Tau and Parkinson's: what’s the link?

Project information

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<tr>
<th><strong>Lead researcher</strong></th>
<th>Dr Richard Wade-Martins</th>
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<tr>
<td><strong>Location</strong></td>
<td>University of Oxford</td>
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<tr>
<td><strong>Cost</strong></td>
<td>£95,462 over 3 years</td>
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<td><strong>Start date</strong></td>
<td>October 2012</td>
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<td><strong>Type of project</strong></td>
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Project background

In this project, a PhD student in Richard’s lab will investigate the connection between a protein called tau and Parkinson’s.

Abnormal proteins are often involved in neurodegenerative conditions. The main protein being investigated for Parkinson’s is alpha-synuclein. This is because alpha-synuclein forms the sticky clumps of protein called Lewy bodies found inside the dopamine-producing nerve cells that die in the condition. Tau is a protein that seems to get tangled up inside the cells affected in Alzheimer’s and Multiple System Atrophy – a Parkinson’s-like condition.

- Why study the connection between Parkinson’s and tau? Recent genetic studies have found that people who carry a certain form of the gene that makes the tau protein are at increased risk of Parkinson’s. So while tau tangles do not usually form in the cells that die in Parkinson’s, the tau protein does seem to be important for keeping these nerve cells healthy – and this makes it a key target for Parkinson’s research.
There are two main forms of the tau gene called H1 and H2. And genetic studies show that people who have the H1 form of the tau gene are more likely to get Parkinson's than people who carry the H2 form. However, it's not yet clear why the H1 gene makes people more susceptible to developing Parkinson's.

What the researchers are doing

In this project the team will investigate why people with the H1 form of the tau gene are more likely to develop Parkinson's than people with the H2 form.

The team will take skin cells from people with and without the H1 version of the tau gene. Then using cutting-edge stem cell techniques they will convert these skin cells into dopamine-producing nerve cells virtually identical to those affected in Parkinson's.

They will then use the nerve cells they grow to study in detail how the different forms of tau behave and how they affect the ability of the nerve cells to survive and function.

How the research will help people with Parkinson’s

The results of these experiments will help shed light on how subtle changes in the tau protein may be involved in the development of Parkinson’s.

Understanding why certain forms of the tau gene increase risk of developing Parkinson’s, may hold exciting potential for developing new drugs and treatments that could one day help slow down, stop or even prevent Parkinson’s altogether.

For more information, please talk to the Research Team

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