Product sheet

SK-BR-3 Cells | 300333

General information

Description	SK-BR-3 cells are a human breast cancer cell line isolated from the pleural effusion of a 43-year-old female patient with metastatic breast cancer. SKBR3 cells were established in the early 1970s and are known for their overexpression of the human epidermal growth factor receptor 2 (HER2), a receptor tyrosine kinase that plays a critical role in the pathogenesis and progression of certain types of breast cancer. The cell line is characterized by genetic aberrations common in breast cancer, including amplification of the HER2 gene and mutations in the p53 tumor suppressor gene. The overexpression of HER2 in SK-BR-3 cells makes them a valuable model for studying HER2-positive breast cancer, which is characterized by aggressive growth and a poor prognosis, and for HER2-targeted therapies. SK-BR-3 cells have been instrumental in the study of trastuzumab (Herceptin), a monoclonal antibody against HER2 that has become a cornerstone in the treatment of HER2-positive breast cancer. SK-BR-3 cells exhibit a robust in vitro growth rate and have been used in a variety of experimental setups, including studies on cell signaling, drug resistance, apoptosis, and the cancer cell cycle. These cells are also a key resource for the production of monoclonal antibodies and for research into the immune response to breast cancer cells. In summary, the SK-BR-3 cell line is an indispensable tool in breast cancer research, offering profound insights into the biology of HER2-positive tumors and facilitating the development of targeted therapies that have significantly improved the outlook for patients with this challenging form of cancer.
Organism	Human
Tissue	Breast, mammary gland
Disease	Invasive ductal carcinoma
Metastatic site	Pleural effusion
Synonyms	SK-Br-3, Sk-Br-3, SK BR 03, SKBR-3, SKBr-3, SK-BR3, SKBr3, SkBr3, SKBR3

Characteristics

Age	43 years
Gender	Female
Ethnicity	Caucasian
Morphology	Epithelial-like

Growth properties	Monolayer, adherent

Identifiers / Biosafety / Citation

Citation	SK-BR-3 (Cytion catalog number 300333)
Biosafety level	1

Expression / Mutation

Protein expression	p53 positive
Antigen expression	Blood Type A, Rh+, HLA A11, Bw22(+/-), B40, B18
Isoenzymes	PGM3, 1, PGM1, 1-2, ES-D, 1, AK-1, 1-2, GLO-1, 2, G6PD, B, Phenotype Frequency Product: 0.0044
Tumorigenic	Yes, in nude mice, forms poorly differentiated adenocarcinoma
Mutational profile	TP53 mut
Karyotype	(P9) hypertriploid to hypotetraploid (+A, +B, +C, +E, +F, +G, -D) with abnormalities including dicentrics, acrocentric fragments, rings, secondary constrictions, large metacentrics or polycentrics and large submetacentric marker

Handling

Culture Medium	DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 1.5 g/L NaHCO3, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)
Medium supplements	Supplement the medium with 10% FBS
Passaging solution	Accutase
Doubling time	30 hours

SK-BR-3 Cells | 300333

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.
Split ratio	A ratio of 1:2 to 1:4 is recommended
Seeding density	Start culture from cryovial at 3 x 10^4 cells/cm^2. Use 2 x 10^4 cells/cm^2 for continued subcultures
Fluid renewal	2 to 3 times per week
Freezing recovery	After thawing, plate the cells at 5 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 24 hours.
Freeze medium	CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

Handling of cryopreserved cultures

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. Optionally, skip centrifugation but remove any remaining freezing medium after 24 hours.
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.

Quality control / Genetic profile / HLA

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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STR profile	**Amelogenin**: x,x **CSF1PO**: 12 **D13S317**: 11,12 **D16S539**: 9 **D5S818**: 9,12 **D7S820**: 9,12 **TH01**: 8,9 **TPOX**: 8,11 **vWA**: 17 **D3S1358**: 17 **D21S11**: 30,30.2 **D18S51**: 10,13 **Penta E**: 10,11 **Penta D**: 9,12 **D8S1179**: 11,12 **FGA**: 20
HLA alleles	**A***: 02:01:01, 03:01:01 **B***: 14:02:01, 40:01:02 **C***: 03:04:01, 08:02:01 **DRB1***: 07:01:01, 13:02:01 **DQA1***: 01:02:01, 02:01:01 **DQB1***: 02:02:01, 06:04:01 **DPB1***: 03:01:01 **E**: 01:01, 01:03