Product sheet

HTh-7 Cells | 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.
Organism	Human
Tissue	Thyroid
Disease	Thyroid gland anaplastic carcinoma
Synonyms	Hth7, HTh 7, HTh-7, Uhth-7, U-hth7, U-Hth7

Characteristics

Age	74 years
Gender	Female
Morphology	Epithelial
Growth properties	Adherent

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Regulatory Data

Citation	HTh-7 (Cytion catalog number 305128)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_6289

Biomolecular Data

Handling

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
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.