SK-UT-1

300455

GENERAL INFORMATION

Description

The SK-UT-1 cell line is derived from human uterine leiomyosarcoma (ULMS), a highly aggressive form of cancer originating in the smooth muscle of the uterus. This cell line is a key model for studying tumorigenesis, metastasis, and drug resistance in ULMS. SK-UT-1 cells exhibit features of sarcomas, including rapid proliferation, poor differentiation, and resistance to conventional therapies. In particular, they are used to investigate cancer stem-like cells (CSCs), which play a significant role in cancer recurrence and resistance to chemotherapy. Research has identified a subpopulation of CD133+ CSCs within SK-UT-1 cells, which demonstrate enhanced self-renewal, colony formation, and resistance to apoptosis.
Studies using SK-UT-1 have focused on characterizing the CD133+ CSCs, revealing their ability to form tumorspheres, a feature indicative of stem cell-like behavior. This subpopulation shows increased tumorigenic potential in vivo, where even a small number of cells (10^4) are sufficient to initiate tumor formation in xenograft models. The CD133+ cells exhibit resistance to chemotherapeutic agents such as doxorubicin, which further supports their role in therapy resistance. Additionally, elevated levels of CSC-related markers, including CD44, ALDH1, and BMI1, were found in CD133+ cells compared to their CD133− counterparts, confirming their role as cancer stem cells.
SK-UT-1 cells have become a vital tool in understanding ULMS progression and in developing potential therapeutic strategies. Targeting the CD133+ cancer stem-like cell population within these tumors may offer a promising approach to improve outcomes in patients with ULMS by addressing the root causes of metastasis and chemoresistance.

Tissue	Uterine
Disease	Mixed mesodermal tumor, consistent with leiomyosarcoma (grade III)

Synonyms

- SK UT 1
- SKUT-1
- SKUT1
- Skut1

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice. Forms spindle cell sarcoma

Karyotype

(P8) hypodiploid to hyperdiploid. Phenotype Frequency Product: 0.0590

IDENTIFIERS

Citation

SK-UT-1 (Cytion catalog number 300455)

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NCBI TaxID	9606
Cellosaurus	CVCL_0533

EXPRESSION AND SUSCEPTIBILITY

Isoenzymes

Me-2, 1-2, PGM3, 1, PGM1, 1, ES-D, 1, AK-1, 1, GLO-1, 1-2, G6PD, B.

HANDLING AND CULTURE

Culture medium

EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)

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

Supplements

Supplement the medium with 10% FBS and 1% NEAA

Dissociation reagent	Accutase

Subculturing

Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

Seeding density	1 x 10^4 cells/cm^2
Fluid renewal	2 times per week

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	75 years
Ethnicity	Caucasian

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