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Human Schwann Cells (HSwC)

Catalog Number	10HU-188	**Cell Number**	0.5 million cells/vial
Species	*Homo sapiens*	**Storage Temperature**	Liquid Nitrogen

Description

Schwann cells are major type of glial cells in peripheral nervous system. Schwann cells differentiate from cells of the neural crest during embryonic development, and they are stimulated to proliferate by some constituent of the axonal surface. Schwann cells can be either myelinating or non-myelinating. Whilst myelinating Schwann cells wrap around the axons of motor and sensory neurons to form the myelin sheath, non-myelinating Schwann cells do not wrap around the axons but still provide support and cushioning to the unmyelinated axons [1]. Each myelinating Schwann cell wraps around the shaft of an individual peripheral axon, forming myelin sheaths along segments of the axon. When an axon is dying, the Schwann cells surrounding it aid in its digestion, leaving an empty channel formed by successive Schwann cells, through which a new axon may then grow from a severed end. The number of Schwann cells in peripheral nerves is tightly regulated [2]. Their proliferation *in vitro* can be stimulated by various growth factors including PDGF, FGF, neuregulin, and others [3]. Schwann cells provide a relatively simple, well-defined, and accessible mammalian model for the study of numerous developmental diseases. It is also of clinical importance to understand the biology of Schwann cells, not only in the context of neuropathies and nerve regeneration, but also because the cells or their precursors may be especially well suited for implants to facilitate repair in the CNS.

iXCells Biotechnologies provides high quality Human Schwann Cells (HSwC), which are isolated from human spinal nerve and cryopreserved at P1. Each vial contains ≥0.5 million viable cells. HSwC are characterized for expression of vimentin, S100, GFAP and CD90. They are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi and can further expand no more than 3 passages in Schwann Cell Growth Medium (Cat# MD-0055) under the condition suggested by iXCells Biotechnologies. Further expansion may decrease the purity.

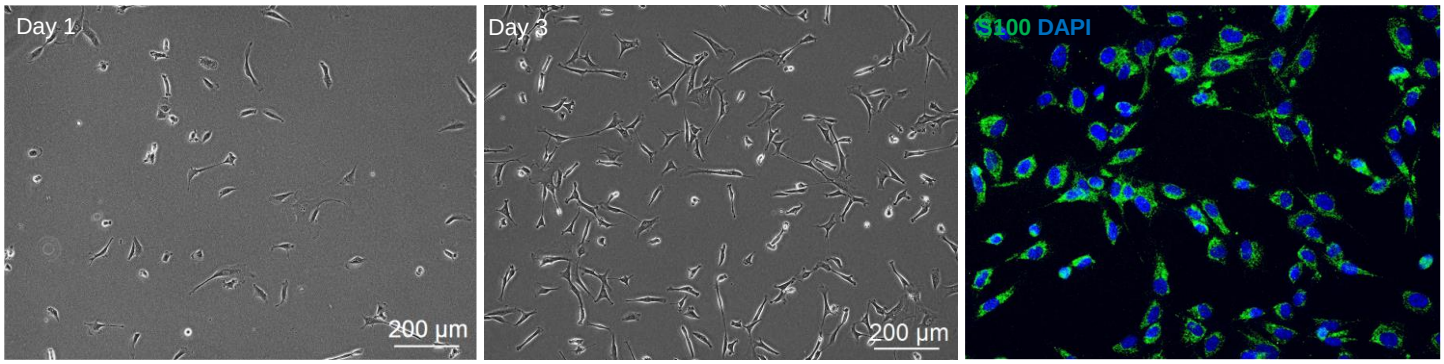

Figure 1 Phase contrast images at indicated days post recovery and ICC staining for S100 for iXCells HSwC

Product Details

Tissue	Human spinal nerve
Package Size	0.5 million cells/vial
Passage Number	P1
Shipped	Cryopreserved
Storage	Liquid nitrogen
Growth Properties	Adherent
Media	Schwann Cell Growth Medium (Cat # MD-0055)

Protocols

Thawing of Frozen Cells

1. Upon receipt of the frozen Human Schwann Cells (HSwC), it is recommended to thaw the cells and initiate the culture immediately in order to retain the highest cell viability.
2. Coat the culture vessels with 0.01% poly-L-lysine for approximately 1 hour at 37°C or 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 **Schwann Cell Growth Medium** (Cat # MD-0055).
5. Centrifuge at 1,000 rpm (~220 *g*) for 5 minutes under room temperature.
6. Remove the supernatant and resuspend the cells in fresh culture medium.
7. Culture HSwC in 100 mm culture dish or T75 flask. Change the medium every three days until the culture is approximately 70% confluent. Once the culture reaches 70% confluency, change medium every other day until the culture is approximately 90% confluent. It is recommended to seed at a density of 5×10^3 cells/cm^2.

Safety Precaution: *it is highly recommended that protective gloves and clothing should be used when handling frozen vials.*

Standard Culture Procedure

1. When cells reach ~80-90% confluence, remove the medium, and wash once with sterile PBS (5 mL/T75 flask).
2. Add ~2.5 mL of 0.25% Trypsin-EDTA to the flask and incubate for ~3 minutes at 37°C. Neutralize the enzyme by adding 2-3 volumes of cell culture medium.
3. Centrifuge at 1,000 rpm (~220 *g*) for 5 minutes and resuspend the cells in desired volume of medium.
4. Seed cells in the new culture vessels at 5×10^3 cells/cm^2. Change the medium every three days until the culture is approximately 70% confluent. Once the culture reaches 70% confluency, change medium every other day until the culture is approximately 90% confluent.

References

[1] Britannica, T. Editors of Encyclopaedia (2020) Schwann cell. Encyclopedia Britannica.

[2] Syroid, D. E., Maycox, P. R., Burrola, P. G., Liu, N., Wen, D., Lee, K. F., Lemke, G., Kilpatrick, T. J. (1996) Cell death in the Schwann cell lineage and its regulation by neuregulin. Proc. Natl. Acad. Sci. USA 93:9229-9234.

[3] Rahmatullah, M., Schroering, A., Rothblum, K., Stahl, R. C., Urban, B and Carey, D. J. (1998) Synergistic regulation of Schwann cells proliferation by heregulin and forskolin. Mol. Cell. Biol. 18:6245-6252.

Disclaimers