SANTA CRUZ BIOTECHNOLOGY, INC.

K-Ras siRNA (h): sc-35731

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.

CHROMOSOMAL LOCATION

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

PRODUCT

K-Ras siRNA (h) 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 K-Ras shRNA Plasmid (h): sc-35731-SH and K-Ras shRNA (h) Lentiviral Particles: sc-35731-V as alternate gene silencing products.

For independent verification of K-Ras (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-35731A, sc-35731B and sc-35731C.

APPLICATIONS

K-Ras siRNA (h) is recommended for the inhibition of K-Ras expression in human cells.

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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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

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 (h)-PR: sc-35731-PR (20 µl, 426 bp). 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. Tecleab, A., et al. 2014. Ral GTPase down-regulation stabilizes and reactivates p53 to inhibit malignant transformation. J. Biol. Chem. 289: 31296-31309.
3. Lee, S.H., et al. 2015. Human papillomavirus 16 (HPV16) enhances tumor growth and cancer stemness of HPV-negative oral/oropharyngeal squamous cell carcinoma cells via miR-181 regulation. Papillomavirus Res. 1: 116-125.
4. Yousef, A.I., et al. 2016. Impact of cellular genetic make-up on colorectal cancer cell lines response to ellagic acid: implications of small interfering RNA. Asian Pac. J. Cancer Prev. 17: 743-748.
5. Du, Z., et al. 2018. Genome-wide transcriptional analysis of BRD4-regulated genes and pathways in human glioma U251 cells. Int. J. Oncol. 52: 1415-1426.
6. Zarredar, H., et al. 2019. Combination therapy with K-Ras siRNA and EGFR inhibitor AZD8931 suppresses lung cancer cell growth *in vitro*. J. Cell. Physiol. 234: 1560-1566.
7. Shimizu, T., et al. 2020. The Ras-interacting chaperone UNC119 drives the RASSF6-MDM2-p53 axis and antagonizes Ras-mediated malignant transformation. J. Biol. Chem. 295: 11214-11230.

RESEARCH USE

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