SANTA CRUZ BIOTECHNOLOGY, INC.

TSHR (4C1): sc-32262

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Various hormones are secreted from the anterior pituitary during development and growth, including thyroid-stimulating hormone (TSH, also known as thyrotropin), follicle-stimulating hormone (FSH) and leutinizing hormone (LH). TSH, FSH, and LH are heterodimers formed from a common α chain and a unique β chain. TSH is a glycoprotein involved in the control of thyroid structure and metabolism, which stimulates the release of the thyroid hormones. TSH is regulated by thyroid hormone (T3) and various retinoid compounds. TSH binds to the thyroid-stimulating hormone receptor (TSHR), which is cleaved into two subunits, A and B, and plays a major role in regulating thyroid function. The third cytoplasmic loop of TSHR has been identified as critical for its role in regulating inositol phosphate and cAMP formation. In Graves disease, an autoimmune disorder, TSHR is activated by autoantibodies, which may be stimulated by the cleavage of the A and B subunits.

CHROMOSOMAL LOCATION

Genetic locus: TSHR (human) mapping to 14q31.1.

SOURCE

TSHR (4C1) is a mouse monoclonal antibody raised against an extracellular domain of TSHR of human origin, epitope mapping to amino acids 381-384.

PRODUCT

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

TSHR (4C1) is available conjugated to either phycoerythrin (sc-32262 PE) or fluorescein (sc-32262 FITC), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM.

APPLICATIONS

TSHR (4C1) is recommended for detection of TSHR of human origin by 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 flow cytometry (1 µg per 1 x 10^6 cells).

Suitable for use as control antibody for TSHR siRNA (h): sc-36754, TSHR shRNA Plasmid (h): sc-36754-SH and TSHR shRNA (h) Lentiviral Particles: sc-36754-V.

Molecular Weight of intact TSHR: 115 kDa.

Molecular Weight of TSHR A subunit: 62 kDa.

Molecular Weight of TSHR B subunit: 42 kDa.

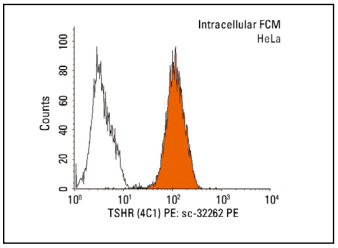
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

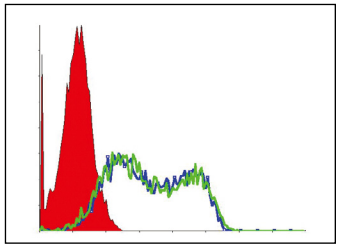
STORAGE

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

DATA



TSHR (4C1) PE: sc-32262 PE. Intracellular FCM analysis of fixed and permeabilized HeLa cells. Black line histogram represents the isotype control, normal mouse IgG_{2a}-PE: sc-2867.



Indirect FCM analysis of GPI-anchored TSHR (Da Costa CR, Johnstone AP. JBC, 1998). Red shaded histogram represents control mouse IgG. Blue line histogram represents TSHR (2C11), sc-32263. Green line histogram represents TSHR (4C1), sc-32262. Kindly provided by Dr. Alan Johnstone, St. George's, University of London.

SELECT PRODUCT CITATIONS

1. Allen, M.D., et al. 2011. Small-molecule thyrotropin receptor agonist activates naturally occurring thyrotropin-insensitive mutants and reveals their distinct cyclic adenosine monophosphate signal persistence. Thyroid 21: 907-912.
2. Richer, J., et al. 2015. Epitope identification from fixed-complexity random-sequence peptide microarrays. Mol. Cell. Proteomics 14: 136-147.
3. Chen, C.R., et al. 2015. Deleting the redundant TSH receptor C-peptide region permits generation of the conformationally intact extracellular domain by insect cells. Endocrinology 156: 2732-2738.
4. Görtz, G.E., et al. 2016. Pathogenic phenotype of adipogenesis and hyaluronan in orbital fibroblasts from female graves' orbitopathy mouse model. Endocrinology 157: 3771-3778.
5. Zane, M., et al. 2017. Estrogen and thyroid cancer is a stem affair: a preliminary study. Biomed. Pharmacother. 85: 399-411.
6. Miao, L.Y., et al. 2022. A rapid homogenous bioassay for detection of thyroid-stimulating antibodies based on a luminescent cyclic AMP biosensor. J. Immunol. Methods 501: 113199.
7. Ma, R., et al. 2022. Insights into ferroptosis: targeting glycolysis to treat Graves' orbitopathy. J. Clin. Endocrinol. Metab. 107: 1994-2003.
8. Veschi, V., et al. 2023. Recapitulating thyroid cancer histotypes through engineering embryonic stem cells. Nat. Commun. 14: 1351.
9. Pantina, V.D., et al. 2024. Protocol for generation and engineering of thyroid cell lineages using CRISPR-Cas9 editing to recapitulate thyroid cancer histotype progression. STAR Protoc. 5: 103263.

RESEARCH USE

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