Product sheet

MPC5 Cells | 305481

General information

Description	MPC-5 (also known as “MPC5” or “Mouse Podocyte Clone-5”) is a conditionally immortalized mouse podocyte cell line widely used to study podocyte differentiation and injury mechanisms in vitro. The cells originate from kidney podocytes of a transgenic H2Kb-tsA58 “Immortomouse” background and carry a temperature-sensitive SV40 large T antigen (SV40LT) system that enables controlled switching between proliferation and differentiation states. Under permissive growth conditions, MPC-5 cells are typically expanded at **33 °C** in the presence of **interferon-γ** , which supports SV40LT-driven proliferation. To induce differentiation, cells are shifted to **37 °C** and interferon-γ is removed, leading to growth arrest and acquisition of podocyte-like features. During differentiation, MPC-5 cells undergo pronounced cytoskeletal reorganization and process formation; WT1 is commonly detected across states, while synaptopodin expression is associated with the differentiated phenotype. Functionally, differentiated cells have been shown to respond to bradykinin with intracellular calcium signaling, supporting their use as a podocyte signaling model. MPC-5 is frequently applied in mechanistic studies of podocyte cytoskeletal dynamics, adhesion/contact remodeling, and cellular stress responses. The line is also broadly used for podocyte-injury paradigms relevant to diabetic kidney disease, where high-glucose exposure is commonly employed to model oxidative, inflammatory, and apoptotic stress and to monitor podocyte readouts (e.g., WT1 and slit diaphragm–associated markers as experimental endpoints). In addition, molecular regulatory layers have been studied in MPC-5 injury settings; for example, miR-204-3p has been reported to modulate high-glucose–induced dysfunction by targeting the bradykinin B2 receptor (Bdkrb2) pathway.
Organism	Mouse
Tissue	Kidney
Disease	Normal
Synonyms	MPC-5, Mouse Podocyte Clone-5

Characteristics

Breed/Subspecies	(CBA/Ca x C57BL/10)Tg(H2Kb-tsA58) Immortomouse
Age	Unspecified
Gender	Unspecified
Cell type	Podocyte
Growth properties	Adherent

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Regulatory Data

Citation	MPC5 (Cytion catalog number 305481)
Biosafety level	2
NCBI_TaxID	10090
CellosaurusAccession	CVCL_AS87

Biomolecular Data

Viruses	Transformant: Simian virus 40 (SV40)

Handling

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
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.

Thawing and Culturing Cells	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.
Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
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.
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.

Quality Control & Molecular Analysis

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.