

Summary of Gene banking in Austria

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- Historical overview of gene bank development in Austria

The Austrian Gene Bank for FAnGR (AGB) was founded in 1997 at the Institute of Organic Farming and Biodiversity of Farm Animals. The basic idea was to back up the in situ conservation programs and to provide material for planned mating in highly endangered breeds. For mainly financial reasons the collection concentrated on semen although a small number of cattle embryos from previous programs is stored as well. When the Institute was still a commercial AI centre in the 1980ies research in embryo transfer, in-vitro fertilisation and embryo splitting led to a small collection of embryos from Original Austrian Brown and Tux-Zillertal cattle. Some of these embryos (Original Austrian Brown) were used to produce AI bulls for the in situ breeding program. Semen of these bulls was added to the gene bank.

In 1999 according to FAO's requirement to include all FAnGR the Austria Cattle Archive (ACA) was added to the gene bank as an agreement between the Austrian cattle AI centres and the Austrian Association for Rare Endangered Breeds (ÖNGENE).

The goal of the Farm Animal DNA Bank (FADNAB) project which started in 2006 is to provide a comprehensive DNA archive for all Austrian FAnGR.

- Objective(s) of national cryopreservation programme/policy

- Collection goals

AGB: 50 sires per breed from as many different parents as possible, even including father/son relations if the mothers are not related, but excluding full siblings

ACA: From every test bull entering an Austrian AI centre 50 doses of semen are stored in the ACA together with complete pedigree and DNA information for scientific purposes.

FADNAB: 50 to 100 samples per breed and generation are stored and the collection is repeated after 5 to 6 generations to build a genetic inventory.

- Collection categories

- AGB

- Working collection to support *in situ* conservation breeding. The number of doses per sire depends on the needs of the breeding organisation in charge (OC).
 - Base collection and duplicate collection are not accessible save in case of emergencies. 25 doses of bull, buck and ram semen and 5 doses of boar semen are added to the base and duplicate collection respectively.

- ACA

- 10 doses of the stored semen are available for scientific purposes only (e.g. genomic selection programme).
 - 20 doses may be used for breeding purposes by the owner after at least 15 years of storage.
 - 20 doses remain in the ACA for long-time storage and are only to be used in emergencies.

- FADNAB

- 4 samples per animal are stored for scientific purposes only. 2 samples are available to research institutes, 2 have to remain in the collection.

- Achievements until today

- AGB

Base collection and duplicate collection

8 cattle breeds – 222 bulls

8 sheep breeds – 154 rams

7 goat breeds – 80 bucks

4 horse breeds – 26 stallions

2 pig breeds – 9 boars

ACA 22 breeds - 2831 bulls

FADNAB 32 breeds - 735 animals only for 10 breeds the goal of at least 50 animals per breed has been reached yet.

- Future plans
 - Complete the AGB and the FADNAB as much as possible. In some highly endangered breeds the goal of 50 sires will not be reached due to lack of male breeding animals.
 - Add poultry breeds to the collection. After the establishment of the first conservation breeding program in 2010 documented samples of purebred birds will become available in the near future.
 - Continue the ACA. As only 3 Austrian cattle AI-centres are still in business and because of the international cooperation in the cattle semen business the number of Austrian test bulls has gone down considerably.
- Participation of stakeholders: responsibilities/roles by stakeholder/actor
 - Laws, regulations or arrangements between stakeholders

AGB
The breeding organisation in charge (OC) of the endangered breed has to develop a conservation breeding programme following the guidelines developed by the ÖNGENE. All conservation breeding programmes have to be reviewed by the ÖNGENE and if feasible are recommended to the Federal Minister of Agriculture and Forestry, Environment and Water Management. The duty to supply sires to the AGB is anchored in each programme.
The ownership of the animals selected for the AGB remains with the farmer/breeder. If viable semen is collected the owner of the sire gets a fee. The

ACA
Arrangement between the commercial cattle AI-centres and the ÖNGENE (see attached document)
 - Transboundary issues/arrangements

If material from the working collection of the AGB is needed by other countries the OC has to decide whether the material can be made available (AGB working collection only!).
- Decision making process
 - Type of material
 - Semen – established technology, know how already there, cheap method, licensed AI-centre available for collection, processing and storage.
 - DNA – only for analytical purposes, no legal complications.
 - Collection targets (populations, individuals)

AGB
Sires for semen collection are chosen by the OC of the conservation programme. ÖNGENE monitors the development of the breeding populations and suggests bloodlines still missing in the gene bank.

ACA
All test bulls of all cattle breeds.

FADNAB
Document a representative genetic sample of the current breeding population of a breed (only herdbook/purebred animals, roughly 50% males and 50% females).
- Storage and documentation
 - Storage facilities and rules

AGB
working and base collection - Institute of Organic Farming and Biodiversity of Farm Animals
duplicate collection - Oberösterreichische Besamungsstation GmbH Hohenzell

ACA
Institute of Organic Farming and Biodiversity of Farm Animals – complete collection
AI-centres Oberösterreichische Besamungsstation GmbH Hohenzell, GENOSTAR Rinderbesamung GmbH Bergheim and Gleisdorf – duplicate collection of company´s own test bulls

FADNAB

Institute of Organic Farming and Biodiversity of Farm Animals currently no duplicate collection

- Data management and documentation

AGB

The working collection is documented on an MS-Access database. For the documentation of the base and duplicate collection CRYOweb is used.

ACA

All information about the semen is available on CRYOweb.

FADNAB

All information is available on CRYOweb

All OCs and AI-centres have reading access to CRYOweb.

- Gene bank security

Institute of Organic Farming and Biodiversity of Farm Animals, Thalheim

The AI-centre is built according to EU-regulations. The building is protected by lightning rods.

The storage rooms (1 for semen, 1 for other material) are not accessible to the public.

There is a fire alarm in each room.

Each collection has its own storage vessels. Liquid nitrogen level is checked once a week and vessels are re-filled from a tank. 4 persons of the Institute of Organic Farming and Biodiversity of Farm Animals are authorized to work within the storage and are responsible for the vessels.

Oberösterreichische Besamungsstation GmbH, Hohenzell

The vessel with the duplicate collection is subject to the normal security routine of the AI-centre. Supervising of the level of liquid nitrogen and re-filling is automatized.

- Sanitary arrangements/regulations

Institute: according to EU legislation for AI-centres

Semen: collected, processed and stored according to EU legislation

Other materials: processed and stored separately from semen

- Legal issues (related to genetic material and data)

- Ownership and IP

AGB

Owner of the semen is the Republic of Austria.

ACA

Ownership of the semen remains with the producing AI-centre.

Holder of the semen of the collection at Thalheim is the Institute of Organic Farming and Biodiversity of Farm Animals.

FADNAB

Owner of the material is the Institute of Organic Farming and Biodiversity of Farm Animals

- Collecting new material: Articles and conditions in Material Acquisition Agreements

See Appendix 1

- Access to gene bank: Articles and conditions in Material Transfer Agreements

No Material Transfer Agreements available

Agreement

on acceptance and storage of and access to semen of established and endangered cattle breeds for the set-up of a gene bank

between

(the owner of semen, AI-centre)

and

LFZ Raumberg-Gumpenstein
Institute of Organic Farming and Biodiversity of Farm Animals
Austraße 10
4606 Thalheim
Austria

A) Acceptance of semen, storage of semen

1. Starting with 1999 the signed AI-centre (owner of semen) makes 50 doses of each new test-bull available for unlimited time for long-storage to build a genetic reserve. Furthermore the AI-center also makes available 50 doses of each proven sire for unlimited time for long-storage to build a genetic reserve if dispensable.
A copy of the pedigree and the blood type (DNA analysis) has to be made available together with the semen.
2. The Institute of Organic Farming and Biodiversity of Farm Animals takes over the semen for long-time storage. The semen has to be delivered at least once a year with the protocol of acceptance (appendix 1). After the taking over of the semen the Institute is responsible for the adequate storage.
The storage cost is met by the Institute (Republic of Austria). The semen doses are provided by the owner free of charge. The ownership remains with the producer (AI-centre or breeding organisation).
3. If the Republic of Austria is unable to provide the storage and no successor organization can be found by mutual agreement the stored semen is returned to the owners.

B) Access to and removal of semen

1. Removal of semen doses is only possible in accordance with the following requirements:
 - 1a) removal for genetic-scientific investigations
 - 1b) removal for genetic-economic use
 - 1c) removal for other purposes (re-vitalizing endangered breeds)

Ad 1a) with the transfer of the semen the owner the gives permit to the Institute to remove max 10 doses (20% of the stored doses) for genetic-scientific investigations. Accordingly in case of removal of semen doses for genetic scientific purposes the applicant (analyzing institute) has to provide an agenda on the procedure of the scientific investigation and on the information of possible results. This agenda is evaluated by the general assembly of the Austrian Association for Rare Endangered Breeds (ÖNGENE). The owner is informed about the agenda and invited to deliver an opinion. The ÖNGENE and the owner will be provided with the results of the investigation.

Ad 1b) the removal for genetic economic use by the owner is possible 15 years after acceptance into storage at the earliest whereupon 20 doses must be preserved as long time genetic reserve or for other purposes.

Ad 1c) the general assembly of the ÖNGENE decides on removal for other purposes (re-vitalizing endangered breeds). The owner is informed about the decision.

Date

Owner
(AI-centre, breeding organisation)

Institute of Organic Farming and
Biodiversity of Farm Animals

**Protocol of acceptance into long-term storage for the purpose of genetic reserve
for bull semen**

Provider

Date

Recipient

Institute of Organic Farming and Biodiversity of Farm Animals
Austraße 10
4606 Thalheim
Austria

Breed	Name of bull	Birth date	Life number	Number of doses	DNA reference number

Provider

Recipient

Signature

Signature



Lehr- und Forschungszentrum
für **Landwirtschaft**
Raumberg-Gumpenstein

Institut für biologische Landwirtschaft und
Biodiversität der Nutztiere
Außenstelle Wels
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Tel. 07242 47011



lebensministerium.at

Kennzeichnung von Tieren und Proben (Policies_AT)

Allgemein

Es gibt keine Leerzeichen. Leerzeichen werden als Unterstriche dargestellt.

Beispiel AT_1234
 C_00001

Aus mehrzeilig wird einzilig.

Datum

Entweder Auswahl aus dem Kalender (Symbol) oder Eingabe ausschliesslich in der Form

TT-MM-JJJJ.

Kennzeichnung Tier

Internationale Lebensnummer mit Ländercode. Nach dem Ländercode folgt ein Unterstrich. Österreichische Lebensnummern (9-stellig) werden mit Punkten dargestellt, andere Länder ohne Punkte.

Beispiel AT_123.456.789
 DE_09_12345678
 IT_02178045789

Bei gleichen Lebensnummern wird ein Unterstrich und das Geburtsjahr angehängt.

Beispiel AT_123.456.789_2007

Der Name des Tieres und – wenn bekannt - die Tagebuchnummer der Abstammungsüberprüfung werden im Feld „Kommentare“ dargestellt.

Bei Importtieren wird immer die internationale Lebensnummer registriert, eine ev. In Österreich vergebene alte Lebensnummer wird im Feld „Kommentare“ dargestellt.

Beispiele

Kommentar
Maxl
DNA R 081245

Altes Importtier
Lebensnummer DE 08 01234567
Probenkennzeichnung AT 1.234.567



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Kennzeichnung Probe

Blutproben

Proben von Genbanktieren

Stationsnummer_Ländercode_Lebensnummer_Name_Rasse (3 Buchstaben)

Beispiel 258_AT_123.456.789_Maxl_ASS

Andere Proben

Fortlaufende Nummer Rasse_Ländercode_Lebensnummer_Name (wenn vorhanden)

Beispiel 1KBV_AT_123.456.789_Susi

Samenproben

Pailletten alt Wels (vor 31.12.2001):

Beispiel AT_SE_2b_16_AT_001.392.370_Scha_196_Joschka_YYYY-MM-DD

Kommentar:

Paillettenaufschrift ev. anders formatiert!

Ab 01.01.2002 bis 31.12. 2008 (Domino-Drucker):

Schafe/Ziegen/Schweine Wels

Beispiel AT_SE_2b_16_AT_001.299.697_Scha_85_Jimbo_YYYY-MM-DD

Rind Wels

Beispiel

IBR_neg_AT_SE_2b_Pustertaler_Spintze_DE_09_33914707_Rd_81_Etore_YYYY-MM-DD

Ab 01.01.2009 (Linx-Drucker):

Schafe/Ziegen/Schweine Wels

Beispiel AT_LT40869_EG_Rasse_Lebensnummer_Scha_Stallnummer_Name_DD-MM-YYYY

Rind Wels

Beispiel

IBR_neg_AT_LT40869_EG_Rasse_Lebensnummer_Rd_Stallnummer_Name_DD-MM-YYYY

Samen von anderen KB-Stationen:

Ländercode_Lebensnummer_Name_Rasse

Achtung! Bei Sperma von Importstieren steht in der Probenkennzeichnung die eventuelle alte österreichische Lebensnummer!

Beispiel Tier DE_07_12345678

Probe AT_712.345.678_Maxl_Fleckvieh



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Isolierte DNA

Tierart_laufende Nummer (5 Stellen)

Rind = R

Schaf = O

Ziege = C

Schwein = S

Pferd = P

Beispiel R_00485

Derzeit sind in der nationalen Cryoreserve keine Embryonen, Oozyten oder somatischen Zellen eingelagert.

Probenstatus

„Besitz“ die Probe ist nach Absprache mit dem Eigentümer verfügbar.

„15_Jahre“ die Probe ist für 15 Jahre ab Einlagerungsdatum in die Genbank gesperrt.

„Sperrre“ die Probe ist nicht verfügbar.