HT-29

300215

GENERAL INFORMATION

Description

The HT-29 cell line, derived from a Grade II human colorectal adenocarcinoma, represents a cornerstone research model in the study of human colon cancers. Derived from a primary tumor in a 44-year-old female in 1964, HT22 cells have been instrumental in advancing our understanding of the adhesion or invasion mechanisms of cancer cells. As a human adenocarcinoma cell line, HT-29 cells exhibit characteristics that closely mimic those of mature intestinal cells, such as enterocytes, underscoring their utility in exploring the dynamics of food digestion and nutrient bioavailability.
HT-29 cells are sensitive to conventional colorectal cancer chemotherapies, including 5-fluorouracil and oxaliplatin. This sensitivity, coupled with their ability to express differentiation pathways under specific conditions, such as glucose deprivation or treatment with inducers like butyrate, makes them an invaluable model for investigating the molecular mechanisms underlying cell differentiation and cancer progression. Moreover, HT-29 cells have been utilized as a xenograft tumor model, providing a platform for in vivo studies that mimic the tumor's behavior in the human body. This application allows for the exploration of tumor growth, metastasis, and the efficacy of therapeutic agents in in vivo situations.
In summary, the HT-29 cell line is a pivotal tool in medical and biological research, facilitating a deeper understanding of human colon adenocarcinoma, the molecular basis of cancer cell differentiation, and the development of effective cancer treatments.

Tissue	Colon
Disease	Adenocarcinoma

Synonyms

- HT 29
- HT29

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice. Forms well differentiated adenocarcinoma consistent with colonic primary (grade I), tumors also form in steroid treated hamsters

Karyotype

The stemline chromosome number is hypertriploid with the 2S component occurring at 2.4%. Seventeen marker chromosomes are found in most metaphases, generally in single copy per chromosome. The marker designations are: M1p-(=t(3p-,?) with a deleted short arm), t(7q,?), t(10q,?), i(13q), 19q+a. M6, ?t(8q,9q-), ?xp, M9, 6q+, t(13,?)a, t(13,?)b, 19q+b, M14, M15, 15p+, and xq-. Chromosome 13 is nullisomic and chromosomes 8 and 14 are generally monosomic. No Y chromosome was detected by QM band analysis.

Doubling time	24 hours

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IDENTIFIERS

Citation

HT-29 (Cytion catalog number 300215)

NCBI TaxID	9606
Cellosaurus	CVCL_0320

EXPRESSION AND SUSCEPTIBILITY

Receptors expressed

Urokinase receptor(u-PAR), vitamin D (moderate expression), no detectable plasminogen activator activity.

Protein expression

CEA negative, p53 positive

Antigen expression

Blood Type A, Rh+, HLA A1, A3, B12, B17, Cw5, CD4 -, cell surface expression of galactose ceramide (a possible alternative receptor for HIV)

Isoenzymes

Me-2, 1, PGM3, 1-2, PGM1, 1-2, ES-D, 1, AK-1, 1, GLO-1, 1-2, G6PD, B, Phenotype Frequency Product: 0.0230

Oncogenes

Myc+, ras+, myb+, fos+, sis+, p53+, abl -, ros -, src -

Virus susceptibility

Human immunodeficiency virus (HIV, LAV)

Products

Secretory component of IgA, carcinoembryonic antigen (CEA), transforming growth factor beta binding protein, mucin, The p53 antigen is overproduced

HANDLING AND CULTURE

Culture medium

EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)

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

Supplements

Supplement the medium with 10% FBS and 1% NEAA

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	3 x 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week
Post-thaw recovery	Slow, the cells need roughly 48 hours to settle and adhere.

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	44 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