Product sheet

MOLT-4 Cells | 300115

General information

Description	MOLT-4 is a T lymphoblast cell line derived from the peripheral blood of a 19-year-old male patient with Acute lymphoblastic leukemia (ALL) in relapse in 1971. It is a sister cell line of MOLT-3, while MOLT-4 shows an unusual T-cell antigen receptor gamma-chain gene (T-gamma) rearrangement. MOLT-4 cells have a doubling time of around 30 hours, grow in suspension, and are tumorigenic in untreated nude mice, anti-lymphocyte serum-treated mice, and x-irradiated mice. MOLT-4 cells have a hypertetraploid chromosome number with the modal chromosome number of 95 occurring in 24% of cells but show stable and recurrent structural abnormalities of chromosomes and longer telomere length. MOLT-4 expresses a variety of T cell markers including CD1, CD2, CD3A, CD3B, CD3C, CD4, CD5, CD6, and CD7. They also express high levels of terminal deoxynucleotidyl transferase (TdT). The MOLT-4 cell line does not produce immunoglobulin or Epstein-Barr virus. The patient from whom the cells were derived had received prior multidrug chemotherapy. There is a G -> A mutation at codon 248 of the p53 gene, and P53 is not expressed. The line was initially contaminated with mycoplasma but has since been cured with antibiotics.
Organism	Human
Tissue	Peripheral blood
Disease	Adult T acute lymphoblastic leukemia
Synonyms	Molt-4, MOLT 4, Molt 4, MOLT.4, MOLT4, Molt4, GM02219, GM02219C, GM2219C, GM02219D

Characteristics

Age	19 years
Gender	Male
Ethnicity	Caucasian
Morphology	Round cells
Cell type	T lymphocyte
Growth properties	Suspension

Regulatory Data

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Citation	MOLT-4 (Cytion catalog number 300115)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0013

Biomolecular Data

Protein expression	P53 positive
Antigen expression	CD1 (49%), CD2 (35%), CD3 A (26%) B (33%) C (34%), CD4 (55%), CD5 (72%), CD6 (22%), CD7 (77%)
Viruses	The cells do not produce immunoglobulin or Epstein-Barr virus (Minowada, 1972).
Products	High levels of terminal deoxynucleotidyl transferase (TdT) are produced
Mutational profile	G -> A mutation at codon 248 of the p53 gene, P53 is not expressed (Rodrigues, 1990).
Karyotype	Hypertetraploid. Modal number: 96. Two x and two Y chromosomes.

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
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	1 x 10^5 cells/cm^2
Fluid renewal	2 to 3 times per week

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Post-Thaw Recovery	24 to 48 hours
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

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.