

U2OS-ZFN-SNAP-Nup107 no.294 Cells | 300294

General information

Description

The U-2 OS-ZFN-SNAP-Nup107 no.294 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.

Organism	Human
Tissue	Bone
Disease	Osteosarcoma

Characteristics

Age	15 years
Gender	Female
Ethnicity	Caucasian
Growth properties	Adherent

Identifiers / Biosafety / Citation

Citation	U-2 OS-ZFN-SNAP-Nup107 no.294 (Cytion catalog number 300294)
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Biosafety level 1

Expression / Mutation

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

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)

Medium 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

Passaging solution 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 A ratio of 1:3 to 1:6 is recommended

Fluid renewal 2 to 3 times per week

Freeze medium CM-1 (Cytion catalog number 800100) or CM-ACF (Cytion catalog number 806100)

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Handling of cryopreserved cultures

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. Optionally, skip centrifugation but remove any remaining freezing medium after 24 hours.
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.

Quality control / Genetic profile / HLA

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.

STR profile

Amelogenin: x,y