Version Date: 2/26/2025

Product Summary

Human Niemann Pick Type C (Female) iPSCs

Catalog Number: CR1013-500

Product Overview	
Product Name	**Human Niemann Pick Type C (Female) iPSCs**
Catalog #s	CR1013-500
Quantity	One vial (approx. 500,000 cells)
Product Form	Frozen
Cell Type	Disease Model iPSCs - Human Niemann Pick Type C (Female)
Reagents Needed	– **Antibiotic** - Penicillin/Streptomycin/Amphotericin B solution or Penicillin/Streptomycin solution, 100x (not included)[1] – **Basement membrane matrix** suitable for adherent cells – based on customer preference, we recommend using Geltrex™ hESC-Qualified Ready-to-Use, Reduced Growth Factor Basement Membrane Matrix manufactured by Thermo Fisher Cat. A1569601) – 70% isopropanol solution – **ROCK Inhibitor** Y-27632 (Dihydrochloride) – based on customer preference – **Cell disassociation reagent** – based on customer preference, we recommend using Gibco™ Versene Solution (Cat. 15040066) or STEMCELL Technologies Gentle Cell Disassociation Reagent (Cat. 100-0485)

Product Description

Human Niemann Pick Type C (Female) iPSCs

Our Niemann-Pick Disease Type C (NPC1) iPSC line is derived from an 8-year-old female donor of Caucasian descent diagnosed with NPC1, a rare neurovisceral lipid storage disorder [i]. Niemann-Pick Type C results from autosomal recessive mutations in the NPC1 or NPC2 gene, which cause abnormal endosomal-lysosomal lipid trafficking. This leads to the accumulation of un-esterified cholesterol and other lipids in lysosomes, resulting in progressive neurodegeneration, hepatosplenomegaly, and early mortality [ii].

This NPC1 iPSC line provides an ideal platform for studying cholesterol homeostasis, drug screening, and therapeutic development. Using our patented episomal reprogramming method, we generate high-fidelity, non-integrating iPSCs that maintain genomic integrity while ensuring consistent, efficient reprogramming. We recommend culturing of these cells in Human iPSC Growth Media (MR1001-K).

To enhance clinical safety, we exclude Myc and Lin28 transcription factors, which are linked to neoplastic formation. This approach lowers the clinical risk profile of downstream differentiated cells, making this iPSC line a powerful tool for Niemann-Pick disease research, gene therapy, and regenerative medicine applications.

Key Features & Quality Control:

- NPC1-mutant iPSC line validated for pluripotency
- Non-integrating episomal reprogramming for genomic stability
- Mycoplasma-free and pathogen-free certification
- Cryopreserved at low passage to ensure high post-thaw viability

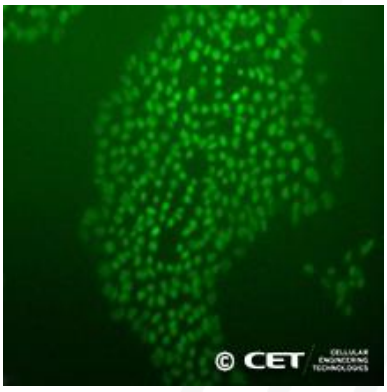
Applications:

- Disease modeling for lysosomal storage disorders
- Cholesterol metabolism research in neurodegenerative disease
- Drug screening and therapeutic development for NPC1-targeted treatments
- Gene therapy development for precision medicine applications
- Differentiation into neuronal, hepatic, and macrophage models

Specifications:

- Cell Type: Human induced pluripotent stem cells (hiPSCs)
- Donor Information: 8-year-old female, Caucasian descent
- Mutation: NPC1 gene mutation (variant details available upon request)

Cell Image



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- Culture Conditions: Feeder-free, compatible with standard iPSC growth media
- Storage & Shipping: Cryopreserved, shipped on dry ice

Each vial contains ~500,000 cryopreserved cells, providing a reliable and reproducible model for Niemann-Pick disease research and therapeutic advancements.

Note: This product is designed and tested to function with Cellular Engineering Technologies Inc. ("CET") product MR1001-K Human iPS Cell Growth Media (not included). Although investigators are welcome to use this product with other media formulations, CET cannot and will not guarantee this product's performance. Additionally, such use of third-party media with this product will void CET's warranty should they not function as indicated. Please refer to CET's Terms & Conditions, available at www.cet.bio.

Cell Characteristics	
Growth Properties	Adherent
Donor Age	8-year-old
Ethnicity	Caucasian
Gender	Female
Gene, Chromosomal Location	NPC1, Chr 18: 23.51 – 23.59 Mb
Media Formulation Instructions (for MR1001-K Human iPSC Growth Media Kit not included)	
Defrosting the iPSC Growth Supplement	1. Defrost the iPSC Growth Supplement at 4°C (the day before the media is prepared) and 5 mL of antibiotic/antimycotic solution (not included) in a 37°C water bath until the ice in the tubes is no longer visible. Never defrost the iPSC Growth Supplement in a 37°C water bath. It is normal for the iPSC Growth Supplement to appear hazy or have suspended solutes. Gently mix by inversion. 2. Immediately disinfect the tubes and the bottle containing the iPSC Growth Base Media with 70% isopropanol (not included).
Mixing	1. Working in a laminar flow hood, remove 12mL of iPSC Growth Base Media (not included with cells) from the bottle and discard. This and all other procedures must be done in a sterile manner. 2. Add the complete contents of the iPSC Growth Supplement to the iPSC Growth Base Media. Add 5mL of the antibiotic/antimycotic solution to the iPSC Growth Base Media[1]. 3. Cap the bottle containing the mixed liquid solution and gently swirl a few times. This formulated media is now considered complete media and ready to use with cells.

Cell Thawing and Plating Instructions	
Cell thawing	1. Before thawing the cells, substrate-coated dishes should be prepared accordingly. 2. Thirty (30) minutes before thawing the iPS cells, the coating solution on the plates must be entirely replaced with complete media (see Media Formulation Instructions) containing five (5) uM ROCK Inhibitor Y-27632 (not included) and equilibrated to room temperature. 3. Remove the Human Niemann Pick Type C (Female) iPS Cells vial from the dry ice or a storage unit. 4. Defrost the vial of cells in a 37°C water bath with constant, moderate agitation until ice in the ampoule is barely visible. DO NOT OVERTHAW. 5. Immediately disinfect with 70% isopropanol (not included).
Cell plating	1. Working in a laminar flow hood, open the vial and transfer the contents to a sterile fifteen (15) mL tube. 2. Very slowly, add approximately nine (9) mL of complete media (see Media Formulation Instructions) containing five (5) uM ROCK Inhibitor Y-27632, pre-warmed to 37°C before use. 3. Centrifuge suspended cells at 200 x g for 10 minutes. 4. Decant the medium and gently resuspend the pellet in 6 mL of complete media containing 5 uM ROCK Inhibitor Y-27632. Do this gently to avoid shearing the colonies. 5. Gently pipette the resuspended cells onto the previously coated dishes. One vial of iPSCs contains enough colonies to seed six (6) wells of a standard six (6)-well tissue culture plate or three (3)- one-hundred (100) mm tissue culture dishes. 6. Distribute the colonies evenly and gently rock the plate back and forth. Place the dish in an incubator at 37°C, 5% CO_2, and 95% humidity. 7. After 24 hours, aspirate media from the dish and replenish with fresh complete media (WITHOUT 5uM ROCK Inhibitor Y-27632), pre-warmed to 37°C before use. 8. Repeat media changes every 24 hours.
Observation and expansion	– The cells should attach over 24 hours. It is normal for these cells to grow slowly initially for one week after thawing and for some colonies to be shed during media changes. – Subculture cells at a 1:6 split ratio using cell disassociation reagent (not included).

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Storage and Stability		
	Storage Temperature	**Storage Time**
Human Niemann Pick Type C (Female) iPSCs Cat. CR1013	Upon arrival, place the cells at a temperature below **-130°C**, preferably in liquid nitrogen vapor, until ready for use	12 months
Human iPSC Growth Media Kit (not included) Cat. MR1003-K		
iPSC Growth Base Media	4°C	3 months
iPSC Growth Supplement	-20°C	Not applicable (use entire contents)
complete media *(see Media Formulation Instructions)*	2-8°C	Not applicable
Avoid repeated freeze-thaw cycles for cells. Avoid repeated exposure to room temperature and light for media.		

[1] These solutions should be portioned in 5mL aliquots, stored at -20°C, and never frozen/thawed. Although antimycotics are unnecessary, CET highly recommends their usage for long-term cell culture. Antibiotics and antimycotics should not be used as an alternative to proper aseptic techniques.

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