

DIO1 (B-7): sc-515198

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 pro-hormone 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., et al. 1992. Cloning and *in vitro* expression of the human selenoprotein, type I iodothyronine deiodinase. *J. Clin. Endocrinol. Metab.* 75: 1133-1139.
- Moreno, M., et al. 1994. Activation and inactivation of thyroid hormone by type I iodothyronine deiodinase. *FEBS Lett.* 344: 143-146.
- Toyoda, N., et al. 1995. Topological analysis of the integral membrane protein, type 1 iodothyronine deiodinase (D1). *J. Biol. Chem.* 270: 12310-12318.

CHROMOSOMAL LOCATION

Genetic locus: DIO1 (human) mapping to 1p32.3; Dio1 (mouse) mapping to 4 C7.

SOURCE

DIO1 (B-7) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 78-99 within an internal region of DIO1 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

DIO1 (B-7) is available conjugated to agarose (sc-515198 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-515198 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-515198 PE), fluorescein (sc-515198 FITC), Alexa Fluor® 488 (sc-515198 AF488), Alexa Fluor® 546 (sc-515198 AF546), Alexa Fluor® 594 (sc-515198 AF594) or Alexa Fluor® 647 (sc-515198 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-515198 AF680) or Alexa Fluor® 790 (sc-515198 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-515198 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

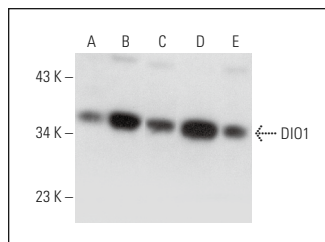
DIO1 (B-7) is recommended for detection of DIO1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for DIO1 siRNA (h): sc-77146, DIO1 siRNA (m): sc-77147, DIO1 shRNA Plasmid (h): sc-77146-SH, DIO1 shRNA Plasmid (m): sc-77147-SH, DIO1 shRNA (h) Lentiviral Particles: sc-77146-V and DIO1 shRNA (m) Lentiviral Particles: sc-77147-V.

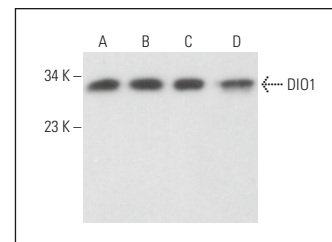
Molecular Weight of DIO1: 28 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Hep G2 cell lysate: sc-2227 or c4 whole cell lysate: sc-364186.

DATA



DIO1 (B-7): sc-515198. Western blot analysis of DIO1 expression in HeLa (A), c4 (B), A549 (C), U-937 (D) and Hep G2 (E) whole cell lysates.



DIO1 (B-7): sc-515198. Western blot analysis of DIO1 expression in Hep G2 (A), IMR-32 (B), A-431 (C) and KNRK (D) whole cell lysates.

SELECT PRODUCT CITATIONS

- Akahoshi, N., et al. 2019. Dietary selenium deficiency or selenomethionine excess drastically alters organ selenium contents without altering the expression of most selenoproteins in mice. *J. Nutr. Biochem.* 69: 120-129.
- Li, K., et al. 2021. Hepatic proteomic analysis of selenoprotein T knockout mice by TMT: implications for the role of selenoprotein T in glucose and lipid metabolism. *Int. J. Mol. Sci.* 22: 8515.
- Zhuang, J., et al. 2023. Thyroid-disrupting effects of exposure to fipronil and its metabolites from drinking water based on human thyroid follicular epithelial Nthy-ori 3-1 cell lines. *Environ. Sci. Technol.* 57: 6072-6084.

RESEARCH USE

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

PROTOCOLS

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

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