Our research projects

2019

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

Since the start of our strategic period in 2015, we've invested £23million in research. We've set up initiatives that aim to speed up the delivery of new and better treatments. In addition to projects aimed at developing a cure, our research grants support those seeking to improve life for people with Parkinson's.

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:

What do we mean by a 'cure'?

Projects and programmes that work towards treatments and strategies to have the potential to slow, stop, reverse or prevent Parkinson's. This includes developing new treatments and improving diagnosis and monitoring of the condition.

What do we mean by 'life'?

Projects and programmes that will deliver 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.

What happens in the different stages of the 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 people.

Our active research grants

1	Project name	Understanding the impact of Lewy bodies (G-1702)
Lead researcher		Professor Peter Magill
Start and end date		Apr 2018-July 2022
Location		University of Oxford
Cost		£216,824
Type: Cure		**Stage:** Scientific discovery

Lewy bodies are abnormal clusters of protein that form inside the brain cells lost in Parkinson's. While they are found in these cells, researchers do not know how Lewy bodies affect them. Peter and his team hope to use a mouse model of Parkinson's to discover the impact Lewy bodies have on the function of dopamine-producing brain cells. Ultimately, their research could shed new light on how to slow or stop the condition.

2	Project name	Tracking Parkinson's (PROBAND) (J-1101)
Lead researcher		Professor Donald Grosset
Start and end date		Oct 2011-May 2022
Location		University of Glasgow
Cost		£3,411,807
Type: Cure		**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 develop better and more targeted treatments that we can use in particular types of Parkinson's.

3	Project name	Understanding what controls the loss of dopamine-producing cells (G-1804)
Lead researcher		Dr Christopher Elliott
Start and end date		May 2019-May 2022
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.

4	Project name	Unblocking cellular traffic jams as a treatment for Parkinson's (G-1802)
Lead researcher		Professor Flaviano Giorgini
Start and end date		Feb 2019-Feb 2022
Location		University of Leicester
Cost		£264,522
Type: Cure		**Stage:** Scientific discovery

Recent studies show that traffic jams inside cells may contribute to Parkinson's. The protein Rab39b is involved in the movement of 'cargo' within cells. Defective Rab39b is associated with Parkinson's symptoms and Flaviano and team have observed this in fruit flies. In this study, they will enhance Rab39b functions to see if this has a beneficial role in Parkinson's.

5	Project name	Could epilepsy drugs help treat Parkinson's? (G-1803)
Lead researcher		Professor Stephanie Cragg
Start and end date		Jan 2019-Jan 2022
Location		University of Oxford
Cost		£326,682
Type: Cure		**Stage:** 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.

6	Project name	Investigating delirium in Parkinson's (DELIRIUM-PD) (F-1801)
Lead researcher		Dr Rachael Lawson
Start and end date		Dec 2018-Dec 2021
Location		Newcastle University
Cost		£240,589
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. This project will investigate delirium in people with Parkinson's admitted to hospital, which could help better identify and treat the condition.

7	Project name	Understanding how the LRRK2 protein is controlled (H-1701)
Lead researcher		Professor Dario Alessi
Start and end date		Oct 2018-Oct 2021
Location		University of Dundee
Cost		£91,389
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. Dario and his team have previously discovered a protein called Rab29 that can control the activity of LRRK2. In this research project, they will look at how Rab29 regulates LRRK2 – which could help in the development of new treatments that target this pathway.

8	Project name	Understanding VPS35 in Parkinson's (H-1702)
Lead researcher		Dr Eva Kevei
Start and end date		Oct 2018-Oct 2022
Location		University of Reading
Cost		£93,375
Type: Cure		**Stage:** Scientific discovery

Researchers have recently discovered that changes in a gene called VPS35 can cause Parkinson's, but we don't yet know how. While this genetic form of Parkinson's is very rare, understanding why changes in this gene lead to Parkinson's could give us the vital insight needed to develop new and better treatments. In this project, the team hopes to use a worm model of Parkinson's to better understand how the VPS35 is linked to the loss of precious brain cells.

9	Project name	Targeting GBA in Parkinson's (G-1704)
Lead researcher		Professor Anthony Schapira
Start and end date		Jul 2018-Jul 2021
Location		Institute of Neurology, UCL
Cost		£319,324
Type: Cure		**Stage:** Developing treatments

Changes in the GBA gene are an important risk factor for Parkinson's and can significantly increase the risk of developing Parkinson's. Anthony's previous research has shown that these mutations lead to alpha-synuclein building up in brain cells. He also discovered that a drug called ambroxol may be able to help. Now Anthony and his team plan to investigate whether ambroxol can slow the spread of the alpha-synuclein protein in a mouse model of the condition. This information could help researchers design future clinical trials.

10	Project name	Understanding Fbxo7 gene in Parkinson's (G-1701)
Lead researcher		Dr Heike Laman
Start and end date		June 2018-June 2021
Location		University of Cambridge
Cost		£200,634
Type: Cure		**Stage:** Scientific discovery

Current treatments only target the symptoms of Parkinson's – they do not slow the loss of dopamine-producing cells. But Dr Heike believes we now have the tools and opportunity to change this. She has experience of studying a gene that we now know plays a fundamental role in brain cell health – Fbxo7. Understanding how this gene protects brain cells could give rise to future therapies that can slow or reverse the progression of the condition.

11	Project name	Predict Parkinson's (G-1606)
Lead researcher		Professor Anette-Eleonore Schrag
Start and end date		May 2017-May 2021
Location		University College London
Cost		£603,271
Type: Cure		**Stage:** Scientific discovery

Finding people at risk of Parkinson's could aid 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 be able to predict people who will develop Parkinson's in the future.

12	Project name	Using nicotine-like drugs to help restore memory and movement in Parkinson's (G-1805)
Lead researcher		Dr Mohammed Shoaib
Start and end date		Jan 2019-Jan 2022
Location		Newcastle University
Cost		£294,180
Type: Cure		**Stage:** Developing treatments

Nicotine binds cells in the region of the brain responsible for memory and motor co-ordination and can enhance their function. In this project, the team will investigate new compounds that have nicotine-like effects on brain cells, but without the side-effects of nicotine like addiction. Nicotine-like compounds will be tested on models of Parkinson's to see whether nicotine-like substances reduce memory loss and movement disorders.

13	Project name	Studying early brain changes in Parkinson's (K-1703)
Lead researcher		Professor Nicola Pavese
Start and end date		Sept 2018-Mar 2021
Location		Newcastle University
Cost		£47,851
Type: Cure		**Stage:** Scientific discovery

Using special brain scans, we are now able to 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 REM sleep behaviour disorder, who are at high risk of developing Parkinson's, to identify areas of the brain affected early on.

14	Project name	Finding drugs that combat alpha-synuclein (G-1703)
Lead researcher		Professor Maria Grazia Spillantini
Start and end date		Mar 2018-Mar 2021
Location		University of Cambridge
Cost		£364,620
Type: Cure		**Stage:** Developing treatments

The protein alpha-synuclein is the main component of Lewy bodies, and is believed to play a key role in the loss of precious brain cells and spread of Parkinson's. Anle138b is a potential drug that Maria and her team have shown reduces the ability of alpha-synuclein to form Lewy bodies in mouse models of the condition. In this project, the team hopes to find the optimal dose of this compound, and discover more about its effects, to progress it towards clinical trials.

15	Project name	A clinical trial of the probiotic Symprove (K-1803)
Lead researcher		Professor K Ray Chaudhuri
Start and end date		Dec 2018-Feb 2021
Location		King's College London
Cost		£38,562
Type: Life		**Stage:** Clinical trials

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.

16	Project name	The Monument Discovery Award (J-1403)
Lead researcher		Professor Richard Wade-Martins
Start and end date		Feb 2015-Feb 2021
Location		University of Oxford
Cost		£5,857,058
Type: Cure		**Stage:** Scientific discovery, developing treatments

The Oxford Parkinson's Disease Centre is a unique, collaborative initiative that brings together the best scientific minds to speed up the search for better treatments and a cure. The researchers are looking at Parkinson's from every angle – including studying stem cells and animal models of the condition – to attempt to answer some of the biggest questions facing the field.

17	Project name	Boosting a growth factor in the brain to fight the loss of dopamine (G-1801)
Lead researcher		Dr Susan Duty
Start and end date		Jan 2019-Jan 2021
Location		King's College London
Cost		£168,139
Type: Cure		**Stage:** Developing treatments

Fibroblast growth factor 20, FGF20, is a specialised protein that has been shown in the lab to aid the survival of dopamine-containing cells. Susan and her team have found that in animal models they can boost FGF20 levels in the brain with two existing medicines – the anti-asthmatic drug Salbutamol and an aspirin-like drug Triflusal. In this research project, they will see if these medicines help protect brain cells in a rat model of Parkinson's.

18	Project name	Understanding gut bacteria to deliver better treatments (G-1705)
Lead researcher		Dr Maria Doitsidou
Start and end date		Jan 2018-Jan 2021
Location		University of Edinburgh
Cost		£243,128
Type: Cure		**Stage:** Scientific discovery

Recent research has highlighted the importance of gut-brain interactions in Parkinson's. We know microorganisms that live in our gut can affect our brain, and there is evidence that, for some, Parkinson's may start in the gut. The team is using a worm model of Parkinson's to investigate how the different types of bacteria in our gut can influence symptoms of Parkinson's, and how gut bacteria communicate with our brain. This could help to predict how Parkinson's will affect an individual in the future and help to develop better treatments.

19	Project name	Hunting for protective genes in Parkinson's (F-1501)
Lead researcher		Dr Emmanouil Metzakopian
Start and end date		Nov 2015-Nov 2020
Location		Sanger Institute
Cost		£383,062
Type: Cure		**Stage:** Scientific discovery

Understanding more about why some people get Parkinson's while others don't, and finding the protective genes responsible, can help scientists develop new protective treatments. Using cells grown in the lab, the team will individually change a single, different gene in each brain cell, using specially designed viruses. The genetically altered brain cells will then be stressed with chemicals that will cause most of the cells to die, helping the researchers find the cells with protective genes.

20	Project name	Understanding and predicting Parkinson's progression (H-1703)
Lead researcher		Professor Huw Morris
Start and end date		Nov 2017-Nov 2020
Location		University College London
Cost		£99,169
Type: Cure		**Stage:** Scientific discovery

Huw's team is interested in finding out how people's genetic makeup may influence the progression of Parkinson's. They will combine clinical and genetic data from several large Parkinson's research studies to create the largest dataset of Parkinson's progression to date. They also aim to predict Parkinson's progression on an individual level using both clinical and genetic factors.

21	Project name	Stem cell therapies: targeting the non-motor symptoms (F-1502)
Lead researcher		Dr Mariah Lelos
Start and end date		Nov 2015-Oct 2020
Location		Cardiff University
Cost		£250,000
Type: Cure		**Stage:** Developing treatments

Cell transplants have the potential to reverse the damage that occurs inside the brain in Parkinson's. The team is transplanting new dopamine-producing cells into the brains of rats with Parkinson's-like symptoms to see if they can improve movement symptoms, and non-motor symptoms including problems with thinking, memory, anxiety and smell. The team will use dopamine-producing brain cells made from different types of stem cells, and investigate how they work by using viruses to turn the cells on and off.

22	Project name	Exploring a new treatment for bladder problems (K-1801)
Lead researcher		Professor Doreen McClurg
Start and end date		Sept 2018-Sept 2020
Location		Glasgow Caledonian University
Cost		£6,887
Type: Life		**Stage:** Clinical trial

Bladder problems, such as a frequent and urgent need to pass urine, affect many people with Parkinson's but current treatment options are limited. Transcutaneous electrical stimulation involves using a device to deliver small electrical impulses to the skin. This approach is sometimes used to address pain but has not been used to treat bladder problems before. This project will test if the treatment can improve bladder symptoms in people with Parkinson's.

23	Project name	Steps towards a new diagnostic test for Parkinson's (G-1806)
Lead researcher		Dr Laura Parkkinen
Start and end date		Feb 2019-Aug 2020
Location		University of Oxford
Cost		£129,038
Type: Life		**Stage:** Scientific discovery

Laura and her team have developed a promising new diagnostic test for Parkinson's focusing on the detection of a specific protein. In this project, they will see how early in the process this protein can be detected. They will also investigate if their test can tell Parkinson's apart from other related conditions to aid correct early diagnosis and treatment.

24	Project name	A blood test to measure LRRK2 (K-1706)
Lead researcher		Dr Esther Sammler
Start and end date		Nov 2017-July 2020
Location		University of Dundee
Cost		£49,270
Type: Cure		**Stage:** Scientific discovery

Changes in the LRRK2 gene are one of the most common genetic risk factors for Parkinson's and can change the way cells behave. Esther hopes that a simple blood test may be able to directly measure the activity of the LRRK2 pathway in blood samples from those with Parkinson's. Demonstrating that the test works could aid future research to test new treatments that target this pathway.

25	Project name	Can we protect neurons against mitochondrial dysfunction? (F-1401)
Lead researcher		Dr Amy Reeve
Start and end date		Nov 2017-July 2020
Location		Newcastle University
Cost		£413,745
Type: Cure		**Stage:** Developing treatments

Understanding how changes in mitochondria affect energy production, and contribute to brain cell death, may be the key to treatments that protect against energy loss and help cells survive into old age. Using brain tissue, brain cells grown in the lab and mice with Parkinson's-like symptoms, Amy is testing a range of drugs known to interact with mitochondria. This could tell her if the drugs can protect brain cells against the problems caused by faulty mitochondria and alpha-synuclein.

26	Project name	Finding new ways to treat anxiety (G-1601)
Lead researcher		Dr Jerome Swinny
Start and end date		May 2017-May 2020
Location		University of Portsmouth
Cost		£224,978
Type: Life		**Stage:** Scientific discovery

Around half of people with Parkinson's have trouble with anxiety, and 'stress and anxiety' is rated the second-highest priority area of research for improving quality of life. The locus coerulus, located in the brainstem, is important for responding to stress. So the researchers want to look specifically at changes to the cells in this part of the brain that may be linked to anxiety. They will then look for drugs that can reverse these changes in the brain and reduce anxiety-like behaviour in mice.

27	Project name	Investigating the role of calcium in Parkinson's (K-1802)
Lead researcher		Professor Sandip Patel
Start and end date		June 2018-April 2020
Location		University College London
Cost		£49,941
Type: Cure		**Stage:** Scientific discovery

Calcium is vital for all the cells in our bodies, but too much calcium can cause problems. Research suggests the levels of calcium inside cells may be affected by Parkinson's, and clinical trials are under way to test the potential of drugs that block calcium. Sandip and his team have previously found changes in the way calcium flows in cells that have an LRRK2 mutation – one of the most common genetic risk factors for Parkinson's. In this project, they want to understand exactly how LRRK2 disrupts calcium flow.

28	Project name	GDNF-7: a combined therapy for Parkinson's (G-1603)
Lead researcher		Dr Oscar Cordero Llana
Start and end date		Apr 2017-Apr 2020
Location		University of Bristol
Cost		£224,941
Type: Cure		**Stage:** Developing treatments

This research project will explore a combined therapy using GDNF alongside a microRNA – called miR-7 – that helps keep alpha-synuclein levels under control. It may have the potential to not only stop but reverse the development of the condition. If successful, the approach could lead to the development of a treatment for Parkinson's that can be tested in clinical trials.

29	Project name	Astrocytes: a support cell in the Parkinson's brain? (G-1402)
Lead researcher		Professor Maeve Caldwell
Start and end date		Nov 2015-Apr 2020
Location		University of Bristol
Cost		£210,457
Type: Cure		**Stage:** Scientific discovery

This project will help us understand the role of astrocytes – the most abundant cell type in the human brain – in the loss of dopamine-producing nerve cells in Parkinson's. Maeve and her team are using induced pluripotent stem (iPS) cells to study how astrocytes support and protect the dopamine-producing brain cells that are lost in Parkinson's.

30	Project name	Better drug screening: finding new uses for old drugs (F-1301)
Lead researcher		Dr Heather Mortiboys
Start and end date		Sept 2013-March 2020
Location		University of Sheffield
Cost		£419,312
Type: Cure		**Stage:** Developing treatments

Heather's project focuses on identifying drugs with untapped potential for Parkinson's that are already used in other conditions. She is looking to see if they can improve the function of mitochondria and lysosomes, and therefore slow or stop the loss of brain cells. If Heather finds strong evidence that any of these drugs have promise, she plans to take them forward to be tested in clinical trials as quickly as possible.

31	Project name	Towards treatments for Parkinson's dementia (J-1401)
Lead researcher		Professor Roger Barker
Start and end date		Aug 2014-Feb 2020
Location		University of Cambridge
Cost		£135,047
Type: Life		**Stage:** Developing treatments

Current animal models don't mimic the slow progression of the condition, and often don't represent non-motor symptoms such as dementia. Professor Roger Barker and his team aim to develop a new rat model of Parkinson's that more faithfully replicates these symptoms. Once they're happy with the model, the team will use it to test a drug that has previously been shown to protect nerve cells in other animal models of Parkinson's.

32	Project name	Does sensory information affect turning mobility in people with Parkinson's? (K-1804)
Lead researcher		Dr Terry Gorst
Start and end date		Jan 2019-Jan 2020
Location		University of Plymouth
Cost		£31,449
Type: Life		**Stage:** Discovering new treatments

People with Parkinson's often have difficulty turning, which can lead to falls. This project aims to understand more about how sensory information, such as being able to see your feet or feel a vibration from a small device, can impact turning. The teams hope this information will be helpful in finding ways to reduce turning difficulties in everyday life.

33	Project name	Understanding LRRK2 in fruit flies (K-1704)
Lead researcher		Dr Christopher Elliott
Start and end date		Jan 2018-Jan 2020
Location		University of York
Cost		£49,441
Type: Cure		**Stage:** Scientific discovery

Changes in the gene that makes the LRRK2 protein are emerging to be a key player in the development of Parkinson's. Recent evidence suggests LRRK2 interacts with another important protein called Rab10, which is involved in many crucial processes including brain cell growth. The team will investigate how mutations in LRRK2 affect its interaction with Rab10 – information that may help in the development of better treatments.

34	Project name	Understanding the scope and value of Parkinson's nurses in the UK (the USP project) (G-1807)
Lead researcher		Dr Annette Hand
Start and end date		Jan 2018-Jan 2020
Location		Northumbria University
Cost		£100,000
Type: Cure		**Stage:** Clinical trial

Annette and her team want to understand more about the role of Parkinson's nurses to ensure people with Parkinson's continue to get the best support. They will do this by gathering information from people with Parkinson's, specialist nurses and other healthcare professionals. This study will help to improve the support of Parkinson's nurses and inform future strategies.

35	Project name	Reducing anxiety in Parkinson's (K-1705)
Lead researcher		Professor Richard Brown
Start and end date		May 2018-Nov 2019
Location		King's College London
Cost		£44,196
Type: Life		**Stage:** Developing treatments

Anxiety is a common symptom in Parkinson's and can have a severe impact on quality of life. Richard believes that when a person is anxious they see the world in a more negative and threatening way, even when there is no danger. In this project, the team hopes to test if this is the reason behind anxiety in Parkinson's. They also plan to test a technique to reduce anxiety using simple online exercises.

36	Project name	The largest-ever study of pain in Parkinson's (K-1301)
Lead researcher		Dr Monty Silverdale
Start and end date		Sept 2013-Sept 2019
Location		Salford Royal NHS Foundation Trust
Cost		£16,060
Type: Life		**Stage:** Scientific discovery

More than half of all people with Parkinson's experience chronic pain. By building on the Parkinson's UK funded Tracking Parkinson's study, Monty and his colleagues are performing the world's largest, most detailed assessment of pain in Parkinson's. They will use surveys alongside an eye examination to look at the small nerves in the surface of the eye for any signs of damage. This project will help us understand more about why pain occurs in Parkinson's, and how to spot those at risk of developing it.

37	Project name	Looking beyond dopamine for better therapies (G-1504)
Lead researcher		Professor Stephanie Cragg
Start and end date		Sept 2016-Sept 2019
Location		University of Oxford
Cost		£297,158
Type: Cure		**Stage:** Scientific discovery

Scientists have recently shown that dopamine cells simultaneously release another chemical messenger called GABA. Drugs that mimic the effects of GABA are already available and used to treat other disorders such as insomnia. If Stephanie's project provides strong evidence that GABA-based drugs could work for Parkinson's, it could lead to these drugs being repurposed to treat Parkinson's.

38	Project name	Helping cells get rid of toxic waste in Parkinson's (H-1502)
Lead researcher		Professor Sylvie Urbe
Start and end date		Sept 2016-Sept 2019
Location		University of Liverpool
Cost		£92,339
Type: Cure		**Stage:** Scientific discovery

Changes in the Parkin gene are one of the most common known causes of early onset Parkinson's. The Parkin protein has a role in removing mitochondria when they are broken – which is needed to keep cells healthy – but proteins called DUBs slow this process down. The team is studying which DUBs are putting the brakes on, then testing compounds that target them to see if they can improve the removal of damaged mitochondria.

39	Project name	Looking for DNA modifications in Parkinson's (G-1502)
Lead researcher		Professor Nigel Williams
Start and end date		July 2016-July 2019
Location		Cardiff University
Cost		£232,404
Type: Cure		**Stage:** Scientific discovery

Nigel and his team are studying high-quality brain tissue samples donated to the Parkinson's UK Brain Bank. Using state-of-the-art technology, they're looking for DNA modifications in the areas of the brain that are commonly affected in Parkinson's, compared to areas that are not. They're interested in histone modifications, as drugs that can enter the brain and reverse histone modification have already been identified and could hold potential in Parkinson's.

40	Project name	Parkinson's UK Brain Bank (J-1402)
Lead researcher		Professor Steve Gentleman
Start and end date		July 2014-July 2019
Location		Imperial College London
Cost		£1,263,580
Type: Cure		**Stage:** Scientific discovery

The Parkinson's UK Brain Bank is the world's only brain bank solely dedicated to Parkinson's research. The team collects the brain, the spinal cord and a sample of cerebrospinal fluid from people with and without the condition for vital research. These tissues are supplied free of charge to researchers studying Parkinson's all over the world.

41	Project name	Using brain scans to study cell transplants in Parkinson's (H-1503)
Lead researcher		Professor Paola Piccini
Start and end date		May 2016-May 2019
Location		Imperial College London
Cost		£76,893
Type: Cure		**Stage:** Scientific discovery

The researchers aim to identify biological markers linked to successful cell transplantation surgeries as part of the TRANSEURO clinical trial. Ultimately, the findings could help us better understand how cell transplants work for Parkinson's, and accelerate progress towards making this type of treatment a reality for people living with the condition.

42	Project name	Tracking Parkinson's: searching for biomarkers (J-1301)
Lead researcher		Professor Simon Lovestone
Start and end date		Apr 2014-Apr 2019
Location		University of Oxford and University of Glasgow
Cost		£749,888
Type: Cure		**Stage:** Scientific discovery

Building on the Tracking Parkinson's project, this study is looking for changes in blood and fluid that surrounds the brain. The team will compare people with different levels of symptom severity, rates of progression and amounts of thinking and memory problems, as well as people with and without Parkinson's. The hope is that this approach will lead to more reliable and useful biomarkers.

44	Project name	Understanding the causes of pain in Parkinson's (H-1404)
Lead researcher		Dr Monty Silverdale
Start and end date		Oct 2015-Apr 2019
Location		University of Manchester
Cost		£88,090
Type: Life		**Stage:** Scientific discovery

Monty and his PhD student are measuring brainwaves, in response to pain, to find out whether the area of the brain responding to pain is overactive in people with Parkinson's. They are also interested in how expectation and levels of brain chemicals, including dopamine and serotonin, can change this response. If the team proves that the area of the brain responding to pain is overactive, it may be possible to use new treatments, such as meditation training, to manage pain.

45	Project name	Predicting dementia in people with Parkinson's (G-1507)
Lead researcher		Professor David Burn
Start and end date		Dec 2015-Apr 2019
Location		Newcastle University
Cost		£357,068
Type: Life		**Stage:** Scientific discovery

The main goal is to better understand the early signs of dementia in people with Parkinson's. The team aims to follow people with Parkinson's to find out if specific symptoms, genes or tests – such as brain scans – can predict who will go on to develop dementia. Identifying people at high risk of developing Parkinson's dementia is important for making decisions about managing the condition, future planning and using medication such as anti-dementia drugs.

46	Project name	Engineering beetroot to combat Parkinson's in Africa (G-1505)
Lead researcher		Professor Cathie Martin
Start and end date		Apr 2016-Apr 2019
Location		John Innes Centre
Cost		£16,834
Type: Life		**Stage:** Developing treatments

Natural sources of levodopa are often used as alternative treatments for Parkinson's where drugs are not available. However, these do not always provide an accurate dose of levodopa and can contain high levels of toxic chemicals. If successful, the researchers hope a modified beetroot could provide a natural source of levodopa that could be extracted and turned into medication. This would improve access to Parkinson's drugs in the developing world.

Parkinson's Virtual Biotech

Launched in March 2017, the Parkinson's Virtual Biotech is the drug development arm of Parkinson's UK. It's mission, to fast track the most promising discoveries to rapidly develop promising treatments with the potential to transform life for people with the condition.

1	Project name	Developing drugs to target oxidative stress
Parkinson's UK investment to date		£2million

Oxidative stress is a toxic process that is believed to play a central role in the death of brain cells in Parkinson's. In March 2017, Parkinson's UK and the University of Sheffield formed the spin out company - Keapstone Therapeutics - to develop new drugs that can protect these cells against oxidative stress.

The project builds on research involving a protein called Nrf2, part of our cells' natural defences against oxidative stress. The problem is that another protein called KEAP1 can stick to Nrf2 and interfere with it doing its job. The project has investigated new molecules that can block KEAP1 and the team are now conducting crucial testing and development of these molecules.

2	Project name	Developing a new drug to treat dyskinesia
Parkinson's UK investment to date		£780,000

Levodopa, which is used to treat Parkinson's, can have severe side effects, such as, dyskinesia – involuntary movements. Launched at the start of 2018, this project is a nine-month collaboration with US company Neurolixis, developing a drug (NLX-112) to combat dyskinesia. This drug has already been tested in phase two clinical trials as a potential pain treatment, it was unsuccessful. But, lab studies have demonstrated its potential for treating dyskinesia.

Our investment has funded the vital final stages of research and preparations required before NLX-112 can move forward into clinical trials. This work is now complete and Neurolixis are planning clinical trials in people with Parkinson's who experience dyskinesia.

3	Project name	Creating new drugs to improve symptoms and slow Parkinson's
Parkinson's UK investment to date		£2.54million

Announced in March 2018 we're 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 to boost the production of protective proteins to slow or halt the damage and loss of precious brain cells. If we're successful it could lead to a unique treatment that not only improves symptoms, but can also slow, stop or even reverse the underlying condition.

Find out more

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

Get connected to Parkinson's research

Join our Research Support Network to hear about ways to have your say 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**

Every hour, two people in the UK are told they have Parkinson's – a brain condition that turns lives upside down, leaving a future full of uncertainty.

Parkinson's UK is here to make sure people have whatever they need to take back control – from information to inspiration.

We want everyone to get the best health and social care. So we bring professionals together to drive improvements that enable people to live life to the full.

Ultimately, we want to end Parkinson's. That's why we inspire and support the international research community to develop life-changing treatments, faster. And we won't stop until we find a cure.

Together we can bring forward the day when no one fears Parkinson's.

Parkinson's UK
215 Vauxhall Bridge Road
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Free confidential helpline **0808 800 0303**
(Monday to Friday 9am–7pm,
Saturday 10am–2pm). Interpreting available.
NGT Relay **18001 0808 800 0303**
(for textphone users only)

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