Product sheet

OLN-93 Cells | 305848

General information

Description	OLN-93 is a permanent oligodendroglial cell line derived from primary glial cultures of neonatal rat brain. The cell line originated from spontaneously transformed cells in mixed glial cultures and was characterized to maintain stable oligodendroglial properties over extended culture periods. OLN-93 cells proliferate continuously in the presence of serum, with a doubling time of approximately 16-18 hours, and retain key features of differentiated oligodendrocytes. Immunocytochemical and biochemical analyses demonstrate that these cells express major myelin-specific markers including galactocerebroside (GC), myelin basic protein (MBP), myelin-associated glycoprotein (MAG), proteolipid protein (PLP), and Wolfgram protein (WP). The expression of PLP and its alternatively spliced isoform DM20 has been confirmed at the mRNA level using RT-PCR. Importantly, OLN-93 cells do not express the astrocytic markers vimentin and glial fibrillary acidic protein (GFAP), nor the oligodendrocyte precursor marker A2B5, indicating a differentiated, non-precursor phenotype. Morphologically, the cells exhibit a bipolar appearance under standard culture conditions and develop arborized processes when grown at low density or in low-serum environments, resembling immature or early postnatal oligodendrocytes. These characteristics make OLN-93 a valuable model for studying oligodendrocyte differentiation, myelin protein expression, and interactions with neurons or other glial cell types in vitro. OLN-93 cells have also been genetically engineered to study neurodegenerative disease processes. For instance, when transfected to express human α-synuclein (including the A53T mutant) and tau protein, they serve as a model to investigate mechanisms of protein aggregation under stress. Upon exposure to oxidative and proteasomal stress, OLN-93 cells form thioflavin S-positive aggregates that co-localize with α-synuclein, tau, and αB-crystallin, resembling glial cytoplasmic inclusions seen in synucleinopathies such as multiple system atrophy. These stress-induced changes in protein solubility and aggregate composition underline OLN-93's utility as a model system to explore proteostasis, chaperone biology, and the cellular responses of oligodendrocytes to pathological protein aggregation.
Organism	Rat
Tissue	Brain
Synonyms	OLN93, OLN 93

Characteristics

Age	1 day
Gender	Sex unspecified
Cell type	Oligodendrocyte
Growth properties	Adherent

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Regulatory Data

Citation	OLN-93 (Cytion catalog number 305848)
NCBI_TaxID	10116
CellosaurusAccession	CVCL_5850

Biomolecular Data

Handling

Culture Medium	DMEM, w: 4,5 g/L Glucose, w: 4 mM L-Glutamin, w: 3,7 g/L NaHCO3, w: 1,0 mM Natriumpyruvat, 10% FBS
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase 5 min 37°C
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

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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.