



A knowledge-based and sustainable **DAIRY** industry

STRATEGY

2026 Danish Dairy
Research Foundation



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PRINT: BØRGE MØLLER GRAFISK I/S

FALL 2022





What awaits around the corner?

The question is easy to pose, but hard to answer. At the Danish Dairy Research Foundation, we not only wonder about developments, guessing what the future might look like – we want to create the future. We do that by launching research projects, each of which in their field contributes to generating results, which form the basis of tomorrow's dairy industry and a knowledge-based and sustainable sector that continues to deliver to satisfy consumer and customer demands.

The challenge at hand is to develop sustainable products that remain healthy, safe, and tasty, at the same time contributing to global food security. There are increasing demands on sustainability and climate footprint of products and production itself, and – targeting a 70 percent reduction by 2030 and climate neutrality by 2050 – a united industry has set an ambitious goal, which requires short-term as well as long-term solutions being brought into play.

The Danish Dairy Research Foundation contributes to the necessary transition through projects that, e.g., reduce food waste and resource consumption, and in many of these projects we seek to ensure a more sustainable world. Moreover, further insight into the potential of dairy relative to disease prevention, health, and nutrition due to its unique nutrient density could contribute to the development of sustainable dietary patterns.

The long tradition of close research collaboration between knowledge institutions and the dairy industry

in areas such as technology, food safety, and nutrition will be key when developing sustainable products and technologies of the future.

Research is about the long haul, and therefore a four-year strategy such as that of the Danish Dairy Research Foundation will reflect the objective of building on top and reinforcing the areas that have not yet been thoroughly explored.

In 2017, the dairy industry – together with the rest of the food industry – helped launch the strategy 'World-class food innovation towards 2030 – Danish research-based solutions for global, sustainable food production'. In 2022, it was followed up by a supplement, 'New knowledge creates the world's most climate-optimized food'. Also this time, a united food industry, including the Danish Dairy Research Foundation, in close partnership with universities, research and technology organizations, and other knowledge institutions, have joined forces to give their views on where there is a lack of knowledge and how research can help take this further.

With 'Strategy 2026', the Board of Directors of the Danish Dairy Research Foundation wishes to present an idea of how we can create the future together.

Happy reading!

Board of Directors of the Danish Dairy Research Foundation

Danish Dairy Research Foundation

In 2021, the total Danish milk production was 5.6 billion kg. The milk is processed by the 24 Danish dairy companies into a variety of products that are in demand and sold to customers and consumers in Denmark and on about 150 markets worldwide. Danish dairy companies' sales on the Danish market total approximately DKK 10 billion with export earnings amounting to more than DKK 20 billion, which corresponds to approximately 17% of the total export value of Danish food (2021). There is also a significant, globally oriented downstream industry with strong links to the Danish dairies, to include ingredients, packaging, and process equipment. The dairy companies and the downstream industry have a long tradition of utilizing raw materials and by-products optimally – i.e., producing more with less – and of delivering tasty, safe, natural, and healthy products.

Strong research and development collaboration efforts between dairy companies, knowledge institutions and suppliers are vital for the dairies to continue to provide the answers to tomorrow's challenges and thus remain competitive.

In 1990, the dairies established the Danish Dairy Research Foundation, and since then, a three-digit million amount has been invested in research at the universities and other knowledge institutions, via the Foundation.

The Danish Dairy Research Foundation initiates and coordinates research in close interaction between the dairy industry and, e.g., universities, hospitals, and the downstream industry. The projects are pre-competitive

in nature and support research-based innovation at the dairies. By competitive research is meant early research, in which the parties involved do not compete, but rather collaborate on projects.

The objective of supporting dairy research is also to continue to ensure relevant, research-based education of future candidates, to include dairy and food engineers, as well as securing the education of PhD's and postdocs with insight into the dairy industry's opportunities and challenges. The dairy industry is convinced that a strong and dynamic dairy research environment nurtures strong candidate, PhD, and postdoc programs that are attractive to young people.

The Danish Dairy Research Foundation consists of a Board of Directors and a Secretariat. The board is balanced in its composition of 12 members from the dairy industry and the Danish universities.

The Board of Directors determines the strategic direction of the Foundation, which is reflected in the strategy and the annual call for expressions of interest. The Secretariate facilitates – in close cooperation with the researchers – the effective implementation of the projects supported and ensures that the results are communicated to the relevant stakeholders.

The Danish Dairy Research Foundation is a non-commercial foundation administered by the Danish Agriculture & Food Council and the Danish Dairy Board.

VISION

A KNOWLEDGE-BASED AND SUSTAINABLE DANISH DAIRY INDUSTRY best-in-class within healthy and safe products.

MISSION

The Danish Dairy Research Foundation **SECURES THE LEADING POSITION OF THE DANISH DAIRY SECTOR** by supporting relevant pre-competitive research.

The Danish Dairy Research Foundation supports applied dairy research

The projects must benefit the entire Danish dairy sector. The Danish Dairy Research Foundation's research, looking forward, will focus on three main strategic areas:

- Technology
- Food safety
- Health & nutrition

The interdisciplinary research activities take place in a binding collaboration between the Danish Dairy Research Foundation, universities, hospitals, research and technology organizations, and to a great extent, with relevant dairy partners and other industries. We welcome international cooperation, and the Danish Dairy Research Foundation has a significant role in maintaining international network and collaboration relationships.

The Danish Dairy Research Foundation initiates annual research projects with total grants of approximately

DKK 12-15 million. This is done partly via the Foundation's own funds and partly via applications to the Milk Levy Fund and the Dairy Rationalization Fund. A typical project receives DKK 1-3 million in grants and continues over a 1-5 year period. Projects are always geared with funds from external public and private foundations and grant schemes, as well as contributions from participating companies and/or research institutions.

The current focus areas and selection criteria will be set out in the call for expressions of interest. It is important that the projects are at a high professional level and have clear objectives and dairy relevance.



A close-up photograph of several stacked petri dishes containing bacterial cultures. The cultures appear as yellowish, opaque layers. Each dish has a small white label with black text. The labels on the visible dishes read "Plain LS HB 2" followed by "78" and a small blue number (1, 2, or 1). The background is blurred, showing more petri dishes.

The Danish Dairy Research Foundation does NOT support

The strategy primarily focuses on utilizing the raw milk product from the time it arrives at the dairy and all the way until it is used by the consumers or further processed by the customers. The quality of the raw milk product commands great awareness by the industry, and funds for this area can be applied for, e.g., via the Milk Levy Fund's pool for the primary area. The Danish Dairy Research Foundation retains focus on how the quality of milk has an impact on further processing, product composition, quality, and health.

The Danish Dairy Research Foundation *does not* support projects that have the character of product development.

As a point of departure, and for financial reasons, the Danish Dairy Research Foundation *does not* support major equipment investments.

The Danish Dairy Research Foundation *does not* support projects that solely relate to the communication of research results.

Three focus areas



The three areas are described in more detail on the following pages. They do not represent an exhaustive list of areas where the dairies need research, but rather address very significant areas of pre-competitive research.



In the period until 2026, the Danish Dairy Research Foundation will have targeted focus on the following topics within the three main areas: Technology, Food safety, and Health & nutrition. All three main areas are based on the desire for increased sustainability, less climate impact, better nutrition, and increased integration of digitalization in the research work.

VISION: A KNOWLEDGE-BASED AND SUSTAINABLE DANISH DAIRY INDUSTRY BEST-IN-CLASS WITHIN HEALTHY AND SAFE PRODUCTS

TECHNOLOGY

IN PERSPECTIVE OF:

Complete commodity utilization, to include utilization of side streams.

Commodity quality, as an effect of changes in primary production.

Process technologies – such as fractionation, alternative thermal processes, recombination and extrusion, as well as packaging.

Shelf life, to include stabilization of products and bio-preservation.

Fermentation and enzyme processes – understanding and control of microbial metabolism and enzyme processes to achieve optimal functionality.

Tailor-made taste and texture.

Basic understanding of food formulation, to include pure formulations and mixed formulations (e.g., milk and plant-based).



FOOD SAFETY

IN PERSPECTIVE OF:

Measurement methods (new analytical methods, online/at-line).

Risk assessment, to include toxins and products at neutral pH.

Traceability and documentation.

Microbial genetics.

Preservation – prediction of risk and shelf life.

Critical contaminants (e.g., detergents and accumulation of undesirable substances formed by heating or by concentration).

Allergens.

Use of omics technologies to understand and document quality and food safety.



HEALTH & NUTRITION

IN PERSPECTIVE OF:

Research into a **sustainable, climate-friendly, and nutritious diet.**

Effect of the food matrix, to include the uptake of micronutrients and vitamins.

Prevention and remedy of lifestyle diseases.

Research into personalized nutrition throughout life (bone and muscle health, cognitive maintenance, energy needs).

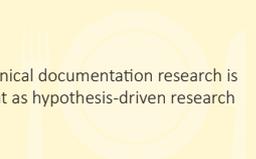
Growth (muscles and bones) and **cognitive developments in children.**

Influence on **satiety and weight regulation.**

Better understanding and maintenance of a **healthy gut.**

Financially affordable and nutritious solutions.

Note: Relevant clinical documentation research is given equal weight as hypothesis-driven research projects.



SUSTAINABILITY (CLIMATE, CARBON FOOTPRINT & NUTRITION) – DIGITALIZATION

TECHNOLOGY

It is essential to understand the molecular properties of milk constituents and the way in which they interact with other components of the food matrix during processing, storage, and at the end user.

A better understanding of how processing, packaging, and storage impact the quality and shelf life of the products is also necessary to develop the products and dairy processes of the future. Here, fermentation and enzyme technologies are key research areas relative to being able to produce and control the quality and shelf life of dairy products, to include creating taste and texture experiences for the consumers. Data science, to include artificial intelligence, is expected to become an essential tool for both better understanding of the possibilities and for rationalization of the solutions.

In a world where resources are under pressure, it is important to look at how we can produce more with less, i.e., make the best use of raw materials and resources. Thereby, we can secure sustainable value chains from raw materials to end products.

What will be the most significant challenges for the dairy industry in the technological field in the years to come?

A major challenge will be to ensure sustainability in everything we do – resources are under pressure, and we must research how we can make maximum use of all value streams. Another major challenge will be to develop new products for consumers – products that will also include plant ingredients. In terms of research, we have come a long way in understanding the dairy matrix – and our broad technological and texture/structure knowledge will be a strong starting point for new research achievements. We must also remember to continue to focus on technology developments in order to continue to produce the best products in a competitive manner.

How will research in this area ensure that the dairy sector becomes even more sustainable?

First and foremost, it is important to relate to the area in an interdisciplinary perspective. We need researchers in technology, process optimization, chemistry, physics, microbiology, sensory disciplines, data, and consumer science to work together to find solutions that leave the least possible footprint and feed as many people as possible.



Interview with Lars Dalsgaard, Chairman of the Board of Directors of the Danish Dairy Research Foundation and SVP, Arla Foods Innovation



FOOD SAFETY

Danish dairy production is characterized by well-documented, high food safety standards, which are essential to ensure and maintain customer and consumer trust.

Proven high food safety throughout the value chain is crucial for entering new markets and for retaining existing customers.

At the same time, new product formulations, new legislation, methods of processing, changed and longer distribution routes, as well as changing consumption patterns are constantly challenging how food safety can be maintained. Therefore, it is essential to be at the forefront of future requirements and opportunities for continued food safety.

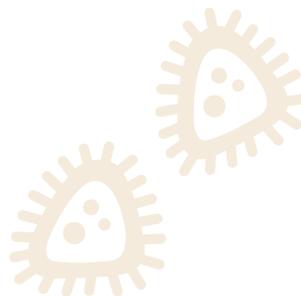
Documentation through precise and validated measurement methods, traceability, and prediction of risks and shelf life are all key elements when it comes to meeting the food safety requirements of the future.

What will be the most significant challenges for the dairy industry in food safety in the years to come?

To be absolutely the best at making the products that consumers can be comfortable with. For example, the emergence of new energy-saving technologies or modified product formulations will require us to be alert to the risk that the new forms of production do not compromise food safety. We must never compromise on that!

How will research in this area ensure that the dairy sector becomes even more sustainable?

We will conduct research into the development of valid measurement technologies and methods for predicting risks and shelf life. In this way, we can, for example, reduce the number of trials prior to launching new products. In addition, the research will help reduce food waste and ensure that we continue to have our documentation in place.



Interview with Poul J. Pedersen, Chairman of the Danish Dairy Research Foundation's 'Technology & Safety' Coordination Group and CEO, Thise Mejeri



HEALTH & NUTRITION

We need a better understanding of the role of the dairy matrix and milk ingredients relative to health and nutrition throughout life.

It is key to have a deep insight into how the milk components alone and in interaction with other food components support our nutritional needs and health, as well as prevent diseases, to include not least lifestyle diseases across the different age groups.

There is also a need for a thorough understanding of how brain function, bones, and muscles can be strengthened in order that these vital functions are maintained throughout life. Finally, we need to understand how we can offer nutrition tailored to the needs of the individual, so that we don't get too much or too little – irrespective of where on the planet we live.

At the same time, there is a need for research into nutritionally healthy and economically and culturally acceptable diets, which simultaneously leave a minimal environmental and climate footprint.

What will be the most significant challenges for the dairy industry in the field of nutrition and health in the years to come?

Sustainable nutrition – It is a topic of global importance as people everywhere struggle to address rising incidence of chronic diseases and nutrient deficiencies while conserving limited natural resources. Sustainable nutrition means ensuring that healthy, nutrient-dense foods are available, affordable, and culturally relevant, while conserving environmental resources and supporting communities. Understanding the dairy sector's opportunities for developing healthy diets that prevent and protect against the devastating effects of malnutrition, lifestyle diseases, such as obesity, diabetes, and cardiovascular disease, is becoming more important than ever. Finally, a huge challenge will be that we are getting older – and, therefore, we must find solutions, so that the diet can be adapted to the individual's needs over a long life – from the first sign of life until we close our eyes for the last time.

How will research in this area ensure that the dairy sector becomes even more sustainable?

One of the things we need to focus on is that resources become scarce when the global population increases. Research needs to be done on “how low can you go” – that is, how little can we settle for when it comes to optimal nutrition? In doing so, we ensure that there will be enough for everyone – and that this will be possible in the most sustainable way.



Interview with Henrik J. Andersen, Chairman of the Danish Dairy Research Foundation's 'Health & Nutrition' Coordination Group and Senior Executive R&D Advisor, Arla Foods



In Denmark, we have a long tradition that the dairy industry, universities, hospitals, and other knowledge institutions work closely together. University representatives on the Board of Directors of the Danish Dairy Research Foundation put into words why the cooperation is fruitful for all parties:

“In the projects under the Danish Dairy Research Foundation, there is very often a close contact between the industry and the knowledge institutions, and here we typically experience an open and transparent knowledge exchange. Many of the projects have participation from companies, which provide access to strategically relevant issues for the researchers. At the same time, the collaboration gives companies access to national and international networks – and not least very rapid transfer of knowledge that can be used by the companies in their product and process development as well as documentation work. When there is company participation in the projects, it is a “seal of approval” for relevance, and therefore, there will often be a better effect of the results. The projects also provide opportunities for early sparring on future focus areas, which ensures that we jointly put the most important research topics on the agenda. The collaboration via the Danish Dairy Research Foundation also helps to strengthen the educational environments through the involvement of BSc, MSc, and PhD students and by creating research-based teaching.”

Characteristics of a good project collaboration:

- That there is mutual understanding of the roles in the project, that there is respect for the contributions and competencies of other professional groups, and respect for what is important for both knowledge partners and companies.
- That the collaboration and the lines of responsibilities are clearly defined, and there is a plan for methods and implementation of the project, with clear goals and with an openness and discussion of what to do when the original plan does not work.
- That there is a legally viable cooperation agreement that considers the interests of all parties.
- That there is ongoing communication about both the good and the bad in the project process.
- That good relationships are developed – creating an environment that fosters new ideas and projects.

This is how the Danish Dairy Research Foundation functions

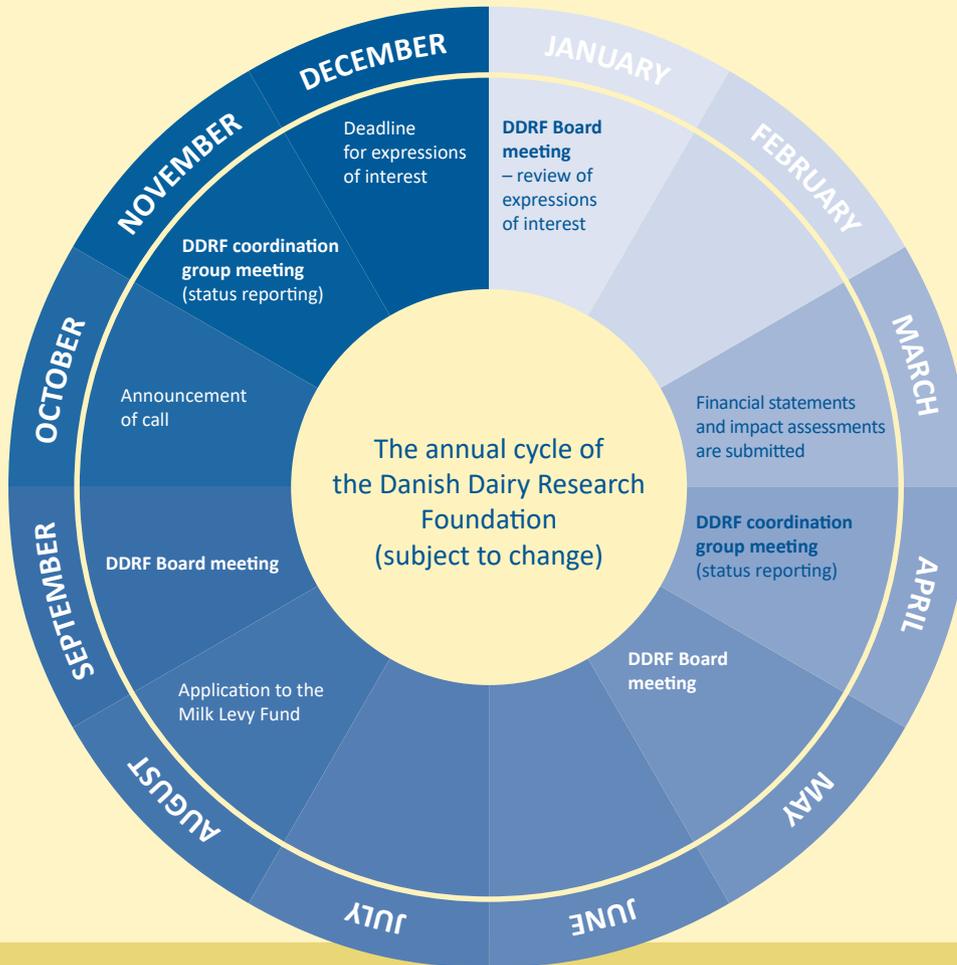
The primary activities of the Danish Dairy Research Foundation focus on projects. The life of a project as well as the annual cycle of the Foundation are here schematically outlined, subject to the proviso that dates can be staggered. See also the Foundation's project guide, which can be downloaded from the website (danishdairyboard.dk/research)

The industry follows the projects closely through participation in two professional coordination groups, which cover all the research projects of the Danish Dairy Research Foundation.

In the coordination groups, we offer a professional community for both experienced researchers, young PhD's, and postdocs, as well as employees at the dairies and in the downstream industry working in development and research. The groups meet twice a year to exchange knowledge and discuss results, new ideas, projects, and funding.

The two coordination groups are led by a dairy representative.





AT PROJECT START:

- Documentation of residual financing
- Cooperation agreement
- Presentation of project in Mælkeritidende
- Presentation of project at coordination group meeting

DURING THE PROJECT PROCESS:

- Publish and disseminate results
- Publications to be sent to the Danish Dairy Research Foundation prior to submission
- Copy of published material to be submitted to the Secretariat

AT PROJECT COMPLETION:

- Final report in writing
- Final reporting at coordination group meeting
- Final financial statement provided
- Article on project results forwarded to Mælkeritidende

WANT TO KNOW MORE?

Please visit our website. Here you can find information about the Secretariat, the composition of the Board, ongoing and completed projects, application deadlines, and news about research activities.

See more on danishdairyboard.dk/research

DANISH DAIRY RESEARCH FOUNDATION

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