Product sheet

LLC-MK2 (Original) Cells | 305149

General information

Description	LLC-MK2 is a continuous epithelial cell line established from the renal tissue of adult rhesus monkeys (*Macaca mulatta*). This cell line was originally isolated in the 1950s through the trypsinization of pooled kidney tissue from six rhesus monkeys. LLC-MK2 cells display adherent growth characteristics and have been extensively used in virology due to their high susceptibility to various viruses, including bovine viral diarrhea virus 1, human poliovirus 1, and human coxsackievirus B4. The cell line's origin and virus susceptibility make it an ideal model for studying viral replication and cytopathogenic effects. The LLC-MK2 cell line is known for its ability to be cultured in chemically defined, serum-free media, which allows for controlled experimental conditions. Research has demonstrated that these cells can be adapted to serum-free conditions without compromising growth, although initial cultures were maintained in media containing significant amounts of horse serum. The adaptation to chemically defined media is particularly advantageous for virological studies, as it minimizes the variability introduced by serum and supports long-term cell line maintenance. Furthermore, the LLC-MK2 line has been shown to maintain virus sensitivity comparable to primary monkey kidney cells, making it a reliable tool for viral titration and vaccine production studies. In addition to its role in virology, LLC-MK2 has also been investigated for its tumorigenic potential. Although it exhibits certain transformed characteristics, such as the ability to grow in soft agar, it does not form tumors in in vivo models, suggesting a limited tumorigenic risk. This characteristic further underscores its utility as a model cell line for in vitro studies, while confirming its unsuitability for therapeutic or in vivo applications.
Organism	Rhesus macaque
Tissue	Kidney
Synonyms	Llc-Mk2, LLC-MK-2, LLC-MK2 Original, LLCMK2, LLcMK2, Lilly Laboratories Culture-Monkey Kidney 2

Characteristics

Age	Adult
Morphology	Epithelial
Growth properties	Adherent

Identifiers / Biosafety / Citation

Citation	LLC-MK2 (Cytion catalog number 305149)
Biosafety level	1

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Expression / Mutation

Protein expression	Plasminogen activator

Handling

Culture Medium	Medium 199, w: 2.7 mM stable Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820101a)
Medium supplements	Supplement the medium with 1% horse serum
Passaging solution	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.
Split ratio	1: 3 to 1: 4
Fluid renewal	2 to 3 times per week
Freeze medium	CM-1 (Cytion catalog number 800100)

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Handling of cryopreserved cultures

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. 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.
3. 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.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. 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.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. 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.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

Quality control / Genetic profile / HLA

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.