OCI-AML3

305432

GENERAL INFORMATION

Description

OCI-AML3 is a human acute myeloid leukemia (AML) cell line derived from a patient with acute myelomonocytic leukemia (FAB classification M4). This cell line is extensively used in leukemia research due to its well-characterized genetic profile and relevance to studying AML pathogenesis and therapeutic response. OCI-AML3 cells are particularly notable for harboring a heterozygous mutation in the nucleophosmin (NPM1) gene, a common alteration in AML that is associated with abnormal localization of the NPM1 protein to the cytoplasm, as well as a DNMT3A R882C mutation, which is implicated in epigenetic dysregulation. These features make OCI-AML3 a highly relevant model for studying key molecular mechanisms in AML.
OCI-AML3 cells grow in suspension and exhibit characteristics of immature myeloid cells with monoblast-like morphology. The cell line has been widely used to study apoptosis, proliferation, and differentiation pathways in AML, as well as the molecular consequences of NPM1 and DNMT3A mutations. It is also a valuable model for investigating the role of epigenetic regulation in leukemogenesis, as DNMT3A mutations are known to contribute to global changes in DNA methylation patterns.
OCI-AML3 is a preferred model for preclinical drug development and screening, particularly for evaluating epigenetic modulators such as DNA methyltransferase inhibitors and histone deacetylase inhibitors, as well as small-molecule inhibitors targeting signaling pathways and anti-apoptotic proteins. This cell line is also utilized in studies examining mechanisms of drug resistance and the development of combination therapy strategies. Overall, OCI-AML3 remains a critical tool for advancing the understanding of AML biology and for identifying novel therapeutic approaches for this aggressive hematologic malignancy.

Tissue	Peripheral blood
Disease	acute myeloid leukemia

Synonyms

- OCI-Aml-3
- OCI/AML-3
- OCI-AML3
- OCI/AML3
- OCI AML3
- OCIAML3
- Ontario Cancer Institute-Acute Myeloid Leukemia-3

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Suspension
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like

Karyotype

Hyperdiploid karyotype - 48(45-50)X/XY, +1, +5, +8, der(1)t(1;18)(p11;q11), i(5p), del(13)(q13q21), dup(17)(q21q25) - sideline with r(Y)x1-2 - hemizygous for RB1

Doubling time	30-40 hours

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IDENTIFIERS

Citation

OCI-AML3 (Cytion catalog number 305432)

NCBI TaxID	9606
Cellosaurus	CVCL_1844

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: 2978, DNMT3A, p.Arg882Cys (c.2644C>T), Heterozygous; Mutation: NRAS, p.Gln61Leu (c.182A>T), Homozygous; Mutation: NPM1, p.Trp288Cysfs*12 (c.860_863dupTCTG), Heterozygous

Viruses

EBV -, HBV -, HCV -, HIV-1 -, HIV-2 -, HTLV-1/2 -, MLV -, SMRV -

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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

Supplements

Supplement the medium with 20% FBS

Seeding density	2 to 5 x 10^5 cells/ml
Fluid renewal	2 to 3 times per week

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.

DONOR

Donor age	57 years
Ethnicity	Caucasian

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