



International on-line Workshop Programme

“Genetic modification tools in cyanobacteria and microalgae”

29th October 2020

During the event, experts in the development of advanced microalgae technologies will discuss the most innovative research that has been developed in recent times. The workshop is organized in the framework of ALGATEC-CM S2018/BAA-4532 project and of the Cyted-Renuwal network.

28th October: Free access to the videos and Forum

29th October 15 pm (CET): Panel Discussion

How to apply:

The workshop will be held in English, and it is open to the public via on-line.

Free registration from October 12nd to 25th 2020 to receive your on-line invitation by email, filling the form at:

<https://forms.gle/9R88Xw6cGEa9st5XA>

All participants will receive a Certificate of Participation

Organized by:

Metabolic Engineering UCM group

Sponsored by UNIVERSIDAD COMPLUTENSE DE MADRID (OC45/20)

Video 1. Renuwal, an iberoamerican CYTED network for the treatment of effluents with microalgae by Juana María Navarro Llorens, UCM, Spain



Dra. Juana Navarro is an Assistant Professor at the Biochemistry and Biology Department, UCM (Spain). Her professional interest mainly lies in the Bacterial Genetics and Biotechnology field while in my spare time I like hiking and playing guitar. She coordinates the Iberoamerican Cytel Network Renuwal since the beginning of 2020.

Video 2. ALGATEC, Development of advanced microalgae technologies for a circular economy by Luis Fernando, URJC, Spain



Dr. L. Fernando Bautista is an Associate Professor of Chemical Engineering at Rey Juan Carlos University. His research interest is focused on the development of chemical and biotechnological processes for microalgae biorefineries. He also loves spending time with his family and playing table tennis.

Video 3. Microalgae to help World Issues by Luisa Gouveia, GreenCoLab, Portugal



Luísa Gouveia, PhD in Biotechnology, expert in Microalgae Biotechnology, has 88 peer-reviewed papers, 1 book, 15 book chapters, participated in a total of 35 projects and coordinated 5, all related to food and feed-, biofuels-, bioactive compounds-, wastewater treatment-, CO2 mitigation-, biofertilizers- bioplastics- and biorefineries-based microalgae. Vice-Coordinator of Cost Action 1408-EUALGAE and Red Cytel RENUWAL and Coordinator of the Bilateral Portugal - Serbia.

My Hobby? - Sports...



Video 4. Theory of heterocyst pattern formation by Pau Casanova, CNB, Spain.



Regarding my academic background I'm a physicist by training and a biologist by heart doing a PhD in Systems Biology in the group of Saúl Ares in the CNB-CSIC and Javier Muñoz-García in the Universidad Carlos III de Madrid. On the other hand, when I'm not working you probably can find me mainly cooking

and eating, hiking, reading or playing some computer games, and always with music in the background.

Video 5. The use of regulatable promoters for the study of cyanobacterial glycogen metabolism by Sandra Díaz Troya, US Sevilla, Spain



During my PhD, I studied the TOR signaling network in the unicellular green algae *Chlamydomonas reinhardtii*. After that I started to work with *Synechocystis*. In Javier Florencio's lab we study several aspects of metabolism and signal transduction in cyanobacteria. The main research lines of the group are regulation of nitrogen metabolism, metal homeostasis and redox regulation. Now we are also doing some research on the regulation of glycogen biosynthesis, which is what I am going to talk about in my presentation. Like many people, I love to travel, but right now my travels are limited to going from the living room to the kitchen chasing a baby who is learning to crawl. But this is also an amazing journey.

Video 6. Screening of genetic libraries of cyanobacteria for biology and biotechnology applications by Paul Hudson, School of Engineering Sciences in Chemistry, Biotechnology, and Health, Sweden



I am an associate professor at Sweden's Royal Institute of Technology (KTH) in Stockholm and a "SciLife Fellow" at the Science for Life Laboratory (2014). I am also an Novo Nordisk Foundation "Ascending Investigator" in Biotechnology (2020). I have a Ph.D. in Chemical Engineering from the University of California, Berkeley. My research is in metabolic engineering of cyanobacteria and other CO₂-fixing bacteria. We combine systems biology and high-throughput screening to guide engineering strategies. I spend most of my free time and energy these days chasing after my two young children.

Video 7. Design of a genetic transformation methodology on *Botryococcus braunii* microalgae, using CRISPR / Cas expression vectors. Juan Camilo Pulgarin, UA, Colombia.



I am a pharmaceutical chemist by profession, I am currently a master's student in biology and I belong to the biotechnology research group of the University of Antioquia, I dedicate myself to studying about the molecular biology of microalgae, in my free time I am dedicated to swimming, lifting weights, I love running, cycling and doing all kinds of sports activities and playing the guitar.

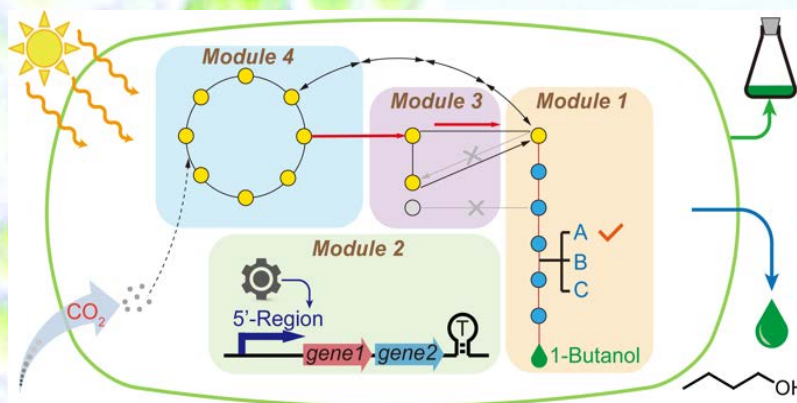
Video 8. How to engineer cyanobacteria to produce butanol by Peter Lindblad, Univ. Uppsala, Sweden

After a PhD in Physiological Botany (1987) I was appointed Associate Professor (1990) and Professor (2000) at Uppsala University. In 2009 I moved to Chemistry and established

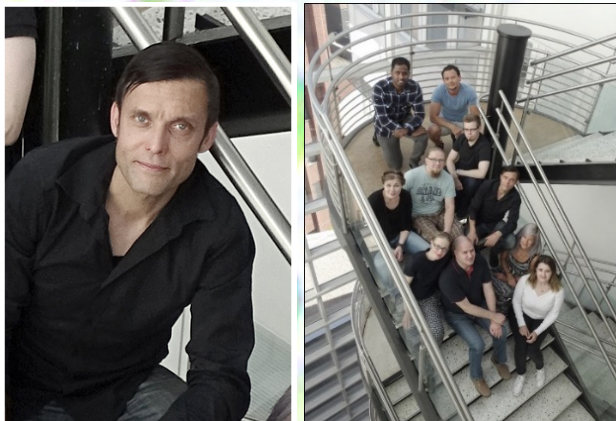


Microbial chemistry. Our research aims to design, engineer, analyze and use photosynthetic microbial cell factories (cyanobacteria) for a direct production of solar chemicals and fuels. I have > 200 original scientific publications, and is an experienced coordinator of, and partner in, European and Nordic collaborative projects. How we engineer cyanobacteria will be exemplified by our attempts to design cells producing photosynthetic butanol in a direct process.

My Hobby? Everything with water: swimming, sailing, diving, skiing ...



Video 9. Introducing genetic material into cyanobacteria: How to select suitable target sites for expression cassette integration by Pauli Kallio, University of Turku, Finland



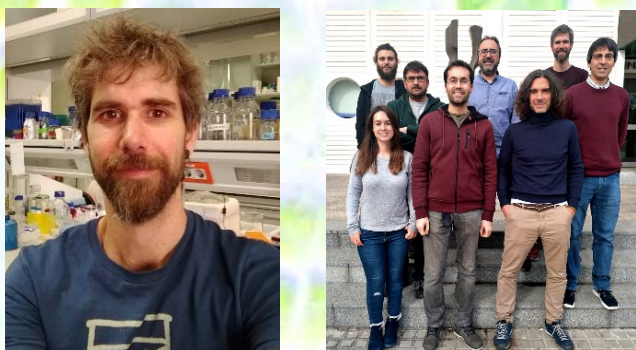
I'm here representing molecular photosynthesis research carried out at the Molecular Plant Biology unit at the University of Turku, Finland. I have an Assistant Professorship (tenure track) in Synthetic Biology of Photosynthetic Organisms, and I coordinate the Synthetic Biology of Cyanobacteria research group (www.utu.fi/sbc). I have four children, and my extracurricular passions include skateboarding, playing the drums and drawing.

Video 10. Organic acid excretion from cyanobacteria during fermentation by Takashi Osanai, Meiji University, Japan



I am an associate professor at Meiji University, School of Agriculture. My research interest is the elucidation of metabolic regulation and the development of metabolic engineering of cyanobacteria and microalgae. Biochemistry and synthetic biology are also in my research area.

Video 11. Genetic engineering of *Synechococcus elongatus* to produce sucrose from CO₂. A path towards third-generation biorefineries by Igor Martínez, CNB, Madrid, Spain:



Since I obtained my PhD in chemical engineering in 2013, I moved toward the dark side of metabolic engineering and synthetic biology. Currently, I work as postdoc in Juan Nogales Lab at CNB. When I am not breaking up bacteria, I try to teach my daughter to enjoy life.

Video 12. Microalgal industrial cultivation: Allmicroalgae as a success case study by Margarida Costa, AllMicroalgae, Portugal



Margarida Costa has a PhD in marine natural products chemistry and is currently a postdoctoral Researcher at Allmicroalgae's production facility since 2019, optimizing microalgae growing conditions and the production of added-value compounds at the laboratory, pilot and industrial scales.



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