Product sheet

NB-4 Cells | 300299

General information

Description	NB-4 cells are a human acute promyelocytic leukemia (APL) cell line established from the bone marrow of a patient experiencing the second relapse of acute promyelocytic leukemia. This cell line is characterized by the presence of the t(15;17) chromosomal translocation, which results in the PML-RARα fusion gene, a hallmark of APL. The NB4 cell line serves as a pivotal model for studying the pathogenesis of APL and the mechanisms of action of therapeutic agents inducing differentiation such as retinoic acid (ATRA) and arsenic trioxide (ATO). As a promyelocytic leukemia cell line, NB-4 cells exhibit an aberrant pattern of differentiation that is characteristic of APL. This aberrancy provides a unique window into the cellular mechanisms underlying leukemia progression and the potential for therapeutic intervention. The ability of NB-4 cells to undergo apoptosis, or programmed cell death, upon exposure to certain chemotherapeutic agents or differentiation inducers like retinoic acid, makes them an invaluable tool for studying cell apoptosis in the context of leukemia. The NB-4 cell line also demonstrates bilineage potential, highlighting its ability to differentiate along multiple hematopoietic lineages under specific conditions. In conclusion, the NB-4 cell line, with its unique properties and responsiveness to differentiation inducers like retinoic acid, continues to be a pivotal resource for researchers delving into the intricacies of promyelocytic leukemia and the broader field of oncology.
Organism	Human
Tissue	Bone marrow
Disease	Acute promyelocytic leukemia
Synonyms	NB4, NB.4

Characteristics

Age	23 years
Gender	Female
Ethnicity	Caucasian
Morphology	Round cells
Cell type	B lymphocyte
Growth properties	Suspension

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Regulatory Data

Citation	NB-4 (Cytion catalog number 300299)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0005

Biomolecular Data

Antigen expression	CD4+, CD14-, CD36-
Reverse transcriptase	Negative
Karyotype	T(15,17) (q22,q11-12) translocation

Handling

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Supplements	Supplement the medium with 10% FBS
Doubling time	35 to 40 hours
Subculturing	Maintain cultures by periodically adding or replacing the medium. Initiate cultures with a density of 5 x 10^5 cells/ml and keep the cell concentration within the range of 3 x 10^5 to 1 x 10^6 cells/ml for optimal growth.
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.
Flask Coating	None
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.