EFFoST Seminar Series

Sustainable Food Systems: Connecting Expertise in Academia and Industry

This seminar series organized by the EFFoST Working Group on Sustainable Food Systems aims to provide detailed insights into various facets of sustainability in the food sector. The seminars will include **expert talks**, practical indications from **industry professionals**, as well as short presentations from selected **early stage researchers**.

All interested participants are kindly invited to participate in the webinar

Microorganisms as an enabler of future sustainable food systems

Monday, 23 October 2023 - 13:00-15:00 (CET) - Cost: free of charge

Registration: https://bokuvienna.zoom.us/webinar/register/WN_QI065_rBT7iwkK0hdWVohA

In order to meet the ambitious goals related to the future sustainable development of the planet, the food sector must act now and contribute its share towards societal change. As by far the greatest share of environmental impacts including greenhouse gas emissions is caused by the production of food raw materials, i.e., crop production and animal farming, this represents the biggest set screw for innovations.

Besides plant-based alternatives to animal products, microbial resources are increasingly becoming the focus of interest. Exploiting metabolic pathways of microbial cells to produce existing ingredients in an improved way (precision fermentation) or simply using fractions of microorganisms directly as food sources (e.g. single cell protein, fermentation-based fat), can lead to foods and food ingredients with an improved environmental footprint, which may possess enhanced nutritional, functional and sensorial properties, compared to raw materials of plant or animal origin. Moreover, those who are driving this nascent industry claim they can do so at scale, in a fast, cheaper, and sustainable way, notably by being able to run operations all year long, independent of geography and climate, with simpler supply chains and the ability to bring food production in closer proximity to consumption.

However, as this wide field is just about to open up, several opportunities but also challenges are ahead of us. Therefore, this webinar aims to provide an overview on the newest developments considering microorganisms as food and food ingredients, showcasing two promising future applications: production of animal-free dairy protein and functional creamy ingredients but also covering potential hurdles (e.g. upscaling, sustainability, IP, regulatory approvals) and ways to overcome them.

Session Chairs: Arthur Robin & Felix Schottroff

Beyond agriculture – Edible microorganisms and the next revolution in food production

Tomas Linder, associate professor at the Swedish University of Agricultural Sciences, Uppsala, Sweden

Throughout our entire existence as a species, humans have ultimately relied on plants for the supply of metabolically available carbon and nitrogen in the form of sugars, fats and proteins – "food". The transition from foraging to agriculture was the catalyst for the development of complex societies by significantly increasing the amount of food that could be harvested from a given area of land per unit time. However, our continued reliance on photosynthesis for food production has brought us to the current moment where we find ourselves with increasing food demand while simultaneously running out of arable land and freshwater. And as if that was not enough, our changing climate threatens future agricultural productivity. To solve this problem, we must think "beyond agriculture" and focus on the central issue – how to produce "food" (defined as any combination of carbohydrates, fats and protein that is digestible and non-toxic to humans) in a way that (1) decouples food production from photosynthetic capacity, (2) uses natural resources in a sustainable fashion and (3) ensures that the global food production system is resilient enough to tolerate future climate perturbations. Edible microorganisms – including bacteria, yeasts, and filamentous fungi – offer such a solution. This talk will describe and discuss the fundamental properties of microorganisms that will make them an essential tool in the next revolution in food production this century.

Microbial proteins as a sustainable alternative to animal-derived foods

Eran Noah, Remilk Ltd., Ness Ziona, Israel

The deliberate production of food ingredients in microbial cells by means of precision fermentation can be used to generate proteins usually derived from animals without the need for the corresponding farming activities. On the example of microbial dairy proteins, this talk will show benefits and potential advantages of this technology, as well as its impact on sustainability.

Microbial fats and oils: sustainable and functional?

Dimitri Zogg, Cultivated Biosciences SA, Wädenswil, Switzerland

Dairy production has a larger than expected impact on the environment and the plant-based alternatives still fail to convince the consumers. The production and use of microbial fats and oils can overcome this issue. This presentation will thus focus on advantages of using fermentation-based fat as well as challenges which arise and must be solved, including environmental impacts but also regarding scaling-up, techno-function properties of microbial fats in comparison to their plant or animal derived counterparts.

Market entry and barriers for microbial foods and how to overcome them

Pauliina Halimaa, Biosafe, Finland

Legislation within the European Union may be a complex yet useful tool to protect markets and societies. In terms of microbial food resources, issues including the novel food regulation as well as legal status and acceptance of genetically modified organisms constitute potential barriers for the market entry of innovative products. Therefore, this talk will show challenges as well as potential solutions which arise when using microorganisms and microorganism-derived products as food.

After the presentations, the speakers will be available for a panel discussion involving the audience.

Further topics to be covered in the seminar series:

Topic	Date & Time
Sustainable sourcing of food raw materials – the "elephant" in the global food carbon footprint room	**January 2024 – TBA**
Networking session at the EFFoST Conference Further information: http://www.effostconference.com/	**06. - 08.11.2023** Valencia, Spain

Short presentations from the scientific community (esp. PhD students & Post Docs) are warmly welcomed. If interested, please email a short abstract (300 words) to sustainability@effost.org

Further infos on the seminars and registration:

https://www.effost.org/members/effost+working+groups/wg+sustainable+food/default.aspx

Scientific board: Felix Schottroff, Henry Jäger, Arthur Robin, Kelly Fourtouni, Sergiy Smetana, Anet Režek Jambrak, Hugo de Vries.