U87MG-Luc

305707

GENERAL INFORMATION

Description

U-87 MG-Luc cells are a bioluminescent derivative of the human U-87 MG glioblastoma cell line that have been genetically modified to stably express the firefly luciferase reporter gene. Upon exposure to luciferin substrate, these cells generate a luminescent signal proportional to viable cell number, enabling sensitive and quantitative monitoring of tumor growth, proliferation, and therapeutic response. U-87 MG-Luc cells retain many of the morphological and biological properties of the parental glioblastoma model, including adherent growth, rapid proliferation, and expression of markers commonly associated with astrocytic tumor cells.
The luciferase reporter system makes U-87 MG-Luc cells particularly valuable for orthotopic and subcutaneous xenograft studies in immunocompromised animal models. Bioluminescence imaging enables non-invasive longitudinal assessment of intracranial tumor establishment, invasion, recurrence, and response to experimental therapies, reducing the need for invasive procedures or large animal cohorts. These cells are widely used in preclinical neuro-oncology research for evaluating chemotherapeutics, targeted inhibitors, immunotherapies, radiation response, nanoparticle-based drug delivery systems, and gene therapy approaches. In vitro, U-87 MG-Luc cells are also suitable for high-throughput viability assays, migration and invasion studies, and real-time analysis of glioblastoma cell dynamics.
Like the parental U-87 MG line, U-87 MG-Luc cells exhibit characteristics associated with high-grade glioma biology, including altered signaling pathways involved in proliferation, apoptosis resistance, angiogenesis, and metabolic adaptation. Researchers should note that different repositories and laboratories may use independently generated luciferase-expressing variants with differences in vector integration sites, promoter systems, reporter intensity, and selection markers. Authentication and validation of luciferase stability, growth behavior, and molecular characteristics are therefore recommended prior to experimental use, particularly in studies involving long-term in vivo imaging or therapeutic screening.

Tissue	Brain
Disease	Glioblastoma
Metastatic site	Primary tumor site (brain)

Applications

Glioblastoma research; bioluminescence imaging in orthotopic and subcutaneous xenograft models; intracranial tumor monitoring; drug delivery evaluation; nanoparticle therapy; radiation response; immunotherapy evaluation; neuro-oncology preclinical studies

Synonyms

- U-87MG
- U87 MG
- U-87-MG
- U87-MG
- U-87 MG
- U-87
- U87
- 87 MG
- 87MG

CLASSIFICATION

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

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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
Cell type	Glial cells (astrocytic)
Tumourigenic	Yes, in nude mice inoculated subcutaneously with 107 cells

IDENTIFIERS

Citation

U87MG-Luc (Cytion catalog number 305707)

NCBI TaxID	9606
Cellosaurus	Not assigned (Luc derivative of U-87 MG; parental CVCL_0022)

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

Luc2 (firefly, codon-optimized)

Isoenzymes

Me-2, 1, PGM3, 1, PGM1, 2, ES-D, 1, AK-1, 1, GLO-1, 1, G6PD, B

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 and 1% NEAA

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 to 3 x 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week

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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	44 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