

# A BBSRC View of Doctoral Training Partnerships

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 **BBSRC** Doctoral  
Training Partnerships



## Outline

- Background to BBSRC
- Overview of BBSRC Strategy
- BBSRC Doctoral Training Partnerships





## Three questions:

- What would you do with £470M?
- How would you invest £67M?
- How would you spend £100,000?



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HM TREASURY



**BIS** | Department for Business  
Innovation & Skills







**BBSRC  
allocates  
around  
£470M p.a.**

- Fund innovative, internationally competitive **bioscience research**
- **Train** bioscientists
- Support **knowledge exchange** and encourage **economic and social impact**
- Engage with the **public** and **stakeholders**
  
- *The Government continues to fund excellent science because of its contribution to driving economic growth and benefit to society.....*





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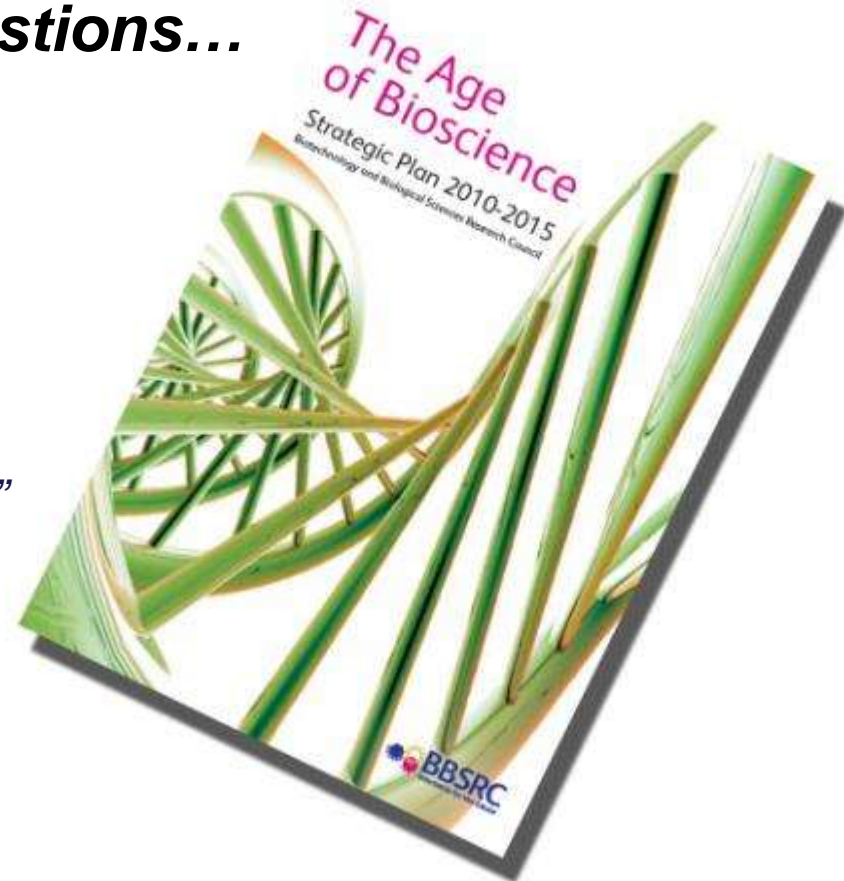
# The Age of Bioscience

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

**Knowledge exchange, innovation and skills:**

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

BBSRC will support **high-quality PhD training** to ensure new researchers develop the necessary breadth of skills...”







World-class bioscience

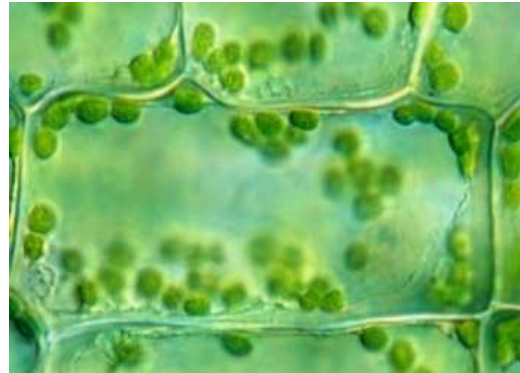
Three major strategic science priorities

Three crucial enabling themes

## Three major strategic science priorities (Grand Challenges)



**Food Security**



**Bioenergy and Industrial  
Biotechnology**



**Basic bioscience  
underpinning health**

## Three crucial enabling themes



**Knowledge Exchange,  
innovation and skills**



**Exploiting new ways of  
working**

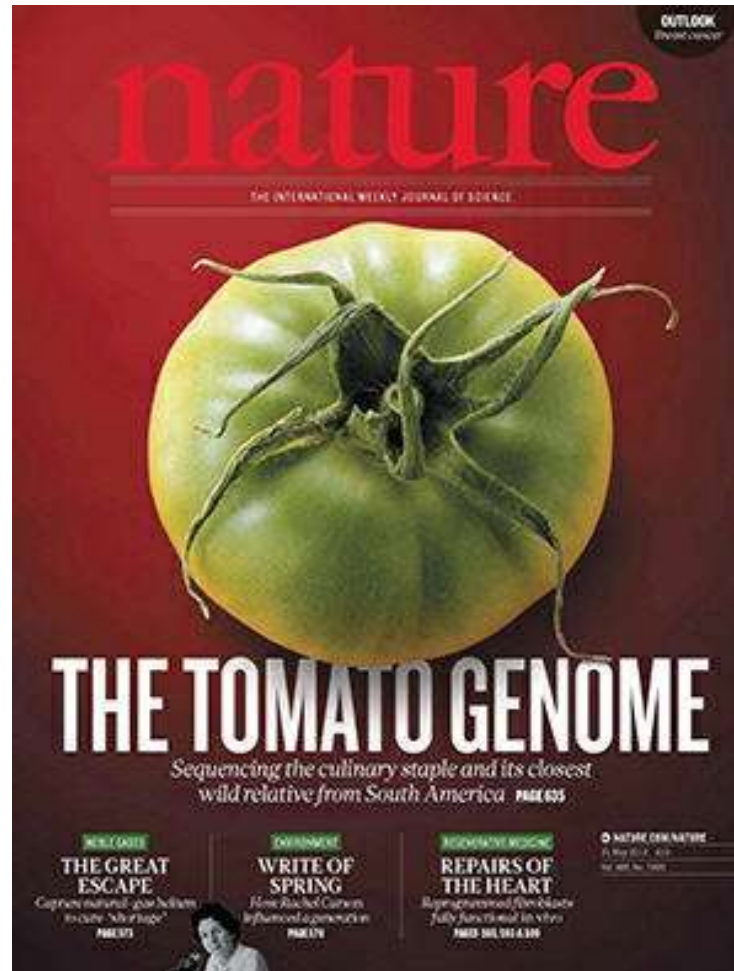


**Partnerships**





We invest in world-class bioscience research...



Nature Volume: 485, Pages: 635–641 Date published: (31 May 2012)

## Working with Syngenta towards disease-resistant food crops



A pox on your' cabbage – a cabbage head with necrotic spots caused by *Turnip mosaic virus*  
Copyright: Dr John Walsh, The University of Warwick

- *Turnip mosaic virus* (TuMV) is an important pathogen of brassica crops including, cauliflower, kale, Chinese cabbage and others
- Researchers led by Dr John Walsh, University of Warwick and funded under the BBSRC Crop Science Initiative have uncovered the genetic basis of broad-spectrum, potentially durable resistance to TuMV.
- The team are now working with Syngenta Seeds to breed resistance into Chinese cabbage.

### **Peter van der Toorn, R&D Lead Leafy Crops, Syngenta Seeds Vegetables:**

*"Working in partnership with academic researchers is very important for us. Through such collaborations it's possible to take an idea from pre-commercial research and turn it into a new variety that can benefit the consumer and boost our contribution to the UK economy."*

## GM chickens breakthrough to prevent spread of bird flu



A genetically modified chicken at the Roslin Institute  
Copyright Roslin Institute

- Researchers funded by BBSRC have developed chickens that are genetically modified to prevent them from spreading bird flu to other chickens.
- If introduced into poultry flocks in the future this modification has the potential to protect the health of the birds and so safeguard the production of meat and eggs.
- The modification would also reduce the risk of bird flu epidemics that could lead to new flu outbreaks in the human population.

63 countries have reported avian influenza outbreaks since 2003. and an estimated 210M chickens have been killed as a result of the disease.



## Plant-based technologies delivering on drug delivery



- George Lomonosof & Frank Sainsbury, John Innes Centre developed technologies that use plants as ‘factories’ to produce plant virus particles that carry medically important antigens for use as vaccines.
- The technology, patented in 2008, provides gene expression systems that are high-yielding, rapid and bio-secure (no infectious virus particles are produced).
- This invention was licensed to Medicago Inc in 2009, enabling the company to make a candidate swine flu vaccine in just two weeks.

**The technology contributed to the NanoSmart™ drug delivery technology of Aura Biosciences Inc. (named 2010 Technology Pioneer, World Economic Forum)**





## We invest in bioscience skills and training...



Minister for Universities and Science David Willetts  
University of Reading, 24 January 2012

- £67 million investment in bioscience skills and training
- includes support for 14 Doctoral Training Partnerships (DTPs)
- 660 four-year PhD studentships

***The brightest and best students will be finding solutions to some of the biggest challenges facing us all, from food security through to renewable energy...***



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# What are Doctoral Training Partnerships?





## Each PhD Studentship is worth approx. £101,000



- 51,000 Big Mac's
- 36,255 pints of beer
- 17,000 bottles of wine
- 78 litres of CHANEL No5
  
- 1 bedroom, Candle House at Granary Wharf, Leeds (£97,463)

<http://www.rightmove.co.uk/new-homes-for-sale/property-30373115.html?premiumA=true>

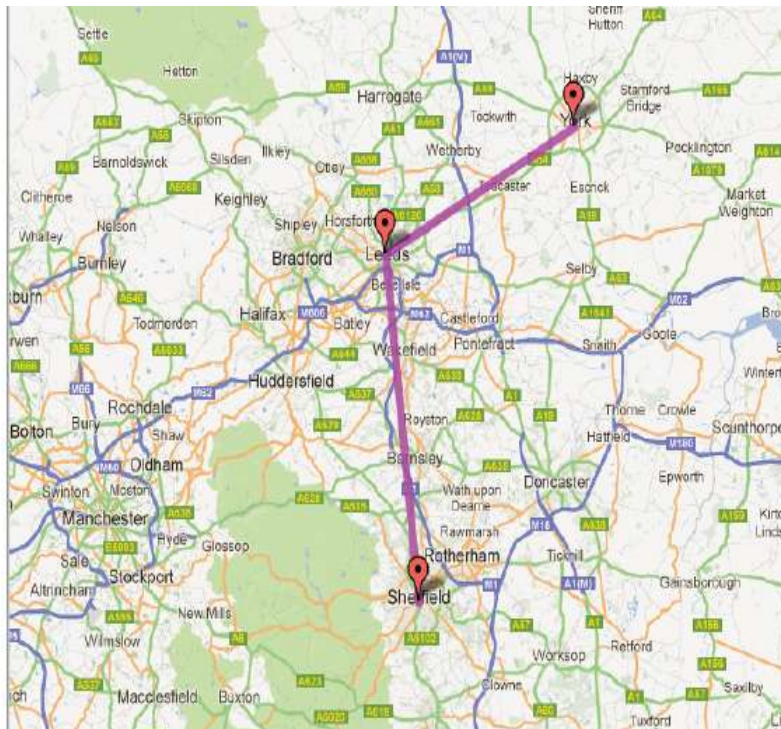


# Doctoral Training Partnerships

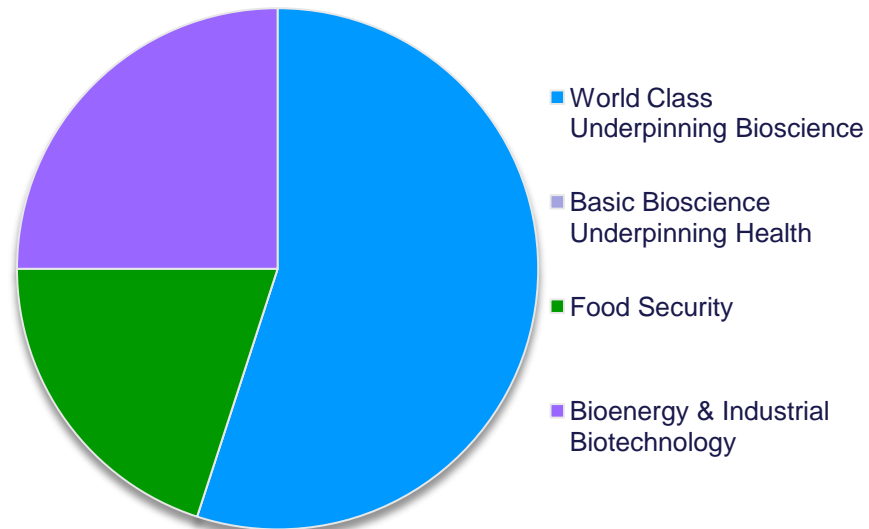


- 14 Partnerships, which include 44 research organisations
- Strategic approach to provide students with improved training and relevant work experience
- Training to meet major social and economic challenges in food security, bioenergy and industrial biotechnology, and bioscience underpinning health
- Provide highly skilled scientists for academia, policy, industry
- Three month professional internship

# Leeds, Sheffield, York DTP

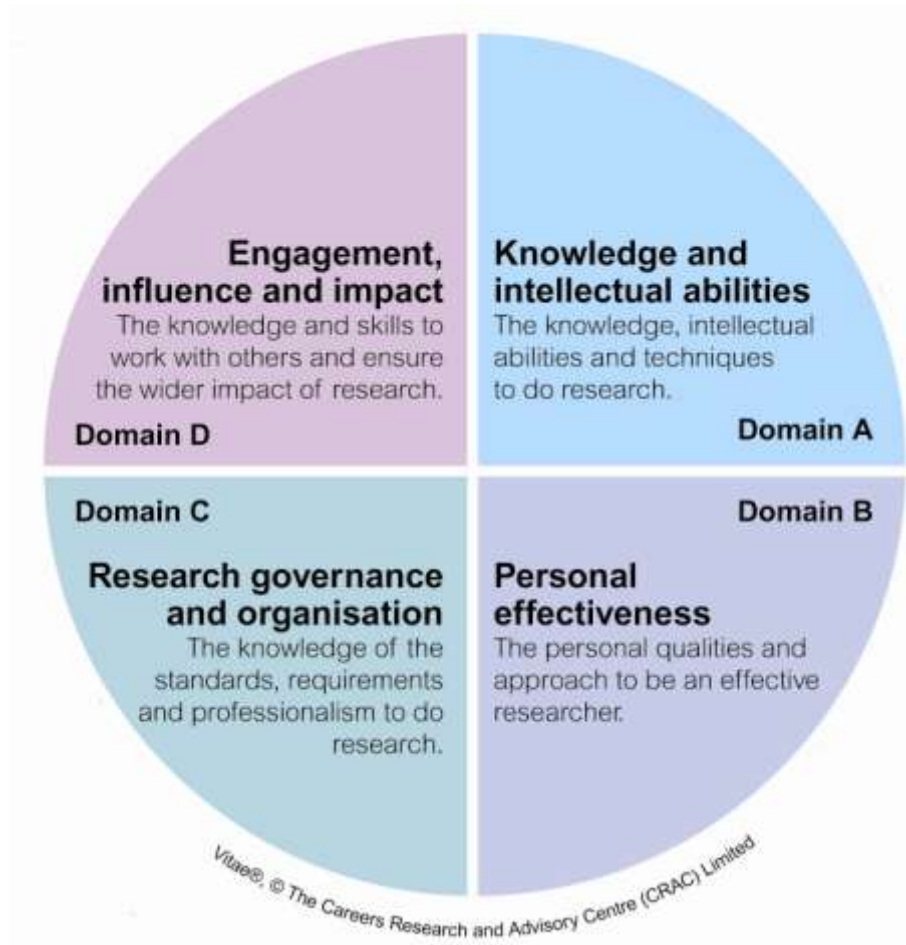


Leeds. Sheffield, York



**Food Security, Bioenergy & Industrial Biotechnology,  
and World Class Underpinning Bioscience Research**

# Researcher Development Framework



# Systems training in Maths Informatics and Computational Biology (SysMIC)

- A custom web-based resource to expand mathematical skills across the UK bioscience community
- Targeted audience PhD students, Post doctoral fellows, PI's
- Broad aims:
  - Basic mathematics for systems biology component
  - Intermediate mathematics to apply knowledge to theoretical / computational biology
  - Advance module
- Researchers will have sufficient understanding of the roles of modelling and computation to “speak a common language” with theoreticians

***‘BBSRC expects most, if not all, students will carry out some level of training in mathematical and systems approaches, as supported by the SysMIC programme’***



# Professional Internships for PhD Students

- A mechanism to provide BBSRC funded PhD students with the opportunity to carry out a **non-academic work experience placement** during their PhD
- A **three month placement** not directly related to the PhD project
  - e.g to provide experience of teaching, policy-making, media, industry, consulting, finance
- They are not intended to replace other generic or core skills training
- They should be **taken by all PhD students** funded through a DTP
  - Including those set on an academic career
  - Encouraged, but not compulsory, for CASE students
- They can be **taken at any time** during the four-year PhD



## Biotechnology YES (Young Entrepreneurs Scheme)



<http://www.rightmove.co.uk/property-for-sale/property-34104193.html>

- Innovative competition to raise awareness of the commercialisation of bioscience ideas among postgraduate students
- Three day workshop
- Participants receive training in:
  - The Requirements of a Business Plan
  - Intellectual Property and Patenting Strategy
  - Raising and Managing Finance
  - Commercial and Marketing Strategies
  - Case Histories
- Participants (in teams of five or less) assume roles of management team and present plans to a group of “equity investors”



Nottingham University  
Business School



wellcome trust



syngenta

Technology Strategy Board  
Driving Innovation

POTTER  
CLARKSON

BIA



Leatherhead  
Food Research

abcam®  
discover more

P&G

jamescowper  
Accountants & Business Advisers





# Thank you for listening...



# Instructions for using the slides

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- Make sure you do not position images too close to (or even over) the BBSRC logo or any of the fixed images on the templates, e.g. the cogs.
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