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LEGEND - LysolP based-lysosomal signatures in Parkinson's Disease

Parkinson's disease (PD) is a progressive neurodegenerative disorder affecting 10 million people worldwide. No curative treatments are currently available, but only symptomatic ones. Emerging evidence highlights lysosomal dysfunction as a key mechanism in PD pathogenesis, with associated mutations in the LRRK2 and SNCA genes, both linked to lysosomal pathways.

This proposal aims to identify common lysosomal biomarkers associated with PD progression. By employing the innovative LysolP method, which enables precise lysosome isolation, we will analyse lysosomal profiles in two PD mouse models of LRRK2 and alphasynuclein across different ages. Our objectives include (1) setting up and validating the LysolP method in wild-type mice, (2) identifying potential lysobiomarkers in PD mouse models, and (3) validating these biomarkers in cellular models of PD.

This project directly aligns with the EU Work Programme under Horizon Europe, which focuses on advancing our understanding of neurodegenerative diseases and accelerating the discovery of disease-modifying therapies. Identifying lysosomal biomarkers will not only improve our understanding of PD mechanisms but also support the development of novel therapeutic approaches targeting lysosomal dysfunction.

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