Lovo-Luc

305682

GENERAL INFORMATION

Description

LoVo-Luc is a bioluminescent derivative of the human LoVo colorectal adenocarcinoma cell line, engineered to stably express a firefly luciferase reporter gene. The parental LoVo cell line was established from a metastatic left supraclavicular lymph node of a colorectal adenocarcinoma in a 56-year-old male patient and is one of the most widely used colorectal cancer cell lines in cancer research. LoVo cells exhibit epithelial-like morphology and are characterized by microsatellite instability (MSI), deficient mismatch repair (dMMR), and expression of oncogenes including Myc, myb, ras, fos, and p53. These features make LoVo a relevant model for studying mismatch repair-deficient colorectal cancer biology and therapeutic responses, including sensitivity to immunotherapy.
The stable luciferase integration in LoVo-Luc enables sensitive, quantitative bioluminescence imaging (BLI) of tumor burden in xenograft models using immunocompromised hosts. The luminescent signal correlates with viable tumor cell number, supporting noninvasive longitudinal monitoring of tumor engraftment, growth kinetics, and treatment response. LoVo-Luc is particularly valuable for preclinical studies evaluating immune checkpoint inhibitors, chemotherapeutic agents, and targeted therapies in the context of MMR-deficient colorectal cancer, as well as for high-throughput drug screening and mechanistic investigations of colorectal cancer biology.
LoVo-Luc retains the established molecular characteristics of the parental LoVo line, including its MSI phenotype, oncogene expression profile, and production of carcinoembryonic antigen (CEA). The luciferase reporter substantially enhances experimental throughput and enables real-time pharmacodynamic assessment of treatment efficacy. Researchers should verify luciferase activity, MMR status, and growth kinetics under their specific experimental conditions prior to use in large-scale preclinical studies.

Tissue	Metastatic
Disease	Colon adenocarcinoma
Metastatic site	Left supraclavicular lymph node

CLASSIFICATION

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

GMO status details

GMO-S1: This cell line contains a stably integrated firefly luciferase reporter cassette (Luc2, codon-optimized) 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

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice
Doubling time	24-48 hours

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IDENTIFIERS

Citation

Lovo-Luc (Cytion catalog number 305682)

NCBI TaxID	9606
Cellosaurus	CVCL_4Y03

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

HLA A11, B15, B17, Cw1, Cw3, blood type B, Luc2 (firefly, codon-optimized)

Isoenzymes

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

Oncogenes

Myc +, myb + , ras +, fos +, p53 +, sis -, abl -, ros -, src -

Mutational profile

Mutation: p.Lys437Argfs*5, Heterozygous; Mutation: p.Arg1114Ter, Heterozygous; Mutation: p.Met1431fs*42, Heterozygous; Mutation: p.Arg2816Gln, Heterozygous; Mutation: p.Leu15Phefs*41, Heterozygous; Mutation: p.Arg505Cys, Heterozygous; Mutation: p.Gly13Asp, Heterozygous; Mutation: p.Ala292Val, Heterozygous; Mutation: p.Lys128Serfs*35, Homozygous

Reverse transcriptase	Negative

Products

Carcinoembryonic antigen (CEA) 908 ng/106 cells/10 days

HANDLING AND CULTURE

Culture medium

Ham's F12K Medium, w: 2.0 mM L-Glutamine, w: 2.0 mM Sodium pyruvate, w: 2.5 g/L NaHCO3 (Cytion article number 820608a)

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.

Split ratio	1 to 3
Seeding density	1-3*10^4/cm²
Fluid renewal	2 to 3 times per week

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	56 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

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