

LoVo Cell Line | 300266**General information****Description**

The LOVO cell line, derived from a grade IV Dukes' type C colon adenocarcinoma, is characterized by mutations in the adenomatous polyposis coli (APC) gene, Kirsten rat sarcoma viral oncogene homolog (KRAS), and tumor protein p53 (TP53). These genetic features are instrumental in studying the molecular basis of colorectal cancer progression, metastasis, and drug resistance mechanisms.

LoVo cells serve as a critical model for screening anti-cancer compounds and by understanding how cancer cells like LoVo develop resistance, researchers can design more effective therapies. LoVo cells are also employed in molecular biology studies to explore signaling pathways that regulate cancer cell growth, survival, and metastasis.

In the context of human colon cancer and colorectal cancer cell lines, LoVo cells offer insights into the mechanisms of tumor growth and the process of metastasis, particularly node metastasis, and the tumor microenvironment driving cancer progression. The use of LoVo colon cancer cells, especially in lovo xenograft models, allows researchers to study cancer cell dynamics and metastatic potential.

Deep sequencing and gene expression analysis in LoVo cells have shed light into the specific genes and their roles in colorectal cancer cells. This research has highlighted the importance of integrins, such as integrin $\beta 1$, in cancer cell migration and invasion, and the regulation of key molecules like MMP2 in signaling pathways contributing to the understanding of cancer cell lines' invasive properties.

LoVo cells, as a model system in colorectal cancer cell lines, play a pivotal role in advancing our understanding of the molecular aspects of cancer, from gene and protein expression to the intricacies of tumor growth and metastasis.

Organism

Human

Tissue

Colon, grade IV, Dukes' type C

Disease

Adenocarcinoma

Metastatic site

Left supraclavicular lymph node

Synonyms

LOVO

Characteristics**Age**

56 years

Gender

Male

Morphology

Epithelial-like

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Growth properties Adherent

Identifiers / Biosafety / Citation

Citation LoVo (Cytion catalog number 300266)

Biosafety level 1

Expression / Mutation

Antigen expression HLA A11, B15, B17, Cw1, Cw3, blood type B

Isoenzymes G6PD, B, PGM1, 2, PGM3, 1-2, 6PGD, A, ES-D, 1

Oncogenes myc +, myb +, ras +, fos +, p53 +, sis -, abl -, ros -, src -

Tumorigenic Yes, in nude mice

Reverse transcriptase negative

Products carcinoembryonic antigen (CEA) 908 ng/106 cells/10 days

Mutational profile LOVO cells carry a mutation in codon 13 of Kras gene: GGC(Wt Gly) >GAC(Asp)

Handling

Culture Medium Ham's F12, w: 1.0 mM stable Glutamine, w: 1.0 mM Sodium pyruvate, w: 1.1 g/L NaHCO₃ (Cytion article number 820600a)

Medium supplements Supplement the medium with 10% FBS

Passaging solution Accutase

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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.

Split ratio A ratio of 1:2 to 1:10 is recommended

Seeding density 1×10^4 cells/cm²

Fluid renewal 2 to 3 times per week

Freezing recovery After thawing, plate the cells at 5×10^4 cells/cm² and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

Freeze medium CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

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Handling of cryopreserved cultures

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. Optionally, skip centrifugation but remove any remaining freezing medium after 24 hours.
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.

Quality control / Genetic profile / HLA

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.

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STR profile

Amelogenin: x,x
CSF1PO: 10,11,13,14
D13S317: 8,11
D16S539: 9,12
D5S818: 11,13
D7S820: 10,11
TH01: 9.3
TPOX: 8,9
vWA: 17,18
D3S1358: 14,16,17
D21S11: 29,31.2,32.2
D18S51: 13,18
Penta E: 10,16
Penta D: 9,10,14
D8S1179: 10
FGA: 18,20

HLA alleles

A*: 01:01:01, 32:01:01
B*: 27:08, 57:55
C*: 06:02:01
DRB1*: 13:01:01, 13:02:01
DQA1*: 01:02:01, 01:03:01
DQB1*: 06:03:01, 06:04:01
DPB1*: 02:01:02, 04:01:01
E: 01:01:01