Enzyme Linked to Increased Parkinson's Damage Found

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A fat-producing enzyme in brain cells may play a key role in driving damage in Parkinson's disease and could offer a new target for treatment, scientists at NTU Singapore have found.

Scientists from NTU's Lee Kong Chian School of Medicine found that this enzyme, called glycerol-3-phosphate acyltransferase (GPAT), can amplify the harmful effects of α-synuclein - a protein that accumulates in the brains of people with Parkinson's disease - by altering how brain cells process fats.

Through laboratory experiments, the scientists reduced the activity of GPAT and observed less brain cell damage in fruit flies and mouse brain cells grown in the lab.

Inside brain cells, structures called mitochondria act as "power stations" that keep cells running. The study found that GPAT contributes to cellular damage that can impair these power stations, reducing the cells' ability to generate energy. At the same time, it increases the toxicity of α-synuclein. Together, these effects deliver a "double hit" to brain cells.

The findings reveal how fat metabolism in brain cells influences α-synuclein toxicity and point to new possibilities for treating Parkinson's disease, which currently has no cure, said the scientists.