



## Who Are We?

C1net is a BBSRC NIBB dedicated to the development and scalable production of C1 gas fermentation for the whole IB community. C1net provides a cross-sector forum with the goals to foster and enhance collaboration between industry and academia; develop skills and expertise; share best practice; define common research priorities; and target funding opportunities in C1 gas fermentation. The management board is currently 12 strong, with Professor Nigel Minton (University of Nottingham) as PI and Professor Davis Fell (Oxford Brookes) as Col.



## Progress

Membership currently stands at 463 with members from Europe, India, USA, Russia and Brazil and 418 followers on Twitter. All 16 POC awards of £50,000 have now been made, but we still have some BIVs...

## BIV Awards 2018

Congratulations and a £10K BIV voucher go to:

William Zimmerman (University of Sheffield) & Pratik Desai (Perlemax Ltd) – “Intensifying Fermentation, the microbubble way!”

Stephen Wilkinson (University of Chester) and Jimmy Roussel (Blue Sky Bio) – “A novel pressurised and instrumented bioreactor system for process intensification of anaerobic digestion”



**TIME IS RUNNING OUT, APPLY NOW:**

**FINAL BIV CALL CLOSES 31 MAY 2018**

APPLY HERE - <http://www.c1net.co.uk/Funding.html>

BBSRC NIBB Business Interaction Vouchers (£10K) will be used to encourage and support collaboration between academic partners and industrial partners within the C1NET framework. They will be awarded to undertake a defined piece of work by the academic partner for the industrial partner.



Jacque Minton Network Manager  
Centre for Biomolecular Sciences  
University of Nottingham  
University Park,  
Nottingham, NG7 2RD  
[www.c1net.co.uk](http://www.c1net.co.uk)

## CALENDER (C1net Other)

**11 April 2018**

The Fuel and Energy research Forum Inaugural Seminar of the Environment Interest Group & 2<sup>nd</sup> Meeting, The University of Sheffield  
[Read more](#)

**9-12 April 2018**

BrisSynBio 4-day More Business Acumen (MBA) course, Unit DX business accelerator, Bristol  
[Read more](#)

**12 June 2018**

Industrial Biotechnology Pitch Event, London  
This Industrial Biotechnology and Bioenergy Showcase and Pitch Event is an opportunity for entrepreneurs with start-up, early stage and growth businesses to increase their profile in front of a national audience of investors.  
[Read more](#)

**16 May 2018**

KTN Event- Unlocking the Potential of 'Green Gases' for Energy, Transport and Chemical Feedstocks, Leeds  
[Read more](#)

**12 July 2018**

"Circular Economy Now" a "special edition" conference to highlight the opportunities and technologies available today to accelerate the circular economy in the UK in a post-Brexit world, Royal Society, London  
[Read more](#)

**18 – 19 July 2018**

'Beyond the lab: developing your Industrial Biotechnology Career', a FREE event for C1net and other participating NIBB members, University of York – Derwent College. Hendrix Hall  
[Read more](#)

**20-23 September 2018**

New Scientist Live, ExCeL Centre, London  
[Read more](#)

**21-23 January 2019**

C1net Final Conference, East Midlands Conference Centre, Nottingham  
[Read more](#)



## C1net Metabolic Modelling Workshop 4

by C1net member, PhD student, Francois Seys.

On the 15<sup>th</sup> January, about twenty postgraduates gathered in Nottingham to attend a metabolic modelling workshop led by Prof. David Fell and Dr. Mark Poolman from Oxford-Brookes University. The goal of the workshop was ambitious: to gain practical insights into the capabilities and limitations of metabolic modelling. The teaching was based on the software package Scrupmy, specifically designed by Dr. Poolman to build structural models of metabolisms. Scrupmy is based on Python, which means that there is no user interface: everything has to be typed in the command line of a Linux operating system. This feature is intimidating at first, but allows a versatility and a transparency that make Scrupmy a perfect teaching tool. The general introduction was short, quickly laying the foundation of logic and programming necessary for the assembly of our very own metabolic model. It became very clear indeed that the pedagogy was to learn by doing, and thus we started coding as early as the second morning of the 5-days workshop.

The practicals were skillfully assisted by Noah Mesfin, Rupert Norman, Nicole Percy, Teresa Diaz Calvo. They each based their PhD on the assembly of the genome-scale model of a different microorganism using Scrupmy, and they each presented their work later in the workshop. They illustrated how genome-scale models could be used to predict the effects of knockouts, expose unexpected pathways, and simulate different culture conditions. It would have been pointless just a few days earlier, but, by now, we were already able to follow a research-level presentation on metabolic modelling. Quite an impressive progression!

The last two practicals saw us building a small metabolic model from scratch and observing the effects of different substrates in a basic central carbon metabolism, in aerobic and anaerobic conditions. What was understood on small models during the workshop can now be applied on larger models within our own projects! Of course we have not quite reached the level of proficiency required to build a genome-scale model ourselves, but that was never the intention. We are now able to communicate effectively with the actual modellers in our teams, we have a starting skillset to keep learning to model and code, and we are aware of what metabolic models can and cannot bring to our research.

**"10/10 would attend again"**



## IBioIC Annual Conference Glasgow, 25-26 January 2018

by C1net sponsored speaker Christophe Mihalcea, LanzaTech

The conference attendance was about 450 people with exhibitors; mainly manufacturers of fermentation equipment presenting their newest equipment. My contribution was in the C1net sponsored C1 fermentation session, which included presentations by Frederick de Bruyn (Bio Base Europe pilot plant) and Joanne Neary (CPI) and Charles Abbas (University of Illinois) and Urbana Champaign. Conclusions were that the gas fermentation process has the potential to be a “disrupting, and game changing” technology but drawbacks included reactor issues the fact that methanotroph or methylotroph processes are just targeting biomass but not fuels and chemicals. The biology associated with gas fermentation was accepted to be working at today’s stage for ethanol and biomass production at large scale but the engineering part was seen by other speakers as the critical component where innovative new solutions are still needed to address scale-up.

In this context, I was presenting on the LanzaTech process technology with a “working” bioreactor and the expansions from ethanol to new products such as acetone and isopropanol. Our first commercial project being in the final stage of construction. Questions were collected in the background throughout the session and presented at the end. My presentation was received very well as the majority of interest was addressed primarily to LanzaTech’s reactor technology. One question was related to the classification of microbes, whether or not they are considered to be GRAS and further related to their potential pathogeny. The main tenor was “gas fermentation is transforming the biotechnology market” and will be a fast expanding sector in years to come.



## Festival of Science and Technology Nottingham, 14-21 February 2018

The Festival of Science and Curiosity is now in its 4th year, and is produced by an enthusiastic collaboration of Nottingham organisations from the City Council, to Nottingham’s two universities and other independent partners. All of whom are dedicated to enriching the city’s culture with science and curiosity!

This year’s festival ran over half term week 14<sup>th</sup> - 21<sup>st</sup> February and boasted an impressive programme of science activities through comedy, games, conferences and demonstrations. C1net outreachers Louise Dynes, Jacque Minton, Philippa Strong, Beth Redfern, Chris McCusker and Christian Gude contributed to the cause with two presentations of “Game of Fuels” at Nottingham and Bulwell Library.

At both events a total of about 80 people played the game. Though some of the concepts were challenging, the children enjoyed playing the game and both adults and children said they had learned something new, one parent even wanted to buy the game!



I took part in the  
Biobutanol Race!

## **STOP PRESS Announcing “Circular Economy Now” Royal Society, London, 11 July 2018**

A “Special Edition” conference to highlight the opportunities and technologies available today to accelerate the circular economy in the UK in a post –Brexit world. From across the supply chain, key players will be invited to speak in panels on the key themes of Resources, Technology/Conversions and Markets with UK Government representatives on each panel. The conference will be held in London and will have 3 keynote speakers. Panel sessions will be moderated by BBC science journalist, Tom Heap.

Brought to you with the help of



[MORE HERE](#)



## **WE WANT YOUR NEWS**

Please send us about your events and send us your news stories for publication in this newsletter and on our soon to be unveiled redesigned website

To UNSUBSCRIBE at any time, please email this link with the subject title “UNSUBSCRIBE”



Jacque Minton Network Manager  
Centre for Biomolecular Sciences  
University of Nottingham  
University Park,  
Nottingham, NG7 2RD  
[www.c1net.co.uk](http://www.c1net.co.uk)



@C1Net\_NIBB