

Nthy-ori 3-1 Cells | 305606

General information

Description

The Nthy-ori 3-1 cell line is a non-tumorigenic model established from normal human thyroid follicular epithelium. It was immortalized using the SV40 large T antigen (SV40T), which allows for extended culture periods without inducing transformation into a malignant phenotype. Nthy-ori 3-1 cells exhibit characteristics typical of thyroid epithelial cells, including expression of markers such as thyroglobulin and thyroid transcription factor-1 (TTF-1), which are essential for thyroid-specific functions. This cell line serves as a valuable tool for investigating normal thyroid biology, the effects of environmental toxins, and the early stages of thyroid carcinogenesis.

In research, Nthy-ori 3-1 has been used to explore the molecular mechanisms underlying thyroid disorders, including autoimmune thyroiditis and goiter. It provides a comparison to thyroid cancer cell lines, particularly in studies focused on the role of oxidative stress and DNA damage. For example, exposure of Nthy-ori 3-1 cells to genotoxic agents has been shown to induce DNA strand breaks and repair responses, which are critical for understanding mutagenesis and the development of thyroid malignancies.

Additionally, the cell line is utilized in toxicology to evaluate the impact of environmental and pharmaceutical compounds on thyroid health. Studies using Nthy-ori 3-1 cells have highlighted pathways involved in cellular response to thyrotoxic agents and endocrine disruptors. This makes Nthy-ori 3-1 a vital model for research on thyroid function regulation, disease modeling, and therapeutic screening.

Organism	Human
Tissue	Thyroid gland
Synonyms	Nthy ori 3.1, Nthy-ori 3.1, NTHY-ORI3.1, HTori-3.1

Characteristics

Age	35 years
Gender	Female
Ethnicity	European
Morphology	Epithelial-like
Cell type	Follicular cell
Growth properties	Adherent

Regulatory Data

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Citation	Nthy-ori 3-1 (Cytion catalog number 305606)
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Biosafety level	1
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NCBI_TaxID	9606
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CellosaurusAccession	CVCL_2659
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Biomolecular Data

Viruses	SV40
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Handling

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO ₃ (Cytion article number 820700a)
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Supplements	Supplement the medium with 10% FBS
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Dissociation Reagent	Accutase
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Seeding density	2-4x10 ⁴ cells/cm ²
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Fluid renewal	2 to 3 times per week
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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.
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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% CO₂, 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

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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.