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Methods for Promoting Oligodendrocyte Regeneration and Remyelination

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ABSTRACT

Researchers at the University of California Davis have demonstrated that immature astrocytes generated from human pluripotent stems cells, promote oligodendrocyte lineage progression via TIMP-1 secretion.

FULL DESCRIPTION

Astrocytes, once considered passive support cells, are increasingly appreciated as dynamic regulators of neuronal development and function. Their ability to regulate oligodendrocytes, or proliferation and differentiation of oligodendrocyte progenitor cells (OPCs) is less understood.

Researchers at the University of California Davis have demonstrated that immature, rather than mature, astrocytes generated from human pluripotent stems cells, promote oligodendrocyte lineage progression via TIMP-1 secretion. Our researchers have further demonstrated that human astroglia, generated from hiPSCs, are highly protective against neonatal brain injury and improve functional outcome. Our findings suggest stage-specific developmental interactions between astroglia and oligodendroglia, with important therapeutic implications for promoting myelinogenesis.

APPLICATIONS

- ▶ Immature hiPSC-derived astroglia promote proliferation and differentiation of oligodendroglial
- ▶ TIMP-1 in part mediates the effects of immature hiPSC-Astros on oligodendroglial differentiation

FEATURES/BENEFITS

- ▶ Transplantation of immature hiPSC-Astros promotes recovery after neonatal brain injury
- ▶ Intranasal administration of immature hiPSC-Astros conditioned medium promotes recovery after neonatal brain injury

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20190099452	04/04/2019	2016-723

CONTACT

Prabakaran Soundararajan
psoundararajan@ucdavis.edu
tel: .



INVENTORS

- ▶ Deng, Wenbin
- ▶ Jiang, Peng

OTHER INFORMATION

KEYWORDS

Astrocytes, stem cells,
neuronal development,
neonatal brain injury,
astroglia, oligodendroglia,
myelinogenesis, pluripotent
stem cells

CATEGORIZED AS

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