

p-ZAP-70 (Tyr 292): sc-12945

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 α and β chains, the CD3 γ , δ and ϵ chains and a ζ -containing homodimer or heterodimer. The protein tyrosine kinase ZAP-70 binds to the phosphorylated immunoreceptor tyrosine-base activation motifs (ITAMs) of the TCR ζ chain through two Src-homology (SH2) domains. This binding results in the phosphorylation of ZAP-70 on multiple tyrosine residues, including Tyr 292 and Tyr 319. ZAP-70 is autophosphorylated on Tyr 292, which is thought to negatively regulate ZAP-70 function in lymphocytes. Alternatively, ZAP-70 is positively regulated by phosphorylation on Tyr 319, which mediates the SH2-dependent interaction between Lck and ZAP-70.

REFERENCES

1. Clevers, H., et al. 1988. The T cell receptor/CD3 complex: a dynamic protein ensemble. *Annu. Rev. Immunol.* 6: 629-662.
2. Frank, S.J., et al. 1990. The structure and signaling function of the invariant T cell receptor components. *Semin. Immunol.* 2: 89-97.
3. Watts, J.D., et al. 1994. Identification by electrospray ionization mass spectrometry of the site of tyrosine phosphorylation induced in activated Jurkat T cells on the protein tyrosine kinase ZAP-70. *J. Biol. Chem.* 269: 29520-29529.
4. Zhao, Q. and Weiss, A. 1996. Enhancement of lymphocyte responsiveness by a gain-of-function mutation of ZAP-70. *Mol. Cell. Biol.* 16: 6765-6774.
5. Magistrelli, G., et al. 1999. Role of the Src homology 2 domains and inter-domain regions in ZAP-70 phosphorylation and enzymatic activity. *Eur. J. Biochem.* 266: 1166-1173.

CHROMOSOMAL LOCATION

Genetic locus: ZAP70 (human) mapping to 2q12; Zap70 (mouse) mapping to 1 B.

SOURCE

p-ZAP-70 (Tyr 292) is a goat polyclonal antibody raised against a short amino acid sequence containing phosphorylated Tyr 292 of ZAP-70 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.

Blocking peptide available for competition studies, sc-12945 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4 $^{\circ}$ 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.

APPLICATIONS

p-ZAP-70 (Tyr 292) is recommended for detection of Tyr 292 phosphorylated ZAP-70 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).

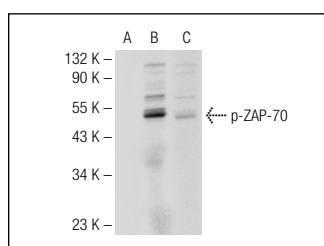
p-ZAP-70 (Tyr 292) is also recommended for detection of correspondingly phosphorylated Tyr on ZAP-70 in additional species, including equine, bovine and avian.

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 p-ZAP-70: 70 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204 or Jurkat + pervanadate cell lysate: sc-24716.

DATA



p-ZAP-70 (Tyr 292)-R: sc-12945-R. Western blot analysis of ZAP-70 phosphorylation in untreated (A), pervanadate treated (B) and pervanadate and lambda protein phosphatase (sc-200312A) treated (C) Jurkat whole cell lysates.

SELECT PRODUCT CITATIONS

1. Chiodetti, L., et al. 2006. Adaptive tolerance and clonal anergy are distinct biochemical states. *J. Immunol.* 176: 2279-2291.
2. Kim, J.E. and White, F.M. 2006. Quantitative analysis of phosphotyrosine signaling networks triggered by CD3 and CD28 costimulation in Jurkat cells. *J. Immunol.* 176: 2833-2843.
3. Kang, Q., et al. 2009. Cytoskeletal protein 4.1R negatively regulates T cell activation by inhibiting the phosphorylation of LAT. *Blood* 113: 6128-6137.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.