

TF-1 Cells | 300434

General information

Description

TF-1 cells are erythroblasts isolated from the bone marrow of a 35-year-old Asian male diagnosed with severe pancytopenia in 1987. These cells are a pivotal model for studying the complex processes of proliferation and differentiation within myeloid progenitor cells. As a cell line, TF-1 is heavily utilized in hematological research to understand the underlying mechanisms that govern cell cycle regulation and development in myeloid lineages.

In addition to their primary role in hematopoietic research, TF-1 cells serve as a robust system for examining the impact of various cytokines on cell survival and growth. Their dependence on specific growth factors such as granulocyte-macrophage colony-stimulating factor (GM-CSF) and interleukin-3 (IL-3) for proliferation makes them an excellent tool for studying cytokine-mediated signaling pathways. This characteristic also makes TF-1 cells useful in evaluating the efficacy of new pharmacological agents that aim to modulate these pathways, thereby contributing significantly to therapeutic advances in treating myeloid disorders and other related diseases.

Organism Human

Tissue Bone marrow

Disease Erythroleukemia

Applications The TF-1 cell line can be applied in various systems due to their responsiveness to multiple cytokines. They provide a good system to investigate the proliferation and differentiation of myeloid progenitor cells. Sensitive to GM-CSF, IL-3, EPO.

Synonyms TF1, MFD-1

Characteristics

Age 35 years

Gender Male

Ethnicity Japanese

Growth properties Suspension

Regulatory Data

Citation TF-1 (Cytion catalog number 300434)

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Biosafety level 1**NCBI_TaxID** 9606**CellosaurusAccession** CVCL_0559**Biomolecular Data****Receptors expressed** TF-1 cells do not express glycophorin A or carbonyl anhydrase I.**Handling****Culture Medium** RPMI 1640, w: 2.1 mM stable Glutamine, w: 2.0 g/L NaHCO₃ (Cytion article number 820700a)**Supplements** Supplement the medium with 10% FBS, 5 ng/ml GM-CSF; for long-term culture: IL-3**Subculturing** Initiate cultures with a cell density of 2×10^5 cells/ml and maintain them within the range of 1×10^5 to 1×10^6 cells/ml. For subculturing, transfer the cell suspension to a fresh cell culture flask pre-filled with the correct volume of fresh culture medium.**Seeding density** $> 2 \times 10^5$ cells/ml**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.

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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 $300 \times g$ 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

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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.