

Product Sheet

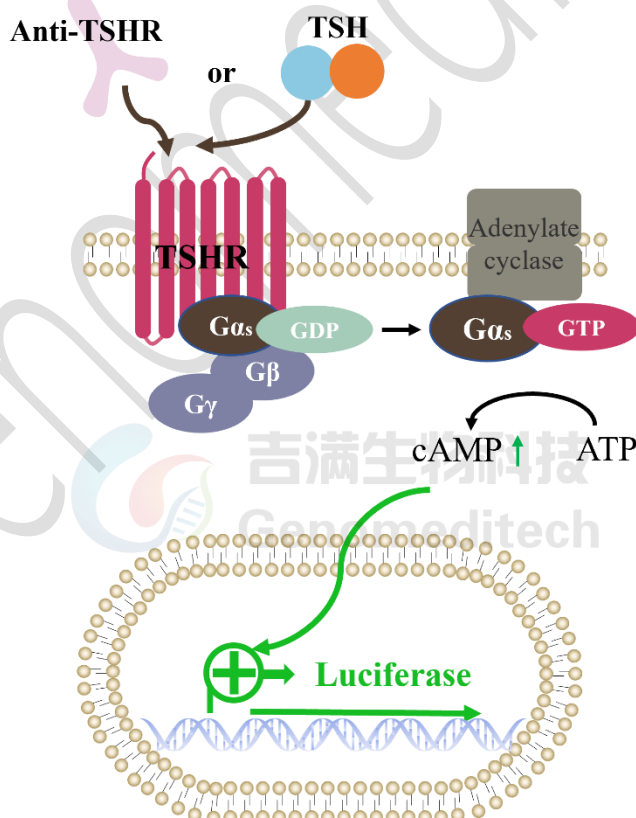
H_TSHR Reporter HEK-293 Cell Line

Catalog number: GM-C42612

Version 3.3.1.26.917

TSHR (Thyroid-Stimulating Hormone Receptor) is a transmembrane protein in the GPCR family, mainly expressed on thyroid follicular epithelial cells. It binds to TSH to activate the adenylyl cyclase pathway, promoting thyroid hormone (T3/T4) synthesis and release. Abnormal TSHR activation causes Graves' disease or thyrotoxicosis, while inactivation leads to primary hypothyroidism, requiring lifelong levothyroxine (LT4) therapy. Beyond thyroid regulation, TSHR influences fat metabolism, bone health, and energy balance, offering potential targets for treating obesity and osteoporosis.

H_TSHR Reporter HEK-293 Cell Line is a clonal stable HEK-293 cell line constructed using lentiviral technology, constitutive expression of the TSHR gene, along with signal-dependent expression of a luciferase reporter gene. When a ligand binds to its receptor, it activates downstream signaling pathways, leading to the expression of luciferase. The luciferase activity measurement indicates the activation level of the signaling pathway and can thus be used to evaluate the in vitro effects of related drugs.



Specifications

Quantity	5E6 Cells per vial, 1 mL
Product Format	1 vial of frozen cells
Shipping	Shipped on dry ice
Storage Conditions	Liquid nitrogen immediately upon receipt
Recovery Medium	DMEM+10% FBS+1% P.S
Growth medium	DMEM+10% FBS+1% P.S+4 µg/mL Blasticidin+75 ng/mL Puromycin
Note	None
Freezing Medium	90% FBS+10% DMSO
Growth properties	Adherent
Growth Conditions	37°C, 5% CO ₂
Mycoplasma Testing	The cell line has been screened to confirm the absence of Mycoplasma species.
Safety considerations	Biosafety Level 2
Note	It is recommended to expand the cell culture and store a minimum of 10 vials at an early passage for potential future use.

Materials

Reagent	Manufacturer/Catalogue No.
DMEM	Gibco/C11995500BT
Fetal Bovine Serum	ExCell/FSP500
Pen/Strep	Thermo/15140-122
Blasticidin	Genomeditech/ GM-040404
Puromycin	Genomeditech/ GM-040401
Recombinant Human TSH	Novoprotein/DRA17
Anti-TSHR mIgG2a Antibody(KSAb2)	Genomeditech/ GM-87935AB
GMOne-Step 2.0 Luciferase Reporter Gene Assay Kit	Genomeditech/ GM-040513
Anti-TSHR hIgG1 Antibody (K1-70)	Genomeditech/GM-89065AB

Figures

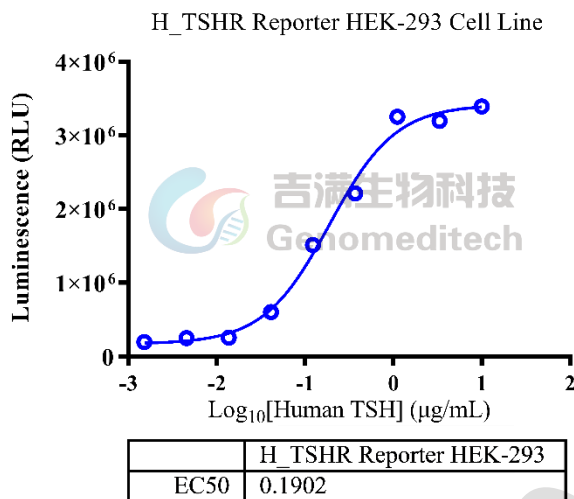


Figure 1 | Response to Recombinant Human TSH. The H_TSHR Reporter HEK-293 Cell Line (Cat. GM-C42612) at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Recombinant Human TSH (Novoprotein/DRA17) in assay buffer (DMEM+1% FBS+1% P.S) for 16 hours. The firefly luciferase activity was measured using the Luciferase Reporter Assay Kit (Genomeditech). The maximum induction fold was approximately [18.2]. Data are shown by drug mass concentration.

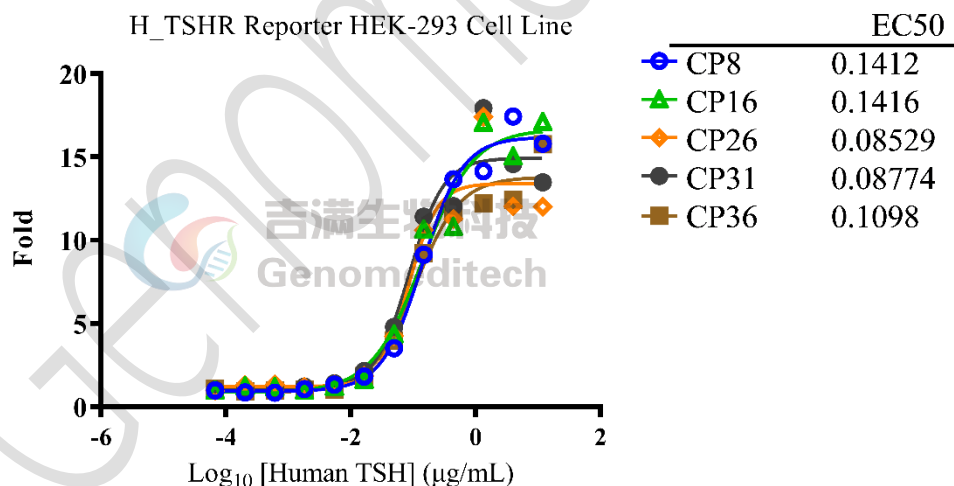


Figure 2 | The passage stability of response to Recombinant Human TSH. The passages 8, 16, 26, 31 and 36 of H_TSHR Reporter HEK-293 Cell Line (Cat. GM-C42612) at a density of 1.5E4 cells/well (96-well format) were stimulated with serial dilutions of Recombinant Human TSH (novoprotein/DRA17) in assay buffer (DMEM+1% FBS+1% P.S) for 16 hours. The firefly luciferase activity was measured using the Luciferase Reporter Assay Kit (Genomeditech). Data are shown by drug mass concentration.

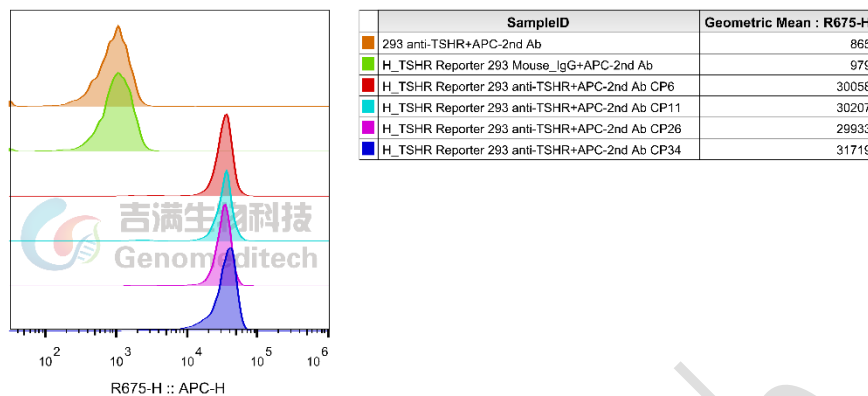


Figure 3 | The passage stability of the H_TSHR Reporter HEK-293 Cell Line (Cat. GM-C42612) was determined by flow cytometry using Anti-TSHR mIgG2a Antibody(KSAb2) (Cat. [GM-87935AB](#)).

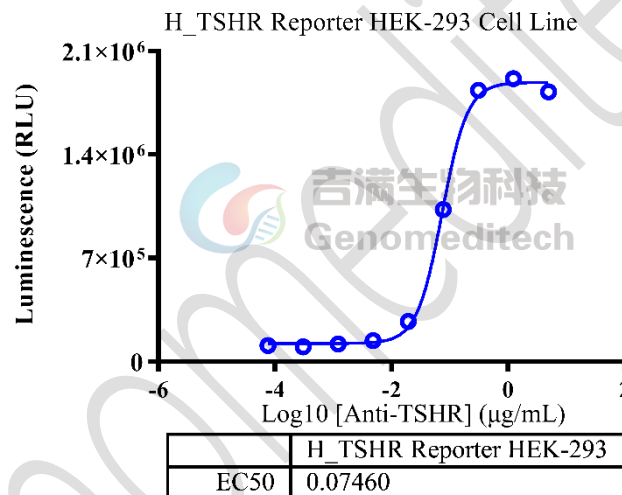


Figure 4 | Response to Anti-TSHR mIgG2a Antibody(KSAb2). The H_TSHR Reporter HEK-293 Cell Line (Cat. GM-C42612) at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Anti-TSHR mIgG2a Antibody(KSAb2) (Cat. [GM-87935AB](#)) in assay buffer (DMEM+1% FBS+1% P.S) for 16 hours. The firefly luciferase activity was measured using the Luciferase Reporter Assay Kit (Genomeditech). The maximum induction fold was approximately [18.0]. Data are shown by drug mass concentration.

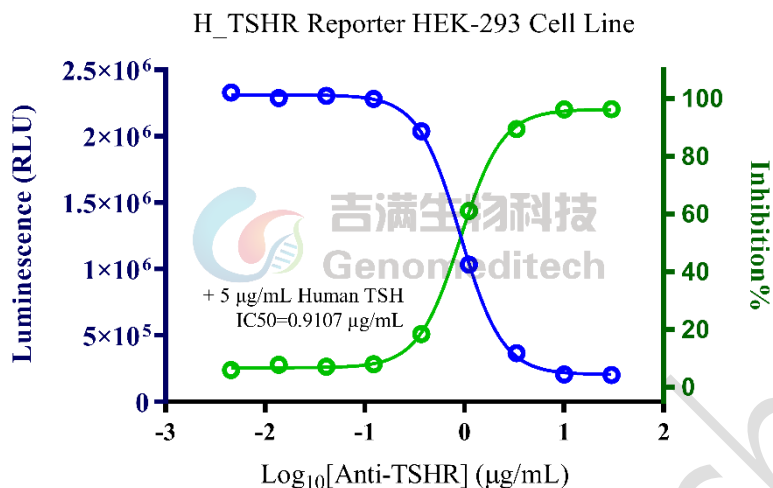


Figure 5 | Inhibition of Recombinant Human TSH-induced reporter activity by Anti-TSHR hIgG1 Antibody (K1-70). Serial dilutions of the Anti-TSHR hIgG1 Antibody (K1-70)(Cat. GM-89065AB) were incubated with 1.5E4 cells/well of the H_TSHR Reporter HEK-293 Cell Line (Cat. GM-C42612) in a 96-well plate for 1 hour in assay buffer (DMEM+1% FBS+1% P.S). Subsequently, the Recombinant Human TSH (novoprotein/DRA17) at a density of 5 μg/mL was added, and the coculture proceeded for an additional 15 hours. Firefly luciferase activity was then measured using the Luciferase Reporter Assay Kit (Genomeditech) (left Y-axis, relative luminescence units), with inhibition percentages shown on the right Y-axis. Data are shown by drug mass concentration.

Cell Recovery

Recovery Medium: DMEM+10% FBS+1% P.S

To insure the highest level of viability, thaw the vial and initiate the culture as soon as possible upon receipt. If upon arrival, continued storage of the frozen culture is necessary, it should be stored in liquid nitrogen vapor phase and not at -70°C. Storage at -70°C will result in loss of viability.

- Thaw the vial by gentle agitation in a 37°C water bath. To reduce the possibility of contamination, keep the O-ring and cap out of the water. Thawing should be rapid (approximately 2 - 3 minutes).
- Remove the vial from the water bath as soon as the contents are thawed, and decontaminate by dipping in or spraying with 70% ethanol. All of the operations from this point on should be carried out under strict aseptic conditions.
- Transfer the vial contents to a centrifuge tube containing 5.0 mL complete culture medium and spin at approximately 176 x g for 5 minutes. Discard supernatant.
- Resuspend cell pellet with the recommended recovery medium. And dispense into appropriate culture dishes.
- Incubate the culture at 37°C in a suitable incubator. A 5% CO₂ in air atmosphere is recommended if using the medium described on this product sheet.

Cell Freezing

Freezing Medium: 90% FBS+10% DMSO

- Centrifuge at 176 x g for 3 minutes to collect cells.
- Resuspend the cells in pre-cooled freezing medium and adjust the cell density to 5E6 cells/mL.
- Aliquot 1 mL into each vial.
- Place the vial in a controlled-rate freezing container and store at -80°C for at least 1 day, then transfer to liquid nitrogen as soon as possible.

Cell passage

Growth medium: DMEM+10% FBS+1% P.S+4 µg/mL Blasticidin+75 ng/mL Puromycin

For the first 1 to 2 passages post-resuscitation, use the recovery medium. Once the cells have stabilized, switch to a growth medium.

- Subculturing is necessary when the cell density reaches 80%. It is recommended to perform subculturing at a ratio of 1:3 to 1:4 every 2-3 days. Ensure that the density does not exceed 80%, as overcrowding can lead to reduced viability due to compression.
- Remove and discard culture medium.
- Briefly rinse the cell layer with PBS to remove all traces of serum that contains trypsin inhibitor.
- Add 1.0 mL of 0.25% (w/v) Trypsin-EDTA solution to dish and observe cells under an inverted microscope until cell layer is dispersed (usually within 30 to 60 seconds at 37°C).
- Note: To avoid clumping do not agitate the cells by hitting or shaking the flask while waiting for the cells to detach. Cells that are difficult to detach may be placed at 37°C to facilitate dispersal.
- Add 2.0 mL of growth medium to mix well and aspirate cells by gently pipetting.
- After centrifugation, resuspend the pellet and add appropriate aliquots of the cell suspension to new culture vessels.
- Incubate cultures at 37°C.

Subcultivation Ratio: A subcultivation ratio of 1:3 - 1:4 is recommended

Medium Renewal: Every 2 to 3 days

Notes

- Upon initial thawing, a higher number of dead cells is observed, which is a normal phenomenon. Significant improvement is seen after adaptation. Once the cells reach a stable state, the number of dead cells decreases after subculturing and the cell growth rate becomes stable.
- Ensure that the cell density does not exceed 80%, as overcrowding may lead to reduced viability due to compression.

Related Products

IGF-1R	
H_IGF-1R Reporter Cell Line	H_IGF-1R CHO-K1 Cell Line

H_IGF-1R HEK-293 Cell Line	
Anti-IGF-1R hIgG1 Antibody(teprotumumab)	Anti-IGF1R hIgG1 Reference Antibody (Dalobio)
Biotinylated Human IGF-1 Protein; His-Avi Tag	Human IGF-1 Protein; His Tag
TSHR	
H_TSHR Reporter CHO-K1 Cell Line	Cynomolgus_TSHR HEK-293 Cell Line
H_TSHR CHO-K1 Cell Line	H_TSHR HEK-293 Cell Line
Mouse_TSHR HEK-293 Cell Line	Rat_TSHR HEK-293 Cell Line
Anti-TSHR mIgG2a Antibody(KSAb2)	

License Agreement:

By purchasing and using this cell line product, the user voluntarily agrees to accept and abide by the following policies:

- This cell line product is restricted to research use only and shall not be used for any commercial purposes.
- This product is strictly prohibited from being used in the diagnosis or treatment of human or animal diseases, and shall not be directly used in experiments involving humans.
- Users and their contractors engaged for their benefit may use this material and its derivatives only within the agreed research scope; modification of the material is not permitted, nor may it be distributed, sold, transferred, or otherwise provided to any other entity (including affiliates).
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