**PROJECT RESUME**

**TITLE**: Investigating the link between cortical network hyperexcitability and neuroinflammation in a mouse model of dementia with Lewy bodies (DLB)

DLB patients suffer from hallucinations and myoclonus linked to cortical hyperexcitability. We have shown that in a transgenic mouse model over-expressing human mutant alpha-synuclein in neurons to model DLB (A30P) there is prodromal hippocampal network hyperexcitability accompanied by increases in reactive astrocytes and microglia. Here, we aim to demonstrate these changes in A30P mice in another cortical region important to memory formation (anterior cingulate cortex). Frontal cortex slices from young mice will be maintained *in vitro* and pharmacological agents added to induce an acute cellular stress response by evoking abnormal network activity. Neurophysiological measurements will be made of the magnitude of, and susceptibility to, abnormal activity. Then the slices will be fixed for re-sectioning and immunofluorescent staining to assess the extent of astrocytic and microglial activation and neuroinflammatory marker expression using confocal microscopy and quantitative image analysis. Both stressed and untreated A30P and wt slices will be compared.

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