MIA PaCa-2

300438

GENERAL INFORMATION

Description

The MIA PaCa-2 cell line is an indispensable asset in the field of cancer research and was derived from the pancreatic carcinoma tissue of a 65-year-old male. Mia PaCa 2 cells are widely used in the study of pancreatic ductal adenocarcinoma (PDAC), a notoriously aggressive and lethal cancer type. The cell line offer a solid tumor model that reflects the cellular characteristics of PDAC. One of the key attributes of this cell line is its genetic profile, which includes mutations in critical genes like KRAS and TP53, which are emblematic of the genetic landscape observed in pancreatic cancer patients.
The cells have been extensively utilized to investigate various aspects of pancreatic cancer growth, metastasis, and resistance to therapeutics. Mia Paca-2 cells are instrumental in assessing the efficacy of chemotherapeutic drugs. Furthermore, the cell line serves as a vital resource for probing into the signaling pathways pivotal for cancer cell survival and metastasis, including the MAPK, PI3K/AKT, and Wnt pathways. Studies utilizing MIA PaCa-2 cells have also shed light on the dynamic interactions between cancer cells and their microenvironment. MIA PaCa-2's robust in vitro growth and its capacity to form tumors in xenograft models make it particularly suited for examining cancer progression and the mechanisms of tumorigenesis.
In summary, the Mia Paca-2 cell line, with its broad application in pancreatic cancer research, continues to be a critical resource for scientists worldwide.

Tissue	Pancreas
Disease	Ductal adenocarcinoma

Synonyms

- MIA-PaCa-2
- MIA-PACA-2
- MIA-Pa-Ca-2
- MIA Paca2
- MIA PaCa2
- MiaPaCa-2
- MIAPACA-2
- MiaPaca.2
- MiaPaCa2
- Miapaca2
- MIAPaCa2
- MIAPACA2
- Mia PACA 2
- MIAPaCa-2
- PaCa2

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

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CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Growth in soft agar. Formation of progressively growing carcinomas in nude athymic mice.

Karyotype

Hypotriploid

Doubling time	25 to 40 hours

IDENTIFIERS

Citation

MIA PaCa-2 (Cytion catalog number 300438)

NCBI TaxID	9606
Cellosaurus	CVCL_0428

EXPRESSION AND SUSCEPTIBILITY

Isoenzymes

G6PD, B

Mutational profile

Homozygous for KRAS p.Gly12Cys (c.34G>T) Homozygous for CDKN2A deletion

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.

Seeding density	1 x 10^4 cells/cm^2
Fluid renewal	2 to 3 times per week
Post-thaw recovery	After thawing, plate the cells at 2 to 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

Donor age	65 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