

13 December 2024

MARKOPOLO: EU-funded project to research health damage caused by traffic noise and air pollution starts on 01 January 2025

- **MARKOPOLO - short for markers of pollution - is a four-year EU-funded initiative set to launch on 01 January 2025**
- **MARKOPOLO's goal is to explore the health impacts of traffic noise and air pollution, with a special focus on fine and ultrafine particulate matter, using cutting-edge translational research approaches**
- **The project brings together an international research consortium comprising 15 partners from ten different countries**

Traffic noise and air pollution, especially particulate matter (PM), are closely linked environmental risk factors that contribute significantly to the development of diseases such as diabetes, hypertension and atherosclerosis. In Europe, traffic noise is responsible for the loss of 1.6 million healthy life years and air pollution causes around 0.5 million premature deaths each year. Despite these serious effects, these health risks are often not adequately addressed in clinical guidelines. In addition, European limits for noise and particulate matter exceed the standards recommended by the WHO.

MARKOPOLO aims to investigate the impact of traffic noise and air pollution, especially fine and ultrafine particulate matter, on human health through an innovative translational approach. Experimental and computational models are used in clinical, interventional and epidemiological studies. One of the main objectives is to identify disease-relevant biomarkers and to understand the molecular mechanisms involved in diseases of the brain, lung and cardiovascular system. The “from bench-to-bedside” approach uses extensive knowledge of the brain-heart connection and applies modern methods to better understand the causes of disease. The MARKOPOLO consortium is led by Prof. Dr. Andreas Daiber from the Department of Cardiology at the Mainz University Medical Center in Germany, with strong support by the environmental health expertise of Prof. Dr. Thomas Münzel. The consortium has secured €7.99 million in EU funding, along with an additional €1.28 million in external support from the Swiss National Funds.

“We will apply the so-called 'exposome concept', that helps us to understand how everything we are exposed to during our lives - especially environmental factors, nutrition or stress - can influence our health. With this approach, we want to find out more precisely which of these influences make us ill. We focus on how these factors are connected and how they work in the body to better understand and prevent diseases. This is what makes MARKOPOLO so special,” explains Prof. Dr. Andreas Daiber, Head of the Molecular Cardiology Research Group at the Department of Cardiology and project coordinator. “In addition, we will also use AI-supported computer models to break new, highly innovative ground in order to ideally be able to replace complex experimental studies in the future.”

“We are very pleased about the outstanding recognition at the EU level,” says Prof. Dr. Thomas Münzel, Senior Professor at the Department of Cardiology. “The Europe-wide network of excellent researchers engaged with MARKOPOLO will help us to strengthen and further expand our leading national and international position in the fields of the environment and cardiovascular diseases.”

In summary, MARKOPOLO seeks to provide new insights into the effects of environmental factors on the human body, improving risk assessment and evaluating the effectiveness of preventive strategies. By exploring societal and political contexts, the researchers aim to deepen understanding of the complex interplay between noise, air pollution, and human well-being. The findings are expected to support the development of clear and actionable guidelines for a range of stakeholders.



About the project:

MARKOPOLO is a large EU-funded project investigating the effects of risk factors such as traffic noise and air pollution in the form of particulate matter on the cardiovascular system, the brain, the lungs and metabolic processes - in cell culture experiments, animal studies, computer-based models, but also clinical/epidemiological studies. The research project, which receives €7.99 million in EU funding, and €1.28 million in external support from the Swiss National Fonds, for four years, is scheduled to commence its work in January 2025.

These are the MARKOPOLO project partners:

- Molecular Cardiology Research, Department of Cardiology, University Medical Center Mainz (Germany)
- University of Padova (Italy)
- Medical University of South Carolina (USA)
- Vytautas Magnus University (Lithuania)
- University of Belgrade (Serbia)
- The Cyprus Institute (Cyprus)
- concentris research management gmbH (Germany)
- Max Planck Institute for Chemistry (Germany)
- Laboratoire National de Santé (Luxembourg)
- Luxembourg Institute of Health (Luxembourg)
- University of Eastern Finland (Finland)
- Julius-Maximilians-University of Würzburg (Germany)
- University of Southern Denmark (Denmark)
- Danish Cancer Research Society (Denmark)
- Swiss Tropical and Public Health Institute (Switzerland)

Coming soon: www.markersofpollution-markopolo.eu

Follow the project on [LinkedIn](#) and [Instagram](#).

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Funded by the European Union and the Swiss State Secretariat for Education, Research and Innovation (SERI). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union, or the European Health and Digital Executive Agency (HADEA) or the SERI. Neither the European Union nor the granting authorities can be held responsible for them.