Progression Opportunities in The School of Pharmacy

PROFESSOR HELEN MCCARTHY

DIRECTOR OF POSTGRADUATE STUDIES

SCHOOL OF PHARMACY

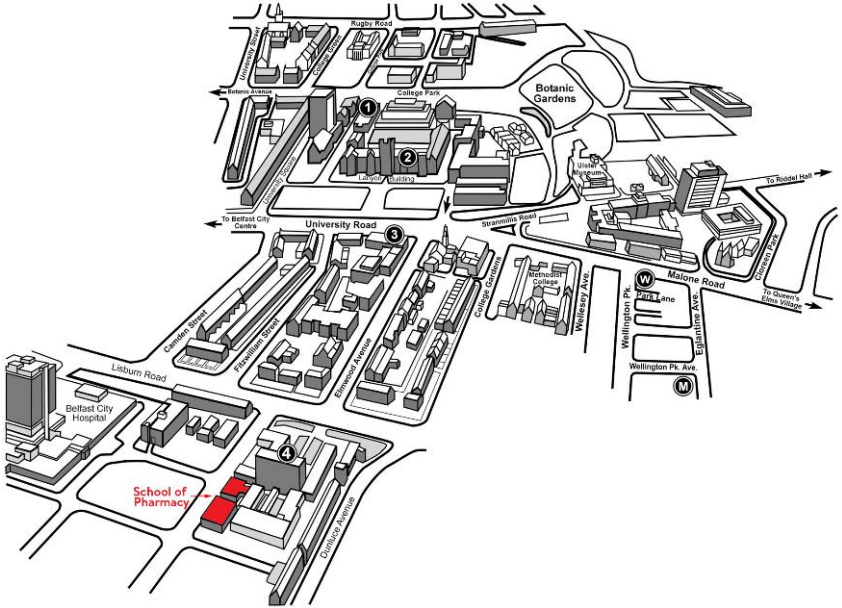
QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

- Consistently ranked as one of the top UK Schools of Pharmacy
- In the global QS rankings top 100

QUEEN'S UNIVERSITY BELFAST

WHERE TO FIND US



QUEEN'S UNIVERSITY BELFAST

KEY CONTACTS FOR POSTGRADUATE STUDENTS

Carmel Hughes
Head of School

Maurice Hall
Director of Education

Helen McCarthy
Director of Internationalisation & PGR

Dimitrios Lamprou
MSc Industrial Pharmaceutics Lead

Lee-Anne Howell
Postgraduate Administrator

QUEEN'S UNIVERSITY BELFAST

SCHOOL PROFILE

405 MPharm students
59 BSc students (QUB campus)
259 BSc students (China campus)
129 PhD students
45 MPhil students
56 Research fellows
49 Academic staff
6 Clinical teacher practitioners
1 Boots teacher practitioner

QUEEN'S UNIVERSITY BELFAST

OUR RESEARCH ETHOS

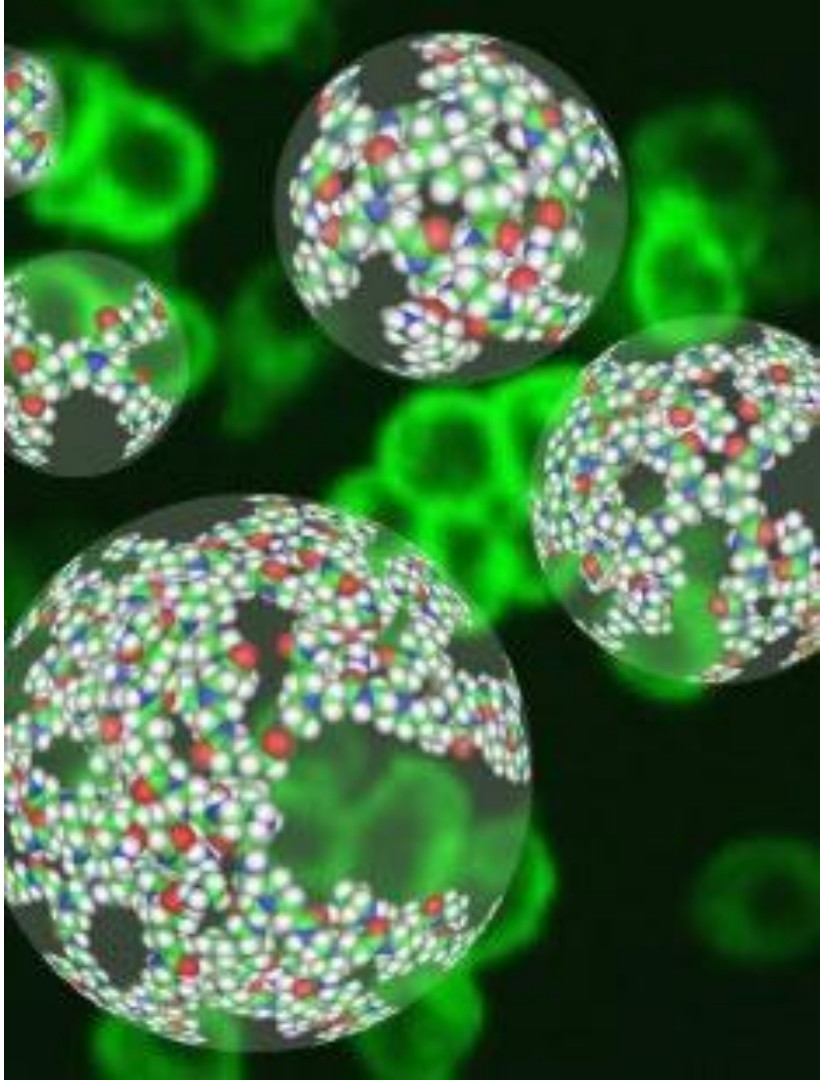
Our goal: **To improve the lives of patients**

Social Sciences, Clinical Sciences, Physiochemical Sciences, Molecular Sciences and Engineering

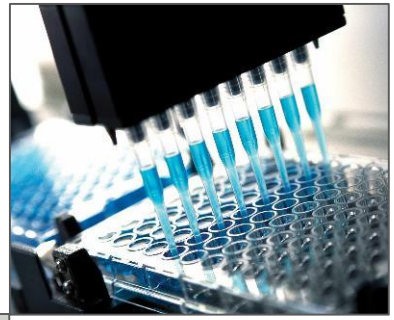
We focus on drugs to prevent, alleviate or cure diseases. Our research programmes range from drug design and discovery, to formulation and delivery, and on to action and implications of use

QUEEN'S UNIVERSITY BELFAST

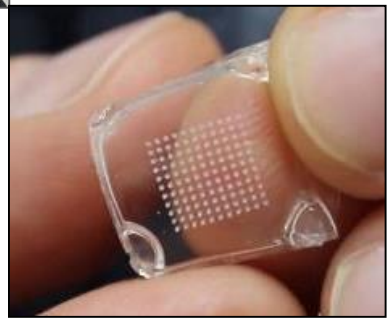
SCHOOL OF PHARMACY



MATCH



Ryan Donnelly
Director of the
MATCH PRP



PRP

MATERIALS AND ADVANCED TECHNOLOGIES FOR HEALTHCARE

Pioneering Research Program

Interdisciplinary Research Initiative

- Pharmacy
- Chemistry & Chemical Engineering
- Mechanical and Aerospace Engineering
- Biological Sciences
- Medicine, Dentistry & Biomedical Sciences
- Nursing & Midwifery

QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

Michael Tunney
Director of Research

https://www.qub.ac.uk/schools/SchoolofPharmacy/Research/ResearchThemes/

QUEEN'S UNIVERSITY BELFAST

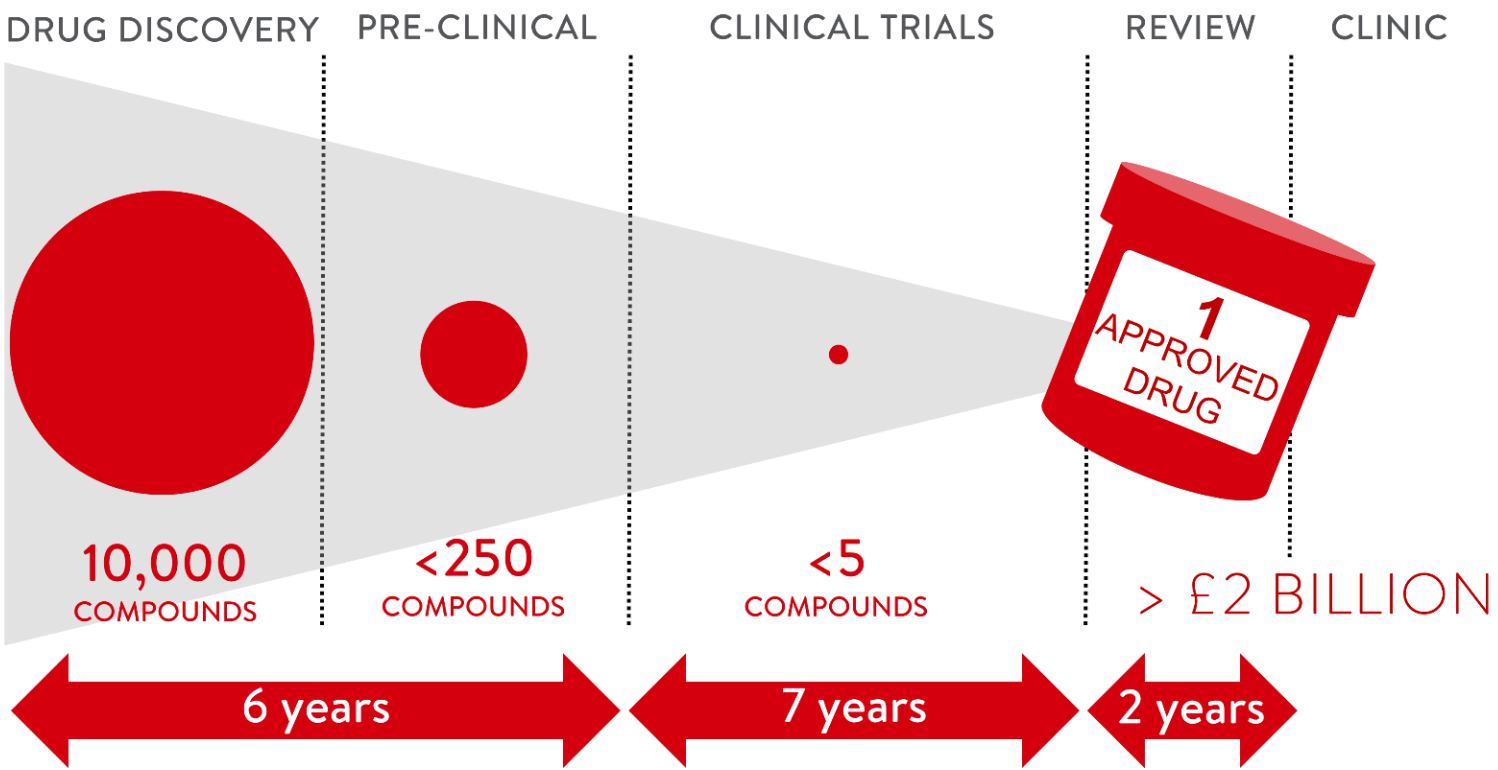
MSc Industrial Pharmaceutics

Equip Graduates with the expertise and skills required for employment in an industry estimated to be worth $1.2 trillion

Industrial Pharmaceutics plays a vital role in the development, validation and manufacture of new medicines

MSc graduates will be able to avail of employment opportunities at all stages of the medicine development pipeline

QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY



QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY

ABOUT THE COURSE

6 Taught modules

Specialist Content to meet the needs of leading pharmaceutical companies

Cutting-edge Research and Development Projects

Opportunities for **Industrial Placements**

Chartered Management Institute Qualification

QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

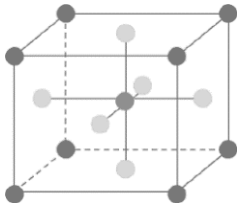
MSc INDUSTRIAL PHARMACEUTICS

Modules	Semester	Credits
Research Methods & Data Management	1	10
Formulation of Pharmaceutical & Biopharmaceutical Products	1	30
Characterisation Methods for Pharmaceutical Products	1	20
Pharmaceutical Manufacturing & Emerging Technologies	2	20
Quality Assurance & Regulatory Affairs	2	20
Project Management & Entrepreneurship	2	20
MSc Research Project	Jun - Sep	60

RESEARCH METHODS AND DATA MANAGEMENT

You will cover key skills and knowledge:

- Evaluation of scientific literature
- Data analysis
- Experimental design
- Statistical analysis
- Good Laboratory Practice
- Personal effectiveness



QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY

FORMULATION OF PHARMACEUTICAL & BIOPHARMACEUTICAL PRODUCTS

Design and development of dosage forms

Formulation of products

Nanotechnology

Drug delivery systems for large and small molecules

Generic drugs and biosimilars

Personalised medicine

QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

CHARACTERISATION METHODS FOR PHARMACEUTICAL PRODUCTS

Product analysis and specification

API and raw material analysis

Dissolution and drug release testing

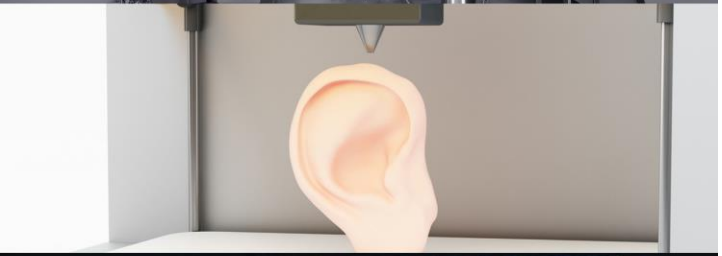
Physiochemical characterisation (eg microscopic and spectroscopic analysis)

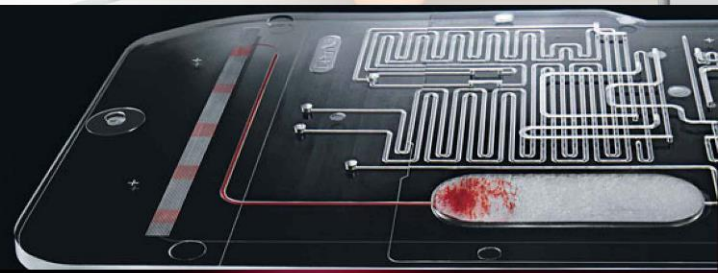
In vitro to *in vivo* correlation

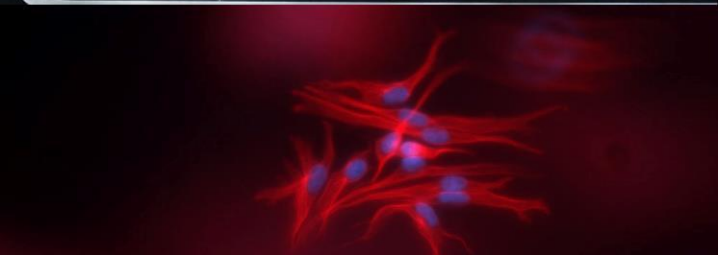
Pharmacokinetics and pharmacodynamics

QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY







PHARMACEUTICAL MANUFACTURING & EMERGING TECHNOLOGIES

Development process and requirements

Pharmaceutical engineering and biotechnology

3D printing and bioprinting

Computational modelling (eg Finite Element Analysis)

Continuous manufacturing

Micromanufacturing engineering and technology

QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY

QUALITY ASSURANCE & REGULATORY AFFAIRS

Quality, safety and efficacy

Legislation and regulation

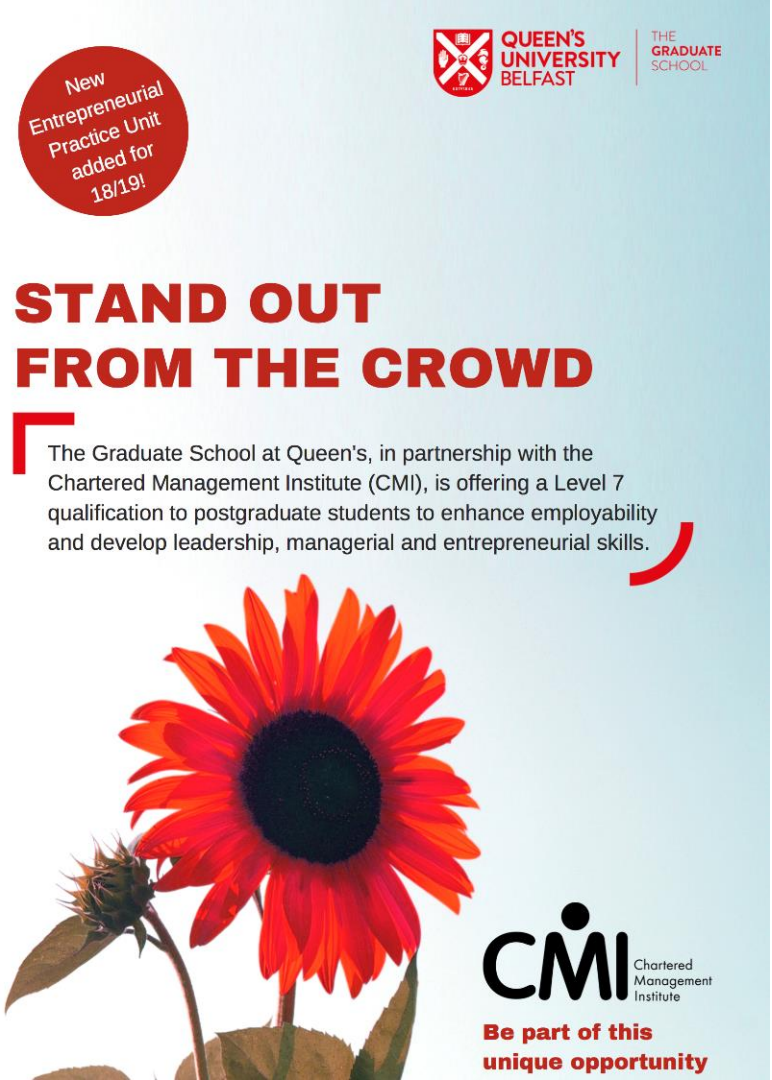
Process Analytical Technologies

Quality by Design

Quality compliance and GMP

Pharmaceutical innovation (eg IP and patents)

QUEEN'S UNIVERSITY BELFAST



PROJECT MANAGEMENT AND ENTREPRENEURSHIP

- Pharmaceutical R&D and business processes
- Key functions of pharmaceutical management
- Benefits of project management
- Project planning
- Marketing and entrepreneurship
- Behavioural aspects

QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

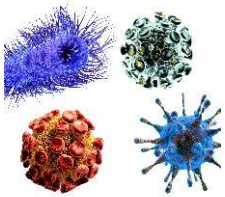
RESEARCH PROJECTS ALIGNED WITH SCHOOL RESEARCH THEMES

Drug Delivery and Biomaterials

Photoactive Biomaterials

Polymeric Medical Devices

Sensor Development



Infection and Antimicrobial Resistance

Respiratory infectious diseases

Antimicrobial stewardship

Novel antimicrobials and anti-infective biomaterials

Nanomedicine and Biotherapeutics

Anticancer therapeutics

Nano-delivery of macromolecules

Proteases in Disease

Natural Peptides

Pharmaceutical Materials Science and Formulation

HIV Prevention and Multipurpose Prevention Technologies

Solid Dosage Forms

Pharmaceutical Technology

QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

CAREER OPPORTUNITIES

On completing this course you will be equipped with the skills and understanding needed for research and development roles with employers such as:

- Pharmaceutical Industry (e.g. R&D, production, regulatory).
- Academia (research & teaching).
- Government agencies such as drug licensing authorities.
- Healthcare
- Scientific Research

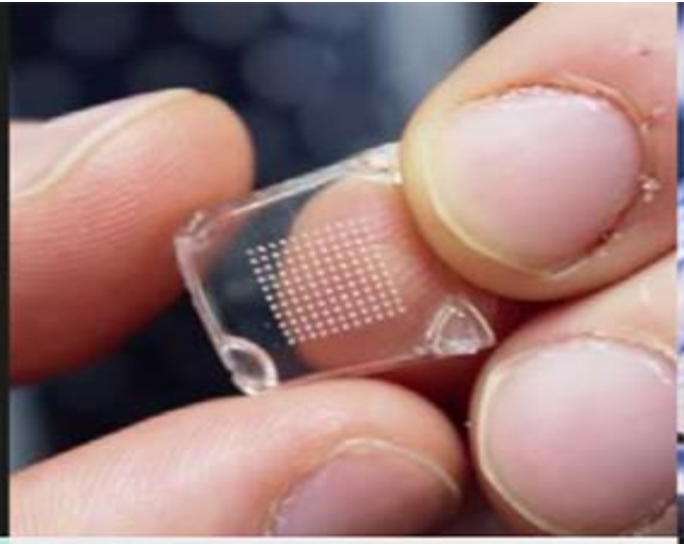
QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY

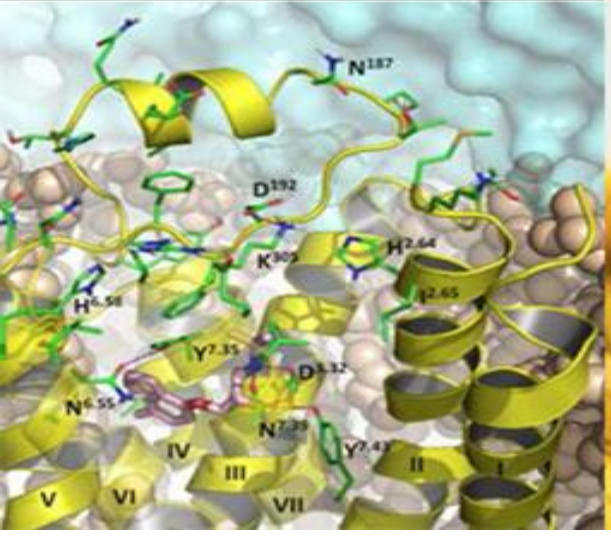
PhD OPPORTUNITIES

- School Post-Graduate Research Committee
- Extensive training
- Pass on your knowledge to UG students
- Opportunities to publish your work
- Implement an extensive support network
- Ensure you are on the right track
- The future of our Research Community

QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY

OUR RESEARCH



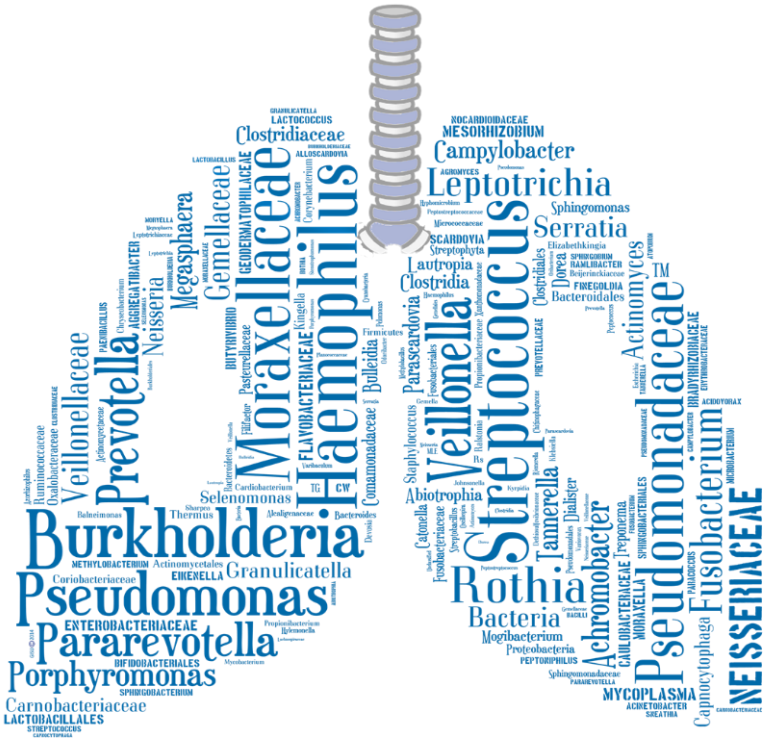


IS MAKING A DIFFERENCE.

QUEEN'S UNIVERSITY BELFAST

RESEARCH IMPACT

CLINICAL IMPACT



BREATH

QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

Polymicrobial CF airway microbiota

IMPACT FOR PATIENTS

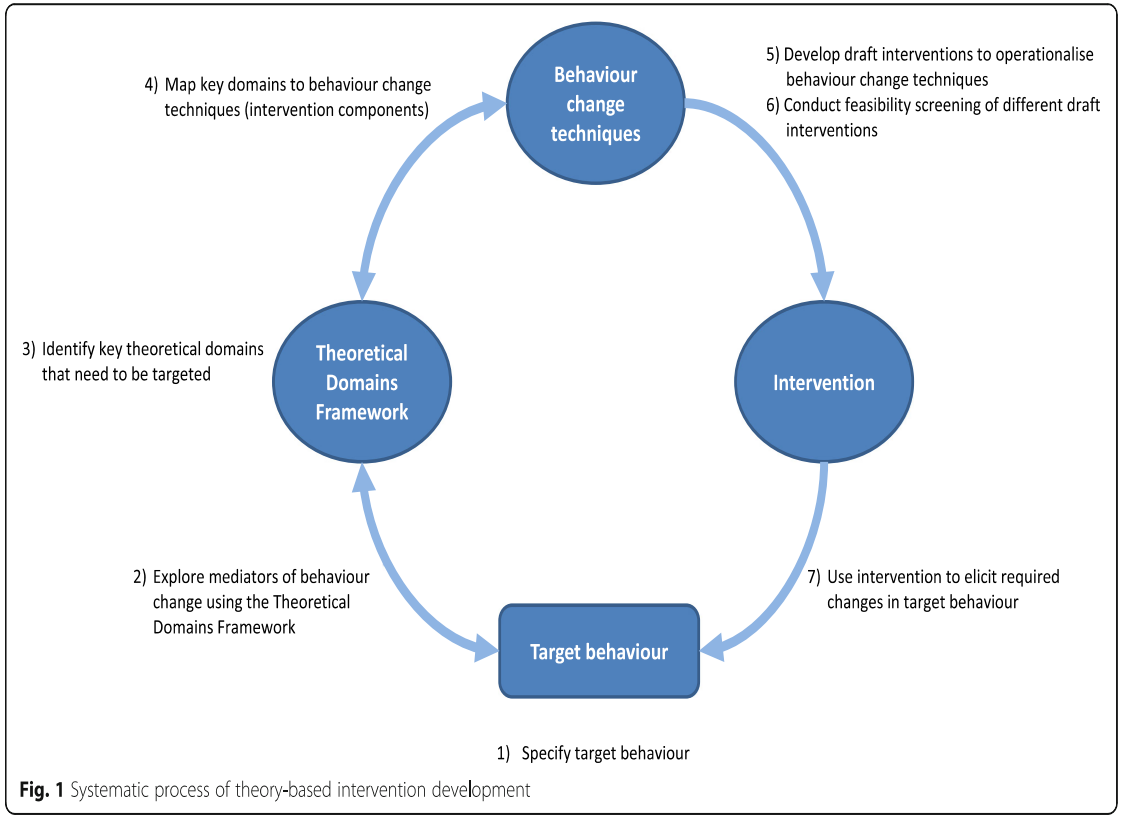
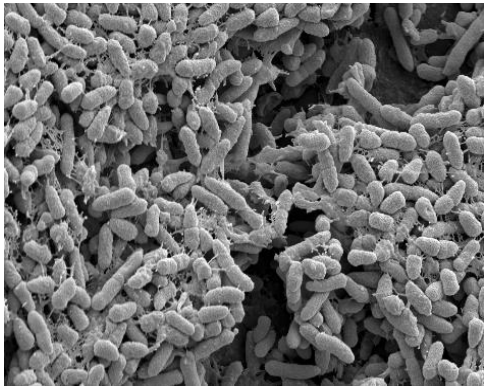
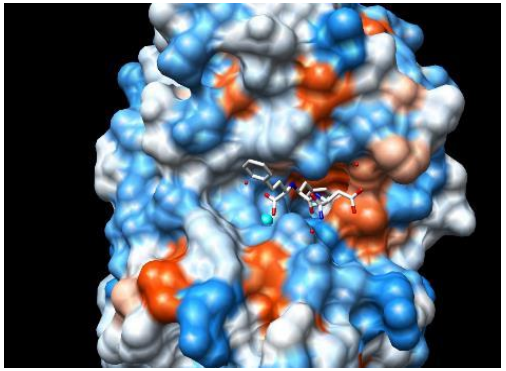


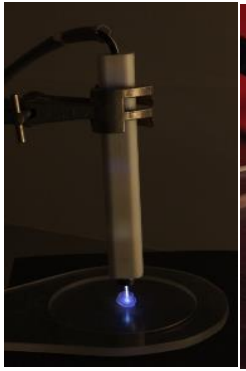
Fig. 1 Systematic process of theory-based intervention development

QUEEN'S UNIVERSITY BELFAST | SCHOOL OF PHARMACY

BIOFILM IMPACT



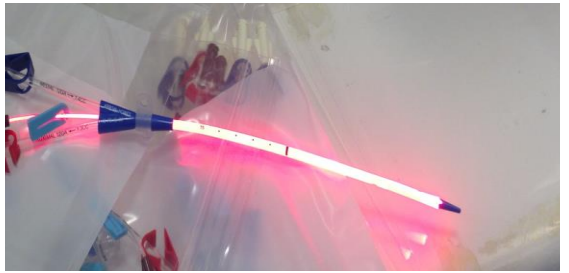




QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

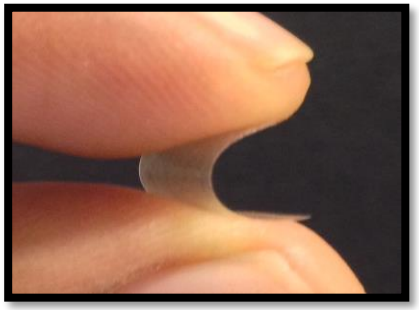
IMPROVING LIVES – MEDICAL DEVICES

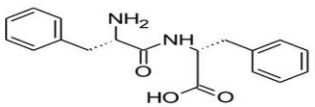


QUEEN'S UNIVERSITY BELFAST

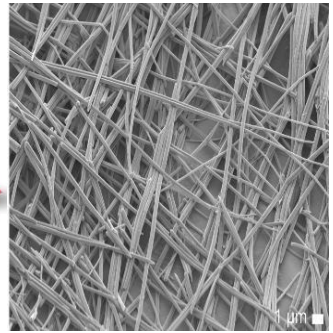
SCHOOL OF PHARMACY

IMPROVING LIVES – MEDICAL DEVICES





Self-assembly

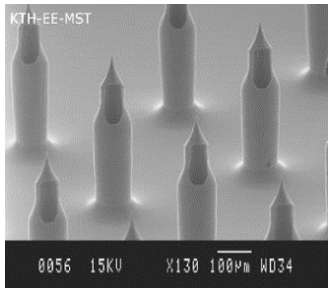


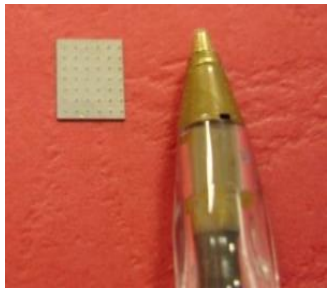
Peptide Hydrogels

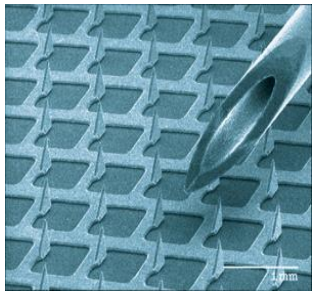
RE-VANA
Vision in the Future

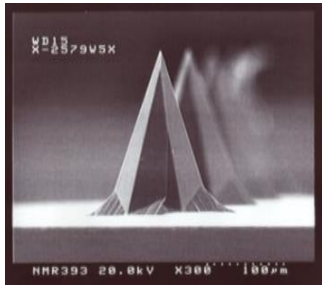
QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

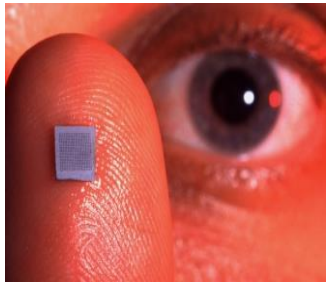
IMPROVING LIVES- MICRONEEDLES

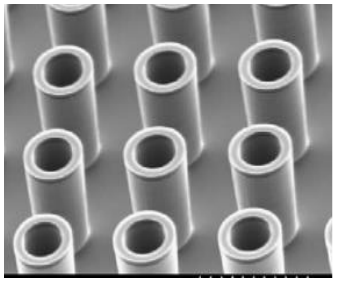


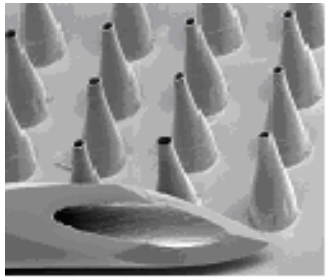






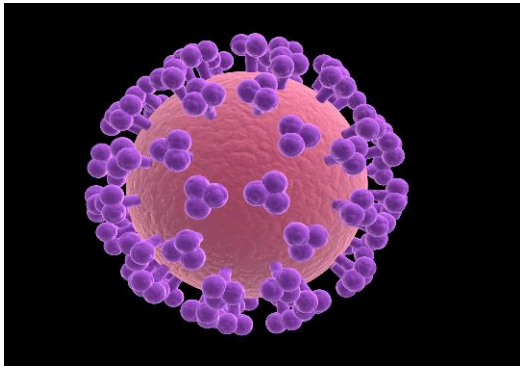


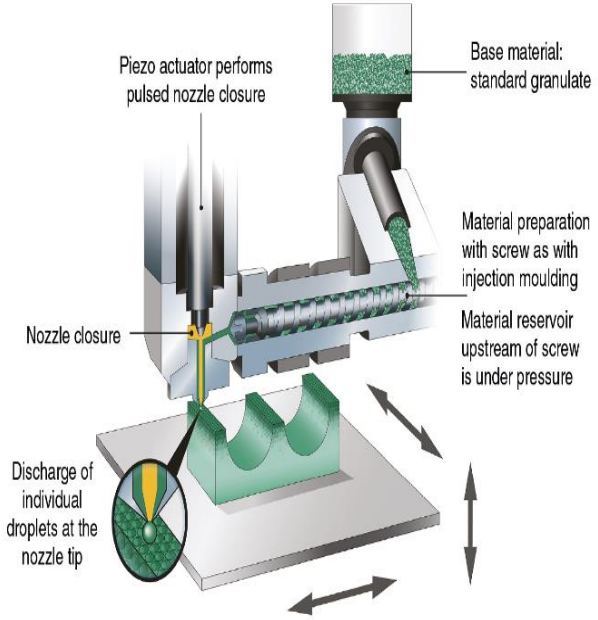




QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

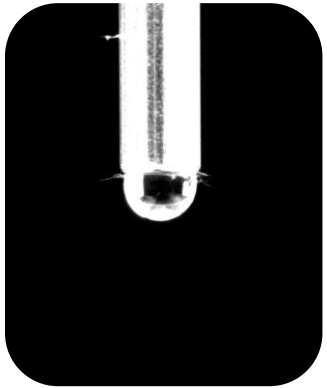
ENGINEERING IMPACT

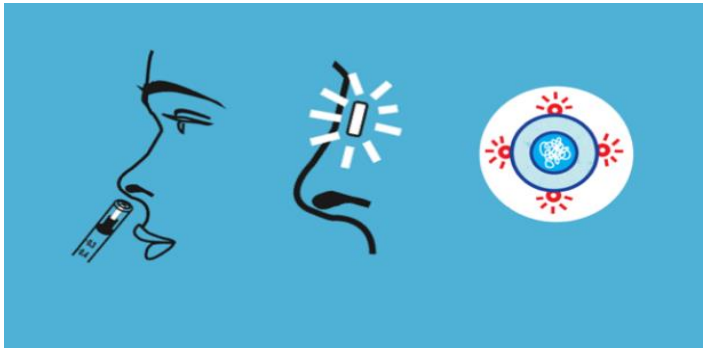


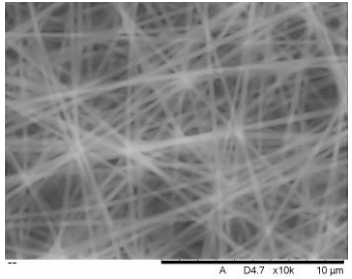


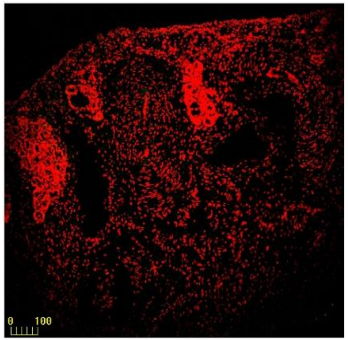
QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

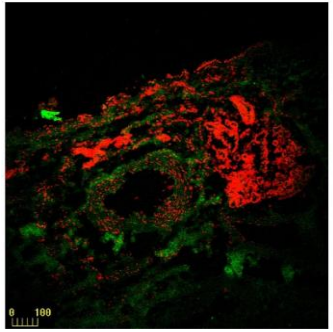
IMPACT OF NEW MATERIALS







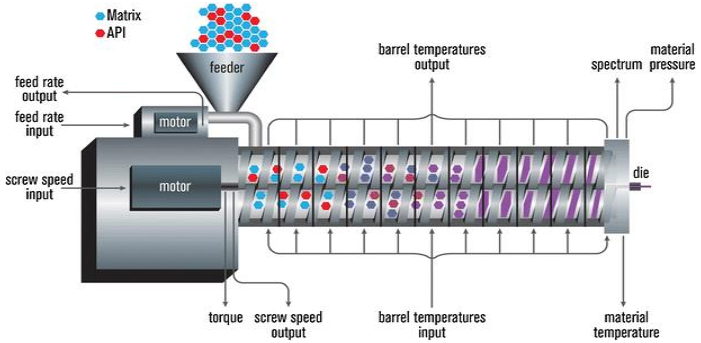


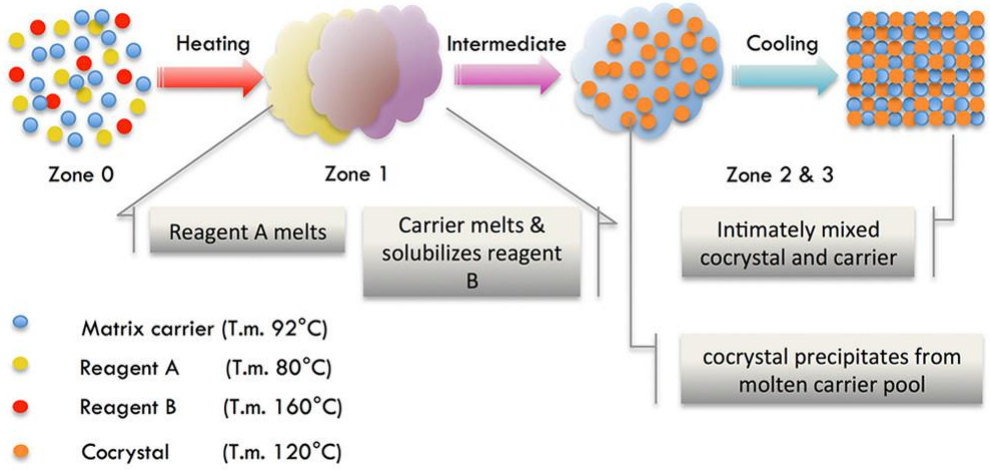


QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

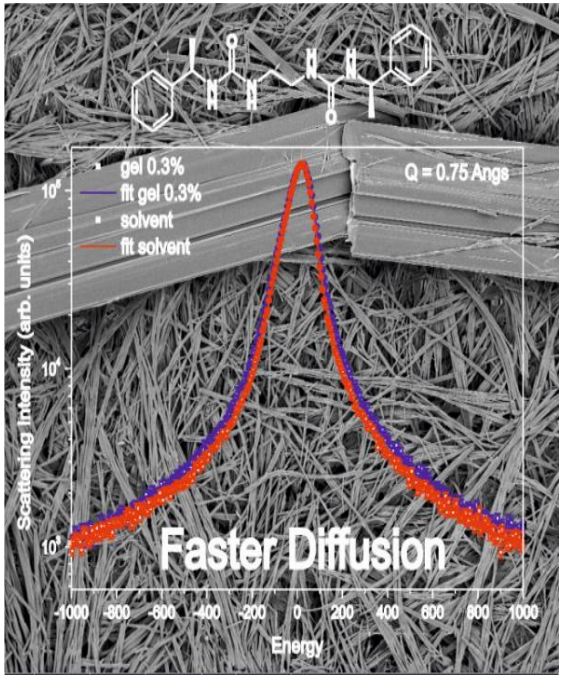
IMPACT OF IMPROVED ORAL DELIVERY





QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

IMPACT OF DRUG DESIGN



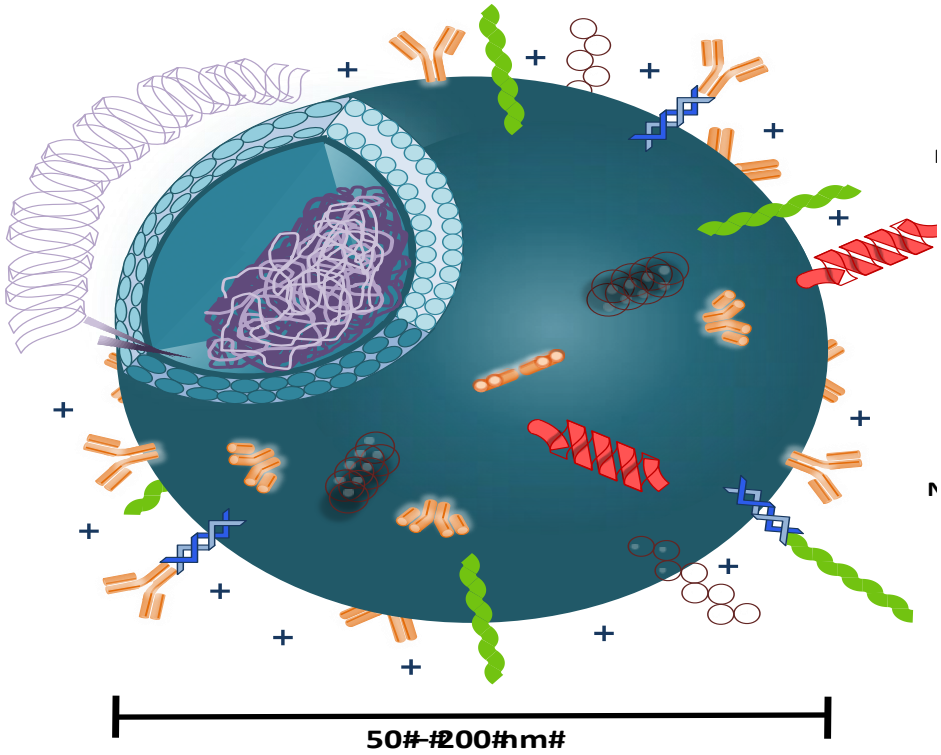
QUEEN'S UNIVERSITY BELFAST

SCHOOL OF PHARMACY

IMPACT OF MOLECULAR DRUGS

QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

IMPACT OF FUTURE NANOMEDICINE



QUEEN'S UNIVERSITY BELFAST
SCHOOL OF PHARMACY

Are you ready to join us?

http://www.qub.ac.uk/schools/SchoolofPharmacy/Research/PostgraduatePositions/


QUEEN'S
UNIVERSITY
BELFAST

Progression Opportunities in The School of Medicine, Dentistry and Biomedical Science

DR DAVID GRIEVE

DIRECTOR OF POSTGRADUATE STUDIES AND INTERNATIONALISATION

SCHOOL OF MEDICINE, DENTISTRY AND BIOMEDICAL SCIENCE

QUEEN'S UNIVERSITY BELFAST

MEDICINE AND HEALTH RELATED RESEARCH

OUR AIMS:

- To address key global healthcare challenges
- To make scientific breakthroughs in disease mechanisms with translation to innovative therapeutics and preventive interventions
- To establish lasting relationships with major funders for programmatic research and capacity building
- To leverage scientific strengths with business enterprises and large pharmaceuticals to develop programmes for discovery and translation

QUEEN'S UNIVERSITY BELFAST

School of Biological Sciences

- **Number of Staff: >500**
- **Research Grant Awards 2017-18: ~£30M**
- **Education/Research Infrastructure Development: >£100M over last 10 years**
- **Undergraduate Students: ~2000**
- **Postgraduate Research Students: ~250**
- **Postgraduate Taught Students: ~400**

QUEEN'S UNIVERSITY BELFAST

HIGH RELEVANCE TO PHARMACY AND PHARMACOLOGY

POSTGRADUATE TAUGHT

- BIOINFORMATICS AND COMPUTATIONAL GENOMICS
- CANCER MEDICINE
- EXPERIMENTAL MEDICINE
- MOLECULAR PATHOLOGY
- ONCOLOGY AND DRUG DISCOVERY
- PUBLIC HEALTH
- GLOBAL HEALTH
- CLINICAL ANATOMY

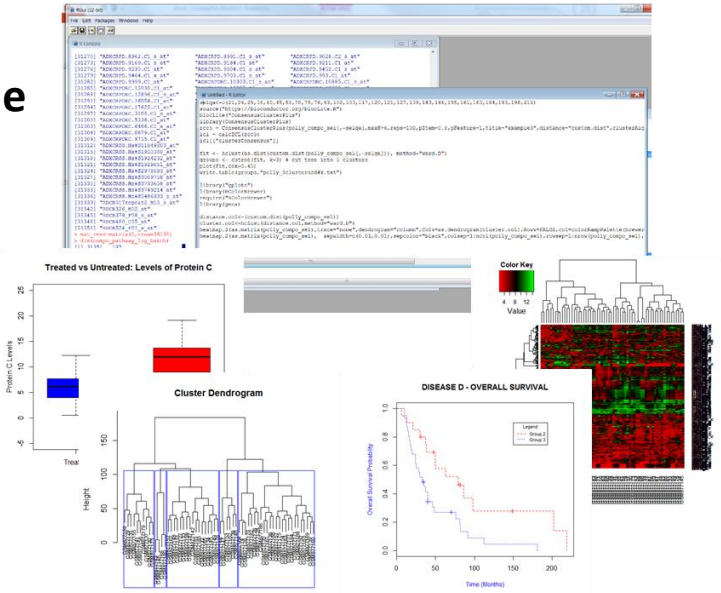
POSTGRADUATE RESEARCH

- ADVANCED RADIOTHERAPY
- BLOOD AND TISSUE CANCER
- BIOINFORMATICS
- CARDIOVASCULAR MEDICINE
- EPIDEMIOLOGY
- GENOMICS
- IMMUNOBIOLOGY AND MICROBES
- OPHTHALMOLOGY
- RESPIRATORY MEDICINE

QUEEN'S UNIVERSITY BELFAST

MSc in Bioinformatics and Computational Genomics

- Candidates from:
  life sciences, mathematics, statistics, computing, medicine
- **Full-time/12 months**
- Teaching led by **active researchers in cancer, inflammatory disease and public health**
- **Clinical and industrial** contributions



Core themes:

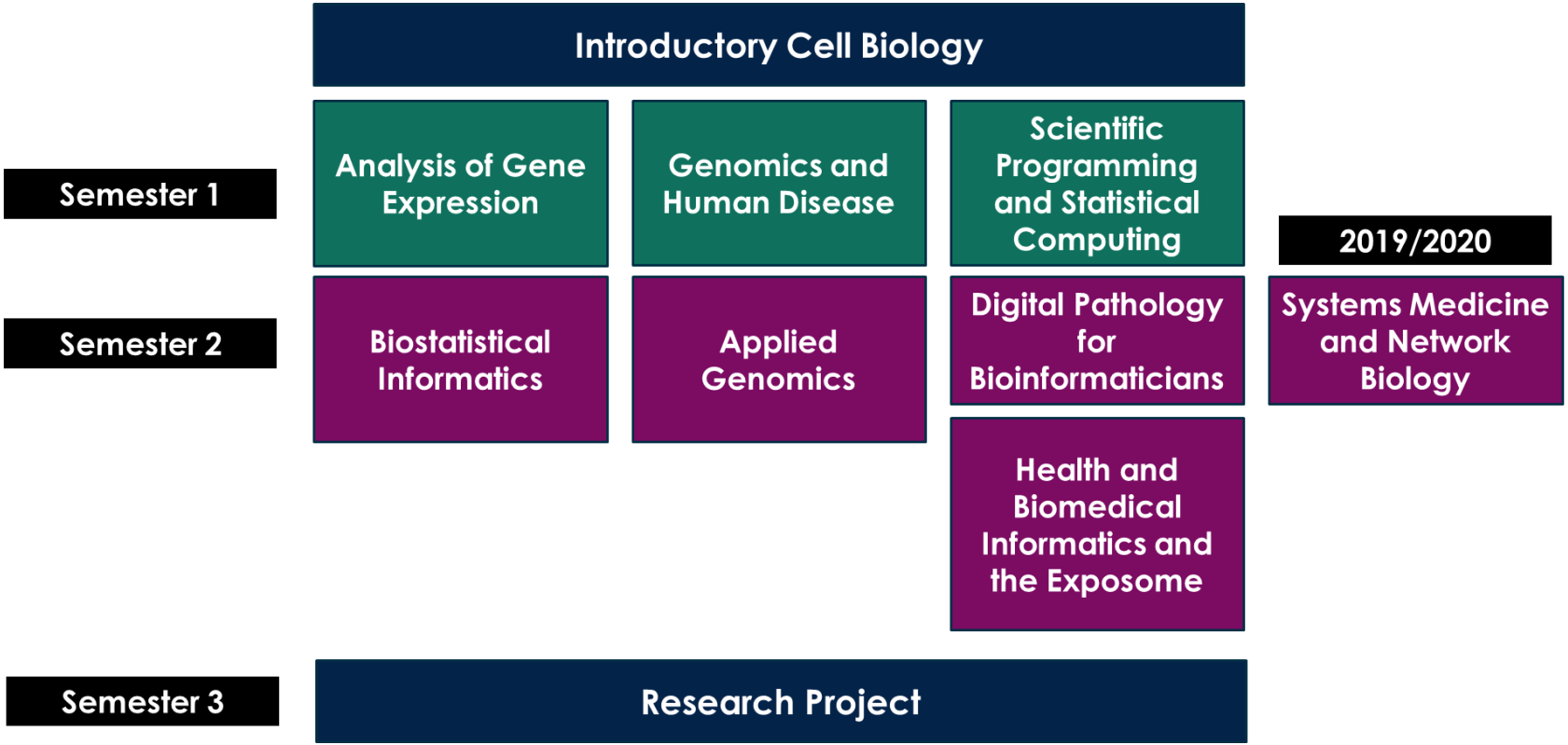
Ethics: e.g. study design, validation, stringency

Reuse, recycle, repurpose: ask different questions of same dataset

Biomarkers: diagnostic, predictive, prognostic

Communication skills: oral/written, not just analysis and code

MSc in Bioinformatics and Computational Genomics



MSc (Res) in Cancer Medicine

Comprehensive 'Research Intensive' programme

AIM: To equip life sciences students with skills required to work in a translational cancer medicine setting (academic or hospital environment, or in the biotech/pharmaceutical industries)

Students will gain hands-on experience of molecular techniques and the equipment/devices used in a modern molecular laboratory

Central component is the 38-week Research Project (Centre for Cancer Research and Cell Biology) within research active teams

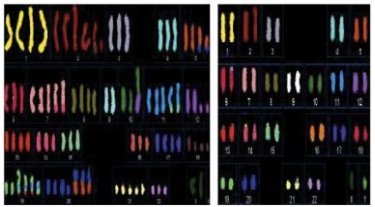
MSc (Res) in Cancer Medicine – Taught Modules

Research Translation: from concept to commercialisation

commercialisation of research findings, Intellectual Property, Patenting

Cancer Biology

fundamental principles of cancer pathogenesis



Translational Cancer Medicine

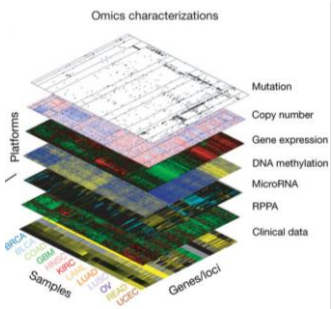
Principles of cancer resistance, clinical trial design and high throughput technologies.

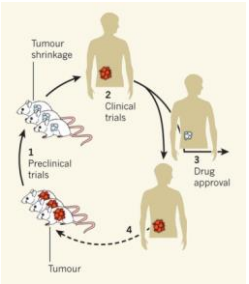
Diagnosis and treatment of cancer

comprehensive overview of the diagnosis and treatment

Cancer Genetics and Genomics

Concepts in genetics and genomics, cancer predisposition





MSc in Experimental Medicine

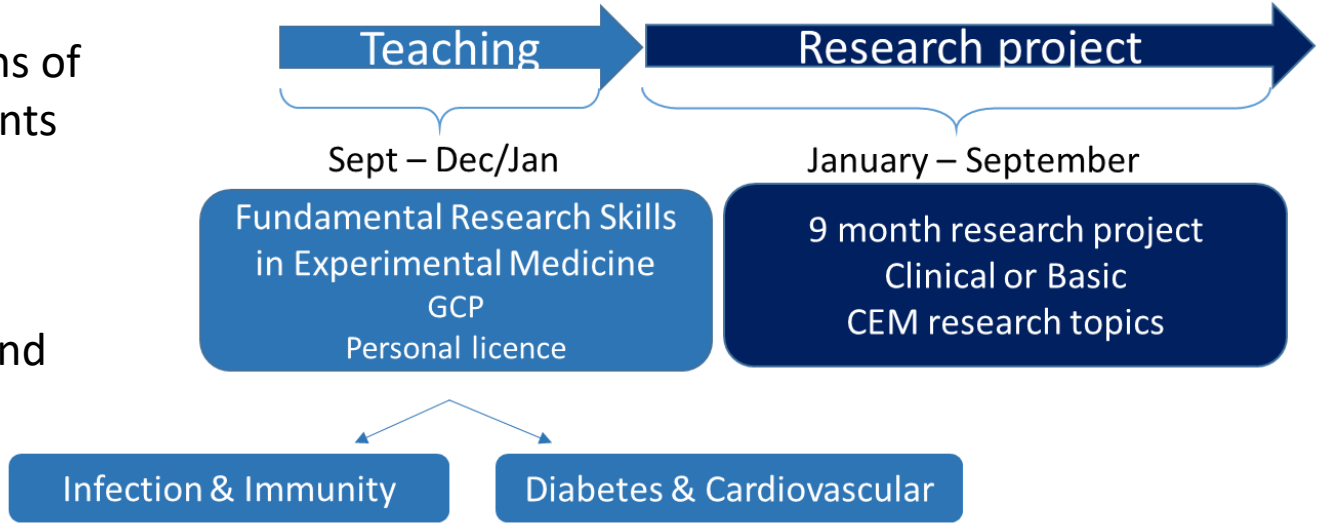
Experimental Medicine covers **fundamental research in biosciences** to application of new strategies towards **clinical translation** that will improve healthcare delivery

In the first 3 months students will:

- be provided with advanced research training in a broad range of research skills
- learn to formulate a research hypothesis
- be taught the importance of research integrity
- gain key understanding of the regulatory frameworks that govern basic and clinical research
- gain accreditation in *in vivo* experimentation through Home Office licensee training
- gain accreditation in Good Clinical Practice, a pre-requisite for undertaking clinical research
- acquire key transferable skills, including scientific writing, presentation, and communication of science including via social media will be taught throughout the course

MSc in Experimental Medicine

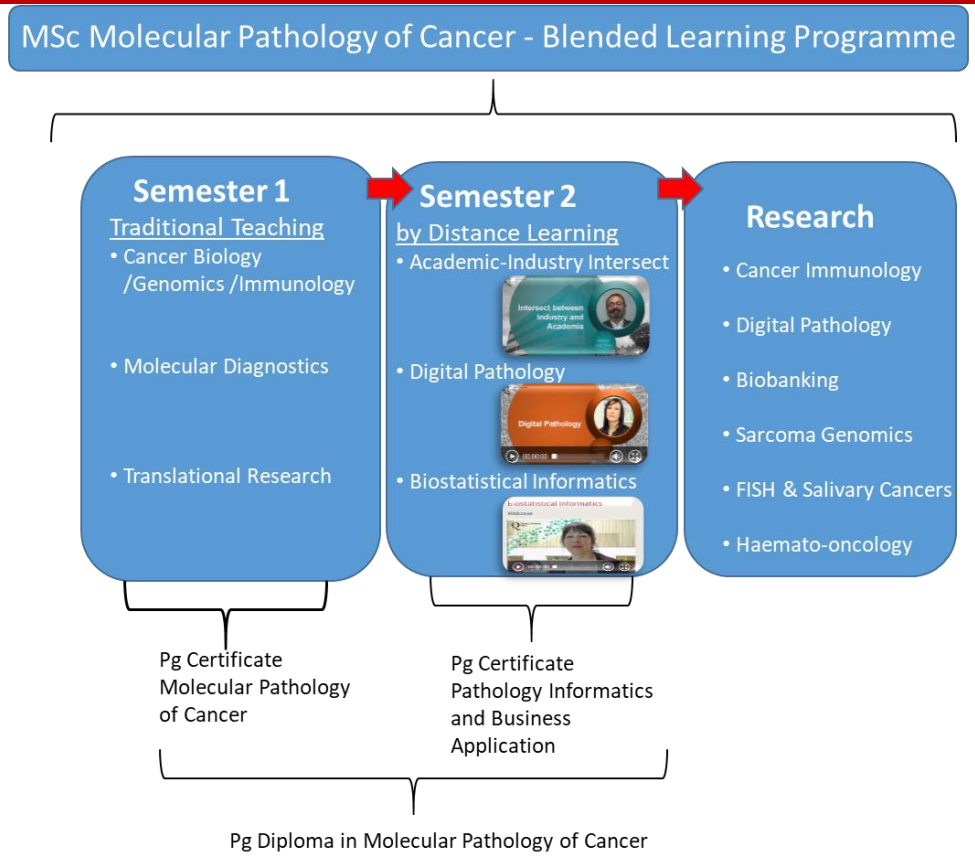
The first three months of MSc will equip students with basic generic research skills, and provide a strong theoretical background in Experimental Medicine



Modules
The Immune System in Health and Disease
Inflammation and Immunology: from Cell to Clinic

Modules
Diabetes and Cardiovascular Medicine
Diabetes and Cardiovascular Medicine: Clinical Translation

MSc in Molecular Pathology of Cancer



MSc in Oncology and Drug Discovery

Course content

- Research Translation from concept to commercialisation
- Diagnosis and treatment of cancer
- Cancer Biology
- Cancer Drug Target Identification
- Processes required to validate a new Drug Target
- Compound 'hit' identification
- 'Hit to lead' compound development in early Drug Discovery
- Lead candidate optimisation
- Novel drug delivery systems

Oncology Drug Discovery highlights

Strong links with biotech and bio-pharmaceutical sectors; Research projects supervised by academic staff and local biotech with strong focus on clinical applications.; World-class facilities: teaching within CCRCB, a purpose-built institute with state-of-the-art technology

POSTGRADUATE RESEARCH PROGRAMMES

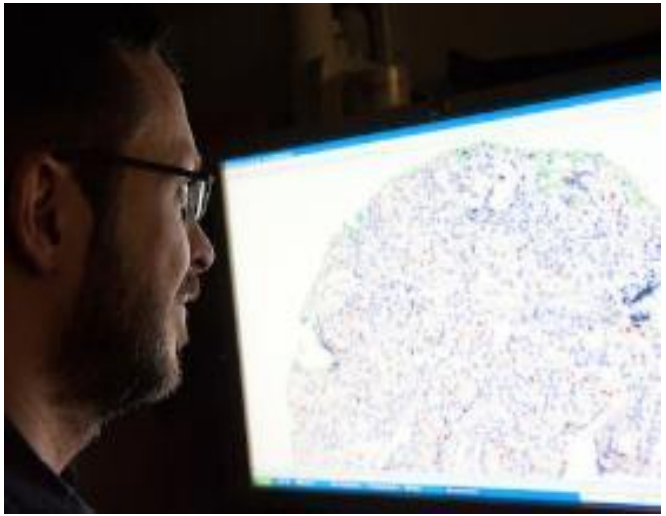
- ADVANCED RADIOTHERAPY
- BLOOD AND TISSUE CANCER
- BIOINFORMATICS
- CARDIOVASCULAR MEDICINE
- EPIDEMIOLOGY
- GENOMICS
- IMMUNOBIOLOGY AND MICROBES
- OPHTHALMOLOGY
- RESPIRATORY MEDICINE

CCRCB

CENTRE FOR
CANCER RESEARCH
AND CELL BIOLOGY

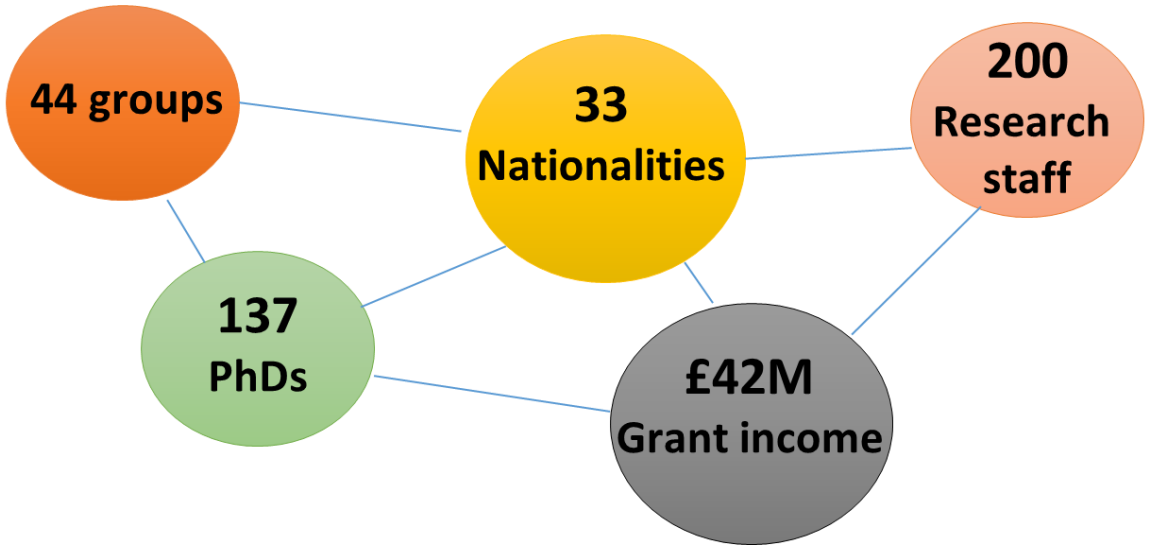
RESEARCH THEMES

- ADVANCED RADIOTHERAPY
- BLOOD CANCERS
- BRAIN TUMOUR
- BREAST CANCER
- GASTRO-INTESTINAL CANCER
- GENITO-URINARY AND PROSTATE CANCER
- OVARIAN CANCER
- CANCER GENOMICS
- TUMOUR EPIDEMIOLOGY AND EARLY DETECTION
- CANCER BIOINFORMATICS



QUEEN'S UNIVERSITY BELFAST

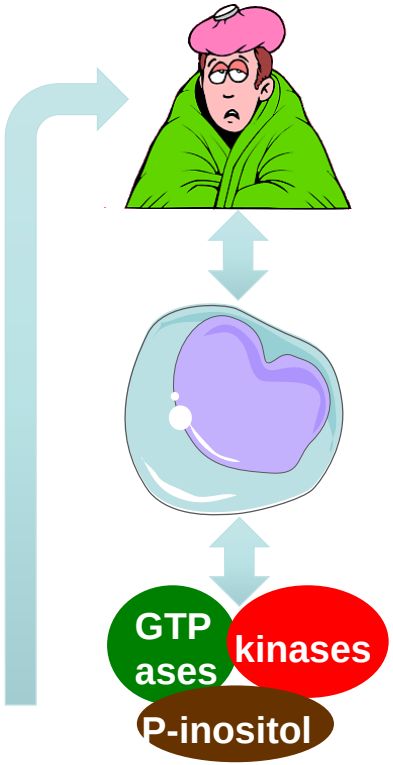
CEM CENTRE FOR EXPERIMENTAL MEDICINE



Mission: To understand the mechanisms of disease and use that understanding to develop innovative new treatments and therapies to improve patient outcomes with respiratory disease, eye disease, vascular disease, and infectious diseases.

QUEEN'S UNIVERSITY BELFAST

Centre for Experimental Medicine

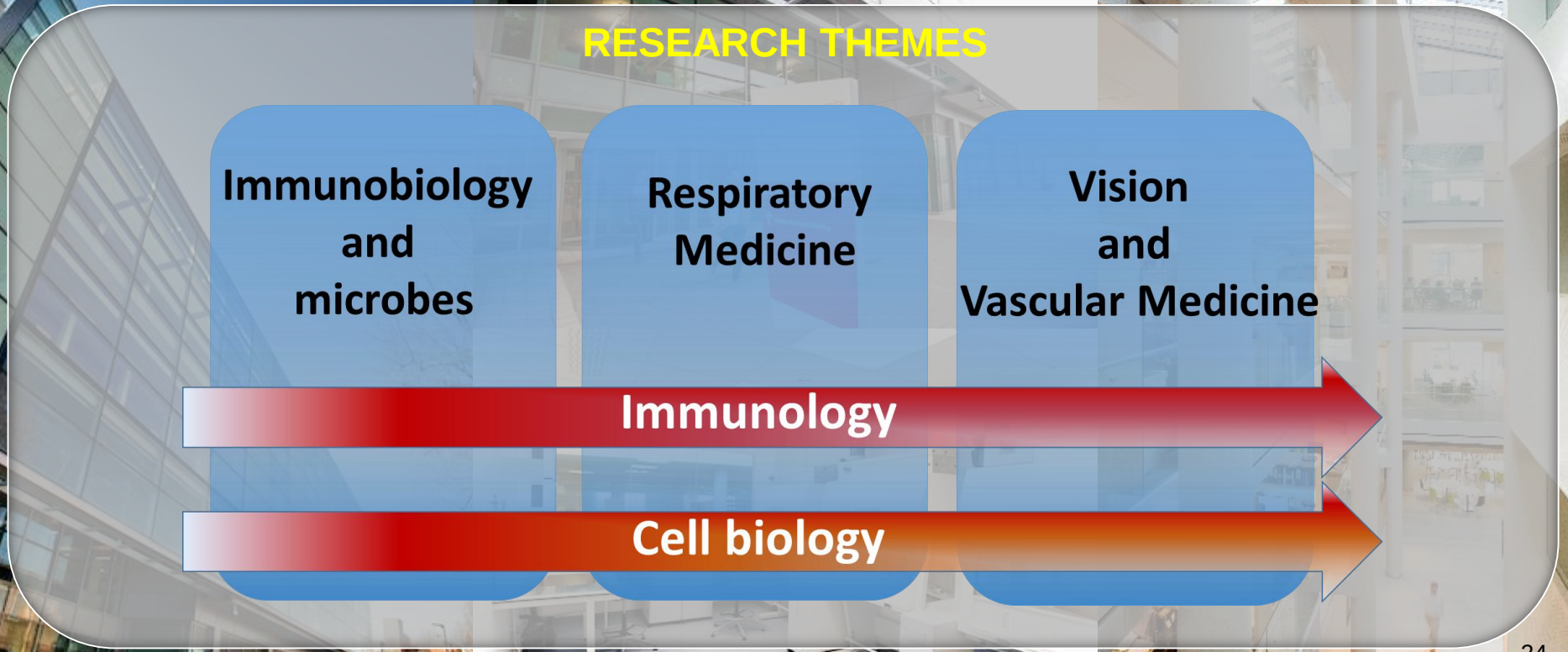


Knowledge and expertise

- Unique pre-clinical models of disease
- Cell re programming, stem cell biology, cell therapy
- Immunobiology, infection biology, antimicrobial resistance
- Novel therapeutics and diagnostic/prognostic biomarkers
- Expertise on clinical trials (phase I, II, III)

Research in Centre for Experimental Medicine

QUEEN'S UNIVERSITY BELFAST



School Postgraduate Research Training

TAILORED SUPPORT FOR INTERNATIONAL STUDENTS

SCHOOL POSTGRADUATE INDUCTION

GRADUATE SCHOOL INDUCTION

POSTGRADUATE RESEARCH MANAGEMENT

GENERIC SKILLS IN COMMUNICATING SCIENCE

INTRODUCTION TO CORE TECHNOLOGY UNITS

SPECIALIST PRACTICAL SKILLS TRAINING

SCHOOL POSTGRADUATE RESEARCH FORUM

PREPARING FOR DIFFERENTIATION

THESIS AND PHD VIVA PREPARATION

Centre-specific Postgraduate Research Training

Mandatory courses

e.g. CPH Medical Statistics, CEM Presentation Skills

Optional courses (class-only)

e.g. Cancer Biology, Applied Genomics,
Diabetes and Cardiovascular Medicine,
Immunity System in Health & Disease,
Public Health Lectures, Systematic Review

Self-directed training and careers mentoring

e.g. conferences, seminars, research-specific training, Graduate School courses
peer-mentoring, careers workshops, academic mentoring

ALL PGR STUDENTS ARE REQUIRED TO DOCUMENT 80 HOURS (10 DAYS) OF TRAINING PER YEAR

Further Information on Postgraduate Programmes

Masters Programmes

HIGHLY RELEVANT TO PHARMACY AND PHARMACOLOGY

Bioinformatics and Computational Genomics
Cancer Medicine
Experimental Medicine
Molecular Pathology of Cancer
Oncology and Drug Discovery

Director of Postgraduate Taught

Prof Sue Morison, Email: s.morison@qub.ac.uk

Research Programmes

TAILORED PROJECTS IN COLLABORATION WITH SCHOOL OF PHARMACY

Centre for Cancer Research and Cell Biology
Centre for Experimental Medicine

PhD Projects and Supervision

Find a PhD Supervisor

Director of Postgraduate Research

Dr David Grieve, Email: d.grieve@qub.ac.uk

Thank you


QUEEN'S
UNIVERSITY
BELFAST

QUEEN'S UNIVERSITY BELFAST

@英国女王大学