SK-NEP-1

300341

GENERAL INFORMATION

Description

SK-NEP-1 is a human cell line originally derived from a nephroblastoma, also known as Wilms' tumor, a common pediatric renal malignancy. This cell line has been used extensively in preclinical research to study nephroblastoma biology and to evaluate novel therapeutic approaches for treating Wilms' tumor. However, later molecular characterizations revealed that SK-NEP-1 expresses the EWS-FLI1 fusion gene, which is characteristic of Ewing sarcoma, indicating that this cell line is more representative of the Ewing family of tumors rather than Wilms' tumor. This discovery has important implications for interpreting past research that utilized SK-NEP-1, as its biological characteristics align more closely with Ewing sarcoma rather than anaplastic Wilms' tumor.

Research involving SK-NEP-1 has shown that it is responsive to chemotherapy agents such as vincristine, which inhibits microtubule polymerization, leading to G2/M phase arrest and apoptosis. Additionally, combination therapies using natural compounds like andrographolide have demonstrated synergistic effects in increasing the cytotoxicity of vincristine on SK-NEP-1 cells, primarily through the PI3K-AKT-p53 signaling pathway. This combination was shown to induce apoptosis in SK-NEP-1 cells, both in vitro and in vivo, making it a promising approach for treating tumors that share the molecular characteristics of SK-NEP-1.

SK-NEP-1 is thus a critical model for studying the molecular underpinnings of pediatric renal and Ewing sarcoma tumors and for evaluating the effectiveness of drug combinations aimed at improving therapeutic outcomes in these cancer types. Its use in research has contributed to understanding drug-induced apoptosis and the potential of targeting specific signaling pathways like PI3K-AKT-p53 in cancer therapy.

Tissue	Kidney
Disease	Wilms tumor
Metastatic site	Pleural effusion

Synonyms

- SKNEP-1
- SKNEP1
- SKNEP

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Suspension
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial-like
Tumourigenic	Yes, in nude mice.

Karyotype

(P12) hypotriploid to hypertriploid (+A1, +A2, +C, +D, +E, +F, +G) with abnormalities including acrocentric fragments, secondary constrictions and large sub telocentric markers

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IDENTIFIERS

Citation

SK-NEP-1 (Cytion catalog number 300341)

NCBI TaxID	9606
Cellosaurus	CVCL_0631

EXPRESSION AND SUSCEPTIBILITY

Isoenzymes

PGM3, 1, PGM1, 1-2, ES-D, 1, Me-2, 2, AK-1, 1, GLO-1, 2, G6PD, B, Phenotype Frequency Product: 0.0029

Mutational profile

P53 mut

HANDLING AND CULTURE

Culture medium

McCoys 5a, w: 3.0 g/L Glucose, w: stable Glutamine, w: 2.0 mM Sodium pyruvate, w: 2.2 g/L NaHCO3 (Cytion article number 820200a)

Incubation atmosphere	37°C, 5% CO_2, humidified atmosphere.

Supplements

Supplement the medium with 10% FBS

Subculturing

Maintain cultures by periodically adding or replacing the medium. Initiate cultures with a density of 5 x 10^5 cells/ml and keep the cell concentration within the range of 3 x 10^5 to 1 x 10^6 cells/ml for optimal growth.

Fluid renewal	2 to 3 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	25 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