Detection of Analytes in Saliva: Correlates with Human Disease

PI: Craig Miller, D.M.D., M.S.

The broad objectives of this proposal are to determine if saliva contains biomarkers of human disease. Saliva is an easily obtained oral fluid that contains many diverse molecules. We were the first to detect a key inflammatory biomolecule, C-reactive protein, in the saliva and show that levels of CRP were elevated in patients who had periodontal disease compared with healthy controls. In as much as serum inflammatory biomarkers are indicators of cardiovascular disease, we are interested in determining if salivary inflammatory biomarkers are associated with heart attack. The objective of this research is to identify the salivary biomarker "fingerprint" patterns of coronary artery disease and determine if levels of specific salivary biomarkers of coronary artery disease predict risk of heart attack and/or the presence of an acute myocardial infarction. Specifically, serum and oral fluid samples analyzed in this study will allow us to answer if salivary biomarkers have diagnostic utility in the assessment of coronary artery disease. The specific aims of this research are to: 1) test the hypothesis that specific biomarkers exist in oral fluids that correlate acute myocardial infarction; 2) determine if specific cardiovascular biomarkers in oral fluid can predict risk of a subsequent myocardial infarction; 3) validate the functionality of a portable diagnostic lab-on-a-chip (LOC) instrument with testing of clinical samples in the context of Aims 1 and 2. These studies could allow for earlier detection of common human diseases such as "heart attack" in out-patient settings.