Product sheet

COS-1 Cells | 305005

General information

Description

COS-1 cells, a fibroblast-like cell line derived from African green monkey kidney tissue, have revolutionized the field of biological science since their development in 1981 by J.W.F. Cowell and colleagues. These cells offer an excellent platform for studying various aspects of cellular biology, including protein expression and protein-protein interactions.

One of the critical advantages of COS-1 cells is their remarkable ability to express exogenous proteins, making them an invaluable tool for producing recombinant proteins and investigating protein-related phenomena. The constitutively active c-src gene and the presence of SV40's large T-antigen enhance translation efficiency, resulting in elevated levels of protein expression within these cells.

Researchers have extensively utilized COS-1 cells to study the cytopathic effects of viruses and host cell responses to viral infections. COS-1 cells are susceptible to various viruses, including herpes simplex, vesicular stomatitis, and influenza A. This characteristic makes COS-1 cells an excellent model system for exploring viral pathogenesis, host cell responses, and the development of antiviral drugs.

Furthermore, the COS-1 cell line has significantly contributed to our understanding of various biological mechanisms. Its popularity in molecular and cell biology research arises from its proficiency in expressing exogenous proteins and its permissiveness to different viral strains. These attributes allow scientists to delve into the intricate workings of cellular processes with precision and reliability.

The COS cell lines are derived from the CV-1 cells, which originated from the kidney of the African green monkey. Through immortalization with a modified SV40 virus capable of producing large T antigen, the COS cells maintain their fibroblast-like morphology and inherit the beneficial properties of the SV40 genetic material.

COS-1 and COS-7 are the most commonly used variants among the COS cell lines. Researchers frequently employ these cell lines when investigating the monkey virus SV40 and conducting molecular biology, biochemistry, and cell biology experiments.

The COS-1 cells, in particular, exhibit remarkable potential for protein expression through transfection with an SV40 origin of replication. The large T antigen these genetically modified COS-1 cells produce allows for substantial images of introduced vectors, facilitating efficient recombinant protein production.

COS-1 cells are pivotal in advancing our understanding of complex biological processes. With their origin in African green monkey kidney tissue and their fibroblast morphology, these cells provide a reliable and versatile platform for many scientific applications.

Their extensive usage, as evidenced by over 1,400 product citations, underscores their significance in various research areas. As for practical considerations, COS-1 cells have a doubling time of approximately 48 hours, enabling efficient cell culture and experimental procedures. Additionally, these cells are categorized as animal cells and belong to the Cercopithecus aethiops organism, with the kidney as the origin tissue.

COS-1 cells stand at the forefront of cutting-edge biological research, facilitating breakthroughs in our understanding of molecular and cellular processes. With their exceptional capacity for protein expression, susceptibility to viral infections, and significance in diverse fields of study, COS-1 cells remain a cornerstone of scientific inquiry.

Researchers continue to leverage the remarkable properties of COS-1 cells to unravel the intricacies of biological mechanisms and pave the way for new advancements in physical science.

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Organism	Chlorocebus aethiops
Tissue	Kidney
Synonyms	Cos-1, COS 1, Cos 1, COS1, Cos1, CV-1 in Origin Simian-1

Characteristics

Gender	Male
Morphology	Fibroblast
Growth properties	Adherent

Regulatory Data

Citation	COS-1 (Cytion catalog number 305005)
Biosafety level	1
NCBI_TaxID	9534
CellosaurusAccession	CVCL_0223
GMO Status	GMO-S1: This African green monkey kidney-derived cell line (COS-1) contains the replication-deficient SV40 mutant pSV6-1 introduced by transfection, enabling stable immortalization. The construct is integrated into CV-1-derived cells. This classification applies only within Germany and may differ elsewhere.

Biomolecular Data

Protein expression	T Antigen, This Is An African Green Monkey Kidney Fibroblast-Like Cell Line Suitable For Transfection By Vectors Requiring Expression Of Sv40 T Antigen. The Cells Are Ebna Negative, Negative For Fc Receptors And Negative For Complement Receptors.

Handling

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)

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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.
Fluid renewal	2 to 3 times per week
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.