Signosis
Innovative Plate Assay Solutions

GR LBD-driven GAL4 reporter HEK 293 stable cell line

Catalog Number: SL-3001 (For Research Use Only)

Product description

Nuclear hormone receptors (NHRs) are a group of ligand-binding transcription factors (TFs). More than 350 NHRs are available in the PDB. Like other TFs, they can regulate gene expression by binding to specific DNA regulatory elements, but their activities are modulated by the corresponding ligands. They play many important physiological functions such as embryonic development, organ physiology, cell differentiation, and homeostasis. They are also associated with human diseases including cancer, obesity/diabetes, arthritis, and asthma. Members of this family are often chosen to be drug targets.
Conventionally, the response element-luciferase reporter assays are used to study endogenous or exogenous receptors, and analyze the receptor signaling pathway in a native biological context. Due to the low sensitivity of these assays and the similar response element shared by multiple NHRs, their applications are limited. Signosis has developed LDB-driven GAL4 reporter HEK 293 stable cell lines by delivering two vectors, one expressing 8 copies of GAL4 upstream activator sequences (UAS) in front of the luciferase reporter gene, another expressing Gal4 DNA Binding Domain (DBD) and GR ligand-binding domain(LBD). Upon addition of a corresponding ligand, the DBD-LBD fusion protein is activated, and binds to GAL promoter binding site, leading to the induction of luciferase. The stable clones were selected with hygromycin and G418, The functional assay was subsequently conducted by DEX treatment, and the clone with the highest induction fold (50) has been chosen for this product. The advantages of these stable cell lines are low cross-reactivity with other nuclear receptors and less toxicity of the chimeric receptors to the cells when overexpressed. These cell lines can be used to screen drug compounds for agonist or antagonist hit identification.

Materials provided

One vial of 2 x 10^6 cells, at passage 4, in Freezing Media. **IMPORTANT**: store the frozen cells in liquid nitrogen until you are ready to thaw and propagate them.

Handling cells upon arrival

It is strongly recommended that you propagate the cells by following instructions as soon as possible upon arrival**.

IMPORTANT: It is imperative that an adequate number of frozen stocks be made from early passages as cells may undergo genotypic changes. Possible genetic instability in transfected cells may results in a decreased responsiveness over time in normal cell culture conditions.

Required Cell Culture Media

- **Complete Growth Media**
  In 450mL of DMEM, add 50mL FBS (10% final) and 5mL Penicillin/Streptomycin (1% final).
- **2x Freezing Media**
  Add 10% DMSO (final) to Complete Growth Media and sterile filter. Make fresh each time.

Materials required but not provided (May be substituted with comparable third-party products):

Materials	Product number
Dulbecco's Modified Eagles Medium (DMEM)	Hyclone SH30243.01
Fetal Bovine Serum (FBS)	Fisherbrand P/N 03-600-511
Penicillin/Streptomycin	Hyclone P/N SV30010
Trypsin	Hyclone P/N SH30236.02
Phosphate-buffered saline (PBS)	Cellgro P/N 21-040-CV
DMSO	Sigma P/N D8418
96-well white plate	Greiner Bio-One P/N 655098
Luciferase substrate	Signosis P/N LUC015
Cell lysis buffer	Signosis P/N LS-001
Hygromycin B	Toku-E P/N H010

Initial Culture Procedure

1. Quickly thaw cells in a 37°C water bath with careful agitation. Remove from the bath as soon as the vial is thawed.
2. Transfer cells to a T-25cm^2 flask (or 100mm^2 dish) containing 8-12ml of **Complete Growth Media.**
3. Gently rock the flask to ensure the cells are mixed well in the media. DO NOT PIPET.
4. Place the flask with cells in a humidified incubator at 37°C with 5% CO_2.
5. After cells adhere (wait at least 4 hours to overnight), replace media with fresh Complete Growth Media. **Recommendation: the cells can be maintained in Complete Growth Media with 100µg/ml of Hygromycin B and/or 400µg/ml G418.**

Subculture Procedure

1. After Cells have recovered and growing well subculture/passage cells when the density reaches 90-100% confluency, maintain and subculture the cells in Complete Growth Media.
2. Carefully remove the culture media from cells by aspiration.
3. Rinse cells with PBS, being careful to not dislodge attached cells. Then remove PBS by aspiration.
4. Add 1-2 mL trypsin/Tris-EDTA solution.
5. Incubate with trypsin for 2-5 minutes (or until detached). Confirm detachment by observation under the microscope.
6. Add 5-10ml of pre-warmed Complete Growth Media and gently pipet up and down to break the clumps.
7. Passage cells in 1:3 to 1:5 ratio when they reach 90% confluency.

NOTE: Stable cell lines may exhibit a slower proliferation rate compared to parental cells. Do not seed cells at suboptimal density as this may hinder cell growth and division.

Preparing frozen stocks

This procedure is designed for 100mm^2 dish or T-75cm^2 flasks. Scale volumes accordingly to other vessels.

1. When cells reach 90-100% confluency, freeze down cells.
2. Detach cells according to "Subculture Procedure."
3. Transfer cells to a 15ml conical centrifuge tube and centrifuge at 250 x g (or 2,000 RPM) for 5 minutes to collect the cells into a pellet.
4. Carefully aspirate the media.
5. Add 1ml of **Freezing Media** and gently resuspend by pipetting up and down.
6. Transfer 1mL of cells into a cryogenic vial.
7. Place the cryogenic vial in a freezing container (*Nalgene # 5100-0001*) and store it at -80°C freezer overnight.
8. Transfer cells to liquid nitrogen for long-term storage.

Assay procedure

The following procedure should be followed as a guideline. You will need to optimize the assay conditions based on your experimental setup.

1. The day before performing the assay, trypsinize the cells and seed each well of a 96-well **white-wall** plate with 1 x 10^4 cells in 100µl.
2. Incubate the plate in a humidified incubator at 37°C with 5% CO_2 overnight.
3. Add inducing 10 uM DEX in DMEM + 0.1% FBS for 16 hours.
4. After 16 hours, carefully remove media by aspiration and add 100µl of PBS to each well. Be very careful not to dislodge the cells. **Note:** HEK293 cells are very easily detached. You may consider skipping addition of PBS here to reduce this risk.
5. Remove PBS by aspiration and add 20µl of 1x lysis buffer to each well (To prepare 1x lysis buffer, add one volume of 5x lysis buffer to four-volume of distilled water).
6. Incubate cells in lysis buffer for 15-30 minutes at room temperature with gentle agitation.
7. Add 100µl of luciferase substrate to each well and gently pipette up and down.
8. Immediately read the plate in a luminometer.

For Data, visit

https://www.signosisinc.com/product/ppar-gamma-lbd-driven-gal4-reporter-hek-293-stable-cell-line-fp

Signosis Luciferase Reporter Stable Cell Lines

For a complete list of cell lines please visit our website at http://www.signosisinc.com/category/cell-based-assays

Transcription Factor	Pathway	Cell Line	Cat #
NFkB	NFkB	Hela; human cervical cancer	SL--0001
NFkB	NFkB	NIH/3T3; mouse fibroblast	SL--0006
NFkB	NFkB	HEK293; human embryonic kidney	SL--0012
NFkB	NFkB	MCF-7; human breast cancer	SL--0013
NFkB	NFkB	A549; human lung cancer	SL--0014
NFkB	NFkB	HepG2; human river cancer	SL--0017
NFkB	NFkB	MEF; murine embryonic fibroblast	SL--0033
NFAT	Calcium Signaling	Jurkat; human T lymphocytes	SL--0032
NFAT	Calcium Signaling	Hela; human cervical cancer	SL--0018
p53	p53	Hela; human cervical cancer	SL--0011
p53	p53	RKO; human colon cancer	SL--0007
SMAD	TGFbeta	HepG2; human river cancer	SL--0016
SMAD	TGFbeta	NIH/3T3; mouse fibroblast	SL--0030
NRF2	Antioxidant Response	MCF7; human breast cancer	SL--0010
STAT1	JAK-STAT	Hela; human cervical cancer	SL--0004
STAT3	JAK-STAT	Hela; human cervical cancer	SL--0003
HIF	Hypoxia Response	NIH/3T3; mouse fibroblast	SL--0005
HIF	Hypoxia Response	Hela; human cervical cancer	SL--0023
HIF	Hypoxia Response	Neuro2a; mouse neuroblastoma	SL--0027
ER	Estrogen Receptor Signaling	T47D; human breast cancer	SL--0002
AR	Androgen Receptor Signaling	MDA-MB-453; human breast cancer	SL--0008
GR	Glucocorticoid Receptor Signaling	MDA-MB-453; human breast cancer	SL--0009
GR	Glucocorticoid Receptor Signaling	Hela; human cervical cancer	SL--0021
AP-1	JNK, ERK, MAPK Signaling	Hela; human cervical cancer	SL--0019
CREB	cAMP, PICA, CaMK Signaling	HEK293; human embryonic kidney	SL--0020
CREB	cAMP, PICA, CaMK Signaling	NIH/3T3; mouse fibroblast	SL--0031
CHOP	Unfolded Protein Response, ER stress	Mia-Paca2; human pancreatic cancer	SL--0025
TCF/LEF	Wnt/b-catenin	HEK293; human embryonic kidney	SL--0015
TCF/LEF	Wnt/b-catenin	Hela; human cervical cancer	SL--0022
TCF/LEF	Wnt/b-catenin	CHO-Kl; Chinese Hamster Ovary	SL--0028
ELK	MAPK Signaling	HEK293; human embryonic kidney	SL--0040
ELK	MAPK Signaling	Hela; human cervical cancer	SL--0041
IRF	Immune Response Pathway	HEK293; human embryonic kidney	SL--0035

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