



# EADGENE News

## WHAT IS EADGENE ?

### Genomics to advance animal health

Improving the health of farmed animals is a pressing issue for Europe. At the moment, European husbandry leads the world in efficiency and animal welfare, but livestock everywhere is prone to disease. Traditional therapies, such as antibiotics and anti-worm treatments, are becoming less effective as pathogens continue to develop resistance to them and there is increased pressure to cut down the use of drugs in order to reduce the risk of them entering the food chain. So, new control methods must be found to keep animals healthy and prevent diseases, many of which also infect humans, affecting food. Genomics offers new opportunities for controlling disease – for example, by breeding genetic resistance into animals, developing new vaccines, and for rapid diagnosis. A Network of Excellence concentrating on the genomics of animal-pathogen interactions is bringing together European research on livestock diseases, and will help ensure that Europe retains its status as a world leader in animal health for years to come.

### Great potential

The genome holds a lot of promise for animal health. Identifying animal genes used in defense against disease makes it possible to screen for resistance, so animals with natural immunity can be identified and bred quickly. Knowing which genes in infectious agents are responsible for their ill effects enables the development of live vaccines in which the disease-causing genes can be disabled or removed while preserving the potency of the vaccine.

Studying the behaviour of genes during disease leads to a better understanding of the interaction between a pathogen and the animal's immunity, which may in turn assist in drug development.

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## EDITORIAL

This is the first EADGENE newsletter. The aim of this newsletter is to inform you, as a citizen of Europe, about our work, and more specifically the EADGENE Network of Excellence. What difference does this network make to your daily life?

We, as EADGENE partners, will regularly inform you not only about the developments and accomplishments in research on genomics for animal health, ...but also the impact of this research and possible applications...for Europe, animal health, food safety, human health...

This first Newsletter gives you a very general overview of EADGENE. The concern among European citizens about the food they consume relates to concern about animal diseases, animal health and food safety. EADGENE tries to find solutions by looking into the genes of animals (hosts) and the viruses, bacteria etc (pathogens) that may attack them, make them ill or even kill them or...cause national elimination programmes when a disease breaks out. Scientific solutions should lead to ...applied solutions... and thus to less sick animals...and healthier food. Therefore, next to research, integration of our laboratories, projects, knowledge and technology transfer is important in EADGENE.

And so are you...as we, as scientists, are technical people and tend to look for technical solutions. At the same time, we should learn what it is exactly you are concerned about, and how we can answer your concerns. In this journey we want to take you on board...

Ton van Erp, editor <<

### GENOMICS is...

Genomics is.... study of the structure and function of genomes and, in particular, genes. This is the hereditary material of living beings, not only man, but also animals, plants.... Genomics is not.....GMOs (genetically modified organisms), but it is the study of the genes as they are present in living material.

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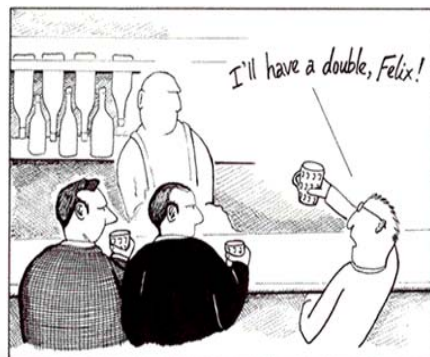


British United Turkeys

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"GENO-cartoon"



Cambridge, 1953. Shortly before discovering the structure of DNA, Watson and Crick, depressed by their lack of progress, visit the local pub.



In diseases that are currently untreatable, such as paratuberculosis in cattle, these methods offer new hope. As a relatively new technology, the use of genomics in agriculture and aquaculture is still in its infancy.

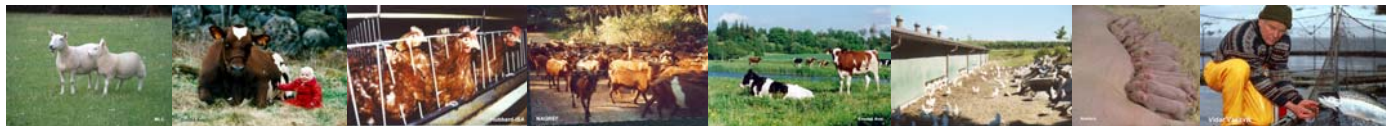
**Money well spent**

Genomics is a high-cost science. Equipment is expensive and specialist knowledge and facilities are needed to deal with the information and resources being generated. The European Animal Disease Genomics Network comprises 13 research centres, each committed to a progressive pooling of resources and facilities and integrating of research strategies. The network is multidisciplinary and will relate findings from genomics to more traditional pathology and aspects of animal husbandry, such as housing. This integrated approach is also likely to enhance our understanding of human disease. The institutes will initiate joint research and training programmes on major diseases caused by bacteria, viruses and other parasites in pigs, cattle, chickens and farmed fish.

**Hi-tech healthcare**

To ensure the science reaches vets and farmers, research will be targeted on the needs of industry. A 'club of interest', made up of companies working in animal disease control, will advise the network directly, and regular workshops will communicate results back to the industry. By helping animal breeding companies to retain their competitive edge, the network will also help maintain Europe's rural infrastructure. In line with the European Commission's 'farm-to-fork' philosophy, the network will also consult consumers, through public hearings, and incorporate their opinions into research directions. There will be many beneficiaries from this network. Research careers will be enhanced, animal health and breeding companies will make great advances, and animal health will be improved. But ultimately it is the consumer and society at large that will benefit from safer food produced from more sustainable farming systems.

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***Launch of EADGENE, The European Animal Disease Genomics Network of Excellence***

*The European research network of excellence, EADGENE, was launched on 5th October at INRA's site at Jouy-en-Josas, France, in the presence of François d'Aubert, French Minister for Research, Achilléas Mitsos, Director-General of the Research DG European Commission, Marion Guillou, INRA's President, and the scientific partners of EADGENE.*

*EADGENE brings together scientific excellence in order to make a real difference to animal and human health, and improve the quality of animal products. The network is dedicated to the major farm animal species. It is supported by the European Community for M€11.52 and involves 130 scientists (13 partners from 10 countries).*

*The 13 institutes will initiate joint research and training programmes on major diseases caused by bacteria, viruses and other parasites in pigs, cattle, chickens and farmed fish. It is hoped that the multidisciplinary approach will also enhance the partners' understanding of human disease and ensure that Europe retains its status as a world leader in animal welfare.*

*The production of high quality safe food, respecting animal welfare and the environment, is the primary objective of European livestock and aquaculture industries.*



**M.H. Pinard van der Laan (Network Coordinator), A.Mitsos (Director-General of the Research DG European), F.D'Aubert (French Minister for Research), M.Guillou (INRA's President)**



**M.Guillou, C.Patermann (Director Unit Biotechnologies Agriculture Food), A.Mitsos, F.D'Aubert**

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## In the Picture:

### Marie-Hélène Pinard-van der Laan

*Scientific co-ordinator of Eadgene*

Welcome to the first EADGENE Newsletter ! I'm 39 yr old. I graduated in 1988 as an Agronomic Engineer and entered the French National Agronomic Research Institute (INRA). My European experience started whilst I was studying for my Ph.D at Wageningen University (NL), working on immunogenetics and disease resistance in chicken. In 1992, I came back to an INRA Animal Genetics research unit located at Jouy-en-Josas.

I'm married (to a Dutch person) and have two daughters (6 and 8). *My hobbies ?* Skiing, sailing, music... *My personal challenge ?* Protecting my family life from a very exciting but invading project and continuing my own research ! *My scientific challenge in Eadgene ?* To succeed in motivating, at the different levels of research, the will to cooperate together at the European level.



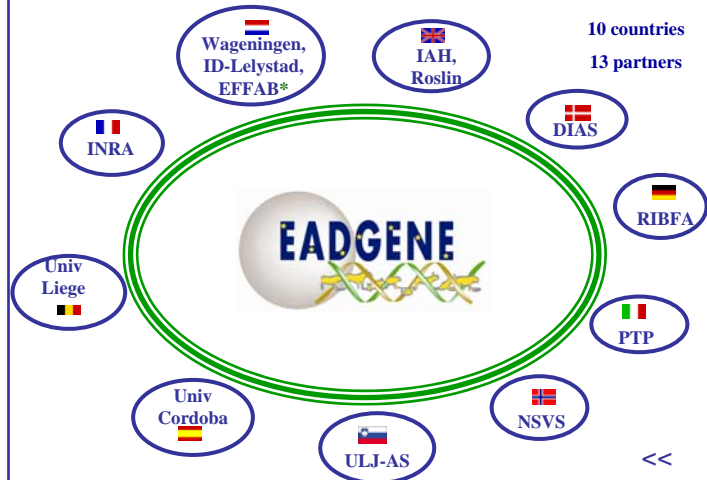
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Hanneke Feitsma

## EADGENE in a Nutshell

- > 11.52 mln EURO in 5 years
- > 4 activities
  1. Integration of Research
  2. Joint Research Programme
  3. Technology Transfer and Dissemination
  4. Management
- > List of Partners
  - Institut Nationale de le Recherche Agronomique (France)
  - Wageningen University (The Netherlands)
  - ID-Lelystad (The Netherlands)
  - Institute for Animal Health, Compton (UK)
  - Roslin Institute (UK)
  - Danish Institute of Agricultural Sciences (Denmark)
  - Liège University (Belgium)
  - Ljubljana University (Slovenia)
  - Cordoba University (Spain)
  - Norwegian School of Veterinary Science (Norway)
  - Research Institute for the Biology of Farm Animals (Germany)
  - Parco Tecnologico Padano (Italy)
  - European Forum of Farm Animal Breeders (The Netherlands)
- > EC Scientific officer:
  - John Claxton, [john.claxton@cec.eu.int](mailto:john.claxton@cec.eu.int)
  - Elena Sachez, [elena.sachez@cec.eu.int](mailto:elena.sachez@cec.eu.int)



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## COLOFON

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### Scope

This newsletter is a result of the European project  
 EADGENE (FOOD-CT-2004-506416)

Website [www.eadgene.info/www.eadgene.org](http://www.eadgene.info/www.eadgene.org)



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



### Mission

*To bring together sufficient expertise and resources to make a real difference to animal and human health and improve the quality and safety of animal products*



### Background

- Genomics offers valuable tools to improve disease control by:
  - Improved diagnostic tests
  - Improved vaccine design
  - Opportunities for breeding animals for resistance
- Concentrating on pathogens of importance in the food chain will impact upon human health and lifestyle choices

Europe has a large but fragmented research community in animal disease genomics

## EADGENE will overcome fragmentation, orientate research priorities and spread excellence

### Activities

- Integrating Activities will:
  - Achieve durable access to facilities, resources, software, tools and knowledge
- Joint Programme of Research will:
  - Focus and augment research on host-pathogen interactions relevant to animal and human health
- Spreading of Excellence will:
  - Ensure knowledge, outcomes and training opportunities are transferred to scientists, industry and general public

### Partners

- |  |             |
|--|-------------|
| INRA                                       | France      |
| Liege University                           | Belgium     |
| Danish Institute of Agricultural Sciences  | Denmark     |
| Research Institute Biology of Farm Animals | Germany     |
| Parco Tecnologico Padano                   | Italy       |
| European Forum of Farm Animal Breeders     | Netherlands |
| ID- Lelystad                               | Netherlands |
| Wageningen University                      | Netherlands |
| Norwegian School of Veterinary Science     | Norway      |
| Ljubljana University                       | Slovenia    |
| Cordoba University                         | Spain       |
| Institute for Animal Health                | UK          |
| Roslin Institute                           | UK          |

### Details

- Duration 5 years
  - 2004-2009
- 13 Institutes
  - plus industrial 'club of interest'
- EC contribution:
  - €11.52m
- Lead Institute: INRA
  - Coordinator: Dr. MH Pinard van der Laan
- [www.eadgene.org](http://www.eadgene.org)

