



## **Synthetic Biology Leadership Council – Meeting 23**

**Wednesday, July 17th, 2019**

**BEIS Conference Centre, 1 Victoria Street, London SW1H 0ET**

### **Attendees:**

Lord Henley, Prof Lionel Clarke, Prof Richard Kitney, Prof Joyce Tait, Dr Rowan McKibbin, Prof Tim Dafforn, Prof Dale Sanders, Dr Tim Fell, Dr Jason Vincent, Dr Gordon Ford, Dr Dana Heldt, Gillian Whitworth (morning only), Jonathan Hoare (afternoon only)

Invited Guest: Steve Bagshaw, Dr Paul Bello

### **Apologies:**

Dr Louise Ball, Dr Jo Bray, Dr Tim Brears, Prof Petra Oyston, Dr David Tew, Dr Yvonne Armitage, Prof Janet Bainbridge, Paul Henderson

### **1. Welcome**

- The SBLC members were welcomed by the Chair Lionel Clarke and apologies were noted.
- Lionel welcomed guest attendees Steve Bagshaw, CEO of Fujifilm Diosynth Biotechnologies and Chair of the Industrial Biotechnology Leadership Forum (IBLF), and Dr Paul Bello, Innovate UK.
- Lionel highlighted the importance of the [SBLC UK synbio achievement brochure](#) which shows the development of UK Synbio outputs in the last 10 years. With over 150 start-ups in the field, and development of new technologies such as CRISPR/CAS9 and AI/machine learning/automation the UK has exceeded the time plan set in in the [Roadmap](#) in 2012.
- Moving forward the focus on the Bioeconomy is crucial

### **2. Preparation for discussion with Lord Henley and Update from IBLF**

- Steve Bagshaw gave an Introduction about the IBLF.
- IBLF is industry focused with companies operating in the industrial biotechnology sector and supported by BEIS. The increased market-pull to incorporate “bio” into manufacturing/consumer products is being addressed by companies in the IBLF, with Unilever, Biome, Oxford Biotrans and Ingenza being highlighted.
- Industrial Biotechnology and Synthetic Biology are overlapping and need to work together.
- IBLF published “[A National Industrial Biotechnology Strategy to 2030](#)” document in summer 2018, setting out the plan to ensure the UK is a leader in the circular bioeconomy through harnessing the excellent science within the UK and enabling industrial biotech to be integral part of UK industry. The UK needs to create a joined-up manufacturing pipeline and ensure start-ups stay in the UK and do not move abroad. The Strategy will be implemented over 7 strands (external

environment; funding and access to finance; infrastructure and regional footprint; Trade, investment and commercialisation; regulation and standards; skills; communication). Regional disparities will be addressed, eg aiming to connect companies/academics in the north and mid-west, who in the past have found it challenging to collaborate. Additional, regulation and standards play an important role, addressing requirements for biodegradable products. Emphasis is also put on the need for continued skills and communications, bringing a consistent, clear message across, informing the public about the benefits and outcomes of IB.

- BBSRC, supported by the IBLF, published a [booklet](#) (UK Biotechnology impacting everyday lives) highlighting examples of commercial Industrial Biotechnology outputs from BBSRC funded University research.
- Chemistry is one of the main sectors which will benefit from working closely with biotechnology. Johnson Matthey was given as an example, which is exploring biological opportunities.
- Discussion focused on the need of a business plan for the UK and to have a synergy across the country. Engagement with the companies per se is important and not just one person, as they might represent their personal views and not the overall company one. Dick Kitney pointed out to keep in mind the requirement for 2 separate business models, depending on the company size (large vs small)
- Industry is changing and biobased becomes more and more important, however well-established companies are closing down business, with Green Biologics being the latest one to close down its production facility in the US. UK needs to learn from mistakes of the past. Jason Vincent highlighted DSM as a company outside of the UK who has transformed over the years to become successful. Support for SMEs and start-ups through the Valley of Death required. Joyce Tait reference a paper she recently published, on policy support for disruptive innovation in industrial biotechnology (<https://doi.org/10.1080/09537325.2019.1631449>).
- Brewery industry was also mentioned as a sector for the biobased approach. There is a clear gap in the route to market and scale up development is required. Build-up of fermentation companies to build the sector could be a solution.
- Dick Kitney pointed out to not lose sight of pure synbio companies.
- There are numerous companies in the biofuel sector who have failed, and the focus is shifting to alternatives. Aviation industry is still in demand for biofuel.
- One of the main sectors where synbio can deliver is crops and healthcare. However, communication and regulation is crucial, especially in the crops sector (gene editing)
- UK needs to focus and capitalise on its skill, eg technology development and innovation.
- UK business model - dependent on private investment but need public funding to secure this.

### 3. Discussion with Lord Henley

- Lord Henley thanked the SBLC for everything it has done in the years since he has been co-chair of the SBLC. The achievements brochure is an excellent way of promoting UK's synbio accomplishments.
- He gave an overview of his recent visits:
  - UK Centre for Mammalian Synthetic Biology Research, Edinburgh
  - Customen, London
  - OpenCell, London

He appreciated the opportunity to participate at SynbiTech2019 and engaged with the Kenyan representatives.

- Questions were raised by the SBLC members how he sees the relation of the Bioeconomy strategy to the Industrial strategy. – 3 of the 4 focus areas (AI, health, clean growth) in the Industrial strategy are also focus points in the Bioeconomy strategy and there is a clear overlap. It's important to join both up and keep the relevant departments involved in the discussions. SBLC will play a crucial role in continuing the synbio involvement.
- The next discussion point addressed the changing market pull. Climate change is one current focus and green bio routes are seen as a solution provider.
- Communication of success stories important. UK has excellence Science base and we need to continue to bring the message across. Dick Kitney pointed out that the press was invited to attend SynbiTECH2019, but not many attended the event. There is clear indication that better connection to the press is needed to deliver positive synbio stories. The [SBLC UK synbio achievement brochure](#) will be published online for everyone to access on demand.

**Action: KTN to ensure online publication**

- The issue of funding was raised with Lord Henley. To obtain private funding the government needs to commit to long term investment. America was given as example where funding supported the community build. Dick Kitney gave an estimation of funding needed for the SBRCs with about 100mio over the next 5 years.
- The current regulatory framework was addressed. Improvements, especially for food, medicine, crops could have a positive impact for the UK in attracting investment and secure skills and companies to not move abroad. IT sector was highlighted as example where we can learn from, although Joyce Tait pointed out that in IT companies like Google and Apple have benefitted from 'first mover advantage', whereas synbio and life science based companies have a first mover disadvantage (due to regulatory and other hurdles to be overcome). Policy can be used to create markets. Energy sector given as example which has been subsidised in past subject to delivery. Question was raised how we can influence the regulatory framework. Lord Henley encouraged continued communication with ministerial departments talking to all parties and stakeholders, engagements via parliamentary days. Also, important to have continued public engagement and for example addressing the misconception of GM and profiling the social and financial benefits. Need to keep in mind how best to communicate.

**4. Continued discussion on IBLF**

- Discussion continued on how the IBLF and SBLC can work together and the requirement for a combined approach. IBLF has less University engagement. It would be appropriate to have joint meeting, possible in form of a workshop next month

**Action: Scope out meeting opportunities (Yvonne and Dana)**

- Other points raised:
  - Tim Dafforn pointed out that Quantum technologies are emerging. David Tew had provided some discussion points via email. For 2019/20 the QTEC program at Bristol University (<http://www.bristol.ac.uk/qttec/>) is expanding with the potential to include two Synthetic Biology companies. This will augment the entrepreneurial training available within the UK for SynBio companies.
  - Tech Transfer Offices holding back commercialisation from universities. (note: Discussion parked for the moment to be taken up again under point 9)

- The potential of a UK PLC: What would it look like. Companies could be departments of UK PLC.
- As the government is changing should the SBLC consider writing a letter to the new PM making him aware of Synbio and the opportunities for UK

**Action: Consider letter to the new PM**

## 5. Internal Business

- The minutes and actions from the last meeting were approved after minor corrections.
- Outcomes of the actions from SBLC 22 are listed below

Actions	Description	Responsibility	Due date	Progress /outcome
22 – 1	Summarise outcomes of the open meeting break-out sessions and circulate with attendees for feedback.	Dana Heldt, Yvonne Armitage	By next meeting	shared with attendees, awaiting further feedback
22 – 2	Generate and publish synbio successes document	Lionel Clarke, with all SBLC support	SynbiTECH 2019	done
22 – 3	KTN to work offline with Stakeholders (Lionel Clarke, BBSRC, Innovate UK, BEIS) to find alternative solutions to continue support to SBLC	Dana Heldt	ongoing	KTN Internal Synbio planed shared with BBSRC and Innovate UK
22 – 4	Enable SBLC representations at the SBUK pre-meetings.	Rowan McKibbin	As and when dates become available	Likely to be 11/12/2019
22 – 5	Review of SBLC ToR: Rephrasing of SBLC vision	All (Dana to collect)	Next meeting	Discussion continued at SBLC 23
22 – 6	Develop synbio skill/platform matrix	Dana	Next meeting	Pre-reading material paper paper 7)
22 – 7	Suggest members to invite, to reflect cross sector synbio representation	All (Dana to collect)	Next meeting	Discussion continued at SBLC 23
22 – 8	Invite Roger Kilburn to join SBLC	Lionel Clarke	Next meeting	Roger Kilburn has left IBioIC – need to identify another.
22 – 9	Support Bioeconomy strategy Working Group reps	all	n/a	ongoing
22- 10	Circulate Education and Training paper	Dick Kitney	Next meeting	Final version is prepared and will be shared

## 6. Science & Technology Subgroup update

- Dick Kitney gave update from the Science and Technology subgroup meeting which took place on 20<sup>th</sup> June
- The Subgroup Science strategy paper was shared with the SBLC members. Aim of the paper is:
  - to inform the SBLC on SBRCs developments, Education and Training in Synbio, as well as the business landscape,
  - to be included in a potential overarching document
- Lack of funding for the SBRC was one of the main discussion points of the Subgroup meeting. There is concern on losing key staff and skilled employees.
  - Previously mentioned funding required was addressed again – Long term funding, £100mio needed,
  - Rowan McKibbin assured that Synbio is still priority of UKRI-BBSRC. Currently no large-scale funding available, but normal funding routes continue. Opportunities will be explored to submit failed applications into spending review.
- Dick Kitney recapped SynbiTech2019
  - attended by over 400 representatives from industry and academics.
  - 76 speakers
  - Limited attendance by press despite being invited to attend
  - Dick shared some statistic outputs from twitter showing a good outreach.
  - The date for the **next SynbiTech conference will take place on 6<sup>th</sup>-7<sup>th</sup> July 2020 in London.**
- Updates were given by the SBRC on recent developments.

## 7. Update from Governance Subgroup.

- Joyce Tait gave an update on the recent subgroup meeting
- Minutes of the meeting will be made available at a later time.
- The activities and achievements of the GSG have been evaluated and the purpose of the GSG reconsidered. Engagement of industry as members is challenging, and discussions have started on whether an informal group with ad-hoc meetings would be more appropriate. Lionel Clarke pointed out it is important to have a group and voice on regulatory aspects and involvement into CBD, GMO, gene editing and Nagoya and also to engage with NGOs. There is a clear value of the group and a restructure of the group with add-hoc meetings was seen as way forward to continue the group and also attract a broader participation.

**Action: Joyce Tait to scope out subgroup restructuring plan**

## 8. 'Strength in Places' bid

- The SBLC was approached to support a "Strength in Places" bid
- A brief overview of the project and the aims were given
- Details of the discussion will not made public due to the sensitive nature of the application.

**Action: SBLC to reply to the request**

## 9. From Strategies to Business Models

- Lionel Clarke presented power point slides to support the discussions
  - Markets:
    - Need to understand what are the markets and their size. More resources needed for in depth analysis and study → part of the bioeconomy strategy group?
  - Infrastructure
    - Different kind of infrastructure – localised and UK wide → Biopilots and Biorefineries (Beacons, CPI, IBioIC)
    - UKRI-BBSRC will be publishing an Infrastructure Roadmap later this year.
    - Good distribution of centres in the UK
  - Technologies
    - Link Chemistry Council to IBLF and SBLC
    - EBSRC roadmap published in the US, focusing on Technology. Would something similar be useful for the UK?
  - TechTransferOffices and Universities
    - There is concern that TTO's are holding back commercialisation from University research (slow turnaround time, high royalties, shares...)
    - Key driver for Universities is REF. While Universities are keen to own IP, this often does not lead to new markets and the cost of not commercially translated project potentially impacts the economy.
    - Dick Kitney pointed out the need to distinguish between different University faculties.
    - A change is required how Universities & TTOs handle academic research translation and possible solutions could be IP shares/IPO. Need to keep the communication going to find a solution benefiting all.
  - Innovation/iGEM
    - Funding support available from EPSRC to support iGEM activities. Participation in iGEM can be time consuming for PIs. Question raised if there is still value in iGEM. Tim Dafforn pointed out the learning from iGEM are important. Some countries have started hosting their own alternative iGEM competitions.

## 10. SBLC administration

- The Terms of References will be updated to ensure transparency. The updated document will show
  - A clear description SBLC aims
  - Reflect the changing synbio sectors and how new emerging technologies will be represented in the SBLC
  - Outline the role of the SBLC members, including the term length
  - Need and function of the open meeting
  - Updated Register of Interests needed

### Actions:

- **Rowan McKibbin to provide templates for ToRs**
- **Lionel Clark to draft ToR**
- **Dana Heldt to send "Register of Interests" document to current members for completion**

## 11. AOB

- Upcoming events were highlighted

Date	event	location
9 <sup>th</sup> – 11 <sup>th</sup> September 2019	International Workshop on Control Engineering and Synthetic Biology	Oxford
1 - 3 <sup>rd</sup> October 2019	SynbioBeta	San Francisco, USA
12 <sup>th</sup> November 2019	SBLC 24	London, UK
9 <sup>th</sup> -10 <sup>th</sup> December 2019	Synbio UK	Warwick, UK
30 March–3 April 2020	Microbiology Society annual conference (session on Biomaterials)	Edinburgh, UK
6 <sup>th</sup> -7 <sup>th</sup> July 2020	SynbiTech20	London, UK

## 12. Actions

The actions from SBLC 23 are summarised in the table below

Actions	Description	Responsibility	Due date	Progress /outcome
23 – 1	Publication of the SBLC UK synbio achievement brochure online	Dana Heldt	As soon as possible	done
23 – 2	Scope out joint IBLF-SBLC meeting	Yvonne Armitage, Dana Heldt	March 2020	In progress
23 – 3	Letter to the PM	Lionel Clark and SBLC members	TBC	TBC
23 – 4	Scope out restructuring plan for GSG subgroup	Joyce Tait	By next meeting	done
23 – 5	Respond to support request for 'strength in places' bid	Lionel Clarke and SBLC members	As soon as possible	done
23 – 6	Update SBLC ToRs	Lionel Clarke,	By next meeting	In progress
23 – 7	Provide ToR examples	Rowan McKibbin	By beginning of October	done
23 – 8	Updated Register of Interest from SBLC members.	Dana Heldt	By next meeting	Document for completion send to all members
23 – 9	Provide Agenda items for SBLC 24	all	beginning October	done
<b>Outstanding Actions</b>				
22 - 10	Circulate the final version of the Training and Education paper	Dick Kitney	Next meeting	done