3D4/21

305357

GENERAL INFORMATION

Description

The 3D4/21 cell line is a porcine alveolar macrophage model extensively used in studies involving immune responses and viral infections. These cells are particularly valuable for research on respiratory infections in pigs, such as those caused by swine influenza virus (SIV) and Senecavirus A (SVA). Due to their origin from alveolar macrophages, 3D4/21 cells serve as a critical in vitro system for examining host-pathogen interactions, focusing on the immune mechanisms that pigs deploy against respiratory pathogens.
3D4/21 cells are often utilized to explore the molecular pathways triggered during infections. For example, in the context of SIV infections, studies have shown that 3D4/21 cells mount an immune response through the expression of various cytokines and viral recognition receptors like RIG-I and TLR7. Furthermore, these cells have been instrumental in identifying how different RNA molecules, including miRNAs, lncRNAs, and circRNAs, contribute to the regulatory networks during viral infections, providing insights into the competitive endogenous RNA (ceRNA) regulatory mechanisms that help in antiviral defenses. This has been particularly useful in elucidating the immune responses triggered by different strains of swine influenza viruses such as H1N1 and H3N2.
In addition, 3D4/21 cells have been employed to study autophagy and its role in infection control. For example, during Haemophilus parasuis infection, these cells exhibit autophagic responses regulated via the AMPK signaling pathway. This autophagy mechanism not only contributes to controlling bacterial invasion but also helps in understanding the pathogenesis of diseases like Glässer's disease, a condition affecting pigs under stress. As a result, the 3D4/21 cell line continues to be a valuable tool for immunological and infectious disease research in the context of swine health.

Tissue	Lung

Synonyms

- IPAM 3D4/21
- IPAM-WT

CLASSIFICATION

Organism	Pig
Sex	Unspecified
Growth properties	Adherent
Biosafety level	2

CHARACTERISTICS

Morphology	Macrophage
Cell type	Alveolar macrophage

IDENTIFIERS

Citation

3D4/21 (Cytion catalog number 305357)

NCBI TaxID	9823
Cellosaurus	CVCL_0F14

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EXPRESSION AND SUSCEPTIBILITY

Viruses

Transformant: Simian virus 40 (SV40)

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

Dissociation reagent	Accutase
Seeding density	1-3*10^4/cm²

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	Landrace
Donor age	12 weeks

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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