Product sheet

HCT116 Cells | 300195

General information

Description	HCT116 cells, isolated from a colon cancer patient, serve a crucial role in therapeutic studies and drug screenings, particularly in colon cancer research. HCT-116 cells are recognized for a mutation in codon 13 of the KRAS proto-oncogene, highlighting their utility in gene therapy research, especially since they are amenable to transfection with viral vectors. In apoptosis research, HCT116 cells are pivotal for studying the mechanisms of apoptosis and cell death. The effects of butyrate, a short-chain fatty acid, have been extensively studied in HCT116 cells, revealing that butyrate inhibits colon cancer proliferation by inducing apoptosis, highlighting the intricate cancer-cell interaction and the broader implications for cancer research. Butyrate's role in modulating gene expression changes and inducing endoplasmic reticulum stress response in HCT116 cells underscores the cellular complexity in colorectal cancer cell lines. The interaction between HCT116 colon cancer cells and therapeutic agents like metformin, known for its legacy effect and potential to reduce the risk of cancer, is of significant interest. Metformin's influence on HCT116 colon cell proliferation, p21 protein level modulation, and its broader implications on proliferation and growth offer insights into the management of primary tumors and the prevention of tumors and metastases. HCT116 cells are invaluable for oncological research, providing critical insights into the efficacy of therapeutics and the molecular dynamics of cancer progression. With a notable KRAS mutation and susceptibility to transfection, these cells facilitate gene therapy studies, apoptosis analysis, and colorectal cancer treatment and prevention strategies.
Organism	Human
Tissue	Colorectal
Disease	Adenocarcinoma
Synonyms	HCT-116, HCT.116, HCT_116, HCT 116, CoCL2

Characteristics

Age	48 years
Gender	Male
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Adherent

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Regulatory Data

Citation	HCT116 (Cytion catalog number 300195)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0291

Biomolecular Data

Antigen expression	The cells are positive for keratin by immunoperoxidase staining. HCT 116 cells are positive for transforming growth factor beta 1 (TGF beta 1) and beta 2 (TGF beta 2) expression.
Tumorigenic	Yes, in nude mice (inoculum of 5-10 x 106 cells)
Ploidy status	Aneuploid
MSI-status	Instable (MSI-high)
Karyotype	The karyotype of HCT116 cells is nearly diploid, with 70% of the cells harboring 45 chromosomes, often showing an overrepresentation of chromosomes 8, 10, 16, and 17 on the long arms, along with the absence of the Y-chromosome.

Handling

Culture Medium	McCoys 5a, w: 3.0 g/L Glucose, w: stable Glutamine, w: 2.0 mM Sodium pyruvate, w: 2.2 g/L NaHCO3 (Cytion article number 820200a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
Doubling time	25 to 35 hours

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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	2 x 10^4 cells/cm^2
Fluid renewal	1 to 2 times per week
Post-Thaw Recovery	3 days
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.