SANTA CRUZ BIOTECHNOLOGY, INC.

Syk siRNA (h): sc-29501

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The Power to Question

BACKGROUND

Syk (spleen tyrosine kinase) is a 635 amino acid protein that contains one protein kinase domain and two SH2 domains. One of several members of the protein kinase superfamily, Syk functions as a positive effector of B cell antigen receptor (CD79)-stimulated responses, coupling CD79 with the movement of one calcium ion through one of two phospho-regulated pathways. Specifically, calcium ions travel through either a phosphoinositide 3-kinase (PI 3-kinase)-dependent pathway when Syk is not phosphorylated, or through a phospholipase C (PLC) γ-dependent pathway when human Syk is phohspho-rylated on Tyr 348 and Tyr 352. Via its ability to influence CD79 activity and to control the movement of calicum through the cell, Syk plays an important role in a variety of cellular responses, including differentiation, phagocytosis, proliferation and B cell development. Syk expression is upregulated in T cell lymphoma, suggesting a possible role for Syk in tumorigenesis. Two isoforms of Syk, designated short and long, exist due to alternative splicing events.

REFERENCES

1. Hutchcroft, J.E., et al. 1992. Association of the 72-kDa protein-tyrosine kinase PTK72 with the B cell antigen receptor. J. Biol. Chem. 267: 8613-8619.
2. Rowley, R.B., et al. 1995. Syk protein-tyrosine kinase is regulated by tyrosine-phosphorylated Ig α/Ig β immunoreceptor tyrosine activation motif binding and autophosphorylation. J. Biol. Chem. 270: 11590-11594.

CHROMOSOMAL LOCATION

Genetic locus: SYK (human) mapping to 9q22.2.

PRODUCT

Syk siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Syk shRNA Plasmid (h): sc-29501-SH and Syk shRNA (h) Lentiviral Particles: sc-29501-V as alternate gene silencing products.

For independent verification of Syk (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-29501A, sc-29501B and sc-29501C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Syk siRNA (h) is recommended for the inhibition of Syk expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

Syk (4D10): sc-1240 is recommended as a control antibody for monitoring of Syk gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Syk gene expression knockdown using RT-PCR Primer: Syk (h)-PR: sc-29501-PR (20 µl, 508 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yang, W.S., et al. 2008. High glucose-induced NFκB activation occurs via tyrosine phosphorylation of IκBα in human glomerular endothelial cells: involvement of Syk tyrosine kinase. Am. J. Physiol. Renal Physiol. 294: F1065-F1075.
2. Papazoglou, E., et al. 2011. The role of Syk kinase in ultraviolet-mediated skin damage. Br. J. Dermatol. 165: 69-77.
3. Kim, Y.J., et al. 2012. Activation of spleen tyrosine kinase is required for TNF-α-induced endothelin-1 upregulation in human aortic endothelial cells. FEBS Lett. 586: 818-826.
4. Liu, J.F., et al. 2013. CCN4 induces vascular cell adhesion molecule-1 expression in human synovial fibroblasts and promotes monocyte adhesion. Biochim. Biophys. Acta 1833: 966-975.
5. Qiao, Y., et al. 2018. Spleen tyrosine kinase promotes NLR family pyrin domain containing 3 inflammasome-mediated IL-1β secretion via c-Jun N-terminal kinase activation and cell apoptosis during diabetic nephropathy. Mol. Med. Rep. 18: 1995-2008.
6. Loureiro, C.A., et al. 2019. Tyrosine phosphorylation modulates cell surface expression of chloride cotransporters NKCC2 and KCC3. Arch. Biochem. Biophys. 669: 61-70.
7. Loureiro, C.A., et al. 2020. A SYK/SHC1 pathway regulates the amount of CFTR in the plasma membrane. Cell. Mol. Life Sci. 77: 4997-5015.

RESEARCH USE

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