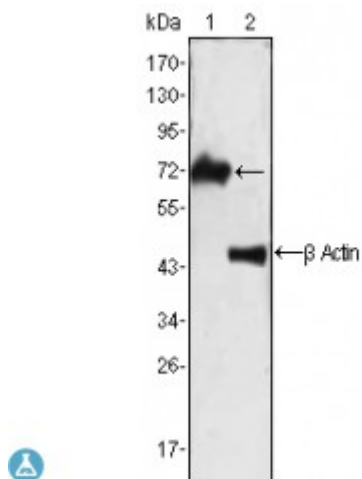


Anti-ZAP-70 antibody



Description	Mouse monoclonal to ZAP-70.
Model	STJ98456
Host	Mouse
Reactivity	Human
Applications	ELISA, IHC, WB
Immunogen	Purified recombinant fragment of human ZAP-70 expressed in E. Coli.
Gene ID	7535
Gene Symbol	ZAP70
Dilution range	WB 1:500-1:2000IHC 1:200-1:1000ELISA 1:10000
Specificity	ZAP-70 Monoclonal Antibody detects endogenous levels of ZAP-70 protein.
Tissue Specificity	Expressed in T- and natural killer cells. Also present in early thymocytes and pro/pre B-cells.
Purification	Affinity purification
Clone ID	3D2A4
Note	For Research Use Only (RUO).
Protein Name	Tyrosine-protein kinase ZAP-70 70 kDa zeta-chain associated protein Syk-related tyrosine kinase
Clonality	Monoclonal
Conjugation	Unconjugated

Isotype	IgG1
Formulation	Ascitic fluid containing 0.03% sodium azide.
Storage Instruction	Store at -20°C, and avoid repeat freeze-thaw cycles.
Database Links	HGNC:12858 OMIM:176947
Alternative Names	Tyrosine-protein kinase ZAP-70 70 kDa zeta-chain associated protein Syk-related tyrosine kinase
Function	Tyrosine kinase that plays an essential role in regulation of the adaptive immune response. Regulates motility, adhesion and cytokine expression of mature T-cells, as well as thymocyte development. Contributes also to the development and activation of primary B-lymphocytes. When antigen presenting cells (APC) activate T-cell receptor (TCR), a series of phosphorylations lead to the recruitment of ZAP70 to the doubly phosphorylated TCR component CD247/CD3Z through ITAM motif at the plasma membrane. This recruitment serves to localization to the stimulated TCR and to relieve its autoinhibited conformation. Release of ZAP70 active conformation is further stabilized by phosphorylation mediated by LCK. Subsequently, ZAP70 phosphorylates at least 2 essential adapter proteins: LAT and LCP2. In turn, a large number of signaling molecules are recruited and ultimately lead to lymphokine production, T-cell proliferation and differentiation. Furthermore, ZAP70 controls cytoskeleton modifications, adhesion and mobility of T-lymphocytes, thus ensuring correct delivery of effectors to the APC. ZAP70 is also required for TCR-CD247/CD3Z internalization and degradation through interaction with the E3 ubiquitin-protein ligase CBL and adapter proteins SLA and SLA2. Thus, ZAP70 regulates both T-cell activation switch on and switch off by modulating TCR expression at the T-cell surface. During thymocyte development, ZAP70 promotes survival and cell-cycle progression of developing thymocytes before positive selection (when cells are still CD4/CD8 double negative). Additionally, ZAP70-dependent signaling pathway may also contribute to primary B-cells formation and activation through B-cell receptor (BCR).
Sequence and Domain Family	Composed of 2 N-terminal SH2 domains and a C-terminal kinase domain. The tandem SH2 domains bind to the doubly phosphorylated tyrosine-based activation motif (ITAM) of CD247/CD3Z and the non-canonical phosphorylated tyrosine-based activation motif (TAM) of RHOH . The interdomain B located between the second SH2 and the kinase domain contains 3 tyrosines (Tyr-292, Tyr-315, Tyr-319) that are phosphorylated following TCR activation. These sites have been implicated in binding to other signaling molecules including CBL or VAV1. Thus, ZAP70 can also function as a scaffold by recruiting additional factors to the stimulated TCR complex.
Cellular Localization	Cytoplasm Cell membrane. In quiescent T-lymphocytes, it is cytoplasmic. Upon TCR activation, it is recruited at the plasma membrane by interacting with CD247/CD3Z. Colocalizes together with RHOH in the immunological synapse. RHOH is required for its proper localization to the cell membrane and cytoskeleton fractions in the thymocytes .
Post-translational Modifications	Phosphorylated on tyrosine residues upon T-cell antigen receptor (TCR) stimulation. Phosphorylation of Tyr-315 and Tyr-319 are essential for ZAP70 positive function on T-lymphocyte activation whereas Tyr-292 has a negative

regulatory role. Within the C-terminal kinase domain, Tyr-492 and Tyr-493 are phosphorylated after TCR induction, Tyr-492 playing a negative regulatory role and Tyr-493 a positive. Tyr-493 is dephosphorylated by PTN22. Ubiquitinated in response to T cell activation. Deubiquitinated by OTUD7B.

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