HCE-T

305255

GENERAL INFORMATION

Description

HCE-T is an SV40-transformed human corneal epithelial cell line derived from primary human corneal epithelium. The line was established by infection with a recombinant SV40–adenovirus hybrid vector (Ad–SV40), enabling stable expression of SV40 large T antigen and continuous proliferation. The original characterization specifically aimed to generate a continuously growing corneal epithelial cell line without shedding free viral particles.
In culture, HCE-T cells show typical epithelial “cobblestone” morphology and grow as adherent monolayers. Ultrastructural epithelial features such as desmosomes and apical microvilli have been reported, and the cells have been described as producing a cornea-associated 64 kD keratin. Under suitable differentiation conditions (e.g., air–liquid interface culture on collagen), HCE-T cells can form multilayered, stratified structures and develop measurable barrier properties, supporting their use in ocular surface research.
HCE-T cells are widely used to study corneal epithelial barrier function, permeability and formulation effects, migration/repair-related processes, and cellular responses to inflammatory or irritant stimuli. However, transporter expression patterns and differentiation-marker profiles can differ from native human cornea and from primary limbal/corneal epithelial systems. Therefore, HCE-T is best suited for mechanistic and comparative in vitro studies, while direct quantitative extrapolation to in vivo human corneal absorption or corneal differentiation biology should be performed with caution.

Tissue	Eye, cornea, epithelium

Synonyms

- HCET
- Human Corneal Epithelial cells-Transformed
- HCE
- SV40-HCEC

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This human corneal epithelial cell line (HCE-T) contains an SV40 early-region construct (RSV-T / pRSV-T vector), enabling immortalization. The insert is stably integrated into primary human corneal epithelial cells. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial
Cell type	Epithelial cell

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IDENTIFIERS

Citation

HCE-T (Cytion catalog number 305255)

NCBI TaxID	9606
Cellosaurus	CVCL_1272

EXPRESSION AND SUSCEPTIBILITY

Viruses

Transformant: plasmid RSV-T (pRSV-T). This plasmid is an SV40 ori-construct containing the SV40 early region genes and the Rous sarcoma virus long terminal repeat.

Products

Keratin (64kD)

HANDLING AND CULTURE

Culture medium

DMEM:Ham's F12 (1:1), w: 3.1 g/L Glucose, w: 2.5 mM L-Glutamine, w: 15 mM HEPES, w: 0.5 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)

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

Supplements

Supplement the medium with 5% FBS, 1% ITS (0.625 mg/mL human insulin, 0.625 mg/mL human transferrin, 0.625 microgram/mL sodium selenite, 0.535 mg/mL linoleic acid, 125 mg/mL BSA) and 10 ng/mL human EGF

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.

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	49 years
Ethnicity	Japanese

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

PRODUCT DETAILS

Composition table