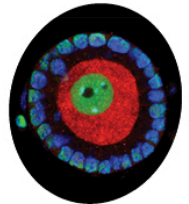


# Strategy and funding for Synthetic Biology

Dr Andy Boyce

Strategy and Policy Manager, BBSRC





# Talk Overview

- UK organisations active in Synthetic Biology funding
- Support for Synthetic Biology research
- Major Synthetic Biology policy activities
- Current funding opportunities in Synthetic Biology

# UK organisations active in SynBio funding

## Research Councils

- Biotechnology and Biological Sciences Research Council
- Engineering and Physical Sciences Research Council
- Medical Research Council
- Economic and Social Research Council



## Learned Societies

- The Royal Society
- The Royal Academy of Engineering



The Royal Academy  
of Engineering



**THE ROYAL  
SOCIETY**

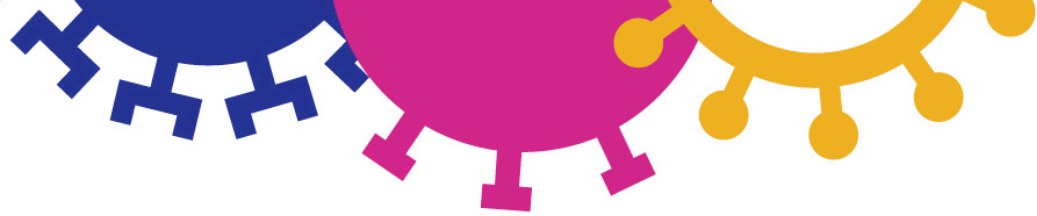
## Government Departments

- Department of Business, Innovation and Skills
  - Technology Strategy Board
- Defence Science and Technology Laboratory (MoD)
- Department of Environment, Food and Rural Affairs



Technology Strategy Board  
Driving Innovation

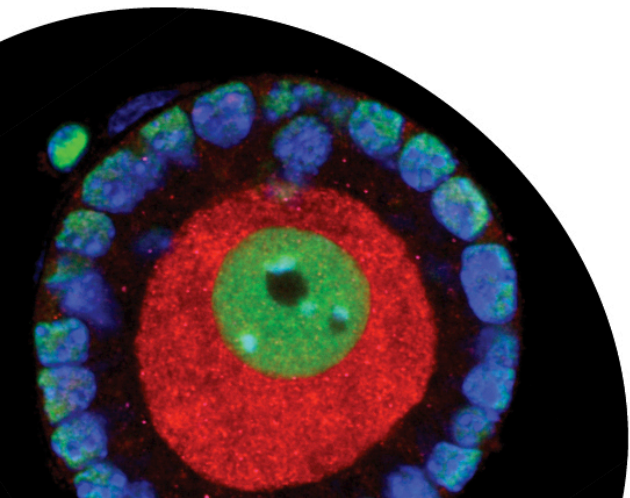




## BBSRC

## £500m per year for BBSRC's mission:

- Fund innovative bioscience research
- Train bioscientists
- Support knowledge transfer and encourage economic and social impact
- Engage with public





## EPSRC

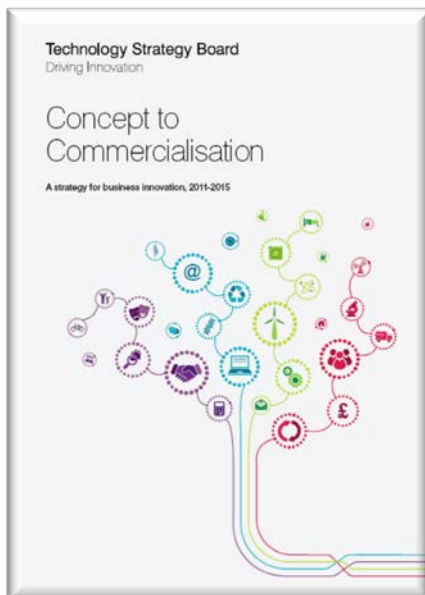
**£800m per year for EPSRC's mission:**

- Support high-quality research in engineering and the physical sciences
- Provide trained scientists and engineers
- Contribute to economic competitiveness and the quality of life
- Encourage public engagement and dialogue



## TSB

- Focused on business innovation and the application of technology
- An arm's length body, guided by business-led Governing Board
- Sponsored by the Department for Business, Innovation and Skills (BIS)
- Work across government departments and in partnership with the Research Councils





# What do we mean by ‘Synthetic Biology’?

Synthetic Biology is recognised as an emerging multidisciplinary field with strong potential for impact on innovation and global grand challenges

BBSRC, EPSRC and TSB define Synthetic Biology thus:

*“Synthetic biology aims to design and engineer novel biologically based parts, devices and systems, as well as redesign existing natural biological systems for useful purposes. It incorporates the principles of engineering e.g. modularity, abstraction and orthogonality into classical biotechnology”*



# UK Synthetic Biology activities

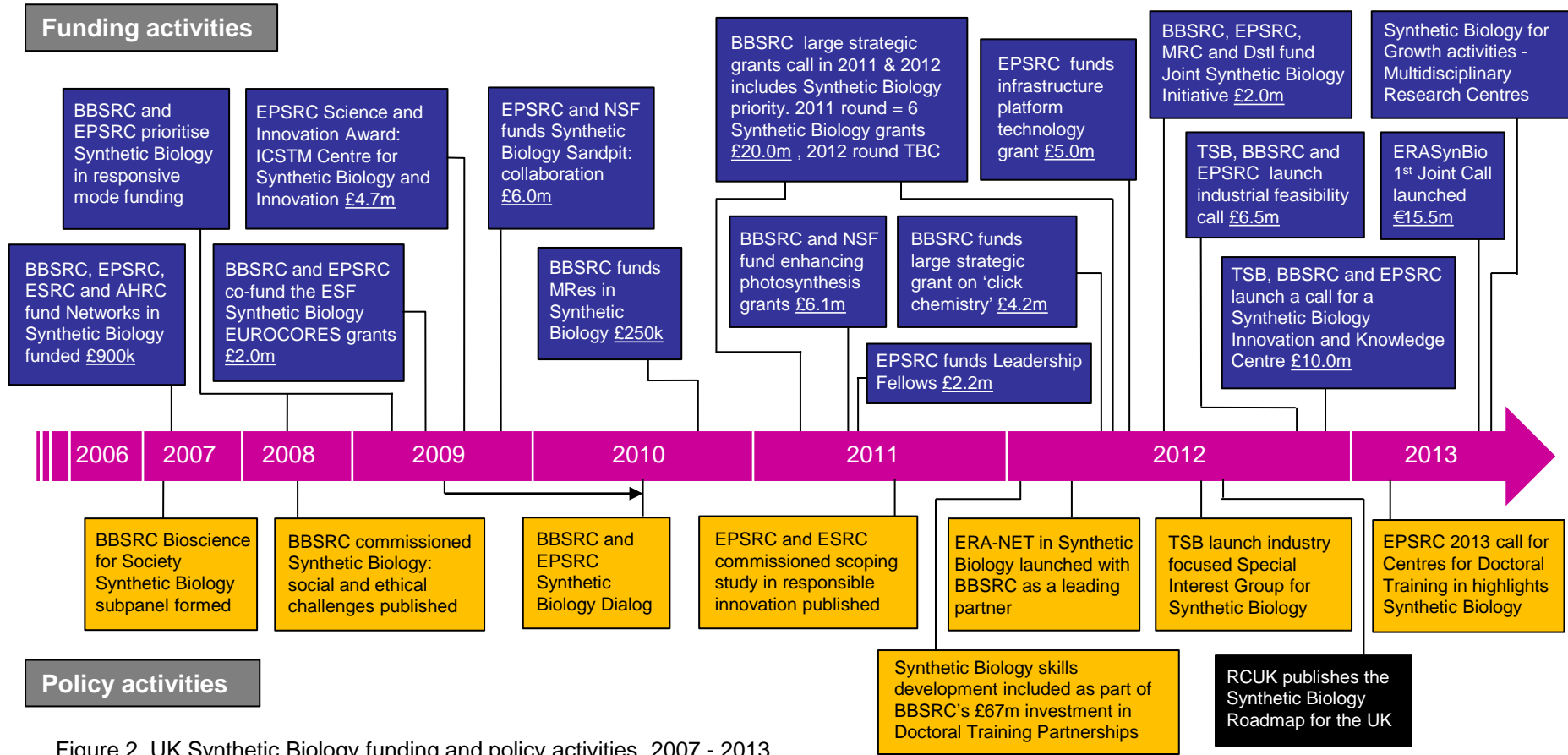


Figure 2. UK Synthetic Biology funding and policy activities, 2007 - 2013.

**Acronyms:** NSF (United States, National Science Foundation) ICSTM (Imperial College of Science, Technology and Medicine), Dstl (Defence Science and Technology Laboratory), ESF (European Science Foundation), MRes (Masters in Research) and ERA-NET (European Research Area Networks)



# Networking and prioritisation

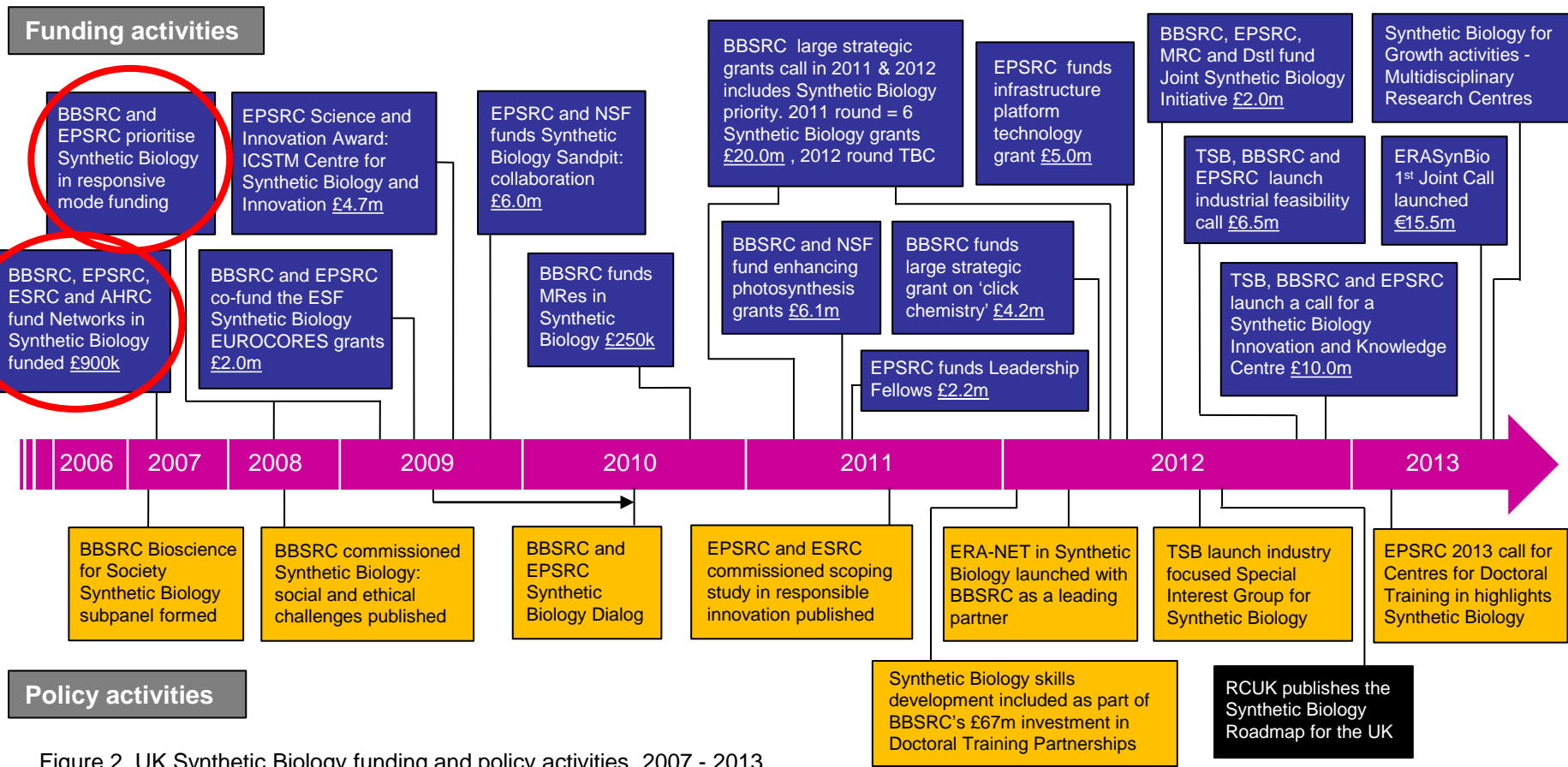


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# Large investments in basic & applied research

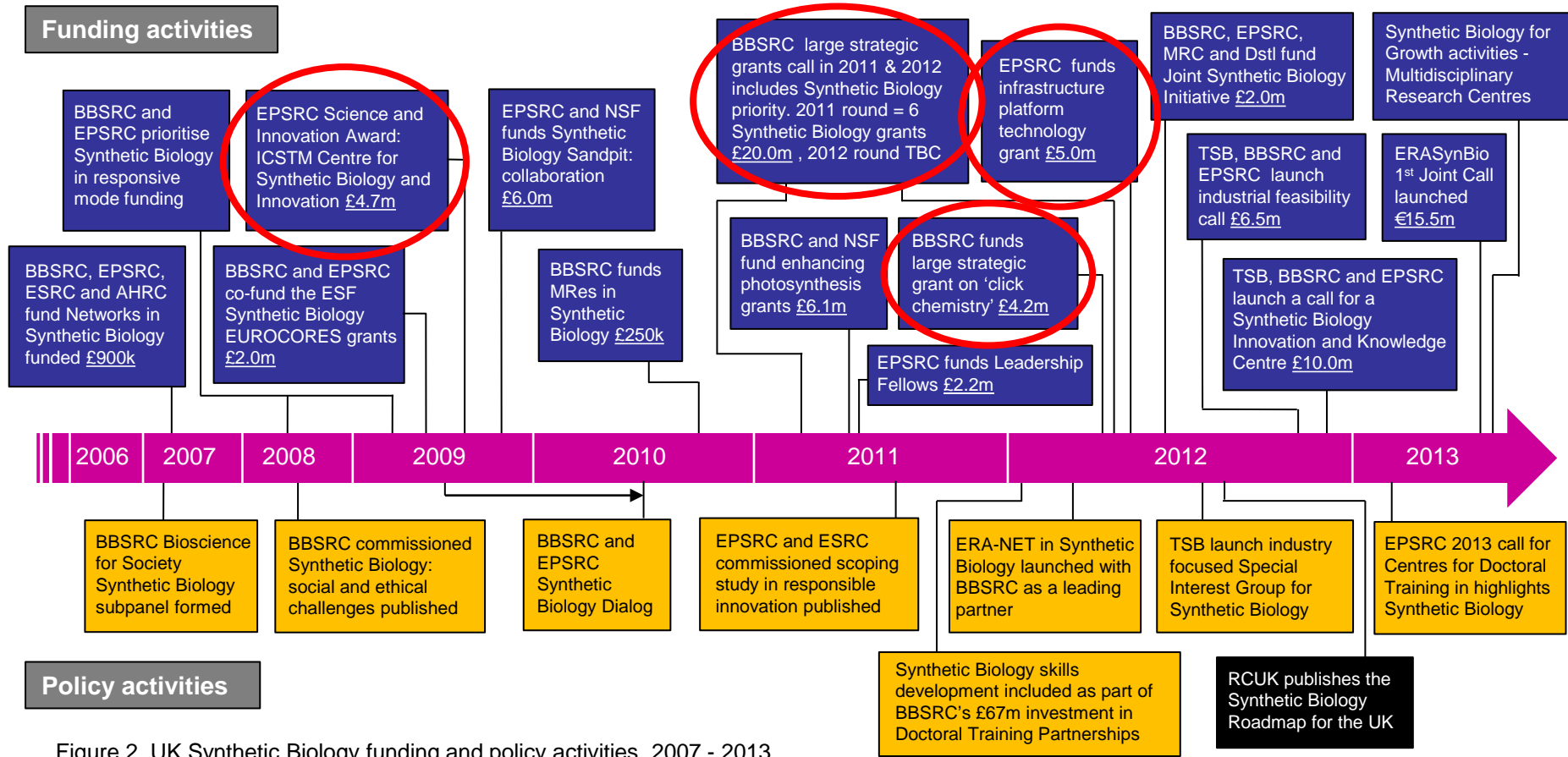


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# International Synthetic Biology activities

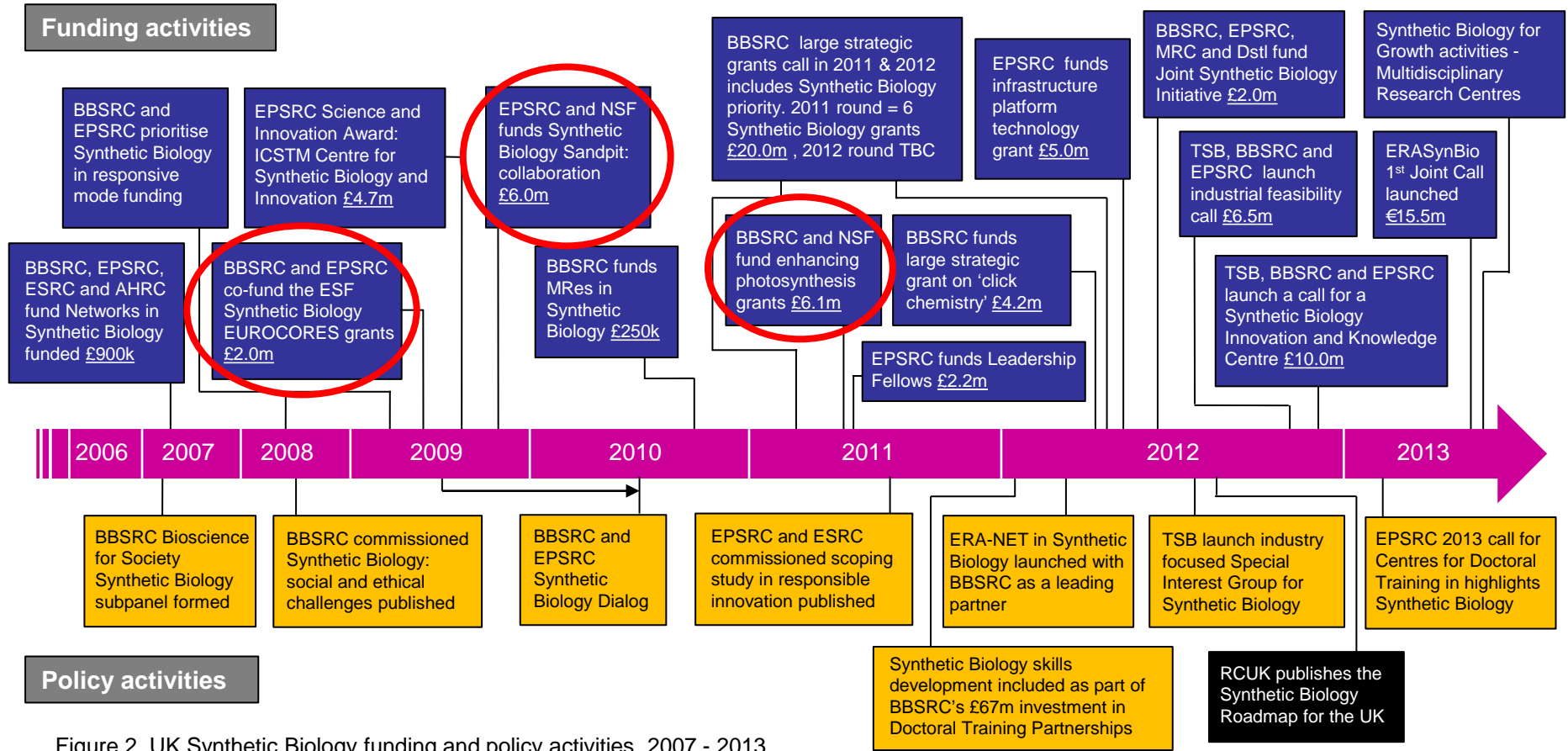


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# Support for applied & industrial research

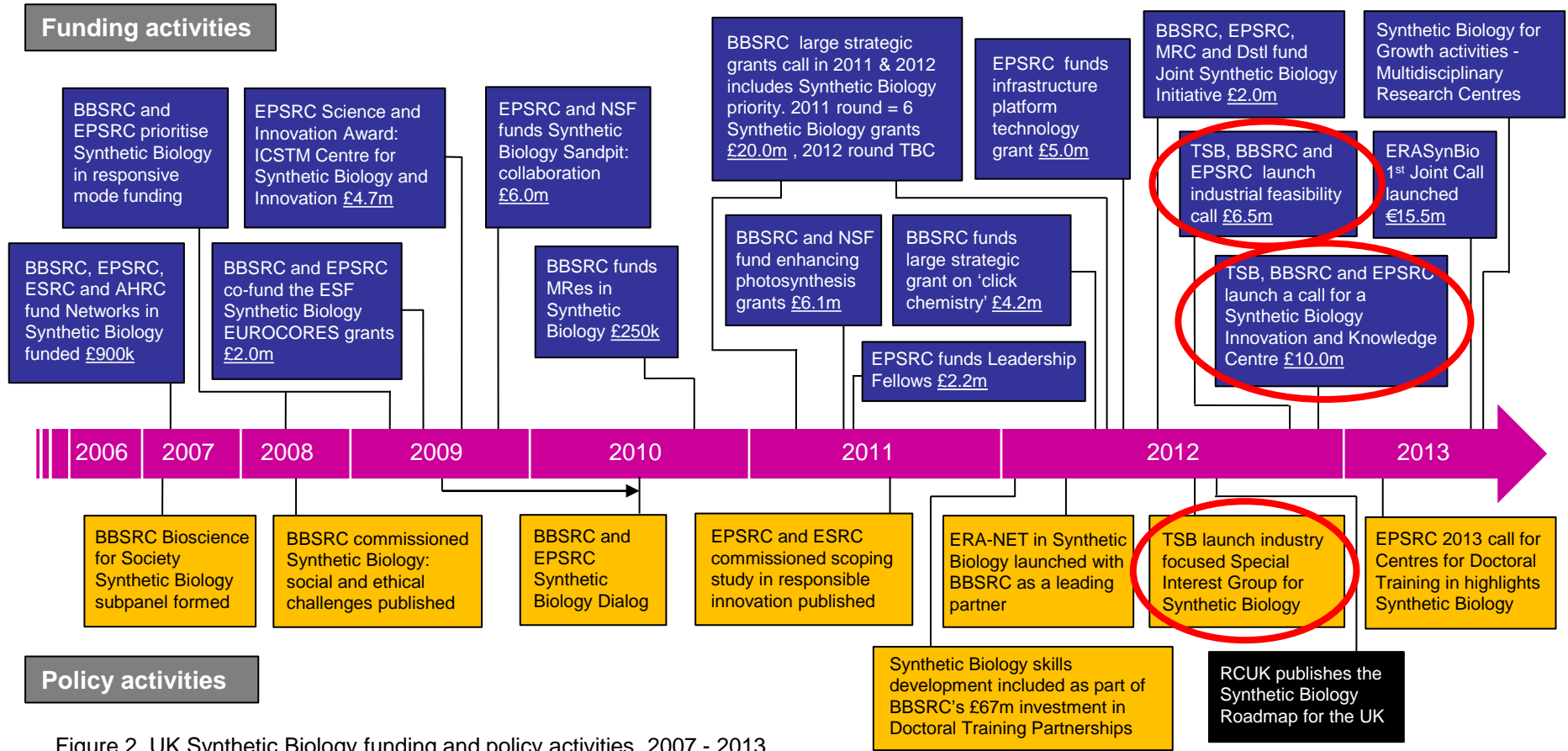
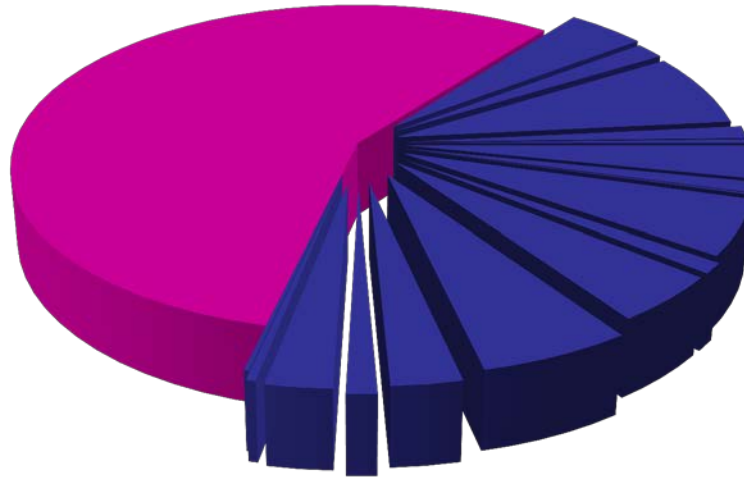


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## Current funding for UK Synthetic Biology is ~ £95m

Responsive mode  
~ 55%



Initiatives, training  
and international  
~ 45%

### **£20m of Synthetic Biology research was announced in November 2012**

**£2.9M** to help make low-carbon fuel, [Professor Minton](#)

**£4.5M** to understand natural biological 'factories' for novel agrochemicals, [Professor Challis](#)

**£4.0M** for a sophisticated new method to create useful microorganism strains, [Professor Stark](#)

**£4.0M** to engineering synthetic microbial communities for biomethane production, [Dr Soyer](#)

**£4.4M** to use synthetic micro-organisms to develop industrial biocatalysts, [Professor Turner](#)

**£2.5M** for the first step in engineering cereal that is less reliant on fertiliser, [Professor Oldroyd](#)

# Major policy activities

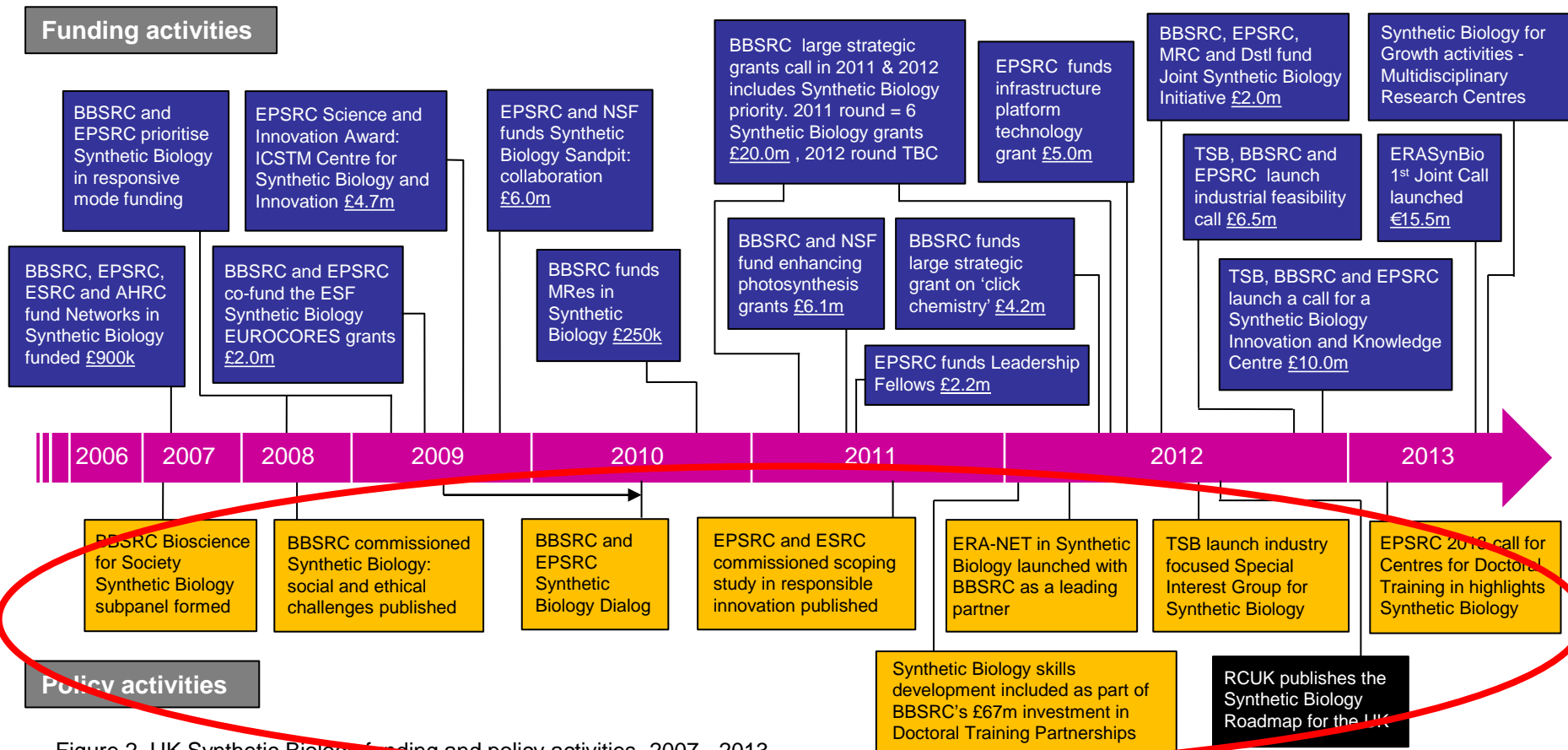


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# National Synthetic Biology Policy activities

## Ethics and public dialog

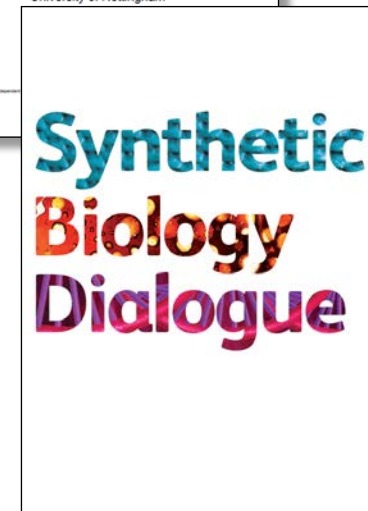
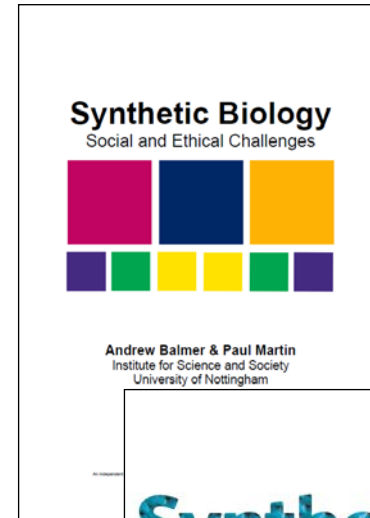
- Bioscience for Society Panel (2007)
- Social and Ethical Challenges (2008)
- Synthetic Biology Dialog (2010)

## Regulation

- Stakeholders scenario planning (2008)

## Education

- Synthetic Biology skills part of BBSRC's £67m investment in Doctoral Training Partnerships
- EPSRC 2013 call for Centres for Doctoral Training in highlights Synthetic Biology

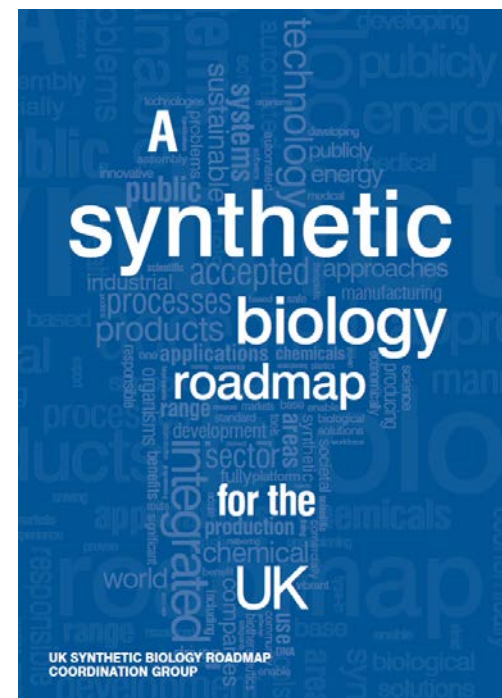




# The UK Synthetic Biology Roadmap

**Future funding and policy will follow the recommendations of the Roadmap**

1. Invest in a network of multidisciplinary centres to establish an outstanding UK Synthetic Biology resource
2. Build a skilled, energised and well-funded UK-wide Synthetic Biology community
3. Invest to accelerate technology responsibly to market
4. Assume a leading international role
5. Establish a leadership council



# International Synthetic Biology policy activities

- **6 Academies** meetings between the UK, the US and China
- Coordination of SynBio with **14 European countries** through **ERASynBio**






- Map European Synthetic Biology
- Promote consideration of ELSA
- Build a European community
- Enhance training and education
- Address infrastructural needs

European Synthetic  
Biology Strategy

Transnational calls  
for Synthetic Biology



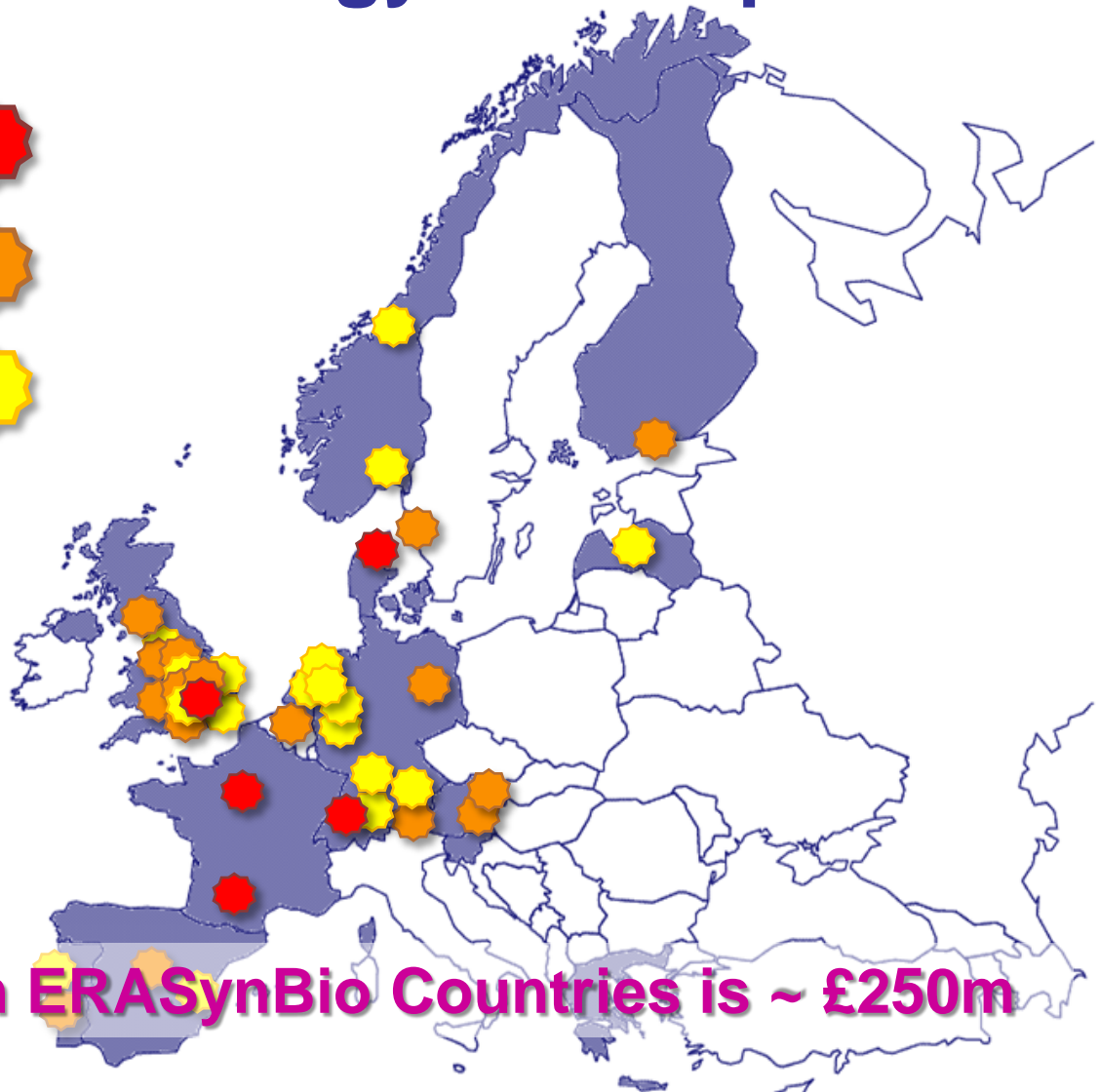
# Mapping Synthetic Biology in Europe

- Centres with > 15m € = 
- Centres with > 5m € = 
- Centres with > 2m € = 

## Identifies:

Synergies and gaps in Synthetic Biology funding

PIs for strategic ERA-NET activities



**Total funding from ERASynBio Countries is ~ £250m**

# Current opportunities for funding

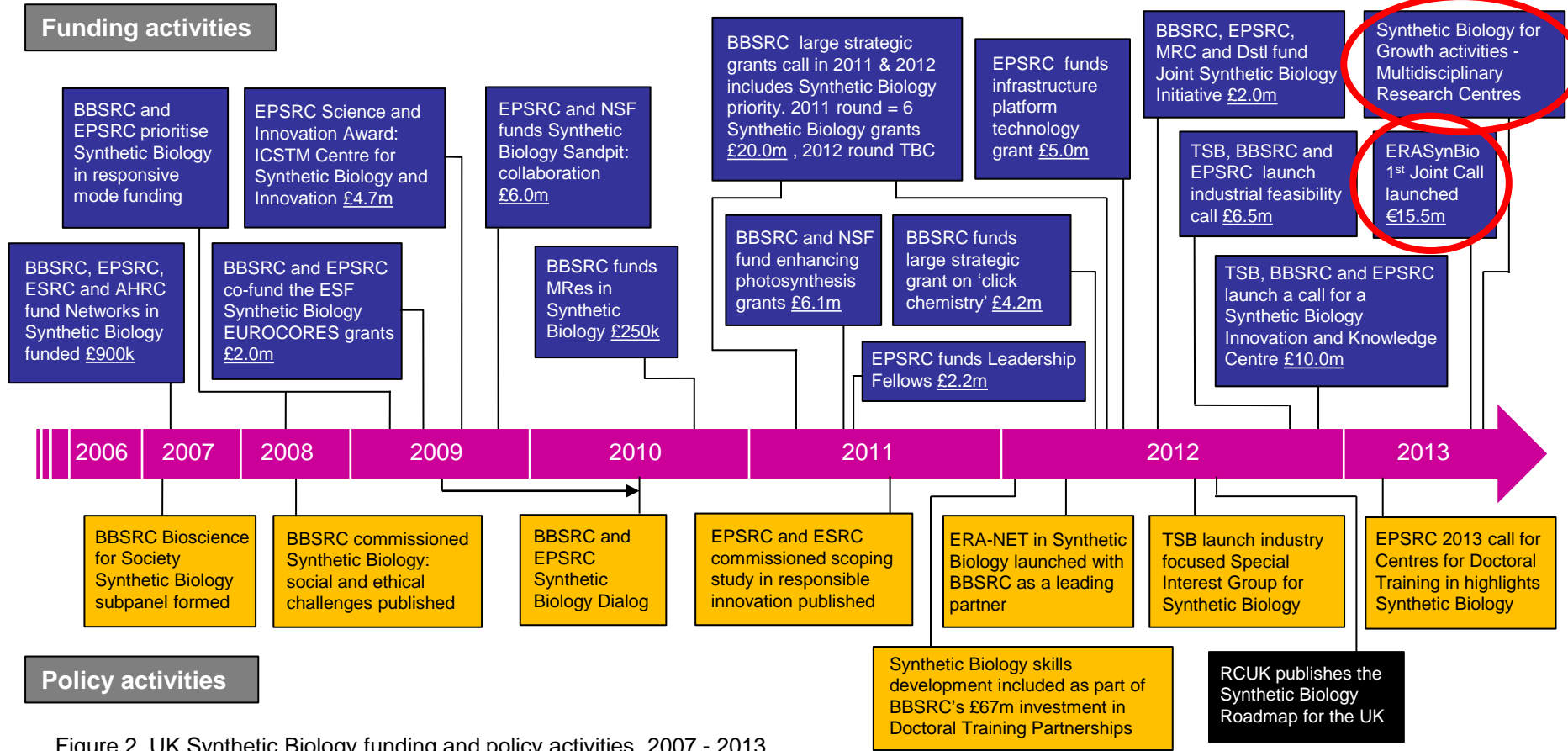


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# ERASynBio 1<sup>st</sup> Joint Call

Building SynBio Capacity Through Innovative Transnational Projects



- Support high adventure / high reward Synthetic Biology projects
- Reduce fragmentation and enhance UK / Europe / US collaboration
- €15.5m is available for consortia - min 3 partners - max 3 years
- Closing date for full applications **26 August** - Travel awards available



# Synthetic Biology for Growth

**Autumn Statement 2012:**  
£600M capital investment for RCs

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

**Funding for Synthetic Biology, to be invested in 4 work-streams:**

1. Multidisciplinary Synthetic Biology Research Centres (2013/14)
2. UK Gene Synthesis capability (2013/14 and 2014/15)
3. Synthetic Biology Company 'Seed Fund' (2013/14 and 2014/15)
4. Targeted training cohorts of students (2014/15)

# Multidisciplinary Research Centres

- Boost UK research capacity & diversify expertise
- Stimulate innovation
- Facilitate interfaces with key stakeholders

## Up to 6 centres in two phases

- £10M capital funding available for each phase
- Recurrent funding up to £2M pa for five years
- Deadlines for the 1st call:
  - Expressions of Interest deadline **28 May**
  - Workshop and launch of full call **6 June**
  - Full call deadline **18 July**





# Any questions?

## Multidisciplinary Research Centres

Rowan McKibbin: [rowan.mckibbin@bbsrc.ac.uk](mailto:rowan.mckibbin@bbsrc.ac.uk)

Ceri Lyn-Adams: [ceri.lyn-adams@bbsrc.ac.uk](mailto:ceri.lyn-adams@bbsrc.ac.uk)

## ERASynBio

Andy Boyce: [andy.boyce@bbsrc.ac.uk](mailto:andy.boyce@bbsrc.ac.uk)