Understanding autoimmunity by studying the genetics of Psoriasis and Celiac Disease.

The aim of the group is to identify genes and biomarkers in the early phase of an autoimmune disease. We work with two large family cohorts, one with psoriasis and one with celiac disease (CD). Psoriasis and CD are two of the most common chronic diseases in the western world, with a prevalence of about two percent in psoriasis and one-three percent in CD. More than 70% of Swedish children affected with CD remain undiagnosed.

2007 was the year of Genome Wide Association Studies (GWAS). More genetic risk factors for common diseases were identified in this one year than had been collectively reported before 2007. This new methodology is used to analyze over one million genetic variants, each consisting of changes in the DNA sequence, so called single nucleotide polymorphisms (SNPs) or copy number variants (CNVs).

The first GWAS on CD identified eight new gene regions (van Heel 2007). Almost all of these have since been replicated in other autoimmune diseases (type 1 diabetes, rheumatoid arthritis, systemic lupus erythematosus, ulcerative colitis as well as psoriasis).

We have completed a GWAS in our Swedish CD families and the results both confirm previous findings by van Heel and point to new pathways involved in CD. We are part of the European Psoriasis Genetics Consortium where we are currently performing a large GWAS including a joint replication. One of the strongest loci from our GWAS in CD, overlaps with a loci confirmed in this joint study.

We continue working on identifying the very functional genetic variants responsible for disease risk, at these loci, using large scale quantitative PCR, FACS, Western Blot and cells from both blood and small intestine.

Genes and pathways identified through these GWASes are implicated in inflammation and cancer as well as metabolic and cardiovascular disease. Understanding how they work in CD and psoriasis can lead to a better understanding of these other common diseases and to the identification of novel targets for therapy and treatment of disease.

Group members and collaborators

Åsa Torinsson Naluai (PI)
Co-workers at the Dept of Medical and Clinical Genetics: Sara Karlsson (M.Sc.) Lena Samuelsson (PhD, clinical geneticist) and Professor emeritus Jan Wahlström.
Co-workers at the Queen Silvia’s Childrens hospital: Dr Audur Gudjonsdottir

National collaboration:
Assoc Prof. Staffan Nilsson, PhD student Malin Östensson, Chalmers, Gothenburg.
Assoc Prof. Susanna Cardell, Dept. of Microbiology and Immunology, Gothenburg.
Dr Daniel Agardh, University Hospital MAS, Malmö.
Assoc Prof. Anna-Carin Olin, Assoc prof. Fredrik Nyberg, PhD student Santosh Dagham, Section of Occupational and Environmental Medicine, Gothenburg.
Professor Lauren Lissner, "Epilife", Public Health Epidemiology Unit, Gothenburg.
Professor Nancy Pedersen, "Lifegene", Karolinska institutet, Stockholm.
Professor Mats Bende, ÖNH, Skövde.
Assoc Prof. Mikael Benson, The Unit of Clinical Systems Biology, Gothenburg.
Assoc Prof. Klas Sjöberg, Department of Medicine, University Hospital, Malmö.
International collaboration:
Professor Ludvig Sollid, Oslo Norway.
Assoc prof. David A. van Heel, London UK.
Assoc prof. Cisca Wijmenga, Gröningen, The Netherlands.
Assoc prof. Päivi Salavainen, Helsinki, Finland.
Professor Luigi Greco, Neapels, Italien.
Professor Thomas Pieber, Graz, Austria.
Assoc prof. Martin D. Tobin, London UK.
Professor Richard Trembath and the Psoriasis Genetics Consortium, London UK.

Selected publications


Curriculum Vitae

Asa Torinsson Naluai
Date of birth: April 8th, 1968, Sex: Female, Nationality: Swedish

Dissertation date: 16th of September 2004
Discipline: Clinical Genetics “The genetic complexity of celiac disease: Gene variants linked and associated to an inflammatory autoimmune disorder.”
Supervisors: Jan Wahlström, Professor, Lena Samuelsson, PhD.

Sept 2004- Dec 2007
Tenured position at Sahlgrenska Academy as Operative Manager for the Genomics Core-Facility. Setting up the robotics and several analyses at the lab. Involved in study design of projects, mainly diseases with a genetically complex background such as allergies, cardiovascular disease and metabolic syndrome.

Jan 2008 - Dec 2009
Post-Doc at the Dept. of Microbiology and immunology, Inst of Biomedicine Sahlgrenska Academy. In the fall of 2007 I was awarded a post-doc position from Göteborgs University in open competition. Supervisor: Assoc. Prof. Susanna Cardell.

Jan 2010 -
Core Facility, Sahlgrenska Biobank , research and development.

Supervision
Graduate students:

Master students
Svetlana Adamovic: VT2000, Celiac disease and linkage and association to CTLA4
Ellen Hansson: VT2007, Gene expression variability of immunologically important genes in blood and intestine of celiac patients – a comparative study

**Teaching**

I have taught at the medical, pharmaceutical, health science and biomedical programs: Cell biology/genetics, developmental biology and genetic epidemiology. 
I have been the course leader for the graduate course "Searching for genes influencing human traits and diseases" at the Sahlgrenska Academy.

**Invited speaker**

Invited speaker at "Svenskt-Italienskt möte om celiaki", Italian embassy and Karolinska Institute, Stockholm, 24 april, 2008


Invited speaker at Svenska Barnläkarföreningen, Sektionen för Gastroenterologi och Nutrition, årsmöte, Göteborg, 26 mars, 2004

Invited speaker “Biotechnology Havana”, Havana, Cuba, Nov 2003


Oral presentation of the results from the "genetics group" (Italy, France, Finland, Great Britain, Norway och Sweden) EU representatives in Belgium, April 2003. (COELIAC-EU CLUSTER N° QLK1-CT-1999-00037).

**Member of the board of the CERROSS research school at Sahlgrenska Academy, 2008-, Co-chair of the board of Junior Faculty, 2007-2008, Member of the board of Junior Faculty, Sahlgrenska Academy 2005-2010. Member of the board of the Medical faculty and the Institutional board (Inst. of the health of women and children) during 2001-2004.**

**Reviewer invitations for the journals:**

Journal of Pediatric Gastroenterology & Nutrition, Clinical Chemistry, Genes and Immunity
European Journal of Human Genetics, Tissue Antigens, Journal of NeurolImmunology
Expert Review of Molecular Diagnostics, Human Molecular genetics
Journal of medical Genetics, Human Immunology

**Popular science:**

Torinsson Naluai Å. Glutenintolerans och våra arvsanlag. Medikament Vol. 2-05, pp 62-64

Interview at "mera vetenskap" kunskapskanalen, April 2006

Interview at "Vetni: Podcast om Vetenskap och Teknik", Spring 2007

Speaker at "akademisk kvart" at Wettergrens Göteborg, May 2007, April 2010