AKATA

305510

GENERAL INFORMATION

Description

The AKATA cell line, derived from Burkitt's lymphoma, is a widely used model to study Epstein-Barr virus (EBV) latency and reactivation. EBV is a ubiquitous herpesvirus linked to a range of cancers, including Burkitt lymphoma, and typically establishes a latent infection within B cells. In AKATA cells, EBV is maintained in an episomal state with a type I latency program, expressing a limited set of viral genes such as EBNA-1, EBER RNAs, and BamHI-A rightward transcripts (BARTs). This restricted gene expression allows the virus to persist in the host without initiating a full lytic cycle. However, AKATA cells can be triggered to enter the lytic phase, where the virus actively replicates and produces progeny. This reactivation is commonly induced through cross-linking surface immunoglobulins, which makes AKATA cells an excellent tool for studying EBV reactivation dynamics and viral gene regulation.

Research utilizing the AKATA cell line has also examined the impact of chemotherapeutic agents on EBV reactivation. For instance, drugs like etoposide and doxorubicin have been shown to influence viral latency. Etoposide induces apoptosis in AKATA cells but reactivates EBV less effectively than doxorubicin, which promotes higher levels of lytic gene expression and viral progeny production. Additionally, studies involving gene editing techniques, such as CRISPR/Cas9, have explored the role of epigenetic regulators in AKATA cells. For example, knockout of the histone methyltransferase EZH2 in AKATA cells disrupts the maintenance of latency by reducing the trimethylation of histone H3K27, leading to increased expression of both latent and lytic EBV genes, as well as enhanced viral replication and cell proliferation.

AKATA cells also display distinct phenotypic characteristics based on EBV presence, such as increased sensitivity to apoptosis-inducing agents and variations in gene expression related to apoptotic pathways. These differences make EBV-positive AKATA cells a powerful model for dissecting EBV's influence on host cell survival, gene expression, and the virus's lifecycle, particularly in the context of cancer development and potential therapeutic interventions targeting EBV-associated malignancies.

Tissue	Blood
Disease	Burkitt lymphoma

Synonyms

- Akata
- Akata-BL
- Akata BL
- Akata-EC
- Akata-Early Culture

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Suspension
Biosafety level	2

CHARACTERISTICS

Morphology	Lymphoblast
Cell type	B cell

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IDENTIFIERS

Citation

AKATA (Cytion catalog number 305510)

NCBI TaxID	9606
Cellosaurus	CVCL_0148

EXPRESSION AND SUSCEPTIBILITY

Viruses

Transformant: EBV

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

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.

DONOR

Donor age	4 years
Ethnicity	Japanese

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