

PRESS RELEASE

28 January 2025

Support for MARKOPOLO research in Mainz on air pollution by the Wahl-Stumpf Foundation

Air pollution contributes to the annual premature deaths in Europe (0.5 million). Critically, particulate matter is underrepresented as a risk factor in clinical guidelines and that European legal exposure limits far exceed WHO standards. There are significant gaps in knowledge regarding the health effects of particulate matter on vulnerable groups such as high-risk patients and the elderly. MARKOPOLO, an EU-funded research consortium with 14 European and one US partner (coordinated by Prof. Daiber, Cardiology 1, University Medical Center Mainz, Germany), will address these critical health problems of air pollution (PM incl. UFP) through a unique translational approach using experimental mouse models.

Based on MARKOPOLO, the present project aims to investigate the potentially protective effects of an antihypertensive drug (ACE inhibitor) and a cholesterol-lowering drug (statin) on damage to the cardiovascular system (including the lungs) caused by particulate matter in a preclinical model. After the exposure and treatment period, the tissues are examined with regard to vascular function (by means of isometric tone determination), oxidative damage and inflammatory markers in the heart and lungs. This project is supported by the Wahl-Stumpf Foundation with a research budget of 12,000 EUR. In accordance with the statutes laid down by the founder, the Wahl-Stumpf Foundation is dedicated to the promotion of science and research in the field of coronary and intestinal diseases.

The Wahl-Stumpf Foundation is pleased to be able to support a project that fully meets the founder's concerns and at the same time has a high level of general interest.

"The clinical significance of the expected findings is based on the fact that people with pre-existing cardiovascular diseases (CVD) belong to the so-called vulnerable groups with regard to the effects of environmental risk factors such as particulate matter," says Prof. Dr. Thomas Münzel, senior professor and environmental cardiologist at the Center for Cardiology at the University Medical Center Mainz. Studies have shown that CVD patients are more sensitive than average to exposure to environmental risk factors such as particulate matter. Accordingly, the data to be expected here are of great clinical importance. Therefore, it is important to know whether standard cardiovascular drugs such as ACE inhibitors and statins, which are used for the treatment of the majority of CVD patients, also protect against particulate matter-mediated damage. This will provide insights into whether vulnerable groups such as CVD patients are already effectively protected against the increased risk of environmental stressors such as particulate matter by existing standard therapy or whether further measures such as an additional reduction of the limit values or personal protective measures such as air purification devices or special respiratory masks should be recommended for CVD patients.

Laureates:

Univ.-Prof. Dr. Andreas Daiber and Dr. Marin Kuntic
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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)

Website: www.markersofpollution-markopolo.eu

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