

# An important study for Parkinson's disease: Researchers uncover mechanism regulating dopamine levels in the brain

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Researchers in Montréal led by Jacques Drouin, D.Sc., uncovered a mechanism regulating dopamine levels in the brain by working on a mouse model of late onset Parkinson's disease.

The study, conducted in collaboration with Dr. Rory A. Fisher from the Department of Pharmacology at the University of Iowa Carver College of Medicine, is published online today by the scientific journal *PLoS Genetics*.

Using [gene expression profiling](#), a method to measure the activity of thousands of genes, researchers investigated [dopaminergic neurons](#) in the midbrain, which are [nerve cells](#) that use dopamine to send signals to other nerve cells. These neurons are known to degenerate in Parkinson's disease.

"We identified the Rgs6 gene for its restricted expression in dopaminergic neurons," explains Dr. Drouin, Director of the Molecular Genetics laboratory at the IRCM. "We had previously shown that this gene is itself controlled by a transcription factor called Pitx3, which plays an important role in the survival of these neurons."

"Through our study, we discovered that a defective Rgs6 gene causes the death of these neurons," adds Dr. Drouin. "More specifically, we found that when we remove the Rgs6 gene, this relieves a brake against excessive dopaminergic signalling. As a result, excess free dopamine accumulation causes cellular stress, which, in turn, causes the neurons to die. Our work thus indicates that Rgs6 could be a new target for the development of drugs against Parkinson's disease."

According to Parkinson Society Canada, nearly 100,000 Canadians have Parkinson's disease.

This [progressive neurodegenerative disease](#) primarily affects voluntary, controlled movement. It

results from the loss of cells responsible for producing dopamine, which acts as a messenger between brain cells that control the body's movements.

**More information:** *PLoS Genetics*: [www.plosgenetics.org/doi/pgen.1004863](http://www.plosgenetics.org/doi/pgen.1004863)

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