

## NCI-H157 Cells | 300387

## General information

## Description

NCI-H157 is a human non-small cell lung carcinoma (NSCLC) cell line, primarily used in cancer research to study tumorigenesis, chemotherapy resistance, and the molecular pathways involved in lung cancer progression. NCI-H157 cells are particularly useful for investigating the role of hypoxia-inducible factor-1 alpha (HIF-1 $\alpha$ ) in NSCLC. Studies have shown that HIF-1 $\alpha$  plays a crucial role in promoting angiogenesis, proliferation, and survival of cancer cells under hypoxic conditions. Downregulation of HIF-1 $\alpha$  via siRNA in NCI-H157 cells significantly reduces cell proliferation, induces apoptosis, and impairs the invasive ability of the tumor cells.

Moreover, combination treatments using HIF-1 $\alpha$  siRNA and chemotherapy agents, such as cisplatin (DDP), enhance the cytotoxic effects on NCI-H157 cells. The reduction of HIF-1 $\alpha$  expression has been shown to increase the activity of apoptotic proteins like caspases 3 and 9 while decreasing the levels of anti-apoptotic proteins such as Bcl-2. Additionally, HIF-1 $\alpha$  knockdown inhibits key signaling pathways involved in tumor growth, including the PI3K/AKT and Raf/MEK/ERK pathways. These molecular alterations contribute to the suppression of tumor cell survival and invasiveness.

The NCI-H157 cell line is also responsive to various natural compounds and plant extracts. For example, extracts from *\*Stellera chamaejasme\* L.* have been found to induce apoptosis in NCI-H157 cells through the Fas death receptor pathway, further emphasizing the cell line's utility in evaluating novel therapeutic agents for lung cancer.

<b>Organism</b>	Human
<b>Tissue</b>	Lung
<b>Disease</b>	Lung squamous cell carcinoma
<b>Synonyms</b>	NCI H157, H157, H-157, NCI-157

## Characteristics

<b>Age</b>	59 years
<b>Gender</b>	Male
<b>Growth properties</b>	Adherent

## Regulatory Data

<b>Citation</b>	NCI-H157 (Cytion catalog number 300387)
<b>Biosafety level</b>	1

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<b>NCBI_TaxID</b>	9606
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<b>CellosaurusAccession</b>	CVCL_0463
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## Biomolecular Data

## Handling

<b>Culture Medium</b>	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO <sub>3</sub> (Cytion article number 820700a)
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<b>Supplements</b>	Supplement the medium with 10% FBS
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<b>Dissociation Reagent</b>	Accutase
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<b>Subculturing</b>	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.
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<b>Freeze medium</b>	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  $-150^{\circ}\text{C}$  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  $37^{\circ}\text{C}$  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  $300 \times g$  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

$37^{\circ}\text{C}$ , 5%  $\text{CO}_2$ , humidified atmosphere.

### Shipping Conditions

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately  $-78^{\circ}\text{C}$  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  $-196^{\circ}\text{C}$ . Storage at  $-80^{\circ}\text{C}$  is acceptable only as a short interim step before transfer to liquid nitrogen.

## Quality Control & Molecular Analysis

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**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.