

Healthy Livestock & People

Finding integrated approaches for securing animal and human health in Europe

14 May 2013, Brussels



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SEMINAR REPORT



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1. Healthy livestock & people

The importance of livestock production

A sustainable, competitive and healthy livestock sector is of great importance to Europe; today and in the future. Animal products provide a major source of protein and are essential for a healthy and balanced diet. Due to population growth and increasing prosperity, demand for animal products is predicted to double over the next decades. Providing European citizens with safe, healthy and sufficient food, produced in an efficient and sustainable way, is a priority for the livestock sector, and for Europe.

Europe has always been a world class producer of animal products; our knowledge and expertise are being valued around the world. With an annual turnover of €130 billion, and accounting for 5,2% of EU employment in 2007, the livestock sector forms an important part of Europe's economy. However, to remain competitive and contribute to a sustainable future in Europe, we need to develop new solutions and address the challenges we are facing together.

Healthy livestock and people

One of the challenges that needs new solutions is animal health. Securing animal health is of utmost importance for human health, animal welfare, and for the efficiency of production. Options should be pursued for developing integrated strategies for disease prevention and control, and approaches for the evolution of agricultural production systems that are in tune with targets for improved animal health, consumer health and protection. This will require multi-disciplinary and multi-stakeholder approaches (see the text box below).

The seminar 'Healthy livestock and people' brought together scientists, policy-makers, politicians and industry to discuss the integrated approaches needed for securing animal health in Europe and to outline research priorities in animal health for the coming years.

The aim of the seminar was to:

- Get an integrated view on animal health from science, policy & industry
- Get an overview of state-of-the-art knowledge on the opportunities of animal breeding and genomics for animal health
- Discuss integrated approaches for securing food safety and security
- Together define research priorities for the future

Animal health genomics: an integrated approach

Animal health genomics is an integrated approach that intelligently combines breeding and genomics technologies with animal health. The EADGENE and EADGENE_S networks worked in the past years to find new solutions for animal diseases through breeding and genomics. Such integrated approaches are more needed in the future to secure animal and human health in Europe and the world. This seminar, organised in cooperation with the Animal Task Force, is the closing event of the FP7 EADGENE_S project.

2. Seminar report

On May 14 2013, the FP7 project EADGENE_S and the Animal Task Force brought together around 50 stakeholders in the livestock sector to discuss the integrated approaches needed to realise a healthy livestock sector in Europe. The event was hosted by Member of European Parliament Mrs. Mairead McGuinness, who is very active in the livestock and animal health debate.

The programme started with a general explanation of the EADGENE_S project, followed by contributions from industry, policy and science in two main parts:

- 1) Improving animal health: prevention, control and eradication
- 2) Public health and food & feed safety

Below you find a report of the contributions and discussions in the seminar. The presentations of the seminar are available on the [EADGENE_S website](#).

Programme

- | | |
|-------|---|
| 13.00 | Welcome & introduction
<i>By Christian Patermann</i> |
| 13.05 | Network of excellence – the FP7 EADGENE_S project
<i>By Marie-Hélène Pinard-van der Laan, coordinator EADGENE_S</i> |
| 13.15 | Animal health from a European policy perspective
<i>By Mairead McGuinness, Member of European Parliament</i> |
| 13.30 | Part I: Improving animal health: prevention, control and eradication
Overview of best practices and available technology in prevention, control and eradication of animal diseases <ul style="list-style-type: none">▪ The need to improve animal health - overview
<i>By Nancy De Briyne, Federation of Veterinarians of Europe</i>▪ Breeding and genomics to improve animal health
<i>By Steve Bishop, The Roslin Institute & R(D)SVS, University of Edinburgh</i>▪ Long term disease prevention and control programs
<i>By Bill Stanley, Aviagen Group</i> |
| 15.00 | Part II: Public health and feed & food safety
How research can improve animal and human health, feed & food safety <ul style="list-style-type: none">▪ Research to improve animal and public health
<i>By Frans van Knapen, University Utrecht</i>▪ Research policy for improving animal health – a policy perspective
<i>By Anne-Sophie Lequarre, DG Research and Innovation</i>▪ Zoonoses, food security & public health
<i>By Tom Humphrey, University of Liverpool</i> |
| 16.00 | Outlook to the new research & innovation programme Horizon 2020
<i>By Jean-Charles Cavitte, DG Research and Innovation</i> |
| 16.20 | Global issues in the Livestock dialogue
<i>By Juan Lubroth, FAO</i> |
| 16.45 | Discussion: defining new action for science-policy-industry to improve healthy livestock and people. |

Welcome by Christian Patermann

Christian Patermann, former director at DG Research and Innovation started with thanking all participants for joining this seminar in Brussels. A healthy livestock sector is an important topic for Europe, also from a global perspective. In his former position at the DG, he signed the EADGENE project himself, and is therefore very attached to this project and the closing event.

Introduction to the EADGENE_S project by Marie-Hélène Pinard – van der Laan “EADGENE_S: Strengthening the implementation of durable integration of EADGENE”

Marie-Hélène Pinard- van der Laan is researcher at INRA – Animal Genetics Division and is coordinator of the EADGENE_S project. Please find her presentation [here](#).

EADGENE, the **E**uropean **A**nimal **D**isease **G**enomics **N**etwork of **E**xcellence for animal health and food safety, started in 2004 as a project¹ under the 6th European Framework Programme (FP6) to bring together fragmented research communities in animal genomics and health. EADGENE was a network of excellence to put people together, in a new way of working that was not known in traditional projects. Combining knowledge was the overall aim. The network consisted of 13 partners in 10 European countries.

After EADGENE ended in 2010, there was the need to continue the network of excellence to ensure a durable integration of the EADGENE. This became the EADGENE_S project² under the 7th Framework Programme, with the aim to integrate key European teams in animal genomics and animal health and to improve animal disease genomics research and applications in Europe.

The EADGENE_S project worked on three missions:

- 1) Share and upgrade common research tools for joint research; and enhance skills & expertise through workshops, training, mobility and studentships.
- 2) Maintain & develop collaborative research projects in animal genetics and genomics; and support strategies for durable integration & forge opportunities for future funding.
- 3) Ensure effective technology interaction and transfer.

What have we learned?

Of the many things we have learned in this project, we have learned much about multi-disciplinary research. This is not simply about putting different disciplines next to each other. It requires researchers to change their attitudes and approaches and think differently, and be open for cooperation with other people and disciplines. We also learned to share knowledge and data in a structured way. This requires elements of trust, which are not always present in competitive research. An other important thing is to make use of differences. Europe is diverse, and this diversity is not a weakness but a strength. Using the diversity optimally can create great opportunities.

After the EADGENE_S project comes to an end, we have to continue the work. There are still knowledge gaps and new questions that arise, such as: how do you predict the reaction of an animal to a challenge? How to optimise the trade-off between animal health and production? The EADGENE_S project partners will continue working on this in the future.

¹ The FP6 project EADGENE existed between 2004-2010, receiving a grant from the European Commission of € 11 M.

² The FP7 project EADGENE_S received a grant of € 1M for the period 2011-2013.

Animal Health from a European policy perspective by Mairead McGuinness

Mairead McGuinness is Member of European Parliament since 2004, for the Fine Gael party for Ireland East. She is a member of the European Parliament's Agriculture and Rural Development Committee and the Committee on the Environment, Public Health and Food Safety.

Mairead McGuinness stressed the importance of economic sustainability of the livestock sector. One of the concerns with revising the agricultural policy at this moment, is that the economic backbone of the livestock sector could be taken away. If we lose the sector, we will be required to import more products, with many consequences for climate change, income and health. Economic sustainability is thus crucial.

In terms of animal health and legislation, key is the relation between the farmer and the veterinarian. Here, trust is crucial. Animal health is also dependent on good nutrition and good husbandry. There should be more debate on the feed and nutrition side to improve animal health. It is very important that scientists work together with each other and other stakeholders.

Researchers should play a greater role in policy-making. Nowadays many people have an opinion, with the consequence that law and policy is often based on opinions created by press and media. Sometimes, sensation seems to work better than factual information. Policy-making should be more reliant on knowledge in science. There is a role for scientists to provide reliable information that is clear and understandable. This information is crucial to avoid bad legislation, which is worse than no legislation.



Mrs. McGuinness made an appeal to those interested in animal health: make your views clear *early* and *frequently* to policy-makers and politicians, and use your platforms to get influence. Do not wait for pressure to come on the system, but take action before. Quality contact with stakeholders is key for MEPs.

As said before, Mrs. McGuinness has a real concern about sustainability in livestock production, and will try to get this higher on the agenda. The new Framework Programme Horizon2020 needs to support animal health.

Part 1: improving animal health – prevention, control and eradication

Overview of best practices and available technology in prevention, control and eradication of animal diseases

"The need to improve animal health" - by Nancy de Briyne, FVE

Nancy de Briyne is Deputy Executive Director at the Federation of Veterinarians of Europe (FVE), an umbrella organisation for veterinarians covering 46 national organisations in 38 European countries. Please find her presentation [here](#).

FVE's mission is to promote animal health, animal welfare and public health across Europe. FVE aims to support veterinarians in delivering their professional responsibilities at the best possible level, recognized and valued by society.

Working according to the 'One Health' concept, FVE recognises the essential link between human, domestic animal and wildlife. One Health combines the issues of human-animal-ecosystem, and strives to promote, improve and assure the health and well-being of all species.

Research plays an important role in this topic. Research can provide solutions necessary for producing more healthy food for more people. One of the aspects to work on is reduction of the disease burden. A huge effort is also required to be made for production diseases: 30% of production is lost as a consequence of health problems. Another important topic to work on is anti-microbial resistance (in people and animals). We need more research on:

- Resistance against antibiotics but also anthelmintics – and how it is related to animal and human health
- Development of rapid field tests for veterinarians in the field
- Identification of critical points
- Development of alternatives
- The link between resistance in humans and animals

To be successful in working on animal health, it is necessary to work in partnership, involving all stakeholders, and also to extend these partnerships internationally. FVE especially welcomes research that is multi-disciplinary, provides innovative solutions, is transparent and accessible (i.e. provides message that can be easily related to politicians), and has science-based solutions that reflect practice reality. There is much research that is very practical but never reaches the practitioners in the field (e.g. because it is published in an academic paper). It is important that research outcomes are directed to the people that need it.

"Breeding and genomics to improve animal health" - by Steve Bishop, the Roslin Institute & R(D)SVS, University of Edinburgh

Steve Bishop is Professor Animal Disease Genetics at the Roslin Institute & R(D)SVS, University of Edinburgh. Please find his presentation [here](#).

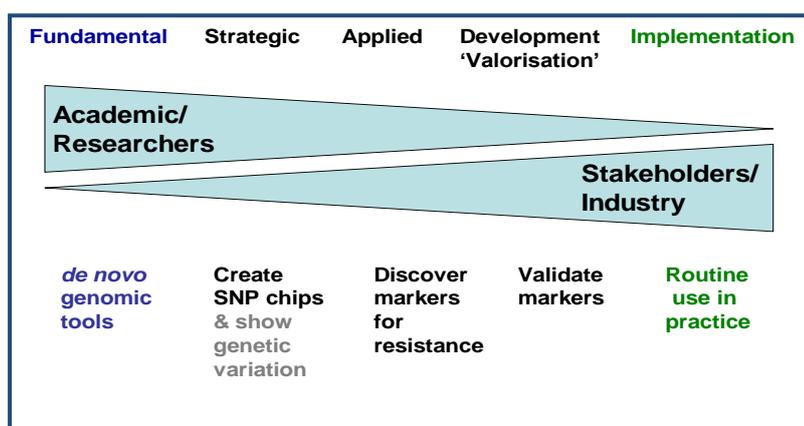
Breeding and genomics give great opportunities to improve animal health. The contribution of genomics to animal health includes:

- Identification of causative organism of novel pathology (deep DNA- or RNA-seq of pathological samples)
- Identification of variants in known pathogens (genome re-sequencing)
- Understanding host-pathogen interactions (deep RNA-seq of host and pathogen transcriptomes in parallel)
- Understanding host genome variation (genome resequencing and/or large-scale SNP analysis; matching vaccine to host genotype)

So, can we breed for increased resistance? The answer is: Yes, often we can, when:

- A requirement exists (important endemic disease, other strategies failing)
- Necessary infrastructure & technology exists (require breeding programme, pedigree or markers)
- Integrated control strategies required (complements other strategies)
- Stable strategies required (selection is cumulative & permanent)

The nature of R&D activities for animal health genomics evolves from fundamental research to application in industry. This process is shown in the graph. Fundamental research as well as industry involvement is necessary for successful development and application of new solutions. In the figure, also shown are examples of different types of research applied to using genomics to breeding animals for increased resistance.



Steve Bishop addressed some interesting examples in which breeding efforts have increased disease resistance, or have the clear potential to do so in the future:

- [Infectious pancreatic necrosis](#) (IPN) in Atlantic salmon.
- Bovine Tuberculosis (bTB) in dairy cows (4th most important disease globally).
- [Porcine Reproductive & Respiratory Syndrome](#) (PRRS) in pigs.

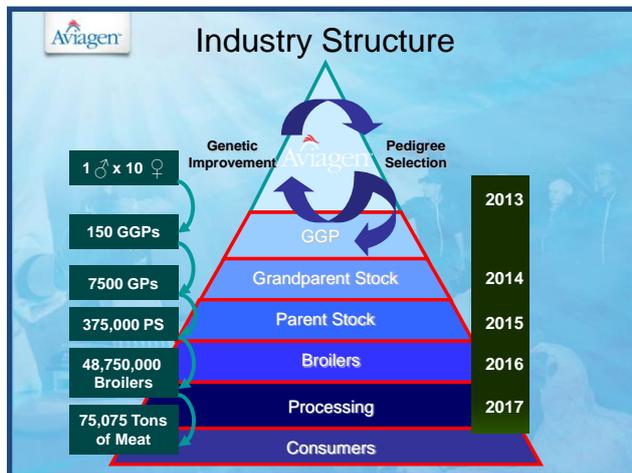
In conclusion:

Genomics will play a key role in animal health by defining new problems, providing solutions to new disease problems, and by assisting control of ongoing disease problems. Therefore combined and complementary strategies are needed. The research requirement will include both blue sky research and technologies as well as applied research.

"Disease prevention and control" - by Bill Stanley, Aviagen Group

Bill Stanley is Director of Global Health Monitoring at the Aviagen Group. Please find his presentation [here](#).

Aviagen is one of the biggest poultry breeding companies in the world. The breeding industry's process requires several multiplier generations to produce the volumes the market requires (see figure). It takes around 5 years to get from the pedigree selection to finding the product in the supermarket.



Therefore Aviagen's R&D programme must be able to look into the future and predict the requirements of its customers, 5 years ahead.

A key component of the breeding process is maintenance of high health. Keeping pathogens out of the food chain begins with the primary breeder. Disease prevention at Aviagen is aimed at reducing mortality and production losses, preventing costly medications and increasing product quality. However, Aviagen also recognises the

responsibility they have to ensure that the product they supply to customers is safe, and a key component of their health monitoring is to minimise food safety risks. Further, Aviagen has a trustworthy relationship with governments and wants to maintain this relation.

As can be seen in the figure, the numbers of birds multiply dramatically down the chain. This means that disease risks also increase. Therefore, Aviagen has strict health and biosecurity procedures, in and around the company, covering the movements of people, stock and equipment within the production operations.

Besides working on animal health inside the company, Aviagen also works on reducing threats outside the company. For example, a key target is Avian influenza, for which they worked closely together with all UK primary breeding cooperations and Defra.

To invest in genetic Research & Development, Aviagen spends 10% of turnover annually on R&D activities. They work in partnerships with leading research centres and also co-fund university research on topics of relevance.

For the future, industry will continue to require high standards of health, welfare, sustainability and biosecurity. The security of the supply chain will stay crucial to meet the increasing market demands. It remains important to promote balanced breeding strategies which simultaneously improve reproduction, production, health, welfare and help reduce the environmental load.

Part 2: Public health and feed & food safety

How research can improve animal and human health, feed & food safety

"21st century considerations on pork production and quality assurance" - by Frans van Knapen, University of Utrecht

Professor Frans van Knapen is head of the Institute for Risk Assessment Sciences, Veterinary Public Health Division at the University of Utrecht. Please find his presentation [here](#).

Veterinary public health is that part of public health activities using veterinary skills, knowledge and resources to protect and improve human health and human welfare.

The historical development of Veterinary Public Health can be divided in three phases:

1) Organised fights against animal diseases.

This phase was characteristic for Europe in the 19th century, but is still ongoing and is also seen in developing countries or developed countries without veterinary infrastructures.

2) Meat inspection and zoonoses control.

This phase is focussed on food safety. It is applicable in most countries of the modern world. Characteristic is regulation by legislation and traditional meat inspection.

3) Health sciences.

The third phase of Veterinary Public Health development is focussed on food acceptance. This is typical for a few (particularly wealthy) countries or regions with industrialised animal food production. Veterinary Public Health is characterised by a focus on healthy feed-animals-food, with emphases on animal welfare and environmental protection. Meat inspection is done by a new concept of process control and certification (GMP, GVP, HACCP, etc.).

Most countries are in phase 1 or 2. Phase 3 is for the 'happy few' and lays out the modern and future veterinarian in which veterinary public health is based on system control, not only product control.

The world is changing from a producer market to a consumer market. Consumer demands can be contradictory. Conflicting interests (animal welfare, food safety, environment and animal and human health) should be taken into account in future developments and clearly communicated to consumers.



"Research policy for improving animal health – a policy perspective" - by Anne-Sophie Lequarré, DG Research and Innovation

Anne-Sophie Lequarré is policy officer at the European Commission's Directorate-General for Research and Innovation. Please find her presentation [here](#).

Anne-Sophie Lequarré gave an overview of European research policy aimed at animal health research. The EU invests a lot in research and innovation, with the aim to preserve the competitiveness of EU, to secure employment, and to protect the environment and wellbeing of citizens (Treaty of Amsterdam 1997). The EU has a central role in supporting research and innovation, as research is increasingly complex and costly, requiring multidisciplinary approaches and a critical mass of scientists. Of all research efforts in Europe, the EU funds 5%. The other 95% is funded by national bodies or other organisations.

EU's mission in research is: to optimise cooperation between researchers, to coordinate national programmes (which will become more important), to promote the mobility of researchers and to improve the competitiveness of Europe.

Regarding animal health research, there is a growing influence of other Directorate-Generals (DGs) for research in animal health (SANCO, RTD, AGRI, DEVCO). Next to the traditional topics, more attention is given to animal health related topics. This requires integrated approaches in future research. Several topics related to animal health are given importance by the EU:

- Prevention & control of animal disease in the EU (diagnostic tools, vaccines, surveillance)
- Networks control measures once a disease is suspected (diva vaccine and elisa tests, drugs, sanitisation)
- Eradication and monitoring programmes (epidemiological models, diagnostic tools)
- Food pathogens
- Zoonoses
- Antimicrobial resistance
- Food quality
- Animal selection
- Criteria for animal welfare
- Precision farming
- Sustainable farming
- Organic potential in European livestock

"Zoonoses, food security & public health" - by Tom Humphrey, University of Liverpool

Professor Tom Humphrey works at the University of Liverpool. Unfortunately, professor Humphrey's presentation was cancelled during the seminar.



Outlook to the new research & innovation programme Horizon2020 by Jean-Charles Cavitte, DG Research and Innovation

“Outlook to Horizon2020: The forthcoming new Framework Programme for research and innovation 2014-2020. The area of agriculture & food”

Jean-Charles Cavitte is Programme Officer for Agriculture, Forests, Fisheries and Aquaculture at DG Research and Innovation. Please find his presentation [here](#).

Jean-Charles Cavitte laid out the provisional outline of the new Horizon2020 research and innovation programme, as part of the Europe2020 strategy of the European Commission. Definite decision will be made soon, although negotiations on the Multiannual Financial Framework (MFF) are still ongoing. Information given in this presentation may be subject to changes.

Horizon2020 is the new research and innovation programme of the European Union. The Commission's proposal is to fund €80 billion on research and innovation from 2014-2020. What is new on this framework programme?

- A single programme bringing together three separate programmes/initiatives (the 7th Research Framework Programme (FP7), innovation aspects of Competitiveness and Innovation Framework Programme (CIP), EU contribution to the European Institute of Innovation and Technology (EIT))
- Coupling research to innovation – from research to retail, all forms of innovation
- Focus on societal challenges facing EU society, e.g. health, food security and sustainable agriculture, clean energy and transport
- Simplified access, for all companies, universities, institutes in all EU countries and beyond

The Horizon2020 programme has three priorities:

- 1) Excellent Science
- 2) Industrial Leadership
- 3) Societal Challenges

Under the Societal Challenge priority, a division is made between six challenges. The figure below also gives the proposed funding (in million euros):

<i>Health, demographic change and wellbeing</i>	<i>8 033</i>
<i>Food security, sustainable agriculture, marine and maritime research & the bioeconomy</i>	<i>4 152</i>
<i>Secure, clean and efficient energy*</i>	<i>5 782</i>
<i>Smart, green and integrated transport</i>	<i>6 802</i>
<i>Climate action, resource efficiency and raw materials</i>	<i>3 160</i>
<i>Inclusive, innovative and secure societies</i>	<i>3 819</i>

The final deadline for the Descriptions of Work of the final FP7 projects is June 21, 2013.

Some additional remarks:

- International cooperation is crucial to address many Horizon2020 objectives
- Some of the Horizon2020 projects will also be open for developing countries
- Bioeconomy will be part of the societal challenge 2, and also of the Key Enabling Technologies part under Industrial Leadership

Global issues in the Livestock dialogue - by Juan Lubroth, FAO

Juan Lubroth is Chief Veterinary Officer at the FAO. Please find his presentation [here](#).

Securing animal health in Europe is not a matter of working on improved animal health in Europe only. Animal health is a global issue. By 2050, the world population will rise from 7 billion to 9.3 billion people. Global demand for animal protein will have increased by 70% in 2050. The global disease landscape is changing:

- Transport and trade of animals, animal products and feed can contribute to the spread of infectious diseases around the world
- Changes in biodiversity lead to changes in disease patterns
- Increased contact between wildlife, domestic animals and human results in disease emergence
- Climate change is one of the fastest drivers of biodiversity loss
- Smallholders are the main victims of zoonotic diseases



Although globalisation has increased the amount of traffic and trade around the world, and population growth and livestock production has increased in recent decades, the global health risk has gone down. The FAO, OIE and other organisations have worked hard to improve animal and human health around the world.

A new FAO publication will soon be published: "World Livestock 2013: Changing Disease Landscape - Livestock in Global Health". This publication promotes global cooperation for One Health. Core in the proposed strategy is to invest in prevention.

For One Health, there is engagement to this topic on global level and a need at the local level. Commitment on national level can be increased. One Health should therefore be a key topic in the Horizon2020 programme.

Discussion and wrap-up: defining new actions for science-policy-industry to improve healthy livestock and people

Integrated approaches

It has become clear that healthy livestock are important for the European economy and for the health perspectives of Europe and the world. Policy, research and industry should join efforts to improve the health of domestic livestock in Europe. This is not a matter of health experts alone, it requires a multi-disciplinary approach, involving breeding, genetics, welfare indicators, experts in feed, nutrition and environmental issues, education, etc. Knowledge experts should work more together and share knowledge and data in a structured way.

Animal and human health is a business for all of us and it requires combined approaches adapted to region specific conditions. For example it is possible to use modern technologies to improve genetic resistance in diverse farm populations, but for some countries certain techniques are not accepted. In other cases complex technologies are not appropriate; for example, for African Swine fever (in African pigs), education and improving conditions are the main tools.

Research and innovation

What does this mean for research and innovation? To improve animal health we need combined approaches. This means that we need research on new approaches that focus on resistance, on productivity diseases and on control of transmissible diseases. It also means that we should take into account the whole value chain, and include end-users and practitioners in the research. This should be part of the business plan in the call for proposals of the project.

Agenda setting

Animal health should be given priority on the policy agenda. Policy, industry and science play a role in agenda setting and opinion leadership. Currently, policy is too often based on media perceptions. Researchers should share their knowledge clearly and understandably, and frequently with policy-makers, politicians and the public, by using the available platforms.

3. Background information: organising organisations

The seminar Healthy livestock and people: finding integrated approaches for improving animal health was organised by the 7th Framework Programme's project EADGENE_S and the Animal Task Force. Below you find more information about the organisations.

EADGENE_S

The FP6 EADGENE project coordinated the activities of 15 partners from 10 European countries, bringing together sufficient expertise and resources to make a real difference to animal and human health. The project started as a Network of Excellence on the 1st of September 2004 and was funded for 5.5 years, with a grant of €11.52 million from the EC.

By integrating the key European teams in genomics, bioinformatics, animal health and animal models, EADGENE has enabled:

- The gathering of a critical mass of scientists and a unique access of complementary resources across host and pathogen models.
- The development of innovative functional genomics so that it has become a powerful tool in veterinary molecular medicine and has contributed to a better understanding of host-pathogen interactions.

After its ending in 2010, the EADGENE Partners continued to work together as a European Research Group (ERG) under the name EADGENE_S between 2011-2013, comprising 13 partners from 10 countries. EADGENE_S aims to ensure a long-term integration of the European resources in animal disease genomics, grouping together the leading institutions. It will strengthen durably the creation of a core group of European research centres of excellence, highly committed to integrating their resources and national facilities.

Partners

Institute National de la Recherche Agronomique (INRA)	France
Wageningen University (WUR)	Netherlands
Animal Science Group Lelystad (DLO-LR)	Netherlands
Institute for Animal Health (IAH)	UK
Roslin Institute and R(D)SVS, University of Edinburgh (UEDIN)	UK
University of Aarhus (AU, former DIAS)	Denmark
Liege University (FMV-UIg)	Belgium
Ljubljana University (ULJ-AS)	Slovenia
Cordoba University (UCO)	Spain
Norwegian School of Veterinary Science (NSVS)	Norway
Leibniz Institute for Farm Animal Biology (FBN)	Germany
Parco Tecnologico Padano (PTP)	Italy
European Forum of Farm Animal Breeders (EFFAB)	Netherlands

For more information, please visit the website: www.eadgene.info

The Animal Task Force

The Animal Task Force (ATF) promotes a sustainable and competitive livestock sector in Europe. ATF is a leading body of expertise, representing key stakeholders from industry and research from across Europe.

Our goals are to stress the importance of sustainable livestock production for Europe's future, to provide our vision on investments to be made within the sector, to stimulate innovation by enhancing cooperation and knowledge exchange, and to set the agenda for research and innovation in the animal domain.

Members of the ATF:

The Animal Task Force is comprised of a group of industry representative organisations and knowledge providers from all over Europe. Together our members represent eleven different EU member states and several sectors in the animal production chain.

Industry representative organisations are:

- European feed industry (EUFETEC)
- European animal health industry (ETP-GAH)
- European farm animal breeding industry (FABRE-TP)
- European aquaculture industry (EATIP)

Knowledge providers are:

- Aarhus University – Denmark
- Institut National de la Recherche Agronomique (INRA) – France
- Instituto Nacional de Investigación y Tecnología Agraria (INIA) – Spain
- MTT Agrifood Research – Finland
- National R&D Institute for Animal Biology and Nutrition (IBNA) – Romania
- Polish Academy of Sciences – Poland
- SRUC Scotland's Rural College – United Kingdom
- Swedish University of Agricultural Sciences – Sweden
- Teagasc – Ireland
- University of Bonn – Germany
- University of Milan – Italy
- Wageningen UR Livestock Research – The Netherlands



For more information, please visit our website: www.animaltaskforce.eu

4. Participants

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Bagnato	Alessandro	University of Milan
Bedford	Adam	British Agriculture Bureau
Biasaka	Cedric	INRA
Bishop	Steve	The Roslin Institute and R(D)SVS, University of Edinburgh
Bozzetta	Elena	Istituto Zooprofilattico sperimentale del Piemonte Liguria e Valle d'Aosta
Brunner	Ronald	Leibniz Institute for Farm Animal Biology
Cavitte	Jean-Charles	DG Research and Innovation
De Briyne	Nancy	FVE
Detilleux	Johann	University of Liege
Dovc	Peter	University of Ljubljana, Biotechnical Faculty
Eeckhout	Mia	University Ghent/EUFETEC
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Garrido-Pavón	Juan Jose	UCO
Gengler	Nicolas	ULg - GxABT
Giuffra	Elisabetta	INRA
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Humphrey	Tom	University of Liverpool
Iamartino	Daniela	PTP
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Jimenez-Marin	Angeles	UCO
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Lantier	Frederic	INRA
Lequarre	Anne-Sophie	DG Research and Innovation
Lubroth	Juan	FAO
Mainil	Jacques	University of Liege, Faculty of Veterinary Medicine, Department of Infectious Diseases, Bacteriology
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