CTX TNA2

305333

GENERAL INFORMATION

Description

CTX TNA2 is a rat astrocyte cell line that was established from primary cultures of cortical astrocytes. It is often used to study central nervous system (CNS) functions, particularly in relation to glial biology, neurotoxicity, and neuroprotection. Astrocytes play a critical role in maintaining CNS homeostasis, providing structural and metabolic support to neurons, and mediating responses to injury and oxidative stress.
In various studies, CTX TNA2 cells have been employed to model neurotoxicity, especially involving excitotoxicity induced by agents such as glutamate. For instance, exposure to glutamate in CTX TNA2 cells triggers apoptosis and autophagy through mechanisms involving reactive oxygen species (ROS) and the glycogen synthase kinase-3β (GSK-3β) pathway. These pathways are central to the cells' response to oxidative stress and mitochondrial dysfunction, particularly after traumatic brain injury or other neurodegenerative conditions. Additionally, neuroprotective agents like resveratrol and cannabidiol (CBD) have been shown to reduce ROS generation and inhibit glutamate-induced autophagy and apoptosis in these astrocytes.
The CTX TNA2 cell line has proven to be a valuable in vitro model for studying not only basic astrocyte function but also the therapeutic potential of antioxidant and neuroprotective compounds under conditions of CNS injury and disease.

Tissue	Brain, frontal lobe

CLASSIFICATION

Organism	Rat
Growth properties	Adherent
Biosafety level	2

CHARACTERISTICS

Morphology	Fibroblast
Cell type	Astrocyte

IDENTIFIERS

Citation

CTX TNA2 (Cytion catalog number 305333)

NCBI TaxID	10116
Cellosaurus	CVCL_3670

EXPRESSION AND SUSCEPTIBILITY

Viruses

Transformant: Simian virus 40 (SV40)

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)

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

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	Accutase

Subculturing

Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

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 50% basal medium + 40% FBS + 10% DMSO, 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.

DONOR

Breed / subspecies	Sprague Dawley
Donor age	1 day

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.

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

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