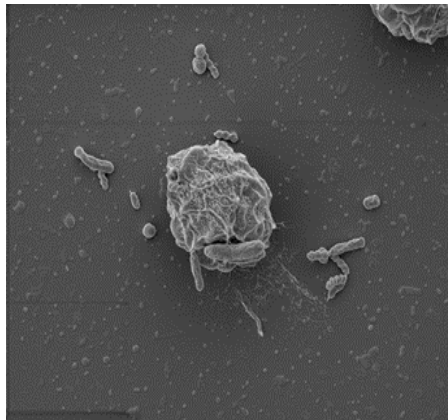
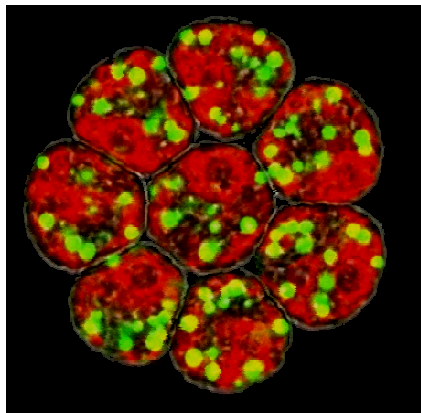


# IMPACT WORKSHOP

---



Prof Alison Smith, Department of Plant Sciences

*7<sup>th</sup> December 2015*



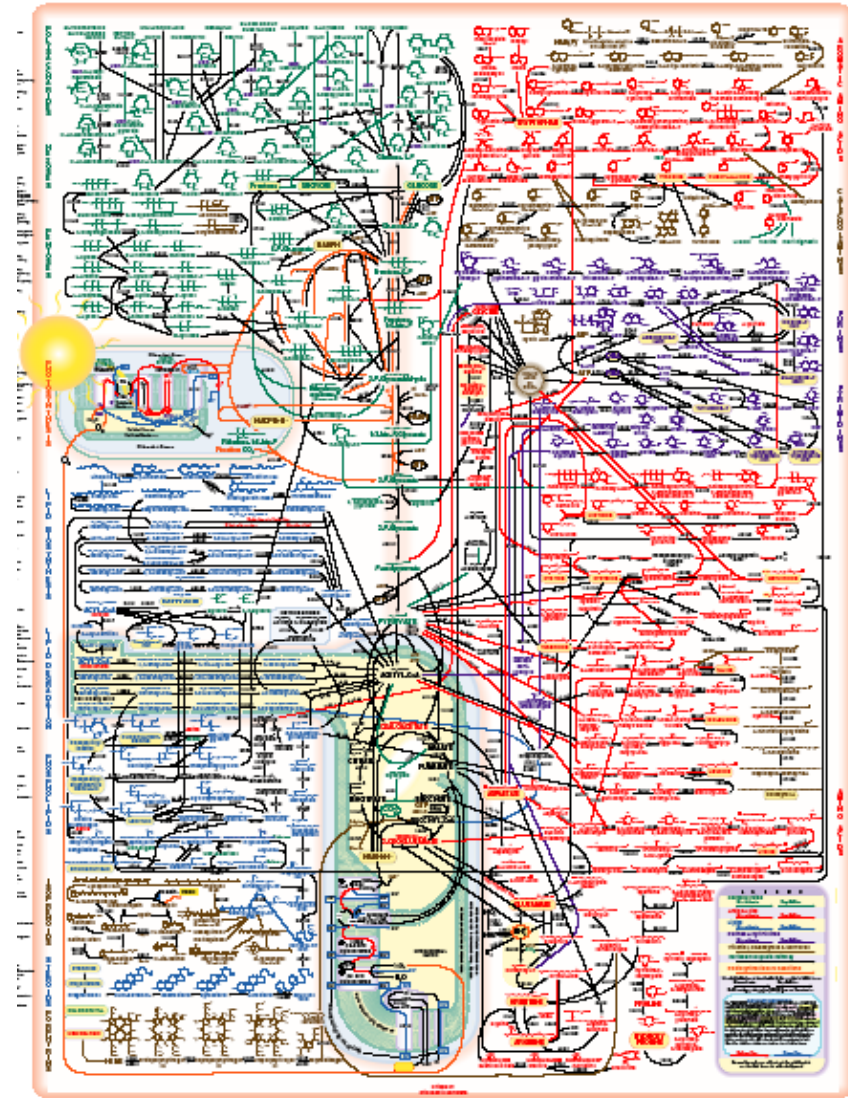
UNIVERSITY OF  
CAMBRIDGE



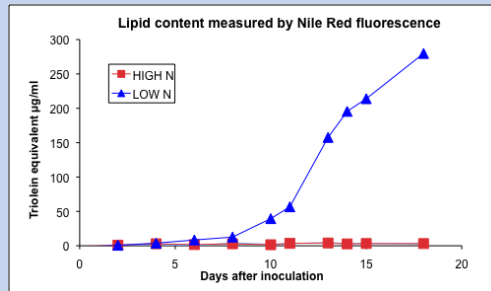
- BSc in Biochemistry,  
University of Bristol
- PhD in Biochemistry,  
University of Cambridge
- Promotions Assistant,  
Academic Press Inc,  
London



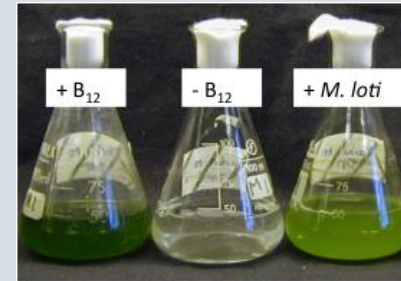
- Postdoc in Cambridge – plant molecular biology
- University Demonstrator, Lecturer
- Promoted to Reader, then Professor



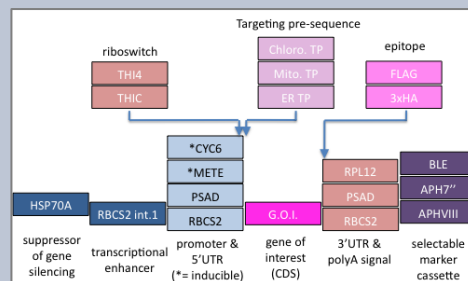
## Gene discovery & regulation of metabolism



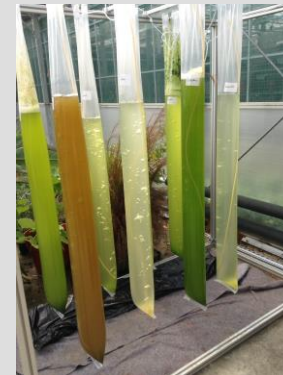
## Vitamins and symbiosis



## Algal synthetic biology



## Growing algae at scale



# Algal biotechnology projects with industry



Bioethanol production in  
*Synechocystis* PCC6803



Polymers from  
*Botryococcus braunii*



Marie Curie ITN



Sustainable bioenergy from  
microalgae: A systems perspective

Manipulating levels of  
omega 3 fatty acids in  
*Phaeodactylum tricornutum*



## Innovate UK

Developing platforms for production of diterpenoids –  
Comparison of *N. benthamiana*, yeast & microalgal platforms

- Attempt to do something useful
- Collaborate
- Have fun



Cambridge



Kent



UCL



MBA, Plymouth

---

- Their agenda is not yours
  - Focused on short-term
  - Can be extremely stimulating
-

- Engagement with
  - Public
  - Government
  - Funders
- Can be time-consuming



'Meet the Algae' Exhibit at Royal Society Summer Science Exhibition 2010



# BioPhotovoltaics – a case study

## Biophotovoltaics: MossTable talk

**BIOPHOTOVOLTAICS:** Dr Paolo Bombelli from the Department of Biochemistry gave a talk at the Bioenergy seminar about the Moss Table project

### BIOPHOTOVOLTAICS

**August 2012,** Dr Paolo Bombelli, from the Department of Biochemistry, gave a talk about the Moss Table project as part of the Bioenergy Initiative monthly seminar series:



Duration: 20 mins 42 secs

If you are having trouble viewing this video please go to <http://www.sms.cam.ac.uk/media/1292766> and choose a format best suited to your device.

---  
**March 2014:** Dr Paolo Bombelli speaks to Radio 4 Today programme about the power of moss:  
<http://www.bbc.co.uk/news/science-environment-26515651>

### Moss Clock



### Related Links

[Biophotovoltaics \(external link\)](#)

[The hidden power of moss](#)

[Energy from Algae](#)

[In the e-media: Moss: A Bio-Photo-Voltaic Generator \(external link\)](#)

[Evidence of Impact](#)

[Dr Bombelli talks to Radio 4 about Moss Power](#)

## Biochemistry

[Outreach](#) [Teaching](#) [Postgraduate](#) [Research](#) [Services](#) [Library](#)

### P2P Solar Hub



## P2P Solar hub Plant to Power



The P2P solar hub has been developed by a team of scientists at the University of Cambridge working in collaboration with green technology companies. The hub integrates two types of solar technologies: 1) an aSi-PV solar panels and 2) a new concept technology known as a 'plant-BES', which generates electrical current from plant root interactions within the Living Wall on the outside of the hub. It will be displayed at the Botanic Garden (Cambridge, UK) for a year while the team behind the project monitor the amount of current produced by this combined system. The long-term aim of the P2P solar hub research is to develop a range of self-powered sustainable buildings for diverse use all over the world from bus stops to refugee shelters.

## Bioenergy Initiative

[Home](#) [Research Directory](#) [Bioenergy News](#) [Lignocellulosic Bioenergy](#) [The Algal Biotechnology Consortium](#)

[Moss Table - Biophotovoltaics outreach: examples of press and internet coverage](#)

[Moss Table - Biophotovoltaics outreach: examples of press and internet coverage](#)

### Showcasing the biophotovoltaics research to the general public.

Examples of press and internet coverage:

#### a) General media:

Feature in Made Magazine (Issue 2, 2013, p40 ff):

<http://edition.pagesuite-professional.co.uk/launch.aspx?bid=50949c5d-3390-4162-9834-377a20643383>

Financial Times, July 12, 2013:

<http://www.ft.com/cms/s/2/a1ce4140-e490-11e2-875b-00144feabdc0.html#slide0>

New York Times, January 17, 2013:

[http://www.nytimes.com/2013/01/17/garden/bio-design-in-the-home-the-beauty-of-bacteria.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2013/01/17/garden/bio-design-in-the-home-the-beauty-of-bacteria.html?pagewanted=all&_r=0)

#### b) Online media:

Related to Royal Society Festival of Science and Arts, 25 June - 4 July 2010

<http://seefurtherfestival.org/exhibition/view/meet-algae-diversity-biology-and-energy>

Related to London Design Festival September 2011:

Examples of press coverage:

- Wired: <http://www.wired.co.uk/news/archive/2011-09/21/biophotovoltaic-product-designs>

**Wired** (stylized as **WIRED**) is a full-color monthly American magazine and online periodical, published since January 1993. It covers how new and developing technology affects culture, the economy, and politics. Digital contributed half of all ad revenue at W in the final three months of 2012 which has a print business guaranteeing advertisers a paid and verified circulation of 800,000.

Dr Paolo Bombelli – Prof Chris Howe – Prof Alison Smith

<http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=24413>

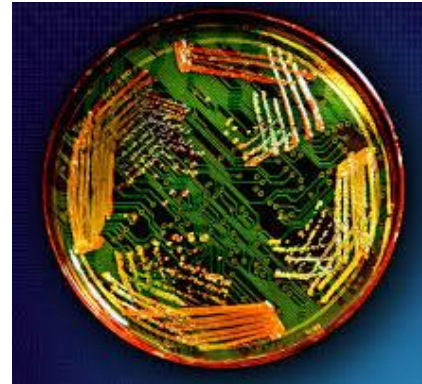
# DEPARTMENT OF PLANT SCIENCES



Fundamental  
plant and  
microbial  
biology



Food Security



Synthetic  
biology and  
biotechnology



Climate science  
and ecosystem  
conservation

**key research themes**