cyagen | OriCell

User Manual

OriCell™ N1-S1 Rat Liver Cancer Cell Line

Catalog No. R1-0901

We help you discover life

Introduction

The N1- S1 rat hepatocellular carcinoma (HCC) cell line was first established by a Japanese research team in the 1970s. It is derived from Sprague-Dawley rats and was induced by feeding male rats 4-dimethylaminoazobenzene to develop hepatocellular carcinoma. Under in vitro culture conditions, the cells exhibit relatively stable morphology and biological characteristics, making them suitable for long-term experimental studies such as drug screening and gene function analysis.

OriCell™ N1-S1 Rat Liver Cancer Cell Line is commonly used to establish rat liver cancer models, facilitating studies on tumor growth and metastasis mechanisms. It is also widely applied in anticancer drug screening and efficacy evaluation, as well as in investigations of the regulatory mechanisms of liver cancer–related biomarkers.

Note: **This product is only provided for further scientific research. It is not intended for diagnostic, therapeutic, clinical, household, or any other applications.**

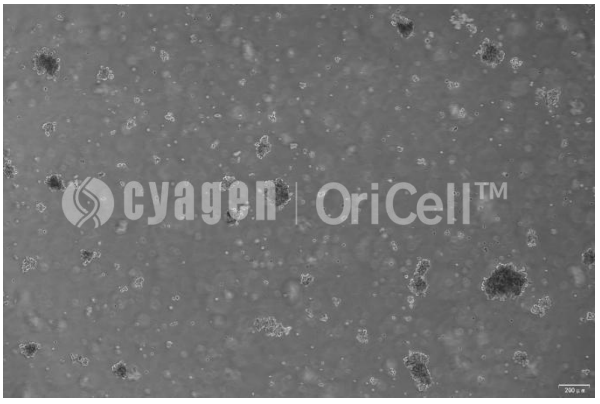
When citing our products in academic publications, please use the following format: "OriCell™ [Product Name] + [Catalog Number], from Cyagen Biosciences."

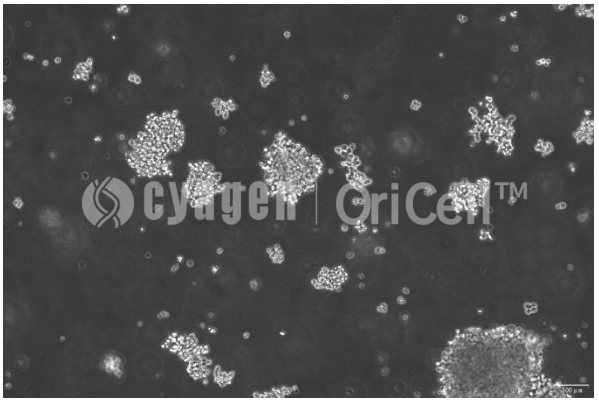
Product Information

Name	OriCell™ N1-S1 Rat Liver Cancer Cell Line
Abbreviation	N1-S1
Alternative Name	N1-S1, ANA1
Catalog Number	R1-0901
Amount of Cells	1×10^6 cells/vial
Tissue Origin	Rat liver
Cell Characteristics	Suspension growth; circular clusters
Culture Conditions	95% air; 5%CO2; 37°C
Culture Medium	DMEM + 10% FBS
Doubling Time	12~24 h
Biosafety Level	1
Storage at	Liquid Nitrogen (-196°C)
Precautions	——

Note: This product is manufactured under strict aseptic conditions. You may choose to add antibiotics during subsequent culturing based on your specific needs.

The Morphology of OriCell™ N1-S1 Rat Liver Cancer Cell Line





QC

- Tested for bacteria, fungi, mycoplasma, and endotoxins.
- Tested for cell viability and recovery.
- Confirmed by short tandem repeat (STR) analysis.

Please refer to "COA" for details.

General Handing Principles

1. Strict sterile environment. Ensure the cleanliness of the entire laboratory, laminar flow hood, and incubator.
2. Follow standardized operating procedures. Adhere to the instructions described in the product manual, strictly control variables, and conduct appropriate control experiments.
3. Use appropriate and high-quality consumables and reagents. This product requires culture vessels suitable for suspension cell growth, and their reuse is not recommended. The reagents used must be validated for reliability, suitable for cell growth, and exhibit minimal batch-to-batch variation.

Note: **The cryopreservation solution of this product contains DMSO, which may pose potential risks. Please handle it with care.**

*The abbreviations used are defined as follows:

Abbreviation	Name	Cat. No.
FBS	Fetal Bovine Serum	See official website
BCS	Bovine Calf Serum	SBCST-01001
Glu	Glutamine	SGLU-10201
SP	Sodium Pyruvate	SCSP-10301
Dex	Dexamethasone	SDEX-10401
NBCS	Newborn Calf Serum	NCSST-01001
HS	Horse Serum	SCHST-01001
NEAA	Non Essential Amino Acid	NEAA-10201
β-mer	β-mercaptoethanol	BMER-10301
P/S	Penicillin- Streptomycin	ATPS-10001
ITS	Insulin, Transferrin, Selenite	ITSS-10201

Thawing and Establishing of Cells

Materials Required

- OriCell™ N1-S1 Rat Liver Cancer Cell Line (Cat. No.: R1-0901)
- OriCell™ Complete Medium For N1-S1 Cell Line (Cat. No.: CMR1-0901)

Steps

Note: If the received cells are to be thawed within 24 hours, they can be stored in an ultra-low temperature freezer at -80°C. For storage longer than 24 hours, please keep them in liquid nitrogen. Before thawing, transfer the cells from liquid nitrogen to -80°C and hold them there for 10 minutes to allow any residual liquid nitrogen in the tube to evaporate.

1. Preheat the water bath to 37°C.
2. Warm the complete medium to 37°C.
3. Add at least 5 mL of complete medium to a 15 mL centrifuge tube for subsequent use.
4. Remove the cryovial containing cells from the −80°C freezer, immerse it in the 37°C water bath, and gently and quickly swirl to thaw the cryopreservation solution.

   Note:

   (1) Gently shake the cryovial during thawing to ensure rapid and uniform thawing.

   (2) Avoid submerging the cap in water to prevent contamination.

   (3) Stop thawing in the water bath when only a single ice crystal (approximately 2 mm in diameter) remains, then continue gently shaking the vial until it fully melts.

5. Wipe the outer surface of the cryovial with 75% ethanol.
6. In a biosafety cabinet, open the cryovial and transfer the cell suspension to the prepared centrifuge tube using a Pasteur pipette.
7. Rinse the cryovial once with 1 mL of complete medium to collect residual cells and minimize loss.
8. Centrifuge the cell suspension at 140×g for 5 minutes.

   Note: **Please calculate the corresponding rotational speed using the formula: $a=\omega^2 r$ (where a is the centripetal acceleration, ω is the angular velocity and r is the rotor radius. $\omega = \pi n/30$).**

9. Carefully remove the supernatant after centrifugation. Add 2 mL of complete medium, gently resuspend the cell pellet by pipetting up and down to mix thoroughly.
10. Inoculate the cells into a T25 flask or culture vessel with an equivalent growth surface area. Add sufficient complete medium so that the total volume in a T25 flask is no less than 5 mL.
11. Gently swirl the flask to evenly distribute the cells, then incubate in a CO_2 incubator at 37°C with 5% CO_2 and saturated humidity.
12. The day after recovery, observe the cell status and either replace the medium with fresh complete medium or passage the cells as necessary.

13. Refresh the complete medium every 3 days until the cells reach an appropriate density, then passage.

Passaging of Cells

Materials Required

- OriCell™ Phosphate-Buffered Saline Solution (1X) (Cat. No.: PBS-10001)
- OriCell™ Complete Medium For N1-S1 Cell Line (Cat. No.: CMR1-0901)

Steps

1. Prewarm the complete medium to 37°C.
2. Transfer the medium from the culture vessel to a centrifuge tube.
3. Gently wash the cells twice with PBS (approximately 3 mL for a T25 flask and 6 mL for a T75 flask). Ensure thorough washing but avoid excessive force. Then transfer the used PBS into a centrifuge tube.
4. Centrifuge all collected cell suspensions at 140 × g for 5 minutes.
5. Carefully remove the supernatant after centrifugation. Add 2 mL of complete medium and gently resuspend the cell pellet by pipetting up and down to thoroughly mix.
6. Inoculate the cells into a suitable culture vessel at a density of (2–3) × 10^4 live cells/cm^2.

   Note: **We recommend manual cell counting when conditions permit and counting efficiency is high, in order to obtain an accurate cell concentration to guide seeding. If precise counting is not feasible, subculturing at an appropriate ratio is a better alternative. Typically, N1-S1 cells are passaged at a ratio of 1:2 to 1:3, with cells reaching passage confluence within 48 hours. Please adjust the subculture ratio according to the actual condition of the cells.**

7. Shake the cells gently and place them in an incubator at 37 °C, 5% CO_2, and saturated humidity.

8. Observe the cells the day after passaging. Replace the culture medium (prewarmed to 37 °C) every 3 days until the cells reach an appropriate density, then passage or cryopreserve them.

Cryopreservation of Cells

Materials Required

- OriCell™ NCR Protein-Free Cryopreservation Medium For General Use (Cat. No.: NCPF-10001)
- OriCell™ NCR Cryopreservation Medium For General Use (Cat. No.: NCRC-10001)

Steps

1. Cells should be cryopreserved once they reach an appropriate density suitable for passaging.
2. For cell collection, please refer to passaging steps 1-3 above.
3. Carefully remove the supernatant after centrifugation and gently resuspend the cells in an appropriate volume of cryopreservation medium.
4. Aliquot the cells into cryovials according to the desired cell number or proportion.

   Note: **If accurate cell counting is not feasible, we recommend aliquoting cells proportionally for freezing. Prolonged storage under non-culture conditions will significantly affect cell viability. Keep the cells at 4°C during counting to minimize metabolic activity and preserve cell integrity.**

5. When using any of the recommended NCR cryopreservation media above, cryovials can be directly placed individually into a -80°C freezer.

   Note: **Avoid opening the freezer door during the first 4 hours of freezing, as temperature fluctuations can seriously impact cell viability.**

6. After approximately 8 hours, transfer the cryovials to liquid nitrogen for long-term storage.

   Note: **Storage at -80°C should not exceed 48 hours.**