U-CH1

305885

GENERAL INFORMATION

Description

The U-CH1 cell line is the first established permanent human chordoma cell model, derived from a recurrent sacral chordoma. Chordomas are rare, slow-growing, locally invasive tumors that originate from notochordal remnants and primarily occur along the axial skeleton. U-CH1 exhibits cytogenetic features characteristic of chordoma, including clonal chromosomal aberrations such as der(1)t(1;22), deletions on chromosomes 4, 5, 6, 9, 10, and 20, and a derivative chromosome 20 resulting from t(10;20). Comparative genomic hybridization revealed recurrent DNA copy number changes in chordomas, particularly losses on 1p and 3p and gains on 7q, 5q, 12q, and 20. The cytogenetic profile of U-CH1 closely mirrors that of its parental tumor, reinforcing its biological relevance.
Functionally and molecularly, U-CH1 and other chordoma cell lines display hallmark features of chordoma, including expression of brachyury, a transcription factor considered a key diagnostic marker. U-CH1 also harbors deletions of CDKN2A and lacks p16 protein expression, a recurrent genetic alteration in chordomas. This alteration leads to hyperactivation of the CDK4/6 pathway, rendering U-CH1 sensitive to CDK4/6 inhibitors such as palbociclib. Treatment with palbociclib significantly reduced phosphorylated Rb levels and inhibited proliferation in vitro, indicating that U-CH1 can be a valuable preclinical model for evaluating cell cycle-targeted therapies. The cell line has also been validated through mRNA and protein profiling, confirming its representativeness of primary chordoma tumors in expression and genomic patterns.

Tissue	Bone, sacrum
Disease	Sacral chordoma

Synonyms

- UCH-1
- UCH1

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Mesenchymal like, with variable vacuoles
Cell type	Chordoma
Doubling time	~1 week

IDENTIFIERS

Citation

U-CH1 (Cytion catalog number 305885)

NCBI TaxID	9606
Cellosaurus	CVCL_4988

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Banking information
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EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: TP53, Simple, p.Pro72Arg (c.215C>G), Unspecified

HANDLING AND CULTURE

Culture medium

IMDM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 25 mM HEPES, w: 1.0 mM Sodium pyruvate, w: 3.024 g/L NaHCO3 (Cytion article number 820800a)

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

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	Accutase
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

Donor age	56 years
Ethnicity	White

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.

Disclaimer

Our cells are provided for in vitro laboratory research purposes exclusively and are not intended for clinical or diagnostic use, nor are they to be administered to humans or used for veterinary purposes. Users must adhere to all applicable guidelines and regulations for the handling and use of these cells in a research setting.

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

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