

ECNIS

Environmental Cancer risk, Nutrition and Individual Susceptibility



With an estimated 2.9 million new cases and 1.7 million deaths each year, cancer remains a major public health problem in Europe. Human exposure to environmental carcinogens usually occurs over a prolonged period of time, making exposure assessments difficult. To explore the risks associated to these exposures, there has been a rapid increase worldwide in the use of biomarkers to monitor exposure and to determine the resultant biological effects, together with studies of human susceptibility factors.

With 25 partners from 13 member states, the ECNIS Network of Excellence is using exposure biomarkers and disease bio-indicators to study how diet and hereditary factors can influence the risk of cancer from environmental factors. This five year long project has developed and validated bio-markers and bio-indicators for use as short cuts in epidemiological studies on the modulation of cancer risk by diet and the influence of genetic variation on cellular, tissue and organism susceptibility to carcinogens. These studies will provide support for the development of functional foods that protect against DNA damage and cancer.

The project aims at developing and standardising procedures for cancer risk assessment, while identifying significant data gaps and providing directions for future development. Another goal is to use bio-marker data to refine and validate pharmacokinetic and pharmacodynamic models and their potential application in risk assessment protocols.

The ECNIS network promotes high quality research by making use of its partners' multidisciplinary expertise and infrastructure, as well as providing the opportunity to conduct molecular epidemiology research on a Europe wide scale.

Exchange of researchers, sharing of laboratory facilities and joint training activities will lower the cost of research and improve funding opportunities while raising expertise and the level of general knowledge about cancer risk.

Background

Substantial progress has already been made in improving the sensitivity, throughput and applicability of biomarkers of exposure, biological effect and susceptibility, but the promise for improving the health of the public using these tools is far from being realized. Most biomarker methods have not been properly validated yet, either analytically or in the field of human health effects.

In order to address this problem, an integrative effort is required and this is one of the main functions of ECNIS. Since most types of exposure are life-style related and low impact, it is difficult to assess them by using traditional epidemiological methods.

Bio-marker methodology greatly improved understanding of the disease's aetiology and human-exposure sources. Molecular epidemiology, using exposure bio-markers, may considerably improve conventional techniques by reducing misclassification and decreasing the time between exposure and the appearance of an observable effect.



Objectives

The ECNIS Network of Excellence is focused on exploring the potential of biomarkers of exposure as well as bio-indicators of disease to study how diet and hereditary factors can influence environmental cancer risk with the ultimate goal to reduce the cancer burden in Europe. The objectives of ECNIS have been classified into the following four groups of activities:

- **Integrating Activities** aimed at establishing a durable network of strongly collaborating participants, using harmonized integrated resources, data bases, procedures and quality standards.
- **Joint Research Activities**, focused on the exploitation of technological and scientific innovation in a nutrition and molecular cancer epidemiology with a ultimate use for cancer risk.
- **Excellence Activities**, focused on training and mobility programmes for inside and outside network and sharing of acquired knowledge with different stakeholders (researchers, industry, society, regulators, health care etc .)
- **Management Activities**, to establish a functional, flexible management structure that will ensure efficient communication between ECNIS participants, the EC and different stakeholders and that will guide the network towards its ultimate goal of becoming a recognized world-class force.

Results/ Impact

Project under execution

ECNIS has succeeded in accomplishing its vision and mandate. For nearly five years now, the project has brought together some of the best European research groups from 25 institutions in 13 countries active in the area of environmental cancer and its modulation by nutrition and genetic makeup.

ECNIS network has formed an extraordinary multidisciplinary forum for knowledge and expertise exchange for more than 200 participating researchers.

ECNIS funds have been supporting scientific events, including conferences, symposia and workshops – altogether as many as 68 workshops were organised with more than 3,000 attendees. As many as 181 joint publications acknowledging ECNIS were published.

For more information, please visit the website: www.ecnis.org

Or contact the project coordinator:

Rydzyński Konrad

Nofer Institute of Occupational Medicine, Łódź, Poland

Email: nmo@ecnis.org

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Partners:

Nofer Institute of Occupational Medicine (PL), Finnish Institute of Occupational Health (FI), German Cancer Research Center (DE), University of Copenhagen (DK), Karolinska Institutet (SE), Institute for Scientific Interchange Foundation (IT), The National Hellenic Research Foundation (GR), University of Leicester (UK), National Institute of Environmental Health (HU), Nicolaus Copernicus University, Collegium Medicum in Bydgoszcz (PL), Genetics Research Institute & Ospedale Policlinico (IT), Johannes Gutenberg University (DE), Lund University (SE), Katholiek Universiteit Leuven (BE), Institute of Cancer Research (UK), Maastricht University (NL), Biochemical Institute for Environmental Carcinogens (DE), Catalan Institute of Oncology (ES), Utrecht University, Institute of Risk Assessment Sciences (NL), University of Dundee, Biomedical Research Centre (UK), International Agency for Research on Cancer (FR), NETIX Skrzypczynski, Krzysztofowicz Sp. J. (PL), Vrije University of Brussels (BE), Leocordia AB (SE), Imperial College, London (UK).