HT-3

305521

GENERAL INFORMATION

Description

HT-3 is a human cervical cancer cell line derived from squamous cell carcinoma and is noted for being HPV-negative. This cell line has been widely used in studies focused on cellular physiology, particularly in relation to ion channel regulation, signal transduction, and the role of cytoskeletal dynamics in cellular processes. HT-3 cells demonstrate activation of volume-sensitive chloride (Cl^-) channels, which are crucial for their regulatory volume decrease (RVD) responses under osmotic stress. This mechanism is pivotal for maintaining cellular homeostasis by allowing the efflux of Cl^- and K^+ ions, thereby facilitating water movement out of the cell to restore normal volume after swelling.
Research into the HT-3 cell line has highlighted the involvement of specific protein kinase C (PKC) isoforms in volume regulation. Notably, PKC-α has been implicated in the activation of volume-sensitive Cl^- channels and RVD responses. Experimental data show that inhibition of PKC-α, using either chemical blockers or isoform-specific antibodies, significantly impairs these channels' function, leading to prolonged cell swelling and disrupted RVD. This underscores the role of PKC-α as a regulatory factor in HT-3 cells' response to hypotonic stress.
Additionally, the integrity of the cytoskeleton, particularly actin filaments and microtubules, has been demonstrated to be essential for the proper activation of Cl^- channels and effective volume regulation in HT-3 cells. Disruption of actin filaments with agents such as cytochalasin B enhances Cl^- conductance and affects cell volume recovery, while stabilizing agents like phalloidin inhibit these channels' activity and delay RVD. Microtubule-modulating compounds, such as colchicine and taxol, have differential impacts, highlighting the complex interplay between cytoskeletal structures and ion channel function in these cancer cells.

Tissue	Cervix
Disease	Carcinoma
Metastatic site	Lymph node

Synonyms

- HT3

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice

IDENTIFIERS

Citation

HT-3 (Cytion catalog number 305521)

NCBI TaxID	9606
Cellosaurus	CVCL_1293

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

Genes expressed: Blood type A, Rh+

Oncogenes

P53+, pRB+

Mutational profile

Mutation: TP53, p.Gly245Val (c.734G>T)

HANDLING AND CULTURE

Culture medium

McCoys 5a, w: 3.0 g/L Glucose, w: stable Glutamine, w: 2.0 mM Sodium pyruvate, w: 2.2 g/L NaHCO3 (Cytion article number 820200a)

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

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 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.

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	58 years
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