

Product Sheet

Insulin Receptor A(IRA) Reporter Cell Line

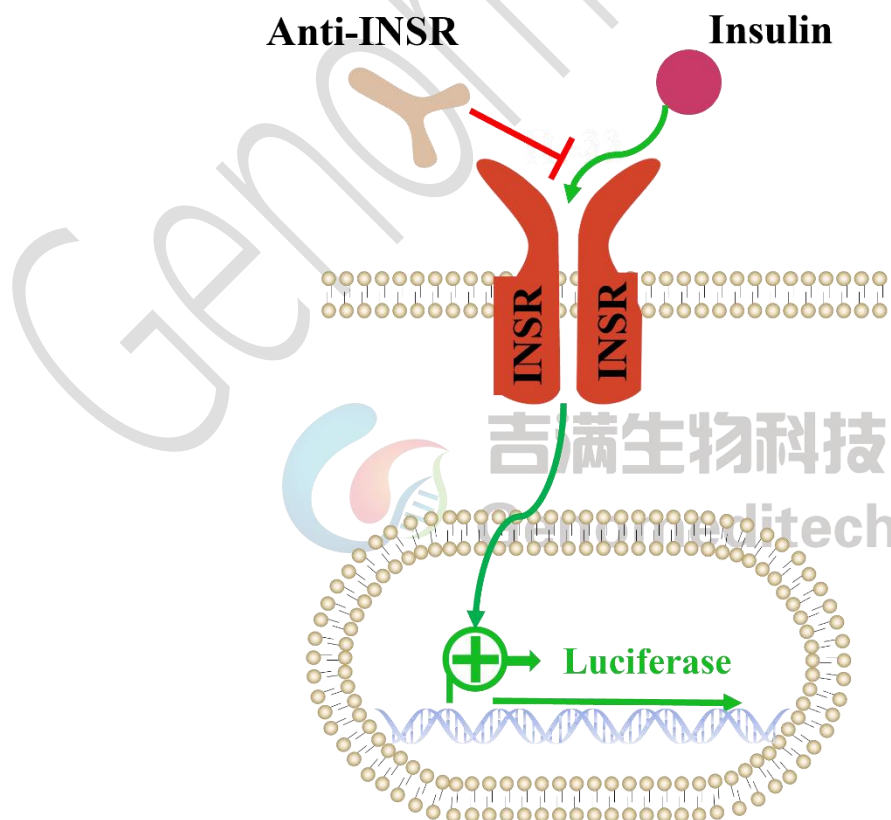
Catalog number: GM-C36651

Version 3.3.1.250103

The insulin receptor has two main subtypes: insulin receptor A (IR-A) and insulin receptor B (IR-B). IR-A is mainly found in fetal tissues and some tumor cells, with a higher affinity for insulin, while IR-B is prevalent in adult tissues and regulates normal metabolic processes, including glucose metabolism, fat synthesis, and cell growth. The expression and activity of these subtypes can vary under different physiological and pathological conditions, affecting insulin's biological effects.

The insulin receptor signaling pathway is activated through its tyrosine kinase activity upon insulin binding. After binding, the β subunit undergoes autophosphorylation, activating downstream signaling molecules like IRS (insulin receptor substrate). Phosphorylated IRS further activates the PI3K/Akt and MAPK pathways, promoting glucose uptake and metabolism, as well as cell proliferation and growth.

Insulin Receptor A(IRA) Reporter Cell Line is a clonal stable cell line constructed using lentiviral technology, constitutive expression of the IRA, along with signal-dependent expression of a luciferase reporter gene. When Insulin binds to IRA, it activates downstream signaling pathways, leading to the expression of luciferase. Blockade antibodies can inhibit this signal transmission. The luciferase activity measurement indicates the activation level of the signaling pathway and can thus be used to evaluate the *in vitro* effects of drugs related to Insulin Receptor A.



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+0.75 µg/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	Cegrogen biotech/A0500-3010
Pen/Strep	Thermo/15140-122
Blasticidin	Genomeditech/ GM-040404
Puromycin	Genomeditech/ GM-040401
Insulin, human recombinant	YEASEN/40112ES25
Anti-INSR hIgG1 Antibody(XPA.15.247.2.018)	Genomeditech/ GM-51390AB
Anti-H_INSR hIgG1 Antibody(Valanafusp)	Genomeditech/ GM-27376AB
GMOne-Step Luciferase Reporter Gene Assay Kit	Genomeditech/ GM-040503

Figures

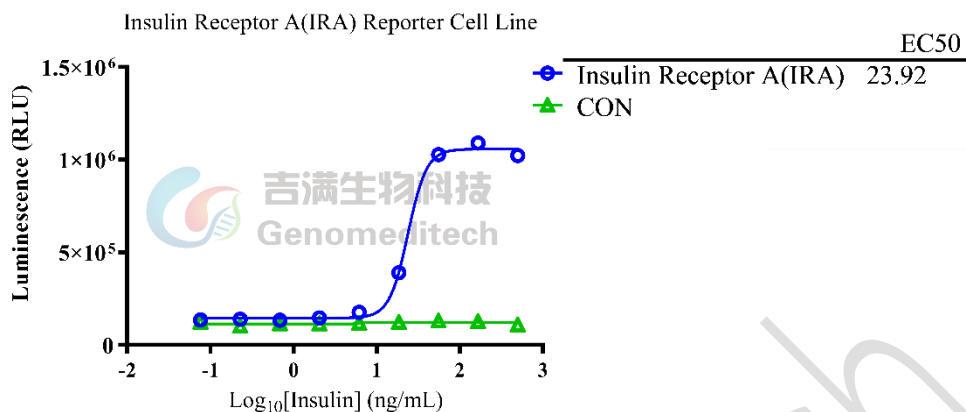


Figure 1 | Response to Insulin. The Insulin Receptor A (IRA) Reporter Cell Line (Cat. GM-C36651) and the control cell line(CON), with only stable expression of the signal-dependent luciferase reporter gene, at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Insulin, human recombinant (YEASEN/40112ES25) in assay buffer (DMEM + 1% FBS + 1% P.S) for 6 hours. The firefly luciferase activity was measured using the GMOne-Step Luciferase Reporter Gene Assay Kit (Cat. GM-040503). The maximum induction fold was approximately [7.6]. Data are shown by drug mass concentration.

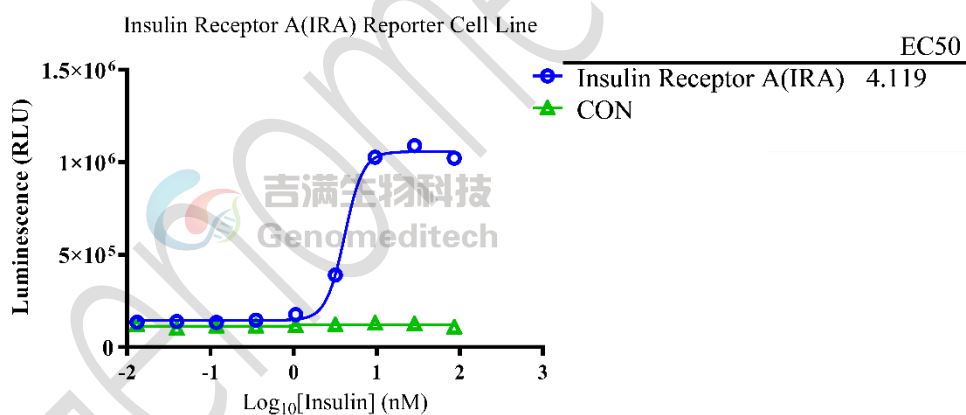


Figure 2 | Response to Insulin. The Insulin Receptor A (IRA) Reporter Cell Line (Cat. GM-C36651) and the control cell line(CON), with only stable expression of the signal-dependent luciferase reporter gene, at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Insulin, human recombinant (YEASEN/40112ES25) in assay buffer (DMEM + 1% FBS + 1% P.S) for 6 hours. The firefly luciferase activity was measured using the GMOne-Step Luciferase Reporter Gene Assay Kit (Cat. GM-040503). The maximum induction fold was approximately [7.6]. Data are shown by drug molar concentration.

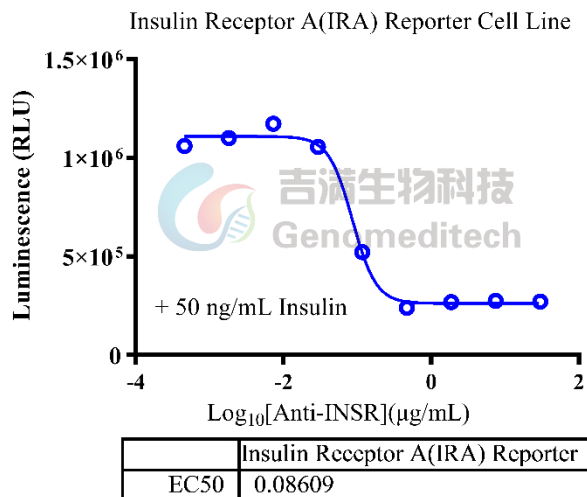


Figure 3 | Response to Anti-INSR hIgG1 Antibody. Serial dilutions of the Anti-INSR hIgG1 Antibody(XPA.15.247.2.018) (Cat. [GM-51390AB](#)) was incubated with 1.5E4 cells/well of the Insulin Receptor A(IRA) Reporter Cell Line (Cat. GM-C36651) in a 96-well plate for 1 hour in assay buffer (DMEM + 1% FBS + 1% P.S). Subsequently, the Insulin (YEASEN/40112ES25) at a concentration of 5 ng/well was added, and the coculture proceeded for an additional 6 hours. Firefly luciferase activity is then measured using the GMOne-Step Luciferase Reporter Gene Assay Kit (Cat. [GM-040503](#)). The results indicated maximum blocking folds of approximately [3.9]. Data are shown by drug mass concentration.

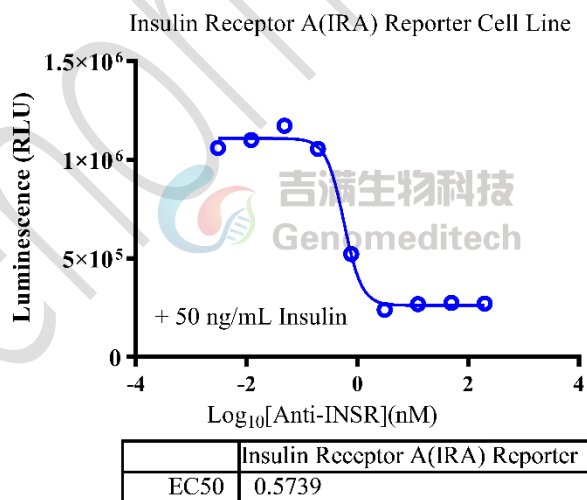


Figure 4 | Response to Anti-INSR hIgG1 Antibody. Serial dilutions of the Anti-INSR hIgG1 Antibody(XPA.15.247.2.018) (Cat. [GM-51390AB](#)) was incubated with 1.5E4 cells/well of the Insulin Receptor A(IRA) Reporter Cell Line (Cat. GM-C36651) in a 96-well plate for 1 hour in assay buffer (DMEM + 1% FBS + 1% P.S). Subsequently, the Insulin (YEASEN/40112ES25) at a concentration of 5 ng/well was added, and the coculture proceeded for an additional 6 hours. Firefly luciferase activity is then measured using the GMOne-Step Luciferase

Reporter Gene Assay Kit (Cat. [GM-040503](#)). The results indicated maximum blocking folds of approximately [3.9]. Data are shown by drug molar concentration.

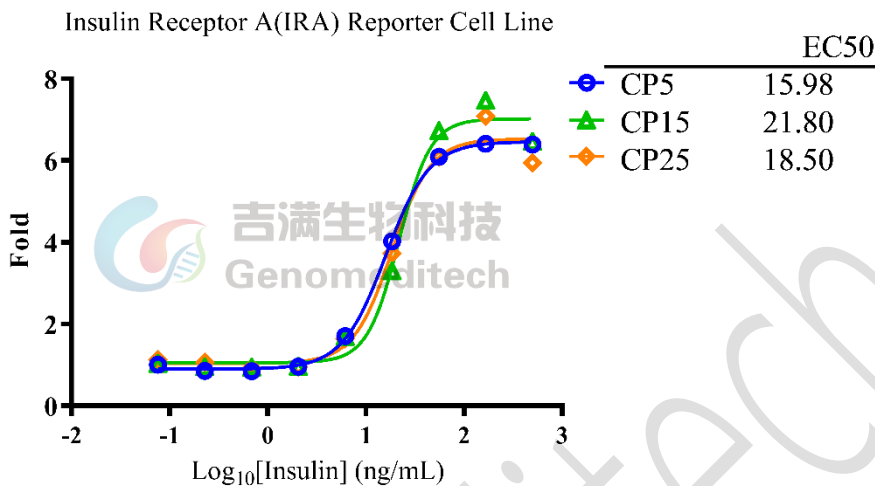


Figure 5 | The passage stability of response to Insulin, human recombinant. The passage 5, 15 and 25 of Insulin Receptor A(IRA) Reporter Cell Line (Cat. GM-C36651) at a concentration of 1.5E4 cells/well (96-well format) were stimulated with serial dilutions of Insulin, human recombinant (YEASEN/40112ES25) in assay buffer (DMEM + 1% FBS + 1% P.S) for 6 hours. The firefly luciferase activity was measured using the GOne-Step Luciferase Reporter Gene Assay Kit (Cat. [GM-040503](#)). Data are shown by drug mass concentration.

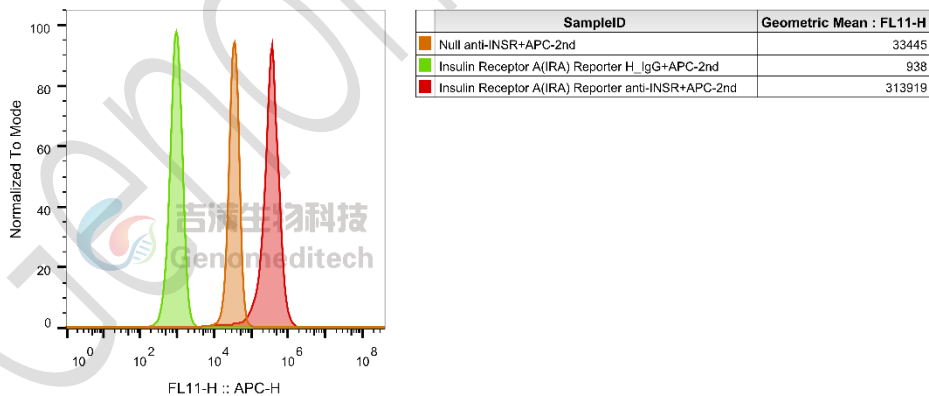


Figure 6 | Insulin Receptor A(IRA) Reporter Cell Line (Cat. GM-C36651) was determined by flow cytometry using Anti-H_INSR hIgG1 Antibody(Valanafusp) (Cat. [GM-27376AB](#)).

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.

- a) 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).
- b) 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.
- c) Transfer the vial contents to a centrifuge tube containing 5.0 mL complete culture medium and spin at approximately $176 \times g$ for 5 minutes. Discard supernatant.
- d) Resuspend cell pellet with the recommended recovery medium. And dispense into appropriate culture dishes.
- e) Incubate the culture at 37°C in a suitable incubator. A 5% CO_2 in air atmosphere is recommended if using the medium described on this product sheet.

Cell Freezing

Freezing Medium: 90% FBS+10% DMSO

- a) Centrifuge at $176 \times g$ for 3 minutes to collect cells.
- b) Resuspend the cells in pre-cooled freezing medium and adjust the cell density to 5×10^6 cells/mL.
- c) Aliquot 1 mL into each vial.
- d) 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 $\mu\text{g/mL}$ Blasticidin+0.75 $\mu\text{g/mL}$ Puromycin

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

- a) 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.
- b) Remove and discard culture medium.
- c) Briefly rinse the cell layer with PBS to remove all traces of serum that contains trypsin inhibitor.
- d) 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).
- e) 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.
- f) Add 2.0 mL of growth medium to mix well and aspirate cells by gently pipetting.
- g) After centrifugation, resuspend the pellet and add appropriate aliquots of the cell suspension to new culture vessels.
- h) 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

INSR:insulin	
Insulin Reporter Cell Line	H_INSR CHO-K1 Cell Line
H_INSR HEK-293 Cell Line	
Anti-H_INSR hIgG1 Antibody(Valanafusp)	Anti-INSR hIgG1 Antibody(XPA.15.247.2.018)

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