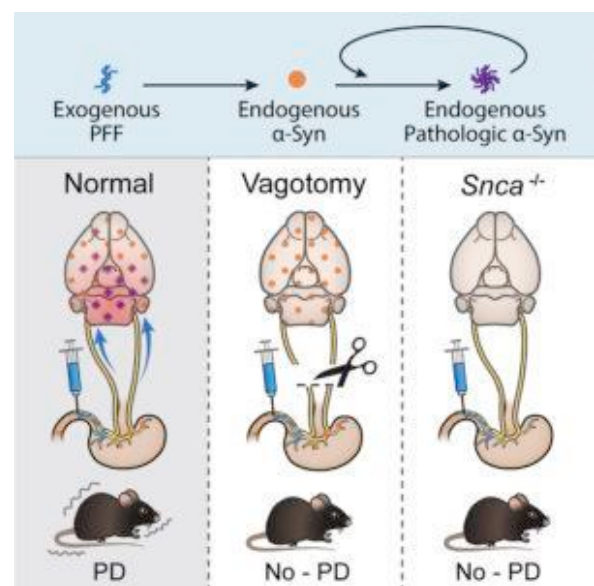
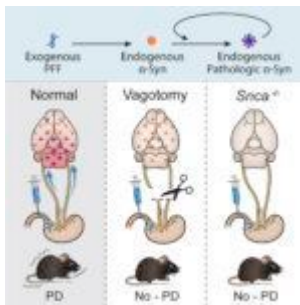


# Propagation of $\alpha$ -synuclein from the gut to brain – new causation for Parkinson's disease?



Kim et al., 2019. Graphical Abstract.

Parkinson's Disease is a chronic disorder of the midbrain which results from damage to nerve cells that produce dopamine, a neurotransmitter crucial for controlling smooth muscle movements. Without sufficient dopamine, patients will display symptoms including tremors, shaking, muscle rigidity and slowed movements which have a significant impact on daily functioning. To date, there is no cure for the condition and

treatment consists of drugs designed to mimic dopamine, surgery and lifestyle modifications. The cause of Parkinson's Disease is unknown, with research pointing towards a complex interplay of genetic and environmental factors. New research by Kim et al. however has shown a novel mechanism of causation in a mouse model.

Neuronal damage in Parkinson's Disease results from the build-up of misfolded fibres of  $\alpha$ -synuclein, a protein normally found at the tips of pre-synaptic terminals. For the first time, this research group have shown that injections of the misfolded protein into the gut of mice resulted in the translocation of these pathological proteins along the length of the vagus nerve, eventually ending up in the brain and correlating with Parkinson's-like pathology and symptomology. To further prove this link, these researchers then showed that severing the vagus nerve stopped the spread of these pathological proteins from the gut to brain.

This research has further highlighted the importance of the gut-brain connection in both health and disease and could significantly change the way that neurodegenerative conditions are treated.

Kim et al., 2019. [Transneuronal Propagation of Pathologic  \$\alpha\$ -Synuclein from the Gut to the Brain Models Parkinson's Disease](#). Neuron

*Article by Richard Charlesworth*