

NSHRF Project Fact Sheet

Replacing brain cells in the diseased or injured brain

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Dr. Ivar Mendez has a vision and a quest – to repair human brains damaged by disease. His work has attracted international attention and helped to establish the Brain Repair Centre in Halifax, Nova Scotia, a multidisciplinary collaboration linking outstanding researchers and physicians specializing in revolutionary treatments and technologies in brain repair. Dr. Mendez’s research at the Neural Transplantation Lab is centered on repairing damaged brain circuitry in people with Parkinson’s disease and spinal cord injuries.

One in every 300 people in Canada and the United States has Parkinson’s. A progressive disease of the brain that slowly robs a person of their ability to walk and speak, it affects more than 150,000 Canadians. Brain cells that produce dopamine, important in controlling muscle movement, are lost. Drug therapy provides only partial relief and loses its effectiveness over time. Replacing brain cells that control muscle movement may be a viable treatment. Transplanting fetal cells in animal models and in patients produced promising results; however, not enough tissue exists to make this a routine treatment and the source of the cells raises important ethical issues. Dr. Mendez’s study focuses on cell replacement, and specifically on finding an alternative to using fetal cells.

His team is investigating stem cells, “master” or “parent” cells from which other cell types derive. They are determining if other cells from the human body grown in culture can be used to restore function and mobility in the rodent model of Parkinson’s disease, how these alternative cells proliferate and differentiate, and how they can be used to replace those that are lost in the disease.

Dr. Mendez laboratory also investigates the potential synergy of trophic factors and stem cells transplants to repair the brain in animal models of traumatic brain injury, stroke and spinal cord injury.

The research results will provide additional information on cell replacement therapy and a better understanding of the potential benefits of this strategy, not only for Parkinson’s disease, but also for other intractable neurological conditions.

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