

BT-549 Cells | 300132

General information

Description

BT-549 cells are a human breast cancer cell line derived from the mammary gland tissue of a 72-year-old Caucasian woman with ductal carcinoma. They are commonly utilized in cancer research to study the biology and treatment of breast cancer, particularly the triple-negative subtype, which lacks estrogen receptor, progesterone receptor, and HER2 expression.

BT-549 cells are characterized by their epithelial morphology and are known for their highly invasive properties, making them a valuable model for studying metastasis and tumor invasion. They exhibit several distinctive features including the presence of lipid droplets in the cytoplasm and a robust expression of the mucin-1 protein. These cells also express various oncogenes and tumor suppressor genes that are relevant to breast cancer pathology, such as TP53 and RB1.

The BT-549 cell line is estrogen receptor-negative, progesterone receptor-negative, and does not amplify HER2, thus categorizing it under the triple-negative breast cancer (TNBC) subtype. Due to this classification, BT-549 cells are particularly useful for studying the unique mechanisms of progression and treatment response in TNBC, which is known for its aggressive nature and lack of targeted therapies.

Furthermore, BT-549 cells are often used in drug resistance studies and for testing new chemotherapeutic agents and targeted therapies, offering insights into potential therapeutic strategies for managing and treating aggressive forms of breast cancer.

Organism Human

Tissue Breast, mammary gland

Disease Invasive ductal carcinoma

Metastatic site Ductal

Synonyms BT 549, BT.549, BT549

Characteristics

Age 72 years

Gender Female

Ethnicity Caucasian

Morphology Epithelial-like

Growth properties Monolayer, adherent

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Regulatory Data

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|-----------------------------|---------------------------------------|
| Citation | BT-549 (Cytion catalog number 300132) |
| Biosafety level | 1 |
| NCBI_TaxID | 9606 |
| CellosaurusAccession | CVCL_1092 |

Biomolecular Data

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|---------------------------|-------------------------------------------------------------------------------------------------------|
| Isoenzymes | G6PD, B, PGM1, 2, PGM3, 1, ES-D, 1, Me-2, 1, AK-1, 1, GLO-1, 1-2, Phenotype Frequency Product: 0.0048 |
| Mutational profile | TP53 mut |
| Karyotype | Mode = 74, range = 53 to 140, three marker chromosomes |

Handling

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| Culture Medium | DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO ₃ , w: 1.0 mM Sodium pyruvate (Cytion article number 820300a) |
| 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 | 1 x 10 ⁴ cells/cm ² will yield in a confluent layer in about 4 days |
| Fluid renewal | 2 to 3 times per week |

BT-549 Cells | 300132

Post-Thaw Recovery

After thawing, plate the cells at 5×10^4 cells/cm² and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

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% CO₂, 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.

BT-549 Cells | 300132

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.