MCA-3D

400437

GENERAL INFORMATION

Description

The MCA-3D cell line is derived from primary mouse epidermal cultures that exhibit resistance to calcium-induced terminal differentiation. These cells were initially treated with the carcinogens N-methyl-N'-nitro-N-nitrosoguanidine (MNNG) or 7,12-dimethylbenz[a]anthracene (DMBA), and subsequently exposed to 12-O-tetradecanoylphorbol-13-acetate (TPA). The resistance to terminal differentiation was assessed by elevating calcium levels in the culture medium to 1.2 mM, which selectively allows for the growth of transformed cells while normal cells typically undergo terminal differentiation and death.
The MCA-3D cell line displays an epithelial morphology and forms well-defined colonies in culture. Ultrastructural analysis reveals that MCA-3D cells contain keratin filaments and desmosomes, which are indicative of their epithelial origin and suggest maintenance of some degree of normal keratinocyte differentiation. However, the exact abundance of these structures can vary among subpopulations within the line.
MCA-3D cells have been tested for tumorigenicity by subcutaneous injection into syngeneic Balb/c neonates, with results indicating that this line is non-tumorigenic, even after prolonged culture in high calcium conditions. Additionally, the MCA-3D cells do not grow in soft agar, further supporting their non-malignant phenotype. Biochemical assays for gamma glutamyl transpeptidase (GGT) activity and transglutaminase activity have shown that MCA-3D cells are negative for GGT, and their transglutaminase activity does not correlate with tumorigenic potential, aligning with their non-tumorigenic classification.
Overall, the MCA-3D cell line serves as a model for studying the early stages of carcinogenesis and the factors that influence the progression from preneoplastic lesions to fully malignant tumors.

Tissue	Skin

Synonyms

- MCA3D
- MCa3D
- MCA/3D
- MCA 3D

CLASSIFICATION

Organism	Mouse
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Cell type	Keratinocyte

IDENTIFIERS

Citation

MCA-3D (Cytion catalog number 400437)

NCBI TaxID	10090
Cellosaurus	CVCL_5797

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HANDLING AND CULTURE

Culture medium

Ham's F12, w: 1.0 mM stable Glutamine, w: 1.0 mM Sodium pyruvate, w: 1.1 g/L NaHCO3 (Cytion article number 820600a)

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

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	TrypLE Express

Subculturing

Remove medium and rinse the adherent cells using PBS without calcium and magnesium (3-5 ml PBS for T25, 5-10ml for T75 cell culture flasks). Add TrypleExpress(1-2ml per T25, 2.5ml per T75 cell culture flask), the cell sheet must be covered completely. Incubate at 37 degree Celsius for 15-20 minutes. Carefully resuspend the cells with medium (10 ml), centrifuge for 5 min at 300xg, resuspend cells in fresh medium and dispense into new flasks which contain fresh medium.

Seeding density	0.5 to 1 x 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week
Post-thaw recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

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	BALB/c

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.

Disclaimer

Our cells are provided for in vitro laboratory research purposes exclusively and are not intended for clinical or diagnostic use, nor are they to be administered to humans or used for veterinary purposes. Users must adhere to all applicable guidelines and regulations for the handling and use of these cells in a research setting.

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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