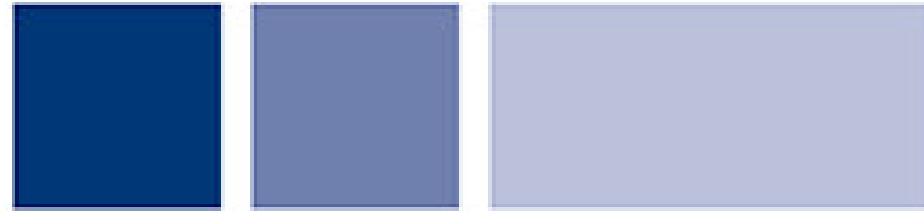




# John Innes Centre

*Unlocking Nature's Diversity*

**JIC/TSL Next Generation  
Infrastructure  
Dale Sanders**



## John Innes Centre

*Unlocking Nature's Diversity*

- 21<sup>st</sup> Century Approaches to understanding what underpins the diversity of life
- How this understanding can be deployed for the benefit of humankind



- To generate knowledge of plants and microbes through innovative research and to apply this knowledge to benefit agriculture, human health and well-being, and the environment.
- To apply modern biotechnology to agriculture in an environmentally-sustainable context
- To engage with policy makers and the public
- To equip and train the scientific leaders of the future

# Top institutions in plant and animal sciences



	Institution	Papers	Citations per paper
1	John Innes Centre, UK	1,134	37.54
2	RIKEN, Japan	926	27.49
3	Max Planck Society, Germany	2,858	23.04
4	University of California, San Diego	1,143	22.18
5	University of California, Berkeley	2,121	20.47
6	University of Arizona	1,717	18.10
7	CNRS, France	2,303	14.34
8	University of Washington	2,226	13.97
9	Wageningen University	4,083	13.35
10	University of Cambridge	1,949	13.28

**Data provided by Thomson Reuters from its  
Essential Science Indicators, January 1999-June 2009**

# Economic & Societal Impact



## On-Going Economic Impact

- Gross wheat yield benefits to UK £400M p.a. (£8.7Bn worldwide)
- Antibiotics revenues of £247M p.a. (attributable to JIC)
- Operating Impact £34M p.a.

## Additional Economic Impacts

- Net UK impact £233M GVA
- Return on investment £12 GVA/£1

## Future 30 year Global Impact

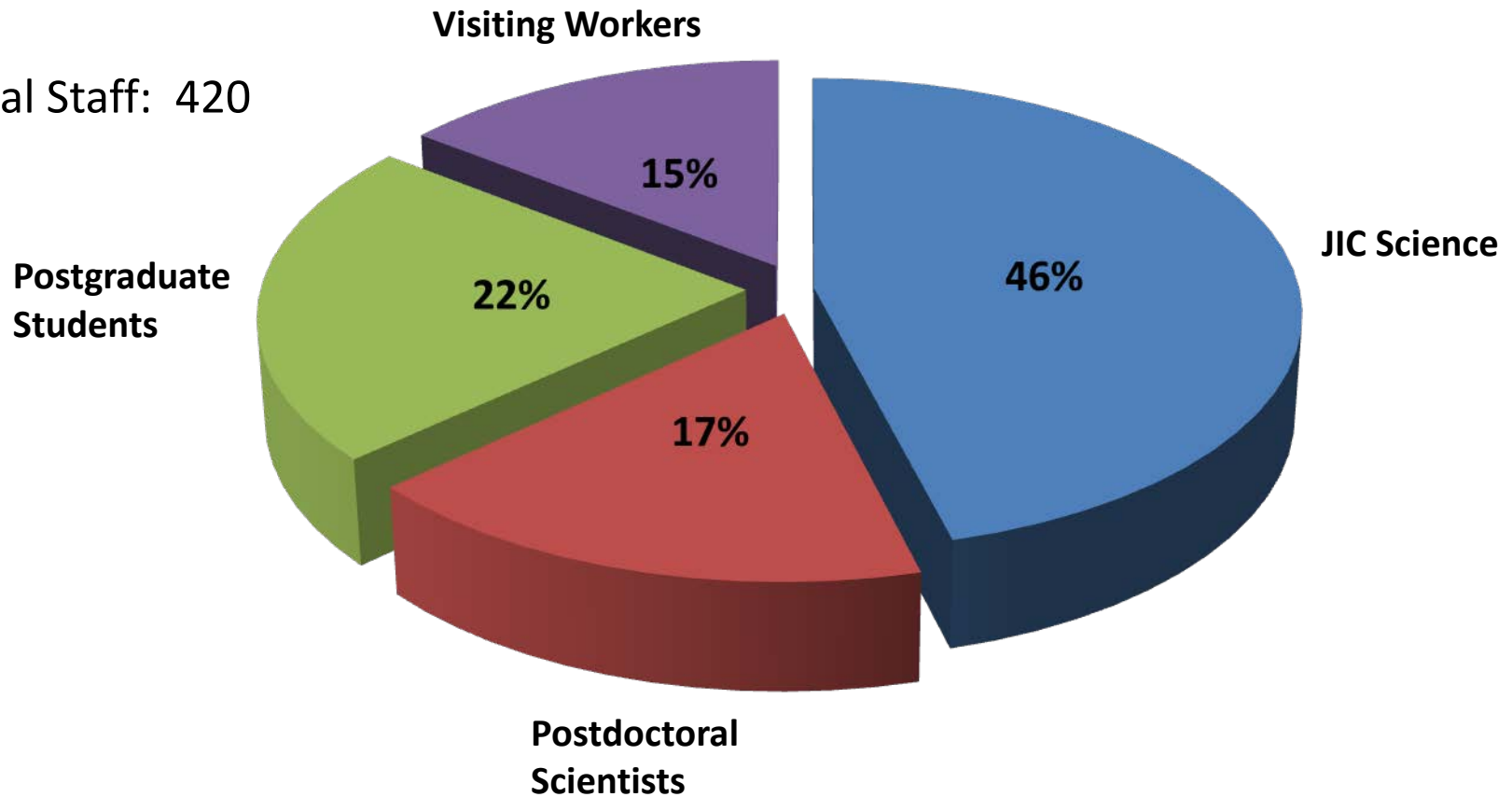
- £15.7Bn GVA





50 project leaders

Total Staff: 420

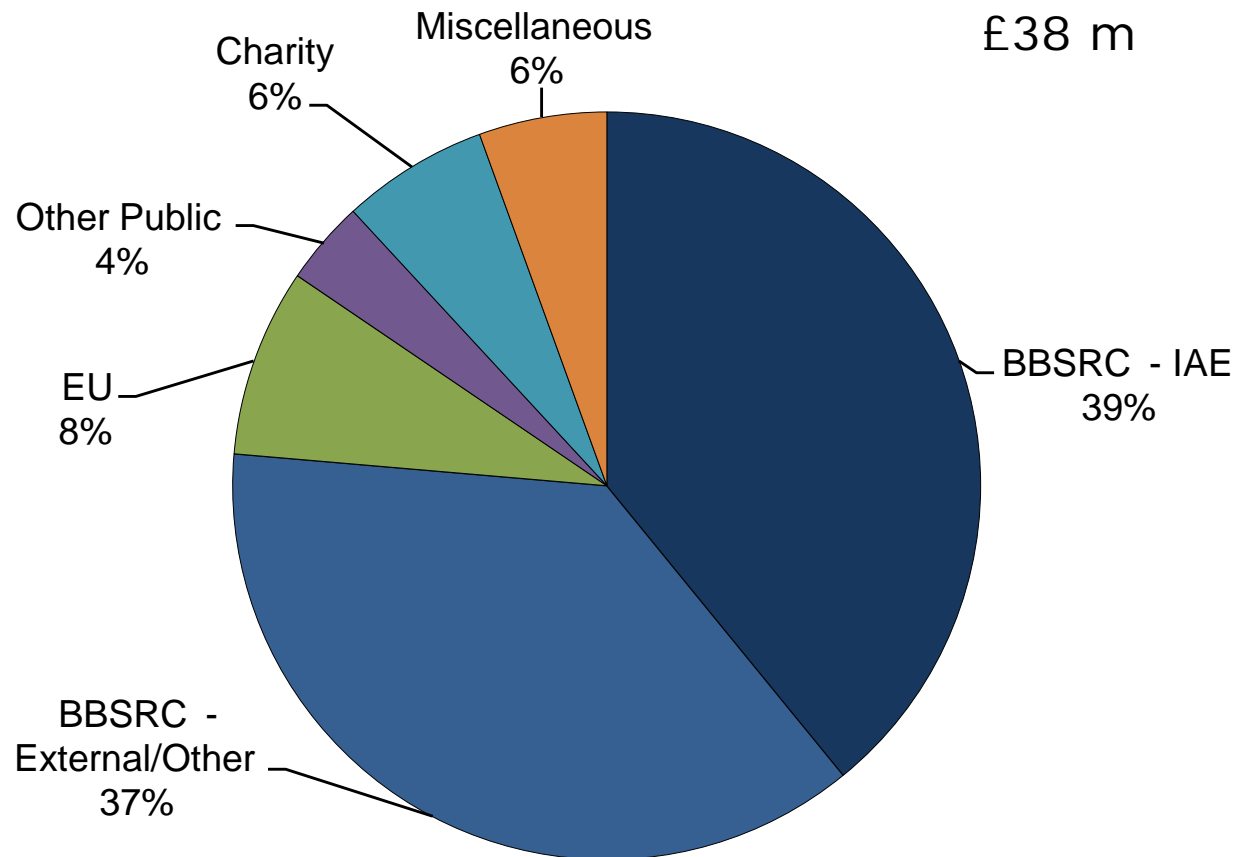


# Income by Sponsor



## 2016/17 Income by Sponsor

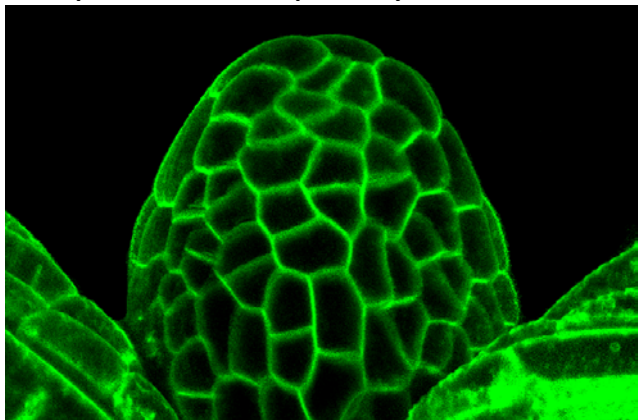
Total turnover  
£38 m



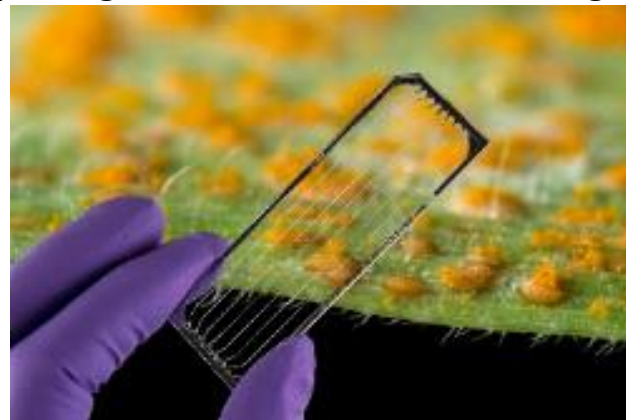
Excludes Capital and infrastructure recharges and Fees rebate

# JIC's Four Core Science Programmes

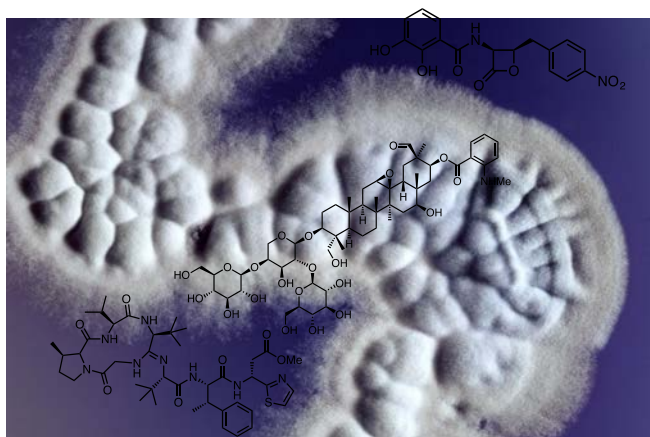
Genes in the Environment: How plant development is shaped by their environment



Plant Health: How plants interact with pathogens and beneficial micro-organisms



Molecules from Nature: How plants and microbes make and deploy complex chemicals



Designing Future Wheat: Leading the national programme to improve wheat yields







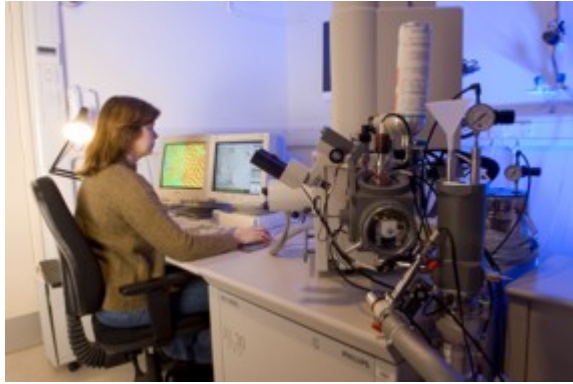
- Underpins the key BBSRC strategic objective of food security through sustainable crop production in a rapidly changing world
- National and international facility
- Enables exploitation of small grain cereals, brassica and pea.
- Current holdings ~ 45000 accessions
- Current users >700 over the last 5 years – 500 external users



# Facilitating the Science



## Technology Platforms



Imaging



Proteomics



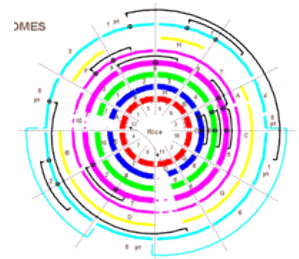
Metabolomics



Secure GM Plot



Field Trials



Bioinformatics



# Links with Stakeholders



Breeders Day



Cereals



Networks in Industrial Biotechnology and Bioenergy (BBSRC NIBB)



**NFU**  
Meurig  
Raymond



**Sustainable Food Trust**  
*A global voice for sustainable food*  
Patrick Holden

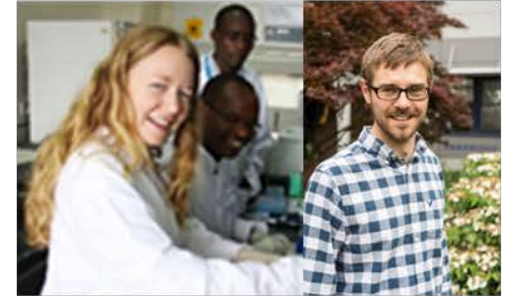
# Winner: BBSRC Excellence with Impact Award 2016



Jon Clarke



Communication



Building Capacity



Conservation



Inspiring the  
next Generation



Route to Market



Disease Surveillance



# Breakthroughs to Impact



1980s and 90s: Virus replication in plants



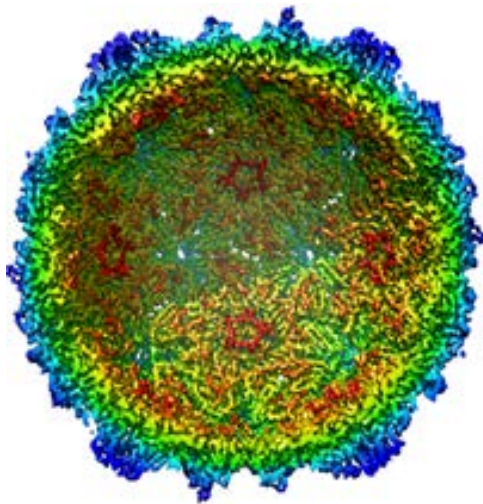
Innovative bioengineering based on viruses

2017: R&D Facility



Leaf Systems™

- Automated
- Custom synthesis
- Process development
- Rapid response
- 10 g protein, 1 g metabolite



Virus-like particles

- Polio
- Zika virus
- Influenza

# International Partnerships: China



## *Centre of Excellence in Plant and Microbial Sciences (CEPAMS)*



Signing MoU, Royal Society, 2014



Institute for Genetics &  
Developmental Biology,  
Beijing



Shanghai Institute for  
Plant Physiology &  
Ecology



Opening Joint Labs, Shanghai, 2016





# International Partnerships: Africa



Biosciences eastern and central Africa – International  
Livestock Research Institute (BecA-ILRI) Hub  
Mobilizing biosciences for Africa's development



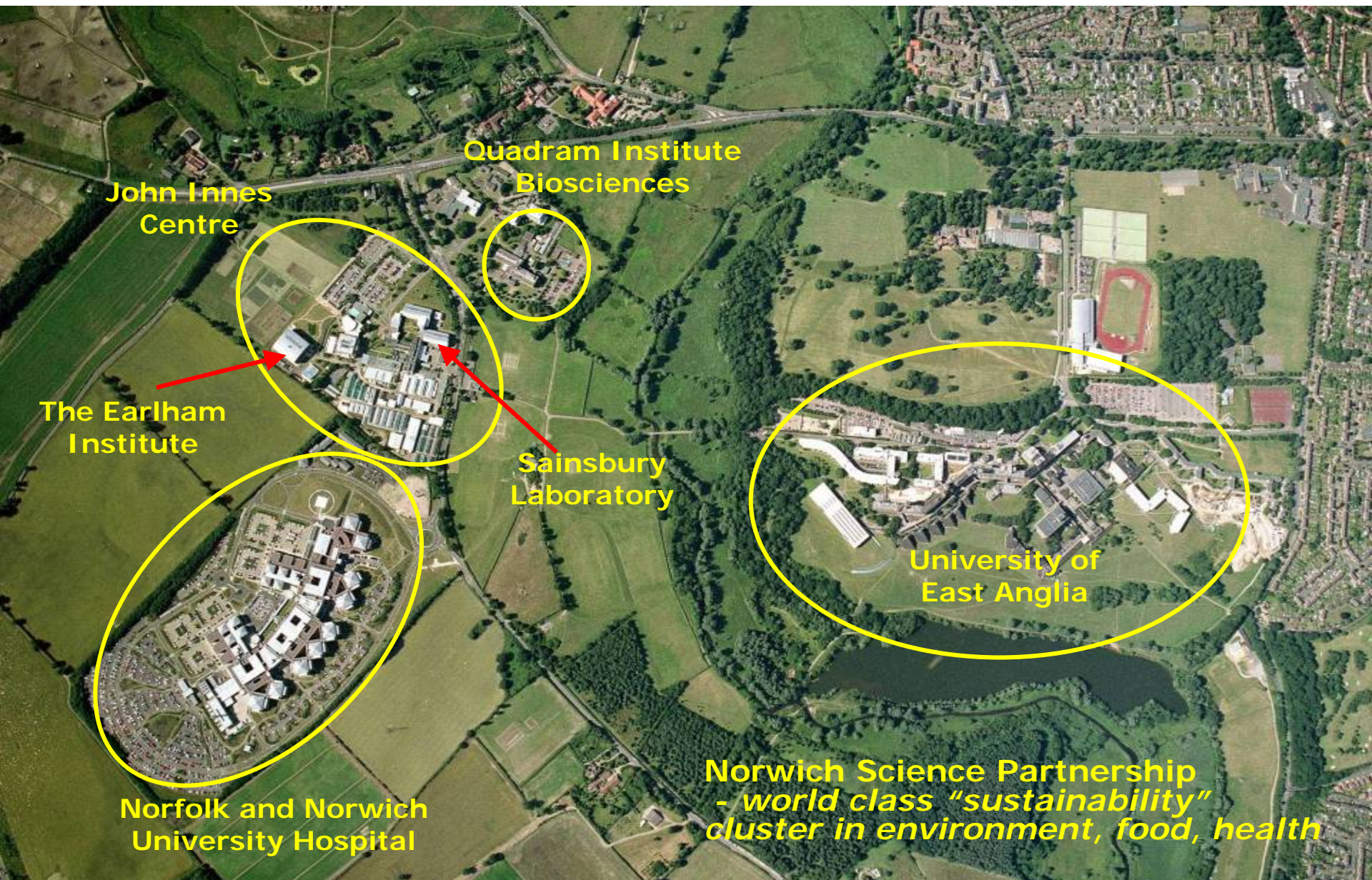
An Alliance for Accelerated Crop  
Improvement in Africa (ACACIA):

- Research
- Capacity building
- Exchange of staff
- Exchange of students
- Technologies





# Norwich Research Park



Quadram Institute  
Biosciences

John Innes  
Centre

The Earlham  
Institute

Sainsbury  
Laboratory

University of  
East Anglia

Norfolk and Norwich  
University Hospital

Norwich Science Partnership  
- world class "sustainability"  
cluster in environment, food, health



What does JIC hope to achieve  
from the new development?



Step change to exploit

new ways of working

new technologies

new relationships

to deliver further global impact

