Product sheet

OVCAR-4 Cells | 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.
Organism	Human
Tissue	Metastatic
Disease	High grade ovarian serous adenocarcinoma
Metastatic site	Ascites
Synonyms	OVCAR 4, NIH:OVCAR-4, NIH:OVCAR4, OVCAR.4, OVCAR4, Ovcar4

Characteristics

Age	42 years
Gender	Female
Ethnicity	Caucasian
Growth properties	Adherent

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Regulatory Data

Citation	OVCAR-4 (Cytion catalog number 305912)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_1627

Biomolecular Data

Mutational profile	Mutation: p.Leu130Val, Homozygous

Handling

Culture Medium	RPMI 1640, w: 2.1 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)
Supplements	Supplement the medium with 20% FBS and 0.25 units/mL human insulin
Dissociation Reagent	Accutase
Doubling time	34 hours ; 43 hours ; 41.4 hours
Seeding density	1.5 to 3 x 10^4 cells/cm^2
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.

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