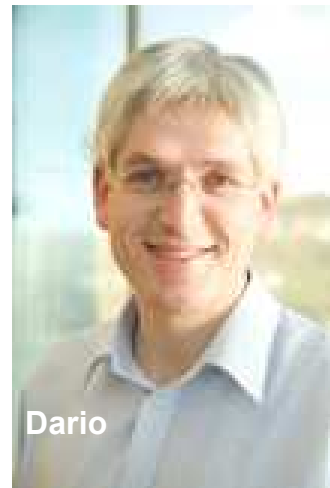


What does the PINK1 gene do in nerve cells?



Project information

Lead researcher	Prof Dario Alessi
Location	University of Dundee
Cost	£84,945 over three years
Start date	October 2009
Type of project	PhD Studentship
Project code	H-0901

Project background

In order to develop better treatments and ultimately a cure for Parkinson's we need to understand what happens when a nerve cell starts to die. Then we may be able to identify ways to block this and slow down or halt the death of the specific nerve cells that occurs in Parkinson's. A small number of people – probably less than 5% - have an inherited form of Parkinson's. But by examining the genes involved, we can get vital clues as to what is going on within a nerve cell when it starts to die. One of these genes is called PINK1.

- **Mutations in the PINK1 gene** are present in some people with an inherited form of Parkinson's. So understanding what the gene does will provide vital information about the causes of Parkinson's and why specific types of nerve cells are affected.
- **PINK1 is very important in nerve cells.** When proteins are manufactured in the cell, they often need to be "edited" before they can become active. This usually means that

other chemicals are added on and these may affect the shape of the protein and its ability to work properly.

- **Phospyorylation is one of the key modifications of newly made proteins.** This process involves the addition of a chemical structure termed phosphate and this is done by an enzyme called a kinase. There are many types of kinase in a cell and these are very important to ensure that all of the machinery inside the cell works correctly.

What the researchers are doing

Prof Alessi is a world expert in the study of kinase enzymes and what they do inside the cell to ensure that they function correctly. If mutations upset the working of the PINK1 kinase, it is important that we know what effect this has. Then we'll know more about how a cell works and why specific nerve cells die in Parkinson's. Prof Alessi has developed state-of-the-art techniques to help us to understand the kinase enzymes and will use these to study how PINK1 works. This is his first piece of research in Parkinson's but it shows that we can make use of information that he has developed in other cells in the body and apply them to nerve cells.

How the research will help people with Parkinson's

We know that mutations in genes such as PINK1 are associated with a rare inherited form of Parkinson's. Finding out the reason behind this is the key to the development of new treatments to slow down or halt the death of nerve cells. Any drugs developed will treat the Parkinson's rather than its symptoms as is currently the case. This study is one of a number of research projects that focus on PINK1 that are currently being funded by Parkinson's UK. Together, they will bring us closer to understanding why nerve cells die, how we can develop new therapies to halt this and lead us closer to a cure for Parkinson's.

For more information, please talk to the Research Team

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