

γ PAK siRNA (h): sc-36183

BACKGROUND

Three isoforms of serine/threonine kinases, designated α PAK p68, β PAK p65 and γ PAK 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 γ PAK 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 γ PAK, including Ser 19, Ser 141 and Thr 402, and phosphorylation of Ser 141 and Thr 402 is correlated with γ PAK 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.

REFERENCES

- Didsbury, J., et al. 1989. Rac, a novel Ras-related family of proteins that are botulinum toxic substrates. *J. Biol. Chem.* 264: 16378-16382.
- Shinjo, K., et al. 1990. Molecular cloning of the gene for the human placental GTP-binding protein G-p (G25K): identification of this GTP-binding protein as the human homolog of the yeast cell-division-cycle protein Cdc42. *Proc. Natl. Acad. Sci. USA* 98: 9853-9857.

CHROMOSOMAL LOCATION

Genetic locus: PAK2 (human) mapping to 3q29.

PRODUCT

γ PAK 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see γ PAK shRNA Plasmid (m): sc-36184-SH and γ PAK shRNA (m) Lentiviral Particles: sc-36184-V as alternate gene silencing products.

For independent verification of γ PAK (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-36184A, sc-36184B and sc-36184C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

γ PAK siRNA (h) is recommended for the inhibition of γ PAK 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 μ M in 66 μ l. 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.

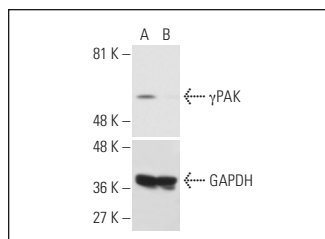
GENE EXPRESSION MONITORING

γ PAK (E-9): sc-373740 is recommended as a control antibody for monitoring of γ PAK 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 γ PAK gene expression knockdown using RT-PCR Primer: γ PAK (h)-PR: sc-36183-PR (20 μ l, 511 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



γ PAK siRNA (h): sc-36183. Western blot analysis of γ PAK expression in non-transfected control (A) and γ PAK siRNA transfected (B) HeLa cells. Blot probed with γ PAK (V-19): sc-7117. GAPDH (FL-335): sc-25778 used as specificity and loading control.

SELECT PRODUCT CITATIONS

- Barros, P., et al. 2009. Rac1 signaling modulates Bcl-6-mediated repression of gene transcription. *Mol. Cell. Biol.* 29: 4156-4166.
- Yang, W.S., et al. 2012. Spleen tyrosine kinase mediates high glucose-induced transforming growth factor- β 1 up-regulation in proximal tubular epithelial cells. *Exp. Cell Res.* 318: 1867-1876.
- 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.

RESEARCH USE

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