SANTA CRUZ BIOTECHNOLOGY, INC.

FAK siRNA (m): sc-35353

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.

REFERENCES

1. Schaller, M.D., et al. 1992. $pp125^{FAK}$, a structurally distinctive protein-tyrosine kinase associated with focal adhesions. Proc. Natl. Acad. Sci. USA 89: 5192-5196.
2. Lipfert, L., et al. 1992. Integrin-dependent phosphorylation of the protein tyrosine kinase $pp125^{FAK}$ in platelets. J. Cell Biol. 119: 905-912.

CHROMOSOMAL LOCATION

Genetic locus: Ptk2 (mouse) mapping to 15 D3.

PRODUCT

FAK siRNA (m) 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 FAK shRNA Plasmid (m): sc-35353-SH and FAK shRNA (m) Lentiviral Particles: sc-35353-V as alternate gene silencing products.

For independent verification of FAK (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-35353A, sc-35353B and sc-35353C.

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 (m) is recommended for the inhibition of FAK expression in mouse 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 (m)-PR: sc-35353-PR (20 µl, 432 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Sen, U., et al. 2006. Homocysteine-induced myofibroblast differentiation in mouse aortic endothelial cells. J. Cell. Physiol. 209: 767-774.
2. Moeller, M.L. and Shi, Y. 2007. EphB receptors regulate dendritic spine morphogenesis through the recruitment/phosphorylation of focal adhesion kinase and RhoA activation. J. Biol. Chem. 281: 1587-1598.
3. Chuang, J.Y., et al. 2012. Cyr61 increases matrix metalloproteinase-3 expression and cell motility in human oral squamous cell carcinoma cells. J. Cell. Biochem. 113: 1977-1986.
4. Ghatak, S., et al. 2014. Periostin induces intracellular cross-talk between kinases and hyaluronan in atrioventricular valvulogenesis. J. Biol. Chem. 289: 8545-8561.
5. Melo, T.G., et al. 2014. The involvement of FAK and Src in the invasion of cardiomyocytes by *Trypanosoma cruzi*. Exp. Parasitol. 139: 49-57.
6. Zhang, W., et al. 2015. $GABA_B$ receptor upregulates fragile X mental retardation protein expression in neurons. Sci. Rep. 5: 10468.
7. Ou, D., et al. 2016. Co-culture with neonatal cardiomyocytes enhances the proliferation of iPSC-derived cardiomyocytes via FAK/JNK signaling. BMC Dev. Biol. 16: 11.
8. da Silva, S.D., et al. 2019. TRAF2 cooperates with focal adhesion signaling to regulate cancer cell susceptibility to anoikis. Mol. Cancer Ther. 18: 139-146.

RESEARCH USE

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