SANTA CRUZ BIOTECHNOLOGY, INC.

αPAK siRNA (h): sc-29700

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The Power to Question

BACKGROUND

Three isoforms of serine/threonine kinases, designated αPAK p68, βPAK p65 and γPAK p62, have been shown to exhibit a high degree of sequence homology with the *S. cerevisiae* kinase Ste 20, involved in pheromone signaling. The α, β and γPAK isoforms complex specifically with Rac1 and Cdc42 in their active GTP-bound state, inhibiting their intrinsic GTPase activity leading to their autophosphorylation. There are eight sites of autophosphorylation on γPAK, including Ser 19, Ser 141 and Thr 402, and phosphorylation of Ser 141 and Thr 402 is correlated with γPAK activation. Once phosphorylated and their affinity for Rac/Cdc42 reduced, the PAK isoforms disassociate from the complex to seek downstream substrates. One such putative substrate is Mek kinase, an upstream effector of Mek4 which is involved in the JNK signaling pathway. While the PAK isoforms interact in a GTP-dependent manner with Rac1 and Cdc42, they do not interact with Rho.

CHROMOSOMAL LOCATION

Genetic locus: PAK1 (human) mapping to 11q13.5.

PRODUCT

αPAK 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 αPAK shRNA Plasmid (h): sc-29700-SH and αPAK shRNA (h) Lentiviral Particles: sc-29700-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

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

αPAK (A-6): sc-166887 is recommended as a control antibody for monitoring of αPAK 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 αPAK gene expression knockdown using RT-PCR Primer: αPAK (h)-PR: sc-29700-PR (20 µl, 494 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Pielage, J.F., et al. 2008. RNAi screen reveals an Abl kinase-dependent host cell pathway involved in *Pseudomonas aeruginosa* internalization. PLoS Pathog. 4: e1000031.
2. Barros, P., et al. 2009. Rac1 signaling modulates BCL-6-mediated repression of gene transcription. Mol. Cell. Biol. 29: 4156-4166.
3. McCarty, S.K., et al. 2010. Group I p21-activated kinases regulate thyroid cancer cell migration and are overexpressed and activated in thyroid cancer invasion. Endocr. Relat. Cancer 17: 989-999.
4. Liu, H., et al. 2011. Hepatitis B virus large surface antigen promotes liver carcinogenesis by activating the Src/PI3K/Akt pathway. Cancer Res. 71: 7547-7557.
5. Barros, P., et al. 2012. Rac1 signalling modulates a STAT5/Bcl-6 transcriptional switch on cell-cycle-associated target gene promoters. Nucleic Acids Res. 40: 7776-7787.
6. Chen, L., et al. 2013. Klotho endows hepatoma cells with resistance to anoikis via VEGFR2/PAK1 activation in hepatocellular carcinoma. PLoS ONE 8: e58413.
7. McCarty, S.K., et al. 2014. BRAF activates and physically interacts with PAK to regulate cell motility. Endocr. Relat. Cancer 21: 865-877.
8. Park, J., et al. 2015. Association of p21-activated kinase-1 activity with aggressive tumor behavior and poor prognosis of head and neck cancer. Head Neck 37: 953-963.
9. Barabutis, N., et al. 2018. Wild-type p53 enhances endothelial barrier function by mediating RAC1 signalling and RhoA inhibition. J. Cell. Mol. Med. 22: 1792-1804.
10. Zhang, C., et al. 2019. CD100-plexin-B1 induces epithelial-mesenchymal transition of head and neck squamous cell carcinoma and promotes metastasis. Cancer Lett. 455: 1-13.
11. Guo, R.H., et al. 2019. *Vibrio vulnificus* RtxA1 cytotoxin targets filamin A to regulate PAK1- and MAPK-dependent cytoskeleton reorganization and cell death. Emerg. Microbes Infect. 8: 934-945.

RESEARCH USE

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