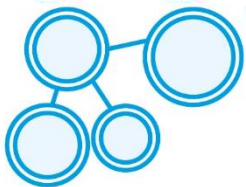




May 2019 Research Roundup

Our Research Support Network (RSN) connects you to Parkinson's research. From finding out more about research to getting involved, there's something for everyone. You can register to receive our research emails by visiting www.parkinsons.org.uk/research/get-involved-research and clicking on "Join the Network."

Here's our May Research Roundup with the latest research news and opportunities for you.



GET CONNECTED

Protecting brain cells – the story of nicotine

Nicotine is typically thought of as bad for you—an addictive substance that can get you hooked on cigarettes. But new research has found that nicotine can help protect brain cells from damage. And this could help people with Parkinson's.

You may have read headlines that left you puzzled with regard to smoking and Parkinson's—research suggests that smoking reduces a person's risk of developing the condition.

We've known about this protective link for a while. Most recently, at the end of 2018, [Imperial College London published a study](#) that recorded the smoking status of 220,494 people aged 37–70, and then assessed whether they went on to develop Parkinson's. The researchers found that:

- former smokers were 20% less likely to develop Parkinson's, and this increased to 50% in current smokers
- smoking more often was also linked to a decreased risk of Parkinson's
- passive smoking also reduced risk.

When the protective effects of smoking were discovered, it was met with confusion. We all know that smoking has huge health consequences and can't be recommended. Smoking is one of the biggest causes of death and illness in the UK. We now know smoking increases the risk of over 50 serious health conditions, from cancer and heart disease to stroke and dementia.

So how can we explain the news that smoking actually may reduce the risk of developing Parkinson's? Researchers think the surprising results could be explained by the nicotine found in tobacco.

Nicotine and Parkinson's

What is Parkinson's?

Parkinson's develops when cells in the brain stop working properly and are lost over time. This includes the loss of brain cells that produce chemicals—called neurotransmitters—such as dopamine and

acetylcholine. These neurotransmitters allow messages to be sent to the parts of the brain that co-ordinate movement and other processes such as memory. With the loss of the brain cells that release these chemicals, various parts of the brain are unable to work normally, causing the symptoms of Parkinson's to appear. The level of neurotransmitters continues to fall slowly over many years, causing symptoms to further develop, as well as the onset of new symptoms.

The symptoms of Parkinson's vary from person to person. The main symptoms are usually related to movement, such as tremor or stiffness. But many people experience other symptoms, including thinking and memory problems. This is when people struggle to recall things, make decisions or find the right words. There is currently no treatment that can help with these symptoms associated with Parkinson's.

One way of managing the condition is through taking drugs that replace the dopamine that is being lost in the brain. The trouble is, it is hard to keep the levels of dopamine constant. This can lead to side effects including involuntary movements called dyskinesia. There is research happening to try and tackle these side effects but we are in desperate need of better treatments.

What is nicotine doing in the brain?

We know that nicotine activates a specific type of receptor in the brain in a similar way to the neurotransmitter, acetylcholine. The activation of these receptors lead to the release of dopamine. And it's this release of dopamine in the reward/pleasure part of the brain that makes nicotine addictive. The dopamine creates the positive feelings associated with smoking and teaches the brain to repeat the behaviour—the reason it often becomes a habit. But on the flip side, because of the stimulated release of dopamine, nicotine may be potentially useful in Parkinson's.

Exciting new studies in animal models of Parkinson's show that nicotine can protect brain cells from damage, which explains why smoking can reduce the risk of Parkinson's. More research is needed to fully understand how nicotine can protect brain cells. There is also evidence, as well as being protective, [nicotine can help improve symptoms of Parkinson's—such as dyskinesia and trouble with memory](#).

Smoking is not the only way to get nicotine into the body

Because of these beneficial observations related to nicotine and Parkinson's, there have been clinical studies that have focused on ways to get nicotine into the body without smoking. Studies have looked at nicotine patches and nicotine gum to see whether they also reduce the risk of Parkinson's or improve symptoms. So far, the results are conflicting and inconclusive.

But there are other alternatives if you want more nicotine in your life. Nicotine-containing vegetables come from the same botanical family as tobacco, *Solanaceae*, and include tomatoes, potatoes, and peppers. And, even though these vegetables only contain small amounts of nicotine, in one small study [they were associated with a reduced risk of Parkinson's](#) when compared with other types of vegetables.

While eating a few more fruits and vegetables will probably be good for most people, we recommend talking to a healthcare professional before making significant changes to your diet or taking supplements.

Learning from nicotine—new treatments

The evidence that nicotine could help people with Parkinson's has led to the search for new nicotine-like compounds that can help but aren't addictive.

Dr Mahmoud Iravani and Dr Mohammed Shoab

Two researchers funded by Parkinson's UK are teaming up to help find a new treatment—Dr Mohammed Shoab an expert in nicotine and Dr Mahmoud Iravani an expert in Parkinson's.

Dr Mohammed Shoab has already designed new nicotine-like compounds that based on the way nicotine travels to the brain and increases neurotransmitters in the specific areas of the brain affected in Parkinson's. He has worked with Dr Mahmoud Iravani to design these compounds specifically for people with Parkinson's.

Now they want to know if the drugs improve memory and movement symptoms—something that no current treatment can do. They are testing this in rodent models of Parkinson's. If successful, it will be an important step towards a new treatment that could be trialled in people with Parkinson's.

“This current research project is built on nearly 15 years worth of work that I've been conducting on nicotine and how its related compounds impact on cognition.

“I believe compounds that work like nicotine hold huge potential.”

Dr Mohammed Shoaib

“I'm dedicated to finding a better treatment for Parkinson's. The more Dr Shoaib and I talked about our expertise, the more obvious it became that we needed to use what he knows about nicotine to target symptoms associated with Parkinson's.

“This research project uniquely addresses two seemingly unrelated symptoms—memory and movement problems. I believe this treatment will one day significantly improve people's quality of life.”

Dr Mahmood Irvani



Written by Katherine Fletcher, Research Communications Officer at Parkinson's UK

Experimental spinal stimulation shows promise for reducing freezing

Results from a trial of spinal cord stimulation carried out in Ontario, Canada highlights its potential for improving walking in Parkinson's.

The experimental treatment for Parkinson's recently featured on [BBC News](#). The news comes after results from a pilot [study](#) of the treatment, which involved just 5 people with Parkinson's, were published in the scientific journal, [Movement Disorders](#).

In this study, the researchers found that electrical stimulation of the spinal cord improved walking and freezing in the participants, even after the therapy was stopped.

MOVEMENT PROBLEMS IN PARKINSON'S

Parkinson's causes the loss of brain cells that produce a chemical messenger called dopamine. This lack of dopamine can cause some people with Parkinson's to experience motor symptoms such as tremor, slowness and freezing, which can all worsen over time.

[Freezing](#) in particular can lead to falls, putting people at risk of seriously hurting themselves, and can have long-lasting effects on confidence and quality of life. The effects can be so profound that people living with Parkinson's [listed finding treatments to help improve balance and reduce falls](#) as their number one priority research area to improve everyday life.

EARLY-STAGE RESEARCH

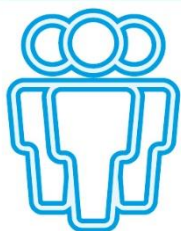
In this latest research, Professor Mandar Jog, in London, Ontario in Canada, led a small scale pilot study in five people with Parkinson's. The trial involved surgically implanting a device that could electrically stimulate the lower spinal cord over a 1–4 month period.

The effects of this stimulation were assessed 6 months after the surgery – after the therapy had been stopped. Positive results were seen in the measures used to assess walking ability. The therapy was also seen to significantly reduce the average number of freezing episodes throughout the study.

The team are now taking their work forward [to a larger clinical trial](#), assessing spinal cord stimulation in 25 people with Parkinson's. The results of this larger study are expected in 2020.

Dr Beckie Port, Research Communications Manager at Parkinson's UK, said: "The results seen in this small-scale pilot study are very promising and the therapy certainly warrants further investigation.

"Should future studies show the same level of promise, it has the potential to dramatically improve quality of life, giving people with Parkinson's the freedom to enjoy everyday activities like going for a walk."



TAKE PART

For people who wish to participate in studies, please visit our [Take Part Hub](https://www.parkinsons.org.uk/research/take-part-research), a post code searchable database of studies actively recruiting participants. The Hub is updated weekly with new studies, so please do check it regularly: <https://www.parkinsons.org.uk/research/take-part-research>

And for those people not online, you can call our free, confidential Helpline on **0808 800 0303** and our trained Advisors will be able to discuss what you are interested in and put you through to the Research team to find studies for you.

UP-Study: Assessing the Safety and Tolerability of Ursodeoxycholic Acid (UDCA) – London and Sheffield

The aim of the research is to see if Ursodeoxycholic Acid (UDCA) may potentially slow or reduce the progression of the condition for people with early stage Parkinson's.

The researchers are looking for 30 people diagnosed with Parkinson's within the last 3 years aged between 18-75 years and who experience tremor and rigidity. You must not have taken UDCA before.

There are opportunities to take part in both London and Sheffield.

For more information:

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Thank you for supporting research!

Best Wishes,

Liz Nash, Research Support Network Manager

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