

# Keratin 40 siRNA (h): sc-94005

## BACKGROUND

Keratin 40 (KRT40), also known as Cytokeratin-40 (CK-40) or KA36, is a 431 amino acid protein that belongs to the intermediate filament family. As a heterotetramer of two type I and two type II keratins, Keratin 40 may play a role in late hair differentiation. While weakly expressed in tongue, breast, colon and small intestine, Keratin 40 is highly expressed in skin and scalp. The gene that encodes Keratin 40 consists of approximately 9,420 bases and maps to human chromosome 17q21.2. Encoding more than 1,200 genes, chromosome 17 comprises over 2.5% of the human genome. Two key tumor suppressor genes are associated with chromosome 17, namely, p53 and BRCA1. Malfunction or loss of p53 expression is associated with malignant cell growth and Li-Fraumeni syndrome. Like p53, BRCA1 is directly involved in DNA repair, though specifically it is recognized as a genetic determinant of early onset breast cancer and predisposition to cancers of ovary, colon, prostate gland and fallopian tubes.

## REFERENCES

1. Hall, J.M., Friedman, L., Guenther, C., Lee, M.K., Weber, J.L., Black, D.M. and King, M.C. 1992. Closing in on a breast cancer gene on chromosome 17q. *Am. J. Hum. Genet.* 50: 1235-1242.
2. Evans, S.C. and Lozano, G. 1997. The Li-Fraumeni syndrome: an inherited susceptibility to cancer. *Mol. Med. Today* 3: 390-395.
3. Kersemaekers, A.M., Hermans, J., Fleuren, G.J. and van de Vijver, M.J. 1998. Loss of heterozygosity for defined regions on chromosomes 3, 11 and 17 in carcinomas of the uterine cervix. *Br. J. Cancer* 77: 192-200.
4. Piura, B., Rabinovich, A. and Yanai-Inbar, I. 2001. Three primary malignancies related to BRCA mutation successively occurring in a BRCA1 185delAG mutation carrier. *Eur. J. Obstet. Gynecol. Reprod. Biol.* 97: 241-244.
5. Minamoto, T., Buschmann, T., Habelhah, H., Matusevich, E., Tahara, H., Boerresen-Dale, A.L., Harris, C., Sidransky, D. and Ronai, Z. 2001. Distinct pattern of p53 phosphorylation in human tumors. *Oncogene* 20: 3341-3347.
6. Rogers, M.A., Winter, H., Langbein, L., Bleiler, R. and Schweizer, J. 2004. The human type I keratin gene family: characterization of new hair follicle specific members and evaluation of the chromosome 17q21.2 gene domain. *Differentiation* 72: 527-540.
7. Hesse, M., Zimek, A., Weber, K. and Magin, T.M. 2004. Comprehensive analysis of keratin gene clusters in humans and rodents. *Eur. J. Cell Biol.* 83: 19-26.
8. Schweizer, J., Bowden, P.E., Coulombe, P.A., Langbein, L., Lane, E.B., Magin, T.M., Maltais, L., Omary, M.B., Parry, D.A., Rogers, M.A. and Wright, M.W. 2006. New consensus nomenclature for mammalian keratins. *J. Cell Biol.* 174: 169-174.
9. Langbein, L., Rogers, M.A., Praetzel-Wunder, S., Böckler, D., Schirmacher, P. and Schweizer, J. 2007. Novel type I hair keratins K39 and K40 are the last to be expressed in differentiation of the hair: completion of the human hair keratin catalog. *J. Invest. Dermatol.* 127: 1532-1535.

## CHROMOSOMAL LOCATION

Genetic locus: KRT40 (human) mapping to 17q21.2.

## PRODUCT

Keratin 40 siRNA (h) 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Keratin 40 shRNA Plasmid (h): sc-94005-SH and Keratin 40 shRNA (h) Lentiviral Particles: sc-94005-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  $\mu$ 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

Keratin 40 siRNA (h) is recommended for the inhibition of Keratin 40 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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Keratin 40 gene expression knockdown using RT-PCR Primer: Keratin 40 (h)-PR: sc-94005-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.