Docket #: S15-403

Therapeutic target for treating age-related neurodegenerative diseases

Researchers in Dr. Anton Wyss-Coray's lab have identified a new therapeutic avenue for treatment of age-related neurodegenerative diseases. Cerebrovascular changes and inflammation are key features of brain aging and neurodegeneration. Modulation of neuroinflammation is thought to be an attractive therapeutic target for Alzheimer's disease and related neurodegenerative diseases, but no effective treatments exist. The researchers found that blocking vascular cell adhesion protein 1 (VCAM1), which plays a significant role in aging of the central nervous system, may prevent the effects of aging. They have shown that blocking of VCAM-1 via a neutralizing monoclonal antibody reduces neuroinflammation and increases neurogenesis. As such, neutralizing VCAM-1 or increasing VCAM1 shedding into the blood can prevent age-associated brain inflammation, neurodegeneration and cognitive decline.

Stage of research
Additional characterization and validation studies are ongoing.

Applications

- Therapeutic development for:
    - Age-related cognitive decline
    - Neurodegenerative diseases such as:
        - Alzheimer's
        - Parkinson's
        - Frontotemporal dementia
        - Multiple sclerosis

Advantages

- Unmet medical need- no effective treatments for brain aging, neuroinflammation and neurodegeneration exist
- New therapeutic avenue for treating neuroinflammation and cognitive decline

Publications

- Aged blood inhibits hippocampal neurogenesis and activates microglia through VCAM1 at the blood-brain barrier. Hanadie Yousef, Cathrin J Czupalla, Davis Lee, Ashley Burke, Michelle Chen, Judith Zandstra, Elisabeth Berber, Benoit Lehallier, Vidhu Mathur, Ramesh V Nair, Liana Bonanno, Taylor Merkel, Markus Schwaninger, Stephen Quake, Eugene C Butcher, Tony Wyss-Coray. bioRxiv 242198.

Patents

- Published Application: 20170145105
- Issued: 10,947,311 (USA)

Innovators

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