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Inhalation Toxicology

My research interests are in air pollution, climate change and their respective health implications. In the laboratory we study the health impacts of inhaled gases such as ozone and oxides of nitrogen, natural and anthropogenic airborne particles and fibers, along with engineered nanomaterials such as nanometals and carbon nanotubes on the cardiorespiratory and neural systems. We have found exposure to combustion-related emissions and source-oriented particles can lead to significantly different patterns of lung inflammation and injury. The effects of exposure to a wide variety of environmental air pollutants during pregnancy and in early life are studied to understand impacts on lung growth, development, maturation and aging. These studies in the nonhuman primate have demonstrated significant impairment of early lung development which could be implicated in early onset

Environment, Global Climate Change, and Cardiopulmonary Health

Bayram H, Bauer AK, Abdalati W, Carlsten C, Pinkerton KE, Thurston GD, Balmes JR, Takaro TK
Am J Respir Crit Care Med 2017;195:718-724

Repeated iron-soot exposure and nose-to-brain transport of inhaled ultrafine particles

Hopkins LE, Laing EA, Peake JL, Uyeminami D, Mack SM, Li X, Smiley-Jewell S, Pinkerton KE
Toxicol Pathol 2017; In Press

My goal is a One Health approach to better understand the implications of the environment on humans and animals to create policy for better public health and quality of life.



Agricultural workers and residents of the San Joaquin Valley are exposed to airborne pollutants from a broad range of sources. Above, a worker sprays a field during a recent fire north of Sacramento.