HTh-7

305128

GENERAL INFORMATION

Description

The HTh-7 cell line is a human anaplastic thyroid carcinoma (ATC) model, widely used to study the aggressive nature of this malignancy. ATC is characterized by rapid progression, resistance to conventional therapies, and a poor prognosis. The HTh-7 cells exhibit complex chromosomal abnormalities typical of ATC, including specific gains and losses of chromosomal regions such as chromosome 20q, which are associated with cancer progression. These cells do not harbor the common BRAF V600E mutation, which is frequent in papillary thyroid carcinoma but less so in ATC, highlighting the diversity of oncogenic drivers in different thyroid cancers.
Further genomic characterization of the HTh-7 cell line reveals frequent mutations in the TERT promoter, a hallmark of aggressive thyroid cancers. The cells display a deletion in the wild-type TERT copy, suggesting the presence of a homozygous TERT promoter mutation, which likely contributes to their aggressive phenotype by promoting telomerase activation. HTh-7 cells also carry mutations in the TP53 gene, leading to complete loss of p53 function, a common event in ATC and a driver of genomic instability. This loss of function is often coupled with other mutations, such as in PTEN and genes involved in the PI3K/AKT/mTOR pathway, further underscoring the utility of HTh-7 as a model for studying the molecular underpinnings of ATC.
HTh-7 cells also demonstrate significant dedifferentiation, as evidenced by low thyroid differentiation scores (TDS), similar to that of ATC tumors. This dedifferentiation is characteristic of advanced thyroid cancers and is reflected in the profound loss of thyroid-specific gene expression, making HTh-7 an ideal model for investigating the mechanisms of thyroid cancer dedifferentiation and the associated therapeutic challenges. The cell line's genetic profile, including its alterations in the TP53 and TERT genes, highlights its relevance for preclinical studies aiming to explore novel therapeutic approaches for ATC, particularly those targeting pathways involved in telomere maintenance and p53-related mechanisms.

Tissue	Thyroid
Disease	Thyroid gland anaplastic carcinoma

Synonyms

- Hth7
- HTh 7
- HTh-7
- Uhth-7
- U-hth7
- U-Hth7

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial

IDENTIFIERS

Citation

HTh-7 (Cytion catalog number 305128)

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NCBI TaxID	9606
Cellosaurus	CVCL_6289

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.1 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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.

Seeding density	1 to 3 x 10^4 cells/cm^2
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	74 years

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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