

**Applicant**

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**Project Title**

Investigating the associations between ambient air pollution exposure and genomics, epigenomics and metabolomics

**Project Summary**

Cancer and other age-related diseases are known to be associated with high air pollution exposure. However, we do not understand how pollution causes diseases to develop. Although we know that disease development involves the transformation of normal tissues, we do not understand the steps involved in such transformation. Epigenomic marks on DNA control the activity of specific genes and are known to alter as we age. Metabolomic marks indicate which biological processes are active in our body at a given time. To gain a clearer understanding of how air pollution exposure can impact these steps, we will study air pollution exposure metrics along with these epigenomic and metabolomic marks. Our results will help us understand how pollution is impacting our bodies to drive disease and help us identify which groups of people may have a high risk of developing pollution-induced disease.

**Keywords**

genomics | epigenomics | environment | cancer | aging | bioinformatics