

Four Nordic Dermatologists and Their Research

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Illustrating the diversity in dermatology: read about various research fields and the Nordic scientists who work in them. Kjersti Danielsen, Noora Neittaanmäki-Pertu, Jenna Huld Eysteinsdóttir and Bibi Petersen work in different countries but share many experiences as scientists at the start of their research career. Hanna Norsted interviewed them to find out more.

They all became interested in dermatology as medical students, but Jenna Huld Eysteinsdóttir at Sahlgrenska University Hospital admits she had a completely different plan as a child. *I grew up on a farm in Iceland and planned to become a veterinarian. Later I took a course in anatomy and became interested in medicine. In medical school I enjoyed the mix of surgery and medicine that dermatology offers.* Kjersti Danielsen studied medicine in Bochum, Germany and it was there she first came in contact with dermatology. *Dermatology appeals both to the practitioner, aesthetician and the medic in me and was the field I felt best combined all these things.*



Noora Neittaanmäki-Pertu at Helsinki University Central Hospital works on field cancerization and field-directed photodynamic therapy. In a paper published last year in *Lasers in Surgery and Medicine* she describes how to detect field cancerization using a hyperspectral imaging system. *The hyperspectral camera captures images in up*

to 70 narrow wavelengths of visible light, whereas a regular camera uses only 3. Different biological tissues can be identified by their reflected spectra in hyperspectral images and thus malignant skin areas can be separated from the healthy skin. In the pilot study, the camera has been used to detect the skin areas with subclinical field cancerization i.e. areas of multiple skin cancer precursors for early treatment of the affected areas. The project on hyperspectral imaging has thereafter proceeded and we are now using hyperspectral imaging to find excision margins for ill-defined tumours like lentigo maligna and infiltrative basal cell carcinoma.

Malignant vs healthy skin is also related to Bibi Petersen's research. Based at Bispebjerg Hospital, University of Copenhagen, she studies the application of sunscreen and how much we actually use in reality. Rather alarmingly, people apply only 20–50% of the amount needed (2 mg/cm²) to achieve the sun protection factor (SPF) stated on the label, as reported in her review article in *Photodermatology, Photoimmunology & Photomedicine* from 2013. *Our results were based on the amount of sunscreen left in the bottle in relation to the area of skin that had been rubbed with cream. People do not follow the recommendations regarding sun behaviour, i.e. avoiding the sun at mid-day and applying sun protection before they sit in the sun.* I asked her if her research has put her off going on sun holidays and she admitted that she is indeed very careful with the sun but that she has never been fond of sun-bathing even before she became a dermatologist.



Fig. 1. Noora Neittaanmäki-Pertu and some of her co-workers in the lab.



Psoriasis affects millions of people and is the focus of research of both Kjersti Danielsen at University of Tromsø and Jenna Huld Eysteinsdóttir.



Kjersti Danielsen has recently defended her thesis on the prevalence of psoriasis and its relation to overweight and metabolic syndrome, based on the Tromsø study cohort from North Norway. Over the past 30 years the prevalence of psoriasis has more than doubled. This increasing trend could partially be due to increased awareness of the disease in the population; however, the results are also supported by others, indicating a possible global trend.

Dr Danielsen explains: *Our findings suggest that lifestyle factors such as smoking and overweight may increase the risk of psoriasis. There is also an ethnic and geographical factor, as several studies show a higher prevalence of psoriasis in Scandinavia. Why that is we do not know, but it could be related to both genetic, climatic as well as other environmental factors.*



Fig. 3. The city of Tromsø, Norway, home to the Tromsø study cohort.
Photo: Terje Simonsen



Jenna Huld Eysteinsdóttir has examined the effect of geothermal seawater from the Blue Lagoon in Iceland combined with narrowband ultraviolet B phototherapy as treatment for psoriasis. She explains: *The water in the Blue Lagoon is a mix of seawater and geothermal water. That means that the ecosystem is different from other thermal baths. One study*

has shown that extracts from the silicon dioxide and 2 different types of algae from the Blue Lagoon improves the skin barrier and prevents early skin aging. Our hypothesis is that the silicon dioxide and algae contribute to the healing and that they have a certain anti-inflammatory effect.

They can all attest the fierce competition in dermatology when it comes to research funding. *As a specialist it is not difficult to find research projects, but getting funding is,* says Bibi Petersen. *At first, when you have no publications it is difficult to get funding. When the project proceeds it gets easier but you really have to be active in applying for grants,* says Noora Neittaanmäki-Perttu. Jenna Huld Eysteinsdóttir adds: *Iceland does not have big grants as Sweden does, so it has been very difficult for my colleagues and me to get funding.*

They also need to balance work at the clinic and research and they admit it is hard. *Combining clinical work and research require effort. At the moment I am off clinical work and concentrate on research for at least 6 months,* says Noora Neittaanmäki-Perttu. Kjersti Danielsen worked as a clinician earlier this year but has mostly focused on research past 3 year prior to this, and will continue to do so for another 2–3 years. She is presently working at Cornell University, USA as part of her postdoc. *Combining full-time clinical work with being part of an active research group is not possible in the long-term. Clinical work and research are both time-consuming and the patient always wins over data that need analyzing.*



Fig. 4. Blue Lagoon, Iceland.

References

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