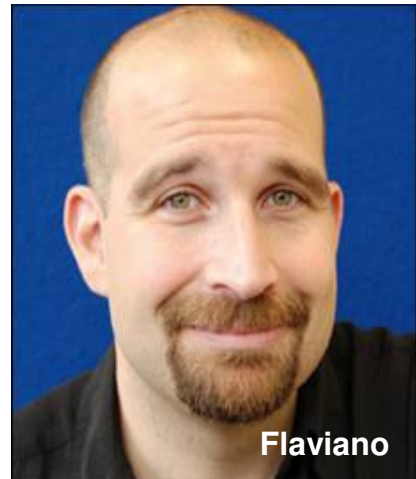


Using yeast to help us understand the DJ-1 gene



Project information

Lead researcher	Dr Flaviano Giorgini
Location	University of Leicester
Cost	£242,759 over three years
Start date	October 2009
Type of project	Project grant
Project code	G-0902

Project background

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. We know that the *DJ-1* gene is one of those involved in certain inherited forms of Parkinson's. While we think that the gene works within the nerve cells to protect them from certain types of damage, we don't understand how mutations in this gene may upset how it works and how this could affect the nerve cells.

- **Mutations in the *DJ-1* 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.
- **Although the precise function of *DJ-1* is unknown**, it is thought to be important in protecting the brain from oxidative stress. This is a biochemical process that leads to the build up of toxic chemicals known as free radicals inside cells. Cells are normally able to come with this and dispose of the free radicals. But for some reason, this is not the case in specific nerve cells in Parkinson's. These toxins damage the cells, making

them sick and eventually causing them to die. A better understanding of why the cells are not able to deal with free radicals is vital to allow us to develop new treatments for Parkinson's.

- **Yeast models are incredibly useful for studying genes.** They provide researchers with a simple system in which to study how individual genes work and what happens when there are mutations in the genes, such as those that are found in some people with Parkinson's.

What the researchers are doing

The purpose of this study is to investigate how mutations in the *DJ-1* gene influence how it works. The research will be done in collaboration with Dr Tiago Outeiro in Portugal. Baker's yeast will be used in the study because it has previously been shown to be extremely useful to investigate the genes that may be involved in the death of nerve cells. It is also very easy to grow in the lab. Once we discover what the *DJ-1* gene does and how it malfunctions in Parkinson's, then we can investigate this in greater detail using mammalian cells grown in the laboratory.

How the research will help people with Parkinson's

Although the number of people who develop Parkinson's due to mutations in the *DJ-1* gene is small, understanding what the genes do and how this is affected by mutations may point to some vital clues about the condition. Finding out why these changes in the gene cause cells to die will help us to understand better what happens within a nerve cell when it starts to die. The results may also uncover new mechanisms by which drugs could halt or even reverse the progression of Parkinson's.

For more information, please talk to the Research Team

Call	020 7963 9313
Email	research@parkinsons.org.uk
Write	Parkinson's UK, 215 Vauxhall Bridge Road, London SW1V 1EJ