

# UAP1L1 siRNA (h): sc-92459

## BACKGROUND

UDP-GlcNAc (UDP-N-acetylglucosamine) is a coenzyme in metabolism that is used for making proteoglycans, glycosaminoglycans and glycolipids. UDP-GlcNAc is also involved in intracellular and nuclear signaling, nuclear pore formation and may be apart of the glucose sensing mechanism in pancreas  $\beta$ -cells. UAP1 (UDP-N-acetylhexosamine pyrophosphorylase) catalyzes the final step of UDP-GlcNAc biosynthesis from fructose-6-phosphate. In sperm, UAP1 localizes to the principle piece of the tail, neck region of the head and midpiece of the tail. Antibodies against UAP1 have been discovered in infertile patients sera, suggesting that this immune-complex may affect sperm function. UAP1L1 (UDP-N-acetylhexosamine pyrophosphorylase-like protein 1) is a 507 amino acid protein that shares sequence similarity with UAP1. There are two isoforms of UAP1L1 that are produced as a result of alternatively splicing events.

## REFERENCES

1. Diekman, A.B. and Goldberg, E. 1994. Characterization of a human antigen with sera from infertile patients. *Biol. Reprod.* 50: 1087-1093.
2. Mio, T., Yabe, T., Arisawa, M. and Yamada-Okabe, H. 1998. The eukaryotic UDP-N-acetylglucosamine pyrophosphorylases. Gene cloning, protein expression, and catalytic mechanism. *J. Biol. Chem.* 273: 14392-14397.
3. Wang-Gillam, A., Pastuszak, I. and Elbein, A.D. 1998. A 17-amino acid insert changes UDP-N-acetylhexosamine pyrophosphorylase specificity from UDP-GalNAc to UDP-GlcNAc. *J. Biol. Chem.* 273: 27055-27057.
4. Mio, T., Yamada-Okabe, T., Arisawa, M. and Yamada-Okabe, H. 1999. *Saccharomyces cerevisiae* GNA1, an essential gene encoding a novel acetyltransferase involved in UDP-N-acetylglucosamine synthesis. *J. Biol. Chem.* 274: 424-429.
5. Online Mendelian Inheritance in Man, OMIM<sup>™</sup>. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 602862. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
6. Peneff, C., Ferrari, P., Charrier, V., Taburet, Y., Monnier, C., Zamboni, V., Winter, J., Harnois, M., Fassy, F. and Bourne, Y. 2001. Crystal structures of two human pyrophosphorylase isoforms in complexes with UDPGlc(Gal)NAc: role of the alternatively spliced insert in the enzyme oligomeric assembly and active site architecture. *EMBO J.* 20: 6191-6202.
7. Buse, M.G. 2006. Hexosamines, Insulin resistance, and the complications of diabetes: current status. *Am. J. Physiol. Endocrinol. Metab.* 290: E1-E8.
8. Schwerin, M., Kuehn, C., Wimmers, S., Walz, C. and Goldammer, T. 2006. Trait-associated expressed hepatic and intestine genes in cattle of different metabolic type—putative functional candidates for nutrient utilization. *J. Anim. Breed. Genet.* 123: 307-314.
9. Isaji, T., Kariya, Y., Xu, Q., Fukuda, T., Taniguchi, N. and Gu, J. 2010. Functional roles of the bisecting GlcNAc in integrin-mediated cell adhesion. *Meth. Enzymol.* 480: 445-459.

## PROTOCOLS

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

## CHROMOSOMAL LOCATION

Genetic locus: UAP1L1 (human) mapping to 9q34.3.

## PRODUCT

UAP1L1 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 UAP1L1 shRNA Plasmid (h): sc-92459-SH and UAP1L1 shRNA (h) Lentiviral Particles: sc-92459-V as alternate gene silencing products.

For independent verification of UAP1L1 (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-92459A, sc-92459B and sc-92459C.

## 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

UAP1L1 siRNA (h) is recommended for the inhibition of UAP1L1 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 UAP1L1 gene expression knockdown using RT-PCR Primer: UAP1L1 (h)-PR: sc-92459-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.