

BioImagingUK Strategy Meeting

A UK Roadmap for Imaging?

Wellcome Trust, Euston Road

July 2-3, 2012



BioImagingUK Strategy Meeting

Organising Committee

- Jason Swedlow (Dundee)
- Paul French (Imperial College)
- Kurt Andersen (Beatson)
- Nick Long (Imperial)
- Tony Gee (Kings)
- Lucy Collinson (LRI/CRUK)
- David Hawkes (UCL)



Special thanks:

Susanna Belfield, Wellcome Trust

Natalie Bayes, RMS

UK Science– World Leading & Growing

World-leading UK research

- £3bn invested p.a. in UK research

2011 BIS Report

- International Comparative Performance of the UK
- “The UK’s share of the world’s top 1% of most highly cited papers, which indicates its share of the highest quality published research, was 13.8% in 2010, 2nd only to the US. “
- “The UK’s field-weighted citation impact, an indicator of quality is 2nd only to and closing in on the US... [w]ithin the UK, its constituent countries reflect the UK’s overall positive trend in field-weighted citation “

UK Science– Biological & Medical Imaging

Major investments in biological & medical imaging

- EPSRC Medical Imaging :
Current Grant Portfolio (2011): £79M
MRC & NIHR: ~ £75M
- Wellcome Trust Brain Imaging:
2% of total funding 1990 – 2009
- EPSRC/CRUK Cancer Imaging:
£50M 2008 – 2013
Cancer Imaging Initiative 2013 - ??
- MRC/BBSRC/Wellcome Trust (2012)
Next Generation Optical Microscopy: £18M
- RCUK Capital Investment Consultation:
in progress

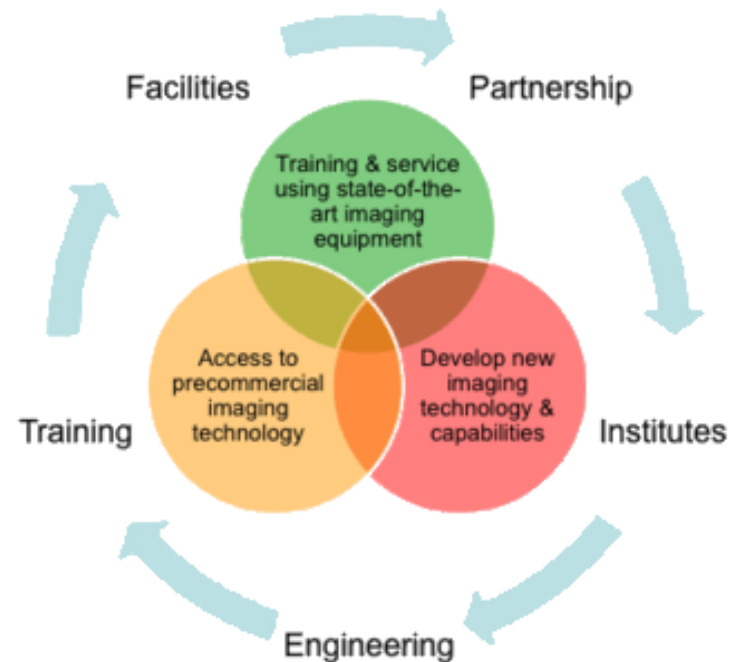
Total investment hard to quantify, so strategic analysis difficult

What is BioImagingUK?

Mission & Scope

Aims & Activities

1. To **develop and exploit new imaging technologies**– driving development of and access to state-of-the-art imaging instrumentation.
2. To devise and help implement mechanisms to enable **shared access to the general and specialized expertise** based in life sciences imaging laboratories and facilities throughout the UK.
3. To engage our departments, universities, and funding bodies to develop **career models for the personnel** that develop, maintain, and enable advanced imaging technology for the life sciences.
4. To define **new training programmes**, to provide the foundation for the next advances in life sciences imaging within the UK.
5. To work inclusively to define short and long-term strategy statements to our research funding bodies, in order to help **articulate funding requirements and priorities**.



<http://bioimaginguk.org> (see *Meetings, Working Groups & Documents*)

Unfunded, grassroots consortium of imaging scientists

Not a true scientific meeting (sorry!)

Imaging for Biological & Medical Research

- depends on *sustainable and usable* technical development, hardware, & expertise
- e.g., Probes, Specimen delivery, Image acquisition, Processing & analysis, Sharing & Publication.

Each requires

- Infrastructure & tools
- Expertise and know-how
- Sustainable implementation and development

Each of these steps requires significant *initial* and *ongoing* investment

Why this Meeting (II)?

Current Success/Future Delivery

Overall Goal: deliver the best, most important, most effective science possible, given the available investment

Technology needed to deliver this science must be the best, most appropriate for the scientific goals & needs.

The status quo (largely) delivers: UK delivers highest research metric/investment

Looking to the Future:

Over the next 10 years, how do we deliver research imaging technology in UK?

- provide necessary infrastructure to underpin world-class science
- keep pace with growing complexity & costs
(equipment, personnel & tech development)

Why this Meeting (III)?

The Questions...

Overall Goal: deliver the best science most important, most effective science possible, given the available investment .

Will the status quo (i.e., response-mode funding and PI-led resources), deliver this goal *over the next 10 years*?

➤ The UK curently achieves highest metric performance per amount spend.

Two Questions:

1. Are there technologies whose performance, utility, etc. wil improve if delivered in a coordinated strategic manner, & thus improve the science they underpin?
2. If there are *any at all*:
 - Can we identify them?
 - Can we agree that the UK scientific community (scientists, funders, institutions) should define a national imaging roadmap and strategy to define and address their funding, provision, delivery & sustainability.

Why this Meeting (IV)?

Some answers...

Overall Goal: deliver the best science most important, most effective science possible, given the available investment .

Over the next 10 years, how do we deliver imaging technology to UK scientists?

Do we:

- Continue Response-mode, PI-led resources (status quo)?
- Develop distributed networks of facilities, know-how, usage?
- Build Regional or National centres?
- Use resources in other countries?

Monday AM:

- Current Status and Future Directions
- UK Funding Update
- Pose the Questions
- Update on Euro-Biomedicine

Monday PM:

- Breakouts– expert opinion and vision of the future
- Summaries

Tuesday AM:

- Summaries
- Strategy for development of a UK Biomedicine Strategic Roadmap

- Electron Microscopy
 - SEM, Electron tomography, cryoEM, CLEM
 - Chairs: Lucy Collinson, Paul Verkade
- Light microscopy (cell biology)
 - Super resolution, high throughput, intravital
 - Chairs: Peter O'Toole, Mike White
- (Preclinical) Imaging disease models (zebrafish-mice-primates)
 - Optical (SPIM/OPT) MR, CT, PET
 - Chairs: Erik Sahai, Luc Bidaut
- Clinical imaging
 - CT, MR, US, PET/SPECT, Optical
 - Chairs: David Hawkes, Daniel Ruckert, Vicky Goh

- Careers
 - Imaging fellowships, permanent posts for multiple project
 - Chair: Martin Spitaler
- Training for users
 - Providers, Users, Developers
 - Chair: Alex Laude, Julian Downward
- Access to imaging capabilities
 - Chair: Dave Clarke, Banafshe Larijani
- Probes and sample preparation
 - Chair: Nick Long, Tony Gee
- Software and data
 - Chair: Julia Schnabel, Richard Baldock