

SYK Protein, Human (Sf9, His)

Cat. No.:	HY-P701637
Synonyms:	SYK; Tyrosine-protein kinase SYK; Spleen tyrosine kinase; p72-Syk
Species:	Human
Source:	Sf9 insect cells
Accession:	P43405 (E356-N635)
Gene ID:	6850
Molecular Weight:	

PROPERTIES

Appearance	Solution.
Formulation	Supplied as a 0.22 µm filtered solution of 50 mM Tris-HCl, pH7.5, 200 mM NaCl, 20% glycerol.
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	Please use rapid thawing with running water to thaw the protein.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

DESCRIPTION

Background

SYK Protein, a non-receptor tyrosine kinase, serves as a critical mediator of signal transduction downstream of various transmembrane receptors, including classical immunoreceptors like the B-cell receptor (BCR). Its regulatory influence spans multiple biological processes, encompassing innate and adaptive immunity, cell adhesion, osteoclast maturation, platelet activation, and vascular development. SYK assembles into signaling complexes with activated receptors at the plasma membrane, facilitated by the interaction between its SH2 domains and the receptor tyrosine-phosphorylated ITAM domains. This association can also occur indirectly through adapter proteins containing ITAM or partial hemITAM domains. Typically, SRC subfamily kinases mediate the phosphorylation of ITAM domains upon receptor engagement, although ITAM-independent signal transduction by SYK is observed more rarely. SYK directly phosphorylates downstream effectors, including DEPTOR, VAV1, PLCG1, PI-3-kinase, LCP2, and BLNK. Initially identified for its essential role in BCR signaling, SYK is indispensable for B-cell maturation, particularly at the pro-B to pre-B transition. Upon BCR engagement, it phosphorylates and activates BLNK, PLCG1, and the PKC signaling pathway, regulating B-cell antigen receptor (BCR)-coupled signaling. Beyond its role in BCR signaling, SYK plays a crucial role in T-cell receptor signaling and participates in the innate immune response against fungal, bacterial, and viral pathogens. Activated by the membrane lectin CLEC7A, SYK induces immune cell responses, including the production of reactive oxygen species (ROS), inflammasome activation, and NF-kappa-B-mediated transcription. SYK also regulates neutrophil degranulation and phagocytosis, mediates dendritic cell activation, and is involved in mast cell activation. Furthermore, SYK functions downstream of receptors mediating cell adhesion, influencing

integrin-mediated activation of neutrophils and macrophages, P-selectin receptor/SELPG-mediated leukocyte recruitment to inflammatory sites, and non-immune processes such as vascular development and osteoclast function. It plays a pivotal role in platelet activation, being activated by collagen, fibrinogen-engaged ITGB3, and the membrane lectin CLEC1B, ultimately contributing to platelet adhesion and cytokine production. Together with CEACAM20, SYK enhances the production of the cytokine CXCL8/IL-8 via the NFkB pathway, suggesting a potential role in the intestinal immune response.

Caution: Product has not been fully validated for medical applications. For research use only.

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