



# NUAK1 siRNA (h): sc-60203

## BACKGROUND

NUAK1 (NUAK family SNF1-like kinase 1), also known as omphk1 (omphalocele kinase 1), is a 658 amino acid nuclear and cytoplasmic protein that contains one protein kinase domain, and belongs to the CAMK Ser/Thr protein kinase family and the SNF1 subfamily. NUAK1 is a serine/threonine-protein kinase involved in various processes such as cell adhesion, regulation of cell ploidy and senescence, cell proliferation and tumor progression. NUAK1 phosphorylates Atm, caspase-6, LATS1, MYPT1 and p53, and is expressed in the developing central nervous system, epidermis and some other tissues. Homozygous Nauk1 mutants suffer from omphalocele, a failure in the closure of the secondary body wall leading to organs outside of the abdomen. Omphalocele is apparent at E14.5 when the physiological hernia is almost rectified in wild-type embryos.

## REFERENCES

1. Suzuki, A., et al. 2003. ARK5 suppresses the cell death induced by nutrient starvation and death receptors via inhibition of caspase 8 activation, but not by chemotherapeutic agents or UV irradiation. *Oncogene* 22: 6177-6182.
2. Suzuki, A., et al. 2004. ARK5 is a tumor invasion-associated factor downstream of Akt signaling. *Mol. Cell. Biol.* 24: 3526-3535.
3. Suzuki, A., et al. 2004. Regulation of caspase-6 and FLIP by the AMPK family member ARK5. *Oncogene* 23: 7067-7075.
4. Fisher, J.S., et al. 2005. Muscle contractions, AICAR, and Insulin cause phosphorylation of an AMPK-related kinase. *Am. J. Physiol. Endocrinol. Metab.* 289: E986-E992.

## CHROMOSOMAL LOCATION

Genetic locus: NUAK1 (human) mapping to 12q23.3.

## PRODUCT

NUAK1 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see NUAK1 shRNA Plasmid (h): sc-60203-SH and NUAK1 shRNA (h) Lentiviral Particles: sc-60203-V as alternate gene silencing products.

For independent verification of NUAK1 (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-60203A, sc-60203B and sc-60203C.

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

## APPLICATIONS

NUAK1 siRNA (h) is recommended for the inhibition of NUAK1 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  $\mu$ M in 66  $\mu$ 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

NUAK1 (A-9): sc-271827 is recommended as a control antibody for monitoring of NUAK1 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor NUAK1 gene expression knockdown using RT-PCR Primer: NUAK1 (h)-PR: sc-60203-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Hou, X., et al. 2011. A new role of NUAK1: directly phosphorylating p53 and regulating cell proliferation. *Oncogene* 30: 2933-2942.
2. Li, M., et al. 2017. Inhibition of AMPK-related kinase 5 (ARK5) enhances cisplatin cytotoxicity in non-small cell lung cancer cells through regulation of epithelial-mesenchymal transition. *Am. J. Transl. Res.* 9: 1708-1719.
3. Yu, Z., et al. 2017. Salinomycin enhances doxorubicin sensitivity through reversing the epithelial-mesenchymal transition of cholangiocarcinoma cells by regulating ARK5. *Braz. J. Med. Biol. Res.* 50: e6147.
4. Ye, Z., et al. 2018. ARK5 promotes invasion and migration in hepatocellular carcinoma cells by regulating epithelial-mesenchymal transition. *Oncol. Lett.* 15: 1511-1516.

## RESEARCH USE

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