

Genetics and Environmental Risk Factors for Complex Diseases: The Northern Sweden Population Health Study (NSPHS)

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Update:

This Swedish IPY project evaluates a northern Swedish population with known demographic and environmental exposures to identify genetic and environmental factors that contribute to health status. In this study cross-population comparisons are used to study genetic and environmental risk factors among populations with widely differing origins and environments. The study measures a broad spectrum of environmental (e.g. diet, physical activity, and daylight exposure) and genetic (e.g. single-nucleotide polymorphisms) factors with potential relevance for health risk. A comprehensive set of health indicators and diagnoses of cardiovascular, orthopedic, and metabolic diseases has been collected. Especially the state-of-the-art laboratory analysis of blood lipids comprising several hundreds of lipid species will give unique insights into the human metabolism under extreme living conditions. Studies of rural populations can make substantial contributions to basic research to understand environmental and genetic determinants of disease. The European Special Population Network (EUROSPAN) provides a platform combining studies of rural populations from different parts of Europe to leverage these for collaboration with large international consortia (Igl et al, 2010).

Abstract IPY Oslo Science Conference June 8-12, 2010

Northern Sweden Population Health Study (NSPHS) - assessing the effects of climate change on health and lifestyle in subarctic areas

Time: Friday 11 June 11:00 **Location:** Room E6

U Gyllensten¹, **W Igl**¹, **Å Johansson**¹, **G Zaboli**¹, **A Ameer**¹, **I Jonasson**¹

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Health care and research in circumpolar populations are often limited due to poor infrastructure, although such populations may have special medical needs. The Northern Sweden Population Health Study (NSPHS) is a paradigmatic study that combines a detailed survey of the lifestyle and health conditions of the community with basic research into environmental and genetic determinants of non-communicable diseases. The NSPHS is part of the European Network on Special Populations (EUROSPAN), focusing on remote, rural, populations from across Europe. NSPHS is a population-based, cross-sectional study of the populations in the Karesuando, Soppero and Vittangi areas north of the Arctic Circle in northern Sweden. People in this area either lead a traditional, subsistence-based, lifestyle mainly based on reindeer herding, hunting and fishing, or a lifestyle similar to other western European countries. The study measures a broad spectrum of environmental (e.g. occupation, diet, physical activity and daylight exposure)

and genetic (e.g. single-nucleotide polymorphisms) factors of relevance for health risk. A comprehensive set of health indicators and diagnoses of cardiovascular, orthopedic and metabolic diseases has been collected. The state-of-the-art laboratory analysis of blood lipids comprising hundreds of lipid species will give unique insights into the human metabolism under extreme living conditions. Of particular importance are the consequences of climate change on lifestyle and health status of the population. Among the project health deliverables are a thorough health investigation with counseling for individual participants and information meetings discussing the results on a community level. Studies of rural populations can make substantial contributions to basic research to understand environmental and genetic determinants of disease. Projects such as the NSPHS provide an example of the benefits of combining population-based health studies with basic research of rural populations, to leverage studies of these populations for participation in large international consortia.

Igl, W., A. Johansson, G. Zaboli, A. Ameer, I. Jonasson and U. Gyllensten, 2010. Northern Sweden Population Health Study (NSPHS). Rural and Remote Health, in press.