U2OS

300364

GENERAL INFORMATION

Description

U2OS cells, an osteosarcoma cell line derived from a human osteosarcoma patient, play a significant role in cancer research, particularly in the study of bone cancer. U2OS cells are used extensively in cancer research, drug development, apoptosis studies, genetic research, and radiation oncology studies. The value of U2OS cells lies in their application to investigate apoptosis and drug resistance, essential for creating small molecule inhibitors and similar therapeutic agents.
In the realm of clinical osteosarcoma research, the U2OS cell line is instrumental in examining biological responses to radiotherapy, thereby enriching our understanding of osteosarcoma biology. These cells are also pivotal in investigating chromatin modifications and their impact on cell biology, especially in the context of tumor formation and cancer progression.
The U2OS cell line, also referred to as the OS cell line, is recognized for its in vivo tumor formation capacity when administered through subcutaneous and intramuscular injections. The tumors produced by U2OS cells are characterized as high-grade sarcomas and exhibit significant osteoid production, which is a hallmark of osteosarcoma. Additionally, these tumors showed infiltration by immune cells. U2OS therefore serves as a representative model for studying human osteosarcoma, its interactions with the human immune system and tumor immunology. One of the challenges, however, is ensuring the osteosarcoma U2OS cell line accurately reflects the tumors in vivo, given the variability in tumor formation capacity.
In summary, sarcoma cell lines such as U2OS serve as a pivotal tool in understanding osteosarcoma, offering valuable insights into cancer biology, therapeutic development, and the complexities of tumor-immune system interactions, while highlighting the need for accurate in vivo tumor modeling.

Tissue	Bone, tibia
Disease	Osteosarcoma

Synonyms

- U-2 OS
- U-2OS
- U-2-OS
- U2-OS
- U20-S
- U20S
- 2T

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like

Karyotype

(P11-46) hypodiploid to near tetraploid, (P111-118) modal numbers 34 to 37 and 64 to 67 with abnormalities including dicentrics, breaks, rings, and pulverizations plus acrocentric subtelocentric and minute markers

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IDENTIFIERS

Citation

U2OS (Cytion catalog number 300364)

NCBI TaxID	9606
Cellosaurus	CVCL_0042

EXPRESSION AND SUSCEPTIBILITY

Receptors expressed

Insulin-like growth factor I (IGF-I), insulin-like growth factor II (IGF-I), Osteosarcoma derived growth factor (ODGF)

Antigen expression

Blood Type A, Rh+, HLA A2, Aw30, B12, Bw35, B40(+/-)

Isoenzymes

PGM3, 1, PGM1, 2, ES-D, 1, AK-1, 1, GLO-1, 2, G6PD, B, Phenotype Frequency Product: 0.0082

Products

Osteosarcoma derived growth factor (ODGF)

HANDLING AND CULTURE

Culture medium

DMEM:Ham's F12 (1:1), w: 3.1 g/L Glucose, w: 2.5 mM L-Glutamine, w: 15 mM HEPES, w: 0.5 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)

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

Supplements

Supplement the medium with 10% FBS

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 to 3 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.

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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	15 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