

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

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ACKNOWLEDGMENT

By using this Product, Customer acknowledges that he/she has read, understood, and agreed to be bound by the terms and conditions of this Limited Use and License Statement. If Customer does not agree to comply with these terms, Customer shall not open or use the Product and shall contact ACROBiosystems to arrange for return of the unused Product.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell

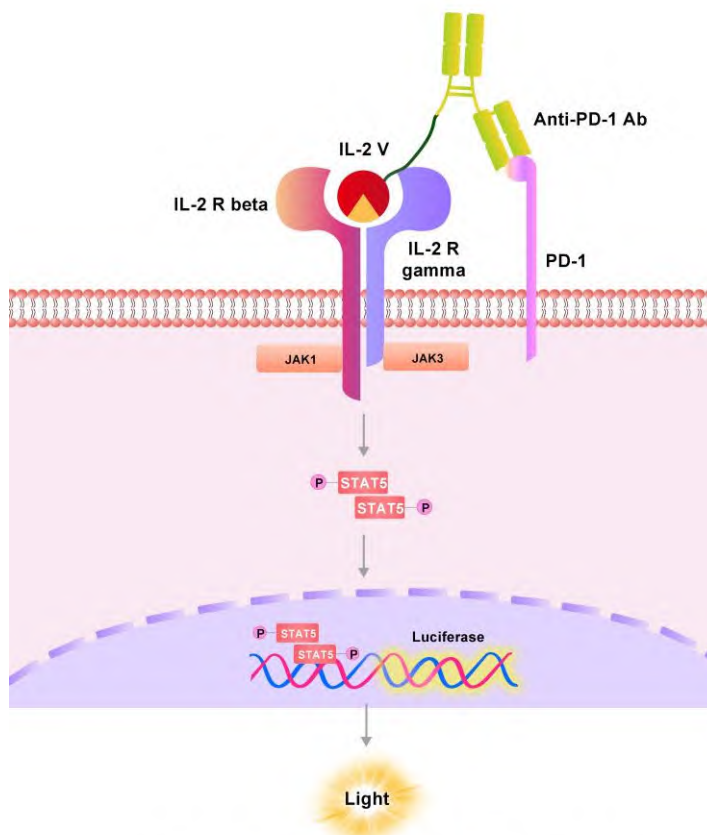
Catalog No.	Size
CHEK-ATF333	2 × (1 vial contains ~5×10 ⁶ cells)

• Description

The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was engineered to not only express STAT5 signaling response element, but also express the receptors full length human IL-2 R beta (Uniprot: P14784), IL-2 R gamma (Uniprot: P31785-1) and PD-1 (Uniprot: Q15116). When stimulated with human IL-2 protein, IL-15 protein, or human PD-1 x IL-2 bispecific molecules, receptor-mediated signaling drives STAT5-dependent luminescence.

• Application

- Bioactivity detection of human IL-2 fusion protein or human IL-15 fusion protein
- Screening for human PD-1 × IL-2v bi-functional molecules



Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• Cell Line Profile

Cell line	Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell
Host Cell	HEK293
Property	Adherent
Complete Growth Medium	DMEM + 10% FBS
Selection Marker	Puromycin (2 µg/mL) + Hygromycin B (20 µg/mL) + Zeocin (20 µg/mL) + G418 (200 µg/mL)
Incubation	37°C with 5% CO ₂
Doubling Time	22-24 hours
Transduction Technique	Lentivirus

• Materials Required for Cell Culture

- DMEM Medium (BasalMedia, Cat. No. L120KJ)

Note: If you are unable to obtain the specified DMEM medium (BasalMedia, Cat. No. L120KJ), you may use an alternative DMEM medium (Gibco, Cat. No. 11965-092) or another suitable medium for culturing.

- Fetal bovine serum (CellMax, Cat. No. SA211.02)
- Puromycin (InvivoGen, Cat. No. ant-pr-5b)
- Hygromycin B (Invitrogen, Cat. No. 10687010)
- Zeocin (Invitrogen, Cat. No. R25001)
- G418 (InvivoGen, Cat.No.ant-gn-5)

Note: For selection antibiotics, we highly recommend using the specified brand. The activity of antibiotics may vary between manufacturers, so if you choose to use a different brand, it is essential to validate whether the concentration recommended in the culture medium is suitable. Regardless of the brand used, we recommend maintaining a backup culture without selection antibiotics to avoid potential cell loss due to inappropriate antibiotic concentration.

- 0.25% Trypsin-EDTA (1X), Phenol Red (Gibco, Cat. No. 25200-056)
- Penicillin-Streptomycin (Gibco, Cat. No. 15140-122)
- Phosphate Buffered Saline (1X) (HyClone, Cat. No. SH30256.01)
- Complete Growth Medium: DMEM + 10% FBS, 1%P/S
- Culture Medium: DMEM + 10% FBS, Puromycin (2 µg/mL), Hygromycin B (20 µg/mL), Zeocin (20 µg/mL), G418 (200 µg/mL), 1%P/S
- Freeze Medium: 90% FBS, 10% (V/V) DMSO
- T-75 Culture flask (Corning, Cat. No. 430641)
- Cryogenic storage vials (SARSTEDT, Cat. No. 72.379.007)
- Thermostat water bath
- Centrifuge (Cence, Model: L550)
- Cell counter (MONWEI, Model: SmartCell200A Plus)

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• *Recovery*

1. Thaw the vial by gently agitating it in a 37°C water bath. To minimize the risk of contamination, ensure the cap remains out of the water. Thawing should be completed quickly, typically within 3-5 minutes.
2. After thawing, promptly remove the vial from the water bath and decontaminate it by spraying with 70% ethanol. From this point onward, all operations must be performed under strict aseptic conditions.
3. Transfer the contents of the vial to a centrifuge tube containing 4.0 mL of complete growth medium. Centrifuge at approximately 1000 rpm for 5 minutes.
4. Resuspend the cell pellet with 5 mL **complete growth medium** and transfer the cell suspension into a T-75 flask containing 10-15 mL of pre-warmed **complete growth medium**.
5. Incubate at 37°C with 5% CO₂ incubator until the cells are ready to be split.

• *Subculture*

1. Cell viability may be low after thawing, and full recovery may take up to a week. Monitor the cells daily until the culture reaches 80-90% confluency. At this point, remove and discard the spent medium. Avoid allowing the cells to become over-confluent to ensure optimal cell health.
2. Wash the cells once with sterile PBS. Avoid adding PBS directly onto the cell surface.
3. Add 2 mL of 0.25% Trypsin-EDTA to the T-75 flask. Place the flask at 37°C for 2-3 minutes, until 90% of the cells have detached. Monitor under a microscope to avoid over-trypsinization.
4. Add 6.0 to 8.0 mL of **culture medium** using a pipette and gently rinse the cells from the surface of the T-75 flask. Gently pipette up and down several times to achieve a single cell suspension without cell clumps.
5. Transfer appropriate aliquots of the cell suspension to a new T-75 flask. A subcultivation ratio of 1:4 to 1:8 is recommended. Adjust the ratio based on your specific culture system.
6. Incubate at 37°C with 5% CO₂ incubator.
7. When the cell culture reaches 80-90% confluency, proceed to the next subculture. Avoid over-confluency, as this may negatively impact cell performance in subsequent passages.

Note: After recovery, maintain the cells for 1-2 passages in the complete growth medium not containing the selection marker, if the cells are in good condition, transition to the culture medium containing the selection marker during subculturing.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• *Cryopreservation*

1. When the cell culture reaches 80-90% confluency, remove and discard the spent medium.
2. Wash the cells once with sterile PBS. Avoid adding PBS directly onto the cell surface.
3. Add 2 mL of 0.25% Trypsin-EDTA to the T-75 flask. Place the flask at 37°C for 2-3 minutes, until 90% of the cells have detached. Monitor under a microscope to avoid over-trypsinization.
4. Add 6.0 to 8.0 mL of complete growth medium using a pipette and gently rinse the cells from the surface of the T-75 flask. Gently pipette up and down several times to achieve a single cell suspension without cell clumps. Count the viable cells.
5. Transfer the cell suspension to a centrifuge tube. Centrifuge at 1000 rpm for 5 min at room temperature to pellet the cells.
6. After centrifugation, discard the supernatant. Resuspend the cells in ice cold freezing medium to a concentration of 5×10^6 to 1×10^7 cells/mL.
7. Aliquot the cell suspension into cryogenic storage vials. Place the vials in a programmable cooler or an insulated box placed in a -80°C freezer overnight, then transfer to liquid nitrogen storage for long-term storage.

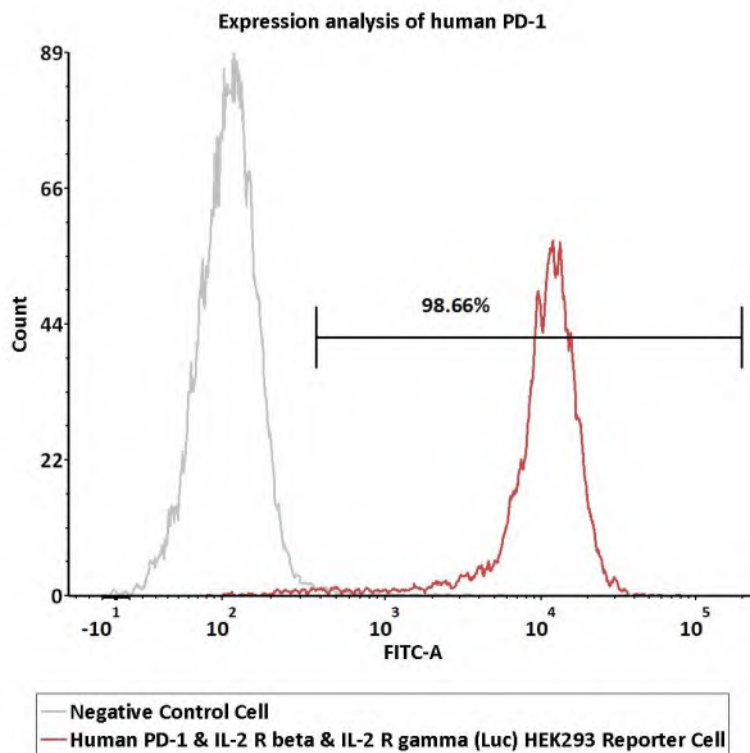
Note: It is recommended to establish a cell bank at the earliest possible passage for long-term use.

• *Storage Condition*

Cells must be received in a frozen state on dry ice and should be transferred to liquid nitrogen or a -80°C freezer immediately upon receipt. If stored in a -80°C freezer, it is recommended to limit the storage period to no more than two weeks. For long-term preservation, transfer the cells to liquid nitrogen is highly recommended.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

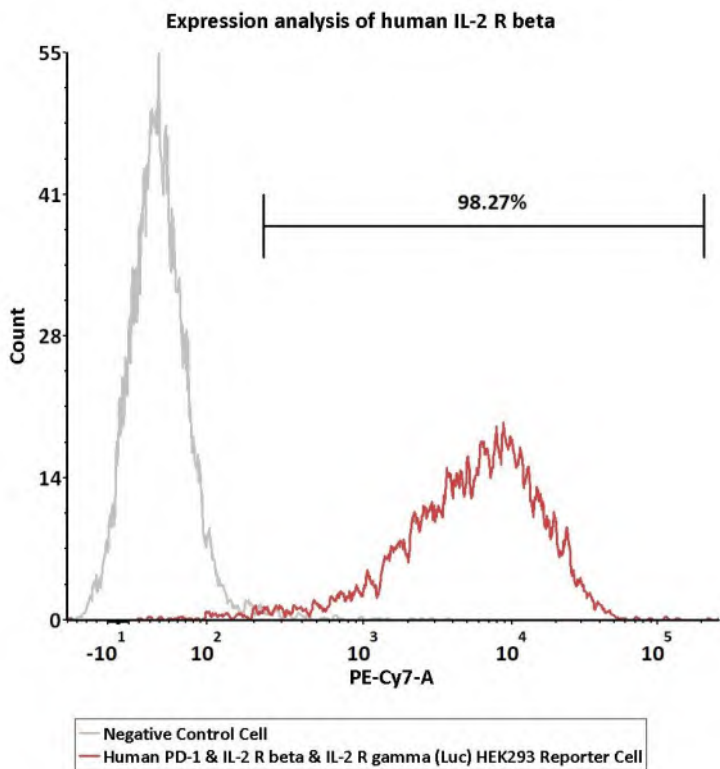
• Receptor Assay



Catalog No.	Stable Cell Line	MFI for PD-1 (FITC)
NA	Negative Control Cell	107.95
CHEK-ATF333	Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell	10882.03

Fig1. Expression analysis of human PD-1 on Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell by FACS. Cell surface staining was performed on Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell or negative control cell using FITC-labeled anti-human PD-1 antibody.

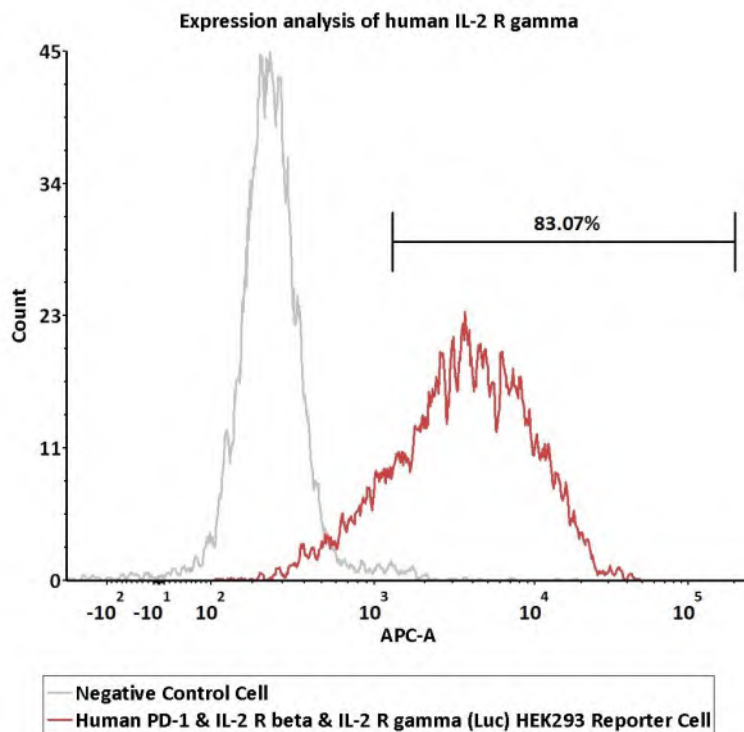
Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet



Catalog No.	Stable Cell Line	MFI for IL-2 R beta (PE)
NA	Negative Control Cell	35.25
CHEK-ATF333	Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell	5885.3

Fig2. Expression analysis of human IL-2 R beta on Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell by FACS. Cell surface staining was performed on Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell or negative control cell using PE-labeled anti-IL-2 R beta antibody.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet



Catalog No.	Stable Cell Line	MFI for IL-2 R gamma (APC)
NA	Negative Control Cell	247.3
CHEK-ATF333	Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell	3513.12

Fig3. Expression analysis of human IL-2 R gamma on Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell by FACS. Cell surface staining was performed on Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell or negative control cell using APC labeled anti-IL-2 R gamma antibody.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• Signaling Bioassay

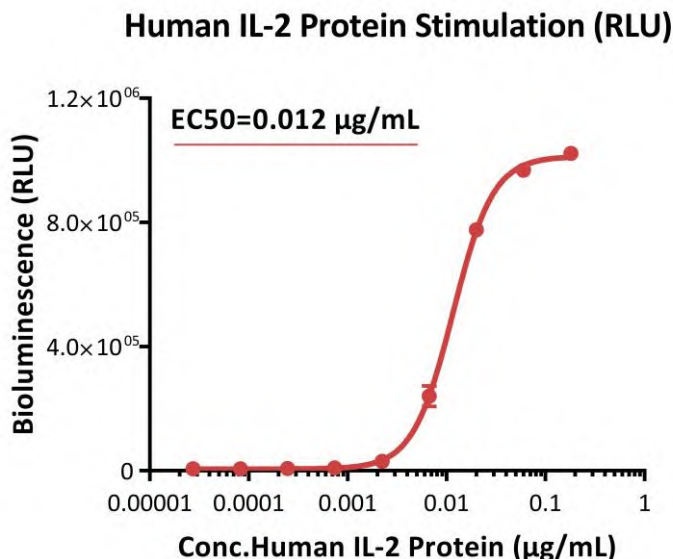


Fig4. Response to human IL-2 protein (RLU). The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human IL-2 protein (Cat. No. IL2-H5215). The EC₅₀ was approximately 0.012 µg/mL.

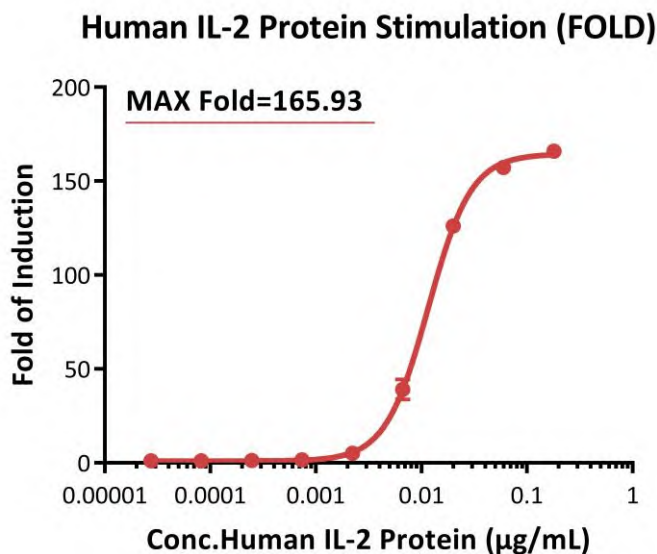


Fig5. Response to human IL-2 protein (FOLD). The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human IL-2 protein (Cat. No. IL2-H5215). The max induction fold was approximately 165.93.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

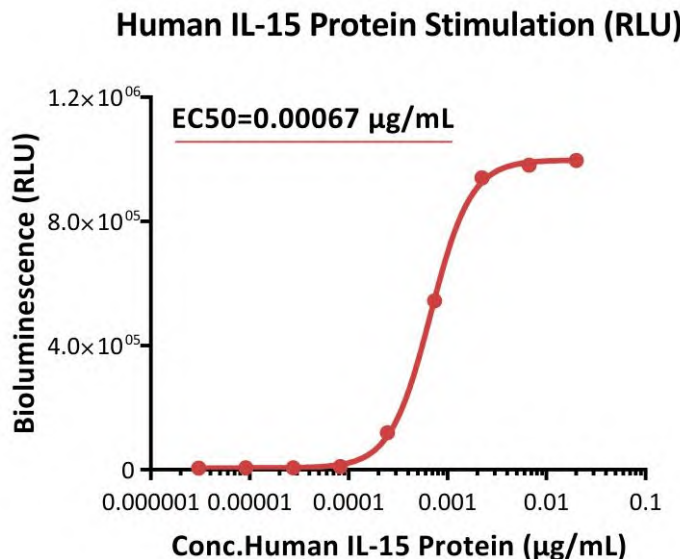


Fig6. Response to human IL-15 protein (RLU). The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human IL-15 protein (Cat. No. IL5-H5215). The EC₅₀ was approximately 0.00067 µg/mL.

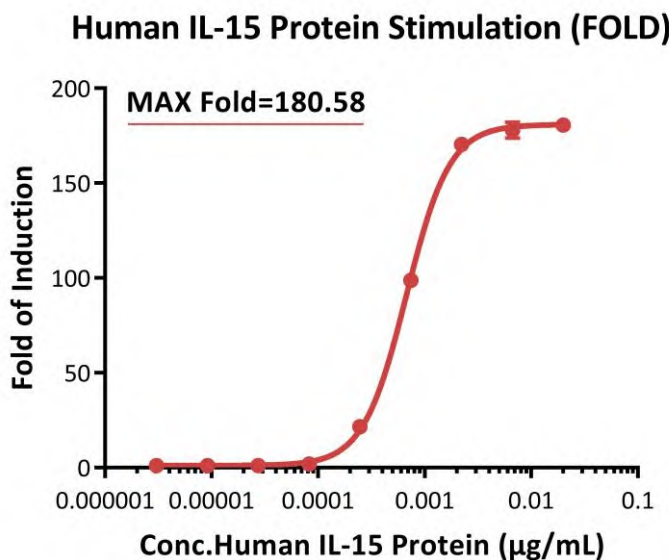


Fig7. Response to human IL-15 protein (FOLD). The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human IL-15 protein (Cat. No. IL5-H5215). The max induction fold was approximately 180.58.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• Application

Human PD-1 x IL2v Bi-functional Molecule Screening (RLU)

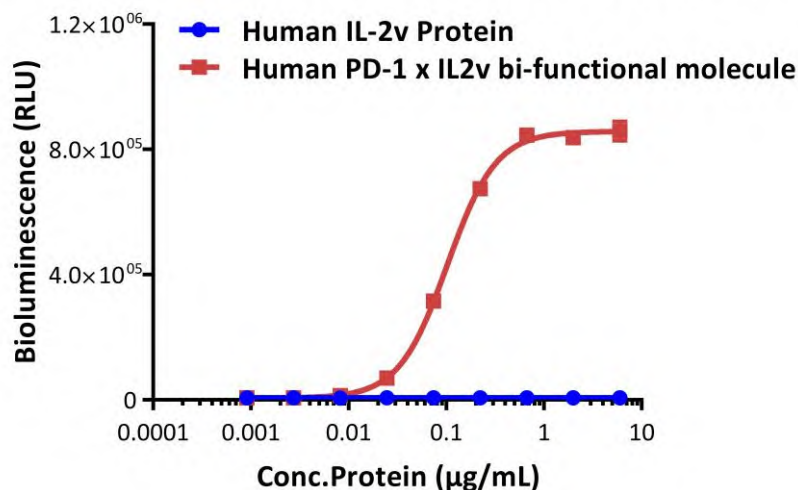


Fig8. Bioactivity analysis of human IL-2v protein and human PD-1 x IL-2v bi-functional molecule (RLU).

The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human IL-2v protein (an IL-2 R alpha-biased IL-2 variant) or human PD-1 x IL-2v bi-functional molecule.

The human IL-2v protein alone showed no activation response, whereas the human PD-1 x IL-2v bi-functional molecule induced a strong activation response. The EC₅₀ of human PD-1 x IL-2v bi-functional molecule was approximately 0.103 µg/mL. These results demonstrate that the PD-1 arm of the human PD-1 x IL-2v bi-functional molecule facilitates the binding of IL-2v to IL-2 R beta and IL-2 R gamma in cis, thereby enhancing IL-2 R beta and IL-2 R gamma-mediated signaling.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

Human PD-1 x IL2v Bi-functional Molecule Screening (FOLD)

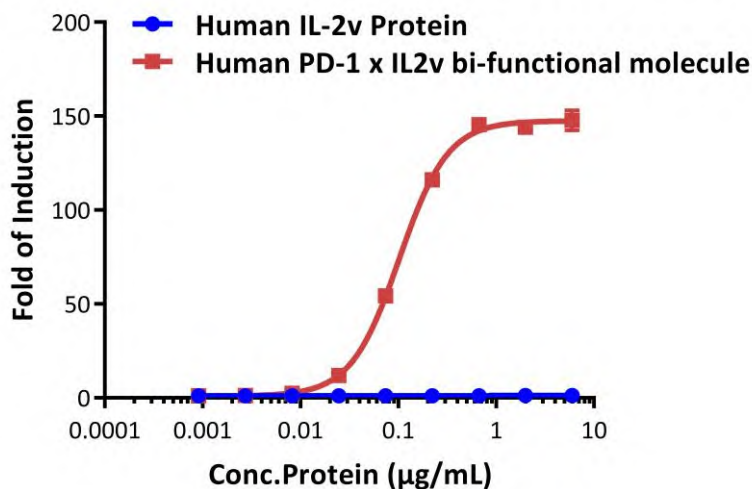


Fig9. Bioactivity analysis of human IL-2v protein and human PD-1 x IL-2v bi-functional molecule (FOLD).

The Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell was stimulated with serial dilutions of human IL-2v protein (an IL-2 R alpha-biased IL-2 variant) or human PD-1 x IL-2v bi-functional molecule.

The human IL-2v protein alone showed no activation response, whereas the human PD-1 x IL-2v bi-functional molecule induced a strong activation response. The max induction fold of human PD-1 x IL-2v bi-functional molecule was approximately 147.67. These results demonstrate that the PD-1 arm of the human PD-1 x IL-2v bi-functional molecule facilitates the binding of IL-2v to IL-2 R beta and IL-2 R gamma in cis, thereby enhancing IL-2 R beta and IL-2 R gamma-mediated signaling.

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• *Related Products*

<u>Products</u>	<u>Cat.No.</u>
Human TSLP R (Luc) HEK293 Reporter Cell	CHEK-ATF045
STAT3 (Luc) HEK293 Reporter Cell	CHEK-ATF047
HEK293/Human CD40 Ligand / TNFSF5 Stable Cell Line	CHEK-ATP041
HEK293/Human OX40 / TNFRSF4 / CD134 Stable Cell Line	CHEK-ATP053
HEK293/Human OX40 Ligand / TNFSF4 Stable Cell Line	CHEK-ATP054
Human IL-5 R alpha/CD131 (Luc) HEK293 Reporter Cell	CHEK-ATF074
HEK293/FcRn (FCGRT & B2M) Cell Line	CHEK-ATP079
Human IL-21 R (Luc) HEK293 Reporter Cell	CHEK-ATF051
Human IL-11 R alpha (Luc) HEK293 Reporter Cell	CHEK-ATF052
Human IL-4 R alpha/IL-13 R alpha 1 (Luc) HEK293 Reporter Cell	CHEK-ATF075
CHO/Human TSHR Stable Cell Line	SCCHO-ATP085
HEK293/Human TSHR Stable Cell Line	CHEK-ATP086
Human IL-31 RA/OSMR (Luc) HEK293 Reporter Cell	CHEK-ATF094
Human IL-10 R alpha/IL-10 R beta (Luc) HEK293 Reporter Cell	CHEK-ATF095
Human CD40 (Luc) HEK293 Reporter Cell	CHEK-ATF097
Human IL-7 R alpha/CD132 (Luc) HEK293 Reporter Cell	CHEK-ATF099
NIH-3T3/Human IGF-1 R Stable Cell Line Development Service	CNIH-ATP102
Human HVEM (Luc) HEK293 Reporter Cell	CHEK-ATF105
Human BTLA (Luc) Jurkat Reporter Cell	SCJUR-STF106
Human IGF-1 R (Luc) HEK293 Reporter Cell	CHEK-ATF107
Human GLP-2R (Luc) HEK293 Reporter Cell	CHEK-ATF128
Human RANK (Luc) HEK293 Reporter Cell	CHEK-ATF129
HEK293/FcRn (FCGRT & B2M), GFP Tag Stable Cell Line	CHEK-ATP132
Human IL-17 RA/IL-17 RC (Luc) HEK293 Reporter Cell	CHEK-ATF133
Human OX40 (Luc) HEK293 Reporter Cell	CHEK-ATF135
HEK293/Human TL1A Stable Cell Line	CHEK-ATP142
Human IL-23 R/IL-12 R beta 1(Luc) HEK293 Reporter Cell	CHEK-ATF166
Human IL-22 R alpha 1/IL-10 R beta (Luc) HEK293 Reporter Cell	CHEK-ATF167
Human DR3 (TL1A receptor) (Luc) Jurkat Reporter Cell	SCJUR-STF178

Human PD-1 & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell Data Sheet

• *Related Products*

<u>Products</u>	<u>Cat.No.</u>
Human TSHR (Luc) HEK293 Reporter Cell	CHEK-ATF187
CHO/Mouse FCGRT-P2A-mGFP&B2M Stable Cell Line	SCCHO-ATP193
CHO/Mouse FCGRT-P2A-mGFP&B2M Stable Cell Line	CHEK-ATF194
MDCK/Mouse FCGRT-P2A-mGFP&B2M Stable Cell Line Development Service	SCMDCATP196
Human TACI (Luc) HEK293 Reporter Cell	CHEK-ATF197
HEK293/Membrane-Bound Human TL1A Stable Cell Line	CHEK-ATF198
Human IL-2 R alpha & IL-2 R beta & IL-2 R gamma (Luc) HEK293 Reporter Cell	CHEK-ATF201
Human IL-1 R1 & IL-1 RAcP (Luc) HEK293 Reporter Cell	CHEK-ATF202
Raji/Membrane-Bound Human TL1A Stable Cell Line	SCRAJ-STT204
HEK293/Human MRGPRX2 Stable Cell Line	CHEK-ATP214
CHO/Human MRGPRX2 Stable Cell Line	SCCHO-ATP215
Human TPO R (Luc) HEK293 Reporter Cell	CHEK-ATF226