Human Oligodendrocytes (HO)

Catalog #1620

Cell Specification

Oligodendrocytes, the myelin-forming cells of the central nervous system, are postmitotic cells that develop from oligodendrocyte precursor cells [1]. Oligodendrocytes play an essential role in the mature nervous system through their ability to myelinate axons that facilitates propagation of action potentials [2]. Functions of oligodendrocytes are well described in the rodent nervous system. In addition, continuous studies of human oligodendrocyte biology with cultures of enriched human oligodendrocytes or their progenitors have shed light on the potential treatments for demyelination and white matter diseases [3].

HO from ScienCell Research Laboratories are derived from differentiated HOPC isolated from human brain. HO are cryopreserved after purification from HOPC cultures and delivered frozen. Each vial contains >1 x 10^6 cells in 1 ml volume. HO are characterized by immunofluorescence with antibodies specific to GalC and CNPase. HO are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi. HO are guaranteed to further culture under the conditions specified by ScienCell Research Laboratories; however, *HO are not recommended for expanding or long-term cultures since the cells do not proliferate in culture*.

Recommended Medium

It is recommended to use Oligodendrocyte Medium (OM, Cat. #1621) for culturing HO *in vitro*.

Product Use

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

Storage

Upon receiving, directly and immediately transfer the cells from dry ice to liquid nitrogen and keep the cells in liquid nitrogen until they are needed for experiments.

Shipping

Dry ice.

References

[1] Zhang SC, Ge B, Duncan ID. (2000) "Tracing human oligodendroglial development in vitro." *J Neurosci Res*. 59: 421-9.

[2] Woodruff RH, Franklin RJM. (1997) "Growth factors and remyelination in the CNS." *Histol Histopathol*. 12: 459-66.

[3] Grever WE, Zhang SC, Ge B, Duncan ID. (1999) "Fractionation and enrichment of oligodendrocytes from developing human brain." *J Neurosci Res*. 57: 304-14.

[4] Duncan ID, Kondo Y, Zhang SC. (2011) "The Myelin Mutants as Models to Study Myelin Repair in the Leukodystrophies." *Neurotherapeutics*. 8: 607-24.

Instructions for culturing cells

Caution: Cryopreserved cells are very delicate. Thaw the vial in a 37°C water bath and return the cells to culture as quickly as possible with minimal handling!

Initiating the culture:

1. Prepare a poly-L-lysine-coated culture vessel (2 µg/cm^2, T-25 flask is recommended). Add 5 ml of sterile water to a T-25 flask and then add 5 µl of poly-L-lysine stock solution (10 mg/ml, Cat. #0413). Leave the vessel in a 37°C incubator overnight (or for a minimum of one hour).
2. Prepare complete medium. Decontaminate the external surfaces of medium bottle and medium supplement tubes with 70% ethanol and transfer them to a sterile field. Aseptically transfer supplement to the basal medium with a pipette. Rinse the supplement tube with medium to recover the entire volume.
3. Rinse the poly-L-lysine-coated vessel twice with sterile water and then add 15 ml of complete medium. Leave the vessel in the sterile field and proceed to thaw the cryopreserved cells.
4. Place the frozen vial in a 37°C water bath. Hold and rotate the vial gently until the contents completely thaw. Promptly remove the vial from the water bath, wipe it down with 70% ethanol, and transfer it to the sterile field.
5. Carefully remove the cap without touching the interior threads. Gently resuspend and dispense the contents of the vial into the equilibrated, poly-L-lysine-coated culture vessel. A seeding density of 10,000-50,000 cells/cm^2 is recommended, with an optimal range of 20,000-25,000 cells/cm^2.

   Note: Dilution and centrifugation of cells after thawing are not recommended since these actions are more harmful to the cells than the effect of residual DMSO in the culture. It is also important that cells are plated in poly-L-lysine-coated culture vessels to promote cell attachment.
6. Replace the cap or lid of the culture vessel and gently rock the vessel to distribute the cells evenly. Loosen cap, if necessary, to allow gas exchange.
7. Return the culture vessel to the incubator.
8. For best results, do not disturb the culture for at least 16 hours after the culture has been initiated. Refresh culture medium the next day to remove residual DMSO and unattached cells, then every other day thereafter.

Maintaining the culture:

1. Change the medium to fresh supplemented medium the next morning after establishing a culture from cryopreserved cells.
2. Change the medium every two to three days thereafter.

It is not recommended that oligodendrocytes be subcultured beyond their initial plating.

Caution: Handling human derived products is potentially biohazardous. Although each cell strain tests negative for HIV, HBV and HCV DNA, diagnostic tests are not necessarily 100% accurate, therefore, proper precautions must be taken to avoid inadvertent exposure. Always wear gloves and safety glasses when working with 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 WE, Polt S. (1988) "Guidelines to avoid personal contamination by infective agents in research laboratories that use human tissues." *J Tissue Cult Methods*. 11: 191-9.