Parkinson's disease research matters because:

It is the **second most common** neurological disease in Australia *(after dementia)*

The disease affects **10 million** including **70,000 Australians** worldwide

32 Aussies are diagnosed with the disease **each day**

(that's more than one person per hour)

30% of sufferers are diagnosed **before their 50th birthday**

Up to **80%** **of sufferers** eventually experience dementia as the disease progresses

Men are **1.5 times** more likely to have Parkinson's disease

Treatment costs to the Australian economy increased by approximately **65%** **in the decade to 2016**

NeuRA

Discover. Conquer. Cure.

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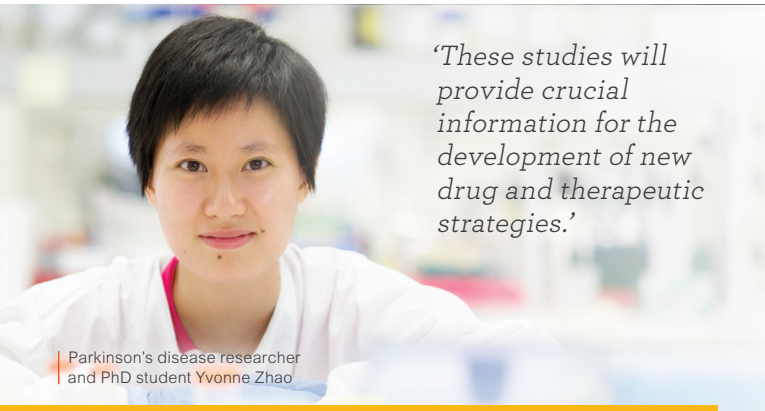
PARKINSON'S DISEASE RESEARCH



'These studies will provide crucial information for the development of new drug and therapeutic strategies.'

Parkinson's disease researcher and PhD student Yvonne Zhao

Parkinson's disease research at NeuRA

Background

α-synuclein is an abundantly expressed neuronal protein that abnormally aggregates inside brain cells of different types in patients with Parkinson's disease (PD) and Multiple system atrophy (MSA).

LRRK2 function in PD

We recently discovered that brain tissue from people with PD also had specific changes in the leucine-rich repeat kinase 2 (LRRK2) protein, that were not found in brain tissue from healthy subjects. This study uses molecular and genetic approaches to model these changes and determine the extent to which they contribute to the α-synuclein PD pathology. This knowledge could help with the design of clinical trials for new LRRK2 blocking drugs.

The role of lipids in PD and MSA

We recently discovered that the amount and type of lipids (commonly known as fats) in the brain are also significantly altered in people with PD and MSA. The human brain is extremely rich in lipids, such as cholesterol and triglyceride, where they are important for normal cellular structure and function and are well-known to be altered in Alzheimer's disease. Our current studies aim to understand the impact of lipid changes on α-synuclein aggregation, and how a number of newly identified genes are involved. This will provide crucial information for the development of new therapeutic strategies.