U-2 OS-ZFN-SNAP-Nup107

300294

GENERAL INFORMATION

Description

The U-2 OS-ZFN-SNAP-Nup107 cell line represents a specialized variant of the widely used human osteosarcoma cell line U-2 OS. This particular model has been engineered to express the SNAP-tagged version of the nucleoporin Nup107, a pivotal component of the nuclear pore complex, which is essential for the transport of molecules between the nucleus and the cytoplasm. The integration of the SNAP-tag technology allows for the biorthogonal labeling and visualization of Nup107 in live or fixed cells, providing a powerful tool for studying nucleocytoplasmic transport and nuclear pore complex architecture under physiological conditions.
The U-2 OS background offers several advantages, including robust growth rates and a well-characterized karyotype, which support high-throughput screening applications and genomic studies. The ZFN (Zinc Finger Nuclease) technology used in this cell line facilitates targeted genome editing, enhancing the precision with which researchers can investigate the genetic contributions to nuclear transport and other cellular processes. This cell line is particularly useful for studies aimed at elucidating the dynamics and regulation of nuclear pore complexes in cancer biology and cellular physiology.
Due to the specialized nature of the U-2 OS-ZFN-SNAP-Nup107 no.294 cell line, it is highly suited for advanced imaging techniques, including super-resolution microscopy, to explore nucleoporin functions at unprecedented detail. It is also a valuable resource for developing therapeutic strategies targeting nuclear transport pathways implicated in various diseases, including cancer. The SNAP-tag component adds versatility for further biochemical and proteomic analyses, making it an indispensable tool in the field of cellular and molecular biology.

Tissue	Bone
Disease	Osteosarcoma

CLASSIFICATION

Organism	Human
Sex	Female
Growth properties	Adherent
GMO status	GMO-S1

GMO status details

GMO-S1: This human osteosarcoma cell line (U2OS-ZFN-SNAP-Nup107 no.294) contains a ZFN-mediated SNAP-Nup107 gene fusion, supporting selective labeling of the Nup107 nuclear pore subunit. The modification is stably present. This classification applies only within Germany and may differ elsewhere.

Biosafety level	1

IDENTIFIERS

Citation

U-2 OS-ZFN-SNAP-Nup107 (Cytion catalog number 300294)

NCBI TaxID	9606
Cellosaurus	CVCL_B7FM
Depositor	The Ellenberg Lab (EMBL)

EXPRESSION AND SUSCEPTIBILITY

Protein expression

SNAP-Nup107 (nuclear pore complex protein 107, SNAP-tag)

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, 3.0 g/L Glucose, stable Glutamine, 2.0 mM Sodium pyruvate, 2.2 g/L NaHCO3, 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 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	15 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.

Third-party agreements apply	Yes