IHH-4

305448

GENERAL INFORMATION

Description

The IHH-4 cell line is derived from papillary thyroid carcinoma (PTC), the most prevalent form of thyroid cancer, which frequently exhibits aggressive characteristics including invasion and metastasis. IHH-4 has been utilized in numerous studies focused on elucidating the molecular mechanisms underpinning PTC progression. This cell line is particularly noted for its role in studies investigating epithelial-mesenchymal transition (EMT), a process that enhances the invasive potential of cancer cells. For example, it has been shown that IHH-4 cells, along with other PTC lines, express elevated levels of matrix metalloproteinase-9 (MMP-9), a protease that plays a critical role in degrading the extracellular matrix and facilitating tumor invasion and metastasis. Inhibition of MMP-9 in IHH-4 cells was found to reduce EMT markers and hinder cell migration and invasion.

Research involving the IHH-4 cell line has also examined the role of transcription factors such as T cell factor 4 (TCF4) and long non-coding RNAs (lncRNAs) in PTC. Studies have highlighted that TCF4 is overexpressed in IHH-4 cells and can regulate the expression of the lncRNA HCP5, which in turn modulates several microRNAs related to tumor progression. Knockdown of TCF4 in IHH-4 cells was shown to decrease cell proliferation and invasion, suggesting that TCF4 is a pivotal regulator of oncogenic pathways in PTC.

Overall, IHH-4 serves as a valuable model for studying molecular and cellular pathways related to thyroid cancer, particularly those that drive cancer cell invasion, metastasis, and resistance to therapies. The insights gained from research using IHH-4 contribute to the development of potential therapeutic strategies for combating aggressive thyroid cancers.

Tissue	Thyroid gland
Disease	Thyroid gland papillary carcinoma
Metastatic site	Left cervical lymph node

Synonyms

- IHH4

CLASSIFICATION

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

GMO status details

GMO-S1: This human thyroid papillary carcinoma cell line (IHH-4) contains undefined stable modifications consistent with tumor-derived immortalization. No infectious virus is produced. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like

IDENTIFIERS

Citation

IHH-4 (Cytion catalog number 305448)

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NCBI TaxID	9606
Cellosaurus	CVCL_2960

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: AKT1, p.Glu17Lys (c.49G>A), heterozygous; Mutation: BRAF, p.Val600Glu (c.1799T>A), heterozygous; Mutation: CREBBP, p.Trp592Ter (c.1776G>A), heterozygous; Mutation: CRLF2, p.Trp255Ter (c.765G>A), heterozygous; Mutation: EP300, p.Arg1312Ter (c.3934C>T), heterozygous; Mutation: RAC1, p.Asp11Glu (c.33C>G), heterozygous; Mutation: TERT, c.1-124C>T (c.228C>T) (C228T), heterozygous

HANDLING AND CULTURE

Culture medium

1 to 1 mixture of Dulbecco's modified Eagle's medium (Cytion article number 820300a) and RPMI1640 medium (Cytion article number 820700a)

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

Supplements

Supplement the medium with 10% heat-inactivated 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.

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	75 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