ND7/23

305520

GENERAL INFORMATION

Description

The ND7/23 cell line is an immortalized hybrid derived from the fusion of neonatal rat dorsal root ganglion (DRG) neurons with a mouse neuroblastoma (N18TG2). This cell line retains numerous characteristics of sensory neurons and is frequently utilized to study neurobiological processes such as nociception, neuroregeneration, and neurite outgrowth. ND7/23 cells are a versatile model for understanding the cellular and molecular mechanisms of sensory neuron function, especially the pathways involved in nerve injury and repair. They express several sensory and nociceptor-related receptors, ion channels, and enzymes, making them suitable for a variety of applications in neuroscience. ND7/23 cells are widely used in research involving the differentiation of sensory neurons, often induced by factors like nerve growth factor (NGF) or dibutyryl cAMP (db-cAMP). Differentiated cells develop neurites, express neurofilament proteins, and show enhanced expression of molecules associated with nociceptive signaling, such as transient receptor potential (TRP) channels, including TRPC4. These features allow ND7/23 cells to serve as a model for studying the effects of neurotrophic factors and for screening potential neurotherapeutic agents. The cell line also facilitates high-throughput assays for analyzing calcium dynamics, electrophysiological properties, and drug responses in sensory neurons.
In studies of nerve injury, ND7/23 cells have provided insights into the role of TRPC channels, particularly TRPC4, in axonal regeneration. Knockdown experiments using short hairpin RNA (shRNA) targeting TRPC4 have shown reduced neurite outgrowth, highlighting the importance of this channel in neuronal repair mechanisms. Additionally, ND7/23 cells offer an accessible and reproducible system for investigating signal transduction pathways and cellular responses to external stimuli, including neurotoxins and analgesics.

Tissue	Brain

Synonyms

- ND7-23

CLASSIFICATION

Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Cell type	Mouse Neuroblastoma Cells (N18 tg 2) x Rat Dorsal Root Ganglion Neurone Cells

IDENTIFIERS

Citation

ND7/23 (Cytion catalog number 305520)

NCBI TaxID	10090, 10116
Cellosaurus	CVCL_4259

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.

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Supplements

Supplement the medium with 10% FBS

Seeding density	1 - 3 x 10^4 cells/cm^2

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.

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