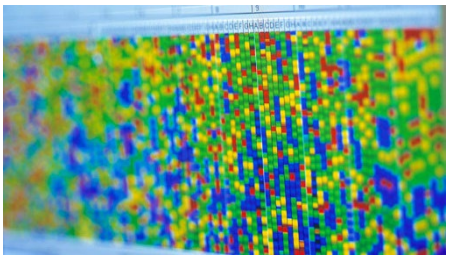
MANCHESTER 1824
The University of Manchester

Integrated Genomics 2024 Showcase

21st October 2024

10am - 2pm

Michael Smith Lecture theatre and lounge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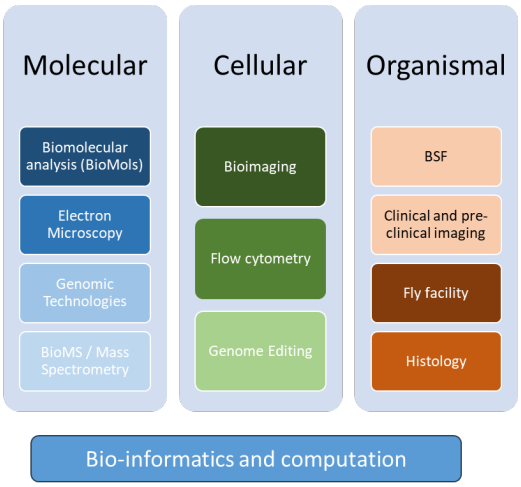
FBMH Technology Platforms and thematic groups

Our technology platforms allow the interrogation of biology and disease from molecular interactions to whole organisms.

The breadth and quality of technical applications available in Manchester is key to our success. They help attract researchers from across the globe.

The scale and power of Manchester's research environment enables us to apply diverse analytical approaches in combination to maximise the insight gained from our discoveries.

The Technology Platforms in the Faculty of Biology, Medicine and Health (FBMH) encompass the Biological Services Facility (BSF), pre-clinical and clinical imaging, and the small research Core Facilities. There are nine small research core facilities: Bio-imaging and Histology, Biomolecular analysis, Biological mass spectrometry, Electron microscopy, Flow cytometry, Genomics Technologies, Genome Editing Unit and the Fly Facility. A bio-informatics facility provides support across these platforms. More information on our technology platforms can be found here.



To enable interdisciplinary research which cuts across the different platforms, three thematic groups have been created to develop cross cutting pipelines. These groups are:

Imaging across scales:

Academic Lead Martin Lowe, Technology Lead: Rich Collins

Protein and Metabolite Analysis:

Academic Lead Sam Butterworth, Technology Leads: Tom Jowitt and Gareth Howell

Integrated genomics:

Academic Lead Matthew Hepworth Technology lead: Andy Hayes

Integrated Genomics

As part of the Technology Platforms thematic Group showcase series, the Integrated Genomics 2024 showcase is on the 21st of October (10am – 2pm) in the Michael Smith Lecture Theatre.

Come and find out how the Integrated Genomics group can support your research with:

1. the latest technological and methodological offerings available to support different types of genomics-focussed research within the Technology Platforms (the perfect opportunity for new PhD students to find out what support is available!),
2. case studies highlighting the interdisciplinary work undertaken in an integrated manner by the technology Platforms within the Integrated genomics theme and
3. what support vendors can offer the users of the equipment within the Technology Platforms (and their latest tech offerings!)

There will be a poster session over the lunch break, please vote for your favourite poster using the QR code below – best poster winds a prize!

Vote for your favourite poster

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Agenda

Session 1: Using the core facilities within integrated genomics **Chair: Matt Hepworth**		
10.00am -10.05am	Introduction	Matt Hepworth
10.05am -10.25am	Integrated genomics and GTCF	Andy Hayes
10.25am – 10.35am	Bioimaging Facility - How the facility is supporting workflows through integrated genomics. What's possible and what's to come	Peter March
10.35am – 10.45am	BioMS Core facility	David Knight
10.45am – 10.55am	Flow Cytometry	Gareth Howell
10.55am – 11.05am	Genome Editing Unit: Bridging Disciplines to Advance Genomics Research	Amanda McGovern

Session 2: Case Studies **Chair: Leo Zeef**		
11.05am -11.25am	Characterising Cell Populations via Multi-modal Integration of Imaging Mass Cytometry and Transcriptomics	Mike Haley
11.25am -11.45am	Gain new insights into Biology with 10X Genomics	10x Genomics – Stephen Hague
11.45am – 12.05pm	Multi-modal data analysis @ BCF	Syed Baker
12.05pm – 12.25pm	Oxford Nanopore – Driving Discoveries in Rare Disease and Cancer Research	Oxford Nanopore - Rosie Ashton

Lunch and posters	
12.25pm – 12.55pm	Lunch and Posters Trade stands from 10x, Vizgen and Oxford Nanopore including trade stand display from BSF

Session 3: **Chair: Andy Hayes**		
12.55pm -1.15pm	Investigating Hepatocellular Carcinoma development using spatial transcriptomics and snRNA/ATAC-seq	Elliot Jokl
1.15pm -1.35pm	Deep Dive into Spatial Biology with MERFISH Technology and the MERSCOPE Ultra™ Platform	Vizgen
1.35pm – 1.55pm	Combining PARP14 Inhibition with α-PD-1 Therapy Enhances Quiescence of Cytotoxic T Cells and Modulates Macrophage Polarisation in ICBT-Resistant Melanoma	Rotem Sami-Leshem
1.55pm – 2.00pm	Closing remarks and poster prize	Matt Hepworth

Vendors:

10x genomics:

We deliver powerful, reliable tools that fuel scientific discoveries and drive exponential progress to master biology to advance human health. Cited in more than 7,000 research papers, our innovative single cell, spatial, and in situ technologies enable discoveries across oncology, immunology, neuroscience, and more. Our talented, dedicated science professionals have a distinguished record of creating innovative instruments, reagents, and software that analyze biological systems at a resolution that matches the complexity of biology

https://www.10xgenomics.com/

Vizgen:

At Vizgen, we're at the forefront of spatial genomics, revolutionizing our understanding of biological systems. Our cutting-edge technology reveals genetic patterns in unprecedented detail, directly enhancing your ability to explore the connections between health and disease. With our user-friendly spatial imaging platform, you gain access to transformative insights, decoding the complexities of cellular behavior to pioneer advancements in human health.

https://vizgen.com/

Oxford Nanopore Technologies:

Oxford Nanopore has developed a new generation of DNA/RNA sequencing technology. It is the only sequencing technology that offers real-time analysis (for rapid insights), in fully scalable formats from pocket to population scale, that can analyse native DNA or RNA and sequence any length of fragment to achieve short to ultra-long read lengths.

Small formats such as Flongle address the need for on-demand, rapid, smaller tests or experiments, and can be used in labs or in the field. The pocket-sized MinION is a powerful and portable sequencing device that can deliver high volumes of long read sequence data. The benchtop GridION can run up to five MinION Flow Cells at a time, on-demand, for larger genomics projects. PromethION is the largest format for nanopore sequencing, designed to offer on-demand use of up to 48 Flow Cells - capable of delivering more than 10 Tb of sequence data in a full run, and is now being

used in population-scale sequencing projects. The palm sized PromethION 2 makes high-output nanopore sequencing broadly accessible

To make the technology suitable for any user, we focus on increasing ease of use and automation. Nanopore sequencing offers easy and rapid preparation, including a ten minute library preparation kit. We also provide a range of analysis workflows.

https://nanoporetech.com/

Posters:

1. Bioimaging Facility-**Peter March**
2. The Genome Editing Unit-**Amanda McGovern**
3. Flow Cytometry Core Facility-**Gareth Howell**
4. Multiparameter imaging and cytometry – mass cytometry services at the University of Manchester-**David Chapman**
5. Proteomics in BioMS- **Stacey Warwood**
6. Metabolomics and Lipidomics in BioMS-**George Taylor**
7. How to cost bio-informatics into your grant- **Leo Zeef / Ian Donaldson / I-Hsuan Lin**
8. Manchester Fly Facility: Integrated genomics in a versatile & highly efficient model organism **– Sanjai Patel**
9. Ensuring the precise flow of genomic data from clinic to journal to database-**Peter Freeman**
10. Predicting Pathway Expression from Histopathology Images Using Deep Learning-**Muhammad Ahtazaz Ahsan**
11. End-to-end workflow for haplotype-resolved genetic and epigenetic variant calling using nanopore sequencing- **Dan Dancer and James Stevens – Oxford Nanopore Technologies**
12. Whole-transcriptome spatial profiling with single cell scale resolution of FFPE tissues using Visium HD – **Stephen Hague and James Williams – 10x Genomics**
13. Intellectual property: it's not just about patents -**Chris Smith, UMIF**
14. Genomic Technologies Core Facility - **Andy Hayes, Stacey Holden, Michal Smiga, Claire Morrisroe, Bharat Rash, Beverley Anderson, Andrew Sharrocks**

Contacts

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