Product sheet

GT1-7 Cells | 305779

Renseignements généraux

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.
Organism	Mouse
Tissue	Brain, hypothalamus

Caractéristiques

Cell type	GnRH neuron
Growth properties	Adherent

Données réglementaires

Citation	GT1-7 (Cytion catalog number 305779)
Biosafety level	1

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NCBI_TaxID	10090
CellosaurusAccession	CVCL_0281
GMO Status	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.

Données biomoléculaires

Mutational profile	

Manipulation

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)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
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.

Thawing and Culturing Cells	1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit. 2. 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. 3. 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. 4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening. 5. 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. 6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. 7. 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. 8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.
Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
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.
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.

Contrôle de la qualité et analyse moléculaire

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.