

# Investigating the impact of too much alpha-synuclein



## PROJECT UPDATE 2014

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|-----------------|----------------------------|
| Lead researcher | Dr Tilo Kunath             |
| Location        | University of Edinburgh    |
| Cost            | £548,915 over five years   |
| Start date      | January 2010               |
| Type of project | Senior Research Fellowship |
| Project code    | F-0902                     |

\*You'll find more information on this research in our project summary.

## Tilo answered these questions from Parkinson's UK in his recent annual report.

### What inspired you to study this area of Parkinson's research?

I was inspired to focus my research on a protein called alpha-synuclein. Changes in the gene that makes alpha-synuclein can cause rare, inherited forms of Parkinson's. But the protein is also a key player in the more common, non-inherited forms of the condition.

### What were your goals for the project?

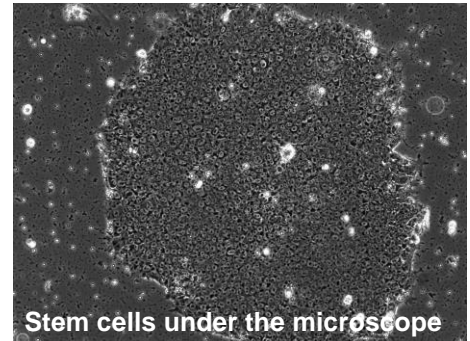
The main goal of this project is to recreate the steps that lead to Parkinson's as accurately as possible in the lab. To do this we wanted to produce a new animal model of Parkinson's that more closely mimics the changes that happen in people with the condition.

We know that the brain cells of some people with Parkinson's produce too much alpha-synuclein and we want to recreate this in an animal model. To do this, we're genetically engineering rats to contain extra copies of the human alpha-synuclein gene.

We also wanted to use stem cells from rats to study the build-up of alpha-synuclein. Stem cells have the potential to become any cell in the human body. We can use stem cells that produce high levels of alpha-synuclein to study what is happening in the brain by turning these stem cells into the type of brain cells that are affected in Parkinson's.

### What have you found?

We have discovered a very robust way to turn rat stem cells into brain cells in the lab. This will help us to understand what is happening in Parkinson's.



We have also made progress making a new animal model of Parkinson's. So far we have been able to remove the rat version of the alpha-synuclein gene and now hope to add in multiple copies of the human alpha-synuclein gene.

### What are the next steps?

The next steps are to finish making the new Parkinson's model. Once the human alpha-synuclein gene has been added to the rat DNA we will check if the rats lose brain cells and develop any symptoms similar to people with Parkinson's.

### How will your research help people with Parkinson's?

This research, if successful, will produce an animal model that more closely mimics what happens in the Parkinson's brain. This is very important when looking for drugs that may be able to stop the process. We hope our work will pave the way for the next generation of treatments that can slow or stop the progression of the condition.

#### Sharing this research

Tilo is currently working on a scientific paper to share how he turned stem cells into the type of brain cells that are affected in Parkinson's.

Find out more about our research, visit our website: [parkinsons.org.uk/research](https://parkinsons.org.uk/research)  
Or contact the Parkinson's UK research team at:

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|-------|--|
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