Product sheet

NCI-H2122 Cells | 305600

General information

Description	The NCI-H2122 cell line is a human non-small cell lung cancer (NSCLC) model derived from an adenocarcinoma patient. It is notable for its harboring of a KRAS G12C mutation, a hallmark of NSCLC that leads to constitutive activation of the MAPK signaling pathway. This cell line is extensively used in studies focusing on therapeutic interventions targeting KRAS G12C and associated downstream pathways, particularly those involving MEK and ERK inhibitors. Research utilizing NCI-H2122 has highlighted its role in understanding drug resistance mechanisms and in optimizing combination therapies. Preclinical studies using the NCI-H2122 cell line have demonstrated its utility in exploring resistance to MAPK pathway inhibitors. For instance, CRISPR screening approaches have identified MAPK7 (ERK5) as a critical mediator of pathway reactivation following MEK inhibition, suggesting potential combination strategies using MEK inhibitors like cobimetinib and MAPK7 inhibitors. The line also serves as a model for evaluating the efficacy of small molecule inhibitors, including those targeting PI3K and BRAF, which are relevant in combination with KRAS-specific treatments. NCI-H2122 is also employed in investigating metabolic vulnerabilities in NSCLC. Studies have implicated serine biosynthesis and the folate cycle as metabolic pathways contributing to resistance against targeted therapies, such as BRAF inhibitors. Metabolic modulators like methotrexate and serine-deprivation strategies have been tested on this cell line, providing insights into overcoming drug resistance and identifying new metabolic targets for therapeutic exploitation.
Organism	Human
Tissue	Lung
Disease	Adenocarcinoma
Metastatic site	Pleural effusion
Synonyms	H2122, H-2122, NCIH2122

Characteristics

Age	46 years
Gender	Female
Ethnicity	Caucasian
Morphology	Epithelial-like, Lymphoblast-like

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Growth properties	Adherent

Regulatory Data

Citation	NCI-H2122 (Cytion catalog number 305600)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_1531

Biomolecular Data

Mutational profile	Mutation: KRAS, p.Gly12Cys (c.34G>T), homozygous; Mutation: TP53, p.Gln16Leu (c.47A>T), heterozygous; Mutation: TP53, p.Cys176Phe (c.527G>T), heterozygous

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 TrypLE Express, 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.