

PtK2 Cells | 608316

General information

Description

PtK2 cells are an epithelial cell line derived from the kidney of a male long-nosed potoroo, *Potorous tridactylis*, a marsupial species. These cells are well-known for their large size and the small number of chromosomes ($2n = 12$), making them particularly useful in cytogenetic studies. Due to their easily visualized chromosomes, PtK2 cells serve as an excellent model for studying mitosis, chromosome movement, and the structural aspects of cell division. Additionally, they maintain a flat morphology throughout the cell cycle, including during mitosis, which aids in the observation of cellular processes under microscopy.

PtK2 cells exhibit specific virus susceptibility patterns, being resistant to adenovirus 5, coxsackievirus B5, and poliovirus 2, while being susceptible to coxsackievirus A9, herpes simplex, vaccinia, and vesicular stomatitis viruses. Furthermore, these cells possess intermediate filaments composed of keratin, which contribute to their structural integrity. In biomedical research, PtK2 cells are often utilized in the study of cell division, virus-host interactions, and cytoskeletal organization.

Organism Potoroo

Tissue Kidney

Synonyms Pt K2 (NBL-5), NBL-5, Pt-K2, PTK-2, Ptk-2, PTK 2, PtK 2, PTK2, Pt K2, Ptk2, Potorous tridactylus Kidney 2

Characteristics

Age Adult

Gender Male

Morphology Epithelial-like

Growth properties Monolayer, adherent

Regulatory Data

Citation PtK2 (Cytion catalog number 608316)

Biosafety level 1

NCBI_TaxID 9310

CellosaurusAccession CVCL_0514

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Biomolecular Data

Virus susceptibility Cocksackievirus A9, herpes simplex, vaccinia, vesicular stomatitis (Ogden)

Virus resistance Adenovirus 5, coxsackievirus B5, poliovirus 2

Reverse transcriptase Negative

Products Keratin

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

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 1×10^4 cells/cm²

Post-Thaw Recovery After thawing, plate the cells at 5×10^4 cells/cm² and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

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.

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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 $300 \times g$ 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.

Flask Coating

None

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

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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.