

PRODUCT DATASHEET

Ready-to-Assay™ β_3 Adrenergic Receptor Frozen Cells

CATALOG NUMBER: HTS159RTA

CONTENTS: Pack contains 2 vials of mycoplasma-free cells, 1 ml per vial. Fifty (50) mL of Media Component.

STORAGE: Vials are to be stored in liquid N₂. Media Component at 4°C (-20°C for prolonged storage).

BACKGROUND

Ready-to-Assay™ GPCR frozen cells are designed for simple, rapid calcium assays with no requirement for intensive cell culturing. Eurofins Discovery Services has optimized the freezing conditions to provide cells with high viability and functionality post-thaw. The user simply thaws the cells and resuspends them in media, dispenses cell suspension into assay plates and, following overnight recovery, assays for calcium response.

The beta adrenergic receptors mediate the effects of endogenous catecholamines, such as epinephrine, by coupling to G_s to stimulate cAMP. Whereas β_1 and β_2 are found predominantly in heart, the β_3 receptor is found primarily in adipose tissue. Activation of adipose β_3 results in lipolysis and thermogenesis. A polymorphism in the human gene for β_3 is associated with weight gain in obese patients (Clement *et al.*, 1995). In addition, mice lacking the β_3 -adrenoceptor display increased total body fat, particularly on a high fat diet (Revelli *et al.*, 1997). These observations indicate that β_3 is a possible target for obesity treatments. Cloned human β_3 -expressing cell line is made in the Chem-10 host, which supports high levels of recombinant β_3 expression on the cell surface and contains optimized levels of a recombinant promiscuous G protein to couple the receptor to the calcium signaling pathway. Thus, the cell line is an ideal tool for screening for agonists, antagonists, and modulators at β_3 .

USE RESTRICTIONS

Please see User Agreement (Label License) for further details. ***One such restriction is that the contents of the supplied vial(s) are limited to a single use and shall not be propagated and/or re-frozen by licensee.***

WARNINGS

For Research Use Only; Not for Use in Diagnostic Procedures
Not for Animal or Human Consumption

GMO

This product contains genetically modified organisms.
Este producto contiene organismos genéticamente modificados.
Questo prodotto contiene degli organismi geneticamente modificati.
Dieses Produkt enthält genetisch modifizierte Organismen.
Ce produit contient organismes génétiquement des modifiés.
Dit product bevat genetisch gewijzigde organismen.
Tämä tuote sisältää geneettisesti muutettuja organismeja.
Denna produkt innehåller genetiskt ändrade organismer.

APPLICATIONS

Calcium Flux Assays

APPLICATION DATA

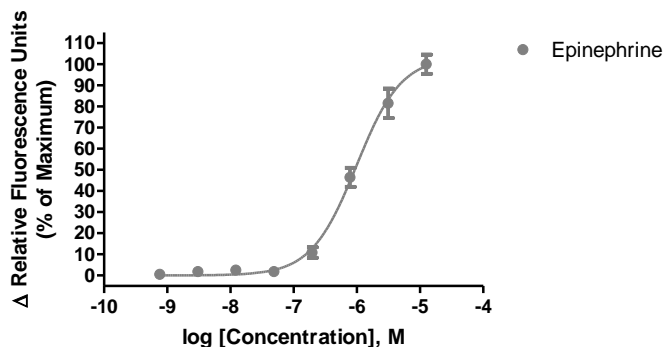


Figure 1. Representative data for activation of β_3 receptor. Calcium flux in β_3 -expressing Chem-10 cell line induced by Epinephrine. β_3 -expressing Chem-10 cells were loaded with a calcium dye, and calcium flux in response to the indicated ligand(s), 4-fold serial dilution with each concentration performed in duplicate, was determined on a Molecular Devices FLIPR^{TETRA} with ICCD camera. Maximal fluorescence signal obtained in this experiment was 20,000 RLU (Relative Light Units).

Table 1. EC₅₀ value of β_3 -expressing Chem-10 cells.

LIGAND	ASSAY	POTENCY (nM)	REFERENCE
Epinephrine	Calcium Flux	980	Eurofins Internal Data

ASSAY SETUP

1. Immediately upon receipt, thaw cells or place cells in liquid nitrogen.
2. Thaw cells rapidly by removing from liquid nitrogen and immediately immersing in a 37°C water bath. Immediately after ice has thawed, sterilize the exterior of the vial with 70% ethanol.
3. Add 1mL of pre-warmed Media Component to each vial of cells. Place contents from two vials into a 15 mL conical tube and bring the volume to 10 mL of Media Component.
4. Centrifuge the cell suspension at 190 x g for four minutes
5. Remove supernatant and add 10.5 mL of pre-warmed Media Component to resuspend the cell pellet.
6. Seed cell suspension into appropriate assay microplate (100 μ L/well for 96-well plate, 25 μ L/well for 384-well plate).
7. When seeding is complete, place the assay plate at room temperature for 30 minutes.
8. Move assay plate to a humidified 37°C 5% CO₂ incubator for 24 hours.
9. After 24 hour incubation, remove assay plate from the incubator and wash sufficiently with Hank's Balanced Salt Solution (HBSS) supplemented with 20mM HEPES, 2.5mM Probenecid at pH 7.4 to remove all trace of Media Component.

10. Prepare Fluo-8, AM (AAT Bioquest: 21080) Ca²⁺ dye by dissolving 1mg of Fluo-8 NW in 200 µL of DMSO. Once dissolved place 10 µL of Fluo-8 NW Ca²⁺ dye solution into 10 mL of HBSS 20mM HEPES, 2.5mM Probenecid pH 7.4 buffer and apply to assay microplate (Ca²⁺ dye at 10 µL /10 mL is sufficient for loading one (1) microplate).
11. Set-up FLIPR to dispense 3x ligand to appropriate wells in the assay plate. Set excitation wavelength at 470-495 nm (FLIPR^{TETRA}) or 485 nm (FLIPR1, FLIPR2, FLIPR3) and emission wavelength at 515-565 nm (FLIPR^{TETRA}) or emission filter for Ca²⁺ dyes (FLIPR1, FLIPR2, FLIPR3). Set pipet tip height to 5 µL below liquid level and dispense rate to 75 µL/sec (96-well format) or 50 µL/sec (384-well format). Set up plate layout and tip layout for each individual experiment. Set time course for 180 seconds, with ligand addition at 10 seconds.
12. Ligands are prepared in non-binding surface Corning plates (Corning 3605 – 96-well or Corning 3574 – 384-well).
13. After the run is complete, negative control correction is applied and data analyzed utilizing the maximum statistic.

ASSAY MATERIALS

Description	Supplier and Product Number
HBSS	Hyclone: SH30268.02
HEPES 1M Stock	EMD Millipore.: TMS-003-C
Probenecid	Sigma: P8761
Quest Fluo-8™, AM	AAT Bioquest: 21080
Epinephrine ligand	Sigma: E1635
Non-binding white plates (for ligand prep)	Corning: 3605(96-well)/3574(384-well)
Black (clear bottom) tissue-culture treated plates	Corning: 3904(96-well)/3712(384-well)

FLIPR SETTINGS

Settings for FLIPR^{TETRA}® with ICCD camera option

Option	Setting
Read Mode	Fluorescence
Ex/Em	Ex470_495 / Em515_575
Camera Gain	2000
Gate Open	6 %
Exposure Time	0.53
Read Interval	1s
Dispense Volume	50 µl (25 µl for 384-well)
Dispense Height	25 µl (50 µl for 384-well)
Dispense Speed	75 µl L/sec (50 µl for 384-well)
Expel Volume	0 µl
Analysis	Subtract Bias Sample 1

HOST CELL

Chem-10, an adherent rat hematopoietic cell line expressing endogenous Gα15 protein as well as an exogenous proprietary promiscuous Gα protein.

EXONGENOUS GENE EXPRESSION

ADRB3 cDNA (Accession Number: NM_000025; see CODING SEQUENCE below) expressed from a proprietary pHS plasmid.

CODING SEQUENCE

ATG GCT CCG TGG CCT CAC GAG AAC AGC TCT CTT GCC CCA TGG CCG GAC CTC CCC	54
M A P W P H E N S S L A P W P D L P	18
ACC CTG GCG CCC AAT ACC GCC AAC ACC AGT GGG CTG CCA GGG GTT CCG TGG GAG	108
T L A P N T A N T S G L P G V P W E	36
GCG GCC CTA GCC GGG GCC CTG CTG GCG CTG GCG GTG CTG GCC ACC GTG GGA GGC	162
A A L A G A L L A L A V L A T V G G	54
AAC CTG CTG GTC ATC GTG GCC ATC GCC TGG ACT CCG AGA CTC CAG ACC ATG ACC	216
N L L V I V A I A W T P R L Q T M T	72
AAC GTG TTC GTG ACT TCG CTG GCC GCA GCC GAC CTG GTG ATG GGA CTC CTG GTG	270
N V F V T S L A A A D L V M G L L V	90
GTG CCG CCG GCG GCC ACC TTG GCG CTG ACT GGC CAC TGG CCG TTG GGC GCC ACT	324
V P P A A T L A L T G H W P L G A T	108
GGC TGC GAG CTG TGG ACC TCG GTG GAC GTG CTG TGT GTG ACC GCC AGC ATC GAA	378
G C E L W T S V D V L C V T A S I E	126
ACC CTG TGC GCC CTG GCC GTG GAC CGC TAC CTG GCT GTG ACC AAC CCG CTG CGT	432
T L C A L A V D R Y L A V T N P L R	144
TAC GGC GCA CTG GTC ACC AAG CGC TGC GCC CGG ACA GCT GTG GTC CTG GTG TGG	486
Y G A L V T K R C A R T A V V L V W	162
GTC GTG TCG GCC GCG GTG TCG TTT GCG CCC ATC ATG AGC CAG TGG TGG CGC GTA	540
V V S A A V S F A P I M S Q W W R V	180
GGG GCC GAC GCC GAG GCG CAG CGC TGC CAC TCC AAC CCG CGC TGC TGT GCC TTC	594
G A D A E A Q R C H S N P R C C A F	198
GCC TCC AAC ATG CCC TAC GTG CTG CTG TCC TCC TCC GTC TCC TTC TAC CTT CCT	648
A S N M P Y V L L S S S V S F Y L P	216
CTT CTC GTG ATG CTC TTC GTC TAC GCG CGG GTT TTC GTG GTG GCT ACG CGC CAG	702
L L V M L F V Y A R V F V V A T R Q	234
CTG CGC TTG CTG CGC GGG GAG CTG GGC CGC TTT CCG CCC GAG GAG TCT CCG CCG	756
L R L L R G E L G R F P P E E S P P	252
GCG CCG TCG CGC TCT CTG GCC CCG GCC CCG GTG GGG ACG TGC GCT CCG CCC GAA	810
A P S R S L A P A P V G T C A P P E	270
GGG GTG CCC GCC TGC GGC CGG CGG CCC GCG CGC CTC CTG CCT CTC CGG GAA CAC	864
G V P A C G R R P A R L L P L R E H	288
CGG GCC CTG TGC ACC TTG GGT CTC ATC ATG GGC ACC TTC ACT CTC TGC TGG TTG	918
R A L C T L G L I M G T F T L C W L	306
CCC TTC TTT CTG GCC AAC GTG CTG CGC GCC CTG GGG GGC CCC TCT CTA GTC CCG	972
P F F L A N V L R A L G G P S L V P	324
GGC CCG GCT TTC CTT GCC CTG AAC TGG CTA GGT TAT GCC AAT TCT GCC TTC AAC	1026
G P A F L A L N W L G Y A N S A F N	342
CCG CTC ATC TAC TGC CGC AGC CCG GAC TTT CGC AGC GCC TTC CGC CGT CTT CTG	1080
P L I Y C R S P D F R S A F R R L L	360
TGC CGC TGC GGC CGT CGC CTG CCT CCG GAG CCC TGC GCC GCC GCC CGC CCG GCC	1134
C R C G R R L P P E P C A A A R P A	378

```

CTC TTC CCC TCG GGC GTT CCT GCG GCC CGG AGC AGC CCA GCG CAG CCC AGG CTT 1188
L F P S G V P A A R S S P A Q P R L 396

TGC CAA CGG CTC GAC GGG GCT TCT TGG GGA GTT TCT TAG TGA 1227
C Q R L D G A S W G V S Stp 409

```

RELATED PRODUCTS

PRODUCT NUMBER

DESCRIPTION

HTSCHEM-1RTA Ready-to-Assay™ Chem-1 host frozen cells (control cells)

HTS159M ChemiScreen™ β₃ Adrenergic receptor membrane prep

* Note: Chem-10 cells are derived from Chem-1 cells

REFERENCES

1. Clement K *et al.* (1995) Genetic variation in the beta3-adrenergic receptor and an increased capacity to gain weight in patients with morbid obesity. *N. Engl. J. Med.* 333: 352-354.
2. Revelli JP *et al.* (1997) Targeted gene disruption reveals a leptin-independent role for the mouse beta3-adrenoceptor in the regulation of body composition. *J. Clin. Invest.* 100: 1098-1106.

FOR RESEARCH USE ONLY; NOT FOR USE IN DIAGNOSTIC PROCEDURES. NOT FOR HUMAN OR ANIMAL CONSUMPTION

Unless otherwise stated in our catalog or other company documentation accompanying the product(s), our products are intended for research use only and are not to be used for any other purpose, which includes but is not limited to, unauthorized commercial uses, in vitro diagnostic uses, ex vivo or in vivo therapeutic uses or any type of consumption or application to humans or animals.

No part of these works may be reproduced in any form without permission in writing.

User Agreement (Label License)

In addition to the General Terms and Conditions section, these specific terms also apply for **Ready-to-Assay™ β₃ Adrenergic Receptor Frozen Cells, Product No. HTS159RTA**

BY USING THE THIS PRODUCT LICENSED TO YOU (“LICENSEE”) HEREUNDER, YOU ARE HEREBY REPRESENTING THAT YOU HAVE THE RIGHT AND AUTHORITY TO LEGALLY BIND YOURSELF OR YOUR COMPANY, AS APPLICABLE, AND ARE CONSENTING TO BE LEGALLY BOUND BY ALL OF THE TERMS OF THIS USER AGREEMENT (“AGREEMENT”). IF YOU DO NOT AGREE TO ALL THESE TERMS, DO NOT USE THE PRODUCT, AND IMMEDIATELY RETURN SUCH PRODUCTS TO THE APPLICABLE SELLER FOR A REFUND. This is a legal agreement between Licensee and Eurofins Pharma Bioanalytics Services US Inc. governing use of the Ready-to-Assay Cells products and/or any accompanying operating/use protocols (the “Product(s)”) provided to Licensee.

LICENSEE shall obtain no ownership interest in the Product or use/culture protocols accompanying the Product other than through the perpetual limited license granted herein. If the Product is licensed through an authorized Eurofins Pharma Bioanalytics Services US Inc. distributor, Licensee shall be obligated to disclose its identity to Eurofins Pharma Bioanalytics Services US Inc. to insure compliance with this User Agreement.

Limited License and Restrictions. Pursuant to the terms and conditions of this Agreement, Eurofins Pharma Bioanalytics Services US Inc. conveys to Licensee the non-exclusive and non-transferable right to use the Licensed Product only for Research Purposes conducted by Licensee (whether Licensee is an academic user or a for-profit entity). “Research Purposes” means any biological research and development application or use, including without limitation, developing, demonstrating or validating biological assays, life sciences and/or pharmaceutical research. “Research Purposes” excludes applications outside biology (including but not limited to consumer electronics or materials sciences), and specifically excludes the following applications of whatever kind or nature: Clinical Diagnostics (any use of a product or service for clinical diagnosis where data from an individual's sample is given to such individual or used for the purpose of diagnosis or treatment of a medical condition in such individual, where that result may be used in the treatment of such individual), therapeutics, clinical imaging, environmental testing and cosmetics. Contents of the supplied vial(s) are limited to a single use and shall not be propagated and/or re-frozen by licensee. Licensee cannot sell or otherwise transfer (a) this Product or (b) materials made using this Product to a third party. Licensee may transfer information or materials made through use of this Product to a scientific collaborator, provided that such transfer is not for the commercial purposes, and that such collaborator agrees in writing: (a) not to transfer such materials to any third party, and (b) to use such transferred materials and/or information solely for Research Purposes and not for commercial purposes. Commercial purposes means any activity by a user of the Product for consideration that may include, but is not limited to: (1) operating a service business that uses the Products to develop information or data which is resold for research and development applications; (2) use of the Product in manufacturing; (3) use of the Product for therapeutic, diagnostic or prophylactic purposes; or (4) resale of the Product, whether or not such Product is resold for use in research. Licensee expressly represents and warrants to Eurofins Pharma Bioanalytics Services US Inc. that Licensee will properly test and use any Product purchased from Eurofins Pharma Bioanalytics Services US Inc. or its affiliated companies in accordance with the practices of a reasonable person who is an expert in the field and in strict compliance with all applicable laws and regulations, now and hereinafter enacted. Licensee agrees to comply with instructions, if any, furnished by Eurofins Pharma Bioanalytics Services US Inc. relating to the use of the Product and to not misuse the Product in any manner. Licensee shall not reverse engineer, disassemble or modify the Product or create any derivative works of the written materials accompanying the Product, including but not limited to any material data sheets or similar materials with respect to the Products' specifications. Licensee acknowledges that Eurofins Pharma Bioanalytics Services US Inc. or its affiliated companies retains ownership of all patents, copyrights, trademarks, trade secrets and other proprietary rights relating to or residing in the Product or any portion thereof.

Term and Termination. This Agreement commences upon Licensee's use of the Products, and shall remain in effect in perpetuity unless terminated sooner as set forth hereunder. Eurofins Pharma Bioanalytics Services US Inc. may terminate this Agreement immediately if Licensee breaches any provision herein. Upon any such termination, all rights granted to Licensee hereunder will immediately terminate, and Licensee shall immediately cease using the Product and, at Eurofins Pharma Bioanalytics Services US Inc.'s option, return or destroy all Products (certifying such destruction to Eurofins Pharma Bioanalytics Services US Inc. in writing).

Assignment. Licensee shall not sublicense, assign (by operation of law or otherwise) or otherwise transfer this Agreement or any of the rights or licenses granted under this Agreement without the prior written consent of Eurofins Pharma Bioanalytics Services US Inc.. Any attempted assignment, sublicense or transfer by Licensee without such consent shall be null and void.

Eurofins Pharma Bioanalytics Services US Inc. is an independent member of Eurofins Discovery Services