

DIO1 siRNA (m): sc-77147

BACKGROUND

DIO1 (deiodinase, iodothyronine, type I), also known as TXDI1, ITDI1 or 5DI, is a 249 amino acid single-pass membrane protein that localizes to the endoplasmic reticulum and belongs to the iodothyronine deiodinase family. Expressed as nine alternatively spliced isoforms, DIO1 functions as a thiol-dependent propylthiouracil-sensitive oxidoreductase that converts the prohormone thyroxine (T4) to bioactive 3,3',5-triiodothyronine (T3), thereby playing a role in thyroid hormone (TH) activation. Human DIO1 shares 88% sequence similarity with its rat counterpart, suggesting a conserved role between species. The gene encoding DIO1 maps to human chromosome 1, which spans 260 million base pairs, contains over 3,000 genes and comprises nearly 8% of the human genome.

REFERENCES

1. Mandel, S.J., et al. 1992. Cloning and *in vitro* expression of the human selenoprotein, type I iodothyronine deiodinase. *J. Clin. Endocrinol. Metab.* 75: 1133-1139.
2. Moreno, M., et al. 1994. Activation and inactivation of thyroid hormone by type I iodothyronine deiodinase. *FEBS Lett.* 344: 143-146.
3. Toyoda, N., et al. 1995. Topological analysis of the integral membrane protein, type I iodothyronine deiodinase (DI). *J. Biol. Chem.* 270: 12310-12318.
4. Curcio-Morelli, C., et al. 2003. *In vivo* dimerization of types 1, 2, and 3 iodothyronine selenodeiodinases. *Endocrinology* 144: 937-946.
5. Arnaldi, L.A., et al. 2005. Gene expression profiles reveal that DCN, DIO1, and DIO2 are underexpressed in benign and malignant thyroid tumors. *Thyroid* 15: 210-221.
6. Koenig, R.J. 2005. Regulation of type 1 iodothyronine deiodinase in health and disease. *Thyroid* 15: 835-840.
7. Panicker, V., et al. 2008. A common variation in deiodinase 1 gene DIO1 is associated with the relative levels of free thyroxine and triiodothyronine. *J. Clin. Endocrinol. Metab.* 93: 3075-3081.

CHROMOSOMAL LOCATION

Genetic locus: Dio1 (mouse) mapping to 4 C7.

PRODUCT

DIO1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see DIO1 shRNA Plasmid (m): sc-77147-SH and DIO1 shRNA (m) Lentiviral Particles: sc-77147-V as alternate gene silencing products.

For independent verification of DIO1 (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-77147A, sc-77147B and sc-77147C.

RESEARCH USE

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

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

DIO1 siRNA (m) is recommended for the inhibition of DIO1 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 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.

GENE EXPRESSION MONITORING

DIO1 (B-7): sc-515198 is recommended as a control antibody for monitoring of DIO1 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor DIO1 gene expression knockdown using RT-PCR Primer: DIO1 (m)-PR: sc-77147-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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