

EDITORIAL

This is the eighth EADGENE Newsletter.

The host pathogen interaction article this time focuses on the work of the fish pathogen group.

The next EADGENE-SABRE days are advertised. Florence Jaffrézic is our "in the picture" guest.

Furthermore, the ethical issues of EADGENE are discussed and the Mobility plan is highlighted

Angela van der Sanden

Host Pathogen interactions - Fish Pathogens

In the EADGENE joint research programme, research is focussed on several specific host-pathogen relationships. In previous newsletters, the functional genomics of host-pathogen interactions of the common livestock diseases of Salmonella, Mastitis and *E. Coli* in particular were discussed. In this Newsletter, we will discuss the latest research group – the fish pathogen group.

The research proposal "Genomics of Pathogen/salmonids interactions and genetic resistance" was launched by the EADGENE fish pathogen working group in January 2007. The Group will focus on the important aquacultural species Atlantic Salmon and Rainbow Trout, and on the viruses Infectious Salmon Anaemia Virus (ISAV) and Infectious Pancreatic Necrosis Virus (IPNV). The chosen fish species are of high commercial value, and contribute significantly to the economy of several European countries including Norway, Ireland and the UK. The diseases ISA and IPN currently present a significant challenge to the effective aquaculture of these species, both in terms of economic loss and animal welfare. The status of fundamental genetics and genomics research in both Atlantic Salmon and Rainbow Trout is relatively advanced - e.g. for both species there are several genetic maps available, as well as several specific databases and genomic tools. This creates opportunities for the Fish Pathogen Working Group to focus directly on more applied research into these important diseases.

ISAV is an infectious disease that principally affects Atlantic Salmon. The disease is caused by a virus from the genus *Isavirus*, family *Orthomyxoviridae*. Clinical signs of ISA include anaemia and leucopenia, exophthalmus, hemorrhages, ascite, petechia in viscera, and congestion of the liver, spleen and gut. Natural outbreaks of ISA were observed only in Atlantic salmon, but recent observations showed that at least some of the genotypes of rainbow trout are susceptible to the virus. ISAV is inactivated at normal human body temperatures and pH and is therefore not dangerous to humans (http://www.fws.gov/northeast/fisheries/issues/isav_qna.htm)

IPNV is a double-stranded RNA birnavirus that can infect different fish species. IPNV is a pathogen of salmonids worldwide, both in cultured and wild fish. The virus can cause high levels of mortality, particularly in intensively cultured fish in both the freshwater and sea water environment, and is currently the most serious disease of Atlantic Salmon in Norway. Within-host replication of the virus causes acute, multifocal lesions of the pancreas, and (to a lesser extent) the intestine and the liver. The virus is thought to be transmitted both vertically through eggs and horizontally, with certain infected fish secreting large amounts of the virus. The virus poses no risk to animals other than fish.

The EADGENE Fish pathogen working group will investigate the host response to ISAV and IPNV. Therefore both fish species will be challenged with one of the viruses. Various genomic technologies will be used to compare the response of infected/susceptible Atlantic Salmon and rainbow trout to their uninfected/resistant counterparts. The application of this genomic research is likely to guide both selective breeding for improved disease resistance and effective vaccine development.



Genomics for Animal Health

4th-8th June 2007, Utrecht, The Netherlands



The EU-funded projects [EADGENE](#) and [SABRE](#) would like to invite you to their joint meeting on "Genomics for Animal Health." This 5-day event will focus on the latest genetics and genomics research in the field of farm animal health, through a joint 2-day conference which will be preceded and followed by a series of satellite workshops and meetings.

Genomics for Animal Health: Joint SABRE and EADGENE conference

5 th June 14.00-18.00 and 6th June 9.00-16.00

Satellite workshops:

- **From Infection to Inference: Interpreting Animal Health & Disease Data**, 4th June 14.00-18.00 and 5th June 8.30-11.00
- ***E.coli* and Salmonella Workshop**, 7th June 9.00-17.00
- **FABRE-TP discussion meeting**, 7th June 9.30-12.30
- **Genomics for Robust Cows workshop**, 8th June 10.00-17.00, will take place in **Lelystad**

Several other closed workpackage meetings will also take place during the conference.

For more information please visit: www.eadgene.org

Identify Emerging Ethical Issues: Applying an Ethical Framework

It is increasingly recognised that an ethical review should be initiated at an early stage of the research and technological development process. More and more researchers are encouraged to reflect on the ethical issues raised by their work and the potential research trajectories that may be initiated by innovation in the laboratory. In particular, animal biotechnology advances are scrutinized by numerous stakeholder groups and there have been growing demands for participatory tools that can be used to structure effective, inclusive and transparent ethical discussions on the key issues raised by new knowledge and techniques.

As a means of structuring ethical deliberations it can be helpful to apply new participatory tools that have been developed in the field of applied bioethics to assist researchers with their analysis. One such tool is the Ethical Matrix, which applies a set of ethical principles to a given situation to help elucidate participants' views on the potential ethical impacts and acceptability of biotechnology trajectories.

The Ethical Matrix (EM) framework is based on the application of three ethical principles: the Principle of Autonomy – freedom; the Principle of Wellbeing – produce benefit and reduce harm; and the Principle of Justice – fairness or fair treatment. These principles are applied to a series of designated interest groups. Technological innovations are assessed to determine whether developments in the field will respect or infringe the three principles for each of the interest groups. Application of the principles aims to ensure a coherent approach to analysing ethical issues for all ethically relevant parties and helps facilitate informed decision-making...



Responding to these societal issues EADGENE researchers have specifically included time and resources within the project to reflect on the ethical issues raised by developments in this branch of genomics research. In order to further strengthen the EADGENE Network's strategy to examine the ethical and societal issues raised by genomics research pertaining to infectious farm animal diseases, a workshop was convened in Copenhagen in November 2006...During the two day EADGENE workshop participants considered whether innova-

tions and current research trajectories might infringe upon or respect the principles for the different interest groups. They also examined the types of formal and informal policies that might enhance respect for the ethical principles for the various interest groups. The outcomes from the workshop are available as a Network report soon.

Ethical Frameworks such as the Ethical Matrix help to clarify the ethical dimensions of biotechnology research and development in order to assist researchers and policy-makers engender a greater confidence in their decision-making.....

For further information: please contact Kate Millar, Centre for Applied Bioethics, University of Nottingham: kate.millar@nottingham.ac.uk
<<[read whole article](#)>>

EADGENE's Mobility Stays

Strengthening the trans-national interactions between its thirteen member institutions is a central intention of the EADGENE Network. The multidisciplinary expertise of the member institutions can help the individual scientist to develop their personal career by widening their personal expertise. The EADGENE Network therefore offers financial support of up to €3300,- for short term stays (under 3 months) for a visit to a EADGENE member institute or a visit of an EADGENE member to a different institute/company located preferably in a different country. EADGENE covers all aspects of the genomics of host-pathogen interactions, from gene expression through bioinformatics to population studies, but excludes TSEs and currently doesn't include transgenics. If you are interested in visiting one of the EADGENE partners, or in hosting a visit from an EADGENE scientist, visit the EADGENE website at www.eadgene.org.

Brigitte Ask's visit to Roslin

I am a Danish PhD student who has been working in the Veterinary Faculty of Utrecht University in the Netherlands. The topic of my PhD is 'Genetic, physiological and immunological aspects of colibacillosis in broilers'.

During my PhD, I wanted to include a research stay abroad, because working in a different environment and with different people adds positively to your research. A collaboration partner should have expert knowledge and added 'value' relative to the PhD working-group, and we found this in Prof. Stephen Bishop at Roslin Institute. We wanted to model immune system development in broilers depending on initial capabilities and infection(s). This would enable assessment of complications in, for instance, evaluating vaccination schemes, challenge experiments or selection criteria related to the immune system.

During my stay, I gained knowledge on building models: how to design a framework based on biology, and translating this into functions and equations. I also benefited from the expertise of the entire group through giving presentations, and established contact with an immunologist who could provide data for validation of the model. Meeting new people and simply being in new surroundings increased my motivation and joy in my work, and this, in combination with the collaboration with Stephen Bishop, ensured that my stay abroad was successful.

In the picture:

Florence Jaffrézic was born in November 1975 near Paris and lived for many years in Lyon. She is a statistician and graduated in 1998 from the ENSAI (National Engineer School of Statistics). She did her masters' training course at the INRA of Jouy-en-Josas and was then offered a PhD position at Edinburgh University.



The subject of her PhD was on the development of statistical models for the genetic analysis of longitudinal data. She was supervised by Bill Hill, Ian White and Robin Thompson. She received her PhD in January 2002 and got a researcher position at the INRA in Jouy-en-Josas (France).

She now works with Jean-Louis Foulley in the Statistical Genetics group of the INRA-SGQA on the development of statistical models for the analysis of gene expression data, and co-supervises with him a PhD student (Guillemette Marot, ENSAI) on this subject.

Within EADGENE, Florence is part of the WP1.4 'Analytical Tools', and she was very glad to be able to take an active part in the organization of the Microarray Data Analysis Workshop which was held in Denmark in November 2006. This workshop was indeed an excellent opportunity to meet researchers working in this area within the EADGENE Network.

She is married to a statistician (as well !) who works in the pharmaceutical industry, and has two little boys: Colin (4) and Tristan (2). She loves hill walking (especially in Scotland !), and travelling. Her wish for the future would be to take her two sons to her favourite places in the world and discover new ones with them!

