



history



culture



architecture



science

**BRNO**  
**city for life**

**MUNI | RECETOX**

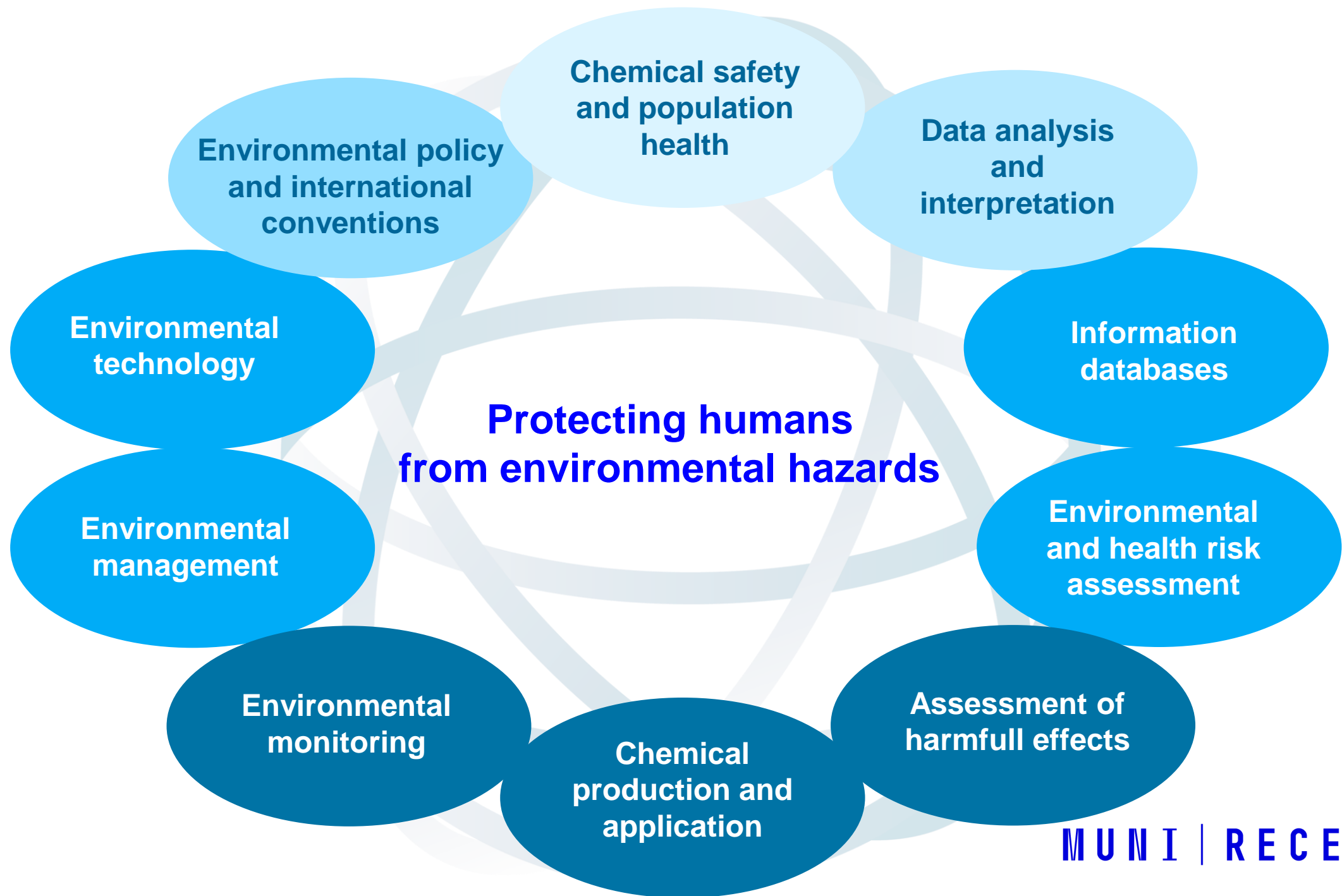
# MUNI | RECETOX



**Research and Education of a Healthy Future**

**Jana Klánová**

Masaryk University Brno  
RECETOX Centre





14.3 | Environmental sciences

### RECETOX Research Infrastructure

**Acronym:**  
RECETOX RI

**Hosting Institution:**  
Masaryk University

**Phase:** construction

**Character:** single-site

**Responsible person:**  
Prof. Jana Klánová, Ph.D.  
klanova@recetox.muni.cz

**Website:**  
old.recetox.muni.cz/index-en.php

**Year of inclusion on the Czech Roadmap:** 2010

**Motto:**  
*Science for a healthy future.*

► 80

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Infrastructure

**Characteristics**

RECETOX RI enables research on both environmental and human health risks related to environmental contamination, and supports the safe management of chemicals. The existing and newly built capacities of the RECETOX RI core facilities offer a wide range of expertise needed for making environmental impact assessments for a variety of users. They provide access to analytical, chemical, biological, and toxicological laboratories, the environmental monitoring network **MONET** (Monitoring Networks), population studies **CELSPAC** (Central European Longitudinal Study of Parents and Children), and related data sources. They allow for the presentation of external data through the **GENASIS** (Global Environmental Assessment and Information Systems) information platforms. The capacities for data analysis, interpretation and modelling are also available together with advanced bioanalytics and bioinformatics offering a portfolio of services to users from both the academic and private sectors in the Czech Republic and abroad. The comprehensive interdisciplinary approach taken by RECETOX RI is unique in the European context. RECETOX RI offers capacities for the assessment of environmental impacts on human health, a platform for the development of innovative methods, know-how and technology transfer, teaching and consulting. The education and training activities of RECETOX RI at all levels of higher education improve the quality and professional readiness of its graduates. The training courses, workshops, and the international summer schools are also organized for attendees from universities, research institutes, health facilities, industrial enterprises, regional and state authorities, ministries, governments and international organisations. RECETOX RI is associated with the Carthage nodes of the ACTRIS (Atmosol, Clouds and Trace Gases Research Infrastructure), **ELIXIR** (European Life-Science Infrastructure for Biological Information), and **BEMIS-ERIC** (Biobanks and Biomolecular Resources Infrastructure) European research infrastructures. It coordinates the ERENE (European Environmental Exposure Assessment Network) project for the updated ESPRI Roadmap, and the **EURO** (Global Earth Observing) initiative **GENASIS** (Global Observation System for Persistent Organic Pollutants). It also contributes to the implementation and management of joint European programmes such as **HUMANET** (Human Monitoring for Europe) and **PLANET** (European Network for Observing our Changing Planet).

**Socio-economic benefits**

RECETOX RI develops new approaches to assess the causal links between human exposure to toxic substances and the development of chronic diseases, and improves our understanding of the mechanisms of such interactions. It identifies toxic mixtures in the environmental samples, consumer products and human tissues, as well as sources of such chemical mixtures, their health effects and most vulnerable populations. It explores the links between these environmental exposures and social and economic factors that affect human health, and allows for the prioritization and better targeting of the relevant legislation. It contributes to the better management of toxic chemicals, the safe production of food and consumer products, and safe waste processing. It enhances the protection of human health, the development of preventive measures, and sustainability of healthcare. It collaborates with **WHO** (World Health Organization) and **WHO** (World Health Organization), and supports the implementation of the concepts of a circular economy and healthy smart cities. It also provides university education and builds international capacities for assessing environmental exposures.

# RECETOX RI

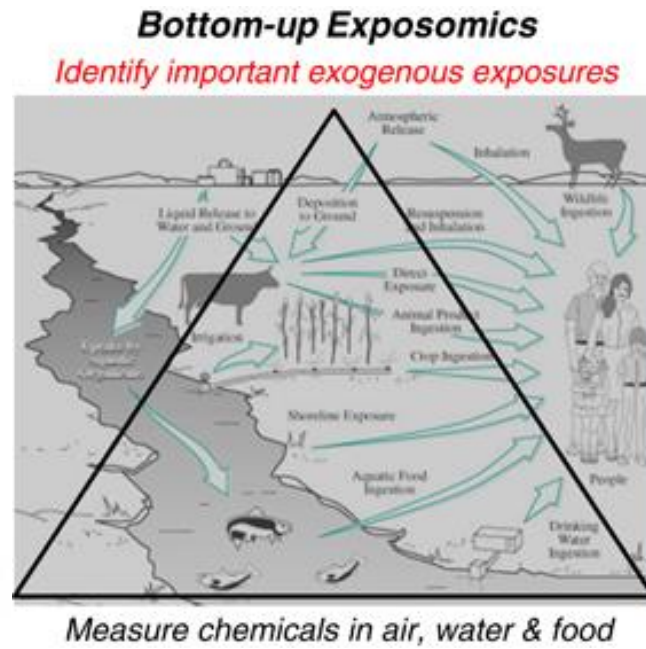
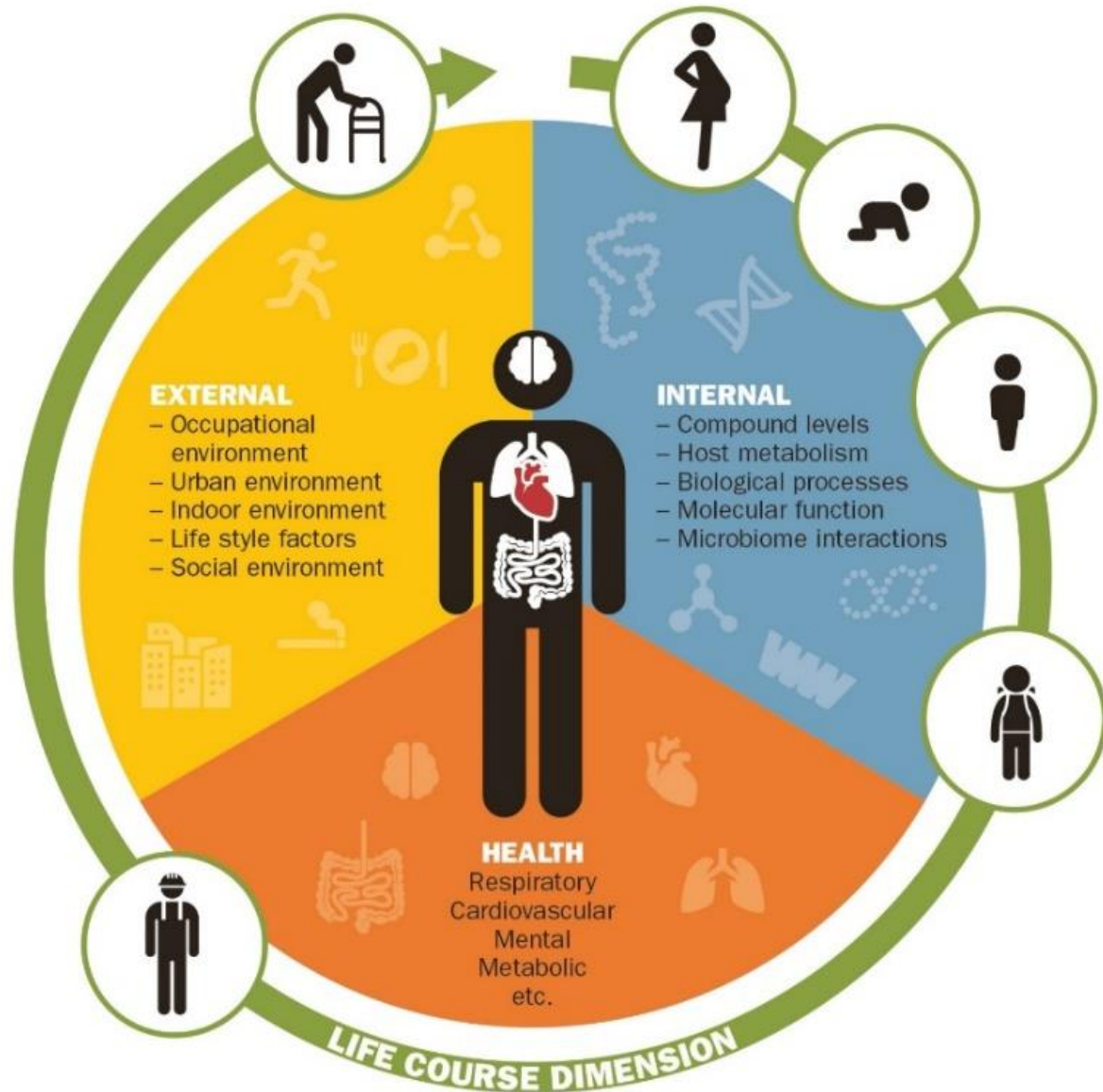
MONET monitoring networks  
CELSPAC population studies  
RECETOX accredited laboratories  
GENASIS information platforms



<https://www.vyzkumne-infrastruktury.cz/en/2019/11/update-of-roadmap-of-large-research-infrastructures-of-the-czech-republic/>

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# HUMAN EXPOSOME



## Bottom-up vs. Top-down Exposomics

Rappaport SM. *J Expo Sci Environ Epidemiol* **21**:5–9 (2011)

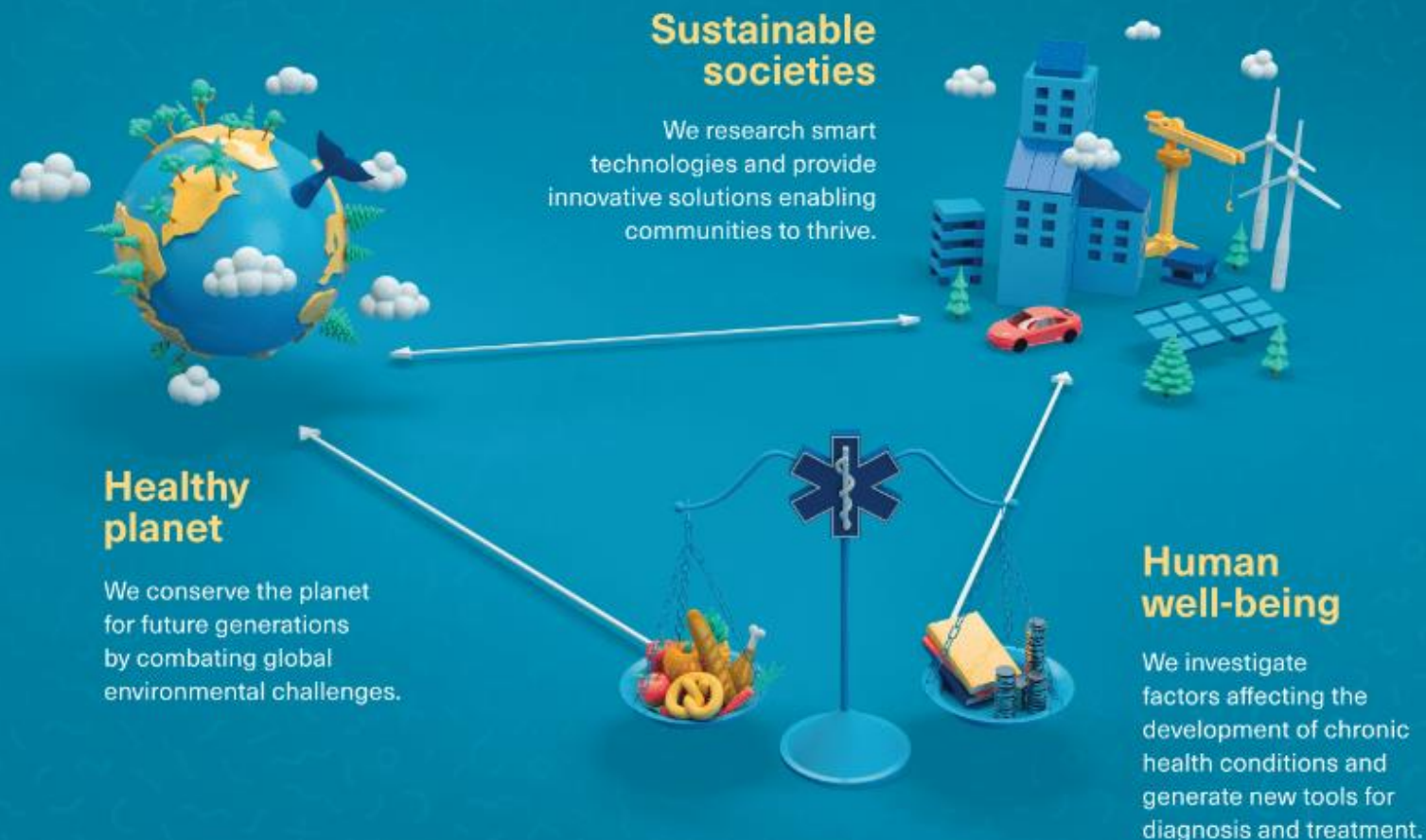
# Teaming for a healthy future

## Mission

Building a healthy future  
with environmental, economic  
and social sustainability and  
improved well-being.



This project has received funding  
from the European Union's Horizon 2020  
research and innovation programme under  
grant agreement No 857560



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# science

For many years we have studied the human impact on the environment & now we also assess environmental impacts on human health. Our research infrastructure supports the international research community.



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# education

We train the future generation of professionals and provide them the multi-disciplinary skills across education, research, policy and practice needed to address environmental health challenges.



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# application

We translate our research results to practical application and legislation. We transfer our knowledge to industry and government and inform regulatory decision-making processes to promote environmental, economic and social sustainability.



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# society

We contribute to improving the quality of life. We generate data and provide new tools, technologies and solutions to benefit the community and secure a stable and prosperous future.



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Brno Living Lab

MUNI

FAKULTNÍ  
NEMOCNICE  
BRNO

FNUSA  
ICRC

B | R | N | O

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# Partnership for a healthy future

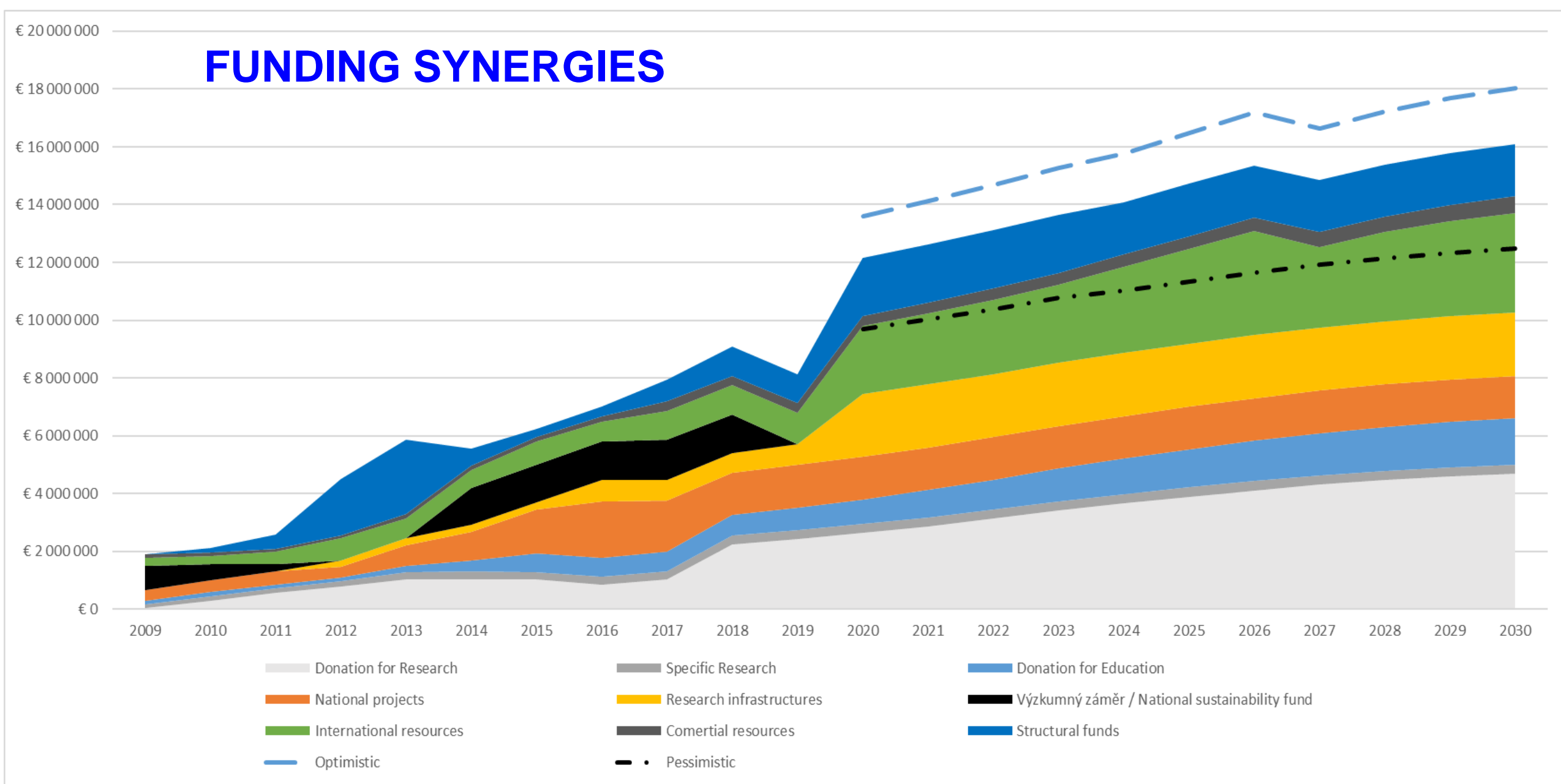
We collaborate to build a community that works together towards a healthy future. We form research partnerships with academic institutions and university hospitals and reach out to local businesses, regional and state authorities to share knowledge. We engage with citizens and welcome them to join our community to co-create positive change.

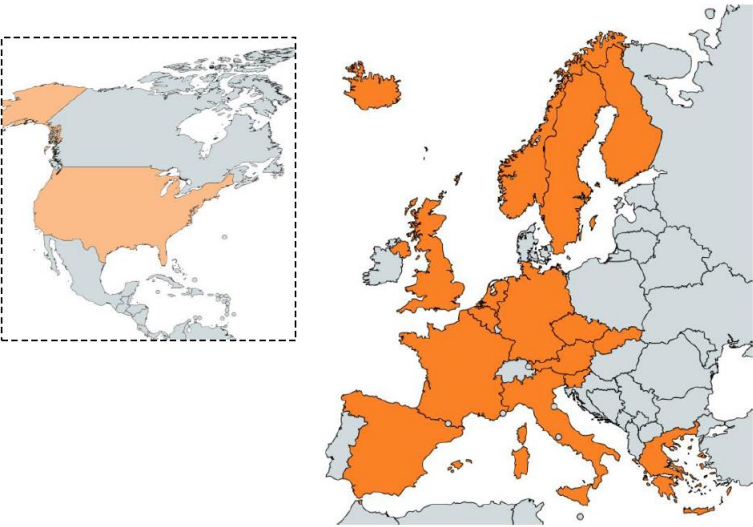
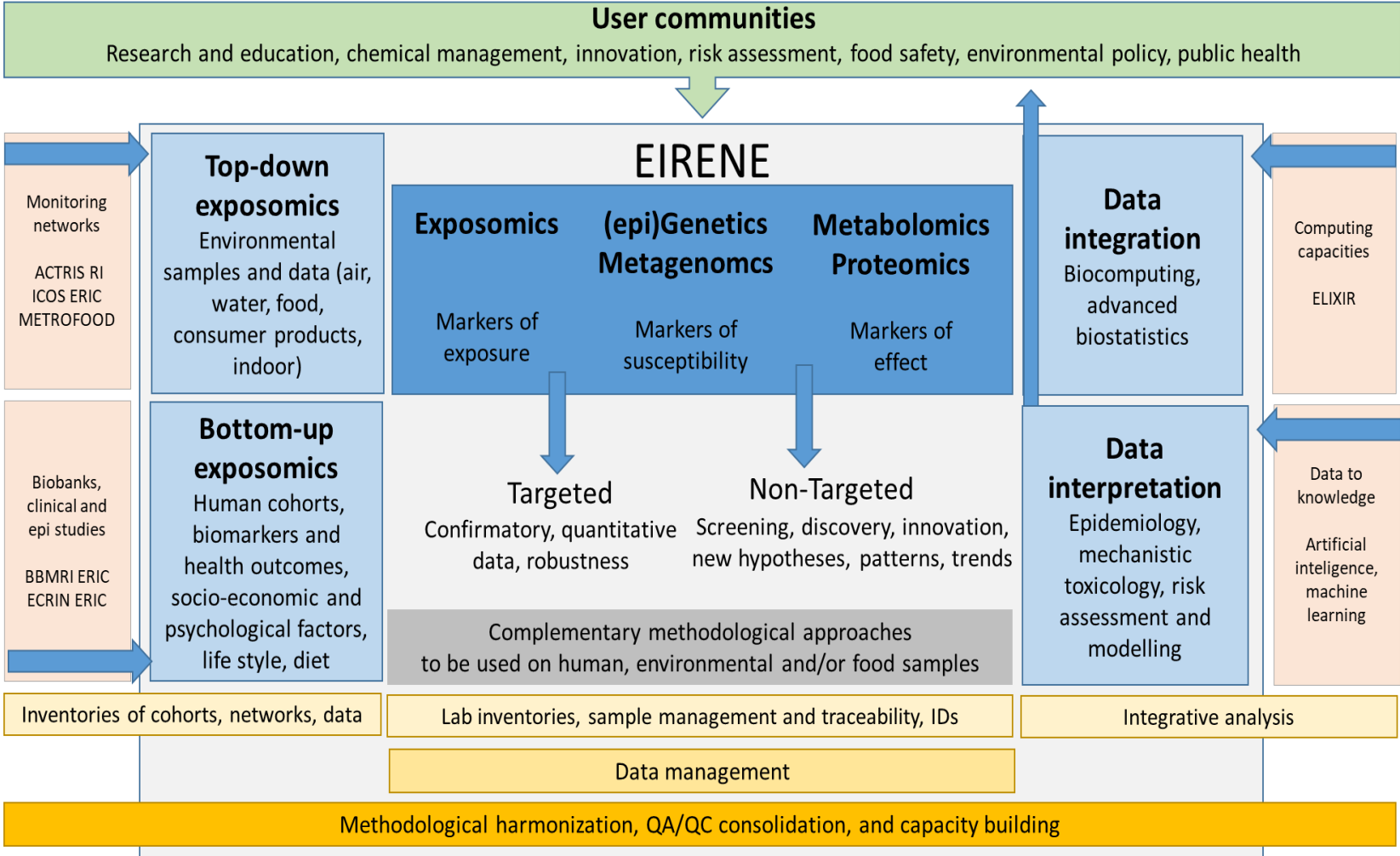


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research and innovation programme under  
grant agreement No 857560

[muni.recetox.cz](https://muni.recetox.cz)

# FUNDING SYNERGIES





**Thank you for your kind attention**

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<https://www.recetox.muni.cz/en>

# University College London (UK)



# Collaborative activities in Cetocoen Excellence

- **Education and training**
  - Research methods
  - Epidemiology
  - Medical and health statistics
- **Joint research activities**
  - Work on population cohorts
  - Environmental health
  - Participation in international projects
- **Integration** of education / training / research / capacity building

# Benefits for UCL (1): Access to unique data

- ELSPAC cohorts of newborns (1991-)
  - Prospective analyses
- TNG cohort of newborns (2019-)
  - Jointly developed protocol
- HAPIEE cohort of ageing population sample (2002-)
  - Planned re-examination
- Urban environment
  - Population exposures
- Other data
  - E.g. COVID-19 seroprevalence survey

# Benefits for UCL (2): Access to laboratory expertise

- Recetox to analyse environmental exposure in biological samples of cohort participants
  - E.g. HAPIEE cohort: nested case-control study of MI and stroke (~600 cases and 600 control)
  - Wide range of biomarkers to study potential novel risk factors
- KARDIOVIZE population study: lab analyses of a subsample of the study
- Estimates of environmental exposures

# Benefits for UCL (3): Access to expertise

- Biomarkers and pollutants
  - Important for design of studies
  - Protocol development
  - Interpretation of findings
- GIS and geospatial modelling
  - Members of cohorts geo-coded
  - Individuals can be linked with estimates of environmental exposures (air pollution, noise, proximity to traffic etc)
  - Allows analyses of the association between environmental exposures and health outcomes
  - Research visits to UCL planned to work / train jointly on projects

# Thank you

Martin Bobak

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<https://www.ucl.ac.uk/epidemiology-health-care/research/ucl-research-department-epidemiology-public-health>