OUR RESEARCH PROJECTS 2022-2023

PARKINSON'S UK
CHANGE ATTITUDES.
FIND A CURE.
JOIN US.

Our research focus for 2022-2023

Parkinson's UK is the largest European charitable funder of Parkinson's research. And people living with Parkinson's are the driving force behind our research.

We're leading the way to better treatments and together, we will find a cure. But we're not just focused on the future. We're investing in research to improve life for people with Parkinson's right now too.

Our research projects exist at different stages of the research pipeline. Some are in the early scientific discovery stage, while others are already being tested in clinical trials.

You can find out more about the terms used in this document in the key below:

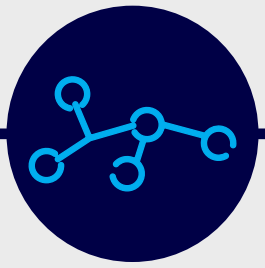
Types of research project

Cure projects work towards treatments and strategies to slow, stop, reverse or prevent Parkinson's. This includes developing new treatments, and improving diagnosis and monitoring of the condition.

Life projects work towards treatments and strategies to improve the symptoms and quality of life of people with Parkinson's. This includes better therapies and management for issues such as falls, anxiety, and thinking and memory problems.

Stages of the research pipeline

Scientific discoveries
Researchers attempt to find out what goes wrong in Parkinson's and come up with ideas for how to fix it.



Developing treatments
Dedicated teams turn the most promising scientific discoveries into potential new treatments.

Clinical trials
New treatments that have been proven safe and effective by all other methods are carefully tested in volunteers.

Our active research grants

1	Project name	Understanding Parkinson's progression (J-2101)
Lead researcher		Professor Michele Hu
Start and end date		August 2021 to February 2026
Location		University of Oxford
Cost		£733,389
Type: Cure/Life | **Stage:** Scientific discovery 		
Since 2010, the Oxford Parkinson's Disease Centre has developed a world-leading research programme. This has included establishing the Discovery cohort, which follows people with Parkinson's over time to help understand how the condition progresses. This project will allow the researchers to continue their work with the Discovery cohort, building the understanding of different symptoms, so we can work towards earlier prediction of certain symptoms, personalised interventions and better treatments.		

2	Project name	Investigating how changes to the cell recycling system affect cell communication in Parkinson's (G-2202)
Lead researcher		Dr Dayne Beccano-Kelly
Start and end date		February 2023 to February 2026
Location		Cardiff University
Cost		£324,695
Type: Cure | **Stage:** Scientific discovery 		
The brain is made up of many different types of cells that can communicate with one another to perform specific jobs. This communication is vital to control how people speak, move, think, and feel. One way of making sure that brain cells can communicate effectively is to keep the cells free from a build up of waste products, using a recycling system. However, researchers believe that this recycling process might not work properly in Parkinson's. The researchers want to understand how problems with the recycling system can prevent cells from communicating with each other effectively. This knowledge could help identify ways to target and treat the fundamental changes that are contributing to Parkinson's in the brain.		

3	Project name	Using mice to see how toxic protein moves from the gut to the brain (G-2204)
Lead researcher		Professor Maria Grazia Spillantini
Start and end date		October 2022 to October 2025
Location		University of Cambridge
Cost		£214,067

Type: Cure | **Stage:** Scientific discovery

Clumps of a toxic protein called alpha-synuclein are commonly seen in the brains of people with Parkinson's, and have been associated with the development of the condition. But it's not clear how these clumps begin to form. One line of research suggests that they might first appear in the gut, before travelling to the brain. Maria and her team will explore how these clumps might move from the gut to the brain, and where else they might go. They also want to see if the bacteria in the gut changes as the clumps form, and whether it could be possible to use this to monitor how Parkinson's is progressing.

4	Project name	Growing brain cells to test new therapies (F-2201)
Lead researcher		Dr Charmaine Lang
Start and end date		October 2022 to October 2025
Location		University of Oxford
Cost		£149,970

Type: Cure | **Stage:** Scientific discovery

Parkinson's symptoms occur due to the progressive loss of brain cells which are responsible for producing the vital brain chemical dopamine. While there are a number of theories suggesting why this happens, it's difficult to study what exactly is going on in the brains of people with Parkinson's. This project aims to get round this by taking skin cells from people with Parkinson's, and growing them into different brain cells in a dish in the lab. They will then study these cells and see if they can boost a process within the cells which may be able to protect them from damage. This could help identify a new target to help develop future treatments for Parkinson's.

5	Project name	Understanding the role of supporting brain cells in Parkinson's (G-2201)
Lead researcher		Dr Gavin Hudson
Start and end date		September 2022 to September 2025
Location		Newcastle University
Cost		£324,406

Type: Cure | **Stage:** Scientific discovery

In the brain, different types of cells must work together to communicate messages and send instructions to other parts of the body. During Parkinson's, communication between cells is more difficult, as one particular type of brain cell, the neurons, get damaged and are lost over time. But not much is known about how the other cells in the brain are affected. The team at Newcastle University will use brain tissue samples from people with Parkinson's to try and understand the changes to a different type of brain cell, the astrocytes, which usually help support the work of the neurons. This research could help improve understanding of how different types of brain cells are impacted in Parkinson's.

6	Project name	Using a digital system to monitor and self-manage non-motor symptoms (H-2101)
Lead researcher		Dr Edward Meinert
Start and end date		February 2022 to February 2025
Location		University of Plymouth
Cost		£189,651

Type: Life | **Stage:** Developing treatments/Clinical trial

Parkinson's can cause a wide range of non-motor symptoms, including pain and problems with mental health, memory and sleep. These affect the quality of life of people with the condition and their friends, family and carers. However, many of them could be self-managed. The researchers working on this project have developed a digital system (NMS Assist) to help monitor non-motor symptoms and teach skills to self-manage them. For 12 months, 60 people with Parkinson's, carers and healthcare professionals will test the tool. This system could help people with Parkinson's better manage their own symptoms at home as well as improving their overall quality of life.

7	Project name	Understanding more about cell recycling in Parkinson's (G-2101)
Lead researcher		Professor David Rubinsztein
Start and end date		January 2022 to January 2025
Location		University of Cambridge
Cost		£380,484

Type: Cure | **Stage:** Scientific discovery

One reason Parkinson's develops is due to a buildup of a protein called alpha-synuclein. This can form clumps in brain cells, stopping them working properly. Currently no treatment can remove this troublesome protein. This project aims to understand how our cells' recycling system might help to remove alpha-synuclein buildup, by looking at zebrafish and mouse models of Parkinson's. The team hopes to understand how they can boost cell recycling to ultimately protect brain cells. This project will lay the foundation for further drug discovery projects that could have the potential to slow or stop Parkinson's.

8	Project name	Predicting Parkinson's (PREDICT-PD) (G-2102)
Lead researcher		Dr Alastair Noyce
Start and end date		December 2021 to December 2024
Location		Queen Mary, University of London
Cost		£310,792

Type: Cure | **Stage:** Scientific discovery/Clinical trial

It's unclear exactly what causes someone to develop Parkinson's, but it's thought to be a combination of genetic and environmental factors. The PREDICT-PD study wants to better understand these risk factors to help identify people who might have a higher chance of developing the condition. The project has already recruited 10,000 people to help identify some of the early signs of Parkinson's. The team will now gather more results from smell tests, DNA collection and finger-prick blood tests. The more we know about the early stages of Parkinson's, the closer we'll be to finding better treatments and a cure.

9	Project name	Understanding more about the role of the immune system in Parkinson's (G-2009)
Lead researcher		Professor Jonathan Lane
Start and end date		March 2021 to October 2024
Location		University of Bristol
Cost		£113,051

Type: Cure | **Stage:** Scientific discovery 

People with Parkinson's don't have enough of a chemical called dopamine because some of the brain cells that produce it have died. We still don't fully know what causes this, but one hypothesis is that a person's immune response may play a role. When we get an infection, our immune system responds by recruiting cells and producing signals which fight against it. This is known as inflammation. Sometimes inflammation can be wrongly activated and damage healthy cells, and this might be the case in Parkinson's. This research aims to understand more about the role of inflammation in brain cell death and may pave the way for new treatments to tackle some of the earliest changes in Parkinson's.

10	Project name	Parkinson's UK Brain Bank (J-1901)
Lead researcher		Professor Stephen Gentleman
Start and end date		July 2019 to July 2024
Location		Imperial College London
Cost		£1,534,543

Type: Cure | **Stage:** Scientific discovery 

The Parkinson's UK Brain Bank, based at Imperial College London, is the world's only brain bank solely dedicated to Parkinson's research. Both people with and without Parkinson's can pledge to donate their brains to research through the Brain Bank. The tissue is supplied to researchers studying Parkinson's all over the world, increasing our understanding of what exactly goes wrong in the condition.

12	Project name	Using worms to help understand the genetics of Parkinson's (G-2008)
Lead researcher		Dr Eva Kevei
Start and end date		June 2021 to June 2024
Location		University of Reading
Cost		£224,290

Type: Cure | **Stage:** Scientific discovery

Parkinson's is often an 'idiopathic' condition, which means it has no known cause. However, for a small minority, Parkinson's can be caused by inherited changes in a number of different genes. Understanding more about the genetics of Parkinson's will help piece together the causes of brain cell death that contribute to the condition. This project is lab-based and will study small worms called C. elegans. The researchers will introduce different combinations of genetic changes that contribute to Parkinson's to understand whether they act together to cause brain cells to die, or act independently. This will give an important insight into how the normal function of brain cells changes in Parkinson's, and by understanding this, we could find a way to develop better treatments.

13	Project name	Exploring the causes and consequences of a gene mutation in GBA1 (G-2103)
Lead researcher		Professor Michael Duchen
Start and end date		November 2021 to May 2024
Location		University College London
Cost		£351,124

Type: Cure | **Stage:** Scientific discovery

Rare and small changes in a gene called GBA1 can lead to someone having an increased risk of developing Parkinson's. Using samples from people who have this small change (mutation) in their gene, this project aims to understand more about what causes the change and how it impacts the behaviour of cells. The research's main aim is to identify new ways to protect brain cells from damage, slowing the progression of Parkinson's.

14	Project name	Predict Parkinson's (G-1606)
Lead researcher		Professor Anette-Eleonore Schrag
Start and end date		May 2017 to May 2024
Location		University College London
Cost		£713,157
Type: Cure | **Stage:** Scientific discovery/Clinical trial 		
Finding people at risk of Parkinson's could help future clinical trials. Research teams worldwide have been trying to do this by concentrating on specific risk factors, such as sense of smell or having abnormal genes, but there are other factors as well. At the end of the project, the team hopes to be able to accurately calculate risk based on a number of factors and predict the type of people who will develop Parkinson's in the future.		

15	Project name	Developing and testing a digital application to support wellbeing in people with Parkinson's (H-2102)
Lead researcher		Dr Angeliki Bogosian
Start and end date		February 2022 to February 2024
Location		City University London
Cost		£199,969

Type: Life | **Stage:** Developing treatments

Living with Parkinson's presents daily challenges, which can affect a person's wellbeing. Face-to-face support where people can talk to healthcare professionals is effective at improving wellbeing but can be time-consuming and difficult to access. To help overcome some of these hurdles, the researchers working on this project, alongside a group of people with Parkinson's, aim to develop a digital application with the potential to provide tailored daily support for psychological wellbeing.

16	Project name	Tracking Parkinson's (PROBAND) (J-1101)
Lead researcher		Professor Donald Grosset
Start and end date		October 2011 to January 2024
Location		University of Glasgow
Cost		£3,411,807

Type: Cure/Life | **Stage:** Scientific discovery

The ambitious Tracking Parkinson's study launched in early 2012 with the aim of studying how people with the condition differ in their symptoms, respond to drug therapies, and progress over time. Ultimately, understanding these differences will help us to develop better and more targeted treatments that we can use for particular types of Parkinson's.

17	Project name	Understanding the role of toxic proteins in Parkinson's and Parkinson's-associated dementia (G-1901)
Lead researcher		Professor David Klenerman
Start and end date		January 2020 to January 2024
Location		University of Cambridge
Cost		£277,423

Type: Cure | **Stage:** Scientific discovery

Abnormal clumps of proteins, including alpha-synuclein, are found in the brains of people with Parkinson's. For some, this can be linked to the development of Parkinson's dementia. It is unclear exactly how these proteins are damaging brain cells, and this research aims to understand more. The researchers will do this by studying tissue from the Parkinson's UK Brain Bank. They will study samples, taken over three years, from people with and without Parkinson's, as well as those with high and low risk of dementia. This could help find a way to predict and track the progression of the condition and pave the way for better treatments.

18	Project name	Improving recycling to reduce brain cell death (G-2006)
Lead researcher		Professor Sandip Patel
Start and end date		January 2021 to January 2024
Location		University College London
Cost		£282,374

Type: Cure | **Stage:** Scientific discovery/Developing treatments

Researchers are still piecing together why dopamine-producing brain cells are lost in Parkinson's. One line of evidence is that the recycling centres that break down waste within cells aren't as efficient in people with Parkinson's, which can stop brain cells from functioning properly. Researchers have found that a protein called TPC2 may be involved in the dysfunction of the recycling process. This research project aims to understand more about the role of this protein in brain cell death by using a fruit fly model of Parkinson's and cells that have come from people with the condition. The researchers will also begin to test drugs that target TPC2 to boost recycling in the cell to see if this can help protect brain cells.

19	Project name	Weight-shift training to overcome freezing (G-2007)
Lead researcher		Dr William Young
Start and end date		July 2021 to December 2023
Location		University of Exeter
Cost		£246,383

Type: Life | **Stage:** Clinical trial

Freezing can be a common symptom of Parkinson's. People describe it as feeling like their feet are 'glued' to the ground. In order to start walking someone's balance needs to be adjusted in a specific way but this 'weight-shift' adjustment does not occur properly in people who freeze. The team at the University of Exeter have previously shown in a controlled lab environment that helping people to initiate weight shifting allowed them to overcome freezing and continue walking. This research project aims to build on these results to see if people can independently learn the weight-shifting strategy from an instructional video and apply it safely in daily life. If successful, this would provide a simple strategy to benefit people who experience freezing, with the potential to reduce the anxiety that comes with this symptom.

20	Project name	Investigating the benefits of physiotherapy at different stages of Parkinson's (G-1808)
Lead researcher		Dr Robert Skelly
Start and end date		December 2019 to December 2023
Location		Derby Hospitals NHS Foundation Trust
Cost		£95,202

Type: Life | **Stage:** Clinical trial

We know exercise is beneficial for people with Parkinson's. Physiotherapists play a role in advising on suitable exercise and encouraging people to keep active. This research project will explore the views and experiences of people with Parkinson's with regard to physiotherapy. The team will also assess the impact of early physiotherapy, before movement problems have been identified, versus physiotherapy deferred to the time of need. They expect early physiotherapy will help people with Parkinson's maintain independence.

21	Project name	Understanding how toxic fats may play a role in the causes of Parkinson's (G-2010)
Lead researcher		Professor Kevin Mills
Start and end date		May 2021 to November 2023
Location		University College London
Cost		£205,160

Type: Cure | **Stage:** Scientific discovery/Developing treatments



Parkinson's is often an 'idiopathic' condition, which means it has no known cause. However, for a small minority, Parkinson's can be caused by inherited changes in a number of different genes. For instance, small changes in the GBA1 gene can lead to someone having an increased risk of developing Parkinson's. This genetic change can lead to less efficient clearing of certain fats from cells, and it is thought that a fat called glucosyl-psychosine may play a role in the causes of Parkinson's. This research aims to understand how this toxic fat is made by the cell and how it is contributing to brain cell death. This research could help to uncover new ways to stop the buildup of this harmful fat and potentially protect brain cells.

22	Project name	Investigating non-invasive nerve stimulation to improve walking (G-1903)
Lead researcher		Dr Alison Yarnall
Start and end date		November 2020 to November 2023
Location		Newcastle University
Cost		£102,476

Type: Life | **Stage:** Clinical trial


In Parkinson's, brain cells are lost over time, resulting in the levels of vital brain chemicals being decreased. One of these chemicals is called acetylcholine, which plays an important role in memory, thinking and walking. This means that people with Parkinson's have an increased risk of falling. This research will look at a small handheld device placed on the neck to stimulate a nerve with the aim of boosting acetylcholine levels. Researchers will be looking at 40 people with Parkinson's to see if this potential non-invasive treatment can help reduce falls and improve the quality of life for those living with the condition.

23	Project name	A new telehealth approach to speech therapy (H-2001)
Lead researcher		Dr Steven Bloch
Start and end date		October 2021 to October 2023
Location		University College London
Cost		£100,321

Type: Life | **Stage:** Clinical trial

Changes in the brain in people with Parkinson's mean that movements become smaller and less forceful and this can lead to problems with speech and communication. This project will develop and test a new speech and language therapy programme delivered remotely via a computer (telehealth) to see if people with Parkinson's and their loved ones find it beneficial. The research will test the new therapy in 10 people with Parkinson's and their chosen loved one and will focus on providing personalised strategies to improve communication. If this research is successful, it could lead to a new strategy for people to have better conversations with their friends and family.

24	Project name	Boosting the brain cell's recycling process (K-2201)
Lead researcher		Dr Robin Ketteler
Start and end date		October 2021 to October 2023
Location		University College London
Cost		£44,384

Type: Cure | **Stage:** Scientific discovery

When a brain cell starts to accumulate lots of unwanted or defective material, it will kick-start a process known as autophagy, which aims to break down and clear this buildup. If this process doesn't work properly, the cell will become damaged and ultimately die. Robin and his team have already identified some compounds that can boost the autophagy process to help rescue the brain cells. In this research, they will see if they can learn more about these compounds and how they work. And find out which has the most promise to become a new treatment.

25	Project name	Investigating why some people with Parkinson's experience constant pain (G-2004)
Lead researcher		Dr Kirsty Bannister
Start and end date		September 2021 to September 2023
Location		King's College London
Cost		£189,850

Type: Life | **Stage:** Scientific discovery

People with Parkinson's experience more than just motor symptoms and one of the most troublesome non-motor symptoms is pain. It is unclear why people with Parkinson's may experience constant pain and therefore this symptom often goes untreated. This research aims to investigate the causes of pain in Parkinson's. The researchers will do various tests to build up a pain sensitivity profile in people with Parkinson's who do and don't experience constant pain, and in people without Parkinson's, to help understand why some people experience this symptom. This knowledge could help shape future treatment strategies.

26	Project name	A clinical trial of the probiotic Symprove (K-1803)
Lead researcher		Professor K Ray Chaudhuri
Start and end date		July 2019 to July 2023
Location		King's College London
Cost		£38,562

Type: Life | **Stage:** Clinical trial

Recent studies have shown that gut health is important in Parkinson's. Symprove is an oral probiotic that can reach the lower gut and has been seen to improve symptoms in conditions such as irritable bowel syndrome. The research team has some evidence that Symprove may be able to reduce motor and non-motor symptoms in people with Parkinson's. Now they want to test its potential in a placebo-controlled trial.

27	Project name	Understanding what controls the loss of dopamine-producing cells (G-1804)
Lead researcher		Dr Christopher Elliott
Start and end date		May 2019 to June 2023
Location		University of York
Cost		£245,995
Type: Cure | **Stage:** Scientific discovery 		
Changes in the LRRK2 gene play a crucial role in the development of rare, inherited forms of Parkinson's and cause the LRRK2 protein to be more active than normal. Christopher and his team have observed in flies that a small protein, Rab10, contributes to LRRK2-induced Parkinson's symptoms. In this research project, they will investigate how Rab10 (and other Rab proteins) work with LRRK2 to control the loss of dopamine-producing brain cells.		

28	Project name	Could epilepsy drugs help treat Parkinson's? (G-1803)
Lead researcher		Professor Stephanie Cragg
Start and end date		January 2019 to May 2023
Location		University of Oxford
Cost		£326,682
Type: Cure | **Stage:** Scientific discovery/Developing treatments 		
A group of drugs called gabapentinoids were made for treating epilepsy. They also help with some types of pain, sleep problems and restless leg syndrome. Stephanie and her research team have seen that these drugs control calcium levels in brain cells for the controlled release of dopamine. This research project hopes to understand how gabapentinoids could keep dopamine cells working in a healthier way to stop Parkinson's from developing.		

29	Project name	Therapeutic avenues to halt Parkinson's progression (G-1902)
Lead researcher		Professor Sylvie Urbe
Start and end date		January 2020 to April 2023
Location		University of Liverpool
Cost		£225,159

Type: Cure | **Stage:** Scientific discovery/Developing treatments

Our brain cells need a lot of energy to function and cell batteries called mitochondria play a crucial role in this. But the buildup of mitochondria that are not working properly is thought to play a critical role in the loss of healthy brain cells in Parkinson's. This project aims to find ways to boost the disposal of damaged mitochondria to ultimately design new therapies that halt the progression of Parkinson's.

30	Project name	Using brain imaging to study walking in Parkinson's (G-2005)
Lead researcher		Professor Lynn Rochester
Start and end date		October 2021 to April 2023
Location		Newcastle University
Cost		£140,122

Type: Life | **Stage:** Developing treatments

Some people with Parkinson's experience difficulty walking, which can lead to falls. We know this can greatly impact people's quality of life and is a top research priority. It is not entirely clear how the brain controls walking and how this process might be affected in Parkinson's. The researchers will analyse brain activity, through the use of brain scans, in people with Parkinson's when they are walking and standing. Increased understanding of the causes of these symptoms could lead to new ways to treat and manage them.

31	Project name	A device to help manage drooling in Parkinson's (H-2002)
Lead researcher		Professor Richard Walker
Start and end date		April 2021 to April 2023
Location		Northumbria Healthcare NHS Foundation Trust
Cost		£199,821

Type: Life | **Stage:** Developing treatments/Clinical trial

In Parkinson's, people may have difficulties swallowing, and as a consequence drooling can be a symptom of the condition. This can affect speech, eating and cause social embarrassment. Current treatments focus on reducing the body's ability to produce saliva, but this research wants to see if a device can prompt people to swallow more frequently without having to undergo regular medical treatment. Using a wrist-worn device to prompt swallowing through vibration could offer a cheap and easy way to help manage these symptoms. The device and associated app also have the potential to set reminders for medications, and monitor physical activity and sleep behaviours. This project aims to recruit 3,000 people with Parkinson's to trial this device and create an active network to shape and develop this technology.

32	Project name	Harnessing the brain's self-cleaning system in Parkinson's (F-1902)
Lead researcher		Dr Ian Harrison
Start and end date		November 2019 to March 2023
Location		University College London
Cost		£245,909

Type: Cure | **Stage:** Scientific discovery/Developing treatments

The gradual buildup of toxic proteins is thought to play a major role in damaging brain cells in Parkinson's. The glymphatic system, a recently discovered brain-wide pathway, works to remove waste products from the brain. Previous research has shown that sleep, exercise and low levels of alcohol may help the glymphatic system to clear out toxic proteins in mice. This research will build upon these promising findings and investigate whether boosting the glymphatic system with drug-like molecules can help protect brain cells.

33	Project name	Studying early brain changes in Parkinson's (K-1703)
Lead researcher		Professor Nicola Pavese
Start and end date		September 2018 to March 2023
Location		Newcastle University
Cost		£47,852

Type: Cure | **Stage:** Scientific discovery

Using special brain scans, we can observe changes in the brain that happen in Parkinson's. However, by the time of diagnosis, many people will have had symptoms for at least several months, so we still don't know what changes happen in the earliest stages of the condition. The team is studying people with rapid eye movement (REM) sleep behaviour disorder, who are at high risk of developing Parkinson's, to identify which areas of the brain are affected.

34	Project name	Exploring markers in the blood to help diagnose Parkinson's (G-2003)
Lead researcher		Dr Gavin Hudson
Start and end date		March 2021 to March 2023
Location		Newcastle University
Cost		£225,865

Type: Cure | **Stage:** Scientific discovery

By the time someone experiences the symptoms of Parkinson's, many brain cells have already been lost. Therefore researchers believe that identifying and diagnosing Parkinson's earlier is vital in the search for better treatments and a cure for the condition. This project aims to explore the potential of a blood test to see if it can accurately predict who will develop Parkinson's. The researchers will analyse blood samples from people with and without the condition to measure levels of a specific group of molecules called acylcarnitines. They also want to see what happens to the levels of these molecules as the condition progresses. This research could lead to a simpler way of diagnosing the condition as well as providing a way to measure its progression.

35	Project name	Understanding more about the brain's self-cleaning system in Parkinson's (G-2104)
Lead researcher		Professor Mark Lythgoe
Start and end date		November 2021 to February 2023
Location		University College London
Cost		£102,702

Type: Cure | **Stage:** Scientific discovery

People with Parkinson's can experience a range of symptoms caused by the gradual loss of brain cells that produce a vital chemical called dopamine. A protein called alpha-synuclein contributes to this by clumping together and damaging cells. One way the brain clears waste proteins, such as alpha-synuclein, is through a self-cleaning process called the glymphatic system. This uses water channels attached to the brain's blood vessels to filter and remove waste. In Alzheimer's there are fewer water channels, which slows down this cleaning process. By looking at brain samples from people with Parkinson's, this research aims to find out if these water channels are also affected in Parkinson's. This research could pave the way for future treatments that could ultimately help protect brain cells.

36	Project name	Investigating delirium in Parkinson's (DELIRIUM-PD) (F-1801)
Lead researcher		Dr Rachael Lawson
Start and end date		December 2018 to December 2022
Location		Newcastle University
Cost		£305,049

Type: Life | **Stage:** Scientific discovery

Delirium is a serious but often treatable condition that can suddenly start in someone who is unwell. People with delirium may appear confused, experience hallucinations, have difficulty following conversations or be unusually sleepy. Some of these features are also symptoms of Parkinson's, which can make delirium difficult to identify in people with Parkinson's. This project will investigate delirium in people with Parkinson's admitted to hospital, which could help better identify and treat the condition.

37	Project name	Delivering a collaborative exercise approach for people with Parkinson's (F-1901)
Lead researcher		Julie Jones
Start and end date		June 2019 to December 2022
Location		Robert Gordon University
Cost		£240,258

Type: Life | **Stage:** Clinical trial

For many, exercise is an effective way to help manage their Parkinson's, and evidence suggests that regular exercise may limit the progression of the condition. Julie's team will explore a collaborative exercise intervention called PDConnect, which includes physiotherapy, community-based group exercise classes, and supported self-management. They will test this approach to see if it is an effective way to support people with Parkinson's to engage in exercise.

Parkinson's Virtual Biotech

A groundbreaking global movement to deliver life-changing new treatments in years not decades.

Like other biotechs, the Parkinson's Virtual Biotech uses cutting edge biological and chemical research to come up with new treatments. But it's driven by people with Parkinson's, not profit. Collaborative and agile, it adapts successful methods from the business world to deliver new treatments faster.

Founded by Parkinson's UK in 2017, the Parkinson's Virtual Biotech is now an international programme in partnership with the Parkinson's Foundation. We believe we'll get to a cure faster by collaborating, not competing.

Our innovative approach is working. The next treatment is closer than ever.

Here are some of the latest projects we're investing in:

Project name: Galaxy	Finding ways to dial down inflammation in Parkinson's (I-2001)
Investment to date	£2.9m

Announced in December 2021, this project aims to find a way to stop harmful inflammation from damaging brain cells.

Inflammation is a process that is vital for defending the body against harm from things like infections, injuries and toxins. It should only be activated when there is a threat. If inflammation is active when it shouldn't be, it can cause harm to healthy cells. There is increasing evidence that this might be the case in Parkinson's.

This project looks to uncover a way to dial down inflammation in the brain, in the hope to protect brain cells. This could help pave the way for the design of a drug to help slow or stop the condition.

Project name: EndLyz	Finding ways to boost cell recycling in Parkinson's (I-2102)
Investment to date	£185,000

We're working with EndLyz Therapeutics, Inc. to help find therapeutic ways to clear cells of damaging or unwanted materials that might contribute to the causes of Parkinson's.

Recent research suggests that lysosomes, packets of digestive chemicals that help to break down and recycle unwanted material inside cells, may be central to the development and progression of Parkinson's. When lysosomes don't work properly, brain cells can't get rid of old and damaged proteins, so these build up and clump together, slowly choking cells.

This project will focus on developing new therapies to restore efficient lysosomal function, which may have the potential to slow or stop Parkinson's.

Project name: Sheffield	Optimising molecules that restore brain cell batteries (I-1904)
Investment to date	£1.3m

We're partnering with researchers at the University of Sheffield to develop molecules that can boost the function of brain cell batteries. This research aims to take important steps towards creating a drug that can protect dopamine-producing brain cells and slow down the progression of Parkinson's.

Over the next 12 months, the team will develop and test the drug-like molecule in cells from people with Parkinson's. If this is successful, the molecules will then move forward into further testing in animal models, before moving into clinical trials in people with Parkinson's.

Project name: GDNF	Planning a new clinical trial of device-delivered GDNF (I-2101)
Investment to date	£800,000

GDNF is a special protein that is naturally produced inside the brain. When GDNF is given to damaged dopamine brain cells in the lab it helps them to regenerate. It may be able to do the same in people with Parkinson's if it can be delivered to the right part of the brain in the right way.

So far, clinical trials using different devices to deliver GDNF have given inconclusive results, but we believe that GDNF still holds huge promise for people with Parkinson's. That's why we have launched a new company, Vivifi Biotech, to lead the planning and preparations for a potential new GDNF trial.

We have reviewed the scientific evidence from the first trial and listened to the views of people with Parkinson's about whether it is right to move ahead. There's still work that needs to be done on the device and drug manufacture to make sure they are the best that they can be. But the main focus for this next phase will be seeking funding partners who can help make a future trial happen.

Project name: TOP HAT	A phase 2 clinical trial to explore the potential of ondansetron for treating hallucinations in people with Parkinson's or Lewy body dementia (I-1902)
Investment to date	£1.1m

In November 2020, we announced we're partnering with University College London to explore the potential of ondansetron as a treatment for visual hallucinations in people with Parkinson's or Lewy body dementia.

Ondansetron is currently used to treat sickness following operations or during chemotherapy. It is estimated that around 75% of people with Parkinson's experience visual hallucinations, when they see things that aren't really there, during the course of their condition. These symptoms can be extremely distressing for people with Parkinson's and their families. However, current treatment options are limited.

This study is investigating whether ondansetron is beneficial and safe as a treatment for hallucinations in 306 people with Parkinson's or Lewy body dementia. With safety data available from ondansetron's current use in treating sickness, positive results from this study could see this repurposed medication quickly progress to become an available treatment.

Project name: CBD (CAN-PDP)	Clinical trial to investigate cannabidiol (CBD) for Parkinson's-related psychosis (I-1901)
Investment to date	£1.2m

There are many different symptoms of Parkinson's and not everyone will experience the same ones. Evidence indicates that up to 60% of people with Parkinson's go on to develop symptoms of Parkinson's psychosis as their condition progresses.

In October 2019, we announced we're partnering with researchers at King's College London to carry out a clinical trial to see whether CBD is safe and effective for treating symptoms of Parkinson's psychosis.

The first stage of the study, a six-week pilot to find the ideal dosage of oral CBD capsules, is now complete. In the second stage, 120 people with Parkinson's-related psychosis will take part in a 12-week, double-blind, placebo-controlled study – the gold standard for testing if treatments actually work.

Project name: Neurolixis	A phase 2 trial of the drug NLX-112 for treating dyskinesia in people with Parkinson's (I-2002)
Investment to date	£1.53m

In November 2020, we announced we're partnering with US charity The Michael J. Fox Foundation (MJFF), and biopharmaceutical company Neurolixis, to investigate a drug called NLX-112 for the treatment of involuntary movements (dyskinesia). This is a common side effect experienced by people with Parkinson's who have been taking levodopa-based medications for several years. The main medication currently available to manage dyskinesia is amantadine. It does not work for everyone and can have serious side effects that prevent its use.

This new trial leads on from previous studies funded by the MJFF and Parkinson's UK, which investigated NLX-112 in the lab and secured approval from regulatory authorities to take the drug into clinical trials in people with Parkinson's.

This research is now investigating whether the drug is safe and beneficial for people with Parkinson's who experience dyskinesia. The aim is to investigate this in 24 people with Parkinson's. If successful, this will lead to larger clinical trials and ultimately a life-changing new treatment.

Project name: NRG	Targeting brain cell batteries to slow the progression of Parkinson's (I-1903)
Investment to date	£4.49m

In July 2019, we announced we're partnering with NRG Therapeutics Ltd to find ways to boost the functioning of mitochondria in Parkinson's.

Mitochondria, the powerhouses of the cell, play an important role in both sporadic and inherited forms of Parkinson's. The aim of this project is to identify new molecules that can enter the brain and support the mitochondria.

If successful, these protective molecules could provide a safe and effective new treatment that will protect brain cells, slow the progression of Parkinson's and extend quality of life.

Building on the success of the project, in 2022 NRG secured funding worth £16million, including further investment from the Parkinson's Virtual Biotech. This funding will be used to continue developing these molecules and progress towards clinical trial.

Project name: Eurofins	Creating new drugs to improve symptoms and slow Parkinson's (I-1703)
Investment to date	£2.7m

Back in March 2018, we announced that we would be collaborating with one of the UK's leading contract research companies, Selcia, to create new molecules that can increase the activity of a selection of genes.

Dialling up the activity of these genes has the potential both to increase dopamine production, and boost the production of protective proteins to slow or halt the damage and loss of precious brain cells. If we're successful, it could lay the foundations for research into new treatments that could not only improve Parkinson's symptoms, but also slow, stop or even reverse the underlying condition.

Project name: Pharmaxis	A phase 2 clinical trial of a new treatment that aims to relieve Parkinson's-like symptoms and target inflammation to slow the onset of the condition. (I-2201)
Investment to date	£2.9m

In September 2022, we announced we're working with Pharmaxis to investigate whether a drug called PXS-4728 can reduce inflammation in the very early stages of Parkinson's.
Inflammation is part of the body's natural response to injury, but it can cause problems if it is overactive and actually damages cells. This is thought to contribute to the causes and progression of Parkinson's.

This study will investigate PXS-4728 in 40 people who experience a sleep disorder known as isolated rapid eye movement sleep behaviour disorder (iRBD).

Studies suggest as many as 70% of people with iRBD go on to develop Parkinson's. The hope is that this drug might be able to slow the onset of Parkinson's symptoms in this group of people that are at a high risk of developing the condition. This could help find a way to slow the progression of Parkinson's in others with the condition.

Project name: Enterin	Investigating a new treatment for Parkinson's-related dementia (I-2202)
Investment to date	£2m

People with Parkinson's are up to six times more likely to develop dementia compared to the general population. But there is no treatment that can stop or even slow the progression of dementia in Parkinson's.

In October 2022, we announced we're partnering with Enterin Inc. to assess the potential of a man-made chemical, ENT-01, which is based on a naturally occurring compound called squalamine, known for its ability to kill bacteria and viruses.

Previous clinical trials with ENT-01 show that it can reduce constipation in people with Parkinson's, and suggest that it might be able to improve other symptoms such as those related to thinking and memory. This project will assess this potential in more detail, looking at the impact it might have for people with Parkinson's who experience memory problems.

Get connected to Parkinson's research

Join our Research Support Network to hear about ways to have your say, take part and get involved in Parkinson's research. You'll receive regular emails packed with exciting research news and opportunities.

Find out more at **parkinsons.org.uk/rsn**

Find out more

For more information about our other research initiatives and the progress that we're making, please visit **parkinsons.org.uk/research**

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