SANTA CRUZ BIOTECHNOLOGY, INC.

BCA3 siRNA (h): sc-96977

BACKGROUND

The second messenger cyclic AMP (cAMP) mediates diverse cellular responses to external signals such as proliferation, ion transport, regulation of metabolism and gene transcription by activation of cAMP-dependent protein kinase (PKA). A-kinase-anchoring proteins (AKAPs) direct the localization of PKA to specific sites in the cell, thereby bringing the important signaling protein in close proximity to its substrates. BCA3 (breast cancer-associated gene 3 protein), also known as PKA-interacting protein, is a 210 amino acid nuclear protein that binds to the amino terminus of the PKA catalytic subunit (PKA cat), thereby contributing to positioning of the catalytic subunit in the nucleus. With high levels of expression in heart and lower expression levels in testis, skeletal muscle, brain and ovary, BCA3 is also found to be upregulated in certain breast cancer cell lines, which results in the recruitment of more PKA to the nucleus. There are three isoforms of BCA3 which are a result of alternative splicing events.

REFERENCES

1. Lester, L.B., et al. 1997. Anchoring and scaffold proteins for kinases and phosphatases. Recent Prog. Horm. Res. 52: 409-429.
2. Burger, A., et al. 1998. Breast cancer genome anatomy: correlation of morphological changes in breast carcinomas with expression of the novel gene product Di12. Oncogene 16: 327-333.
3. Amid, C., et al. 2001. Comparative genomic sequencing reveals a strikingly similar architecture of a conserved syntenic region on human chromosome 11p15.3 (including gene ST5) and mouse chromosome 7. Cytogenet. Cell Genet. 93: 284-290.
4. Carr, D.W., et al. 2001. Identification of sperm-specific proteins that interact with A-kinase anchoring proteins in a manner similar to the type II regulatory subunit of PKA. J. Biol. Chem. 276: 17332-17338.
5. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 609191. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
6. Kitching, R., et al. 2003. Characterization of a novel human breast cancer associated gene (BCA3) encoding an alternatively spliced proline-rich protein. Biochim. Biophys. Acta 1625: 116-121.
7. Sastri, M., et al. 2005. A-kinase-interacting protein localizes protein kinase A in the nucleus. Proc. Natl. Acad. Sci. USA 102: 349-354.
8. Gao, N., et al. 2008. AKIP1 enhances NFκB-dependent gene expression by promoting the nuclear retention and phosphorylation of p65. J. Biol. Chem. 283: 7834-7843.

CHROMOSOMAL LOCATION

Genetic locus: AKIP1 (human) mapping to 11p15.4.

PROTOCOLS

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

PRODUCT

BCA3 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 BCA3 shRNA Plasmid (h): sc-96977-SH and BCA3 shRNA (h) Lentiviral Particles: sc-96977-V as alternate gene silencing products.

For independent verification of BCA3 (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-96977A, sc-96977B and sc-96977C.

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

BCA3 siRNA (h) is recommended for the inhibition of BCA3 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor BCA3 gene expression knockdown using RT-PCR Primer: BCA3 (h)-PR: sc-96977-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Liu, Y., et al. 2022. Perfluorooctane sulfonate (PFOS) triggers migration and invasion of esophageal squamous cell carcinoma cells via regulation of Zeb1. Drug Chem. Toxicol. 45: 2804-2813.

RESEARCH USE

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