Human Oligodendrocyte Precursor Cell-oligospheres (HOPC-os)

Catalog Number: 1610

Cell Specification

The precursor cells for oligodendrocytes were first discovered in 1993 by Raff, Miller and Noble [1] and have been extensively studied. These precursor cells are referred in the literature as either oligodendrocyte-type-2 astrocyte progenitor cells or oligodendrocyte precursor cells (OPC). The developing and adult central nervous system both contain OPC [2, 3]. Oligodendrocytes, the myelin-forming cells of the central nervous system, develop from OPC. In culture, OPC can be generated from neural progenitors or neural stem cells in the presence of basic fibroblast growth factor and they proliferate in presence to platelet-derived growth factor or factors produced by astrocytes [4] and differentiate into mature oligodendrocytes. Because of this, they have provided an exceptional population in which to study developmental transitions.

HOPC-os from ScienCell Research Laboratories are isolated from human oligodendrocyte precursor cell cultures. HOPC-os are cryopreserved and delivered frozen. Each vial contains >1 x 10^6 cells in 1 ml volume. HOPC-os are characterized by immunofluorescent method with antibodies to A2B5 and nestin. HOPC-os are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast and fungi. HOPC-os are guaranteed to further culture at the condition provided by ScienCell Research Laboratories.

Recommended Medium

It is recommended to use oligosphere medium (OsM, Cat. No. 1611) for expanding oligospheres *in vitro* and use oligodendrocyte precursor cell differentiation medium (OPCDM, Cat. No. 1631) for the differentiation of oligospheres.

Product Use

HOPC-os are for research use only. It is 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] Raff, M. C., Miller, R. H. and Noble, M. (1983) A glial progenitor cell that develops in vitro into an astrocyte or an oligodendrocyte depending on the culture medium. Nature 303:390-396.

[2] ffrench-Constant, C. and Raff. M. C. (1986) Proliferating bipotential glial progenitor cells in adult rat optic nerve. *Nature* 319:499-502.

[3] Wolswijk, G. and Noble, M. (1989) Identification of an adult-specific glial progenitor cell. *Development* 105:387-400.

[4] Noble, M., Murray, K., Stroobant, P., Waterfield, M. D. Riddle, P. (1988) Platelet-derived growth factor promotes division and motility and inhibits premature differentiation of the oligodendrocyte/type-2 astrocyte progenitor cells. Nature 333:560-562.

Instruction for culturing cells

Caution: Oligodendrocyte precursor cells are very delicate and sensitive cell type. Return the cell to culture as quickly as possible with minimal handling!

Set up culture after receiving the ordering:

1. Remove the vial from the shipping package 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.
2. Using 1 ml eppendorf pipette gently resuspend the contents of the vial and transfer the cells to a 15 ml conical centrifuge tube which contains 10 ml of complete OsM (medium contains oligodendrocyte precursor cell growth supplement). Centrifuge the tube at 1000 rpm for 5 min.
3. Discard the supernatant, gently resuspend the cells in complete OsM, and dispense the cell suspension into the equilibrated culture vessels. A seeding density of 10,000 cells/cm^2 is recommended.
   Note: It is important that oligospheres are plated in substrate-free culture vessels that decrease oligosphere 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. Add oligodendrocyte precursor cell growth supplement every day at a half dose. Change medium every 5 – 7 days.

Subculture:

1. Subculture when oligospheres are over 50 – 100 cells per sphere.
2. Harvest oligospheres in a 15 ml conical centrifuge tube and centrifuge at 1000 rpm for 5 min.
3. Resuspend the cell pellet in 300 μl of OsM.
4. Using a 200 μl pipetman repeatedly pipet the cell suspension to brake oligospheres into cell suspension.
5. Add enough volume of OsM to cell suspension and plate them in a new tissue culture vessel.

Caution: Handling human derived products is potentially bioharzadous. Although each cell strain testes negative for HIV, HBV and HCV DNA, 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).