HCT116-GFP

305649

GENERAL INFORMATION

Description

HCT116-GFP is a genetically modified derivative of the human colorectal carcinoma cell line HCT116, engineered to constitutively express green fluorescent protein (GFP). The parental HCT116 line originates from a colon carcinoma of an adult patient and is widely used as a model of mismatch repair–deficient (MMR-deficient) colorectal cancer. Cytogenetic analyses have shown that HCT116 cells typically exhibit a near-diploid karyotype with defined chromosomal alterations, including structural rearrangements and copy number variations characteristic of microsatellite instability–positive colorectal tumors. Introduction of the GFP reporter gene enables real-time visualization of cellular behavior without substantially altering the intrinsic genetic and phenotypic properties of the parental line.
The GFP labeling in HCT116-GFP cells is commonly achieved through stable transfection, resulting in uniform fluorescence that facilitates live-cell imaging, cell tracking, and quantitative analysis of proliferation, migration, and tumor growth dynamics. This modification is particularly valuable in in vitro assays and in vivo xenograft models, where GFP expression allows non-invasive monitoring of tumor progression, metastatic dissemination, and response to therapeutic interventions. Fluorescence-based phenotypic profiling approaches have demonstrated that colon cancer cell lines, including HCT116, exhibit distinct intracellular signatures that can be captured through imaging-based methodologies, supporting the utility of fluorescent reporters such as GFP for high-content screening applications.
HCT116-GFP serves as a robust tool for investigating colorectal cancer biology, enabling detailed analysis of tumor cell behavior, microenvironmental interactions, and therapeutic efficacy in both basic and translational research contexts.
Genetic modification: Stably modified by replication-incompetent lentiviral transduction to express the ZsGreen1 green fluorescent protein reporter; maintained as a polyclonal population under puromycin selection (1–5 µg/mL). S1/BSL-1 containment.

Tissue	Colon
Disease	Colon carcinoma

Synonyms

- HCT-116
- HCT.116
- HCT_116
- HCT116
- HCT116wt
- HCT-116/P
- HCT-116/parental
- CoCL2

CLASSIFICATION

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

GMO status details

GMO-S1: This cell line contains a stably integrated ZsGreen1 green fluorescent protein reporter introduced via replication-incompetent lentiviral transduction. The resulting polyclonal cell population was maintained under puromycin selection (1–5 µg/mL). S1 containment is required. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

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CHARACTERISTICS

Doubling time	27 hours ; 17.1 hours ; 22 hours ; 25.02 hours ; 36 hours ; 18.14 +- 0.051 hours ; ~25-48 hours ; 17.4 hours ; ~21 hours

IDENTIFIERS

Citation

HCT116-GFP (Cytion catalog number 305649)

NCBI TaxID	9606
Cellosaurus	CVCL_0291

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

ZsGreen1 (green fluorescent protein)

Mutational profile

Mutation: p.Lys437Argfs*5, Homozygous; Mutation: p.Ile2675Aspfs*6, Heterozygous; Mutation: p.Arg24Serfs*20, Heterozygous; Mutation: p.Glu33Argfs*20, Heterozygous; Mutation: p.Asp74fs*21, Heterozygous; Mutation: p.Ser45del, Heterozygous; Mutation: p.Met1470Cysfs*22, Heterozygous; Mutation: p.Asn1700Thrfs*9, Heterozygous; Mutation: p.Gly13Asp, Heterozygous; Mutation: p.His1047Arg, Heterozygous; Mutation: p.Leu450Ter, Heterozygous; Mutation: p.Lys128Serfs*35, Homozygous

HANDLING AND CULTURE

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)

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

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	Accutase
Seeding density	2 to 4 x 10^4 cells/cm^2

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 200 x g for 5 minutes, carefully discard the supernatant containing freezing medium.
Follow the procedure described under Post-Thaw Recovery

QUALITY CONTROL AND CRYOPRESERVATION

Freeze medium	As a cryopreservation medium, we use complete growth medium + 10% DMSO for adequate post-thaw viability.

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	48 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