Product sheet

OVCAR-3 Cells | 300307

General information

Description	OVCAR-3 cells are a human ovarian cancer cell line established from the malignant ascites of a 60-year-old Caucasian female patient with progressive adenocarcinoma of the ovary, refractory to treatment with cyclophosphamide, adriamycin, and cisplatin. Ovcar 3 cells are used in a wide range of studies including drug resistance, particularly those involving DNA damage response biomarkers, homologous recombination repair, and the overall cell cycle dynamics, cancer cell biology, and gene expression studies. OVCAR-3 cells are epithelial in morphology and have been characterized by their high in vitro growth potential and their ability to form tumors in immunodeficient mice. These cells express several markers characteristic of ovarian carcinoma and have been utilized extensively to study the biology of ovarian cancer. OVCAR-3 cells are known to have a complex karyotype, with numerous chromosomal abnormalities that are typical of high-grade serous ovarian carcinomas. They are estrogen receptor-positive, which is relatively rare among ovarian cancer cell lines, and this feature is exploited in studies focusing on hormonal influences on ovarian cancer progression and treatment. In summary, the OVCAR3 cell line stands as a cornerstone in ovarian cancer research, offering a robust model for studying the complex interplay between hormonal influences, drug resistance, and the genetic underpinnings of high-grade ovarian serous adenocarcinoma.
Organism	Human
Tissue	Ovary
Disease	High grade ovarian serous adenocarcinoma
Metastatic site	Ascites
Synonyms	OVCAR-3, Ovcar-3, OVCAR.3, NIH:Ovcar-3, NIH:OVCAR3, NIH-OVCAR-3, NIHOVCAR3, OVCAR3, Ovcar3

Characteristics

Age	60 years
Gender	Female
Ethnicity	Caucasian
Growth properties	Adherent

Regulatory Data

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Citation	OVCAR3 (Cytion catalog number 300307)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0465

Biomolecular Data

Receptors expressed	Androgen, estrogen, progesterone
Isoenzymes	G6PD, B, PGM1, 1, PGM3, 1, ES-D, 1, AK-1, 1, GLO-1, 1
Tumorigenic	Yes, in nude mice
Ploidy status	Aneuploid
MSI-status	Stable (MSS)

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 20% FBS and 0.01 mg/mL human insulin
Dissociation Reagent	Accutase
Doubling time	40 to 60 hours
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.
Seeding density	2×10^4 cells/cm^2

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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

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.