Pilot Project Lays Groundwork for Establishing a UW Environmental Health Center

**Description:** The goal of this project was to lay the groundwork for an environmental health center at the UW School of Medicine and Public Health. The center would use molecular and epidemiological strategies to better understand how chemical exposure affects people. This pilot project tested whether it was possible to differentiate active smokers from former or non-smokers by testing for specific biomarkers in saliva and blood samples.

**Relevance:** Understanding how chemicals affect human physiology is a complex process. Because individual reactions are influenced by several factors (including genetics, personal decisions and lifestyle choices), discovering how chemical exposure may drive physiological reactions or disease progression is of paramount importance.

**Results:** This pilot project sought to determine whether biomarkers in saliva and blood could be used to identify individuals who had been exposed to cigarette smoke. Smoking was selected for the initial study because smokers represent a high-risk population and molecular tests can be used to verify self-reported smoking status. Cigarette smoke contains compounds known as polycyclic aromatic hydrocarbons. These compounds can bind to a molecule or receptor in the surface of cells and elicit known cellular responses by turning different genes on or off to a various extent. Researchers collected blood from current and former or non-smokers and surveyed which genes were turned on or off, and to what extent, in their blood cells. They identified three such genes as biomarkers that were present at significantly different levels in the cells of smokers compared to those of former or non-smokers.

The success of the pilot project makes it likely that biomarkers for exposures to other environmental chemicals can be efficiently detected and provides impetus for establishing the environmental health center.

**Grantee:** Christopher Bradfield, PhD, UW School of Medicine and Public Health, McArdle Laboratory for Cancer Research

**Grant Title:** Environmental Health Center Strategic Planning

**Dates:** January 1, 2013 – June 30, 2014

**Amount:** $200,000

**Program:** Strategic

**Project ID:** 2608