HL-60

300209

GENERAL INFORMATION

Description

HL-60 cells, originating from a 36-year-old female with acute promyelocytic leukemia, serve as a vital model in cancer research, particularly in studying hematological malignancies, due to their ability to differentiate into mature white blood cells and mimic innate immune responses, aiding in the understanding of leukemic progression, cellular oncogene expression, and therapeutic target identification.
The ability of HL-60 cells to differentiate into mature white blood cells, such as granulocytes and monocytes, through agents like dimethyl sulfoxide (DMSO) or retinoic acid, underscores their significance in studies related to human myeloid cell differentiation and sheds light on the mechanisms underpinning leukemic progression and the efficacy of therapeutic interventions.
HL-60 human myeloid leukemia cells are integral to research focusing on apoptosis, cell activation, and the cell cycle, including the regulation of key oncogenes like the c-myc proto-oncogene and tumor necrosis factor (TNF-alpha). Their capability to form extracellular traps, structures involved in trapping and killing pathogens, which mirrors the innate immune response seen in primary neutrophils, makes HL-60 cells a useful model for studying the immune aspects of leukemia and how leukemic cells interact with the immune system.
Moreover, the responsiveness of HL-60 cells to signaling pathways such as the MAPK pathway and various kinases is crucial for dissecting the molecular mechanisms driving leukemic cell proliferation and differentiation. This aspect is particularly beneficial for identifying therapeutic targets and developing new treatment strategies for leukemia.
HL-60 cells are a critical resource in cancer research, offering insights into hematological malignancies, leukemic progression, and potential therapeutic targets through their unique differentiation capabilities and mimicry of immune responses.

Tissue	Blood
Disease	Acute promyelocytic leukemia

Applications

Transfection host

Synonyms

- HL 60
- HL.60
- HL60

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Suspension
Biosafety level	1

CHARACTERISTICS

Morphology	Round cells
Cell type	Lymphoblast

IDENTIFIERS

Citation

HL-60 (Cytion catalog number 300209)

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NCBI TaxID	9606
Cellosaurus	CVCL_0002

EXPRESSION AND SUSCEPTIBILITY

Receptors expressed

Complement, Fc

Isoenzymes

G6PD, B, PGM1, 1, PGM3, 1, ES-D,1, Me-2, 1, AK-1, 1, GLO-1, 1

Oncogenes

Myc+

Reverse transcriptase	Negative

Products

Tumor necrosis factor (TNF), also known as tumor necrosis factor alpha (TNF-alpha, TNF alpha), after stimulation with phorbol myristic acid

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 10% heat-inactivated FBS

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.

Seeding density	2 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	36 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