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INVESTIGATING PARKINSON'S DISEASE MECHANISMS IN CAENORHABDITIS ELEGANS

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Investigating Parkinson's Disease Mechanisms in *Caenorhabditis Elegans*

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ABSTRACT

Parkinson's Disease is an adult-onset neurodegenerative disorder that affects motor function, balance, and coordination. Though it is known that Parkinson's patients have a loss of dopaminergic neuronal cells and an abnormal aggregation of the protein alpha-synuclein, the underlying mechanisms are still unclear. The roundworm, *Caenorhabditis elegans*, can be used to model Parkinson's Disease and investigate causative mechanisms. Due to their small size, short lifespan, low maintenance expense, and ability to reduce gene activity through feeding RNAi, they act as an advantageous model for both genetic and eukaryotic biology. In this lab/study, we are characterizing transgenic *C. elegans* strains expressing wild-type and A53T mutant alpha-synuclein to be able to use these models to investigate Parkinson's Disease mechanisms. To test general motor function, crawling and swimming assays are being performed. Dopamine neuron functions are also being tested through performing basal slowing assays. Imaging fluorescently-labeled neurons will measure neurodegeneration. Additionally, alpha-synuclein aggregation will be measured by imaging with dyes that bind to aggregates. Overall, these experiments' results will provide insight into the phenotypes of Parkinson's Disease progression and allow us to lay the foundation for mechanistic studies in the future.

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