

# TSHR (A7): sc-57490

## 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  $\alpha$  chain and a unique  $\beta$  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. It 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.

## REFERENCES

- Kosugi, S., et al. 1993. Substitutions of different regions of the third cytoplasmic loop of the thyrotropin (TSH) receptor have selective effects on constitutive, TSH-, and TSH receptor autoantibody-stimulated phosphoinositide and 3',5'-cyclic adenosine monophosphate signal generation. *Mol. Endocrinol.* 7: 1009-1020.
- Breen, J.J., et al. 1997. The rat TSH $\beta$  gene contains distinct response elements for regulation by retinoids and thyroid hormone. *Mol. Cell Endocrinol.* 131: 137-146.
- Sanders, J., et al. 1997. Understanding the thyrotropin receptor function-structure relationship. *Baillieres Clin. Endocrinol. Metab.* 11: 451-479.
- Moyle, W.R., et al. 1998. Functional homodimeric glycoprotein hormones: implications for hormone action and evolution. *Chem. Biol.* 5: 241-254.
- Tanaka, K., et al. 1999. Subunit structure of thyrotrophin receptors expressed on the cell surface. *J. Biol. Chem.* 274: 33979-33984.
- Sanders, J., et al. 2006. Effects of TSH receptor mutations on binding and biological activity of monoclonal antibodies and TSH. *Thyroid* 16: 1195-1206.
- Jezirowska, A., et al. 2006. A novel mutation in the thyrotropin (thyroid-stimulating hormone) receptor gene in a case of congenital hypothyroidism. *Thyroid* 16: 1303-1309.
- Persani, L., et al. 2007. Technology Insight: modern methods to monitor protein-protein interactions reveal functional TSH receptor oligomerization. *Nat. Clin. Pract. Endocrinol. Metab.* 3: 180-190.
- Mankai, A., et al. 2007. Anti-thyroid-stimulating hormone receptor antibodies determined by second-generation assay. *Clin. Chem. Lab. Med.* 45: 26-29.

## CHROMOSOMAL LOCATION

Genetic locus: TSHR (human) mapping to 14q31.1; Tshr (mouse) mapping to 12 D3.

## RESEARCH USE

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

## SOURCE

TSHR (A7) is a mouse monoclonal antibody raised against TSHR corresponding to amino acids 402-415 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>2b</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

TSHR (A7) is recommended for detection of TSHR of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for TSHR siRNA (h): sc-36754, TSHR siRNA (m): sc-36755, TSHR shRNA Plasmid (h): sc-36754-SH, TSHR shRNA Plasmid (m): sc-36755-SH, TSHR shRNA (h) Lentiviral Particles: sc-36754-V and TSHR shRNA (m) Lentiviral Particles: sc-36755-V.

Molecular Weight of intact TSHR: 115 kDa.

Molecular Weight of TSHR A subunit: 62 kDa.

Molecular Weight of TSHR B subunit: 42 kDa.

Positive Controls: IMR-32 cell lysate: sc-2409 or HeLa whole cell lysate: sc-2200.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.