Welcome to the Newsletter for the Faculty of Medical Sciences Scientific Facilities

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The excellent response to the recent survey of academics about developments in the Faculty’s Core Facilities has enabled a number of important investment decisions.

The three most important are:

- The **Genomics Core Facility**, launched last academic year, has been a huge success, and we have now invested in an **Illumina NovaSeq**, which will allow users to perform high throughput exome, transcriptome and whole genome sequencing. The machine has arrived, and is expected to be commissioned and available for use by Christmas.

  Further details are available from Jon Coxhead: jonathan.coxhead@ncl.ac.uk

- Detailed business planning is underway to set up a new **disease phenotyping facility**, which will include offering a CRISPR-cas9-based mouse transgenic service. Further details to follow!

- A new **Seahorse metabolic analyser service** is now offered and supported by the **Flow Cytometry Core Facility** (FCCF) across multiple sites (iCFL, Medical school and CAV). The FCCF will also have the capabilities to perform highly multiplexed imaging (>30) on tissue sections with the introduction of the “**Hyperion**” Imaging **Mass Cytometry module** to the existing Helios CyTOF system. This is also expected to be up and running by the end of the year.

  Further details are available from Andy Filby: andrew.filby@ncl.ac.uk

There are a number of other Facility equipment bids in progress - watch this space for further news!
Excellent news from the Newcastle Cellular Therapies Facility, which is part of a successful Horizon 2020 consortium bid!

**TRACE**-Transfer of multivirus-specific T cells following transplantation is coordinated by Ludwig Maximilians University’s Professor Tobias Feuchtinger, and includes Miltenyi Biotec and Newcastle University’s Dr Andy Gennery and Professor Anne Dickinson.

While cellular immunotherapy is considered to be a major recent breakthrough, cellular treatment approaches are yet to become standard. This is due to the lack of controlled, prospective clinical trials investigating efficacy of immunotherapy. The consortium will lead the first ever internationally academically-driven trial in the field of adoptive transfer of virus specific T cells (against three viruses: Cytomegalovirus, Epstein Barr virus and Adenovirus), which cause life-threatening complications in patients undergoing allogeneic hematopoietic stem cell transplantation.

The project will run for five years, with Newcastle as both a **manufacturing site** for the anti-viral T cells (through Newcastle Cellular Therapies Facility) as well as a **clinical site** for treatment of paediatric and adult patients (through Newcastle upon Tyne Hospitals).

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Read the latest paper from the Flow Cytometry Core Facility (FCCF), in collaboration with the Broad Institute, Boston USA and the Helmholtz Zentrum, Munich, Germany:

**Reconstructing cell cycle and disease progression using deep learning**

This collaborative work specifically uses an advanced analytical approach called “Deep Learning” to analyse Image Cytometry data sets to specifically reconstructs the trajectory of single cells along a cell cycle and disease progression. In terms of cell cycle analysis, the neural network can “learn” to classify cells in to all 7 major cell cycle stages (G1, S, G2, Prophase, Metaphase, Anaphase and Telophase) based on label-free bright field imagery avoiding the need to stain cells with fluorescent DNA-binding dyes. Moreover it can analyse images from retinal scans and classify the degree of retinopathy.

The work was published recently in Nature Communications and already has an Altmetric score of 84 showing that it is having significant impact within the wider scientific community.

[http://www.nature.com/articles/s41467-017-00623-3](http://www.nature.com/articles/s41467-017-00623-3)
The FCCF are also happy to announce that our first Mres student, Emma Ladlow, who was also co-supervised by Dr Louise Michaelis (NUTH), has achieved a distinction in her project. We would like to congratulate Emma for her success and hard work.

Seahorse XF Analyzer Workshop

Measuring Metabolic Engines and Fuels with the Agilent Seahorse XF Analyzer

09.45 - 16.30, Friday 20 October 2017
Centre for Life, Biomedicine West Wing, Newcastle University

Presented by Nick Howe from Seahorse Bioscience, a part of Agilent, and Dr Andy Filby and Dr Satomi Miwa from the Flow Cytometry Core Facility.

Free to attend - for full event details and to RSVP, please contact: fccf@newcastle.ac.uk

www.ncl.ac.uk/medicalsciences/research/facilities/
North East Postgraduate Conference

30 October 2017
Newcastle Civic Centre

The NEPG is the UK’s largest annual postgraduate conference for medical bioscientists.

Look out for Dr Simon Cockell, Facility Manager for the Bioinformatics Support Unit, who will be speaking on behalf of the University’s Core Facilities!

Find out more on the conference website (ne-pg.co.uk).

Research Facilities & You

08.45 - 12.45, Tuesday 20 March 2018
Baddiley Clark Seminar Room

We warmly welcome researchers from across the University to join the FMS Core Facility Managers at a half-day event, with presentations from each of the Facility Managers followed by plenty of time for further discussions over lunch.

Register your attendance and view the programme on the event website.

https://conferences.ncl.ac.uk/facilities2017/
Preparations for the next annual Scientific Facilities Conference are well under way!

Practicalities of ‘Omics will be based around the following Core Facilities:

- Proteomics (NUPPA)
- Genomics
- Bioinformatics
- High Throughput Screening

Registration is now open, and the draft programme will be published shortly.

Please visit the conference website for the latest updates.

https://conferences.ncl.ac.uk/practicalities2018/

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