Online AnSciCon 2021 PROGRAMME

Annual Scientific Conference of Applied Bio and Food Sciences 2021

January 21, 2021

(Link to the online meeting room will be provided after registration)

Hochschule Flensburg
University of Applied Sciences

UNIVERSITAS JEMBER

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Dear guests, students and teaching staff,

It is my pleasure to welcome you to this year's Annual Scientific Conference of Applied Bio and Food Sciences. This conference is an inherent part of the master programme „Applied Bio and Food Sciences" of Flensburg University of Applied Sciences.

The conference is dealing with issues of „ innovative and sustainable research and development". It perfectly fits into the „science year 2020 bio-economy" and contributes to our national research strategy BioEconomy 2030.

This conference provides an optimal opportunity for our students to present their knowledge and the skills that they have gained in the current semester. In addition they acquire experiences in organizing such a multinational conference. I would like to explicitly mention the contributions of international students from our Indonesian partner university in planning and organising this conference.

I would like to thank everyone involved in this conference. Especially if you take into account the very special circumstances of studying and teaching in 2020 - you have been proven performance under exceptional conditions! I wish this conference fruitful discussions, even if they might only be virtually.

Sincerely,

Dr. Christoph Jansen

President of Flensburg University of Applied Sciences

Dear conference participants,

it is a great pleasure to welcome you to the **Scientific Conference 2021 at Flensburg University of Applied Sciences.** We are looking forward to interesting presentations and inspiring discussions during this day.

This conference is organised by students for students in course of our Master program "Applied Bio and Food Science". It illustrates the connection of research and product innovation our university stands for. The demand for future food and fossil-free production based on biotechnology approaches are rising and is recognised by decision makers in science, politics and industry.

This year our students joined forces with students from our partner University of Jember in Indonesia. We are proud of this international character. It reflects the context in which modern science occurs. We hope that physical travel and exchange of students for which the educational programs of our university were used will start again soon. In the meantime, our students have shown that international co-operation is also possible under Corona-conditions.

During the conference, the students will present the results they obtained during the project semester of the Master program "Applied Bio and Food Science". You can expect overviews of the projects and insights in their results. Next to the presentations, students as well as professors and the program coordinator will be available in break out rooms. You are interested in our Master program? This conference is a unique possibility to obtain insight information from your peers but also to get in contact with your future teachers.

The conference is the final highlight of the project semester of M.Sc. students of the study program "Applied Bio and Food Science" of the Flensburg University of Applied Sciences. The students will present their research with focus on sustainable use of resources for food production and biotechnology in healthcare. These are typical examples for the focus areas of the master programme "Applied Bio and Food Science". The students design and conduct a research project on a specific advanced topic of the field, but also gain skills for scientific work. The conference and its proceedings are an integral part of the study programme. The content and arrangement of the conference but also all of its organisational parts were scheduled and prepared by the students in an independent manner.

The success of the projects is based on the efforts the students put into their projects. We, as the professors, congratulate the project teams to this success and wish the best for the presentations and poster sessions today.

We thank you for joining in and wish an insightful and enjoyable time.

Sincerely,

Dr. Holger Rehmann
Prof. Dr. Antje Labes
Prof. Dr. Birte Nicolai
Prof. Dr. Andreas Nicolai
Prof. Dr. Hans-Udo Peters

Professors of the Master's study Applied Bio and Food Science,
Flensburg University of Applied Sciences

Introduction

Over the last decades the general living standard for people has increased, but there are still many environmental problems and risks for the human health. That is why the research in this field is still ongoing. Through the cooperation of the University of Applied Sciences in Flensburg (Germany) and the University of Jember (Indonesia), these problems can be tackled by spreading awareness and exchange of knowledge.

The risks for human health reach from illnesses like Malaria over deficits in the diet and threats from climate change through a not sustainable way of using available resources. This is where the presented projects have their causes.

The Malaria project aims to find Malaria Vectors for Characterization to reduce the spread of Malaria in the long run. The research carried out by MEAT contributes to solving environmental, ethical and dietary problems, leading to the development of new methods of providing food. OPTIMA aims to make astaxanthin, a food supplement and natural dye, more accessible to a wider range of applications and by doing so to reduce the use of non-renewable resources.

Time Table 21.01.2021

Germany (UTC+1): 9:00 – 13:00, Indonesia (UTC+7): 15:00 – 19:00

09:00 - 09:15 (15:00 - 15:15)	**Time to Enter the Conference**	
09:15 - 09:20 (15:15 - 15:20)	**Opening Remarks**	Mara Baller
09:20 - 09:30 (15:20 - 15:30)	**Welcoming**	Dr. Christoph Jansen Dr. Ir. Iwan Taruna
09:30 - 10:15 (15:30 - 16:15)	**Project OPTIMA** Comparison of optimized growth in H. pluvialis combining parameters to increase yield and productivity	Elias Messerschmidt Tobias Koser
10:15 - 10:30 (16:15 - 16:30)	**Coffee Break**	
10:30 - 11:15 (16:30 - 17:15)	**Project MALARIA** Redesigning ITS2 Primer for Molecular Characterization of Anopheles spp. as Malaria Vector	Muhammad Khalid Abdullah Nuril Azizah
11:15 - 11:45 (17:15 - 17:45)	**Lunch Break**	
11:45 - 12:30 (17:45 - 18:30)	**Project MEAT** Isolation of satellite cells from different tissue sources to build a base for an affordable and efficient cultured meat production	Isa Antonowicz Alessandra Buse Mara Baller Jörn Niklas Hansen
12:30 - 12:35 (18:30 - 18:35)	**Closing**	Jörn Niklas Hansen
12:35 - 13:20 (18:35 - 19:20)	**Discussion** Meeting in breakout rooms	

MALARIA – *Redesigning ITS2 Primer for Molecular Characterization of Anopheles spp. as Malaria Vector*

Anopheles mosquitoes are vectors of the Malaria disease, a serious health issue in Indonesia. Therefore, vector control becomes an important method to overcome this disease. The first and important step of vector control is vector identification. Some of Anopheles species share undistinguishable morphological features, and can only be distinguished via molecular identification. DNA barcoding is a method to identify different vector species using specific DNA sequences as molecular markers. Internal Transcribed Spacer 2 (ITS2) is a non-coding region DNA commonly used as a molecular marker in DNA barcoding of insects. Many ITS2 PCR primers available are universally designed for all insects. These primers are usually less specific for identifying certain genera, i.e. Anopheles spp. Therefore, redesigning a specific ITS2 primer is necessary for Anopheles spp. identification. This research aims to design a specific PCR primer for Anopheles mosquitoes. The redesigned primer is then tested for its universality using mosquito samples from Anopheles genus and for its specificity using mosquito samples from another genera. Each mosquito is morphologically identified and their genomes are extracted. Each DNA sample is amplified by PCR-method using the redesigned primer. The redesigned primer will be useful for distinguishing Malaria vectors that are morphologically similar via molecular identification, especially in Indonesia.

MEAT – *Isolation of satellite cells from different tissue sources to build a base for an affordable and efficient cultured meat production*

The production and consumption of meat is associated with various negative effects, such as high carbon dioxide emission promoting climate change, high resource consumption and animal cruelty. Additionally, as the world population increases, the food industry will not be able to meet the demand for meat much longer. In order to reduce these negative impacts, alternatives are currently being researched. One of them is artificially cultured meat, i.e. in-vitro meat. Meat production using cell culture technique has gained more and more attention in recent years. We present first steps of cell-cultured meat with the primary aim to isolate satellite cells from porcine and bovine tissue. There are different quality levels by which these types of meat are examined: fresh meat directly from slaughter and meat from the fresh food counter. The study of different samples aims to support the in-vitro research by trying to find a reasonably priced and high-quality base material to facilitate the isolation of satellite cells for further research projects.

OPTIMA – *Comparison of optimised growth in H. pluvialis combining parameters to increase yield and productivity*

Astaxanthin is a food supplement that can positively influence the health of people and is being used as a dye in the food industry. It is produced by a microalga called "Haematococcus pluvialis".
The objective of the project was to increase astaxanthin production in the mentioned microalga. By increasing the effectiveness of the fermentation, an increase in sustainability is observed. In this way, chemically produced astaxanthin, which is manufactured with the help of petrochemicals, could be replaced by a more environmentally friendly alternative.
Our project goal was to determine the relevant parameters of the Astaxanthin production and to test them in a laboratory environment. This was done by researching the effects of the parameters such as pH, light and temperature in the cultivation of Haematococcus pluvialis and analyzing the results using HPLC and
OD measurements.

Quotations:

"It was fun to see the great enthusiasm with which students working on such diverse projects as the biotechnological production of astaxanthin, the characterisation of malaria vectors, or the basic development of techniques for the production of in-vitro meat co-operate to make this conference possible." *Dr. Holger Rehmann*

"Your projects have once again impressively shown how valuable the combination of research and teaching is."
Prof. Dr. Birte Nicolai

"Thank you very much for your commitment despite the adversities caused by Corona."
Prof. Dr. Hans-Udo Peters

"It was a great pleasure to see how the students self-reliant familiarized themselves with current issues and projects in biotechnology and food technology. "
Prof. Dr. Andreas Nicolai

"The science of today is the technology of tomorrow – this quote of E. Teller is a good motivation for our students to combine curiosity, ambition and enthusiasm to gain new knowledge and capability." *Prof. Dr. Antje Labes*

"I am very excited and looking forward to the upcoming student's conference as I understand that they are organizing almost everything by themself, 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