TT

305027

GENERAL INFORMATION

Description

TT cells continuously produce high levels of calcitonin and CEA.Immunoreactive calcitonin was found to be produced in cell culture at levels of 3900 pg/million cells and 7700 pg/million cells 24 and 72 hours respectively, after a medium change.CEA was found to accumulate to greater than 27 ng/million cells over a 72 hours period.Chromosomal analysis of the cell line and tumors induced in nude mice reveal an aneuploid human karyotype with several marker chromosomes.The initial characterization studies of the TT cell line were conducted using early passage TT cells cultivated in RPMI 1640 medium supplemented with 15% fetal bovine serum and 1mM L-glutamine.It is not known if the neuropeptides reported to be produced by this cell line when it was grown in RPMI 1640 medium are also produced by the cells when they are cultured in Ham's F-12K medium.Chromosomal analysis of the cell line and tumors induced in nude mice reveal an aneuploid human karyotype with several marker chromosomes.

Tissue	Thyroid, medulla
Disease	Hereditary thyroid gland medullary carcinoma, Multiple endocrine neoplasia type 2
Metastatic site	Not applicable (primary hereditary medullary thyroid carcinoma; no documented distant metastasis)

Applications

Medullary thyroid carcinoma research; neuroendocrine tumor biology; calcitonin secretion studies; MEN2 biology; RET proto-oncogene pathway analysis; drug sensitivity (cabozantinib, vandetanib, everolimus); neuroendocrine biomarker research; CEA assay development

Synonyms

- MTC-TT

CLASSIFICATION

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

GMO status details

No genetic modification; wildtype hereditary medullary thyroid carcinoma cell line

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Cell type	Neuroendocrine cells (C cells / parafollicular cells)
Tumourigenic	Yes
Doubling time	approx. 36 to 48 hours

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IDENTIFIERS

Citation

TT (Cytion catalog number 305027)

NCBI TaxID	9606
Cellosaurus	CVCL_1774

EXPRESSION AND SUSCEPTIBILITY

Protein expression

Calcitonin, Carcinoembryonic Antigen(CEA)

HANDLING AND CULTURE

Culture medium

Ham's F12K Medium, w: 2.0 mM L-Glutamine, w: 2.0 mM Sodium pyruvate, w: 2.5 g/L NaHCO3 (Cytion article number 820608a)

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

Supplements

Supplement the medium with 10% FBS, 1% NEAA and 1mM Sodiumpyruvat

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.

Split ratio	1 to 3
Seeding density	1 to 3 × 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week
Post-thaw recovery	After thawing, plate the cells at 5 × 10^4 cells/cm^2 and allow at least 24 hours for adherence before the first medium change. Note: Calcitonin production may require 24–72 hours post-thaw before reaching stable secretion levels.

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	77 years
Ethnicity	European

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