**INVESTIGATING THE NEURODEVELOPMENTAL EXPOSOME: TRANSCRIPTOMIC AND METABOLOMIC ANALYSIS OF MOTHER-CHILD PAIRS IN PORTUGAL**

**D.R. Schultz1,2\*, N. Papaioannou1,2, T. Papageorgiou1,2, C. Gabriel1,2, I.S. Frydas1,2, S. Karakitsios1,2,4, D.A. Sarigiannis1,2,3**

1 HERACLES Health and Exposome Research Centre, Centre for Interdisciplinary Research and Innovation, Aristotle University of Thessaloniki, Greece

2 Environmental Engineering Laboratory, Department of Chemical Engineering, Aristotle University of Thessaloniki, Greece

3 Environmental Health Engineering, School for Advanced Study IUSS, Pavia, Italy

4 ENVE.X, Thessaloniki, Greece https://enve-x.com/

*\* daynaraeschultz@gmail.com*

**ABSTRACT**

The exposome paradigm is the concept that the environment, lifestyle factors, and behaviours of an individual can impact health outcomes. This concept has become an area of intense interest in recent years as an important tool in human health risk assessments. Particularly, there is an emerging and urgent need to understand the dynamic interactions occurring that may influence child neurodevelopment. The aim of this project is to investigate the influence of combined exposure to environmental pollutants on the neurodevelopment of human fetuses as well as the health of the mother, using integrated omics technologies. Mother-child cohort samples were collected from Portuguese subjects as part of the HEALS-EXHES project. Together, transcriptomic (microarray) and metabolomic (untargeted) analysis will be performed to identify genes and metabolites of interest. These data will then be combined with urine sample analysis and questionnaire data to investigate the associated links between genes and metabolites of interest and potential causal agents using environment-wide association studies (EWAS) approaches. The study also aims to generate adverse outcome pathways for neurodevelopmental disorders. Together, this work will help to inform human health risk assessment efforts.

**KEYWORDS**: multi-omics, transcriptomics, metabolomics, risk assessment

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