



## Online Programme

Annual Scientific Conference of  
Applied Bio and Food Sciences 2022  
on 13th December 2022  
*(Link to the online meeting room is provided after registration)*

## REGISTRATION :



[hs-flensburg.de/go/anscicon2022](https://hs-flensburg.de/go/anscicon2022)

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WELCOMING WORDS  
FROM  
PRESIDENT OF  
FLENSBURG UNIVERSITY OF  
APPLIED SCIENCES

Dear participants and guests,

It is my great pleasure to welcome you to the campus of Flensburg University of Applied Sciences for the International Annual Scientific Conference of Applied Bio- and Food Sciences.

The event is characterized by exciting works of our master program. I am particularly pleased that students from our partner university in Jember have made the long journey to the Fjord to conduct research here together with subscribed master students on campus in their project semester on a wide range of scientific issues in the field of bio- and food sciences. From the more efficient and environmentally friendly production of in vitro meat to the development of microbial potential in agro-industry from microbes of a tropical rainforest – the range of scientific year-end projects is broad.

A big thank you from my side goes to the professors and staff of the master program Applied Bio and Food Sciences for the scientific support of this project semester.

I am looking forward to exciting and insightful presentations and wish the conference a successful course.

**Dr. Christoph Jansen**

**President of Flensburg University of Applied Sciences**

Dear conference participants,

It is a great pleasure to welcome you to this year's conference of the master study programme "Applied Bio and Food Sciences". All arrangements were done in an international context, jointly between students of Flensburg University of Applied Sciences together with students from our partner university Universitas Jember in Indonesia. We are very proud of this international character. It reflects the modern environment, in which science and education happen today.

The master's degree program Applied Bio and Food Sciences was developed precisely for this modern teaching and research orientation. It has a duration of three semesters. During the first semester students acquire a theoretical foundation, whereas in the second semester the students design and conduct a research project on a specific advanced topic in Bio and Food Technology. Additionally, they gain skills for scientific work. The third and final semester is dedicated to the Master Thesis, which is usually written in industry or research institutes.

Today's conference and its proceedings are an integral part of this study programme and the final highlight of the second semester. The conference is organized by students for students. The content of the conference but also all organisational parts were scheduled and prepared by the students in an independent manner.

During the conference, the students will present the results obtained during their project work of this semester with special focus on sustainability. The project topics of a wide range of current and urgent research include cultured meat, astaxanthin production, food safety and lignocellulose degrading bacteria. The results are presented by talks and a digital poster session, but you also have the possibility to discuss these interesting topics with the students directly after the presentations or in breakout rooms.

The success of the projects is based on the efforts put by the students into their projects. We, as the lecturers, congratulate the project teams to this success and wish the best for the conference today.

We thank you for joining in and wish you an exciting day, with interesting presentations and inspiring discussions.

**Prof. Dr. Antje Labes**

**Dr. Holger Rehmann**

**Prof. Dr. Birte Nicolai**

**Prof. Dr. Andreas Nicolai**

**Prof. Dr. Hans-Udo Peters**

**Dr. rer.nat Kartika Senjarini**

**Dr. Esti Utarti, S.P., M.Si.**

**Dr. Sattya Arimurti. S.P., M.Si.**

*Lecturers and Project Sponsors of the Master's study Applied Bio and Food Science*

# Introduction

Population growth always increases every year. The need for food, food safety, development of astaxanthin, and the need in agro-industry field are also increasing. Flensburg University of Applied Sciences (Germany) and University of Jember (Indonesia) are trying to make a breakthrough over these problems by analyzing the problems and exchanging knowledge.

# Timetable December 13th, 2022



## Online Scientific Conference

Joint Biotechnology Conference of Master's Students of  
Flensburg University of Applied Sciences and the University of Jember

Tuesday, December 13<sup>th</sup>, 2022

Germany (UTC+1): 9:00 – 14:25, Indonesia (UTC+7): 15:00 – 20:25

09:00 - 09:15 15:00 - 15:15	Time to enter the Conference	
09:15 - 09:25 15:15 - 15:25	Opening Words	Moderator 1
09:25 - 09:30 15:25 - 15:30	Welcome Words from President of FUAS	Dr. Christoph Jansen
09:30 - 09:35 15:30 - 15:35	Welcome Words from President of University of Jember	Dr. Ir. Iwan Taruna
09:35 - 09:40 15:35 - 15:40	Introductory words for the Indonesian Project	Dr.rer.nat. Kartika Senjarini
09:40 - 10:25 15:40 - 16:25	$\alpha$ -Bacteria Characterization of Lignocellulose Degrading Bacteria from Ereke-Ereke Geoforest Ijen Geopark, Banyuwangi, Indonesia	Ainur Rohmah and Indria Sari Manda Triono
10:25 - 10:35 16:25 - 16:35	Coffee Break	
10:35 - 10:40 16:35 - 16:40	Introductory words for the German Projects	Prof. Dr. Antje Labes, Dipl.-Biol.
10:40 - 11:25 16:40 - 17:25	SIMBAH Scaffolds for In-vitro-meat based on Alternative Hydrocolloids	Lukas Duday, Viktor Lensch, Lasse Petersen, and Miriam Ritter
11:25 - 12:10 17:25 - 18:10	PROTEIN Bacterial Expression of Growth Factor for Serum-Free Tissue Culture	Naura Paramitha Cindy Ardyah, Oryza Sativa Roshaney, and Khilfa Yahya
12:10 - 12:45 18:10 - 18:45	Lunch Break	
12:45 - 13:30 18:45 - 19:30	PROTECTIONIST Protective Culture Against <i>Listeria monocytogenes</i> in Cold-Smoked Salmon	Christin Duus, Marie Heydn, and Carolin Krebs
13:30 - 14:15 19:30 - 20:15	ACT Possibility of Producing Astaxanthin using Sustainable Organic sources by <i>Haematococcus pluvialis</i>	Jamie Vonau, Leon Hansen, and Alex Justus
14:15 - 14:25 20:15 - 20:25	Closing	Moderator 2
14:25 20:25	Poster Session	



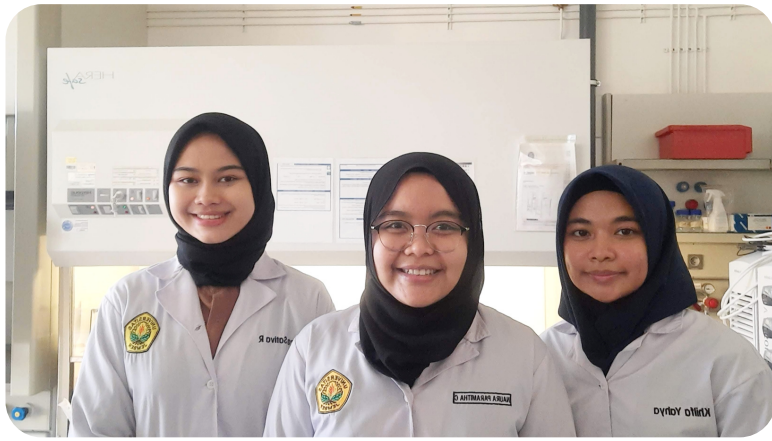
### ***$\alpha$ -Bacteria : Characterization of Lignocellulose Degrading Bacteria from EreK-Erek Geoforest Ijen Geopark, Banyuwangi, Indonesia***

Ijen Geopark is the mountain forest area around the Ijen Crater natural park. This place consists of some geosites and biosites such as Ijen Crater, Kalipait Waterfall, Blue Fire, Rainbow Forest, EreK-Erek Geoforest, and many others. EreK-Erek geoforest as one part of Ijen geopark and also as primary tropical rain forest has huge biodiversity of plants. This means that the EreK-Erek geoforest also has an abundance of lignocellulose biomass. The diversity shows that this forest has fertile soil. The fertile environmental conditions in EreK-erek Geoforest supported by an abundance of litter indicate lignocellulolytic biodegradation activities by microbes in the soil. This encourages research on biodiversity screening, especially novelty lignocellulose degrading bacteria for the development of microbial potential in agro-industry. This study aims to characterize lignocellulolytic bacteria, especially lignin and cellulose degrading bacteria from EreK-erek Ijen Geoforest, Banyuwangi Indonesia.



### ***SIMBAH : Scaffolds for in-vitro-meat based on alternative hydrocolloids***

The improvement of cultured meat (CM) cultivation is crucial to guaranteeing proper nutrition and food supply in an ever-growing world. Livestock farming impacts the environment in a negative way through wastewater, intensive land use, and greenhouse gases. Normally, to produce cultured meat, gelatine is used, which is obtained from animal tissue in a very energy consuming process. Therefore, it is essential to remove this resource from the production process to achieve a sustainable CM product. Because of that, the research objective of this project is to find scaffolds based on animal-free hydrocolloids and plant-based proteins that can perform as carrier materials. Accordingly, cells of various mammals are used, and experiments are conducted to test the toxicity and attachability of hydrocolloids such as agar, carrageenan, alginate, pectin, gellan, xanthan. In addition, protein sequences are tested to enhance cell adhesion. Moreover, decellularized plant parts are being investigated for suitability as alternative scaffolds.



### **Protein : Bacterial Expression of Growth Factor for Serum-Free Tissue Culture**

In vitro meat is cultured meat produced by tissue engineering with the stimulation technology from satellite cells in controlled conditions in the laboratory. In vitro meat production could minimize water use, greenhouse gas emissions, eutrophication risk, and land utilization. The growth factor plays an important role in developing tissue engineering for in vitro meat that influence cell attachment and growth. FBS contains Growth Factors (GFs) and other essential components for in vitro cell attachment, expansion, maintenance, and proliferation. The increasing number of bovine fetuses killed for FBS collection and the distress of fetuses during blood collection for FBS preparation enlarges animal welfare and ethical organizations worldwide. The aim of this research is to develop potential growth factors, which is an essential component of the serum-free media for in vitro meat. We want to produce and purify growth factors as the alternative to reduce or even replace FBS.

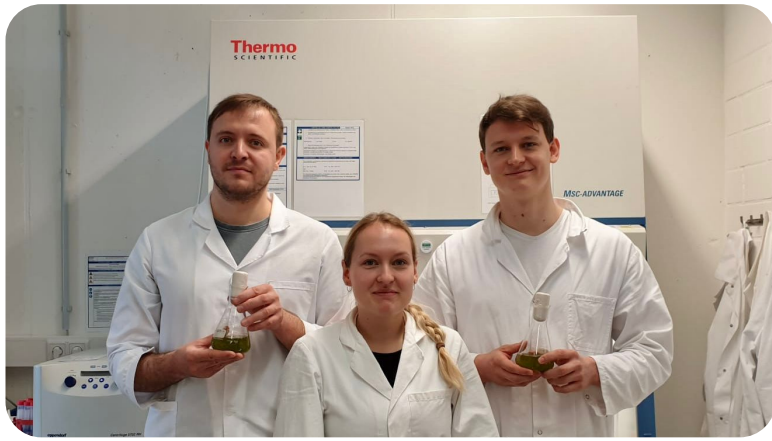


### **Protectionist : Impact of protective culture on the growth of *L. monocytogenes* in cold-smoked salmon and the changes of sensory properties during the shelf life**

Cold-Smoked salmon (*salmo salar* farmed in Norway) is one of the favorite fishery products and has a high consumer demand. But the production and distribution of unprocessed, hot and cold smoked fishery products have a special focus in food safety due to the high risk of occurrence of the potentially deadly pathogen *Listeria monocytogenes*.

Therefore, this project was supposed to evaluate the influence of protective culture on the growth of *L. monocytogenes* in ready-to-eat cold-smoked salmon. The protective culture is based on lactic acid bacteria. The goal was to prove that cold-smoked salmon treated with a protective culture is qualifying for a higher food category in EU regulation (No. 2073/2005) which ensure a more sustainable food production.

The additional sensory evaluation should ensure that the protective culture has no negative influence in the taste of the salmon compared to not treated products.



## **ATC : Possibility of increase the Astaxanthin production using sustainable organic sources by Haematococcus pluvialis**

Cardiovascular diseases are still the number one cause of death worldwide. These include metabolic diseases such as diabetes, dyslipidemia and high blood pressure. These diseases are caused by oxidative stress. A promising active substance against oxidative stress is astaxanthin.

Astaxanthin is the strongest natural antioxidant and is extracted from *Haematococcus pluvialis*, the so-called "blood rain algae". Cultivation is time-consuming due to the short generation time. Therefore the "ACT" project is aiming for an enhanced efficiency of the overall cultivation by increasing the biomass. In the interest of sustainability, research is being conducted to investigate whether accumulating nutrient sources from other industrial sectors are suitable as additives. The growth rate and the astaxanthin yields were examined in the cultures. At the end, the results were compared with each other and a reference value.

## **Impressions**

I wish all conference participants a successful and inspiring event.  
-Prof. Dr. Hans-Udo Peters



It was fun to see the great enthusiasm with which students from Indonesia and Germany working on very different topics co-operate to make this conference possible  
-Dr. Holger Rehmann

It was a great pleasure to see how the students independently developed a current project in a special food safety technology and carried it out with great commitment  
Prof. Dr. Andreas Nicolai-



It was a pleasure to accompany the students in organizing the conference. For today I wish good success, interesting conversations and many positive experiences  
-Prof. Dr. Birte Nicolai

Hope that this annual scientific conference goes well and gain deep understanding for all participants.  
-Dr. Esti Utarti, S.P., M.Si



I am very excited and looking forward to the upcoming student's conference as I understand that they are organizing almost everything by themselves, not only my enthusiasm of the differs topics, but also how an international online collaboration between students is able to make this conference possible.  
-Dr. rer.nat Kartika Senjarini

Glad to guide our students to take a part on this annual scientific conference. Best of luck with your future endeavors.  
-Dr. Sattya Arimurti, S.P., M.Si.



We motivate our students to combine curiosity, ambition and enthusiasm to gain new knowledge and capability. It was good to see the learning progress as well as the skill development during the projects.  
-Prof. Dr. Antje Labes