

IBLF Newsletter



March
2015



Sustainable growth in industrial biotechnology – a showcase like no other

I can't quite believe that the IB Showcase is already over! Held at the QEII Conference Centre in central London on 11th and 12th February, it was our largest event yet, bringing together nearly 300 IB experts from across the UK and Europe. I think it is safe to say that it was a success, and represented a real coming together of the IB community – I left with a real sense of the depth of science underpinning what we are doing in this industry as well as the products and processes just about to be or already launched.

Of course, we must be cautious - we mustn't feel we have arrived. For me, the event showed that we are at the start of an exciting journey. This view has been reflected in a new report launched by the IBLF at the IB Showcase. Titled **'Journey of Industrial Biotechnology: The opportunity for growth'**, it charts the rapid growth of the IB sector in the past five years, and highlights the challenges that remain. This report is free to download from the IBLF website, but to wet your appetite, the executive summary can be found on page 3.

At the IB Showcase, we were lucky enough to host George Freeman MP, Parliamentary Under Secretary of State for Life Sciences at the Department for Business, Innovation and Skills and the Department of Health. His enthusiasm for industrial biotechnology was clear from his first words, and he stressed the Government's commitment to the area. While at the IB Showcase, Freeman also visited the exhibition space, enjoying a coffee from Biome's bioplastic pods and an orange juice from the Biorenewables Development Centre.

Here was a key theme of this year's IB Showcase – moving from lab to market. Day two of the event saw the first ever IBLF Awards, run via a Dragons' Den-style pitching session which led to some fascinating discussions. The IB Dragons, including Ian Fotheringham from Ingenza Ltd, Stuart West from Biocatalysts Ltd,

Tom Brown from the University of Oxford and Colin Harrison from CPI, allocated £10k prizes to 9 innovative companies. This money, provided by the Scottish Government and NERC, could be put towards a range of services including market research, PR, process facilities, incubator space or IP protection/exploitation – we hope these prizes will give each of the nine winners a springboard to bigger and better things.

More than anything, the event demonstrated the commercialisation opportunities open to us - there is now a sense that industrial biotechnology is a real and growing part of our economy. It was clear that our networks reach far outside the UK too, thanks to our connections with the Industrial Biotechnology Network Norway (IBNN) in particular. Five companies from Norway attended the event with innovations as varied as wood-based composites to extracting enzymes from fish stocks.

The challenge for those of us invested in industrial biotechnology is really going forward from this point. We have progressed hugely in the past five years and I feel strongly that we must not lose this hard-earned momentum. IHS Consulting's Mark Morgan echoed this during his talk on the second day of the IB Showcase where he said that **"having a great bio-process is not enough – we must also optimise our time to market in all sectors. There are many great opportunities open to us, and we must grab them - we simply can't stand still."**

This second IB Showcase provided an exciting opportunity for the IBLF to demonstrate UK excellence in industrial biotechnology, but we as a community have plenty of work still to do. The future for IB has never looked so bright, but we must work together to turn this remarkable progress into one that transforms business operations and the economy as a whole.

"having a great bio-process is not enough – we must also optimise our time to market in all sectors. There are many great opportunities open to us, and we must grab them - we simply can't stand still."

Mark Morgan, IHS Consulting



Steve Bagshaw, IBLF Chair and Chief Executive Officer at Fujifilm Diosynth Biotechnologies

Journey of Industrial Biotechnology: The opportunity for growth

Five years has passed since the Industrial Biotechnology Innovation and Growth Team (IB-IGT) published **IB2025** – a horizon-scanning and road-mapping report. The IBLF has produced an update, and at the IB Showcase, all attendees were provided with a copy of **'Journey of Industrial Biotechnology: The opportunity for growth'**. This document reviewed the rapid growth of the IB sector since the publication of IB2025, and highlighted the challenges that remain, split into five themes:

Connecting it all together: In 2009, a significant communication gap existed between upstream and downstream supply chains. The IBLF has since supported and delivered a number of high profile events, and established long-lasting connections across a broader biotechnology base. Future focus should be on supporting and nurturing the commercialisation of IB products, processes and start-up companies.

Facilities and funding: One of the specific recommendations included development of an open access fermentation demonstrator facility, and under the leadership of the BBSRC, BIS and CPI, huge progress has been made toward that goal. Funding bodies such as Innovate UK and EPSRC have also led in the delivery of strategic funds for IB, and the sector has secured significant private investment.

Innovation and knowledge transfer: BBSRC has led the way on delivering change through strategic innovation and knowledge transfer, with the latest round of Networks in Industrial Biotechnology and Bioenergy (BBRSC NIBB) funding a host of blue-sky and applied research areas.

Skills: The provision of doctoral training programmes and a multi-disciplinary MSc course across the UK has helped to plug some of the IB skills gap. In addition, Cogent established that the skills gap extends beyond academia

and launched a Gold Standard award for process technicians in biotechnology. GSK also led on the development of a Science Industry Partnership (SIP) for process industries.

Perception and awareness: As with all new sectors, there is a need for a supportive 'public' and 'business' environment to grow. To that end, consistent language around IB, coupled with examples of benefits to society, are currently being developed. In addition, a PAS guidance document, facilitated by BSI, was launched in November 2013, which focuses on the production, use and disposal of bio-based products.

In addition, the **'Journey of Industrial Biotechnology: The opportunity for growth'** highlights a number of innovative case studies from across the IB landscape and includes the thoughts of some of the sector's leading figures. Their comments would suggest that the future of IB looks bright. To download the report, please visit: www.iblf-uk.com.

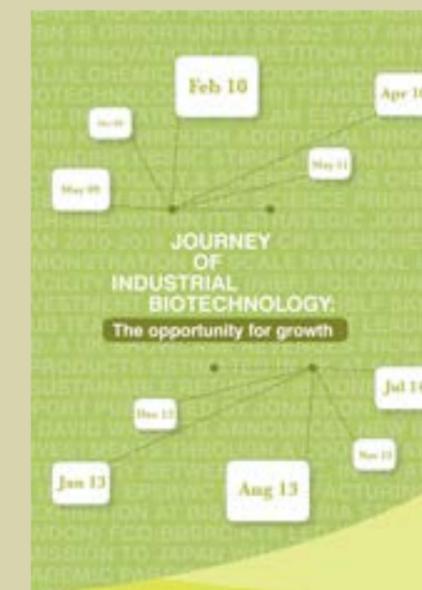
CASE STUDY: Unique enzymes catalyse growth for Biocatalysts

Finding a shortcut from the lab to the shelf is always a challenge, but thanks to recent advances from a British company, the enzymes market may finally be within reach for SMEs.

Biocatalysts has two strands to its business – it has been manufacturing enzymes, for widespread use in food, flavour and fragrance applications for over 25 years. In addition, the organisation's novel enzyme development programme has grown rapidly. Biocatalysts has produced 22 unique enzymes in the past 18 months, right through from concept to large-scale manufacture. One project has involved the development, scale up and production of an enzyme for use in prebiotics in the food industry. Part of this has been due to their state-of-the-art facilities with investment in 2014 exceeding £1million. According to Caroline West, Biocatalysts' Marketing Manager, they can now **"put clones**

into a synthesizer in the morning and get several unique enzymes in the afternoon." This has changed the customer base of Biocatalysts – their approach provides a rapid way to de-risk processes without considerable expense, resulting in many more SMEs approaching their business. According to their Managing Director, Stuart West, their approach is all about **"taking people through the development pyramid quicker, at a much lower financial risk, and very often ending up with a choice of potential enzymes to use."**

One challenge still facing the sector is the often-mentioned skills gap. As the commercial biotech sector grows, there'll be an increasing need for cross-disciplinary research. With an eye to the future, Biocatalysts has been taking on lab and production apprentices and graduate sales apprentices for the past two years, citing that **"people with the right behaviours, with a willingness to learn and develop can contribute directly to the growth of the company."**



Showcasing true innovation in IB

In the heart of Westminster, hundreds of IB experts from across the UK and Europe gathered to debate, discuss and demonstrate the potential of industrial biotechnology in the UK and beyond. Here we provide an overview of some of the highlights from the IB Showcase.

This year's IB Showcase featured a key address from George Freeman MP, Parliamentary Under Secretary of State for Life Sciences at the Department for Business, Innovation and Skills and the Department of Health. He described the conference as "a vibrant, inspiring showcase of UK scientific and business excellence in the application of the innovative, enabling technology

that is IB." He also highlighted the multi-disciplinary nature of our sector and the success of the collaboration between UK & Norway in biorefining. For Freeman, industrial biotechnology will be key in the UK economy, "Government has a role to play in supporting development of a sustainable bioeconomy, built on UK strengths."

He also talked about his personal experience of the UK's growing bioeconomy, referring to his test drive of a Lotus car run on biofuels sourced from local agri-waste. Speaking on the wider IB environment, Freeman emphasised the importance of the IBLF's role as an important enabling leadership body,

and closed with an inspiring remark, "biosciences are delivering the new industrial revolution. We will look back in 20 or 30 years in awe at this extraordinary age of bioscience."

The IB Showcase attendees were treated to some keynotes from organisations including GSK, DuPont and the National Farmer's Union. David Tew from GSK had good advice for biotech innovators, saying that it is a three step process - "start with the end in mind – identify, then incubate and industrialise". Tew went on to say that the synthetic biology revolution has reached a tipping point and has the potential to become the "new normal" - an exciting stage for the

industry. But the challenge, according to GSK remains to increase the speed of process development. Andrew Morgan from DuPont said that "science is the engine of our innovation", a comment that was widely repeated on social media. DuPont also announced news on their upcoming lignocellulosic plant, which caused great excitement in the audience and online. Jonathan Scurlock from the National Farmer's Union spoke about the need to regard agriculture as a major source of biomass feedstock, in order to avoid the bio-based supply becoming overly reliant on imports. Scurlock went on to say that "the UK is not short of agricultural land, as the

myth goes - we just need investment. The potential in both food and non-food products is all in improving yields of existing agricultural land, not necessarily creating more."

The panel discussion at the end of Day 2 was all about "Moving towards a bioeconomy" and was led by the Industry Chairs of the Leadership Councils, including Steve Bagshaw from the IBLF – his opening comment stressed the need for joined up thinking in Government, to support innovation and the growth of the bioeconomy. Lionel Clarke from the Synthetic Biology Council said that we need to generate greater confidence and enable a wider

range of start-ups and SMEs. After the discussion was opened to the floor, it appeared that there was clear consensus on the need for a bioeconomy strategy, with the speakers agreeing on the importance of shared language about the bioeconomy and bio-industries. The legacy of excellent British science was also highlighted as a huge strength, but the room agreed in the need for timely, global collaborations.

Presentations from the IB Showcase can be found online: www.iblf-uk.com.



George Freeman MP addresses the IB Showcase delegates

"We came to the first Showcase – the event has definitely grown since then. This year in particular, we've seen a very broad audience, which makes it interesting, and no doubt a challenge for the organisers! The thing is that IB is not an industry in itself – we truly enable many different industries, and that is reflected here today"

Paul Mines, Biome Bioplastics



IB Showcase panel discussion

"It's incredible to see how this event has grown – it's the go-to place for getting the UK perspective on IB. I loved the keynote presentations – so encouraging to see the key role that biosciences is beginning to play in enabling economic growth. There is a greater awareness of the bioeconomy and what it means and the collaborations it can help foster than there ever has been before. But what we struggle with in Europe is a clear focus on how we can help industry create new markets for new bio-based products"

Joanna Dupont-Inglis, EuropaBio



IBLF Awards winners named by the IB Dragons!

The IB Showcase hosted the first ever IBLF Awards - a business competition for early stage biotech SMEs focusing on a bio-based technology or process. Following a high-pressure Dragons' Den style pitching session, nine innovative organisations were awarded a £10k voucher each, which can now be put towards a range of services including market research, web/app development, PR, business coaching, process facilities, incubator space or IP protection/ exploitation. The 'Dragons' were Tom Brown, University of Oxford, Ian Fotheringham, Ingenza Ltd, Stuart West, Biocatalysts Ltd, Colin Harrison, Centre for Process Innovation, Alan Wolstenholme, Caledonian Solutions Ltd, and Will Barton, Oxford Biotrans.

The full list of winners is as follows:

- **Innovation in Technology Development:** Industrial Phycology – for their work with the water industry to treat sewage

- **Innovation in Biomass Utilisation:** Cellucomp – for their development of a scrub-resistant paint, using nano-cellulose fibres extracted from root vegetables

- **Innovation in Bio-based Product Development:** Naturiol – for their work on extracting high value chemical from indigenous plants

- **Algae Innovation:** Aragreen Limited – for their development of small photobioreactors

- **NERC Award for Ecosystem Services:** Phytofutures Ltd – for their development of an algal treatment for sewage treatment

- **Responsible Innovation:** Valueform – for their use of the bi-products of crop growth

- **Potential for Big Social Impact:** Bento Bioworks Ltd – for their development of a "a biolab in a box", that gives students an IB experience

- **The Most Promising SME:** Chain Biotech Ltd – for their development of superior microbes for the flavor and fragrances market

- **Innovation in Sustainability:** Fibreright – for their development of a process to strip bio-waste into its component parts

A final award – the **People's Choice Award** – was awarded to Bento Bioworks Ltd, which was voted for by the IB Showcase delegates.

"We are very proud to know that even the most dangerous dragons in the IB world have decided to throw their faith behind what we have done and what we plan on doing in the future. With this award, we will promote our "get with Curran" campaign through PR and marketing initiatives and look forward to building awareness of our Curran@ product both to industry and consumers."

Christian Kemp-Griffin, CEO, CelluComp



Bento Bioworks Ltd receiving the People's Choice Award

Norwegian innovators out in full force

In February 2011, Innovate UK signed a five-year Memorandum of Understanding with Innovation Norway. Ever since, bilateral collaborations have been very fruitful, and this was evidenced at the IB Showcase. Industrial Biotech Network Norway (IBNN)

brought five highly-innovative biotech companies to the event, to meet and network with their UK counterparts. Alkymar have a strong vision – they want to establish a global network of marine biorefineries, in order to leverage innovative technologies internationally. Barentzymes also look to Norway's marine legacy for their business, but for them it's about developing new enzymes from the rich genetic resources of their fish stocks. Calysta may be a name known to readers, but it was their nutrition team who took to the floor at the IB Showcase, discussing the need for high-quality protein for aquaculture and livestock. PFI, the Norwegian centre of expertise for fibre, pulp and paper and

wood-based composites, attended the IB Showcase for the first time. The final organisation was Sintef Materials and Chemistry, an innovative organisation working across the materials supply chain.

Speaking to Ernst Kloosterman from IBNN, it seems that the Scandinavia cohort took a lot from their attendance. "This is a truly excellent event with some great presentations. The exhibition space is really what makes it so valuable though – we're in a room full of great people with fascinating ideas and projects. Our companies are extremely glad that they travelled from Norway to attend!"

Roadmap set for Scottish biorefining industry

The IB Showcase saw the launch of a key document for the biotech industry. Titled '**Biorefinery Roadmap for Scotland**', this report sets out the steps ahead for the country's industry in the coming decade. Alan Wolstenholme, Chairman of Scottish Industrial Biotechnology Development Group at Scottish Enterprise, announced the launch on Day 2, highlighting the significant business opportunities for Scottish companies and also for international organisations to join the supply chain within Scotland. The Roadmap outlines the actions required and the support needed to contribute to industry's goal of increasing turnover in industrial biotechnology from £189m

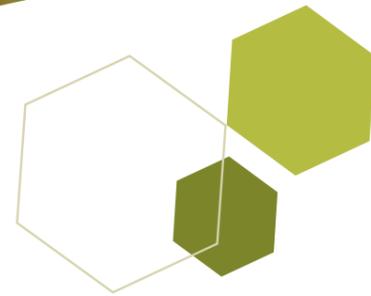
in 2012 to £900m by 2025, as was laid out in the National Plan for Industrial Biotechnology.

Alan Wolstenholme commented: "Biorefining has an important role to play in driving Scotland's low-carbon agenda and this roadmap is the beginning of the journey. Building on existing expertise in chemicals, life sciences and engineering, key Scottish stakeholders are committed to following the Roadmap to ensure that further investment and development in biorefining will not only boost Scottish manufacturing, but will push the country to the forefront of sector developments in Europe. Essential to these efforts will be the partnerships that will need to be undertaken across private, public and

academic institutions. I'm proud to say that this is already taking place at the Industrial Biotechnology Innovation Centre (IBioIC), for example, and through other initiatives."

The report includes a foreword by Fergus Ewing MSP, Minister for Business, Energy and Tourism, who urges business to "take serious consideration to biorefining in order to benefit from this fast-growing, innovative and burgeoning sector."

To download the roadmap, visit: <http://www.scottish-enterprise.com/biorefineryroadmap>



Grapefruit is the taste of success for Oxford Biotrans



Oxford Biotrans is a University of Oxford spin-out company, supported by over 15 years of research at the Department of Chemistry. They have a clear business aim – to commercialise new routes to high-value chemicals using patented enzyme technology. Since its founding in 2013, Oxford Biotrans has focused on developing their first product – nootkatone, which will launch within the next two months.

This compound is responsible for the flavour and scent of grapefruit and is widely used in a huge range of domestic and industrial products. Jason King, CEO of Oxford Biotrans spoke about all things nootkatone on Day One of the

IB Showcase. Their unique approach to producing natural-grade nootkatone is via the biotransformation of natural valencene, a citrus extract readily obtained from oranges.

Citing the importance of CPI and the Catalyst funding model throughout his talk, King said that Oxford Biotrans has already identified several further high-value flavour products, with relatively low cost feedstock. With the global market for flavours and fragrances predicted to reach \$33.5 Billion by 2019, it seems that Oxford Biotrans may have a bright future ahead.

Do you take bioplastics with your coffee?



When you think of single-serve coffee, do you just picture George Clooney? You should be thinking about bioplastics! Biome Bioplastics are a rapidly growing company, thanks to the luxury coffee industry. "Sales have almost doubled in 2014 compared to 2013 – mostly due to our growing appetite for coffee pods," explains CEO Paul Mines at the IB Showcase. Biome's bio-based materials can be used by manufacturers across the coffee pod

industry, but uniquely, can be disposed of in food waste rather than into landfill. The first generation of bioplastics are much more costly (by a factor of two) than oil-based plastics. Biome's research aims to drag that price difference down, and they are well on their way. Their commercially available materials tend to be starch or cellulose-based, but they've also started to look towards lignin.

"Big thanks @BiomePlastics for the supply of excellent coffee produced using their compostable pods & served in #biobased PLA cups at #IB15." Adrian Higson, NNFCC

Squeezing even more from oranges

Did you know that only 40% of the orange is actually used to produce juice?

Currently, the rest goes to waste. This is a situation that the Biorenewables Development Centre (BDC) wants to change. Recent work from them has

demonstrated that it's possible to use microwave technology to extract high-value chemicals from orange peel waste limonene from the orange skins. This versatile chemical is a colourless liquid that is commonly used in cosmetics and cleaning products. By extracting it from a waste product, at a scale suitable for industrial testing, the BDC are confident that their approach is truly unique. The team recently started to investigate the practicalities of extracting pectin from the waste skins too, adding further value to the process and keeping even more waste away from landfill.



Light is the key for microalgae

Aragreen was a company founded to utilise previously neglected waste streams, but since 2011, they have an additional interest in the extraction of high-value chemicals from microalgae. Standard low-cost industrial technologies use a system similar to that used by the ancient Aztec culture – ponds open to the air that utilise sunlight. Larger-scale closed bioreactors are the obvious alternatives, but their size and cost has kept them outside of the range of many biotech companies.

At the IB Showcase, Aragreen presented their latest innovation – small-scale photobioreactors, which deliver light directly inside the algal culture. Removing the sun from the 'photosynthesis equation' means that microalgae can be produced 24 hours a day. Their proprietary system is based on LEDs and can be run from the mains. They can also fit into a work space of just 9m², making it of broad interest to a range of SMEs, and larger, high-throughput food and beverage companies.

“Enjoying the updates from the BBSRC NIBB at #IB15 - lots of encouraging activity and engagement between academia and industry.”

Steve Martin, CEO, BioSyntha

IBCarb and EGSF collaborate on glycoscience roadmap

IBCarb has produced “A roadmap for Glycoscience in Europe” which is now available. This was a joint effort between IBCarb and the Euroglycosciences Forum (EGSF) and the result of a workshop on the ‘Future of European Glycoscience’, which took place in Copenhagen in March 2014. The participants, from both academia and industry in diverse fields of glycoscience, considered European strengths in glycoscience and future trends, which led to the recommendations contained in the roadmap. The document outlines areas where glycoscience can address some of the challenges faced by Europe. It is hoped that this will be a useful document for scientists, policy makers, funding bodies and the general public alike.

The document is available to download from the IBCarb website: <http://www.ibcarb.com/glycoscienceroadmap/index.html>

For further details, contact Dr Claire Doherty, Network Manager: claire.doherty@manchester.ac.uk, www.ibcarb.com

Twitter: @IBCarb

Innovative plants help to grow the P2P

The Plants to Products (P2P) BBSRC NIBB focuses on an integrated approach to the conversion of plant material to deliver chemicals and materials. Back in July 2014, they funded five Proof of Concept (PoC) projects, co-funded by the EPSRC, which covered a huge range of biological, chemical and engineering-based topics.

One of these projects involves a particularly interesting microorganism: *Metschnikowia pulcherrima*. Historically known for its use in South Africa’s wine industry, it can deliver a similar lipid profile to palm oil. Importantly, this yeast can grow on a wide range of biomass feedstocks. The PoC project, led by the University of Bath in collaboration with Croda, aims to demonstrate microbial production of lipids from partially hydrolysed rapeseed meal, increasing the yield of suitable lipid for further chemical upgrading. While this project is still in progress, the team’s promising results have prompted them to pursue additional funds through the IB Catalyst to expand their efforts.

The four other projects are progressing similarly well, and include topics from microplasma reactors, to waste stream valorisation. P2P are now looking forward to another full year with funding workshops focused on different network themes – the first of which is on the 17th March 2015 – along with other activities to support their members more generally (e.g. IP Value and Management) and a showcase planned for the Autumn – highlighting the successes in the first round PoC projects as well as industrially relevant fermentation hosts being developed within the network.

For further details, contact Dr Kirstin Covington, Network Manager: k.covington@bath.ac.uk, www.nibbp2p.org

Twitter: @P2P_NiBB

More funding opportunities for metals in biology

The Metals in Biology BBSRC NIBB, hosted at the University of Durham, has already awarded 11 business interaction vouchers (BIVs) across its seven strands: metals in bio-processing, metal-related antimicrobials, metal circuits for synthetic biology, bio-energy and industrial biotechnology, metals in the environment, metal-related nutrition and supplements, metallo-enzyme engineering for bio-energy and industrial biotechnology, tools and technologies for metals in biology.

For members working in relevant sectors, there is some good news – applications are now open for the next round of applications. Metals in Biology are offering a bumper 29 BIVs, up to a value of £5k. The deadline for applications is noon, Tuesday 7 April 2015.

For further details, contact Dr Pamela Robinson, Network Manager: metals.bbsrcnibb@durham.ac.uk, http://prospect.rsc.org/MiB_NIBB/

Twitter: @METALSBBSCRNIBB

Cable announces £20 million for UK industrial biotechnology

In February 2015, Business Secretary Vince Cable unveiled the winners of a multi-million pound competition to bring innovative UK biotechnology projects to market.

A total of 23 projects, ranging from making biofuel from household waste, to using bacteria to make the building blocks for new medicines, will share almost £20m from the Industrial Biotechnology Catalyst – introduced in January 2014 to support collaboration between UK researchers and the emergent industrial biotechnology sector. The multi-million pound fund has been pledged by the Biotechnology and Biological Sciences Research Council (BBSRC), Engineering and Physical Sciences Research Council (EPSRC) and Innovate UK to support UK researchers and companies to work together to bring their biotechnology innovations to market and to help cement the UK’s position as a world leader in this sector.

Business Secretary Vince Cable said: “Whether it’s developing new antibiotics or producing plastics from plants, this funding will help our talented researchers across the UK continue to bring their innovative ideas to market.”

Winning projects include:

A new generation of E. coli expression hosts and tools for recombinant protein production	University of Kent
A Combinatorial Approach to Enhance Production of Monoclonal Antibodies	University of York
Developing platforms for the production of diterpenoids	University of York
Manufacture of complex protein polymers for industry and medicine	Newcastle University
Improved downstream operation through formulation innovation	Arecor/CPI/ FujiFilm Diosynth Biotechnologies
Bioplastic polymers based on aromatic dicarboxylic acids derived from lignin	Biome Technologies/ CPI/ University of Warwick/University of Leeds
ALGIPRO - Alginates by Production Scale Fermentation and Epimerisation	CPI/AlgiPharma/ FMC Biopolymer
Combinatorial genome editing to create enhanced biomanufacturing platforms	Horizon Discovery/ CPI NBMC/ University of Manchester
Efficient production of first in class antimicrobial therapeutics from an integrated synthetic biology approach	Ingenza/Plymouth University
A naturally inspired industrial biotechnology route to the manufacture of a novel biopolymer with unique properties	Ingenza/ Synthomer
Industrial validation of nanofibre platform technology for biotherapeutics manufacture	Purify/UCL
Much-efficient and cost-effective manufacturing of antibody biotherapeutics employing integrated negative chromatography technology	UCB/BioToolomics
Development of superior Clostridial strains for low cost renewable chemical production	Green Biologics
Biochemical production of succinic acid from biorefinery glycerol: De-risking, scale-up, and feasibility	University of Manchester/ CPI/ Brocklesby
PeriTune - a clonal optimisation platform	University of Manchester/Cobra Biologics
Development of new tools for de novo polyketide synthase design	Isomerase/University of Cambridge
Generation of a library of recombinated novel polyketides and non-ribosomal peptides	Isomerase/ Biosyntha/ John Innes Centre
Discovery and development of large/diverse user-friendly panels of novel biocatalysts	Prozomix/ Northumbria University
Engineering a Nano-factory for Peptide Synthesis	Generon/ University of Bristol
In vivo selection of bioprocessable biopharmaceuticals	University of Leeds/MedImmune/ Avacta Analytical
Novel production processes for L-glufosinate	Acidophil
Novel platform biotechnology for the production of natural next generation 3D nanomaterials and nanodevices	CelluComp/James Hutton Institute/ MyInfield Research
Driving down the cost of waste derived sugar	Fiberight/CPI/Rebio Technologies/ University of Leeds/Aston/Knauf/ novozymes



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