SANTA CRUZ BIOTECHNOLOGY, INC.

TRα1/β1 (C4): sc-740

BACKGROUND

Thyroid hormone nuclear receptors (TRs) are ligand-dependent transcription factors which regulate and control many metabolic and developmental processes. There are two genes encoding TRs identified to date, TRα and TRβ. TRs bind to thyroid hormone response elements (TREs) with half-site binding motifs in the orientation of palindromes, direct repeats or inverted palindromes. The affinities of binding are both variable and influenced differentially by 3,5,3'-triiodo-L-thyronine (T3). Transcriptional regulation by TRs is also modulated by heterodimerization with TR nuclear accessory proteins, the most extensively characterized of which are the retinoid X receptors (RXRα, RXRβ and RXRγ). The TRα isoform, TRα1, can display both a nuclear and undefined cytoplasmic location, and is the only TR that is imported into the mitochondrial matrix. The TRβ isoform TRβ1 forms a complex with the PI 3-kinase p85α subunit and plays an important role in the T3-induced activation of Akt in pancreatic β cells.

CHROMOSOMAL LOCATION

Genetic locus: THRA (human) mapping to 17q21.1, THRB (human) mapping to 3p24.2.

SOURCE

TRα1/β1 (C4) is a mouse monoclonal antibody raised against an epitope mapping within the C-terminus of TRβ1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-740 X, 200 µg/0.1 ml.

TRα1/β1 (C4) is available conjugated to agarose (sc-740 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-740 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-740 PE), fluorescein (sc-740 FITC), Alexa Fluor® 488 (sc-740 AF488), Alexa Fluor® 546 (sc-740 AF546), Alexa Fluor® 594 (sc-740 AF594) or Alexa Fluor® 647 (sc-740 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-740 AF680) or Alexa Fluor® 790 (sc-740 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

TRα1/β1 (C4) is recommended for detection of TRα1 and TRβ1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

TRα1/β1 (C4) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight of TRα1: 47 kDa.

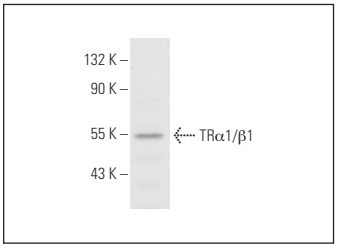
Molecular Weight of TRβ1: 58 kDa.

Positive Controls: C32 whole cell lysate: sc-2205.

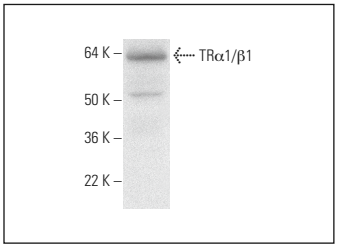
STORAGE

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

DATA



TRα1/β1 (C4): sc-740. Western blot analysis of TRα1/β1 expression in C32 whole cell lysate.



TRα1/β1 (C4): sc-740. Western blot analysis of TRα1/β1 expression in ZL (293 cells stably expressing TRβ1) whole cell lysate. Kindly provided by Sheue-Yann Chen at the National Institutes of Health.

SELECT PRODUCT CITATIONS

1. Fondell, J.D., et al. 1996. Unliganded thyroid hormone receptor α can target TATA-binding protein for transcriptional repression. Mol. Cell. Biol. 16: 281-287.
2. Chen, S.T., et al. 2002. Characterization of a thyroid hormone-mediated short-loop feedback control of TSH receptor gene in an anaplastic human thyroid cancer cell line. J. Endocrinol. 175: 459-465.
3. Mochizuki, K., et al. 2007. De-phosphorylation of TRα-1 by p44/42 MAPK inhibition enhances T3-mediated GLUT5 gene expression in the intestinal cell line Caco-2 cells. Biochem. Biophys. Res. Commun. 359: 979-984.
4. Pietrzak, M., et al. 2008. Triiodothyronine utilizes phosphatidylinositol 3-kinase pathway to activate anti-apoptotic myeloid cell leukemia-1. J. Mol. Endocrinol. 41: 177-186.
5. Wu, S.M., et al. 2011. Cathepsin H regulated by the thyroid hormone receptors associate with tumor invasion in human hepatoma cells. Oncogene 30: 2057-2069.
6. Wang, Y., et al. 2013. Protective effect of taurine on down-regulated expression of thyroid hormone receptor genes in brains of mice exposed to arsenic. Adv. Exp. Med. Biol. 775: 155-166.
7. Zhang, D., et al. 2014. Thyroid hormone regulates muscle fiber type conversion via miR-133a1. J. Cell Biol. 207: 753-766.
8. Illes, P., et al. 2015. Development and characterization of a human reporter cell line for the assessment of thyroid receptor transcriptional activity: a case of organotin endocrine disruptors. J. Agric. Food Chem. 63: 7074-7083.
9. Flamini, M.I., et al. 2017. Thyroid hormone controls breast cancer cell movement via integrin $\alpha_V\beta_3$/SRC/FAK/PI3-kinases. Horm. Cancer 8: 16-27.

RESEARCH USE

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