



**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:

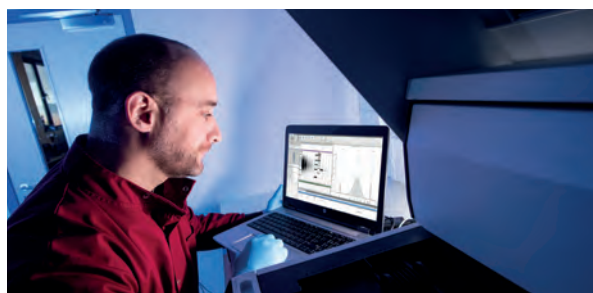
- Whole blood
- Plasma/serum
- FFPE material
- Fresh frozen tissue
- DNA

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



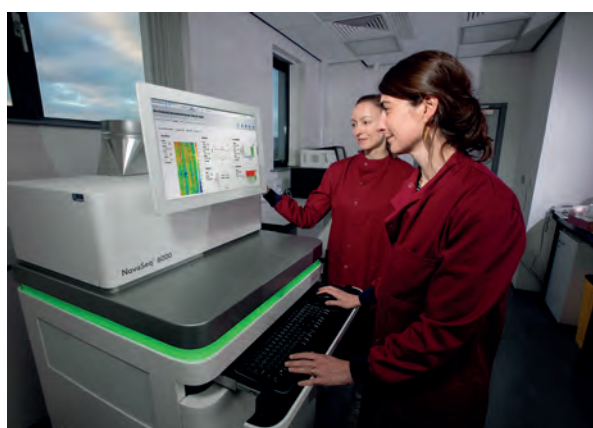
Agilent 4200 TapeStation

- 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

For details of Genomics services contact:

Dr Louise Harewood at l.harewood@qub.ac.uk or Dr Manisha Maurya at m.maurya@qub.ac.uk

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

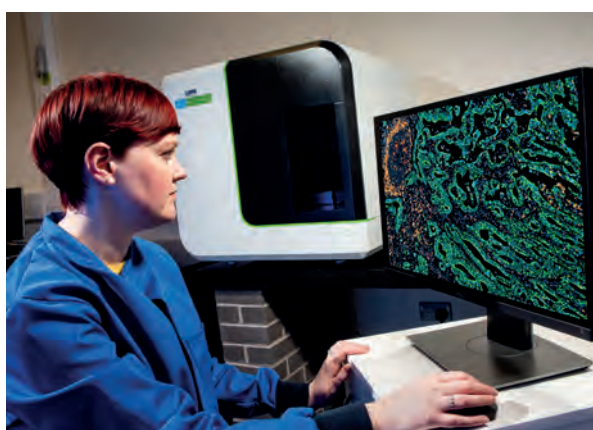
Aperio AT2 Scanning

- Up 400 slide loading capacity for scanning of glass microscope slides x20 and x40
- Philips UFS (PathLAKE)
- Roche DP200 (Validation purposes)



Polaris, Multichannel Fluorescence

- 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
- Definiens
- Visiopharm
- Halo (RUO)
- U-Path
- Philips Intellisite
- Philips XPlore
- Philips TissueMark
- Philips Analytic Suite

For details of Tissue Hybridisation and Digital Pathology services contact:

Dr Matt Humphries at m.humphries@qub.ac.uk or Dr Perry Maxwell at p.maxwell@qub.ac.uk

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 Microsoft Azure Cloud including data management and genomic data analysis tools for the clinical genomic diagnostics and research.

For details of Bioinformatics services contact:

Dr Shambhavi Srivastava at s.srivastava@qub.ac.uk



Precision Medicine Centre (PMC)

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Precision Medicine Centre of Excellence

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