LS180

305823

GENERAL INFORMATION

Description

LS180 is a human colon adenocarcinoma cell line established from the primary tumor of an adult female patient with moderately well-differentiated colon adenocarcinoma that had metastasized to the pericolic adipose tissue. The cells are epithelial in morphology, with an oval to polygonal shape and diameters ranging from 20 to 40 µm. They exhibit ultrastructural characteristics typical of normal colonic mucosal cells, including abundant microvilli-particularly prominent in secretory cells-and the presence of intracytoplasmic mucin vacuoles. These cells display hallmark features of neoplasia, including high levels of carcinoembryonic antigen (CEA) production and the ability to form tumors in both hamster cheek pouches and immunodeficient mice, indicating their tumorigenic potential in vivo.
LS180 cells were notable for their exceptionally high levels of CEA production, releasing approximately 900 times more CEA per cell into the culture medium and carrying 30 times more cell-associated CEA than other colon cancer lines such as HT-29. This makes LS180 a valuable model for studying the biochemical, immunological, and functional properties of neoplastic colonic epithelium, particularly in relation to CEA-associated tumor markers. The cells have been karyotyped and confirmed to have abnormal chromosomal complements consistent with neoplastic transformation. Their epithelial identity and tumor-associated traits make them suitable for use in immunological assays, drug screening, and studies on colorectal cancer biology and therapeutic response.
Additionally, LS180 is part of the Cancer Cell Line Encyclopedia (CCLE), where it has been deeply characterized through multi-omics profiling including proteomics, transcriptomics, and mutation data. LS180 is classified as a microsatellite instable (MSI) cell line, a phenotype associated with a hypermutated genome and known to affect proteome organization and therapeutic vulnerabilities. The proteomic analysis of LS180 revealed that MSI cell lines, including LS180, exhibit significant dysregulation of protein complexes involved in mutation surveillance and translational control, offering insights into mechanisms of drug sensitivity and resistance. The proteomic data further support that large-scale pathway-level coordination in protein expression in LS180 is decoupled from RNA expression, underscoring the importance of direct protein-level investigations.

Tissue	Colon
Disease	Adenocarcinoma

Synonyms

- LS-180
- LS 180
- Laboratory of Surgery 180

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Cell type	Epithelial cell of colon
Tumourigenic	Yes; Yes, in nude mice

Karyotype

Modal number = 45; range = 42 to 47.

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Doubling time	72 hours

IDENTIFIERS

Citation

LS180 (Cytion catalog number 305823)

NCBI TaxID	9606
Cellosaurus	CVCL_0397

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

Serologically defined colon cancer antigen 3; Homo sapiens, expressed
HLA A2, B13, B50; Blood type O

Isoenzymes

ADA, 1
ES-D, 1
G6PD, B
PEP-D, 1
PGD, A
PGM1, 1
PGM3, 2

Mutational profile

Mutation: ACVR2A, Simple, p.Lys437Argfs*5 (c.1310delA), Homozygous, Mutation, CTNNB1, Simple, p.Ser45Phe (c.134C>T), Homozygous, KRAS, Simple, p.Gly12Asp (c.35G>A), Heterozygous. Mutation, PIK3CA, Simple, p.His1047Arg (c.3140A>G), Unspecified Mutation, TGFBR2, Simple, p.Lys128Serfs*35 (c.383delA), Homozygous; Mutation, TP53

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

Dissociation reagent	Accutase

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	58 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.

Disclaimer

Our cells are provided for in vitro laboratory research purposes exclusively and are not intended for clinical or diagnostic use, nor are they to be administered to humans or used for veterinary purposes. Users must adhere to all applicable guidelines and regulations for the handling and use of these cells in a research setting.

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