Product sheet

6T-CEM Cells | 305132

General information

Description	The 6T-CEM cell line is a mutant derivative of the human acute lymphoblastic leukemia (ALL) T-cell line CCRF-CEM. It was developed by exposing the parent CEM cells to 6-thioguanine, leading to the selection of a subline that exhibits resistance to this compound. This resistance is a result of the inactivation of the HPRT gene, which is critical in the purine salvage pathway. The 6T-CEM cells have been particularly valuable in studying drug resistance mechanisms, especially concerning purine analogs like 6-thioguanine. Additionally, these cells are characterized by their secretion of a unique T-cell suppressor inducer factor (SIF), which is not only non-mitogenic and non-cytotoxic but also capable of suppressing T-cell proliferation while sparing B-cell proliferation at certain dilutions. 6T-CEM cells and their subclones, like 6T-CEM-20, have shown a significant increase in the production of this suppressor-inducer factor, which has potential applications in immunological research, particularly in the study of T-cell regulation and immune suppression. The SIF secreted by these cells has been shown to suppress up to 90% of mitogen-induced T-cell proliferation at extremely high dilutions (up to 10^-9), making these cells a potent model for exploring therapeutic strategies that involve modulation of the immune response. The use of these cells in various experimental setups has provided insights into the molecular underpinnings of immune suppression, with potential implications for the development of treatments for autoimmune diseases and in the context of organ transplantation to prevent graft rejection.
Organism	Human
Tissue	Peripheral blood
Disease	T-cell acute lymphoblastic leukemia
Synonyms	6-T CEM

Characteristics

Age	4 years
Gender	Female
Ethnicity	Asian
Morphology	Lymphoblast
Growth properties	Suspension

Regulatory Data

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Citation	6T-CEM (Cytion catalog number 305132)
Biosafety level	2
NCBI_TaxID	9606
CellosaurusAccession	CVCL_6869

Biomolecular Data

Handling

Culture Medium	Alpha MEM, w: 2.0 mM stable Glutamine, w/o: Ribonucleosides, w/o: Deoxyribonucleosides, w: 1.0 mM Sodium pyruvate, w: 2.2g/L NaHCO3
Supplements	Supplement the medium with 10% FBS
Subculturing	Gently homogenize the cell suspension in the flask by pipetting up and down, then take a representative sample to determine the cell density per ml. Dilute the suspension to achieve a cell concentration of 1 x 10^5 cells/ml with fresh culture medium, and aliquot the adjusted suspension into new flasks for further cultivation.
Fluid renewal	2 to 3 times per week
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.