

## Breakthrough in understanding Parkinson's disease

August 29 2016, by Heidi Jones



Research from The University of Queensland could lead to a new treatment for Parkinson's disease, with future potential applications to nearly 50 other disorders.

In Parkinson's disease – which affects about eight million people worldwide – vital nerve cells (neurons) in the <u>brain malfunction</u> or die.

Researchers from UQ's Institute for Molecular Bioscience examined a genetic mutation that interrupts the traffic of materials within neurons



and allows waste products to accumulate, causing Parkinson's disease.

Associate Professor Rohan Teasdale said previous studies showed that dysfunctions in retromer (a protein machine responsible for transporting biological material within a cell) were linked to Parkinson's disease, but the biological reasons behind this were unclear until now.

"It has been identified that one of these proteins (Vps35) is mutated in some Parkinson's patients, which creates congestion in the <u>transport</u> <u>network</u> inside cells," Associate Professor Teasdale said.

"As a result, it appears that the workers responsible for recycling material within these neurons are not getting to their correct work place and without their assistance the cells within the brain cannot rid themselves of waste materials, which increases the likelihood of <u>cell</u> <u>death</u>.

"It's this cell death that then causes the symptoms of Parkinson's disease, such as tremors and muscle stiffness," he said.

Associate Professor Teasdale said the research was in very early stages, but the team's discovery had potential to improve treatments that now address symptoms rather than the cause of the disease.

"As part of this study we expanded the transport network within these cells which reinstated traffic flow so the <u>neurons</u> could rid themselves of waste," he said.

"We believe that expanding the cells' recycling capacity could halt or drastically slow the progression of the disease."

Associate Professor Teasdale said the same treatment principle could be applied in nearly 50 other disorders that are caused by the build-up of



waste materials within cells.

These diseases, known as lysosomal diseases, affect different parts of the body, including the skeleton, brain, skin, heart, and central nervous system, and are especially prevalent in young children.

**More information:** Jordan Follett et al. Parkinson Disease-linked Vps35 R524W Mutation Impairs the Endosomal Association of Retromer and Induces  $\alpha$ -Synuclein Aggregation, *Journal of Biological Chemistry* (2016). DOI: 10.1074/jbc.M115.703157

Provided by University of Queensland

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