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EDINBURGH INNOVATIONS



E4 DTP Year 3 residential workshop: Innovation and Impact, Peebles

How to engage with industry & examples of success in Biological Sciences

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March 2023



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Edinburgh Innovations – an introduction

Connecting

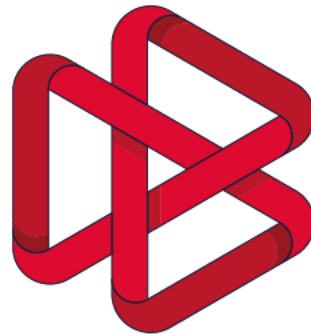
industry with University expertise,
research and facilities

Understanding

opportunities and
requirements

Managing

interactions between
industry and the University



Sourcing

investment opportunities

Translating innovation

from idea to commercial asset

Identifying

funding streams

Supporting

staff and students to form
new companies

How we engage with Industry

Collaborative Research	Contract Research	Consultancy	Studentships
Applied Research	Fundamental Research	Secondments	Patents / Licensing
Bespoke Workshops & Events	Company mentoring	Bespoke Training	Incubator Space
Executive Education	Spinout/Startups	Intellectual Property	Event Sponsorship

We work alongside researchers to enable engagement and potential impact with policymakers, practitioners, industry and the public.



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University strategy

“Our vision: Our graduates, and the knowledge we discover with our partners, make the world a better place.”

You can build relationships with external partners for mutual benefit and the benefit of society.

Collaboration is essential to solve real world problems and make societal change!



Benefits of engagement

- 'Getting research out there' and 'making a difference' beyond academia.
- Help win research funding that specifically asks for external partners.
- Greatly benefits your research and can feedback into your work allowing for a continuous learning cycle.

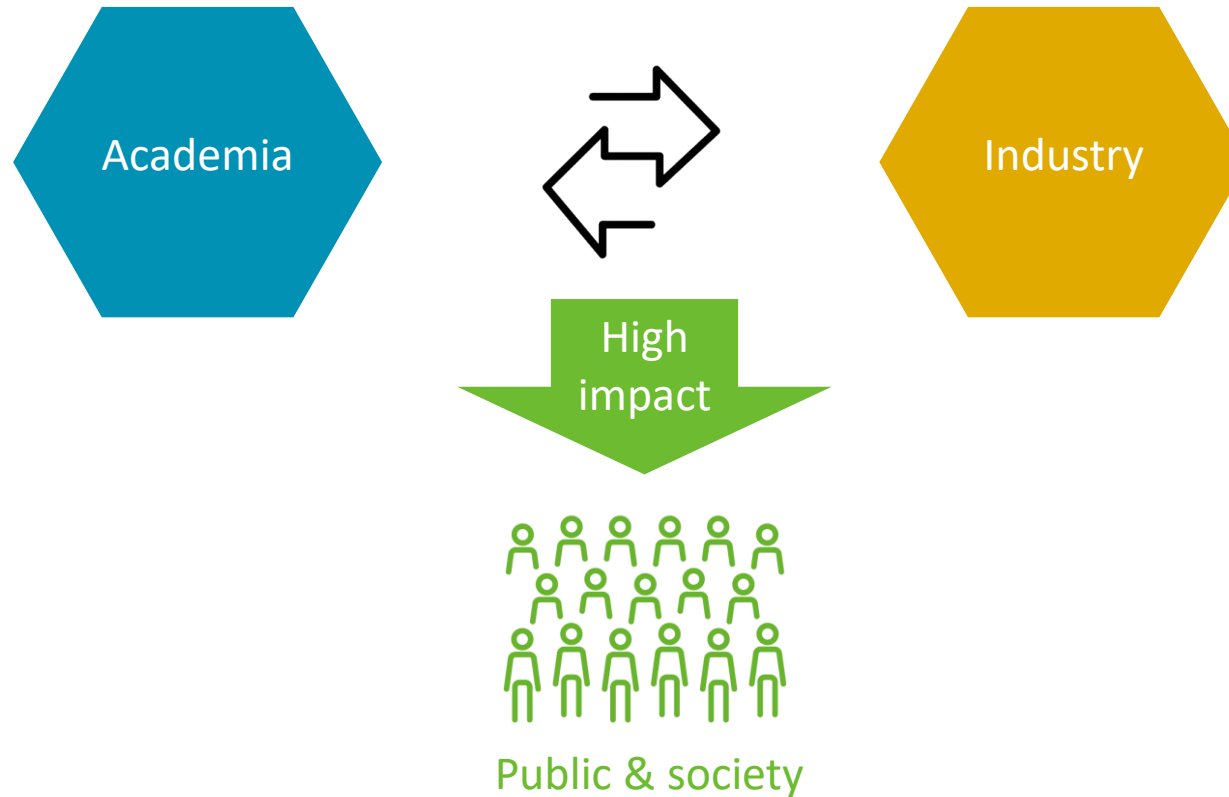


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How can you engage with Industry?



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Do's

- First step is to identify who you should be working with.
- Identify who is relevant in your field.
- See the relevance of your research in the context of the wider world.
- Consider who might be interested in your research.
- Specific funding calls may require external partner from a specific sector so you will need to check the funder's guidance.
- Contact BD team as soon as you identified a potential partner.

We are here to help!



Methods

Connect Online

- Many of your potential external partners, especially organisations, will have a presence online.
- **LinkedIn** is a good online tool.
- Set up your own profile, outlining your research, your wider interests and expertise, and who you are interested in working with.
- Start reaching out to people in organisations you are interested in, start getting involved in conversations/chats.
- Try to connect with R&D people within the company.



Methods

Target and look at themed groups

- **Internally:** Academic colleagues may give you tips on industry engagement.
- There are many internal discussion forums and research centres. E.g. **Centre for Adapting to Changing Environments** – ACE has an early career network: <https://www.ed.ac.uk/environmentalchange>.
- There are also interdisciplinary institutes established within the University (e.g. **Edinburgh Futures Institute**).
- **Externally:** There are forums and networks that researchers can join.



Methods

Sign up to thematic newsletters

- Sign up to alerts and newsletters.
- Example, the **Scottish Council for Voluntary Sector Organisations** or the **Scottish Environment Link**.
- Or other partnerships and industry bodies that are set up externally.
- Broaden out your research.



Methods

Workshops and Events

- Attend networking opportunities – including workshops & events in your relevant area.
- Attend workshops hosted by funders with potential external partners -particularly **Innovate UK**.
- You can find out more details of these workshops and events on funder websites.

<https://www.ukri.org/>



Methods

Engage

- Either with the help of your BD, contact on LinkedIn or approach them at events.
- Invite a potential partner to a meeting.
- Do some preparation before the meeting, check:

Their website, LinkedIn profile, your network here at UoE and EI or your wider network – has anyone you know worked with them and have opinions?

- At the meeting: Make sure relevant BD contact is present: we are happy to help you plan your partner meetings and we can accompany you on meetings.
- As negotiations progress, we need to be involved in meetings where costs and contractual obligations and IP are discussed.



Don'ts

A common error that we can make, is to reach out to potential partners or collaborators from the perspective of how 'they' can help 'us'. Or that we "tell" external people or organisations how they can be helped.

Instead:

Listen & be curious

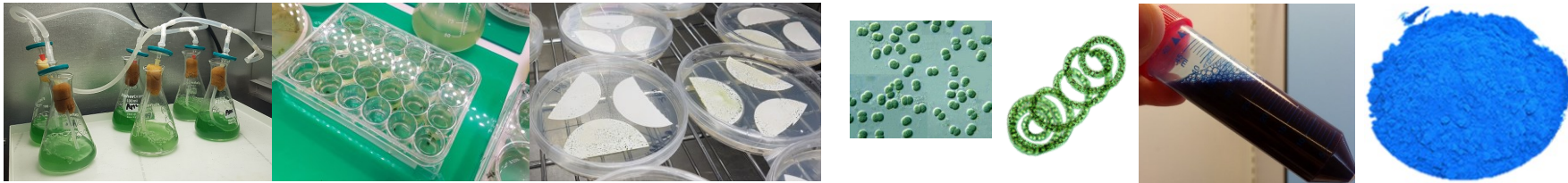


Do's

- Be confident, but pay attention & try to find out what they need.
- Put your partner's needs first, then you can tailor any messages about your research directly to what they need to achieve.
- Engaging with a partner is a balance between recognising their needs and meeting your own.
- Discuss a collaboration opportunity.



Working with ScotBio: balancing research with industry goals



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SynthSys and Institute of Molecular Plant Sciences
Rutherford Building



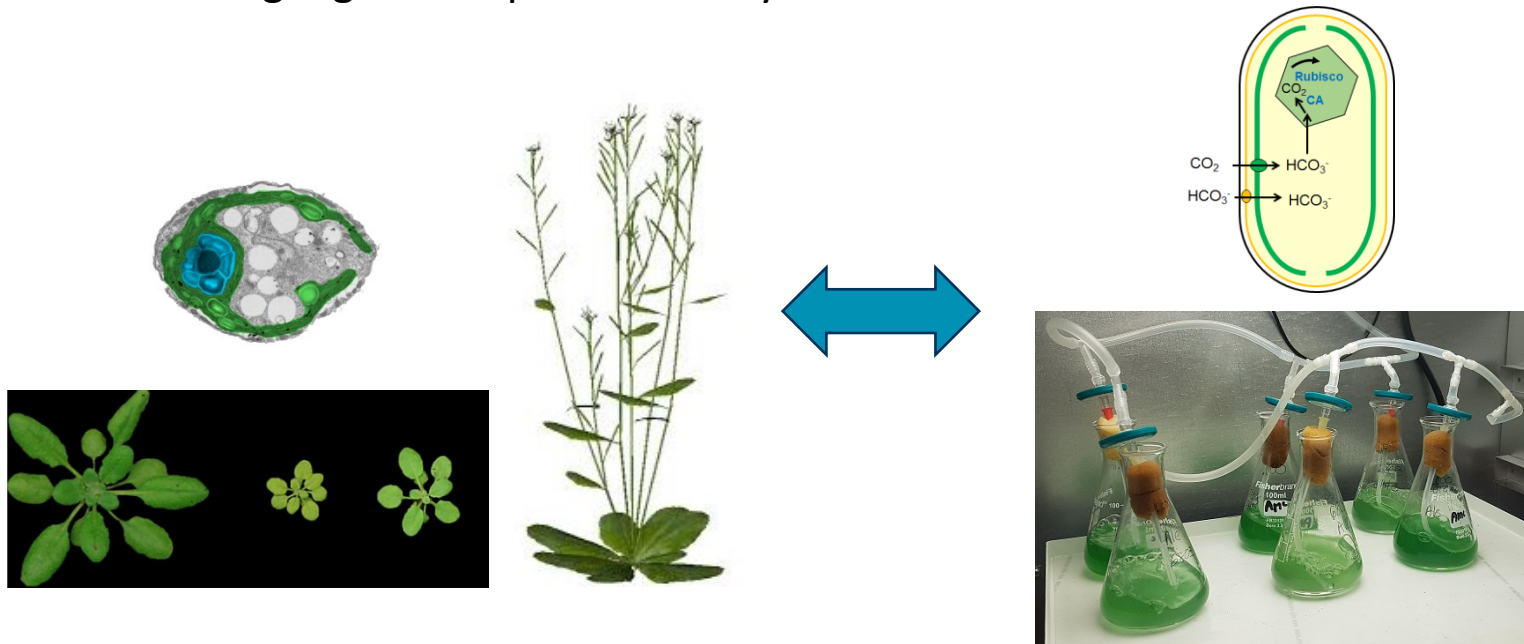
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A bit of background...

Lab established in 2013:

- Improving photosynthesis in plants using microalgal CO₂-concentrating mechanisms.
- Producing high value products in cyanobacteria.



Brief overview of the timeline

2015



Adam Irvine (EI, then ERI)



Identified an Industrial collaborator:



(then Scottish Bioenergy, small SME at Roslin Innovation Centre. David van Alstyne and Rocky Kindt, PhD student with Andrew Free)



2016



First funding BBSRC NIBB: Proof of Concept Funding



2017- 2020

Apply for more funding
Expand and collaborate

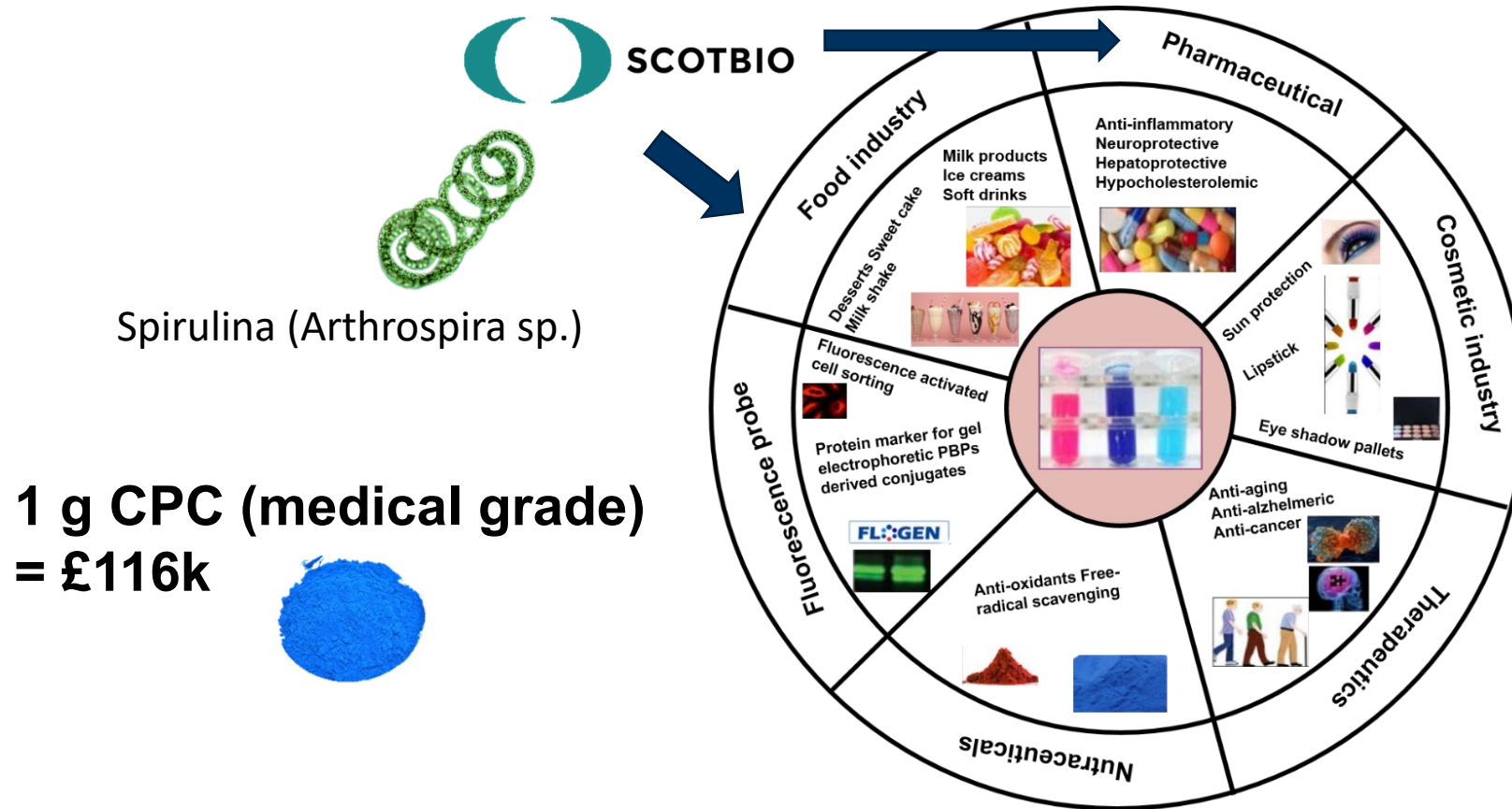


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C-phycocyanin (CPC) is a pigment-protein naturally produced at high quantities in cyanobacteria



First funding and new friends (2016)



Rocky Kindt
(PhD student)

David van Alstyne

John Malin
(MSc student)

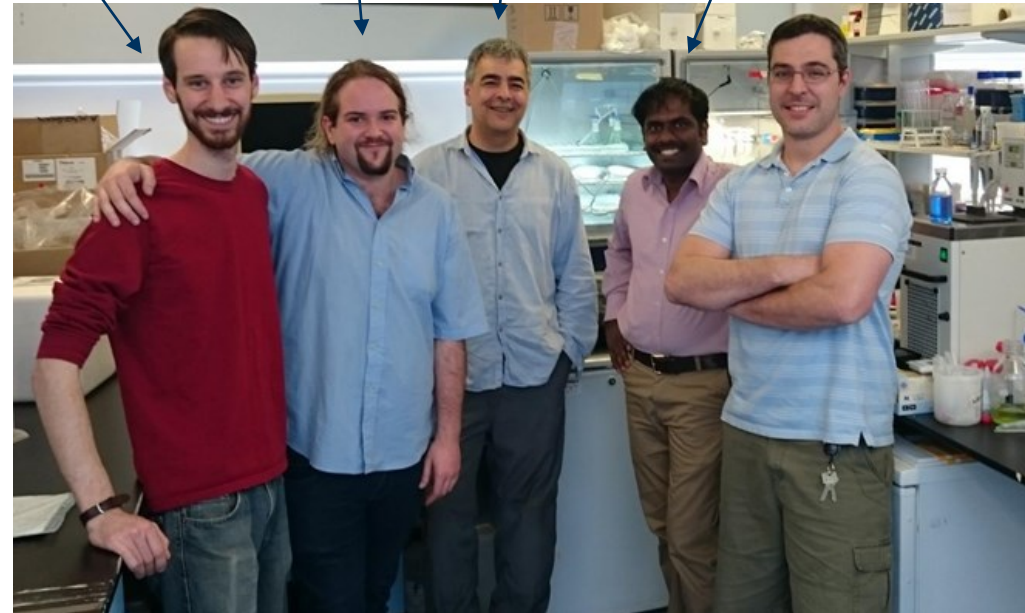
Ravendran Vasudevan
(PDRA)



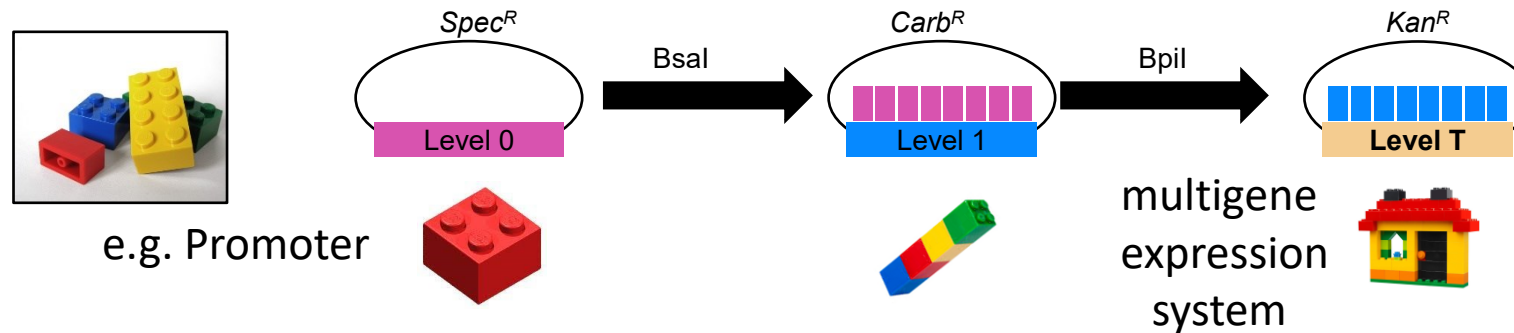
PHYCONET
high value products from microalgae

Proof of Concept Funding Award

A molecular toolbox to commercialise cyanobacteria: synthetic genetic sensor-regulator circuits for increased yields of phycobiliproteins



2016: Designed a MoClo toolkit for cyanobacterial synthetic biology - CYANOOGATE

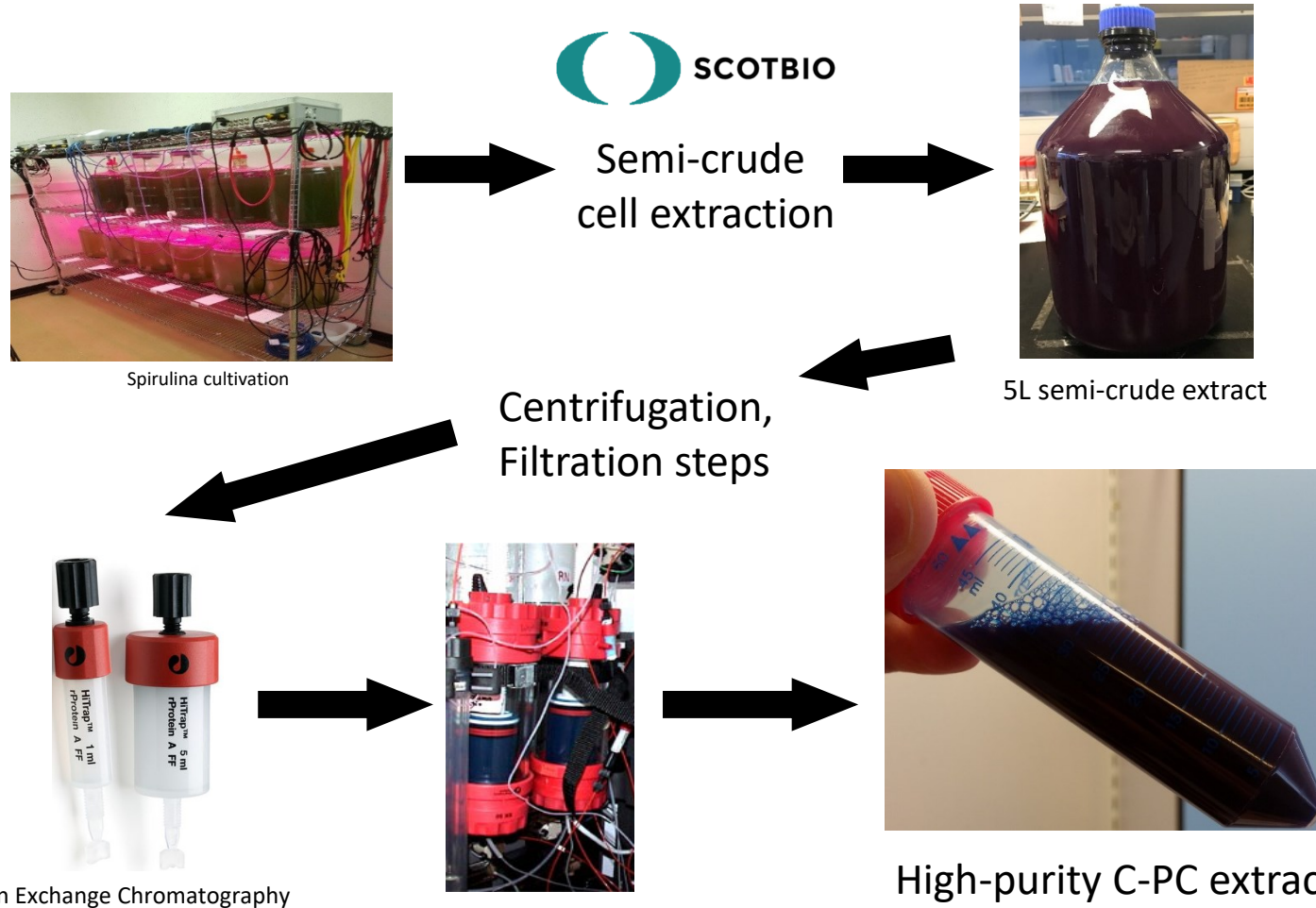


Vasudevan et al. 2019. CyanoGate: A modular cloning suite for engineering cyanobacteria based on the plant MoClo syntax. *Plant Physiology* 180: 39-55.

<http://www.addgene.org/kits/mccormick-cyanogate/#kit-details>

Listed as “Hot Plasmids” by Addgene (March 2020).

2017: Developing a purification protocol for producing high-purity C-PC

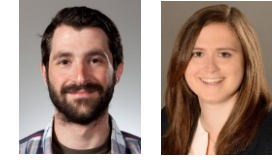


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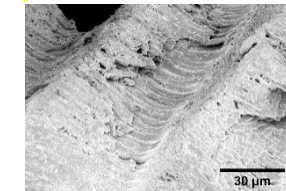
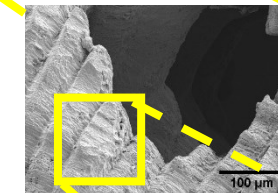
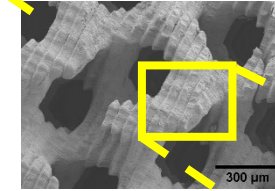
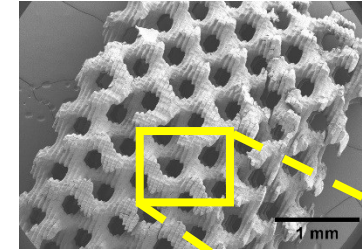


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2018: Adsorption of CPC on 3D printed chromatography columns

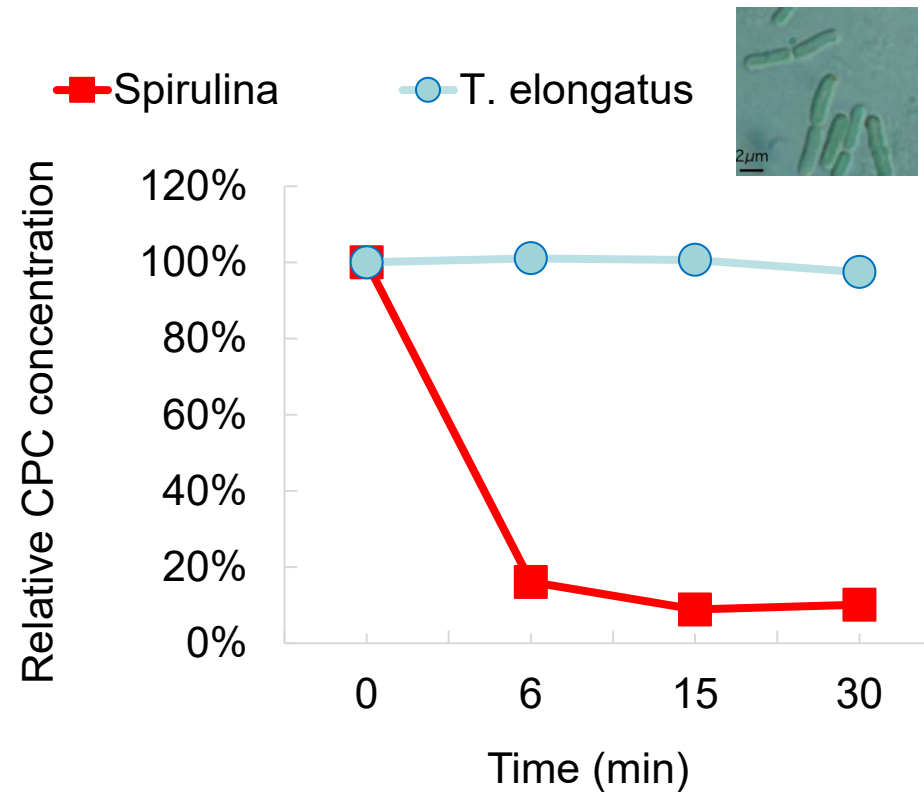


Eng.



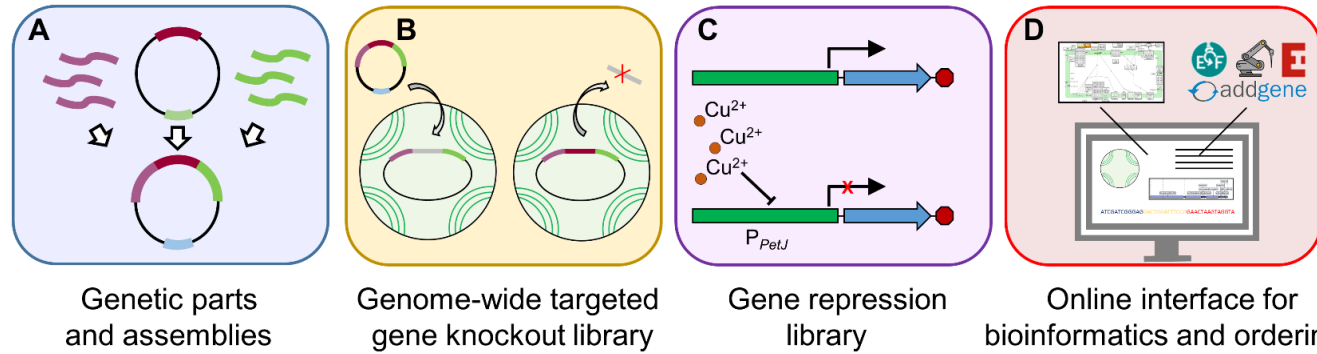
CPC concentration

2018: Genetic engineering approaches could improve the yields and quality of C-phycoerythrin



CPC held at 65°C
(pasteurising
temperatures)

2019: CyanoSource: a mutant library for *Synechocystis* generated by high-throughput automation



Edinburgh Genome Foundry



- Large collaborative project between two universities and two genome foundries
- Standardised design for 3,456 barcoded mutant strains
- Repository of mutants for the global cyanobacterial community.



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Funding and outcomes

Five successful grant applications (~£1m FEC):

2016 PhycoNet NIBB Proof of Concept Funding Award PHYCPoC-16.



2017 IBioIC Micro Accelerator Grant



2019 IBIOIC Micro Accelerator Grant



2019 BBSRC BBR Award BB/S020128/1



2020 Algae-UK Proof of Concept Grant



Funding for three postdocs

Two BBSRC-IBIOIC PhD scholarships, one BBSRC-CASE PhD scholarship.

Four publications

Case study for IBIOIC (2019)

Case study for REF 2021



SCOTBIO

grown from small SME at the Roslin Innovation Centre to a company with >10 people spread across two sites (BioCity and Lockerbie). Potential future employer for students.

Acknowledgements

Ravi Vasudevan



Alejandra Schiavon



Grant Gale



Anton Puzorjov



John Malin



Livia Scorza



Baojun Wang



Simone deMartino



Chris Howe



David Lea-Smith



HELLENIC REPUBLIC
National and Kapodistrian
University of Athens

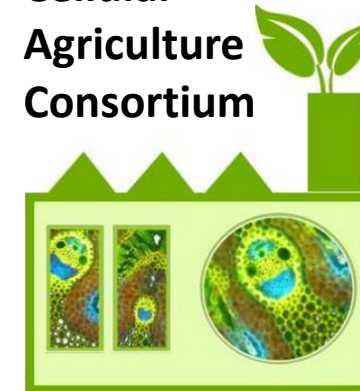
Konstantinos Vavitsas



Winners of Best Innovative Collaboration 2019 Scottish Life Sciences Awards



Cellular
Agriculture
Consortium



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Engage courses

Engage course available at Learn platform:

Relevant courses:

- How do I engage with external partners?
- How do I protect Intellectual Property?
- How do I build relationships and network?
- How do I start a translational journey with my research?
- How do I engage in consultancy?
- How do I commercialise my idea?

<https://www.ed.ac.uk/edinburgh-innovations/for-staff/training-and-events/engage>

The programme is available to **PhD researchers** on a referral basis – please contact your local Business Development Executive or your PI for a referral, which can be sent to eievents@ei.ed.ac.uk



Relevant Contacts



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