3D in vitro platforms of Alzheimer’s microglia to improve clinical translation

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**Background and significance**

- Alzheimer’s disease is a multifactorial disease with high clinical heterogeneity.
- No disease-modifying treatments currently exist.

**Microglia**, the brain immune cells, are a promising **drug target**.

2D in vitro platforms of microglia used for preclinical drug testing poorly reflect drug responses in patients.

3D blood-derived patient microglia models are personalised, easy to generate and provide a more physiologically relevant platform for better prediction of drug efficacy.

**Results**

Generation and characterisation of blood-derived microglia in 2D and 3D

- 3D microglia behave similarly as microglia in an Alzheimer’s brain

Differential cytokine responses of Alzheimer’s microglia in 2D and 3D

- Drug responses of microglia in 2D and 3D are different, which warrants further investigation of the 3D microglia model as a platform for personalised drug testing in Alzheimer’s disease.

**Conclusions**

- 3D culture conditions are more physiologically relevant and enhance microglia survival and ramified morphology compared to 2D.
- Drug responses of microglia in 2D and 3D are different, which warrants further investigation of the 3D microglia model as a platform for personalised drug testing in Alzheimer’s disease.