TCMK-1

305361

GENERAL INFORMATION

Description

TCMK-1 is a mouse kidney epithelial cell line that was transformed using simian virus 40 (SV40). This cell line was established to study SV40-induced cellular transformation and oncogenesis in murine kidney tissue. The transformation process resulted in cells with an altered morphology, increased proliferative capacity, and the ability to maintain continuous growth in vitro. TCMK-1 cells exhibit a predominantly epithelial phenotype with some spindle-shaped cells and multinucleated giant cells, which are common features of transformed cell lines.
One of the key characteristics of TCMK-1 is the presence of SV40 large T-antigen, which plays a role in disrupting normal cell cycle regulation by inactivating tumor suppressor proteins such as p53 and RB. This mechanism facilitates uncontrolled cell division and enhances cellular survival. Immunofluorescence studies have confirmed the expression of SV40-specific antigens in TCMK-1 cells, providing further evidence of viral-induced transformation. Additionally, despite their transformed nature, these cells have not been observed to form tumors in vivo when injected into immunocompetent mice.
TCMK-1 has been used in research involving viral oncogenesis, kidney cell physiology, and cellular transformation mechanisms. Due to its SV40 transformation, it serves as a useful model for studying viral-host interactions and the molecular pathways associated with cell immortalization. However, researchers should take into account that the presence of SV40 T-antigen may impact normal cellular functions, which could influence experimental outcomes.

Tissue	Kidney
Disease	Normal

Synonyms

- TCMK1
- Transformed C3H Mouse Kidney-1

CLASSIFICATION

Organism	Mouse
Sex	Unspecified
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This murine kidney-derived cell line (TCMK-1) contains an SV40 T-Antigen introduced by infection with SV40 strain 777, supporting transformed and sustained proliferation. The viral sequences are stably present. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial
Tumourigenic	No; No, in immunosuppressed mice; Yes, in semisolid medium

Karyotype

Modal number = 78; range = 64 to 157. All cells showed 2-6 acrocentric chromosomes with secondary constrictions and 1-4 biarmed chromosomes per cells. Sixty percent of the cells had one or more minute chromosomes.

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IDENTIFIERS

Citation

TCMK-1 (Cytion catalog number 305361)

NCBI TaxID	10090
Cellosaurus	CVCL_2772

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

H-2k

Viruses

SV40

Virus susceptibility

Vesicular stomatitis, Glasgow (Indiana); Human poliovirus 1

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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

Supplements

Supplement the medium with 10% FBS and 10 mM HEPES, 2,5g/L Glucose, 1 mM Sodiumpyruvate

Dissociation reagent	Accutase 10 min at 37°C

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.

Split ratio	1 to 3
Seeding density	2 to 4 x 10^4 cells/cm^2
Fluid renewal	Every 2 to 3 days

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	C3H/Mai
Donor age	1-2 months

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