iPSC-hDPSC

300622

GENERAL INFORMATION

Description

The iPSC-hDPSC cell line represents a cutting-edge model derived from human dental pulp stem cells (hDPSCs). These cells originate from dental pulp tissue, where they undergo enzymatic digestion to isolate the adherent fraction. Upon reaching 70-80% confluence, the cells are subcultured and cryopreserved at Passage 1. This foundational step is crucial in maintaining the cellular integrity and ensuring the viability of the stem cells for future applications.
The reprogramming of hDPSCs into induced pluripotent stem cells (iPSCs) is a significant advancement, achieved through an episomal reprogramming technique. This method employs vectors that incorporate the Yamanaka factors-Oct-4, Sox-2, and Klf-4-alongside p53 Anti-sense, EBNA-1, and a Red Fluorescent Protein marker. The episomal approach is particularly advantageous as it avoids the integration of reprogramming factors into the genome, thus preserving the genetic stability of the iPSCs. The resultant iPSC-hDPSC line exhibits pluripotent characteristics, making it a valuable tool for research in regenerative medicine, disease modeling, and drug discovery.

Tissue	Third molar
Disease	Normal donor

Applications

Disease Modeling, Drug Discovery and Toxicity Testing, Regenerative Medicine, Genetic Research, Developmental Biology Studies

CLASSIFICATION

Organism	Human
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This human iPSC line (iPSC-hDPSC) contains episomal plasmids encoding OCT4, SOX2, KLF4 and c-MYC, supporting reprogramming of dental stromal cells. The constructs are maintained without viral sequences. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Morphology	IPSC, colonies with defined edges
Cell type	Stem cells

IDENTIFIERS

Citation

iPSC-hDPSC (Cytion catalog number 300622)

NCBI TaxID	9606
Cellosaurus	CVCL_B7DW

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Banking information
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HANDLING AND CULTURE

Culture medium

mTESR

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.
Dissociation reagent	ReLeSR

Subculturing

To improve the cell detachment and reseeding process, follow these steps:
Remove the spent medium and rinse the cells with PBS (without calcium and magnesium).
Add the detaching solution and allow it to act as per the manufacturer's instructions.
Carefully add fresh medium to the cells.
Gently dissociate the cells to ensure minimal damage.
Coat a fresh 6-well culture plate with vitronectin and seed the dissociated cells into two wells for further cultivation.

Seeding density	To ensure optimal cell growth and experimental consistency, it is recommended to use a seeding density of 5,000 to 10,000 cells/cm² once the cells have adapted to the culture conditions.
Fluid renewal	Daily
Post-thaw recovery	Fast

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 80% FBS + 10% basal medium + 10% DMSO to maintain viability, or CM-1 (Cytion catalog number 800100) for superior cryoprotection, preventing unwanted differentiation while preserving pluripotency and cellular integrity.

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

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

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