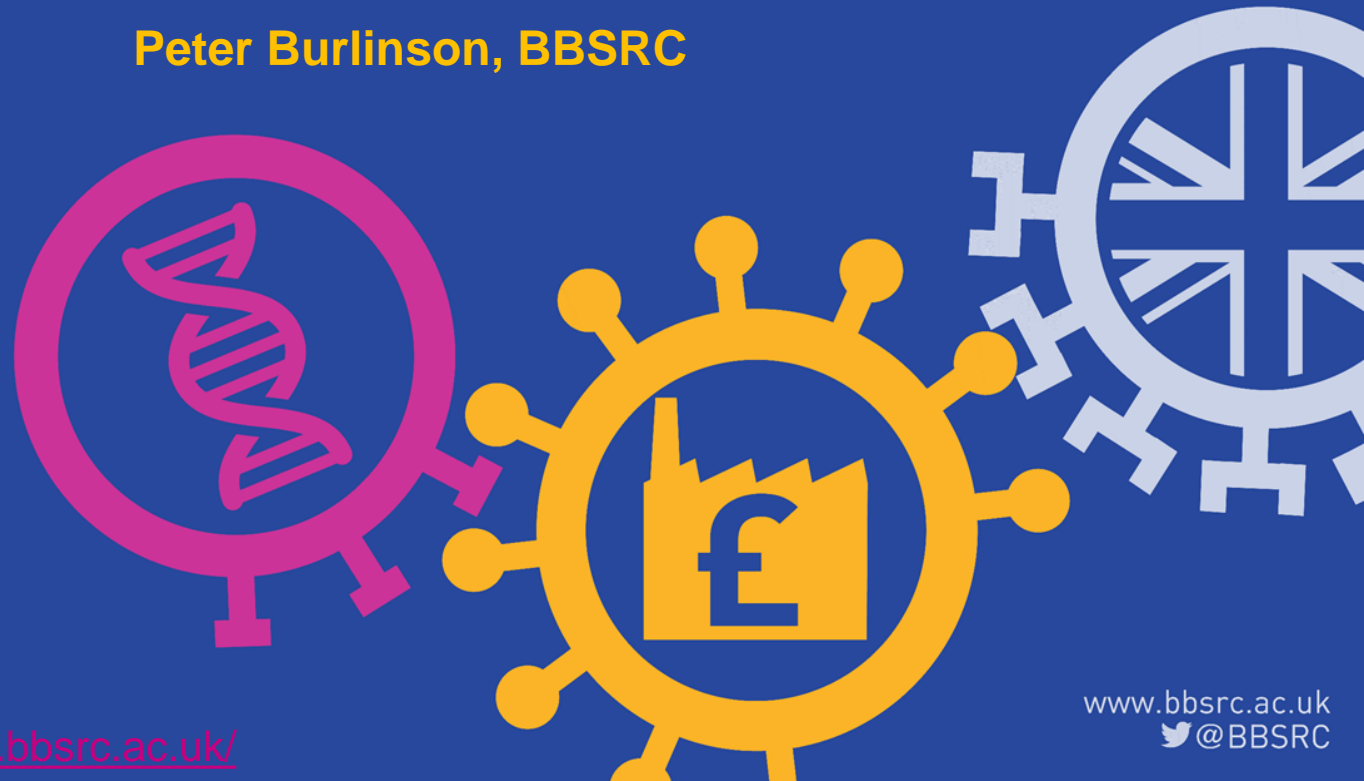




Overview, Strategic Priorities and Funding Opportunities

Peter Burlinson, BBSRC



UK Research Funding

HM Treasury

Comprehensive
Spending Review

Department for Business, Innovation and
Skills (BIS)

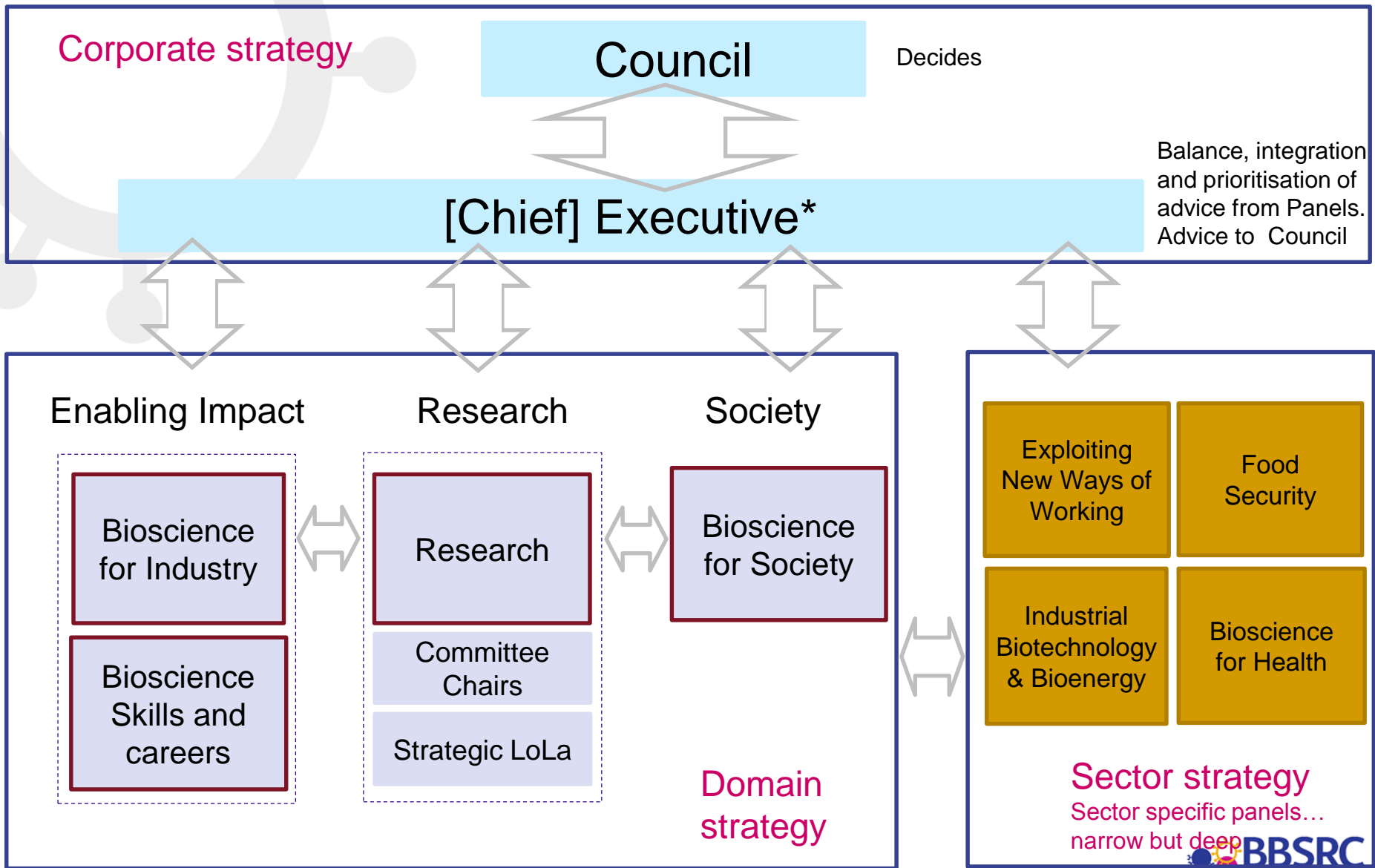
AHRC BBSRC ESRC EPSRC
MRC NERC STFC

BBSRC £417M
2016-17
*Includes additional capital

~£3 billion budget

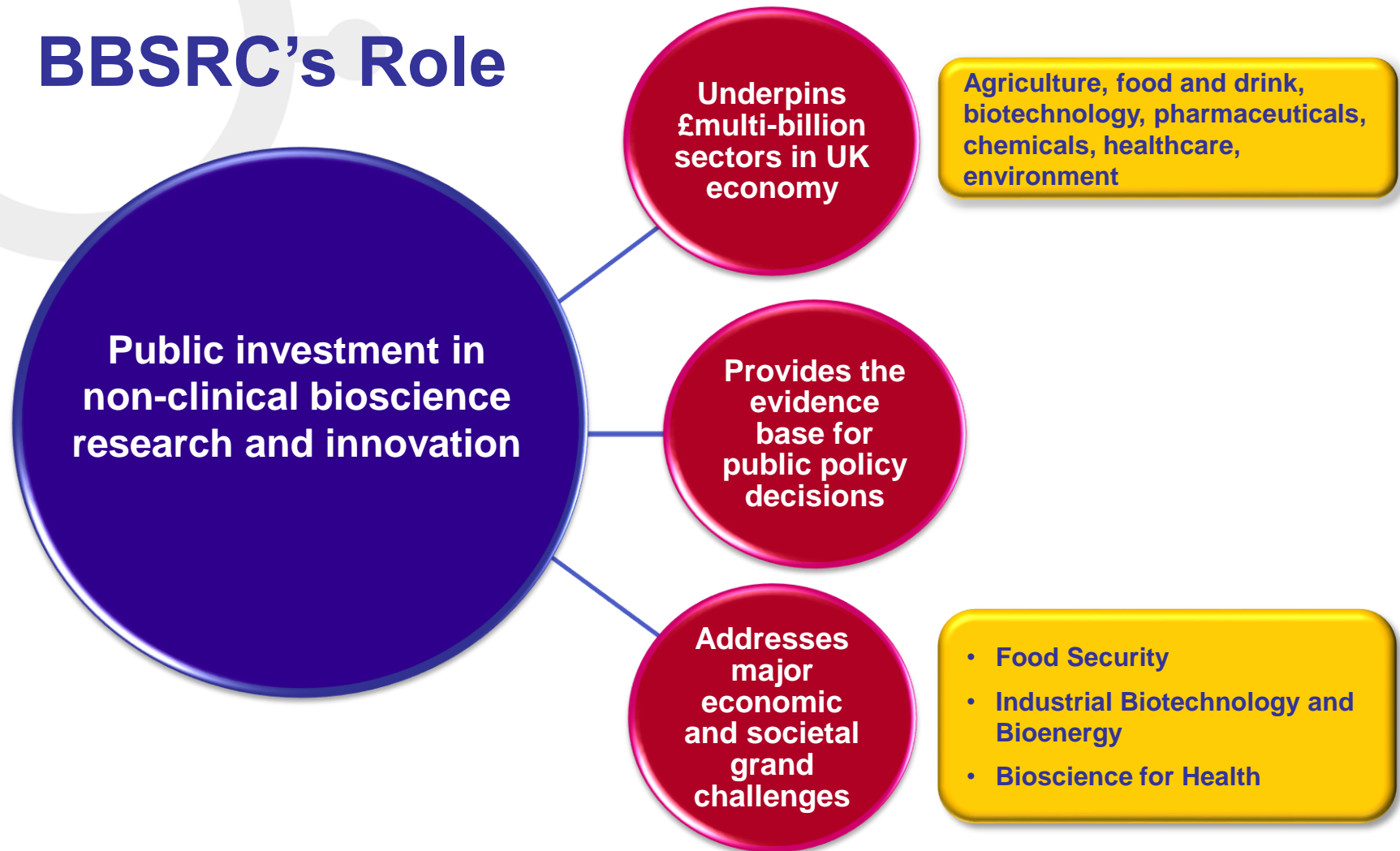


Key advisory groups



* in the context of the diagram, the '(Chief) Executive' represents the collective responsibility of the BBSRC Executive, led by the CE

BBSRC's Role



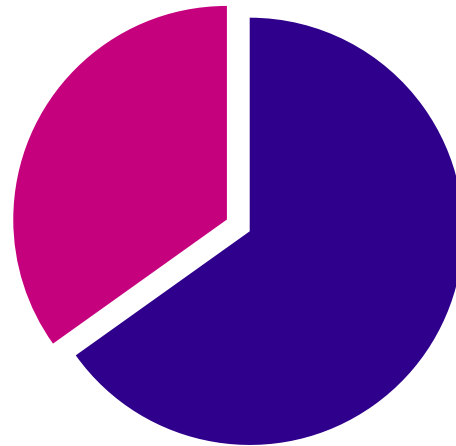
BBSRC – What We Do:

- Fund **world-class bioscience research** in UK Universities and Institutes
- Fund **bioscience training and skills** for the next generation of bioscientists
- Drive the widest possible **social and economic impact** from our bioscience in industry, policy and public goods
- Promote **public dialogue** on bioscience

BBSRC funds research in universities & institutes

Institutes

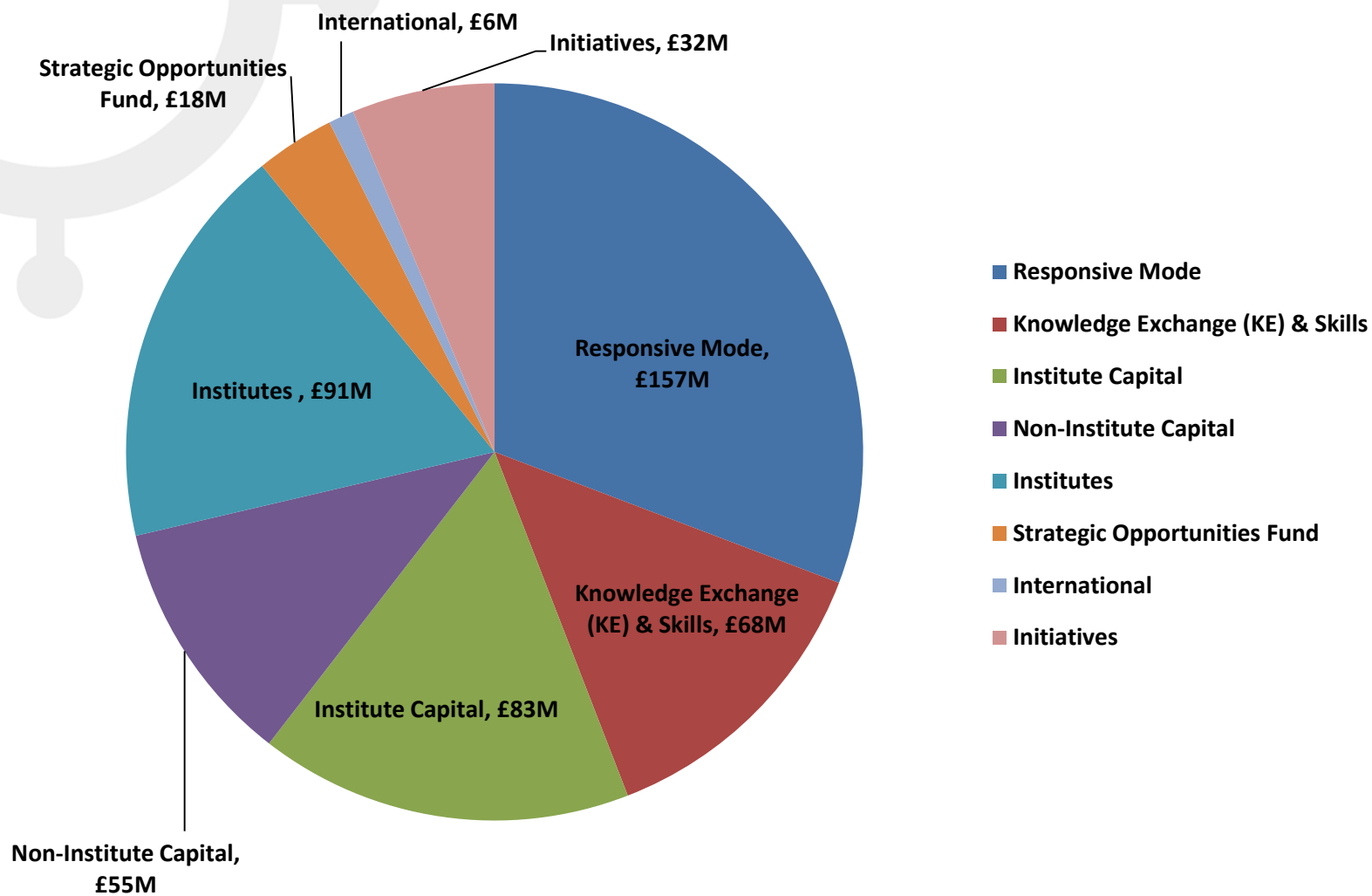
- **More strategic** research
- **Mission-oriented**
- Longer-term funding (5yr programmes)
- Specialist facilities and capabilities



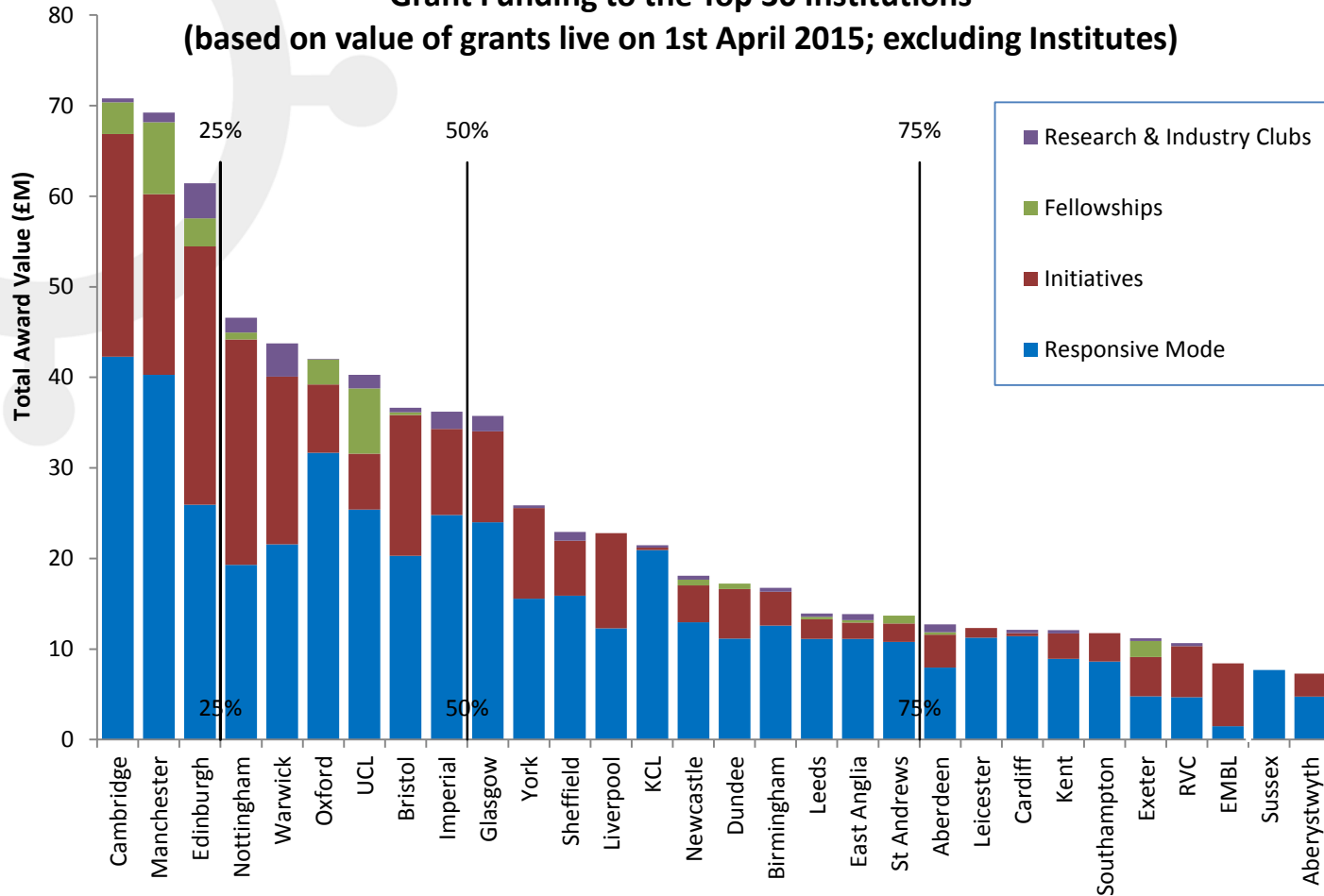
Universities

- **Basic and strategic** research
- More curiosity-driven/ may be aligned to University strategy
- Short- and long-term funding (1-5yr grants)
- Specialist facilities and capabilities

Spending Overview 2014-2015



Grant Funding to the Top 30 Institutions (based on value of grants live on 1st April 2015; excluding Institutes)



BBSRC strategic plan: The age of bioscience

“driven by new tools and technologies”

....never before have researchers been able to address such a breadth and depth of biological questions....

www.bbsrc.ac.uk/strategy



<http://www.bbsrc.ac.uk/documents/delivery-plan-2016-20-pdf/>

Supporting world-class bioscience is a key priority

World-class bioscience

Research



Skills



Infrastructure



Image credits 1. Cardiff University 2. Thinkstock 3. IBERS

Frontier Bioscience

- Pioneering, curiosity-driven research is fundamental to BBSRC's mission as the UK's primary public investor in bioscience
- Our frontier bioscience theme gives high priority to world-class discovery research that provides fundamental insights into biology
- We believe that frontier research is essential to ensure the UK remains a global leader and will continue to champion frontier bioscience in making the case for investment

cutting-edge
inventive radical
far-reaching
frontier
blue-skies
curiosity-driven
discovery science
original fundamental
transformational
pioneering
paradigm-changing
adventurous
creative
leading

Frontier Bioscience

- We drive scientific discovery through a focus on scientific excellence in peer review
- BBSRC aims to sustain a balanced portfolio encompassing frontier investigations as well as more strategic and applied programmes
- Responsive mode, fellowships and studentships remain our key mechanisms to support talented scientists with great research ideas
- We also aim to support emerging bioscience areas and to encourage multidisciplinary working, recognizing that ground-breaking discoveries often come through collaboration

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original fundamental
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creative
leading

Frontier Bioscience

A few examples...

- Big data '-omics' approaches to identify regulators of blood cell development
- Investigation of surface wave phenomena in cell division using imaging and modelling
- Fundamental research revealing rules governing packing of viral RNA into protein coats
- Influence of chloroplast protein import on stress tolerance in the model plant *Arabidopsis*
- Building the synthetic yeast genome to explore genome topology and principles of genome design

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adventurous
creative
leading

Three major strategic priorities

Agriculture and food security



Industrial biotechnology and bioenergy



Bioscience for health

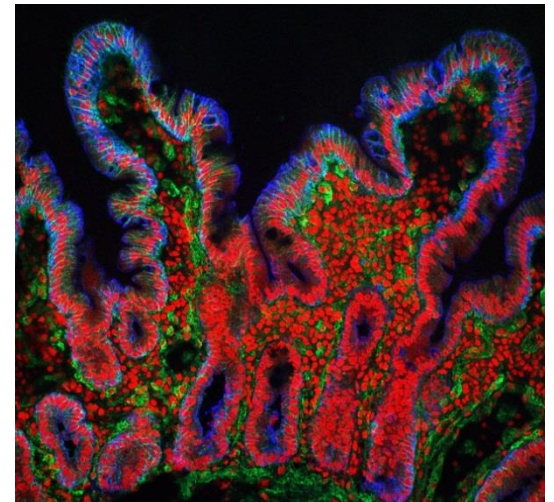
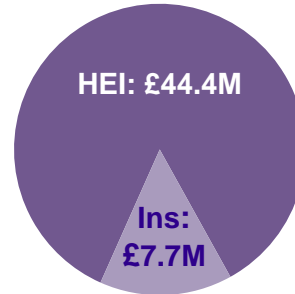


Image credits 1.Thinkstock 2.TMO Renewables 3.Stephanie Schuller, IFR

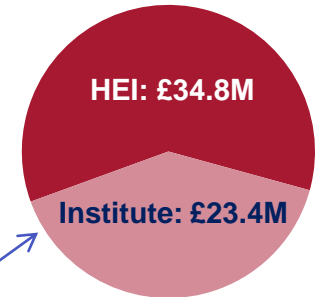
Mapping the research landscape: Annual spend 2014/15: £334.0M

Research relevant to more than one strategic research priority is double counted resulting in an overlap of £34.9M between strategic research priorities

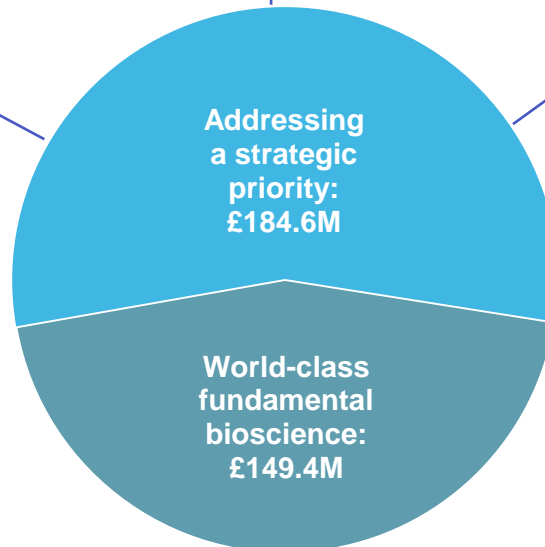
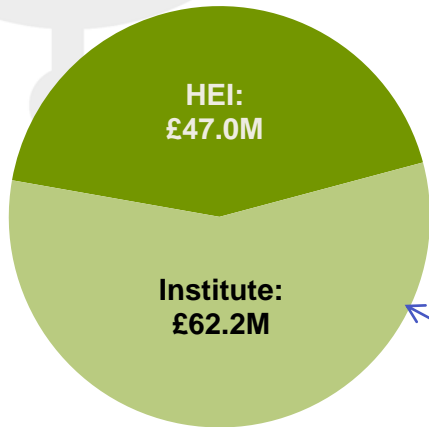
Industrial Biotechnology and Bioenergy £52.1M



Bioscience for Health £58.2M

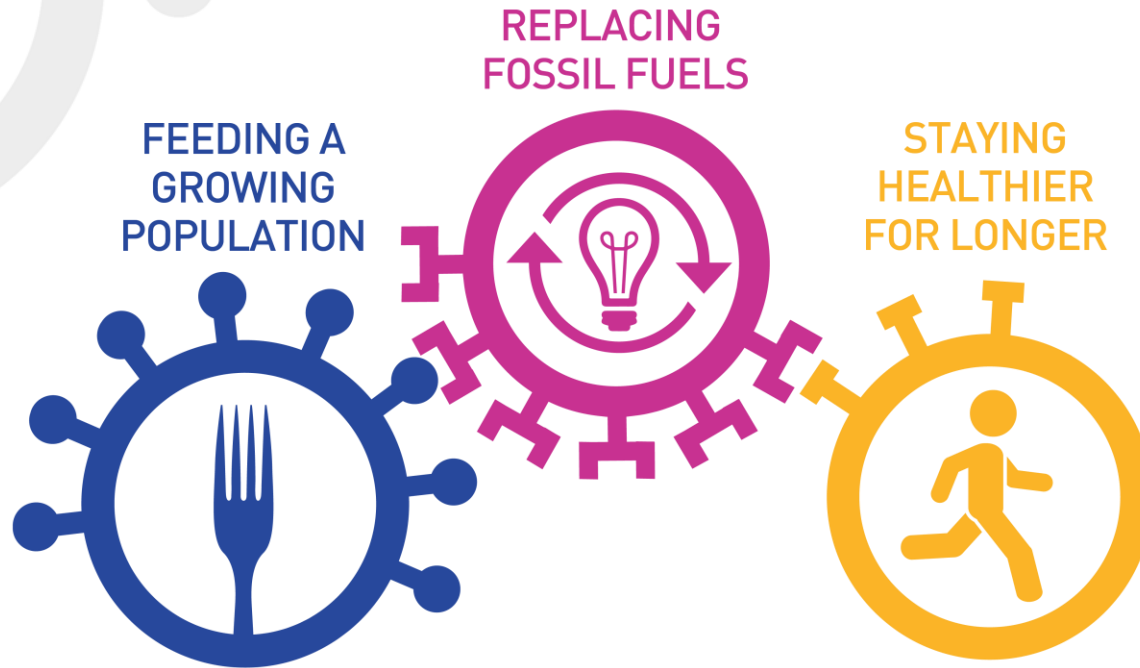


Agriculture and Food Security £109.2M*



55% of the portfolio addresses a strategic priority (51% in 2010/11)

Meeting society's challenges



- The world needs to produce 50% more food by 2050
- Food & agri sector in UK already worth £96Bn a year
- Need for low carbon alternatives to fossil fuels
- Demand for energy predicted to grow by 20% in 2030 (from 2010)
- 21% of UK population will be aged 60+ by 2050
- Tackling obesity would save wider UK economy £50bn per year by 2050

Agriculture and Food Security -the challenge

The Agri-food sector in the UK, from farm to fork:

- Employs 1 in 7 people
- £80Bn (6.8% of national Gross Value Added [2010])



Image: © Wikimedia Commons

The UK Government's overarching goal is for:

- A sustainable agri-food system, which can produce enough affordable, safe and healthy food, both in the UK and globally, supporting a thriving UK agri-food business sector
- Non-food crops as a source of novel products to support the bio-economy
- For the sector to be underpinned by **research & innovation**, to ensure the development and dissemination of new knowledge, technologies and skills

Agriculture and Food Security -priorities

Bioscience for sustainable and productive agriculture, supplying not only sufficient, nutritious and safe **food** but also **non-food** products, in a rapidly changing world

- Sustainably enhancing agricultural production
- Reducing waste in the food chain
- Food, nutrition and health
- Combatting antimicrobial resistance
- Animal health
- Welfare of managed animals



IBBE challenges:

Sustainability: UK and EU drivers for implementation of the Kyoto Protocol

- UK Climate Change Act 2008: 80% reduction in greenhouse gas emissions by 2050
- EU Renewable Energy Directive: 27% of energy from renewable sources by 2030.

Economics (2015 values)

- Value to UK economy: **£2.9B pa**
- Companies involved in IBBE manufacturing: **225**
- Contribution to exports: **£1.5B pa (+4.5% on UK balance of trade)**
- Growth potential: **£2.9B (present) to £8.6B (2025) (11% pa)**

Health of the nation

- The only way to manufacture recombinant biopharmaceuticals and complex antimicrobials

Maintaining citizens' lifestyles while:

- Sourcing sustainable biochemical alternatives to petrochemicals to supply energy (power, heat, transport), materials and chemicals
- Seeking an integrated approach to address the issues of food, energy, land use and water demand



Image Credits: Thinkstock / Julie Stevens

Industrial Biotechnology and Bioenergy (IBBE) - priorities

Energy, industrial materials and biopharmaceuticals, developed and produced using biological processes from a wide range of feedstocks including wastes and residues, reducing dependency on fossil carbon and helping drive the UK bioeconomy

- Industrial Biotechnology: Innovative approaches using biological resources and systems in manufacturing routes for fine chemicals, bulk chemicals and biopharmaceuticals
- Bioenergy: Liquid and gaseous biofuels
- Emphasis on systems and synthetic approaches



Bioscience for Health: The Challenge

- The **ageing society** is a major challenge for 21st century
- Ageing is a major risk factor for poor health & frailty, disease & disability; **lifespan increasing faster than healthspan**
- Increased **pressure on public services, welfare, health and social care** – current models are unsustainable



Image Credit: Thinkstock 2011

In the UK the percentage aged 65+ expected to reach 23% by 2034

Fastest growth is those aged 85+, expected to increase to 5% by 2034

Number of centenarians has tripled in the last 25 years to 11,600 in 2009

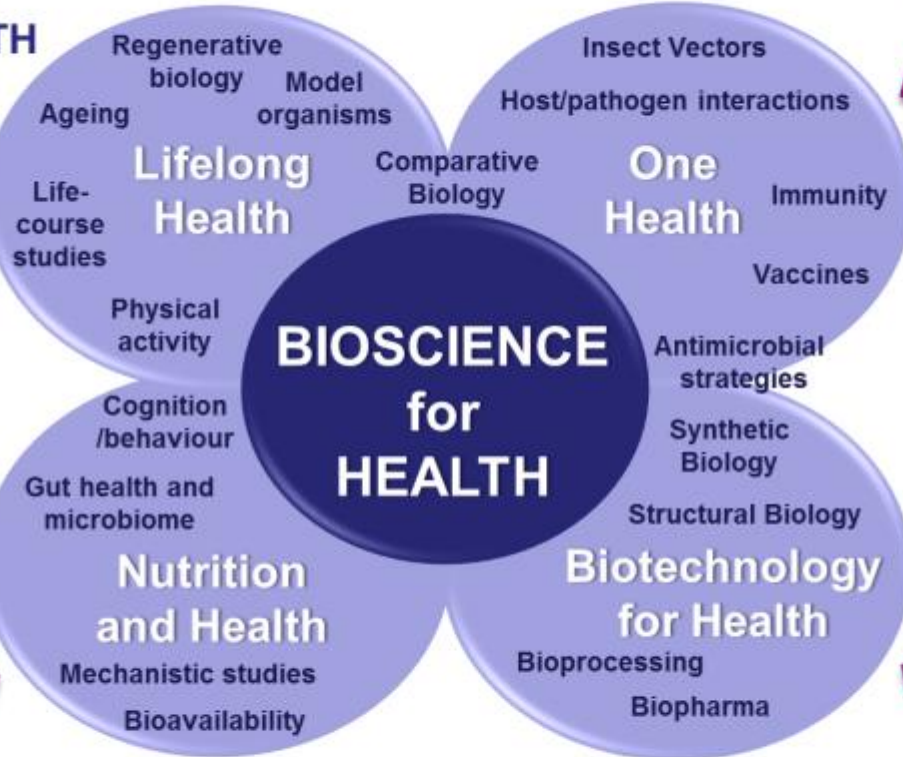
Bioscience for Health - priorities

Driving advances in fundamental bioscience for better health across the lifecycle, reducing the need for medical and social intervention.

- **Lifelong Health** – Maintain and develop health across the life course.
- **Nutrition and Health** – How nutrition affects health
- **One Health** – Dedicated to improving lives of all species (human and animal)
- **Biotechnology for Health** – New knowledge to advance regenerative biology and tissue engineering



**CROSS-FUNDER
RESEARCH IN
LIFELONG HEALTH**



**ANIMAL HEALTH &
WELFARE***



**AGRICULTURE
& FOOD
SECURITY**



**INDUSTRIAL
BIOTECHNOLOGY**

Understanding fundamental mechanisms
Exploiting new ways of working

BBSRC Framework: Launched March 2015

- Key features:
 - Unique position of BBSRC supporting research from farm to physiology
 - Opportunities to join up agricultural, food processing and human nutrition research
 - Importance of mechanistic research to provide a robust evidence base for new products and policies
 - Seeks to engage researchers from a range of backgrounds
 - Emphasises the importance of fundamental research in supporting industrial innovation and influencing policy, regulation and public perception
- Covers areas such as: diet-mediated physiological changes, the relationship between food and health changes across the lifecourse, (influences of genotype, epigenetics and microbiome), mechanistic understanding of the healthy gut, health implications of modern lifestyles and food processing techniques, biological determinants of food intake (e.g. sensory qualities and satiety)

BBSRC strategic framework and cross-Council vision

BBSRC Research in Food, Nutrition and Health

Strategic Framework:
2015 – 2020



A Cross-Council vision for Food, Nutrition and Health research



Global Challenges Research Fund

- The Global Challenges Research Fund (GCRF) is a £1.5 billion fund announced by the UK Government to support cutting-edge research that addresses the challenges faced by developing countries
- GCRF is administered through delivery partners including the Research Councils and national academies.
- GCRF forms part of the UK's Official Development Assistance (ODA) commitment, which is monitored by the Organisation for Economic Cooperation and Development (OECD).

GCRF: What is ODA compliant research?

Primary purpose is the economic development and welfare of developing countries

- Research should investigate a specific problem or seek a specific outcome which will impact on developing countries in the immediate or longer-term.
- Research proposals can focus on a development topic or address an unmet capacity need in the partner country.
- Research does not need to be solely relevant to developing countries, but developing countries should be the primary beneficiaries.

DAC list: 140 countries



This note helps donors to decide whether a particular expenditure qualifies as official development assistance (ODA). It supplements the Development Assistance Committee (DAC) Statistical Reporting Directives. Further guidance on ODA eligibility of expenditures in the field of conflict, peace and security is available in the DAC's "ODA Casebook on Conflict, Peace and Security Activities."

IS IT ODA?

DAC Members occasionally request the Secretariat's view as to whether a particular expenditure should be reported as official development assistance (ODA). This paper outlines the reasoning the Secretariat uses to answer such enquiries, and discusses some specific cases. It should not be taken as a definitive guide to ODA eligibility, since only the DAC may determine such eligibility. Further details are provided in the Statistical Reporting Directives (available at www.oecd.org/dac/stats/dac-directives).

Official development assistance is defined as those flows to countries and territories on the DAC List of ODA Recipients (available at www.oecd.org/dac/stats/dac-list) and to multilateral development institutions which are:

- provided by official agencies, including state and local governments, or by their executive agencies; and
- each transaction of which:
 - is administered with the promotion of the economic development and welfare of developing countries as its main objective; and
 - is concessional in character and conveys a grant element of at least 25 per cent (calculated at a rate of discount of 10 per cent).¹

¹ This calculation helps determine whether a loan is concessional. If the loan satisfies the ODA criteria, then the whole amount is reported as ODA. The grant element itself is not reportable as a flow. Reporting is on a cash (nominal) basis, except for Paris Club debt service reduction (see under "Flows" below).

Global Challenges Research Fund

Current opportunities:

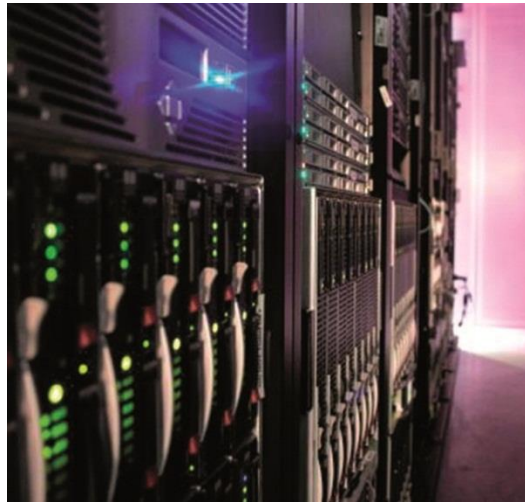
- BBSRC is currently investing substantially in **three calls for GCRF Foundation Awards (£600k) in collaboration with other Research Councils:**
 - [Global Agriculture and Food Systems Research](#) (led by BBSRC)
 - [Global Infections](#) (led by MRC)
 - [Non-Communicable Disease – Beyond Infections](#) (led by MRC)
- Applications can address the challenges in agriculture, health, infection and food security using appropriate disciplinary and/or interdisciplinary approaches.
- Research funded through the GCRF Foundation Awards call will form part of the UK's Official Development Assistance (ODA). Research proposals submitted to the foundations awards calls should clearly demonstrate that the primary purpose is to promote the economic development and welfare of Low and/or Middle Income Countries (LMICs) on the DAC list of ODA recipients as its main objective
 - **Expression of interest deadlines: 22 June 2016**

Three crucial enabling themes

Enabling Innovation



Exploiting new ways of working



Partnerships



Image credits 1.BBSRC 2.EMBL EBI 3.Thinkstock

Exploiting New Ways of Working: Drivers

Cutting-edge bioscience is critically dependent on the availability of modern research infrastructure and the adoption of new ways of working:

- Support for technology development and an associated strengthening of the skills base is required in order to embed the latest equipment in facilities, and enable multidisciplinary research.
- In order to investigate complex biological phenomena, researchers need access to comprehensive, integrated and interoperable data resources, built to community-accepted standards.



- BBSRC's goal is for researchers to routinely apply computational and mathematical techniques to high-quality quantitative biological data – this will enable a deeper and more rapid understanding of complex biological problems. Exploiting information-rich approaches is essential to maintaining the UK's competitive position.

Exploiting New Ways of Working

Promoting innovative working practices underpinning all of BBSRC's research remit, in an era of rapid technological advancement.

- Developing new tools and resources, enabling access to infrastructure
- Data intensive bioscience: development of bioinformatics tools and computational methods in biology
- Embedding synthetic biology across BBSRC's portfolio
- Integration of systems biology approaches, supporting the emerging field of multi-scale biology

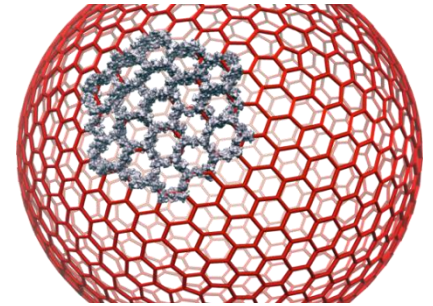


Image: Richard Sessions, Thom Sharp, Jordan Fletcher

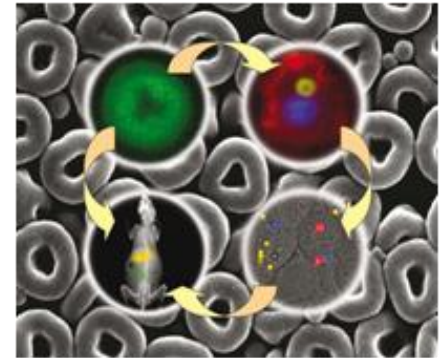


Image: Mark Bradley

Enabling Innovation

Maximising the impact of our science and skilled people in boosting the UK economy, informing policy and improving quality of life

- Skills and capabilities
- Knowledge exchange and translation
- Promoting innovation - academia/industry engagement; UK innovation ecosystem
- Capturing, celebrating and rewarding impact

From the research base to the user.....

Collaborative Research

(pre-competitive research with industry, moving towards proof-of-concept)

Collaborative Training

(equipping UK researchers with industrial skills/experience of the industry setting)

**Driving
Innovation &
Impact**

People Exchange

(exchanging ideas and experience with industry/accessing specialist facilities & equipment)

Commercialisation

(exploring commercial potential of bioscience & acquiring business skills)

Fostering Innovation



**FOSTERING
INNOVATION
2016**

Excellence with Impact

The Impact Awards

**EXCELLENCE
WITH IMPACT**



PraxisUnico.

Impact through innovation

**THE
IMPACT
AWARDS**

FOR KEC
PROFESSIONALS

Innovator of the Year

**INNOVATOR
OF THE YEAR**



Partnerships

Working with our many stakeholders, including other funders and the public, nationally and internationally, to deliver our ambitious vision for global impact from UK bioscience

- Joint funding – synergy and leverage
- Enhancing impact
- Engaging with society
- Building international links

Collaborative Training Opportunities

BBSRC Training Partnerships

 **BBSRC** Doctoral Training Partnerships

 **BBSRC** Collaborative Training Partnerships

 **BBSRC** Professional Internships for PhD Students

 **BBSRC** Industrial CASE Studentships

 **BBSRC** Advanced Training Partnerships

 **BBSRC** Modular Training Partnerships

 **BBSRC** Strategic Training Awards for Research Skills

Research Clubs and Initiatives

BRIC • BIOPROCESSING RESEARCH INDUSTRY CLUB



DRINC • DIET AND HEALTH RESEARCH INDUSTRY CLUB



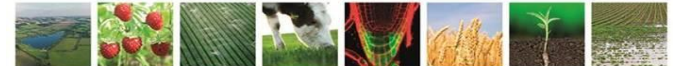
CIRC • CROP IMPROVEMENT RESEARCH CLUB



IBTI • INTEGRATED BIOREFINING RESEARCH AND TECHNOLOGY CLUB



ARC • ANIMAL HEALTH RESEARCH CLUB



SARIC • SUSTAINABLE AGRICULTURE RESEARCH & INNOVATION CLUB

People Movement Schemes



 **BBSRC FLIP** Flexible Interchange Programme

THE ROYAL SOCIETY
Industry Fellowships

Knowledge Transfer Partnerships

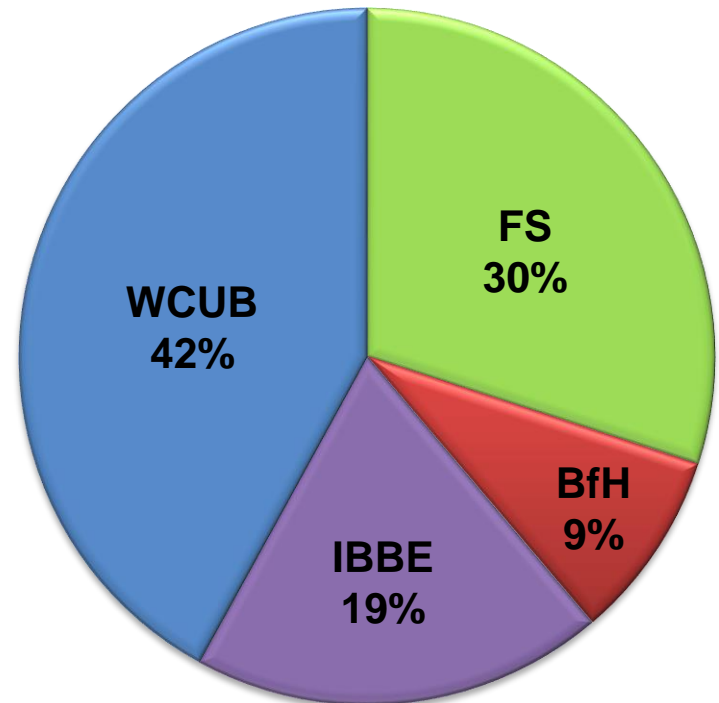


RCUK
Policy Internships

BBSRC Doctoral Training Partnerships

- 12 Partnerships, which include 55 research organisations
- Strategic approach to provide students with improved training and relevant work experience
- Training to meet major social and economic challenges and develop highly skilled scientists for academia, policy, industry
- Three month professional internship

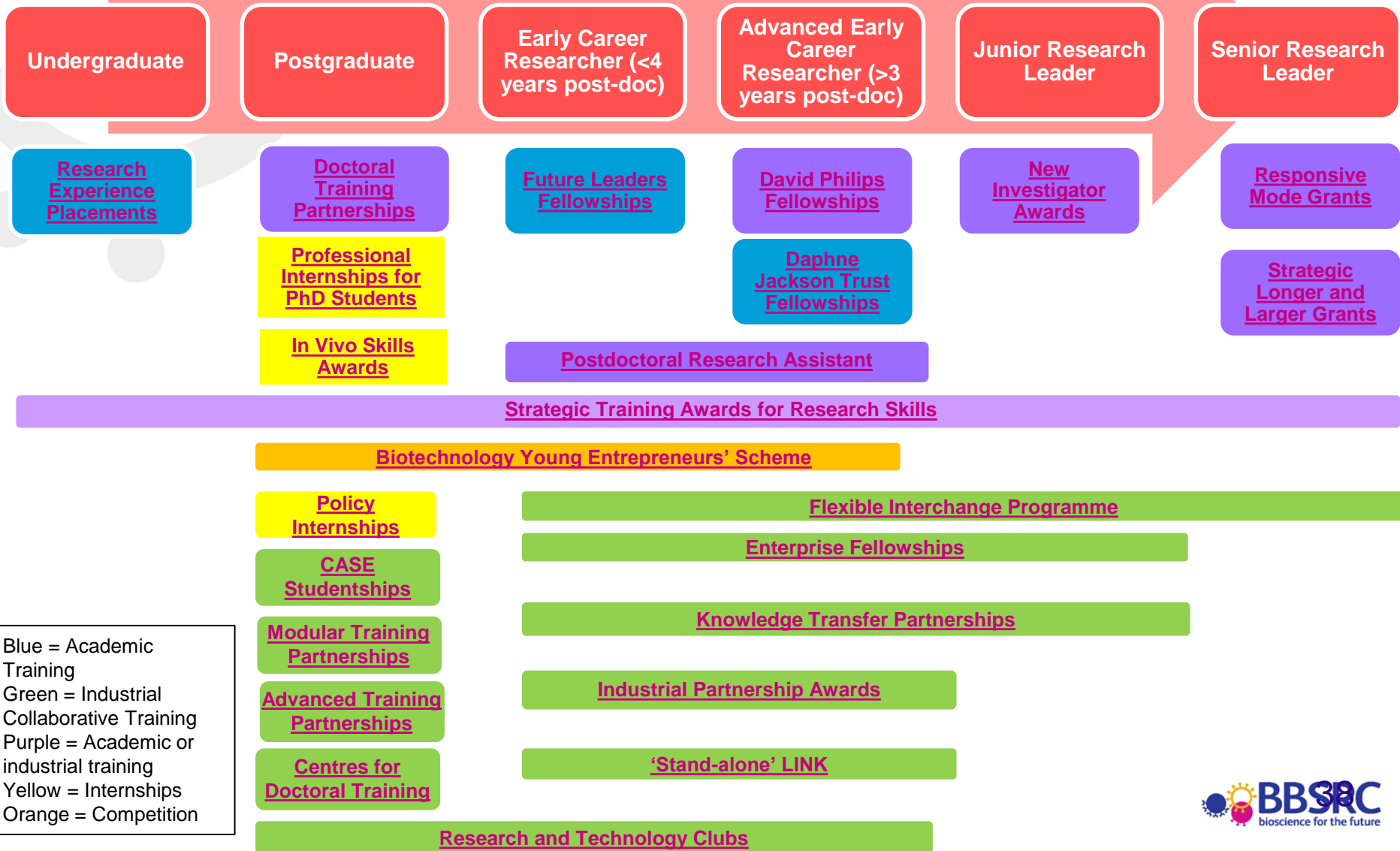
DTP2 Portfolio (2015-2019)
(for 250 studentships p.a)



ENWW
50%

Total Recommended Allocation of
DTP Studentships (2015-19)
by BBSRC Strategic Research Area

Overview of BBSRC Training Opportunities



Blue = Academic Training
 Green = Industrial Collaborative Training
 Purple = Academic or industrial training
 Yellow = Internships
 Orange = Competition

Some BBSRC Industry Collaboration Schemes



IPA
industrial
partnership
awards

Industrial Partnership Awards (IPA)

IPAs are academic-led research grants with a minimum of 10% cash contribution to project costs from an industrial partner

LINK projects

Collaborative, pre-competitive research between one or more companies and one or more research-base partners. BBSRC support limited to a maximum of 50% of total eligible costs



LINK collaborative
research

Industrial CASE

PhD studentships with an enhanced experience for the student through partnership with an industrial partner, which is a UK registered company. Overseas companies are considered on a case-by-case basis.



BBSRC Industrial
CASE Partnerships

International Collaboration

BBSRC grant holders/institute staff can apply for:

Partnering Awards

- Japan, China, India, Brazil, Taiwan and the US
- 'Other Countries' and 'European' schemes launched 2013
- Aims to benefit BBSRC-funded research:
 - To establish new links
 - Promote exchange of scientists
 - Provide access to facilities
 - Enable UK scientists to access overseas funding
- Partnerships for up to 4 years
- £20k - £50k
- Annual Call: mid September - mid November

International Workshops

- Stimulate joint working in topics important to BBSRC
- Annual Call: mid September - mid November
- Typically up to £10k





Strategic Training Awards for Research Skills (STARS)

Aims to support the development of strategically important and vulnerable research skills and capabilities in the biosciences.

Awards are available to develop postgraduate-level training in areas of significant need for clearly defined academic and industrial sectors.

Supports:

- Research Experience Placements
- Skills schools in strategically important and vulnerable research areas
- Development and delivery of training resources through other mechanisms, such as development of e-learning

Up to £250k is available per year to support training activities through the STARS programme. There will be three calls per year.

<http://www.bbsrc.ac.uk/funding/studentships/stars/>

Research Outcomes Collection

- It is vital that grant holders return information on the outcomes and outputs from their projects. This information is used to...
 - Provide a strong evidence base to support the continued funding of research
 - Improve the quality of reporting to Government, the public and other organisations
 - Develop and maintain longer term relationships with award holders through the capture of outcomes after an award has finished
- Grant holders can enter information to **researchfish®** at any time but there is an annual submission period (February/March) when grant holders must formally submit their outcomes. Submissions need to be made for five years after the end of the award.
- Information returned to the Research Councils is also made available through the **Gateway to Research**, thereby raising the visibility of your research to the public and potential collaborators.

More information can be found at www.rcuk.ac.uk/research

Impact can be varied.....

.....is about more than just IP, products and spin outs



Building a relationship with BBSRC

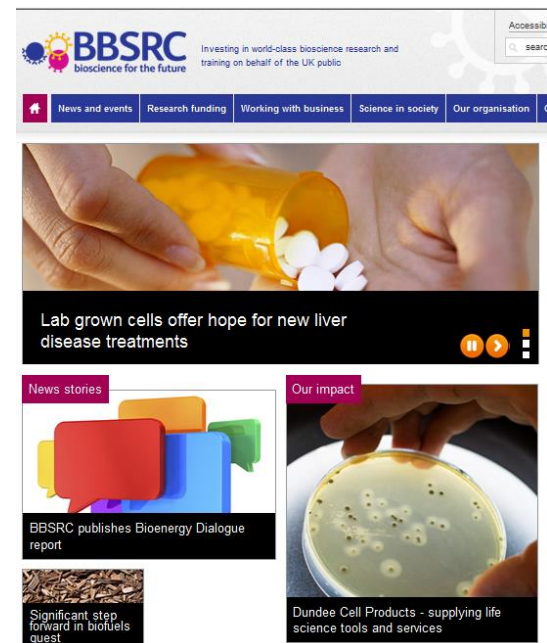
Join a Research Committee/Strategy Advisory Panel!

- Provides insight into BBSRC peer review and strategy

Participate in workshops, events and consultations

Please review for us when asked!

Utilise BBSRC contacts



Keep In Touch!

Visit the Web Site

- www.bbsrc.ac.uk

CE blog and BBSRC twitter feeds

Sign up for the email bulletin

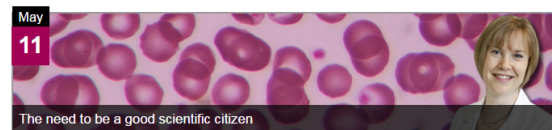
- <http://www.bbsrc.ac.uk/news/news-email/>

BBSRC Business magazine

Tell us about exciting outcomes

- We are always looking for interesting case studies, particularly showcasing impacts of BBSRC-funded research

- Contact BBSRC External Relations: external.relations@bbsrc.ac.uk



This week's blog focusses on a topic that I am passionate about – scientific citizenship. [Larry Goldstein](#) from UCSD, discusses scientific citizenship in this video blog and takes the broad perspective that this encompasses life and impacts of science both within the research environment and beyond, including society at large.

The aspects of scientific citizenship that I would like to concentrate on are those within the research environment. For me it is relatively simple – do to other researchers as you would want to be done to yourself and support the research endeavour. In other words, if you expect to receive 3 thoughtful, timely and well-reasoned reviews for the latest paper you have submitted, then it means that in return you will have reviewed 3 papers according to these same principles. Ask yourself – do I regularly achieve this?

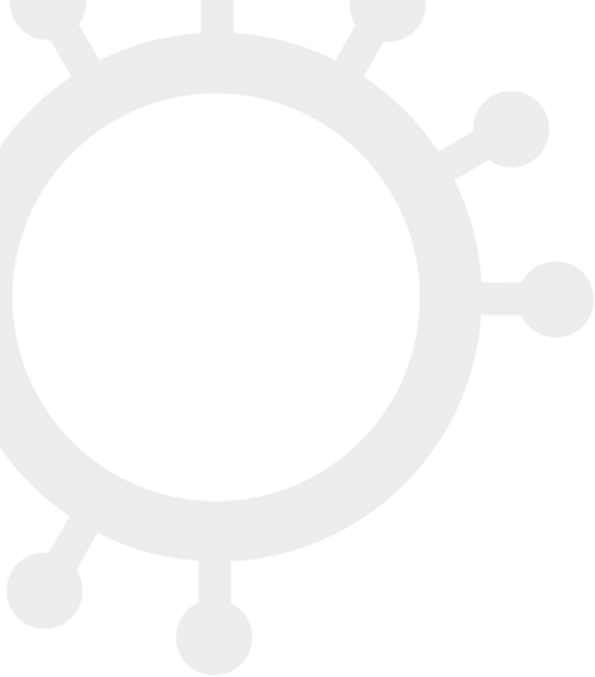
The same goes for reviewing grants. Here at BBSRC we seek to secure a good range of reviews from experts for each grant submitted to us – something I am sure each applicant would expect. Ideally we will receive 4 or 5 high quality useable reviews (more for larger awards such as strategic longer larger grants and institute strategic programmes) – and often we do – but sometimes, despite repeated requests, we don't. Our latest data for 2015 show that we receive usable reviews from only 48% of requests made. Close to 60% of those declining gave their reason as 'too busy' – I was quite shocked at this and I would be interested to hear if it surprises you? Now I have a bit of a bee in my bonnet about this (as I did quite literally when cycling the other day) – As an active research leader I was very

- Subscribe to RSS
- Blog home
- Blog rules
- Chief Exec's biography

- ### Recent posts
- Celebrating innovation
 - The need to be a good scientific citizen
 - Research advice and food – in Vogue
 - Blueprints for life and synthetic biology
 - Career paths

- ### Tags
- 20 years of bioscience





Thank you
Any questions?