



**QUEEN'S
UNIVERSITY
BELFAST**

SCHOOL OF
MEDICINE,
DENTISTRY AND
BIOMEDICAL
SCIENCES

IMPROVE AND SHAPE FUTURE CANCER TREATMENTS

MSc (Res)
CANCER MEDICINE

Entrance Requirements

A minimum 2.1 Honours degree or equivalent qualification acceptable to the University in a relevant biological subject is required. Evidence of equivalent professional qualifications (MBBS, BDS or BVSc) or experience will be considered on an individual basis. Intercalating students are encouraged. Applicants may be required to undertake an interview.

International Qualifications

For information on international qualification equivalents please select Your Country from the list on our International Students website.

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 not 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: qub.ac.uk/EnglishLanguageReqs

Duration

1 year full time

Teaching Times

Class times vary throughout morning, afternoon and evening, and through a combination of course lectures, practical experiences and Self-directed study to enhance employability.

Students perform their research project throughout the programme, which may necessitate working (under supervision) at out-of-hours times, including weekends.

Assessment

Assessment is by a combination of oral presentations and written assignments. The research project is written up as a dissertation.

Contact Us

askmhls@qub.ac.uk

Further Information

www.qub.ac.uk

MSc (Res) CANCER MEDICINE

Overview

This MSc programme offers a broad range of experience across multiple disciplines, demonstrating how precision medicine can improve and shape future cancer treatments. Dedicated research projects will provide students with hands-on experience of the latest molecular techniques, in a state-of-the-art laboratory environment. Students will be able to evaluate how novel therapeutic approaches can be used to stratify patients into different treatment groups for better clinical management.

There are optional modules in the second semester allowing students to explore the fundamental principles of Carcinogenesis and the translational approaches (including cutting edge technologies) which allow cancer scientists and clinicians to advance our understanding and treatment of cancers. The **Precision Cancer Medicine** stream provides a comprehensive overview of the current understanding of the Hallmarks of Cancer from the role of genetic/epigenetic alterations, cell cycle control and metastases/angiogenesis to the development of applications to help diagnose cancers earlier, improve treatments, rationally design clinical trials and reduce chemotherapy drug resistance.

The **Radiation Oncology** stream will develop skills in understanding the biological principles of radiotherapy and its clinical applications in the treatment of cancer. This will include the physical and chemical basis of radiation interactions and the biological consequences of radiation exposures. Clinical aspects of Radiation Oncology will be covered including principle of advanced radiotherapy delivery, cancer imaging techniques and biomarker discovery.

Importantly, both streams show how our improved understanding of the molecular processes driving cancer growth and spread can be 'translated' through research-intensive MSc projects to improve the treatment and survival of cancer patients.

Content

Semester 1

Research Translation: from Concept to Commercialisation (Full Year)

This module develops an appreciation of the importance of innovation, business awareness and leadership skills in the translation of discovery science to clinical implementation.

Diagnosis and Treatment

This module provides a comprehensive overview of the diagnosis and treatment of the common solid and haematological malignancies, including breast, ovarian, genitourinary and gastrointestinal cancers as well as the leukaemias.

Cancer Biology

This module provides a comprehensive overview of the fundamental principles of carcinogenesis highlighting how normal control processes are bypassed during tumour formation. The pathogenic

mechanisms to be discussed will range from genomic alterations in key gene families, to epigenetic mechanisms of gene control, alterations in kinase activities or protein turnover, or activation of aberrant phenotypes such as invasion and angiogenesis.

Semester 2

Students will make a selection from the following modules:

Precision Cancer Stream

Cancer Genetics and Genomics

This module will provide students with a comprehensive foundation of concepts in genetics and genomics pertaining to cancer aetiology and molecular pathology with emphasis on both inherited predisposition to cancer mediated by germline genetic variation and consideration of the contribution of the tumour genome to disease pathogenicity.

Translational Cancer Medicine

This module provides a comprehensive overview of current cancer treatments and their limitations. The principles of resistance to standard chemo- and radio-therapies will be addressed and how new targeted therapies are being developed to overcome this resistance.

or

Radiation Oncology and Medical Physics (ROMP) Stream

Biology of Radiotherapy

This module develops knowledge and skills in understanding the principles of radiation interactions and the molecular basis of radiation response in cells, tissues and tumours.

Clinical Radiation

Building on the biological basis of radiotherapy, this module will develop knowledge and skills in understanding clinical radiotherapy, medical imaging and the design of radiotherapy treatment plans.

Research Project and Dissertation

You will undertake a project in the Centre for Cancer Research and Cell Biology (CCRCB).

Why Queen's

The strong links between us and the biotech and biopharmaceutical sectors provides a stimulating translational environment, while also expanding your career opportunities.

Careers

This MSc (Res) will produce high calibre candidates who can thrive in the academic, healthcare delivery or the burgeoning bio-industry sector. The programme aims to train future leaders in biomedical sciences, medicine and biotechnology, in addition to providing opportunities for progression into academic career paths via PhD programs.