Genomeditech (Shanghai) Co.,Ltd.
Order: +86 021-68455258/50432826/50432825
Toll-free: +86 400 627 9288
Email: service@genomeditech.com

Product Sheet

H_NPR1 Reporter Cell Line

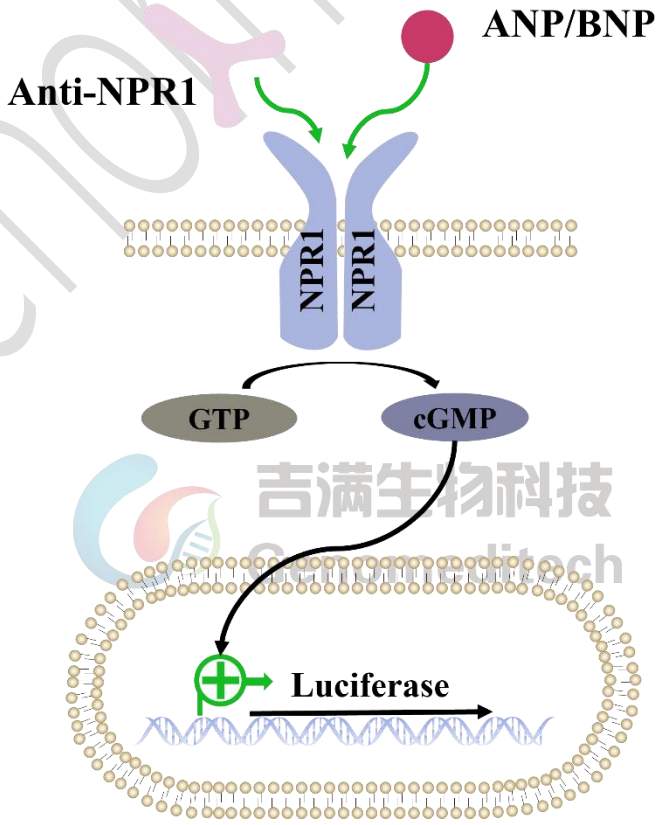
Catalog number: GM-C34551

Version 3.3.1.241128

NPR1/NPRA (Natriuretic Peptide Receptor A) is a membrane-bound guanylyl cyclase receptor for atrial natriuretic peptide (ANP) and brain natriuretic peptide (BNP). NPRA has an extracellular ligand-binding domain, a transmembrane region, and an intracellular functional domain that includes a regulatory and a catalytic region. When ANP or BNP binds to NPRA, it activates guanylyl cyclase, initiating downstream signaling.

In the NPRA signaling pathway, ANP or BNP binding induces a conformational change that activates the intracellular guanylyl cyclase, leading to the production of cyclic guanosine monophosphate (cGMP). cGMP serves as a second messenger, activating protein kinase G (PKG), which regulates vascular smooth muscle relaxation and inhibits sodium reabsorption in the kidneys. It also amplifies signaling through phosphodiesterases (PDEs) and ion channels.

H_NPR1 Reporter Cell Line is a clonal stable cell line constructed using lentiviral technology, constitutive expression of the NPR1 gene and some adapter membrane molecules, along with signal-dependent expression of a luciferase reporter gene. When ANP/BNP binds to NPR1, 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 drugs related to NPR1.



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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+125 μg/mL Hygromycin+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
Hygromycin	Genomeditech/GM-040403
Puromycin	Genomeditech/GM-040401
Atrial Natriuretic Peptide (ANP) (1-28), human, porcine Acetate	GLPBIO/GC34025
BNP (1-32), human	GLPBIO/GP10071
Anti-NPR1 hIgG1 Antibody(XX-16)	Genomeditech/GM-87696AB
GMOne-Step Luciferase Reporter Gene Assay Kit	Genomeditech/GM-040503

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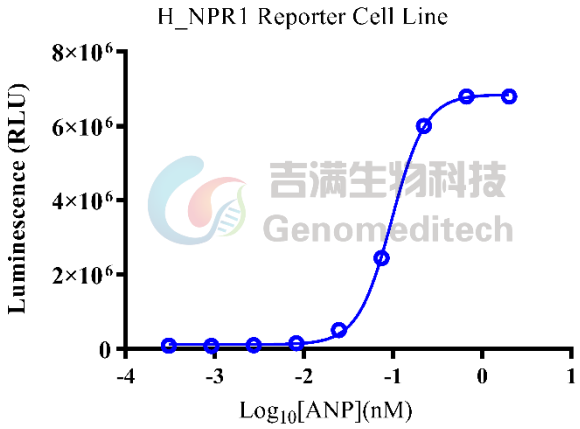
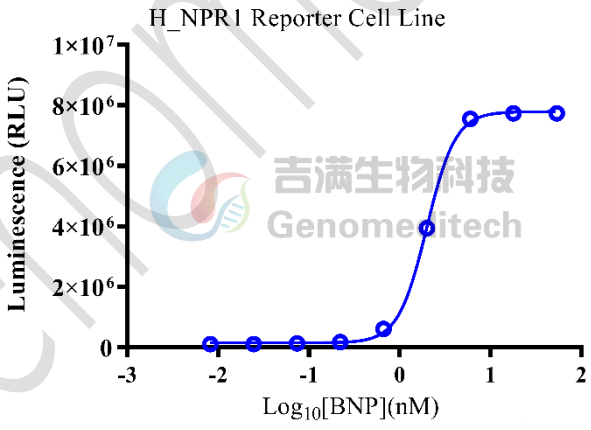
Figures



	H_NPR1 Reporter Cell Line
EC50	0.09680

Figure 1 | Response to Atrial Natriuretic Peptide (ANP) (1-28). The H_NPR1 Reporter Cell Line (Cat. GM-C34551) at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Atrial Natriuretic Peptide (ANP) (1-28) (GLPBIO/GC34025) 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 [76.8]. Data are shown by drug molar concentration.



	H_NPR1 Reporter Cell Line
EC50	1.999

Figure 2 | Response to BNP (1-32). The H_NPR1 Reporter Cell Line (Cat. GM-C34551) at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of BNP (1-32) (GLPBIO/GP10071) 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 [66.6]. Data are shown by drug molar concentration.

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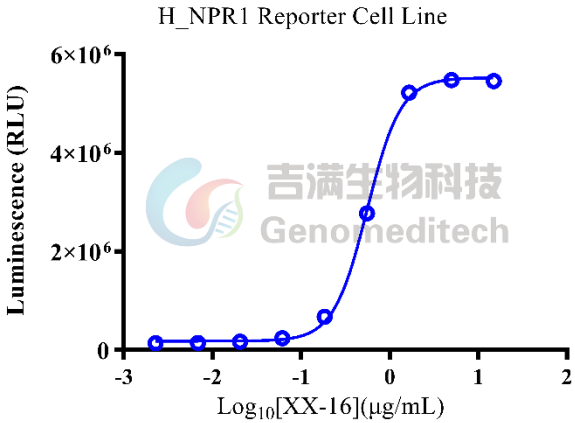
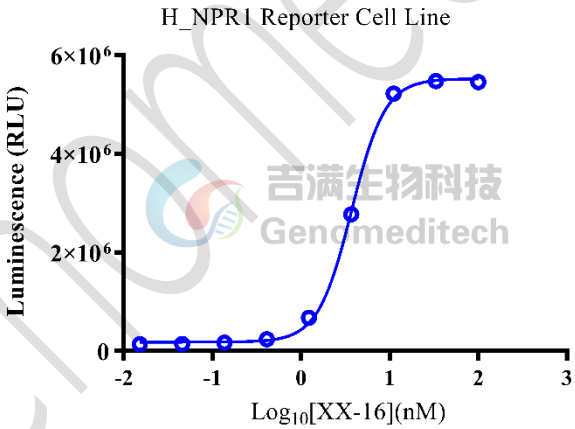


	H_NPR1 Reporter Cell Line
EC50	0.5596

Figure 3 | Response to Anti-NPR1 hIgG1 Antibody(XX-16). The H_NPR1 Reporter Cell Line (Cat. GM-C34551) at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Anti-NPR1 hIgG1 Antibody(XX-16) (Cat. GM-87696AB) 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 [34.5]. Data are shown by drug mass concentration.



	H_NPR1 Reporter Cell Line
EC50	3.731

Figure 4 | Response to Anti-NPR1 hIgG1 Antibody(XX-16). The H_NPR1 Reporter Cell Line (Cat. GM-C34551) at a concentration of 1.5E4 cells/well (96-well format) was stimulated with serial dilutions of Anti-NPR1 hIgG1 Antibody(XX-16) (Cat. GM-87696AB) 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 [34.5]. Data are shown by drug molar concentration.

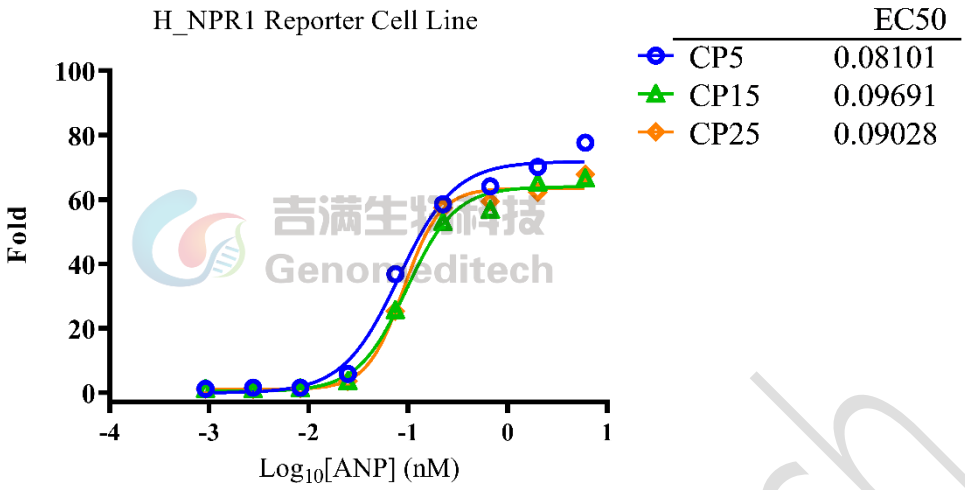
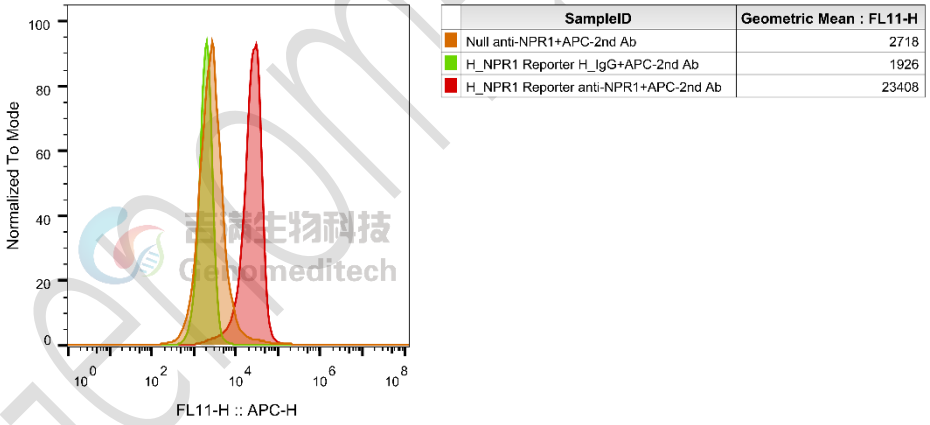


Figure 5 | The passage stability of response to Atrial Natriuretic Peptide (ANP) (1-28). The passage 5, 15 and 25 of H_NPR1 Reporter Cell Line (Cat. GM-C34551) at a concentration of 1.5E4 cells/well (96-well format) were stimulated with serial dilutions of Atrial Natriuretic Peptide (ANP) (1-28) (GLPBIO/GC34025) 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). Data are shown by drug molar concentration.



SampleID	Geometric Mean : FL11-H
Null anti-NPR1+APC-2nd Ab	2718
H_NPR1 Reporter H_IgG+APC-2nd Ab	1926
H_NPR1 Reporter anti-NPR1+APC-2nd Ab	23408

Figure 6 | H_NPR1 Reporter Cell Line (Cat. GM-C34551) was determined by flow cytometry using Anti-NPR1 hIgG1 Antibody(XX-16) (Cat. GM-87696AB).

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 x 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 x g for 3 minutes to collect cells.
b) Resuspend the cells in pre-cooled freezing medium and adjust the cell density to 5E6 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 μg/mL Blasticidin+125 μg/mL Hygromycin+0.75 μg/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.

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

Medium Renewal: Every 2 to 3 days

Notes

a) 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.

b) Ensure that the cell density does not exceed 80%, as overcrowding may lead to reduced viability due to compression.

Related Products

NPR1	
Cynomolgus_NPR1 CHO-K1 Cell Line	Flag-Mouse_NPR1 CHO-K1 Cell Line
H_NPR1 CHO-K1 Cell Line	H_NPR1 HEK-293 Cell Line
Mouse_NPR1 CHO-K1 Cell Line	Rat_NPR1 CHO-K1 Cell Line
Anti-NPR1 hIgG1 Antibody(XX-16)	Anti-NPR1 hIgG4 Antibody(REGN-5381)

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