



Environment as proxy for human health

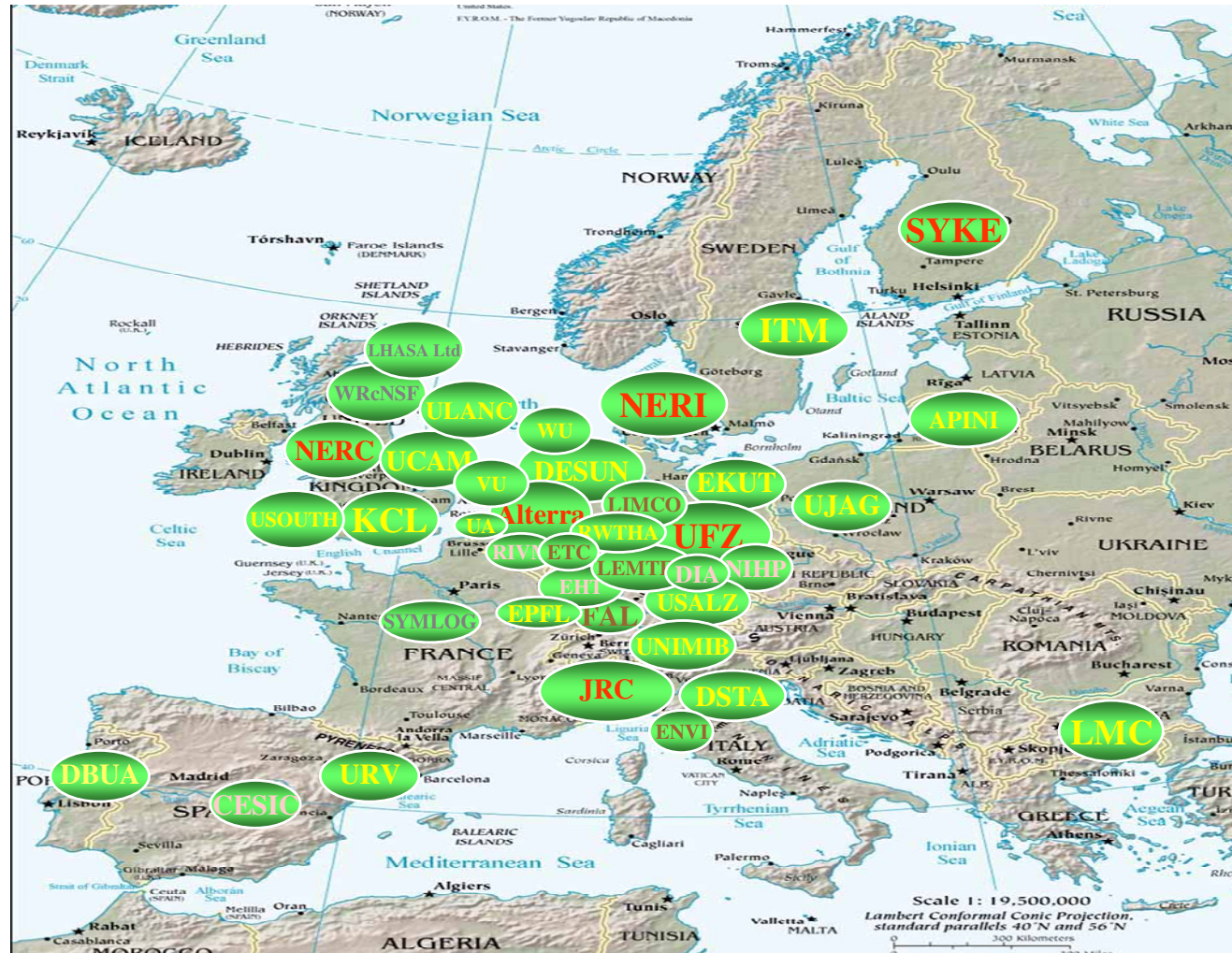
**Novel Methods for Integrated Risk
Assessment of Cumulative Stressors in
Europe (NoMiracle) - Integrated Project**

co-ordinated by Hans Løkke NERI, Denmark

NoMiracle



NoMiracle





NOMIRACLE will

- do research useful for policy and decision-making
- develop an environment and health “cause-effect framework” that will provide information for the development of Community policy dealing with sources and the impact pathway of health stressors
- provide novel tools for integrated risk assessment



NoMiracle Science & technology objective 2: To achieve more effective integration of the risk analysis of environmental and human health effects

- **Exposure assessment valid for both areas**
- **Mechanistic approach in effects assessment, including uptake mechanisms**
- **Demand for less use of mammalian test animals; in vitro methods and invertebrate testing in focus**
- **General biomarkers for human and environment**



The integration of human and ecological risk assessment deals with

- *exposure routes*
- *human and ecological endpoints*
- *methods*
- *data gathering*
- *assessment of cumulative stressors (chemicals in combination with natural stressors)*
- *spatial scales*
- *temporal scales*



Mammals are still used as models for humans

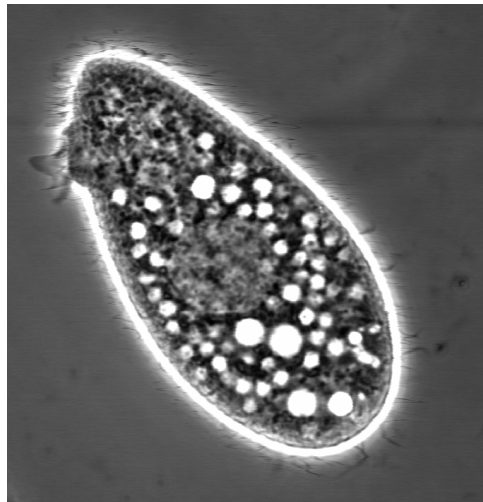


in the laboratory as instruments for early warning

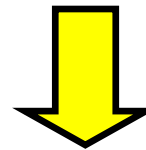
But *in the field* changes in organisms may indicate threats to human health, e.g. caused by pathogenes



Even single cell organisms such as *Tetrahymena pyriformis* may be used as proxy for human health:



➤ metabolism, structure and mode of function of cilia comparable to cilia in human epithelia



suitable for human health risk assessment of environmental samples



Suggestions for research topics:

”Research will:

- develop and validate simple non-vertebrate methods as proxy for assessing complex environmental impacts on human health
- focus on genetic factors and molecular interactions that dominate the toxicokinetic and – dynamic processes of chemicals in organisms
- explore the impact of spatial and temporal variations in exposures which are typical for real-life exposure situations”