Human iPS Cell Line (Normal)

SKU: 30HU-002

PRODUCT SHEET

Product Description

Induced Pluripotent Stem Cells (iPSCs) are a type of stem cells generated by reprogramming a variety of mature, specialized somatic cells into an embryonic-like pluripotent state. iPSCs exhibit large self-renewal capability and can differentiate into cells from all three germ layers [1, 2]. Due to their high differentiation potential, iPSC serves as a unique cell model for the regenerative medicine. In addition, iPSCs reprogrammed from rare disease carriers can be expanded and differentiated into specific cell types, allowing research with genetically pertinent disease-specific cell models for personalized treatment [3]. iPSCs, thus, provide a unique model for studying a variety of processes that occur in the early development and become a promising tool in cell therapy of human diseases [4].

Product Details

Catalog Number: 30HU-002
Organism: *Homo Sapiens*, Human
Tissue Origin: Dermal fibroblast or peripheral blood mononuclear cells
Cell Type: iPSC
Disease: Normal
Package Size: 0.5-1.0 x 10^6 cells/vial
Growth Properties: Adherent
Associated Media: Human iPSC Feeder-Free Growth Medium (MD-0019)
Human iPSC Xeno-Free Growth Medium (MD-0074)

Storage Conditions & Shipment

Product Format/Shipped: Cryopreserved
Storage: Liquid Nitrogen

For Research Use Only

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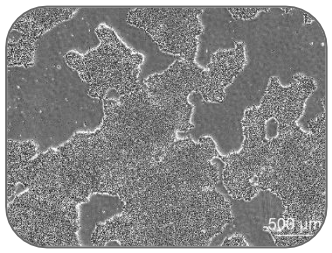
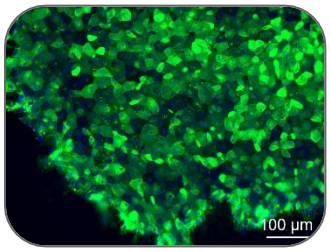
RELATED PRODUCTS



Human iPS Cell Line (Amyotrophic Lateral Sclerosis)
SKU: 30HU-004



Human iPS Cell Line (Alzheimer's Disease, PSEN2, N141I, HET)
SKU: 30HU-008

Overview of Human iPS Cell Line (Normal)

iXCells Biotechnologies is proud to offer human iPSCs derived from normal and patient somatic cells (dermal fibroblasts or peripheral blood mononuclear cells) with different race, gender, and age options to choose from. The pertinent donor information is available on the CoA or upon request (info@ixcellsbiotech.com). These iPSCs are established from single clones and expanded in feeder-free conditions. iXCells' iPSCs demonstrate hESC morphology, express pluripotency markers, have normal karyotype, and are integration free (Figure 1). The iPSCs have been extensively used in differentiation projects to generate various cell types, including neurons, astrocytes, microglia, skeletal muscles, and hepatocytes (Figure 2). They are negative for mycoplasma, bacteria, yeast, fungi, HIV-1, HBV and HCV.

In addition, patient-derived iPS cell lines are also available as separate products. The currently available disease specific iPS cell lines are derived from patients with Type 2 Diabetes (T2D; Cat#30HU-005), Alzheimer's Disease (AD; Cat#30HU-008, Cat#30HU-009), Amyotrophic Lateral Sclerosis (ALS; Cat#30HU-004). More disease-specific iPS lines are under development. We also provide custom iPSC generation and iPSC differentiation services to meet your needs.

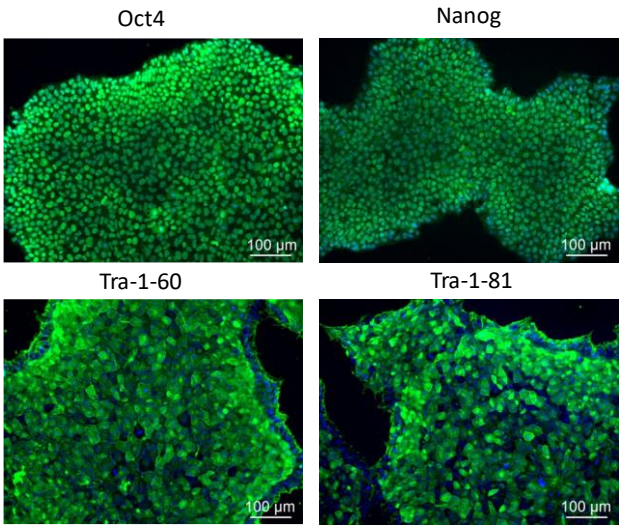


Figure 1. iXCells human iPS Cell Lines are characterized by immunostaining targeting Oct4, Nanog, TRA-1-60, and TRA-1-81. Images are also stained with DAPI to show cell nuclei. Scale bar = 100µm.

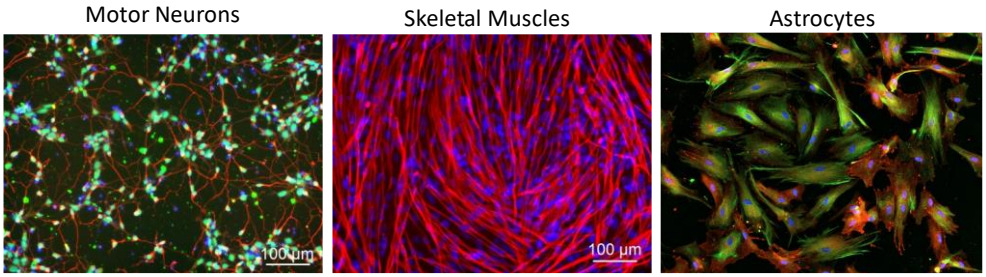


Figure 2. iXCells human iPS Cell Lines demonstrate a high capacity for differentiation into various cell types, including Neurons, Skeletal Muscles, and Astrocytes. Scale bar = 100µm.

Cell Thawing – Frozen Cells

1. Upon receipt of the frozen cells, it is recommended to thaw the cells and initiate the culture immediately to retain the highest cell viability.
2. Before recovering cells, prepare evenly coated Matrigel®/Cultrex® BME plates, following manufacturer's instructions.
3. To thaw the cells, put the vial in 37°C water bath with gentle agitation for 1-2 minutes. Keep the cap out of water to minimize the risk of contamination.
4. Pipette the cells into a 15 mL conical tube with 5 mL fresh culture media. Human iPSC Feeder-Free Growth Medium (Cat # MD-0019) or Human iPSC Xeno-Free Growth Medium (Cat # MD-0074) can be used in feeder-free culture system.
5. Centrifuge at 50-100*g* for 5 minutes at room temperature.
6. Remove the supernatant and re-suspend the cells gently in the culture medium supplemented with 10 µM Y-27632 (Cat # MD-0025).
   Note: Gently resuspend the cell pellet to keep cells in small clusters.
7. Seed the cells on Matrigel®/Cultrex® precoated plates for feeder-free culture.
   Note: It is recommended to seed the cells at three different densities in 6-well plates to ensure optimal recovery density.
8. Incubate the cells in 37°C CO_2 incubator overnight.
9. The next day, change to cell culture media without Y-27632.
10. Change media daily until cells are ready to be passaged. It may take 1-2 weeks (depending on the lot#) to fully recover the cells before passage.
    Note: There may be 5-10% differentiated cells after cell recovery. We recommend removing differentiated cells manually with a sterile tip or syringe under a microscope in a sterile biosafety cabinet. The cells will be stabilized after 2-3 passages.
    Safety Precaution: It is highly recommended that protective gloves and clothing should be used when handling frozen vials.

Subculture Procedure

1. Prepare evenly coated Matrigel®/Cultrex® plates according to manufacturers' instructions.
2. When the cells are 80-90% confluent, aspirate the medium and wash cells with 2 mL of sterile PBS/well.
3. Add 1 mL/well of ReLeSR™ and incubate for 1-2 minutes at room temperature. Aspirate the ReLeSR™ and incubate the plate at 37°C for another 3-4 minutes.
   Note: Dissociation time may vary depending on the cell line used.
4. Add 1 mL of medium and detach the colonies by gently tapping the plate.
5. Transfer the detached cell aggregates to a 15 mL tube containing 5 mL fresh culture media.
6. Centrifuge at 50-100*g* for 5 minutes at room temperature and resuspend the pellet in desired volume. Gently resuspend the cell pellet and avoid breaking the pellet into single cells.
7. Plate the cell aggregate mixture at appropriate density onto pre-coated 6-well plates in recommended iXCells medium with 10 µM Y-27632. The next day, change to culture medium media without Y-27632.
8. If the cells are seeded at the optimal density, cells will be confluent and ready to use in 4-7 days.

References

[1] Medvedev, S. P., Shevchenko, A. I., & Zakian, S. M. (2010). Induced Pluripotent Stem Cells: Problems and Advantages when Applying them in Regenerative Medicine. Acta naturae, 2(2), 18–28.

[2] Ghaedi, M., & Niklason, L. E. (2019). Human Pluripotent Stem Cells (iPSC) Generation, Culture, and Differentiation to Lung Progenitor Cells. Methods in molecular biology (Clifton, N.J.), 1576, 55–92.

[3] Okita, K., Matsumura, Y., Sato, Y., Okada, A., Morizane, A., Okamoto, S., Hong, H., Nakagawa, M., Tanabe, K., Tezuka, K., Shibata, T., Kunisada, T., Takahashi, M., Takahashi, J., Saji, H., & Yamanaka, S. (2011). A more efficient method to generate integration-free human iPS cells. Nature methods, 8(5), 409–412.

[4] Ebert, A. D., Liang, P., & Wu, J. C. (2012). Induced pluripotent stem cells as a disease modeling and drug screening platform. Journal of cardiovascular pharmacology, 60(4), 408–416.

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