
QUEEN'S UNIVERSITY BELFAST
SCHOOL OF MEDICINE, DENTISTRY AND BIOMEDICAL SCIENCES
SHAPING THE FUTURE OF PRECISION MEDICINE
MSc/ PgDip/ PgCert
MOLECULAR PATHOLOGY OF CANCER

Entrance Requirements
MSc / Pg Dip - Normally a 2.1 Honours degree or equivalent qualification acceptable to the University in a relevant biological subject or Professional qualification (eg. MBBS / BDS . BVSc) or experience will be considered on an individual basis. Intercalating students are encouraged, see online Course Finder for more details. Applicants may be required to undertake an interview. MSc course duration - 1 year Full-time (3 years part time)

Pg Cert – a minimum of a 2.2 Honours degree or an equivalent qualification acceptable to the University in a relevant biological subject

Additional Information for International Students
International students wishing to apply to Queen's University Belfast (and for whom English is not their first language), must be able to demonstrate their proficiency in English in order to benefit fully from their course of study or research. Non- EEA nationals must also satisfy UK Visas and Immigration (UKVI) immigration requirements for English language for visa purposes.

Evidence of an IELTS* score of 6.5, with no less than 6.0 in any component, or an equivalent qualification acceptable to the University is required.

*Taken within the last 2 years.

For more information on English Language requirements for EEA and non-EEA nationals see: **go.qub.ac.uk/EnglishLanguageReqs**

If you need to improve your English language skills before your study, our partner INTO Queen's University Belfast offers a range of English language courses.

Duration
1 year full-time

Fees and Funding
Four competitive bursaries are available to cover fees and stipend/salary through funding from the Cancer Research UK Accelerator Network Programme in Digital Molecular Pathology.
Visit: **go.qub.ac.uk/MPFunding** for more details.

For additional information on funding opportunities visit the International and Postgraduate Student Centre go.qub.ac.uk/postgradfunding. For up-to-date information on postgraduate taught tuition fees refer to go.qub.ac.uk/tuitionfees.

Assessment
Continuous assessment of coursework, examinations, and assessment of modules based solely on submitted work related to private individual study.

Contact Us
askmhls@qub.ac.uk

Find out more
www.qub.ac.uk

MSc/ PgDip/ PgCert

MOLECULAR PATHOLOGY OF CANCER

Overview

Molecular Pathology is at the heart of delivering precision or personalised medicine. It is having a major impact on modern medicine, revolutionising how we diagnose and treat our patients. Molecular pathology integrates genomics, digital imaging and bioinformatics with modern pathology approaches to underpin molecular diagnostics, theranostics and clinical trials delivery within medical research, health services and industry.

This MSc programme at Queen's University includes traditional and distance learning (DL) approaches to provide maximum flexibility. It focuses on innovation and entrepreneurship, addressing the ethos of Genomic Medicine in the 21st century. The course is focussed on the analysis of cancer using key technologies including high-throughput genomics (Next Generation Sequencing) and artificial intelligence (Digital Pathology).

Study Options:

- MSc in Molecular Pathology of Cancer
  Completion of all taught components (semesters 1&2) and research project.
- PG Diploma in Molecular Pathology of Cancer
  Completion of all taught components (Semester 1&2)
- PG Certificate in Molecular Pathology of Cancer
  Completion of taught components in semester 1
- PG Certificate in Pathology Informatics and Business Application
  Completion of taught components in semester 2 – Distance Learning

Course Content

Semester 1
In Semester 1 students receive 'face to face' traditional timetabled teaching for the three modules. The student experience is enhanced as some of the classes are shared with other PG programmes, providing students with opportunity to interact with other students.

Cancer Biology / Immunology and Genomics
The main objective of this module is to develop students who will have acquired the knowledge and skills to understand basic cancer biology, cancer genomics, cancer immunology and cancer molecular epidemiology as they develop skills for self-directed and life-long learning.

Molecular Diagnostics
The module will increase the student's knowledge of the principles of targeted therapy and the tests that are currently in practice. To do so, the student will acquire key knowledge on the main aspects of a molecular diagnostic test from beginning to end.

Translational Research
The module will introduce the students to new products (biomarkers, medicines) and processes (medical devices, technologies) which are developed and utilised in translational medicine. It describes how translational medicine is hypothesis driven and outline the principles of clinical trial design and how trials can support translational research studies.

Semester 2
In Semester 2 the teaching is delivered online as distance learning modules.

Biostatistical Informatics
In this module students will be introduced to data types, data distributions, and hypothesis testing. In addition they will learn about and be able to evaluate testing for statistical associations and differences between data types including parametric/non-parametric tests.

Digital Pathology
This module covers modern aspects of digital pathology and artificial intelligence including digital approaches in education, research and diagnostics. The main objectives are to introduce technical aspects of whole slide scanning and instrumentation and demonstrate their application in a modern molecular laboratory environment. A key part of the module focuses on the use of image analysis techniques.

Academic-Industry Intersect
This module will provide the student with a clear understanding of the academia-industry intersect, and provide the student with the skill sets required to develop collaborative interactions with the biotech and biopharmaceutical sectors.

Research Project
Research projects will be available across a variety of subjects. Potential project areas for the MSc will include – Cancer Immunology; Application of liquid biopsies in Molecular Pathology; Digital Pathology; Biobanking; Molecular Diagnostics; Bioinformatics and Molecular Neuropathology.

Why Queen's

Queen's University has international reputation for the application of Molecular Pathology and Genomic Medicine in high quality translational research. Students have the opportunity to engage with leaders who champion modern cancer diagnostics and key players within global biotechnology companies who have international reputations. Key academics from Queen's provide a quality framework for delivery of this course.

Careers

Completing this course could lead to a range of future options and help you:

- In pursuit of an academic career including access to higher degrees
- Gain employment in high-end diagnostics
- Open avenues to develop a career in industry or industry partners