

Getting closer to treatment for Parkinson's

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Charalampos Tzoulis is closer to solve the Parkinson's riddle. Credit: University of Bergen

More than 10 million people worldwide have Parkinson's disease. The cause of Parkinson's disease is unknown and thus no effective treatments exist. A study from the University of Bergen (UiB) suggests that the

secret of the disease may lie in the mitochondria, the powerhouses of the cell.

"We hope that our findings may be the key to a future treatment. There is generally very little knowledge about the mechanisms causing Parkinson's disease. Now, we are a step closer to understanding these mechanisms and we may have a target to strike at for therapy" says neurologist Dr Charalampos Tzoulis who directed the study at UiB's Department of Clinical Medicine and Haukeland University Hospital.

The results were recently published in *Nature Communications*.

Aging of the brain

The problem, it seems, is that the microscopic powerhouses found in our [brain cells](#) are not able to adapt to the effects of aging in people who get Parkinson's disease. Mitochondria contain their own DNA, which tell them how to build their [power generators](#).

"It is known that the DNA of mitochondria is damaged during aging, causing failure in the power generators, lack of energy and disease," says Tzoulis.

Comparing brain cells

In their study, Tzoulis' team compared brain cells from healthy aged persons to those of individuals with Parkinson's disease.

The researchers discovered that brain cells of healthy persons are able to compensate for the age-induced damage by producing more DNA in their mitochondria. This protective mechanism is weakened in individuals with Parkinson's disease leading to a loss of the [mitochondria](#)

's healthy DNA population.

"I believe we have discovered an essential biological mechanism that normally preserves and protects the brain from aging related damage. Intriguingly, this mechanism appears to fail in persons with Parkinson's disease rendering their brain more vulnerable to the effects of aging" Tzoulis explains.

More information: Christian Dölle et al. Defective mitochondrial DNA homeostasis in the substantia nigra in Parkinson disease, *Nature Communications* (2016). [DOI: 10.1038/ncomms13548](https://doi.org/10.1038/ncomms13548)

Provided by University of Bergen

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