Product sheet

HEI-OC1 Cells | 305548

General information

Description	The HEI-OC1 cell line, derived from the cochlea of the transgenic Immortomouse, represents a versatile model for studying auditory cell biology, particularly in the context of ototoxicity and protective mechanisms. HEI-OC1 cells are conditionally immortalized and exhibit characteristics of both sensory and supporting cells of the organ of Corti. These cells express various cochlear hair cell markers, including prestin, myosin 7a, and calbindin. As an in vitro model, HEI-OC1 has been applied to investigate the cellular responses to ototoxic drugs, such as aminoglycosides and cisplatin, which are known to induce hearing loss through apoptosis, ROS accumulation, and mitochondrial dysfunction. HEI-OC1 cells have demonstrated utility in exploring protective strategies against ototoxic damage. For instance, studies have shown that lysophosphatidic acid (LPA) can mitigate the cytotoxic effects of cisplatin by reducing apoptosis, excessive autophagy, and ROS accumulation. Additionally, the inhibition of ferroptosis, a type of iron-dependent cell death, has been found to protect HEI-OC1 cells from cisplatin-induced damage by preserving mitochondrial function. The application of glucocorticoids, such as dexamethasone, has also been observed to protect HEI-OC1 cells from endoplasmic reticulum stress-induced apoptosis by modulating the PERK-CHOP pathway. These findings support the role of HEI-OC1 cells as a valuable model for screening drugs for ototoxicity and investigating otoprotective interventions.
Organism	Mouse
Tissue	Ear, inner ear, cochlea, organ of Corti
Disease	Normal
Synonyms	HEIOC1, House Ear Institute-Organ of Corti 1

Characteristics

Breed/Subspecies	(CBA/Ca x C57BL/10)Tg(H2Kb-tsA58) Immortomouse
Age	7 days
Gender	Unspecified
Morphology	Epithelial-like
Growth properties	Adherent

Regulatory Data

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Citation	HEI-OC1 (Cytion catalog number 305548)
Biosafety level	2
NCBI_TaxID	10090
CellosaurusAccession	CVCL_D899
GMO Status	GMO-S1: This HEI-OC1 Immorto Mouse epithelial line contains a temperature-sensitive SV40 large T-antigen construct enabling conditional immortalization. This classification applies only within Germany and may differ elsewhere.

Biomolecular Data

Viruses	Transformant: Simian virus 40 (SV40)

Handling

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)
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 TrypLE Express, 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.
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.
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.