Investigating the role of the microglial receptor TREM2 in Alzheimer’s disease

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Alzheimer's Research UK

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United Kingdom

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Investigating the role of the microglial receptor TREM2 in Alzheimer's disease

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Alzheimer's Research UK

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€ 223,783

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The project/programme is most relevant to:

Alzheimer's disease & other dementias

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Immunity and Inflammation | Microglia

Research Abstract
Recent genetic studies point to a prominent role of the immune system in Alzheimer’s disease

(AD). Variations in the immune receptor gene TREM2 (triggering receptor expressed on myeloid cells 2), which in the nervous system is active in microglia, the resident brain immune cells, were recently identified as a risk factor for developing AD.

We plan to study the function of TREM2 in microglia and in particular, whether microglia with faulty TREM2 respond abnormally to amyloid ?, the sticky protein that accumulates widely in AD brains and is thought to have a major role in the disease process. We plan to identify the functional changes in microglia with TREM2 defects and compare them with unaffected microglia.

As a model we will use human stem cell-derived microglia, by reprogramming skin cell derived induced pluripotent stem cells (iPSCs) of patients with Nasu-Hakola disease, an inherited early-onset dementia caused by two faulty copies of the TREM2 gene, as well as unaffected relatives who carry one copy of the faulty TREM2 gene.

The ultimate aim of this research is to gain insight into the role of TREM2 and microglia in the development of AD in order to identify new therapeutic targets.

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