

# NordMilk - Nordic Network on characterization of milk from indigenous Nordic cattle breeds

**Nina A. Poulsen<sup>1</sup>, Mette K. Larsen<sup>1</sup>, Maria Glantz<sup>2</sup>, Marie Paulsson<sup>2</sup>, Gerd E. Vegarud<sup>3</sup>, Tove G. Devold<sup>3</sup>, Juha Kantanen<sup>4</sup>, Anne Pihlanto<sup>4</sup>, Bryndís E. Birgisdóttir<sup>5</sup>, Linn F. Groeneveld<sup>6</sup>, Peer Berg<sup>6</sup>, Lotte B. Larsen<sup>1</sup>**

<sup>1</sup>Department of Food Science, Aarhus University, Denmark, <sup>2</sup>Department of Food Technology, Engineering and Nutrition, Lund University, Sweden, <sup>3</sup>Department of Chemistry, Biotechnology and Food Science, Norwegian University of Life Sciences, Norway, <sup>4</sup>Biotechnology and Food Research, MTT Agrifood Research Finland, Finland, <sup>5</sup>Department of Food Science and Nutrition, University of Iceland, Iceland, <sup>6</sup>NordGen - Nordic Genetic Resource Center, Norway

The newly established NordMilk Network is a scientific network for researchers working on characterization of milk from indigenous Nordic cattle breeds. The aim of the network is to fulfill some of the international obligations through genetic and phenotypic characterization of milk from Nordic indigenous cattle breeds. This is considered as a step towards developing dairy niche products from these breeds and thereby sustainable use and conservation of genetic resources.

Modern dairy farming is based on intensive production systems for high yielding breeds to increase the economic net benefit for the primary producers and the consumers. Thus, indigenous breeds have to a large extent been replaced by higher yielding global breeds. Therefore, many of the Nordic indigenous cattle breeds generally are in low numbers and classified as endangered or critically endangered. Locally, many of these cows are used as suckling cows or for landscape management and the fraction being milked varies from breed to breed. However, molecular characterization of the Nordic breeds suggests that they are genetically distinct (Kantanen et al., 2000) and show different allelic and genotypic frequencies for example at the casein loci (Lien et al., 1999). This could be reflected in distinct milk composition among the breeds, which could facilitate development of niche dairy products and thereby an increase in the economic incentive for sustainably utilizing these breeds.

National funding in the different Nordic countries has ensured that milk from the indigenous breeds can be collected and characterized in order to document if milk originating from indigenous breeds have desirable characteristics of nutritional and/or technological value that can be exploited in specific dairy products, like drinking milk, butter, cheese or fermented dairy products. Furthermore, genetic analyses using the bovine HD chip will provide new understanding of the genetic basis of these traits in indigenous Nordic cattle breeds.

## References

Kantanen J, Olsaker I, Holm L-E, Lien S, Vilkki J, Brusgaard K, Eythorsdóttir E, Danell B, Adalsteinsson S. 2000. Genetic diversity and population structure of 20 North European cattle breeds. *The Journal of Heredity* 91: 446-457.

Lien, S., Kantanen, J., Olsaker, I., Holm, L-E., Eythorsdóttir, E., Sandberg, K., Dalsgard, B., Adalsteinsson, S. 1999. Comparison of milk protein allele frequencies in Nordic cattle breeds. *Animal Genetics* 30: 85-91.