Principal Researcher: Noelia Ramírez - Fundació Institut d'Investigació Sanitària Pere Virgili

Title: Epigenetic and metabolic alterations associated to early childhood exposure to air pollution and its role in later life chronic disease.

Main purpose of the project:

The main aim of ECHOES is to investigate the possible social inequalities in children regarding their exposure to air pollution, the role of this exposure in children's health and its possible impact in later life chronic disease development.

Design/methodology/approach:

We will evaluate the exposure of a 4-year-old children cohort through the determination of air pollutants in indoor (homes, cars and schools) and outdoor environments and the identification of metabolomics and epigenetics biomarkers in the children´s urine, focusing on thirdhand smoke (THS) toxicants as an example of ubiquitous air pollutants.

Potential results:

- Comprehensive assessment of air pollutants and urine biomarkers (exposure and health) together with socioeconomical data.
- First characterization of the metabolic-epigenetic effects derived from the exposure to THS at an early-life stage.
- Development of innovative methods suitable for the study of other environmental contaminants.

Social relevance of the research:

Children's exposure to tobacco toxicants in Spain is more than 29% and 42% in private and public places and increases in the more deprived social classes. ECHOES will provide stronger evidences to influence future public health policies, improving children's health and reducing the social inequalities and the associated sanitary costs.

Originality/value of the project:

The assessment of possible social inequalities in Spanish children regarding their exposure to airborne toxicants, concretely THS toxicants, using for the first time advanced environmental analyses in combination with metabolomics and epigenetics data for a more accurate assessment of the role of air pollution in children's health.