MB49

305240

GENERAL INFORMATION

Description

The MB49 cell line is a murine model derived from the C57BL/6 mouse bladder epithelial cells. It was originally developed to study bladder cancer, providing a platform for examining the biological and molecular characteristics of urothelial carcinoma. The cell line was established through the chemical induction of bladder tumors using the carcinogen 7,12-dimethylbenz[a]anthracene (DMBA), as detailed in early research studies. MB49 cells exhibit a tumorigenic phenotype when transplanted into syngeneic mice, forming urothelial carcinomas. These tumors are often poorly differentiated and can display mixed morphologies, including spindle-shaped cells and adenocarcinomatous areas, which resemble aggressive bladder cancer subtypes seen in human pathology.
Further research has led to the development of MB49-I, a more invasive subline of MB49. This subline was generated after 13 consecutive in vivo passages, enhancing its invasive and metastatic potential. MB49-I cells exhibit increased proteolytic activity, particularly in enzymes such as cathepsin B, matrix metalloproteinase 9 (MMP-9), and urokinase-type plasminogen activator (uPA). These enzymes contribute to the breakdown of extracellular matrix components, facilitating the invasion and metastasis of tumor cells. The MB49-I subline, when inoculated orthotopically into the bladder of syngeneic mice, leads to the formation of highly invasive bladder tumors, making it a valuable model for studying tumor progression and testing anti-cancer therapeutics aimed at preventing invasion and metastasis.
This MB49 model, including the MB49-I variant, is instrumental in understanding the molecular mechanisms underlying bladder cancer progression and in developing new therapeutic strategies. The model closely mimics human bladder cancer, particularly in its ability to simulate the invasive and metastatic characteristics of the disease, thereby providing a robust system for preclinical studies.

Tissue	Urinary bladder
Disease	Mouse bladder transitional cell carcinoma

Synonyms

- MB-49

CLASSIFICATION

Organism	Mouse
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial

Karyotype

Has lost chromosome Y

IDENTIFIERS

Citation

MB49 (Cytion catalog number 305240)

NCBI TaxID	10090
Cellosaurus	CVCL_7076

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HANDLING AND CULTURE

Culture medium

DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

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.

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 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

QUALITY CONTROL AND CRYOPRESERVATION

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.
To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.

Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

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

Breed / subspecies	C57BL/ICRF-a(t)
Donor age	Adult

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

PRODUCT DETAILS

Composition table