Developing the building blocks to elucidate the impact of the urban exposome on cardiometabolic-pulmonary disease: the EU EXPANSE project

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4646050
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Year 2021
Title Developing the building blocks to elucidate the impact of the urban exposome on cardiometabolic-pulmonary disease: the EU EXPANSE project
Journal Environ Epidemiol
Volume 5
Number 4
Pages / **Article-Number** e162
Keywords Cardiometabolic disease; Ethics parallel research; European Human Exposome Network; Exposome; Life course epidemiology; Omics; Pulmonary disease; Ultra-high-resolution massspectrometry; Urban exposome; content of this report.
By 2030, more than 80% of Europe's population will live in an urban environment. The urban exposome, consisting of factors such as where we live and work, where and what we eat, our social network, and what chemical and physical hazards we are exposed to, provides important targets to improve population health. The EXPANSE (EXposome Powered tools for healthy living in urbAN SEttings) project will study the impact of the urban exposome on the major contributors to Europe's burden of disease: Cardio-Metabolic and Pulmonary Disease. EXPANSE will address one of the most pertinent questions for urban planners, policy makers, and European citizens: "How to maximize one's health in a modern urban environment?" EXPANSE will take the next step in exposome research by (1) bringing together exposome and health data of more than 55 million adult Europeans and OMICS information for more than 2 million Europeans; (2) perform personalized exposome assessment for 5,000 individuals in five urban regions; (3) applying ultra-high-resolution mass-spectrometry to screen for chemicals in 10,000 blood samples; (4) evaluating the evolution of the exposome and health through the life course; and (5) evaluating the impact of changes in the urban exposome on the burden of cardiometabolic and pulmonary disease. EXPANSE will translate its insights and innovations into research and dissemination tools that will be openly accessible via the EXPANSE toolbox. By applying innovative ethics-by-design throughout the project, the social and ethical acceptability of these tools will be safeguarded. EXPANSE is part of the European Human Exposome Network.
ISSN/ISBN 2474-7882 (Electronic)2474-7882 (Linking)
URL https://doi.org/10.1097/EE9.0000000000000162
edoc-URL https://edoc.unibas.ch/89636/
Full Text on edoc Available;
Digital Object Identifier DOI 10.1097/EE9.0000000000000162
PubMed ID http://www.ncbi.nlm.nih.gov/pubmed/34414346
ISI-Number WOS:000784740800002
Document type (ISI) Journal Article