

From genotypes to decisions:

Complete genomic evaluation services for livestock management and breeding

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Manufacturer's Showcase

EUROFINS SCIENTIFIC

Worldwide excellence in bio-analytical testing

Eurofins is an international life sciences company and the global leader in the bioanalytical testing market

59
Countries

940
Laboratories



>€ 6.7
Billion
Revenue

250,000+
Reliable and
validated analytical
methods



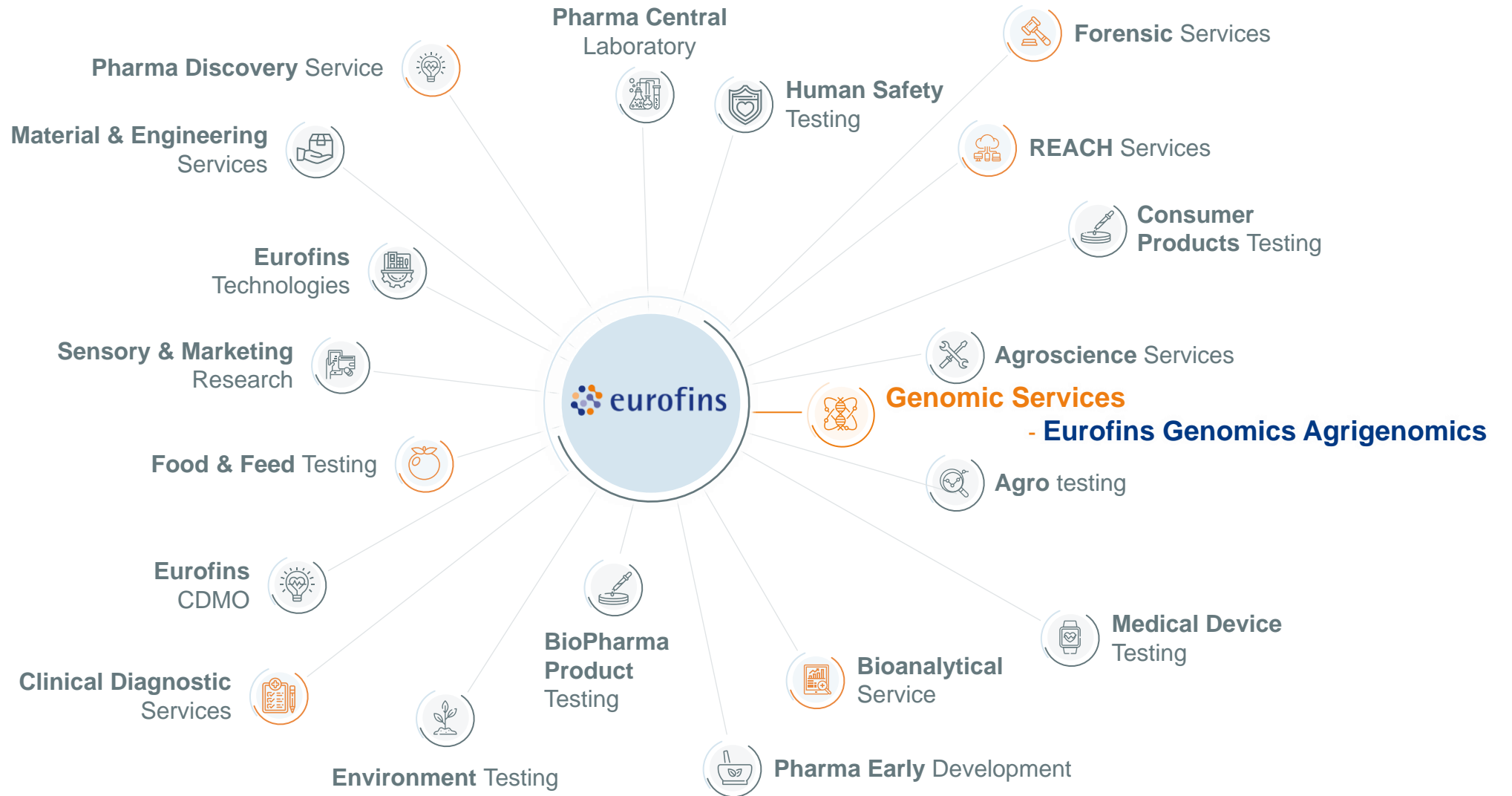
61,000+
Employees

400 Million
Assays a year



#1 IN EUROPE FOR GENOMICS SERVICES

Eurofins Genomics Europe Agrigenomics is part of the Eurofins Scientific group of companies



Global Genomics Lab Locations

Main Genotyping Labs

- Aarhus, DK
- Wisconsin, US
- Milton Keynes, UK

Satellite Genomics Labs

- Kentucky, US
- Ebersberg, DE
- Tokyo, JP
- Bangalore, IN
- Sao Paulo, BR



Eurofins Genomics Europe AgriGenomics

Aarhus, Denmark

- **DNA Extraction**
 - Custom automation for high throughput
 - Flexibility to handle any sample type

- **Microarrays**
 - ThermoFisher and Illumina platforms
 - Capacity for >4M samples per year and growing

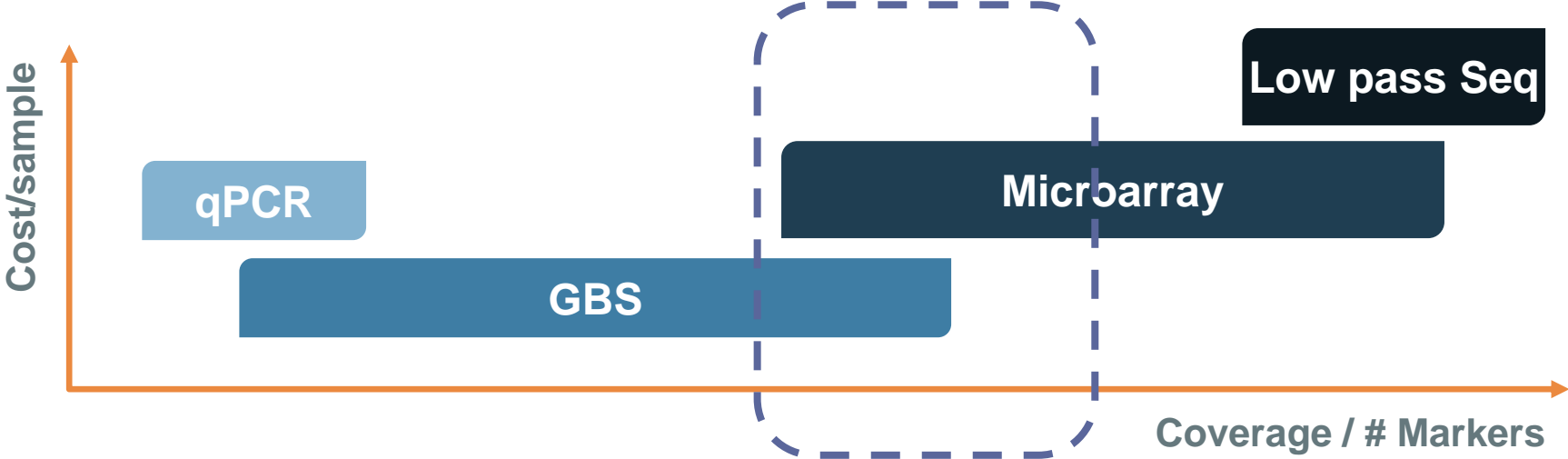
- **NGS**
 - Illumina MiSeq, NextSeq and NovaSeq
 - Ion Torrent S5XL

- **Realtime PCR**
 - Fluidigm Biomark



16,000 sq. ft state-of-the-art lab space dedicated to Agrigenomics
 Located at Galten (Aarhus), Denmark

Eurofins' platforms meet the genotyping needs of any genomics-based breeding program



Features	qPCR	GBS	Microarray	Low pass
# Markers	1-192	25-5K	1K-1M	100K+
TAT (working days)	5	10	5-10	10-15
Relative cost	\$	\$	\$\$-\$	\$\$\$
SNP discovery		✓		✓

Microarrays remain our core business, supporting the majority of our client's genomic selection programs



- 
Industry-leading Array Platforms
 Maximum flexibility in terms of throughput and marker density needs
- 
Fully Automated Workflows
 Fastest TATs (5-8 days) within minimal labour costs

illumina

Infinium Bead Chip

ThermoFisher
SCIENTIFIC

Axiom Array Plate

Capacity	iScan: 170k samples/month	GeneTitan: 172k samples/month
Sample Formats	24 or 96	96 or 384
# Targets	3,072-700,000	1,500-650,000
Minimum # Samples (custom)	Format 24: 1,152 Format 96: 100,000	Format 96: 480 Format 384: 1,920
Multi-species designs?	✓	✓
Best for	High throughput	Flexibility

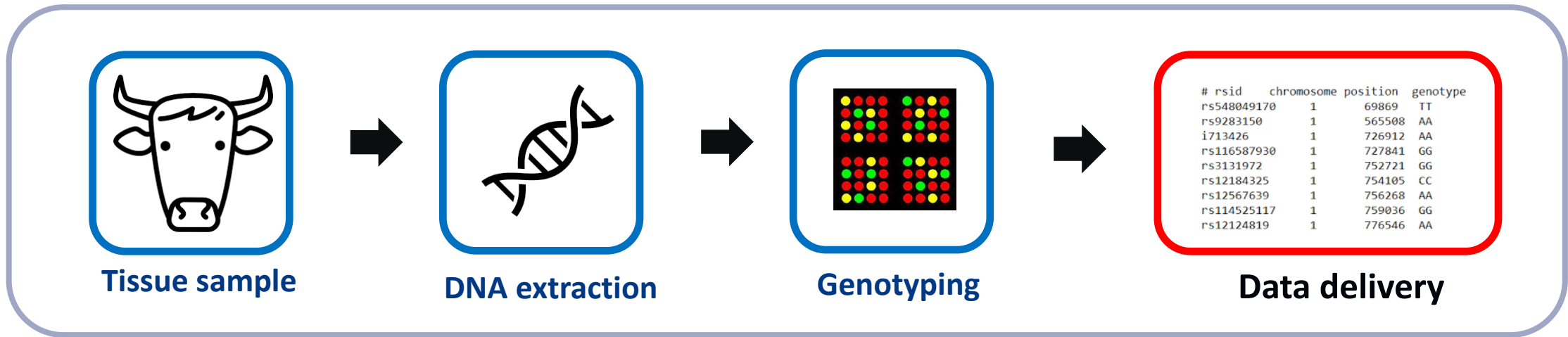
Our NGS platforms can support routine applications such as parentage verification (GBS), as well as research projects



Platform	Illumina NextSeq/MiSeq	MGI DNBSEQ-400	ThermoFisher Ion Torrent S5XL
Sample throughput	Low-Med	High	Low-Med
Main Applications	GBS AgriPlex: 25-2,500 SNPs Paragon: 7-20,000 SNPs	Microbiome, Low pass sequencing (GBS), RNA-Seq,	GBS Ion AgriSeq 100-5,000 SNPs
	Parentage verification, trait/disease screening, LD genomic selection, marker-assisted selection		Parentage verification, trait/disease screening, marker-assisted selection



Lab workflow at Eurofins Genomics is optimised for **low-cost and high throughput** genotyping at scale



- Ideal for organisations that have the resources to interpret genomic data and develop herd management strategies for their clients, eg.
 1. Large breeding companies
 2. Livestock co-operatives
 3. Livestock associations and consortia
- Outside of the major Western meat and dairy breeds, **there is a global need for customisable, end-to-end genomics solutions...**

Supporting the diverse global livestock community

1. Rare or indigenous breeds

- Unique genetics and limited numbers

2. Newly established or emerging populations

- Unique genetics derived through breed formation

3. Cross-bred and Composite breeds

- Significant genetic diversity compared to purebreds

4. Non-bovine species

- Different genetic architecture, statistical models and phenotype recording



Brazilian Association of Girolando Cattle Breeders

Girolando is a composite breed developed from Holstein and Zebu cattle (*Bos taurus* × *Bos indicus*) and is widely used in Brazil's dairy industry due to its adaptability to tropical climates, high milk production potential, and tolerance to diseases and parasites. <http://www.girolando.com.br/>

Using a customised reference dataset for the population in question ensures genomic predictions are accurate and relevant, leading to selection decisions that meet the unique breeding goals

Diverse breeds have unique genetics and traits that must be optimised for the breeding strategy

1. Breed-specific traits

Consider the breed's inherent strengths and adaptability that align with the breed's intended purpose.

2. Market demand

High demand traits eg. beef marbling or milk fat content.

3. Environmental adaptation

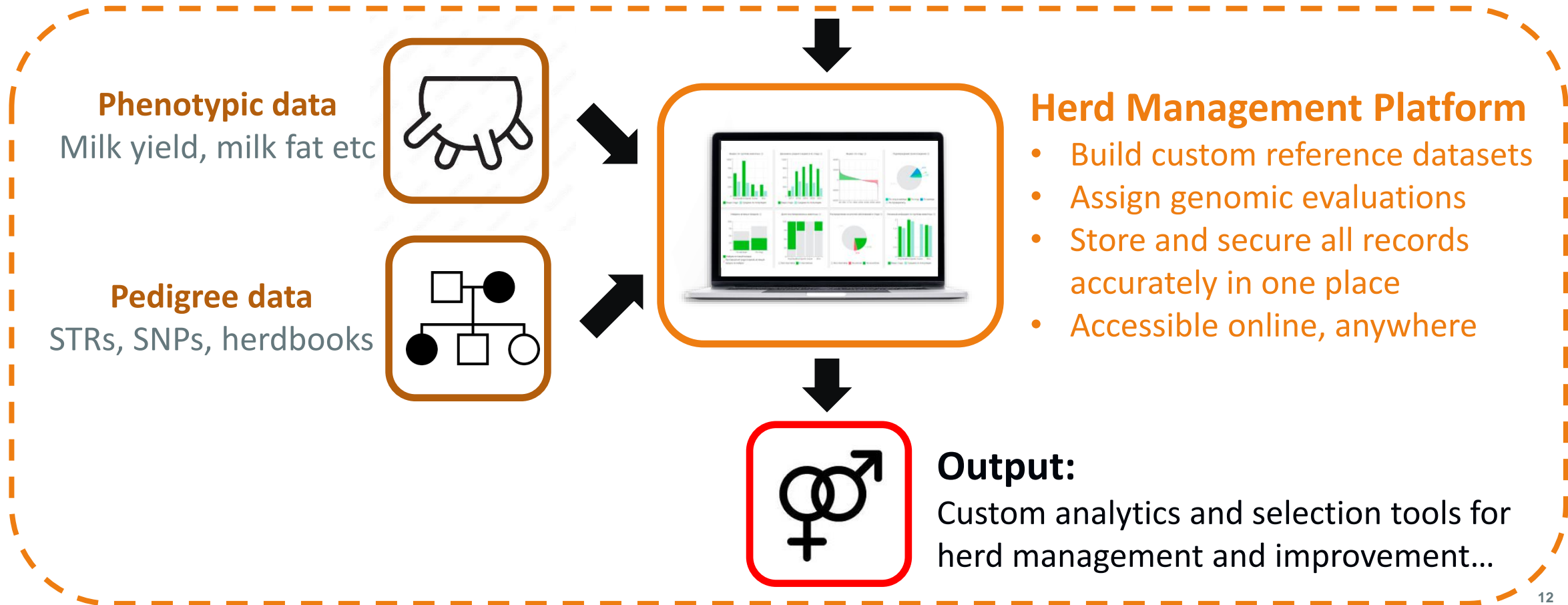
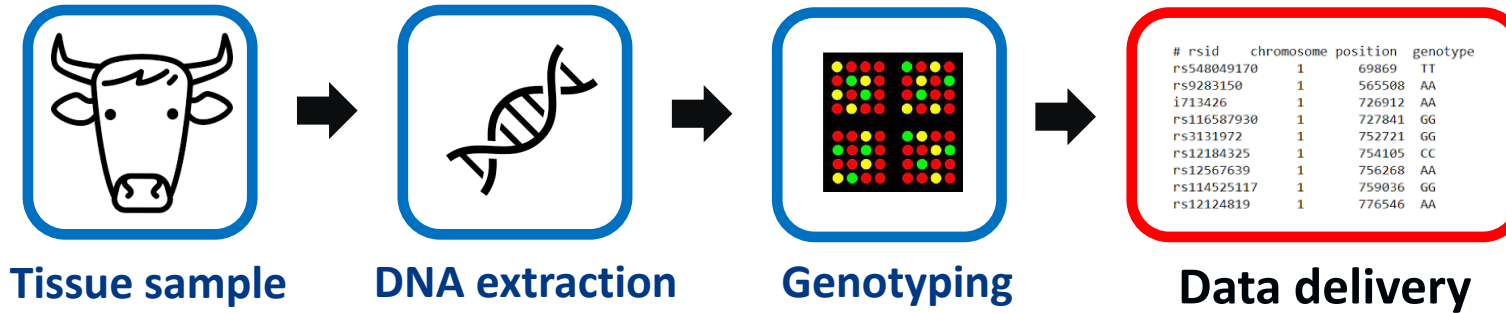
Traits that contribute to adaptability, such as heat tolerance, disease resistance, or forage utilization.

4. Farmer preferences and goals

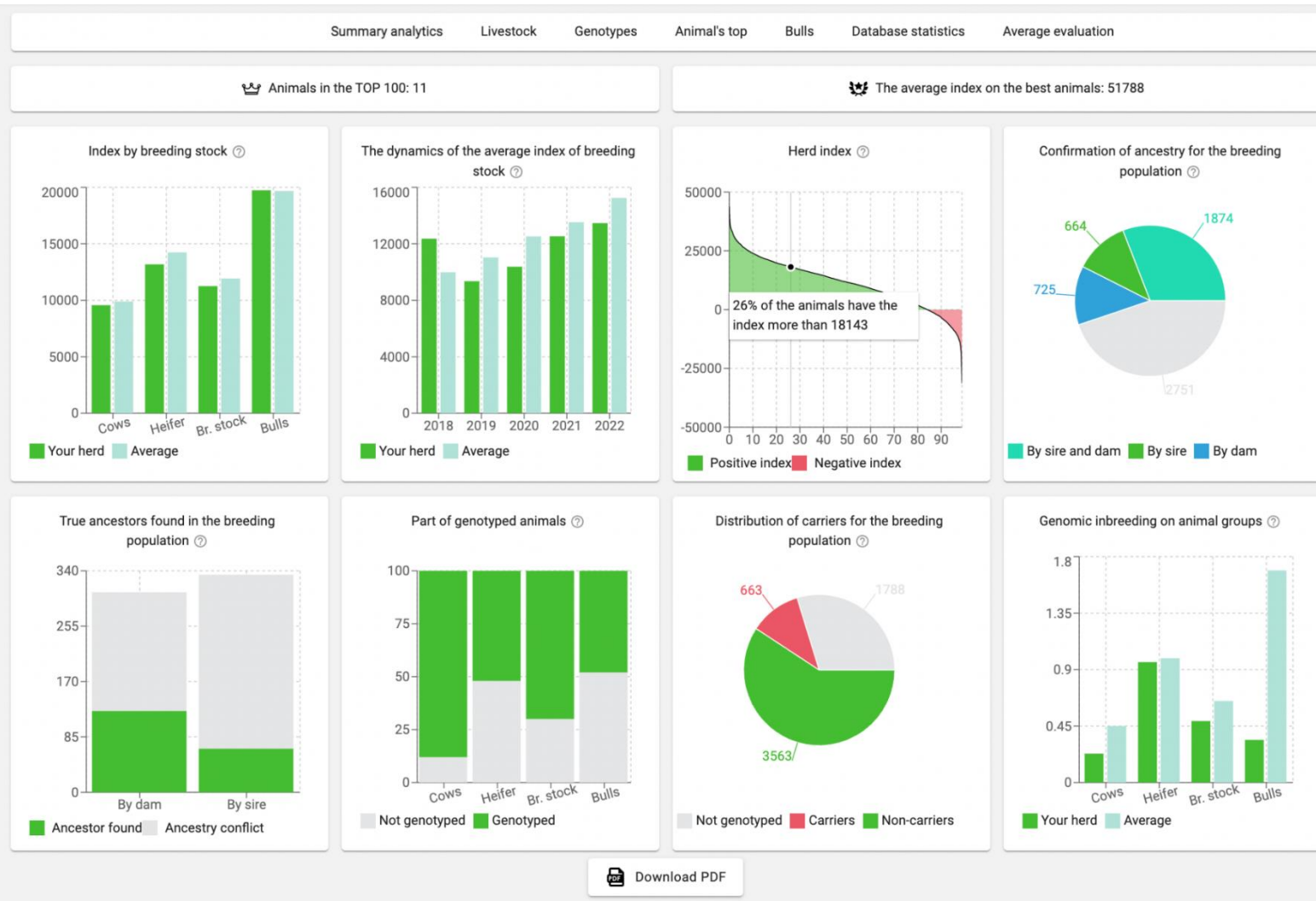
Management practices, available resources, and personal objectives such as ease of calving, or specific coat colour

Flexible tools for applying genomic selection are key for transitioning diverse livestock farming systems into the future!

Eurofins' Complete Solution for Livestock Breeding

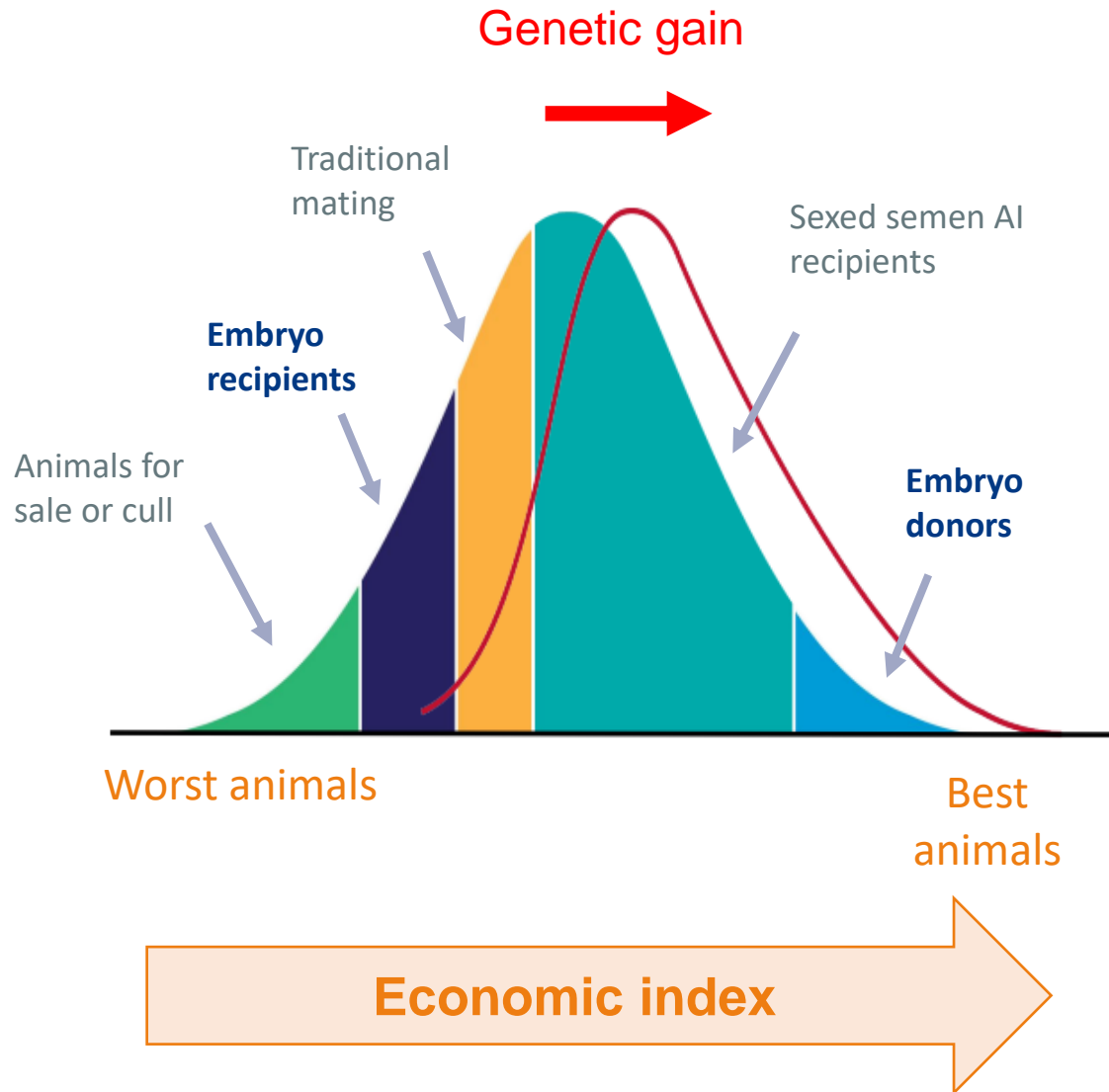


Democratising access to genomics with simple to use analytics and selection tools for breeding



- **Dashboard** presents performance indices, ancestry, carrier and genotype status of the herd against the reference population
- **Fully customisable** features:
 - Custom reference datasets
 - Customise GEBV, indices, phenotypes
- Use **custom filters** to identify animals for various breeding strategies, e.g.
 - Culling
 - Traditional mating
 - AI
 - **Embryo transfer...**

Embryo transfer can be a good breeding strategy to meet a number of goals:



1. **Replication of elite female genetics**, increasing impact on herd genetic progress and accelerate herd expansion
2. **Overcome reproductive challenges** if donor has fertility or conformation deficiencies
3. **Facilitating breed preservation and propagation**, preventing loss of valuable genetic traits and helps conserve rare breeds
4. **Facilitates breeding across distances**, avoiding the need to transport high value animals

Apply relevant filters (GEBV, pedigree, carrier status etc) to select the animals with best genetics for embryo donors

Search by ID or name Filters Save filter Saved filters

Only live animals × Status: Pregnant heifer, Heifer × Genotyping status: Genotyped × Non-carrier (genotyped) × Clear filters

General information

Live animals only ?

Company
Demo_Farmgroup ▼

Farm
Farm ▼

Status
Pregnant heifer × Heifer × × ▼

Index & evaluations

Economic index
From To

GEBV milk yield, kg
From To

GEBV fat, kg
From To

GEBV fat, %
From To

Genetics

Genotyping status
Genotyped

Date of genotyping
From

Confirmation of the m
Confirmation of the

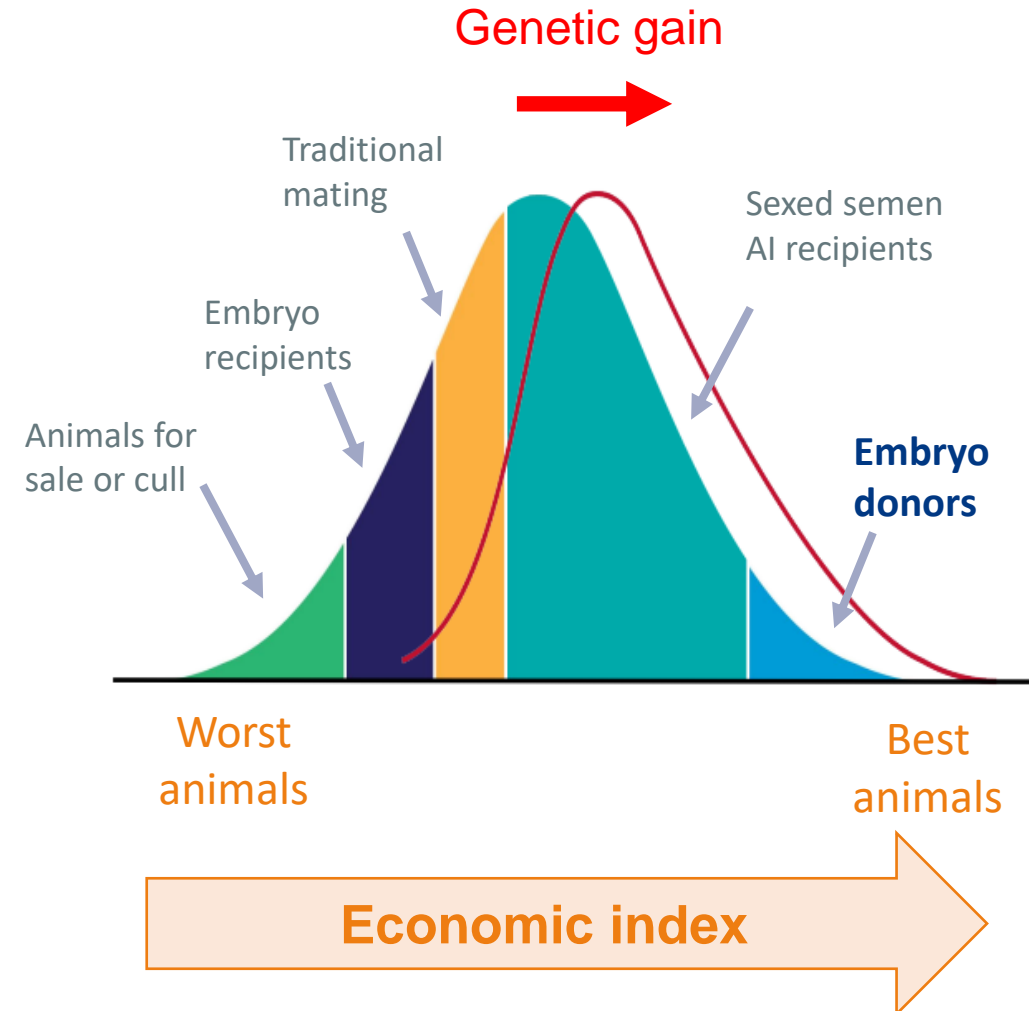
Carriers of diseases (genotyped)
 Non-carriers (genotyped)
 Non-carrier or unknown (not genotyped)

Sort animals from highest to lowest index (default)

Search by ID or name Filters Save filter Saved filters

Genotyping status: Genotyped × Non-carrier (genotyped) × Only live animals × Status: Pregnant heifer, Heifer ×

Sex & ID	Inventory id	Status	Date of birth	Economic index	Genotype status	Date of gen
?	?	?	?	?	?	?
DEMO_388	964317	Heifer	17-07-2021	+44439	Processed	01-11-2021
DEMO_682	955710	Pregnant heifer	13-06-2021	+42176	Processed	01-11-2021
DEMO_9735	974214	Heifer	14-07-2022	+41467	Processed	15-12-2022
DEMO_9152	963029	Heifer	11-07-2022	+41281	Processed	09-11-2022
DEMO_4116	955554	Pregnant heifer	19-07-2021	+40614	Processed	01-11-2021



Name and save the custom filter

Filters

Save filter

Only live animals

Status: Pregnant heifer, H

Create filter name

To save the new filter, please choose a name

Name

heifer for embryo

Cancel Done

rth Economic index Genotype status Da

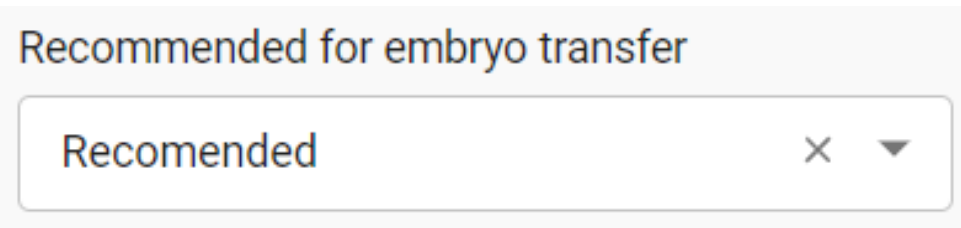
Download list of the Top 50 embryo donor candidates

The screenshot shows a web application interface for downloading a list of embryo donor candidates. At the top right, the 'eurofins | Genomics' logo is visible. The main interface features a filter bar with a green 'Filters' button, a 'Save filter' button, and a 'Saved filters' button. Below the filter bar, there are two filter tags: 'Only live animals' and 'Status: Pregnant heifer, Heifer', along with a 'Clear filters' button. A dropdown menu is open, showing two options: 'Table in Excel - all animals' and 'Table in Excel - range of animals'. The 'Table in Excel - range of animals' option is highlighted with an orange box. Below the dropdown menu, a modal dialog box is open, titled 'Number of animals for download'. The dialog box contains the text 'Please set the number of animals to download.' and a text input field with the number '50' entered. The 'Done' button is highlighted with an orange box. The background of the interface shows a table with columns for 'Economic index', 'Genotype status', 'Date of genotyping', 'Diseases', 'Inbreeding', and 'Inbr'.

Add additional phenotype filters for if required

You can add a filter "recommended for embryo transfer" which allows you to **select animals according to certain phenotypic characteristics** which are not displayed in the web-service (non GEBV/indices) eg:

- Age
- Calving interval and number of successful calvings
- Hormone responsiveness



Recommended for embryo transfer

Recomended × ▼

The filter can be **configured for any traits** that are in the client's data

Repeat the filtering process to **select embryo recipients** by applying relevant filters

Search by ID or name Filters Save filter

Only live animals × Status: Cow × Clear filters

General information

Live animals only ?

Company
Demo_Farmgroup ▼

Farm
Farm ▼

Status
Cow × × ▼

Index & evaluations

Economic index
From To

GEBV milk yield, kg
From To

GEBV fat, kg
From To

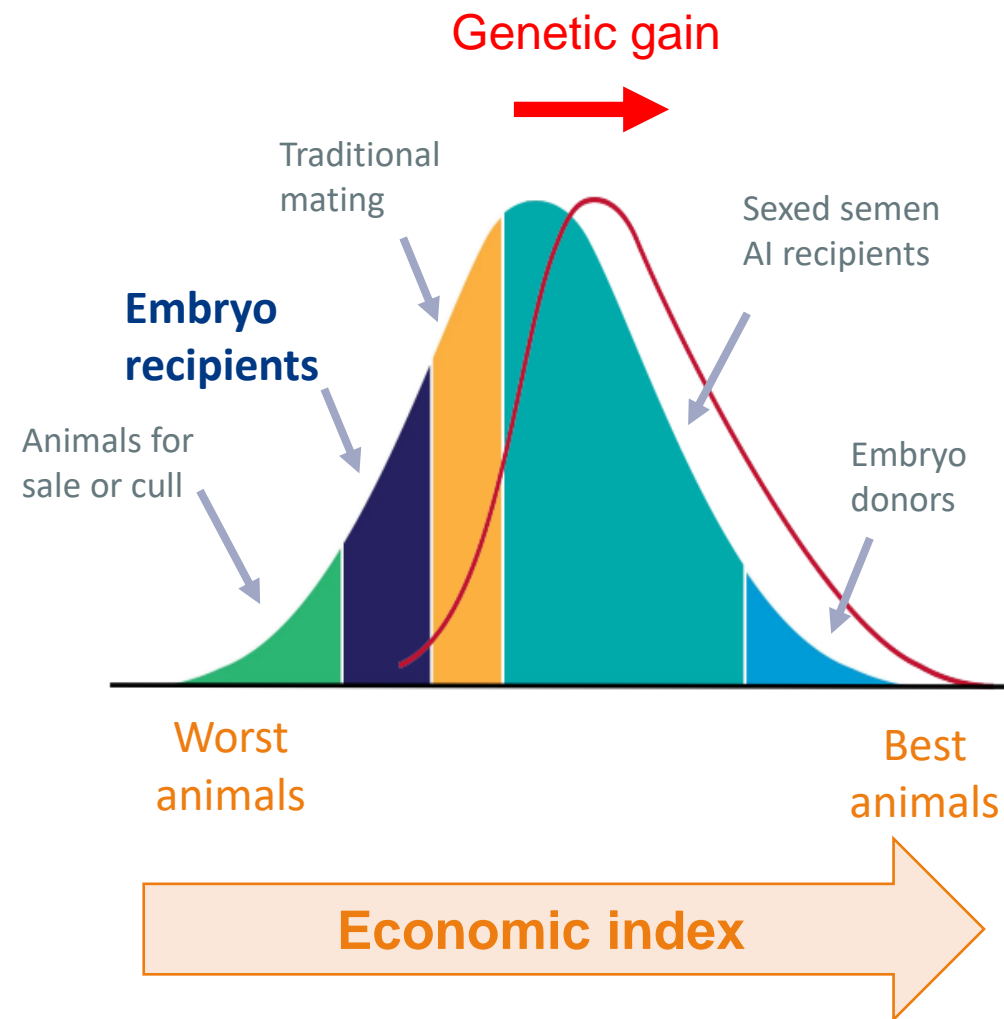
GEBV fat, %
From To

Sort animals from lowest to highest index (exclude animals for culling)
 Add any additional phenotypic filters (e.g. calving ease)

Search by ID or name Filters Save

Only live animals × Status: Cow × Clear filters

Sex & ID	Inventory id	Status	Date of birth	Economic index	Gen
?	?	?	?	?	?
DEMO_5722	990987	Cow	16-03-2019	-21109	Proc
DEMO_6694	998753	Cow	23-04-2013	-20381	Proc
DEMO_6536	997430	Cow	10-07-2017	-18971	Proc
DEMO_948	969996	Cow	07-01-2014	-18069	Proc
DEMO_2606	993876	Cow	19-02-2020	-17165	Proc



Download candidate list

Filters

Save filter

Reports on 2107 animals

- Table in Excel - all animals
- Table in Excel - range of animals

Economic index Genotype status Date of genotyping Diseases Inbreeding Inh

Number of animals for download

Please set the number of animals to download.

200

Cancel Done

Summary

- Eurofins Genomics has developed world-class lab capabilities that leverage the economies of scale and automation to deliver the **fastest and lowest cost genotyping services**
- We **serve all markets globally** through our extensive network of labs
- To compliment our lab capabilities, we are working to **bring flexible, easy to use genomic tools to every breeder**, large or small
- **Please visit our booth to discuss your breeding goals** and learn how more about how we can help

A person's silhouette is shown in the lower right, looking up at a vibrant night sky filled with stars and the Milky Way galaxy. The galaxy's colors transition from purple and pink at the top to yellow and orange at the bottom. A large, semi-transparent circle is centered in the sky, containing the text "TESTING FOR LIFE".

TESTING FOR LIFE