

# ZAP-70 (5K145): sc-73280

## 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 nine 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

1. Clevers, H., et al. 1988. The T cell receptor/CD3 complex: a dynamic protein ensemble. *Annu. Rev. Immunol.* 6: 629-662.
2. 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.
3. Baniyash, M., et al. 1988. The T cell antigen receptor  $\zeta$  chain is tyrosine phosphorylated upon activation. *J. Biol. Chem.* 263: 18225-18230.
4. 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.
5. Frank, S.J., et al. 1990. The structure and signaling function of the invariant T cell receptor components. *Semin. Immunol.* 2: 89-97.
6. 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 posttranscriptionally regulated during T cell development. *Proc. Natl. Acad. Sci. USA* 88: 5202-5206.
7. 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.
8. Chan, A.C., et al. 1992. ZAP-70: a 70 kDa protein-tyrosine kinase that associates with the TCR  $\zeta$  chain. *Cell* 71: 649-662.

## CHROMOSOMAL LOCATION

Genetic locus: ZAP70 (human) mapping to 2q12.

## SOURCE

ZAP-70 (5K145) is a mouse monoclonal antibody raised against amino acids 280-309 of ZAP70 of human origin.

## STORAGE

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

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>2b</sub> in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

ZAP-70 (5K145) is recommended for detection of ZAP-70 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for ZAP-70 siRNA (h): sc-29526; and as shRNA Plasmid control antibody for ZAP-70 shRNA Plasmid (h): sc-29526-SH.

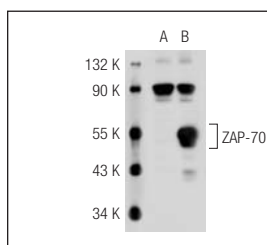
Molecular Weight of ZAP-70: 70 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, MOLT-4 cell lysate: sc-2233 or CCRF-CEM cell lysate: sc-2225.

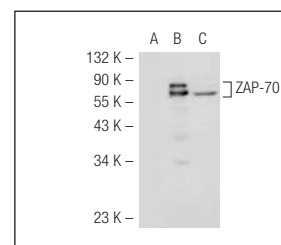
## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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).

## DATA



ZAP-70 (5K145): sc-73280. Western blot analysis of ZAP-70 expression in non-transfected: sc-117752 (A) and truncated human ZAP-70 transfected: sc-114635 (B) 293T whole cell lysates.



ZAP-70 (5K145): sc-73280. Western blot analysis of ZAP-70 expression in non-transfected 293T: sc-117752 (A), human ZAP-70 transfected 293T: sc-116483 (B) and CCRF-CEM (C) whole cell lysates.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.