

GD BIOTECH'S Newsletter

Focus on Microbiota

It has been a fruitful year for GD Biotech in the microbiota field:

- ✓ 1 patent on production longevity
- ✓ 7 publications in various scientific journals
- ✓ Few awards and collaborations to research consortium
- ✓ Furthermore, the opening of our cattle farms for field trials has proven a relevant service addition to our clients

Those achievements support GD Biotech position as one of the leading experts on cattle microbiota, and livestock microbiota overall.

We are pleased to share with you a selection of our latest contributions and progress in the fields of animal nutrition and performances, sustainable development, and discovery of new markers and probiotics.



Animal microbiota

This section reports a curated selection of publications on dairy cattle and pigs. Also, we took great care not to limit ourselves to a single type of microbiota.

This first study demonstrates significant associations between the faecal microbiota and the performance of dairy cows at the whole lactation scale, with being abundant in the high-yielding animal. Some *Bifidobacterium* strains might even prove relevant candidate for probiotic trials. Overall, this work shows the importance of considering the lower gut microbiota in the dairy industry.

Bifidobacterium abundance in the fecal microbiota is strongly associated with milk traits in dairy cattle. L. Brulin, S. Ducrocq, G. Even, MP. Sanchez, S. Martel, S. Merlin, C. Audebert, P. Croiseau, J. Estellé

[Animal](#)

This second study explores the vaginal microbiota in dairy cows, a type of microbiota relatively poorly depicted to date. It is also noteworthy that this work uses one of the largest cohort of animals (1171) from commercial herds. It highlights the associations between the vaginal microbiota and several phenotypes and stress out the interest of better understanding this ecosystem to improve the reproductive health status of cows.

Characterization of bovine vaginal microbiota and its relationship with host fertility, health, and production. L. Brulin, S. Ducrocq, G. Even, MP. Sanchez, S. Martel, S. Merlin, C. Audebert, P. Croiseau, J. Estellé

[Sci Rep](#)

This third study investigated the fecal microbiota of the Holstein cows and its correlation to dairy performances.

The fecal microbiota of Holstein cows is heritable and genetically correlated to dairy performances.

L. Brulin, S. Ducrocq, J. Estellé, G. Even, S. Martel, S. Merlin, C. Audebert, P. Croiseau, MP. Sanchez.

[Journal of Dairy Science.](#)

Last, but not least, we are delighted to share our contribution to the work undertaken by Phileo by Lesaffre. This



study concludes the beneficial effect of branched yeast beta-glucans in reducing the dissemination of *Lawsonia intracellularis* between pigs in a given herd.

The effect of yeast-derived β -glucans in reducing the adverse outcome of *Lawsonia intracellularis* in finishing pigs. L. Rhayat, G. Even, TG. Kiros, G. Kuhn, S. Lebrun-Ruer, C. Audebert, J. Schulthess.

[Frontiers in Animal Science](#)

A more extensive review of our published work on microbiota is available on GD Biotech's website: www.gdbiotech.eu



Our services

GIVE SENSE TO YOUR DATA

We are delighted to announce that MicIV (Microbiota Insight Viewer) is about to become a registered trademark. MicIV is a personal interface for valorisation and visualization of microbiota data from high throughput sequencing. It is completely tailor-made and scalable to enable optimal use of microbiota analyses. The statistical analyses are performed by our experts in bio-analysis, the analytical outputs are made available to you in interactive mode. This user-friendly web-interface allows you to exploit your data analysis in the best way: in visual form to understand the main trends interpretations of differential analyses, visually and statistically analyse the microbial diversity of your samples to compare the groups of samples you consider relevant.



If you want to test MicIV you can log in to access the demo version:

<https://miciv.genesdiffusion.com/auth/login>

MICROBIOTA PROJECTS

GD Biotech is involved in several projects as:

« **METHANE 2030** » is a French collaborative initiative led by APIS-GENE.



Private players, inter-professional organisations and scientists are making a collective commitment to METHANE 2030 to speed up the reduction of enteric methane emissions in cattle farms.

GD Biotech oversees the sequencing of the faecal microbiota samples for this project.

MICRONOR: Studying the microbiota of Normandy cows to improve production, disease resilience and longevity



The intestinal microbiota is considered as the second mammalian genome. It contains as many bacteria as there are cells in the body. These bacteria contain 100 times more genes than the host genome. Discoveries about the role of the microbiota on its host are constantly increasing: absorption and synthesis of nutrients, development of the intestine, intestinal function, protection against pathogens, bone homeostasis, synthesis of neurotransmitters, impact on behaviour and pain perception, etc.

In dairy cows, it has been shown that there is a link between ruminal and intestinal microbiota. They appear to influence animal performance, health and longevity. The heritable bacteria in the rumen of cattle are correlated with the cow's ability to obtain energy from its feed. It is possible to prolong the productive life of cows and improve milk production performance in dairy cows by influencing the gut microbiota.

A proof of concept has been produced on the possibility of modulating the genetic potential of bulls according to the performance of the cows and their environment, analysed through their intestinal microbiota (GHP Prim'Holstein: Gènes Diffusion).



The MicroNor project aims to develop a methodology that will enable the Normande breed to characterise the breeding environment through its gut microbiota, with a view to selecting the most suitable animals and practices for improving the performance, resilience and environmental impact of farms.

This project, led by Littoral Normand and co-financed by the European Union and the Normandy Region, involves the partners Origen Normande, Gènes Diffusion and Seenovia.

2600 dairy cows from 40 farms will highlight :

- ✓ Interactions between genotype and microbiota to select the best adapted animals for the breeding environment.
- ✓ Interactions between microbiota and performance, to identify the most favourable microbiota.
- ✓ Interactions between practices and microbiota to identify the practices that are best suited to the development of favourable microbiota.

FIELD TRIALS

As part of Gènes Diffusion Group, we benefit from privileged access to cattle commercial farms. Hence, we can provide complete services to our customers, from the set-up of field trials to the microbiota investigation, in real conditions and with a statistically relevant number of samples. If you are interested in conducting such trial, do not hesitate to contact us: contact@gdbiotech.eu

OUR PRODUCTS

« GHP » PROGRAM (GENETIC HIGH PERFORMANCE)

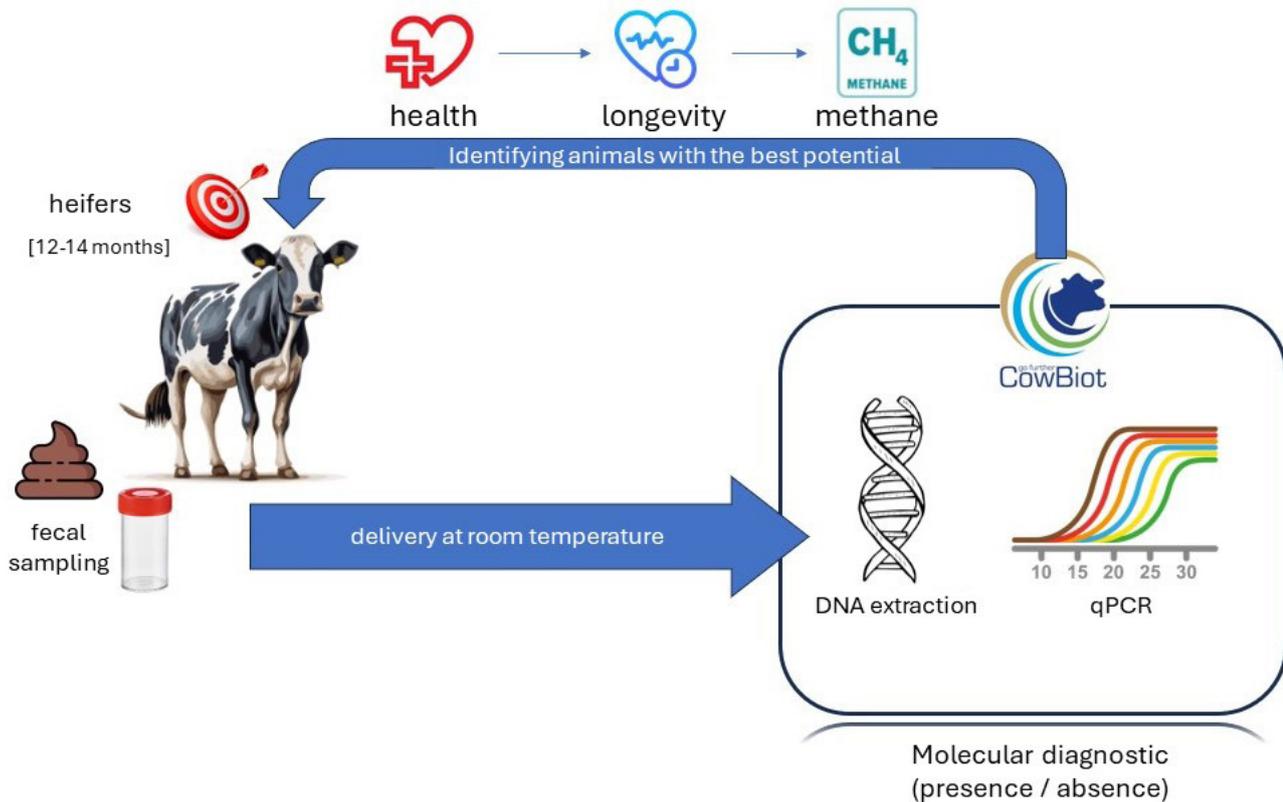
GHP is one of the only commercial programs worldwide, including microbiota analysis and use on a routine basis. Supported by the analysis of the herd's microbiota, we produce personalised indexes to help breeders to choose the most suited genetics for their herd objectives. In 2024, the program originally running on Holstein cows has been extended to the Charolais breed and we have reached the number of 2800 animals in the program, strengthening our unique expertise on the bovine microbiota.



COWBIOT®

Livestock farming accounts for about 15% of greenhouse gas emissions worldwide, and dairy cows for around 8% of methane emissions.

Being able to predict and promote the productive longevity of cows is a key factor in reducing the carbon impact of livestock. Up to date there is a lack of solutions to take objective, data-driven decisions for herd management renewal and culling strategy.



We recently discovered and patented a **biomarker for productive longevity in dairy cows**. This biomarker is detected by a simple PCR test on the animals' intestinal flora. The test results can be used to pilot the renewal and culling strategy, in order to breed only the heifers needed and limit culling, thereby reducing the herd's carbon footprint without affecting its economic performance.

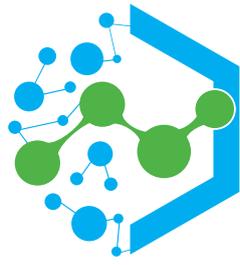
Our initial estimates in the field are of the order of at least **-18% CO₂eq /kg of milk produced** (tests carried out on over 1,500 cows and 20 herds).

As dairy industrial, states and people are trying to align and target 30% reduction in methane emissions by 2030, CowBiot® might represent a relevant part of the solution.

In that regard, CowBiot® innovation has just been awarded during the "Livestock Summit 2024" (Sommet de l'élevage, Cournon, France), 1st world fair for sustainable livestock farming.



**SOMMETS
D'OR 2024**



GD Biotech
AGRI-AGRO SOLUTIONS

**FOR ANY QUESTION,
PLEASE CONTACT US:**

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