POLAND

EUROPEAN HOLSTEIN & RED HOLSTEIN CONFERENCE

PFHBiPM

2026

#FUNDUSZE PROMOCJI

Konferencja Członków Europejskiej Konfederacji Czarno-Białego i Czerwono-Białego Bydła Holsztyńskiego (EHRC) w Warszawie w 2026 r.

PROGRAM AND ABSTRACTS

ORGANIZERS

EUROPEAN HOLSTEIN & RED HOLSTEIN CONFEDERATION
EHRC

EUROPEAN HOLSTEIN AND RED HOLSTEIN FEDERATION

PFHBiPM

POLISH FEDERATION OF CATTLE BREEDERS AND DAIRY FARMERS

HONORARY PATRONAGE

Ministerstwo Rolnictwa i Rozwoju Wsi

Patronat honorowy
Ministra Rolnictwa i Rozwoju Wsi
Stefana Krajewskiego

THE CONFERENCE IS CO-FINANCED BY

#FUNDUSZE PROMOCJI

Content

Welcome Letter

Dear Guests and Friends of the European Holstein Community,

*It is with great pleasure that we welcome you to the **33rd Conference of the European Holstein and Red Holstein Confederation (EHRC)**, which is being held in Poland for the first time in its history.*

This unique event brings together representatives of EHRC member organizations, industry experts, scientists, and breeders from across Europe, providing an excellent platform for the exchange of knowledge, experience, and best practices. We are proud that the Polish Federation of Cattle Breeders and Dairy Farmers has the honour of hosting this prestigious gathering.

This year's conference, held under the theme "Dairy Farm of Tomorrow – Innovations, Challenges and Inspiration for the Next Generation", focuses on issues of key importance to the future of European dairy cattle breeding. Particular attention will be given to sustainable production, animal welfare, reducing the environmental impact of dairy farming, succession in family farms, and the implementation of modern technologies and digital tools.

Addressing these challenges requires close cooperation, the exchange of experience, and a shared commitment to finding effective solutions. For many years, EHRC has served as a platform bringing together European breeding organizations and supporting the development of modern Holstein breeding. We are confident that this year's conference will further strengthen international cooperation and help shape the future direction of our industry.

We hope that the conference programme will provide inspiration, valuable knowledge, and fruitful discussions. We wish you successful deliberations, many rewarding meetings, and an enjoyable and memorable stay in Poland.

Suzanne Harding

EHRC Secretary General

Leszek Hadzlik

President of the Polish Federation of Cattle Breeders and Dairy Farmers

Program 25 June 2026 (Thursday)

EHRC 2026 Conference
"Dairy Farm of Tomorrow – Innovations, Challenges, and Inspiration for the Next Generation"

8:30 – 9:10 Opening Session

Welcome

9:10 – 10:30 Session 1 – Inspiring the Next Generation

Chair: Anke Rolfes, *German Livestock Association, Germany*

9:10 – 9:30 Fifth generation dairy farmer, but why?
Eeva Harhala, *Finland*

9:30 – 9:50 Success is Plannable: Mindset, Management and Practical Actions from My Farm
Fraederk Meppen, *Germany*

9:50 – 10:10 European Farm Policy on Generational Renewal
Thomas Duffy, *Ireland*

10:10 – 10:30 Discussion

10:30 – 10:55 Coffee Break / Networking

10:55 – 12:20 Session 2 – Breeding for Climate Resilience

Chair: Nanna Hammershøj, *Dansk Holstein, Denmark*

10:55 – 11:15 Breeding for resilience in Holstein cows
Franziska Keßler, *Research Institute for Farm Animal Biology in Dummerstorf, Germany*

11:15 – 11:35 Complexities of genetic selection of heat tolerant cows
Maria Jesús Carabaño, *National Institute for Research in Agriculture, Spain*

11:35 – 11:55 Development of genetic evaluation for methane
Gerben de Jong, *CRV, The Netherlands*

11: 55 – 12:20 Discussion

12:20 – 13:40 Lunch

13:40 – 15:00 Session 3 – Data-Driven Dairy Breeding

Chair: Melanie Harmitt, *Holstein UK, United Kingdom*

13:40 – 14:00 Different Goals, Common Ground: A Global Perspective on Dairy Breeding Objectives
Dr Donagh Berry, *Teagasc, Ireland*

14:00 – 14:20 CFIT – Cattle Feed InTake measured in commercial Holstein herds with 3D cameras
Jan Lassen, *Viking Genetics, Denmark*

14:20 – 14:40 Breeding for Lower Methane Emissions: A Data-Driven Approach"
Dr Raffaella Finocchiaro, *Italian Holstein Breeders Association, Italy;* Dr Marcin Pszczoła, *Poznań University of Life Sciences & Polish Federation of Cattle Breeders and Dairy Farmers, Poland*

14:40 – 15:00 Discussion

15:00 – 15:15 Coffee Break / Networking

15:15 – 17:00 Session 4 – The Future of Genetics

Chair: Dr László Bognár, *Holstein Hungary, Hungary*

15:15 – 15:35 Future of genomic selection utilising AI and dense DNA data
Prof Tomasz Suchocki, *Wrocław University of Environmental and Life Sciences, Poland*

15:35 – 15:55 Beef on Dairy: Consequences for Herdbooks
Prof Martino Cassandro, *National Association of Italian Friesian, Brown and Jersey Breeders, Italy*

15:55 – 16:15 Interbull Centre and EU Reference Centre-Zootechnics in future European/Global cattle breeding
Toine Roozen, *Interbull Centre and EU Reference Centre Zootechnics, Sweden*

16:15 – 16:35 Gene Editing and New Genomic Techniques (NGT)
Dr László Bognár, *Holstein Hungary, Hungary*

16:35 – 17:00 Discussion

Session 1 – Inspiring the Next Generation

Fifth generation dairy farmer, but why?

Eeva Harhala
Family Farm, Finland

ABSTRACT

Fifth generation farmer – but why? Kauppi Farm is located in southern Finland – where at this time the sun never sets. We have a dairy farm of 70 dairy cows, 50 replacement heifers and 120 hectares of agricultural land. During summer we enjoy the nightless nights in field work collecting grass for the cows. In the winter, when the sun hardly gets over the horizon, we take care of our forests. Why did I then want to take part in the chain of generations by becoming the fifth-generation dairy farmer on my father's farm? I had my doubts, my inspirations and my goals – and in this presentation I will share them, because I know that other young farmers and farmers-to-be share my thoughts.

BIOGRAPHY

Eeva Harhala from Finland – fifth generation dairy farmer since January 2026. I am passionate about farming and animal breeding. I studied agricultural sciences in University of Helsinki and spent a few years as a journalist and as a breeding advisor and head classifier. During that time, I thought about life and then decided to take over my family farm. Our farm has 70 milking cows, 120 hectares of agricultural land and 40 hectares of forest. We run the farm as a corporation together with my husband and my parents.

Success is Plannable: Mindset, Management and Practical Actions from My Farm

Fraederk Meppen
Operations Manager of a dairy farm, Germany

ABSTRACT

Every 15 years, the number of dairy farmers in Germany is cut in half. Entrepreneurship in the agricultural sector appears to be associated with significant risks. At the same time, the present is often perceived as uncertain and

difficult to plan for. In hindsight, however, success frequently seems surprisingly simple and logical.

But what are the fundamental building blocks for creating positive growth and development? And why do we so often struggle to implement them consistently?

This presentation is about stepping outside your comfort zone, gaining new perspectives, and taking away valuable insights that can shape your thinking and actions for the future.

BIOGRAPHY

Fraederk Meppen is an experienced farmer and entrepreneur. He graduated from the South Westphalia University of Applied Sciences in 2017 with a degree in Agricultural Economics. His career started earlier with a practical apprenticeship at the Heinrich Mensmann and Haus Düsse farms.

Since 2017, Fraederk has been the Operations Manager of a dairy farm that also handles crop production and field trials. Besides running the farm, he is a very active businessman. He owns several companies that offer services in:

- Agricultural and business consulting.
- Software, marketing, and sales.
- Equipment rental and the use of agricultural drones.

Fraederk is also well-known for his work in public relations, especially on Instagram, where he promotes the agricultural sector. He holds several leadership and volunteer roles, such as the Chair of the Hunting Association and a consultant for herd management at VOST.

European Farm Policy on Generational Renewal

Thomas Duffy

Family Farm, Ireland

ABSTRACT

Upcoming Common Agricultural Reform provides an opportunity to correct declining numbers of young people entering farming. Difficult policy decisions surrounding not only CAP funding allocation but also pension conditionality and ultimately how we define' a farmer' – in modern European agriculture.

BIOGRAPHY

Thomas manages together with his parents and sister their 60-hectare farm in North-East Ireland milking 80 dairy cows in a robotic grass-based system. He returned to farming after studying agriculture for 4 years in a 'Sustainable Agriculture' degree programme before returning to education to complete an MA in ‚Environmental Resource Management' with a focus on climate change and the livestock sector. Thomas served on the Board of Macra na Feirme for 7 years including serving as President 2019-2021. He served as Vice President of CEJA, the Council of European Young Farmers 2021-2023.

Session 2 – Breeding for Climate Resilience

Breeding for resilience in Holstein cows

Franziska Keßler

Research Institute for Farm Animal Biology in Dummerstorf, Germany

ABSTRACT

Resilience is the ability of an individual to cope with short-term disturbances and recover from them as fast as possible. Due to increasing environmental challenges, novel traits to measure resilience and to select for them are of increasing importance.

The most promising approach is the application of time series parameters to longitudinal collected data, which allow to analyse the stability and the time for recovery of an individual. In Holstein cows, stability is calculated as the variance of daily milk yields with low variance showing high resilience. Recovery time could be indicated by autocorrelation, with a small value equivalent to high resilience. In the present study, we analysed AMS data of almost 4,000 German Holstein cows collected between 2022 and 2024. Daily milk yields were used to model individual lactation curves. Deviations between observed and lactation curve daily milk yields were used to calculate resilience indicators. We estimated variance components and genetic parameters. The estimated heritability was sufficiently to obtain selection response in a putative breeding scheme. The correlation with milk production and functional traits showed desirable correlations, if persistency and performance level were conducted.

We combined various single resilience indicators in a resilience selection index. The weights were obtained by optimizing the correlation of this index with the existing health selection index, established a couple of years ago in Germany.

BIOGRAPHY

Franziska Keßler completed her Bachelor in Agricultural Economics in Neubrandenburg, East Germany. For her Master in Agribusiness, she moved to the University of Hohenheim in Southern Germany. Her doctoral thesis, titled "Breeding for Resilient Cows", was supervised by Prof. J. Bennewitz in the Department of Animal Genetics and Breeding. She successfully defended her dissertation in 2025. Since April 2026, she works at the Research Institute for Farm Animal Biology in Dummerstorf, Northern Germany. Within Prof. M. Schmid's group on Quantitative Animal Genetics, she continues her research on breeding for resilience and further novel traits in livestock.

Complexities of genetic selection of heat tolerant cows

Maria Jesús Carabaño

National Institute for Research in Agriculture, Spain

ABSTRACT

Specialised breeds and highly productive individuals are recognised as most susceptible to heat stress (HS) effects, as is the case for Holstein cows. Heat stress effects are commonly mitigated through heat abatement strategies, mainly by installing fans and sprinklers in the barn. However, these strategies are not fully effective when outside temperatures rise above certain levels and animals still suffer HS. Enhancing animal heat tolerance mechanisms by selection has been proposed as a long lasting and economical strategy of climate resilience in dairy farms. The aim of this presentation is to review the pros and cons of the proposed strategies to select heat tolerant cows. Breeding programmes that provide heat tolerance genetic evaluations nowadays are based on the estimation of the genetic component of the individual response in production to increases in thermal load. This approach takes advantage of the already available data from milk recording, which combined with the meteorological conditions, produce an estimator of heat tolerance with little or no additional cost for the breeding scheme. However, an antagonistic relationship between heat tolerance and production levels has been found in Holstein animals and consequences of selection ought to be considered. In addition, the growing adoption of automated milking systems provide the opportunity of obtaining higher resolution data that could enhance the detection of heat tolerant animals and the evaluation of more realistic impact of HS and selection for HT on the economics of dairy farms. Alternative HT indicators based on functional traits, adding genomic or metabolomic information will also be evaluated.

BIOGRAPHY

María Jesús Carabaño has occupied a permanent position as researcher at the Animal Breeding and Genetics department of INIA since 1991, being currently Investigador Científico INIA-CSIC. Since the beginning of her scientific career, she has been principal investigator (PI) of 12 projects funded by national and EU competitive research programmes and member of the research group of another 16 research projects. She is author of 66 SCI articles plus a number of technical and extension publications and has contributed to a vast number of national and international meetings and conferences.

All along her scientific career, she has been well in contact with breed associations and AI centres, participating in technical and assessment committees, looking for continuous feedback between research and industry challenges. She has also been involved in training activities as director of 8 PhD theses and 7 MSci theses and as responsible of shorter training periods of a number of international pre- and post-doctoral students.

Her expertise is in the area of statistical analysis of animal breeding data relevant for genetic and genomic evaluations. Her main achievement in this area has been linked to the implementation of random regression models in the analyses of milk production or weight traits and to analyse plasticity under changing environments linked to male fertility (semen quality traits) or heat tolerance using milk production and meteorological information.

Her current main line of research includes search for the genetic mechanisms that determine heat tolerance and resilience in dairy ruminants by making use of novel phenotyping, genomic and transcriptomic information.

Development of genetic evaluation for methane

Gerben de Jong

CRV, Netherlands

ABSTRACT

Dairy cows contribute to the emission of methane (CH4), a strong greenhouse gas, into the atmosphere. Reducing CH4 emissions from dairy cows will lower the impact of livestock on global warming. Breeding could be an effective reduction method, and estimating breeding values was the objective of this work. The CH4 emission of 11,595 dairy cows in 89 Dutch herds was measured with sniffers in parts per million (ppm) of exhaled air. The CH4 emission of 397 dairy cows from 1 Dutch herd was measured in grams per day (g/d) of exhaled air using Green Feed. CH4 measurements took place from 2019 to 2025 (sniffer) and from 2022 to 2025

(GreenFeed). All observations during a week on a cow were averaged into week observations. There were 226,449-week observations for ppm and 11,824-week observations for g/d. Genetic parameters were estimated with ASReml 4.2 using an animal multi-trait repeatability model. Heritabilities (h2) were 0.14, 0.14 and 0.19 for ppm and 0.34, 0.37 and 0.37 for g/d, for respectively parity 1, parity 2 and parity 3 and later (3+). Genetic correlations between different parities for ppm were 0.74, 0.47 and 0.79, and for g/d 0.73, 0.38 and 0.69, between respectively 1 and 2, 1 and 3+, and 2 and 3+. An overall breeding value was calculated for g/d based on traits in parity 1, 2 and 3+. By using a selection index, extra information was added to the overall breeding value in g/d. Traits in the selection index were kg milk production, kg fat production, feed intake and body weight with genetic correlations of respectively 0.39, 0.19, 0.20 and 0.09. The average CH4 emission of a dairy cow was 435 grams per day with a genetic standard deviation of 36 grams per day. The heritability of the trait, the size of the genetic standard deviation, and the fact that genetic correlations with health traits were estimated to be small, makes breeding an effective and powerful tool to mitigate CH4 emissions from dairy cattle in the Netherlands and Flanders. The overall breeding value for CH4 in grams per day is published in the Netherlands and Flanders from April 2025 onwards.

BIOGRAPHY

Raised on a dairy farm in Friesland. Graduated from Wageningen University. Over the years, involved in R&D and genetic evaluations in CRV and her predecessors. Currently manager of Animal Evaluation Unit and herdbook of cooperative CRV in the Netherlands.

Also involved in Interbull activities (Steering Committee member and chair of Interbull Technical Committee). Chair of the ICAR working group on Conformation. Chair of WHFF Harmonisation Working Group and member of WHFF council.

Session 3 – Data-Driven Dairy Breeding

Different Goals, Common Ground: A Global Perspective on Dairy Breeding Objectives

Donagh Berry
Teagasc, Ireland

ABSTRACT

Comparing dairy cow breeding objectives across countries provides a high-level view of where national priorities converge or diverge. Such comparisons help identify populations with compatible selection goals, informing the strategic sourcing of germplasm to accelerate national genetic gain while broadening the genetic base. Rankings of 49,450 Holstein-Friesian artificial insemination sires across 22 dairy breeding indexes differing in component traits, trait weightings, and genetic evaluation methodologies, were examined. Pairwise correlations between indexes ranged from 0.24 to 0.87; 41% of correlations exceeded 0.70, while only 11% were greater than 0.80. Indexes designed for indoor, confinement-based systems had weaker average correlations with grazing-focused indexes from Ireland and New Zealand (0.48–0.50). In contrast, stronger correlations were observed among confinement-based indexes (mean of 0.69). The correlation between the Irish Economic Breeding Index and New Zealand Breeding Worth was moderate (0.56). When analyses were restricted to milk production components only, correlations among sub-indexes averaged 0.78, ranging from 0.29 (Uruguay and Poland) to 0.96 (Japan and Spain). Countries also differed in their approaches to trait weighting. Weights were derived from economic models in 38% of countries, while 29% relied solely on desired-gain approaches; the remaining countries adopted a hybrid of economic and desired-gain weighting. With the exception of Ireland, the UK, the USA, Israel, and Uruguay where genetic evaluations are reported as predicted transmitting abilities, most countries present milk production evaluations as estimated breeding values. Across countries, 10% update their genetic evaluation base population more than once per year, 38% update annually, 38% every five years, and the remaining 14% on an irregular basis. Health traits are increasingly being considered for inclusion in future breeding objectives, alongside traits related to environmental impact and feed efficiency. Overall, these findings highlight how economic, biological, genetic, and policy considerations shape national breeding objectives and help explain international differences in genetic trends and performance outcomes.

BIOGRAPHY

A senior principal investigator in quantitative genetics at Teagasc for the past 25 years holding professorships at several (inter)national universities; as well as research, Donagh is strongly engaged in third-level education and extension to a wide range of different stakeholders both nationally and globally. He is also director of the €60m VistaMilk research center on AgTech where the focus is on delivering fundamental and translational research in digital dairy production and processing across the whole soil-to-society food chain. Following his BAgrSc at University College Dublin, he undertook a PhD in quantitative genetics in a collaboration between Teagasc, Wageningen

University and University College Dublin, Ireland followed by an MSc in Bioinformatics at University College Cork. Donagh has over 400 peer reviewed scientific journal publications across species in phenotyping strategies, breeding goal development and deployment, genetic evaluations, genomic predictions and development of value-creating decision support tools.

CFIT – Cattle Feed InTake measured in commercial Holstein herds with 3D cameras

Jan Lassen

Viking Genetics, Denmark

ABSTRACT

In this presentation Jan Lassen will talk about the 3D camera-based system Vikinggenetics developed over the last 10 years called CFIT (Cattle Feed InTake). The system is installed in 40 herds and provide data on individual feed intake and body weight measurements on a daily level. This means that the data used in the NAV feed saved evaluation for Holstein is based on more than 11000 genotyped cows born after 2020. The presentation will both include results from phenotypic and genetic analysis and provide examples of situations where data has been used to improve daily management decisions.

BIOGRAPHY

A distinguished leader in dairy research and genetics, Jan Lassen serves as a Senior Project Manager at VikingGenetics and is an Adjunct Associate Professor at the Centre for Quantitative Genetics and Genomics (QGG), Aarhus University. With a PhD and a Diploma in Leadership from Business Academy Aarhus, bridging the gap between high-level scientific innovation and strategic project management.

Their pioneering research focuses on the intersection of artificial intelligence and animal science, specifically utilizing 3D camera technology and AI to analyze individual feed intake. A key figure in sustainable agriculture, they lead large-scale initiatives to quantify methane production in dairy cattle, aiming to integrate these complex phenotypes into genomic selection models.

Their career is marked by significant achievements, including: Scientific Leadership: Currently leading the ONIMIT project (19M DKR) and previously the CFIT project (22M DKR), focusing on on-farm methane monitoring and feed efficiency, Academic Excellence: Author of 70 peer-reviewed publications and 3 patents, maintaining an H-index of 39 with over 6,100 citations, Prestigious Awards: Recipient of the Innovation Fund Denmark Grand Solution Prize (2018)

and the Sapere Aude – Young Elite Scientist Award (2011).

Breeding for Lower Methane Emissions: A Data-Driven Approach

Raffaella Finocchiaro[1], Marcin Pszczoła[2]

[1] *Italian Holstein Breeders Association, Italy*
[2] *Poznań University of Life Sciences & Polish Federation of Cattle Breeders and Dairy Farmers, Poland*

ABSTRACT

Methane emissions from dairy cattle are an increasing societal concern that affects the livestock breeding industry. Reducing emissions is important not only from an environmental perspective, but also from an economic one, as lower-emitting animals are often more efficient and therefore more profitable. Multiple studies have shown that methane emissions in dairy cows are a heritable trait. Consequently, cattle breeding organizations in several countries have already implemented tools that enable farmers to select cows with the genetic potential for a lower environmental footprint. The greatest genetic progress can be achieved when selection pressure is applied directly to the trait of interest. Therefore, effective selection for lower methane emissions requires direct measurements. This involves analyzing air samples collected from cows. One practical approach is to install measuring devices-known as sniffers in automatic milking robots, enabling rapid and high-throughput monitoring of large numbers of animals. Combined with genotyping and international collaboration, these data create new opportunities to implement effective breeding programs aimed at reducing methane emissions in dairy cattle.

BIOGRAPHY

Raffaella Finocchiaro was born in Palermo (Italy) in 1971. In 1995 she got her Master's degree in Agricultural Science at the University of Palermo, where she remained till 1997 to undertake research in the field of Animal Breeding and Genetics. In 1998 she started her PhD project in Animal Breeding and Genetics, at the University of Milan. During her PhD, Dr. Finocchiaro focused her interest on molecular genetics applied to small ruminants.

After her PhD, she moved to the University of Palermo for a post doc position. Here she developed several research projects in the field of goat and sheep selection schemes and on genetic conservation of small populations reared in Sicily. Her other interests were the effect of lactoprotein genes as major genes affecting variability of quantity and quality of milk in population genetics and genetic improvement of livestock with the necessary background in quantitative

genetics, statistics and computer programming. She successfully applied for national and EU funding.

At the end of 2007 she started to work with dairy cattle at the Italian Holstein Breeders Association (ANAFI), where she is senior researcher at the Research and Development Office. Her main activities are:

1. Developing and implementing new selection traits, techniques and technologies for the Italian Holstein and Jersey breeds.
2. Developing, implementing and supervising genetic and genomic routine evaluation for all traits for Holstein and Jersey breeds.
3. Updating technicians from AI industry, researchers, farmers and students on the Associations' activities and service.

Lately her interests are also moving towards feed intake and methane emission in dairy cattle. Since 2015 she is part of the ICAR Feed & Gas working group.

Marcin Pszczoła is an Assistant Professor at the Genetics and Animal Breeding Department of the Faculty of Veterinary Medicine and Animal Science at Poznań University of Life Sciences, Poland, and Deputy Director of the Centre for Genetics of Polish Federation of Cattle Breeders and Dairy Farmers. He works in the field of animal breeding and genetics. His research focuses on improving the accuracy of genomic predictions for novel traits in dairy cattle and reducing their environmental impact by selective breeding to reduce methane emissions. He obtained his PhD in animal science from Wageningen University (the Netherlands). He is vice president of the Polish Society of Animal Production (PTZ), and vice president of the Commission on Animal Genetics of the European Federation of Animal Science (EAAP). He serves as the chair of the Scientific Board of the Animal – The international journal of animal biosciences.

Session 4 – The Future of Genetics

Future of genomic selection utilising AI and dense DNA data

Tomasz Suchocki

Wrocław University of Environmental and Life Sciences, Poland

ABSTRACT

The efficiency of modern animal breeding programs relies heavily on the precision of genetic evaluation models. While traditional linear statistical frameworks have been the industry standard for decades, they are limited by their inability to fully account for the complex, non-linear interactions within the genome. In this study, we implemented and evaluated advanced Deep Learning (DL) architectures as a superior alternative for processing large-scale genetic datasets to improve the reliability of estimations. We developed and tested multi-layered neural networks designed to handle high-dimensional genotype-phenotype mappings. Unlike conventional methods that assume additive gene effects, our Deep Learning models are capable of capturing epistatic interactions and other non-linear biological complexities. By utilizing sophisticated optimization algorithms and regularization techniques, we addressed the computational challenges associated with large-scale genomic data, ensuring stable and robust predictions. For the breeder, the application of Deep Learning translates into several direct economic and practical advantages:

Increased Reliability of Predictions: Our research shows that Deep Learning models significantly improve the accuracy of estimated breeding values compared to standard linear models. For a breeder, this means a lower risk of selection errors and higher confidence when choosing top-tier individuals for the next generation.

Maximizing Data Value: Breeders currently invest heavily in genotyping. We demonstrate that AI-based methods extract more valuable information from the same datasets than traditional statistics. This allows for a better return on investment (ROI) in DNA testing without requiring additional data collection.

Accelerated Genetic Progress: By providing more precise evaluations, Deep Learning enables faster genetic gain within existing breeding goals. This leads to a more rapid improvement in the herd's overall performance and profitability over time.

In conclusion, our work demonstrates that integrating Deep Learning into genetic evaluation pipelines provides a more powerful and flexible tool for modern animal breeding. By capturing the full complexity of the genetic code, we offer breeders a high-precision methodology to optimize their selection programs and ensure long-term economic competitiveness.

BIOGRAPHY

Prof Tomasz Suchocki is an Associate Professor at the Wrocław University of Environmental and Life Sciences, specializing in the intersection of mathematical statistics, biotechnology, and animal genetics. With a diverse academic background including a Habilitation (2019), a PhD in Biotechnology, and an MSc in Mathematics, they possess a rare and powerful combination of skills for solving complex biological problems through quantitative modeling.

Throughout their career, Tomasz Suchocki has held several key positions in both academia and the private sector: Academic Leadership: As a leading member of the Biostatistics team at the Institute of Genetics, the focus is on QTL modeling and the statistical analysis of genomic data. Industry Expertise: Currently a Big Data Analyst at Weartech Solutions, they apply machine learning and advanced data analytics to real-world challenges, Genomic Specialist: They serve as an expert for the National Research Institute of Animal Production, focusing on genetic markers and genomic breeding value estimation—a role they previously held at SHiUZ Sp. z o.o.

With 36 scientific papers published in JCR journals and 25 conference presentations, their research is internationally recognized. Their expertise spans a wide technical stack, including R, Python, and MySQL, and covers cutting-edge fields such as GWAS methods, NGS data analysis, and Machine Learning. International scientific internships at the University of Toronto and the Roslin Institute further underscore their commitment to global scientific collaboration.

Beef on Dairy: Consequences for Herdbooks

Martino Cassandro

National Association of Italian Friesian, Brown and Jersey Breeders, Italy

ABSTRACT

The increased focus on sustainability in beef production demands the development of new production strategies. Animal maintenance costs in dairy farming are shared between the production of milk from the dairy cow and meat from the culled dairy cows and calves, meaning that meat from dairy production systems has a markedly lower carbon footprint than meat from suckler calf production in which beef alone absorbs all animal maintenance costs. The competitiveness of beef from the dairy sector would be further increased by optimizing meat quality through improved management and breeding decisions. One solution, known as beef-on-dairy, involves using beef semen to produce calves intended for meat production from the genetically lowest-ranking (milk production) females in a dairy herd. Calves raised from

the dairy sector produce meat with a lower carbon footprint (per unit weight) and beef-on-dairy crossbreeding improves upon purebred dairy animals with regard to feed efficiency, carcass weight, carcass conformation, meat yield, and meat quality. Moreover, employing the beef-on-dairy strategy also leads to an increase in dairy herd income, particularly when crossbreeding with double-muscled beef breeds, which in Europe yield more valuable calves and obtain higher meat prices compared to other beef breeds. This increased value results from the higher carcass weights and superior EUROP conformation scores of Belgian Blue × Holstein crossbreeds (BBL × HOL) in comparison to purebred HOL and other beef-on-dairy crossbreeds sired by Angus, Hereford, Limousine, and Simmental breeds.

Use of Beef Semen is high-usage in France (~66–70%), Italy (>80% of members use beef semen), Germany (~25% of inseminations at peak). It is moderate or declining usage: Parts of Central Europe and North America, driven by replacement needs and market volatility. In Europe, the breed preferences are: Belgian Blue because of historically dominance, but linked to calving difficulty and calf mortality, Angus because of increasing use due to calving ease and market acceptance, Wagyu is dominant in Japan. Recently, BoD is often used strategically, rather than only on low-parity or low-merit cows. From the economics point of view, crossbred calves often sell for more than double the price of pure Holstein calves. In Germany, breeding values for calf weight and calf revenue are already used. A calf revenue breeding value was introduced in Germany in August 2025. The genomic approach on BoD could be very useful, considering that key tenderness genes (e.g., calpain, calpastatin) are already included in routine SNP chips in some countries. Genotyping of BoD calves, not just bulls, is considered essential for future evaluations.

However, there are some risks and challenges as the calf mortality remains high in many production systems, particularly with extreme muscling breeds. Moreover, potential reduction in pure dairy breeding population, although this is often offset by: increased use of sexed semen, reduced live animal exports, data fragmentation between dairy, beef, and slaughterhouse systems, different management systems (baby beef vs mature beef) complicated comparisons and slaughterhouse concerns in some regions regarding carcass quality and health (e.g. liver issues). In conclusion, will be needed to monitor international developments in BoD evaluation and market trends, to support dialogue among national breeders' association with ICAR and INTERBEEF working groups, providing an international service and comparison.

BIOGRAPHY

Martino Cassandro holds a degree in Agricultural Sciences at the Faculty of Agriculture of the University of Padova in 1990. From September 1993 to April 1994, he spent a period of collaboration and training at the Centre for Genetic Improvement of Livestock (CGIL) – Department of Animal & Poultry Science, University of Guelph, Ontario, Canada. In September 1995 he holds a PhD in Animal Science. Later on, he continued his training and research activities at the Department of Animal Science of Padova and at the National Association of breeders of Holstein Friesian cattle. In March 2000 he became a researcher at the Faculty of Agriculture in the scientific sector (SSD) AGR/17 "Animal Breeding and Production". In October 2002, he became Associate Professor and since 2006 he is full professor in SDD AGR/17 – "Animal Breeding and Production" at the Faculty of Agriculture of Padova.

At present, in his scientific career, Prof. Martino Cassandro manages around 40 million euro of research projects, and he has coordinated many working groups in the PI (principal investigation) position. Since 2012, he is President of the World Association of Poultry Science Italian branch (WPSA-Italy).

Since March 1, 2021, he has been General Director of ANAFIBJ – National Association of Italian Friesian, Brown and Jersey Breeders. He is author of more than 500 papers, of which 243 as journal articles listed in Web of Science, 6 book chapters and numerous abstracts in proceedings of Italian and international congresses. He holds 3 patents on the method of breeding poultry species for human consumption and on the genomics of the dairy attitude of cow's milk and has an h-index of 43.

Interbull Centre and EU Reference Centre-Zootechnics in future European/Global cattle breeding

Toine Roozen

Interbull Centre and EU Reference Centre-Zootechnics, Sweden

ABSTRACT:

The Interbull Centre has supported the dairy industry with accurate genetic information on bulls of the major dairy breeds for use by importers and exporters, thereby facilitating selection of best genetics for different countries, environments or breeding goals since 1996. Holstein populations from 32 countries are included in the Interbull evaluations.

The Interbull Centre is also the EU Reference Centre (EURC) for Zootechnics (Bovine Breeding), assisting cattle breeding organisations in the European Union with the implementation of the EU Animal Breeding Regulations through the

promotion of harmonisation and improvement of the methods of performance testing or genetic evaluation.

We will look at how Interbull and EURC continue assisting breeding organisations and farmers accessing accurate genetic information through the genetic revolution in cattle breeding.

BIOGRAPHY

Mr. Toine Roozen is the Director of the Interbull Centre and the European Union Reference Centre.

Toine has an MSc in Animal Genetics from Wageningen University, and an MBA from Oxford University. Toine grew up on a pig farm in the South of The Netherlands. He then worked 21 years in the UK – in pig breeding (Pig Improvement Company) and knowledge transfer – before joining the Interbull Centre in 2015.

Gene Editing and New Genomic Techniques (NGT)

László Bognár

Holstein Hungary, Hungary

ABSTRACT:

New Genomic Techniques (NGTs) are moving rapidly from research into practical breeding, offering powerful opportunities to accelerate genetic progress and address emerging challenges in animal health, welfare, and environmental resilience. At the same time, they raise legitimate questions around governance, long-term impacts, and societal acceptance. This presentation outlines a pragmatic European approach for integrating NGTs into livestock breeding programmes – one that enables innovation while safeguarding public trust and genetic sustainability.

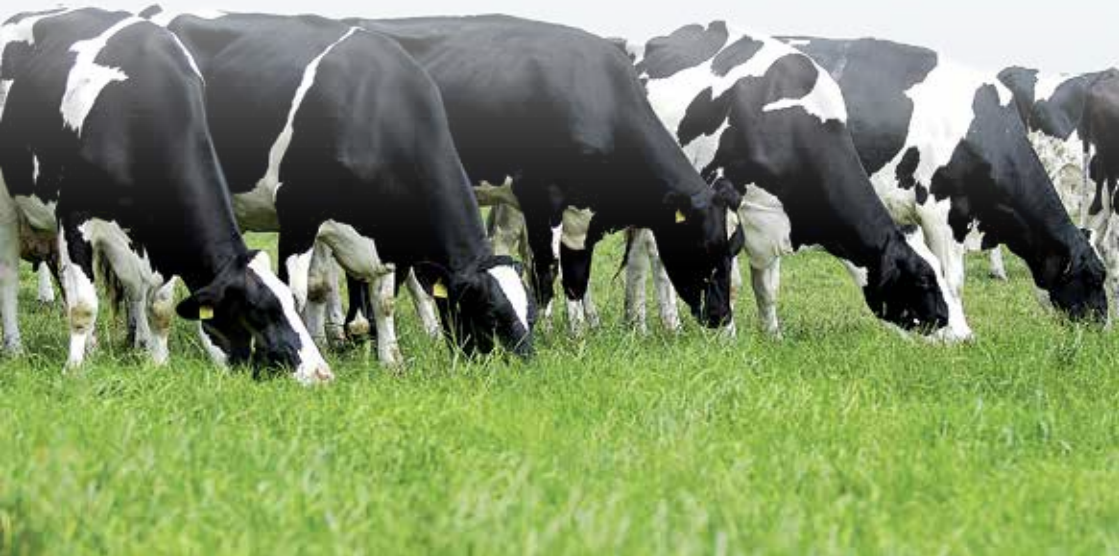
A central focus is regulatory clarity. Europe needs a workable framework that prevents its breeders and companies from being excluded from global markets. However, highly specific regulatory regimes risk being overly restrictive and difficult to enforce in practice, particularly because identification and traceability of gene-edited animals can be costly and, in many cases, unfeasible. For NGT-1 animals, a proportionate approach aligned with conventional breeding pathways is proposed, while ensuring that credible labelling options remain available for organic producers.

The talk highlights tangible welfare applications (e.g., polled gene to avoid dehorning; slick gene for heat tolerance), alongside the need for ethical safeguards to prevent misuse that could compromise welfare. Environmental and biodiversity aspects are addressed through the dual lens of opportunity

(reduced inbreeding, enhanced resilience) and risk (narrowing diversity if a small set of "best" edits becomes dominant), underscoring the importance of continued within-breed biodiversity monitoring.

Finally, the presentation explores consumer trust and market acceptance, emphasizing transparent communication of benefits and limitations, including the realities of traceability without strict farm-to-fork systems. With global competitors already deploying these tools, Europe must adopt a harmonised, proportionate strategy that supports competitiveness and responsible innovation – using NGTs to solve real problems rather than to create new ones.

Index of Authors



ehrc2026.pfhb.pl/EHRC2026_program