IPEC-J2

305571

GENERAL INFORMATION

Description

The IPEC-J2 cell line is a non-transformed, permanent epithelial cell line derived from the jejunal epithelium of a neonatal, unsuckled piglet. IPEC-J2 cells maintain structural and functional characteristics of mature enterocytes, making them an excellent model for studying intestinal physiology and pathology. These cells form a polarized monolayer with tight junctions and exhibit high transepithelial electrical resistance (TEER), which is essential for investigating epithelial barrier functions and permeability. Due to their porcine origin, IPEC-J2 cells more closely mimic human intestinal physiology compared to rodent-derived lines like IEC-6 and IEC-18, enhancing their relevance in zoonotic and comparative research.

Functionally, IPEC-J2 cells express key markers and cytokines associated with immune responses, such as TNF-α and GM-CSF, and possess a range of toll-like receptors (TLRs) that facilitate studies on pathogen-host interactions. This has made them invaluable for microbiological research, particularly in examining interactions with pathogens like *Salmonella enterica* and pathogenic *Escherichia coli*. They have also been employed to evaluate the effects of probiotics and dietary supplements on intestinal health, with applications including assessing anti-inflammatory and cytoprotective responses.

Research involving IPEC-J2 has explored their responses to oxidative stress and their protective mechanisms. For example, exogenous glutathione (GSH) has been shown to protect IPEC-J2 cells from oxidative damage by enhancing mitochondrial function, improving mitochondrial membrane potential, and reducing reactive oxygen species (ROS) accumulation. These findings underscore the utility of IPEC-J2 in studying epithelial stress responses and potential therapeutic interventions for maintaining intestinal barrier integrity.

Tissue	Small intestine, jejunum
Disease	Normal

Synonyms

- IPECJ2
- Intestinal Porcine Epithelial Cell line-J2

CLASSIFICATION

Organism	Pig
Sex	Unspecified
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Cell type	Enterocyte

IDENTIFIERS

Citation

IPEC-J2 (Cytion catalog number 305571)

NCBI TaxID	9823
Cellosaurus	CVCL_2246

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HANDLING AND CULTURE

Culture medium

DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

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

Supplements

Supplement the medium with 10% heat-inactivated 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 TrypLE Express, 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 - 2 x 10^4 cells/cm^2
Fluid renewal	1 to 2 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	Newborn

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

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