Mouse Schwann Cells (MSC)

Catalog Number: M1700

Cell Specification

Schwann cells are neural crest derivatives that ensheathe and myelinate axons of peripheral nerves [1]. They wrap individually around the shaft of peripheral axons, forming myelin sheath along segments of the axon. Schwann cells play important roles in the development, function and regeneration of peripheral nerves. When an axon is dying, the Schwann cells surrounding it aid in its digestion. This leaves an empty channel formed by successive Schwann cells, through which a new axon may grow from a severed end. The number of Schwann cells in peripheral nerve is tightly regulated [2]. Their proliferation *in vitro* can be stimulated by growth factors including PDGF, FGF, neuregulin and others [3]. The Schwann cells provide a relatively simple, well-defined and accessible mammalian model for the study of a number of developmental questions. It is also of particular 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 precursor might be especially well suited as implants to facilitate repair in the CNS.

MSC from ScienCell Research Laboratories are isolated from neonate mouse sciatic nerves. MSC are cryopreserved either at primary or passage one culture and delivered frozen. Each vial contains >5 x 10^5 cells in 1 ml volume. MSC are characterized by immunofluorescent method with antibodies to S-100, GFAP and CD90. MSC are negative for mycoplasma, bacteria, yeast and fungi. MSC are guaranteed to further expend 5 population doublings in the conditions provided by ScienCell Research Laboratories.

Recommended Medium

It is recommended to use Schwann Cell Medium (SCM, Cat. No. 1701) for the culturing of MSC *in vitro*.

Product Use

MSC are for research use only. They are not approved for human or animal use, or for application in *in vitro* diagnostic procedures.

Storage

Transfer cells directly and immediately from dry ice to liquid nitrogen upon receiving and keep the cells in liquid nitrogen until cell culture is needed for experiments.

Shipping

Dry ice.

Reference

[1] Jessen, K. R. and Mirsky, R. (1999) Schwann cells and their precursors emerge as major regulators of nerve development. *Trends Neurosci*. 22:402-410.

[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.

Instruction for culturing cells

Caution: Cryopreserved cells are very delicate. Thaw the vial in a 37^{o}C waterbath and return them to culture as quickly as possible with minimal handling!

Set up culture after receiving the ordering:

1. Place the vial in a 37^{o}C waterbath, hold and rotate the vial gently until the contents are completely thawed. Remove the vial from the waterbath immediately, wipe it dry, and transfer it to a sterile field. Rinse the vial with 70% ethanol, and then wipe to remove excess. Remove the cap, being careful not to touch the interior threads with fingers. Using 1 ml eppendorf pipet gently resuspends the contents of the vial.
2. Dispense the contents of the vial into the equilibrated, poly-L-lysine coated culture vessels. A seeding density of 10,000 cells/cm^2 is recommended.
3. *Note: Dilution and centrifugation of cells after thawing are not recommended since these actions are more harmful to the cells than the effect of DMSO residue in the culture. It is also important that Schwann cells are plated in poly-L-lysine coated culture vessels that promote Schwann cell attachment.*
4. Replace the cap or cover, and gently rock the vessel to distribute the cells evenly. Loosen caps if necessary to permit gas exchange.
5. Return the culture vessels to the incubator.
6. For best result, do not disturb the culture for at least 16 hours after the culture has been initiated. Change the growth medium the next day to remove the residual DMSO and unattached cells, then every other day thereafter. A health culture will display typical oval-shaped cell body, with a prominent nucleus and bipolar extensions, giving an overall spindle shape; and the cell number will be doubled after two to three days in culture.

Maintenance of Culture:

1. Change the medium to fresh supplemented medium the next morning after establishing a culture from cryopreserved cells. For subsequent subcultures, change medium 48 hours after establishing the subculture.
2. Change the medium every other day thereafter, until the culture is approximately 50% confluent.
3. Once the culture reaches 50% confluence, change medium every day until the culture is approximately 80% confluent.

Subculture:

1. Subculture the cells when they are 80% confluent.

2. Prepare poly-L-lysine coated cell culture flasks.
3. Warm medium, trypsin/EDTA solution, trypsin neutralization solution, and DPBS to **room temperature**. We do not recommend warming the reagents and medium at 37^{o}C waterbath prior to use.
4. Rinse the cells with DPBS.
5. Incubate cells with 3 ml of trypsin/EDTA solution (in the case of T-25 flask) until 80% of cells are rounded up (monitored with microscope). Add 3 ml of trypsin neutralization solution to the digestion immediately and gently rock the culture vessel.
6. *Note: Use ScienCell Research Laboratories' trypsin/EDTA solution that is optimized to minimize the killing of the cells by over trypsinization.*
7. Harvest and transfer released cells into a 15 ml centrifuge tube. Rinse the flask with another 3 ml of growth medium to collect the residue cells. Examine the flask under microscope to make sure the harvesting is successful by looking at the number of cells left behind. There should be less than 5%.
8. Centrifuge the harvested cell suspension at 1000 rpm for 5 min and resuspend cells in growth medium.
9. Count cells and plate them in a new, poly-L-lysine coated flask with cell density as recommended.

Caution: Handling human derived products is potentially bioharzadous. Although each cell strain testes negative for microbial, diagnostic tests are not necessarily 100% accurate, therefore, proper precautions mush be taken to avoid inadvertent exposure. Always wear gloves and safety glasses when working these materials. Never mouth pipette. We recommend following the universal procedures for handling products of human origin as the minimum precaution against contamination [1].

[1]. Grizzle, W. E., and Polt, S. S. (1988) Guidelines to avoid personal contamination by infective agents in research laboratories that use human tissues. J Tissue Culture Methods. 11(4).