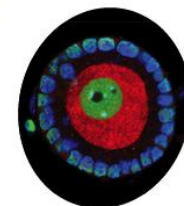


ELIXIR and Impact



19 November 2013

Jackie Hunter

Chief Executive, BBSRC



Grand challenges

- the growing demands for food, water and energy
- an ageing population
- environmental degradation
- the loss of biodiversity
- the need to respond rapidly to emerging global threats such as pandemics and bioterrorism

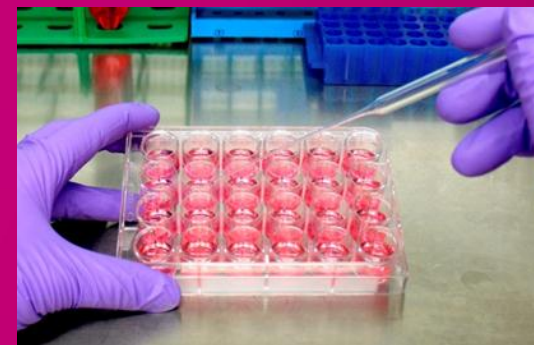
Three major strategic science priorities (Grand Challenges)



Food Security



**Bioenergy and
Industrial biotechnology**



**Basic Bioscience
Underpinning Health**

Three crucial enabling themes



KE, Innovation and Skills



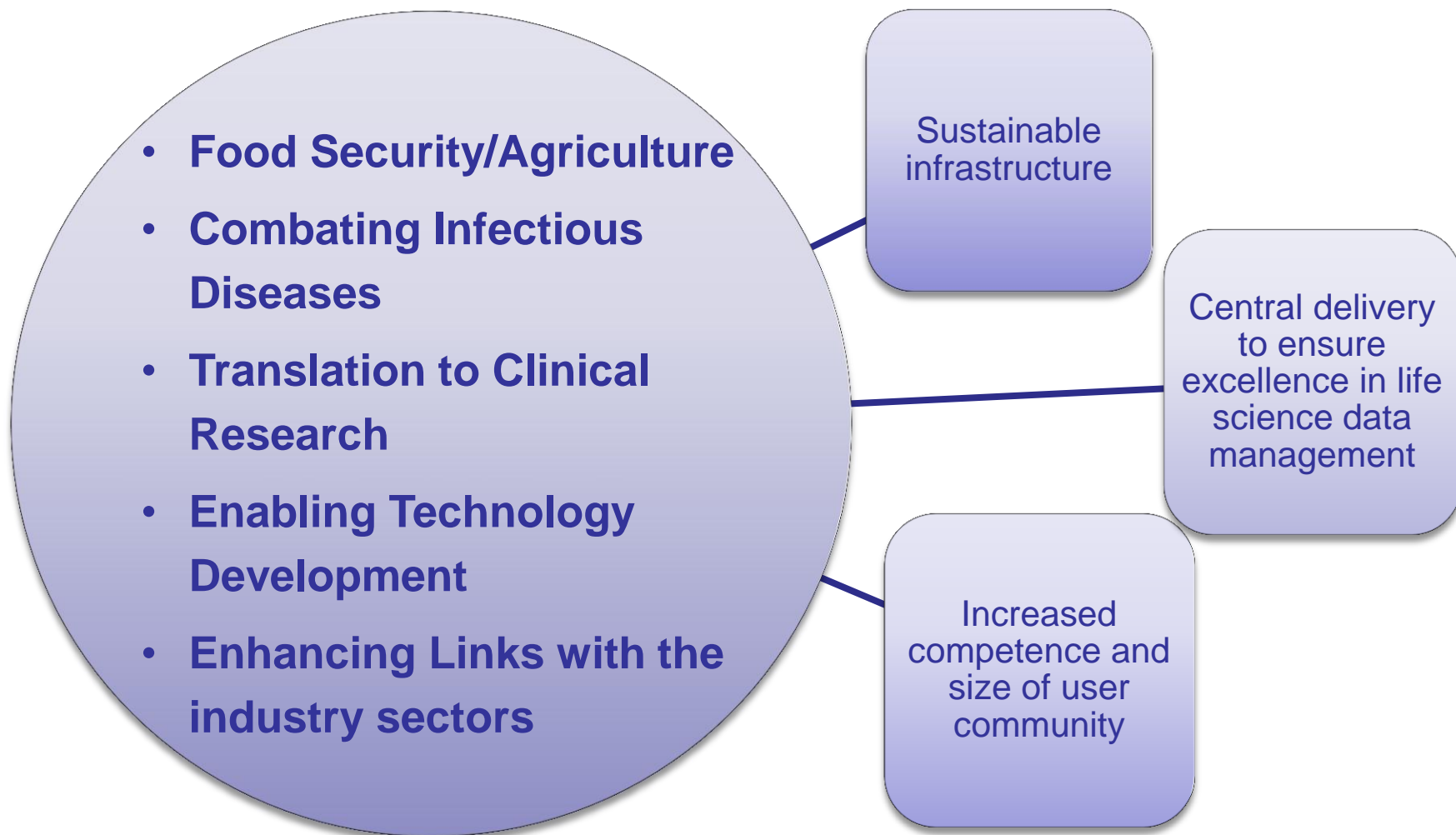
**Exploiting New Ways
of Working**



Partnerships



BBSRC priorities and supporting requirements



ELIXIR can support all of this



ELIXIR broad impacts

- Underpins access to information from other investments
- Promotes innovation & collaboration
- Enhances training & dissemination
- Increases research productivity & performance
- Improved integration of life science data & services throughout Europe
- Enabling the management of data in a seamless way

Where can bioinformatics have most impact?

- Bridging the genotype to phenotype gap
 - Plants
 - Animals
 - Man
 - In healthy organisms and disease
- Better target validation
 - For new plant varieties
 - For new medicines
- Tracking biodiversity to sustain natural resources



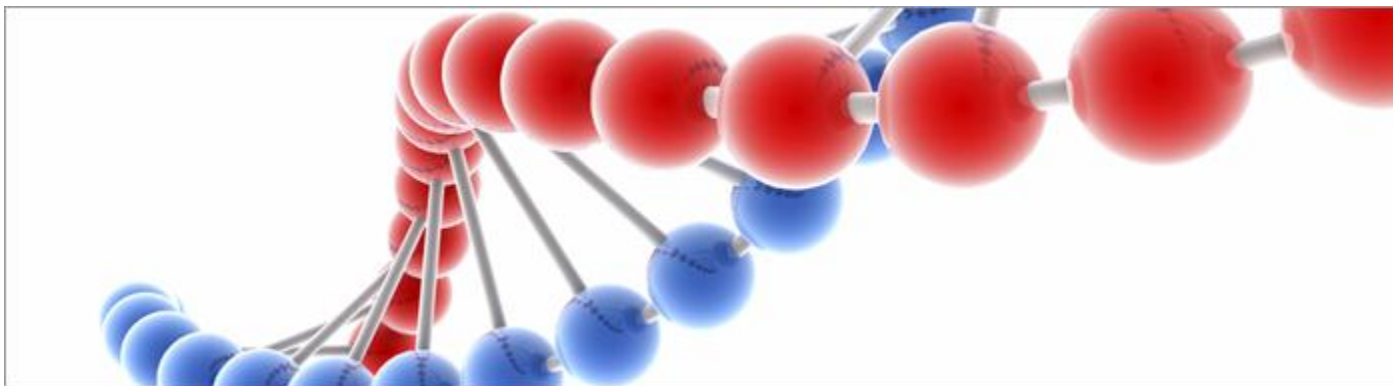
Impact for new medicines development

- Addressing the variational range of European human genome data
- Enabling better prediction of drug actions & drug combinations on individual patients
- Ultimately creating a seamless continuum from genomic data through preclinical data to electronic health records



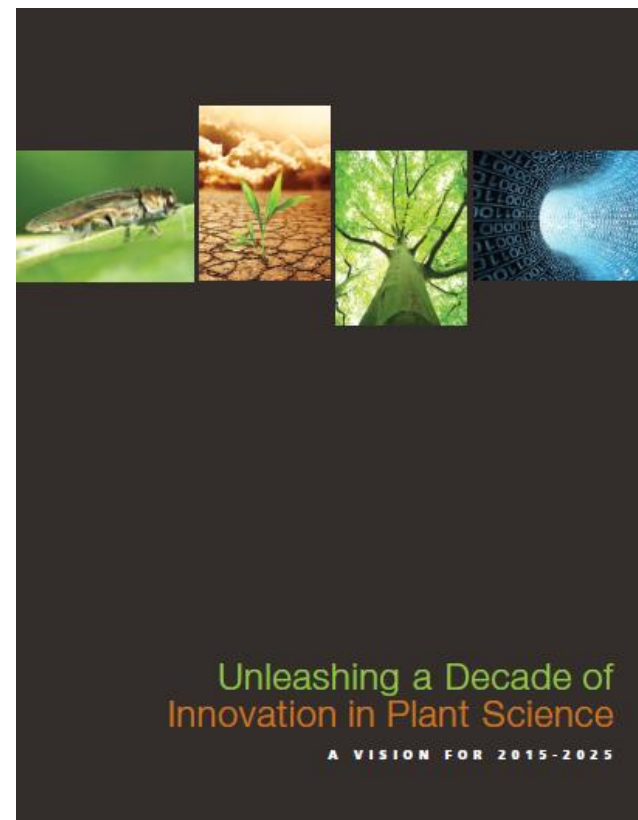
Model of the human metabolic network

- Multi national collaboration provided results only made possible by a big data approach
- Model provides a framework to understand better the relationship between an individual's genetic make-up and his/her lifestyle
 - step closer to 'personalised medicine'



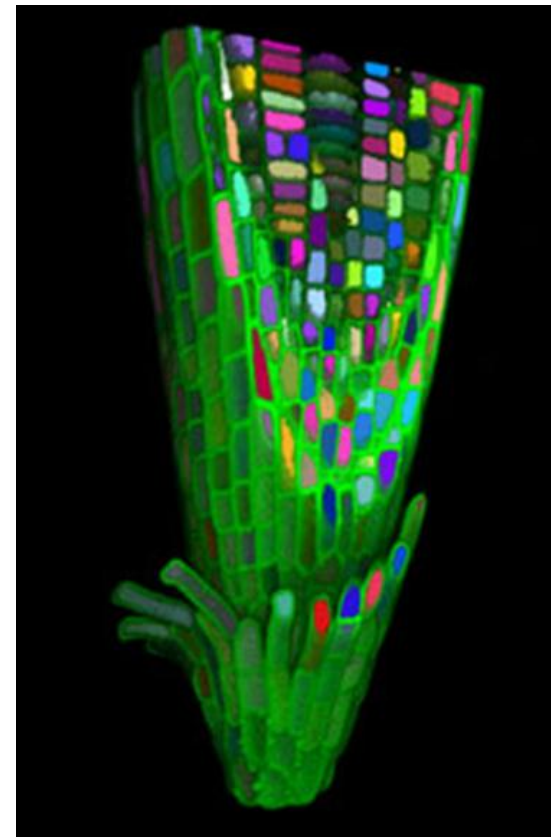
Goals of US report – “Unleashing a Decade of Innovation in Plant Science”

- Increase the ability to predict plant traits from plant genomes in diverse environments
- Assemble plant traits in different ways to solve problems
- Discover, catalogue, and utilise plant-derived chemicals
- Enhance the ability to find answers in a torrent of data
- Create a T-training environment for plant science doctoral students



Virtual Organisms and Crop Science

- Combining e-organisms (virtual leaf, root, seed etc.) with genome & phenome data
- Building models using local and distributed high-performance computing infrastructure
- Enabled by advances in image quality at both the micro and macro level and improvements in image analysis



Credit: University of Nottingham

Working together will maximise global impact





ELIXIR and impact

- Real opportunity to bridge genotype to phenotype gap
- Create new communities
- Build skills and capabilities
- Enhance EU competitiveness
- Promote problem led large scale integrative bioscience