Novel 3D in vitro models of Alzheimer’s patients microglia
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Background
- Alzheimer's disease is a complex disease with high clinical heterogeneity.
- Microglia, the brain resident immune cells, are key contributors to Alzheimer’s disease pathology.

Aim and significance
- To generate Alzheimer’s patient-specific blood-derived microglia models in 3D.
- 3D Alzheimer’s microglia could be used as drug testing platforms.

Establishment of 3D models

Current preclinical models fail to recapitulate Alzheimer’s disease mechanisms, which hampers translatability of clinical outcomes.

3D microglia show enhanced expression of microglia-enriched genes compared to 2D microglia.

3D co-culture of microglia with neuronal cells is a more superior model than 3D microglia mono-cultures.

Results

3D Alzheimer’s microglia show disease-specific traits

- Reduced interaction with neuronal cells
- Altered growth factor secretion

Conclusions and Future directions

- 3D models of microglia are more biologically relevant than 2D models.
- 3D co-culture with neuronal cells provides a brain-like environment for in vitro culture of microglia.
- 3D co-cultures of Alzheimer’s microglia are patient-specific and recapitulate disease phenotypes amenable for therapeutic intervention.
- Assess how drug responses in the 3D co-culture microglia model compare to already established models used for preclinical drug testing.