Wilms10T

300417

GENERAL INFORMATION

Description

The Wilms10T cell line was derived from a primary Wilms tumor sample obtained from a patient with Wilms tumor, a pediatric nephroblastoma. This cell line is characterized by a homozygous deletion of the WT1 gene, leading to a complete loss of WT1 function, a critical gene involved in kidney development and the maintenance of normal renal differentiation. Unlike many other Wilms tumor cell lines, Wilms10T lacks any WT1 protein expression, which is reflective of the severe genetic alterations present in this tumor subtype. Additionally, the Wilms10T cell line exhibits loss of heterozygosity (LOH) in the 11p15 chromosomal region, which includes important genes like IGF2, further contributing to its tumorigenic properties.
Wilms10T cells have a stable normal karyotype with no major chromosomal rearrangements apart from the specific deletion of the WT1 region. This cell line has been utilized extensively to study the effects of complete WT1 loss on tumor biology, including its impact on cell proliferation, differentiation, and response to various signaling pathways. The cells retain mesenchymal characteristics, expressing markers such as vimentin, while lacking epithelial markers like cytokeratin, indicative of their stromal origin.
Significant research has focused on the signaling pathways active in Wilms10T cells. Proteomic studies have demonstrated that these cells show activation of several receptor tyrosine kinases (RTKs) such as IGF1R, PDGFRβ, and AXL, which are known to drive tumorigenesis. Additionally, downstream signaling pathways, including the MAPK and PI3K/AKT pathways, are activated in Wilms10T cells, contributing to their aggressive tumor phenotype. The comprehensive characterization of Wilms10T makes it a valuable model for investigating the molecular underpinnings of Wilms tumor with complete WT1 loss, as well as for exploring potential therapeutic targets in this aggressive tumor subtype.

Tissue	Kidney
Disease	Wilms tumor

Applications

In vitro cell culture model and biochemical studies

Synonyms

- Wilms10

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Spindle-shaped
Cell type	Wilms cells
Doubling time	46 hours

IDENTIFIERS

Citation

Wilms10T (Cytion catalog number 300417)

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NCBI TaxID	9606
Cellosaurus	CVCL_A5SL

EXPRESSION AND SUSCEPTIBILITY

Mutational profile

WT1 mutation status: homozygous del WT1 within del11p13. LOH: no in 11p13 but UPD in 11p15. CTNNB1 mutation status: homozygous del TCT, p.DS45, UPD 3p

HANDLING AND CULTURE

Culture medium

MSCGM kit (from Lonza)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.
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	4 x 10^4 cells/cm^2
Fluid renewal	1 to 2 times per week

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	2 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