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Melanocortin 4 Receptor (MC4R) ACTOne™ Stable Cell Line

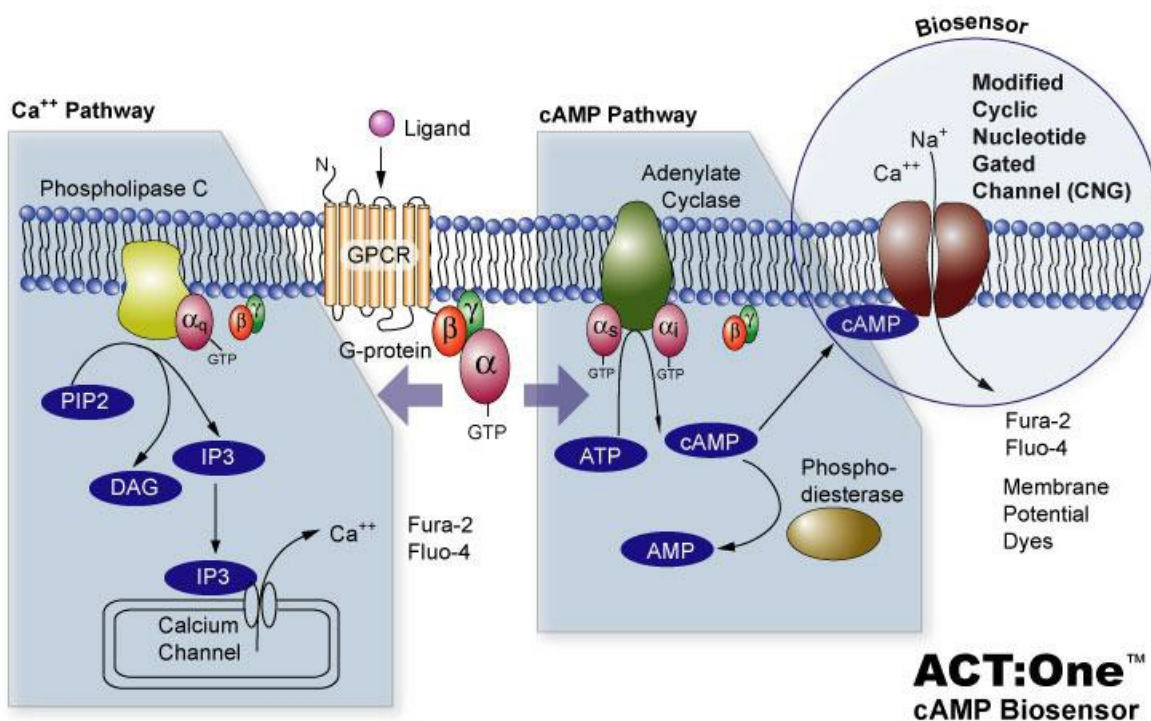
CATALOG NUMBER: CL-01-MC4R

Introduction

MC4R is a G-protein coupled receptor that binds α -melanocyte stimulating hormone (α -MSH). In murine models MC4 receptors have been found to be involved in feeding behaviour, the regulation of metabolism, sexual behaviour, and male erectile function.

Description

Human MC4R ACTOne™ is a HEK-293 CNG cell line that expresses recombinant human MC4R. HEK-293 CNG cells express a modified CNG (Cyclic Nucleotide Gated) channel that opens in response to elevated intracellular cAMP levels and consequently result in ion flux (often detectable by calcium-responsive dye, Cat# CA-C155) and cell membrane depolarization which can be easily measured with fluorescent Membrane Potential Dye (Cat# CA-M165). The assay allows both end-point and kinetic measurement of intracellular cAMP changes with a FDSS, FLIPR, or a fluorescence microplate reader.



Parental Cells

HEK-293 CNG cells (originally developed by BD Biosciences by introducing CNG in HEK-293 cells) (Cat# CL-03-PC20)

Gene/Enzyme Introduced

MC4R (Genbank Accession No. XP_008716.1)

Applications

- cAMP dependent human MC4R receptor cell based assay
- cell based high-throughput screening of human MC4R receptor agonists/antagonists

Functional Test

- this cell line has been tested positive for MC4R receptor specific response
- surviving rate: More than 2.5 million/vial on the second day after thawing
- the receptor specific activity is stable for 10 weeks continuous passage

Mycoplasma Contamination Test

This lot of cells has been tested and found to be free of mycoplasma contamination.

Content

- Stable MC4R receptor cells: 1 mL (1 x 10⁶ cells/mL in 70% DMEM, 20% FBS, 10% DMSO)

Growth Properties

Adherent

Cell Culture Medium

- Growth medium: DMEM-10% FBS supplemented with 250 µg/ml G418, 1 µg/ml Puromycin
- Freezing medium: 10% DMSO, 90% complete cell culture medium

Subculturing Procedure

1. Thaw the frozen cryovial of cells within 1-2 min by gentle agitation in a 37°C water bath. Decontaminate the cryovial by wiping the surface of the vial with 70% ethanol and transfer into a 75 cm² flask with 20 ml of complete DMEM growth medium.
2. Remove and discard culture medium next day, and then add fresh DMEM complete medium.
3. Monitor cell density daily. Cells should be passaged (1:3) when the culture reaches 90% confluence. Expected cell yield is between 1.5 x 10⁵ and 2x 10⁵ viable cells/cm².
4. Add 2.0 to 3.0 mL of 0.25% (w/v) trypsin-0.53 mM EDTA solution to the flask and observe cells under an inverted microscope until the cell layer is dispersed (usually within 15 to 20 minutes).

Note: To avoid clumping do not agitate the cells by hitting or shaking the flask while waiting for the cells to detach. Place at 37°C to facilitate dispersal.

5. Transfer cell suspension to a 15mL centrifuge tube and spin at approximately 250 x g for 5 to 10 minutes.
6. Discard supernatant and resuspend cells in fresh growth medium. Add appropriate aliquots of the cell suspension to new culture vessels. An inoculum of 4 to 6 x 10⁴ viable cells/cm² is recommended.
7. Incubate cultures at 37°C (5% CO₂).

Storage

Remove the frozen cells from the dry ice packaging and immediately place the cells at a temperature below -130°C, preferably in liquid nitrogen vapor, until ready for use.



Data Example

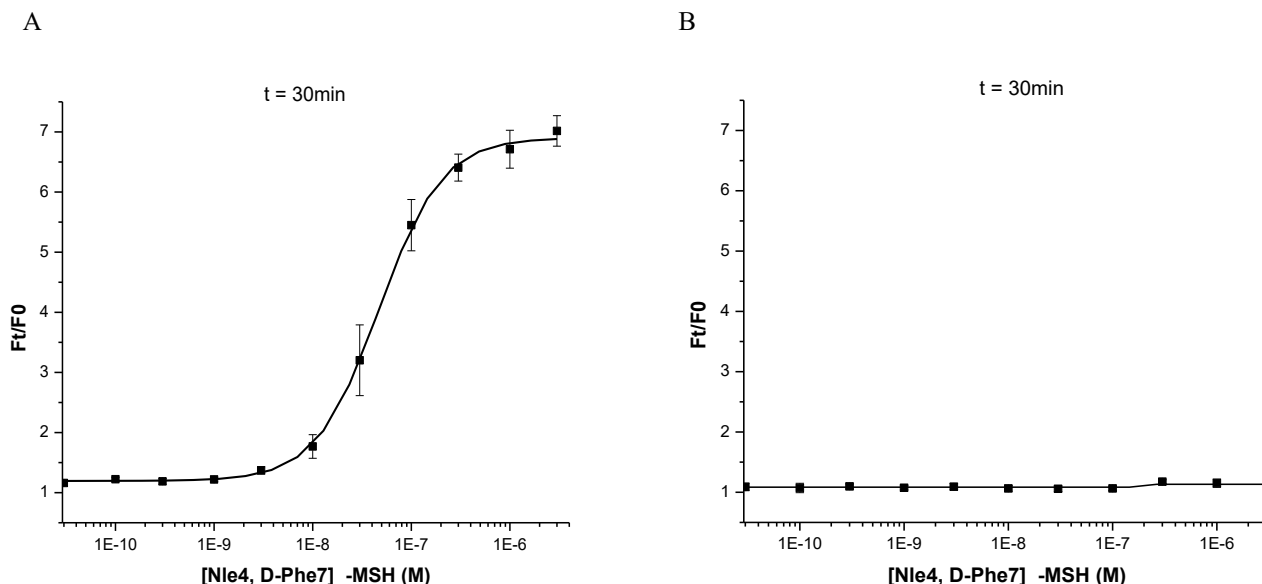


Figure 1. Response of ACTOne™ MC4R cell line & parental cell line to [Nle4, D-Phe7]α-MSH

ACTOne™ MC4R receptor cells and parental cells (Cat# CL-03-PC20) were plated overnight in 20 μl culture medium on a 384 well Biocoat plate. The next day, cells were dye-loaded with 20 $\mu\text{l}/\text{well}$ of 1x Dye-loading solution (membrane potential dye kit, Cat# CA-M165). After 2 hours of incubation at room temperature, two readings were obtained prior to and 30 min after the addition of [Nle4, D-Phe7]α-MSH. Ratios of the two readings (F/F0) are plotted in the figure.

- A. Dose response curve of [Nle4, D-Phe7]α-MSH in ACTOne™ MC4R cell line. EC50 = 47 nM in the absence of PDE inhibitor Ro 20-1724 and EC50 = 1.7 pM in the presence of Ro20-1724 (data not shown).**
- B. Parental cells do not respond to [Nle4, D-Phe7]α-MSH.**

Notice to Purchaser

1. This cell line is to be used for research purposes only. It may not be transferred to third parties, resold, modified for resale, or used to manufacture commercial products or to provide a service to third parties without written approval of eEnzyme LLC.
2. Refer to the license agreement for details on the usage restrictions.