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The CARMUCI project aims to evaluate the impact of indoor air purification on respiratory health of children and adults with CF and PCD in Cyprus, using a randomized, double-blind, cross-over, sham-controlled design. Besides the potential impact on the clinical management of CF and PCD, this project could lead to insights on the understudied interplay between MCC and air pollution.

Maria Kakkoura is currently a Marie Skłodowska-Curie Actions (MSCA) COFUND Fellow at the Medical School of the University of Cyprus. Maria's previous research record and skills has provided her with the expertise to address important questions in the interdisciplinary fields of clinical, environmental, and epidemiological science with a focus on environmental exposures and disease risk. Previously, she worked as Epidemiologist at the Oxford Population Health of the University of Oxford, where she studied associations between lifestyle factors, omics-based biomarkers, and risk of chronic diseases in large, biobank prospective studies. Particularly, Maria's research focused on assessing the associations of animal sourced foods with disease risk and on investigating the mechanisms underlying those associations with the use of biomarker data. This work formed part of the Wellcome Trust funded Livestock, Environment and People (LEAP) project at the University of Oxford.

Prior to joining University of Oxford, she was a postdoctoral researcher at the Medical School of the University of Cyprus, where she participated in the LIFE-MEDEA program and collected, managed and analyzed data from randomized control intervention studies in children with asthma and adults with heart arrhythmias, aiming to reduce exposure to air pollution and improve health outcomes. In parallel, she participated in various studies of health-related quality of life (HRQoL) in Cypriot adult primary ciliary dyskinesia (PCD) patients and analyzed data from epidemiological studies focusing on cardiorespiratory outcomes. During her postdoctoral positions, she had the opportunity to improve greatly her experience in organizing clinical trials, as well as her analytical skills and epidemiological knowledge on the health effects of environmental and lifestyle factors. Her active collaboration with a wide range of partners, from different scientific backgrounds, has also equipped her with the expertise to manage multi-disciplinary health research.

Maria also received her PhD in Molecular Medicine from the Cyprus Institute of Neurology and Genetics, for which she investigated the interactions between single nucleotide polymorphisms and Mediterranean diet on breast cancer risk and on selected metabolites. She also holds a BSc in Human Genetics (University College London) and an MSc in Environmental Health (Cyprus International Institute for Environmental and Public Health of the Cyprus University of Technology).

Her current research project is titled “Clean Air for Rare MUCociliary Clearance disorders” (CARMUCI). Previous studies have demonstrated that indoor air cleaning can reduce the negative impacts of air particulates on chronic lung diseases such as asthma. However, interventions to reduce exposure to indoor air pollutants have not been studied yet in more severe chronic lung disorders, such as cystic fibrosis (CF) and PCD. More so, CF and PCD are characterized by severely compromised mucociliary clearance (MCC), which is one of the main defence mechanisms of the respiratory system against inhaled pathogens and air particulates. It is therefore extremely important to explore in these conditions the potential health benefits of indoor air filtration in terms of reduction in respiratory symptoms, improvement in lung function and HRQoL. The CARMUCI project aims to evaluate the impact of indoor air purification on respiratory health of children and adults with CF and PCD in Cyprus, using a randomized, double-blind, cross-over, sham-controlled design. Besides the potential impact on the clinical management of CF and PCD, this project could lead to insights on the understudied interplay between MCC and air pollution. The supervisory team for this multidisciplinary research project is made up of Professor Panayiotis Yiallourous (Medical School) and Professor Marina Neophytou (Department of Civil and Environmental Engineering).