



**QUEEN'S
UNIVERSITY
BELFAST**

**PRECISION MEDICINE
CENTRE OF EXCELLENCE**

SERVICES AND EQUIPMENT

The Precision Medicine Centre of Excellence at Queen's University Belfast offers high-throughput genomics, digital pathology and big data analytics in a fully integrated fashion.

The key services available are listed here.

GENOMICS

MAIN ASSAYS OFFERED

- DNA extraction, purification and QC
- Whole Genome Sequencing
- Shallow whole genome sequencing
- Exome Sequencing
- Hybrid capture panels (multiple panels available)
- Droplet digital PCR

Sample types:

- Whole blood
- Plasma/serum
- FFPE material
- Fresh frozen tissue
- DNA

KEY EQUIPMENT



BioMek i7 Liquid Handler

- Automated Sample Prep
- Can perform multiple sample prep methods
- Highly reproducible results
- Limited interaction required
- Can be run 24 hours a day
- Hundreds of samples can be prepared per run



Agilent 4200 TapeStation

- Allows QC of 96 samples per run
- Provides quantification and sizing information
- Easy load and limited set up required



Droplet Digital PCR, QX200 with AutoDG

- Allows extremely sensitive detection of variants
- Up to 96 samples per run
- Limited hands on time required
- Automated droplet generation yields highly reproducible results



NovaSeq 6000

- NovaSeq provides high throughput sequencing
- Highly flexible sequencing outputs, from 65 Gb to 6000 Gb of data per run
- At full capacity, each NovaSeq run can sequence 48 whole human genomes or 500 human exomes
- Can perform multiple runs per week
- 50x more output than the NextSeq 500
- Vastly reduces per sample sequencing costs
- NextSeq 500 also available for smaller sequencing runs
- MiSeq available for QC runs of sequencing library pools

TISSUE HYBRIDISATION AND DIGITAL PATHOLOGY

MAIN ASSAYS OFFERED

- Single and multiplexing biomarker Immunohistochemistry, fluorescence and chromogenic (DDISH)
- In situ hybridisation, fluorescence and chromogenic (RNAScope)
- Antibody technical validation
- Microtomy, Haematoxylin and Eosin staining service

- Digital and glass Pathology review/annotation for TMA bespoke design, mapping and construction
- Full spectrum digital analysis capability; choice of image analysis programs and algorithms

Sample types:

- Formalin Fixed Paraffin Embedded (FFPE) blocks and sections

KEY EQUIPMENT AND SOFTWARE



Roche/Ventana Ultra

Fully automated Immunohistochemistry and In situ Hybridisation platform

Bond Rx

Fully automated Immunohistochemistry and In situ Hybridisation platform



3D Histech Grandmaster

Allows Core size options: 0.06 mm, 1 mm, 1.5 mm and 2 mm with up to 558 cores per TMA, depending on core size

Aperio AT2 Scanning

Up 400 slide loading capacity for scanning of glass microscope slides x20 and x40

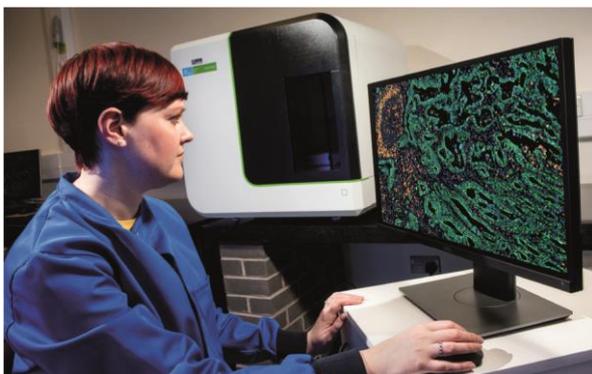


Phenolmager HT, Multispectral imaging

Continuous scan loading capacity
Scans at x10-x40 brightfield and fluorescence
Up to nine, unmixed colour capture

Analysis and IMS

Project oriented image analysis with a choice of programs and algorithms available
QuPath
Visiopharm



BIOINFORMATICS

KEY SERVICES OFFERED



Supporting the Genomics and Tissue Hybridisation and Digital Pathology groups, the Bioinformatics team provide two main services:

- Custom-tailored genomic data analysis beyond the predefined analysis offered by the data-generating platforms at the Precision Medicine Centre
- Computational infrastructure on HPC including data management and genomic data analysis tools for the clinical genomic diagnostics and research.



Precision Medicine Centre (PMC) is a co-investment from *Invest Northern Ireland*, *Queen's University Belfast* and the *Health and Social Care Research and Development Division of the Public Health Agency*.

Precision Medicine Centre of Excellence

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