MDA-MB-231-Luc

305693

GENERAL INFORMATION

Description

MDA-MB-231-Luciferase is a bioluminescent derivative of the MDA-MB-231 human breast cancer cell line, genetically engineered to express luciferase. This modification enables sensitive, non-invasive detection of tumor burden and metastatic dissemination in live animal models through bioluminescence imaging (BLI). Upon administration of the luciferase substrate, these cells emit light that can be quantified using imaging systems, allowing for dynamic monitoring of tumor growth, metastatic colonization, and therapeutic response over time without the need for repeated invasive procedures.
As a triple-negative breast cancer (TNBC) model, the parental MDA-MB-231 line is ER-, PR-, and HER2-negative, and is characterized by a mesenchymal, invasive phenotype. The luciferase-expressing variant retains these aggressive features and is frequently used in xenograft and metastasis models, particularly to study organotropism such as bone, lung, or brain metastasis. Its high tumorigenic potential in immunocompromised mice combined with luciferase expression makes MDA-MB-231-Luciferase a powerful tool for quantifying tumor dynamics in real time and evaluating anti-cancer drug efficacy, especially in preclinical therapeutic studies targeting metastasis or microenvironmental interactions.
While the luciferase label itself does not alter the inherent biological behavior of the MDA-MB-231 cells, batch-specific validation is recommended to confirm that luciferase integration does not influence proliferation, invasion, or drug response in a given experimental context. This line is especially useful for applications requiring longitudinal tracking, including orthotopic mammary fat pad implantation, tail vein injection for experimental metastasis, or intracardiac injection to model systemic dissemination.

Tissue	Metastatic
Disease	Breast adenocarcinoma
Metastatic site	Pleural effusion

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

IDENTIFIERS

Citation

MDA-MB-231-Luc (Cytion catalog number 305693)

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Banking information
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IBAN: DE35 6725 0020 0009 2076 86
BIC: SOLADES1HDB

NCBI TaxID	9606
Cellosaurus	CVCL_JZ05

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

Luc2 (firefly, codon-optimized)

Mutational profile

Mutation: p.Gly464Val, Heterozygous; Mutation: p.Gly13Asp, Heterozygous; Mutation: p.Arg280Lys, Homozygous

HANDLING AND CULTURE

Culture medium

DMEM:Ham's F12 (1:1), w: 3.1 g/L Glucose, w: 1.6 mM L-Glutamine, w: 15 mM HEPES, w: 1.0 mM Sodium pyruvate, w: 1.2 g/L NaHCO3 (Cytion 820400a)

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

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	Accutase 5 min. at 37°C

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	51 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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