



# Unravel the complexity and heterogeneity of neurodegenerative disorders with the help of MRI

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## ABSTRACT

The complexity and heterogeneity within Alzheimer's disease and other neurodegenerative disorders and the substantial overlap between them are poorly understood. Currently, there are no disease modifying treatments (curable treatments) for AD and many clinical trials have failed (over 170 AD trials to date). More homogeneous populations need to be recruited with the same underlying etiology of the disease so future trials will have a chance of success. By using advanced imaging techniques such as magnetic resonance imaging (MRI) and positron emission tomography (PET) we try to understand the underlying mechanisms and the heterogeneity of AD and other disorders. Neuroimaging data is analyzed with novel methods for modeling brain networks using the concepts of graph theory as well as advanced multivariate data analysis techniques to combine information from different image modalities and other biomarkers. This is of particular importance with emerging disease-modifying therapies, so we can target the right populations, monitor disease progression and have a good outcome measure for clinical trials.