

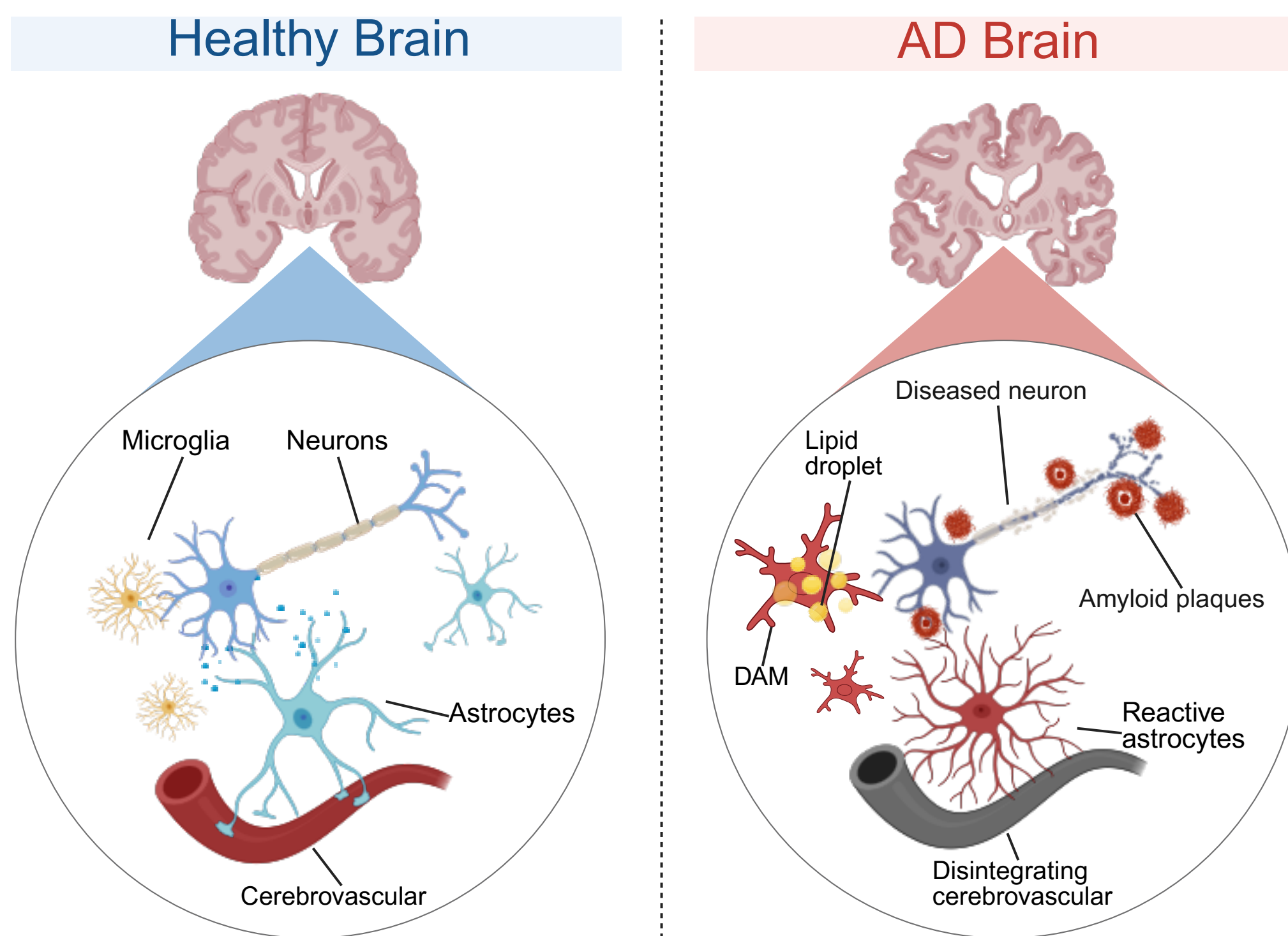
BrainMultiCell-GEM: Mapping Cell-type-specific Metabolic Crosstalk Associated With Lipid Droplets In Alzheimer's Disease

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INTRODUCTION

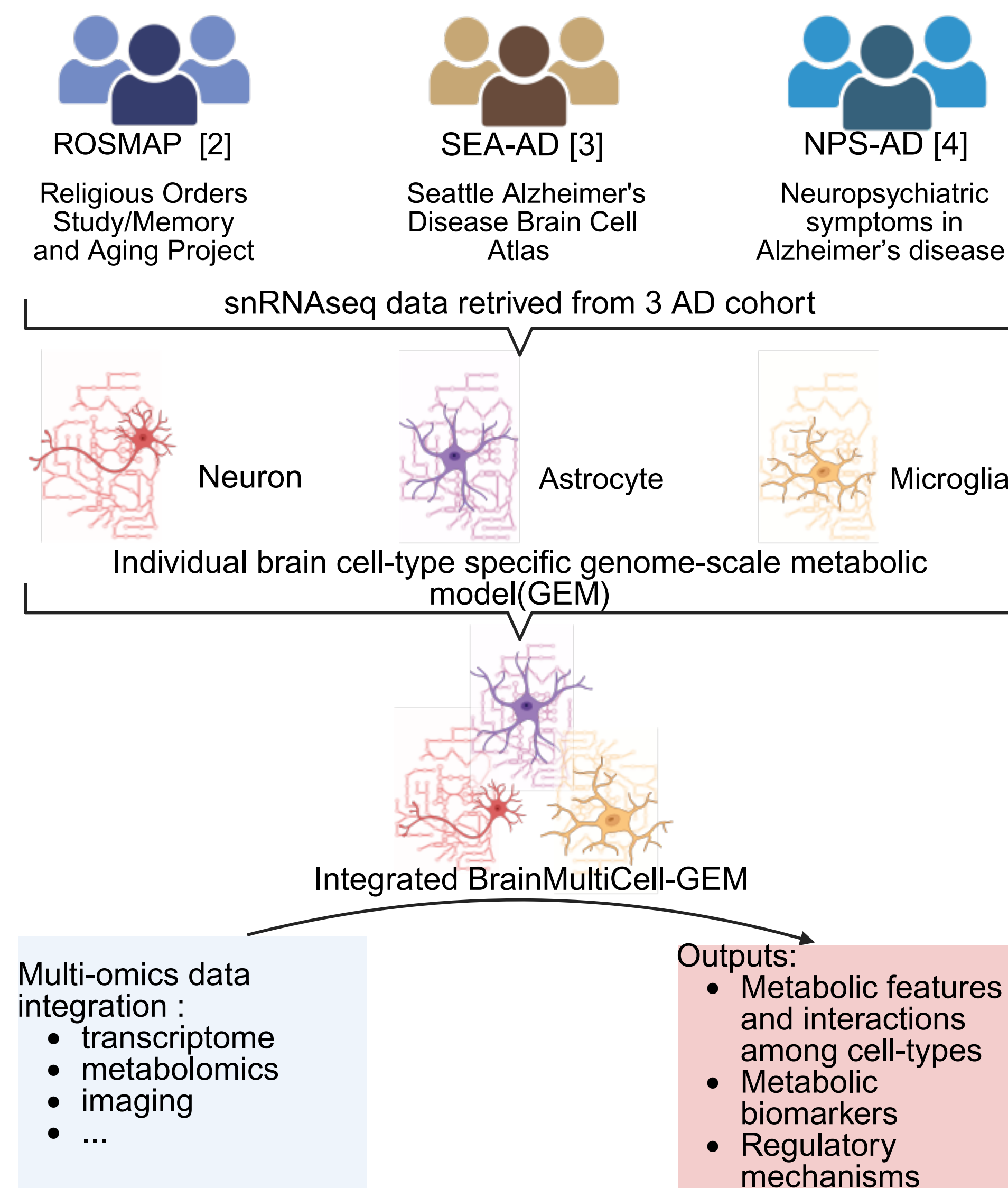
- Lipid droplet accumulation has been reported as a key feature for Alzheimer's Disease (AD) pathology [1].
- In AD, the brain cell types show differential regulation and metabolic interactions collectively driving the pathology.



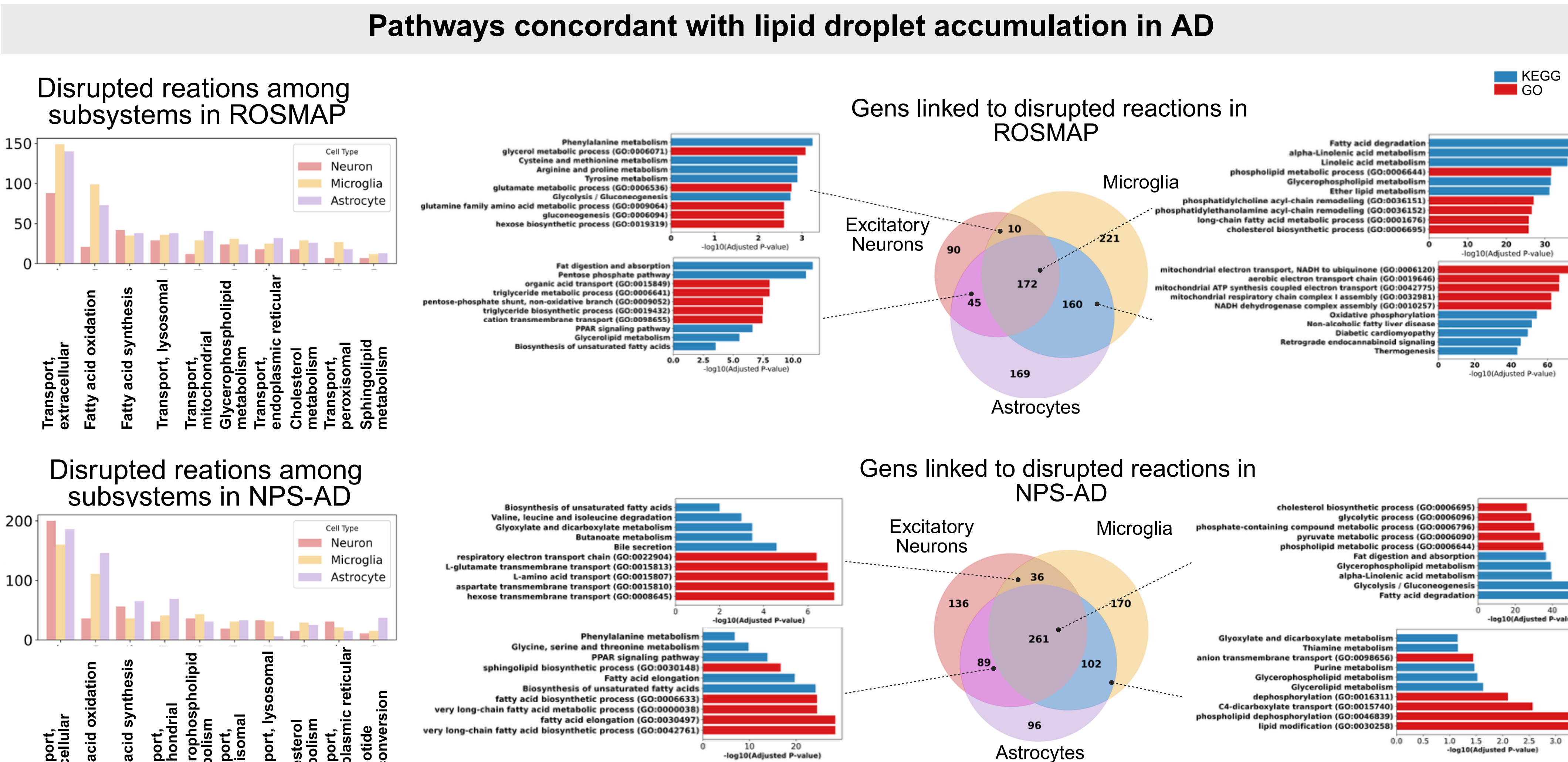
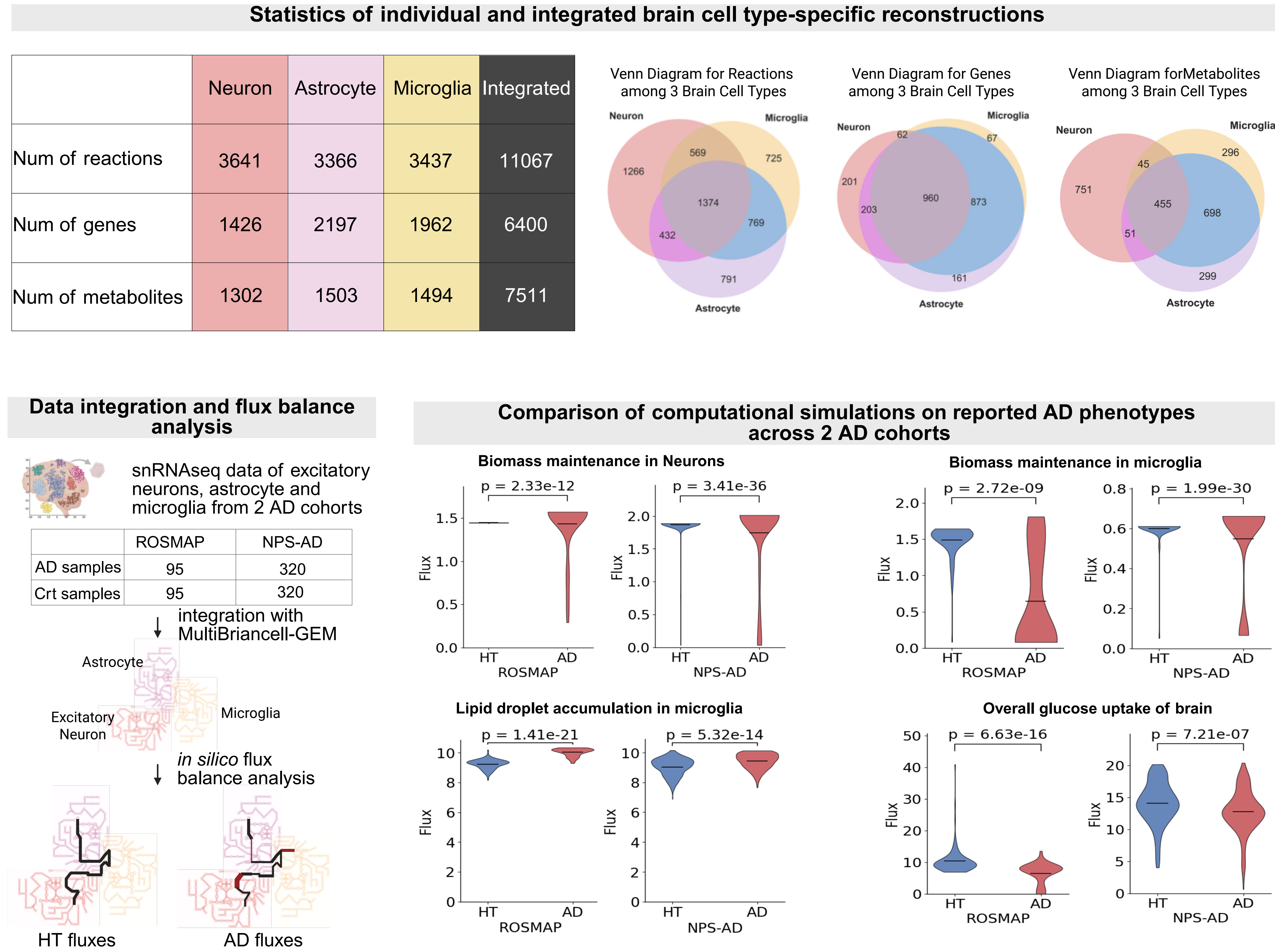
HYPOTHESIS

Metabolic stress in brain cell types, specifically neurons, astrocytes and microglia, drives lipid droplet accumulation in AD

METHODS



RESULTS

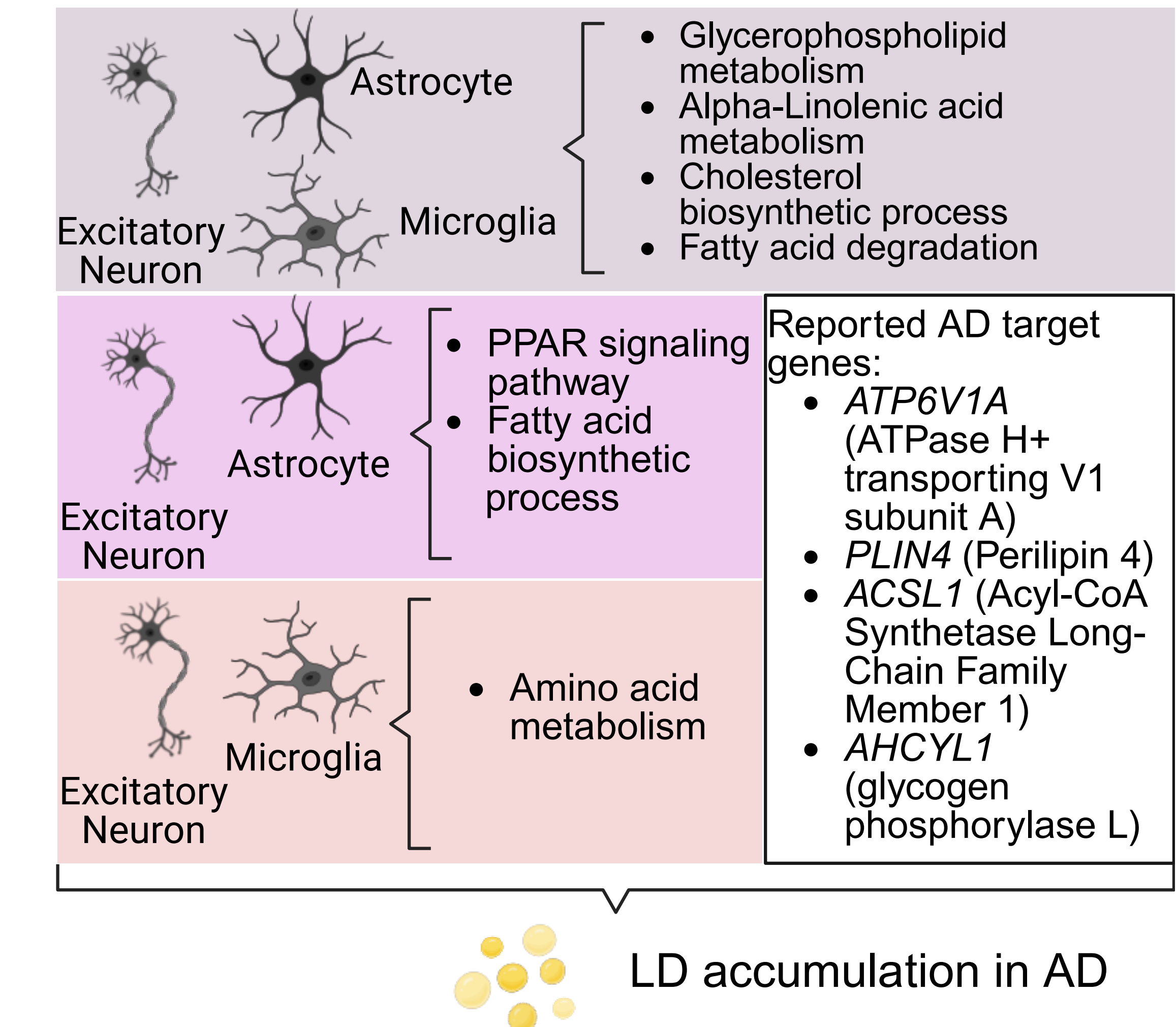


CONCLUSION

BrainMultiCell-GEM provides a novel and efficient framework to infer altered cell type-specific metabolic activities and interactions in the brain of AD. It can simulate some reported phenotypes in A, including

- LD accumulation,
- energy metabolism and
- brain atrophy

We can identify some pathways among different cell types across two AD cohorts studies which are likely associated with lipid droplet accumulation in AD, which is below:



Future work:

- Develop AI-based agents to integrate multi-omics data with *BrainMultiCell-GEM*;
- Explore more detailed regulatory mechanisms underlying LD accumulation in AD.

REFERENCE

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