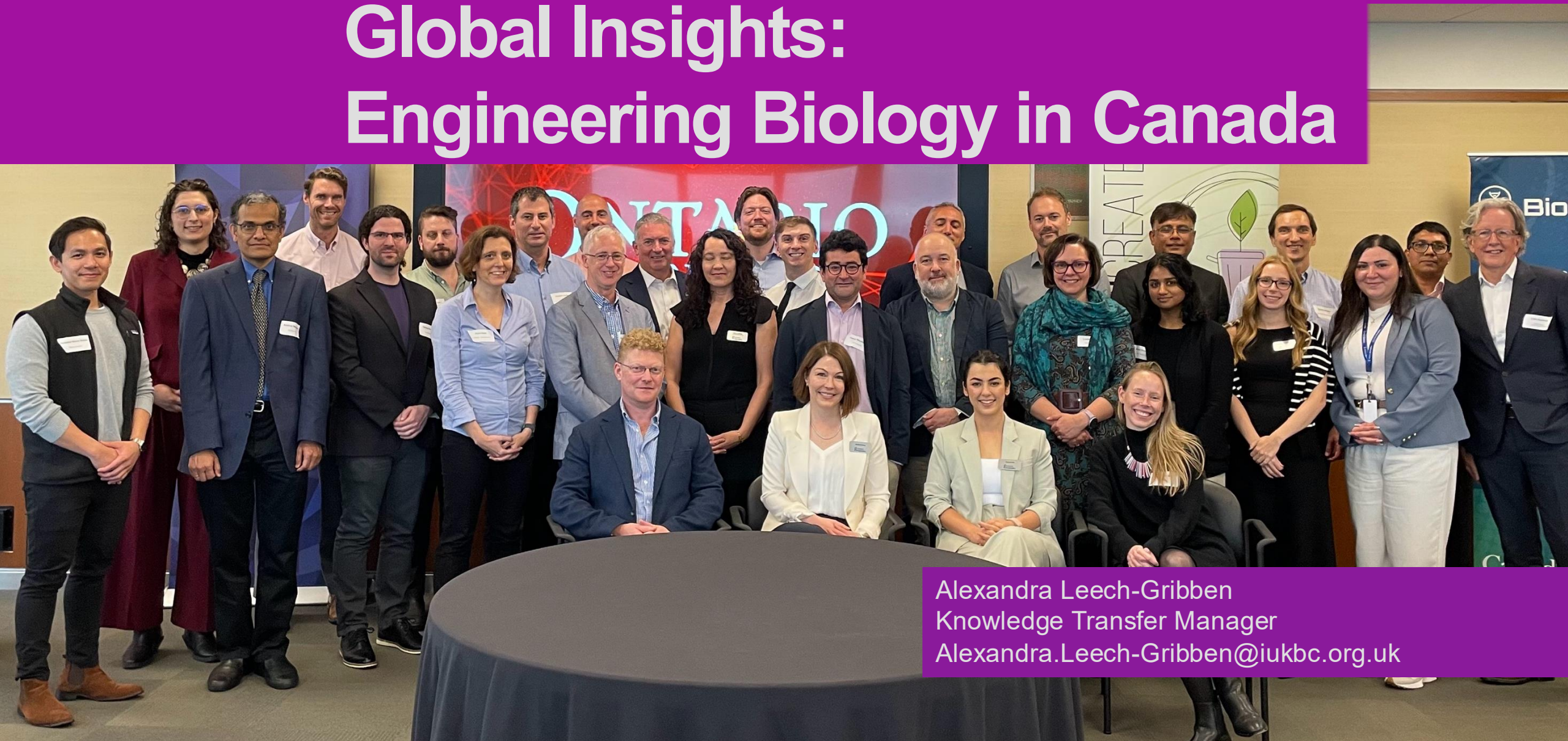
UKRI Innovate UK

UK Science & Technology Network

Global Insights: Engineering Biology in Canada



Alexandra Leech-Gribben
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Housekeeping

- Please note that this session is being recorded and will be shared on the Innovate UK Business Connect website.
- All attendees will be muted and cameras will be turned off.
- Please use the Q&A tab throughout the webinar – we will answer questions near the end.
- Should you have any technical issues during the webinar, please let us know in the chat box.
- Please scan the QR code for our report holding page,
  This will be shared by email once published.

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Agenda

Time	Item	Speaker
11:00-11:05	Welcome & introduction	**Alexandra Leech-Gribben**, *Knowledge Transfer Manager, Global Alliance* - Innovate UK Business Connect
11:05-11:10	Introduction to Innovate UK	**David Golding**, *Head of Global Innovation Partners*hips – Innovate UK
11:10-11:15	Overview of Innovate UK's Engineering Biology programs	**Tom Jenkins**, *Deputy Director: Transforming Food Production / Farming Innovation programmes* – Innovate UK
11:15-11:20	Overview of the Engineering Biology in Canada Global Expert Mission	**Alexandra Leech-Gribben**, *Knowledge Transfer Manager, Global Alliance* - Innovate UK Business Connect
11:20-11:30	Key findings of the Engineering Biology in Canada Global Expert Mission	**Dana Heldt**, *Knowledge Transfer Manager, Synthetic Biology* – Innovate UK Business Connect
11:30-12:15	Panel discussion on key insights for UK-Canadian collaboration in Engineering Biology	**Co-chairs** – **Tom Jenkins** & **Dana Heldt** **Panellists**: **Frederic Coulon**, *Chair in Environmental Chemistry and Microbiology* - Cranfield University **James MacDonald**, *CEO & Co-Founder* - Solena Materials **Louise Horsfall**, *Professor of Sustainable Biotechnology* - The University of Edinburgh **Tamara Kononoff**, *Industrial Technology Advisor* - National Research Council of Canada **Megha Bajaj**, *Business & Innovation Lead- Engineering Biology* - Global Institute for Food Security (GIFS) **Rick Mumford**, *Deputy Chief Scientific Advisor & Deputy Director of Science & Research* – Food Standards Agency **Zoe Woods**, CEO - Change bio
12:15-12:25	Q&A	All
12:25-12:30	Close	**Alexandra Leech-Gribben**

Introduction to Innovate UK & Engineering Biology programs

David Golding & Tom Jenkins

UKRI Innovate UK

The UK’s innovation agency

We are the UK's innovation agency

As part of **UK Research and Innovation (UKRI)**, Innovate UK is publicly funded by the Department of Science, Innovation and Technology (DSIT) to drive innovation and productivity across the UK.

We work for you to create a better future by inspiring, involving and investing in businesses developing life-changing innovations.

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Canada-UK MoU on cooperation on scientific research and innovation

On 30th January 2024, Canada and the UK signed a Memorandum of Understanding on bilateral cooperation that delivers excellence, and impacts across all fields of research and innovation, and aspires to work across three pillars of research and innovation collaboration: deep science and technology; commercialisation of innovation; and science diplomacy and governance;

Canada-UK MoU on scientific research and Focus areas include:

Life sciences
- Engineering biology
- Biomanufacturing
- Agricultural technology

Sustainability and net zero
- Critical minerals
- Ocean science and technology
- Clean energy technology
- Arctic and polar research

Digital and emerging technology
- Quantum
- Artificial intelligence
- Semiconductors

Joint statement between the Prime Minister of the United Kingdom and the Prime Minister of Canada

This Joint Statement follows the meeting of the Prime Ministers of the United Kingdom and Canada on 15 June 2025.

From: Prime Minister's Office, 10 Downing Street and The Rt Hon Sir Keir Starmer KCB KC MP

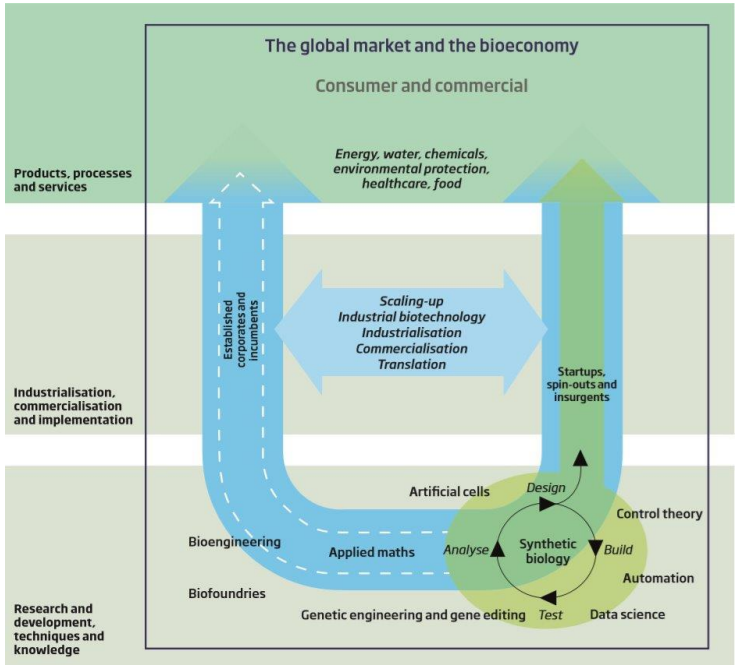
Published 15 June 2025

Growth and Innovation Partnership

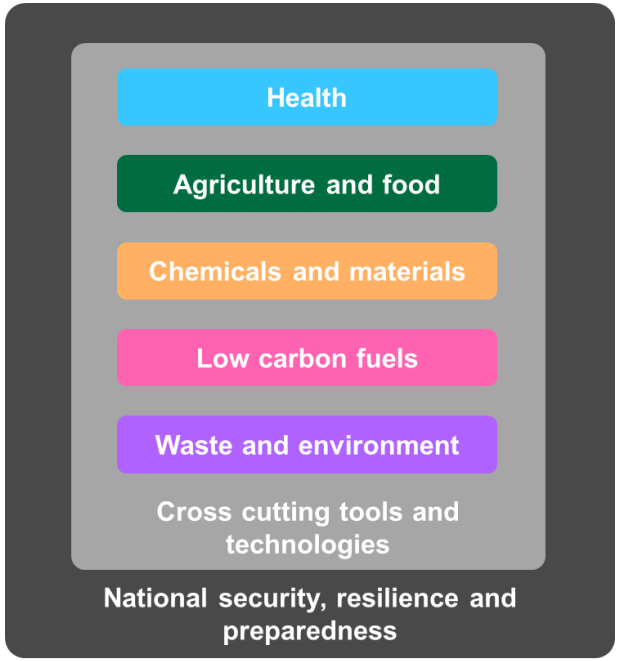
Canada and the UK are committed to delivering economic growth for their people. The two Prime Ministers today announced further collaboration on trade, science, technology and innovation.

Engineering biology: critical technology for growth

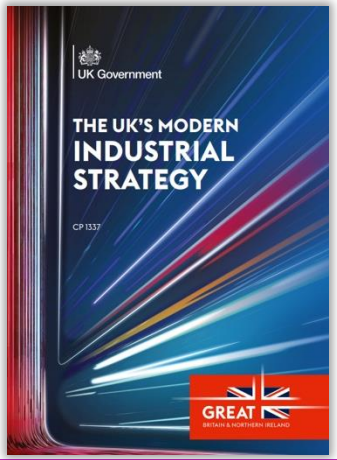
Definition

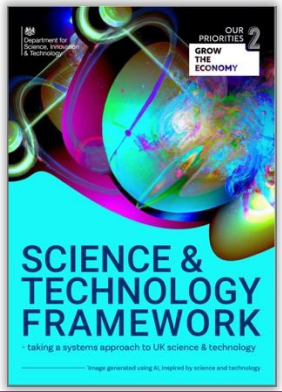


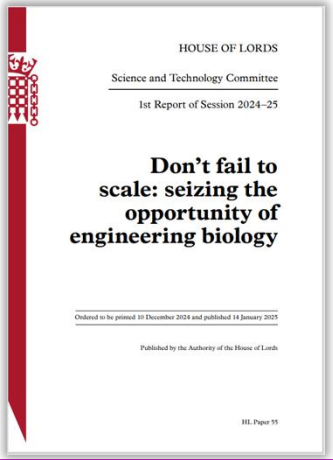
Application



Government priority







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Engineering biology: cross UKRI collaboration

Technology Missions Fund: £70m UKRI programme
(Apr 2023 – Mar 2025)

Biotechnology and Biological Sciences Research Council

£48m*

- 6 Research Hubs
- 22 Mission Awards
- Seedcorn Awards

Engineering and Physical Sciences Research Council

£2m

- POC Awards

Innovate UK

£16m

- 2x Accelerator comps
- 2x Feasibility comps
- 2x CR&D comps

IUK £16m

Accelerator & Feasibility

- 40 founder-led companies receiving entrepreneurial training and business support
- 20 companies awarded Feasibility funding to develop R&D pipelines and technology maturity

CR&D

- 48 projects across 4 themes: healthcare, food systems, clean growth, environmental solutions

* Plus £70m from BBSRC core

Invention → Innovation → Scale

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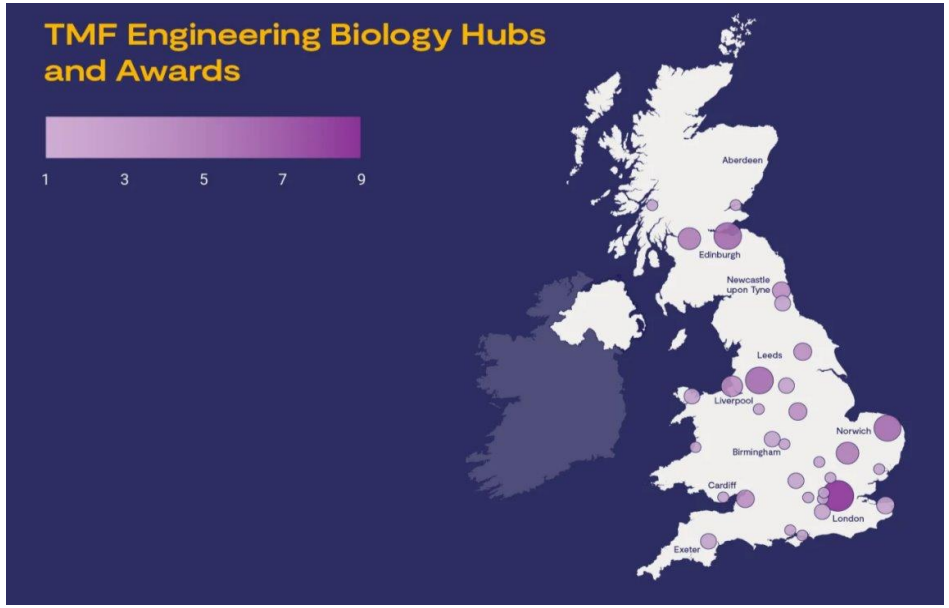
Engineering biology: Mission Hubs and Award

In 2024, UKRI invested over **£100 million** in **six Mission Hubs** and **22 Mission Awards** through our National Engineering Biology Programme

These investments **build on the UK's world-class engineering biology capabilities** – established through £800m UKRI investment since 2007 – to **unlock the potential of engineering biology across a broad range of application areas**

They aim to drive engineering biology research and innovation toward **tangible, mission-oriented impacts**, ultimately delivering **economic and societal benefits** to UK citizens

- Environmental Biotechnology Innovation Centre
- Engineering Biology Hub for Microbial Foods-
- Engineered Genetic Control Systems for Advanced Therapeutics
- Engineering Biology Hub for environmental processing and recovery of metals
- GlycoCell Engineering Biology Mission Hub: Transforming glycan biomanufacture for health Preventing Plastic Pollution with Engineering Biology



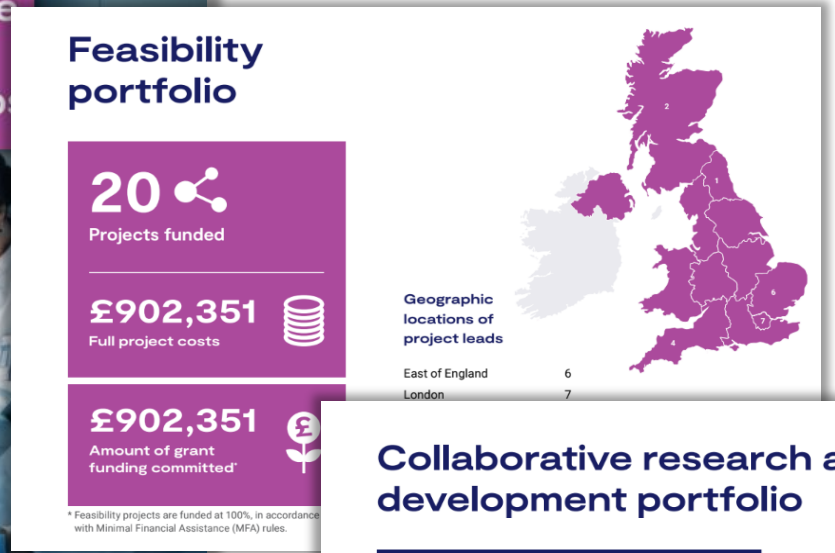
Geographical spread of Mission Hubs and Mission Awards

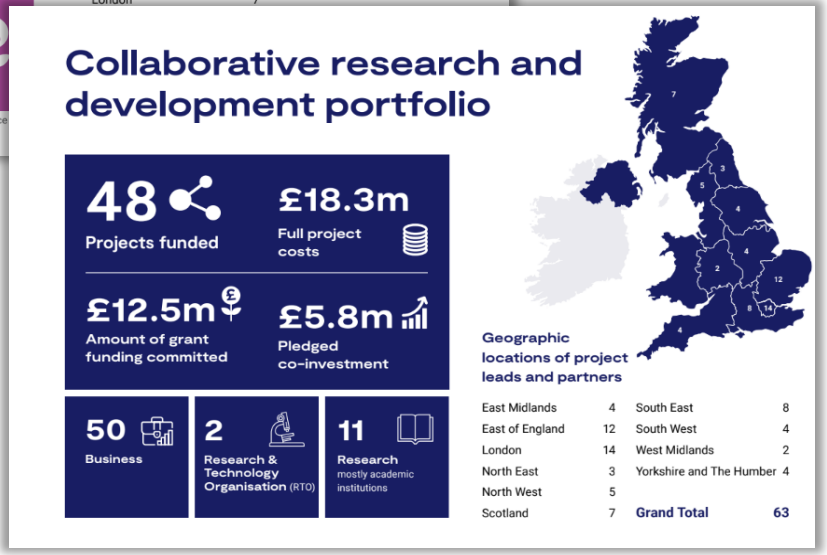
[UKRI Engineering Biology Mission Hubs Showcase - YouTube]

Innovate UK and BBSRC

Innovate UK engineering biology portfolio:

Over 60 companies have been supported to date





Download the project brochure: https://bit.ly/EngBio-Projects

Innovate UK engineering biology portfolio

Over 60 companies supported through TMF grants across **a range of application areas**

Agriculture & Food

APOHA, multus, B-hive, James Hutton Limited, GREENLEAF, BioDivide Applied Stem Cell Technology, Bravely Cultured, Quest Meat, folium science, Gain Holdings, UBLII, GENESIS, BRANSTON, BugBiome, KT KALVOTECH

Health

BACTOBIO, CELL guidance systems, NunaBio, Scarlet Therapeutics, syngensys, Oxford SIMCELL, 17CICADA, dimension, Janus Biosciences, Katana Bioworks, EVolution THERAPEUTICS, Plurify, Excellio Labs, prokarium, Deliver Biosciences, xterna, rapidX

Chemicals & Materials

Medusa, CROWN PAINTS, REPLICA BIOMATERIALS, SOLENA MATERIALS, LeafyColl

Low Carbon Fuels

biofuel evolution

Cross cutting tools

APIS Assay Technologies Ltd., impact solutions, IMPERAGEN, PentaBind Aptamer AI Discovery, NCIMB, nuclera, HER LAB, BiologIC Technologies, INTELLIGENT BIO SOLUTIONS, NATIVE LABS, NEW WAVE BIOTECH, evolutor, STERLING BIO MACHINES, GitLife BioTech

Waste & Environment

ColoriFix, CYANOCAPTURE, epoch BIOGAS, EVORALIS, SHELLWORKS, tw:g, SUN BEAR BIOFUTURE, CEXAL, neo-fossil, AquAffirm, PhotoClear, DEEP BLUE BIOTECH

Engineering Biology Innovation Network

Mission & Goals

- Driving the development of a joined-up UK Engbio ecosystem ensuring synthetic biology tools, technologies and processes can be developed and adopted by industry.
- Progress innovations, foster new consortia and create a commercially focused community, across the UK and globally.

Focus Areas

- Agriculture and food
- Materials and chemicals
- Health
- Waste recycling
- Energy and low carbon fuels
- Tools

Activities

- Showcases and Webinars
- Community-led insight gathering via workshops
- **Global opportunities and partnerships**
- Investment (including Pitch training) and funding

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Engineering Biology: Canada opportunities

- Canada is a priority country for UKRI (UK Research and Innovation) and DSIT (Department for Science, Innovation and Technology)
- Engineering biology is a key technology area for research and innovation partnerships to tackle global challenges in the MOU between DSIT and GAC
- Innovating with Canada provides opportunities for UK businesses to:
  - Co-develop & supply innovations across a range of supply chains, from agri-food, forestry, chemicals and material, mining;
  - Enable UK companies to increase technological abilities and take innovations towards market POC testing with Canadian RTOs and scale-up partners;
  - Form strong relationships with Canadian partners to access global business opportunities
- Bilateral partnerships have already been established across agri-food and biomanufacturing sectors that could be leveraged for future engineering biology collaborations and partnerships

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UK EngBio GEM to Canada Sept. 2025

Global Expert Mission:

- Programme included visits to **Montreal, Guelph, Toronto, Saskatoon**
- Focus was on opportunities to **use EngBio inspired solutions** across **application areas** including **agri-food-tech, clean-tech and environmental solutions.**

Objectives:

- **Building international partnerships** across government and funders, research-base and industry
- **Learning about Canadian ecosystems** to identify strategic priority areas for future collaborations focused on engineering biology solutions to sector challenges
- **Showcasing UK Capabilities** to promote UK technological and business strengths for future innovation partnerships
- **Establishing strong platforms** to enable future collaborations between UK and Canada for mutual benefit

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Overview of the Engineering Biology in Canada Global Expert Mission

Alexandra Leech-Gribben

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The UK’s innovation agency

Overview of Innovate UK Global Programme

Global Scoping Workshops

Bring together in a workshop, UK businesses, research organisations and other stakeholders in specific technology and sector areas to help identify countries offering the best prospects for partnership and collaboration with the UK.

The outputs of the workshop(s) will help to narrow down where Global Expert Missions could be used to scope opportunities in more detail.

Global Expert Missions

Group of 6-8 experts scoping opportunities for UK businesses in specific countries and technology and sector areas.

Three stages –

- Scoping visit
- Dissemination report
- Dissemination workshop

Global Business Innovation Programmes

Cohort of c.15 innovative high growth businesses exploring opportunities and building collaborations and partnerships in specific countries and technology and sector areas.

Programme over 9-12 months with 3 phases –

- Get ready
- Visit the market
- Exploit the opportunity

Global Incubator Programmes

Cohort of c.6-8 innovative high growth businesses building long-term relationships and foundations for future market growth.

Programme over 12-18 months with 4 phases –

- Prepare
- Participate
- Pursue – 3-6 months in an incubator in country
- Exploit

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Canada GEM Objectives

Building International Collaboration
Focused on innovations within the Engineering Biology sector with applications for Agri-Food, Clean Technology & Environmental Solutions.

Informing UK businesses and Government
Develop these findings into strategic actions for Innovate UK to build on and provide information to enable UK and Canadian companies to exploit collaboration opportunities.

Showcasing UK Capabilities
Promote the UK's technological and business strengths to be the "Partner of Choice" in future innovation partnerships with Canada.

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GEM Visit background

- **6 experts delegates**
  - **Adrian Higson**, *Managing Director & Principal Consultant* – Alder BioInsights
  - **Frederic Coulon**, *Chair in Environmental Chemistry and Microbiology* - Cranfield University
  - **James MacDonald**, *CEO & Co-Founder* - Solena Materials
  - **Louise Horsfall**, *Professor of Sustainable Biotechnology* - The University of Edinburgh
  - **Rick Mumford**, Deputy *Chief Scientific Advisor & Deputy Director of Science & Research* – Food Standards Agency
  - **Zoe Woods**, *CEO* - Change bio

- **Agenda**
  - 5 Working days across Canada 22-26th September
    - Montréal
    - Toronto / Guelph
    - Saskatoon
  - Activities included meetings, site visits, roundtables & workshops

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Stakeholders met during the GEM

Montreal

Academia

- Université de Montréal
- Mcgill University

Government, RTO & not-for-profit funders

- Fonds de Recherche du Québec
- Génôme Québec
- NRC Royalmount

GEM Delegation attending Montréal International roundtable

Incubators & investors

- Axelys
- Centre d’études des proceeds chimiques du Québec (CÉPROCQ)
- Consortium de recherche et d’innovation en bioprocédés industriels au Québec (CRIBIQ)
- Investissement Québec
- Montréal International

Stakeholders met during the GEM

Toronto / Guelph

Agri-food applications discussion in Ontario Genomics workshop

Academia

- University Of Guelph
- Lambton College
- University of Toronto, BioZone
- University of Waterloo
- Queen's University

Government, RTO & not-for-profit funders

- Ontario Genomics
- Agriculture and AgriFood Canada

EngBio companies & associations

- Alco Energy Canada
- BioPolaris
- Carboform
- Escarpment Labs
- Genuine Taste
- Grain Farmers of Ontario
- Kulture Rebellion
- Metacycler
- Bioinnovations
- Nurture Growth Biofertilizer
- RHA Ventures
- Syngenta
- Vive Crop Protection
- Liven Proteins

Stakeholders met during the GEM

Saskatoon

Incubation and R&D

- Global Institute For Food Security (GIFS)
- Food Industry Development Centre

Government, RTO & not-for-profit funders

- Saskatchewan Research Counci
- National Research Council Canada

GEM Delegation touring GIFS

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Key findings & opportunities for collaboration

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Innovation Partnerships: Areas for Collaboration

Cleantech

- green chemistry and biology
- biobased

Agriculture and Food

- protein value chains
- breeding
- biochar, soil improvements and plant science

Circular Economy and Waste valorization

- vast waste/by-product streams and natural resources
- agriculture, forestry, wool, paper & pulp

Environmental

- water treatment
- bioleaching & biomining
- Waste management

Tools

- LCA and TEA
- microbial chassis development

Regulation and Standards

- aligned regulation and standards between the UK and Canada

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Canada ecosystem support

Access to facilities

- pilot-scale bioprocessing
- biomanufacture
- genomic tools
- Food Centre
- GIFS
- Genome Quebec

Innovation programmes

Examples

- Sustainable Canadian Agriculture Partnership
- BioCreates
- Biobased projects (CRIBIQ)
- International partners

Exchange programmes

Student exchange programmes with UK universities

Local support

- for overseas SMEs entering the Canadian market
- Financial support
- Examples
  - Invest Ontario
  - BioEnterprise Canada
  - Investment Quebec

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Challenges and Barriers for collaboration

Terminology and regulatory

- engineering biology vs bioengineering
- Limited engagement between regulators & innovators
- IP ownership expectations

Provincial and national ecosystem challenges

- geographic size and internal distances
- funding often require keeping majority of activity and investment within country

Scaling infrastructure bottlenecks

- limited facilities, especially fermentation infrastructure

Potential Next Step

- Future UK Discovery Visit to Canada
- Joint R&D calls, incubator programmes, and knowledge exchange initiatives
- Global Business Innovation Programme (GBIP)
- Canada and UK Engineering biology sector mapping
- International Networking Forums

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Engineering Biology in Canada Global Expert Mission

- Delegation panel

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Engineering Biology in Canada Global Expert Mission - Delegation panel

Co-chair

- **Tom Jenkins**, *Deputy Director: Transforming Food Production / Farming Innovation programmes* – Innovate UK
- **Dana Heldt**, *Knowledge Transfer Manager, Synthetic Biology* – Innovate UK Business Connect

Panel (UK Delegation)

- **Frederic Coulon**, *Chair in Environmental Chemistry and Microbiology* - Cranfield University
- **James MacDonald**, *CEO & Co-Founder* - Solena Materials
- **Louise Horsfall**, *Professor of Sustainable Biotechnology* - The University of Edinburgh
- **Rick Mumford**, Deputy *Chief Scientific Advisor & Deputy Director of Science & Research* – Food Standards Agency
- **Zoe Woods**, *CEO* - Change bio

Panel (Canadian stakeholders met during GEM)

- **Tamara Kononoff**, *Industrial Technology Advisor* - National Research Council of Canada
- **Megha Bajaj**, *Business & Innovation Lead- Engineering Biology*, Global Institute for Food Security (GIFS)

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Questions?

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Thank you

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