Power of biology:
The UK is engineering biology for global good

GREAT
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Introduction

This brochure was produced by the Department for International Trade in association with the BioIndustry Association

About the Department for International Trade (DIT)
The UK's Department for International Trade (DIT) helps businesses export, drives inward and outward investment, negotiates market access and trade deals, and champions free trade.

We are an international economic department, responsible for:

- supporting and encouraging UK businesses to drive sustainable international growth
- ensuring the UK remains a leading destination for international investment
- opening markets, moulding the trade environment with new and existing partners which is free and fair
- using trade and investment to underpin the government's agenda for a Global Britain and its ambitions for prosperity, stability and security worldwide.

Get in contact with us through https://www.great.gov.uk/international/contact/ or lifescience@trade.gov.uk.

The BioIndustry Association (BIA)
The BIA is the trade association for innovative life sciences and biotech industry in the UK, counting over 460 companies including start-ups, biotechnology, universities, research centres, investors, and lawyers among its members. We are the voice of the industry, enabling and connecting the UK ecosystem so that businesses can start, grow and deliver world-changing innovation.

The BIA represents the interests of its members to a broad section of stakeholders, from Government and regulators to patient groups and the media. We also work with organisations at an international level to ensure that UK biotech is represented on the global stage including EuropaBio, the European Federation of Pharmaceutical Industries and Associations (EFPIA) and the International Council of Biotechnology Associations (ICBA).

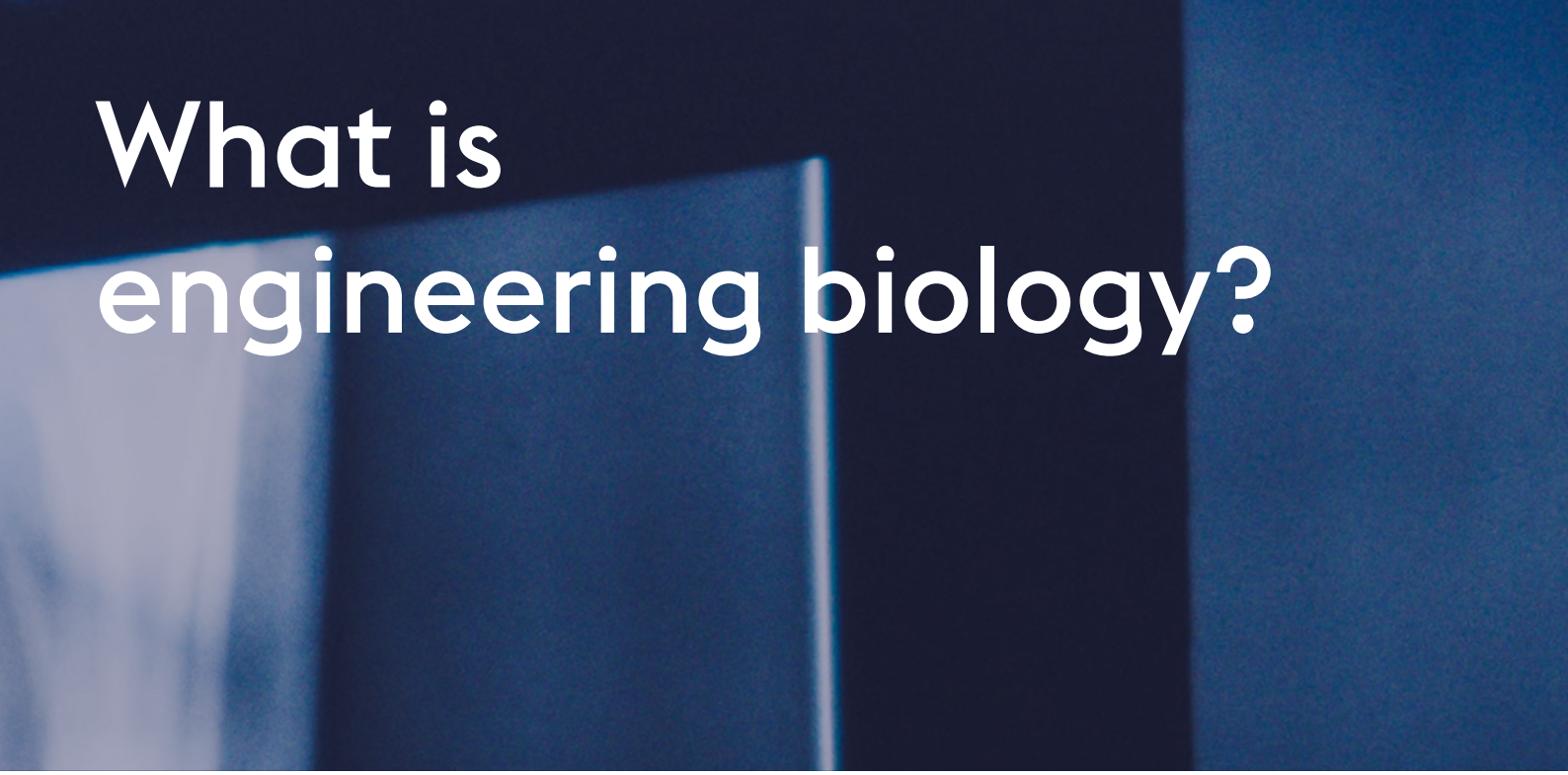
The BIA is the key thought leader for the sector – working across a wide range of related issues including policy, finance, science, regulatory, legal and talent on topics including engineering biology and techbio.

For further information, please visit bioindustry.org

Department for International Trade

BIA
UK BioIndustry Association

What's inside



What is engineering biology?

In its simplest form, engineering biology, or synthetic biology, is designing or redesigning cells and their components of living cells to do new and useful things.

It is a multidisciplinary field that brings together expertise across engineering, biology and programming to create tools, processes, products and organisms that are cleaner, greener, more efficient and potentially more diverse.

Engineering biology has the potential to impact every aspect of our lives and offers solutions to many of the real-world challenges that we face today. As an enabling technology, the applications of engineering biology are vast.

It could revolutionise healthcare, industry, and agriculture to help us reach Net Zero goals, and could be further leveraged with other innovative technologies such as data and artificial intelligence (AI).

Engineering biology played a central role in the global fight against the COVID-19 pandemic.

How is engineering biology being used to transform healthcare, industry and agriculture?

In healthcare, engineering biology has been used as a toolkit to diagnose and fight diseases, develop personalised medicines and has opened the door to the huge potential of genetic medicines.

In the manufacturing sector, engineering biology has the potential to transform the production of foodstuffs, plastics, and chemicals to sustainably mass produce goods in our Net Zero future.

It has even played a central role in the global fight against the COVID-19 pandemic, as the use of DNA- and mRNA-based vaccine technologies have boosted the speed at which we can research, develop and produce vaccines.

Home to world-leading expertise in research across biosciences, engineering and data science, the UK is well positioned to be at the forefront of engineering biology. The examples in this booklet showcase just some of the groundbreaking work coming out of the UK. We invite you to get in touch to learn more about other UK companies and innovators working in this pioneering field.

Healthcare is smarter with engineering biology

Healthcare is smarter with engineering biology

- **Transforming research and development**
  Engineering biology can help reduce reliance on animal testing, by creating human cells that can be used to more effectively test medicines in vitro ahead of in-person clinical trials. The ability to create standardised cells also means that biological experiments can now be easily reproduced. ***(bit.bio)***
- **Enabling greater access to cell and gene therapies**
  Engineering biology is industrialising DNA sequencing, manufacturing and editing, making it cheaper and more accessible. Scientists are already able to insert edited copies of defective or missing genes, and gene editing techniques now allow scientists to accurately and rapidly cut out and replace specific DNA sequences, not just entire genes. A recent gene editing technique is CRISPR-Cas9, (short for clustered regularly interspaced short palindromic repeats and CRISPR-associated protein 9). CRISPR-Cas9 is a fast, low-cost gene editing method that can be used like a pair of molecular scissors. ***(Touchlight, Sixfold Bioscience, Ochre Bio, AskBio)***
- **Engineering bacteria to deliver new treatments**
  Engineering biology is being used to unravel the complexities of the microbiome (the diverse array of microbes that coexist in our bodies) and develop new therapeutics, based on living bacteria, to modulate and augment the human microbiome to treat a broad range of diseases including infections, chronic inflammation, and cancer. ***(Oxford Simcell, Chain Biotechnology Ltd, Prokarium and Biocleave)***
- **Preventing the spread of diseases**
  Engineering biology has been used to genetically edit mosquitoes so that they are less able to spread diseases like yellow fever, dengue fever and Zika. The engineered mosquitos are now being deployed for use in the US. ***(Oxitec)***
- **Adapting naturally occurring processes in plants to create medicines**
  Plants can be used as natural bioreactors to deliver rapid, scalable production of products such as proteins, vaccines, metabolites and complex natural proteins. Importantly, using plants eliminates the risk of any animal-derived infectious material being processed within the new drugs. ***(Leaf Expression Systems)***

Industry and agriculture are greener with engineering biology

Reducing industry's reliance on petrochemicals

The UK chemical industry is worth £25 billion GVA and manufacturing of chemicals from renewable, natural materials by low energy routes will reduce the carbon footprint of chemicals used in everyday life, such as cleaning products, cosmetics and packaging.[1] *(Oxford Biotrans, Croda)*

Building a new circular economy

Engineering Biology is reprogramming bacteria to efficiently digest plastic and polymer waste to produce raw materials which can be used as part of the circular economy. The Centre for Enzyme Innovation are learning from the natural world to deliver transformative enzyme-enabled solutions for the circular recycling of plastics. *(Evoralis, Mellizyme, Centre of Enzyme Innovation)*

Creating new materials

Biologically-based lightweight but very strong materials are engineered with direct applications in the automotive, aircraft and fashion industries, resource-efficient biocomputers are being developed, and artificial enzymes are used to increase the effectiveness of various detergents. ***Shellworks, Biome Technologies, Ingenza, BiologIC Technologies)***

Detecting or removing pollutants

Biosensors based on environmental bacteria that can detect metals, organics and biological toxins at ultra-low concentrations can be deployed to monitor and manage the processing of industrial wastewater and environmental pollution. ***(Oxford Molecular Biosensors)***

These unique biological sensors can be used as precision tools that use molecular receptors to capture pollutants that are difficult to extract from the natural environment. ***(Puraffinity)***

Creating more sustainable food sources and supporting agriculture to work towards net zero

A major biological security risk lies in the sustainable production of food by the UKs agri-food sector, worth £110 billion GVA.[2] Crops and seeds can be genetically engineered or created to endure changes in climate, evolving crop pests or soil fertility, new types of environmentally friendly pesticides are being engineered, and bioremediation is used to detoxify contaminants in soil and other natural environments. ***(Corteva)***

Engineering biology is also being used to create protein ingredients from fermentation for livestock that use no arable land or plant or animal products. ***(Calysta, Deep Branch)***

The UK led the way in commercial exploitation of Engineering Biology with the development of Quorn over thirty years ago, a protein rich, sustainable meat substitute produced by fermentation of Fusarium venatum. The Quorn innovation centre continues its work to diversify its product range by exploring new protein avenues. ***(Quorn Foods)***

The latest large shift with the potential to change land use and reduce CO2 emissions is the use of engineering biology in cellular agriculture, creating alternatives to meat for those seeking a flexitarian diet.[1] ***(Meatable)***

Producing environmentally friendly and economically sustainable energy

Outdated processes of deriving biofuels, e.g. from sugar cane or palm oil, can waste around 90% of biomass. Biofuels derived from engineered biology can use a much higher percentage of biomass, thereby increasing the crop yield and associated carbon savings. ***(Greenergy, Croda, C3 Biotechnologies)***

Gas and C1 fermentation can be used to harness microbes to use waste greenhouse gases, such as carbon dioxide, to produce sustainable aviation fuel. (***Centre for Process Innovation)***

1. Chemicals Industry Association, 2021
2. https://bbsrc.ukri.org/documents/agriculture-food-security-strategic-framework-pdf

The UK engineering biology ecosystem

The size of the UK ecosystem allows for excellent connectivity at every stage.
Companies working in the UK can tap into a connected ecosystem of scientific excellence in academic and research centres, incubators and accelerators, with access to investors, and opportunities to partner with and both established and emerging companies. The Government and regulators also stimulate the ecosystem. The UK's well-established bioprocessing and manufacturing network has enabled this thriving area of the bioeconomy to grow at pace. The UK Bioeconomy was worth £220 billion GVA in 2016, the aspiration is to double this to £440 billion over the next decade, with Engineering Biology at its core.[3]

An engineering biology research network.
The UK government recognised the potential of engineering biology early on and invested over £300 million into building a nationwide network of Synthetic Biology Research Centres (SBRCs).

Each centre has a distinctive field of expertise, from the engineering of bacteria to make useful products from greenhouse gases in Nottingham, to the development of the underlying tools needed to realise the full potential of engineering biology in Edinburgh. These centres are complemented by several DNA foundries, specialists in the assembly of DNA, and SynbiCITE, the UK's national centre for the commercialisation of engineering biology. Together these centres of excellence and commercialisation connect academia and industry to form a thriving engineering biology community.[4]

With London's financial centre continuing to draw in local and international investors, there are many opportunities to build a world-leading engineering biology business environment. UK companies are attracting investment and building engineering biology tools, technologies and solutions with the potential to reduce or eradicate certain diseases, enhance pandemic preparedness, transform food and chemicals production and clean up waste and pollutants not only in the UK but around the world.[5]

Ecosystem at a glance

Development stages	Relevant organisations
Academic learning and research science	**Academic excellence:** UK hubs in Oxford, Cambridge, London, Edinburgh and Nottingham. Synthetic Biology Research Centres (SBRCs) **Scientific excellence:** Wellcome Sanger Institute, Crick, Rosalind Franklin Institute **Data generation:** Health Data Research UK (HDRUK), Genomics England/100,000 Genomes Project, National Institute for Health and Care Research (NIHR)
Growing and regulating spin outs and start-ups into SMEs and beyond	**Funding bodies:** UK Research and Innovation (UKRI) including Innovate UK, Biotechnology and Biological Sciences Research Council (BBSRC), Engineering and Physical Sciences Research Council (EPSRC), Medical Research Council (MRC) **DNA Foundries:** London, Earlham **Catapults:** Cell and Gene Therapy, Medicines Discovery, Centre for Process Innovation **Networking and knowledge hubs:** BioIndustry Association (BIA), Knowledge Transfer Network (KTN), Engineering Biology Leadership Council, SynbiCITE, Built with Biology, Industrial Biotechnology Leadership Forum (IBLF), Industrial Biotechnology Innovation Centre (IBioIC, John Innes Centre and The Sainsbury's Lab **Government Departments:** Office for Life Sciences, Department for International Trade, Treasury, Department for Business, Energy & Industrial Strategy **Regulators:** Department for Environmental, Food and Rural Affairs (Defra), Medicines and Healthcare products Regulatory Agency (MHRA), British Standards Institution (BSI)

The UK policy landscape

The UK has never been afraid to forge ahead in emerging science, but also offers a strong and supportive policy and regulatory landscape for responsible innovation. From being the birthplace of the first cloned mammal Dolly the sheep, to being the first country in the world to regulate mitochondrial donation, the UK has a longstanding track record of supporting innovation in engineering biology.

The UK government is intent on building the country's excellent science base to form the world's most innovative economy. In 2021, engineering biology was listed by the Government as one of the seven key technology families of UK strength and opportunity.[6]

Recognising engineering biology as an area of strategic importance more than a decade ago, the UK government established the Engineering Biology Leadership Council in 2012. It brings together government representatives with senior industry and academic stakeholders to boost sector growth.

Supportive government policy, legislation and regulation.
The areas of application for engineering biology are vast, spanning healthcare, agriculture, energy, and various industries. This means engineering biology as an enabling technology is influenced by multiple government policies, strategies, legislations and regulations, and shapes these in turn.

Realising that innovation in genetic technologies is expanding rapidly, the Government is changing how it governs the use of organisms developed using genetic technologies such as gene editing in current legislation. This will allow the UK to reap future benefits of this innovative technology. A major step includes easing the burdens on developers undertaking R&D of this kind. This will enable further progress in the applications of engineering biology.[7]

Similarly, the UK has shown renewed impetus on emerging technologies including engineering biology post-Brexit. UK is committed to driving innovation in sciences and beyond, as highlighted in the commitment to increase overall investment into UK R&D to 2.4% of GDP by 2027.

Over £300m
invested into building a nationwide network of Synthetic Biology Research Centres

Following on from the Innovation Strategy,[6] the newly established National Science Technology Council, based in the heart of Government, will take decisions on how to support technologies to give the UK a strategic advantage. UK Research and Innovation (UKRI), the Government's main research and innovation funding agency, is working on the engineering biology aspect of the Innovation Strategy. Prior to this launch it had already established a National Engineering Biology Programme (NEBP), supported by the Defence Science and Technology Laboratory (Dstl) and Ministry of Defence (MoD), to retain the UK's world leading capability in engineering biology and to maintain its momentum and capabilities across disciplines and sectors in the UK.[8]

3. https://ktn-uk.org/wp-content/uploads/2021/07/EBLC-Building-back-better-with-Engineering-Biology_upload.pdf
4. SYNBIOCHEM (2022) National Synthetic Biology Research Centres. Available here: https://synbiochem.co.uk/national-synthetic-biology-research-centres
5. BIA (2018) Engineering Biology Explained: A guide to engineering biology and UK excellence in the field. Available here: https://www.bioindustry.org/resource-listing/engineering-web-pdf.html
6. Government innovation strategy. Available here: https://www.gov.uk/government/publications/uk-innovation-strategy-leading-the-future-by-creating-it
7. Defra (2021) Genetic technologies regulation: government response. Available here: https://www.gov.uk/government/consultations/genetic-technologies-regulation/outcome/genetic-technologies-regulation-government-response#summary-of-consultation-views-and-our-response
8. UKRI (2021) UKRI paves the way for a future engineering biology programme. Available here: https://www.ukri.org/news/ukri-paves-the-way-for-a-future-engineering-biology-programme

UK innovator spotlight

UK companies are working across the diverse range of applications of engineering biology. The following case studies highlight examples of this exciting work and give additional insight into how this transformative technology can be used across healthcare, industry and agriculture.

"When you change the program in a computer or a mobile phone, you get a new function. When you change the code of a cell you get a new cell, because the code determines the physical reality."

Mark Kotter
CEO, bit.bio

bit.bio/Meatable

What does the company do?
bit.bio uses its opti-oxTM technology to reprogram human stem cells (cell raw material with the potential to transform) into functional human cells for research, drug discovery and cell therapy. Meatable is using the same opti-ox technology created by bit.bio to reprogram animal stem cells to make functional, mature animal muscle and fat cells in order to cultivate meat in the lab.

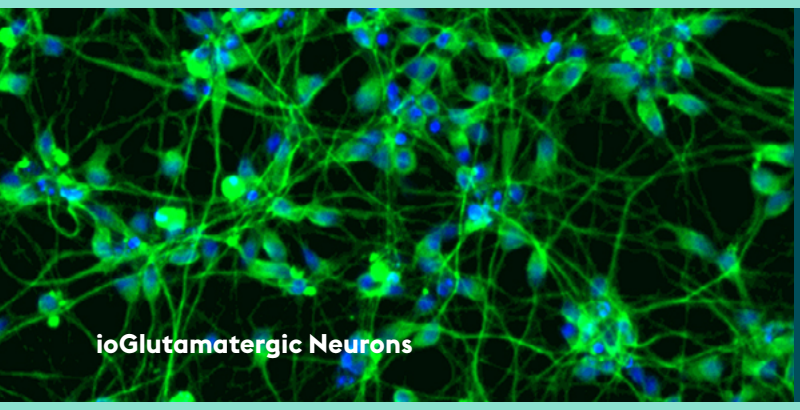
How does the technology work?
opti-ox is a precision cell reprogramming technology – it's essentially a control system that is inserted into the DNA of a stem cell – when it's switched on, it reprograms the stem cell into a new type of cell. Each type of cell in the human body has a particular code. Once a scientist has identified this piece of code, opti-ox technology is used to insert it into specific locations in the DNA called genomic safe harbour sites. This protects the new piece of code from being silenced by the immune system. When activated, this code establishes a new program that converts the stem cell into a new identity.
opti-ox is unique because it reprograms every cell in a culture dish - it's a breakthrough in reprogramming that for the first time allows fast, consistent manufacture of highly defined cell products at commercial scale. bit.bio is also building a machine learning and wet lab platform called Discovery to identify the codes for every single human cell type and sub cell identity – we call this the Operating System of LifeTM or LifeOSTM.

What impact is the technology having?
The versatility of the technology means that it has applications in both healthcare and agriculture. There are three areas where this type of technology is already having an impact on healthcare.

1. Enabling cell therapies.
In cell therapies by providing a technology platform to create any human cell consistently at commercial scale: For example, you can produce a liver cell to repair liver damage by replacing lost cells, and help the body recover through the way these cells also interact with other cells in the local environment.

2. Improving drug discovery.
There's not a mouse on this planet that suffers from Alzheimer's because it's a human disease.
Using animal models to discover and test medicines before they enter human clinical trials is standard practice but can lead to surprises downstream, when the reality of human biology doesn't match what was seen in mice. opti-ox enables a smarter discovery process using bit.bio's ioCells portfolio, which provides human cells and disease models for research and drug discovery in lieu of animal models for this key preclinical testing. Scientists can better predict outcomes and have more confidence going into clinical trials with cells actually affected by the condition that they want to treat.

3. Creating new standards in biological research.
There are reproducibility challenges in biology due to working with materials where there is no standard cell. opti-ox technology means that the same type of cell can be accurately reproduced, over and over again, supplying biologists with a standard cell for R&D.


ioGlutamatergic Neurons

"I don't see cultured meat as taking over every aspect of meat production, I think if we can save organic farms and cultured meat could out-compete animal factories that would be a great outcome."

Mark Kotter
CEO, bit.bio

Cultured meat at scale.
Meatable is utilising opti-ox technology to create porcine fat and muscle cells at scale. There are real benefits to cultured meat over industrial farming, as a more human and environmentally friendly alternative. For example – not having to mass rear and slaughter animals, avoiding the heavy use of antibiotics meaning less chance of contributing to antibiotic resistance, no risk of pathogens passing between animals and humans, and cutting greenhouse gases bringing us closer to the net zero target.

What is the future for the company?
It's exciting. The application of bit.bio's technology platform is highly diverse and the company is looking to move into cell and gene therapies as well as bringing standardisation and industrialisation to human cells to support drug discovery and clinical trials.

Meatable will be looking to partner with other supply chain companies to help scale up production.

UK innovator spotlight

TOUCHLIGHT

Touchlight

What does the company do?
Touchlight makes DNA using enzymes.

How does the technology work?
The company uses engineered enzymes to rapidly and accurately copy any given DNA sequence. Its resulting 'doggybone DNA' (dbDNA™) vectors – named for their shape – are closed-ended double-strands of DNA. These can be manufactured at commercial scale in just weeks compared to months using plasmid DNA production in *E.coli*. The dbDNA is stable, reliably reproduces the desired DNA sequence, and doesn't contain any unnecessary material as it is made outside of cells. This means it avoids some of the safety concerns surrounding plasmid DNA, such as antibiotic resistant genes used for plasmid selection.

What impact is the technology having?
The technology has many applications, from cell and gene therapy and nucleic acid vaccines in healthcare, to generating battery power in industry.

- **Revolutionising the rapid growth of genetic medicine.** Touchlight technology is relieving the bottleneck in DNA manufacturing by manufacturing DNA in a faster, simpler and more cost-effective way. This has opened up a panacea of opportunity in genetic medicine and the company is already working with many pharma and biotech companies.

"We want to be the leading global DNA manufacturer across all areas of genetic medicine - gene therapy, cell therapy, genome editing, mRNA and DNA vaccines."

Tommy Duncan
Chief Business Officer, Touchlight

"We take enzymes that exist in nature and then exploit the exquisite properties that those enzymes have evolved in order to make DNA outside of cells, in a way that's not possible in nature."

Tommy Duncan
Chief Business Officer, Touchlight

- **Generating power from naturally occurring materials in the bio-battery.** Touchlight is working with the UK Ministry of Defence, the Defence Science and Technology Laboratory, the University of Utah and the US Department of Defense, on this first-of-its-kind project. The technology takes naturally occurring products such as lactate, breaks them down using enzymes, and as they break down, they release electrons. These electrons are then captured and used as power. The batteries that the military carry currently are made from a mix of chemicals which could explode if shot. The bio-battery is made out of DNA, enzymes, lactate and water so is significantly safer. The hydrogel that makes up the battery can be dried out and reconstituted with water – even seawater - giving an energy-dense battery that can be carried easily and reconstituted anywhere. Not only is the battery safer and easier to use than current technology, it's also a greener solution to generating power as the materials used in it are natural and will degrade over time.

What is the future for the company?
The company continues to expand and will be opening the biggest capacity DNA manufacturing plant in the world in Q3 of 2022. Touchlight continues to look for new opportunities to partner with pharma and biotech companies who could benefit from using the technology.

UK innovator spotlight

Prokarium

What does the company do?
Prokarium is harnessing evolution to cure difficult to treat cancers by applying cutting edge science at the intersection of immunology and engineering biology.

The company's goal is to design the perfect bacteria to be the next cancer immunotherapy platform. Immunotherapies work by using our immune system to fight cancer and the new field of microbial immunotherapy does this by using engineered bacteria.

How does the technology work?
Prokarium is developing a safe strain of Salmonella Typhi as a microbial cancer immunotherapy. The proposed mechanism of action centres on fighting cancer by training your immune system to fight for you.

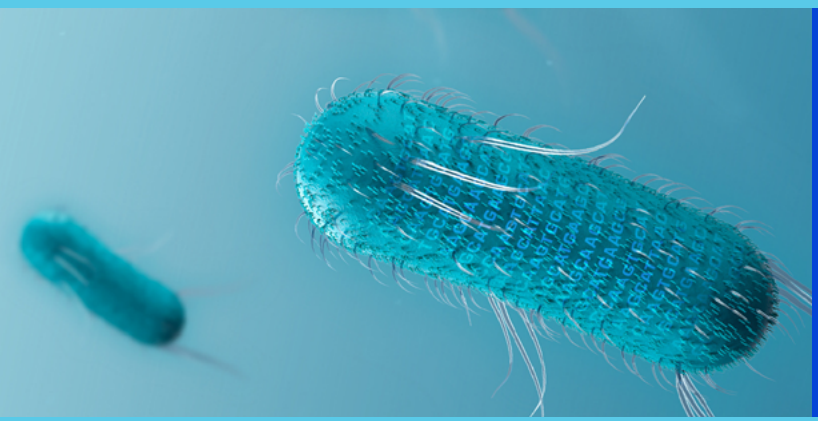
Prokarium is also engineering their Salmonella to deliver therapeutic cargo molecules. This will combine the bacteria's ability to generate a powerful activation of the patient's immune system with delivery of therapeutic molecules to the tumour.

"Our approach builds on the long history of microbial immunotherapy and holds the promise of providing solutions to many clinical needs that cannot be addressed by current cancer therapeutics."

Kristen Albright
CEO, Prokarium

What impact is the technology having?
Prokarium's lead program is focused on transforming the treatment paradigm in bladder cancer by orchestrating immune-driven, long-lasting antitumor effects. Microbial immunotherapy is the gold standard-of-care in the treatment of bladder cancer however, high recurrence rates exist, and limited treatment options are currently available for patients. Prokarium's immunotherapy offers a new and effective treatment to a market that has seen little disruption in over 30 years.

What is the future for the company?
Prokarium is pioneering the field of microbial immunotherapy and are interested in engaging with investors passionate about immunotherapy and synthetic biology.



"Prokarium has established an innovative technology and our therapeutic candidates are highly differentiated from other IO technologies in development. Looking to the future, we will continue to build a deep pipeline of next-generation therapies engineered to deliver diverse payloads within the tumour microenvironment ."

Kristen Albright
CEO, Prokarium

Trade and investment opportunities

Whether you are looking to discover, develop, make or deliver engineering biology solutions - global innovators, companies, buyers and investors can connect with the UK's vibrant ecosystem with the support of the Department for International Trade and through peer industry resources such as the BIA. You'll find engineering biology talent and expertise spread across the UK.

The potential economic benefits of engineering biology are significant, with estimates that biological applications could unlock an estimated $2-4 trillion in annual direct global economic impact by 2030 to 2040.[9]

The UK is open to investment and ready to trade with the world. It is second only to the US globally as a destination for inward investment in life sciences, with thriving domestic life sciences and chemicals industries, and both sectors are also top exporters.

The UK biotech sector reached new heights in 2021, securing £4.5 billion in public and private financings, £1.7 billon more than in 2020 and a tenfold increase since 2012. This money is helping UK spinouts and scale-ups to start and grow. It is also an attractor for global innovators seeking finance, global companies seeking innovation, and financial investors seeking returns.

The UK continues to draw international financing with UK companies securing half of all European biotech venture capital last year. The record-breaking levels of venture investment indicate that the UK has a strong pipeline of engineering biology companies.

There was also an increase in IPO activity in 2021, which saw more UK biotechnology companies listed on markets on both sides of the Atlantic, suggesting an ecosystem reaching maturity and ready to scale to reach new international markets.

Looking to buy from the UK?
UK engineering biology businesses and other organisations have a range of offerings for international customers and collaborators, from research to business partnering or commercial solutions. Check out the case studies in this booklet or contact lifescience@trade.gov.uk to request an accompanying company directory and to discuss your needs to matchmake with the UK opportunity.

Looking to invest in the UK?
The Department for International Trade network provides a global reach in 170 countries. Staff work to ensure global businesses can invest successfully in the UK, whether directly creating a UK entity, or indirectly investing capital in a UK business or development. Get in contact to start your investment journey:

https://www.great.gov.uk/international/content/investment/how-we-can-help/

9. https://www.mckinsey.com/industries/life-sciences/our-insights/the-bio-revolution-innovations-transforming-economies-societies-and-our-lives

In order to thrive, scientific research, development and manufacturing needs sustained collaboration across borders to ensure knowledge and talent are shared, and companies can access the finance and partnership opportunities that they need to grow.
I hope that this booklet has given you some insight into the vibrancy of the UK engineering biology ecosystem and encouraged you to look at how you and your organisation could become part of it.
The BIA has been networking and promoting UK synthetic biology companies for many years. We are proud to see the community grow and thrive and are keen to make connections for those interested in partnering. The UK biotech ecosystem is open for business and the links below give further information on how you can be part of the UK engineering biology revolution.

Steve Bates
CEO,
BioIndustry Association

How can I kickstart the partnering process with UK Engineering Biology companies?

Get in contact today via:
great.gov.uk/international/contact or request the accompanying UK engineering biology company directory from:

This booklet was a joint production between the Department for International Trade and the BioIndustry Association (BIA). We would like to thank the following individuals and organisations for contributing their time and expertise to this publication:

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Department for International Trade

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