

## Looking for changes in gene modification in Parkinson's



### Project information

Lead researcher	Dr Nigel Williams
Location	Cardiff University
Cost	£130,161 over 2 years
Start date	December 2013
Type of project	Project grant
Project code	G-1309

### Project background

People with Parkinson's don't have enough of a chemical called dopamine because some nerve cells in their brain have died. We don't yet understand why people get Parkinson's, but genes, lifestyle and environmental factors are all thought to be involved.

- **It's rare for an individual to develop Parkinson's solely due to the genes they inherit** – the condition is directly caused by genetic changes in less than 5% of people. It is more common to inherit subtle differences in certain genes that slightly increase risk of Parkinson's. These subtle changes are more common but we are uncertain how they increase risk of Parkinson's.
- **Tiny molecules stick to our genes like labels and affect how active they are.** Subtle differences in our genes, as well as factors in our lifestyle and environment (like smoking, diet and exercise) can all play a role in deciding how genes are 'labeled' and may play an important part in health and illness.

- **Recent research shows that these molecular labels affect important genes involved in risk of cancer, rheumatoid arthritis and type 2 diabetes.**

Nigel's keen to find out whether these molecular labels also have a part to play in Parkinson's by influencing the behavior of genes linked to the condition.

### What the researchers are doing

Nigel and his team will study high quality brain tissue samples donated by over 130 individuals. Using state-of-the-art technology they will look for differences in a common type of molecular label, known as 'methylation', at over 450,000 locations across the entire genome. They will then look to see whether individuals who carry a genetic change known to increase risk of Parkinson's have a different pattern of methylation to those without these genetic changes.

### How the research will help people with Parkinson's

This study is exploring an important new avenue that could shed light on the complex behavior of genes in Parkinson's.

This project has huge potential to advance research to improve our understanding of why some people get Parkinson's and how the condition progresses in the brain. It could also open the door to developing drugs that change the way key genes behave, which would be a completely new way of treating Parkinson's.

As well as publishing the results in articles and journals, the team also plan to make the data generated by this project freely available to the scientific community.

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