Product sheet

Wilms1 Cells | 300411

Description	The Wilms1 cell line was derived from a primary Wilms tumor sample obtained from a patient presenting with large bilateral kidney tumors, indicative of Wilms tumor, a pediatric nephroblastoma. This cell line harbors a homozygous nonsense mutation in the WT1 gene (c.149 C>A, p.S50X), which results in a truncated and non-functional WT1 protein. The WT1 gene, critical for kidney development and function, is frequently mutated in Wilms tumor, particularly in those with a stromal subtype that exhibits ectopic mesenchymal differentiation. Wilms1 cells, therefore, represent a unique in vitro model for studying the consequences of WT1 loss of function in tumor biology. The Wilms1 cell line maintains a stable karyotype with no significant chromosomal abnormalities, allowing for reliable long-term culture. These cells exhibit a mesenchymal phenotype, characterized by the expression of vimentin and the absence of epithelial markers such as cytokeratin, consistent with their stromal origin. Additionally, the cell line demonstrates limited but notable mesenchymal differentiation capacity, including the ability to differentiate into muscle-like cells under appropriate conditions. This makes Wilms1 an invaluable tool for investigating the molecular mechanisms of mesenchymal differentiation and its deregulation in Wilms tumor pathogenesis. Wilms1 has also been used to study the activation status of key signaling pathways involved in tumor progression. Proteomic analyses have shown that Wilms1 cells exhibit phosphorylation and activation of several receptor tyrosine kinases, including EGFR and PDGFRβ, as well as downstream MAPK signaling pathways. These findings highlight the relevance of the Wilms1 cell line in exploring targeted therapeutic approaches for Wilms tumor by dissecting the role of these pathways in cancer cell survival, proliferation, and differentiation.
Organism	Human
Tissue	Kidney
Applications	In vitro cell culture model. Biochemical studies
Synonyms	Wilms1-2l

Age	2 years
Gender	Female
Ethnicity	Caucasian
Morphology	Spindle-shaped
Cell type	Wilms cells

Product sheet

Cytion

Wilms1 Cells | 300411

Growth properties	Adherent

Citation	Wilms1 (Cytion catalog number 300411)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_A5SC

Receptors expressed	Receptor tyrosine kinases EGFR, EphA7, PDGFRalpha, FGFR1, PDGFRbeta, AxL
Tumorigenic	Yes, in nude mice. Forms tumor with small cells consistent with Wilms' tumor (xenografts may not represent Wilm’s tumors completely, see E. Kunce Stroup 2017)
Viruses	HIV-1: negative, HBV: negative, HCV: negative
Mutational profile	WT1 mutation status: homozygous c. 149 C>A, p.S50x, LOH: 11p11-11pter, CTNNB1 mutation status: heterozygous TCT>TTT, p.S45F
Karyotype	46, normal

Culture Medium	MSCGM kit (from Lonza)
Dissociation Reagent	Accutase
Doubling time	24 hours

Cytion

Wilms1 Cells | 300411

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
Fluid renewal	1 to 2 times per week
Post-Thaw Recovery	Fast
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.

Cytion

Wilms1 Cells | 300411

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.

Wilms1 Cells | 300411

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.