786-0

300107

GENERAL INFORMATION

Description

786-O cells are a human renal cell carcinoma cell line derived from a primary clear cell adenocarcinoma of the kidney. This cell line is frequently used in the study of renal cell carcinoma (RCC), providing valuable insights into the biological characteristics and treatment responses of this cancer type.
The 786-O cell line exhibits a clear cell morphology, typical of the most common form of kidney cancer, and is characterized by specific genetic alterations, including the loss of the von Hippel-Lindau (VHL) tumor suppressor gene. This genetic feature is significant as it plays a crucial role in the pathogenesis of many clear cell renal carcinomas by influencing hypoxia-inducible pathways, which are central to cellular responses to low oxygen conditions.
These cells are particularly useful for studying the molecular mechanisms involved in tumor growth and survival, including pathways related to angiogenesis, metabolism, and cell cycle regulation. Due to their VHL deficiency, 786-O cells are an excellent model for researching the effects of hypoxia and for testing drugs that target hypoxia-related pathways.
In addition to their application in basic cancer research, 786-O cells are also used in preclinical studies to evaluate the efficacy of new therapeutic agents, especially those targeting the angiogenic processes driven by the overexpression of hypoxia-inducible factors (HIFs). This includes therapies that inhibit the HIF pathway, tyrosine kinase inhibitors, and immune checkpoint inhibitors.
Overall, 786-O cells provide a robust model for advancing our understanding of the molecular underpinnings of renal cell carcinoma and for developing targeted therapies that could improve treatment outcomes for patients with this challenging disease.

Tissue	Kidney
Disease	Renal cell carcinoma
Metastatic site	Primary tumor site (kidney)

Applications

Renal cell carcinoma research; VHL pathway and HIF biology; anti-angiogenic drug evaluation; tyrosine kinase inhibitor testing; transfection host; clear cell RCC xenograft models

Synonyms

- 786-o
- 786O
- 786-0
- 786.O
- 786-O RCC
- RCC 786-O
- RCC_7860
- RCC 7860
- 7860
- 786-0WT

CLASSIFICATION

Organism	Human
Sex	Male
Growth properties	Adherent
GMO status	Non-GMO

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GMO status details

No genetic modification; wildtype clear cell RCC line with endogenous VHL loss-of-function

Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Cell type	Epithelial cells
Tumourigenic	In immunosuppressed hamsters
Ploidy status	Hypertriploid. Y chromosome was observed in 60% of the cells analyzed.

Karyotype

Hypertriploid. Y was present in 60% of cells examined

Doubling time	24 hours

IDENTIFIERS

Citation

786-0 (Cytion catalog number 300107)

NCBI TaxID	9606
Cellosaurus	CVCL_1051

EXPRESSION AND SUSCEPTIBILITY

Antigen expression

CAIx +, as confirmed by FACS analysis.

Products

The cells produce a PTH (parathyroid hormone) like peptide that is identical to peptides produced by breast and lung tumors. It has an N terminal sequence similar to PTH, has PTH like activity, and has a molecular weight of 6000 daltons.

HANDLING AND CULTURE

Culture medium

RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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.

Split ratio	1 to 5
Seeding density	1 x 10^4 cells/cm^2 will result in a confluent monolayer within 4 days.

Fluid renewal	2 to 3 times per week
Post-thaw recovery	After thawing, plate the cells at 4 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 48 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	58 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

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