Hela-Luc

305664

GENERAL INFORMATION

Description

HeLa-Luc cells are a bioluminescent derivative of the human HeLa cervical adenocarcinoma cell line that have been engineered to constitutively express a luciferase reporter gene. Following administration of the luciferin substrate, these cells emit a quantifiable luminescent signal that directly correlates with viable cell number and metabolic activity. This feature enables sensitive, non-invasive monitoring of tumor cell proliferation, survival, and dissemination in both in vitro assays and in vivo imaging applications. HeLa-Luc cells retain the robust growth characteristics and epithelial morphology associated with parental HeLa cells while providing an additional optical readout for longitudinal experimental analysis.

The luciferase-expressing phenotype makes HeLa-Luc cells particularly useful for xenograft and metastasis studies in immunocompromised animal models, where real-time bioluminescence imaging can be used to track tumor burden and therapeutic response over time. In cell-based assays, these cells are widely employed for high-throughput drug screening, cytotoxicity testing, evaluation of gene delivery systems, and studies of cancer cell signaling and apoptosis. The stable reporter expression also supports reproducible quantification in co-culture systems and experimental models requiring dynamic monitoring of cellular viability or transcriptional activity.

As with parental HeLa cells, HeLa-Luc cells exhibit the genomic instability and high proliferative capacity characteristic of transformed cervical cancer cells associated with human papillomavirus type 18 (HPV-18). Experimental conditions, luciferase vector design, promoter selection, and selection strategy may vary between laboratories or commercial sources, potentially influencing reporter intensity and long-term expression stability. Researchers should therefore verify luciferase activity, growth kinetics, and phenotypic consistency under their specific culture and assay conditions prior to large-scale experimental use.

Tissue	Uterus, cervix
Disease	Human papillomavirus-related endocervical adenocarcinoma

CLASSIFICATION

Organism	Human
Sex	Female
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

IDENTIFIERS

Citation

Hela-Luc (Cytion catalog number 305664)

NCBI TaxID	9606

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Cellosaurus	CVCL_YA88

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

Luc2 (firefly, codon-optimized)

Isoenzymes

G6PD, A

Virus susceptibility

Poliovirus 1, 2, 3, vesicular stomatitis (Indiana), encephalomyocarditis, adenovirus 5

Reverse transcriptase	Negative

Products

Keratin

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
Seeding density	1 to 3 x 10^4 cells/cm^2
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	30,5 years
Ethnicity	African American

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