OVCAR-4

305912

GENERAL INFORMATION

Description

OVCAR-4 is a human ovarian carcinoma cell line derived from an adult patient with epithelial ovarian cancer who had previously undergone combination chemotherapy. It belongs to a panel of ovarian cancer cell lines established to model clinical drug resistance and tumor heterogeneity. As part of this series, OVCAR-4 reflects characteristics of tumors exposed to chemotherapeutic agents such as cisplatin and doxorubicin, making it particularly valuable for studying mechanisms of chemotherapy response and resistance.
Molecular analyses have demonstrated that OVCAR-4 exhibits detectable expression of metallothionein mRNA, a protein involved in metal ion binding and cellular detoxification pathways. Notably, exposure to cisplatin induces only a modest increase in metallothionein expression in this cell line, suggesting that while metallothionein may contribute to cellular stress responses, it is not a primary determinant of cisplatin resistance in this model. These findings highlight the complexity of drug resistance mechanisms in ovarian cancer, where multiple pathways—including drug transport, DNA repair, and intracellular detoxification - may act in parallel.
OVCAR-4 is included in the NCI-60 cancer cell line panel and has been utilized in high-content phenotypic profiling studies. Fluorescence-based screening approaches have shown that OVCAR-4 exhibits distinct intracellular staining patterns and intensity kinetics when exposed to diverse fluorescent probes, enabling its classification alongside other ovarian cancer cell lines. These phenotypic signatures reflect underlying biochemical and morphological features, supporting the use of OVCAR-4 in systems biology, drug screening, and cancer cell lineage identification studies.

Tissue	Metastatic
Disease	High grade ovarian serous adenocarcinoma
Metastatic site	Ascites

Synonyms

- OVCAR 4
- NIH:OVCAR-4
- NIH:OVCAR4
- OVCAR.4
- OVCAR4
- Ovcar4

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Doubling time	34 hours ; 43 hours ; 41.4 hours

IDENTIFIERS

Citation

OVCAR-4 (Cytion catalog number 305912)

Cytion GmbH
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Banking information
Sparkasse Heidelberg
IBAN: DE35 6725 0020 0009 2076 86
BIC: SOLADES1HDB

NCBI TaxID	9606
Cellosaurus	CVCL_1627

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

Mutation: p.Leu130Val, Homozygous

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.1 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 20% FBS and 0.25 units/mL human insulin

Dissociation reagent	Accutase
Seeding density	1.5 to 3 x 10^4 cells/cm^2
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

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	42 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.

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

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