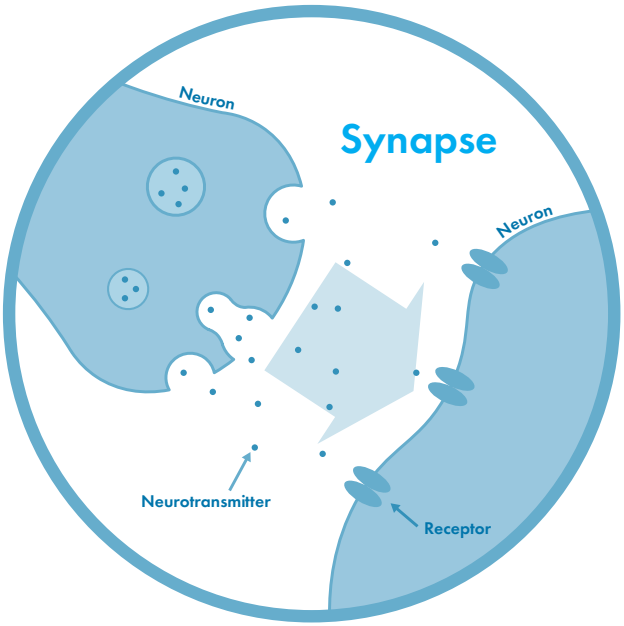
Deep Brain Stimulation (DBS) for Parkinson's: The next steps

Zoom Webinar: 24 September at 5:00 pm BST

What is DBS?

Deep brain stimulation (DBS) is a surgical treatment for Parkinson's that involves implanting electrodes in the brain. These electrodes then produce electrical impulses that stimulate brain activity, which can help relieve Parkinson's motor symptoms such as tremor, stiffness, and slowness of movement. These electrodes are connected to and controlled by a device called a pulse generator (a device similar to a pacemaker), which is implanted in the chest or abdomen.



How does DBS work?

Parkinson's is caused by the loss of dopamine-producing neurons in a part of the brain associated with movement. Dopamine is a type of signalling molecule called a **neurotransmitter**; neurons use neurotransmitters to communicate with one another.

To send neurotransmitters from one neuron to the next, there must be an electrical event; this is referred to as an **action potential**. Once the action potential reaches a certain threshold, the neuron fires, releasing neurotransmitters into the gap between neurons called a **synapse**. Receptors on the next neuron then take in these molecules, changing activity there.

The loss of dopamine neurons disrupts neurons' ability to communicate with one another, leading to abnormal patterns of electrical activity along those pathways. DBS helps regulate electrical activity in the brain, allowing these pathways to function more normally.

What will this webinar discuss?

The focus of this webinar will be on two emerging concepts related to DBS. Firstly, is the question of whether DBS is disease-modifying. When we say **disease-modifying**, we are referring to treatments that target the underlying biology driving Parkinson's to slow, stop, or reverse progression. DBS, as we understand it today, does not meet this definition since it can only help relieve symptoms. There is growing evidence to suggest, however, that DBS may have a greater effect.

The second is a recent advancement in the technology itself. Currently, DBS provides constant stimulation when turned on. Our brains do not constantly need stimulation, however, especially during periods of low activity. A new form of DBS called **adaptive DBS** may offer a more personalised approach. Adaptive DBS responds to changes in brain activity, meaning it adapts levels of stimulation in real time.

Interested in learning more?

Two of our panelists, Dr Alfonso Fasano and Benjamin Stecher, have co-written a book on their experience with adaptive DBS from the perspective of the doctor and patient. Learn more about this by scanning the QR code or clicking here.