K562

300224

GENERAL INFORMATION

Description

The K562 cell line, originating from the bone marrow of a 53-year-old female with chronic myelogenous leukemia, serves as a cornerstone in various research fields such as immunology, tumor immunology, and immune system disorder research. Human K-562 cells are widely used in studies involving immune system interactions, particularly with effector cells like natural killer cells (NK). This is due to their unique characteristics, such as the expression of specific antigens that can be recognized by NK cells.
Exploring the interaction between NK cells and cancerous cell lines like K562 offers insights into immune defense mechanisms. NK cells' ability to recognize and respond to K562 cells varies with the presence of specific markers, which fluctuate throughout the K562 cell cycle.
K562 cells are characterized by the presence of the Philadelphia chromosome, which results from a translocation between chromosomes 9 and 22, creating the BCR-ABL fusion gene. This fusion gene is not a normal ABL transcript but a mutated form that is constitutively active and leads to uncontrolled cell proliferation. Analyzing ABL transcripts in K562 cells sheds light on leukemia's molecular dynamics and immune evasion strategies.
K562 cells are crucial for understanding the cell cycle, particularly for analyzing cell cycle phases and distributions. This analysis is essential for evaluating the impact of ABL gene expression and the associated decrease in ABL fusion transcripts. Furthermore, K562 cells are valuable in assays assessing the cytotoxic effects of FGFR inhibitors and the activity of epigenetic enzymes, highlighting their significance in elucidating cell signaling pathways and the mechanisms of action of various therapeutic agents.
The versatility of K562 cells, ranging from their role in enzyme activity assays to their application in immunological studies with natural killer (NK) cells, emphasizes their widespread utility in the scientific realm. This adaptability highlights their significance in bridging the gap between fundamental research and translational medicine, playing a crucial role in advancing the fight against chronic myelogenous leukemia.

Tissue	Bone marrow
Disease	Chronic myeloid leukemia

Synonyms

- K562
- K.562
- K 562
- KO
- GM05372
- GM05372E

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Suspension
Biosafety level	1

CHARACTERISTICS

Morphology	Round cells
Cell type	Lymphoblast
Tumourigenic	Yes, in nude mice.

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IDENTIFIERS

Citation

K562 (Cytion catalog number 300224)

NCBI TaxID	9606
Cellosaurus	CVCL_0004

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

CD7 (25%)

Isoenzymes

G6PD, B, AK-1, 1, ES-D, 1, GLO-1, 2, PGM1, 0, PGM3, 1, Me-2, 0

Oncogenes

BCR-ABL1

Reverse transcriptase	Negative

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

Maintain cultures by periodically adding or replacing the medium. Initiate cultures with a density of 5 x 10^5 cells/ml and keep the cell concentration within the range of 3 x 10^5 to 1 x 10^6 cells/ml for optimal growth.

Seeding density	3 x 10^5 cells/ml
Fluid renewal	Every 2 days
Post-thaw recovery	Please allow cells to recover for roughly 24 to 48 hours after thawing.

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.

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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	53 years
Ethnicity	Caucasian

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