Undergraduate Courses in

Medical Biochemistry  Medical Genetics
Medical Microbiology  Medical Physiology

School of Biological Sciences
Television news bulletins describing dramatic breakthroughs in biomedicine seem to come on a nearly daily basis. This is an indication of the fact that it is a tremendous time to be studying for an education in medically-related bioscience.

At Leicester, the strong collaboration between the disciplines of biochemistry, genetics, microbiology and physiology within the School of Biological Sciences, and with the neighbouring School of Medicine, allow us to offer the exciting options of degrees in Medical Biochemistry, Medical Genetics, Medical Microbiology and Medical Physiology, which give our students both breadth of vision and specialised knowledge in these important subjects.

Biological Sciences at the University of Leicester has an international reputation based on our research strengths. You’ll be taught by world-leaders. 50% of our staff place in the top 1% of their research field. We are renowned for the discovery of DNA Genetic profiling (fingerprinting) by Professor Sir Alec Jeffreys, which has generated a multi-million pound industry and has had profound effects in the spheres of health and criminal justice.
Why Choose to Study at Leicester?

- Leicester has never been outside the top 20 universities ranked by overall satisfaction in the National Student Survey since it began in 2005. In 2014 96% of students studying biological sciences at Leicester were satisfied with their course.

- We are consistently in the top 10 in national league tables – 7th for Biosciences in the UK 2015 Guardian University Guide.

- We offer opportunities to study abroad or take a year in industry as part of the course. This is an ideal way of boosting your career prospects.

- We offer a range of degrees and flexible courses designed to allow you to follow your own interests.

- A degree in medical sciences offers you a wide range of career opportunities. Many of our graduates follow further training for research or teaching careers in biology often on the MSc or PhD programmes in Leicester.

- Our excellence in teaching is built on a synergy with international excellence in research and your learning and teaching is effectively supported by personal tutors and the University’s student support services.

“The course is fascinating. I love laboratory practicals as we get hands-on experience with different organisms and complex equipment.”

Ze-Lyn, Biological Sciences
Course Detail

Three year degrees:

BSc Medical Biochemistry – UCAS code C720 BSc/MBio
BSc Medical Genetics – UCAS code C431 BSc/MGen
BSc Medical Microbiology – UCAS code C521 BSc/MMic
BSc Medical Physiology – UCAS code B120 BSc/MPhys

These courses will provide you with an education and training in biochemistry, genetics, physiology or microbiology, with particular emphasis on the application to medicine. The courses combine modules from the Medical School curriculum and the Biological Sciences programme alongside modules exclusive to these degrees. If you are intending to go on to study medicine, all of these programmes are a suitable base from which to apply for graduate entry. Students who perform exceptionally well in the 1st year of study may apply for consideration for transfer into Year 1 of the 5-year MBChB programme.

Four year degrees:

For all of these degree programmes there is an opportunity, by taking an extra year between Years 2 and 3, to broaden your experience in a number of ways. You will initially register for the three-year degree programme and then transfer to one of these options in the second year.

BSc Medical Biochemistry/Genetics/ Microbiology/ Physiology (Year in Industry)
BSc Medical Biochemistry/Genetics/ Microbiology/ Physiology (Erasmus)
BSc Medical Biochemistry/Genetics/Microbiology/ Physiology (Year in North America)
Year in Industry

This provides a great opportunity to gain experience of laboratory work in industry and will normally be paid employment. This option is competitive and so will depend upon your performance in the first year. Previous students have spent their year in industry with companies such as AstraZeneca, GSK and Pfizer.

University of Leicester Biological Sciences students who complete an industrial placement year will graduate with an accredited degree. According to the Society of Biology, the UK learned society for biologists, this means that:

“Degree accreditation by the Society of Biology recognises academic excellence in the biosciences, and highlights degrees that educate the research and development leaders and innovators of the future. The accreditation criteria require evidence that graduates from the programme meet defined sets of learning outcomes, including gaining a substantial period of research experience.”

Year Abroad (Europe, North America or Japan)

Studying abroad is a wonderful and life-changing opportunity. As well as enjoying a vibrant social life, your confidence, demonstrable language skills and global outlook will enhance your career prospects considerably. Many organisations have an international scope so knowledge of a foreign language and a global outlook can give you a vital edge in the graduate employment market.

The School of Biological Sciences participates in the Erasmus-Socrates programme of the European Union whereby you can study in another European university. Partnerships currently exist with universities in Spain, France and Portugal. If you take this opportunity you can obtain a grant to help support you during this year.

You can also opt to spend a year studying at a North American or Japanese university.
Research-Led Teaching

Academic staff in the School of Biological Sciences are engaged in exciting research in their subject. This has a direct impact on the teaching programmes, not only because you are being taught by experts in their field, but also because it affects your opportunities for research in your final year project.

The School has consistently attracted financial support from the major UK research councils and from charities such as Cancer Research UK, the British Heart Foundation and the WellcomeTrust. We have a full postgraduate training programme leading to the degree of PhD and also run MSc courses in Molecular Genetics, Bioinformatics, Molecular Pathology and Toxicology, Cancer Cell and Molecular Biology and Infection and Immunity.

The Henry Wellcome Building, which houses the laboratories of the Departments of Biochemistry and Cell Physiology and Pharmacology provides the School with a state-of-the-art facility for research in biomedical sciences.

The teaching and research laboratories in the Maurice Shock Medical Sciences Building and Adrian Building have recently undergone extensive refurbishment to provide high quality, up-to-date facilities for staff and students to work in.

Some highlights of the wide range of current research activities include:

- Development of work related to the discovery of DNA fingerprinting, and its application in forensic science. These technologies were discovered here at Leicester by Professor Sir Alec Jeffreys.
- The study of the effects of radiation, for example following fallout from the Chernobyl disaster, and following treatment for cancers.
- The identification of genes involved in susceptibility to a range of genetic disorders including cancer and neurological disorders such as Alzheimer’s disease.
- The role of genes in behaviour and biorhythms.
- In the Department of Biochemistry, studies on the molecular processes of chromosome segregation and of cell activation mechanisms in cancer cells are identifying novel potential targets for chemotherapy and gene therapy.
- Groups working in Biochemistry on the regulation of gene expression are
identifying novel processes affecting mammalian development and their role in diseases.

- Work in Biochemistry on the structure of proteins (using techniques such as NMR spectroscopy and x-ray crystallography) are providing insight on a wide range of fundamental processes such as cell motility, drug metabolism, gene activation and tuberculosis virulence.

- Scientists in Cell Physiology and Pharmacology are studying how drugs that cause sudden cardiac death bind to proteins in cell membranes.

- Other work in Cell Physiology and Pharmacology has shown that proteins in the cell membranes of excitable tissues, such as the brain and heart, are important targets for the treatment of diseases including stroke, high blood pressure and for the treatment of pain.

- Scientists and clinicians in the Department of Infection, Immunity and Inflammation are looking at how to stop the immune system from damaging heart muscle after a heart attack. This is an important factor in what is one of the UK’s major killers.

- Other scientists in the Department of Infection Immunity and Inflammation are at the forefront of both national and international efforts to stop the spread of infectious diseases such as pandemic influenza and tuberculosis – responsible for many deaths in both rich and poor countries.
BSc Medical Biochemistry UCAS Code: C720 BSc/MBio

Three or four years, full-time

The Medical Biochemistry programme will provide you with knowledge and understanding of the fundamental importance of biochemistry in the working of the human body.

First Year

All students in the Medical Sciences at Leicester follow a common First Year. You will take modules in Biochemistry, Microbiology and Cell Biology, Genes, Physiology, Pharmacology & Neuroscience and a dedicated Medical Bioscience module. Key skills in IT, numeracy and communication will form part of all of these modules and will provide you with the relevant experience for the second and third years. Throughout the first year, you will gain practical experience in the laboratory classes associated with each module and have the opportunity to discuss topics in the tutorials that form an integral part of the learning process.

Second Year

Second year core modules deepen your understanding of the dynamic processes occurring within a cell and the ways in which cells can respond to various signals, either from elsewhere in the body or from the wider environment. You will see how errors in these processes play crucial roles in the development of disease. Other modules look into the control of gene expression and in more detail at the amazing roles fulfilled by proteins. The module Targeting Biochemical Knowledge to Medical Problems addresses issues related to molecular medicine, rational drug design and the ethical implications of new developments in biomedicine. Additionally, you will be able to choose some modules to reflect your own areas of interest.

Final Year

In the final year, you will take four modules including Biochemical Mechanisms of Human Disease. This core unit looks in detail at the molecular basis of important diseases, such as asthma and cardiovascular disease, and investigates some of the experimental strategies being employed to improve the ability of clinicians to tackle these conditions. You may choose three additional modules from a broad range of topics; modules on Cancer Cell and Molecular Biology and Understanding Disease: An Integrated Approach are particularly popular with Medical Biochemists, but you can also choose advanced units on aspects of genetics, microbiology or physiology according to your particular areas of interest. All finalists also undertake a substantial project during which you have the opportunity to work as part of a genuine research team, either in the University or in one of the nearby hospitals. A library-project alternative is available if lab-based research does not appeal.

In recent years, graduates from the course have gone on to a variety of destinations, including PhDs, MSc courses in subjects such as forensics, bioinformatics and health science, to teaching and into medicine.

“Medical Biochemistry is an exciting blend of Biochemistry with Medical relevance, taught by lecturers at the forefront of their research fields. The course provides a solid foundation in problem-solving, research skills and teamwork, which are going to be valuable for careers in research, medicine or similar.”

Emmanuel, Final Year Medical Biochemistry
BSc Medical Genetics UCAS Code: C431 BSc/MGen

Three or four years, full-time

This course provides an education and training in genetics with particular emphasis on its application to medicine. The course promotes an understanding of the principles of the discipline, an awareness of the social and ethical issues raised by recent advances in modern genetics and their application to the diagnosis and management of genetic diseases.

First Year

All students in the Medical Sciences at Leicester follow a common First Year. You will take modules in Biochemistry, Microbiology and Cell Biology, Genes, Physiology, Pharmacology & Neuroscience and a dedicated Medical Bioscience module. Key skills in IT, numeracy and communication will form part of all of these modules and will provide you with the relevant experience for the second and third years. Throughout the first year, you will gain practical experience in the laboratory classes associated with each module and have the opportunity to discuss topics in the tutorials that form an integral part of the learning process.

Second Year

In the second year, core modules in genetics constitute two thirds of the degree programme. These modules will enable you to extend your knowledge of genetics and, through modern molecular biological and bioinformatic approaches, to understand how the human genome is organised and how genes are expressed and regulated in cells, in tissues, as well as during the development of an organism. You will learn how this knowledge is used to investigate the inheritance and expression of human disease and how genetics is important for many ethical and legal issues in society. Optional modules will give the opportunity to specialise in associated disciplines.

Final Year

In the final year, half of the programme consists of modules in Human Genetics and Medical Genetics. A third module is chosen from a selection of genetics modules covering aspects of Evolutionary Genetics, Genomics: A Microbial Perspective or Genes in Development. The fourth module is selected from Biological Sciences options that cover the molecular biology of cancer cells, an integrated approach to understanding disease, pharmacology, the biochemistry of gene expression or aspects of virology, infection and immunity. You will also undertake a laboratory- or library-based research project in which you will have the opportunity to carry out an in-depth study of a topic in genetics that interests you, under the supervision of an acknowledged expert in the field.

Students taking the Medical Genetics degree course are affiliated to the Department of Genetics, one of the largest genetics departments in the country with an excellent international reputation for research in a broad range of fields including human and medical genetics.
BSc Medical Microbiology UCAS Code: C521 BSc/MMic

Three or four years, full time

The Medical Microbiology degree will give you a thorough understanding of the range, type, structure and physiology of infectious organisms that cause disease in humans; including the major microbial diseases. You will appreciate how such organisms infect the human body promoting both health and disease and how such infections are prevented, managed or cured.

First year

All students in the Medical Sciences at Leicester follow a common First Year. You will take modules in Biochemistry, Microbiology and Cell Biology, Genes, Physiology, Pharmacology & Neuroscience and a dedicated Medical Bioscience module. Key skills in IT, numeracy and communication will form part of all of these modules and will provide you with the relevant experience for the second and third years. Throughout the first year, you will gain practical experience in the laboratory classes associated with each module and have the opportunity to discuss topics in the tutorials that form an integral part of the learning process.

Second year

In the second year core modules in microbiology constitute half of the degree programme. One course examines the bacterial world, another concentrates on eukaryotic microbiology, immunology and virology. A third course is dedicated to Medical Microbiology – you will learn about the major pathogens, their associated diseases, diagnosis, treatment and epidemiology including public health measures. Optional modules taken from biochemistry, genetics or physiology will give you the opportunity to pursue your own interests.

Final year

Four microbiology modules are studied in this year. The Infection and Immunity module studies in depth the infectious nature of micro-organisms, the body's response to infection and how the interplay between the two may lead to disease. A second module, Microbial Biotechnology, looks at chemotherapy, drug discovery – development and vaccine manufacture. Another module is devoted to the viruses including cancer causing viruses, HIV, influenza, hepatitis viruses and even enigmatic mad cow associated prions. The final course is only for Medical Microbiologists and looks at the most interesting and advanced topics of microbial physiology, structure, genetics and disease in depth. You will also undertake a research project associated with an active research laboratory in either the University or one of the University hospitals. This is an opportunity to conduct groundbreaking research in an area of medical microbiology that really interests you in association with an internationally renowned scientist or if you prefer, a library project on a relevant breaking subject.

Our Department contains both research and clinical scientists involved in patient management. You will be taught by both and introduced to the clinical environment. Graduates of our programmes often choose to enter medical school, take a higher degree or enter the diverse world of employment armed with both a general numerical and analytical insight coupled to a specific scientific specialisation.
BSc Medical Physiology UCAS Code: B120/MPhys

Three or four years, full-time

The Medical Physiology degree programme will provide you with a comprehensive understanding of human physiology from the molecular level to the cellular level to the systems level. Specialist modules introduce you to common diseases of each of these systems and the scientific rationale for drug therapy in each case. The Medical Physiology programme was ranked first in the UK for student satisfaction in the 2009 National Student Survey.

First Year

All students in the Medical Sciences at Leicester follow a common First Year. You will take modules in Biochemistry, Microbiology and Cell Biology, Genes, Physiology, Pharmacology & Neuroscience and a dedicated Medical Bioscience module. Key skills in IT, numeracy and communication will form part of all of these modules and will provide you with the relevant experience for the second and third years. Throughout the first year, you will gain practical experience in the laboratory classes associated with each module and have the opportunity to discuss topics in the tutorials that form an integral part of the learning process.

Second Year

In the second year, you take a total of six modules, including two compulsory modules (Physiology and Pharmacology I and II), which provide you with the essential background knowledge required for third year. The core Pathophysiology of Disease module will introduce you to the physiology and pathophysiology of specific tissues in health and disease and describe the pharmacology of common drug therapies. In addition, you will also take a core Research Topic module that will prepare you for the research-level teaching and experimental science taught in third year by introducing research methods, analytical methods and research techniques. Two optional module choices provide you with an opportunity to retain an interest in complementary subject areas, such as biochemistry, genetics and/or microbiology.

Final Year

In the final year, you will take a total of four modules, one of which is core – Understanding Disease: An Integrated Approach which investigates diseases from the population to the molecular level. You will take three further modules chosen from: Molecular and Cellular Neuroscience, Molecular and Cellular Pharmacology, Cellular Physiology of the Cardiovascular System, Brain and Behaviour and Comparative Neurobiology). You will undertake a laboratory- or a library-based research project that has a strong medical focus, with an emphasis on a particular disease process. The aim is for you to examine and understand the project topic at all levels (e.g. prevalence in man, anatomy, physiology, pharmacology and pathology of the diseased tissue, conventional therapies, current research into new and novel therapies), irrespective of whether the project has a direct laboratory-based component. This integrated course has a strong focus on the role of physiology and therapeutics in our understanding and treatment of human disease. Only through a complete knowledge of the normal physiology of each bodily system can we understand the abnormalities associated with each disease and develop strategies for their treatment.
Your Learning Experience

How will I be assessed?

Assessment is based on the following:

- Examinations typically contribute 70% of the marks for each module. In the first year these are usually multiple choice and short answer papers, with the second and third year examinations being predominantly essay-based.

- Course work: all modules contain some continuous assessment, which typically contributes 30% of the marks awarded for each module. This may include reports of practical work, written assignments, essays and oral presentations.

- Research Project (Final Year). An individual research study resulting in the presentation of a dissertation makes up a significant part of the final year.

How are the courses structured?

All of our courses are modular

The academic year is divided into two semesters. One of the benefits of the modular system is that your overall performance is fed back to you at the end of each semester in years one and two. This enables you to closely monitor your progress and, if necessary, adjust your work pattern.

Most modules have a weighting of 20 credits. The credit rating is an indication of the workload required for the module. Each year you must complete 120 credits in order to progress to the next year.

How will I be taught?

Lectures

Lectures form a vital part of teaching. They are used to define the basic material for a given module. Lecture styles vary considerably and may include web-based delivery, demonstrations/animations, as well as the traditional lecture format.

Tutorials

In a tutorial a small group of students meets with a member of staff for an hour. The format of tutorials will vary between modules but will involve teamwork. For tutorials students may be required to research a particular topic associated with the module concerned and discuss their findings with other members of their tutorial group, alternatively tutorials may take the form of problem solving sessions.

Laboratory classes

All these subjects are, of course, very practical and so strong emphasis is placed on the acquisition of varied laboratory and field-work skills. During your undergraduate career you will acquire a full range of personal transferable practical, IT, team work and presentation skills. Practical classes take place in well-equipped laboratories, under the guidance of academic staff and postgraduate demonstrators. Laboratory-based research projects allow you the opportunity to work in a research laboratory and gain experience of some specialist techniques, for example electron microscopy, NMR, PCR or patch clamping.

What facilities will be available?

IT provision

IT Services provide a networked microcomputer service to students, supplemented by Departmental PC sites, offering applications software, e-mail and access to the Internet and the University Campus Wide Information Service. Student-access computer suites are used for some formal teaching sessions and are available to students for individual work. Students have access to their own computer file store, with common user interface, application software etc. from any of the 18 Open Access Areas on and off campus. Wi-fi is available in many central areas and internet access is available in
all the study bedrooms in University Accommodation.

**Library**

The University’s award-winning David Wilson Library has an excellent stock of up to date books and receives over 200 periodical titles in Biological Sciences and Medical Sciences. There is online access to the Library catalogue and to an extensive range of journals available across the campus. Additional copies of texts in demand for taught courses are placed in the short loan collection. See more about the Library on page 17.

**How will I be supported?**

**Personal Tutor**

All students are allocated a Personal Tutor who is a member of staff in Biological Sciences. Your tutor receives copies of your continuous assessment feedback forms and you will normally see your personal tutor two or three times a term to discuss progress in your studies, and of course at any other time if you need advice. Your tutor will provide a sympathetic ear for all matters of personal concern, whether they be academic, financial, housing, career or social issues.

**Welfare Services**

The University has a professional Welfare Service and the staff are available to assist with a wide range of issues from managing your money to dealing with landlords etc. These will, of course, be treated in the strictest confidence.

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

**Career Development Service**

Careers staff provide guidance starting in the first year to all undergraduates on the importance of skills development, work experience and career planning. They offer drop-in careers advice, a well-stocked information room, workshops and practice interviews.

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

**Career Opportunities**

A degree in Medical Biochemistry, Medical Genetics, Medical Microbiology or Medical Physiology offers you a wide range of career opportunities. Recent graduates have gone on to further training on MSc and PhD programmes, to work in medical or pharmaceutical laboratories as well as other careers requiring a good degree. Success on any of these courses would put you in a strong position to apply to study Medicine.
Entrance Requirements and Further Information

A Levels

Entry requirements are three A levels, or two A levels and a vocational A level or equivalent, two of which should be in relevant science subjects, preferably from Biology, Chemistry, Physics or Mathematics. Chemistry is required for Medical Biochemistry.

GCSE Mathematics and English at Grade C or above are also a requirement.

Other Qualifications

International or European Baccalaureate, and overseas qualifications are considered. Mature students are welcomed: alternative qualifications e.g. Access courses are considered. Direct entry into the second year with suitable advanced qualifications is considered.

Typical Offers:

A levels: AAB/ABB at A2

Access: Pass with 45 credits at level three, depending on the course structure, plus Distinctions in 30 credits at level 3 in relevant subjects

National Diploma: 5 Distinctions

Irish leaving Certificate: AABBB, including English, at higher level

Scottish Highers: AABBB

European Baccalaureate: Pass with 77% overall including subject specific gradings

International Baccalaureate: Pass Diploma with 32-34 points including 6 at Higher Level in two sciences

Open and Visit Days

We have a number of Open Days during the year which you are very welcome to attend. All offer holders to our undergraduate degree courses are also invited to attend one of our regular Visit Days. Other, individual visits can be made by arrangement. You are very welcome to bring friends or family members any time you visit the University, and we are always happy to answer any queries on the phone or by email. To find out more visit: www.le.ac.uk/opendays
Student Life

Campus
On our bustling compact campus it’s impossible 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 bookshops to bars and the fantastic live music venue, O₂ 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.

www.le.ac.uk/accommodation

Private accommodation is available through our lettings agency, SUlets. www.sulets.com
**Sports Facilities**

You can enjoy a work out, take a swim or build up a sweat in a fitness class at our recently-refurbished sports centres on campus or at Manor Road (next to our accommodation). You can also 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 our thriving Intramural events.

**Library**

The award-winning £32 million David Wilson Library is a light, airy, five-storey building providing state-of-the-art facilities for all our students.

We invest over £6 million per year in the Library. Self-service loan and return, group study rooms, hundreds of PCs, netbook loans, wireless access throughout, staffed Help Zone in the Library and online, 24-hour opening during term time, a bookshop and café create a first-class study environment.

Our Librarians can provide detailed advice on finding and using information, and help you make the most of the resources available in the Library and on the web. You can also use our online guides to finding information for your coursework or research.

There is access to a digital library of over 30,000 electronic journals and 350,000 eBooks – as well as over one million printed volumes. Our electronic resources can be accessed from anywhere you have an Internet connection.

**Embrace Arts**

Embrace Arts at the Richard Attenborough Centre is the University’s own arts centre, offering a vibrant programme of events, music, spoken word, and exhibitions in its new gallery and performance spaces. Embrace Arts offers you the chance to try something new, from a variety of arts courses to hula hoop dancing or creative writing. There are special discounts for students. Or if you just want a break from your studies you can enjoy free lunchtime music performances or have a drink at the café. www.embracearts.co.uk
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 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.

Leicester is a city of sporting excellence. Sports fans can enjoy Premier League football with Leicester City and watch top-class rugby at Welford Road, home of the mighty Leicester Tigers. The Leicester Riders are a formidable presence in the British Basketball League (BBL), and during the summer months, Leicestershire County cricket club compete in the county championship and T20 Blast competition.

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 range 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.