

## SynBioStandards Network

**\*\* July 2010 NEWSFLASH \*\***



Welcome to a bumper summer edition of the Network newsletter! Included are reports from Jane Calvert's visit to JBEI for the SynBERC retreat earlier this year, and Tom Ellis' trip to the Second International Workshop on Bio-Design Automation, held in Anaheim last month.

**SAVE THE DATE!** The autumn 2010 SynBioStandards Network meeting will be held on **Thursday 16 September in Edinburgh**, with drinks and dinner the night before (Wednesday 15 September). Details to follow, but please mark the date in your calendar! If you have suggestions for topics to discuss, or would like to present some of your recent research at the meeting, please get in touch with Emma F.

### NEWS bytes

Welcome to new Network member Elise Cachat (Edinburgh), who is working with Jamie Davies on his BBSRC-funded synthetic morphology project.

Residencies announced! Between now and the end of 2010, the EPSRC/NSF-funded [Synthetic Aesthetics](#) project is sponsoring 12 exchanges between synthetic biologists and designers, artists, and creative practitioners. SynBioStandards Network member Fernan Federici (Cambridge) will be working with New York-based architect David Benjamin. Follow their ideas and adventures [online](#).

### EPSRC Funding call: Challenging Engineering

This call seeks to enable future leaders of research to develop a research group that will undertake creative research and develop innovative solutions to some of the challenges facing society. Closing date for proposals: 4 PM on 11 August 2010.



iGEM 2010 is underway! A record number of UK teams have signed up this year, and we wish them the best of luck with their projects. Follow the progress of the Aberdeen, Bristol, Cambridge, Edinburgh, Imperial, Newcastle, Sheffield, St Andrew's, and UCL teams through their [wikis](#).

The University of Edinburgh will be launching an [MSc degree in Systems & Synthetic Biology](#) from September 2010.

Interested in talking about synthetic biology at a [Café Scientifique](#) event near you? The SynBioStandards network is keen to sponsor a series of Café Scientifique soirées around the UK next year. Please contact Emma F. if you would like to be involved.

## NETWORKERS ABROAD

SynBioStandards Network members have been travelling the globe in recent months to take part in synthetic biology events. Highlights include:

- James King presented his 'Cellularity' project at the [Wyss Symposium on Synthetic Biology](#) in Boston on 30 April. With designer colleague Daisy Ginsberg, he has also recently spent two weeks in Bangalore, working with the ArtScienceBangalore iGEM 2010 team. Read all about their adventures on the [blog](#) they kept while out there.
- Chris French gave a talk as part of a panel on 'Synthetic Biology: From Oligonucleotides to Genomes' at BIO (the BioIndustry Organization conference) in Chicago on 3 May.
- Jane Calvert participated in a panel discussion entitled 'Synbio in Society: Toward New Forms of Collaboration?' at the Woodrow Wilson Centre on 12 May. A [webcast](#) of the event is available.

## FOR YOUR SUMMER READING and LISTENING PLEASURE...

- On 27 May, the US Committee on Energy and Commerce held a Congressional Hearing on 'Developments in Synthetic Genomics and Implications for Health and Energy'. [Videos and full transcripts](#) are available online.
- A recent [Nature News article](#) mentions two new competitions in synthetic biology: the International Rational Genome-Design Contest (GenoCon), and the Critical Assessment of Genetically Engineering Networks (CAGEN, pronounced 'cajun') competition.
- The [BBSRC/EPSRC Synthetic Biology Dialogue report](#) was published in June 2010, summarising the findings from their recent UK-wide public engagement exercise.
- James King published an [article on synthetic biology](#) in the 21 June edition of *SEED Magazine*.
- The 9 July instalment of the NPR show 'Science Friday' focused on [the ethics of synthetic biology](#).

## COMING UP...

**15 July:** Deadline for submitting films to the Bio:Fiction competition

**20-21 July:** iGEM-UK meet-up in Newcastle

**4-7 Sept:** The EMBO 2010 meeting (Barcelona)

**16 Sept:** Autumn 2010 UK SynBioStandards Network meeting, Edinburgh

*If you would like to publicise an event, article, funding opportunity, etc. in the next Network newsletter, just email details to [emma.frow@ed.ac.uk](mailto:emma.frow@ed.ac.uk).*

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## **SynBERC Retreat**

**Joint BioEnergy Institute, California, 28th Feb-3rd March 2010**

### ***Report by Jane Calvert (Edinburgh)***

The SynBERC (Synthetic Biology Engineering Research Centre) retreat was a fascinating event where investigators reported on the progress of their work on applications such as biofuels and tumor-killing bacteria, as well as conceptual issues such as building robustness into engineered biological systems. This retreat marked the launch of the BIOFAB, with all of the presenters having to address the question: "what could the biofab do for me?" In this short report I will focus on these discussions and on the role of Human Practices in the BIOFAB in particular.

The BIOFAB, like GNU, is a recursive acronym, which stands for BIOFAB: International Open Facility Advancing Biotechnology. It currently has two years funding from the National Science Foundation matched by the Lawrence Berkeley National Laboratory and the BioBricks Foundation.

Drew Endy's talk on the BIOFAB was called 'Linking applications to foundational needs', precisely because he sees the aim of the BIOFAB to fill the gap between the simple biological parts that are currently being designed in synthetic biology and the applications that are desired. By filling this gap the BIOFAB will help realise the mission of making biology easier to engineer. Endy explained that the BIOFAB is a new type of entity, which is more like a service facility for the synthetic biology community than a traditional academic lab. The kinds of services they will perform include designing, refining and measuring parts, and producing datasheets for parts, as well as standards development and testing, and rapid strain prototyping

A particularly interesting feature of the BIOFAB is the priority they give to the Human Practices component (which is called Human Practices in Practice or HPiP in the BIOFAB context). Endy even described Human Practices as "the brains of the BIOFAB".

The Human Practices leader in the BIOFAB is Gaymon Bennett, who has already worked closely with Paul Rabinow in SynBERC for several years. What's interesting about Bennett's position in the BIOFAB is that he is not an embedded social science researcher, but an investigator, an integral part of the BIOFAB on an equal footing with the other investigators.

The kinds of questions that are being asked by Human Practices researchers in the BIOFAB are: should the BIOFAB be shipping materials abroad? Should they be putting genetic signatures into parts? Should they barcode? Should they distribute parts outside recognised institutions? What kind of intellectual property system should they adopt?

Bennett will write several Human Practices reports on a set of core questions. These reports will be available on the BIOFAB website. The topics will include:

- What is a part? (This report is already available on <http://www.biofab.org/>)
- What is iGEM?
- What is an open technology platform?

- What is the role of religion?
- What do we mean by standards in synthetic biology?

This early-stage integration of Human Practices in Practice shows that the BIOFAB is innovative not only technically, but also organisationally.

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## **Second International Workshop on Bio-Design Automation (IWBD A) 14–15 June 2010, Anaheim, California**

### ***Report by Tom Ellis (Imperial)***

The 2nd annual IWBD A workshop was a two-day meeting piggy-backed onto the much larger DAC conference at the Anaheim Convention Centre in California. The workshop was attended by about 80 people and featured talks and posters focused on the design of software for synthetic biology, specifically CAD and tools. For the second year running the conference was organised by Ron Weiss (now at MIT) and Doug Densmore (about to move to Boston University). Neither gave presentations themselves, nor did Adam Arkin who was in attendance. For an invited speaker they had Roger Brent, who began the workshop critiquing the progress of synthetic biology and arguing that it had become stagnant. He was scathing of claims of novelty attributed to synthetic biology that had actually been done decades before but seemingly forgotten. His assessment on synthetic biology's current state was put into focus by the state of semiconductor chip design which was surrounding us at this workshop. Truly we have a long way to go before synthetic biology even begins to represent an industry like the microchip one, with countless companies promoting their wares with freebies and sexy models!

Encouragement was given on the second day in a joint-session with the DAC community that saw talks from Pam Silver, J. Chris Anderson and Richard Murray. The chip architects among the crowd seemed very enthusiastic to synthetic biology and the progress achieved in 10 years, even if we ourselves are a little jaded. Perhaps the sharpest talk of all was Anderson's. As one of the few wetlab synthetic biologists in attendance he acutely summed up the problem with software development for synthetic biology so far – too many people are working on high-level problems, such as Bayesian solutions for linking hundreds of logic gates, and not enough people are designing tools we can use right now, like the Voigt Lab's RBS calculator. Let's hope that next year his call will be answered and there was promising sounds that it would be, with the presentation of a potential 'Promoter Calculator' for *E.coli*, and a poster from JBEI outlining a software program 'Johnny5' which helps design and automate DNA assembly for various different methods. A final positive note was an agreement by most of the big players working in synthetic biology CAD, registries and the BIOFAB to develop a common shareable format – SBOL – so that data from one can be shared with all.

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