NCI-H820

305841

GENERAL INFORMATION

Description

NCI-H820 is a human non-small cell lung cancer (NSCLC) cell line derived from a lung adenocarcinoma of an adult patient. It is part of the NCI lung cancer panel and has been widely used in research on targeted therapies due to its unique genetic features. Morphologically, the cells exhibit epithelial characteristics and grow as adherent monolayers. They are typically cultured in RPMI-1640 medium supplemented with 10% fetal bovine serum and maintained under standard cell culture conditions (37°C, 5% CO_2).
Genetically, NCI-H820 is notable for harboring an EGFR exon 19 deletion mutation (E746-A750del), a common activating mutation associated with sensitivity to EGFR tyrosine kinase inhibitors (TKIs). However, it also possesses a secondary EGFR T790M mutation, which is a well-established mechanism of acquired resistance to first-generation TKIs such as erlotinib and gefitinib. This dual mutation status makes NCI-H820 a highly relevant model for investigating resistance mechanisms and for evaluating third-generation EGFR inhibitors like osimertinib, which can overcome T790M-mediated resistance.
In addition to its EGFR mutations, NCI-H820 has been used to study autocrine signaling loops and growth factor receptor pathways. Research has demonstrated that it expresses the type I insulin-like growth factor receptor (IGF-1R), contributing to survival and proliferation signaling. Its dual mutation profile and expression of receptor tyrosine kinases make it a valuable tool in preclinical studies focused on drug resistance, combination therapy strategies, and the development of personalized treatment approaches for EGFR-mutant NSCLC.

Tissue	Metastatic
Disease	Lung papillary adenocarcinoma
Metastatic site	Lymph node

Synonyms

- H820
- H-820
- NCIH820

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

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

Karyotype

Near triploid; modal number = 69; range = 46 to 74

Doubling time	65

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IDENTIFIERS

Citation

NCI-H820 (Cytion catalog number 305841)

NCBI TaxID	9606
Cellosaurus	CVCL_1592

EXPRESSION AND SUSCEPTIBILITY

Isoenzymes

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

Mutational profile

Mutation: TP53, Simple, p.Thr284Pro (c.850A>C), Homozygous

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 5% 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	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.

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