



Accelerating the Bioeconomy:

Unlocking the Potential of Engineering Biology

**Report from a House of Lords Dinner
2nd December 2024**

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Head of Next Frontiers at Capgemini Invent, Richard Traherne chairs the meeting in the House of Lords

Foreword

It is a pleasure to introduce this report, which summarises an extraordinary evening of discussion, collaboration, and shared ambition for the future of engineering biology. Hosted by Lord Kirkhope in the magnificent surroundings of the House of Lords, and organised by Capgemini, the event brought together an exceptional group of leaders from government, global industry, academia, and the wider community. The dinner preceded the kickoff the following day of the SynbiTECH conference, the UK's leading international forum for engineering biology.

For many of us, the evening was a rare opportunity to swap the lab bench for a rather different kind of bench. While the debates that took place were different – one scrutinising new legislation, the other the potential of novel organisms – the energy, passion, and complexity of the conversations were strikingly similar.

The purpose of the evening was clear: to explore the UK's role in the rapidly emerging field of engineering biology, an area of digitally-enabled science that is set to shape the coming decades of innovation and disrupt global economies and supply chains. From healthcare to chemicals, fuels, consumer products, and climate tech, no industry will be untouched by the opportunities of this modern industrial revolution. However, like all major waves of change, engineering biology comes with challenges that require coordinated support for it to be established effectively.

Capgemini has been working in this space for over a decade, with the centre of our capability at the headquarters of our subsidiary, Cambridge Consultants, leading ground-breaking work in areas such as AI-enabled protein and metabolic engineering, and the application of digital twins to scale up production. Our value is simple but key – to help organisations reduce the time and cost of the discovery, development, and scaling of bio-based solutions. We also provide advisory support to governments and the public sector, and we are proud to be the World Economic Forum's partner for its Bioeconomy Initiative.

 **We were delighted to bring together leaders from industry, the public sector, and academia to unlock the transformative potential of engineering biology. By uniting diverse perspectives to address the challenges hindering its growth, we're driving forward initiatives and action to accelerate this revolutionary field."**

This year, we published a landmark report that provides critical insights into the state of engineering biology worldwide. Drawing on interviews with 1,100 corporate executives and 500 engineering biology startup executives, the report revealed that 96% of companies are pursuing biosolutions – with 40 per cent in exploratory phases and 56% actively experimenting, piloting, or scaling their work. Encouragingly, 72% of executives believe that biosolutions will accelerate progress towards sustainability goals. However, there are significant barriers to overcome. Companies identified high costs, a lack of infrastructure, a shortage of multidisciplinary talent, low "bioliteracy", and regulatory hurdles as common challenges.

Given that 96% of businesses are already pursuing biosolutions, we must focus urgently on unblocking these barriers. This is why Capgemini has adopted the rallying call, "The time is now." We believe this is a decisive moment for engineering biology and that a collective effort from industry, government, and academia will be required to seize this opportunity.

Our aim for the House of Lords dinner was to ensure this was not just an occasion for reflection but also a catalyst for action. It was designed as a "working dinner", structured to facilitate meaningful discussion around key themes. With the Chatham House Rule in place to ensure open dialogue, we asked participants to contribute insights and ideas that would be captured, synthesised and shared as a non-attributed report. This document, alongside a follow-up workshop in 2025, will help shape the agenda for supporting and scaling engineering biology in the UK and worldwide.

We thank Chamber UK for their support in the organisation of the event, and policy institute Curia for their work to produce this report.

We hope this foreword and the following discussions will mark the beginning of a lasting collaboration. Engineering biology is not just a scientific endeavour – it is a true industrial revolution that can transform industries, economies, and societies. To everyone who participated in the evening, thank you for your contributions. Your insights, perspectives, and experiences will be vital as we work to realise the transformative potential of this revolutionary field.

The time is now. Let us seize it together.

Richard Traherne
Next Frontiers, Capgemini Invent

Attendees

Name	Title	Organisation
Dr Dave Smith FIET FRAeS	National Technology Adviser	Department for Science, Innovation and Technology
Professor Joyce Tait CBE, FRSE, FRSA	Professor and Member	University of Edinburgh, and UK Council for Science and Technology Regulatory Horizons Council
Richard Traherne	Head of Next Frontiers	Capgemini Invent
Rt Hon Lord Kirkhope of Harrogate	Peer	House of Lords
Professor Dick Kitney OBE, FEng, FRSE, DSc (Eng), FCGI	Co-Director, Professor of BioMedical Systems Engineering, Co-Founder, and Co-Director	SynbiCITE, Imperial College London. Imperial College, Co-Founder, EPSRC National Centre for Synthetic Biology and Innovation (CSynBI)
Chi Onwurah MP	Chair	Science, Innovation and Technology Select Committee
Richard Slater	Chief R&D Officer	Unilever
John Cumbers	Founder, CEO	SynbioBeta, Biological Enlightenment Studios
Professor Sir Peter Donnelly FRS FMedSci	Founder, CEO	Genomics PLC
Dr Ruth Faram	Chief Scientific Officer	Uncommon Bio
Dr Cassandra Padbury	Associate Director	Cambridge Consultants
Professor Gideon Henderson	Director General for Science and Analysis and Defra Chief Scientific Adviser	Department for Environment, Food & Rural Affairs
Paul Dixon	Global Head of Public Sector	Capgemini Invent
Justine Bejta	Deputy Chief Scientific Adviser	Department for Environment, Food & Rural Affairs
Bill Hodson	Consulting Director	Cambridge Consultants
Scott Allen	Head of Engineering Biology	Department for Science, Innovation and Technology
Hannah Boardman	Department for Science, Innovation and Technology	Department for Science, Innovation and Technology
Chris Price	Operations Lead, Engineering Biology	Capgemini Invent
Silvia Cerolini	Head of Transformation	Sanofi
Dame Tamara Finkelstein DCB CB	Permanent Secretary	Department for Environment, Food & Rural Affairs
Kieran McBride	Head of Public Sector and Policy Labs	frog