Docket #: S21-153

Oligodendrocyte rejuvenation in the aging brain by Fgf17

Stanford scientists pioneer the use of Fibroblast growth factor 17 (Fgf17) to restore memory and treat associated age-related diseases and conditions by rejuvenating oligodendrocytes which are crucial for myelin repair in aging and other neurodegenerative diseases.

Aging, neurodegenerative, and demyelinating diseases have one thing in common: myelin degeneration. Our ability to form new oligodendrocytes, the cells responsible for myelin formation, declines as we age, limiting the capacity to replace myelin loss. Therefore, oligodendrocyte rejuvenation in the elderly is a promising strategy for disease treatment.

Oligodendrocyte progenitor cells (OPCs) from which oligodendrocytes arise rely on growth factors supplied by cerebrospinal fluid (CSF) for their function. Age-related changes in the brain result in lower OPC support, resulting in inefficient myelin turnover and axonal damage. However, re-exposure of aged brains to young CSF induces OPC proliferation and maturation to oligodendrocytes in the hippocampus. Young CSF achieves this by inducing Serum Response Factor (SRF) signaling via the Fgf8 sub-family of Fibroblast growth factors (Fgfs), which consists of Fgf8/17/18. Among these, only Fgf17 has similar effects on progenitor proliferation, maturation, and long-term memory as young CSF. Iram and colleagues, therefore, propose its use to restore OPC function in the aged and diseased brain.

Stage of development
Research – in vivo

Applications

- Treatment of neurodegenerative diseases like Alzheimer's disease and other age-related diseases

- Treatment of demyelinating diseases like Multiple Sclerosis.

Advantages

- Novel therapeutic approach for age-related diseases
- Novel therapeutic approach for demyelinating diseases

Publications

- Iram, T., Kern, F., et al. (2022). Young CSF restores oligodendrogenesis and memory in aged mice via Fgf17. Nature, 605, 509-515.

Patents

- Published Application: WO2023220639

Innovators

- Tal Iram
- Anton Wyss-Coray

Licensing Contact

Chu Chang

Licensing Manager, Life Sciences

Email