Project Title: Salivary cytokines as indicators of early cognitive decline
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Alzheimer's disease causes significant morbidity and mortality in aging populations. Despite decades of research, there are still no effective treatments to prevent or delay progression of this devastating disease. Because the neurodegenerative process in Alzheimer's disease develop over a prolonged period that can span decades, there is a need to identify individuals during this preclinical period when potential interventions might be more effective. Current diagnostic tools, such as imaging, cerebrospinal fluid sampling and even blood draws, are expensive and/or invasive, limiting their utility. As an alternative to blood, we have been developing salivary biomarkers for neurodegenerative diseases. Our previous studies on Huntington's disease patients have demonstrated that levels of inflammatory mediators, such as Interleukin-6 (IL-6) in saliva, but not plasma, were significantly correlated with several cognitive measures, suggesting its benefit as a non-invasive biomarker. In current pilot studies on cognitively normal aged individuals, we have found that salivary IL-6 levels are significantly correlated with white matter imaging data detected in vivo with magnetic resonance imaging. Studies across the literature have suggested that white matter pathology may predict Alzheimer's disease at least a decade before the clinical stage of the disease. Our overall hypothesis is that alterations in IL-6 and/or additional salivary cytokines are early events in the development of Alzheimer's disease and might represent biomarkers to detect patients at risk of developing Alzheimer's disease during the preclinical phase. In this proposal we will measure a panel of salivary cytokines from n=100 cognitively intact, older adults aged 60-85 years, and determine associations between these analytes and cognitive/neuropsychological measures and neuroimaging data. The results from these studies could allow the identification of salivary biomarkers that might be used as a simple, non-invasive screening mechanism for detection of cognitive decline during the preclinical phase when treatments may be more effective.