

Phthalates and bisphenol A biomonitoring in Italian mother-child pairs: link between exposure and juvenile diseases



PERSUADED



ENGLISH ISSUE N.2

November 2015

PERSUADED
Newsletter

Editorial PERSUADED Networking activities: Health and Environment-wide Associations based on Large population Surveys (HEALS) and Polish Mother and Child Cohort (REPRO_PL)

Networking and synergy building with similar initiatives in Europe and outside Europe are among the main objectives of PERSUADED. This activity aims at ensuring better spread and exploitation of the scientific achievements of the research projects in common fields of science. HEALS and REPRO_PL projects describe their activities, focused on environmental exposure and children's health, representing the main aim of PERSUADED.

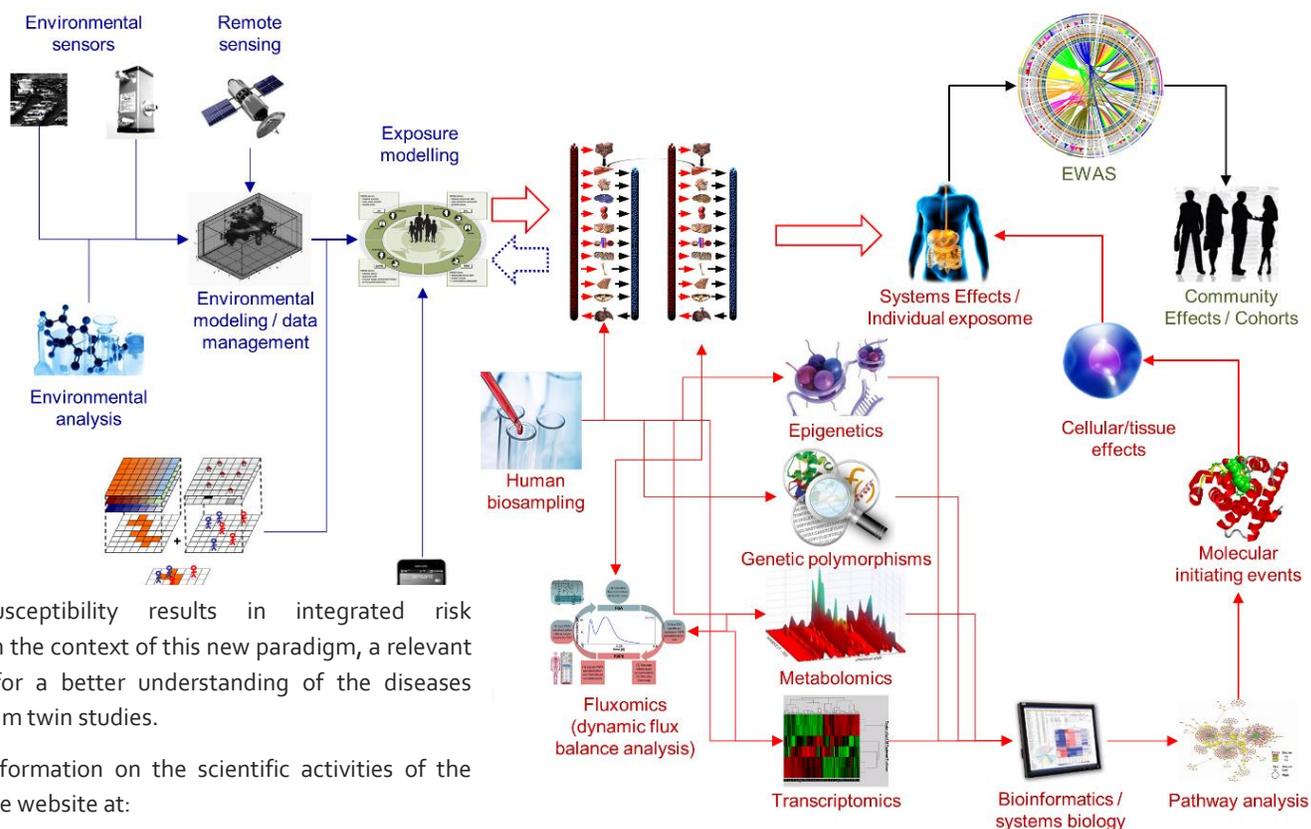
HEALS (Health and Environment-wide Associations based on Large population Surveys), a 60-month research project funded by the Seventh Framework Programme of the European Commission (starting in October 2013). HEALS is carried out by a consortium composed of 29 partners from 15 countries. The project is coordinated by Isabella Annesi-Maesano

(UPMC, Paris) and Dimosthenis Sarigiannis (AUTH, Greece). The objective of the project is to assess individual exposures to environmental stressors in view to predict health outcomes. The project also envisages to conduct a pilot environment and health examination survey (EXHES Pilot Study), which is based on a large population cohort encompassing neonates, their samplings, the parents and grandparents with oversampling on twins. The EXHES study is being carried out in 10 EU countries. HEALS introduces a comprehensive applied methodology focusing on the different aspects of individual assessment of exposure to conventional and emerging environmental stressors and on the prediction of the associated health outcomes. For the first time, HEALS will try to reverse the paradigm of "nature versus nurture" and adopt one defined by complex and

dynamic interactions between DNA sequence, epigenetic DNA modifications, gene expression and environmental factors that all combine to influence disease phenotypes. A conceptual representation of the HEALS methodological approach and information workflow is illustrated in Figure 1.

HEALS will start from analysis of data collected in existing epidemiological EU studies and twins registers involving mother/infant pairs, children, or adults including the elderly to evidence relevant environmental exposure/health outcome associations. These associations will aid in designing pilot surveys using an integrated approach, where the selection of biomarkers of exposure, effects and





individual susceptibility results in integrated risk assessment. In the context of this new paradigm, a relevant contribution for a better understanding of the diseases comes also from twin studies.

For further information on the scientific activities of the project visit the website at:

www.heals-eu.eu

HEALS methodological approach and information workflow

REPRO_PL (Polish Mother and Child Cohort) is a multicenter prospective cohort study established in 2007 with the aim to evaluate a variety of environmental and lifestyle factors that contribute to the pregnancy outcomes, children's health and neurodevelopment. The study is coordinated by Kinga Polańska and Wojciech Hanke from the Nofer Institute of Occupational Medicine, Lodz, Poland.

The REPRO_PL cohort consists of 1700 mother-child pairs. The women were recruited during the first trimester of pregnancy at maternity units or clinics provided they fulfilled the following inclusion criteria: single pregnancy up to 12 weeks of gestation, no assisted conception, no pregnancy complications and no chronic diseases as specified in the study protocol.

The women were contacted 3 times during the pregnancy (once in each trimester) in order to collect and update demographic and socio-economic data, medical and reproductive history, information about occupational exposure as well as lifestyle factors. During each visit biological samples were collected from them (the first visit: saliva and blood; the second visit: saliva, urine, and blood; the third visit: saliva, urine, blood and hair). After delivery, samples of cord and maternal blood were collected, and the details regarding pregnancy outcomes were described by gynecologists. Child exposure, health status and neurodevelopment have been assessed at 1, 2 and 7 years of age.

The analysis based on REPRO_PL has indicated that pregnancy duration was

inversely associated with natural log concentrations ($\mu\text{g/g}$ creatinine) of MEP. Significant impact of MOiNP on head circumference has been also observed. In addition, child motor development was inversely associated with natural log concentrations of 3OH-MnBP, 5OH-MEHP, 5oxo-MEHP and the sum of DEHP metabolites, DnBP metabolites, and high molecular weight phthalates in the urine collected from the mothers during pregnancy. Postnatal child exposure to phthalates was not associated with any of the measured scores of child psychomotor development (EHD 2014;90:477-485).

More details regarding REPRO_PL can be found on www.repropl.com

Progress Update

<p>A3. Involvement and training of family pediatricians</p> <p>Training of the regional representative family pediatricians at ISS. Training of local (both rural and urban areas) family pediatricians by the regional representatives in Lombardia, Veneto, Marche, Friuli Venezia Giulia, Lazio, Puglia and Basilicata regions</p>	<p>B5. Data management and statistical analysis</p> <p>Collection of anamnestic data files of children from pediatricians who completed the enrollment. Starting of data download and verification of questionnaires and diet diaries filled on-line.</p>	<p>D6. Workshop and conference holding PERSUADED workshop</p>
<p>B1. Human biomonitoring study</p> <p>Recruitment of subjects from urban and rural areas: it is concluded in Lombardia, Veneto, Marche regions; it is ongoing in Friuli Venezia Giulia, Lazio, Puglia and Basilicata regions. Shipping of the frozen samples and the filled questionnaires to the IFC-CNR laboratory</p>	<p>B7. Clinical biomarkers evaluation</p> <p>B8. Toxicological biomarkers evaluation</p> <p>The panel of clinical and endocrine biomarkers related to onset puberty and obesity were measured during Day Hospital for each patient according to project indications</p>	<p>D7. Dissemination activities</p> <p>PERSUADED has been presented at several meetings, among them:</p> <ul style="list-style-type: none"> -Meeting "Ambiente e salute in età pediatrica. Rischi e sicurezza in nutrizione" - Casabianca di Fermo 09/05/2015 -Endocrine disruptors and child health" 29-30 maggio 2015 Roma -1st Metabolomics Forum: Complessità Biologica e Systems Biology, Centro di Systems Biology, SYSBIO, Università di Milano-Bicocca 24 settembre 2015
<p>B2. Case-control study on idiopathic premature thelarche and idiopathic central precocious puberty</p> <p>B3. Case-control studies on idiopathic obesity in children</p> <p>Children recruitment is under way</p>	<p>C1. Monitoring of the impact of the project</p> <p>Monitoring of the impact by using indicators of progress</p>	<p>D8. Facebook page</p> <p>Implementation of the project Facebook page</p>
<p>ACTION B.4 Assessment of contaminants in human samples</p> <p>Analyses of sets of urine samples from pediatricians</p>	<p>D1. Project Website</p> <p>Project website implementation</p> <p>D4. Newsletters</p> <p>Six issues of Newsletter in Italian language (available on the website) and two issues in English (available on the website)</p>	<p>E1. Project management</p> <p>Organization of the workshop</p> <p>Monitoring of the project activities</p> <p>E2 Networking with other projects</p> <p>Networking activities with LIFE project and other national and international projects (available on the website)</p>

Events

First LIFE PERSUADED Workshop

Rome, 17th December, 2015
ISS, Via Giano Della Bella, Aula G. B. Rossi
10:00- 16:30

OBJECTIVES

Presentation of the project with special emphasis on the results of positive outcome for stakeholders, presentation of initial data, presentation tools produced during the first year of the project (eg. Questionnaire aimed at exposure to BPA and phthalates), presentation of networking activities.

The workshop will be held in the coordinating beneficiary language (Italian)

For more detail go to [our website](#)

PERSUADED is co-funded by [Life+ European Programme](#), coordinated by Istituto Superiore di Sanità and carried out in collaboration with Bambino Gesù Children's Hospital of Rome and National Research Council - Institute of Clinical Physiology, Pisa, with the participation of Associazione Culturale Pediatri and Federazione Italiana Medici Pediatri Marche.



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ENVIRONMENT

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