

DIO1 (L-19): sc-69385

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

- Mandel, S.J., Berry, M.J., Kieffer, J.D., Harney, J.W., Warne, R.L. and Larsen, P.R. 1992. Cloning and *in vitro* expression of the human selenoprotein, type I iodothyronine deiodinase. *J. Clin. Endocrinol. Metab.* 75: 1133-1139.
- Moreno, M., Berry, M.J., Horst, C., Thoma, R., Goglia, F., Harney, J.W., Larsen, P.R. and Visser, T.J. 1994. Activation and inactivation of thyroid hormone by type I iodothyronine deiodinase. *FEBS Lett.* 344: 143-146.
- Toyoda, N., Berry, M.J., Harney, J.W. and Larsen, P.R. 1995. Topological analysis of the integral membrane protein, type 1 iodothyronine deiodinase (D1). *J. Biol. Chem.* 270: 12310-12318.
- Curcio-Morelli, C., Gereben, B., Zavacki, A.M., Kim, B.W., Huang, S., Harney, J.W., Larsen, P.R. and Bianco, A.C. 2003. *In vivo* dimerization of types 1, 2, and 3 iodothyronine selenodeiodinases. *Endocrinology* 144: 937-946.
- Arnaldi, L.A., Borra, R.C., Maciel, R.M. and Cerutti, J.M. 2005. Gene expression profiles reveal that DCN, DIO1, and DIO2 are underexpressed in benign and malignant thyroid tumors. *Thyroid* 15: 210-221.
- Koenig, R.J. 2005. Regulation of type 1 iodothyronine deiodinase in health and disease. *Thyroid* 15: 835-840.
- Panicker, V., Cluett, C., Shields, B., Murray, A., Parnell, K.S., Perry, J.R., Weedon, M.N., Singleton, A., Hernandez, D., Evans, J., Durant, C., Ferrucci, L., Melzer, D., Saravanan, P., Visser, T.J., Ceresini, G., 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.
- Panicker, V., Saravanan, P., Vaidya, B., Evans, J., Hattersley, A.T., Frayling, T.M. and Dayan, C.M. 2009. Common variation in the DIO2 gene predicts baseline psychological well-being and response to combination thyroxine plus triiodothyronine therapy in hypothyroid patients. *J. Clin. Endocrinol. Metab.* 94:1623-1629.
- Online Mendelian Inheritance in Man, OMIM™. 2009. Johns Hopkins University, Baltimore, MD. MIM Number: 147892. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

CHROMOSOMAL LOCATION

Genetic locus: DIO1 (human) mapping to 1p32.3.

SOURCE

DIO1 (L-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of DIO1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-69385 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

DIO1 (L-19) is recommended for detection of DIO1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

DIO1 (L-19) is also recommended for detection of DIO1 in additional species, including canine and bovine.

Suitable for use as control antibody for DIO1 siRNA (h): sc-77146, DIO1 shRNA Plasmid (h): sc-77146-SH and DIO1 shRNA (h) Lentiviral Particles: sc-77146-V.

Molecular Weight of DIO1: 28 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

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

PROTOCOLS

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