A549-Luc

305648

GENERAL INFORMATION

Description

A549-Luc is a genetically engineered derivative of the human lung adenocarcinoma cell line A549, modified to stably express a luciferase reporter gene. The parental A549 cell line originates from a lung carcinoma of an adult patient and is widely used as a model for non-small cell lung cancer (NSCLC), particularly adenocarcinoma. A549 cells exhibit epithelial morphology and harbor key molecular features relevant to lung cancer biology, including mutations in KRAS and alterations in pathways regulating proliferation, metabolism, and response to oxidative stress. The luciferase-expressing variant retains these intrinsic characteristics while enabling bioluminescent detection.
The incorporation of the luciferase gene allows for sensitive, non-invasive quantification of viable cells through bioluminescence imaging following administration of a luciferin substrate. This enables real-time monitoring of cell proliferation, tumor growth, and therapeutic response in both in vitro assays and in vivo xenograft models. The emitted light signal correlates with metabolically active cell number, making A549-Luc particularly suitable for longitudinal studies of tumor kinetics, metastasis, and drug efficacy. Stable integration ensures sustained reporter expression, although signal intensity may vary depending on clone selection and experimental conditions.
A549-Luc maintains the biological behavior of the parental A549 line, including its utility in studies of lung cancer progression, inflammation, and response to chemotherapeutic or targeted agents. The addition of a luciferase reporter significantly enhances experimental flexibility, supporting high-throughput drug screening, in vivo imaging, and quantitative assessment of tumor burden over time. As such, A549-Luc is a valuable tool for translational lung cancer research and preclinical evaluation of novel therapeutic strategies.

Tissue	Lung
Disease	Lung adenocarcinoma

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

IDENTIFIERS

Citation

A549-Luc (Cytion catalog number 305648)

NCBI TaxID	9606
Cellosaurus	CVCL_J242

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

Luc2 (firefly, codon-optimized)

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Mutational profile

Mutation: p.Gly12Ser, Homozygous; Mutation: p.Gln37Ter, Homozygous

HANDLING AND CULTURE

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

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	58 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