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ZAP-70 Antibody

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AP52815

Product Information

Application	WB, IP
Primary Accession	P43403
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Isotype	IgG2b
Calculated MW	69872

Additional Information

Gene ID	7535
Other Names	70 kDa zeta associated protein;70 kDa zeta-associated protein;EC 2.7.10.2;FLJ17670;FLJ17679;Selective T cell defect;SRK;STD;Syk related tyrosine kinase;Syk-related tyrosine kinase;Truncated ZAP kinase;Tyrosine protein kinase ZAP70;Tyrosine-protein kinase ZAP-70;TZK;ZAP 70;ZAP-70;ZAP70;ZAP70_HUMAN;Zeta chain associated protein kinase 70kD;Zeta chain associated protein kinase 70kDa;Zeta chain associated protein kinase 70kDa isoform 1;Zeta chain associated protein kinase 70kDa isoform 2;Zeta chain TCR associated protein kinase 70kD;Zeta chain TCR associated protein kinase 70kDa.
Dilution	WB~~1:1000 IP~~1:500
Format	Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.02% sodium azide, pH 7.3.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name	ZAP70
Synonyms	SRK
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. Also contributes to the development and activation of primary B-lymphocytes. When antigen presenting cells (APC) activate T-cell receptor (TCR), a serie 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).
Cellular Location	Cytoplasm. Cell membrane; Peripheral membrane protein. Note=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 (By similarity).
Tissue Location	Expressed in T- and natural killer cells. Also present in early thymocytes and pro/pre B-cells

Background

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 serie 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).

References

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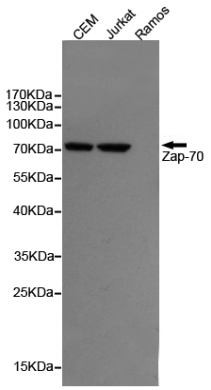
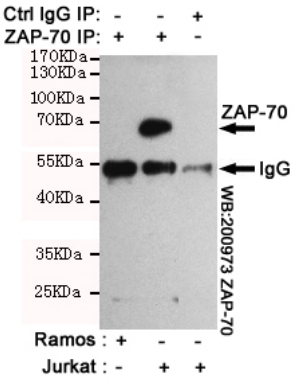
Kuroyama H.,et al.Biochem. Biophys. Res. Commun. 315:935-941(2004).
Hillier L.W.,et al.Nature 434:724-731(2005).
Arpaia E.,et al.Cell 76:947-958(1994).
Isakov N.,et al.J. Exp. Med. 181:375-380(1995).

Images



Western blot detection of ZAP-70 in CEM and Jurkat cell lysates,negative in the Ramos cell lysates using ZAP-70 mouse mAb (1:1000 diluted).Predicted band size:70KDa.Observed band size:70KDa.



Immunoprecipitation analysis of Jurkat cell lysates (ZAP-70 positive expression cell line)and Ramos cell lysates(ZAP-70 negative expression cell line) using ZAP-70 mouse mAb.