National Food Institute

At the forefront of healthy, safe and sustainable food

Urgent need to develop a sustainable future
Our linear economic growth paradigm is challenging the boundaries of our planet. If we are to live within the boundaries, we need to close the loops so the resources we use constantly become resources for new processes. Circular economy describes this new and necessary paradigm.

According to forecasts from the UN, the world population will grow by more than two billion people over the next decades. With so many more mouths to feed, the UN estimates that in 2050 we must produce 70% more food than we do today. At the same time food consumption accounts for approximately a quarter of the total climate impact per person.

In the food sector, this has multiple implications.

Food production and processing has traditionally generated huge volumes of sidestreams, which the industry must better utilize. New and better food products must be developed, and new and gentler production methods that emit less CO2 are needed.

Urgent need to develop a sustainable future

Calls for sustainable technological solutions
These game changers require that industry, authorities and research institutes challenge existing and develop new technological developments and new regulatory frameworks – areas in which DTU is a front-runner.

Interdisciplinary collaboration across many research disciplines is imperative and the work within the National Food Institute is done through two main approaches:

The National Food Institute delivers its outcome through an interdisciplinary cooperation between the disciplines of e.g. chemistry, epidemiology, microbiology, modeling, nutrition, technology and toxicology.

One, by utilizing the possibilities that arise through digitalization. This includes being smarter in the innovation process by applying bioinformatics to identify valuable compounds in sidestreams and new raw materials. It also includes developing decision support systems for controlling the food processing, which can lead to e.g. higher food safety, better quality and lower resource use.

Two, by developing new technology that can make products or production processes more sustainable. This includes developing and refining the jumps in new technology to make them applicable in the production and processing of foods.

At the same time, a continuing focus on health and ensuring a high level of food safety is necessary to meet consumer expectations and regulatory requirements.

A driving force in the green transition
Through research and innovation, the National Food Institute is a driving force in the green transition towards a more healthy and sustainable future.

The National Food Institute:

- identifies valuable ingredients, like peptides, that are present in sufficient quantities in food processing sidestreams and develops extraction processes that are scaleable and profitable on the market.
- studies and develops fermentation processes for transforming low-value sidestreams into new valuable food ingredients such as amino acids or flavours.
- finds and develops new raw materials from underutilized marine sources like algae.
- develops digital twin solutions for the food processing industry aimed at optimizing resource use (water, energy) and product quality without compromising on food safety.
- utilizes new technologies to enhance the shelf life and effect of health promoting substances, such as probiotics.
- develops new ingredients that have a low carbon foot print, like plant-based substitutes for egg, meat or dairy products.
- develops the plant proteins for tomorrow's food.
- weighs up the risks and benefits in a circular economy.
- develops scientific guidance aimed at ensuring that official dietary guidelines for a safe and sustainable diet are based on up-to-date science.

The National Food Institute's vision is to make a difference by preventing disease and promoting health, developing new and better food products for a growing population and creating sustainable technological solutions.