QUEEN'S UNIVERSITY BELFAST

SCHOOL OF BIOLOGICAL SCIENCES

IMPACT HEALTH AND THE ECONOMY

MSc/PgDip

PARASITOLOGY AND PATHOGEN BIOLOGY

Entrance Requirements
Normally a 2.2 Honours degree or above in a relevant area of science or equivalent qualification acceptable to the University. Applicants with qualifications below 2.2 Honours degree standard (or equivalent qualification acceptable to the University) will be considered on a case-by-case basis, if they can demonstrate appropriate experience, acceptable to the School.

International Qualifications
For information on international qualification equivalents, please see **go.qub.ac.uk/YourCountry**

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 6.0, with not less than 5.5 in any component, or an equivalent qualification acceptable to the University is required.

*Taken within the last 2 years.

For information on language requirements for EEA and non-EEA nationals see: **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; see **www.intohigher.com/qub**

Duration
1 year full-time

Teaching Times
Morning/Afternoon

In addition to laboratory teaching it is envisaged that participants will also acquire field experience in vector and parasite sampling and control methodologies.

Assessment
The award of the MSc in Parasitology and Pathogen Biology is based on continuous assessment of coursework, examinations and assessment of modules based on submitted work related to private, individual study.

Contact Us
askmhls@qub.ac.uk

Find out more
www.qub.ac.uk

MSc
PARASITOLOGY AND PATHOGEN BIOLOGY

Overview
This MSc is for students seeking training in parasite-borne infectious diseases that severely undermine human health in the developing world and agri-food production systems globally. The programme embraces the World Health Organization's One Health approach so you will develop expertise directly applicable to human, plant and animal health and welfare.

You will acquire skills such as molecular biology techniques, diagnostics, epidemiology, drug/vaccine development, pathogen control, host-parasite interaction, immunobiology, drug resistance and the potential impact of climate change.

Taught by research active staff, gaining practical experience in internationally competitive laboratories you will also acquire field experience in vector and parasite sampling and control methodologies and your research project will be undertaken in either research active laboratories (academic or industrial) or in the field.

Content

Foundation for Research in the Biosciences
This module introduces students to the process of designing and planning a research project including all associated aspects such as: formulating hypothesis; designing experiments; budgeting; and potential impact of research.

Fundamental Parasitology & Advanced Skills
A range of key techniques in infection biology, including the rationale behind the use of both currently employed and emerging technologies is covered alongside a variety of methods used to treat, monitor and identify parasite and pathogen infections. Overviews and practical experience of technologies such as ribonucleic acid interference (RNAi), immunocytochemistry (ICC), polymerase chain reaction (PCR), the McMaster technique, enzyme-linked immunosorbent assay (ELISA), bioinformatics and endoparasite egg and vector identification will be covered

Advanced Parasitology I
This module covers a range of diverse internationally relevant diseases/infections and their impact on human, plant and animal health will be discussed as will the current challenges faced in terms of their control in light of abiotic and biotic factors.

Advanced Parasitology II
This module covers key facets of parasite biology including: drug action and resistance; drug discovery and drug target validation; vaccine development; host-parasite interactions; parasite induced pathology; parasite genomics/transcriptomics/proteomics; parasite functional genomics; parasite behaviour and neurobiology.

Bio-Entrepreneurship & Advanced Skills
Covers the fundamentals of bio-entrepreneurship; business and financial planning; routes to market: the role of R&D in the Biotech industry; intellectual property; literature critiquing and solving quantitative problems in the molecular biosciences.

Literature Review
A review of the literature in the field of parasitology using primary scientific literature with skills such as literature searching; referencing of literature; scientific writing; presenting an argument and independent learning skills.

Research Project
A substantial piece of research work, based in research laboratories of the School of Biological Sciences or externally within the laboratories or field sites of research collaborators. Students should expect to spend approximately 35 hours per week on research work with additional hours devoted to reading research literature, attending seminars and completing assignments.

Why Queen's
The MSc programme embraces the World Health Organization's approach to these infectious diseases, with strong recognition of the interplay between health and disease at the dynamic interface between humans, animals and the environment.

In addition to embedded generic skills training, students will have the opportunity to acquire subject-specific skills training, e.g. molecular biology techniques, diagnostics, epidemiology (human, animal and plant diseases), drug/vaccine development, pathogen management/control, host-parasite interaction, immunobiology, drug resistance and the potential impact of climate change on parasites and their vectors.

In addition to the taught elements of the course, MSc students will undertake a research project working in research active laboratories (academic or industrial), or in the field, e.g. the impact of helminth infections on animal welfare, the economic impact of parasites on agriculture, the role of vectors in emerging diseases, the ecology of zoonotic diseases, the molecular basis of anthelmintic resistance, emerging technologies for drug discovery, the pathology of infection, parasite immunomodulation of the host.

Careers
The skills set and knowledge acquired will equip participants with a comprehensive academic and methodological repertoire to undertake careers in agriculture, plant science, animal and human health, pharmaceutica, academia and food security, underpinning the transdisciplinary nature of the programme.