2020 IMPACT CIRCLE

Targeting non-neuronal tissues to slow or halt the progression of Alzheimer's disease

Investigators: Suzanne Angeli, Julie Andersen, Gordon Lithgow

Unmet Need: Effective and novel therapeutics that slow or halt the progression of Alzheimer's disease

Background: With a 99.6 failure rate in Alzheimer's disease clinical trials, we need new and creative solutions to treat this disease. Circulating factors in the body, such as pro-inflammatory factors, eventually cross and enter the brain via the blood brain barrier (BBB) and can exacerbate Alzheimer's disease pathology. Previous studies have shown that patients on FDA-approved immunosuppressive drugs a have staggeringly low incidence of Alzheimer's disease compared to the general population (Taglialatela et al., 2015), despite these drugs not crossing the BBB. Thus, targeting peripheral (non-neuronal) tissues may be effective in ameliorating the brain symptoms of Alzheimer's disease. However, no studies have directly addressed this.

Novel Hypothesis: We hypothesize that drugs that target non-neuronal tissues are an untapped resource that could slow and even halt the progression of Alzheimer's disease pathology.

Proposal: Test if the FDA-approved immunosuppressants, FK506 and cyclosporin A, improve symptoms in a mouse model of Alzheimer's disease and in AD-patient-derived iPS cells.

Impact: While it may take 10 – 20 years to have new drugs approved by the FDA, repurposing FDA-approved drugs for Alzheimer's would shorten the time it takes for a drug to reach market, making these immunosuppressive drugs an attractive therapeutic target to test. If successful, we will have identified FDA-approved drugs to target Alzheimer's disease, which can serve as preclinical data needed to further help patients. Furthermore, we will have identified that targeting tissues outside of the brain can help with the disease, which would revolutionize how researchers study the disease.

Specialized Equipment Needs: $20K Mouse and iPSC equipment

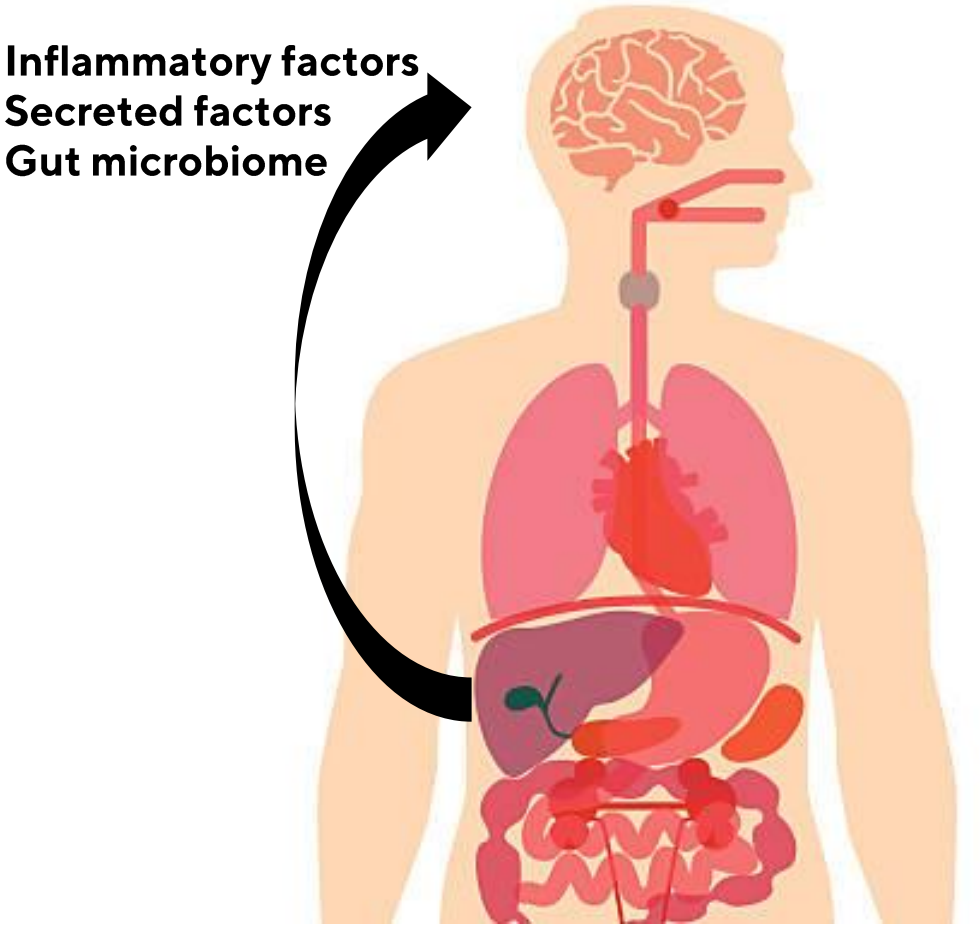

Figure 1: Factors from peripheral tissues and blood can impact brain health and exacerbate Alzheimer's disease. We propose to test if FDA-approved drugs that target peripheral tissues can slow or halt the progression of Alzheimer's disease.