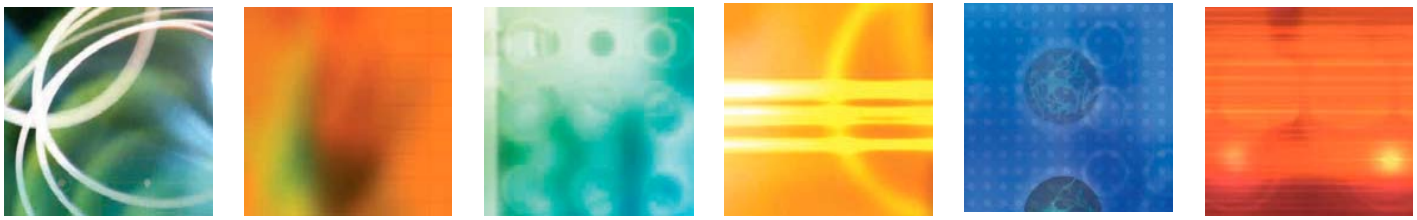

The Future of Biotechnology in the UK

The Foundation for Science & Technology, 8 June 2005

From science base to market place

Dr Doug Yarrow

Group Director

Biotechnology and Biological Sciences Research Council

The future of biotechnology

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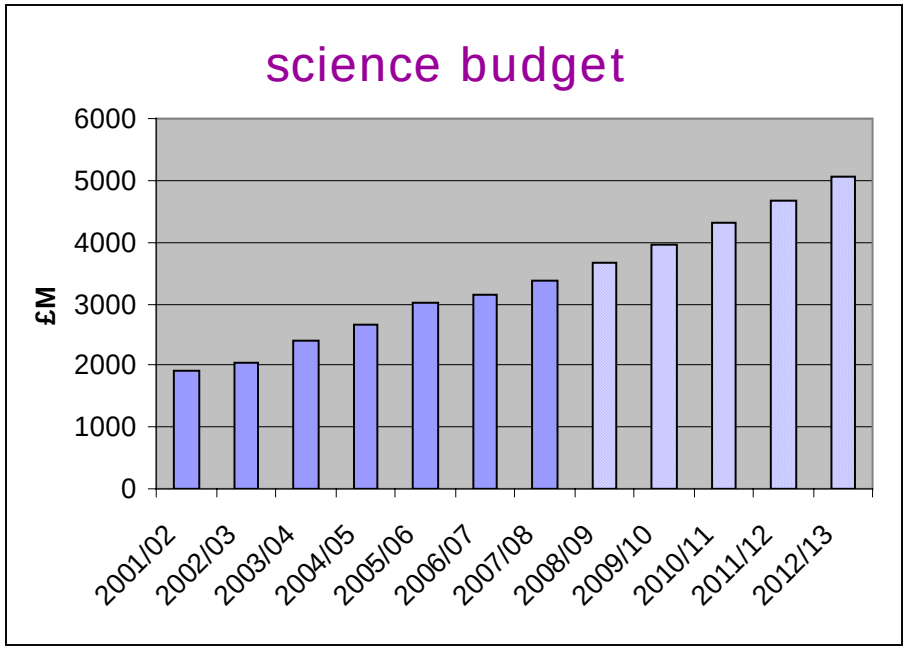
biotechnology and biological sciences research council

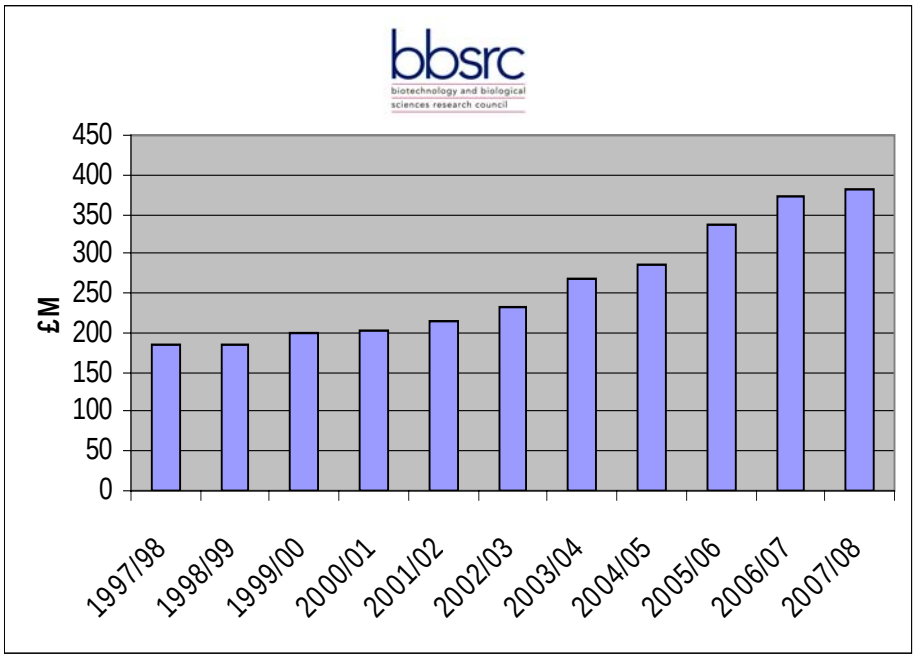
Success factors:

- excellence of science base
- effective exploitation
- research underpinning needs of industry
- risk capital
- ‘patient’ money
- market conditions
- etc etc

Funding for science

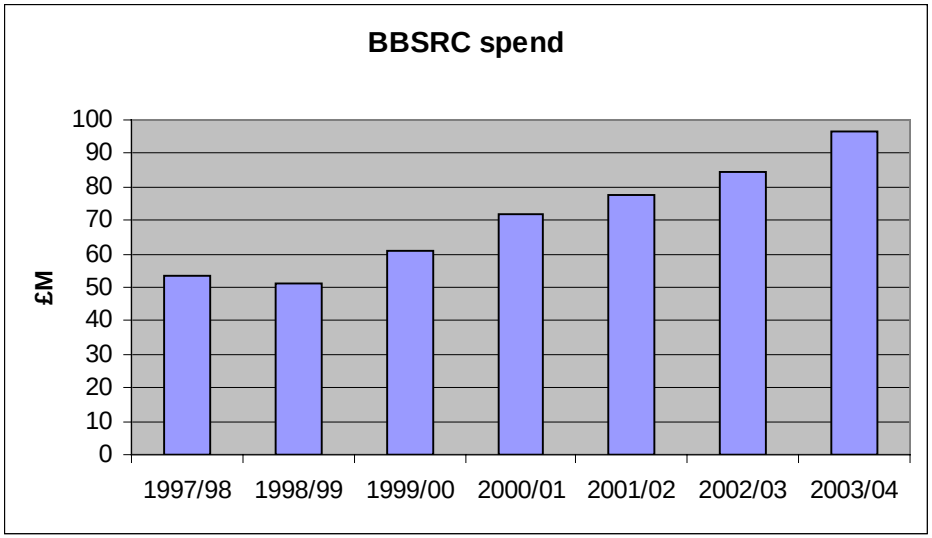
- science budget increasing to £3.3B in 07/08
- BBSRC budget increase from £183M in 97/98 to £382M in 07/08





Increasing resources for...

- equipment and infrastructure
- responsive mode research grants



- initiatives
- in addition to extra resource for postgraduate training, knowledge transfer and science in society

Excellence!

- biosciences successful in international context
- cornerstone of BBSRC's Strategic Plan

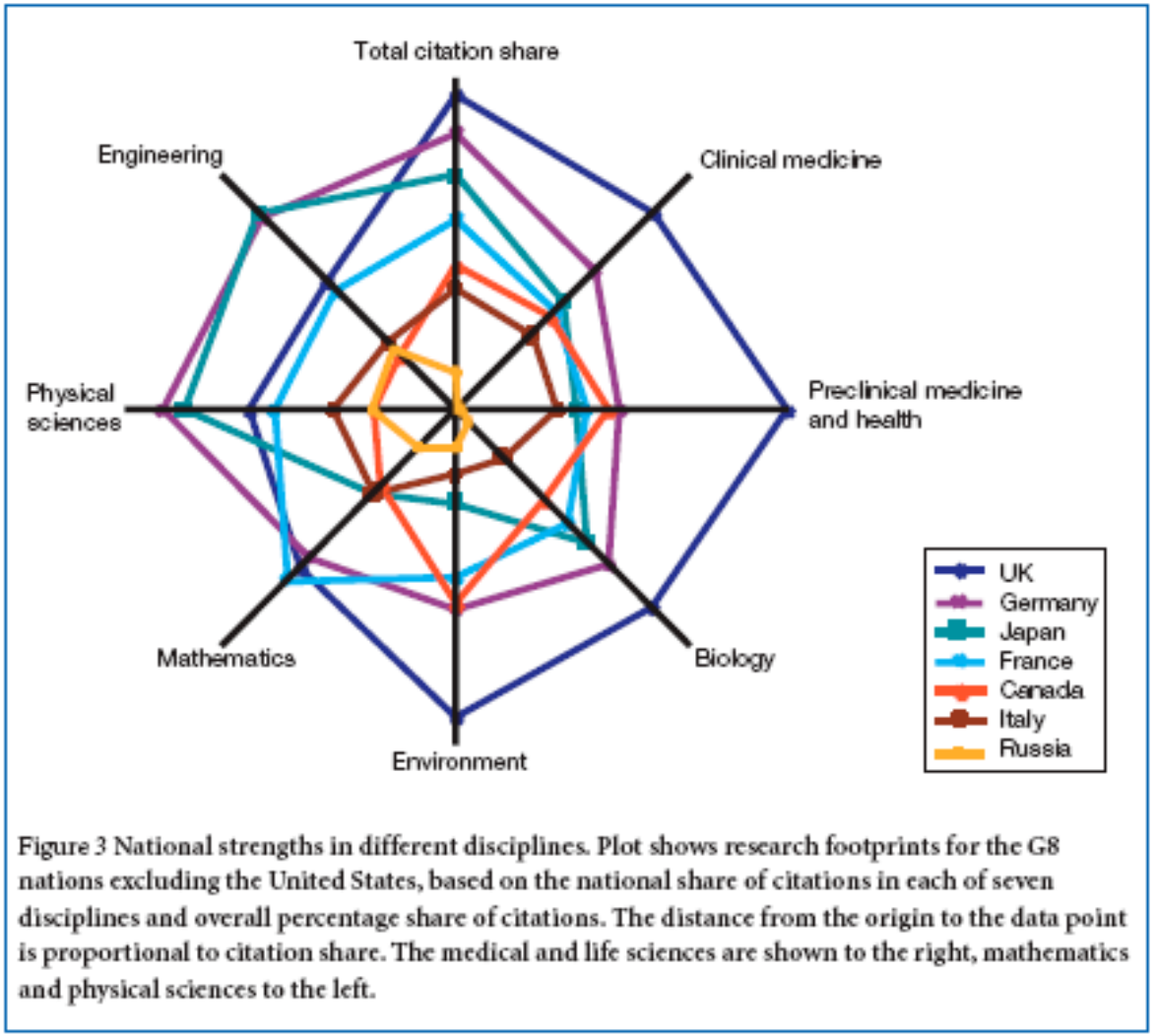


Figure 3 National strengths in different disciplines. Plot shows research footprints for the G8 nations excluding the United States, based on the national share of citations in each of seven disciplines and overall percentage share of citations. The distance from the origin to the data point is proportional to citation share. The medical and life sciences are shown to the right, mathematics and physical sciences to the left.

From David King's "The Scientific Impact of Nations" Nature 430, 311-316, July 2004

From science base to market place

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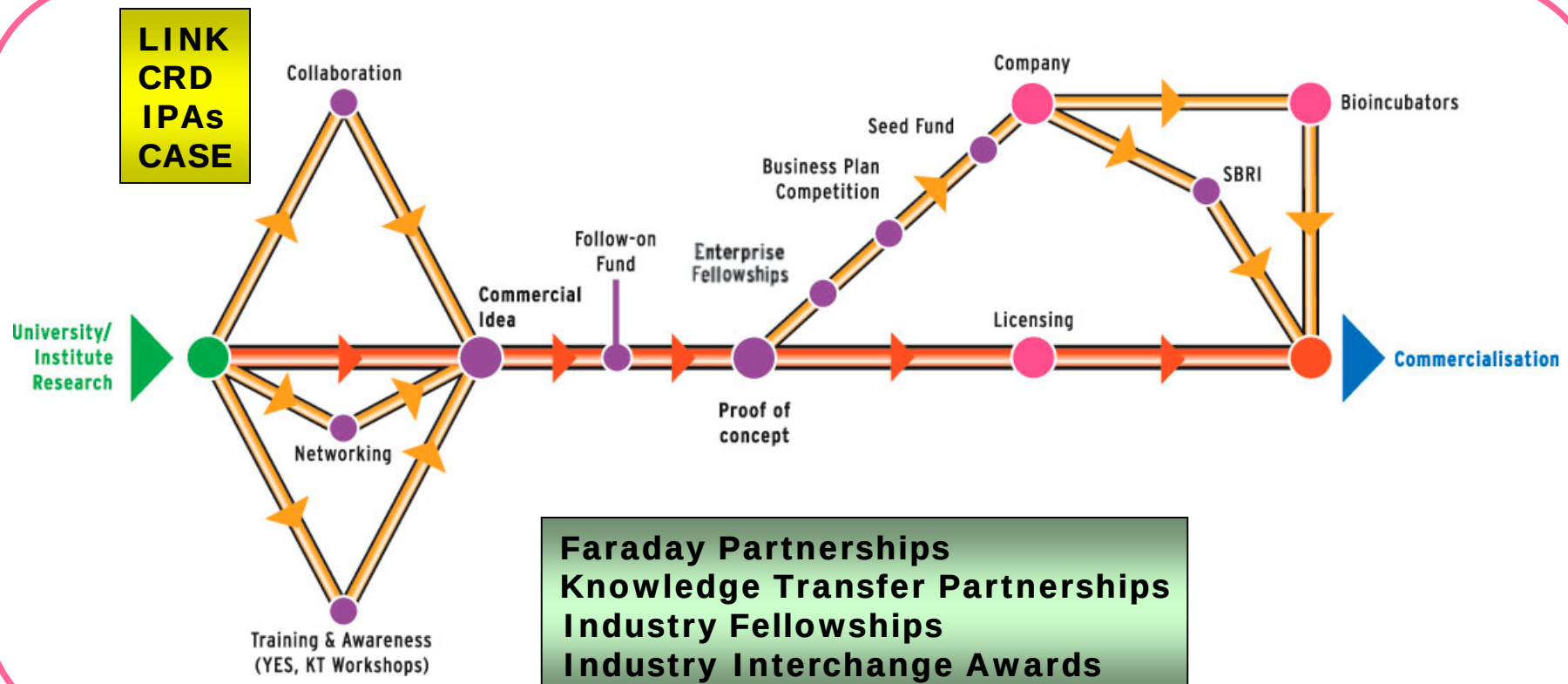

From science base to market place

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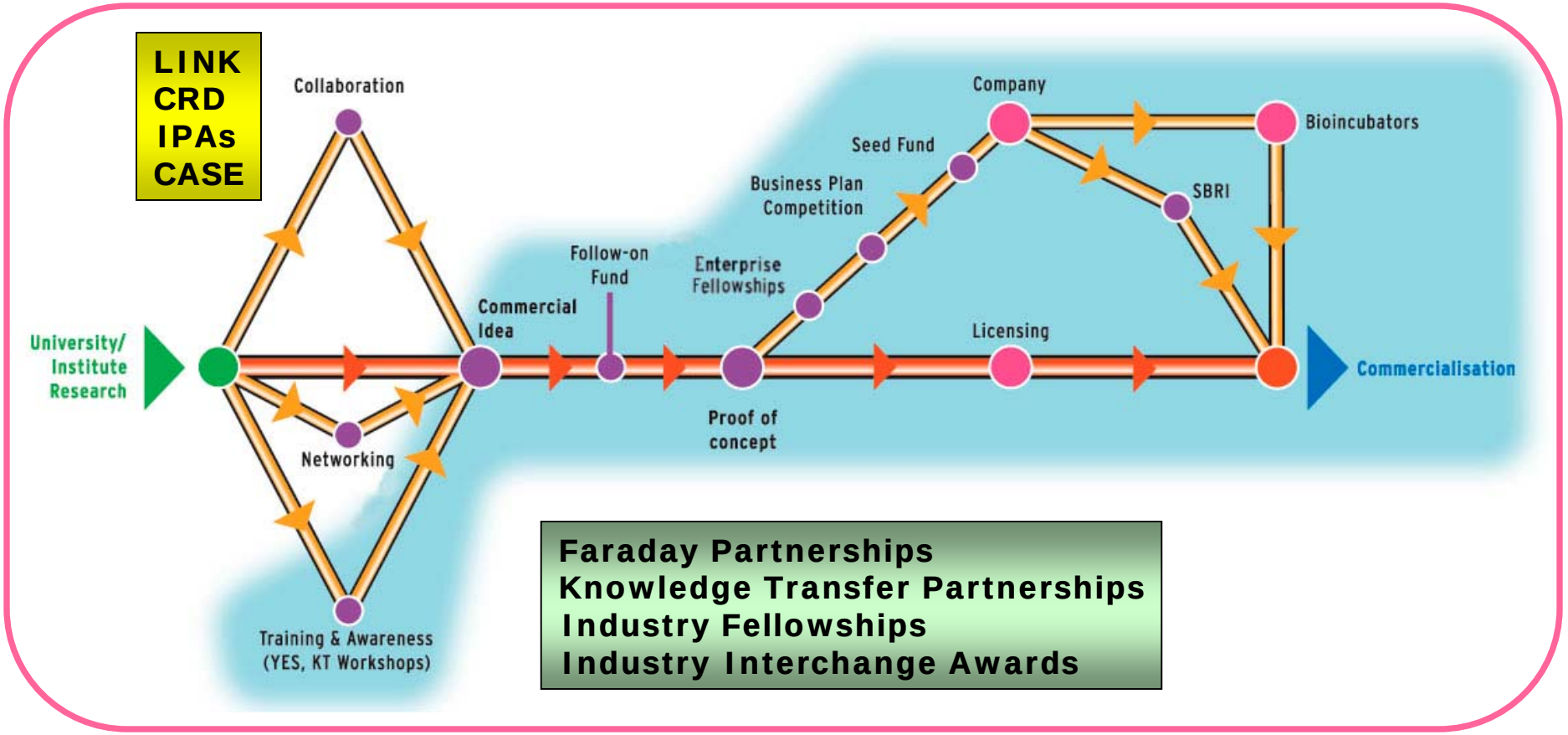

BBSRC's innovation pipeline

- Young Entrepreneur's Scheme (1995)
- Follow-on Fund (2004)
- Enterprise Fellowships (2005)
- Business Plan Competition (1999)
- Seed Funds (1999)
- Bioincubators (1998)
- Small Business Research Initiative (2002)

biotechnology yes
young entrepreneurs scheme
CELEBRATING 10 YEARS

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- in 10th year and jointly organised by BBSRC/UNIEI
- other main sponsors: MRC, NERC, Gatsby
- delivers commercialisation awareness training to over 150 bioscientists
- regional workshops for teams of 5 PhD/Postdocs
- prepare presentation business plan, with help from expert mentors, based on imaginary biotechnology ideas
- competition Final (for £1000) in December

www.biotechnologyYES.co.uk

2003 YES winners

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"Cambridge Scientists Win National Entrepreneurs Competition"

- CLAIRVOYENZ
  (University of Cambridge)

  an imaginary company developing disposable contact lenses for diabetics that change colour when their glucose levels change

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Follow-on Fund

- to enable scientists to advance ideas with commercial potential to a stage where commercial opportunities can be secured *e.g. further technical or scientific development, broaden patent claims, market analysis, identify licensees, etc.*
- BBSRC, EPSRC, NERC, PPARC
- grants of £10k to £60k
- BBSRC £1M over 2 calls (Apr/Nov)
- open to existing grantholders

- 17 BBSRC awards totalling £1.1M issued to date

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The Business Plan Competition

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- to increase awareness of issues involved in developing a bioscience business
- help the formation of new bioscience business ventures
- two stage format: training & mentoring
  - 1999 (with MRC): 16 teams mentored
  - 2001 (with MRC): 17 teams mentored
  - 2003 (with all RCs): 41 teams mentored
  - 2005 (with all RCs): to be launched in autumn
- mentoring organisations
  - business planning, IP, finance, legal
  - including several biotech entrepreneurs

BPC bioscience prize winner 2003-04: *Monica Healthcare Ltd.*

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- foetal health monitoring company (Nottingham)
- secured £200k initial seed investment from Lachesis Fund and £250k from Catapult Ventures

LACHESIS FUND

BBSRC's innovation pipeline

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- Business Plan Competition (1999)
- Seed Funds (1999)
  - UNIVERSITY CHALLENGE
  - RAINBOW
- Bioincubators (1998)
  - BABRAHAM, JIC, ROSLIN
- Small Business Research Initiative (2002)

Babraham research campus

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Babraham Bioscience Technologies

Babraham BioConcepts -
An evolution of mentoring processes for start-up bioventures

BBSRC's innovation pipeline

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Small Business Research Initiative

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- to enhance research capacity of existing SMEs
- 11 contracts (£2.3M total) in March 2005
- 33 contracts (£7.0M total) awarded to date

- rolling annual call in June - closing date Sept
- evidence of shared risk required
- science quality an important criterion
- contracts in region of £200k

SBRI
Small Business Research Initiative

SBRI 2005

deltaDOT – empowering proteomics and genomics	Isolating unlabelled biomolecules in a microfluidic system – Switching samples for multiple downstream procedures
OXITEC – OXFORD INSECT TECHNOLOGIES	Improved insect transformation
CRITICAL PHARMACEUTICALS	Evaluating biological responses to single-dose vaccines
Farfield – illuminating the molecular world...	Towards a new structure-function workstation for multimolecular assemblies
SOUTHAMPTON POLYPEPTIDES	Chemical synthesis of therapeutic proteins using PEGylated precursors

SBRI 2005

SBRI Small Business Research Initiative

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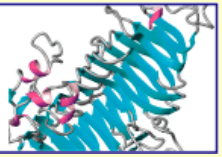
Lumora BrightSolutions™	2D-NAAT: A universal handheld assay platform for ultra-sensitive low-cost biological detection
Zyentia Protein Misfolding and Human Disease 	Nanostructured calcium phosphate as a novel bone replacement material
CellTran™	Pre-clinical development of an advanced surface for culture and transfer of limbal epithelium for ocular surface disease
MedPharm	The development of a novel topical ungual delivery system (MedNailTM)
DANIOLABS	Identification of factors responsible for the differentiation of oligodendrocytes
Plasso	Sugar binding surfaces

BBSRC's innovation pipeline

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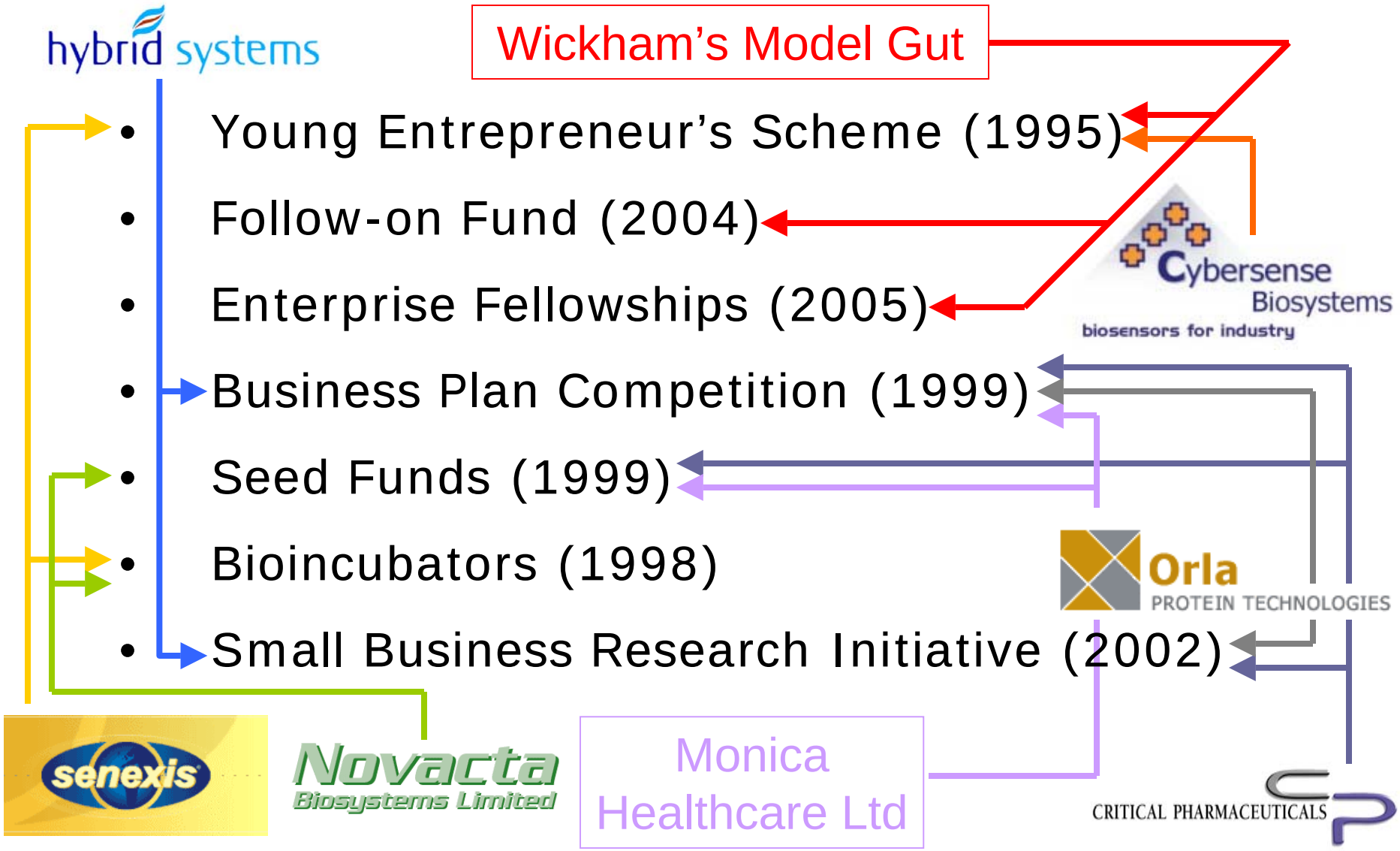

Underpinning industrial need

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Identifying areas of the bioscience research base where an enhancement of activity may underpin the needs of industry over the next 10 years

Four prime criteria:

- capacity for high-quality research
- ability of the UK science base to deliver that research
- size of commercial opportunity
- ability of companies based in the UK to derive benefit

BBSRC technology priorities

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- biocatalysis and biotransformations
- integrative mammalian biology
- bioprocessing
- exploiting systems biology
- genomics underpinning healthcare
- intelligent storage, retrieval and analysis of large data sets
- crops and crop production
- bionanotechnology

Implementing the strategy

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integrative mammalian biology

- 2% of graduates in pharmacology are taught *in vivo* skills
- >25% of academics who teach these skills retire soon

So:
- *need to enhance UK's research and training involving whole organisms*
- *leveraged funding from key stakeholders for capacity-building awards (BBSRC £2M, MRC, industry £2M, HEFCs £5M)*
- *call for proposals later this month with aim to fund 3 or 4 centres*

Implementing the strategy

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bioprocessing

- a third of all drugs under development now biopharmaceutical
- need new and improved bioprocessing technologies (BIGT report)
- range of biotechnology and pharmaceutical companies would derive benefit

So:
- *developing Bioprocessing Club*
- *funding BBSRC £6M, EPSRC £3M, industry £1M*
- *many companies showing interest*
- *club members will:* identify areas; have early access to results; select projects; avenues to recruitment of skilled staff

The future of biotechnology: from science base to market place

bbsrc
biotechnology and biological sciences research council

- excellent UK bioscience research base

- effective exploitation

- research underpinning industry need