Product sheet

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 x 10^5 cells/ml and maintain them within the range of 1 x 10^5 to 1 x 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 x 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.

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.