Product sheet

ND7/23 Cells | 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.
Organism	Rat, Mouse
Tissue	Brain
Synonyms	ND7-23

Characteristics

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

Regulatory Data

Citation	ND7/23 (Cytion catalog number 305520)
Biosafety level	1

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NCBI_TaxID	10090, 10116
CellosaurusAccession	CVCL_4259

Biomolecular Data

Handling

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

Quality Control & Molecular Analysis

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.