

CACUL1 siRNA (h): sc-90590

BACKGROUND

CACUL1 (Cdk2-associated, cullin domain 1), also known as C10orf46 (chromosome 10 open reading frame 46) or CAC1 (Cdk-associated cullin1), is a 369 amino acid protein that belongs to the cullin family and exists as three alternatively spliced isoforms. CACUL1 is a cell cycle protein that promotes cell proliferation through Cdk2 activation at the G₁/S transition. Changes in expression are observed during the cell cycle with high expression in G₁/S, low expression in mid S phase, and return to high expression in G₂/S. CACUL1 is ubiquitously expressed with highest expression in large intestine, mammary gland, cancerous tissue and cancer cell lines. The gene encoding CACUL1 maps to human chromosome 10q26.11. Spanning nearly 135 million base pairs, chromosome 10 makes up approximately 4.5% of total DNA in cells and encodes nearly 1,200 genes. Several protein-coding genes, including those that encode for chemokines, cadherins, excision repair proteins, early growth response factors (Egrs) and fibroblast growth receptors (FGFRs), are located on chromosome 10. Defects in some of the genes that map to chromosome 10 are associated with Charcot-Marie-Tooth disease, Jackson-Weiss syndrome, Usher syndrome, nonsyndromic deafness, Wolman's syndrome, Cowden syndrome, multiple endocrine neoplasia type 2 and porphyria.

REFERENCES

1. Jabs, E.W., et al. 1994. Jackson-Weiss and Crouzon syndromes are allelic with mutations in fibroblast growth factor receptor 2. *Nat. Genet.* 8: 275-279.
2. Deloukas, P., et al. 2000. Report of the third international workshop on human chromosome 10 mapping and sequencing 1999. *Cytogenet. Cell Genet.* 90: 1-12.
3. Gilbert, F. 2001. Chromosome 10. *Genet. Test.* 5: 69-82.
4. Berger, P., et al. 2002. Molecular cell biology of Charcot-Marie-Tooth disease. *Neurogenetics* 4: 1-15.
5. Teresi, R.E., et al. 2007. Cowden syndrome-affected patients with PTEN promoter mutations demonstrate abnormal protein translation. *Am. J. Hum. Genet.* 81: 756-767.
6. Cho, M.Y., et al. 2008. First report of ovarian dysgerminoma in Cowden syndrome with germline PTEN mutation and PTEN-related 10q loss of tumor heterozygosity. *Am. J. Surg. Pathol.* 32: 1258-1264.

CHROMOSOMAL LOCATION

Genetic locus: CACUL1 (human) mapping to 10q26.11.

PRODUCT

CACUL1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CACUL1 shRNA Plasmid (h): sc-90590-SH and CACUL1 shRNA (h) Lentiviral Particles: sc-90590-V as alternate gene silencing products.

For independent verification of CACUL1 (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-90590A, sc-90590B and sc-90590C.

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

CACUL1 siRNA (h) is recommended for the inhibition of CACUL1 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CACUL1 gene expression knockdown using RT-PCR Primer: CACUL1 (h)-PR: sc-90590-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. Kong, Y., et al. 2009. Identification and characterization of CAC1 as a novel CDK2-associated cullin. *Cell Cycle* 8: 3552-3561.
2. Kong, Y., et al. 2012. Expression of the newly identified gene CAC1 in the hippocampus of Alzheimer's disease patients. *J. Mol. Neurosci.* 47: 207-218.

RESEARCH USE

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

PROTOCOLS

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