

# 2025

## Algaculture for Biotechnology

### TRAINING COURSE PROGRAMME

23<sup>RD</sup> & 24<sup>TH</sup> APRIL 2025  
EACH DAY 09:00 - 17:00 GMT



# WELCOME

Scottish Association for Marine Science (SAMS) and Culture Collection of Algae and Protozoa (CCAP) look forward to welcoming you to our online *Algaculture for Biotechnology* Course. This programme details the logistics for the course including timings and tutors.



## WHEN

Time of course – runs each day from 09:00 – 17:00 GMT on the 23rd & 24th of April 2025.

A full schedule is provided in the following pages and you will be provided with all necessary materials and documents.

## WHERE

The *Algaculture for Biotechnology* course will run in the CCAP laboratories held within the Scottish Association for Marine Science (SAMS) facility. This course will comprise of short lectures, video-based lab practical demonstrations, and plenty of time for discussion with the tutors and other experts.

# DAY 01

23rd April 2025

Algae culturing techniques

9:00	Welcome & Housekeeping	Dr Mikey Ross
<b>LECTURE SESSION: Big Picture &amp; Algal Fundamentals</b>		
9:10	Video: CCAP Virtual Tour	
9:30	Algal Biodiversity and Taxonomy	Ceci Rad-Menéndez
10:00	Algal Nutrition	Dr Puja Kumari
10:30	Algal Photosynthesis	Prof. Michele Stanley
11:00	<b>Refreshment Break</b>	
<b>PRACTICAL SESSION: Growth Media Preparation &amp; Sterilisation</b>		
11:20	Demonstration Video & slides – followed by live Q&A	Jamie Rowell
<b>PRACTICAL SESSION: Strain Collection, Isolation, and Purification</b>		
12:10	Algal maintenance techniques	Rachel Allen
13:00	<b>Lunch Break</b>	
<b>LECTURE SESSION: Algal in Biotechnology</b>		
13:50	Algae and Bacteria in Biotechnology: Opportunities and Challenges	Prof Irmi Horst
14:20	Overview and Challenges of Large-Scale Cultivation of Photosynthetic Microalgae and Cyanobacteria	Dr Lucie Novoveská
14:50	Q&A with Guest Speakers	
15:15	<b>Refreshment Break</b>	
15:30	Algal Metabolomics	Associate Prof. Matt Davey
<b>PRACTICAL SESSION: Algal Maintenance Techniques</b>		
16:00	Demonstration Video & slides – followed by live Q&A	Ceci Rad-Menéndez
16:45	Wash-up Q&A	
17:00	<b>Finish</b>	

# DAY 02

24th April 2025

Algae culturing techniques

## LECTURE SESSION: Molecular Phycology, Bioinformatics, and Synthetic Biology

09:15	Algae as Genetic Resources	Dr Frederik De Boever
09:45	CCAP's Bioinformatics Gateway	Dr Frederik De Boever
10:15	Synthetic Biology for Algal Biotechnology	Dr Katrin Geisler
10:45	<b>Refreshment Break</b>	

## PRACTICAL SESSION: Algal Enumeration

11:00	Demonstration Video & slides – followed by live Q&A	Joanne Field (Microscope methods) Naomi Thomas (Coulter counter) Elaine Mitchell (Flow Cytometry)
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## PRACTICAL SESSION: Cryopreservation

12:10	Demonstration Video & slides – followed by live Q&A	Joanne Field
12:30	Biobanking & Cryopreservation	Ceci Rad-Menéndez
13:00	<b>Lunch Break</b>	

## LECTURE SESSION: Algal Scale-up, CCAP-ARIES

14:00	Algal Cultivation Scale-Up: Markets, Applications, Considerations & Cultivation Systems	Dr Mikey Ross
14:45	Demonstration Video on CCAP-ARIES - followed by live Q&A	Dr Mikey Ross
15:15	<b>Refreshment Break</b>	

## STUDENT RESEARCH & EDUCATION OPPORTUNITIES

15:30	Student Flash Presentations	Alberto Rock Anita Flores Leñero Carla Ruiz González Priyadharshini Elanchezhian
16:00	Overview of SAMS-Enterprise Seaweed Academy and EIT courses	Jenny Black
16:15	Wash-up Q&A	
16:45	<b>Finish</b>	



# TRAINING COURSE LECTURERS

Delivered by leading algal scientists from SAMS algal scientific team, including the Culture Collection of Algae and Protozoa (CCAP). This course is one of the best introductions to algaculture.

# GUEST SPEAKERS



## **Dr Lucie Novoveska - ScotBio, UK**

Lucie is passionate about “all things microalgae and cyanobacteria” and has a keen interest in applying her background in applied phycology and biotechnology. She received her PhD from Dauphin Island Sea Lab in 2011 and has since worked in 4 biotech companies in both the US and the UK. Lucie also serves as an Associate Editor for Journal of Applied Phycology and served as a Work Group leader of EU COST action Ocean4Biotech. Lucie’s current role at ScotBio is to continually optimise upstream processes, develop products and ensure health and safety compliance.



## **Prof Irmi Horst - University of Applied Sciences in Nuremberg, Germany**

I studied biology and chemistry in Würzburg, Germany. I then moved to the John Innes Centre in Norwich as a Marie Curie scholar where I did my PhD in biochemistry, molecular biology and genetics.

I moved to the University of Cambridge as a postdoc working on a biofuel project especially focusing on down-stream processing. Since 2013, I am a biotechnology professor at the Technical University of Applied Sciences in Nuremberg, Germany mainly lecturing and doing research on the topics of bioeconomy and how microalgae can be employed for using waste streams from industry.



## **Dr Katrin Geisler - University of Cambridge, UK**

Katrin is a postdoc at the Department of Plant Sciences, University of Cambridge, with an interest in understanding plant and algal metabolism. Her work aims to establish the diatom *Phaeodactylum tricorutum* and the freshwater algae *Chlamydomonas reinhardtii* as chassis for the production of high-value compounds, such as terpenoids. She is involved in the development of genetic tools to control gene expression using synthetic biology principles.

**More about Katrin**

# SPEAKERS



## Professor Michele Stanley

Michele has worked on applied phycology projects for >20 years. Over the last 10 years, she has initiated and led research investigating marine biomass, both macro- and micro-algal, as forms of biofuels at SAMS and is also developing other areas of applied research investigating the biotechnology application of algae. She is a member of EPSRC's Energy Strategic Advisory Team; a member of the steering board for the European Algal Biomass Association; a member of the UK Cross Research Councils Bioenergy Group and Chair for the Scientific Advisory Board of the Industrial Biotechnology Innovation Centre (IBioIC).

[More about Michele](#)



## Dr Matt Davey

Matt is an Associate Professor in Algal Biotechnology specialising in algal physiology, innovation and ecology. His research interests are in the diversity and plasticity of metabolic traits, especially in extreme habitats. Using a translational approach to apply the unique techniques and expertise he has developed in these ecosystems to produce sustainable and innovative solutions in the bio-economy.

[More about Matt](#)



## Dr Puja Kumari

Puja is a phycologist, interested in the interaction of algae (both microalgae and macroalgae) with its biotic and abiotic environment. Puja has been involved in international research projects based in Israel, Japan, and the UK and has extensive expertise in macroalgal cultivation, life-cycle development, (a)biotic stress physiology, host-pathogen interactions, biodiversity, chemotaxonomy, biochemical characterisation, -omics science, and bioprocessing, biorefineries, and the circular economy.

[More about Puja](#)

# SPEAKERS



## Dr Michael Ross

Mikey is the manager of the Culture Collection of Algae and Protozoa (CCAP) and a Lecturer in Algal Biotechnology at the Scottish Association for Marine Science (SAMS). I have a very broad interest in applied algal biotechnology and have researched microalgae, cyanobacteria, and macroalgae for the production of biofuels, food/feed, and for the production of high-value products, namely pigments and carotenoids for inclusion into nutraceutical and cosmetic markets. My Ph.D. research undertaken at the University of Edinburgh and with SAMS, investigated the potential of a filamentous macroalgae to remove nutrients and heavy metals from wastewater.

[More about Michael](#)



## Cecilia Rad-Menéndez

Ceci is the CCAP curator. She has worked in the collection for over 17 years isolating, characterizing, and maintaining different groups of cyanobacteria, microalgae, macroalgae and protozoa. She is responsible for the molecular characterization of CCAP strains and has developed several cryopreservation protocols for both, micro and macroalgae.

Her main interest is protists diversity and unveiling some of the mysteries hidden within this extraordinary group.

[More about Cecilia](#)



## Dr Fred De Boever

I am a microbial ecologist with a focus on microbe-host interactions. I use laboratory model systems, sequencing technologies, and bioinformatic approaches to dissect the genetic underpinnings of complex ecological interactions such as symbiosis and parasitism. I have a particular interest in how such interactions (co)-evolve, comparative genomics, and taxonomy.



# SPEAKERS



## Joanne Field

I joined CCAP in 2007 as a support scientist. I am also the Laboratory manager responsible for day to day running of the CCAP laboratory and the SAMS Cryopreservation facility.

My primary role is the maintenance and subculture of CCAP strains, in particular many phytoplanktonic cultures such as Dinoflagellates, Chrysophytes, Raphidophytes, a range of freshwater and marine protozoan cultures and red algae and seaweeds. I am also responsible for maintenance of all patent strains deposited with CCAP.

[More about Joanne](#)



## Jamie Rowell

I am working as a support scientist for the [Culture Collection of Algae and Protozoa](#) where I am responsible for making the growth media required for all cultures in addition to customer orders. I am responsible for ensuring in-house equipment is up to ISO 9001:2015.

I also support [CCAP-ARIES](#) scale up projects involving preparing, monitoring, harvesting, and cleaning our four 70L photobioreactors and membrane harvester.

[More about Jamie](#)



## Rachel Allen

I joined CCAP in September 2017 as a support scientist, and my primary role involves the maintenance and subculture of a wide range of freshwater green algae, brown seaweeds, and protozoan strains. In addition, I am also the CCAP Quality Lead, responsible for helping to maintain the ISO 9001:2015 accredited certification awarded to us in 2021.

I am also heavily involved in outreach programmes with children from schools in the local area.

[More about Rachel](#)

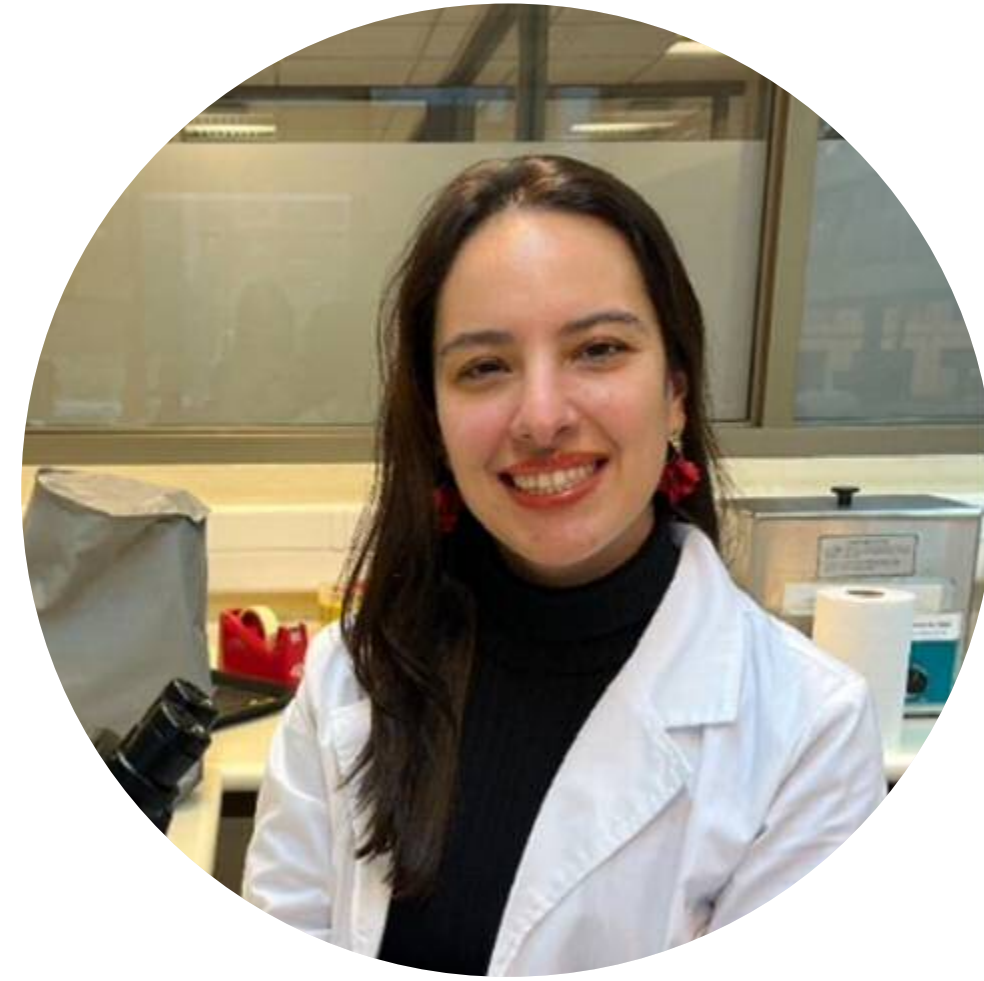
# STUDENTS



## Alberto Rock

I am a PhD student at SAMS studying “Lipid production by cultivating Thraustochytrids on alternative media and optimization by synthetic biology”. I have previously completed an MRes investigating novel CRISPR technology to increase high-value fatty acid yields in *Nannochloropsis* sp.

[More about Alberto](#)



## Anita Flores Leñero

My PhD is “Mitigating Harmful Algal Blooms (HABs) with modified clays”. This research will therefore evaluate the potential for extending the use of MCs as a means of controlling HABs at marine aquaculture sites to Scotland (and by extension other major salmon farming countries e.g. Norway).



## Carla Ruiz Gonzalez

I am a marine scientist with an interest in the sustainable exploitation of algae. Through my PhD project, I'll be researching the limits of life of snow algae. Physiology experiments and metabolomic results will reveal how snow algae survive under extreme conditions.

My PhD project is “Life at the limits – Algal physiology under extreme conditions”

[More about Carla](#)



## Priyadharshini Elanchezhian

I am a Plant biology postgrad with great interest in different aspects of working with algae to serve solutions for present day problems.

My PhD is titled “Maximising bromoform production in *Asparagopsis taxiformis* for methane reduction in food and feeds”

[More about Priyadharshini](#)

# MEET THE CCAP STAFF AND COURSE DEMONSTRATORS



Naomi Thomas  
Joanne Field  
Elaine Mitchell  
Rachel Saxon  
Jamie Rowell  
Rachel Allen  
Cecilia Rad-Menéndez  
Evie Whyte



## TRAINING COURSE LOGISTICS

SAMS is a leading scientific institution researching and delivering Marine Science. SAMS is a partner of the University of Highlands and Islands (UHI). CCAP is a Biological Resource Centre and is supported by the Natural Environment Research Council (NERC), part of the UK Research and Innovation (UKRI) as an internationally renowned National Capability service. SAMS and CCAP has expertise in Biogeochemistry and Earth Science, Ecology, Microbial and Molecular Biology, Physics, Sea Ice and Technology. If you are interested in collaborating with SAMS or CCAP or have any commercial opportunities you would like to discuss, please let us know and we will endeavour to set up the relevant meetings.

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## CCAP, Seaweed Academy, EIT and SAMS MRes offer a range of other courses and degrees relating to algaculture

### THESE INCLUDE:

**CCAP** *Algaculture for Biotechnology and Algal Cryopreservation* practical skills training courses both in-person and online. These online courses run annually and may also be provided on a bespoke basis.  
[ccap@sams.ac.uk](mailto:ccap@sams.ac.uk)

**THE SEAWEED ACADEMY** is the UK's only dedicated seaweed industry facility, offering 1-day, 2-day, and 5-day training courses. The Seaweed Academy is thrilled to announce our brand new Seaweed Nursery Course, starting in August 2025.

[www.seaweedacademy.co.uk](http://www.seaweedacademy.co.uk)

**EIT FOOD** *Algal Biotechnology and Restorative Aquaculture* workshops with an entrepreneurial perspective.  
[matt.davey@sams.ac.uk](mailto:matt.davey@sams.ac.uk)

**SAMS** MRes Degree in Marine Science  
[bernadette.snow@sams.ac.uk](mailto:bernadette.snow@sams.ac.uk)

### FURTHER INFORMATION:

We hope we've been able to provide all the information you require to enjoy your time with us, but if you have any further questions, please email [ccap@sams.ac.uk](mailto:ccap@sams.ac.uk)

### FEEDBACK FORM:

Please complete the feedback form and e-mail it to [ccap@sams.ac.uk](mailto:ccap@sams.ac.uk)

### WE LOOK FORWARD TO MEETING YOU ON THE COURSE.



## CONTACT US

Visit our online shop to order algae & protozoa

[www.ccap.ac.uk/catalogue](http://www.ccap.ac.uk/catalogue)

Contact and follow our team to learn more about our tailored products and services

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