CMK

305533

GENERAL INFORMATION

Description

The CMK cell line is a human megakaryoblastic leukemia model established from a Down syndrome patient diagnosed with acute megakaryoblastic leukemia (AMKL). These cells are significant for research on megakaryocytic differentiation and leukemia associated with trisomy 21. CMK cells display markers typical of megakaryocytes, such as glycoproteins GPIIb/IIIa and GPIb, which are key components of platelet membranes. The presence of platelet peroxidase (PPO) activity, localized to the nuclear envelope and endoplasmic reticulum but not the Golgi apparatus, confirms the megakaryocytic lineage of these cells. Ultrastructural analysis reveals the existence of cytoplasmic granules resembling α-granules and demarcation membranes, further validating their megakaryocytic nature.
CMK cells are characterized by a complex karyotype, including near-tetraploidy and a specific translocation, der(17)t(11;17), also present in the patient's original leukemic cells. This genetic alteration links the cell line back to the disease state in the patient, providing a reliable model for studying AMKL pathogenesis. Additionally, the CMK cell line can respond to hematopoietic growth factors like interleukin-3 (IL-3) and granulocyte-macrophage colony-stimulating factor (GM-CSF), which stimulate proliferation and differentiation into more mature megakaryocytic forms. Treatment with agents like phorbol ester (TPA) enhances the expression of megakaryocytic markers and induces morphological changes, including cytoplasmic segmentation resembling platelet formation. These features make CMK a valuable tool for investigating megakaryocytic lineage development, the effects of trisomy 21 on hematopoiesis, and the mechanisms of leukemogenesis in Down syndrome.

Tissue	Peripheral blood
Disease	Myeloid leukemia associated with Down syndrome

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Suspension
Biosafety level	1

IDENTIFIERS

Citation

CMK (Cytion catalog number 305533)

NCBI TaxID	9606
Cellosaurus	CVCL_0216

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: TP53, p.Asp49His (c.145G>C), heterozygous; Gene fusion: TP53-FXR2

HANDLING AND CULTURE

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)

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

Supplements

Supplement the medium with 20% FBS

Subculturing

Gather the suspension cells in a 15 ml tube and gently wash the adherent cells with PBS lacking calcium and magnesium (use 3-5 ml for T25 flasks and 5-10 ml for T75 flasks). Apply Accutase (1-2 ml for T25 flasks, 2.5 ml for T75 flasks) ensuring full coverage of the cell layer. Allow the cells to incubate at room temperature for 10 minutes. Following incubation, combine and centrifuge both the suspension and adherent cells. After centrifugation, carefully resuspend the cell pellet and transfer the cell suspension into new flasks containing fresh medium.

Seeding density	3-5*10^5/ml

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	10 months
Ethnicity	Japanese

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

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