
Welcome
Michael Kleinert
Head of ILGI – Food and beverage innovation

Who are we?

- University of **Applied Sciences** Zurich, Switzerland
  School of Life Sciences and Facility Management
- Our strategic topics are “Environment”, “Food”, “Health” and “Digitization”
- 2000 Students, 600 Employees, 90 M. CHF Budget
- Study and research in Wädenswil: practical, creative, passionate and reflective

Introduction…

Michael Kleinert is a professor in bakery technology and head of the Institute of Food and Beverage Innovation of the ZHAW School of Life Science and Facility Management, Wädenswil, Switzerland.

A certified and trained master baker and food technology graduate of the FH Lippe in Lemgo /Detmold in Germany. He moved to Lucerne, Switzerland where he was the head of quality assurance at the internationally renowned Richemont Bakery School.

In 2000 he changed to the industry for an internationally operative manufacturer of frozen bakery products. During this time different projects were held in Switzerland, Malaysia, Singapore, and Japan.

Four years later he came back to academia at the Zurich University of Applied Science in Wädenswil, Switzerland.

Together with his excellent team, he is committed to **a future in which sustainable, enjoyable, safe, and healthy nutrition is possible for all people and generations to come.**

The team is working on solutions to challenges posed by climate change, the growing world population, and the limited natural resource – pursuing the vision of regenerative food for planetary health. This is being underlined with the new "Future of Food" Campus ready in 2023.

https://www.zhaw.ch/en/about-us/person/klei/

The School and the Institute

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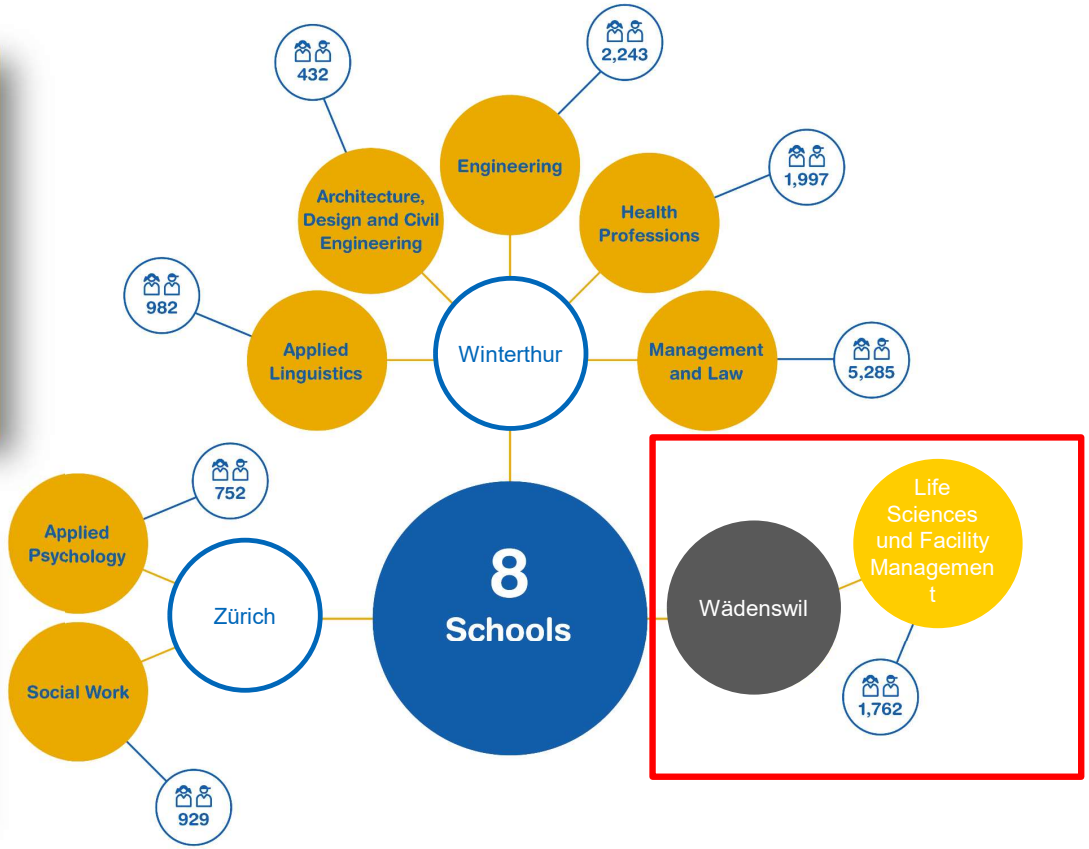
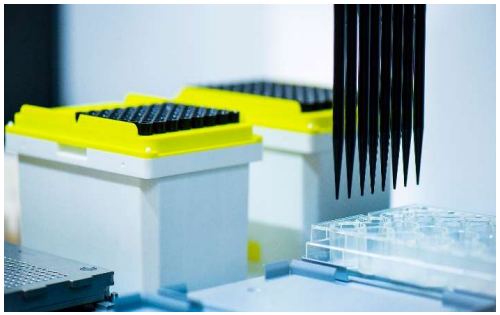
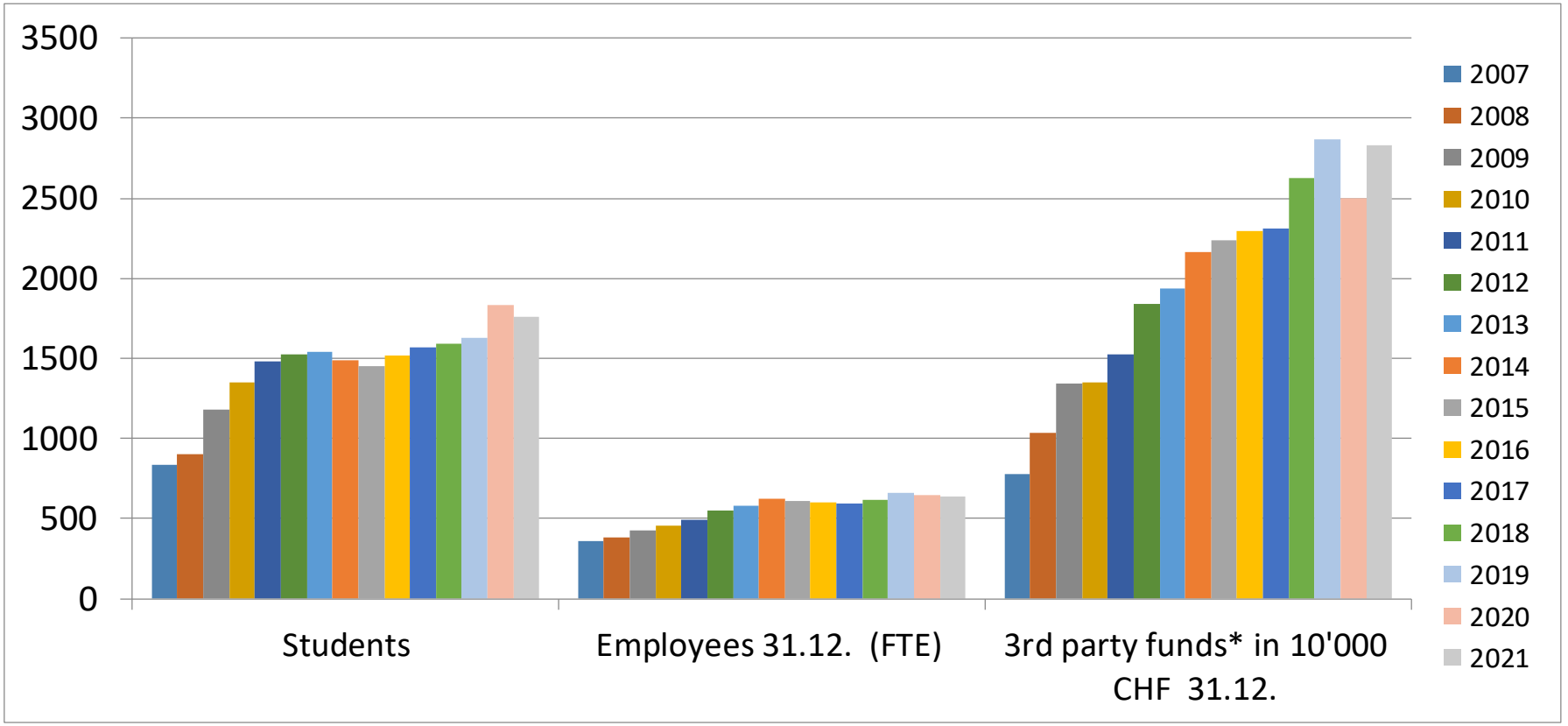


Data based on ZHAW annual report 2021

We have a broad spectrum of possibilities



Key figures



- Third-party funds = R&D, Services, and Continuing Education, excluding contributions from Canton
- ZHAW annual report 2021

Future of Food

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The ZHAW's Reidbach campus is the home of the "Future of Food". We are committed to creating a future where sustainable, enjoyable and healthy food is available for everyone. With the motto "regenerative food for planetary health", we aim to find solutions to the challenges posed by climate change, the growing world population and limited natural resources.

Future of Food

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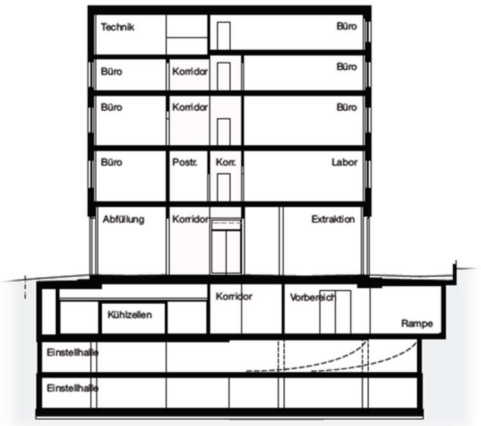
Recognising the potential of the "Future of Food" – establishing cooperation

What awaits you at the Food Campus?

From idea to finished product.

The entire value chain of a foodstuff under one roof.



5th floor	○ ○ ●	Food law and quality management: the basis for safe food
4th floor	○ ○ ●	Nutrition of the future and the world of the senses
3rd floor	○ ○ ●	Food safety and functional cultures
2nd floor	○ ○ ●	Value-determining ingredients and techno-functional properties of food products
1st floor	○ ● ○	Innovative and sustainable approaches in food processing, packaging and preservation
Basement	● ○ ○	Biotransformation: extraction und genesis of aroma components
Subbasement	● ○ ○	Concept and product testing using controlled storage tests

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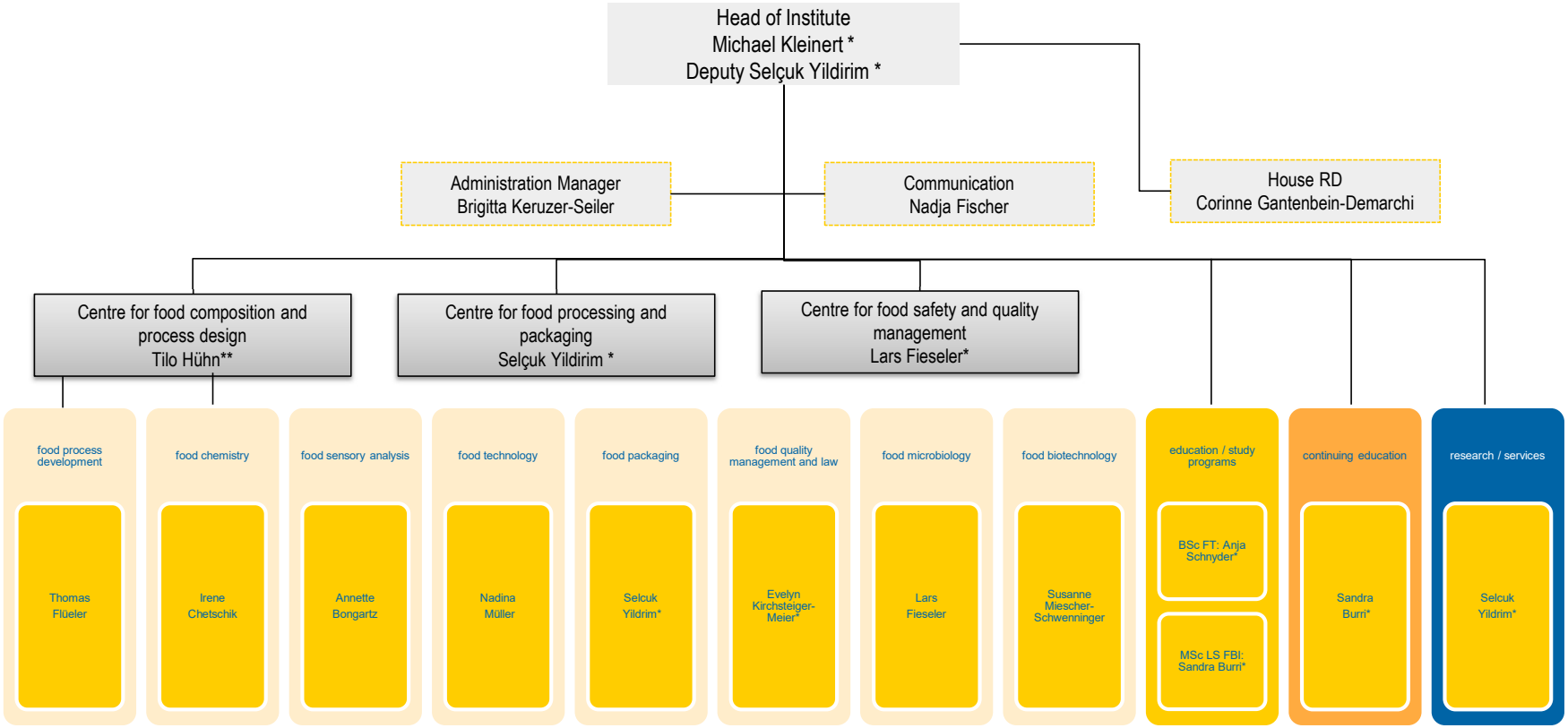
F&BI: Institute of Food and Beverage Innovation



Our gardens

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Our laboratories

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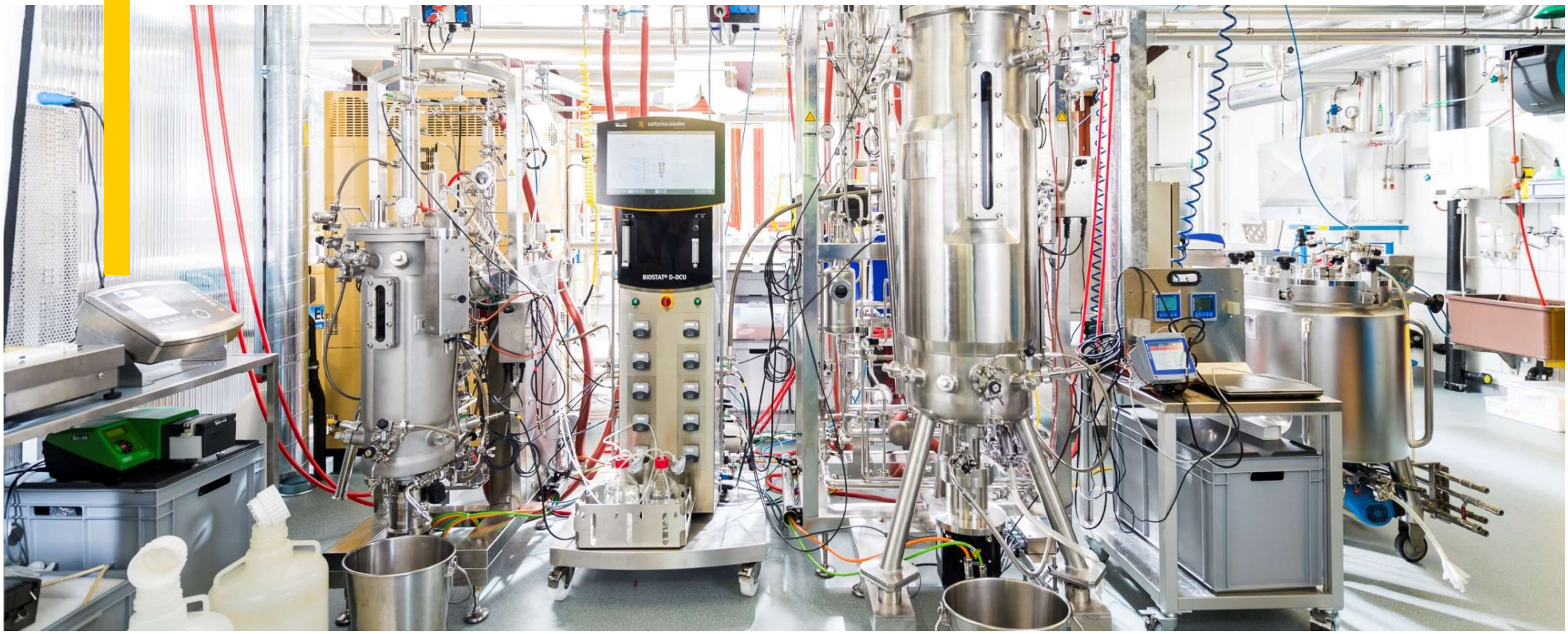

Our scientific work

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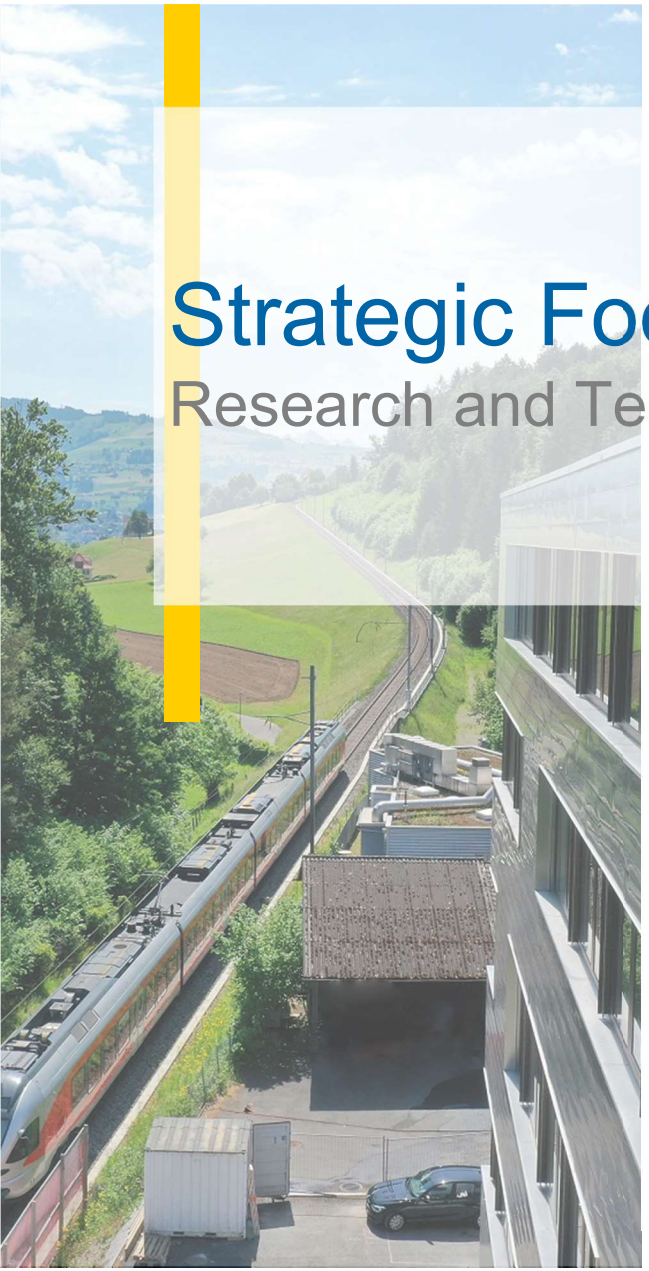

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Strategic Focus

Research and Teaching

Food Fermentation & Biotransformation

Regenerative Food Processing

Sustainable Food Packaging

Sustainability and Regeneration

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In a living biological system, there is a continuous exchange of substances that enables growth, development, adaptation, use, regeneration and decay. An important feature of regenerative systems is that they are embedded as subsystems in other systems and are connected to them through closed cycles. The energetic and material exchange of this metabolic process enables the entire system to maintain itself, develop and adapt.

Exceeding the ecological boundaries of our earth endangers the stability of the ecosystem and thus the basis of life for us as humans. Therefore, for foods to be accepted - in addition to their individual sensory, nutritive and cultural appropriateness - their influence on overall planetary health is becoming increasingly important. The associated challenges concern not only the climate and water consumption, but also biodiversity, society and other important aspects that are often linked to the concept of sustainability. In order to be able to sustainably feed humanity and thereby preserve the irreplaceable resources of soil, water and biodiversity for the future, approaches that take into account regenerative production and consumption processes are becoming increasingly important. This starts with the sustainable production of primary raw materials and the creation of maximum added value from these materials, which includes processing of by-products that focuses on providing human nutrition, prevention of avoidable food waste at all levels of the value-added network, disengagement from the use of finite resources, reduction of renewable energy and resource consumption to an earth-friendly level, fair working conditions and sustainable business models. Raising awareness, educating consumers and optimizing the food supply is ultimately the key to a sustainable, regenerative food system that is good for our health and for that of the planet.

Regeneration

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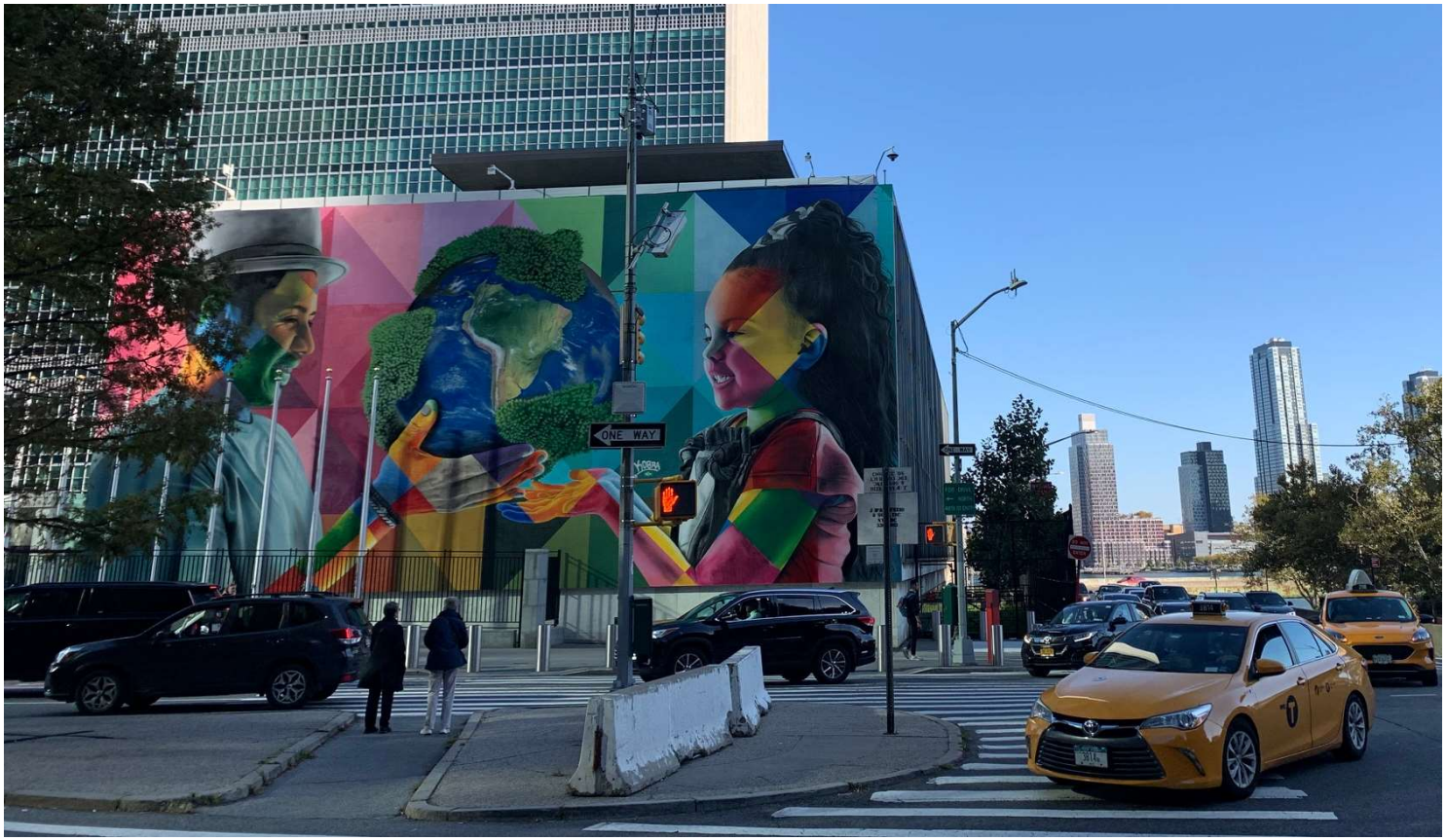
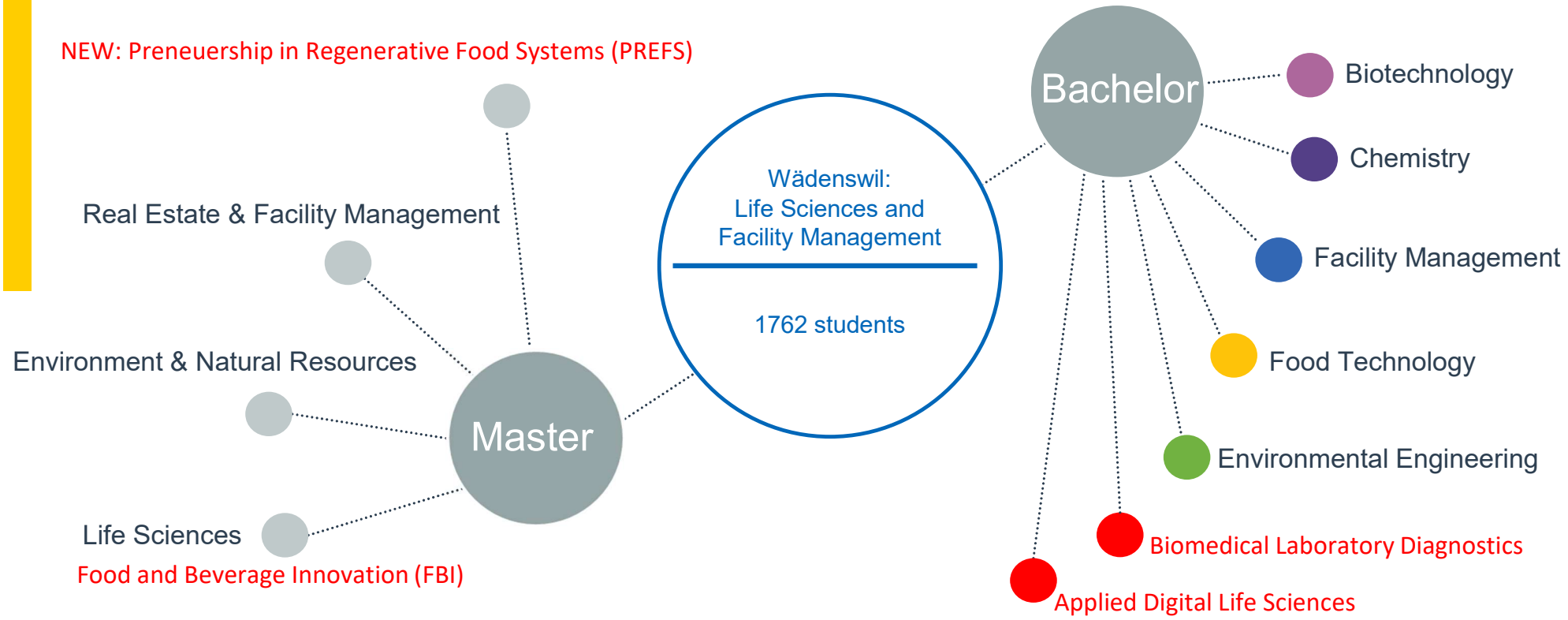


Our degree programs in Wädenswil



Become a Food-Preneur

Transforming food systems with the MSc PREFS

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2023

Future of Food
Campus

Environment, Food, Health, Society
Our areas of expertise

07

From idea to finished product
The entire value-added network of a foodstuff under one roof

08

Research Groups
Focused on innovation in food and beverages

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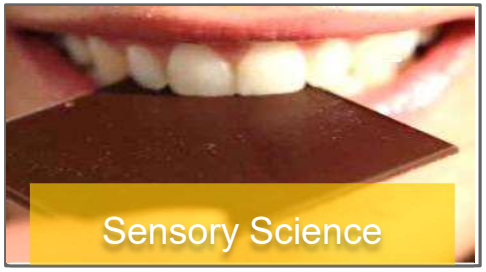
08 Research Groups



..and many more fields of expertise

STRATEGY RESEARCH GROUP FOOD TECHNOLOGY
Project focus areas

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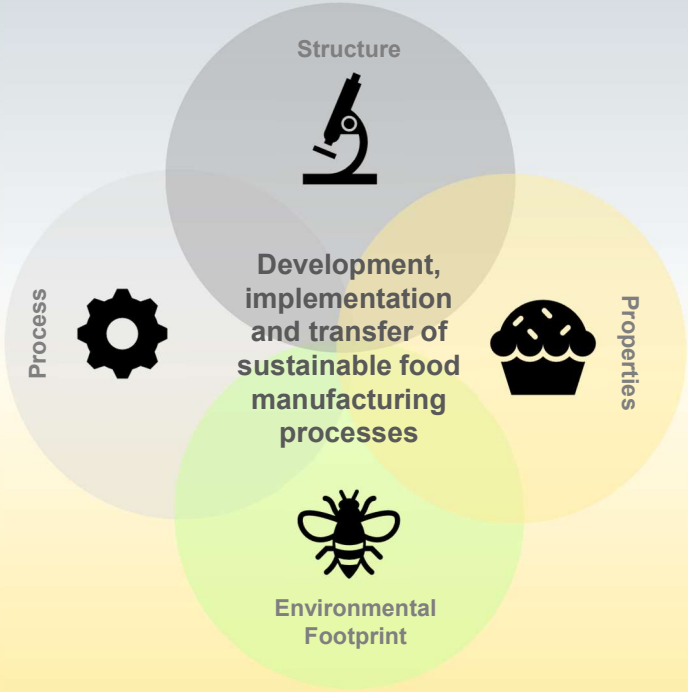
SUSTAINABLE FOOD VALUE CHAINS

- ✓ Maximising use of raw materials
- ✓ Valorizing side streams
- ✓ Processing alternative proteins
- ✓ Replacing unsustainable raw materials
- ✓ Development of assessment tools
- ✓ Smarter processing through digitalisation
- ✓ Fiber enrichment strategies



OPTIMISED NUTRITIONAL PROFILE

Selected project examples

Valorisation of Swiss Agri-Food side streams (VALISS)

Valorisation of Swiss Agri-Food side streams (VALISS)

3 year project funded by Avina foundation (2022 – 2024)

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Background

- Detailed analysis of food waste in Swiss Food industry was done by ZHAW and ETH between 2014 – 2019

Aim of current project

- Reduce food loss through innovative food and packaging solutions
- Analyze 10 – 15 key side streams from Swiss food production & determine promising processing and application pathways
- Food processing companies invited to participate with knowhow and raw material in exchange for early access to results
- Public end report to allow the entire Swiss Food ecosystem to profit from the results

Team

Research Group Food Packaging: Prof. Dr. Selçuk Yildirim
Research Team Food Technology: Dr. Claudio Beretta, Dr. Claudia Müller, Prof. Dr. Nadina Müller

Innovative bio-valorisation of wheat bran to optimise processability and sensory properties of cold extruded pasta

Innovative bio-valorisation of wheat bran

to optimise processability and sensory properties of cold extruded pasta

SATW funded project, 2022

Aim

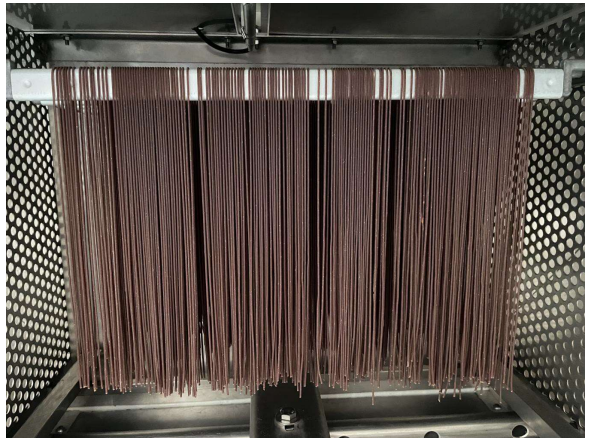
- Improve color and technofunctional properties of wheat bran through fermentation
- Achieve desirable pasta with 50% bran inclusion rate

Project team

- Andrea Tönz, Laila Tulinski-Withers, Susanne Miescher Schwenninger
- Paola Diaz Cruz (master student), Tamara Schmid, Nadina Müller

Unfermented:

10% bran



30% bran

50% bran

Energy- and climate-friendly nutrition in urban catering companies

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Background

- The city of Zurich has set itself the goal of becoming a “2000 watt city”. One subject area that can contribute achieving this goal is energy and climate friendly nutrition.
- Adjustments to the eating habits on the consumer side and changes in the catering offer on the provider side are necessary.

Aim

- The «Menu Sustainability Index» (MSI) will be adapted to the needs of catering establishments within the city of Zürich (incl. homes for elderly).
- One deliverable will be a set of 150 main courses which comply with the requirements of a sustainable nutrition.

Team

ILGI: Claudia Müller, Monja Züst IAS: René Hauck
IUNR: Verena Berger, Gian-Andrea Egeler, Karen Muir, Matthias Stucki
Partners: Homes for elderly and staff canteens in Zürich

BLV guide for food labelling

Image: @elloproducts, unsplash

ESSENZ – Eating decisions for the future

MERCATOR FOUNDATION

Background

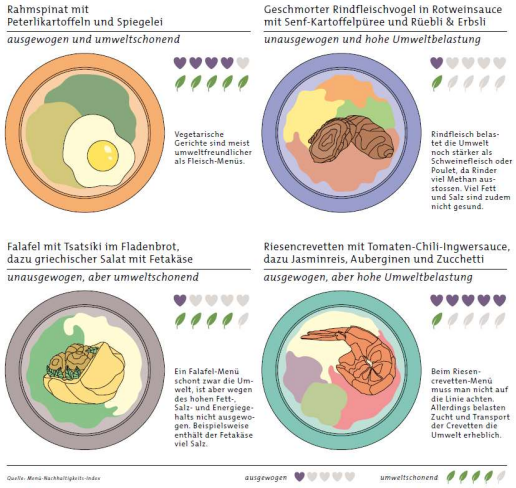
- 25% of global environmental emissions are caused by nutrition
- 80% of Swiss health care costs are related to unbalanced nutrition
- Many Swiss eat lunch out of home
- The out-of-the-home catering sector has an important role in promoting sustainable and healthy diets

Aim

Practical and effective communication measures will be developed and tested with reference to the «Menu Sustainability Index» (MSI) to promote a sustainable nutrition in the out-of-the-home catering sector. In addition, the efficacy of appropriate measures placed directly at the decision-making point will be evaluated with respect to the transfer of sustainable eating habits to daily life.

Team

ILGI: Claudia Müller IUNR: Verena Berger, Gian-Andrea Egeler
Partners: ZFV



7. R&D Projects

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Development of anti-fungal protective cultures for cocoa bean fermentation

Development of functional microbial sourdough starter cultures

InnoBUN – Development and application of a multifunctional sourdough in buns

PlantEAT / Plant-based meat analogues produced by innovative pre-processing methods and extrusion

Development of sustainable beverage packaging as an alternative to aluminum cans

LOFT - LOcal Food for the fuTure

Protective coating

Bio-based Materials Value Chain

7. R&D Projects

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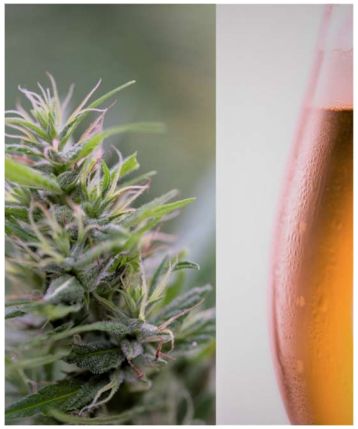

Valorization of by-products

ValuSect: Valuable insects for use in food

Olive Oil Award - Zurich

Center of Excellence for Phage Technology

Validation of N-Light (Nemis)

Soneva: The food storage drawer that combats food waste

Roots used as local raw materials for foodstuffs

Characterization of bitter compounds in hemp and their use in beer production

..plus many more projects in the pipeline

COMPLEMENTARY RESEARCH GROUPS

Examples of collaboration @ ILGI and LSFM

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Food Biotechnology:
Functional starter cultures

Food Chemistry:
Aroma and protein analytics

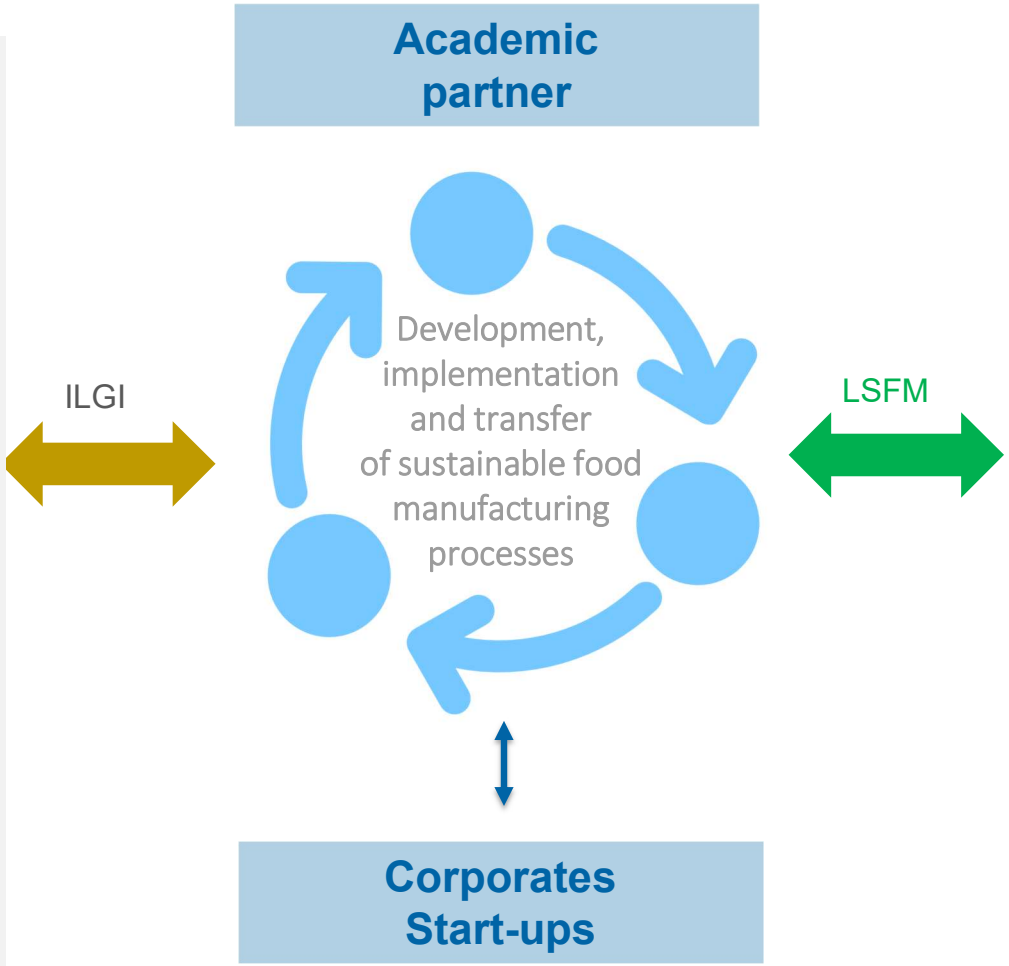
Food Microbiology:
Microbiologial testing

Food Packaging:
Innovative packaging materials

Food Law:
Regulations such as novel food

Sensory science:
Consumer testing

Food Process Design:
Processing of liquids



IUNR:
Algae cultivation techniques

IUNR:
Rearing of insects

IUNR:
Life Cycle Analysis

IUNR:
Novel crops

ICBT:
Expression of novel enzymes

ICBT:
Cell cultures

IAS:
Simulation and modelling

Industrial and academic partners & sponsors

our goal is…

working together to achieve our goal of enjoyable, healthy, safe and sustainable food

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Thank you for your attention

Do you have any questions?
Institute of Food and Beverage Innovation

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