Product sheet

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.
Organism	Human
Tissue	Third molar
Disease	Normal donor
Applications	Disease Modeling, Drug Discovery and Toxicity Testing, Regenerative Medicine, Genetic Research, Developmental Biology Studies

Characteristics

Ethnicity	Caucasian
Morphology	IPSC, colonies with defined edges
Cell type	Stem cells
Growth properties	Adherent

Regulatory Data

Citation	iPSC-hDPSC (Cytion catalog number 300622)
Biosafety level	1

iPSC-hDPSC | 300622

NCBI_TaxID	9606
CellosaurusAccession	CVCL_B7DW
GMO Status	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.

Biomolecular Data

Handling

Culture Medium	mTESR
Dissociation Reagent	ReLeSR
Subculturing	To improve the cell detachment and reseeding process, follow these steps: 1. Remove the spent medium and rinse the cells with PBS (without calcium and magnesium). 2. Add the detaching solution and allow it to act as per the manufacturer's instructions. 3. Carefully add fresh medium to the cells. 4. Gently dissociate the cells to ensure minimal damage. 5. 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/cm^2 once the cells have adapted to the culture conditions.
Fluid renewal	Daily
Post-Thaw Recovery	Fast
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.

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.