RESEARCH IN SUSTAINABILITY

BIOSOLUTIONS

Technology for sustainable solutions

For decades, DTU has been leading in biotechnology, food, and the use of biosolutions to solve industrial challenges. We deliver the scalable bio-based solutions of the future in close collaboration with industry – from medicine to cement.

Biosolutions originate from traditional biotechnological research, but deal with how we invent and produce more sustainable products and solutions. By harnessing bacteria, fungi, algae, and enzymes, biosolutions can replace and improve traditional, fossil-based products and methods employing bio-based alternatives such as bioplastics or alternative fuels.

Common to the bio-based technologies is that they can contribute to significantly reducing CO_2 emissions in other industries' manufacturing processes and end products.

At DTU, we conduct the latest research on biosolutions within areas such as:

- Development of alternative protein sources
- Development and use of microorganisms for the production of food, materials, alternative fuels, etc.
- Development of new drugs
- Development of bio-based pesticides or biofertilizers for agriculture and fish farming
- Biological fertilizer or biofertilizer

At DTU we are committed to a responsible future

In Europe we must transition towards a more viable society based on more sustainable solutions.

At DTU, we lead cutting-edge research in engineering and natural sciences, supported by one of Europe's most robust innovation ecosystems.

Our strength lies in interdisciplinary collaboration, where we develop advanced technologies and sustainable solutions to benefit society.

Kind regards,

Christine Nellemann, provost

Development of microorganisms, microbiomes, and enzymes

DTU is world leading in research and development of microorganisms and microbiomes, which are the key components of biosolutions.

DTU's fundamental knowledge in this area drives the development of biosolutions. DTU works with:

- Research, knowledge, and development of biological production methods (biomanufacturing)
- Fermentation technologies such as precision fermentation and fermentation in open and less sterile systems, e.g. for food, building materials, fuels
- Screening for optimization of microorganisms or enzymes for use in various biosolutions - GMO and non-GMO
- Development of novel foods including a focus on taste, nutrition and safety, e.g. algae as a substitute for animal proteins
- Development of biological control agents for agriculture and fish farming industry, e.g. plant biologicals and biofertilizers
- Technologies to capture CO_2, or other C1 gases, and converting them into valuable bioproducts, e.g. chemicals, polymers, proteins
- Development and innovation in biomedicine, antibiotics, preventive treatment, etc.
- Large cell banks with fungal and bacterial collections for use in future solutions

Biosolutions drive the transformation of industrial production methods

DTU collaborates closely with industry to develop solutions and phase in new technologies based on biosolutions. This enables the transformation of production methods and the development of new materials, food, chemicals, etc. with a smaller CO_2 footprint. The innovation includes:

- Circular production in industry
- Utilization of by-products and side streams from production
- Development of sustainable and scalable bioprocesses
- Development of unit operations that can reduce costs and CO_2 footprint in bio-production
- CO_2 capture and conversion into bioproducts

DTU's Centre for Absolute Sustainability develops new models to calculate the absolute sustainability of products, and our behaviour based on the planet's resources and planetary boundaries. The models show whether something is sustainable in an absolute sense and not just less environmentally harmful than the alternatives.

CONTACT

Mette Lange
Tel.: +45 2081 1998
metla@dtu.dk

dtu.dk/biotechnology