

## Cellular Model of Parkinson's Disease

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**Categories:**

- Chemistry and Chemical Analysis
- Pharmaceuticals

**Keywords:**

- Assays
- Chemistry and Chemical Analysis
- Medical/Health
- Neurodegenerative Disease
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- Pharmaceuticals

Alpha-synuclein (aSyn) is central in Parkinson's disease pathogenesis. Converging evidence suggests that the level of aSyn expression plays a critical role in both familial and sporadic Parkinson's disease. The study of aSyn toxicity remains critical because the manner in which aberrant aSyn leads to neuronal degeneration is not yet understood. Current methods of monitoring aSyn toxicity levels in cell culture require inducing cellular differentiation, a process that is time-consuming, costly, and highly susceptible to variations in experimental conditions from one lab to another. Additionally, the current cellular model is insensitive to the toxic effects of aSyn, making it very difficult to monitor the effect of treatment on aSyn toxicity.

Purdue University researchers have developed an assay to address these challenges that uses an undifferentiated immortalized cell line that expresses aSyn at high levels. Importantly, aSyn is thought to carry out its neurotoxic effect in part by disrupting mitochondrial function; the new assay takes advantage of cell culture conditions to ensure that cells retain functional mitochondria. As a result, this assay displays pronounced aSyn toxicity enabling more robust measurement of a treatment's effect on toxicity. Because this assay does not require differentiation of the cell line, it is also more reproducible and less time-consuming.

**Advantages:**

- Less costly
- Faster
- Less susceptible to variation

**Potential Applications:**

- Screening assay for Parkinson's disease drug discovery
- Interrogation of Parkinson's disease biology

**People:**

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**Intellectual Property:**

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