INTERBULL Business Meeting

Aotea Centre, Auckland, New Zealand

10 and 11 February 2018

THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Network. Guidelines. Certification.

INTERBULL Business Meeting

Reinhard Reents

INTERBULL Chairman

Aotea Centre, Auckland, New Zealand

10 and 11 February 2018

THE GLOBAL STANDARD
FOR LIVESTOCK DATA

INTERBULL Business Meeting

Welcome

THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Network. Guidelines. Certification.

7 – 11 February 2018

THE GLOBAL STANDARD FOR LIVESTOCK DATA

Annual Conference

icar2018.nz

11-16 February 2018

11th WORLD CONGRESS ON GENETICS APPLIED TO LIVESTOCK PRODUCTION

wcgalp.com

AOTEA CENTRE, AUCKLAND, NEW ZEALAND

- Saturday 10 and Sunday 11 February
- Interbull Business Meetings
- Interbull Open Sessions

- Monday 12 and Tuesday 13 February
- Joint Interbull-WCGALP sessions:

7 – 11 February 2018

THE GLOBAL STANDARD FOR LIVESTOCK DATA

Annual Conference

icar2018.nz

11-16 February 2018

11th WORLD CONGRESS ON GENETICS APPLIED TO LIVESTOCK PRODUCTION

wcgalp.com

AOTEA CENTRE, AUCKLAND, NEW ZEALAND

Interbull Open Sessions (Sat 10 and Sun 11 February)

- Saturday 10 February
- 16:00-17:30 (Parallel: “Applied and Technical”
- 1) Availability and use of genetic and genomic information in dairy and beef herd management
- 2) R&D in (inter)national evaluations: Calving traits and fertility in dairy and beef cattle

7 – 11 February 2018

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icar2018.nz

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wcgalp.com

AOTEA CENTRE, AUCKLAND, NEW ZEALAND

Interbull Open Sessions (Sat 10 and Sun 11 February)

- Sunday 11 February
- 8:30: 3) R&D in (inter)national evaluations: Implementation of new traits in dairy and beef cattle.
- 11:00: 4) Free Communications
- 13:30: 5) Addressing the challenges of genomic selection in international genetic and genomic evaluations in dairy and beef cattle

7 – 11 February 2018

THE GLOBAL STANDARD FOR LIVESTOCK DATA

Annual Conference

icar2018.nz

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wcgalp.com

AOTEA CENTRE, AUCKLAND, NEW ZEALAND

Interbull-WCGALP Sessions

Methods and Tools

- **Monday 12 Feb:**
- 10:00: Models and Computing Strategies
- 13:00: Software
- 16:00: Prediction

- **Tuesday 13 Feb:**
- 13:30 GWAS
- 16:00: Prediction

Acknowledgements

ICAR
WCGALP
Local Organising Committee
Interbull Committees (SC, ITC, SAC)
Interbull Centre Team
Interbeef WG & DNA WG
Interbull Community

Agenda, Interbull Business Meeting

Saturday *10 February 2018, 13:30-15:30*

Sunday *11 February 2018, 16:00-17:30*

Interbull Business Meeting

Online information: **www.interbull.org/ib/bm_auckland_2018:**

- Agenda
- Minutes of the Business Meetings in Tallinn (August 2018)

Interbull Business Meeting

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- Agenda
- Minutes of th etings in Tallinn (August 2018)

Interbull Business Meeting

Online information: www.interbull.org/ib/bm_auckland_2018:

- Agenda
- Minutes of th… …etings … …18)

Agenda

1. Opening
2. Adoption of agenda
3. Interbull Centre update (including finances and personnel)
4. Interbull Technical Committee report
5. Interbull Centre Activities
6. Interbeef working group report
7. The New EU Animal Breeding Law and Interbull Centre's role as the EU Reference Centre
8. Governance
9. Calendar for future events
10. Other matters

Agenda

5. Interbull Centre Activities
   a) International R&D on feasibility study to combine SNP solutions across countries; “SNPMACE”
   b) ICAR Parentage Analysis Accreditation of DNA Data Interpretation Centres
   c) GenoEx-PSE
   d) InterGenomics (Brown Swiss and Holstein)
   e) Review of schedule for additional Test Run
   f) “IDEA and ID Developments: Current and Future”

INTERBULL – an introduction

Reinhard Reents

- Chairman of the INTERBULL Steering Committee
- CEO IT Solutions for Animal Production, vit, Germany

Toine Roozen

- Interbull Centre Director

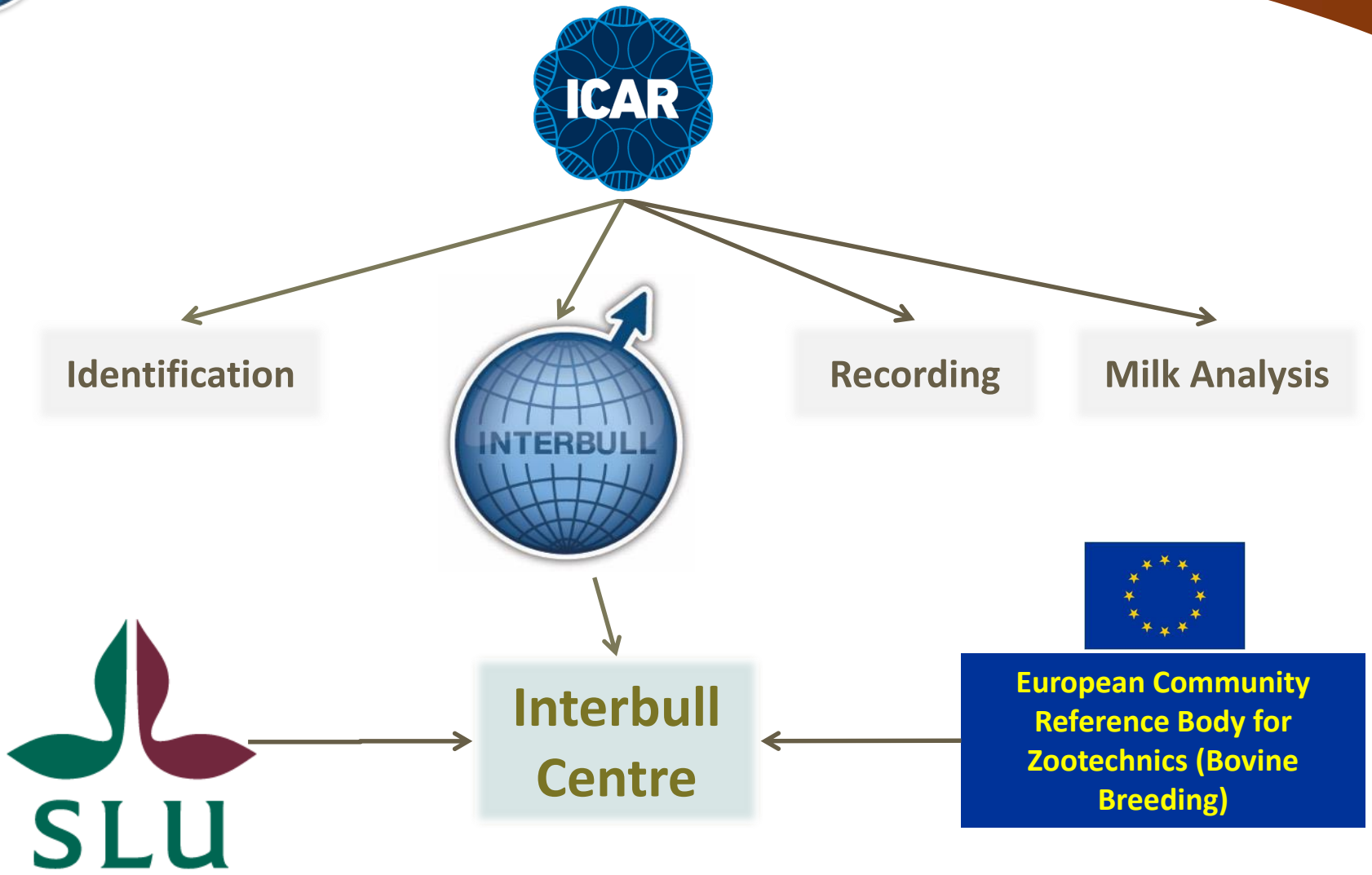
THE GLOBAL STANDARD FOR LIVESTOCK DATA

Network. Guidelines. Certification.

1. SLU, ICAR, Interbull: Interbull Centre
2. ICAR
3. Interbull Centre

SLU, ICAR, Interbull: Interbull Centre

An overview of the organisation


ICAR
Identification
INTERBULL
Recording
Milk Analysis
SLU
Interbull Centre
European Community Reference Body for Zootechnics (Bovine Breeding)

SLU, ICAR, Interbull: Interbull Centre

1951 ICAR founded

1975 EAAP Working Group (+IDF, ICAR, etc.)

1983 Interbull Founded

1988 ICAR Permanent Sub-Committee

1991 Interbull Centre established in Uppsala, Sweden

1994 1st Routine International Evaluation

1996 Official Reference Body for the EU

THE GLOBAL STANDARD
FOR LIVESTOCK DATA

Network. Guidelines. Certification.

ICAR
International Committee for Animal Recording

International non-governmental organisation

14-2-2018

ICAR Mission Statement

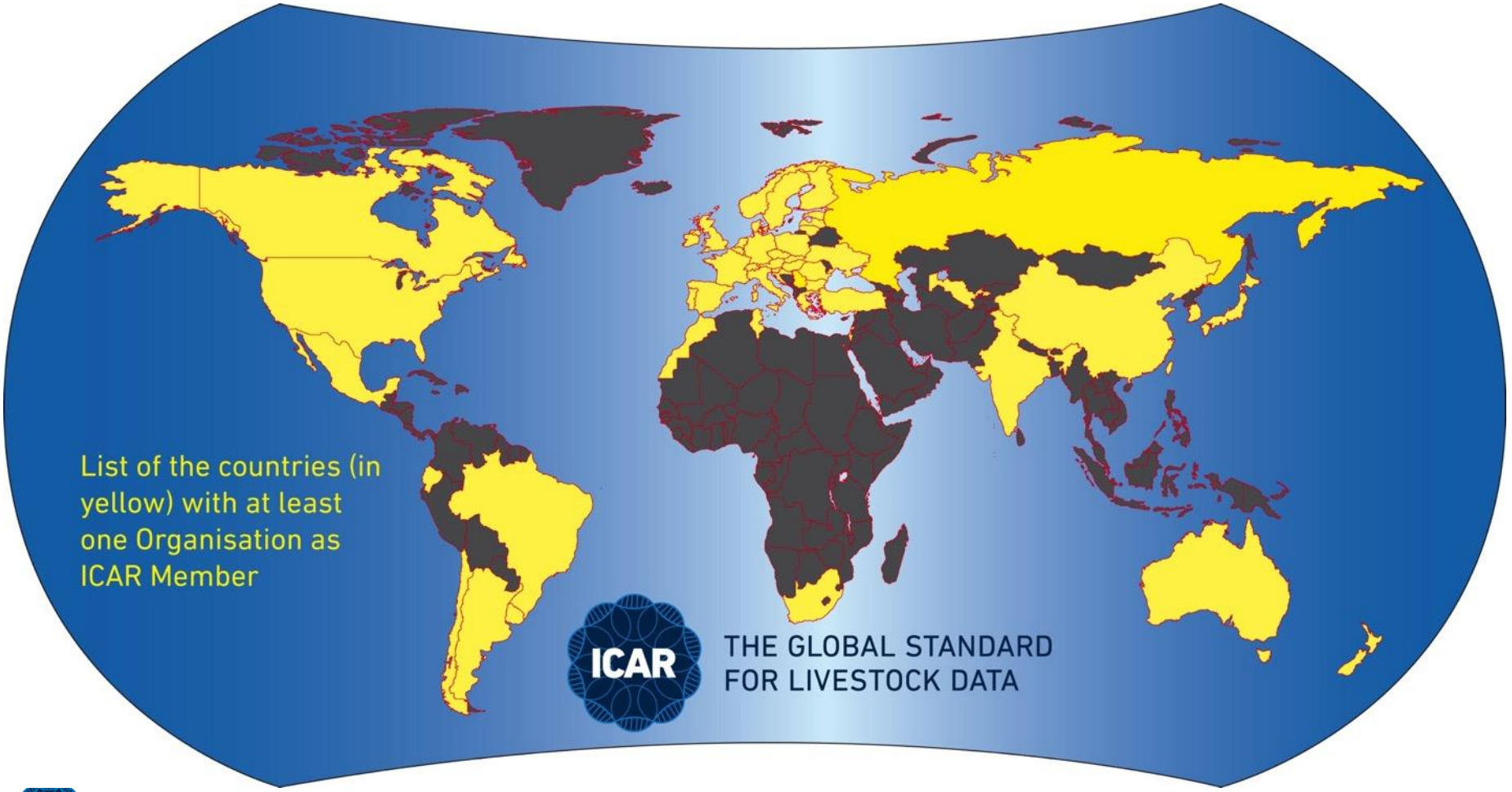
To be the leading global provider of Guidelines, Standards and Certification for animal identification, animal recording and animal evaluation.

To improve the profitability, and sustainability of farm animal production by:

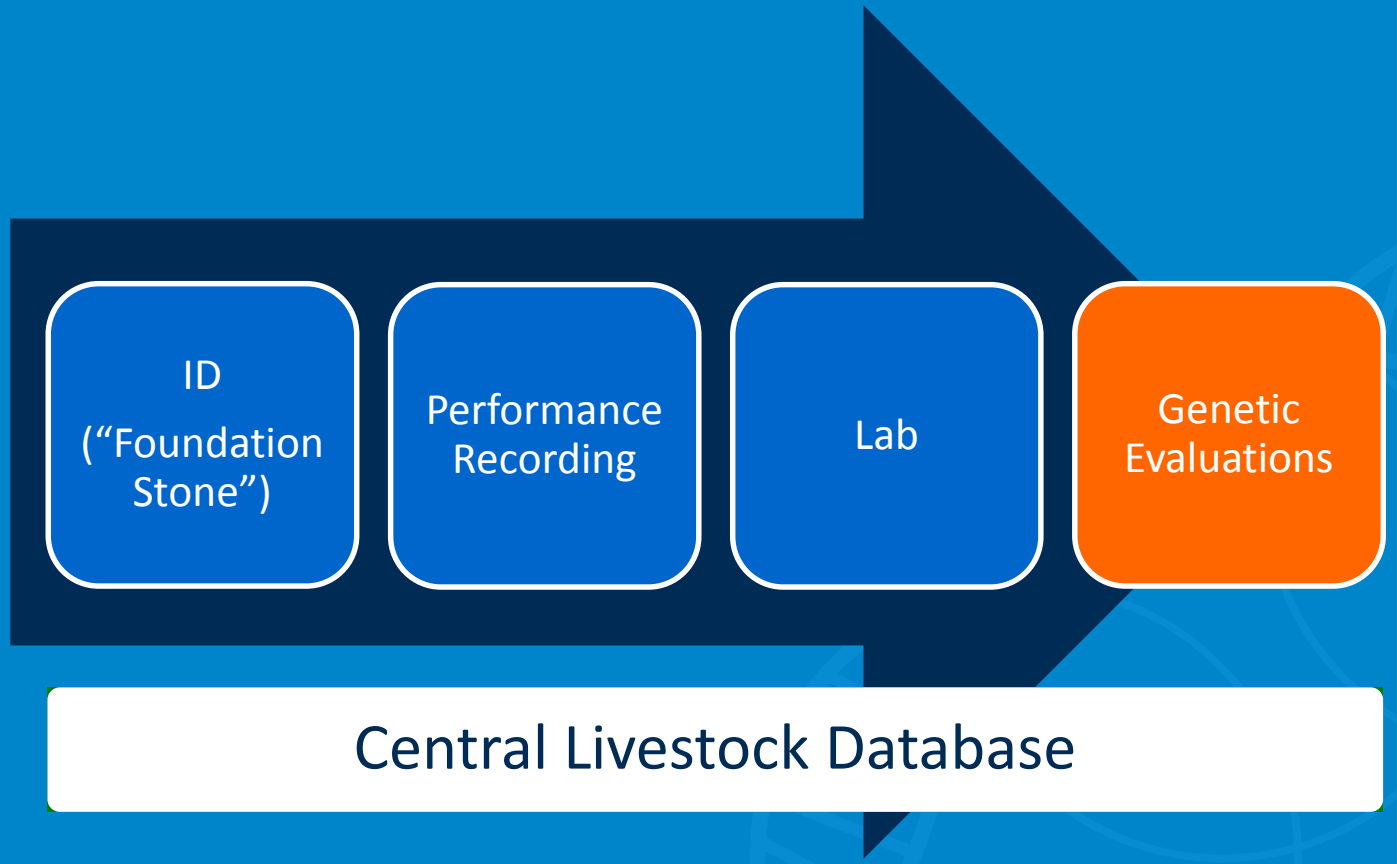
- Establishing and maintaining guidelines and standards for best practice in all aspects of animal identification and recording.
- Certifying equipment, and processes used in animal identification, recording and genetic evaluations.
- Stimulating and leading: continuous improvement, innovation, research, knowledge development, and knowledge exchange.

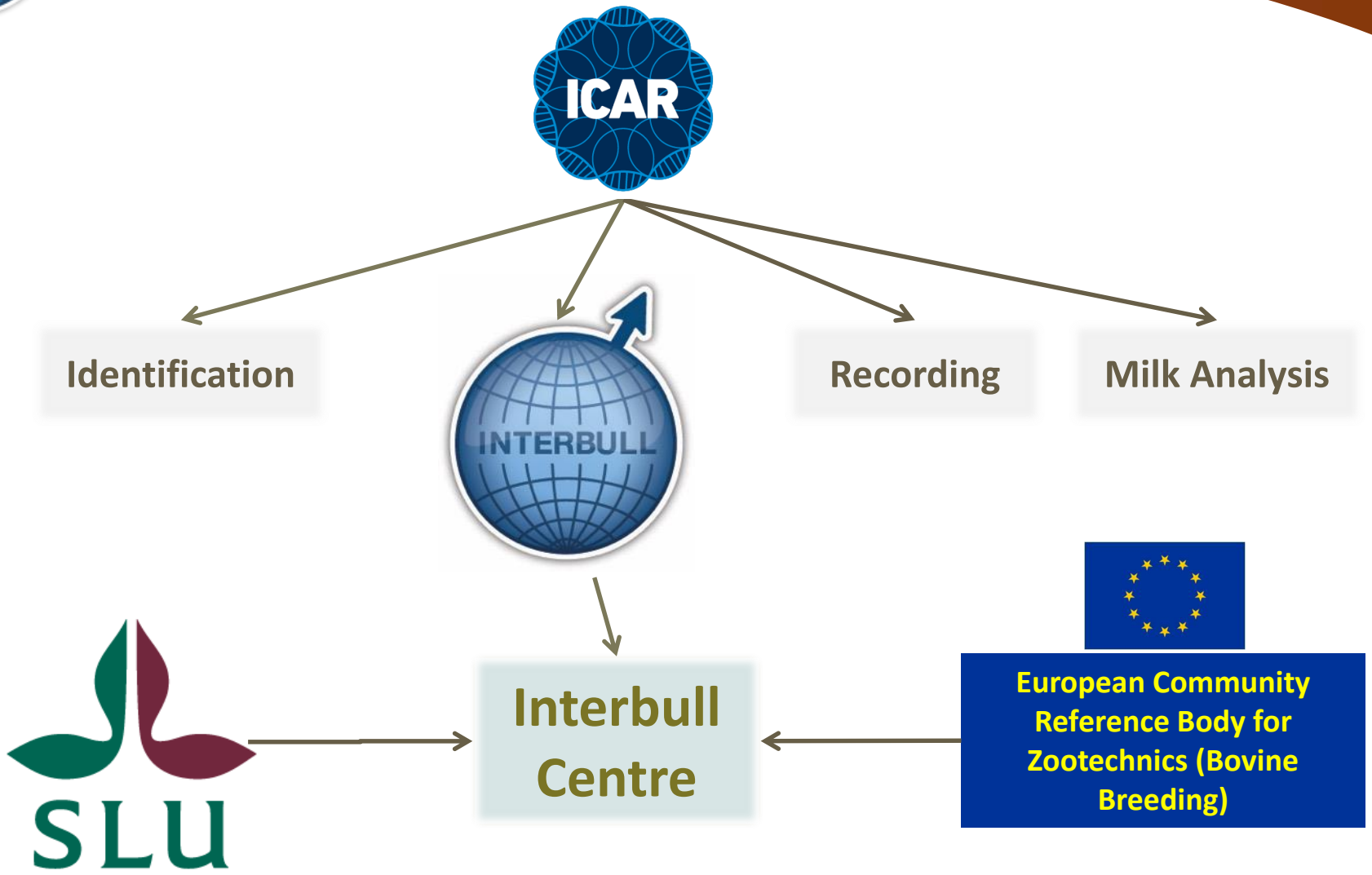
ICAR's Global Reach

120 members in 60 countries



ICAR's 4 Permanent Building Blocks

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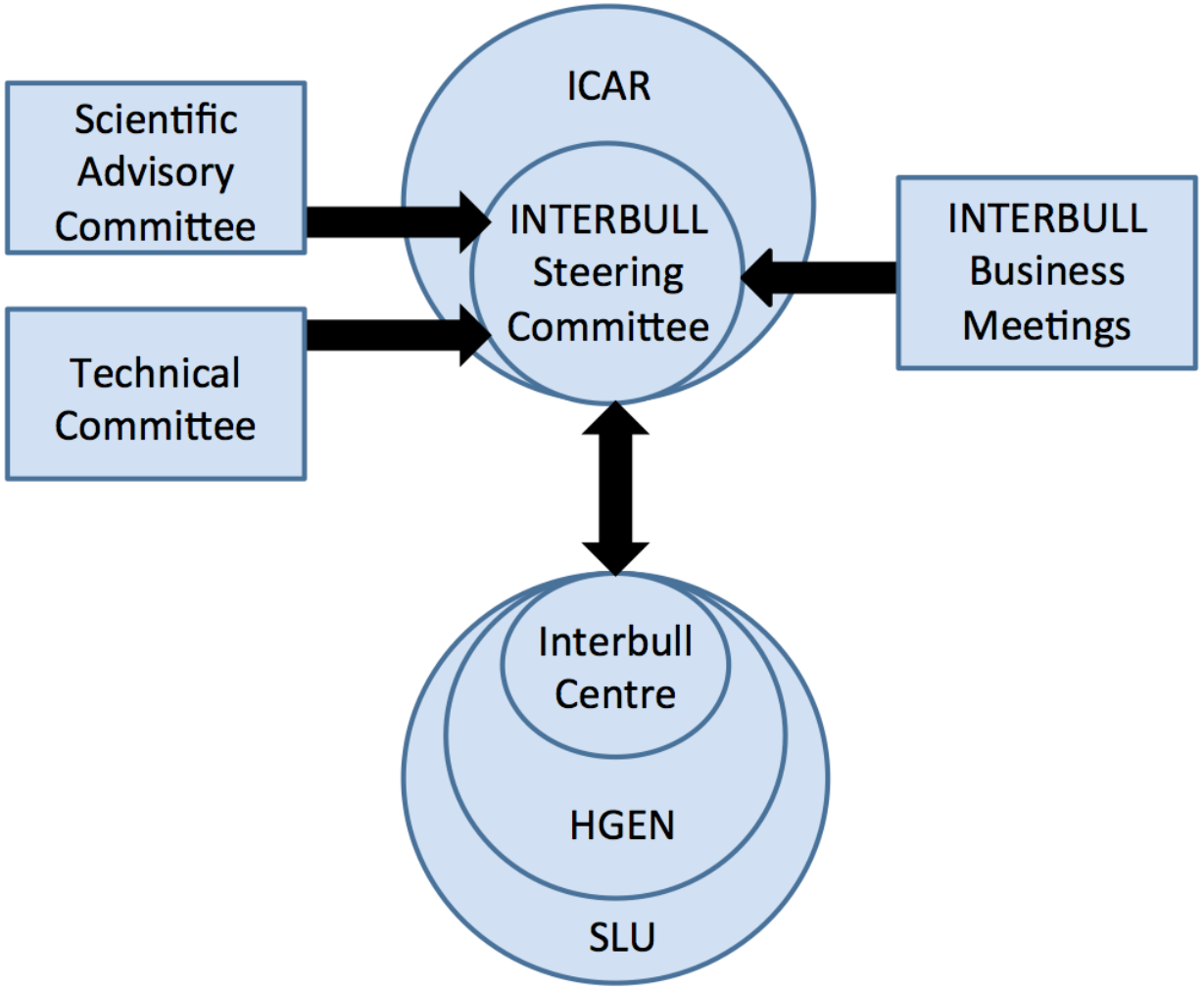
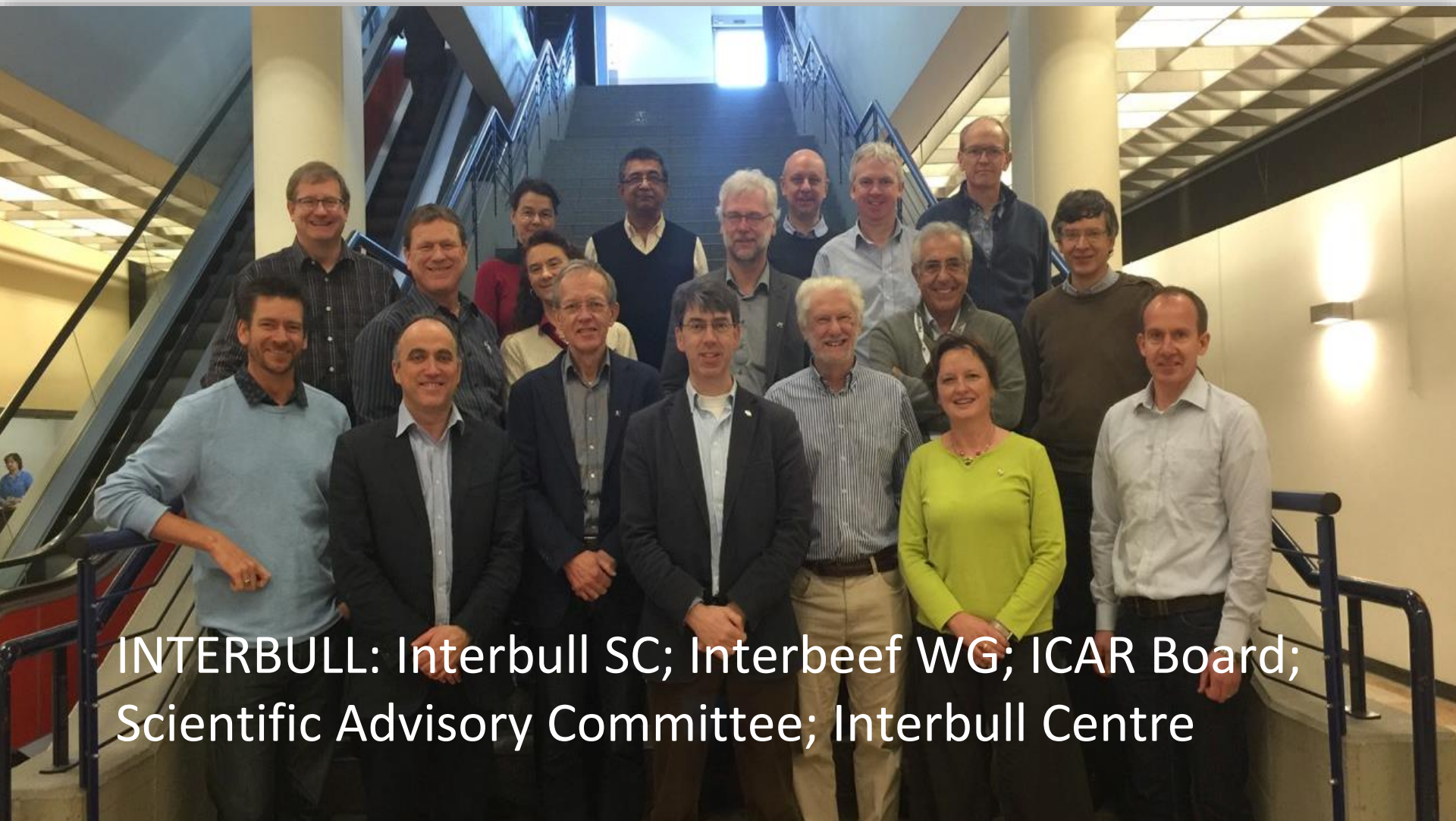
Interbull Centre
European Community Reference Body for Zootechnics (Bovine Breeding)

Interbull Organisational Structure




INTERBULL: Interbull SC; Interbeef WG; ICAR Board;
Scientific Advisory Committee; Interbull Centre

INTERBULL CENTRE:
INTERBULL'S OPERATIONAL UNIT

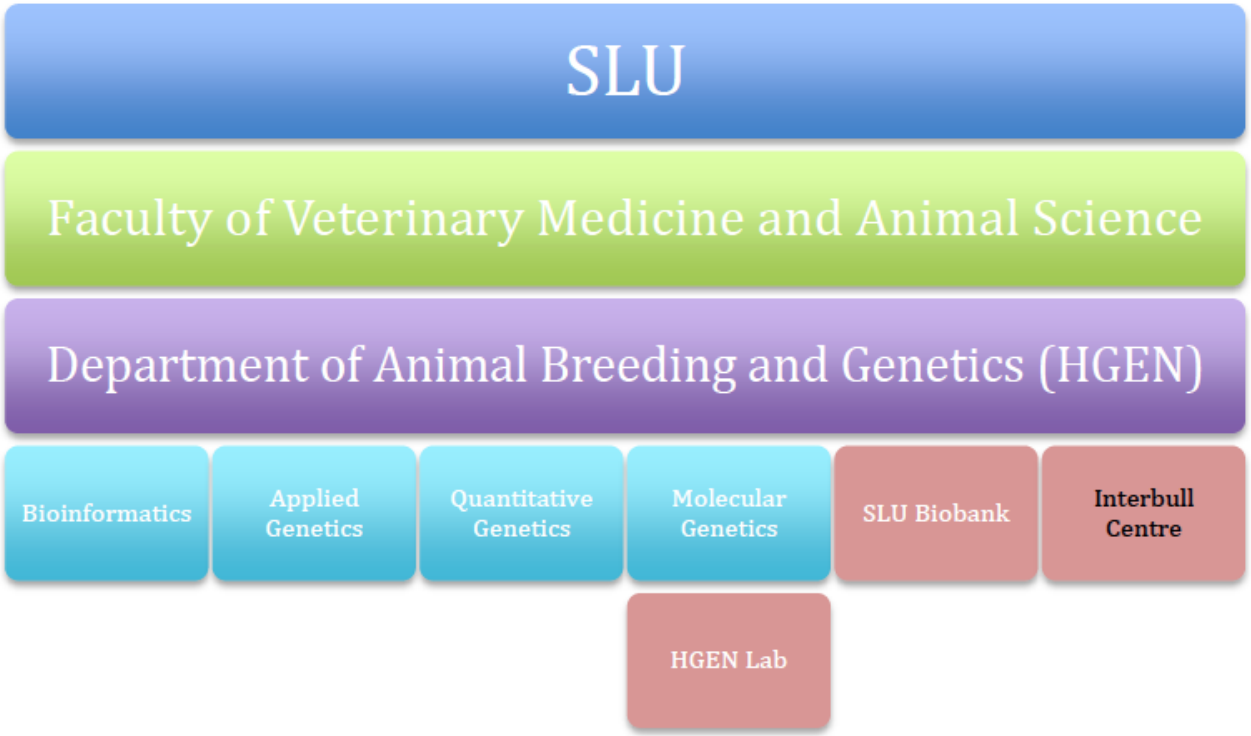
Interbull Centre

Interbull Centre:

- Operational unit of Interbull
- Located in Uppsala, Sweden.
- Provides International genetic information services

Department of Animal Breeding and Genetics
Swedish University of Agricultural Sciences
Uppsala, Sweden

Interbull Centre



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Swedish University of Agricultural Sciences
Uppsala, Sweden

Interbull Centre

Supporting dairy and beef industry:

- Accurate genetic information on bulls
- Since 1995
- Enabling importers and exporters to select, worldwide, the best genetics for different countries, environments or breeding goals.

International Genetic and Genomic Evaluation

Dairy: “MACE”, “GMACE”, “InterGenomics”

Holstein

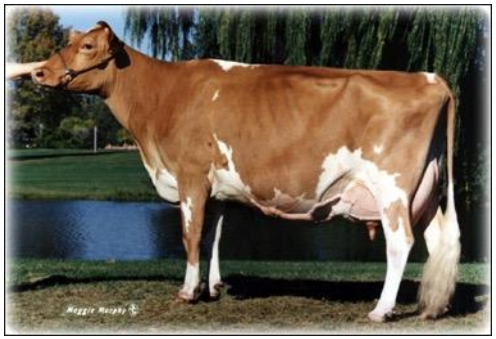
Jersey

Guernsey

Red Dairy Cattle

Brown Swiss

Simmental



International Genetic Evaluation

Beef: Interbeef

Charolais

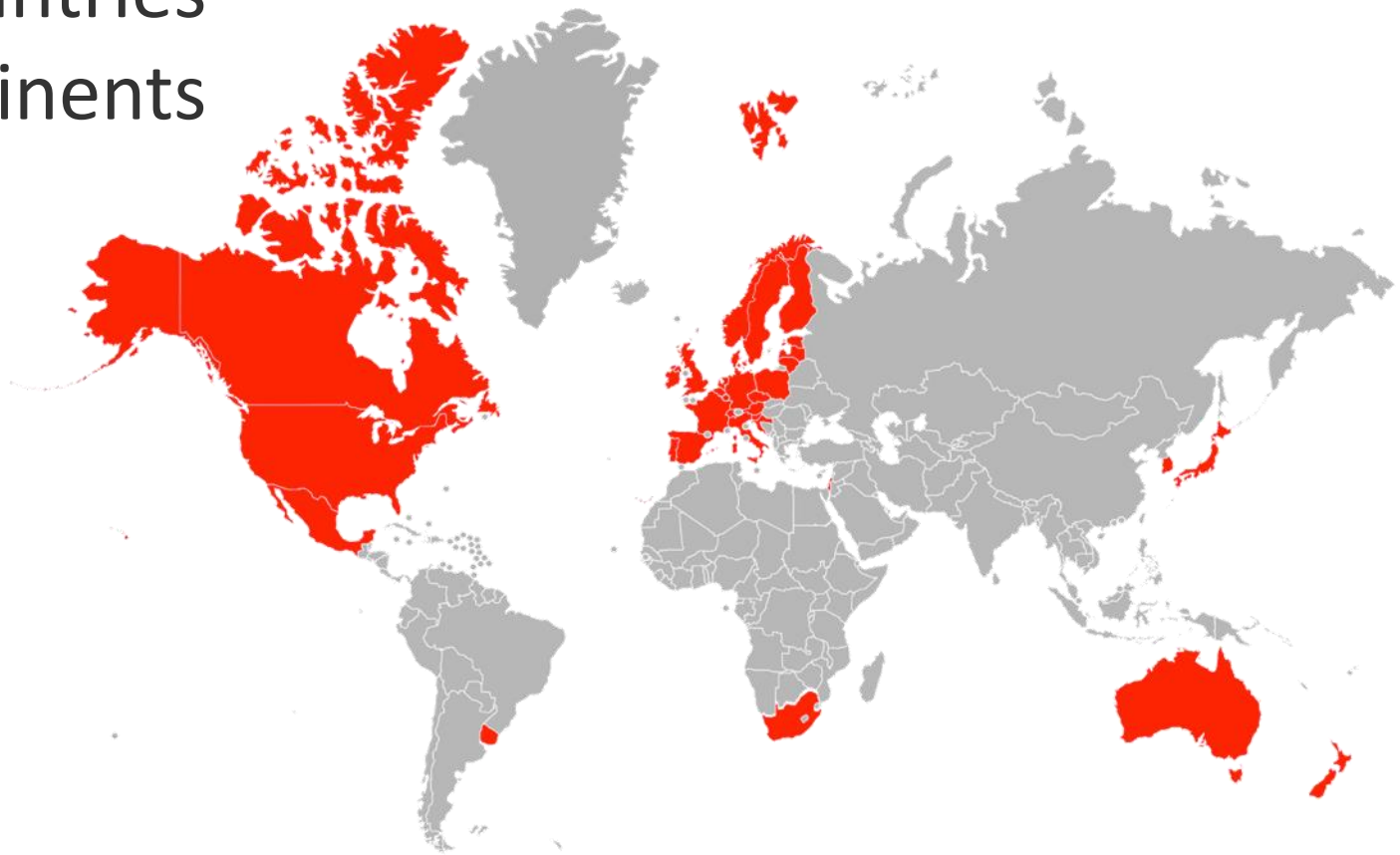
Limousin

Simmental

Interbull / Interbull Centre

INTERBULL's Global Reach

- 35 countries
- 5 continents



Interbull Centre

- **Infrastructure** and **expertise** for **International Data Exchange** and **Quality Assurance**:
  - Processes
  - Standards
  - Protocols
  - Code of Practice

Interbull Centre

ISO 9001 Certified

ISO 9001
BUREAU VERITAS
Certification
N° SE004561-1

Interbull Centre

- European Union Reference Laboratory (EURL) for Zootechnics (Bovine Breeding)
  - Since 1996
  - Responsible for collaborating in "*rendering uniform the testing methods and the assessment of the results for pure-bred breeding animals of the bovine species*".
  - Interbull test I,II, III
  - Genomic Validation for widespread use of genomically tested bulls

Interbull Centre

- New EU regulation European Union from 2016 → in effect Nov 1st, 2018
  - Intergral part of a breeding programe is performance testing and genetic evaluation
- Call for ’new’ Reference Laboratory (EURL) for Zootechnics
  - Application from Sweden supporting the Interbull centre / SLU as carrying out the duties from the new regulation

COMMISSION IMPLEMENTING REGULATION (EU) 2017/1422

of 4 August 2017

designating the European Union reference centre responsible for the scientific and technical contribution to the harmonisation and improvement of the methods of performance testing and genetic evaluation of purebred breeding animals of the bovine species

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

HAS ADOPTED THIS REGULATION:

Article 1

The following centre shall be designated as the European Union reference centre responsible for the scientific and technical contribution to the harmonisation and improvement of the methods of performance testing and genetic evaluation of purebred breeding animals of the bovine species:

Interbull Centre
Department of Animal Breeding and Genetics
Swedish University of Agricultural Science — SLU
Ulls väg 26
Box 7023
SE-750 07 Uppsala
Sweden

(1) OJ L 171, 29.

Article 2

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 1 November 2018.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 4 August 2017.

For the Commission
The President
Jean-Claude JUNCKER

COMMISSION IMPLEMENTING REGULATION (EU) 2017/1422

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Done at Brussels, 4 August 2017.

For the Commission
The President
Jean-Claude JUNCKER

- During tomorrow's Business Meeting:

7 - The New EU Animal Breeding Law and Interbull Centre's role as the EU Reference Centre

Interbull Centre Finance Update

Preliminary Report

August 2017 – January 2018

Toine Roozen

Finance Update Interbull Centre

Business Meeting August 2017:

- **Finance Report** 2016/2017 (updated 1 Sept. 2017)
  - Available online
  - Less than 6 months ago

Business Meeting February 2018:

- **Finance update** for August 2017-January 2018
  - Interbull Centre overall
  - Preliminary Results 2017
  - Budget 2018

EU Payments

	Funds received						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total grant**
2015	75 000	75 000					150 000
Total	**75 000**	**…**					

EU Payments

	Funds received						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total grant**
2015	75 000	75 000					150 000
2016/17		91 650	91 650	122 200			305 500
Total	**75 000**	**166 650**	**91 650**	**…**	**…**	**…**	

EU Payments

	Funds received						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total grant**
2015	75 000	75 000					150 000
2016/17		91 650	91 650	122 200			305 500
2018				75 000	75 000	…	150 000
Total	**75 000**	**166 650**	**91 650**	**197 200**	**…**	**…**	

Interbull Centre – Income

- Cash account report; Income accounted in year received
- Lower EU payment in 2017 explains lower income vs budget

Income	Actual '16	Budget '17	Prelim. '17
Service fees	796 331	805 000	823 974
SLU grants	52 342	51 975	50 793
Guernsey	-	3 000	-
Intergenomics	43 874	35 000	32 300
EU	162 672	152 750	92 284
Interbeef	102 016	100 000	100 935
GenoEx	41 350	15 000	20 317
Total	**1 198 585**	**1 162 725**	**1 118 603**

Interbull Centre – Income

- Cash account report; Income accounted in year received
- Lower EU payment in 2017 explains lower income vs budget
- Overall budget for 2018 similar to 2017; Main difference: EU

Income	Actual '16	Budget '17	Prelim. '17	Budget '18
Service fees	796 331	805 000	823 974	825 500
SLU grants	52 342	51 975	50 793	50 000
Guernsey	-	3 000	-	-
Intergenomics	43 874	35 000	32 300	35 000
EU	162 672	152 750	92 284	200 000
Interbeef	102 016	100 000	100 935	100 000
GenoEx	41 350	15 000	20 317	15 000
Total	**1 198 585**	**1 162 725**	**1 118 603**	**1 225 500**

Interbull Centre - Costs

- Lower costs than budgeted in 2017

Costs	Actual ‘16	Budget ‘17	Prelim. ‘17
Salaries + social costs	642 339	720 894	700 210
Office rent	110 900	129 761	113 935
Support functions	234 539	281 149	277 983
Outsourcing	42 354	20 790	44 500
Other operating costs	126 188	98 580	85 005
Total	**1 156 318**	**1 251 174**	**1 221 633**

Interbull Centre - Costs

- Lower costs than budgeted in 2017
- In 2018: Big increase in 'Outsourcing' mainly due to investement in SNPMace research.

Costs	Actual '16	Budget '17	Prelim. '17	Budget '18
Salaries + social costs	642 339	720 894	700 210	707 000
Office rent	110 900	129 761	113 935	110 000
Support functions	234 539	281 149	277 983	278 000
Outsourcing	42 354	20 790	44 500	111 000
Other operating costs	126 188	98 580	85 005	111 500
Total	**1 156 318**	**1 251 174**	**1 221 633**	**1 317 500**

Summary

- 2017: 15K over budget:
  - Maintained healthy reserve
  - While investment in GenoEx-PSE

Item	Actual ‘16	Budget ‘17	Prelim. ‘17
Total income	1 198 585	1 162 725	1 118 603
Total costs	1 156 318	1 251 174	1 221 633
Balance	**42 267**	**-88 449**	**-103 030**
Acc. balance	**590 864**		**487 838**

Summary

- 2018: -80K €:
  - Still healthy reserve
  - Investing in SNPMace feasibility research

Item	Actual '16	Budget '17	Prelim. '17	Budget '18
Total income	1 198 585	1 162 725	1 118 603	1 225 500
Total costs	1 156 318	1 251 174	1 221 633	1 317 500
Balance	**42 267**	**-88 449**	**-103 030**	**-80 000**
Acc. balance	**590 864**		**487 838**	**407 834**

Thank you.

INTERBULL TECHNICAL COMMITTEE REPORT

Gert Pedersen Aamand

Chair of Interbull Technical Committee

Robust MACE - validation

- Idea to include a country x year effect to catch potential trend bias in national models
- Conclusion
  - No significant differences between MACE and RMACE – no model offers better predictability on all scales
  - Technical challenging
  - No effect on rg structure

Specific work on Robust MACE finalized

Genomic preselection

- Still need for better understanding of discrepancy between genetic trend from Single Step and traditional EBV evaluation
- Still need for better understanding of the effect on MACE – plan to make simulation of the effect on MACE
- ***Work continue***

Genomic reliabilities

- Aim - develop standard procedure for Genomic reliabilities
- Done
  - Standard procedure ready
- Next step
  - Validate procedure (countries still invited)
  - Finetuning
  - Implementation
  - Might be a part of 2018 Interbul Technical Workshop (25-26 August 2018, Dubrovnik)

Mendelian sampling test

- September 2017 – countries delivered results for production
- ITC recommended based on promising results for production traits to ask for more traits and small populations – approved by SC – test results to be delivered along with normal validation procedures
- A part of 2018 Interbul Technical Workshop

ITC meeting 12th February 8.30-12.30

- ITC and SAC – further discuss actions in relation to:
  - Effect of and handling of genomic preselection in MACE
  - Validation – GEBV and EBV
  - Future MACE incl. how to deal with national single step
  - New traits
  - SNP MACE

Inputs welcome from business meeting

INTERBULL CENTRE ACTIVITIES

Toine Roozen

5. Interbull Centre Activities

a) International R&D on feasibility study to combine SNP solutions across countries; “SNPMACE”
b) ICAR Parentage Analysis Accreditation of DNA Data Interpretation Centres
c) GenoEx-PSE
d) InterGenomics (Brown Swiss and Holstein)
e) Review of schedule for additional Test Run
f) “IDEA and ID Developments: Current and Future”

Key Publications

Key Publications

Interbull Bulletin

HOME ABOUT LOG IN REGISTER SEARCH CURRENT ARCHIVES

Home > Archives > **No 51 (2017)**

No 51 (2017)

Proceedings of the 2017 Interbull Meeting

Tallinn, Estonia, August 25 - 28 2017

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Articles

Key Publications

Interbull Bulletin

HOME ABOUT LOG IN REGISTER SEARCH CURRENT ARCHIVES

Home > Archives > **No 51 (2017)**

No 51 (2017)

Proceedings of the 2017 Interbull Meeting

Tallinn, Estonia, August 25 - 28 2017

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Articles

www.genoex.org

GENOEX ABOUT CONTACT LOGIN

GENOEX

Parentage SNP Exchange

International Genotype Exchange platform for Animal Breeding

FIND OUT MORE

About the Service

The main purpose of the Genotype Exchange Parentage SNP Exchange (GenoEx-PSE) database is to provide a service for exchanging standardised sets of SNP for genotyped animals to facilitate and streamline parentage analysis activities carried out by organisations that are responsible and/or active in parentage integrity.

Service Users

Organisations wishing to join GenoEx-PSE services shall:
1. Be member of ICAR or be nominated by an ICAR member;
2. Have a valid "ICAR Accreditation for DNA Interpretation Centres";
3. Sign a Service User Agreement with the Interbull Centre.

‘Doctor Honoris Causa’: Larry Schaeffer

‘Doctor Honoris Causa’: Larry Schaeffer

International Estimation of SNP solutions (”SNPMace”)

Enrico Santus

Chair of SNPMace Working Group

SNPMace Working Group

Name	Country	Organisation
Enrico Santus (Chair)	Italy	ANARB
Toine Roozen (Secretary)	Sweden	Interbull Centre
Mike Goddard	Australia	Melbourne
Vincent Ducrocq	France	INRA
Esa Mäntysaari	Finland	LUKE
Zengting Liu	Germany	vit
Hossein Jorjani	Sweden	Interbull Centre

Background

- Dairy farmers and breeding companies around the world want the most accurate comparisons of all bulls and cows.
- Most selection decisions now made on GBVs.
- GEBVs would be most accurate if effects of SNPs estimated most accurately.
- Most accurate SNP effects obtained by combining results from different countries.
- Interbull is testing a method to do this without exchanging raw data or genotypes.

Background

- Since 2008, SAC members pointed out the need:
- To offer and monitor the sharing of genomic and other information in order to increase the accuracy and acceptability of GEBV: at first, this may mainly concern small breeds and/or countries/regions which want to reach a critical size for their genomic selection scheme.
- For independent, international validation of SNP effects and, possibly, new phenotype collection protocols (e.g. health traits) for this matter.

SAC Report 2008

Background

- Interbull should be involved in:
- Coordinate worldwide research on optimal data combination from different sources, including genomic, phenotypic and pedigree data.
- Consider the development of genomic prediction services that would enable genomic selection of young animals without own or daughter performance records across different countries and environments.

SAC report 2012

Why?

- InterGenomics-BSW: GBLUP method, sharing genotypes, since December 2011

- GMACE: GEBVs exchange
  - Is not really used in national breeding programs, used as a marketing tool…
  - An interim approach until methods to explicitly calculate SNP effects/DGVs on the scale and base of each participating country became available.

  How can we develop such a method ? What could be shared ?

- Interbull Community agreed upon some key Interbull Issues, including:
  - **Maintain MACE relevant – (Key short term)**
  - **Genomic based international evaluation (Key medium-to long term)**

Interbull Strategic Plan 2016

How?

What to share? ***Genotypes or SNP effects?***

- Constant increase of the number of genotyped animals: genotypes sharing more difficult to monitor/individual data on bulls
- More countries are moving to SNP based models because of the increasing number of genotypes
- There is a need for frequent genomic evaluations, quick calculation of GEBVs

With more accurate, stable SNP effects between official evaluation, it is easier to get more frequent GEBVs.

SNP effects sharing: more feasible

SNPMace: Potential Benefits

Short or medium term benefits

- More accurate and independent SNP estimates for both sexes
- More reliable and robust GEBVs
- Quick and more frequent GEBVs
- More accurate country correlations (using genomic data instead of using pedigree)
- No need for direct access to national reference animal genotypes and phenotypes data
- Use of Bayesian methods

SNPMace: Potential Benefits

Long term possiblities

- Increase the variance explained by SNPs
- Multibreed prediction
- Use of biological information (Identify sequence variants for inclusion in national evaluation), More understanding of traits
- Particularly useful for new traits with large-scale genotyped cows

SNPMace: Challenges?

- Residual covariance between countries if use of foreign information
- Various genomic evaluation models:
  - Residual polygenic effect
  - Bayesian ABC#, single-step, Bayesian Stochastic Search Variable Selection, haplotype based evaluations etc
  - Different countries, different SNP sets
- Data transfer, infrastructure, computing power
- Business Model
  - Service Users / Data Providers
  - Benefits

SNPMace: FAQ

1. “Do we need to share genotypes?”
   - No need for any direct access to genotypes for reference animals
2. “If we share SNP effects with everyone, any animal anywhere could be evaluated for free”
   - SNP MACE is still at the feasibility stage. We first need to find technical answers, methods.
   - Sharing information is one major reason behind the success of breeding programs in dairy cattle.
   - The business model will need to be addressed/reviewed.

SNPMace Time Line

How did we get here?

- February 2016: Strategic Planning meeting, Verona
- February 2017: Technical Workshop, Ljubljana
- November 2017: Project Meeting, Uppsala
- December 2017: SC established SNPMace WG
- January 2018: Start review of InterGenomics software
- February 2018: SNPMace WG meeting, Auckland

SNPMace Time Line

Where are we going?

- 25-26 August 2018: Technical Workshop, Dubrovnik
  - Focus on development of Interbull Services:
  - SNPMace / Mendelian Sampling Test / InterGenomics-Holstein
  - Documentation for Interbull Community available
- June 2019: Interbull Annual Meeting, Cincinnati
  - Report
  - Recommendation

Interbull Service Portfolio

Current services

- Quality assurance → EU Reference Centre
- MACE → Progeny tested bulls
- GMACE → Young genomically tested bulls
- InterGenomics → International genomic evaluation
- Interbeef → International beef evaluation

SNPMace

- After successful research offers new options
  - How to combine phenotypic and genomic INFORMATION across country borders

ICAR PARENTAGE ANALYSIS ACCREDITATION FOR DNA DATA INTERPRETATION CENTRES

ICAR DNA-Related Services

1. Background
2. DNA-Related Services
3. Laboratory Accreditation
4. DNA Data Interpretation Centres
5. GenoEx-PSE

Background

- ICAR has offered accreditation services to laboratories for several years
- In 2016, ICAR restructured various committees and working groups
  - Created the DNA Working Group as the advisory committee on topics related to DNA
- It has taken much more time than initially expected but two new ICAR DNA-related services are now/soon openly available

ICAR DNA-Related Services

ICAR Accreditation for Genotyping Labs

-Test quality of DNA genotyping services using ISAG ring test
-Includes microsatellite parentage verification

ICAR Accreditation for DNA Data Interpretation Centres

-Test internal processes for parentage verification and/or parentage discovery

GenoEx-PSE via Interbull Centre

- Exchange of SNP genotypes for parentage verification and/or discovery
-Requires accreditation as a DNA Data Interpretation Centre

Laboratory Accreditation

- International Society for Animal Genetics (ISAG) has recommended a list of 100/200 SNP and 12 microsatellites to be used for parentage verification
  - Also established guidelines for parentage verification
- ICAR has offered an annual “Ring Test” for laboratories to demonstrate their ability/processes for DNA genotyping
  - Microsatellite-based and/or SNP-based (separate forms)
  - Labs receive a Rank level based on their results
- By-product has also been parentage verification accreditation but no testing was done, just reporting counts
- Going forward, this accreditation is specific for **genotyping laboratories** and requires ISO certification or equivalent

SNP Parentage Analysis Accreditation

- New ICAR accreditation service was “soft” launched in December 2017 by starting with the first few applicants
- **Parentage Analysis Accreditation for DNA Data Interpretation Centres**
  - Currently only for SNP-based Parentage Verification accreditation with Parentage Discovery expected later this year
- Need multiple organizations with this accreditation for multiple qualifying Service Users for GenoEx-PSE

SNP Parentage Analysis Accreditation

- 6 Key Steps -

1. Complete application form and submit with fee of 300 Euro to ICAR (renewal required every 2 years)
2. ICAR secretariat reviews the application and informs Interbull Centre when all is in good order
3. Interbull Centre sends “unique” test data files to the contact person provided by the applicant
4. Applicant applies internal parentage analysis processes to test data files and returns “Results” file to Interbull Centre within maximum allowable 90-day period
5. Interbull Centre establishes “Pass” or “Fail’ status and communicates result to ICAR
6. ICAR informs applicant of outcome and lists accredited organizations on its web site

ACCREDITED DNA DATA INTERPRETATION CENTRE

for Parentage Verification by SNP

Exp.: January 2020

SNP Parentage Analysis Accreditation

For more details, refer to:

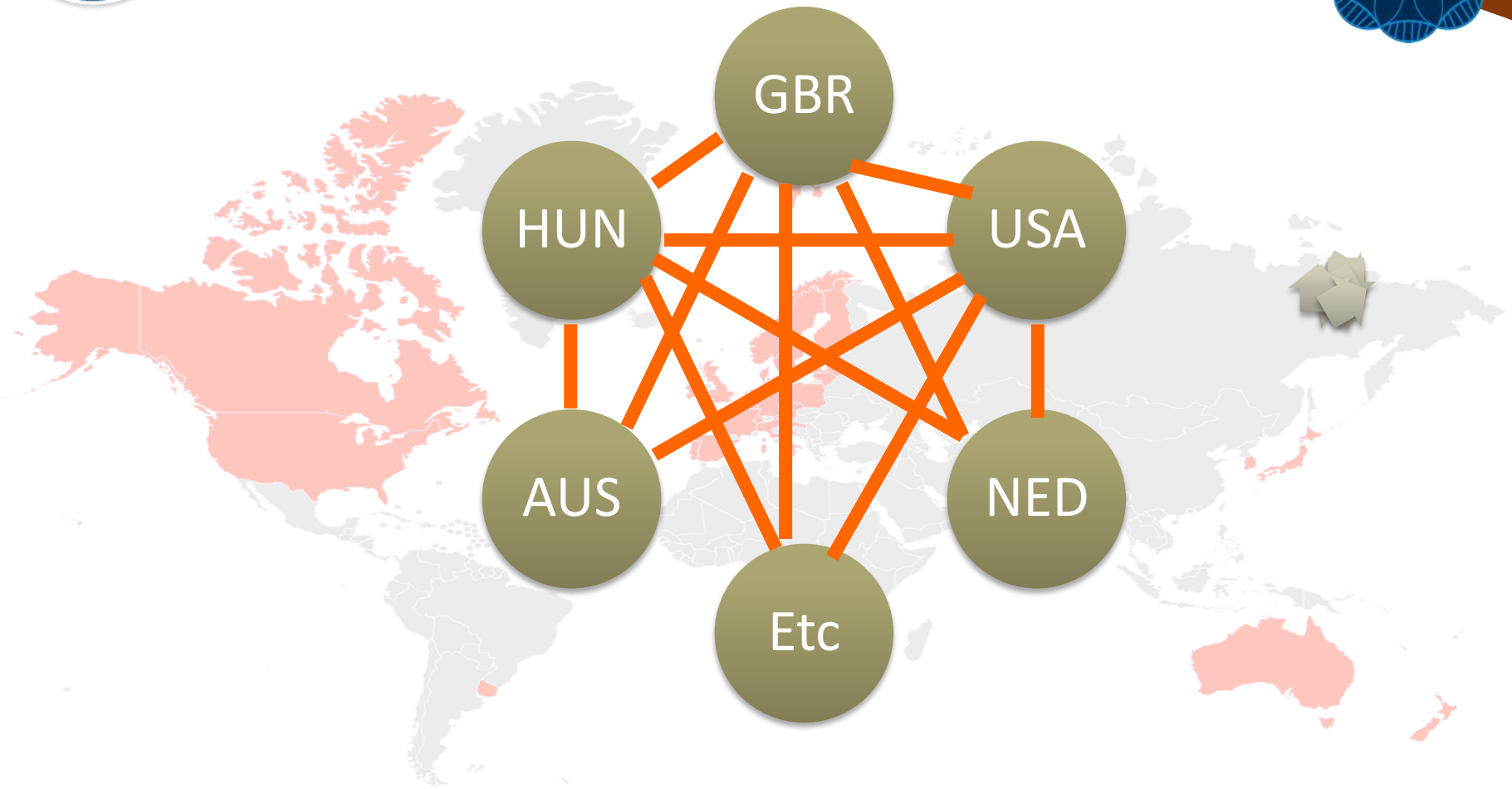
- ICAR Guidelines for Parentage Verification and Parentage Discovery Based on SNP Genotypes
- Applicant's Guide for ICAR Parentage Analysis Accreditation for DNA Data Interpretation Centres

GENOEX

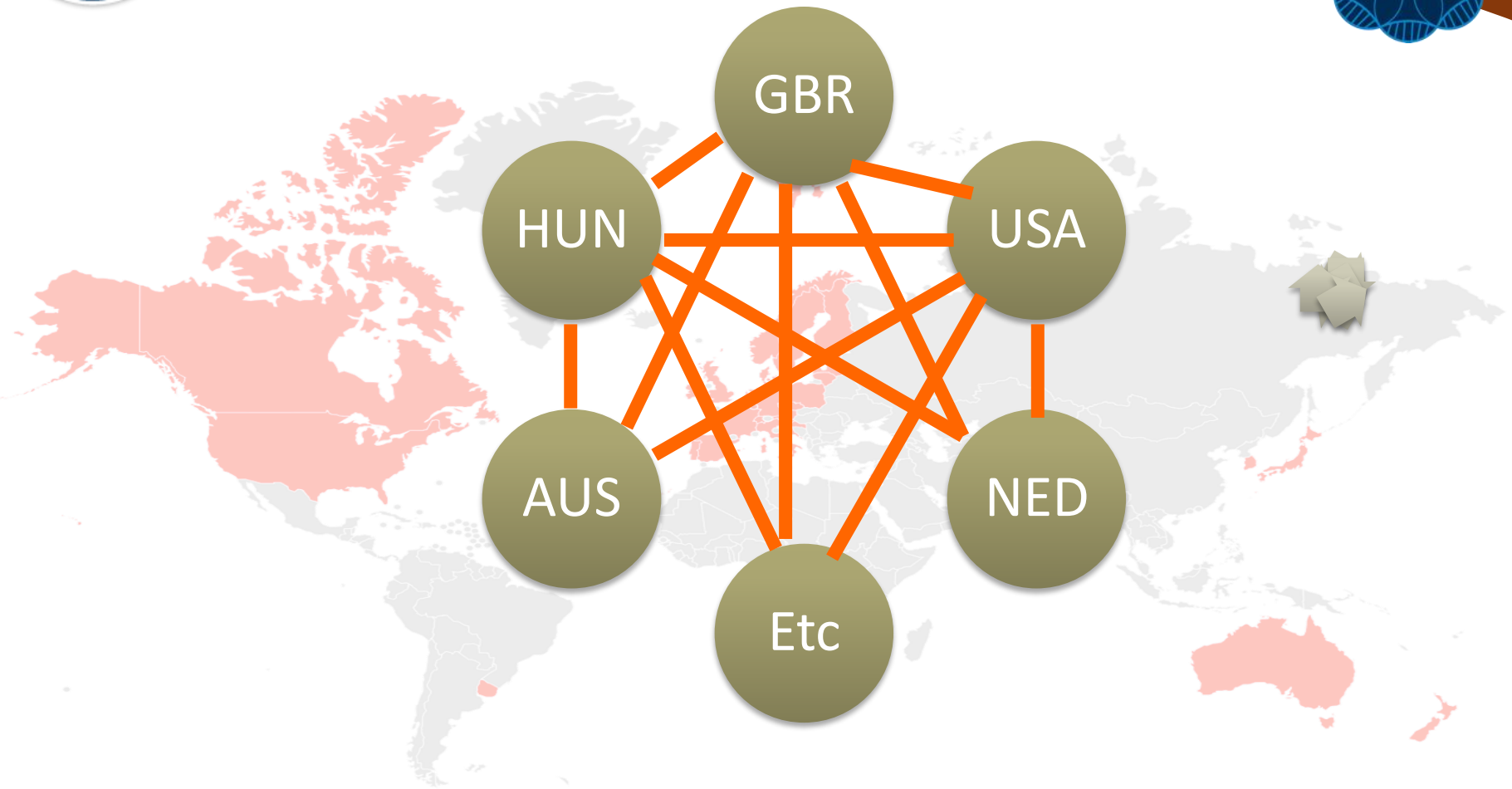
Parentage SNP Exchange

THE GLOBAL STANDARD
FOR LIVESTOCK DATA

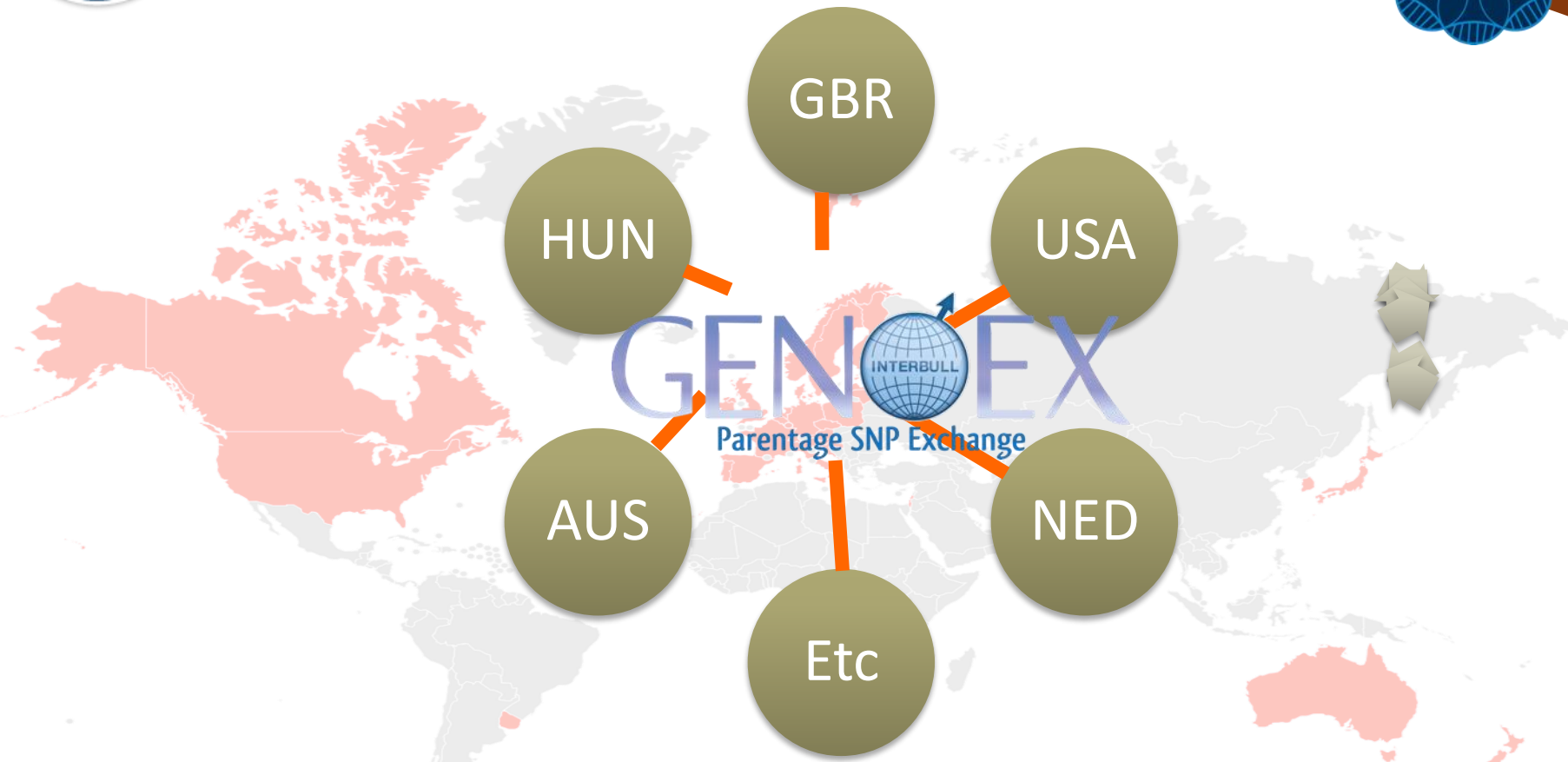
Exchange of SNPs – before GenoEx-PSE



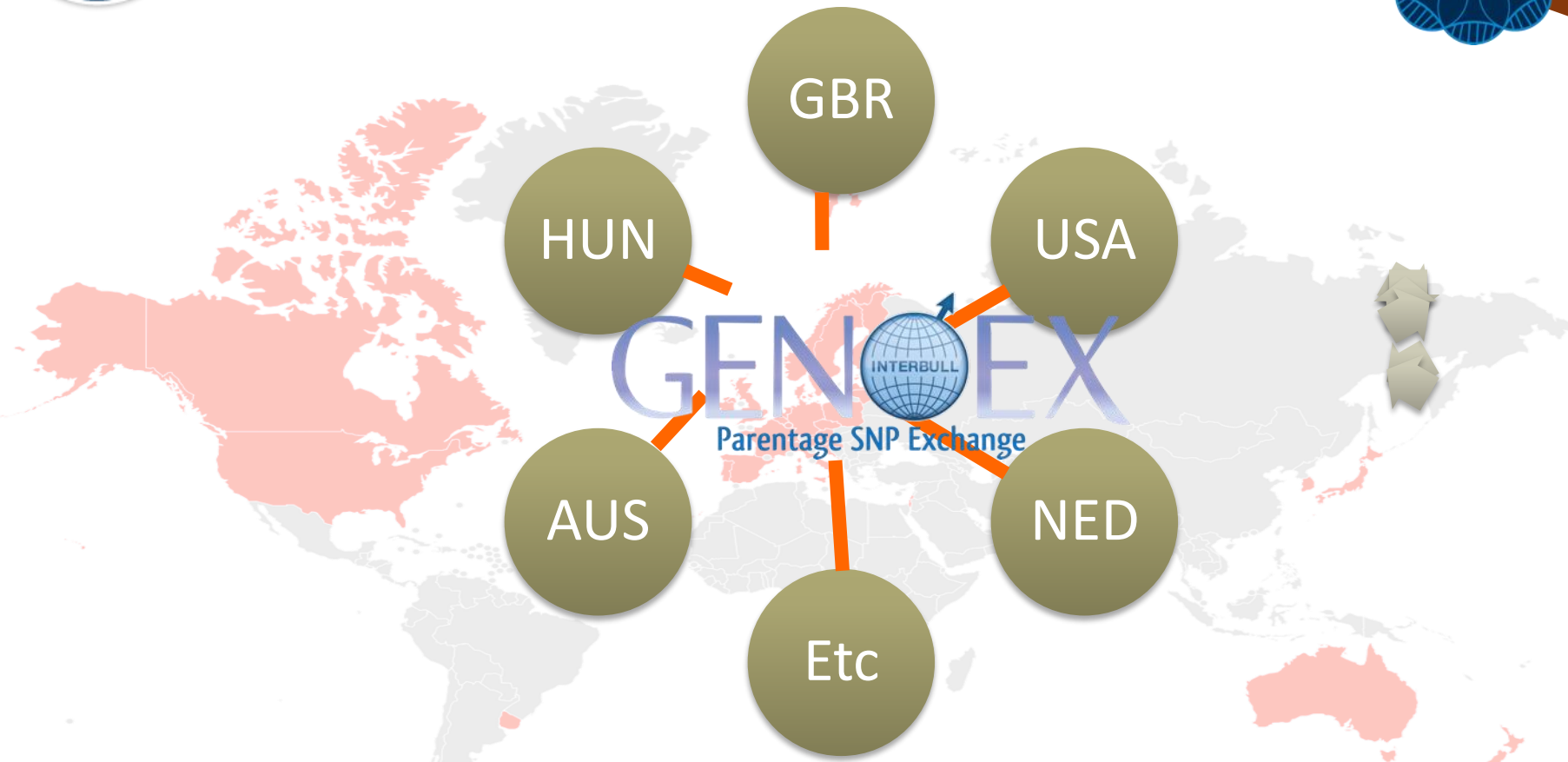
Exchange of SNPs – before GenoEx-PSE



Exchange of SNPs – with GenoEx-PSE



Exchange of SNPs – with GenoEx-PSE



GenoEx-PSE - principles

GENOEX-PSE

- Is a tool to facilitate (not a replacement for national authorities);
- Interbull Centre will not have the right to do parentage analysis;
- SNP exchange ONLY for parentage analysis;
  - Verification, discovery, imputation for subsequent verification
- Currently only cattle: both dairy and beef;
- A voluntary initiative;
- National responsibilities will remain where they are now.

Service Users

- Interbull Users and ICAR Members
- Only service users with signed agreement can upload and download data
- Service users need to be ICAR DNA Data Interpretation Centre Accredited
- Service Fee: €1 000 per year

www.genoex.org

International Genotype Exchange platform for Animal Breeding

FIND OUT MORE

About the Service

The main purpose of the Genotype Exchange Parentage SNP Exchange (GenoEx-PSE) database is to provide a service for exchanging standardised sets of SNP for genotyped animals to facilitate and streamline parentage analysis activities carried out by organisations that are responsible and/or active in parentage integrity.

Service Users

Organisations wishing to join GenoEx-PSE services shall:

1. Be member of ICAR or be nominated by an ICAR member;
2. Have a valid "ICAR Accreditation for DNA Interpretation Centres";
3. Sign a Service User Agreement with the Interbull Centre.

Documentation

The version in use is GenoEx-PSE v1.0 (December 2017).

- GenoEx-PSE Manual
- GenoEx-PSE Code of Practice

File Formats

- variable length, comma delimited files in .csv format

meta.csv

general information

single record for each **animal** for which the SNP genotype details are being uploaded

snps.csv

SNP information

single record for each **SNP** included for given animal

your_final_upload_file.zip

GENOEX
Parentage SNP Exchange

Login to GenoEx

joanna.sendecka@slu.se

●●●●●●●●●●●●

Log in

Forgotten password?

GENOEX
Parentage SNP Exchange

GenoEx

Joanna

Dashboard

Submit

Extract

Dashboard

Submissions

File Uploaded	a day ago
File Uploaded	a day ago

View all

Extractions

animals.zip	a day ago
Query	a day ago

View all

GENOEX
Parentage SNP Exchange

Edit Account Settings

Edit Account Settings

First name

YourName

Last name

YourSurname

Email

YourEmail@address.cou

Current password

••••••••••••

New password

Your password must consist of at least ten characters. Numbers as well as uppercase, lowercase and special characters are required. Whitespace (tabs, spaces) is not allowed.

Repeat new password

Cancel Update

GENOEX
Parentage SNP Exchange

GenoEx

Joanna

- Dashboard
- Submit
- Extract

Dashboard

Submissions

File Uploaded	a day ago
File Uploaded	a day ago

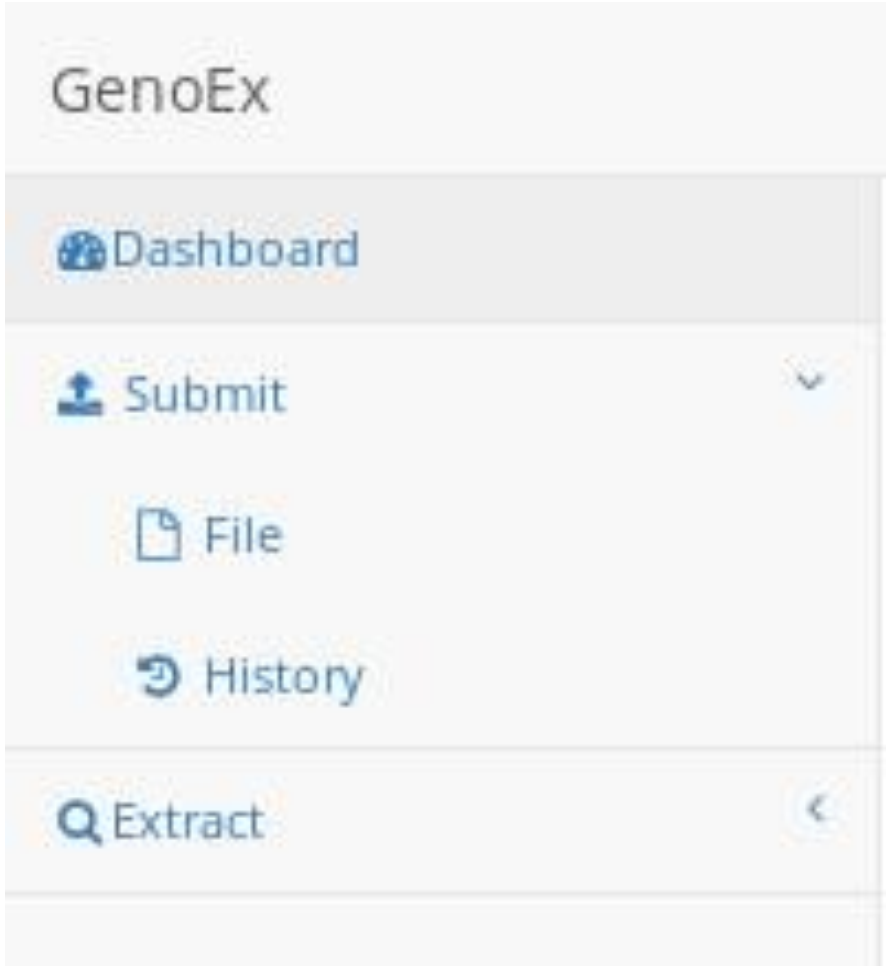
View all

Extractions

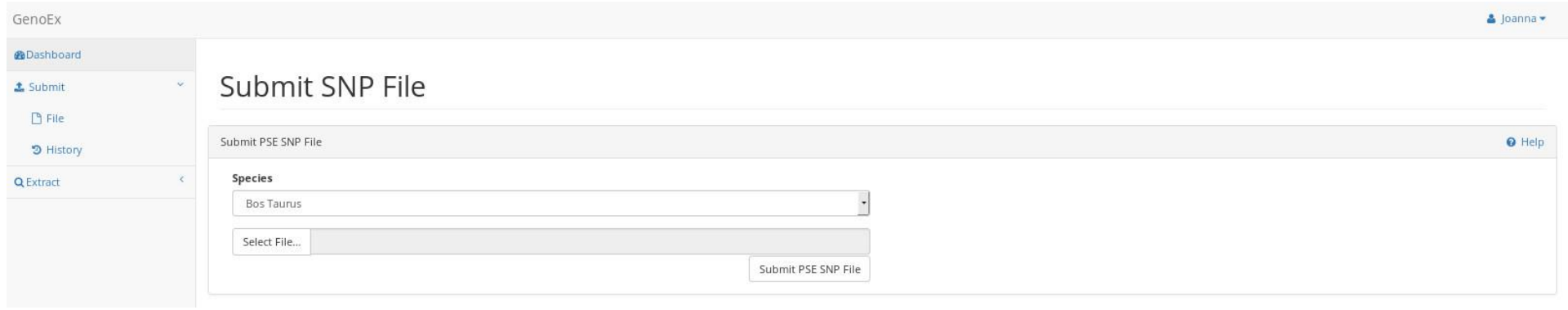
animals.zip	a day ago
Query	a day ago

View all

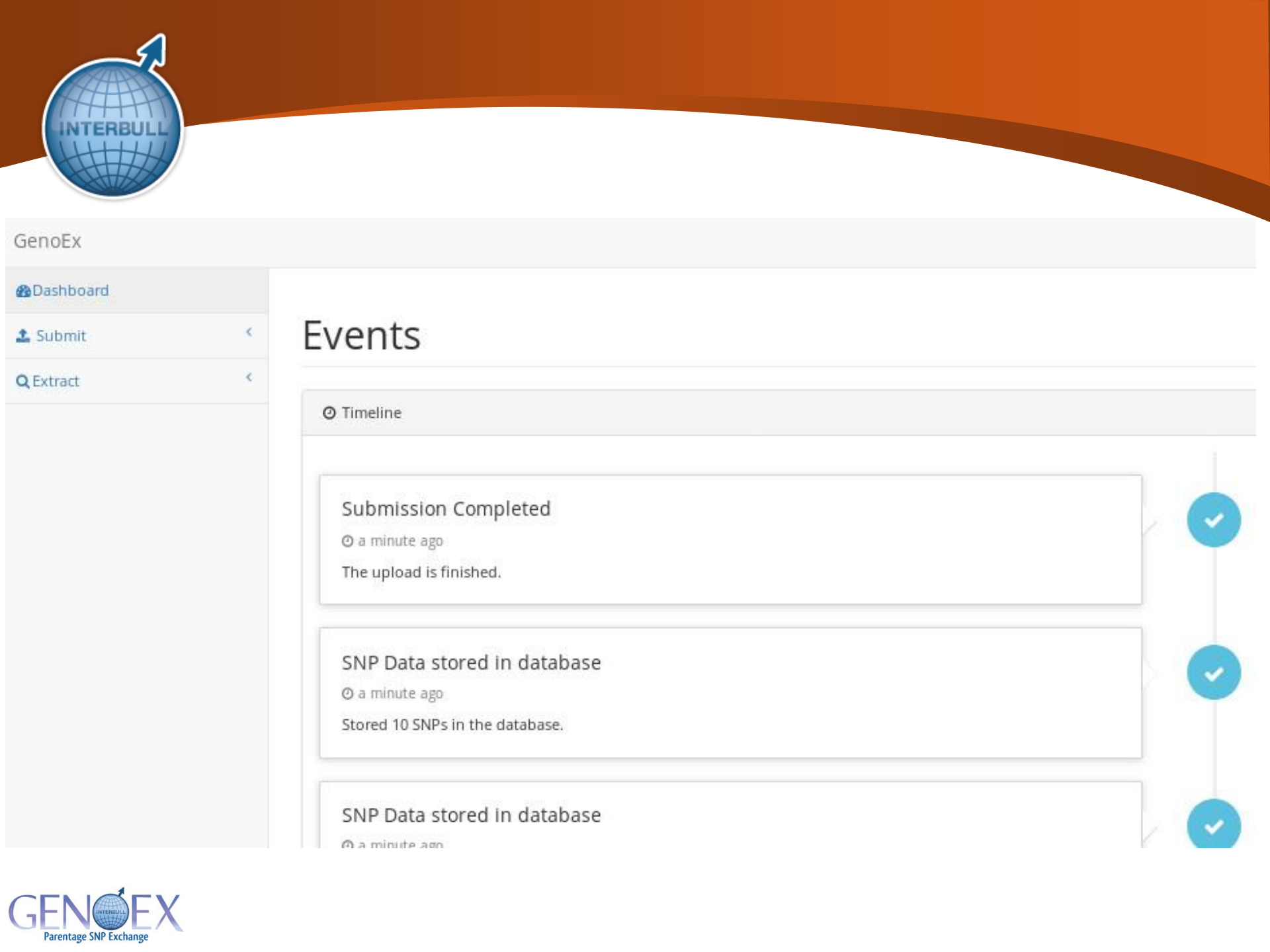
GENOEX
Parentage SNP Exchange



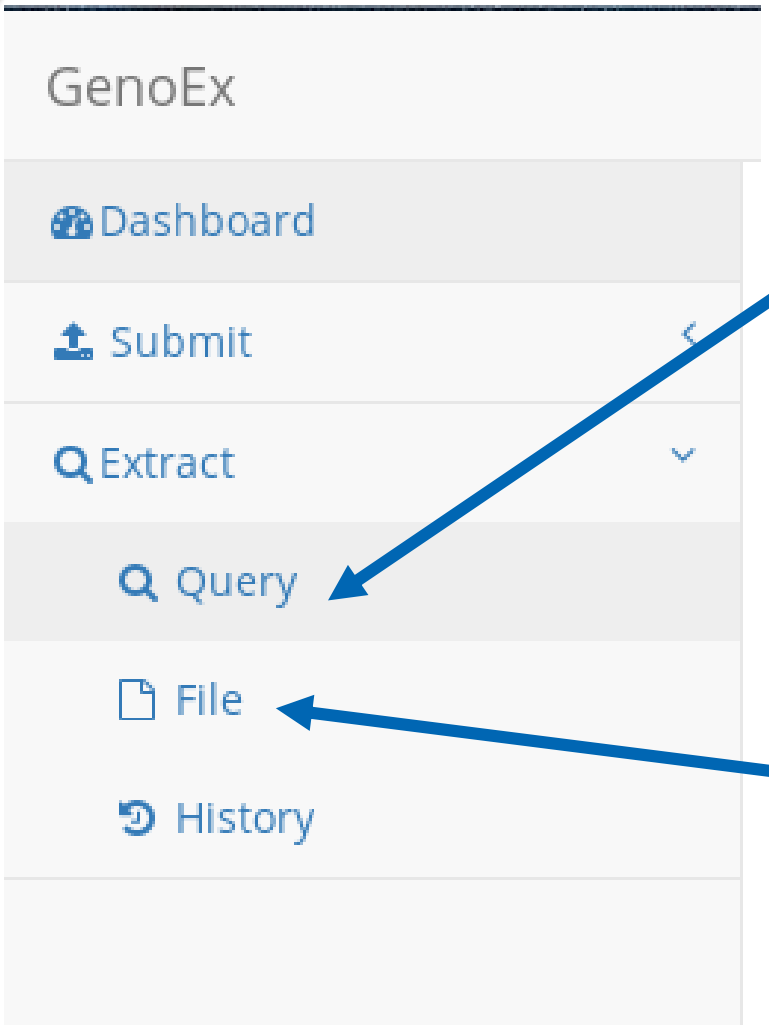
GENOEX
Parentage SNP Exchange



GENOEX
Parentage SNP Exchange



GENOEX
Parentage SNP Exchange



group of animals by breed, sex and country

individual animals listed

GENOEX
Parentage SNP Exchange

GenoEx

- Dashboard
- Submit
- Extract
  - Query
  - File
  - History

Extraction Query

Query

Species

Bos Taurus

Included Genotypes

(•) All ( ) Merged

Sex

(•) Both ( ) Female ( ) Male

Use Allele Coding

(•) AB ( ) TOP

Breeds

AAN — Angus
ABO — Abondance
AUB — Aubrac
BAQ — Blonde d'Aquitaine

Shift+Click to select multiple breeds.

Countries

AUT — Austria
AZE — Azerbaijan
BDI — Burundi
BEL — Belgium

Shift+Click to select multiple countries.

Start Extraction

GENOEX
Parentage SNP Exchange

GenoEx

Dashboard

Submit

Extract

Events

Timeline

Extraction Completed

2 minutes ago

Download file.

SNP Data Extracted

2 minutes ago

10 SNP's extracted from database.

SNP Data Extracted

2 minutes ago

10 SNP's extracted from database.

SNP Data Extracted

2 minutes ago

10 SNP's extracted from database.

SNP Data Extracted

2 minutes ago

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SNP Data Extracted

2 minutes ago

10 SNP's extracted from database.

SNP Data Extracted

2 minutes ago

10 SNP's extracted from database.

SNP Data Extracted

2 minutes ago

10 SNP's extracted from database.

Query Match Results

2 minutes ago

Query matched 4.

Extraction Started

2 minutes ago

Started Query for SNP data submitted before 2018.02.09 21:23:28.058812.

The 'TOP' was requested for the extracted data.

- **Species:** Bos Taurus
- **Sex:** Male
- **Breeds:** AAN BSW
- **Countries:** AUS

GENOEX INTERBULL

Parentage SNP Exchange

Events

Timeline

Extraction Completed

3 minutes ago

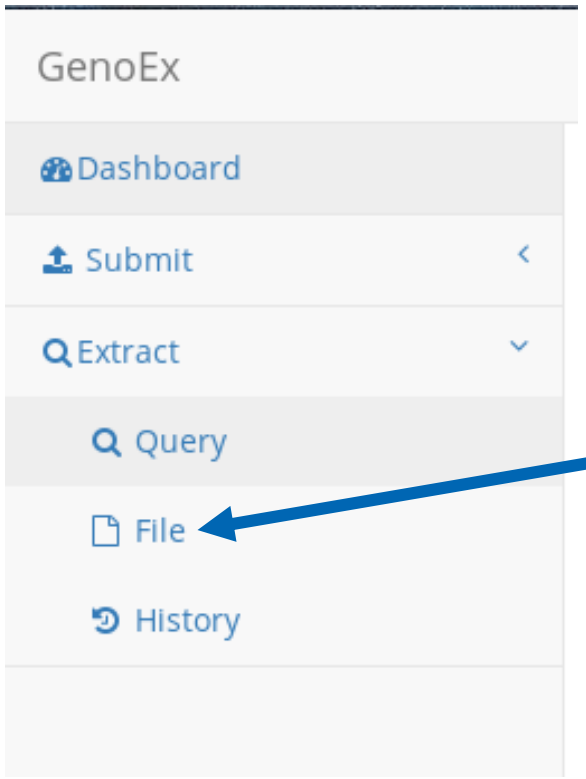
Download file.

SNP Data Extracted

3 minutes ago

10 SNPs extracted from database.

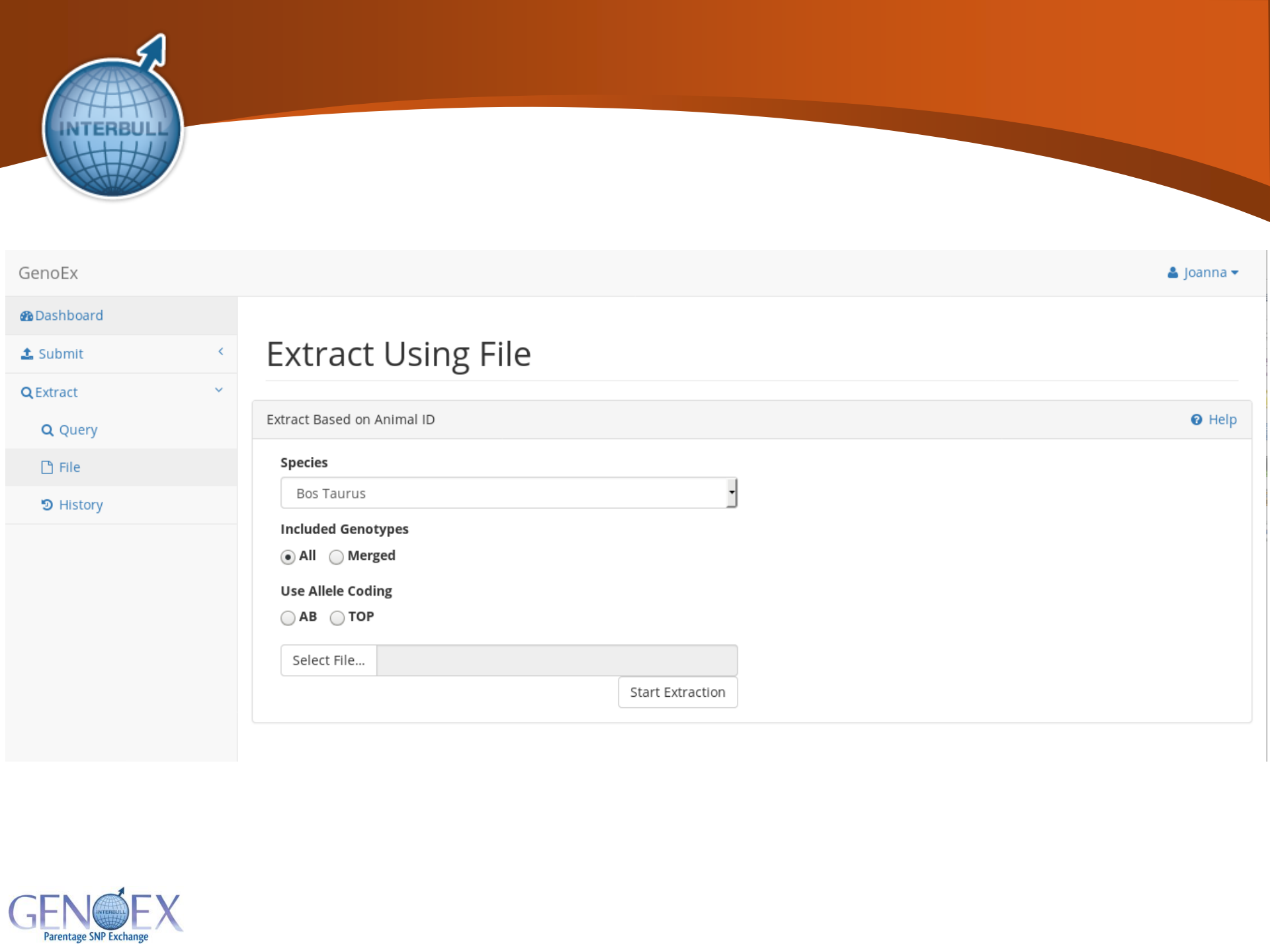
GENOEX
Parentage SNP Exchange



individual animals listed

BRD,COU,S,INDIVIDUAL_ID

GENOEX
Parentage SNP Exchange



GENOEX
Parentage SNP Exchange

Events

Timeline

Extraction Completed

3 minutes ago

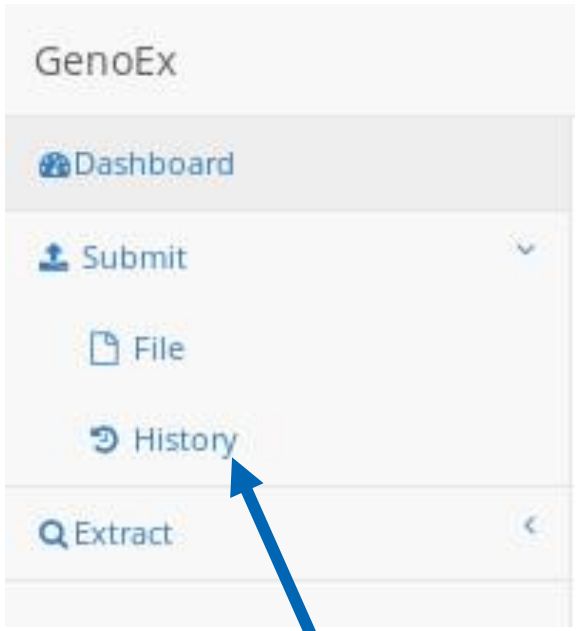
Download file.

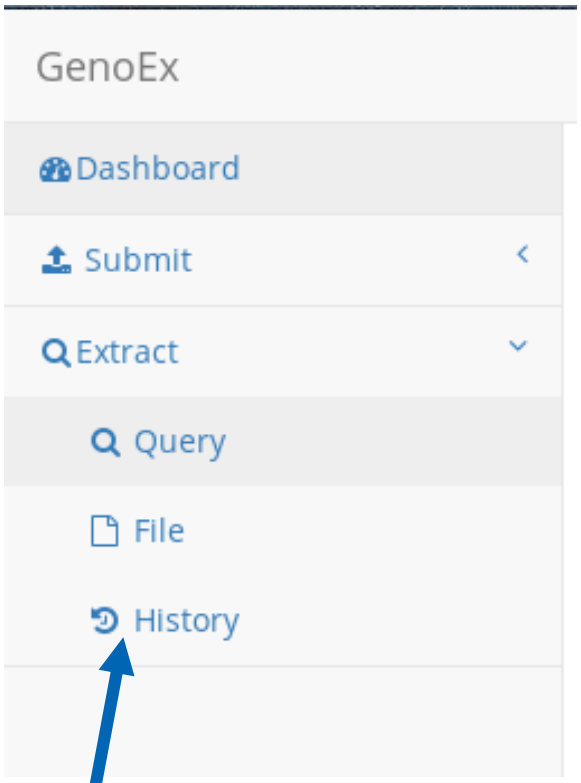
SNP Data Extracted

3 minutes ago

10 SNPs extracted from database.

GENOEX
Parentage SNP Exchange





GENOEX
Parentage SNP Exchange

GenoEx

Joanna

Dashboard

Submit

Extract

Dashboard

Submissions

File Uploaded	a day ago
File Uploaded	a day ago

View all

Extractions

animals.zip	a day ago
Query	a day ago

View all

GENOEX
Parentage SNP Exchange

Dashboard
Submit
Extract
Query
File
History

Extraction History

Timeline

Extraction Query

2018-02-09 22:23:28

- **Species:** Bos Taurus
- **Included Genotypes:** all
- **Sex:** Male
- **Breeds:** AAN BSW
- **Countries:** ABW
- **Submitted Before:** 2018-02-09 21:23:28.058981Z

See related events

Get All New SNP Genotypes

Use Allele Coding

AB TOP

Extract Updates

Run Extraction Again

Use Allele Coding

AB TOP

Rerun Query

- User’s Manual

- Code of Practice

- Contact us at GenoEx@slu.se

GENOEX
Parentage SNP Exchange