Science Excellence

Colin Campbell

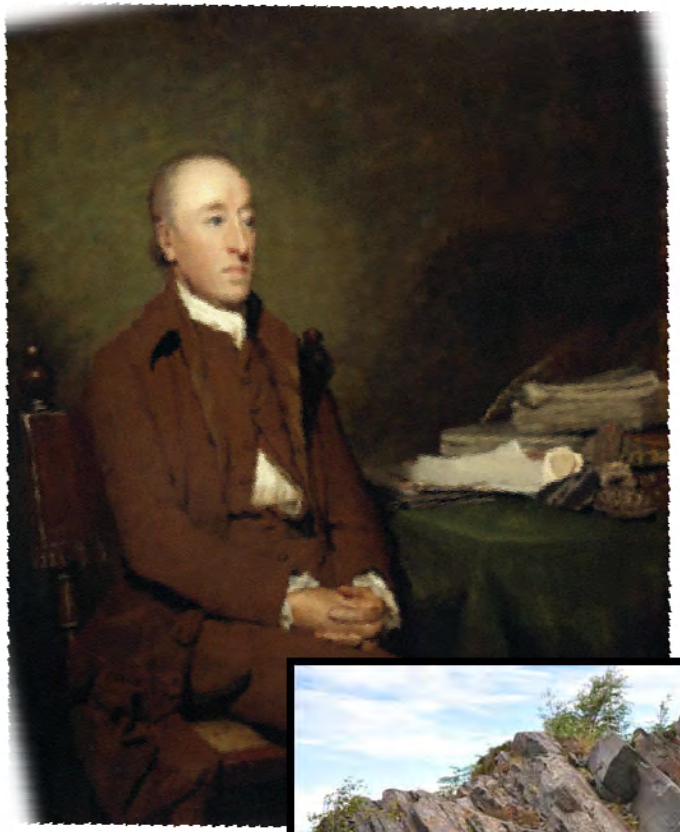
The James Hutton Institute

The James Hutton Institute– founded on science

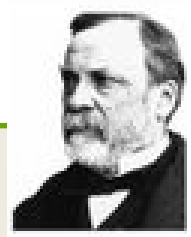
James Hutton (1726 – 1797)
a leading figure of the Scottish Enlightenment, in a golden age of intellectual and scientific achievements

The founder of modern geology and one of the first to describe the Earth as a living system. His work spanned chemistry, meteorology, geology, botany and zoology and he experimented in plant and animal breeding.

Discoverer of “Deep Time”



Excellent, Relevant Science Aiming at Pasteur's Quadrant



Pure Basic research
Niels Bohr

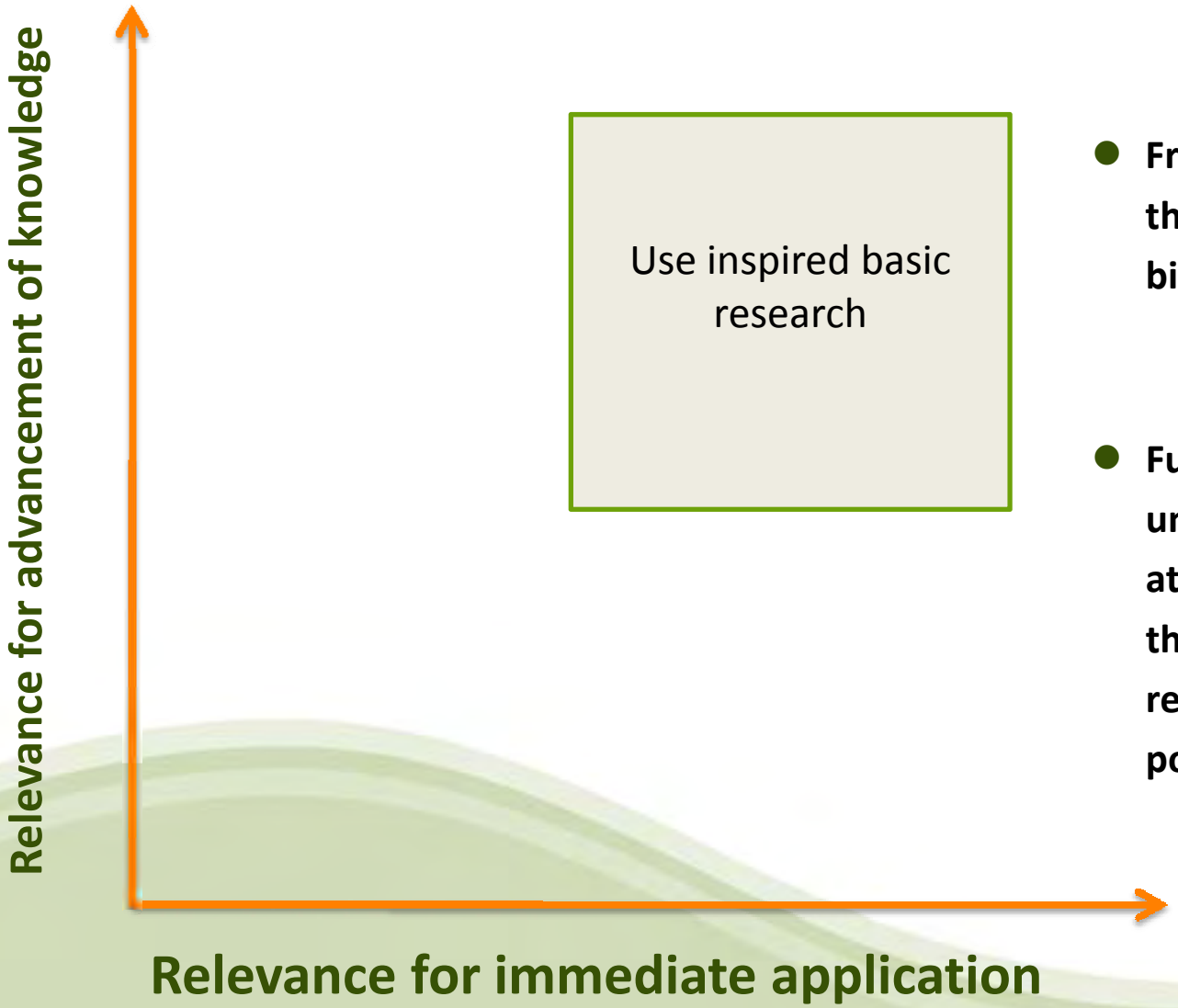
Use inspired basic research
Louis Pasteur

Pure applied research
Thomas Edison

Relevance for advancement of knowledge

Relevance for immediate application

Hitting Pasteur's Quadrant



- **From sequencing genomes through to new crops and biotechnology applications**
- **Fundamental understanding of human attitudes and behaviour that change societal responses and government policies**

Achieving more together

- **First** - joint paper between Aberdeen and Dundee in the Hutton name

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Contents lists available at ScienceDirect

Applied Soil Ecology

journal homepage: www.elsevier.com/locate/apsoil

Altered food web structure and C-flux pathways associated with mineralisation of organic amendments to agricultural soil

Eric Paterson[a,*], Roy Neilson[b], Andrew J. Midwood[a], Shona M. Osborne[a], Allan Sim[a], Barry Thornton[a], Pete Millard[a]

[a] The James Hutton Institute, Craigiebuckler, Aberdeen AB15 8QH, Scotland, United Kingdom
[b] The James Hutton Institute, Invergowrie, Dundee DD2 5DA, Scotland, United Kingdom

- **First** - James Hutton Institute paper in "Nature" due out in next few weeks

Science excellence is at the core

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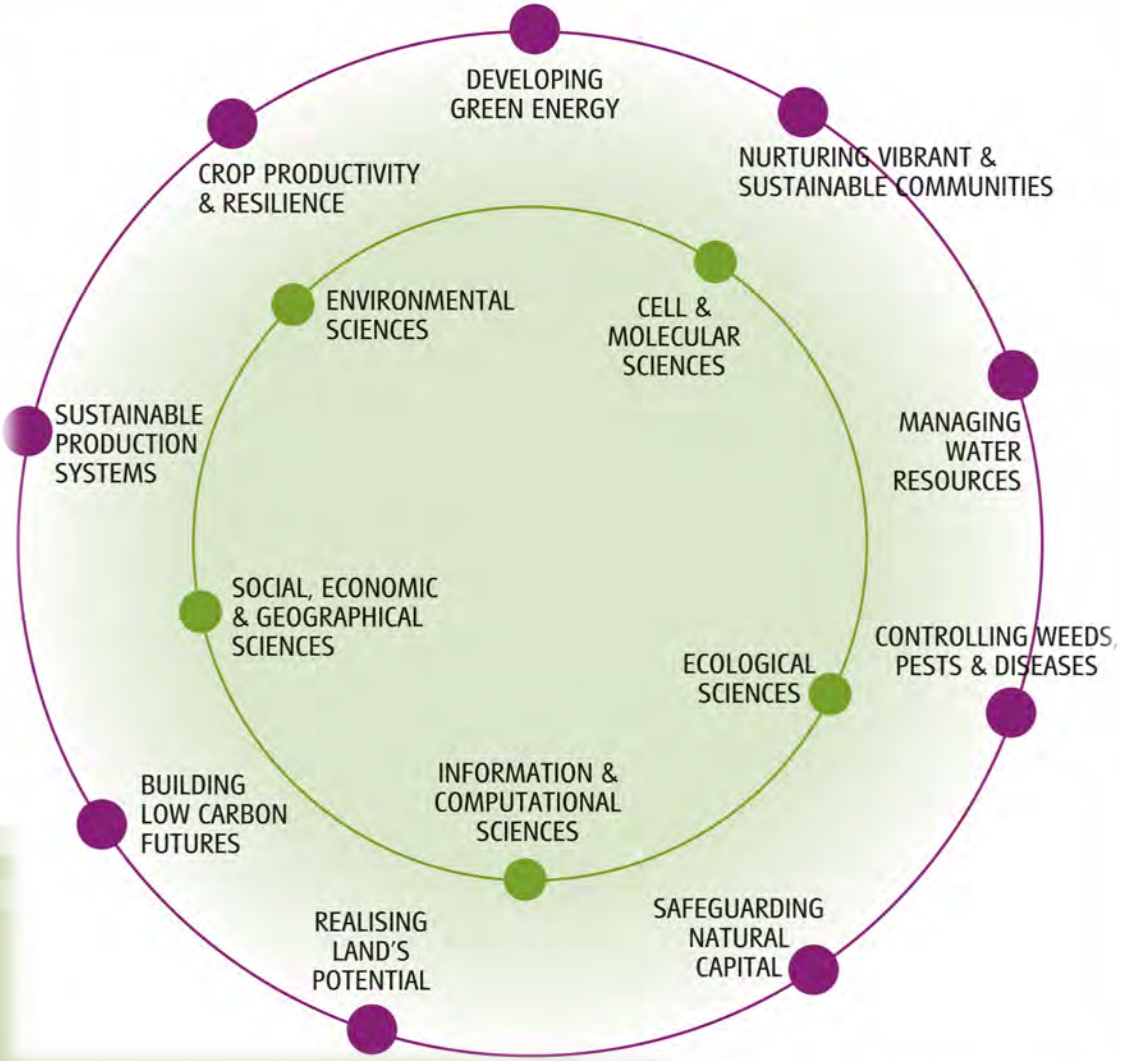
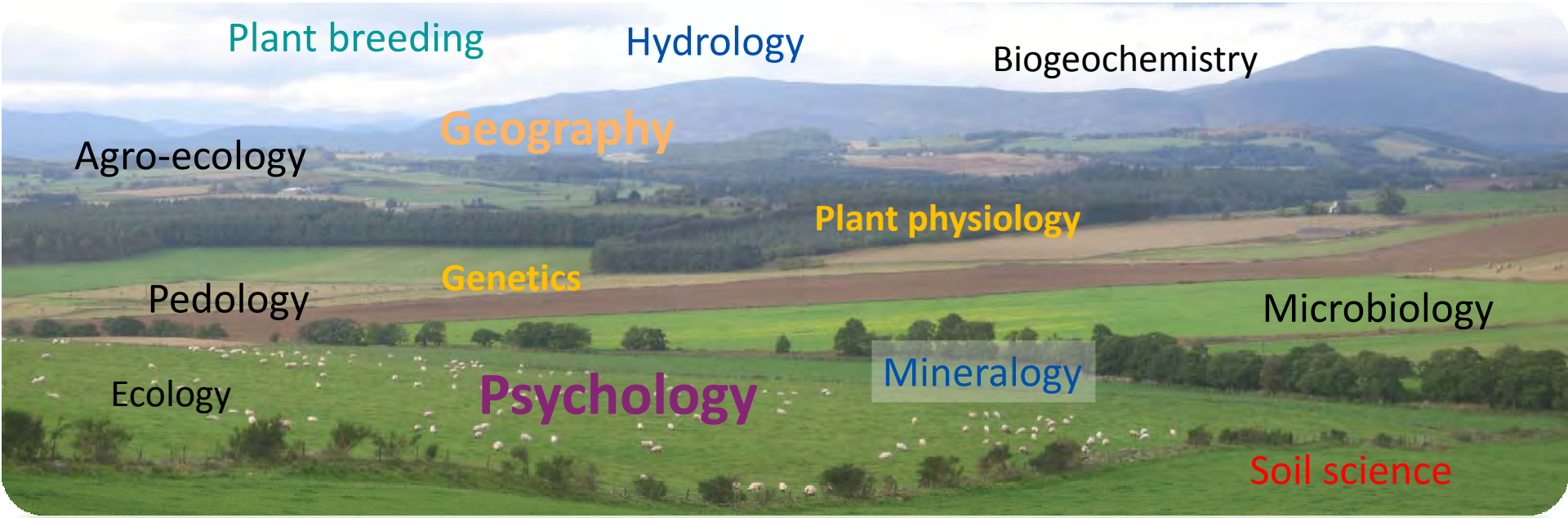


Discipline diversity



Scientific excellence

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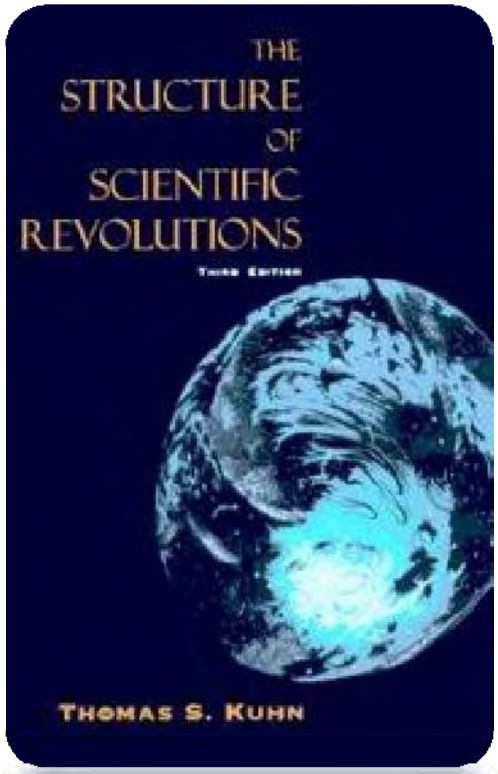
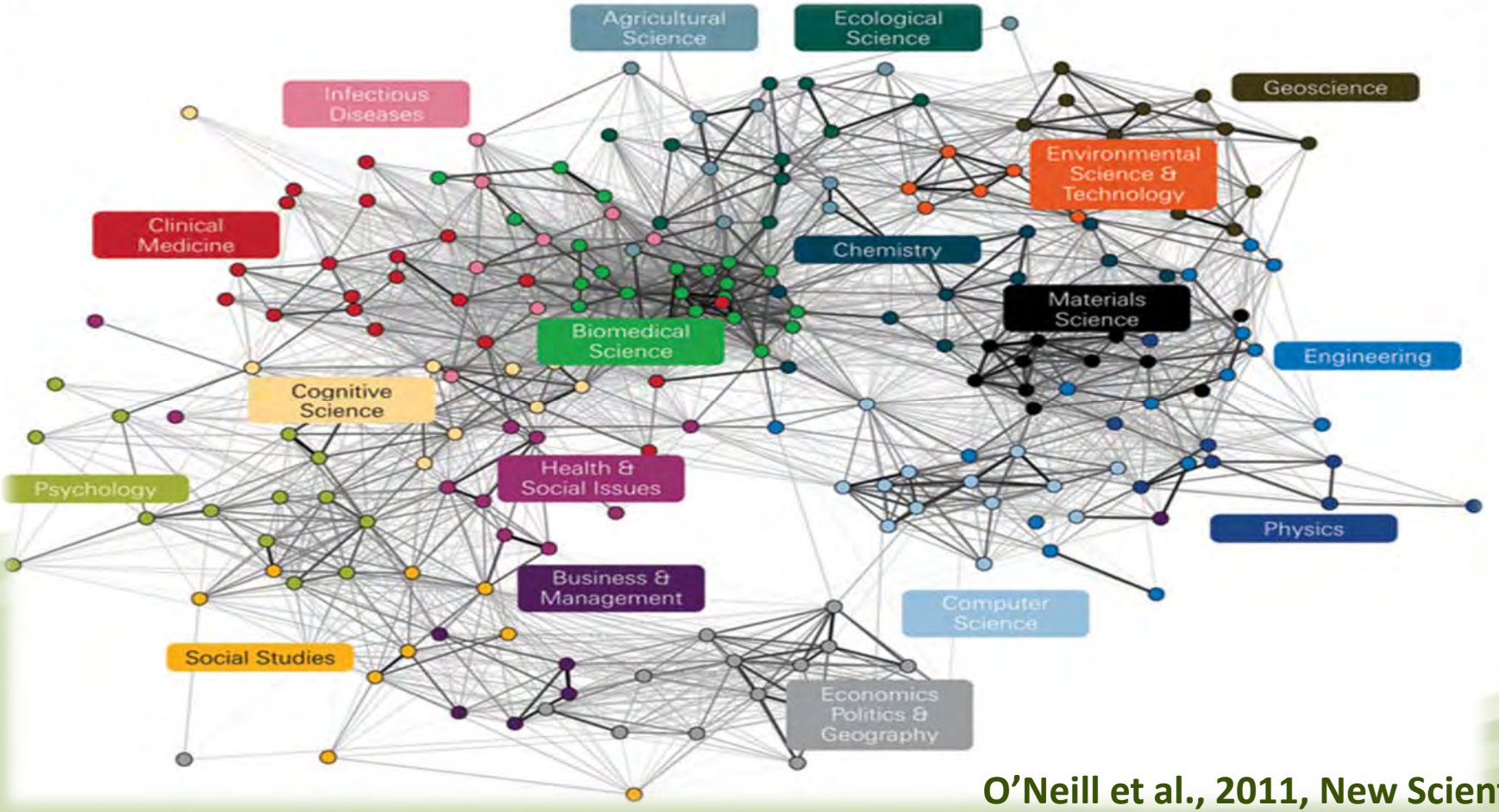
- The way we do science is changing
- Science that transforms what we do often occurs through lateral thinking and making new connections and is not necessarily dependent on linear thinking
- New disciplines are constantly evolving
- Metrics for excellence varies across disciplines



Scientific excellence

- Evolving disciplines and inter-disciplinarity
- Need to recognise and embrace new approaches when necessary



O'Neill et al., 2011, New Scientist

As Director of Science Excellence

- To achieve our aims our science must be
  - Excellent
  - Enabling
- Provide leadership to our science group leaders and with them..
- Motivate, inspire and energise science and the scientists
- Nurture a culture of innovation where we celebrate in-depth science for real world applications
- Work with Director of Research Impact, senior managers and the executive to connect the matrix in a single purpose
- Develop a strategy based on analysis of what we are, where we want to be and how we get there
- Embrace all necessary disciplines and foster shared understanding

Enabling – Using our under-pinning funds

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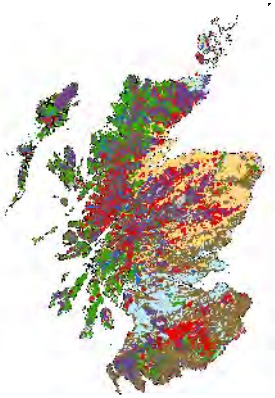
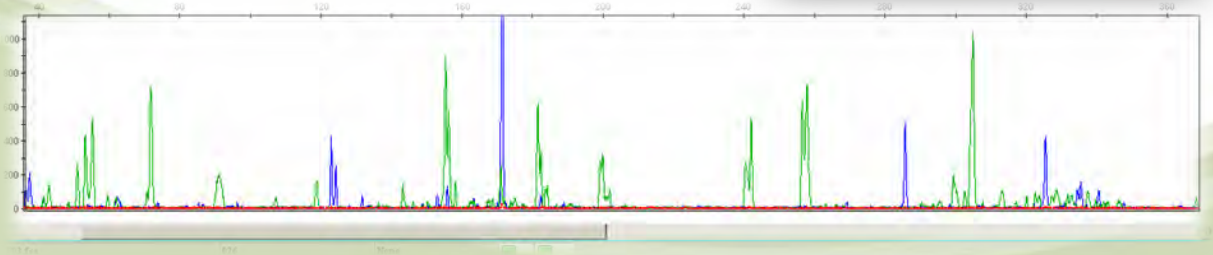
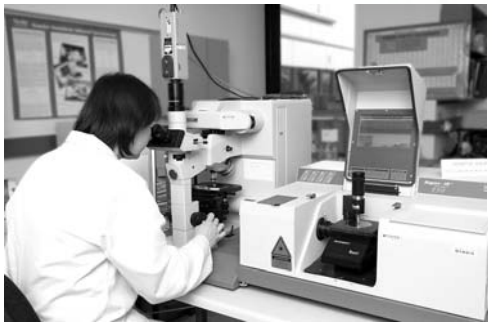


- Long term Datasets
- Scientific collections
  - Seed and germplasm
  - National Soils Archive
- Research Platforms
- Post Grad school – currently 120 PhDs
- Seed corn – explore and test new areas e.g.
  - Eco-genomics
  - Informatics



Scientific resource strategy

- A plan that seeks to evolve the facilities and the staff skills base through investment, mentoring, training and recruitment
- There is a continuous need for renewal in all disciplines to stay at the cutting edge
- Need a systematic analysis of what are new requirements for delivering the matrix
- We already have specific targets
  - bioinformatics, informaticians of other sorts
  - systems analysts, socio-economics



Scientific resource strategy…..

- Need mixed strategy using all available approaches e.g.
  - Competition for new skills by recruitment will not work on its own.
  - Use a mixture of investment in infrastructure, new posts to attract key individuals to build an attractive critical mass coupled to training our own future scientists (PhD recruitment; re-training).
  - We need initiatives and to make a big noise about it

We have achieved much already – we can do even more together in the future