BIOAGRAPHY

Jordi Sunyer Deu is Medical Doctor (1980) and PHD in Medicine (1989) for the University of Barcelona, he specialised in Family Medicine and Preventive Medicine. He worked as an epidemiologist in the Institute of Public Health of Barcelona during the years 1984 - 1988, and he has been a senior researcher. Moreover, he is currently Co-director of the Centre for Research in Environmental Epidemiology (CREAL) and Professor at the Pompeu Fabra University in Barcelona. Besides, he is principal researcher: European Community Respiratory Health Study (ECRHS), Air pollution and inflammatory responses (AIRGENE), Health effects of indoor pollution (HITEA), and he is Coordinador de l'estudi de cohorts de nounats Infància i Medi Ambient (INMA).

Doctor in Medicine and Surgery at the University of Barcelona (1980), specializing in Family Medicine and Preventive Medicine. He worked as an epidemiologist at the Municipal Institute for Medical Research in Barcelona between 1984 and 88, and since then, is a senior researcher. In addition, he is currently Co-Director, Center for Research in Environmental Epidemiology (CREAL) and Professor at the University Pompeu Fabra in Barcelona. It is also principal investigator of several international projects: Doctor in Medicine and Surgery at the University of Barcelona (1980), specializing in Family Medicine and Preventive Medicine. He worked as an epidemiologist at the Municipal Institute for Medical Research in Barcelona between 1984 and 88, and since then, is a senior researcher. In addition, he is currently Co-Director, Center for Research in Environmental Epidemiology (CREAL) and Professor at the University Pompeu Fabra in Barcelona. It is also principal investigator of several international projects: Health effects of indoor pollution (Hite), ESCAPE, MEDALL, BREATH (ERC Advanced Grant) and coordinator of the study cohort of newborns Children and the Environment (INMA).

PROJECT

European Research Council Advanced Grant

Project acronym: BREATHE
Project full title: Brain Development and Air Pollution ultrafine particles in school children.

Overview

Traffic-related air pollution is an important environmental problem that may affect neurodevelopment. Ultrafine particles (UFP) translocate to the brains of experimental animals resulting in local proinflammatory overexpression. As the basic elements for thinking are acquired by developing brains during infancy and childhood, susceptibility may be elevated in early life.

We postulate that traffic-related air pollution (particularly UFPs and metals/hydrocarbons content) impairs neurodevelopment in part via effects on frontal lobe maturation, likely increasing attention-deficit/hyperactivity disorder (ADHD). BREATHE objectives are to develop valid methods to measure children's personal UFP exposure and to develop valid neuroimaging methods to assess correlations between neurobehavior, neurostructural alterations and particle deposition in order to reveal how traffic pollution affects children?s exposure to key contaminants and brain development, and identify susceptible subgroups.

We have conducted general population birth cohort studies providing preliminary evidence of residential air pollution effects on prenatal growth and mental development.

We aim to demonstrate short and long-term effects on neurodevelopment using innovative epidemiological methods interfaced with environmental chemistry and neuroimaging following 4000 children from 40 schools with contrasting high/low traffic exposure in six linked components involving: repeated psychometric tests, UFP exposure assessment using personal, school and home measurements, gene-environment interactions on inflammation, detoxification pathways and ADHD genome-wide-associated genes, neuroimaging (magnetic resonance imaging/spectroscopy) in ADHD/non-ADHD children, integrative causal modeling using mathematics, and replication in 2900 children with neurodevelopment followed from pregnancy.