SANTA CRUZ BIOTECHNOLOGY, INC.

FAK siRNA (h): sc-29310

BACKGROUND

Focal adhesion kinase was initially identified as a major substrate for the intrinsic protein tyrosine kinase activity of Src encoded pp60. The deduced amino acid sequence of FAK p125 has shown it to be a cytoplasmic protein tyrosine kinase whose sequence and structural organization are unique as compared to other proteins described to date. Localization of p125 by immunofluorescence suggests that it is primarily found in cellular focal adhesions, leading to its designation as focal adhesion kinase (FAK). FAK is concentrated at the basal edge of only those basal keratinocytes that are actively migrating and rapidly proliferating in repairing burn wounds and is activated and localized to the focal adhesions of spreading keratinocytes in culture. Thus, it has been postulated that FAK may have an important *in vivo* role in the reepithelialization of human wounds. FAK protein tyrosine kinase activity has also been shown to increase in cells stimulated to grow by use of mitogenic neuropeptides or neurotransmitters acting through G protein-coupled receptors.

CHROMOSOMAL LOCATION

Genetic locus: PTK2 (human) mapping to 8q24.3.

PRODUCT

FAK siRNA (h) is a target-specific 19-25 nt siRNA 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 FAK shRNA Plasmid (h): sc-29310-SH and FAK shRNA (h) Lentiviral Particles: sc-29310-V as alternate gene silencing products.

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

FAK siRNA (h) is recommended for the inhibition of FAK 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

FAK (D-1): sc-271126 is recommended as a control antibody for monitoring of FAK 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 FAK gene expression knockdown using RT-PCR Primer: FAK (h)-PR: sc-29310-PR (20 µl, 578 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Natarajan, M., et al. 2006. HEF1 is a necessary and specific downstream effector of FAK that promotes the migration of glioblastoma cells. Oncogene 25: 1721-1732.
2. Lundgren, T.K., et al. 2008. Cell migration by a FRS2-adaptor dependent membrane relocation of ret receptors. J. Cell. Biochem. 104: 879-894.
3. Chiu, Y.C., et al. 2009. Peptidoglycan enhances IL-6 production in human synovial fibroblasts via TLR2 receptor, focal adhesion kinase, Akt, and AP-1-dependent pathway. J. Immunol. 183: 2785-2792.
4. Hou, C.H., et al. 2011. WISP-1 increases MMP-2 expression and cell motility in human chondrosarcoma cells. Biochem. Pharmacol. 81: 1286-1295.
5. Yang, Y.N., et al. 2012. TNF-α stimulates MMP-2 and MMP-9 activities in human corneal epithelial cells via the activation of FAK/ERK signaling. Ophthalmic Res. 48: 165-170.
6. Caino, M.C., et al. 2015. PI3K therapy reprograms mitochondrial trafficking to fuel tumor cell invasion. Proc. Natl. Acad. Sci. USA 112: 8638-8643.
7. Vitillo, L., et al. 2016. Integrin-associated focal adhesion kinase protects human embryonic stem cells from apoptosis, detachment, and differentiation. Stem Cell Reports 7: 167-176.
8. Fisher, M.L., et al. 2016. Transglutaminase interaction with α6/β4-integrin stimulates YAP1-dependent ΔNp63α stabilization and leads to enhanced cancer stem cell survival and tumor formation. Cancer Res. 76: 7265-7276.
9. Lachowski, D., et al. 2017. Substrate rigidity controls activation and durotaxis in pancreatic stellate cells. Sci. Rep. 7: 2506.
10. Lachowski, D., et al. 2018. FAK controls the mechanical activation of YAP, a transcriptional regulator required for durotaxis. FASEB J. 32: 1099-1107.
11. Deng, B., et al. 2019. Simulated microgravity inhibits the viability and migration of glioma via FAK/RhoA/Rock and FAK/Nek2 signaling. In Vitro Cell. Dev. Biol. Anim. 55: 260-271.
12. Ali, M., et al. 2019. CRISPR/Cas9 engineering of ERK5 identifies its FAK/PYK2 dependent role in adhesion-mediated cell survival. Biochem. Biophys. Res. Commun. 513: 179-185.

RESEARCH USE

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