LS513

300457

GENERAL INFORMATION

Description

The LS513 cell line is a well-characterized colorectal carcinoma model derived from a primary tumor biopsy taken in 1985 from a 63-year-old Caucasian male patient. The tumor was classified as a Dukes' C mucin-secreting cecal carcinoma located at the Bauhin valve. LS513 cells are adherent in nature and have demonstrated multidrug resistance (MDR), making them a valuable model for studying drug resistance mechanisms in colorectal cancer. These cells exhibit a 30% colony-forming efficiency in methylcellulose and are tumorigenic in nude mice, further validating their use in oncogenic studies.
At the genetic level, LS513 cells express several notable features. They are positive for the p53 wild-type oncogene and express carcinoembryonic antigen (CEA) on approximately 50% of the cells. Additionally, LS513 cells express major histocompatibility complex (MHC) class I antigens, including HLA and beta 2 microglobulin, but lack MHC class II antigens (HLA-DR, DQ, and DP). The cells also produce transforming growth factor beta 1 (TGF beta-1) at a rate of 83 pg per 10^6 cells per 24 hours. Notably, TGF beta-1 acts as an inhibitor of LS513 cell proliferation, whereas TGF beta-2 has no significant effect on their growth. Compared to the LS1034 cell line, LS513 cells are 100-fold less sensitive to TGF beta-1, indicating distinct responses to growth factor signaling between these two colorectal carcinoma models.
LS513 cells exhibit a unique profile of antigen expression, with strong positivity for intercellular adhesion molecule 1 (ICAM-1) and HLA class I antigens. The lack of MHC class II antigen expression is particularly noteworthy, as it suggests potential immune evasion mechanisms that could be relevant to colorectal cancer progression and metastasis. These features, along with their resistance to multiple drugs and their ability to form tumors in immunocompromised mice, make LS513 cells a powerful tool for studying the molecular and cellular underpinnings of colorectal cancer, especially in the context of immune interactions and therapeutic resistance.

Tissue	Colorectal
Disease	Adenocarcinoma

Synonyms

- LS513
- LS 513

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, forms tumors in nude mice

Karyotype

Two stem lines can be distinguished. The main one was represented in 65% of the cells, with a modal number of 51,xY and 3 markers, M1 - der(1)t(1,15), M2 - der(2)t(2,3)der(3)t(2,3), M3, and a monosomy 15. The second stem line had a modal chromosome number of 52,xY and presented M2 and M3 plus an isochromosome for the long arm of chromosome 1 called M4. A trisomy 5,7, a tetrasomy 13, and a monosomy 2 and 3 were present in all of the cells analyzed, the line did not exhibit monosomy 15.

Cytion GmbH
Nikola-Tesla-Str. 3
69124 Heidelberg
Tel: +49 (0)6221 405780
info@cytion.com
cytion.com

Registered office Heidelberg
VAT ID: DE283292917
Local court Mannheim - HRB 714394
CEO / Geschäftsführer: Jonathan Steubing

Banking information
Sparkasse Heidelberg
IBAN: DE35 6725 0020 0009 2076 86
BIC: SOLADES1HDB

IDENTIFIERS

Citation

LS513 (Cytion catalog number 300457)

NCBI TaxID	9606
Cellosaurus	CVCL_1386

EXPRESSION AND SUSCEPTIBILITY

Protein expression

CEA+ (50%), p53+

Antigen expression

Carcinoembryonic antigen (CEA), ICAM-1, HLA class I positive

Products

Transforming growth factor beta 1 (TGF beta-1, 83 pg per 10 exp6 cells per 24 hours)

HANDLING AND CULTURE

Culture medium

DMEM:Ham's F12 (1:1), w: 3.1 g/L Glucose, w: 2.5 mM L-Glutamine, w: 15 mM HEPES, w: 0.5 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion article number 820400a)

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

Supplements

Supplement the medium with 10% FBS

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	1 x 10^4 cells/cm^2
Fluid renewal	Every 3 days
Post-thaw recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

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	63 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