Product sheet

NCI-H1975 Cells | 305067

General information

Description	The NCI-H1975 cell line is a well-established model derived from human non-small cell lung carcinoma (NSCLC), specifically adenocarcinoma. This cell line is particularly significant due to its dual mutations in the epidermal growth factor receptor (EGFR) gene. It harbors the L858R activating mutation in exon 21 and the T790M mutation in exon 20, which confers resistance to first-generation tyrosine kinase inhibitors (TKIs) such as gefitinib and erlotinib. These genetic characteristics make NCI-H1975 a valuable tool for studying drug resistance mechanisms and testing next-generation EGFR inhibitors. The T790M mutation alters the ATP-binding pocket of EGFR, reducing the efficacy of earlier EGFR inhibitors while maintaining receptor signaling activity. This property has driven research into third-generation inhibitors, such as osimertinib, which selectively target T790M mutant EGFR while sparing wild-type EGFR, reducing off-target effects. Studies using NCI-H1975 have contributed to understanding the structural and functional impacts of these mutations on EGFR-mediated signaling pathways, including downstream effects on PI3K/AKT and RAS/RAF/MEK/ERK pathways, which are pivotal in tumor cell proliferation and survival. In addition to its role in drug resistance research, NCI-H1975 is employed in preclinical evaluations of combination therapies that aim to overcome resistance by targeting multiple pathways. Its well-characterized genetic and molecular profile, including detailed data on copy number variations and mutational landscapes, has solidified its status as an essential model in the study of NSCLC biology and therapeutic development.
Organism	Human
Tissue	Lung
Disease	Lung adenocarcinoma
Synonyms	NCI-H1975, H-1975, NCIH1975

Characteristics

Gender	Female
Ethnicity	European
Morphology	Epithelial
Growth properties	Adherent

Regulatory Data

Citation	NCI-H1975 (Cytion catalog number 305067)

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Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_1511

Biomolecular Data

Handling

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
Subculturing	Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.
Fluid renewal	2 to 3 times per week
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.

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Thawing and Culturing Cells	1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit. 2. 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. 3. 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. 4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening. 5. 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. 6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. 7. 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. 8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.
Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
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.
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.

Quality Control & Molecular Analysis

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.