Product sheet

SK-NEP-1 Cells | 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.
Organism	Human
Tissue	Kidney
Disease	Wilms tumor
Metastatic site	Pleural effusion
Synonyms	SKNEP-1, SKNEP1, SKNEP

Characteristics

Age	25 years
Gender	Female
Ethnicity	Caucasian
Morphology	Epithelial-like

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Growth properties	Suspension

Regulatory Data

Citation	SK-NEP-1 (Cytion catalog number 300341)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_0631

Biomolecular Data

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
Tumorigenic	Yes, in nude mice.
Mutational profile	P53 mut
Karyotype	(P12) hypotriploid to hypertriploid (+A1, +A2, +C, +D, +E, +F, +G) with abnormalities including acrocentric fragments, secondary constrictions and large sub telocentric markers

Handling

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)
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
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

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.