# NCI-H196

300390

## GENERAL INFORMATION

### Description

NCI-H196 is a small-cell lung cancer (SCLC) cell line used to study the mechanisms of cancer progression, chemotherapy resistance, and cellular responses to oxidative stress. Research involving NCI-H196 has demonstrated its sensitivity to the cytotoxic effects of pyrrolidine dithiocarbamate (PDTC), a pro-oxidant agent. PDTC induces S-phase cell cycle arrest and significantly reduces the viability of NCI-H196 cells in a dose-dependent manner. This cytotoxicity is attributed to the induction of oxidative stress, as evidenced by increased reactive oxygen species (ROS) and changes in the expression of oxidative stress-related genes. The addition of antioxidants like N-acetyl-L-cysteine (NAC) can effectively reverse PDTC-induced cytotoxicity, confirming the role of oxidative stress in cell death.
Further studies have shown that PDTC enhances the cytotoxicity of cisplatin, a first-line chemotherapy drug used for SCLC treatment. Combining low doses of cisplatin with non-toxic concentrations of PDTC leads to synergistic cytotoxicity in NCI-H196 cells. This combination therapy is believed to be effective due to PDTC's downregulation of ATP7A, a copper efflux transporter associated with cisplatin resistance. By inhibiting ATP7A, PDTC may increase intracellular copper and sensitize NCI-H196 cells to cisplatin, highlighting its potential as an adjunct therapy for SCLC.

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| **Tissue** | Lung |
| **Disease** | Lung small cell carcinoma |
| **Metastatic site** | Pleural effusion |

### Applications

3D cell culture, Cancer research

### Synonyms

- NCI-H196
- H-196
- NCIH196

## CLASSIFICATION

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| **Organism** | Human |
| **Sex** | Male |
| **Growth properties** | Adherent |
| **Biosafety level** | 1 |

## IDENTIFIERS

### Citation

NCI-H196 (Cytion catalog number 300390)

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| **NCBI TaxID** | 9606 |
| **Cellosaurus** | CVCL_1509 |

## HANDLING AND CULTURE

### Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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| **Incubation atmosphere** | 37°C, 5% $CO_2$, humidified atmosphere. |

**Supplements**

Supplement the medium with 10% FBS

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| **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.

**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.

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| **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

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| **Donor age** | 68 years |
| **Ethnicity** | European |

## 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.

### 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.

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| **Material Transfer Agreement required** | Yes |

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