Product sheet

SW-579 Cells | 300346

General information

Description	SW-579 is a human thyroid squamous cell carcinoma cell line, commonly used in cancer research to study thyroid cancer progression and invasiveness. This cell line has been particularly valuable in research exploring the role of matrix metalloproteinases (MMPs) and integrins in cancer cell invasion. Studies involving SW-579 have demonstrated that bone sialoprotein (BSP) significantly enhances the invasiveness of these cells by forming a trimolecular complex with MMP-2 and integrin αvβ3. This complex promotes cancer cell movement through extracellular matrices, mimicking the invasive behavior of metastatic cancers. In vitro experiments using a modified Boyden chamber invasion assay have shown that treating SW-579 cells with BSP increased their invasiveness by approximately 10-fold compared to untreated controls. This enhanced invasiveness was found to be mediated by MMP-2 and integrin αvβ3, as blocking either the integrin or MMP-2 significantly reduced the effect. These findings highlight the critical role of MMPs and integrins in the metastatic potential of thyroid cancers, making SW-579 a useful model for studying targeted therapies aimed at disrupting these pathways. Moreover, the involvement of BSP in SW-579 cell invasiveness suggests potential therapeutic targets for inhibiting metastasis in thyroid carcinoma. By interfering with the formation of the BSP-MMP-2-integrin αvβ3 complex, researchers may be able to reduce the invasiveness of these cancer cells, offering a promising approach to limiting the spread of thyroid cancer in patients.
Organism	Human
Tissue	Thyroidea
Disease	Squamous cell carcinoma
Synonyms	SW579, SW 579

Characteristics

Age	59 years
Gender	Male
Ethnicity	Caucasian
Morphology	Epithelial-like
Growth properties	Monolayer, adherent

Regulatory Data

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Citation	SW-579 (Cytion catalog number 300346)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_3603

Biomolecular Data

Antigen expression	Blood type O, Rh+
Isoenzymes	Me-2, 1-2, PGM3, 1, PGM1, 1-2, ES-D, 1, AK-1, 1, GLO-1, 2, G6PD, B, Phenotype Frequency Product: 0.0209
Oncogenes	Myc +, myb + , ras +, fos +, sis +, p53 +, abl -, ros -, src -, N-myc -.
Tumorigenic	Yes, produces a grade III malignant spindle and giant cell tumor in nude mice

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 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.
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

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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.