

CRB Anim

A web portal to access to biological resources for animal sciences

Sylvain Marthey, Aurélie Delavaud¹, Nicolas Marthey,
Michèle Tixier-Boichard*

INRA, Animal Genetics and Integrative Biology,
Foundation for Research on Biodiversity¹,
France





CRB-Anim : a national infrastructure project supported by the *Investing for the Future* program



2012-2019
11 M€



Cryobanking of reproductive cells
Biobanking of somatic tissues, fluids, DNA, RNA



All populations commercial, endangered experimental...

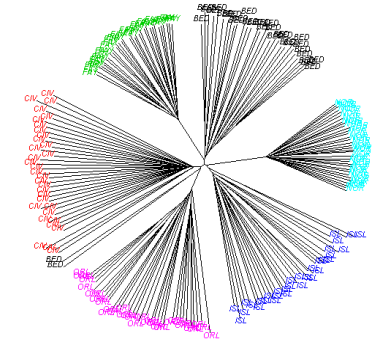
BIOLOGICAL RESOURCES CENTERS : BRC
Collect → Characterize → Secure → Distribute



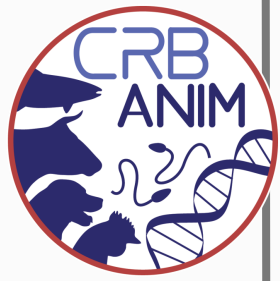
- **Preservation and Characterization of genetic diversity**
- **Support for genomics, physiology**
- **Biology of Reproduction**



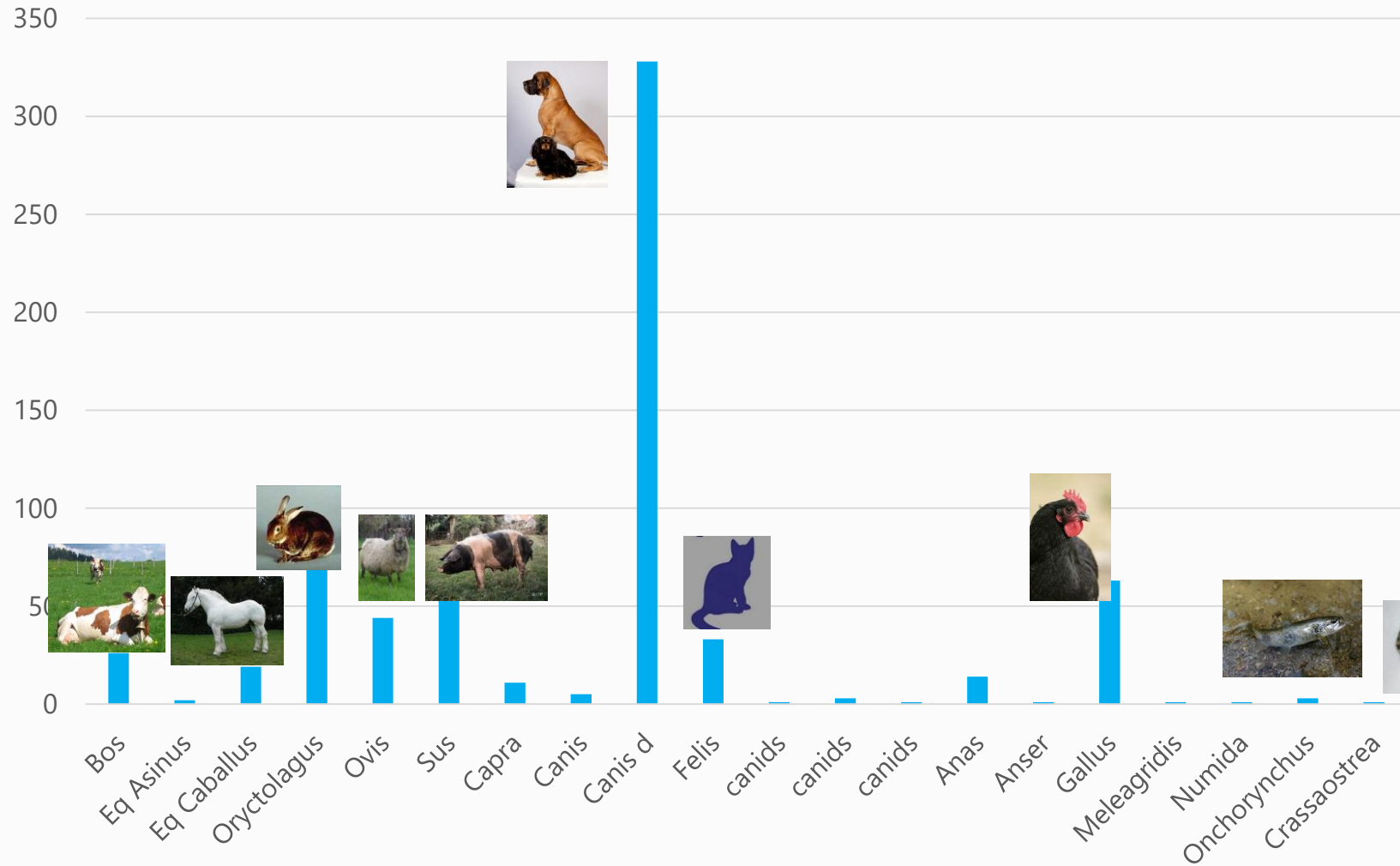
Support to the livestock sector
Management of genetic resources
Biological models



A diversity of resources: 684 breeds in 5 BRCs



Nb breeds



20 species

Livestock:

7 mammals

5 birds

1 fish

1 shellfish

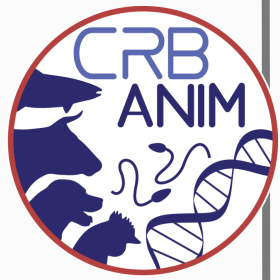
Pets

2 domestic

4 wild relatives



Unequal representation of species

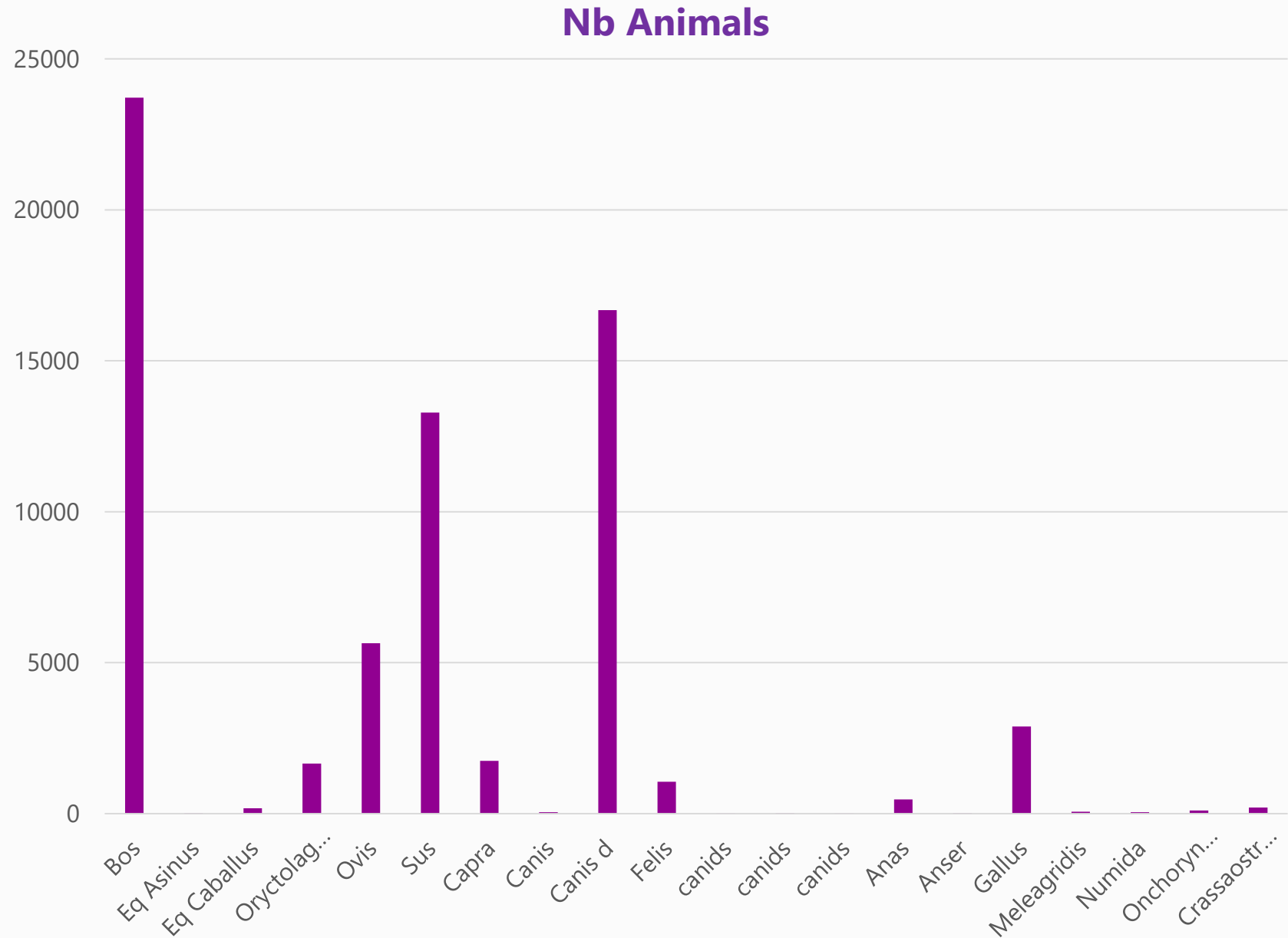


≈ 70 000 animals

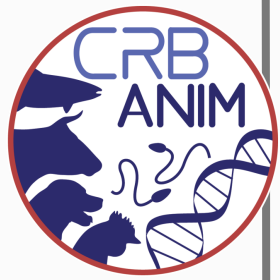
≈ 140 000 samples

- Semen & skin biopsies for cattle & pig
- DNA & tissues for canids
- Semen Blood & DNA for birds
- Semen for fish
- Larva for oyster

& the FAANG tissue collection of INRA



« A common list of descriptors »



i3-CRB: Interoperable IT Infrastructure for Biological Resources Centres / Biobanks - France



BBMRI

The Pan-European research infrastructure for Biobanking and Biomolecular Resources: managing resources for the future of biomedical research

Heli Salminen-Mankonen¹, Jan-Eric Litton², Erik Bongcam-Rudloff³, Kurt Zatloukal⁴ and Eero Vuorio¹

EMBNET news 15.2

2009

Updates to BioSamples database at European Bioinformatics Institute

Adam Faulconbridge, Tony Burdett, Marco Brandizi, Mikhail Gostev, Rui Pereira, Drashti Vasant, Ugis Sarkans, Alvis Brazma and Helen Parkinson*

D50-D52 Nucleic Acids Research, 2014, Vol. 42, Database issue
doi:10.1093/nar/gkt1081

Published online 21 November 2013

A Minimum Data Set for Sharing Biobank Samples, Information, and Data: MIABIS

Loreana Norlin, Martin N. Fransson, Mikael Eriksson, Roxana Merino-Martinez, Maria Anderberg, Sanela Kurtovic, and Jan-Eric Litton

BIOPRESERVATION AND BIOBANKING
Volume 10, Number 4, 2012
© Mary Ann Liebert, Inc.
DOI: 10.1089/bio.2012.0003

- Established according to needs &...
 - Information available / provided** by BRCs
 - Experts' information** from Species Committees
 - Experience** gained from the Human domain (BBMRI, i3CRB...) & from EBI (Biosamples)
- + taking into account an international metadata schema (Ecological Metadata Language)
- using ontologies (ex UBERON for body part)
- lists of controlled vocabularies or agreeing on tailored lists

| Type | Animal | Sample |
|-----------------------|--------|--------|
| Ontology | 3 | 1 |
| Controlled vocabulary | 10 | 12 |
| Raw | 14 | 11 |



The set of descriptors



| Animal | | |
|--|--------------|------------------------|
| Information | Nb of descr. | Nb of mandatory descr. |
| ID & genealogy | 8 | 5 |
| Species, race, lineage | 12 | 3 |
| Health status | 2 | 1 |
| Type(s) of known disease(s) | 4 | |
| Phenotype | 6 | |
| Living environment | 7 | |
| Country of origin of the sampled animal (N) | 1 | 1 |
| + additional information if available type of info + link / contact | 3 | |

★ informations required by the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization

| Sample | | |
|---|--------------|------------------------|
| Information | Nb of descr. | Nb of mandatory descr. |
| ID | 3 | 1 |
| Reason and date of CRB storage | 2 | 2 |
| Sampling date (N) | 1 | 1 |
| Sample description (anatomy component, nature...) (N) | 6 | 2 |
| Preparation, conditioning, preservation | 10 | 4 |
| Quality controlled applied | 1 | 1 |
| + additional information | | |
| Protocol to use the sample | 1 | |
| Information on research project in which the sample was collected and / or used | 5 | 1 |
| + information about access | | |
| Condition applying to access to sample (N) | 1 | 1 |
| + information about the depositor | | |
| Information about depositary, affiliation and MTA (N) | 4 | 4 |

86 descriptors

37 required

| BRC | | |
|--|--------------|------------------------|
| Information | Nb of descr. | Nb of mandatory descr. |
| Administrative information about the BRC | 8 | 7 |
| Contact | 4 | 3 |





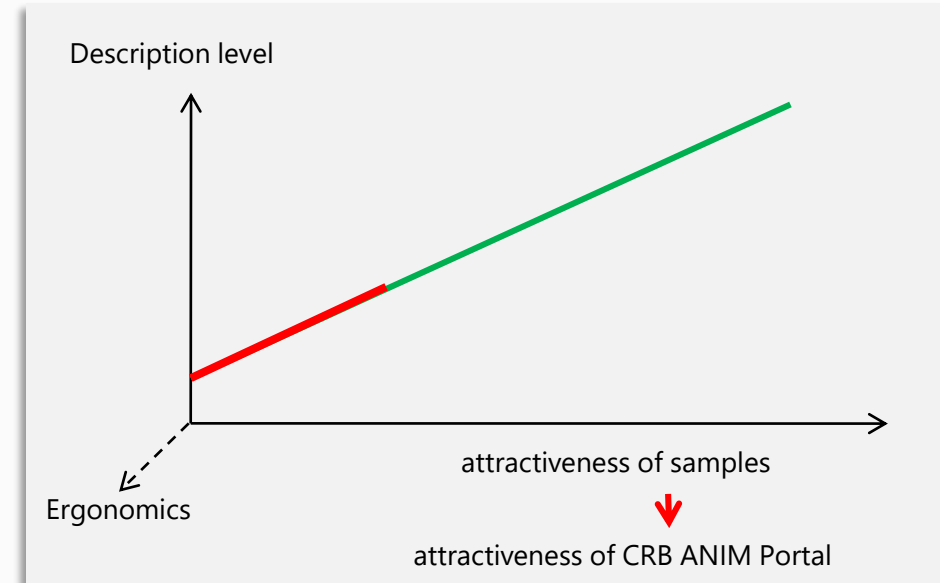
« Minimum dataset »

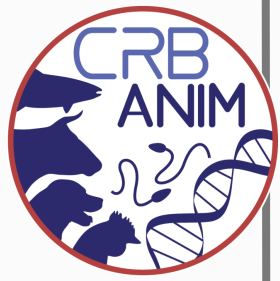
The common information BRCs share about samples and animal

<>

The information you can find in the web portal


- Goal: to have a sufficient level of description and characterization to **make the samples findable & evaluable for the intended use** – while preserving feasibility and ergonomics...






Go to <https://crb-anim.fr/access-to-collection>

You can freely search for main descriptors : species, breed, type of sample

My account 

 Biological Resource Centre
for domestic animals

Charolaise

?

59 Sample matching your criteria

| | Breed <input type="button" value="v"/> | Sample type <input type="button" value="v"/> | Species <input type="button" value="v"/> | |
|--------------------------|--|--|--|---------------------------------------|
| <input type="checkbox"/> | <input type="text" value="Add a filter..."/> | <input type="text" value="Add a filter..."/> | <input type="text" value="Add a filter..."/> | |
| <input type="checkbox"/> | Charolaise | blood | Bos taurus | <input type="button" value="Infos."/> |
| <input type="checkbox"/> | Charolaise | blood | Bos taurus | <input type="button" value="Infos."/> |
| <input type="checkbox"/> | Charolaise | blood | Bos taurus | <input type="button" value="Infos."/> |



If you want to :

- * get more detailed information on samples
- * request samples
- * store samples



You need to create a user account

User profile



- Family Name*
- First name*
- Title*
- Function*
- phone*
- Fax
- Web site
- Adress*
- Zip code*
- City*
- Country*
- Family Name of **authority signing MTA**
- First name of authority signing MTA
- Function of authority signing MTA



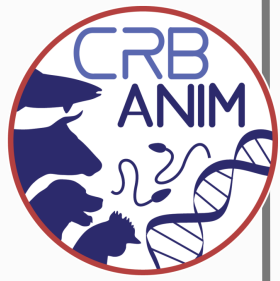
- Name
- Acronym
- Type
- Commercial name
- Main Activity
- Adress of headquarters
- Zip code
- City
- Country
- URL
- Family name and first name of the **legal representative for the institution**
- Function of the legal representative



Institution



Requesting samples



Actors / Roles :



User

- Select samples of interest
- Launch the request
- Validate the list of samples requested
- Fills in MTA & *gets it signed by its authority*
- Receive samples
- Assess the service



BRC

- Assess technical feasibility
- Validate the list of samples to be distributed
- Fills in MTA & *gets its signed by its authority*
- Prepares and ships the samples



Species committee

- Assess scientific purpose of the request and/or possible conflict of interest or IP issues

Objects :



Samples

- Initial request:
 - Batch of samples
 - List of IDs
- MTA
 - List of IDs



MTA

- Recipient : *User*
- Provider : *biobank itself or on behalf of initial provider*
- Samples



Initiating a request



Validation of the request

Add to cryobasket

Validation of cryobasket

Demande initiale

| Identifiant échantillon | Nombre Animal | Type d'échantillon | Type de contenant | Espèce |
|-------------------------|---------------|--------------------|-------------------|-----------------------|
| Gaga-Lign-1335-1 | 1335 | semen | Palette | Gallus gallus |
| Gaga-Lign-1335-2 | 1335 | semen | Palette | Gallus gallus |
| Orcu-INRA-1335-1 | 1335 | embryo | Palette | Oryctolagus cuniculus |

Informations supplémentaires sur la demande*

Je souhaiterais utiliser du matériel reproductif de poule et lapin afin de mener une étude sur les techniques d'intraversion chez ces deux espèces. Éventuellement j'aimerais que vous me conseillez les meilleurs lots de palettes correspondant à 5 individus chez ces deux espèces.

Nature du matériel demandé*

semence

Conditionnement souhaité*

palettes

CRB concerné par la demande

TEST

Informations demandeur / Destination des échantillons

Demandeur

Nom: Sylvain
Prénom: MARTHEY
Fonction: Adm.
Organisation:

Êtes-vous le déposant des échantillons demandés ?*

Oui
 Non

Les échantillons demandés seront-ils utilisés dans le cadre d'un projet de recherche ?*

Oui
 Non

Valider la demande de sortie d'échantillons

Mon cryopanié

Antigène:

Lots d'échantillons

Aucun lot d'échantillon dans votre panier

| Echantillon | Numero animal | Nature | Conditionnement | Espèce | Actions |
|-------------|---------------|--------|-----------------|------------------------|---|
| 43172 | 24891 | blood | Tube <=> 2ml | Canis lupus familiaris | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 62150 | 14584 | blood | Tube <=> 2ml | Canis lupus familiaris | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 87066 | 22465 | blood | Tube <=> 2ml | Canis lupus familiaris | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 87893 | 3115 | blood | Tube <=> 2ml | Canis lupus familiaris | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Effectuer une demande de sortie sur ces échantillons

Search/ update the content of cryobasket

Fill in the request

Centre de Ressources Biologiques pour les Animaux Domestiques

Rechercher

Recherche avancée

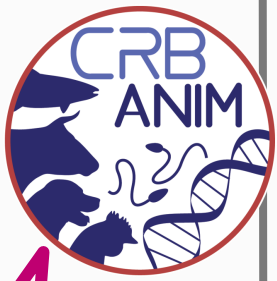
Recherche avancée

| Identifiant | Nature de l'échantillon | Statut |
|-------------|-------------------------|--------|
| 43172 | Bulding | blood |
| 62150 | Bulding | blood |
| 87066 | Bulding | blood |
| 87893 | Bulding | blood |

Search & Select samples



Conclusions : main features of the web portal



A single entry point for everyone to **search for samples**
for registered users to...
to get **additional information** on samples
to order samples (cryobasket), with traceability and MTA
to **store** their samples with traceability and MTA



in back-office :

- To manage and **record the steps when assessing** the request
- To manage information (import / **update data from BRCs**, lists...) & to monitor the project to report on activities (statistics)

Our challenges : get complete data, integrate new BRCs, train users

