VMRC-RCZ

305886

GENERAL INFORMATION

Description

The VMRC-RCZ cell line is a human renal cell carcinoma (RCC) line established from a patient with clear cell type kidney cancer. It was derived to investigate the biological and genetic underpinnings of renal carcinogenesis, particularly with regard to chromosomal abnormalities and tumor progression. Cytogenetic analysis of VMRC-RCZ has revealed deletion of the short arm of chromosome 9, specifically within the 9p21-22 region. This deletion implicates the loss of key tumor suppressor genes such as CDKN2A, which is commonly associated with various malignancies and plays a role in cell cycle regulation.
In broader cancer genome analyses, VMRC-RCZ has contributed to the mapping of homozygous deletions across multiple tumor types. These studies show that regions like 9p21 often exhibit structural instability in cancer cell lines, including VMRC-RCZ, suggesting that genomic deletions in this region may confer a selective growth advantage during tumor evolution. Additionally, VMRC-RCZ has been incorporated into high-resolution genomic profiling platforms for the systematic identification of cancer-related mutations and copy number alterations, making it a valuable model for studying RCC pathogenesis and for the exploration of potential therapeutic vulnerabilities in renal malignancies.

Tissue	Kidney
Disease	Renal cell carcinoma
Metastatic site	Renal

Synonyms

- VMRCRCZ
- Virginia Mason Research Center-Renal Cancer Z

CLASSIFICATION

Organism	Human
Sex	Unspecified
Growth properties	Adherent
Biosafety level	1

IDENTIFIERS

Citation

VMRC-RCZ (Cytion catalog number 305886)

NCBI TaxID	9606
Cellosaurus	CVCL_1791

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: TP53, Simple, p.Asp48Valfs*74 (c.143_146del4), Heterozygous (Cosmic-CLP=909781), VHL, Simple, c.463+2T>C, Heterozygous, Note=Splice donor mutation (Cosmic-CLP=909781)

HANDLING AND CULTURE

Culture medium

EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)

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

Supplements

Supplement the medium with 10% FBS

Dissociation reagent	Accutase
Split ratio	A ratio of 1:6 is recommended.
Fluid renewal	2 to 3 times per week

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	Age unspecified
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.

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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