

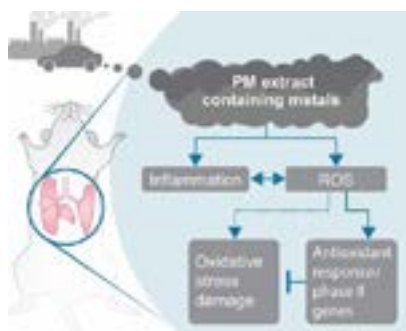
12th International Conference on**ENVIRONMENTAL TOXICOLOGY AND ECOLOGICAL RISK ASSESSMENT**

October 19-20, 2017 | Atlanta, USA

Health and epigenetic effects induced by metals in resuspended urban dust**Michal Pardo**

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Exposure to resuspended urban dust can be harmful to the exposed population. However, the underlying mechanisms that lead to such health effects are not yet elucidated. Water extracts of PM samples collected from the roadway urban environments of Thessaloniki, Milan and London were examined in several different models (in vivo and in vitro exposure systems). Soluble metals extracted from roadway traffic emissions were identified as the lead cause for reactive oxygen species (ROS) production and antioxidant response element (ARE) promoter activation in exposed mice and in lung cell cultures. Metals such as arsenic (As), zinc (Zn) and ferrous (Fe) best predict the ROS-generating/ARE-activating capacity of the near roadway PM in the pulmonary cells study. When mice were exposed several times to the same water extracts, an increase in cytokine levels in both bronchoalveolar lavage (BAL) fluid and in the blood serum, was detected, indicating a systemic reaction. Removal of soluble metals by chelation markedly diminished the pulmonary PM-mediated response (inflammation and oxidative stress), while an artificial metal solution (MS) recapitulated 80-90% of the PM extract response. We have then set to study possible synergetic effects between a metabolic challenge such as obesity and PM exposure that can further lead to a series of other health risk factors. When metals from PM interact with obesogenic nutrition, tissue specific (lung, liver, fat) showed changes in nrf2-related gene expression profiles that correlated with DNA methylation were observed. Altogether, this study suggests that water-soluble metals in urban PM, potentially from break and tire wear, may constitute major drivers of the pulmonary and systemic responses to multiple exposure to urban PM.

**Biography**

Michal Pardo has her expertise in Biochemistry and Food Science. She has completed her PhD from The Hebrew University of Jerusalem. She is a Research Associate focusing on Health-related mechanisms induced by air pollution at the Weizmann institute of science.

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