NCI-H69AR

305840

GENERAL INFORMATION

Description

NCI-H69AR is a multidrug-resistant derivative of the parental small cell lung carcinoma (SCLC) cell line NCI-H69. It was developed through continuous selection in increasing concentrations of chemotherapeutic agents such as doxorubicin. As a result, NCI-H69AR serves as a key model system for investigating mechanisms of acquired drug resistance in SCLC. This cell line retains many of the morphological and biochemical features of its parental line but exhibits profound resistance to several cytotoxic agents, making it especially relevant for studying efflux-mediated resistance pathways.
The primary mechanism of resistance in NCI-H69AR involves overexpression of the multidrug resistance protein P-glycoprotein (P-gp), encoded by the MDR1 gene. P-gp functions as an ATP-dependent efflux pump that reduces intracellular drug accumulation, particularly for anthracyclines, vinca alkaloids, and epipodophyllotoxins. Additionally, NCI-H69AR exhibits altered expression of membrane-associated proteins, including annexin II, which may be associated with changes in calcium signaling and vesicular trafficking-processes implicated in drug resistance and cellular stress response. These phenotypic alterations make NCI-H69AR a valuable model for identifying modulators of drug resistance and for evaluating the efficacy of agents targeting efflux mechanisms or bypassing resistance pathways altogether.
NCI-H69AR has also been used in comparative studies with its parental line to delineate changes in gene and protein expression, drug sensitivity profiles, and response to pharmacologic inhibitors. This comparative framework helps clarify the evolution of drug resistance in cancer and contributes to the design of combination therapies aimed at re-sensitizing resistant tumors. The line is typically cultured in RPMI-1640 medium supplemented with fetal bovine serum and maintained under standard atmospheric conditions. Its robustness and well-characterized resistance phenotype have secured its place in preclinical research on drug resistance in lung cancer.

Tissue	Metastatic
Disease	Lung small cell carcinoma
Metastatic site	Pleural effusion

Synonyms

- NCI-H69 AR
- NCI-H69/AR
- H69AR
- H-69AR

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial
Cell type	Epithelial like
Tumourigenic	Yes; Yes, in nude mice

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IDENTIFIERS

Citation

NCI-H69AR (Cytion catalog number 305840)

NCBI TaxID	9606
Cellosaurus	CVCL_3513

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: PIK3CA, Simple, p.Gly106_Arg108del (c.317_325delGGCAACCGT), Heterozygous (from parent cell line).Mutation, RB1, Simple, p.Glu748Ter (c.2242G>T), Homozygous (from parent cell line).Mutation, TP53, Simple, p.Glu171Ter (c.511G>T), Homozygous (from parent cell line).

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 20% FBS

Dissociation reagent	Accutase
Fluid renewal	2 to 3 times per week

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	55 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.

Disclaimer

Our cells are provided for in vitro laboratory research purposes exclusively and are not intended for clinical or diagnostic use, nor are they to be administered to humans or used for veterinary purposes. Users must adhere to all applicable guidelines and regulations for the handling and use of these cells in a research setting.

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