *Proc. Natl. Acad. Sci. USA* 88: 9166-9170.

## CHROMOSOMAL LOCATION

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

## SOURCE

ZAP-70 (4H386) is a mouse monoclonal antibody raised against amino acids 282-307 of ZAP-70 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG $_1$  kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

ZAP-70 (4H386) is available conjugated to either phycoerythrin (sc-73279 PE) or fluorescein (sc-73279 FITC), 200  $\mu$ g/ml, for IF, IHC(P) and FCM.

## APPLICATIONS

ZAP-70 (4H386) 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  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1  $\mu$ g per 1 x 10<sup>6</sup> 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.

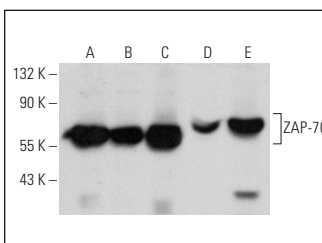
Molecular Weight of ZAP-70: 70 kDa.

Positive Controls: ZAP-70 (h): 293T Lysate: sc-114635, CCRF-CEM cell lysate: sc-2225 or MOLT-4 cell lysate: sc-2233.

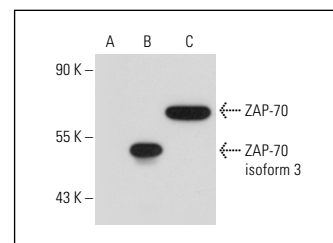
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



ZAP-70 (4H386): sc-73279. Western blot analysis of ZAP-70 expression in CCRF-CEM (A), MOLT-4 (B), HL-60 (C), BYDP (D) and CTLL-2 (E) whole cell lysates.



ZAP-70 (4H386): sc-73279. Western blot analysis of ZAP-70 expression in non-transfected 293T: sc-117752 (A), human ZAP-70 isoform 3 transfected 293T: sc-114635 (B) and Jurkat (C) whole cell lysates.

## SELECT PRODUCT CITATIONS

- Kloog, Y. and Mor, A. 2014. Cytotoxic-T-lymphocyte antigen 4 receptor signaling for lymphocyte adhesion is mediated by C3G and Rap1. *Mol. Cell. Biol.* 34: 978-988.

## 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.