

LRRK2 may provide a target for new treatments for Parkinson's



Project information

Lead researcher	Dr Patrick Lewis
Location	Institute of Neurology, London
Cost	£250,000 over three years
Start date	October 2010
Type of project	Career Development Award
Project code	F-1002

Project background

LRRK2 – pronounced lark 2 – is the most common gene associated with Parkinson's. A mutant form of LRRK2 can cause the death of nerve cells, and blocking this form of LRRK2 from working can prevent this from happening. Before we can use this knowledge to develop treatments we need to fill in the gaps in our understanding of the role LRRK2 plays when it's healthy, and of the different proteins it interacts with along the way within the nerve cell.

- **A small number of people with an inherited form Parkinson's have altered or mutant forms of the LRRK2 gene.** This causes the death of nerve cells because they cannot work properly.
- **LRRK2 is type of protein called a kinase** which has specific functions within the nerve cell. It helps to keep the cells alive and working correctly. However, we don't know exactly what LRRK2 does within the nerve cell in order to keep it working normally.

- **LRRK2 is important in Parkinson's for lots of affected people**, not just those with mutations, and so figuring out how it works and how to change this is a promising route to developing potential novel therapies.

What the researchers are doing

Patrick has been awarded a three year career development award to develop his research career and study the LRRK2 protein. The study is based on some initial results generated from an innovation grant awarded to him last year by Parkinson's UK. Firstly, he will use a number of systems to find out what LRRK2 normally does within a nerve cell. The protein is made up of a number of different parts, so we need to find out what each of these does. He will then use this information to try to understand why the mutant form leads to the death of nerve cells. In particular, Patrick will look at how it may influence the levels of other proteins inside the cell. It may not be LRRK2 that is the main culprit but changes in the protein may spark off other reactions within the cell that will cause them to die. Getting this information is vital if we are to develop drugs in the future that act at specific targets inside the cell and prevent them from dying.

How the research will help people with Parkinson's

Figuring out how LRRK2 works and how to change this is a promising route to developing novel therapies for the treatment and ultimately cure for Parkinson's. Although a long way off, we hope that these can ultimately be tested in the clinic to see if we can slow down or alter the progress of the condition. The career development award will also allow Patrick to develop his career in the area of Parkinson's research and he will be carrying out the research at one of the top research institutions in the UK.

For more information, please talk to the Research Team

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