SK-N-SH

305028

GENERAL INFORMATION

Description

The SK-N-SH cell line is a human neuroblastoma model originally established from the bone marrow aspirate of a child with metastatic neuroblastoma. It is widely used in cancer research, particularly for studying neuronal differentiation, neuroblastoma biology, and therapeutic interventions. The cell line is notable for its heterogeneity and its ability to differentiate into neuronal-like and non-neuronal phenotypes under appropriate conditions, which closely mimics the cellular diversity observed in neuroblastoma tumors.
Chromosome analysis of SK-N-SH revealed a near-diploid karyotype with numerical and structural abnormalities. The line consistently displays trisomy of chromosome 7, along with translocations involving chromosomes 9 and 17. Specifically, a segment of chromosome 17 translocates to chromosome 22, resulting in partial trisomy of chromosome 17. Despite these alterations, SK-N-SH cells exhibit relatively stable karyotypic features compared to other neuroblastoma models, making them suitable for studying chromosomal aberrations in neuroblastoma.
Functionally, SK-N-SH cells possess neuronal properties and express neuroblastoma markers, including neurotransmitter synthesis enzymes, which are indicative of their neural crest origin. Importantly, SK-N-SH cells can be induced to differentiate into neuron-like cells with morphological and biochemical changes. Agents such as retinoic acid are commonly used to trigger this differentiation, resulting in increased neurite outgrowth and expression of neuronal markers. This property makes SK-N-SH a valuable tool for examining neuronal differentiation pathways, neurotoxicity, and neuroblastoma therapeutic targets.
SK-N-SH serves as a robust and versatile model for investigating neuroblastoma progression, neuronal differentiation, and therapeutic responses. Its karyotypic stability and ability to differentiate into neuronal phenotypes provide a platform for translational research into pediatric cancers and neuronal development.

Tissue	Brain
Disease	Neuroblastoma
Metastatic site	Bone marrow

Synonyms

- SK N SH
- SKN-SH
- SK-NSH
- SKNSH
- NSH

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
Biosafety level	1

CHARACTERISTICS

Morphology	Epithelial

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IDENTIFIERS

Citation

SK-N-SH (Cytion catalog number 305028)

NCBI TaxID	9606
Cellosaurus	CVCL_0531

EXPRESSION AND SUSCEPTIBILITY

Protein expression

Plasminogen Activator, Shows Increased Expression Of M-Csf After Treatment With Amyloid-Beta Peptide.

Antigen expression

Blood Type A, Rh□

HANDLING AND CULTURE

Culture medium

EMEM (MEM Eagle), w: 2 mM L-Glutamine, w: 2.2 g/L NaHCO3, w: EBSS (Cytion article number 820100a)

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

Supplements

Supplement the medium with 10% FBS and 1% NEAA

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.

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 50% basal medium + 40% FBS + 10% DMSO, 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	4 years
Ethnicity	European

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