

Research Roundup

We would like to say thank you for your continued support and interest in Parkinson's research, and a very warm welcome if you are new to the Research Support Network.

This month we share encouraging news about the development of a blood test that can diagnose Parkinson's, as well as share the latest research news and opportunities to get involved.

Research news

Blood test shows promise for identifying Parkinson's before movement symptoms

Research co-funded by Parkinson's UK finds a new way to potentially improve diagnosis and monitoring of Parkinson's.

Researchers at University College London have developed a test that was 100% accurate in identifying Parkinson's when comparing blood samples from 99 people with Parkinson's and 36 people without the condition.

The study used artificial intelligence alongside the analysis of blood samples to develop and fine tune a test based on the levels of 8 circulating proteins that they found to be early markers of Parkinson's.

Predicting Parkinson's 7 years before diagnosis

The study also looked at blood samples from people with idiopathic REM sleep behaviour disorder (iRBD), who are known to be at a higher risk of going on to develop Parkinson's. The test identified that 79% of the 54 iRBD samples had a similar read out to the samples from people already diagnosed with Parkinson's, offering a prediction to who might go on to develop the condition.

The researchers have followed the iRBD patients over 7 years and the predictions so far match those that have now formerly received a diagnosis of Parkinson's. This evidence suggests that the test could be used to identify Parkinson's 7 years before movement symptoms appear and someone receives a diagnosis.

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Work is now ongoing to verify the test to see how it could be used as a tool in research and the clinic.

Overcoming challenges with diagnosing Parkinson's

One of the lead researchers, whose mother had iRBD and went on to develop Parkinson's, Professor Kevin Mills (UCL Great Ormond Street Institute of Child Health), said:

"As new therapies become available to treat Parkinson's, we need to diagnose patients before they have developed the symptoms. We cannot regrow our brain cells and therefore we need to protect those that we have.

"At present we are shutting the stable door after the horse has bolted and we need to start experimental treatments before patients develop symptoms. Therefore, we set out to use state-of-the-art technology to find new and better biomarkers for Parkinson's and develop them into a test. Parkinson's UK funding was integral to the development of this test."

What does this mean for people with Parkinson's?

Professor David Dexter, Director of Research at Parkinson's UK, said:

"This research represents a major step forward in the search for a definitive and patient friendly diagnostic test for Parkinson's. Finding biological markers that can be identified and measured in the blood is less invasive than a lumbar puncture which is being used more and more in clinical research to trial new treatments in people with Parkinson's.

"With more work, it may be possible that this blood based test could distinguish between Parkinson's and other conditions that have some early similarities, such as Multiple Systems Atrophy or Dementia with Lewy Bodies. This is an important next step.

"The findings add to an exciting flurry of recent activity towards finding a simple way to test for and measure Parkinson's."

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Parkinson's UK invests in development of potential new drugs to protect brain cells using mitochondria

We're providing £1.6m through our Virtual Biotech programme to develop a potential new treatment targeting mitochondria to protect brain cells in Parkinson's patients.

Parkinson's UK is partnering with US company Lucy Therapeutics and the Michael J Fox Foundation to accelerate the development of new drugs targeting mitochondria, the tiny powerhouses inside our cells.

If this project is successful, the treatment will be ready to move towards clinical trials in people.

Why mitochondria could be the key to Parkinson's

Mitochondria are the key to nearly every process inside cells, unlocking communication between cells, delivering the energy needed to live and directing cell growth and death.

We know mitochondria become damaged in the dopamine-producing brain cells lost in Parkinson's.

Cells with damaged mitochondria - especially brain cells - may not have enough energy to function properly, ultimately leading to cell death.

Drugs to repair mitochondria could save dying brain cells and stop the progression of Parkinson's.

Towards drugs that restore mitochondria

The team at Lucy Therapeutics has developed exciting molecules targeting a key protein within mitochondria.

Experiments show these molecules can improve mitochondrial function and prevent the death of brain cells.

Experiments suggest these molecules can reduce levels of alpha-synuclein, a protein that builds up in Parkinson's and causes damage to dopamine-producing brain cells.

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This new investment will help Lucy Therapeutics study their molecules' ability to:

- reduce alpha-synuclein and other markers of Parkinson's
- provide evidence of cell protection
- travel through the body to reach the brain
- not produce significant side effects.

Crucial next steps will focus on taking the best molecule into further testing to get closer to clinical trials.

Major potential to slow or stop Parkinson's

Arthur Roach, Virtual Biotech Director at Parkinson's UK, said:

"We are delighted to be working with Lucy Therapeutics to accelerate the development of an extremely promising new treatment for Parkinson's.

"Mitochondria play a crucial role in the development of the condition, so fixing mitochondrial problems could have far-reaching benefits.

"We hope this collaboration will produce a new drug that can be rapidly moved forwards into clinical trials in people with the condition."

Amy Ripka, CEO at Lucy Therapeutics, said:

"Mitochondrial damage both in and outside of the brain may help explain the earlier symptoms of Parkinson's, such as loss of smell and sleep disorders, as well as the later symptoms including movement disorders and loss of dopamine.

"We're really excited to be working with Parkinson's UK to take our programme forwards."

Funding awarded for research looking at new drug target for Parkinson's

Parkinson's UK is funding researchers to develop a potential set of drugs against a new target for people with Parkinson's.

Through our drug accelerator award grant scheme, we've awarded nearly £100,000 to Professor Michael Johnson and his research group at Imperial College London, for work

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which aims to develop a new drug for Parkinson's using a method designed to improve the success of clinical trials. They're doing this by using a computer-based programme to simulate what might make a good target for new drugs to slow the progression of Parkinson's.

The drug accelerator award grants provide funding for researchers to generate the essential data and help bridge the gaps needed to help progress their new drug down the drug discovery pipeline. This helps push research forward towards the aim of bringing new drugs to people with Parkinson's in the future.

Improving the success of clinical trials

Sometimes drugs which look really promising in early lab testing, don't perform as well as expected when they reach the clinical research stage (being trialled in people). This is usually because the new drug doesn't appear effective, or make enough of a difference when compared to the current available treatments.

Lab research to fully understand the target for new drugs is a vital part of the process for drug development. The more information researchers have ahead of planning a clinical trial the more likely it is to be successful. Simulating how a drug might work ahead of clinical trials is one way of doing this.

What will the researchers do?

Professor Johnson and his team are using a simulation to test the best way to target a protein in the body called GPNMB, which has been linked to Parkinson's. Previous research has shown that reducing the amount of GPNMB might reduce damage to brain cells by preventing the spread of a protein called alpha-synuclein. Alpha-synuclein has been shown to cause irreversible damage to some brain cells in Parkinson's, leading to progression and worsening of symptoms.

Using their understanding of how to target GPNMB, they're now working to develop small drugs called antisense oligonucleotides, and test which ones can reduce the activity of GPNMB most effectively. This will help decide which drug has the best chance of success in a clinical trial, which would be the next step for this research.

Lead researcher, Professor Michael Johnson, said:

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“It is a great honour to be awarded this grant from Parkinson’s UK. A major problem with drug development is that half of all drugs will fail during clinical trials due to lack of efficacy - i.e. the drugs don’t work despite extensive testing prior to clinical trials in people.

“This award will fund us to work with the UK’s Nucleic Acid Therapy Accelerator (NATA) to develop a new type of drug against GPNMB as a potential treatment for Parkinson’s.”

Take part in research

The development of new Parkinson’s treatments is only possible if everyone is part of the research process. We need your help to push promising research forward.

Are people with Parkinson’s able to access and benefit from exercise?

Regular exercise can help with balance, strength and mental health in people with Parkinson’s. However, not all people with Parkinson’s have access to exercise classes or physical therapy.

Researchers at the University of Birmingham want to understand the impact of exercise on people with Parkinson’s and learn more about what may prevent some people from staying active.

Who

- 900 people with Parkinson’s

What

- Completing an online questionnaire which will take up to 1 hour to complete
 - You can call the researcher on 0121 4146 845 to complete the questionnaire over the telephone if you do not have internet access
- The first 900 people who complete the questionnaire will receive a £25 Amazon voucher

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Interested in taking part?

Please contact Anisa Choudhary by email at a.choudhary.1@bham.ac.uk or call **0121 4146 845** if you have any further questions.

The deadline for taking part in this research is **28 December 2024**.

Research results: thanks to you

Exploring the experiences of people with progressive brain conditions in Northern Ireland

Rehabilitation is the process of restoring or improving someone's health through training and therapy. It can be particularly useful to help people with neurological conditions, such as Parkinson's, to keep doing the things they enjoy. Unfortunately, not everybody who needs rehabilitation gets it, which can mean they need to rely on others for help.

In February 2022, we shared an opportunity for people with Parkinson's in Northern Ireland to share their experiences of accessing rehabilitation services through the NHS. The research aimed to understand what enabled or prevented people from accessing specialist rehabilitation professionals, and how improvements could be made in the health service.

Thanks to the Parkinson's community getting involved, this research has increased our understanding of the complex needs of people with Parkinson's to access rehabilitation services. Alongside highlighting the role that healthcare professionals play in connecting patients with these services. It's also called attention to the need to determine how best to empower people to access rehabilitation in the future.