204 | **RESTING STATE FMRI DISCERNS EARLY PARKINSON'S FROM CONTROLS**

Michal Rolinski,[1,2] Konrad Szewczyk-Krolikowski,[1,2] Ricarda AL Menke,[1,3,5] Nicola Filippini,[3,5] Verena Heise,[3,5] Giovanna Zamboni,[2,3,4] Gordon Wilcock,[4] Kevin Talbot,[1,2] Michele Hu,[1,2] Clare Mackay[1,3,5]. [1]Oxford Parkinson's Disease Centre; [2]Nuffield Department of Clinical Neurosciences; [3]Centre for Functional Resonance Imaging of the Brain; [4]Oxford Project to Investigate Memory and Ageing; [5]Department of Psychiatry, University of Oxford

Background Resting state functional MRI (RS-fMRI) has been shown by our group to be a promising tool in investigation early PD. In this study, we aimed to investigate the use of a RS-fMRI in differentiating participants with an alpha-synucleinopathy from healthy controls and patients with Alzheimer's disease (AD).

Methods RS-fMRI data were collected from thirty-two patents with early PD, eight patients with dementia with Lewy bodies (DLB), nineteen healthy controls and thirty-one patients with AD. Data-driven independent component analysis was used to derive the basal ganglia network, and connectivity values were extracted bilaterally from the caudate, putamen and pallidum.

Results Connectivity values within the three regions of interest were significantly lower in patients with PD relative to those with AD and healthy controls. When combined into a single connectivity score, these values successfully differentiated PD from controls (area under the curve (AUC)=0.83, $p<0.001$), PD from AD (AUC=0.77, $p<0.001$), and PD and DLB from AD and healthy controls (AUC=0.78, $p<0.0001$).

Conclusions We have demonstrated that RS-fMRI may be used to differentiate patients with early PD from healthy and disease controls. Our results hold promise for the use for the use of RS-fMRI as a biomarker in prodromal PD.