Cardiff Institute of Tissue Engineering and Repair (CITER)

MSc in Tissue Engineering

One year full-time

What is Tissue Engineering?

"Tissue engineering is an interdisciplinary field combining life and material sciences to progress the maintenance, repair and replacement of damaged/diseased tissue. The research area applies an understanding of normal tissue physiology to develop therapies including acellular and cell-based treatment and novel biomaterials for clinical applications.

Delivery of these advances requires research translation to patient products and services through commercial exploitation by the healthcare industry."

Background

Tissue engineering is a new and exciting field of research which has been growing in prominence over the last decade largely because of the recognised need to address chronic diseases in an ageing population. The challenges and opportunities lie in the development and application of novel tissue engineering technologies that will help to reduce the growing pressures on the healthcare system and identify cheaper, quicker and more readily accessible methods of diagnosis, monitoring and treatment. However, to achieve the successful translation of basic science to clinical application there is a growing need for trained researchers with the skills encompassing these multidisciplinary technologies in both the healthcare services sector and allied industry.

Introduction

The Cardiff Institute of Tissue Engineering and Repair (http://www.cardiff.ac.uk/citer) is an interdisciplinary Institute with internationally recognised expertise in basic, translational and clinical research in the field of tissue engineering and repair.

The current research base and clinical facilities within CITER provide the prospect for synergy in both research and teaching, with a view to facilitate the development of new technological advances used for the diagnosis and treatment of clinical conditions associated with tissue engineering and repair (e.g. ocular repair, musculoskeletal diseases, sports injuries, chronic wounds and kidney disease).

The MSc in Tissue Engineering is principally supported by the School of Dentistry (http://www.cardiff.ac.uk/dentistry/school/), the School of Medicine (http://www.cardiff.ac.uk/medicine/) and the School of Biosciences (http://www.cardiff.ac.uk/biosi/) at Cardiff University. The programme offers a truly unique modular scheme, designed to provide students from life, biomedical and physical science backgrounds with an extensive understanding of the science and practice of tissue engineered therapies; from theoretical science through to testing and clinical application.

Why study this MSc course at Cardiff?

- CITER offers students access to an inclusive multidisciplinary community that has a strong clinical axis
- Six months taught course followed by six months clinical or laboratory-based project
- Vocational training providing skills in Intellectual Property/Licensing and Ethical/Legal aspects of tissue engineered products
- Opportunity to experience partnership with Industry via an industrial visit to a biomedical company relevant to the Tissue Engineering and Repair field
- The course offers excellent training in transferable skills for subsequent employment in the biomedical and clinical research environment.

Student Testimonials

Chi Pooi Lee, Tissue Engineering MSc student (Academic year 2006/7)

The MSc in Tissue Engineering offers an insight into various aspects of tissue engineering thanks to the clinical and industrial visits and the interdisciplinary content; from the modern technologies available and the advancements made, to the perspective of our society and the current difficulties associated with tissue engineering.

One of the most fascinating topics was the use of stem cell technology in various tissues. I was fortunate to base my dissertation project on stem cells which consequently led to my decision to carry out a PhD following-on with the laboratory project with the same wonderful supervisors.

Karen Brakspear, Tissue Engineering MSc student (Academic year 2006/7)

For me, the course particularly brought home the clinical relevance of tissue engineering and the processes involved when developing new technology in medical science such as patenting, funding and foreseeing the ethical implications. The small class size meant that discussions and critique of current research were very rewarding and informative, and the variety of teaching formats (lectures, tutorials, clinical visits, labs) gave us an all round appreciation of the subject.

Course Structure

The CITER MSc course comprises a six-month taught course (Stage 1) followed by a clinical or laboratory based project work from May to September, leading to submission of a 20,000-word dissertation (Stage 2). All students must pass Stage 1 before moving onto Stage 2.

Module Summary (Stage 1 — Taught Course)

Modules average 43 hours contact time. Module structure and content is summarised below.

Module Title	Key Elements
Research Methodologies	Induction Library and Information Skills Statistics Skills
Cellular and Molecular Biology	Cellular Structure Extracellular Matrix Tissue Experimental Models
The Innovation Environment and Tissue Engineering Technology	Emergent Technologies Regulation of New Technologies Technology Transfer Science Communication
Tissue Engineering From Concept to Clinical Practice	Clinical Problems in Tissue Engineering Engineering of Advanced Materials New Materials for Clinical Use GLP & GMP Testing of New Materials and Therapies Evaluating products *in-vivo* effectiveness, efficiency and outcome Industrial Visit

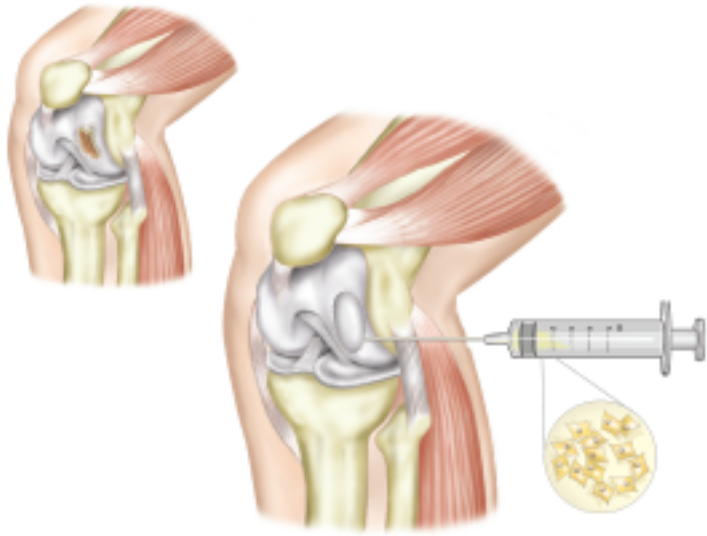
Teaching and Learning Methods

The course is taught through subject centred lectures, supported by tutorials and practical exercises. Collaborative learning and student-centred learning will be adopted via group work and individual assignments. Students are also required to conduct substantial independent study for their dissertation.

Each student will be assigned a project tutor at the start of the programme in preparation for the dissertation module. The tutor will be chosen in relation to the appropriate subject discipline and expertise for the project.

Entry Requirements
Students who possess the following are encouraged to apply:

- A qualification in Biological Sciences to at least A-level standard and
- A first or second class honours degree in a biomedical/veterinary or other science subject or an engineering or clinical discipline from medicine or dentistry.



Application Procedure

To apply please complete a Cardiff University postgraduate application form.

Guidance notes and a downloadable application form can be found at http://www.cardiff.ac.uk/for/prospective/postgrad/apply/index.html. If you are unable to access this web page, a printed copy of the Postgraduate Application Form can be requested by emailing Prospectus@cardiff.ac.uk.

Your completed application form should be returned to;
The Postgraduate Admissions Office, Registry, Cardiff University,
PO Box 927 CF24 0DE

For further information please contact:

Course Director:
Dr Ryan Moseley
Email: Moseleyr@cardiff.ac.uk

Deputy Course Director
Dr Robert Steadman
Email: Steadmanr@cardiff.ac.uk

Dental School Admissions Officer
Victoria O' Cock
Email: DentalAdmissions@cardiff.ac.uk