Product sheet

HT-29 Cells | 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.
Organism	Human
Tissue	Colon
Disease	Adenocarcinoma
Synonyms	HT 29, HT29

Characteristics

Age	44 years
Gender	Female
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Adherent

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Regulatory Data

Citation	HT-29 (Cytion catalog number 300215)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0320

Biomolecular Data

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

Handling

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Culture Medium	EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)
Supplements	Supplement the medium with 10% FBS and 1% NEAA
Dissociation Reagent	Accutase
Doubling time	24 hours
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	3×10^4 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.
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.