**Investigation of atopic dermatitis in Greenland; distinct genotypes, phenotypes and immunotypes**

**Brief project description:**

Atopic dermatitis (AD) is a chronic inflammatory itchy skin disease, associated with allergic and psychiatric comorbidities. It is the most common skin disease in childhood and affects approximately 20% of children in western countries. Despite intensive research over the past decades there is still poor insight in environmental and genetic risk factors of AD. Notably, the main part of our knowledge relies on research conducted in adults in western countries.

The settings in Greenland differ on many parameters from the conventional western society, such as living conditions, diet, climate and genetic admixture. Based upon successful findings from studies performed in small populations, we hypothesize that, by studying atopic dermatitis in Greenland, we may provide a break-through in AD research.

We will establish a large cohort of 1,400 children in Greenland to describe prevalence of and genotypes associated with AD. By examining children with AD we will be able to describe pheno- and immunotype, bacterial load and specific risk factors for AD amongst Inuit children. Of this cohort, we will establish a sub-cohort of 25 Danish children with AD for further phenotype, immunotype, and microbiome comparisons.

This study foresees a unique opportunity to examine AD from a different perspective and hopefully identify meaningful environmental and genetic risk factors.

The following 3 papers are anticipated:

1. A questionnaire-based cross-sectional study of atopic dermatitis in Greenlandic Inuit children
2. A phenotype, immunotype and microbiome comparison of Danish and Inuit children with atopic dermatitis
3. A genome-wide association study in Greenlandic Inuit children – an investigation of common genetic variants associated with atopic dermatitis