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K-Ras siRNA (h2): sc-43874

BACKGROUND

The mammalian Ras (also designated v-Ha-Ras, Harvey rat sarcoma viral oncogene homolog, HRAS1, K-Ras, N-Ras, RASH1 or c-bas/has) gene family consists of the Harvey and Kirsten Ras genes (c-H-Ras1 and c-K-Ras2), an inactive pseudogene of each (c-H-Ras2 and c-K-Ras1) and the N-Ras gene. The three Ras oncogenes, H-Ras, K-Ras and N-Ras, encode proteins with GTP/GDP binding and GTPase activity. Ras proteins alternate between an inactive form bound to GDP and an active form bound to GTP, activated by a guanine nucleotide-exchange factor (GEF) and inactivated by a GTPase-activating protein (GAP). Ras nomenclature originates from the characterization of human DNA sequences homologous to cloned DNA fragments containing oncogenic sequences of a type C mammalian retrovirus, the Harvey strain of murine sarcoma virus (HaMSV), derived from the rat. Under normal conditions, Ras family members influence cell growth and differentiation events in a subcellular membrane compartmentalization-based signaling system. Oncogenic Ras can deregulate processes that control both cell proliferation and apoptosis. The Ras superfamily of GTP hydrolysis-coupled signal transduction relay proteins can be subclassified into Ras, Rho, Rab and ARF families.

REFERENCES

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2. Cox, A.D. and Der, C.J. 2003. The dark side of Ras: regulation of apoptosis. *Oncogene* 22: 8999-9006.
3. Colicelli, J. 2004. Human Ras superfamily proteins and related GTPases. *Sci. STKE* 2004: RE13.
4. Weber, M.J. and Gioeli, D. 2004. Ras signaling in prostate cancer progression. *J. Cell. Biochem.* 91: 13-25.
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6. Hancock, J.F. and Parton, R.G. 2005. Ras plasma membrane signalling platforms. *Biochem. J.* 389: 1-11.
7. Quatela, S.E. and Philips, M.R. 2006. Ras signaling on the Golgi. *Curr. Opin. Cell Biol.* 18: 162-167.
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CHROMOSOMAL LOCATION

Genetic locus: KRAS (human) mapping to 12p12.1.

PRODUCT

K-Ras siRNA (h2) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see K-Ras shRNA Plasmid (h2): sc-43874-SH and K-Ras shRNA (h2) Lentiviral Particles: sc-43874-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 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

K-Ras siRNA (h2) is recommended for the inhibition of K-Ras 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

K-Ras (F234): sc-30 is recommended as a control antibody for monitoring of K-Ras 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 K-Ras gene expression knockdown using RT-PCR Primer: K-Ras (h2)-PR: sc-43874-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ryu, S.H., et al. 2010. Oncogenic Ras-mediated downregulation of Clast1/LR8 is involved in Ras-mediated neoplastic transformation and tumorigenesis in NIH3T3 cells. *Cancer Sci.* 101: 1990-1996.
2. Calvert, R.J., et al. 2013. K-Ras 4A and 4B mRNA levels correlate with superoxide in lung adenocarcinoma cells, while at the protein level, only mutant K-Ras 4A protein correlates with superoxide. *Lung Cancer* 80: 263-269.
3. Liu, H., et al. 2019. KRAS-enhanced macropinocytosis and reduced FcRn-mediated recycling sensitize pancreatic cancer to albumin-conjugated drugs. *J. Control. Release* 296: 40-53.

RESEARCH USE

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