

# GenRes Bridge



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## **Report of the Peer Review of the French National Cryobank**

September 13<sup>th</sup> to 14<sup>th</sup> 2021, Paris, France

### **Introduction**

Complementary to *in situ* conservation, countries in Europe have established genebanks for the (long term) *ex situ* conservation of farm animal genetic diversity. The FAO Global Plan of Action on Animal Genetic Resources, as well as the UN Sustainable Development Goals (Target 2.5) recognize the relevance of genebanks for the conservation and sustainable use of genetic resources.

Within Europe, the European Regional Focal Point (ERFP) initiated the development of the European Genebank Network for Animal Genetic Resources (EUGENA). The aim of EUGENA and ERFP is to exchange information, knowledge and experiences between genebanks and countries, to support further development and professionalization of national genebanks, and to create a network that collectively conserves animal genetic resources in genebanks.

To streamline and to strengthen the conservation and sustainable use of genetic resources in Europe over different domains (plant, animal and forest) ERFP cooperates in the EU Horizon 2020 GenRes Bridge project<sup>1</sup>. Funded by GenRes Bridge, a system of peer review has been set up aiming at improving the quality of European genebanks by simply having the experts of these genebanks visit each other in their genebanks, giving full transparency about the facilities and protocols, and having discussions about these. Reviewers provide recommendations to the hosting genebank.

A pilot of these Genebank Peer Reviews for livestock genebanks was organised in the second half of 2021, involving the French national Cryobank (Paris, France), the Dutch national genebank (CGN-WUR, Wageningen, the Netherlands) and the national genebank of Slovenia (Ljubljana, Slovenia). The first review was held from 13th and 14th September, in Paris, France.

The review committee consisted of Danijela Bojkovski (University of Ljubljana, Slovenia), Marjolein Neuteboom, Mira Schoon and Sipke Joost Hiemstra (CGN-WUR, the Netherlands).

### **Organisation of the review**

The review was organised by Delphine Duclos, Executive Secretary of the French national Cryobank, and employed by the *Institut de l'Élevage*. The review took place at the *Institut de l'Élevage* in Paris, and the primary storage site at LNCR (French National Laboratory for Health Control of Breeding Animals) near Paris. Representing *Institut de l'Élevage*, Coralie Danchin-Burge (researcher, former Executive Secretary of the French national Cryobank, and currently acting Secretariat for ERFP) also joined the review. From LNCR side, David Briganti (stock manager at LNCR) and Laurence Guilbert-Julien (director of laboratory at LNCR) welcomed the review panel at the primary storage site.

A self-assessment was carried out by Delphine Duclos and sent to the review panel ahead of the peer review visit to Paris. The visit consisted of several presentations made by Delphine Duclos and Coralie

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Danchin-Burge and a tour through the main storage site and facilities by David Briganti (Stock manager), followed by discussions and interaction with the review panel. At the end of the visit (second day) the review panel shared their observations and draft recommendations, followed by a final general discussion.

## ***Observations, conclusions and recommendations***

### *Organisation*

The French national Cryobank has a Governing Board of twelve partners, including commercial breeding organisations, breeding associations and research institutes. With the foundation of the *Groupement d'Intérêt Scientifique* (GIS), general objectives have been agreed upon between the partners of the Governing Board of the GIS. The Governing Board is the decision making body. One of the twelve partners is elected as the chair, and *Institut de l'Élevage* has a mandate from the Ministry of Agriculture to employ the executive secretary of the genebank, this decision has to be approved by the Governing Board as well.

The partners of the GIS operate within a general framework, without setting specific goals for a determined period of time. Besides the signatory members of the GIS, the French national Cryobank has agreements with depositors (AI organisations and breed societies), and with a range of (mirror) storage sites across the country (depending on species). The president of the GIS signs the agreements with depositors and storage sites.

The French national Cryobank is dependent of the *in kind* contributions of employees of the members of the GIS. Two half-time persons are directly payed by the cryobank, the executive secretary and the stock manager. The regular source of funding of two half time staff, equipment and liquid nitrogen comes from the Ministry of Agriculture. This is supplemented by regional or national project funding, e.g. from *Centre de Ressources Biologiques pour les Animaux Domestiques* (CRB-Anim) infrastructure project.

**Recommendation 1:** Limited mandate and limited regular funding from Ministry of Agriculture makes the national cryobank rather dependent of project funding or *in kind* contributions. This also influences priority setting, which may not be completely in line with long term public interests. A stronger long term mandate of public tasks of INRAE/IDELE could further strengthen the position of the French national Cryobank.

### *Policy Development and Quality Management System*

A general policy document, including medium and long term goals, is missing. Such a document will be required for obtaining ISO 9001:2015 certification. The French national Cryobank is planning to obtain ISO 9001:2015 certification in the coming years. This policy document would include a clear vision on breeds to pro-actively acquire genetic material. Currently rare local breeds seem to be underrepresented in the interests of the Board of GIS which could result in bias towards commercial breeds. Due to national veterinary legislation, the main material stored in the cryobank is collected at (commercial) AI-stations. A substantial proportion of total genetic diversity will not be covered by this material as for several breeds, mainly local rare breeds, will use natural mating for the majority of breeding. The French genebank strategy would benefit from specific measures or derogations in the national animal health legislation, that will provide better opportunities to cryopreserve genetic material of breeds with higher risks of extinction or local breeds without any cryopreserved material for the moment.

An overall risk assessment in the medium to long term should be considered. An important aspect of such an assessment would be to discuss different options regarding the ownership and access rules of the stored material.

**Recommendation 2:** Carry out an overall risk assessment in the medium and long term. The current conventions between providers of genetic material and the French national Cryobank could be revisited in particular with regard to ownership and access rules. It might not be sufficient to state ownerships in a 100 years. Juridical advice might be needed to evaluate the ownership status based on the current agreements.

**Recommendation 3:** The current national animal health regulatory framework for AI centers may limit the genebank to meet its objectives. Necessary derogations or exemptions in the national animal health law should be explored and discussed with the veterinary authorities.

#### *Storage of the material and collection management*

The entire collection is stored under optimal long-term storage conditions in liquid nitrogen at -196°C. The storage was very well organized at the primary storage site near Paris. Also the forms that are used to check the material when it arrives looked detailed and well documented. Half of the genetic material is stored at (species specific) mirror sites across France, which is a very good and secure system. These mirror sites run rather independent from main storage site, while good communication between the main site and mirror sites is important.

The whole cryobank collection has an EU sanitary status, except horses. To allow more influx of different types of material, for example from males of particular breeds which cannot be stationed at an AI centre, the cryobank could have separated storage tanks without this high EU status. Genetic material stored in these tanks can contribute to national use but cannot be exported for international use. However, under specific conditions it is allowed to exchange this type of genetic material between genebanks.

**Recommendation 4:** As Excel documentation system is very prone to man-made mistakes and communication and exchange of data between different databases is difficult. We advise to aim for the development of an integrated information system for tracking and tracing of samples and of animal data. Consider joining the ERFIP initiative for developing a new database for cryobanks.

**Recommendation 5:** Start uploading the (meta) genebankdata into EFABIS/EUGENA and the IMAGE/EBI database.

#### *Access and Distribution*

The public database is very detailed and informative about the whole collection, including number of doses and quality. The procedures in CRB-Anim are very clear and the system easily creates the MTAs and MAAs, although in some cases there may be too many steps for the user. The genebank works with 3 types of classifications (Type 1: rare breeds, Type 2: original animals or lines and Type 3: selected breeding stock). We feel Type 1 could get a higher priority but this is currently difficult because of funding limitations. Governmental funding is required for establishing Type 1 collections. The cryobank is working with species groups organised with CRB-Anim. This is a good structure, however coordination across species groups is also important.

So far, distribution of genebank material to users is very limited, and is only possible via the breed societies. Use of genebank material could be promoted by better communication about the genebank collections and about the opportunities towards breeders, either directly or via the breed societies.

**Recommendation 6:** (Governmental) funding for establishing genebank collections for rare breeds is advised.

**Recommendation 7:** Expand communication strategy towards breeders to create more awareness about the objectives of the genebank, possibilities for collaboration and to promote (future) use of genetic material stored in the cryobank.

### *Documentation*

For the registration of genetic material, documentation and collection management, multiple systems are used. At the local sites Excel-sheets are used to document where the material is stored, which is prone to man-made mistakes and server back-ups are crucial. The storage information is shared by the stock manager with by Delphine who needs to include the information in the national database Cryobase and then exported to the CRB-Anim database. LNCR (the institute that also hosts the genebank collections) has its own software to handle and register material. There may be opportunities to adjust this software in order to make it functional for the cryobank collection as well, and possibly create direct links. to national databases such as Cryobase and CRB-Anim as well. Currently no data is uploaded to EFABIS/EUGENA.

**Recommendation 8:** Development and implementation of a new modern database is essential. The new tools developed should allow interoperability and data optimization between different databases.

### *Final conclusion*

The French national Cryobank is an impressive and excellent infrastructure. The governance structure is well organised and there is a very good collaboration with the different sectors. The legislative framework is good, although for the long term continuity it may be a threat that it is not specifically mentioned in the legislation who is responsible for the genebank. Furthermore, derogations in national animal health law, for the genebank to collect, store, freeze and distribute genetic material of local (rare) breeds, would provide additional opportunities to increase the genetic diversity conserved.

The staff is very competent but continuity of staff is a risk with the small team and high level of expertise. In case of leaving of a staff or board members, replacement of the persons will not be easy. Expanding the structural budget for personnel and genebank activities is highly recommended. This would also allow more time for implementing adequate quality standard like ISO 9001:2015.

### ***Final remarks***

The reviewers highly appreciated the well organised review visit. The sharing of expertise and experiences was fluent and very useful for all participants. As this was the first visit of the series, this was an excellent start and setting the standard for the other reviews.

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