SK-BR-3

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.

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

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice, forms poorly differentiated adenocarcinoma

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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

Doubling time	30 hours

IDENTIFIERS

Citation

SK-BR-3 (Cytion catalog number 300333)

NCBI TaxID	9606
Cellosaurus	CVCL_0033

EXPRESSION AND SUSCEPTIBILITY

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

Mutational profile

TP53 mut

HANDLING AND CULTURE

Culture medium

McCoys 5a, w: 3.0 g/L Glucose, w: stable Glutamine, w: 2.0 mM Sodium pyruvate, w: 2.2 g/L NaHCO3 (Cytion article number 820200a)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS

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.

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
Post-thaw 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.

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.

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	43 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