ACT-1

305461

GENERAL INFORMATION

Description

The ACT-1 cell line originates from a strain of the slime mold Dictyostelium discoideum, which serves as a valuable model for studying actin dynamics and cellular motility. In Dictyostelium, actin plays a pivotal role in cytoskeletal organization, particularly in the process of chemotaxis and cellular aggregation under nutrient deprivation. The ACT-1 cell line has been essential for analyzing monoclonal antibody interactions with actin, especially in distinguishing specific binding regions on actin monomers and assessing actin's structural and functional responses to various molecular interactions. Studies using ACT-1 have contributed significantly to understanding how actin's amino-terminal regions interact with antibodies and influence actin polymerization, highlighting regions crucial for monomer-to-filament transitions and stabilization. In particular, ACT-1 has been used to examine monoclonal antibodies that can prevent actin polymerization by binding selectively to monomeric forms of actin. This binding inhibits filament formation by stabilizing actin in its monomeric state, which reduces filament length and viscosity when introduced to existing actin filaments. These effects are useful for studying actin-regulating proteins and their mechanisms in cellular processes. Given its specificity, the ACT-1 line is instrumental for both biochemical assays and immunofluorescence studies, which utilize anti-actin monoclonal antibodies to map structural actin domains and assess actin-binding proteins' regulatory roles in cellular architecture.

Tissue	Hybridoma

Synonyms

- Act I
- ACT 1
- ACT I

CLASSIFICATION

Organism	Mouse
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Lymphoblast-like
Cell type	Spleen cells were fused with NS-1 myeloma cells

IDENTIFIERS

Citation

ACT-1 (Cytion catalog number 305461)

NCBI TaxID	10090
Cellosaurus	CVCL_4499

EXPRESSION AND SUSCEPTIBILITY

Protein expression

Monoclonal immunoglobulin (IgG1) against Dictyostelium discoideum actins

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HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.1 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

Subculturing

Gather the suspension cells in a 15 ml tube and gently wash the adherent cells with PBS lacking calcium and magnesium (use 3-5 ml for T25 flasks and 5-10 ml for T75 flasks). Apply Accutase (1-2 ml for T25 flasks, 2.5 ml for T75 flasks) ensuring full coverage of the cell layer. Allow the cells to incubate at room temperature for 10 minutes. Following incubation, combine and centrifuge both the suspension and adherent cells. After centrifugation, carefully resuspend the cell pellet and transfer the cell suspension into new flasks containing fresh medium.

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.

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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