NEWSLETTER

EADGENE

European Animal Disease Genomics Network of Excellence for Animal Health and Food

July 2007

EDITORIAL

This is the ninth EADGENE Newsletter.

In this newsletter you will find a short article about the EADGENE days 2007.

The new EADGENE website and the Animal Genomics for Animal Health Conference are also advertised.

Giuletta Minozzi tells about her work and Sem Genini is our "In the Picture" guest.

Angela van der Sanden

EADGENE-SABRE days 2007

EADGENE organised the EADGENE-SABRE days in cooperation with SABRE from 4 to 8 June in Utrecht (The Netherlands).

This five day event focussed on the latest genetics and genomics research in the field of farm animal health, through a joint 2-day conference which was preceded and followed by a series of satellite workshops and meetings.
This event kicked off with a "From Infection to Inference workshop" with a lot of enthusiastic attendees and much discussion between the disease experts and specialists in data analysis. On Tuesday and Wednesday the actual "Genomics for Animal Health" conference took place. This 2-day conference featured a series of presentations by keynote speakers and leading specialists in their fields which updated delegates on the latest genetics and genomics research in udder health, gut health and functionality, genome wide selection, microarray analyses, and new genomics tools and technologies.

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The main event was followed by several workpackage meetings and other satellite meetings. The *E.coli*-Salmonella workshop and FABRE-TP (Farm Animal Breeding and Reproduction Technology Platform) discussion meeting took place on Thursday. The event was closed by the "Genomics for Robust Cows" meeting in Lelystad.

All in all a lot of interesting topics were discussed during these events, with a lot of enthusiastic delegates taking advantage of this clustering of meetings. Next year's EADGENE days will again take place in June!

Read more about the EADGENE-SABRE days at www.eadgene.info

New EADGENE website launched!

EADGENE has recently launched its new website (www.eadgene.info), which gives a good and clear overview of the EADGENE project for citizens, industry and scientists. The website includes information on the research carried out by EADGENE, training and courses, funding schemes, and news and events relevant to the EADGENE project.

The new website also includes a password protected area for EADGENE's Partners, where internal project documents, downloads and discussion forums are made available. Our Partners are invited to register for the website using the "Register" button in the top right corner.

www.eadgene.info

Public website:

- General information about EADGENE
- Details about the project
- Achievements
- Training and Courses
- News & Events
- Industry involvement

The Partner website:

- Specific information for EADGENE scientists
- Workpackage and working group pages
- Reports
- EADGENE meeting minutes
- Management announcements

By Giulietta Minozzi, PhD student at INRA

Poultry selection: improving animal health and general immune capacity

In poultry, as of course in other farm animals, it is of great importance to improve animal health and resistance to pathogens. Since the different pathogens that an animal could face in his entire lifecycle are uncountable, selection for general immune response in poultry has been proposed as a sustainable alternative to selection for specific infectious diseases.

This basic principal drives an experimental selection programme in poultry based at INRA, France. The experiment started in 1994 with three selected chicken lines on three different *in vivo* immune related traits: high antibody response, high phagocytoses activity and high T cell-mediated activity. Each line was selected for one of the components of the immune system, in this way both innate and acquired immunity were implicated in the experiment. In addition a control line was kept by random breeding. The responses after 12 discrete generations of single-trait within-line selection were significant for all three traits, which were found to be independent.

One of the principal questions addressed was is it possible to build complementary immunity with a combination of crosses. This crossing approach is used in intensive poultry production by taking advantage of the two-step crossbreeding design (F1 and F2) used to produce more commercial chicken. Consequently planned crosses have been designed in the last two years between the three previously selected chicken lines. Results show that:

- correlations between the traits confirm the independence of the selection criteria in the first cross generations,
- negative or no heterosis is observed,
- the mutual effect is only significant in one of the lines.

This shows that it is important to complete the first and possibly second cross generations to gain further knowledge on these immune response traits. Soon it should be possible to include the use of genetic markers like SNPs to follow better the transmission of underlying genes.

Another studied aspect was the estimated correlations between parameters of innate (natural antibodies) and acquired (specific antibodies) immunity (of animals under this strategy of selection and crossbreeding). Our findings suggest a positive relationship between the levels of natural antibodies and acquired humural immune responses in F2 and backcross produced populations.

Finally this project combines different strategies, corresponding to the consumer's demand to improve scientific knowledge in these fields, contributing to food safety and human health.

In the picture:

Sem Genini is a post-doc scientist at the Parco Tecnologico Padano (PTP) in Lodi in the Livestock Genomics I unit, led by Dr. Elisabetta Giuffra. Sem was born in July 1976 in the Italian part of Switzerland, the "famous" Ticino, and he graduated in 2002 at the Swiss Federal Institute of Technology in Zurich (ETHZ) as Engineer in agricultural science specialising in biotechnology. During his studies he spent one sabbatical year working in Australia and in the USA, where he could improve his English language skills.
He continued his career in science with a focus on the animal genomic area. Hence, he got his PhD in animal molecular biology and functional genomics at the ETHZ in 2006, with, as a main subject, the lethal hereditary defect called arthrogryposis multiplex congenita (AMC). He also contributed to the building and analysing of resource populations for other pig genetic diseases.

His current research spans a number of fields; the overall purpose and central theme is to understand the molecular mechanisms involved in host-pathogen interactions in order to improve animal health. Sem enjoys to actively participating in the EADGENE project. He sees this network as an excellent opportunity to meet top researchers working in the same area. His positive-thinking and open mind allow him to establish good working relationships with his colleagues.

Sem loves playing and watching all kind of sports, especially soccer (he was an active player for 20 years), ice hockey, tennis, and auto- and motorbike racings. His main hobbies are mountain hikes (see picture), travelling, languages and enjoying music and friends.

Besides all this, he is involved in running a farm, as working in the field is another of Sem's passions. However, although he has more than a hundred sheep, Sem has never conducted research projects on this domestic animal!

In the future, he wishes to be able to continue to live his life as it is now, though he would not be averse to the idea of marrying and having children. Even if he is happy with his current research life, he would not mind publishing in Nature and/or Science!

International Symposium on

Animal Genomics for Animal Health (AGAH)

23 - 25 October 2007, OIE Headquarters, **Paris, France**

This conference aims to identify critical needs and opportunities to advance the use of animal genomics to solve problems in animal health. All topics that relate to this goal will be considered.

For further information please click on their website or view the programme.