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# $\beta$ -glucuronidase siRNA (m): sc-44459

## BACKGROUND

The enzyme  $\beta$ -glucuronidase catalyzes the conversion of  $\beta$ -D-glucuronoside and water to an alcohol and D-glucuronate. Deficiency of  $\beta$ -glucuronidase is the cause of the human lysosomal storage disorder mucopolysaccharidosis type VII (MPS VII). Specifically, two residues appear important for catalytic activity: Glu 451 and Glu 540. Mutations at these sites affect the overall structure of the protein, which normally consists of a homotetramer with each promoter including a jelly roll barrel, an immunoglobulin constant domain and a TIM barrel. Regulation of  $\beta$ -glucuronidase activity may play a role in tumorigenesis and the invasiveness of a number of cancers, and is also an important factor in the development of functional prodrugs that require the cleavage of an active cytostatic by endogenous enzymes for antitumor activity.

## REFERENCES

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2. Gupta, G.S. and Singh, G.P. 1983. Isolation and characterization of the major form of  $\beta$ -glucuronidase from human seminal plasma. *Biochim. Biophys. Acta* 748: 398-404.
3. Varma, R., et al. 1983.  $\beta$ -glucuronidase in sera of patients with epileptic seizure activity, diabetes and some other disease states. *Neurosci. Lett.* 39: 105-111.
4. Guise, K.S., et al. 1985. Isolation and expression in *Escherichia coli* of a cDNA clone encoding human  $\beta$ -glucuronidase. *Gene* 34: 105-110.
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6. Jain, S., et al. 1996. Structure of human  $\beta$ -glucuronidase reveals candidate lysosomal targeting and active-site motifs. *Nat. Struct. Biol.* 3: 375-381.
7. Vervoort, R., et al. 1998. Low  $\beta$ -glucuronidase enzyme activity and mutations in the human  $\beta$ -glucuronidase gene in mild mucopolysaccharidosis type VII, pseudodeficiency and a heterozygote. *Hum. Genet.* 102: 69-78.
8. Kurokawa, H., et al. 2003. Heparanase and tumor invasion patterns in human oral squamous cell carcinomaxenografts. *Cancer Sci.* 94: 277-285.
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## CHROMOSOMAL LOCATION

Genetic locus: *Gusb* (mouse) mapping to 5 G1.3.

## 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.

## PRODUCT

$\beta$ -glucuronidase siRNA (m) 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  $\beta$ -glucuronidase shRNA Plasmid (m): sc-44459-SH and  $\beta$ -glucuronidase shRNA (m) Lentiviral Particles: sc-44459-V as alternate gene silencing products.

For independent verification of  $\beta$ -glucuronidase (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-44459A, sc-44459B and sc-44459C.

## 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

$\beta$ -glucuronidase siRNA (m) is recommended for the inhibition of  $\beta$ -glucuronidase expression in mouse 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  $\beta$ -glucuronidase gene expression knockdown using RT-PCR Primer:  $\beta$ -glucuronidase (m)-PR: sc-44459-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.