

Leader of the *Ad Hoc* action: Fernando Tejerina Ampudia.

Report of the ERFP *Ad Hoc* action Ad hoc action to support the development of EUGENA, to identify candidate EUGENA genebanks, and improve the information about the genebanks in Europe

1. Objectives (Summary)

The main objective of the Ad Hoc Action is to increase the number of member countries and genebanks enrolled in EUGENA, due to a better knowledge of EUGENA between the actors of the management of the AnGR (Breeder societies, reproduction centres, competent authorities, researchers) in the European Region. In parallel, the activities of the Ad Hoc Action must collect the information about the facilities where the genebanks are hosted, and this information should be registered by the ERFP in a file. The Ad Hoc Action will continue the work done within the IMAGE project “*Inventory and mapping of European animal genetic collections*”

2. Membership

The Ad Hoc Action will be developed by Coralie Danchin, Delphin Duclos, Oscar Cortes, Sipke Hiemstra (all of them with experience in the report of Inventory and mapping of European animal genetic collection, of the IMAGE Project) Zhivko Duchevev, Manuel Luque (Manager of FEAGAS, biggest breeder federation in Spain, for the administrative work) and Fernando Tejerina (Chair of the ex situ WG).

3. Activities in the past year and output/results

1. The designing of the EUGENA Flyer: <https://www.animalgeneticresources.net/wp-content/uploads/2020/06/2020-EUGENA-Flyer-V2.pdf>. The topics in the flier are:
 - a. The importance of genebanks.
 - b. What is the European Regional Focal Point for Animal Genetic Resources?
 - c. EUGENA, the European Genebank Network for AnGR.
 - d. What are the benefits of joining EUGENA?
 - e. How to become a member country of EUGENA?
 - f. How to become a member genebank of EUGENA?

- g. What are the commitments of a member genebank?
 - h. ERFP social media.
2. The designing of the EUGENA Membership Certificate (Example in Annex I).
 3. The development of a survey to collect information from the European genebanks, with the next questions:
 - a. **Name of the institution holding the genebank** (mandatory).
 - b. **Postal address** (mandatory). Fields: Address, City, Zip Code and Country.
 - c. **E-mail address** (mandatory).
 - d. **Species of the donors of the material stored in genebank** (mandatory). Multi-answer question, with the next options: Cattle, Buffalo, Donkey, Goat, Horse, Pig, Rabbit, Sheep, Poultry, Water species, Fur species, Pets, Wild Species and Others.
 - e. **Type of biological material stored** (mandatory). Multi-answer question, with the next options: Semen, Embryos, Oocytes, DNA, Blood, Tissue, Hair, Feathers y Others
 - f. **Main objective of the genebank.** (mandatory). Multi-answer question, with the next options: Conservation, Research and Commercial.
 - g. **Web page** (no mandatory).
 - h. **Profiles in social media** (no mandatory).
 - i. **EUGENA encourages and promotes collaboration between genebanks, do you want to receive more information about EUGENA?** Yes/no
 4. The writing of template e-mails and its translation to the languages (22) of the European countries: BG, CS, DE, DK, EL, ET, FI, HR, HU, IT, LT, LV, MT, NO, PL, PT, RO, SK, SL, SV, FR and ES.
 5. The mailing of the EUGENA Flyer and the survey to:
 - a. National coordinators of the ERFP.
 - b. Members of the ERFP WGs.
 - c. Semen collection and storage centres, embryo collection and production teams approved by the MMSS of the EU and third countries in the European Region (1.957). (see table 1).
 - d. Breeder's societies approved by the MMSS and third countries in the European Region (1.064). (see table 1).

- e. Animal Breeding Industry: EFFAB, FABRE TP (for the dissemination to their members).
- f. NGOs in relation with conservation and sustainable use on AnGR: SAVE, RARE BREED and RBI (for the dissemination to their members)
- g. Researchers associations: ESDAR, EAAP and AETE (for the disseminations to their members).
- h. Competent authorities in the zootechnical field of the MMEE, and in the European Commission.
- i. Participants in previous projects, as IMAGE Project

	COUNTRY	BREEDERS SOCIETIES	REPRODUCTION INSTITUTIONS	TOTAL		COUNTRY	BREEDERS SOCIETIES	REPRODUCTION INSTITUTIONS	TOTAL
1	AUSTRIA	53	50	103	18	LATVIA	10	20	30
2	BELGIUM	41	52	93	19	LITHUANIA	18	6	24
3	BULGARIA	46	1	47	20	LUXEMBOURG	8	0	8
4	CROATIA	23	0	23	21	NETHERLANDS	64	74	138
5	CYPRUS	1	5	6	22	NORWAY	15	6	21
6	CZECH REPUBLIC	2	16	18	23	POLAND	15	65	80
7	DENMARK	12	48	60	24	PORTUGAL	51	18	69
8	ESTONIA	12	6	18	25	ROMANIA	31	74	105
9	FINLAND	5	27	32	26	RUSIA	1	0	1
10	FRANCE	39	563	602	27	SLOVAKIA	9	5	14
11	GERMANY	103	409	512	28	SLOVENIA	17	17	34
12	GREECE	37	12	49	29	SPAIN	163	249	412
13	HUNGARY	0	39	39	30	SWEDEN	26	49	75
14	ICELAND	2	2	4	31	SWITZERLAND	29	12	41
15	IRELAND	27	0	27	32	TURKEY	1	0	1
16	ISRAEL	1	0	1	33	UNITED KINGDOM	136	12	148
17	ITALY	66	119	185	34	UKRAINE	0	1	1
						TOTAL	1064	1957	3021

Table 1. Number per country of potential breeders associations and reproduction institutions recipients of the e-mail

6. The development of the European Inventory of Genebanks, which collect information about 126 different institutions (1 from Brazil) identify as genebanks by the IMAGE Project, EUGENA and AHA. A summary of the inventory is annex II and the complete inventory have been sent to the ERFP secretariat in an Excel file.

7. A report about the results of the survey:

7.1 Methodology:

Data were collected through an online survey that was sent (mainly) to a list of institutions potentially holding or managing a collection of farm animal genetic resources in European Countries (1957) or Associations of breeders (1064). See table 1 and point 3.5.

The list of institutions and contact details was provided through the European Commission in the links below:

- [Approved Establishments in the veterinary field](#)
- [approved establishments in the zootechnical field](#)

The countries were:

Austria (AT); Belgium (BE); Bulgaria (BG); Croatia (HR); Cyprus (CY); Czech Republic (CZ); Denmark (DA); Estonia (EE); Finland (FI); France (FR); Germany (DE); Greece (EL); Hungary (HU); Iceland (IS); Ireland (IE); Israel; Italy (IT); Latvia (LV); Lithuania (LT); Luxembourg (LU); Malta (MT); Netherlands (NL); Norway (NO); Poland (PL); Portugal (PT), Romania (RO); Russia; Slovakia (SK); Slovenia (SI); Spain (ES); Sweden (SE); Switzerland (CH); Turkey; United Kingdom (UK).

Respondents to the survey were 103, the results of the analysis of the answer are summarize in Chapter 7.2.

7.2 Characterization of the European genebanks.

Table 2 Collections per country and main objective.

Countries	Commercial	Conservation	Research	Grand Total
Albania		1		1
Austria		1		1
Belgium			1	1
Brasil			1	1
Bulgaria		2		2
Croatia		1		1
Denmark		3		3
Finland		1	1	2
France	1	4	2	7
Germany	1	1	1	3
Greece			1	1
Hungary			1	1
Ireland	3			3
Italy	1	4	3	8
Lithuania		1		1
Luxembourg			1	1
Norway	1	1		2
Poland			1	1
Portugal		2		2
Romania	2	2	1	5
Slovenia		2		2
Spain	8	26	8	42
Sweden		1		1
Switzerland		3		3
The Netherlands		1		1
UK	2	2	1	5
Ukraine		1	1	2
Total	19	60	24	103

Figure 1 Genebank records per country

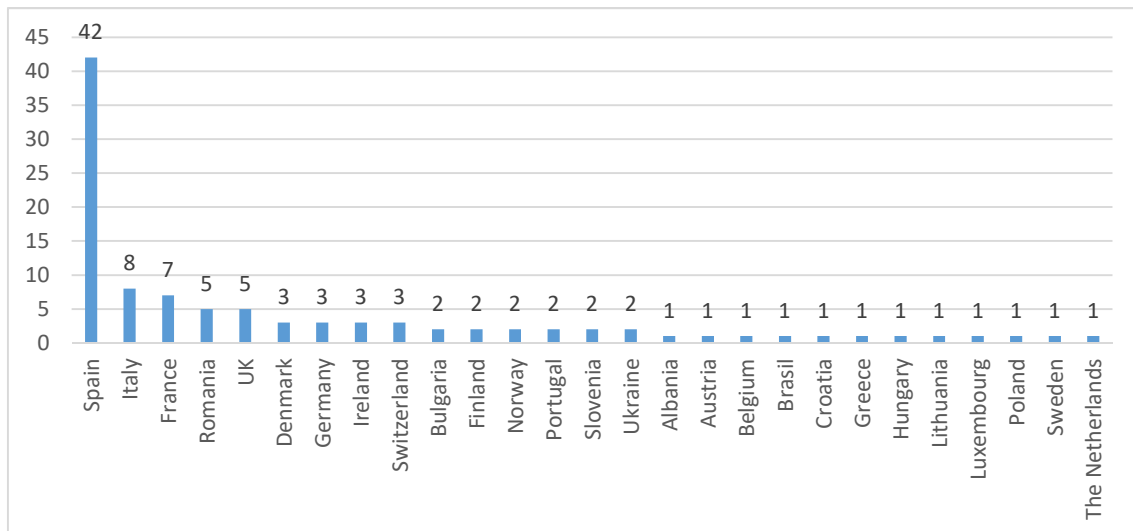


Table 3 Records by country and type of material stored (reproductive, genomic or both types)

Countries	Reproductive GB	Genomic GB	Both	Total
Albania			1	1
Austria			1	1
Belgium		1	0	1
Brasil		1	0	1
Bulgaria	1		1	2
Croatia			1	1
Denmark	1	1	1	3
Finland		1	1	2
France	2	2	3	7
Germany	1	1	1	3
Greece		1	0	1
Hungary			1	1
Ireland		1	2	3
Italy	2	3	3	8
Lithuania			1	1
Luxembourg		1	0	1
Norway	1		1	2
Poland			1	1
Portugal			2	2
Romania	4		1	5
Slovenia	1		1	2
Spain	25	4	13	42
Sweden	1		0	1

Switzerland	3		0	3
The Netherlands			1	1
UK	2	1	2	5
Ukraine		1	1	2
Grand Total	44	19	40	103

Table 4 Collections by country and type of material

Countries	Semen	Embryos	Oocytes	DNA	Blood	Hair	Tissue	Feathers	Other
Albania	1				1		1		
Austria	1			1	1		1		
Belgium				1					
Brasil				1		1			
Bulgaria	2				1				
Croatia	1				1	1	1		
Denmark	2	1	1	1					1
Finland	1	1		2	2		2		
France	5	2		3	4		3		3
Germany	2	2		1	1		2		
Greece				1	1	1			
Hungary	1	1		1			1		
Ireland	2	1		3	2		1		
Italy	4	1		6	3	3	1		
Lithuania	1	1	1	1	1	1			
Luxembourg				1		1			
Norway	2	2		1	1	1	1		1
Poland	1			1	1	1	1		
Portugal	2	2	1	2	1	1	2		
Romania	5	2	1	1					
Slovenia	2			1	1		1		
Spain	38	18	2	9	8	3	4		4
Sweden	1								
Switzerland	3								
The Netherlands	1	1	1	1	1	1	1		
UK	4	2	1	2	1		3	2	1
Ukraine	1	1		1	2	1			
Grand Total	83	38	8	42	34	16	26	2	9

The most popular stored genetic material is semen, then DNA and Embryos.

Table 5. Collections by country and species

Countries	Cattle	Buffalo	Donkey	Goat	Horse	Pig	Rabbit	Sheep	Poultry	Water species	Pets	Wild species	Other
Albania	1			1				1					
Austria	1			1		1		1		1			
Belgium			1										
Brasil				1		1		1					
Bulgaria	1	1		1	1			1					1
Croatia	1		1	1	1	1		1					
Denmark	2			1	1	1		1					
Finland	2				2	1		1			1		
France	6		1	3	2	4	2	3	2	2			
Germany	3			1	1	2		1	2				1
Greece	1			1				1					
Hungary	0								1				
Ireland	2							1					
Italy	5		1	2	3	2	1	3					1
Lithuania					1	1		1					
Luxembourg					1								
Norway	2			1	1	1		1		1	1		
Poland					1						1	1	
Portugal	2			2	2	1		2	1				
Romania	5	2		1		1		1					
Slovenia	2			1	1	1		1	1				
Spain	30		5	24	18	13		26	5		5	4	
Sweden	1			1	1	1		1					
Switzerland	1			2		1							
The Netherlands	1			1	1	1	1	1	1	1	1		
UK	4			1	1	2		2				1	
Ukraine	1				1	1		1	2	1	1	1	
Total	74	3	9	47	40	37	4	53	15	6	10	7	3

8 Conclusions and perspectives

The Ad Hoc Action reach their objectives in relation with:

- The knowledge about EUGENA (and ERFP) has been increased between all the stakeholders in relation with AnGR conservation and animal breeding across Europe.
- A new inventory of genebanks have been developed, enhancing the previous initiatives (Image Project). This new tool allows improve the communication with the institutions holding genebanks and a better dissemination of the ERFP activities in relation with Ex – situ Conservation.
- The networking in the ERFP has been promoted inside the organisation, and also with other entities.
- The institutions holding genebanks are interested in enrol EUGENA (mostly accept the sending of new information about EUGENA) and at least one (from Spain) have applied for the enrolment in the net.
- All proposed activities haven been developed completely (flyer, certificate of participation, mailing, translation and survey)
- A report on the information collected in the survey have been developed. The more relevant finding are:
 - o A high number of institutions managing genebanks for AnGR in the European Region.
 - o The main purpose of the genebanks is conservation, then research and finally the commercial use of the stored material.
 - o Spain has the country with the highest number of recorded genebanks. Italy and France also have a relevant number of institutions holding genebanks
 - o Semen is the most frequent material stored, and reproductive genebanks are more spread than genomic ones, nevertheless a relevant number of genebanks have both types of material.
 - o The “five big” livestock species (Cattle, Sheep, Goat, Horse and Pig), are also the species with more collections. We have found a relevant number of collections of poultry and pets.

4. Plans and priorities for the rest of the year

The Ad Hoc Action have finished.

5. Other

Budget execution analysis:

TASK	COMPANY	BUDGET	DONE	DIFFERENCE
Electronic flyer design	ALCANDORA	500 €	500 €	0 €
Administrative work to make the mail list and the register	FEAGAS	2.500 €	2.500 €	0 €
E-mail translation	UBIQUUS S.L.U	2.500 €	1.718 €	782 €
Total		5.500 €	4.718 €	+ 782 €

ANNEX I. EXAMPLE OF EUGENA MEMBERSHIP CERTIFICATE.

CERTIFICATE OF MEMBERSHIP

THIS CERTIFICATE IS AWARDED TO

**Centre for Genetic Resources, the Netherlands (CGN)
of Wageningen University & Research**

**AS MEMBER OF THE EUROPEAN GENE BANK NETWORK
FOR ANIMAL GENETIC RESOURCES
(EUGENA)**

SIPKE JOOST HIEMSTRA
Chair of the European Regional
Focal Point for Animal Genetic
Resources.

Date
9TH JUNE, 2020



ANNEX II. INVENTORY OF GENE BANKS IN THE EUROPEAN REGION. SUMMARY.

NAME OF THE INSTITUTION HOLDING THE GENE BANKS	COUNTRY
Center of Agricultural Technology Transfer	Albania
AREC Raumberg-Gumpenstein	Austria
Belgian Donkey Friends studbook (B.E.V.)	Belgium
Cryobanque wallonne	Belgium
Universidade Federal Rural de Pwenameuco	Brasil
Executive Agency for Selection and Reproduction in Animal Breeding.	Bulgaria
AZRAP-KDK	Bulgaria
Ministry of Agriculture	Croatia
Institute of Animal Science	Czech Republic
Det rådgivende Bevaringsudvalg for Danske Husdyr genetiske Ressourcer hos oprindelige danske husdyr racer	Denmark
DNA- OG BLODTYPELABORATORIET	Denmark
Viking Genetics	Denmark
University of Helsinki	Finland
Natural Resources Institute Finland	Finland
INRAE	France
Cryobanque Nationale	France
LABOGENA DNA	France
Eva Jura.	France
Origen Normande	France
Breeding organisations of Alliance R&D	France
INRAE	France
Gesellschaft zur Erhaltung alter und gefährdeter Haustierrassen e.V. (GEH)	Germany
Genossenschaft zur Förderung der Schweinehaltung eG	Germany
Goepel Genetik GmbH	Germany
Verein Ostfriessicher Stammviehzüchter	Germany
Deutsche Genbank für Landwirtschaftlich Nutztiere	Germany
Leibniz Institute for Farm Animal Biology (FBN)	Germany
Agricultural University of Athens	Greece

Haszonállat-génmegőrzési Központ	Hungary
National Centre for Biodiversity and Gene Conservation	Hungary
Ministry of Agriculture	Hungary
Agricultural University of Iceland	Iceland
Belgian blue society	Ireland
Department of Agriculture, Food and the Marine	Ireland
Sheep Ireland	Ireland
ANABIC Associazione Nazionale Allevatori Bovini Italyni da Carne	Italy
Laboratorio di Genetica Molecolare, Università degli Studi della Basilicata	Italy
Consorzio di Sperimentazione, Divulgazione e Applicazione di Biotecniche Innovative	Italy
University of Perugia (ITALY), Department of Agricultural, Food and Environmental Sciences	Italy
IBBA CNR - DIMEVET UNIMI	Italy
ANCI (Associazione Nazionale Coniglicoltori Italyni)	Italy
CHIANINA DEL ROVERE di RIZZATO ENZO	Italy
Associazione Nazionale Allevatori delle Razze Equine ed Asinine ItalyNE	Italy
Animal Germoplasm Cryobank "Giuseppe Rognoni" - IBBA-CNR	Italy
University Of Perugia	Italy
Latvia University of Agriculture	Latvia
Lithuanian farm animal genetic resorse coordination center, Animal Science Institute of Lithuanian University of Health Sciences	Lithuania
L.A.S.	Luxembourg
University of Montenegro, Biotechnical Faculty	Montenegro
BioBank AS	Norway
Geno SA	Norway
National Bank of Biological Material	Poland
University of Agriculture in Krakow	Poland
Instituto Nacional de Investigação Agrária e Veterinária	Portugal
National Institute of Agrarian and Veterinarian Research	Portugal
Agentia Natonala pentru Zootehnie	Romania
S.C. SEMTEST BVN S.A. TÂRGU MUREȘ	Romania
AGENȚIA NAȚIONALĂ PENTRU ZOOTEHNIE	Romania
DaNutrition	Romania

SCDCB Tg. Mures	Romania
Temerin	Serbia
Cattle breeder veterinary center Krnjaca-Belgrade	Serbia
Public enterprise Livestock-veterinary center for reproduction and artificial insemination "Velika Plana"	Serbia
Biotechnical Faculty	Slovenia
ZDRUŽENJE REJCEV AVTOHTONEGA CIKASTEGA GOVEDA V SLOVENIJI	Slovenia
Topigs Norsvin Spain	Spain
AECAS	Spain
Universidad de Castilla-La Mancha	Spain
CENSYRA de Badajoz	Spain
Instituto Murciano de Investigación y Desarrollo Agrario y Alimentario (IMIDA)	Spain
Centro Integrado de Formación y Experiencias Agrarias de Lorca (CCAA Región de Murcia)	Spain
Centre de recollida, d'emmagatzematge i distribuïdor de germoplasma de SEMILLA Menorca	Spain
Centre de recollida, enmagatzament i distribució de germoplasma de SEMILLA	Spain
Centro de Selección y Reproducción Animal. Gobierno de Cantabria.	Spain
Explotaciones Mandor SL	Spain
ASTURGÉN SL.	Spain
Gobierno de Canarias, Consejería de Agricultura, Ganadería y Pesca	Spain
CENSYRA-IMIDRA-Comunidad de Madrid	Spain
Regional Institute for Research and Development in Agrifood and Forestry in Castilla-La Mancha (IRIAF) - Regional Center for Animal Breeding and Genetics (CERSYRA-Valdepeñas)	Spain
Servicio Regional de Investigación y Desarrollo Agroalimentario	Spain
Faculty of Veterinary. University Complutense of Madrid	Spain
Centro de Recursos Zootécnicos de Galicia.	Spain
Centro de Transferencia Agroalimentaria-Gobierno de Aragón	Spain
IFAPA Andalusian Institute for Agricultural Research and Training	Spain
Instituto Tecnológico Agrario.	Spain
CITA-Aragón La Garcipollera Research Farm (Our biological material is a living germplasm collection of around 250 cattle heads and 250 sheep heads of autochthonous breeds)	Spain
Asociación N. de Criadores de Ganado Bovino de raza Cárdena Andaluza.	Spain
IEGRA	Spain

Instituto Tecnológico Agrario de Castilla y León	Spain
Javier González Fraga	Spain
Universidad de León.	Spain
Centro de Selección y Mejora de Caprino - Diputacion de Granada	Spain
Banco de Germoplasma Biomejón AGR 218 de la Universidad de Córdoba	Spain
Politechnic University of Valencia	Spain
Associació de ramaders l'ovella de raça Mallorquina.	Spain
CENTRO DE SELECCION Y REPRODUCCION ANIMAL (CENSYRA)	Spain
Autonomous University of Barcelona	Spain
Servicio Regional de Investigación y Desarrollo Agroalimentario (SERIDA)	Spain
ACRIFLOR	Spain
CITA-IVIA	Spain
Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA)	Spain
INATEGA	Spain
Universidad de Zaragoza	Spain
Aberekin	Spain
University of Cordoba	Spain
AGRAMA	Spain
Banco Nacional de Germoplasma Animal.	Spain
Laboratorio Central de Veterinaria.	Spain
Investigación y sanidad veterinaria	Spain
Universitat Autònoma de Barcelona.	Spain
University of Huelva	Spain
Swedish board of agriculture	Sweden
SUISAG	Switzerland
Swissgenetics	Switzerland
Schweizerischer Ziegenzuchtverband	Switzerland
Wageningen University & Research - Centre for Genetics Resources The Netherlands (CGN)	The Netherlands
The Sheep Trust	UK
CryoArks (https://www.cryoarks.org/) comprises multiple UK institutions.	UK
JSR Genetics	UK



The English Guernsey Cattle Society	UK
Rare Breeds Survival Trust	UK
Rare breed survival trust uk	UK
M.V.Zubets Institute of Animal Breeding and Genetics	Ukraine
Institute of Farm Animal Breeding and Genetics	Ukraine
State Research Poultry Station of NAAS	Ukraine