Summary of the BioImagingUK meeting at mmc2023 in Manchester Central, 3 July 2023

The following is a brief overview of the talks. The speaker's slides are also available to view and download.

Georgina Fletcher – BioImagingUK Project Officer

The various BioImagingUK network aims were presented, with co-funding for the network from the RMS and UKRI-BBSRC running until April 2024.The pilot UK Node of Euro-BioImaging is now operational with 7 sites covering LM, EM, correlative, multimodal and high throughput imaging techniques and expertise, training and support. More info here: https://www.eurobioimaging.eu/nodes/uk-node

The second round of Business Interaction Vouchers were presented; in 2021-2022, 14 awards (4 original BIV and 10 PoC BIVs) were awarded totalling an overall sum of £306K from UKRI with £308,249 donated in-kind from industrial partners. https://www.rms.org.uk/community/networks-affiliates/bioimaginguk-network/bioimaginguk-business-interaction-vouchers-scheme.html

The RMS-BioImagingUK Application Coaching and Personal Mentoring Pilot Scheme was extended owing to successful feedback from the first cohort of pairings. Applications are open until 31 August 2023 and can be made over the RMS website www.rms.org.uk/mentoring

A new Technical Specialist Job Shadowing Scheme was announced, thanks to funding from the Technician Commitment. This scheme aims to provide scientists on an academic track with the opportunity to visit an imaging or flow cytometry core facility for up to 1 week. Applications are open until 31 August 2023 and can be made over the RMS website www.rms.org/opportunities/job-shadowing

The Hidden REF team will run a free one-day event in Bristol on the 21st September called the Festival of Hidden REF, which will bring together people who work in non-traditional research roles alongside policymakers, publishers and others involved in the research assessment. The aim is to improve research assessment, recognition and celebration in readiness for the Hidden REF competition in 2024 and the REF2028.

Adam Staines – Infrastructure and cross-council partnerships at UKRI-MRC

UKRI overarching strategy, budget and funding opportunities were presented. From an annual total budget of £8 billion approximately £1 billion is allocated to infrastructure - £160 million in the Infrastructure Fund and £43 million in the Digital Research Infrastructure Programme. The MRC annual equipment call, which spent £13 million + on bioimaging in 2022 call, will launch after summer. Horizon Europe association negotiations are ongoing. Currently, plan B is a fund called "Pioneer" For more details, please see the slides.

Philip Hubbard – Transformative Technologies at UKRI-BBSRC

Big picture strategy and how bioimaging fits into this. The Review of Technology Development Recommendations put forward seven high-level draft recommendations by a dedicated expert Task and Finish Group (funding, peer review, skills and training, culture change, RTPs, terminology and support landscape). Funding opportunities were presented: Transformative Research Technologies (TRT) remit linked to this community. Microscopy development for bioscience research will likely be a common area in the applications that come through, as it has been in previous TRDFs. Open sharing of technology developments is highlighted in the review and has been incorporated into TRT. With the new TFS assessment criteria, open sharing of technology developments will be assessed as part of responsible research considerations, so it will have influence on the final score and hopefully bring more incentive to demonstrate best practice in open science. Close on 5 October 2023.
BBSRC Responsive mode: The new Responsive Mode Spotlight mechanism will initially be introduced on a pilot basis and subject to review. Simpler, more agile and dynamic targeting of particular areas of timely strategic interest, opportunity or need, expected to be in place for around 3 rounds. Funding of up to £2 million is available for up to five years for:

- research projects, including technology development projects
- equipment or use of existing facilities
- new facilities or infrastructure
- research networks and coordination
- summer schools

You can apply to undertake biotechnology or biological research in:

- plants
- microbes
- animals (including humans)
- tools and technology underpinning biological research.
- Investigations within and across scales are supported, from molecules and cells, to tissues, whole organisms, populations and landscapes.

Three deadlines per year, next one is 27 Sept 2023.

Also presented were Cross-UKRI Responsive Mode Pilot and UKRI Basic Technologies Call 2022, ALERT: Mid-Range Equipment Call.

Switch over from Je-S to TFS: Any funding calls with decision being made past October 2023 are now on The Funding Service (TFS) by default. Streamlining the application process across councils by simplifying and standardising the questions it asks researchers to explain their ideas. TFS will use a more intuitive digital question and answer format, making it easier for you to explain your idea, and easier for assessors to review it. Central to this format is the 'core question set', which is a set of questions intended to be generic enough to apply to all councils and nearly all funding opportunity types. https://www.ukri.org/apply-for-funding/improving-your-fundingexperience/using-the-new-ukri-funding-service-for-applicants
From January 2024, all council opportunities will be launched and managed in TFS. In 2023, opportunities will still run in Je-S while simultaneously running increasing numbers of opportunities on TFS.

Luigi Martino, Senior Research Manager at Wellcome Trust (WT)

Brief overview of research programmes at WT before focusing on the Discovery stream with its open-mode, directed and underpinning activities. Some of the findings from the Technolopolis-coordinated WT Landscape review of barrier affecting progress in the field of bioimaging were

presented – with full publication coming later in the year. Finally, 2 new schemes were shown, one aimed at LMICs and another aimed at bridging the gap between tech users and tech developers.

Marjan Famili, Research Associate at The Turing Institute

The Turing Institute is the UK's national institute for data science and artificial intelligence. Marjan is in Alan Lowe's group which develops and uses Scivision - a webapp and a Python package for discovering, and using pre-trained computer vision models and image datasets from science and the humanities. These models and datasets are available in a catalog, which researchers working in diverse fields have contributed to. More details on 3 software packages were given (also see slides for more detail).

- Grace can identify patterns in imaging data. The package provides a method to find connected objects & regions of interest in images by constructing graph-like representation.
- btrack perfoms cell tracking on time-lapse microscopy data.
- Affinity-VAE performs disentanglement, clustering and classification of objects in multidimensional image data.

For details of how to sign up to Living Systems Interest group or Scivision updates, please see slides.

Peter O'Toole, Technical Specialist Network

New network funded by MI Talent to bring together technical specialists across the UK. A recent meeting in Edinburgh had 150 attendees from 50 institutions and featured talks on topics such as open science, finance and funding models and career development. The next meeting will be in Bath on 16-17th April 2024. https://www.mitalent.ac.uk/TSN

Tim Self, Midlands Open Bioimaging

Coalition of several universities in the midlands to develop a joined-up asset and test innovative solutions to enable remote training and access to advanced microscopy. £1.1M "capital" funding by the BBSRC to:

- Upgrade equipment, software and IT infrastructure at 4 Institutions
- Build new experimental system for fully automated advanced microscopy (UoB)
- Support and promote remote training and access
- Identify challenges and opportunities for future development

Progress to date:

- Experimental system for fully automated advanced microscopy has been built at Birmingham and is undergoing initiation testing
- Upgrades to existing microscopes and purchase of upright LM, interactive screen, webcams, Teamviewer at Leicester, Nottingham, Warwick
- Joint initiatives for image analysis training, co-ordinating training across 4 core facilities
- Joint seminar series (remote and in-person)
- Remote access and control of instrumentation working well e.g. commercial

More details here https://midlandsinnovation.org.uk/midlands-open-bioimaging

Maria Harkiolaki, Beamline 24 at Diamond on Correlative Light and X-ray Tomography

B24 is a correlative cryo-imaging beamline offering 3D imaging with soft X-ray tomography (cryoSXT) complemented by super resolution fluorescence structured illumination microscopy (cryoSIM). All associated sample preparation and evaluation as well as post-data collection processing are also available at the beamline. Workflows, examples of research questions and access mechanisms were all presented in this talk.

https://www.diamond.ac.uk/Instruments/Biological-Cryo-Imaging/B24.html

Johanna Bischoff, EuroBioImaging (EuBI)

Overview presented of EuBI technology portfolio, EU funding mechanisms such as isidor (infection), canserv (cancer) and agroserv (agro-ecology), as well as image data services such as data stewards assisting with creating FAIR data and EU calls for projects to utilise AI with expert support. The virtual pub seminar series on Fri at noon UK time and various expert groups were highlighted and free and open for all to join!

Carole Goble, Joint head Elixir-UK on UK Data Research Infrastructures

An overview of UK bioscience and related data research infrastructures such as:
Archer2 – UKRI's national supercomputer;
Climb Big Data - cloud Infrastructure for big data microbial bioinformatics;
HDRUK - National institute for health data science - large-scale data and advanced analytics;
DARE UK - programme funded by UK Research and Innovation (UKRI) to design and deliver coordinated and trustworthy national data research infrastructure to support cross-domain research for public good;
BioFAIR, was presented in more detail – a community-led virtual infrastructure to enhance the sharing, management, reuse of life sciences data and address fragmented, patchy, DIY data management and data analysis, supporting UK researchers, data stewards and DRI providers with a national capability;

Common themes for all collaborative commons include aggregating data generated from different sources, making data and software FAIR, integrating researcher data with reference data, exploiting the accumulation of data to enable data analytics and Machine Learning/AI and more. An UKRI DRI club has been formed to bring together everyone who is interested in applying to the DRI fund, everyone is welcome to join (see slides for info).
ELIXIR-UK is a node of ELIXIR the European Research Infrastructure for Life Science Data. Their work around research data management, knowledge and collaboration with other data infrastructures (eg. TRE-fx) was summarised.
The first Conference on Research Data Infrastructure (CoRDI) is happening in Germany from 12th to 14th September 2023 https://indico.scc.kit.edu/event/3453