

## The French National Cryobank and its insertion in genebanks network



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**MINISTÈRE DE L'AGRICULTURE ET DE LA SOUVERAINETÉ ALIMENTAIRE**

*Jeune Agence France*

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## Why a National Cryobank in France ?

- France signs the Convention on Biological Diversity in 1992
  - ✓ Commitment to preserve its domestic species genetic variability on a long term basis
  - ✓ Cryoconservation (i.e. storing biological material in liquid nitrogen) seems an adequate tool for such purpose
- Creation of the French National Cryobank (CBN) in 1999 to store reproductive material of all species/breeds in French farms



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## 12 partners involved in the Group Council



Funder



Research



Federations



Technical institutes



Storage (sanitary status)

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## Roles of the National Cryobank

- **Ensuring the rationalisation and financement** of an important part of cryopreserved reproductive genetic material collections as a **core collection**
- Gathering a wide array of representants of different domains and species to be able to get the information and the good contact for **coordinating the different actions** concerning cryoconservation

=> CRB-Anim was a good example of that synergy : increase in the diversity of the material stored in number of species represented and diversity inside the species



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## CRB-Anim: a network after the project

What was CRB-Anim ? A project from 2012-2022

OBJECTIVES: Organize and strengthen the BRCs for domestic animals

CHALLENGES: Preserve biodiversity and characterize it through genomics

ACTIONS: Enrich and document collections

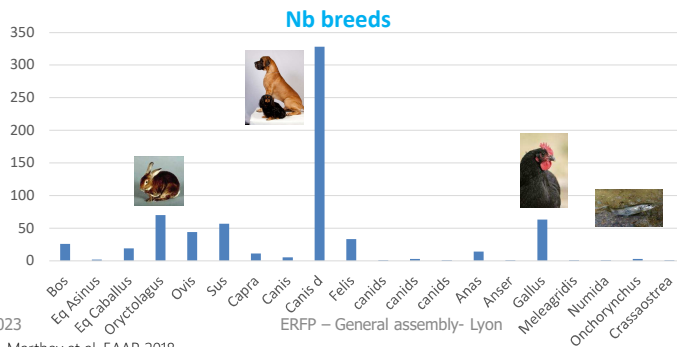
Develop conservation methods

Organize distribution

Support research

Promote methods and resources

Training for biobanking professions



More than 20 species and 650 breeds/lines concerned

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Marthey et al, EAAP 2018

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## CRB-Anim: a network after the project

Now: 6 Biological resources centers (BRC) involved

### Resources

Reproductives Genomics

Livestock animals

Group of organisms

Pets

Cryobanque Nationale

CryAnim

Vet school - Lyon

CARARE

@BRIDGE

Cani-DNA

CRBA

CNRS, ENV, Antagene

Vet school-Nantes

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## CRB-Anim: a network after the project

### What is CRB-Anim now ?

- A common webportal where information about samples and animals are shared and ask for genetic material has to be done.

Breed	Sample type	Species	
<input type="checkbox"/> Add a filter:	<input type="text" value="Add a filter:"/>	<input type="text" value="Add a filter:"/>	
<input type="checkbox"/> Charolaise	blood	Bot taurus	<input type="button" value="↳ Infos"/>
<input type="checkbox"/> Charolaise	blood	Bot taurus	<input type="button" value="↳ Infos"/>

- Creation of a scientific interest group (GIS) to continue the partnership

To know more: <https://crb-anim.fr/>  
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## Process of certification



### Why asking for a certification?

- Most of the BRCs in the CRB-Anim network are already certified: a guarantee of the quality of the work carried out  
=> request that all the BRCs in the network be certified
- Be eligible for some calls for projects
- In Europe, structures similar to the Cryobank are encouraged to adopt a QMS approach (see the new AHA using IMAGE self-diagnostic tool).
- Internal benefits too : certification is helping to formalise our processes and their continuous improvement

Certification process is underway for several years and now :

- ✓ First important step was the white audit in June
- ✓ Certification audit is planned for December

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## Some particularities of the CBN

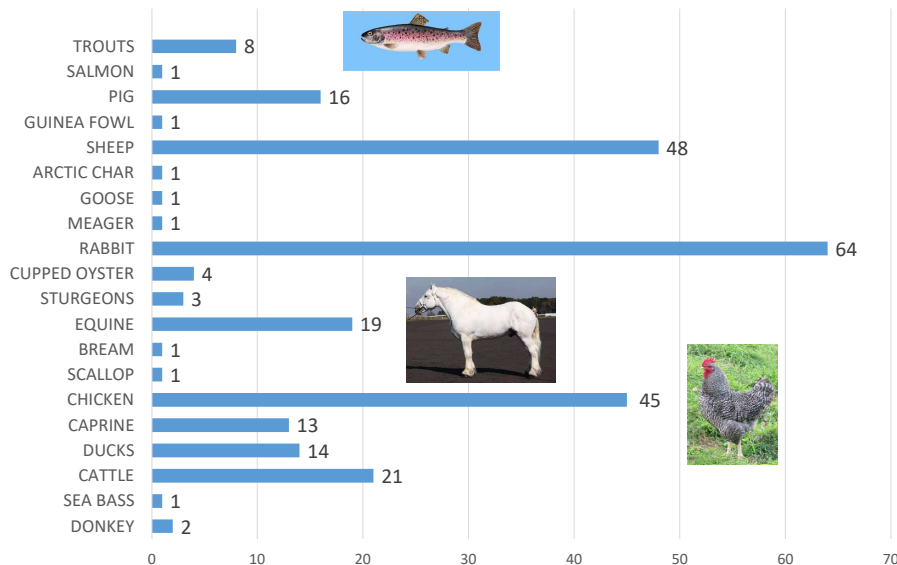
- ✓ A complete duplication of the collection : the primary site is containing half of the samples of each collections, the other half is in different mirror sites according to the species
- ✓ Material classified into 3 types :
  - Rare breeds : type I
  - Improved breeds:
    - Exceptional animals not used as breeders -> type II
    - Representative selected breeding stock -> type III
- ✓ Depositor (never an individual) keeps its ownership but leaves the collection management to the CBN Group Council.  
To use a sample, the depositor's agreement is mandatory and reconstitution of the stock is asked.

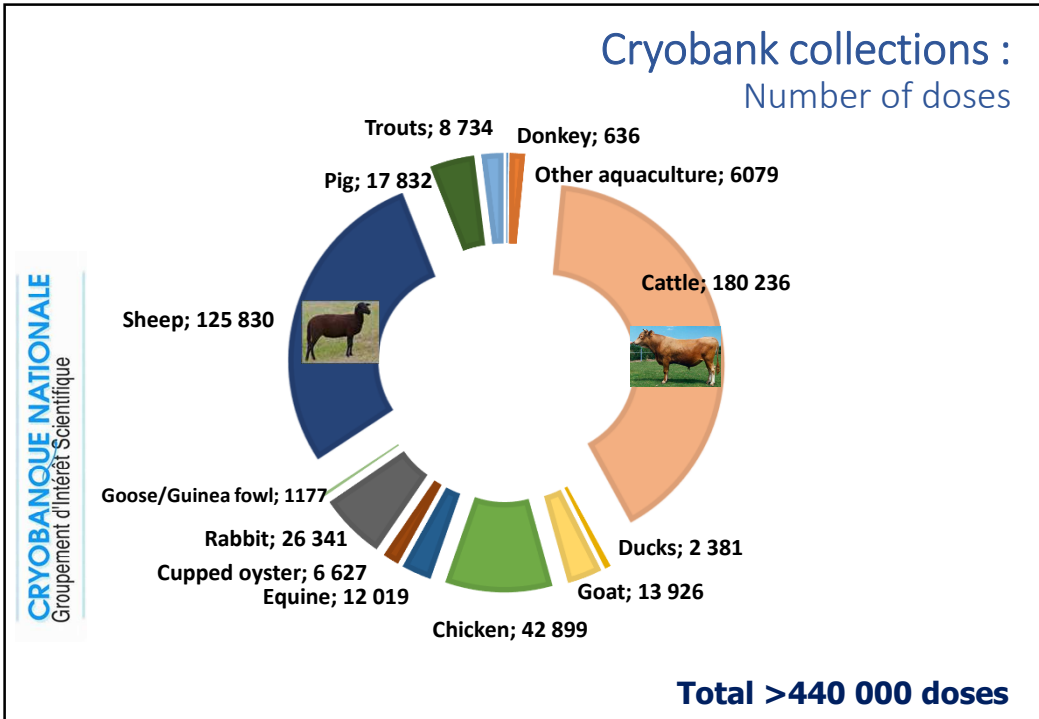


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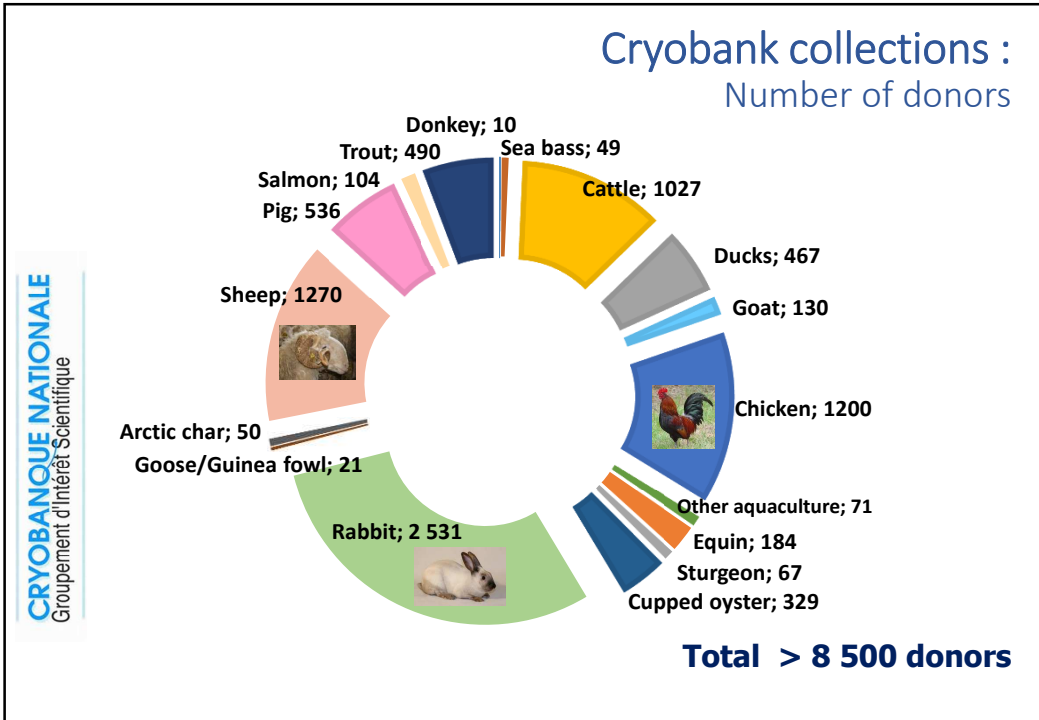
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## Cryobank collections : Number of breeds/lines > 260





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## A future strategic plan for cryopreservation

To pursue the enrichment in cryopreserved reproductive material, the Ministry of Agriculture asked to the National Cryobank to write a strategic plan for cryopreservation:


- to have an **inventory of the situation**, particularly, which breed has theoretically sufficient material to be reconstituted according to the species
- underline what is currently **missing** in the stocks
- **prioritise** future collections.



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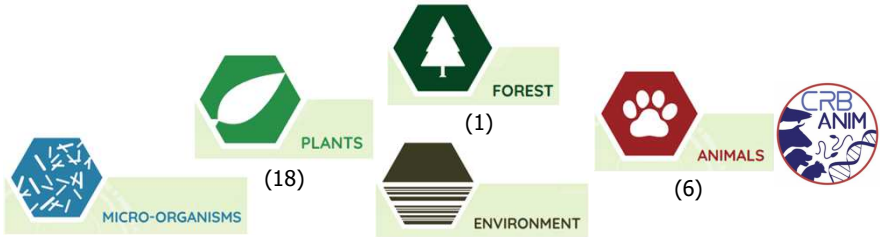


## AgroBRC

The French Network of Biological Resource Centers  
for Agricultural, Environmental and Life Sciences

## An other national infrastructure for research collection : AgroBRC-RARe

- French research institutions active in agronomy and biology (INRAE, CIRAD, IRD, CNRS) and their partners (technical institutions, higher education institutions) have set up Biological Resource Centers. Currently, more than 30 BRCs store millions of resources.
- A national research infrastructure that brings together 5 BRC networks: RARe (Agronomic Resources for Research) is organized by pillars  
*To know more: <https://www.agrobrc-rare.org/>*



(3)                      (18)                      (1)                      (4)                      (6)

MICRO-ORGANISMS                      PLANTS                      FOREST                      ENVIRONMENT                      ANIMALS

(number of BRC)

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## At european level

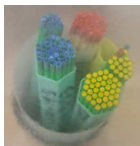
- The president of the French National Cryobank, Michèle Tixier-Boichard from INRAE was the leader of the H2020 **project IMAGE**: “Innovative Management of Animal Genetic Resources” (2016-2020) – 28 partners  
 Objectives: enhance the use of genetic collections and upgrade animal gene bank management.  
 -> demonstrated the benefits brought by gene banks to the development of more sustainable livestock farming systems.
- French National Cryobank : member of the **WG ex situ** at ERFP since its creation in 2011.
- Participating to several ad hoc actions also
- We hope soon to become a member of the EUGENA network...



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# Thank you for your attention !



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