UMR-106

305197

GENERAL INFORMATION

Description

UMR-106 is an osteosarcoma cell line derived from a rat model, commonly used in studies investigating bone metabolism, cancer biology, and osteoblast differentiation. These cells are highly responsive to parathyroid hormone (PTH), prostaglandins, and bone-resorbing steroids, making them valuable for research on the regulatory mechanisms of bone cells. The PTH responsiveness of UMR-106 cells is notably greater than that of the related cell line UMR-108, highlighting their unique utility in studies focused on PTH signaling pathways. UMR-106 cells also exhibit the production of alkaline phosphatase, osteocalcin, and other bone-related proteins, which are critical markers in osteoblast research.
In cancer research, UMR-106 cells serve as a model to study the molecular mechanisms underlying osteosarcoma development and progression. They exhibit typical features of cancer cells, such as rapid proliferation and the ability to form tumors in vivo, allowing researchers to explore the genetic and epigenetic changes associated with osteosarcoma. These cells are also instrumental in preclinical studies for testing the efficacy and safety of new anti-cancer drugs, providing a reliable system for the preliminary evaluation of therapeutic agents.
Furthermore, UMR-106 cells are utilized to investigate the pathways involved in osteoblast function and differentiation. Researchers have observed that activation of protein kinase C in UMR-106 cells inhibits ATP-induced increases in intracellular calcium levels, providing insights into the complex regulatory networks governing osteoblast activity. The responsiveness of these cells to various stimuli, along with their ability to produce key osteoblastic markers, makes UMR-106 a critical tool in the study of bone biology and the development of strategies to treat bone-related disorders.

Tissue	Bone
Disease	Rat osteosarcoma

Synonyms

- UMR 106
- UMR106

CLASSIFICATION

Organism	Rat
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial

IDENTIFIERS

Citation

UMR-106 (Cytion catalog number 305197)

NCBI TaxID	10116
Cellosaurus	CVCL_3617

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EXPRESSION AND SUSCEPTIBILITY

Receptors expressed

Parathyroid hormone(PTH), 1-25(OH)2D3(bone resorbing steroid hormone)

HANDLING AND CULTURE

Culture medium

DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

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.

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.

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

Breed / subspecies	Sprague Dawley
Donor age	Adult

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