Product sheet

U2OS Cells | 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.
Organism	Human
Tissue	Bone, tibia
Disease	Osteosarcoma
Synonyms	U-2 OS, U-2OS, U-2-OS, U2-OS, U20-S, U20S, 2T

Characteristics

Age	15 years
Gender	Female
Ethnicity	Caucasian
Morphology	Epithelial-like

U2OS Cells | 300364

Growth properties	Monolayer, adherent

Regulatory Data

Citation	U2OS (Cytion catalog number 300364)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0042

Biomolecular Data

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)
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

Handling

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)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase

U2OS Cells | 300364

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	1×10^4 cells/cm^2
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.