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Bi-Phospho-Syk(Y525/526) Antibody

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP3271A

Product Information

Application	WB, IHC-P, E
Primary Accession	P43405
Other Accession	Q64725, Q00655, P48025
Reactivity	Human
Predicted	Mouse, Pig, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	72066

Additional Information

Gene ID	6850
Other Names	Tyrosine-protein kinase SYK, Spleen tyrosine kinase, p72-Syk, SYK
Target/Specificity	This Syk Antibody is generated from rabbits immunized with a KLH conjugated synthetic phosphopeptide corresponding to amino acid residues surrounding Y525/526 of human Syk.
Dilution	WB~~1:1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Bi-Phospho-Syk(Y525/526) Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	SYK
Function	Non-receptor tyrosine kinase which mediates signal transduction downstream of a variety of transmembrane receptors including classical immunoreceptors like the B-cell receptor (BCR). Regulates several biological processes including innate and adaptive immunity, cell adhesion, osteoclast maturation, platelet activation and vascular development (PubMed:12387735,

PubMed:33782605). Assembles into signaling complexes with activated receptors at the plasma membrane via interaction between its SH2 domains and the receptor tyrosine- phosphorylated ITAM domains (PubMed:12387735, PubMed:9698567). The association with the receptor can also be indirect and mediated by adapter proteins containing ITAM or partial hemITAM domains (PubMed:20154219). The phosphorylation of the ITAM domains is generally mediated by SRC subfamily kinases upon engagement of the receptor. More rarely signal transduction via SYK could be ITAM-independent. Direct downstream effectors phosphorylated by SYK include DEPTOR, MYO1F, VAV1, PLCG1, PI-3-kinase, LCP2 and BLNK (PubMed:8657103, PubMed:12456653, PubMed:15388330, PubMed:18369315, PubMed:34634301, PubMed:39694035, PubMed:8657103). Initially identified as essential in B-cell receptor (BCR) signaling, it is necessary for the maturation of B-cells most probably at the pro-B to pre-B transition (PubMed:12456653). Activated upon BCR engagement, it phosphorylates and activates BLNK an adapter linking the activated BCR to downstream signaling adapters and effectors (PubMed:12456653, PubMed:18369315). It also phosphorylates and activates PLCG1 and the PKC signaling pathway (PubMed:8657103). It also phosphorylates BTK and regulates its activity in B-cell antigen receptor (BCR)-coupled signaling (By similarity). In addition to its function downstream of BCR also plays a role in T-cell receptor signaling. Also plays a crucial role in the innate immune response to fungal, bacterial and viral pathogens. It is for instance activated by the membrane lectin CLEC7A. Upon stimulation by fungal proteins, CLEC7A together with SYK activates immune cells inducing the production of ROS. Also activates the inflammasome and NF-kappa-B-mediated transcription of chemokines and cytokines in presence of pathogens. Regulates neutrophil degranulation and phagocytosis through activation of the MAPK signaling cascade (By similarity). Required for the stimulation of neutrophil phagocytosis by IL15 (PubMed:15123770). Also mediates the activation of dendritic cells by cell necrosis stimuli. Also involved in mast cells activation. Involved in interleukin-3/IL3- mediated signaling pathway in basophils (By similarity). Also functions downstream of receptors mediating cell adhesion (PubMed:12387735). Relays for instance, integrin-mediated neutrophils and macrophages activation and P-selectin receptor/SELPG-mediated recruitment of leukocytes to inflammatory loci. Also plays a role in non-immune processes. It is for instance involved in vascular development where it may regulate blood and lymphatic vascular separation. It is also required for osteoclast development and function. Functions in the activation of platelets by collagen, mediating PLCG2 phosphorylation and activation. May be coupled to the collagen receptor by the ITAM domain-containing FCER1G. Also activated by the membrane lectin CLEC1B that is required for activation of platelets by PDPN/podoplanin (PubMed:20154219). Involved in platelet adhesion being activated by ITGB3 engaged by fibrinogen. Together with CEACAM20, enhances production of the cytokine CXCL8/IL-8 via the NFKB pathway and may thus have a role in the intestinal immune response (By similarity). Acts as a positive regulator of cGAS-STING signaling by mediating phosphorylation of MYO1F, thereby promoting plasma membrane localization and activation of CGAS (PubMed:39694035).

Cellular Location

Cell membrane. Cytoplasm, cytosol

Tissue Location

Widely expressed in hematopoietic cells (at protein level) (PubMed:8163536). Expressed in neutrophils (at protein level) (PubMed:15123770). Within the B-cell compartment, expressed from pro- and pre-B cells to plasma cells (PubMed:8163536)

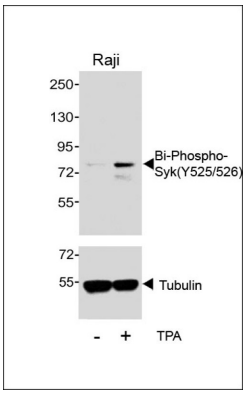
Background

Syk is a positive effector of BCR-stimulated responses. This protein couples the B-cell antigen receptor (BCR) to the mobilization of calcium ion either through a phosphoinositide 3-kinase-dependent pathway, when not phosphorylated on tyrosines of the linker region, or through a phospholipase C-gamma-dependent pathway, when phosphorylated on Tyr-342 and Tyr-346. Thus the differential phosphorylation of Syk can determine the pathway by which BCR is coupled to the regulation of intracellular calcium ion.

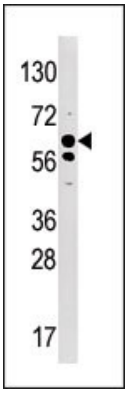
References

Steinberg, M., et al., Blood 104(3):760-767 (2004). Wang, S., et al., World J. Gastroenterol. 10(12):1815-1818 (2004). Hayes, M.J., et al., Mol. Immunol. 41(4):457-468 (2004). Arndt, P.G., et al., J. Biol. Chem. 279(12):10883-10891 (2004). Ding, Y.B., et al., Zhonghua Yi Xue Za Zhi 84(4):290-293 (2004).

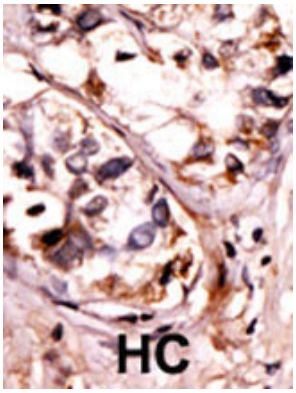
Images



Western blot analysis of lysates from Raji cell line, untreated or treated with TPA, 200nM, 30min, using 457167101(Cat. #AP3271a)(upper) or Tubulin (lower).



Western blot analysis of anti-Phospho-Syk Pab(Cat. #AP3271a) in mouse liver tissue lysate (35ug/lane). Phospho-Syk(arrow) was detected using the purified Pab.



Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by AEC staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.

Citations

- Synergistic Anti-Tumour Effect of Syk Inhibitor and Olaparib in Squamous Cell Carcinoma: Roles of Syk in EGFR Signalling and PARP1 Activation

- Phosphorylated Syk expression is enhanced in Nasu-Hakola disease brains.
- CHMP5 controls bone turnover rates by dampening NF-κB activity in osteoclasts.
- The identification of raft-derived tau-associated vesicles that are incorporated into immature tangles and paired helical filaments.
- Distribution of spleen tyrosine kinase and tau phosphorylated at tyrosine 18 in a mouse model of tauopathy and in the human hippocampus.
- Alzheimer's disease pathological lesions activate the spleen tyrosine kinase.
- Stress Granules Modulate SYK to Cause Tau-Associated Neurocognitive Deterioration in 5XFAD Mouse After Anesthesia and Surgery

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