

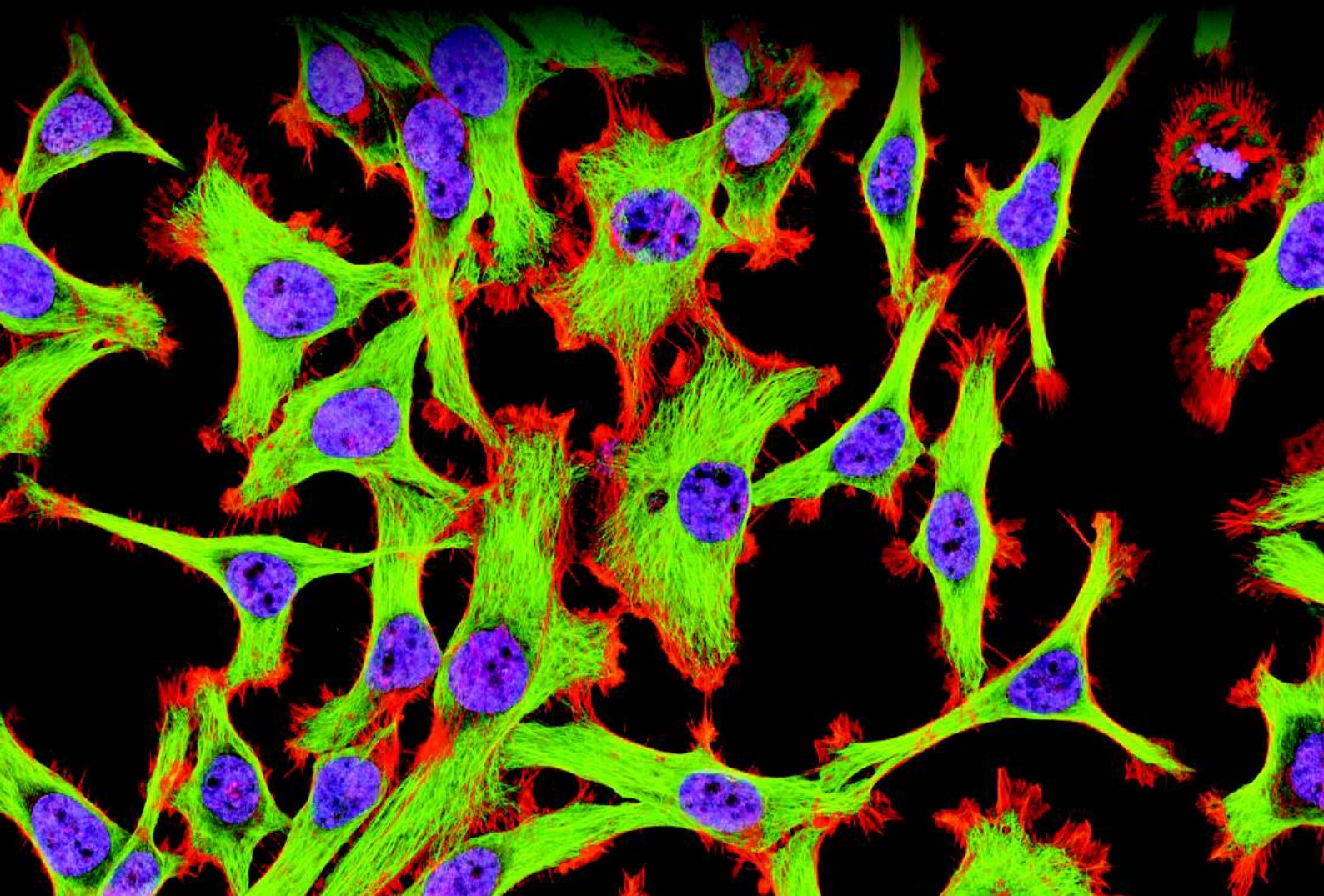


University of  
**Leicester**

College of Medicine,  
Biological Sciences and Psychology

MSc COURSES IN

# Molecular and Medical Biosciences



**THE Awards Winner**  
2007, 2008, 2009, 2010, 2011, 2012

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## MSc Courses In

Bioinformatics · Cancer Cell and Molecular Biology ·  
Chronic Disease and Inflammation ·  
Infection and Immunity · Molecular Genetics ·  
Molecular Pathology and Therapeutics of Cancer · Molecular  
Pathology and Toxicology

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## Welcome to Leicester

**We believe that our world-changing research produces high-quality teaching – and will inspire you to go further.**

At Leicester we consider education and knowledge to be a power for good. We aim to push the boundaries and discover ways to improve and change the world for the better.

For example, work done in our Department of Genetics by Professor Sir Alec Jeffreys led to the discovery of genetic fingerprinting, which revealed a pioneering method of biological identification. The technique identified the unique DNA variations in each human, which could be retrieved from hair, saliva and blood. The implications of the discovery were to become far reaching for forensic investigations.

More recently, University of Leicester geneticist Dr Turi King, a former student of our MSc in Molecular Genetics course, used this pioneering technique to help identify the remains of King Richard III, who was discovered under a Leicester car park.

But this is not just about what we do – this is about you – we're equally passionate about giving you the chance to find your own way, push the boundaries and put your mark on the world.

We know our work is better in a shared academic community that includes you. Where you're coming from and your journey up to this point will have given you your own personal perspectives and ideas. Your experience, energy and willingness to ask the difficult questions benefits you and us.

You'll be working with our leading academics who are at the cutting edge of their disciplines. By sharing their enthusiasm you'll become part of a stimulating and innovative learning community, which will enable you to realise your potential and to compete alongside the very best.





Fielding Johnson Building



## Introduction from the College Academic Director

Welcome to the College of Medicine Biological Sciences and Psychology at the University of Leicester. We have constructed a suite of exciting taught postgraduate programmes which reflect the cutting-edge emphasis on research in the College.

A particularly attractive feature of these programmes is the development of high level practical skills and the extent of the research project work involved. These are designed to develop you as a skilled research scientist.

Our programmes are founded on the College's excellent reputation in research and teaching within the biosciences, as reflected in research assessments and national student surveys; indeed, the School has been specifically commended for the clear synergy between its research and teaching.

In this brochure you will find details of the specific taught postgraduate programmes we have on offer and the range of exciting progression opportunities for our graduates. We look forward to meeting you and to guiding you on the next steps in your scientific career.

Best wishes

**Prof. Jon Scott**

Academic Director,  
College of Medicine Biological Sciences and Psychology



## How to apply

Our application process is designed to be user-friendly. Applications are best made online through the University Study With Us pages [www.le.ac.uk/study](http://www.le.ac.uk/study). This site gives you more details of the courses, but also provides essential information on accommodation, fees and funding, student visas and student life in Leicester. The Study With Us site also has specific sections useful to international students, parents, teachers and agents representing international students.

If you would prefer to apply by post, please request an Application Package from the Graduate Admissions Office University of Leicester, University Road, Leicester, LE1 7RH. United Kingdom.

You can contact your course Admissions Tutor and ask questions about the course or discuss the application process. Contact details of the Admissions Tutors for each course appear on the inside of the back cover of this brochure.

## About the College of Medicine, Biological Sciences and Psychology

The College offers a dynamic, modern environment for postgraduate study that attracts some of the most promising students from around the world. Built on decades of highly respected innovation, achievement and the resources of the University, few competitors can match our ability to give our MSc students the best possible all-round university experience.

Our first-class reputation for postgraduate teaching has been earned through our premium quality, laboratory based MSc courses in Molecular and Medical Biosciences. As a feature of their design, the courses include the development of laboratory research skills and a six-month research project that have proved to be very attractive to employers and postgraduate research supervisors. Formal national and local quality control procedures ensure that the highest standards of teaching are maintained and that the high regard of our students' degrees is preserved.

The College has over one thousand staff and three thousand students working in some of the newest purpose-built scientific accommodation in the UK. The MSc programmes are taught by staff whose expertise and quality are recognised throughout the research and teaching communities; it is a major strength of the courses that our teaching is recognised to be firmly underpinned by research. Having experienced the quality of our postgraduate taught students, staff in the College often recruit students from the MScs to their laboratory to continue their studies in one of the College's postgraduate research programmes.

## Why study Molecular and Medical Biosciences at Leicester?

- Our courses will train you in laboratory and bioinformatic techniques used in your chosen field and will **develop your proficiency** in experimental design. These skills will then be put into practice in a full time laboratory research project placement in the College that comprises two thirds of the credits for your course.
- The research training you receive and the laboratory research project you conduct will provide a **training that PhD supervisors and employers value highly when recruiting** their postgraduate research students from around the world.
- The core lecture programme, which is shared between the laboratory courses, will develop **specialist knowledge in your chosen field**. In addition to the core lectures for your course, there are optional lectures in fields related to your own, which will allow you to increase your understanding of the interdisciplinary aspects of your speciality.
- To bring you right up-to-date with your chosen topic, you can **attend Departmental seminars** and College Research Theme days that include both visiting and internal speakers.

## Entry Requirements

Applicants with a first or second-class honours (2.1 or 2.2) degree in a subject relevant to the course of interest are encouraged to apply. Qualifications recognised by the University as equivalent to a British University lower second class degree (2.2) will also be considered, as will applicants with significant relevant industrial or professional experience.

Applicants with a BTech and relevant industrial or professional experience and medically qualified applicants with a strong background in molecular biology and/or cell biology may also apply.

All applicants must satisfy our English language requirements, and we recognise a number of different qualifications and tests, such as IELTS, where a score of 6.5 is required, TOEFL iBT, where we look for a score of 90 or the Pearson Test of English (PTE) where a score of 61 is required. Information about other acceptable qualifications and tests can be found on our website: [www.le.ac.uk/englishskills](http://www.le.ac.uk/englishskills).

If your English language test results do not meet our requirements, the University's English Language Unit (ELTU) offers a range of pre-sessional courses. More information is available on the ELTU's webpages: [www.le.ac.uk/eltu](http://www.le.ac.uk/eltu).

## Duration and Mode of Study

The Laboratory based MSc courses take one year to complete full time and start in mid-September each year. The Bioinformatics MSc is also a one year course but starts in January each year.

## Course Structure

The course material for all the courses is organised into modules. For the Laboratory courses, the 60 credits of taught modules are held in the first semester (September to January) and include the lecture programme, tutorials and the intensive practical laboratory classes. The second semester, starting in January, comprises a 120 credit laboratory project placement in a research laboratory.

The Bioinformatics course comprises 80 credits of taught modules followed by a 40 credit steered research project and a 60 credit, independent research project.

## Scholarships

Applicants to our courses are eligible for a number of scholarships.

- The University of Leicester Open Scholarships for International Students are open to applications from any International applicant holding an offer from any MSc course.
- Santander Scholarships are open to any applicant holding an offer on any of our MSc courses who comes from Argentina, Portugal, Brazil, Puerto Rico, Chile, Spain, Colombia, Uruguay, Mexico, Venezuela, and Peru.
- Academically outstanding applicants from India holding an offer on any of our MSc courses may also be entered by the Admissions Tutors for one of seven £3,000 College of Medicine and Biological Sciences Scholarships.
- Applicants applying for the Infection and Immunity MSc or Chronic Disease and inflammation MSc are eligible to apply for The Commonwealth Shared Scholarships jointly funded by the UK Government's Department for International Development and the participating institutions.
- Fee discounts are also available from the University. All eligible applicants can apply for a Graduate Loyalty Discount. International applicants can also apply for the Family Loyalty Discount.

Full details of these schemes are available here:

[www.le.ac.uk/departments/gradschool/finance/funding](http://www.le.ac.uk/departments/gradschool/finance/funding)

# MSc Bioinformatics

## Why study Bioinformatics with us?

Bioinformatics is a major growth area in research and industry and so qualified bioinformaticians are in high demand. The MSc in Bioinformatics is a one year full-time course that enables biological sciences graduates to acquire bioinformatics skills for a career in this multi-disciplinary field.

Bioinformatics is a very practical subject and from day one of the course you will start working on your Linux laptop to develop your own bioinformatics toolkit. Ownership of the laptop is transferred to you, free of charge, on successful completion of the course. The course culminates in a three-month project placement in industry, a research institute or university research laboratory. In addition to entering PhD programmes, our graduates have gone on to take up positions at prestigious research institutes, including the Wellcome Trust Sanger Institute, the European Bioinformatics Institute and The Genomics Analysis Centre; others have gone on to have careers in the biotechnology industry, including at Pfizer, Astra Zeneca and Novartis.

## Course aims

The course aims to equip Biological Sciences graduates with the theoretical and practical analytical skills required for a career in Bioinformatics.

## Modules

### Introduction to UNIX and Linux – Essential Computing Skills

This module teaches the basic skills necessary to progress through the course. We begin with an introduction to Linux and deal with the installation of software and applying updates and patches. The next component handles the intricacies of the Linux operating system including files, archives and compression systems. This provides the basis for more advanced aspects of configuring the computer and installing software. An introduction to the concepts of web-page design concludes this module.

### Programming: Java and Databases for Bioinformatics

This module introduces you to the basic ideas for developing software to solve a problem. These ideas are introduced in the object oriented programming language Java. You will also be introduced to the development of graphical user interfaces and applets in Java. The second aspect of the module covers the use of computer databases, and more importantly for a bioinformatician, how they can be designed, built and queried efficiently.



## Programming: Perl for Bioinformatics

Perl is a scripting language that enables bioinformatics housekeeping tasks, but is also powerful enough to be used in most bioinformatics web servers and applications. You will learn the key commands and programming structures used in Perl. Following the material covered in lectures you develop your programming skills by solving small programming problems in tutorials. The module enables you to write original Perl programs in a bioinformatics context, but also utilise existing solutions and structures in public domain resources.

## Algorithms for Bioinformatics

Processing biological data requires complex computations on large volumes of data. This module introduces you to the algorithmic solutions of such computational problems and also covers the probabilistic models that underlie the data processing tasks in bioinformatics.

## Gene and Genome Analysis

This module informs you of the broad role of bioinformatics in genetics and genomics. You cover basic molecular and cellular processes underlying gene expression, genome structure and evolution and the techniques used to study them. You will then explore genome sequencing projects and genome annotation as major bioinformatics applications as well as functional and comparative genomics. Statistical analyses underpin many informatic challenges in biology, so you will apply statistical tools (specifically the R programming language) to two major research topics: transcriptomics and molecular evolution.

## Proteins

This module introduces you to the basic features of protein structures and methods used in structure determination. A central feature is hands-on training in the visualisation and comparison of protein structures. You will also learn theory and practice in alignment and comparison of amino acid sequences and how these can be used. We also introduce you to molecular modelling and discuss the drug design process, including visiting speakers from the pharmaceutical industry.

## Steered Research Project

The steered research project is organised as a group project with individually assessed components focussing on the topic of next generation sequencing. The project incorporates hands-on training and practice in the handling and analysis of next generation sequencing data, appropriate statistical analysis, web-server development and web application programming. You also will receive generic training during this period, including presentation and communication skills.

## Independent Research Project

Building on the skills you have acquired in the taught modules and the steered research project, you undertake a three month project involving original, independent research. Each project is carried out under individual supervision either in industry, external research

institutes or in the laboratory of a member of academic staff. There is a broad variety of projects available; examples of projects that have been offered in recent years include:

- Comparative Genomics of Blood Flukes
- Identifying the Transcriptional Start Sites of L1 Retrotransposons
- Natural Variation in miRNA Target Sequences
- Unravelling the significance of bidirectional promoters and the function of “unknown” genes in genomes
- Constructing whole genome recombination maps from Next Generation Sequencing Data
- Trawling for satellites and transposons in living fossil genomes

Project work by some MSc Bioinformatics students has been published:

Ray J, Dondrup M, **Modha S**, Steen IH, Sandaa R-A, *et al.* (2012) Finding a Needle in the Virus Metagenome Haystack – Micro-Metagenome Analysis Captures a Snapshot of the Diversity of a Bacteriophage Armoire. *PLoS ONE* 7(4): e34238. doi:10.1371/journal.pone.0034238

Malone, J. **Badarinarayan, N.** Ison, J. Stevens, R. and Parkinson, H. (2010) An Ontology of Bioinformatics Software. *Bio-Ontologies* 2010, a Special Interest Group meeting at ISMB 2010. Boston, MA.

Saunders, GI, Wasmuth, JD, Beech, R, Lainga, R, **Hunt, M**, **Naghra, H**, Cotton, JA, Berriman, M, Britton, C, Gilleard, JS. (2013) Characterization and comparative analysis of the complete *Haemonchus contortus*  $\beta$ -tubulin gene family and implications for benzimidazole resistance in strongylid nematodes. *Int. J. Parasitol.* in press.

## Student Profile

**Siddharth**  
MSc Bioinformatics

Studying at the University of Leicester was a great experience. The MSc Bioinformatics course provides a sound platform to enter the bioinformatics industry. It is challenging, but course work and research project impart the necessary knowledge that one needs to enter the world of bioinformatics. Combining biology and computing, bioinformatics is a tough subject, but the lecturers were always available, which helped a lot. Being an International student, it was really difficult to choose a university from the huge list of universities in the UK. I am happy that I made the right choice.



## MSc Cancer Cell and Molecular Biology



### Why study Cancer Cell and Molecular Biology with us?

Discoveries in cell and molecular biology underpin most of what is known about the development of cancer. This full time course is designed to train you to an advanced level ready for a research-based career in the molecular cell biology of cancer and allied subjects.

The course is designed to appeal to a broad range of bioscience graduates and comprises a three month, intensive taught laboratory and lecture course followed by a six month, independent laboratory research project. As well as developing your understanding of the cellular and molecular processes and techniques in cancer research, you will learn how to critically analyse research data and articles and to communicate complex scientific concepts and processes.

Many Cancer Cell and Molecular Biology MSc graduates continue their studies on PhD programmes.

### Course Aims

The course aims to provide you with cutting edge knowledge and practical training in those aspects of molecular genetics, cell biology and histopathology that are required to understand the contemporary approach to cancer research. This training provides you with an ideal platform for pursuing their careers in PhD programmes or employment in biomedical science and related industries.

### Modules

#### Introduction to Molecular Techniques

This laboratory practical module introduces you to commonly used techniques in molecular biology; the important principles of good and safe laboratory practice and critical data analysis skills are also integrated into the classes. By conducting your own experiments supervised by the academic staff you will be taught a range of key molecular techniques, including PCR, RT-PCR, DNA extraction, restriction endonuclease digestion, molecular cloning, agarose gel electrophoresis, RNA extraction and cDNA synthesis.

#### Research Methods in Cell Biology

The module comprises a laboratory practical course that covers a range of techniques used to study intracellular signalling pathways, cell proliferation and the intracellular localisation of subcellular organelles and proteins. Core techniques you can expect to learn include mammalian cell culture, transfection, immunoprecipitation, immune-complex kinase assays, polyacrylamide gel electrophoresis, immunoblotting and the use of green fluorescent protein and other epitope based tags to follow proteins. You will also be exposed to advanced analytical methods including mass spectrometry, flow cytometry, confocal microscopy and electron microscopy.

#### Research Methods in Cancer Biology

In a practical laboratory class setting, this module is designed to teach you the aberrant properties of tumour cells. You will conduct experiments that examine how growth factors



produced by tumours influence endothelial cells that line blood vessels to permit vascularisation of tumours. In addition, your experiments will allow you to explore the techniques of immunohistochemistry, immunofluorescence microscopy, cell migration and spreading assays, *in vitro* endothelial cell tube formation assays and the chorioallantoic membrane assay of neovascularisation.

### Advanced Topics in Cancer Biology

This module comprises a lecture series that will develop your understanding of the theoretical aspects of the molecular and cellular basis of cancer. Introductory lectures will cover the hallmarks of cancer and will be followed by detailed lectures on the specific properties of cancer cells, with an emphasis on growth control, apoptosis, angiogenesis, tissue invasion and immortalisation. The module will also include lectures on cancer genetics, with particular reference to the development of breast and colon cancer, cancer prevention, diagnosis and treatment.

In addition to the factual and practical knowledge of the cell and molecular biology of cancer cells, it is important that you learn how to critically analyse your own experimental data and data published in research papers. The above four modules will also include tutorials, practicals, self-directed learning and group presentations that will teach you how to apply critical thinking processes to any data you will need to analyse.

### Research Laboratory Project

The laboratory research project is a premium feature of the Cancer Cell and Molecular Biology MSc course that has proved particularly attractive to employers of our students. Comprising a full-time, 120 credit, six month laboratory research project placement in a research laboratory, you put your knowledge of cancer cell and molecular biology and newly acquired practical skills to the test. You will have a wide selection of projects to choose from according to your interests and intended career. Working in a research team and supervised by a member of academic staff, you will write up your results in the form of a project thesis.

In recent years projects undertaken by Cancer Cell and Molecular Biology students have included:

- Functional regulation of the melanoma associated adaptor protein ShcD/RaLP by phosphorylation
- Investigation of crosstalk between ERK and WNT signalling in colorectal cancer
- Monitoring the transcriptome of HDAC1 null embryonic stem cells
- The effect of CD40 stimulation on miRNA expression in chronic lymphocytic leukaemia.

- Use of human adult stem cell models for assessing the efficacy of cancer chemopreventive agents
- Identification and characterisation of novel B Cell Antigen Receptor-associated proteins in leukaemic cells using epitope-tag affinity purification and mass spectrometry

Project work by some MSc Cancer Cell and Molecular Biology students has been published:

**Al-Salmi, K**, Abbas, HHK, Schulpen, S, Karbaschi, M, Abdalla, I, Bowman, KJ, So, KK, Evans, MD, Jones, GDD, Godschalk, RW, Cooke, MS (2011) Simplified method for the collection, storage, and comet assay analysis of DNA damage in whole blood. *Free Radical Biol. Med.* **51**, 719-725.

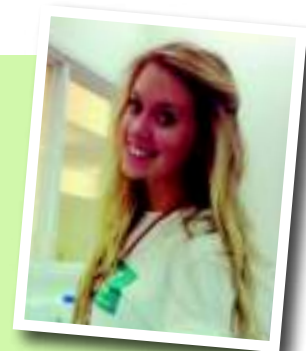
Lam, D., **Shah, S.**, de Castro, I. P., Loh, S. and Martins, L. M. (2010). *Drosophila happyhour* modulates JNK-dependent apoptosis. *Cell Death and Disease*, Aug 19; 1: e66; doi: 10.1038/cddis.2010.44.

Muskett, F.W., **Thouta, S.**, Thomson, S. J., **Bowen, A.**, Stansfeld, P. J. and Mitcheson, J. S. (2011). Mechanistic insight into human ether-à-go-go-related gene (hERG) K<sup>+</sup> channel deactivation gating from the solution structure of the EAG domain. *J Biol Chem.*, 286, 6184-91.

## Student Profile

### Jaelle

MSc Cancer Cell and Molecular Biology, PhD Student,  
Department of Biochemistry



I had always intended to continue to a postgraduate level but not necessarily in my undergraduate area of mathematics. So I took a year to work and travel and think about what I wanted to do and what interested me. It was quite a challenge to start biochemistry/molecular biology at a Masters level but I was well supported and worked hard to achieve a distinction on this course. I really enjoy my work now and am so glad I chose to come back to study at a postgraduate level at Leicester.

The first term is extremely intense but offered me an opportunity to learn a wide variety of techniques in the lab and also theory through lectures. The second element, a lab project, was a great way for me to build my independence and confidence in the lab and learn more techniques at an in-depth level.

## MSc Chronic Disease and Inflammation



### Why study Chronic Disease and Inflammation with us?

Chronic diseases caused or exacerbated by inflammatory processes are a major burden on world health. In addition to constituting the main cause of death in adults worldwide, they are recognised as a health priority of the World Health Organisation and the United Nations in its Millennium Development Goals. Non-communicable inflammatory diseases affect nearly all organ systems of the body including the skin, endocrine glands, gut, lungs, kidneys, musculoskeletal and cardiovascular system. Accordingly, there is high demand worldwide for well qualified researchers who understand the molecular and cellular basis of inflammation. The one year MSc in Chronic Disease and Inflammation enables biological and biomedical graduates to develop their knowledge of the molecular and cellular processes of inflammation and inflammation research techniques suitable for further study in PhD programmes or research based careers in industry. In addition to laboratory practicals and teaching by researchers and clinicians from the College, you complete a six month laboratory based research placement.

### Course Aims

The course aims to respond to the worldwide need for research scientists with a high level, theoretical and practical understanding

of inflammation and inflammatory diseases by producing graduates qualified for research. We also aim to train you for careers in biomedical industries and to qualify you for entry to higher research degree programmes.

### Modules

#### Core Theory and Techniques in Inflammation and Chronic Disease

This module introduces you to the fundamental molecular and cellular mechanisms of inflammation and subsequent tissue responses. Techniques used in inflammation research are also covered. Tutorial sessions emphasise the links between material taught in lectures and the progression of inflammatory diseases.

#### Fundamental Processes of Inflammation

This module comprises a lecture and tutorial course that describes details of the molecular and cellular mechanisms of acute and chronic inflammation, the mechanisms of action of common anti-inflammatory drugs will also be covered. In the context of inflammatory diseases, the module will also discuss the mechanisms and processes that govern whether an inflammatory reaction resolves or is perpetuated leading to a state of chronic inflammation and disease.

## Immunity

The Immunity module, taught in a series of lectures and tutorials, introduces the fundamental cellular and molecular mediators of the immune response as well as the role of the immune response in tissue repair. The immunological mechanisms that underlie inflammation are described both in the context of immune responses to pathogens and in chronic non-infectious inflammatory disorders. Diseases that involve dysregulation of the immune system, in particular the autoimmune diseases, are also considered with respect to the important role of chronic inflammation in their pathogenesis.

## Laboratory Practicals and Data Analysis

This module offers an introduction to the most common laboratory skills in cellular and molecular biology which you might be expected to use in your laboratory research projects. The module comprises six extensive laboratory practicals and linked data handling tutorials that are enhanced by technical demonstrations of advanced analytical equipment commonly used in inflammation research.

## Advanced Topics in Chronic Disease & Inflammation

The advanced topics module builds on the two introductory modules on Immunity and Inflammation. In addition to lectures, tutorials and student-led presentations there is a series of research based seminars delivered by internationally recognised authorities in their fields. These provide you with both topical and cutting-edge knowledge of developments in inflammation research and on a wide range of clinically important chronic diseases.

## Laboratory Research Project

One of the most attractive features of the MSc in Chronic Disease and Inflammation to employers is the six month, independent laboratory research project. You have the opportunity to meet the academic staff to discuss your project title and then choose your placement in an active research laboratory. Before starting experimental work you write a summary of the background of the work to be undertaken, the hypothesis to be tested and the experimental methods you expect to be used. One to one training is provided in the techniques to be used in the project by an experienced member of the research staff and you have regular meetings with the project supervisor to discuss day to day development on the project. At the end of the experimental work, you write and submit your dissertation and may even have the opportunity to have your work included in your supervisor's publications.

In recent years projects undertaken by Chronic Disease and Inflammation MSc students have included:

- Procoagulant signalling in platelets via the tyrosine kinase receptor FcγRIIa
- Regulation of the SNAT2 (slc38a2) amino acid transporter by L-Glutamine in a rat model of chronic kidney disease (CKD)
- Wnt-5A signalling and fibrosis in asthma
- Role of properdin in LPS-mediated tolerance of macrophages
- The role(s) of HTRA1, a novel serine peptidase involved in the activation of the complement system, in the pathophysiology of inflammatory disease
- Understanding the mechanisms of airway constriction by allergen exposure using the precision lung cut slices *ex vivo* model

## Student Profile

### Tariq

MSc Chronic Disease and Inflammation



I completed my undergraduate degree at University of Leicester, and the experience was excellent. Having witnessed the friendly staff with excellent teaching skills, and the department's facilities I decided to stay and study here at Leicester for my MSc. The change into postgraduate study was challenging but all staff members have been exceptional with their help and advice. The lecturers are a fantastic bunch of individuals and deserve all my respect, they are very friendly have a lot of passion for their work and were always available to aid me in any manner during my studies. I've been supported by the Department every step of the way. The most enjoyable part of the course has been the second semester research project, so challenging yet so rewarding, I loved every bit!



## MSc Infection and Immunity



### Why study Infection and Immunity with us?

In infants worldwide, infectious disease accounts for higher mortality and morbidity than any other category of disease. Tackling the burden of infectious disease on mankind is recognised as a health priority of the World Health Organisation and the United Nations in its Millennium Development Goals. This course aims to respond to the international need for research scientists by training biological and biomedical graduates to develop their knowledge and research skills in the fields of immunology and infection. The course combines practical and theoretical teaching delivered by scientists and clinicians working in the College. Of great value to potential employers, the course also gives you experience of research in a six month research laboratory placement. This project in particular prepares you for employment as research scientists or for entry to PhD programmes.

### Course aims

The MSc in Infection and Immunity aims to respond to the worldwide demand for research scientists with experience in these topics by producing graduates qualified for research careers in the biomedical industries and higher level research degree programmes. This goal is achieved by training you with the

necessary skills to apply cellular and molecular approaches to the study of infection and the immune response.

### Modules

#### Core Theory and Techniques in Infection and Immunity

This module teaches you molecular and cellular mechanisms and techniques that are used for research in infection and immunity. Emphasis is given both to prokaryotic and eukaryotic cell biology and its molecular regulation. The tutorial programme emphasises links between the material covered in lectures and infectious disease progression and also describes how the cellular, microbial and molecular techniques covered in the lectures are applied in practice to important research problems.

#### Infectious Disease

In the lecture and tutorial programmes of this module, you will learn the details of the molecular and cellular mechanisms that account for the pathogenesis of many of the most important diseases studied by medical microbiologists. There will be an emphasis on the diseases caused by *Mycobacterium* spp, *Vibrio cholera*, *Streptococcus pneumoniae*, human Immunodeficiency virus and *Plasmodium* spp. In addition to these diseases, the

mechanisms of action of drugs and other antimicrobial therapies will be discussed in particular, the details of antibiotic action and resistance.

## Immunity

This module comprises a series of lectures and tutorials dealing with the cellular and molecular components of the immune response and complex interactions involved in raising and resolving an immune response to infection. You will learn the mechanisms underlying immunity and factors controlling resistance and susceptibility to infection. There will also be discussion of how the immune system is unable to fully control latent and chronic infections.

## Laboratory Practicals and Data Analysis

This laboratory practical class module, supported by data handling tutorials and technical demonstrations, will introduce you to the most common laboratory skills required for research in the fields of infection and immunity. As well as teaching you cellular and molecular biology techniques, there will be an opportunity to learn the basics of sterile tissue culture that underpin many research projects in infection and immunity.

## Advanced Topics in Infection and Immunity

Lectures, tutorials and student-led presentations are used in this module to bring you to the cutting edge of topical issues in infection and immunity. Building on the modules Infectious Disease and Immunity, this module exposes you to a series of research-based lectures delivered by scientists and clinicians working on the interactions between pathogens and the immune system and the progression of infectious diseases.

## Laboratory Research Project

One of the most attractive features of the MSc in Infection and Immunity to employers is the six month, independent laboratory research project.

Carried out from January through to June, the independent research project is a particularly rewarding part of the course. You choose from a varied list of available projects and conduct your research under the watchful eye of an academic member of staff. Following the experimental phase of the project, you write up your results, with advice from your supervisor, in the format of a dissertation. The project is an ideal preparation for students wishing to proceed to PhD programmes.

In recent years projects undertaken by Infection and Immunity MSc students have included:

- The microbiomics of chronic obstructive pulmonary disease
- Studies on action of new drug candidates for the treatment of invasive pneumococcal diseases

- Growth arrest, neutral lipid content and antibiotic tolerance in mycobacteria
- Studies on phase variable restriction-modification systems on resistance of *Haemophilus influenzae* to infection by bacteriophage
- Identification and characterisation of novel bacterial transferrin and lactoferrin binding protein(s).

Project work by some MSc Infection and Immunity students has been published:

Cruse G. Fernandes VE. de Salort J. **Pankhania D.** Marinas MS. Brewin H. Andrew PW. Bradding P. Kadioglu A. (2010) Human lung mast cells mediate pneumococcal cell death in response to activation by pneumolysin. *J. Immunol.* 184, 7108-15

Bangert M, **Bricio-Moreno L**, Gore S, Rajam G, Ades EW, Gordon SB, Kadioglu A. (2012) P4-mediated antibody therapy in an acute model of invasive pneumococcal disease. *J. Inf. Dis.* 205, 1399-407

## Student Profile

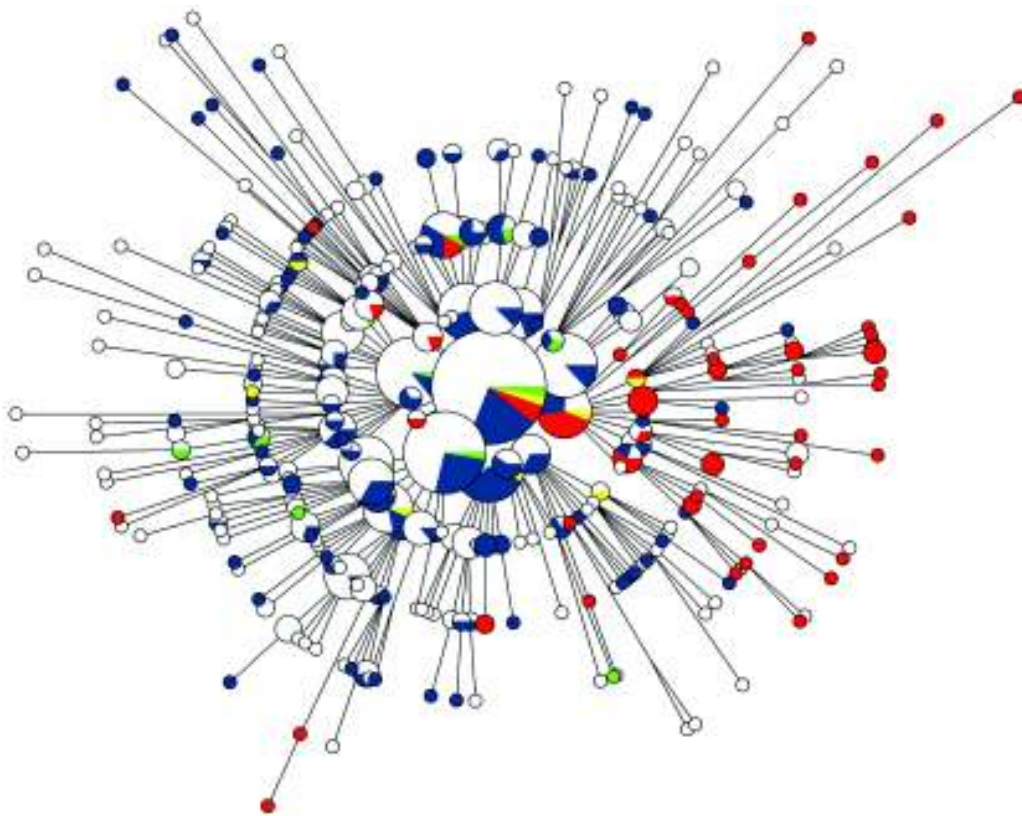
**Katerina**  
MSc Infection and Immunity

The University of Leicester is a place where you are given the chance to experience everything at its maximum; high quality of teaching, great facilities, great career opportunities, amazing nightlife, wonderful city! I am lucky to be a student here, and a member of this great, lovely family, and I believe everyone must experience it.

Teaching is through lectures, tutorials/seminars and practical elements. After each subject lecture we have tutorials or seminars in a presentation or discussion format, which help us understand about a particular subject area in depth. During practical classes we have the chance to work in pairs or groups, which is great as you can exchange lots of information with your classmates. We also work individually, which develops your confidence. Every module of semester 1 helps build up enough skills in order to move on to our research project in semester 2.



## MSc Molecular Genetics



### Why study Molecular Genetics with us?

In this post-genomic era nearly all aspects of biology are being investigated using molecular genetics, whether it be human disease or wildlife ecology.

The standout feature of this MSc course is the opportunity we give students to do hands-on experiments and carry out real research. By the combination of taught programme and research project, you will learn how to design and analyse experimental investigations in a modern research setting and, crucially, develop real experimental skills you can put to use in PhD research or working in biological, biomedical and biotechnological sciences. Our approach to teaching and training has developed over many years, the Genetics Department started this MSc in 1998, and many of our graduates have gone on to build careers in biotechnology, agribusiness, healthcare and scientific research.

### Course Aims

We aim to equip biological and biomedical science graduates with the theoretical and practical analytical skills required for a

research career. The course prepares you for employment in a wide range of industries either directly or after higher level study on a PhD programme.

### Modules

#### The Taught Programme

The taught programme is based on eight, week-long experiments that you undertake in a fully equipped laboratory dedicated to the Molecular Genetics MSc. These are not like experiments you may have done before in your degree studies, here, you will perform sophisticated molecular analyses yourself from start to finish. You will receive expert guidance from academic staff throughout the experiments and they will also make you think about what you are doing and why you are doing it. The taught programme is organised in two large modules that, in addition to the laboratory experiments, are supported by lectures and tutorials.

During the intensive experimental programme you will form strong working relationships with the other students and meet people from many different countries; our students make friendships that last many years.



## Introduction to Techniques in Molecular Genetics and Data Analysis

In this module you will learn about modern experimental techniques from lectures and you will also perform experimental procedures including subcloning in plasmids, controlling nucleic acid hybridization, polymerase chain reaction, DNA sequencing and the bioinformatic analysis of sequence data. In a series of laboratory investigations you will use these techniques to characterise bacterial genome variation, determine human genotypes, test gene expression, identify transposon insertion sites and compare protein expression levels. Assessment of the module is based on written analyses of the laboratory experimental investigations and interpretation of the resulting data.

## Experimental Design and Application of Molecular Techniques to Research

There will be lectures about experimental technologies and current topics in molecular genetics. You will perform more sophisticated experiments and also think more critically about how experiments are designed and investigations planned. For example, you will use real-time PCR for quantitative assessment of RNA expression and examine epigenetic modification of gene promoters by using bisulphite sequencing to determine patterns of DNA methylation.

You will independently investigate a current topic in molecular genetics by reading and analysing research publications, and apply your understanding to write an essay explaining the research topic.

Assessment of the module includes a written analysis of an experimental investigation. A multiple choice exam assesses knowledge and understanding of the lecture topics. A written exam assesses your understanding of experimental techniques and the ability to devise experimental strategies. Consideration of the essay completes the module assessment.

## Laboratory Research Project

You choose your laboratory research placement from projects covering a broad range of disciplines involving molecular genetics and a variety of organisms. You become part of an active research group employing modern approaches and technologies to solving significant research questions.

Projects undertaken by Molecular Genetics students have included:

- Characterising actively transducing L1 retrotransposons in humans
- DNA methylation and photoperiodism in the wasp *N. vitripennis*
- Copy number variation in haptoglobin and haptoglobin-related protein and their association with human sleeping sickness
- Mitochondrial stress and autophagy in a Parkinson's model
- Effects of folic acid deficiency on genome stability in mice
- Characterisation of the *PapsFIL* gene in the opium poppy
- Effect of bottleneck on phase variable genes of *C. jejuni*
- Functional genomics of *Bak1* polymorphisms and human platelets

Assessment of the research project is in three parts, based on your research performance, a dissertation you write about your research and a seminar you will present at the end of the project.

Project work by some MSc Molecular Genetics students has been published:

Borg, M., Brownfield, L., Khatab, H., Sidorova, A., **Lingaya, M.** and Twell, D. (2011) The R2R3 MYB transcription factor DUO1 activates a male germline-specific regulon essential for sperm cell differentiation in Arabidopsis. *Plant Cell* 23, 1-16.

Mendez-Bermudez, A., Hidalgo-Bravo, A., Cotton, V.E., **Gravani, A.**, Jeyapalan, J.N. and Royle, N.J. (2012). The roles of WRN and BLM RecQ helicases in the Alternative Lengthening of Telomeres. *Nucleic Acids Research* 40, 10809-10820

**Ray A.**, Rahbari R, and Badge RM (2011) IAP Display: A Simple Method to Identify Mouse Strain Specific IAP Insertions. *Molecular Biotechnology* 47, 243-252.

**Vosnakis, N., Maiden, A.**, Kourmpetli, S., Hands, P., Sharples, D. and Drea, S. (2012) A *FILAMENTOUS FLOWER* orthologue plays a key role in leaf patterning in opium poppy. *The Plant Journal* 72, 662-673

Watkins, R.J., **Patil, R.**, Goult, B.T., Thomas, M.G., Gottlob, I. and Shackleton, S. (2013) A novel interaction between FRMD7 and CASK: evidence for a causal role in idiopathic infantile nystagmus. *Hum. Mol. Genet.* first published online February 12, 2013 doi:10.1093/hmg/ddt060

## Student Profile

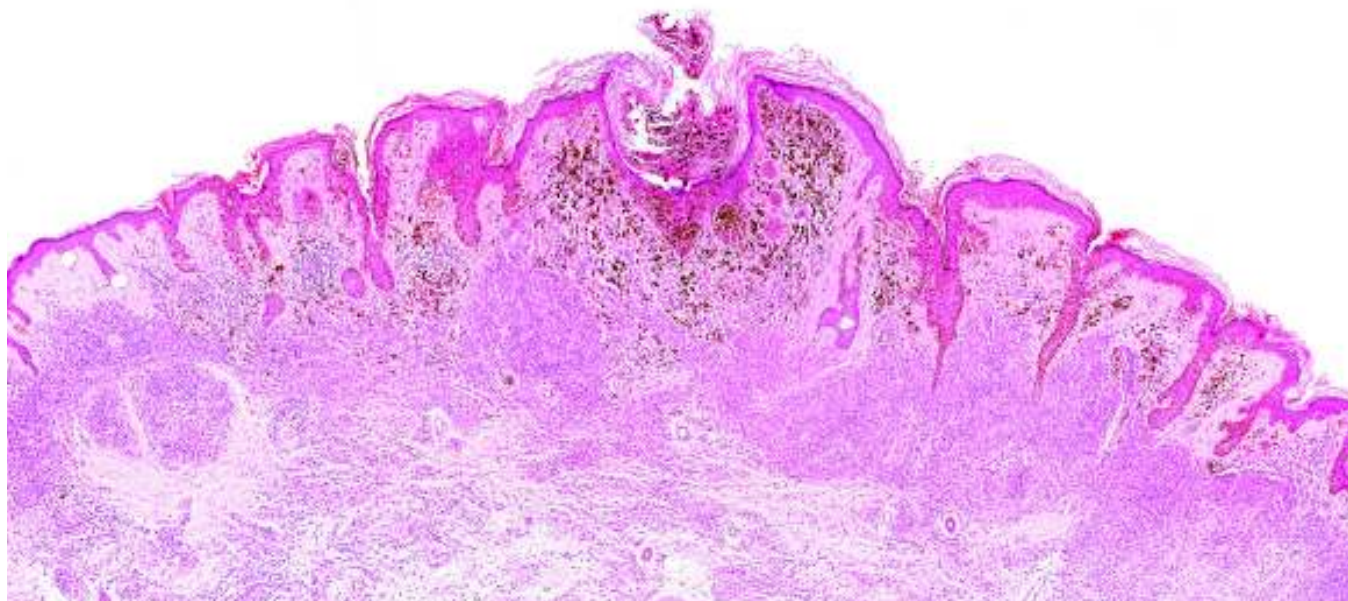
**Devyani**  
MSc Molecular Genetics



My first degree was undertaken in India. I successfully completed a three-year biology degree and decided that I wanted to specialise in genetics. I knew that I would have to study abroad and throughout my research into the courses available to me, the Genetics Department at the University of Leicester always came highly recommended and it is very well respected for its research and its personnel.

Prospective students should be aware that this is not a course for the faint-hearted. It is demanding but extremely varied and I have become far more self-sufficient and independent than I would have envisaged. I am learning all the time. Coming to Leicester, working with great lecturers and researchers in excellent working conditions has been a great experience.

## MSc Molecular Pathology and Toxicology



### Why study Molecular Pathology and Toxicology with us?

Over 20 years, this MSc course has trained more than 300 graduates in Molecular Pathology and Toxicology, two subjects of prime importance to the biomedical and pharmaceutical industries. The course equips you with practical skills and theoretical knowledge in molecular and cellular biology as applied to pathology and toxicology. Accordingly, after graduating with an MSc in Molecular Pathology and Toxicology you will be highly regarded by employers. Advanced lectures and seminars on carcinogenesis, reproductive toxicology, inflammation and molecular toxicology are taught by experts from within the College and externally. Following the taught phase of the course, you select a project from a wide range offered by academic staff. The research experience you gained during the six month laboratory research project is particularly valued by employers in industry and by PhD supervisors.

### Course Aims

The MSc in Molecular Pathology and Toxicology aims to train research scientists for industry and further study who can apply advanced molecular and cellular biology skills to conduct research in non-infectious disease and toxicology. This is achieved by teaching you theoretical aspects of pathology and toxicology to a high level, as well as laboratory practical and analytical skills that can then be put into practice in the research project and ultimately, the workplace.

### Modules

#### Science Skills

In tutorials, lectures and laboratory classes, this module aims to teach you the core competencies required of research scientists in bioscience. You are taught how to design experiments and the theory and practice of common molecular techniques. Laboratory skills covered include cellular and molecular methods to investigate cellular function, genetic variation and gene expression. In addition to the laboratory programme, you are also trained in biostatistics.

#### Molecular Mechanisms in Pathology and Toxicology

Lectures and tutorials in this module introduce you to toxicology and the pathological processes and mechanisms of cancer, cardiovascular disease and neurodegenerative disease.

In the toxicology section of the module, you learn the major processes that contribute to the toxicity of a chemical agent including absorption, distribution, metabolism and excretion of chemical toxins. Xenobiotic transformation and therapeutic drug toxicity encompassing the roles of immunological and free radical processes are also studied.

In the pathology section of the module you will learn how tissue responses to damage, cellular adaptations and neoplasia contribute to the pathology of cancer. Pathogenic mechanisms in cardiovascular disease and neurodegeneration are also covered.

## Introductory Projects in Molecular Pathology and Toxicology

This module comprises an intensive laboratory practical programme in which you conduct experiments in molecular pathology and toxicology.

In the toxicology experiments, you explore the relationship between genotype and phenotype of cells following exposure to xenobiotics; a particular focus is placed on the understanding of laboratory methods used to evaluate cellular DNA damage.

In the pathology experiments, you study gene expression in response to DNA damage and stress in tumour tissues and cell lines. Experiments are also conducted on metastasis, tumour proliferation, and cell death.

Laboratory work in the module is underpinned by lecture and tutorial sessions that include discussion of the ethical issues surrounding the use of tissue and other material from volunteers.

## Advanced Topics in Molecular Pathology and Toxicology

This lecture-based module, designed to make you experts in their field, covers four topics: Carcinogenesis and Cancer Biology; Molecular Toxicology; Reproductive Toxicology; Inflammation.

In the Carcinogenesis and Cancer Biology topic, you learn, to an advanced level, the use of and hazards of cytotoxic agents such as chemotherapeutic drugs, and radiotherapeutic and oncogenic mechanisms within the context of breast cancer and melanoma. Molecular Toxicology expands on the earlier lecture programme by considering neurotoxicology, metabolism, genetics of response to toxic agents and toxicology in the contexts of drug development, forensics and medicine. Reproductive Toxicology covers the complex physiological process of pregnancy and its exquisite vulnerability to toxic agents. Inflammation teaches you how immunological processes underpin pathological mechanisms, histopathological and systemic findings by reference to selected organ systems.

## Laboratory Research Project

One of the most valued features of this course is the laboratory research project, in which you put your knowledge of molecular pathology and toxicology and your newly acquired practical skills to the test. For six months, you work as a member of a research team, conducting your own experiments. The project is written up as a dissertation, with recent titles as diverse as:

- Biomarkers of bladder cancer in human urine
- Modulation of purinergic neurotransmission in urinary bladder during cycles of hypoxia/reoxygenation
- Use of human adult stem cell models for assessing the efficacy of cancer chemopreventive and chemotherapeutic agents

- Development of a genotoxicity screening system for drug candidates
- Translating prognostic biomarkers in melanoma
- Monitoring the circulating cancer genome for patient follow up

Project work by some MSc Molecular Pathology and Toxicology students has been published:

Britton RG, Horner-Glister E, **Pomenya OA**, Smith EC, Denton R, Jenkins PR, Steward WP, Brown K, Gescher A, Sale S (2012) Synthesis and biological evaluation of novel flavonols as potential anti-prostate cancer agents. *Eur. J. Med. Chem.* 54, 952-958

Al-Salmani K, **Abbas HHK**, Schulpen S, Karbaschi M, **Abdalla I**, Bowman KJ, So KK, Evans MD, Jones GDD, Godschalk RW, Cooke MS (2011) Simplified method for the collection, storage, and comet assay analysis of DNA damage in whole blood. *Free Radical Biol. Med.* 51, 719-725.

## Student Profile

### Dipti

MSc Molecular Pathology and Toxicology



I chose to do a Masters because I wanted to carry on learning about biology and expand on my lab skills. I chose to do it at Leicester because of the interesting course content and the six-month lab project opportunity, which has allowed me to work in a lab and undertake my own research.

The teaching comprises seminars, lectures and practical elements. The teaching is excellent and varied, meaning there is always something new to learn. The six-month lab project allowed me to improve my practical skills and analytical skills and develop independence within a lab environment. I definitely feel I have been well supported by the Department and the most enjoyable part of the MSc has been the taught lab sessions at the beginning of the course.

The University offers excellent support from the teaching staff and departments. The lovely campus is compact and friendly with everything you need within walking distance. There are good facilities and a good library.



## MSc Molecular Pathology and Therapeutics of Cancer

This exciting new course scheduled to start in **September 2014** is designed to equip future scientists with the knowledge to make a difference in the understanding and treatment of cancer. The course will take the mechanistic understanding of cancer biology and apply it to the analysis of risk, prevention, diagnosis, prognosis and therapy. Building on a foundation of the understanding of basic cancer cell biology, translational coverage will consider design of treatment modalities, including radiotherapy, mechanisms of action of anti-cancer drugs, therapy resistance, biomarker discovery and use, cancer chemoprevention, anti-cancer target discovery and validation, clinical trials, imaging, cancer risk and epidemiology and biostatistics. A key component of the course will be a six month research project, which will give students an opportunity to study one of these areas in depth.

## Your Learning Experience

### Teaching Methods

The first semester taught modules are delivered by a variety of methods. For the laboratory based courses, there is a wide ranging series of core and optional lectures scheduled so that any student on any course can attend any lecture without a timetable clash. Each course also has its own topic specific lectures, some of which are integrated into the practical class programme. The more computer based Bioinformatics MSc includes an extensive specialist lecture series.

On days when there are no lectures, structured laboratory practical classes are run in the first semester of the laboratory based courses. Tutorials, seminars and employability sessions are embedded into these practical modules.

Following examinations in December, laboratory based students choose their research project placement topic from a wide range of titles and supervisors.



### Assessment

Academic performance in the taught modules is assessed by means of formal examination papers and a wide range of coursework assignments including essays, practical reports, presentations and other written tasks. All projects are assessed on the basis of the research dissertation and research performance.

### Student Support

On arrival at Leicester, you will attend an induction to introduce you to the Department, College, University and City. A personal tutor will be assigned to you who will be available to offer guidance on academic and pastoral issues.

IT services available include a University account that allows you access to a wide range of software, e-mail, the University's virtual learning environment, literature databases, the library catalogue, e-books and journals and open access computer laboratories.

The University has a Learning Development Service for students to improve and adapt their skills in academic writing, study and examinations, numerical data, presentations and dissertation writing.

The Career Development Service offers one-to-one guidance, feedback and support on a wide range of areas, including: generating career ideas and plans, gaining relevant work experience, developing employability skills, writing effective CVs, cover letters and application forms, interview preparation and practice, exploring further study options. Sessions on employability will be integrated into your lecture courses.

The University has a Welfare Service, which offers support for practical and personal issues including health, finance, housing and advice on international student issues. The Student Psychological and Healthy Living Service helps students to identify an approach to life which can improve their well being, enhance their study, and reach their full potential. The AccessAbility Centre offers support to students with dyslexia, other specific learning difficulties, disabilities and long-term conditions.

## Core Facilities Available for Research Projects

Research in the College is supported by an impressive array of services that are available to staff and students when conducting their research projects.

The Protein and Nucleic Acid Laboratory provides analytical services such as DNA Sequencing, SNP genotyping, proteomics and mass spectrometry, and protein sequencing. The Bioinformatics and Biostatistics Analysis Support Hub is available to assist with the design of studies involving bioinformatics and biostatistics as well as assist with data analysis itself.

Leicester Imaging Technologies comprises the electron microscopy laboratory, which analyses ultrastructural detail through transmission and scanning electron microscopy, the advanced imaging facility which provides access to a wide and diverse set of microscopes for cell-based fluorescence studies through widefield, confocal, multiphoton and TIRF technologies, as well as a pre-clinical imaging suite, that includes imaging modalities for small animals ranging from ultrasound and bioluminescence to quantum CT and MRI.

For microbiological research, the College has a Containment Level 3 suite that provides a facility for experienced staff to work with ACDP Category 3 organisms. The Containment Level 3 suite contains four individual laboratories equipped with microbiological safety cabinets, a CO<sub>2</sub> incubator for tissue culture and other equipment essential for working with Category 3 microorganisms and their safe storage.



“ You get to know your lecturers really well and the University is very friendly and there are many opportunities to get to know other people, particularly those on the postgraduate courses. There is a Mature Students & Post Graduate Association, which organises events where you can meet people in a similar situation.

Leicester is a great place to study, there is a really good atmosphere and whilst you are living in a city everything seems quite compact and you can get around easily. Everything is on the doorstep.”

Emma

## Research Opportunities

### Research Themes and PhD Opportunities

There are many opportunities for PhD research at Leicester after completing an MSc in Molecular and Medical Biosciences and every year about ten students from the courses move to a PhD programme in one of the colleges research themes.

Research in the College is organised into nine cross-departmental research themes based on topics that reflect our research strength and future potential. All of our MSc courses, and the employers of our students, place great emphasis on the individual research project placement, almost all of which will be in laboratories associated with the college research themes. Details of some work taking place in the themes most closely associated with the MScs in Molecular and Medical Biosciences are given below:

#### Cancer Science Theme

The Cancer Science research theme includes 52 clinical and non clinical staff engaged in research include: genome variation and dynamics, radiobiology, cell proliferation and death, and biomarkers and cancer prevention.

Cancer research at Leicester is underpinned by a strong foundation in basic science that is used for our translational and clinical research programmes with the goal of eventually developing new and improved treatments for cancer patients. An example is our research on haematological cancers, which is based on strong links between laboratory and clinical research. A detailed understanding of the fundamental mechanisms that regulate cell death by apoptosis is linked to clinical trials with drugs that promote apoptosis of tumour cells, in the expectation that this will improve patient survival.

#### Cardiovascular Science Theme

Cardiovascular research has been a major strength of the University of Leicester Medical School since its inception; currently the University has more than 160 staff and postgraduate students engaged in cardiovascular research.

Principle areas of investigation include: cardiovascular genomics and proteomics, cardiovascular cell biology and signalling and cardiovascular physiology, pathophysiology and clinical trials. There is excellent interaction between basic and clinical scientists with an emphasis on translational research. This is facilitated by the Leicester National Institute for Health Research Biomedical Research Unit in Cardiovascular Disease. Laboratory research has been enhanced by the completion of a £12.6m Cardiovascular Research Centre to house functional genomics and bioinformatics research and 2013 will also see the completion of a new spectrometry and proteomics facility.

#### Genome Science Theme

The University of Leicester is perhaps best known for the world-changing discovery in 1984, by Professor Sir Alec Jeffreys, of DNA fingerprinting in the Department of Genetics. Since that time the study of Genome Science has expanded to encompass over 60 academic members of staff. The uniting thread for this diverse community of researchers is DNA – the molecular code for all living things that places genetics and the study of genes and genomes at the heart of biology and medicine.

Research within the theme is organized into four interconnected sub-themes:

- Genome Diversity and Dynamics
- Genes in Health and Disease
- Genome Function and Epigenetics
- Evolutionary and Behavioural Genetics







## Microbial Science Theme

The Microbial Sciences Theme includes academics from three Departments in the College whose primary focus is on microbes or infection, their work encompasses laboratory studies, applied, clinical and translational research. The major subthemes are:

- Respiratory Infections
- Microbial growth and physiology
- Microbes and metals
- Microbial genomics

Many members of the theme are engaged in molecular and cellular studies of host responses and bacterial pathogenesis relevant to infection.

Research on viruses ranges from clinical research on respiratory virus infections, viral vaccines, antiviral agents and non clinical work on bacteriophages and their relationship with bacterial hosts.

## Molecular and Cellular Science Theme

The Molecular and Cellular Bioscience Research Theme includes 80 members of academic staff from across the college.

The focus of research includes:

- Single molecule approaches to understanding biological systems
- The structure, dynamics and assembly of macromolecular complexes
- The mechanisms and principles of regulation of gene expression
- Signalling and phosphorylation networks

## Neuroscience and Behaviour Theme

The Neuroscience and Behaviour Theme integrates research across five strands including genetics and the evolutionary basis of behaviour, receptors and ion channels, sensory processing (e.g.

hearing and vision), neuronal networks, cognition, psychology and neurodegeneration.

Some of the exciting topics under investigation include:

- The genetic and molecular mechanisms underlying circadian rhythms
- Motor circuit development; auditory processing and tinnitus; vision and nystagmus
- G-proteins and the mechanisms of synaptic plasticity
- Ion channels and neuronal excitability
- Disease mechanisms including stroke and ischaemic injury, neurodegeneration and attention deficit hyperactivity disorder

## Respiratory Science Theme

The University of Leicester has an international reputation in respiratory research with strengths in both laboratory and clinical research. The 51 members of the theme are drawn from a number of departments within the University. Research is based on three groups of diseases:

- Airway diseases – asthma and COPD
- Infectious diseases – pneumonia and tuberculosis
- Lung cancer

A central question being addressed by members of the theme is what is the pathogenesis of environmentally-driven lung disease? Theme members come together to address this question from a diversity of perspectives, encompassing fundamental molecular and cellular investigations, through to clinical, epidemiological approaches. Particular areas of interest have been mechanisms of eosinophil trafficking and activation in asthma, T-cell homing to the lung in health and inflammatory lung diseases, immunopathology of asthma, and the genetics of chronic obstructive pulmonary disease.

## Student Life

### Campus

On our bustling compact campus it's rare to walk from one end to the other without bumping into someone you know along the way. The campus is a vibrant community, with all manner of places to meet, eat and drink, as well as study. We're committed to providing you with high quality facilities and our £1bn campus development plan ensures all our resources meet the needs of modern and ambitious students.

### Students' Union

The Students' Union is brimming with opportunities that will make your time at Leicester unforgettable. The spectacular Percy Gee building boasts superb facilities, from coffee shops to bars and the fantastic live-music venue, O<sub>2</sub> Academy Leicester. You are encouraged to get involved with the SU – there are over 200 student societies covering a huge range – sport, politics, media, performing arts and much, much more. It's a great way of meeting new people, gaining skills or trying something completely different!

## Accommodation

Our accommodation offers you a wide variety of choice. Whether you fancy self-catered or catered, en-suite or standard, there will be a package to suit you. Our halls at Oadby are surrounded by beautiful Botanic Gardens and offer a thriving social life. Accommodation in the city gives you independence and the amenities of the city right on your doorstep. You are guaranteed a room in student accommodation if you apply for accommodation by 1 September of your year of entry.

[www.le.ac.uk/accommodation](http://www.le.ac.uk/accommodation)

## Sports facilities

The University has recently invested £10m in its sports facilities. You can enjoy a work out, take a swim or work up a sweat in a fitness class at our sports centres on campus or at Manor Road (next to the Oadby Student Village). You are also encouraged to get involved with our sports clubs, which welcome members of all abilities. Keen competitors can also represent the University through Team Leicester, the hotly-contested Varsity matches and get involved with our thriving Intramural events.

[www.le.ac.uk/sports](http://www.le.ac.uk/sports)

## Embrace Arts

The University has its own arts centre, Embrace Arts, with a packed programme for students and the public, featuring music, dance, theatre, comedy as well as exhibitions. It also runs courses covering everything from salsa dancing to jewellery making. Students can get concessionary prices and discounts on courses and workshops.

[www.embracearts.co.uk](http://www.embracearts.co.uk)

## About the City of Leicester

Leicester is a lively and diverse city and the tenth largest in Britain. It has all the activities and facilities you would expect, with a friendly and safe atmosphere. The city centre is just a short walk from campus so you'll never be far from the action.

Leicester's diverse heritage is reflected in a dazzling array of festivals and cultural experiences including the largest Diwali celebrations outside India, the UK's longest running Comedy Festival, the eclectic Summer Sundae Music Festival, and the University's hugely successful book festival – Literary Leicester.

Recent developments have led to the opening of the world-class Curve Theatre and Phoenix Square Independent Arts Centre in the new Cultural Quarter, which complement Leicester's existing array of cinemas, theatres, museums and galleries. The sparkling Highcross complex features 110,000 square metres of retail therapy, bars, cafés and restaurants. For those with independent tastes Leicester Lanes houses a variety of boutiques and specialist shops.

As you would expect from a true student city, there is a huge variety of bars, clubs and live music venues that cater for all kinds of tastes. Food lovers are treated to a fantastic selection of restaurants, with specialities available from every corner of the world.



Students' Union

## Contact Details

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Cover Photo Credit: Thomas Deerinck

All information in this brochure was correct at the time of going to press. However, changes and developments are part of the life of the University, and alterations may occur to the programmes and services described in this brochure.



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