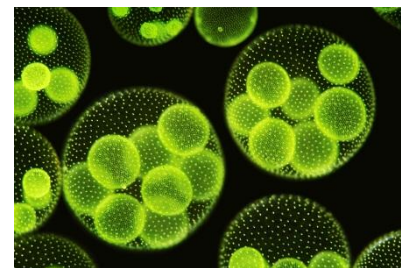


UK Strategy for Industrial Biotechnology

Introducing the Industrial Biotechnology Leadership Forum

Rebecca Wood
Chemistry Innovation KTN

18th September 2013



IB Manufacturing Exhibition 5-16th August 2013



IB Strategy in the UK: Government Support



IB 2025: 'Maximising UK Opportunities from Industrial Biotechnology in a Low Carbon Economy'

IB 2025

Maximising UK Opportunities
from Industrial Biotechnology
in a Low Carbon Economy

A report to government by the Industrial Biotechnology
Innovation and Growth Team

May 2009



The estimated **global market**
for IB by 2025:

£150 bn - £360 bn

£12bn

Sales for UK chemistry-using industry
using Industrial Biotechnology

Driving

- Connecting it all together

Delivering

- De-risking access to new products and technologies
- Accelerating the innovation and knowledge transfer process

Enabling

- Retaining and developing interdisciplinary talent in science and management
- Creating a supportive public and business environment for industrial biotechnology

Download IBIGT report (<http://www.berr.gov.uk/files/file51144.pdf>)
and Government Response (<http://www.berr.gov.uk/files/file51891.pdf>)



The Chemistry Using Industries



What is industrial biotechnology?

IB is defined as *“the use of biological substances* for the processing and production of enzymes, chemicals, materials and energy”*.

* *plants, algae, marine life, fungi, micro-organisms*

White Biotechnology

Use of micro-organisms, biochemistry, biocatalysts, engineering and fermentation

Green Biotechnology

Discovery & use of novel genes, processes and materials in land plants, agricultural crops and forestry

Blue Biotechnology

Discovery & use of novel genes, processes and materials in freshwater and marine organisms

Areas of focus:

IB for the design and processing of bio-derived raw materials

IB for onward processing and manufacture of products



Strategic Action Plan



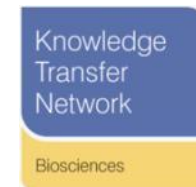
Industrial Biotechnology Leadership Forum – The Members

Technology Strategy Board
Driving Innovation

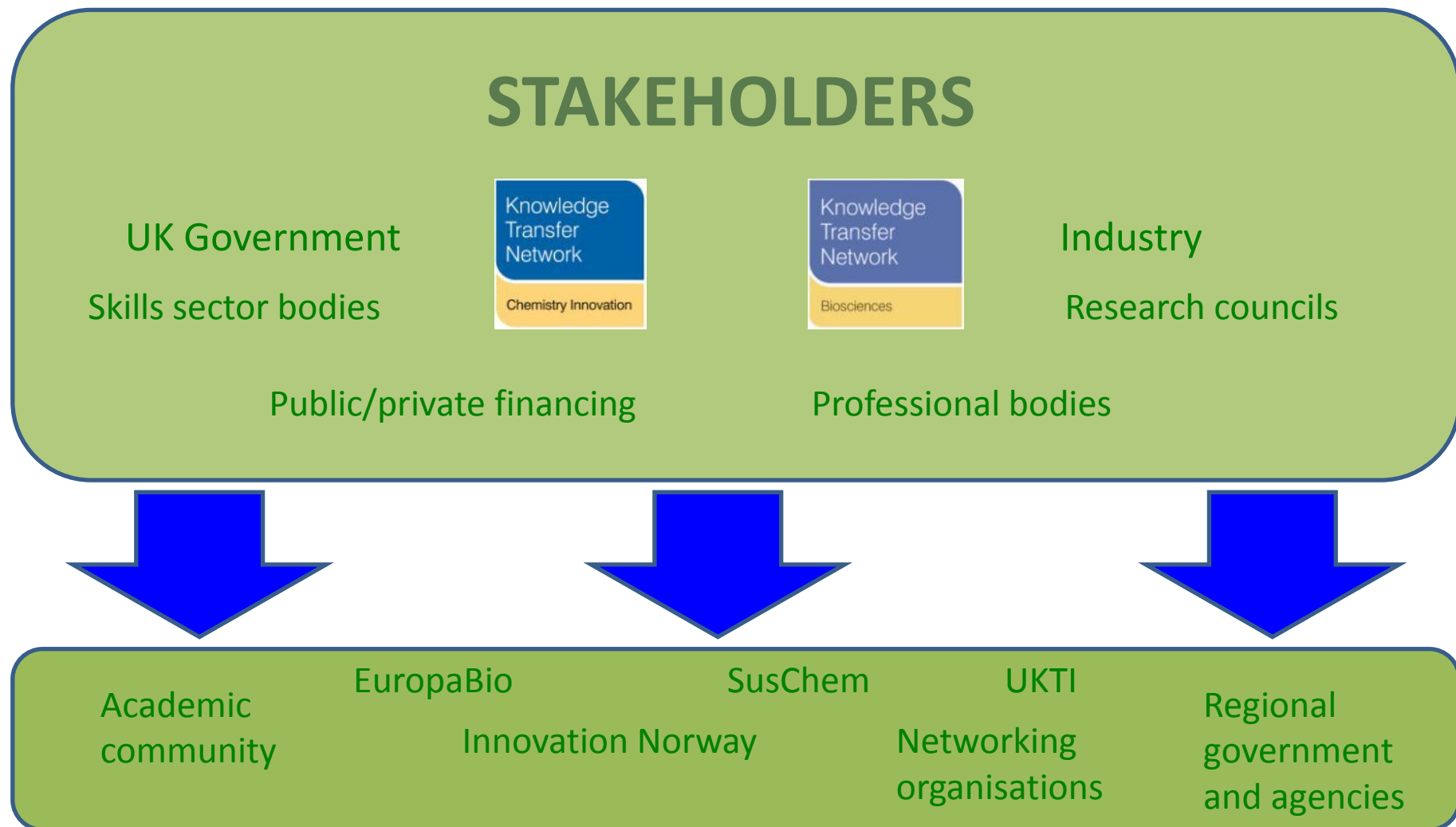
BIS | Department for
Business Innovation & Skills



- Connecting it all together



Industrial Biotechnology Leadership Forum (IBLF) Structure

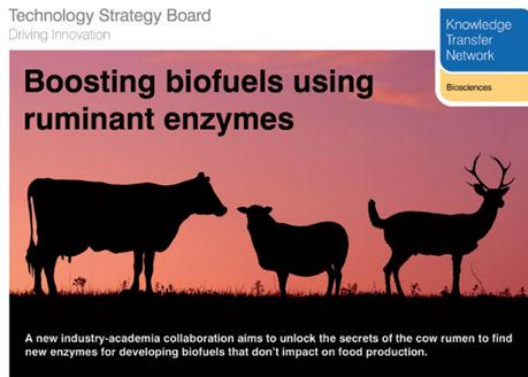


Driving a bio-based economy in the UK

Quarterly newsletter



Case studies



Events



Website



www.iblf-uk.com

Social media



National Industrial Biotechnology Facility (NIBF)

Development Laboratories

- Up to 10 litre working volume
- DSP matched to plant scale up units
- Algal processing

NIBF 1

- Pilot plant to 750 L
- Plug and play processing

NIBF 2

- Centre piece is a 10,000 L fermenter
- Solvent suite, distillation, wet and dry biomass processing
- Focused on biomass to renewable chemicals

Multi-disciplinary team

<http://www.uk-cpi.com/>

Delivering

- De-risking access to new products and technologies
- Accelerating the innovation and knowledge transfer process



Images courtesy of CPI



Academic Centres of Excellence

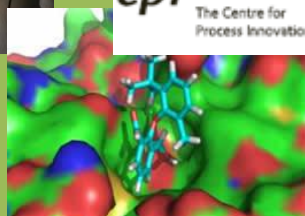
<http://www.coebio3.manchester.ac.uk/>

<http://www.biorenewables.org/>

Centre of Excellence for Biocatalysis,
Biotransformations and Biocatalytic
Manufacturing (CoBio3)

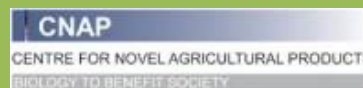


THE UNIVERSITY of York



Images courtesy of the MIB (Manchester Institute of Biotechnology)

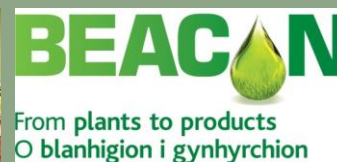
The Biorenewables Development Centre



Images courtesy of the BDC

<http://www.beaconwales.org/>

The BEACON Biorefining Centre of Excellence



Images courtesy of the BEACON project, Wales



Company Engagement Programme – The Beginning

Follow up / result of company visit		Delivering					
		<ul style="list-style-type: none"> De-risking access to new products and technologies Accelerating the innovation and knowledge transfer process 					
Sector Class	New IB project initiated						
	Introduction made						
	Technical input provided						
	Follow up visit				1		
	Basic follow up interest	1	1		1 1	2 1	1 4
	Primary visit only			2		2 1	1 1
	Total companies engaged per awareness level	1	1	2	3	6	7
1 = Number of companies per sector class		Unaware or resistant	Aware of IB	Open to application	Engaged at R&D	Engaged at commercial	IB is core business

Bulk Chemicals
Specialty Chemicals
Environment
Providers
FMCG
Pharmaceuticals

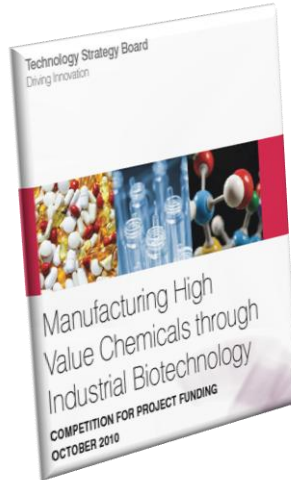


Company Engagement Programme – January 2013

		>300 biocatalytic processes, >400 fermentation processes, >1000 products based on renewable raw materials: Value est. Up to £5 bn					
Follow up / result of company visit Sector Class Bulk Chemicals Specialty Chemicals Environment Providers FMCG Pharmaceuticals	New products, processes, services (value generated)						
	New IB project initiated		1	3 2	1 2	1 2 3	1 4
	Introduction made		1 1	1 1 2 1	3 1 1 3	3 2 1	1 1
	Technical input provided	1	1 1	1 1 4	1	1	
	Follow up visit	1			1 1 1	2 1	1
	Basic follow up interest	2	1 5	2 2 3 6	1 1 1 4	2 5 2 3	1 2
	Primary visit only		2				
	Total companies engaged per awareness level	4	14	31	23	29	11
1 = Number of companies per sector class		Unaware or resistant	Aware of IB	Open to application	Engaged at R&D	Engaged at commercial	IB is core business



Project Building and Funding



Technology Strategy Board
Driving Innovation

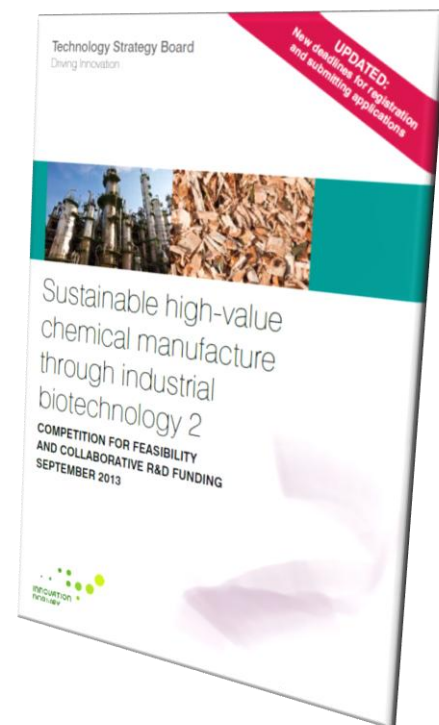


High value chemicals manufacture through industrial biotechnology

Projects that utilise sustainable bio-based feedstocks and/or biocatalytic processes in the production of higher value chemicals.

UK Business Led

	Business Model	Technical Feasibility	cR&D
Funding available	£0.25m	£1m	£1.25m
Project size	£33k	£150-200k	£500k-1m
Funding Allocation	75 / 65 %	75 / 65 %	60 / 50%
Single Company	Yes	Yes	No
Collaborative	Yes	Yes	Yes
Project length	< 6 months	6-9months	< 2years
Academic contribution	<50%	<50%	<30%





- MoU signed in Tromsø in April 2010
- Building a relationship based on mutual interests
- Testing possibilities
 - in Biosciences
- Vision of collaborative options
 - in IB and Biorefining
- Networking events
- 8 Joint projects



2 year review reported excellent progress



UK Government Investments in Industrial Biotechnology 2009-2013

£12M to establish demonstration facilities

- ~£3M pa continued through Catapult funding

Up to £3M pa into Feasibility / CR&D Competitions from TSB

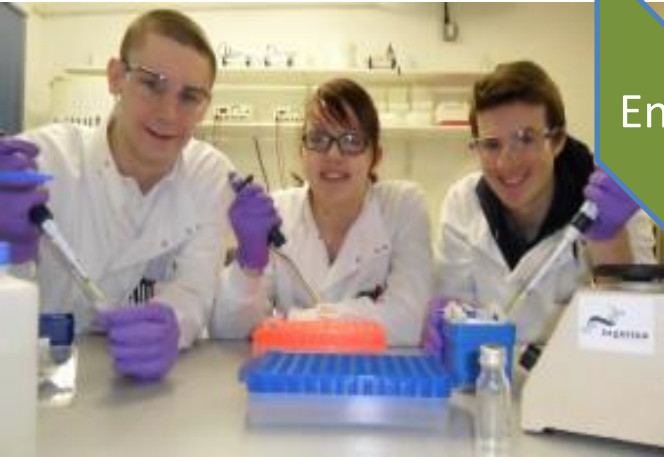
- TSB Competitions in UK (incl. partnership with Innovation Norway)
- European ERANets

£2.5M into the Biorenewables Development Centre in York

£1M into company engagement programme

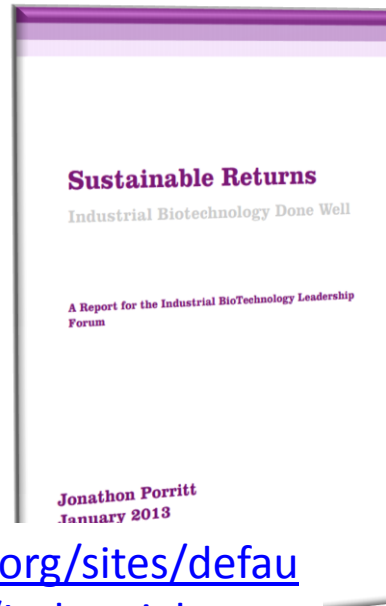


Enabling a bio-based economy in the UK



Enabling

- Retaining and developing interdisciplinary talent in science and management
- Creating a supportive public and business environment for industrial biotechnology



<http://www.forumforthefuture.org/sites/default/files/images/Forum/Projects/Industrial-Biotech/Final%20report%20IB%20PDF.pdf>



Demonstrating progress 3 years on

Leading IB: A UK Showcase



300 Delegates
45% industry
20% academic
20% IB stakeholders (KTNs, CPI, Cogent....)
15% Funders (public and private)



The bio-based flag

<http://www.youtube.com/watch?v=SHb8K2Uo9sU>



<http://www.bbc.co.uk/news/uk-england-hampshire-22407246>



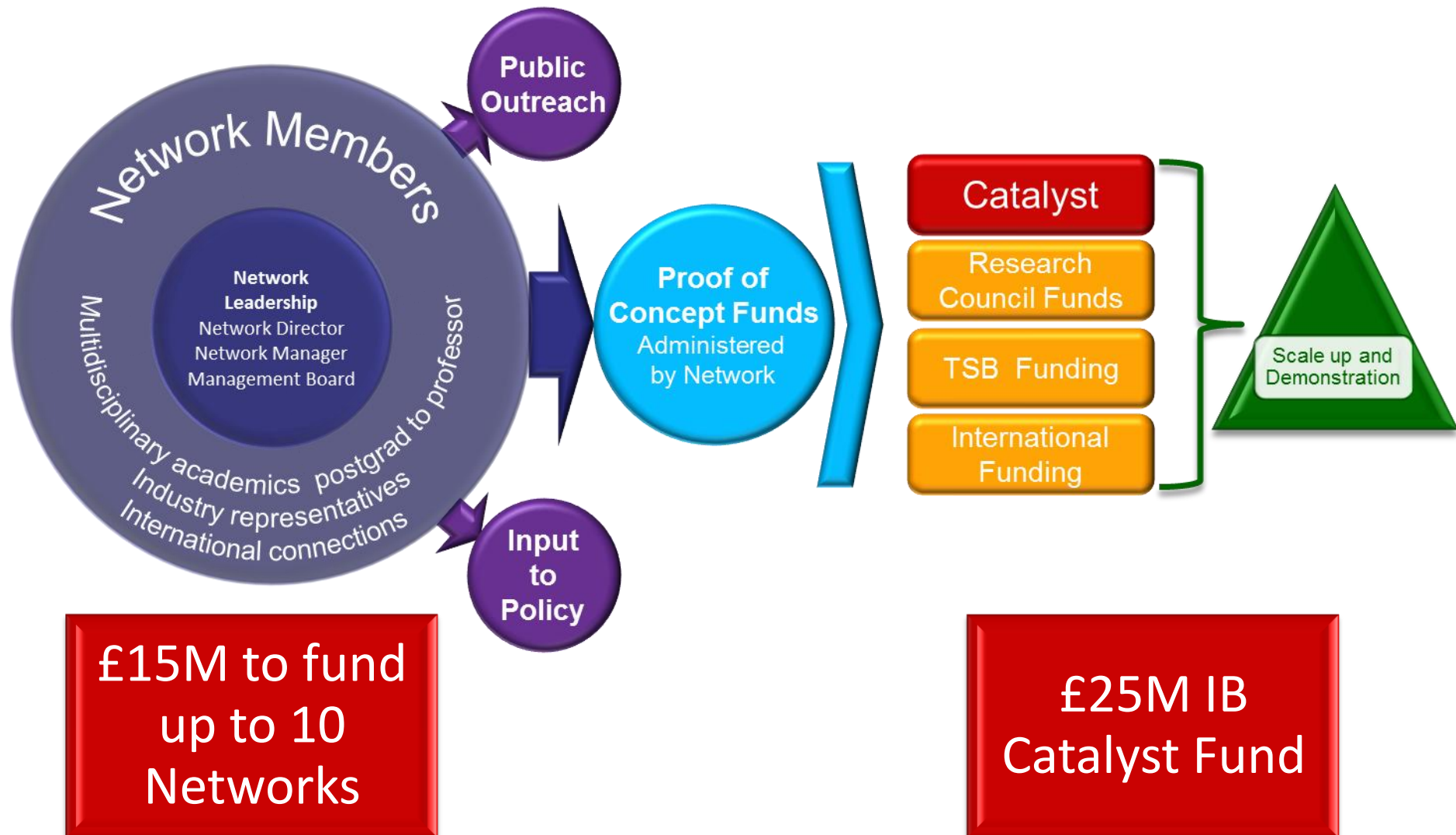
Ministerial Engagement



“£40m investment for IB Catalyst”



RCs and TSB working together: Networks and the IB Catalyst

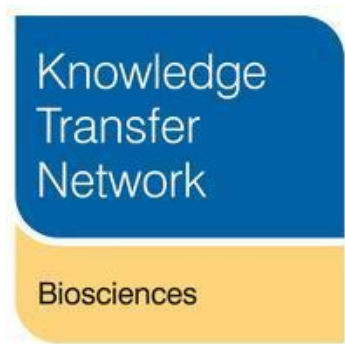


Summary

- >10 delivery partners driving progress towards £12bn opportunity by 2025 with interim milestones
- We are on track to deliver the step change in IB for the UK
- Looking for even stronger engagement with industry
- Working closely with the government on IB
- It's an exciting time to be involved!
- Coherent industry voice
- Simple and memorable messages
- Strong leadership
- Co-operation of multiple stakeholders with different agendas



Thank you



**Industrial Biotechnology
Special Interest Group**

BIS | Department for Business
Innovation & Skills

Technology Strategy Board
Driving Innovation

• Together we aim to **drive uptake of Industrial Biotechnology** through-out the **chemistry-using industries**

Rebecca Wood (rebecca.wood@ciktn.co.uk +44 7515 334820)



Knowledge Transfer Networks

