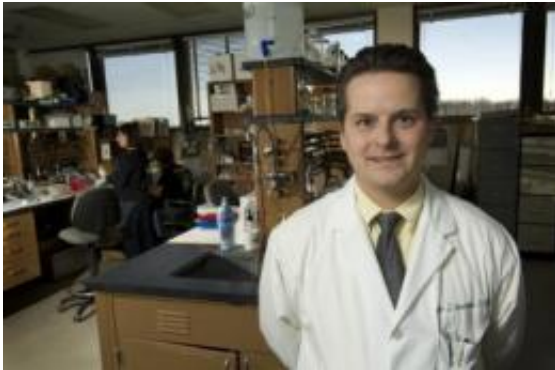


Specific protein may help neurons fix themselves in Parkinson's patients

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John Goudreau, director of Michigan State University's Translational Neurobiology Research Unit, believes parkin can rescue certain neurons from injury induced by Parkinson's disease. Credit: Kurt Stepnitz

A Michigan State University researcher is working to uncover how a protein known as parkin may help nerve cells fight off damage from Parkinson's disease, a strategy that could lead to new therapies for the degenerative ailment.

John Goudreau, an osteopathic physician and director of MSU's Translational Neurobiology Research Unit, believes parkin can rescue certain [neurons](#) from injury induced by Parkinson's disease.

He has been awarded \$1.5 million from the National Institutes of Health's National Institute of Neurological Disorders and Stroke to test

his hypothesis.

"Parkinson's is a progressive disease, and much of the research has been focused on slowing that progression by preventing cell injury and death," said Goudreau, who holds appointments in MSU's departments of Neurology and Pharmacology/Toxicology in the College of Osteopathic Medicine. "But we are looking at why some neurons in the [brain](#) are able to fight off the disease through a unique ability to revive after being hit with an injury that kills other cells."

There is a "selective vulnerability" with Parkinson's disease, he said, where [nerve cells](#) in the mid-brain are damaged while cells in the hypothalamic region of the brain are spared since they have the capacity to quickly bounce back after being damaged.

Goudreau's research team has discovered that the protein parkin is essential for these hypothalamic neurons to recover.

"What we now want to find out is how parkin facilitates this recovery," said Goudreau, who has been studying Parkinson's disease for nearly a decade at MSU and has received more than \$2 million in external funding for clinical and translational research.

Using human cell cultures and mice, the research team will attempt to isolate exactly what the parkin protein is doing and how it helps neurons return to health after being damaged. Two theories: Parkin may allow cells to rebound from injury by aiding in energy production within the cell, or it may improve a cell's ability to dispose of other proteins damaged by Parkinson's disease.

Either way, Goudreau said, understanding the steps underlying parkin's ability to promote neuron recovery will identify targets for therapies to slow the progression of Parkinson's disease.

"From a clinical standpoint, once a Parkinson's patient presents symptoms and seeks treatment, many neurons in the brain have already been injured and many cells are already dead," he said. "But there is a population of injured neurons that still have the potential to recover.

"Understanding how parkin promotes recovery from injury may allow us to provide cells injured by Parkinson's disease the necessary tools to survive."

Provided by Michigan State University

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