Selective vulnerability to Alzheimer’s disease – understanding changes in white matter connectivity of the visual system in Posterior Cortical Atrophy

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Selective vulnerability to Alzheimer’s disease – understanding changes in white matter connectivity of the visual system in Posterior Cortical Atrophy

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Research Abstract
This project will investigate changes in white matter structure in Posterior Cortical Atrophy (PCA), an atypical form of Alzheimer's Disease (AD) where the back of the brain and individuals' visual processing are affected first. The brain works through networks of grey-matter (brain cells) connected by white-matter (cabling between cells). Recent evidence suggests that AD might target and spread through the brain via these networks. Whilst many studies have investigated grey matter loss in AD, far fewer have investigated changes in the organisation of white matter, and specific structural brain networks.

Investigating PCA provides a unique opportunity to study AD where the network affected is the visual system, due to a different pattern of sensitive and resistant neuronal populations compared with typical AD. This has advantages because it is a very well-understood system in healthy people, and one can investigate structures that are connected to the brain but are known not to be the primary site of onset for AD (optic tract and eye). This can help reveal whether the disease progresses along white matter tracts, and will improve our characterisation and understanding of why people with this unusual form of AD show such different patterns of vulnerability to the disease.

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