GT1-7

305779

GENERAL INFORMATION

Description

GT1-7 is a clonal subline of immortalized mouse hypothalamic neurons that synthesize and secrete gonadotropin-releasing hormone (GnRH), also known as luteinizing hormone-releasing hormone (LHRH). These cells were developed through genetically targeted tumorigenesis using a transgenic mouse model in which the SV40 large T-antigen was expressed under the control of the GnRH gene promoter. This strategy resulted in hypothalamic tumors from which several GnRH-secreting cell lines were derived, including GT1-1, GT1-3, and GT1-7. GT1-7 cells display a differentiated neuronal phenotype, including the expression of neuron-specific markers such as neurofilament proteins, neuron-specific enolase, synaptic vesicle-associated proteins (VAMP-2, SNAP-25), and chromogranin B. They do not express glial markers such as GFAP or myelin proteins, confirming their neuronal identity.

Functionally, GT1-7 cells express endogenous GnRH mRNA and secrete GnRH in an episodic pattern. They possess the full processing machinery to convert pro-GnRH into mature, bioactive GnRH, including the required endopeptidases, carboxypeptidases, and amidating enzymes. These cells also secrete GnRH-associated peptide (GAP), a by-product of pro-GnRH processing. Biochemical characterization has revealed multiple molecular forms of both pro-GnRH and mature GnRH within GT1-7 cells and in the culture medium, indicating active post-translational processing. The GnRH secreted by GT1-7 is biologically active, capable of stimulating LH release from anterior pituitary cells in vitro.

GT1-7 cells exhibit low migratory activity in vitro, contrasting with other GnRH cell lines such as GN11, which are derived from more developmentally immature, migratory GnRH neurons. GT1-7 cells are considered representative of post-migratory, hypothalamic GnRH neurons and form tightly connected, neurite-linked colonies in culture. Their lack of motility, coupled with mature neuronal traits and responsiveness to regulatory factors, makes them a powerful model for studying gene regulation, developmental control, and secretory physiology of hypothalamic GnRH neurons.

Tissue	Brain, hypothalamus

CLASSIFICATION

Organism	Mouse
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This GT1-7 neuronal line contains an SV40 large T-antigen transgene under GnRH promoter control for GnRH secretion studies. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Cell type	GnRH neuron

IDENTIFIERS

Citation

GT1-7 (Cytion catalog number 305779)

NCBI TaxID	10090
Cellosaurus	CVCL_0281

Cytion GmbH
Nikola-Tesla-Str. 3
69124 Heidelberg
Tel: +49 (0)6221 405780
info@cytion.com
cytion.com

Registered office Heidelberg
VAT ID: DE283292917
Local court Mannheim - HRB 714394
CEO / Geschäftsführer: Jonathan Steubing

Banking information
Sparkasse Heidelberg
IBAN: DE35 6725 0020 0009 2076 86
BIC: SOLADES1HDB

HANDLING AND CULTURE

Culture medium

DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	Accutase

Thawing and culturing

Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

QUALITY CONTROL AND CRYOPRESERVATION

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.
To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.

Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

Storage conditions

For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Shipping conditions

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.

LEGAL AND SAFETY

Safety precautions

When planning to store a cryovial in liquid nitrogen for future thawing, it is mandatory to adhere to stringent safety measures. Appropriate protective gloves and clothing are essential, and the use of a face mask or safety goggles is required during the transfer of frozen samples to or from the liquid nitrogen tank. This is to mitigate the risk of injury from potential cryovial explosions upon removal, which can result in the projection of sharp fragments.

Disclaimer

Our cells are provided for in vitro laboratory research purposes exclusively and are not intended for clinical or diagnostic use, nor are they to be administered to humans or used for veterinary purposes. Users must adhere to all applicable guidelines and regulations for the handling and use of these cells in a research setting.

Warranty

At Cytion, we stand behind the quality and viability of our products.
We guarantee that our cells will be viable at the start of culture for
60 days after shipment from our facilities.
We assure that all materials conform to the specifications described in the
Certificate of Analysis and/or Product Sheet.
For full details, please refer to our
Warranty Statement.

Material Transfer Agreement required	Yes

Cytion GmbH
Nikola-Tesla-Str. 3
69124 Heidelberg
Tel: +49 (0)6221 405780
info@cytion.com
cytion.com

Registered office Heidelberg
VAT ID: DE283292917
Local court Mannheim - HRB 714394
CEO / Geschäftsführer: Jonathan Steubing

Banking information
Sparkasse Heidelberg
IBAN: DE35 6725 0020 0009 2076 86
BIC: SOLADES1HDB