
IMAGE

Innovative Management of Animal Genetic Resources

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Horizon 2020 FRAMEWORK PROGRAMME

TOPIC: MANAGEMENT AND SUSTAINABLE USE OF GENETIC RESOURCES

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Type of Action: Research and Innovation Action (RIA)

DELIVERABLE D7.3

Deliverable title: Project newsletter n°1

Abstract: The 1st issue of an electronic newsletter has been produced for distribution to IMAGE partners, Advisory Board members and stakeholder mailing list in pdf format. It contains information on project activities, progress, events, publications and contact details.

Due date of deliverable: Month 12
Start date of the project: March 1st, 2016
Organisation name of lead contractor: ULisboa
Contributors: EFFAB, INRA, BOKU, DLO, UGOE
Dissemination level: [PU](#)¹
Revision N°: V1

Actual submission date: Month 14
Duration: 48 months

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| PU Public (must be available on the website) |
| PP Restricted to other programme participants (including the Commission Services) |
| RE Restricted to a group specified by the consortium (including the Commission Services) (precise to whom it should be addressed within IMAGE consortium) |
| CO Confidential, only for members of the consortium (including the Commission Services) |

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Executive Summary

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| Background | <p>This deliverable was aimed at providing the project with the 1st issue of the electronic newsletter, meant to inform all interested parties about the IMAGE project and the activities undertaken, and to publicise the latest project developments. It also informs the stakeholders of the website address and how they can contact the project to obtain further information via other social media channels.</p> |
| Objectives | <p>This deliverable is designed to combine the information generated in the other WPs and make it available in the most effective manner to stakeholders, decision-makers, scientists and the general public. Main objective of the IMAGE newsletter is to disseminate new knowledge integrating genetic, technological and socio-economic aspects, to optimise the conservation and sustainable utilisation of livestock genetic resources in the EU to the stakeholders.</p> |
| Methods | <p>IMAGE Newsletter 1 is designed as a high-quality pdf file in A4 document format (size 21 x 29.7 cm) suitable for commercial printers. It will be widely distributed to IMAGE stakeholders. Its contents include the editorial, an article on the IMAGE project, news about the past events and work in progress in different WPs, Dialogue Forum and contact information, profiles of the Project Coordinator and WP1 leader, publications and communication contact information with a brief summary of the IMAGE project.</p> <p>The due date of this deliverable was M12, but it was actually finalized in M14. Its submission was delayed because the version ready in M12 was redesigned.</p> <p>It must be noted that this delay did not compromise the continuation of other tasks and therefore did not jeopardize further development of the project.</p> |
| Results & implications | <p>Its final format and articles was decided by successive improvements of an originally proposed draft. The IMAGE Newsletter is initially mailed to 490 stakeholders including the projects partners. The newsletter is published on the IMAGE website (http://www.imageh2020.eu/Newsletter/Newsletter1.pdf) and the link to the newsletter has been distributed with an email informing about the release of the IMAGE Newsletter issue 1 and its contents via an email distribution platform (MailChimp). Furthermore, it is also made available via the IMAGE website (www.imageh2020.eu) and different social media channels of IMAGE, EFFAB, FABRE-TP and other partner organisations.</p> |

1. Annex 1: The IMAGE Newsletter Issue 1

INNOVATIVE MANAGEMENT OF GENETIC RESOURCES

NEWSLETTER

APRIL 2017—ISSUE 1



editorial

Animal genetic resources provide the basis for selection and improvement of livestock, as well as for research projects aimed at characterizing the genome diversity and the relationships between genotype and phenotype. A large diversity of traditional and commercial breeds as well as experimental lines has been obtained as a result of domestication and selection of the main domestic animal species: cattle, sheep, goats, horses, donkeys, pigs, rabbits, poultry (chickens, turkeys, ducks, quails, guinea-fowls) and fishes. This variety ensures the capability and adaptability of livestock to fulfil its role in food production under different circumstances, now and in the future.

"One third of domestic breeds are considered to be at risk of extinction."



"A renewed strategy is necessary for animal gene banks, taking advantage of genomics and biotechnologies."

INNOVATIVE MANAGEMENT OF GENETIC RESOURCES



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IMAGE: a project for animal genetic resources

"Innovative Management of Animal Genetic Resources" (acronym IMAGE) is a project funded by the Horizon 2020 Research and Innovation Programme of the European Union.

It started on March 1st, 2016 and unites 28 partners, including three SMEs, three NGOs, the Food and Agriculture Organization of the United Nations (FAO), nine research institutions, 11 higher education and research institutions, and INRA Transfert, a subsidiary of INRA, the co-ordinating partner. 13 EU countries are involved, together with Switzerland and four non-European countries: Argentina, Colombia, Egypt and Morocco.

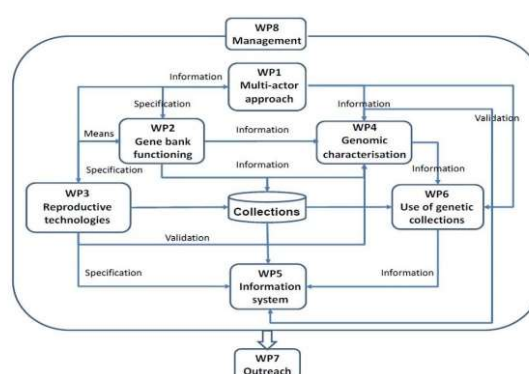
"IMAGE aims at enhancing the use of genetic collections and upgrading animal gene bank management."



IMAGE will further develop genomic methodologies, biotechnologies and bioinformatics for a better knowledge and exploitation of animal genetic resources."

The ultimate goal of the project is to demonstrate the benefits brought by gene banks to the development of more sustainable livestock farming systems.

The project is organised in six research work packages (WP), one dissemination WP and the management WP.



"Raising awareness about the value of animal gene banks will contribute to popularising them in the society as a whole, since they represent both a heritage and a resource for the future."

First priorities are to launch surveys for 1) gene bank managers and 2) stakeholders, and to map available molecular data on gene bank collections in order to identify gaps and to define priorities for further characterisation through whole genome sequencing. At the same time, studies aimed at improving reproductive biotechnologies will be starting.

For more information on IMAGE please [visit our website](http://www.imageh2020.eu)

IMAGE at a glance

www.imageh2020.eu

28 partners: 13 EU countries and 5 non-EU including Switzerland, Argentina, Colombia, Egypt and Morocco

Project duration: 1 March 2016 - 29 February 2020

Project Coordinator: Dr. Michèle Tixier-Boichard, INRA

Project Manager: Dr. Irina Carpusca, INRA Transfert



INNOVATIVE MANAGEMENT OF GENETIC RESOURCES

news

IMAGE Kick-Off Meeting

The kick-off meeting of the H2020 IMAGE project took place in Paris, 19-20 May 2016. It gathered 50 participants from 11 European countries and one non-EU country, Colombia.

The kick-off included a half-day devoted to WP meetings and exchanges between WPs in order to facilitate collaborations between them.



The main approaches of IMAGE were presented:

- Engaging the different types of stakeholders which are relevant for IMAGE, from the beginning of the project, and targeted meetings are both needed on a case by case basis;
- Improving the reproductive quality of the gene bank samples and their 'usability' in the field, with the development of new protocols and the perspective to assess the potential of new technologies to improve the cost-efficiency of using gene bank samples;
- Improving the connection between gene bank managers and supporting the set-up of the European Gene Bank Network for Animal Genetic Resources (EUGENA) in connection with the European Regional Focal Point;
- Assessing the potential of genetic diversity present in genetic collections by genomics and data integration;
- Facilitating access to information and resources by developing a new model for data integration in a web

portal, and registering collections into the BioSamples database of EMBL-EBI;

- Developing, testing and demonstrating strategies and scenarios to facilitate the use of this diversity and to enhance synergy between gene banks and on-farm management of genetic resources; and
- Increasing awareness about the value of gene banks by a multi-faceted dissemination programme, including decision support tools for breeds and North-South workshops for capacity building.



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IMAGE 1st Dialogue Forum Meeting

The first IMAGE Dialogue forum was held on August 28th, 2016 at Riddel Hall, Queen's University, Belfast, Northern Ireland, in association with the ERFP general assembly and the EAAP conference.

"The IMAGE Dialogue Forum is a platform designed to involve all stakeholders in the discussion about the future of genetic management of farm animals."

Stakeholders with wide-ranging experience joined the IMAGE partners to discuss their views on the management of gene bank resources. Amongst the 51 participants were ERFP National Coordinators, scientists, government officials, as well as representatives from industry and NGOs. The event was hosted and moderated by Waltraud Kugler, SAVE Foundation, Switzerland.

The event started with a presentation by Michèle Tixier-Boichard, IMAGE Coordinator on the objectives and approaches of IMAGE. Sipke-Joost Hiemstra, ERFP chair and national coordinator gave his presentation on the European gene bank network EUGENA. The event continued with Beate Berger, the Austrian ERFP national coordinator and gene bank manager, on practical examples of gene bank management in Europe.

The ensuing discussion covered topics such as sanitary regulations, data/material sharing, ethics in biotech and standardization of gene bank management. ➡

INNOVATIVE MANAGEMENT OF GENETIC RESOURCES

Up to now there are 25 gene banks for animal genetic resources identified within Europe. Some are governmental with the main purpose of conservation, while others are research gene banks that are not fully connected. Knowledge is needed to better involve gene banks in animal breeding programmes. IMAGE aims to improve the connections between gene bank managers and users.



A demonstration program for genetic introgression in chicken will show possible ways of using gene bank material. Priorities for cattle genotyping will be identified. Populations which are represented in gene banks with time series (i.e. samples from different stages of the breeding programme) will be inventoried in order to identify possible case studies for monitoring trends in genetic diversity.

"The Dialogue Forum consists of annual meetings, smaller topical meetings and any further measures to identify ideas, needs and attitudes of stakeholders."

Besides the expected achievements, Michèle Tixier-Boichard pointed out the importance of the involvement of stakeholders from the very beginning to be able to shape the whole process of the project, instead of simply presenting them with completed results at the end of the project.



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Quality Management Systems for Gene Banks (WP2)

The 16th Regular Session of the FAO Commission on Genetic Resources for Food and Agriculture was held in late January in Rome. IMAGE partners contributing to Task2.2 on "Benchmarking of gene bank protocols and standards" took advantage of the occasion to interact with FAO National Coordinators for the Management of Animal Genetic Resources.

Specifically, Ms. Maëlle D'Arbaumont from INRA spent the week in Rome and used the opportunity to interview National Coordinators and gene bank managers from several countries regarding their quality management system and quality control.

In addition, FAO organized a special meeting of participants on quality management systems for gene banks. Ms. D'Arbaumont (INRA, France), Sipke J. Hiemstra (Centre for Genetic Resources, the Netherlands (CGN) of Wageningen University & Research) and Paul Boettcher (FAO) gave presentations at the meeting, which also included general discussion on gene bank management. The meeting was attended by more than 20 persons.

Commission's Session report is available [here](#).



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IMAGE Dialogue Forum

The next annual IMAGE Dialogue Forum will be held around the EAAP conference in Tallinn, Estonia (28 August - 1 September 2017, <https://eaap2017.org/>) and will include presentations, a discussion session and wine & snacks.

Visit our website for details on the Dialogue Forum Meetings and Sessions www.imageh2020.eu

If you would like to participate or suggest topics to be discussed at the event, contact:

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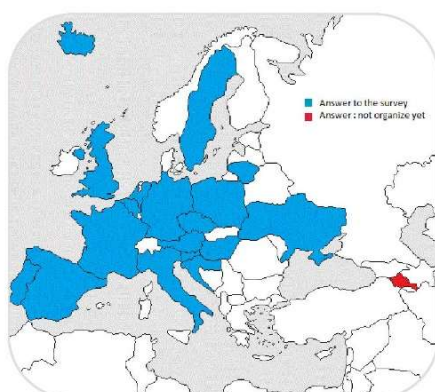
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WP2 "The European Genetic Collection Survey" Preliminary Results

The European genetic collection survey for animal genetic resources draws to a close. The goal of this survey was to characterize and map genetic collections all around Europe. Two types of collections can be distinguished:

- i) *germplasm collections covering biological samples of reproductive material, and*
- ii) *genomic collections covering other biological samples (DNA, tissue).*

After the initial distribution of the questionnaire, 54 gene banks from 19 European countries have replied to the survey in the first 3 months.



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According to the preliminary results 28 institutions are holding a germplasm collection, whereas 8 institutions are holding a genomic collection and 18 institutions are holding both collections.

In more than 80% of cases, the institution managing the collection is public. In most of the cases 5 species are dominant in germplasm collections: cattle, sheep, goat, horse and pig. For genomic collections, chicken can be added.

A detailed report of the results of the survey is under development, and will become available soon at the [IMAGE website](#).

WP6 Case study "from gene banks to breeding lines"

The first steps towards demonstrating an efficient introgression of a rare characteristic from a chicken gene bank into a contemporary laying line have been carried out.



Araucana goldhalsig

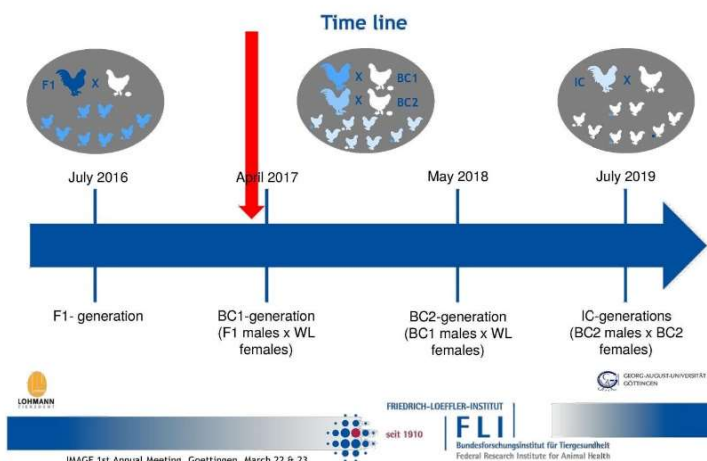


White Leghorn

Photo by S. Henne



Task 6.3: Case study - from gene bank into breeding line



INNOVATIVE MANAGEMENT OF GENETIC RESOURCES

F1 crosses have been set up based on a cross of Araucana males, which carry the blue egg shell color as single monogenic dominant trait, and White Leghorn females of a high performing layer line. F1 males have been genotyped and selected for further breeding.

The selection is based on a "gene-dropping" simulation approach incorporating molecular information. This simulation approach was implemented in a flexible way enabling



the simultaneous consideration of multiple factors, which may influence the selection progress.

Using this approach, several selection strategies were compared and the best F1 males, which will ensure the highest genetic diversity and the preservation of the genetic make-up of the recipient line while at the same time transferring the gene of interest, were identified.

Laboratory assays as well as statistical procedures have been established and optimized to identify potential breeders at an early age.



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profiles



Dr. Michèle Tixier-Boichard, INRA

Project Coordinator

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Dr. Tixier-Boichard is a senior scientist at GABI, working on chicken genetics since 1985.

She participated in the European projects, ChickMap (1995- 1998) and AvianDiv (1998-2000), and was an invited expert in SEFABAR (sustainable breeding) and GLOBALDIV (characterisation and management of animal genetic resources).

She has more than 100 papers published in peer-reviewed journals, and she has been the supervisor of 10 theses (two at present) and 15 master students.

She chairs the board of the French National Cryobank and coordinates the national infrastructure project for biological resource centres of domestic animals, CRB-Anim.

She has been elected as vice-president of the World Poultry Science Association's board from 2004 to 2016.



Prof. Dr. Johann Sölkner, BOKU

WP1 Leader—Multi actor participation and knowledge exchange

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Prof. Dr. Johann Sölkner is a full professor at the University of Natural Resources and Life Sciences, Vienna and leader of the animal breeding and genetics working group.

He has been involved in the design of breeding programs for different species in Austria, but also in various developing countries.

He is the National Coordinator of the Genetics Commission of the European Association for Animal Production (EAAP), and President of the Austrian Association for Rare Endangered Breeds (ÖNGENE).

ÖNGENE has developed rules and procedures for support of keepers of currently more than 30 local endangered livestock breeds implemented by the European Regional Development Fund.

INNOVATIVE MANAGEMENT OF GENETIC RESOURCES



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publications

Pan European Networks: Science & Technology

A review of IMAGE by Michèle Tixier-Boichard, Project Coordinator



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IMAGE Newsletter

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