

## Dermato-Venereological Research at Tampere University

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Tampere University has very active dermatological research, with emphasis on clinically relevant questions. Successes in recent decades have been the characterisation of latex allergy and prevention of latex allergy epidemics, as well as food allergy research (Associate Professor Kristiina Turjanmaa) and the study of dermatitis herpetiformis, in which our research, under the supervision of Professor Timo Reunala, has led to greater knowledge regarding aetiology and improvements in diagnosis and treatment.

Active research in Tampere and Lahti, in collaboration with dermatologists in Sweden and England, resulted in the use of dimethyl fumarate in consumer products being prohibited in the European Union since spring 2009, demonstrating the rapid conversion of research results into practice.

During recent years, research in Tampere has focused on photodermatology and vitamin D, lichen sclerosus, chronic leg ulcers, atopic dermatitis, and dermatitis herpetiformis. Descriptions of our ongoing research projects are provided below.

### *Dermatitis herpetiformis*

The leader of our dermatitis herpetiformis study group is Professor Emeritus Timo Reunala, who has investigated dermatitis herpetiformis in Tampere University Hospital since 1970. The other investigators in our study group are Kaisa Hervonen, MD, PhD, Teea Salmi, MD, PhD, Anna Alakoski, MD and Associate Professor Pekka Collin. Our main interests are the epidemiology of, and associated diseases and survival in, dermatitis herpetiformis. We collaborate with the Celiac Disease Study Group in Tampere.

### *Ultraviolet radiation and vitamin D*

The vitamin D research group was launched in 2004. The leaders of the group are Professor Emeritus Timo Reunala and Associate Professor Erna Snellman. We collaborate with other vitamin D researchers at our university and abroad. Our initial aim was to assess the dependence of skin vitamin D production on the area and body site exposed to ultraviolet radiation.

The first study focused on atopic patients receiving heliotherapy for eczema on the Canary Islands, Spain. Further studies elucidated some of the basic characteristics of vitamin D formation, such as the influence of UV source, body area and skin diseases. The initial results were published in the thesis of Dr. Katja Vähävihi, MD, PhD in September 2010 (<http://acta.uta.fi/teos.php?id=11355>). In 2010, Dr. Meri Ala-Houhala, MD joined our vitamin D consortium and began her doctoral project. She is studying the effects of narrowband UVB radiation on vitamin D concentrations in chronic kidney disease patients requiring dialysis. In further studies, she is focusing on the possible use of narrowband UVB to correct vitamin D deficiency in different cohorts.

### *The role of microbial infections during the first years of life in progression to atopy*

The increasing incidence of atopic diseases in developed countries suggests that environmental factors play a major aetiological role. Infections are among the strongest environmental candidates. We have biobank samples from the Diabetes Prediction and Prevention (DIPP) study, a prospective population-based birth cohort follow-up study being conducted at three University Hospitals in Finland: Turku, Oulu and Tampere. In this study, children with HLA alleles conferring increased genetic risk for type 1 diabetes are identified at birth, and followed through regular visits to study clinics every 3–6 months. The occurrence of both viral and bacterial infections during the first years of life, and also during pregnancy, is studied by methods based on serology and nucleic acid amplification. The balance of the immune system is studied by evaluating the transcription of cytokines and transcription factors specific for Th1, Th2 and Treg cells. This is a joint study led by Professor Heikki Hyöty and Dr. Maria Lönnrot, with assistance from PhD student Laura Korhonen, MD. Working on this project are the Dermatology clinic at Tampere University, the Department of Virology at the Medical school of Tampere University, the Institute of Medical Technology at Tampere University and the DIPP study group.



Prof Antti Lauerma, Department of Dermatology and Venereology



Timo Reunala, Professor emeritus in Dermatology.

### *Lichen sclerosis*

In 2010, we launched in our dermatological clinic a new multidisciplinary research group to study lichen sclerosis (LS). The first part of the LS study was a register study focusing on patients who suffered LSA during childhood and who had been treated in our hospital during the past two decades. Medical student Kaisa Karvinen conducted this part of the study. We have now widened the scope further to include adult female patients with LS. The research group includes PhD student Dr Maria Lagersted, who specialises in inheritable diseases. Dr Satu-Leena Sallinen, MD, PhD from our department also has an active role in the study. In our research team, in addition to dermatology, we also have expertise in gynaecology, pathology, microbiology and genetics. Associate Professor Erna Snellman launched the consortium during her stay at our clinic in 2010. The present leader of the consortium is Professor Antti Lauerma MD, PhD, who became Chair in January 2011.

### *Chronic ulcer research group*

Tampere University Hospital Dermatology Clinic has a long tradition of chronic ulcer research. At present, Associate Professor Annikki Vaalasti is the leader of the group. Dr Anna Hjerpe is just finishing her thesis, which deals with the prevalence and treatment of venous leg ulcers. The group collaborates closely with other clinical specialities such as vascular surgery, internal medicine, plastic surgery and pathology.

### *Other projects*

Professor Antti Lauerma's collaborative projects include the EU project MAARS (Microbes in Allergy and Autoimmunity Related to Skin), for which he is Vice-Coordinator. The project was launched in April 2011, lasts 4 years, has EU funding of 6.0 million Euros, and has 10 partners including the Finnish Institute of Occupational Health (FIOH) (H. Alenius, Coordinator), the University of Helsinki (A. Ranki), Karolinska Institutet (J. Kere) and Icosagen AS (M. Ustav) as Nordic and Baltic participants. The project will study the interaction of the skin microbiome and skin tissue, with atopic dermatitis and psoriasis as model diseases.

Other projects in which Professor Lauerma is involved include an Academy of Finland-funded project on the interaction between IL33 and ST2 in atopic dermatitis and a Work Endowment Fund-funded project on the prognosis of asthma. He is also conducting a study into the immunopathogenesis of acne vulgaris in collaboration with Associate Professor Riitta Palatsi of the University of Oulu, and with FIOH. Five PhD studies supervised or co-supervised by Professor Lauerma are being undertaken as part of these projects, three of which will be finished in 2011.

Tampere University Hospital participates actively also in the work of the Finnish Contact Dermatitis Research Group (Docent Taina Hasan), which is conducting ongoing multi-centre contact allergy and patch testing studies.

*Tampere University Central Hospital.*

White arrow indicates the Department of Dermatology.



### **Facts**

Tampere University was founded in 1925 in Helsinki and relocated to Tampere in 1960. The University is ranked the most popular in Finland and has approximately 2,200 employees and a total of 15,000 students. There are 6 faculties in Tampere.

The group of researchers at the Department of Dermatology at Tampere University consists of:

1 professor + 1 professor emeritus

8 researchers with a doctor's degree (all MDs)

4 registered PhD students

During the last three years, 3 doctoral theses have been produced.