Product sheet

SaOS-2 Cells | 300331

General information

Description	Saos-2 cells are an osteosarcoma cell line derived from the primary osteogenic sarcoma of an 11-year-old Caucasian female. These cells are a widely recognized model for studying osteosarcoma and bone biology, due to their osteoblastic characteristics and the ability to produce a bone-like extracellular matrix. Characterized by their high level of alkaline phosphatase activity and expression of bone-specific proteins such as osteocalcin and osteopontin, Saos-2 cells serve as an effective in vitro system to study bone formation and the pathophysiology of osteosarcoma. They are particularly valuable for investigating cellular responses to various biochemical stimuli and mechanical forces that mimic the bone environment. Saos-2 cells also exhibit an aneuploid karyotype, lacking several chromosomes but with extra copies of others, typical of many cancer cell lines. They are negative for mycoplasma and possess a robust capacity for calcification, making them suitable for assays related to mineral deposition. In the context of cancer research, Saos-2 cells are extensively used to explore the molecular mechanisms of tumorigenesis, metastasis, and the effects of anticancer drugs on osteosarcoma. The cells are also employed to study gene expression profiles associated with osteoblastic differentiation and malignancy. Due to their high transfectability, Saos-2 cells are amenable to genetic manipulation, which allows for the study of gene function and the validation of molecular targets for therapeutic intervention. This adaptability has facilitated significant advancements in understanding the genetic and molecular basis of bone cancer and in developing targeted treatments for osteosarcoma.
Organism	Human
Tissue	Bone
Disease	Osteosarcoma
Synonyms	SAOS-2, Saos-2, SAOS 2, Saos 2, Saos2, SaOs2, SAOS2, Sarcoma OSteogenic-2, SaOS, SAOS

Characteristics

Age	11 years
Gender	Female
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Monolayer, adherent

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Regulatory Data

Citation	SaOS-2 (Cytion catalog number 300331)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0548

Biomolecular Data

Receptors expressed	Epidermal growth factor (EGF), transforming growth factor beta (type 1 and type 2)
Antigen expression	Blood Type B, Rh+, HLA A2, A3, Bw16, Bw47
Isoenzymes	Me-2, 1, PGM3, 1-2, PGM1, 1-2, ES-D, 2, AK-1, 1, GLO-1, 2, G6PD, B, Phenotype Frequency Product: 0.0002
Tumorigenic	No
MSI-status	Stable (MSS)
Karyotype	The stemline chromosome number is hypotriploid with the modal number of 56 chromosomes per cell and the 2S component occurring at 13.2%. Over two-thirds of the chromosome complement consisted of structurally rearranged chromosomes. Most marker chromosomes had complex rearrangements. The origin of the segments composing these markers could not be identified. Of the identifiable markers, 6p+/q+, 7p+, 11p+, and 12p+ occasionally were present at 2 copies per cell. The Y chromosome was not detected in the QM stained preparation.

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
Doubling time	35 to 40 hours

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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
Post-Thaw Recovery	Fast
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.
Flask Coating	None
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.