

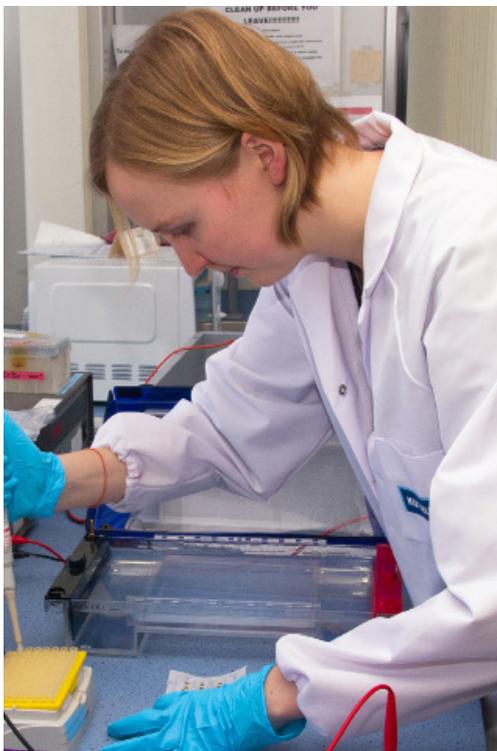
TECHNOLOGY CLUSTER BIOENGINEERING TECHNOLOGY



Research Profile

Moving science into practical solutions

The cluster Bioengineering Technology aims to translate basic research and to enhance practical applications for the food and beverage industry, sustainable crop production, sustainable livestock production, ecosystem management and remediation, and biotechnology in general.



Research Topics

Microbial Ecology

- Studying the structure and functioning of microbial communities and their members in natural and manmade environments and processes in order to better understand, manage and control these processes.
- Development and implementation of molecular detection tools (diagnostics).

Functional Molecular Biology

- Studying specific functions of microorganisms, populations and communities by molecular methods.
- Identification and (functional) characterisation of genes and gene products that are responsible for particular phenotypes of interest.

Industrial Microbiology & Biotechnology

- Screening of microorganisms and genetic modification for the production of industrially relevant biomolecules (small scale).
- Evaluation of disinfection techniques for biofilm treatment.

Biostatistics & Computational Genomics

- Data analysis using appropriate statistical methods.
- Processing, assembly and analysis of “next generation sequencing” data (“(comparative) genomics”, “metagenomics” and “metatranscriptomics”).

Soil and Environment

- Sustainable soil and ecosystem management.
- Biodiversity and ecosystem services.

Sustainable plant production

- Integrated crop protection
- Plant physiology and cultivation optimisation
- Insect-microbe-plant interactions

Sustainable animal production

- Animal welfare
- Animal behaviour

Lab4Food (Food & Feed)

- Texture and rheology, including sensory analysis
- Microbial quality
- Nutritional and chemical research
- Food quality systems and legislation
- New food matrices, such as insects

Sustainable management of inorganic secondary resources

- Bioleaching - biometalurgy

Malting and Brewing Technology

- The role of barley and malt in relation to beer flavour quality and stability
- Prolonged beer flavour stability through anti-oxidative wort and beer production, combined with cost-effective, fast, and innovative brewing technologies
- Development and implementation of novel technologies for beer bittering and aromatisation based on hops/hop products
- Optimisation of the quality/stability of commercial beers and development of new beers with innovative flavour profiles
- Controlled, mixed fermentation

Enzyme and Fermentation Technology

- Characterisation of enzymes for a wide range of applications
- Production, purification and immobilisation of enzymes for process development of innovative food ingredients
- Development of starter cultures for food & feed
- Fermentation projects using bacteria, yeast or moulds
- Production of bio-ethanol from waste streams, including pre-treatment of renewable sources
- Microbiological conversion of side streams into products with added economic value
- Formation/inhibition of biofilms

Microalgal Technology

- High value product development
- Antioxidant activity for microalgae
- Applications in food and feed

Technology and Quality of Animal Products

- Understanding the application potential of functional ingredients in meat and fish products
- Understanding the structure of emulsified meat products
- Processing of meat and fish products: mechanical manipulations, brining/salting, drying, smoking, fermentation and thermal treatments
- Quality assessment of meat and fish products: structure/texture of intermediates and produced meat products, colour formation and stability, sensorial characteristics, prevalence of process-induced contaminants such as biogenic amines and N-nitrosamines

Sustainable water management and water as secondary resource

- Reuse of water
- Electrodialysis on pilot scale
- Recuperation of nutrients (N, P, K)



Contact

Department of Microbial and Molecular Systems (M²S)
Technology Cluster Bioengineering Technology
Kasteelpark Arenberg 23 box 2461
3001 LEUVEN, Belgium
cbet-tc@kuleuven.be
www.fet.kuleuven.be/cbet



*The research groups of the Technology Cluster Bioengineering Technology are active on the technology campuses in Ostend, Ghent, De Nayer Sint-Katelijne-Waver and Geel.
In 2017-2018 the research of Campus Ostend will move to a new campus in Bruges.*