Welcome

It is my great pleasure to welcome you to the School of Life Sciences at the University of Lincoln.

Our School provides a thriving and dynamic environment in which to learn and offers a unique, interdisciplinary approach to prepare you for a career at the cutting edge of life sciences.

Teaching is underpinned by the research expertise of our academic staff, encompassing areas as diverse as animal behaviour, cognition and welfare, biomedical science, biochemistry, evolution and ecology. I am very pleased to report that the recent government audit of research in UK universities found that more than 90% of the papers submitted by the School were recognised as world leading or internationally excellent. This places our research teams among the best in the country.

You will be supported to develop the practical, technical and research skills required for a career in the science industry. There are opportunities to work alongside academics on some of the School’s groundbreaking research projects and to take part in field trips around the world to gain first-hand experience of your subject.

All our BSc programmes have the option of a four-year MBio route, which gives you the opportunity to conduct an extended research project and gain enhanced employability skills.

You join us at an exciting time as a world-class Science and Innovation Park is established in the city, and will benefit from working in our new, purpose-designed laboratories.

If you would like to know more about the School of Life Sciences, please contact us using the details at the back of this brochure or visit us on an Open Day to experience our School and campus for yourself.

Dr Libby John
Head of School
‘Designer’ nanodevice could improve treatment options for cancer sufferers

Cancer diagnostics and treatment options could be drastically improved with the creation of a ‘designer’ nanodevice being developed by researchers from the UK, Italy, the US and Argentina.

The diagnostic ‘nanodecoder’, which will consist of self-assembled DNA and protein nanostructures, will enable more detailed evaluation of how diseased tissues respond to therapies.

Lincoln’s involvement in the four-year project, which is funded by a €441,000 grant from the Marie Skłodowska-Curie Research and Innovation Staff Exchange programme, will be led by Dr Enrico Ferrari from the School of Life Sciences and Dr Ishwar Singh from the School of Pharmacy.

The University of Lincoln team will be responsible for engineering and synthesising a key component of the nanodevice: a two way molecular connector to bind the protein part to the DNA scaffold. Research will take place in the University’s state-of-the-art Joseph Banks Laboratories.

Dr Ferrari said: “Once a cancer has been diagnosed, the next stage is to try various treatment methods, but it is often difficult to understand the specific effect of treatment. This nanodecoder is the perfect tool to be able to both diagnose cancer accurately and record therapeutic effects.

“Our hybrid nanodevice is an artificial device made out of DNA and protein. Molecules arranged in a very specific way can perform a function – this is what we are trying to achieve, in an artificial way. It’s like DNA origami; it’s possible to engineer different shaped molecules but we want to engineer molecules that also have a function.”

University achieves Athena SWAN Bronze Award

The University of Lincoln has been recognised for its commitment to advancing women’s careers in academia by achieving its Bronze Award as part of the Athena SWAN Charter.

With recent research showing that men in the UK are six times more likely than women to work in science-related careers, the University of Lincoln has pledged to “create a level playing field for all” and develop employment practices to address representation and support the careers of women in science, technology, engineering, mathematics and medicine (STEMM).

Professor Mary Stuart, Vice Chancellor, said: “I am delighted that the University of Lincoln has been recognised for its commitment to combating the underrepresentation of women in these vital subjects, while providing the correct mechanisms to advance the careers of women in STEMM research and academia.”

How the shape of eggs can help explain the evolutionary history of birds

The eggs of mammals, reptiles and birds come in a remarkable variety of shapes and sizes and now evolutionary biologists are examining these differences by comparing the eggs of birds with those of their ancestors, the extinct theropod dinosaurs.

The eggs of modern birds are not the same as those of their ancestors. Modern birds are more streamlined and have different wing proportions than their ancestors. The shape of the egg can provide clues about the evolution of birds.

Scientists explore how insects evolved ultrasonic hearing abilities over millennia

A cochlear organ for frequency selectivity was thought to be unique to hearing in mammals until Dr Monteleone-Zapata’s team discovered a similar mechanism for frequency analysis in the ears of bushcrickets in the rainforests of South America.

Scientists believe the discovery of this previously unidentified hearing organ could pave the way for technological advancements in bio-inspired acoustic sensors, including medical imaging devices and hearing aids.

The new research project aims to develop an integrated understanding of the evolution of ultrasonic hearing in bushcrickets; specifically how they developed cochlear-like systems in response to changing evolutionary pressures over millions of years.

Researching renal disease in diabetes sufferers

Understanding and ultimately preventing renal damage in diabetes sufferers is a key aim for two academics in the School of Life Sciences.

Professor Paul Squires and Dr Claire Hills’ joint research aims to better understand the sub-cellular mechanisms that regulate how people with diabetes can end up with diabetic nephropathy (kidney disease).

Almost one third of all patients with diabetes progressively develop diabetic nephropathy; however, we still lack a basic understanding of this debilitating condition.

Professor Squires and Dr Hills, who have more than 20 years’ experience in diabetes research, are currently investigating how high glucose and the protein Transforming Growth Factor beta (TGF-beta), cause renal damage. Their research is supported by a grant from Diabetes UK.

Dr Hills said: “Understanding the mechanism by which TGF-beta evokes its effects is essential in establishing strategies for the prevention or arrest of the disease.”

Research into the causes and complications of diabetes is vital as the number of sufferers is predicted to double by 2025. Currently more than three million people in the UK have been diagnosed with diabetes, with another million unaware that they have the disease.
Students and staff from the School of Life Sciences recently visited the cloud forests of Ecuador. Students learned about the conservation, history, flora and fauna of the site and each conducted their own scientific investigation into some aspect of the biology of the area. They also had the privilege of learning from an Ecuadorian botanist and a world lizard expert. Libby John, Head of the School of Life Sciences, says: “The site is amazing in terms of plants and animals with some highlights including the Oncilla (also known as the little spotted cat) caught on our camera trap, the giant worm (over 1m long) that came out in the rain and the amazing diversity of plants. We were all very well looked after throughout our stay by the local guides and staff at the Santa Lucia Lodge.”

Student, Lilly Harvey, says: “My favourite experience of the course was going on the overseas field trip to the Santa Lucia Cloud Forest Reserve in Ecuador. I made fantastic memories of trekking through the forest; swimming in waterfalls; learning about the environment, plants and a new culture.”

Gain industry experience on a work placement

All of our students have the opportunity to undertake work placements to gain valuable experience and a competitive edge in the job market. Biology student Joe Pinkstone chose to do a placement during his summer break.

Joe says: "I undertook a summer placement with Eurofins, a multinational company which carries out research and agronomy trials for several of the market-leading chemical companies. It appealed to me as I’m particularly interested in plants and their reactions to environmental factors. "The placement was extremely beneficial and allowed me to work in a professional environment alongside accomplished agronomists. The research was directly relevant to my degree. I was able to apply the knowledge I had already learnt, as well as gain experience that would benefit my studies. "I had the opportunity to analyse data, assess trials and take responsibility for maintaining high standards of practice. I got a great insight into the realities of working in agricultural science, which will help me to prepare for jobs after I graduate."
You join a vibrant academic community in the School of Life Sciences with research-focused teaching by academics at the forefront of their respective fields. There is an emphasis on practical work, with students conducting their own projects alongside leading academics, who are active researchers and professionals in relevant areas.

The University offers an integrated Master’s programme (MBio). This includes an additional research-intensive final year, after the three-year BSc, to facilitate progression to further research at PhD level and allow greater opportunities to access competitive job markets.

We offer the following undergraduate degree courses:

**BSc (Hons)/MBio Animal Behaviour and Welfare**

The scientific study of animal behaviour and welfare allows us to develop an understanding of why animals behave in the way they do, and to determine how best to respond to the many challenges that face animals living in captive and wild environments.

The Animal Behaviour and Welfare degree at Lincoln employs a multidisciplinary approach to the study of animal behaviour, taught by internationally renowned academics who publish their findings widely. You develop the knowledge and skills needed to further your understanding of animal behaviour and welfare, working with fish, insects, reptiles, birds and mammals.

**BSc (Hons)/MBio Biochemistry**

The study of biochemistry involves examining the fundamental chemical systems of living things. Advances in biochemical research have led to greater understanding of metabolic regulation, cell signalling, disease biology, drug development and genetics, and have revolutionised the biotechnology industry.

At Lincoln, our Biochemistry degree is dynamic and research-driven. Teaching reflects the University’s research expertise in the fields of pharmacology, biomedical science, plant sciences, biology and biotechnology. Learning within this academic community, you develop skills in practical laboratory techniques, data interpretation, critical analysis and scientific writing.

**BSc (Hons)/MBio Biology**

Biology is the study of all life on our planet, including humans. Biologists are pushing back the frontiers of knowledge, enabling scientists to respond to the urgent medical, agricultural and environmental challenges that will dominate the 21st Century.

Biology at Lincoln covers a diverse range of subject areas while allowing you to develop your own specialisms. You undertake an individual research project to develop your independent investigation skills. This course includes opportunities for field work to study living organisms in their natural environments.

96% of students were satisfied with this course according to the latest National Student Survey.

**BSc (Hons)/MBio Biomedical Science**

This course, accredited by the Institute of Biomedical Science, lays the foundations of knowledge needed to understand and investigate human disease. It prepares students for careers as biomedical scientists in the NHS or as scientific researchers.

This course offers a broad scientific base for the investigation of human diseases. You study topics such as haematology, cellular pathology and medical microbiology. A multidisciplinary approach incorporates lectures, seminars and laboratory-based work. There is an opportunity to undertake a work placement within industry and an emphasis on the development of hands-on experience.

**BSc (Hons)/MBio Biomedical Science**

At Lincoln, you will learn the science that underlies animal health and disease from some of the world’s leading experts, developing the skills and knowledge necessary for careers across the animal sciences.

Combining the key elements of animal science with academically rigorous laboratory analysis, you are introduced to the processes underlying animal health, including life histories of pathogens and parasites, infection and immunity, prevention measures, diagnosis and treatments. You study these issues in a range of animal species, including exotic and wild animals, as well as humans.

**BSc (Hons)/MBio Zoology**

The study of zoology is an exploration of how animals have evolved, how they function and how they interact with their environment. The subject integrates anatomy, physiology, behaviour, ecology, evolution and conservation, to provide a comprehensive understanding of species structure and diversity.

This degree provides a broad understanding of the subject, encompassing the study of key aspects of modern zoology in a diverse range of invertebrates and vertebrates. You have opportunities to study animals in their natural habitat at key points during your studies.
Postgraduate study

As a postgraduate student in the School of Life Sciences, you will join a supportive academic community in which you are exposed to, and engage in, a rich variety of research projects, working alongside inspirational academics. You will develop career-relevant and transferable skills in addition to advancing your knowledge and expertise in your chosen area of science.

We offer the following postgraduate qualifications:

**MSc Biotechnology**
This academically rigorous programme enables you to advance your theoretical knowledge, understanding, practical experience and training in biotechnology with a particular focus on modern molecular biology approaches. You will have the opportunity to specialise in medical, industrial, environmental and fermentation biotechnology and complete a research project in one of these areas.

**MSc Forensic Anthropology**
During this highly specialised programme, you will receive training in professional forensic anthropology techniques by experts with practitioner experience in this fascinating field. Research-informed teaching includes an overseas field course to experience the work of a forensic anthropologist at first hand.

**MSc Clinical Animal Behaviour**
This innovative Master's degree is informed by research and practice and enables you to gain hands-on experience in the School of Life Sciences' internationally renowned veterinary behaviour clinic. You will have the opportunity to work alongside European veterinary behaviour specialists Professor Daniel Mills and Helen Zulch (pictured below).

**MSc by Research in Life Sciences**
This programme provides an opportunity for students from non-biological subjects to begin research in life sciences. You will be able to collaborate with academics working on high-impact studies and projects in order to answer fundamental questions in molecular biology and biomedical science, forensic science and microbiology, animal and plant biology, and evolution and ecology.

**Research Programmes**
We welcome applications for MPhil/PhD level research across the life sciences. The School offers a supportive academic community in which students can explore their chosen area and develop transferable skills.

Research is conducted within six substantial research groups. Scientists in Animal Behaviour, Cognition and Welfare explore the causes, functions and evolution of animal behaviour and the impact this has on animal welfare. Those in Evolution and Ecology examine population dynamics and evolutionary processes at all levels of biological organisation. Researchers in Drug Design and Delivery focus on the application and efficacy of novel therapeutics, while academics working in Molecular Basis of Disease aim to understand disease at a molecular level in order to improve diagnosis and treatment. Forensic Analysis within Life Sciences focuses on forensic anthropology and mass fatalities planning, while the Historic and Ancient Materials Research Group is concerned with the properties that influence the structure of materials, from microscopic to macroscopic levels.

Some of our exciting research areas include communication and evolution of animal signals, cancer biology, behavioural ecology, cardiovascular disease, climate change biology, conservation, virology, early tetrapod evolution, and the genetic diversity of captive breeding programmes.

**Staff profile**

Dr Meredith Tise
Lecturer in Forensic Anthropology

“At Lincoln, our Forensic Anthropology students train extensively in human osteology and methods in forensic anthropology. The University’s impressive human skeletal collection enables students to gain hands-on experience in recognising pathology, trauma and human variation.

“My own research in forensic and biological anthropology focuses on craniofacial variation among different populations, most recently in Latin America and the Caribbean. Based on differing population histories, the cranial morphology of individuals from different Caribbean countries varies greatly due to the effects of European colonisation on islands already occupied by indigenous groups, as well as the implementation of the Transatlantic African slave trade.

“An understanding of this variation has implications for improved techniques in human identification, especially in countries such as the United States where individuals from Latin America and the Caribbean compose a large proportion of the population.”
Our facilities

The University of Lincoln’s award-winning city centre campus provides a modern student-centred environment. Life Sciences students have access to the latest equipment in our cutting-edge laboratories, enabling you to develop the practical skills necessary for a career in science.

Science and Innovation Park

The University and Lincolnshire Co-operative have formed a partnership to develop a world-class Science & Innovation Park in the centre of Lincoln. The Joseph Banks Laboratories and Minster House form the first part of this development, and provide more than 6,000 square metres of new teaching, learning and research space equipped with specialist facilities.

You have access to state-of-the-art scientific instruments to support your learning and research. Specialist equipment includes multi-million pound facilities for molecular and cell biology, biochemistry and microbiology. Research activities benefit from a modern and comprehensive imaging suite comprising confocal microscopy, scanning electron microscopy and atomic force microscopy.

Students have access to a range of species and resources including aquatic and reptile facilities, an insectary and a bioacoustics laboratory. Specialist equipment for tissue cultures, DNA extraction and amplification, high performance liquid and gas chromatography and mass spectrometry is available.

Science Building

In addition, our purpose-built Science Building contains large laboratory spaces, including specialist teaching areas for molecular and cell biology and a class 2 level containment laboratory for microbiology. All laboratories are equipped with large displays connected to an audio-video system that are used for demonstrations during practical work.

Great Central Warehouse Library

A dedicated subject librarian can help you to navigate and locate a wide range of subject-specific print and electronic resources in our award-winning Great Central Warehouse Library.
Dr Lisa Collins
Programme Leader, Bovine Veterinary Science

Dr Lisa Collins is one of the world’s few animal welfare epidemiologists – applying the study of the patterns, causes and effects of health and disease conditions to animals. Through her recent research efforts, her team discovered that every one of the top 50 most popular breeds of dogs was predisposed to at least one inherited disorder linked to its physical appearance. These findings have helped to inform sweeping changes among breeders to improve the health of pedigree dogs, and Dr Collins now sits on the Advisory Council on the Welfare Issues of Dog Breeding, set up as a result of the report’s recommendations. Dr Collins is currently involved in two major European projects, one of which is a study funded by the Biotechnology and Biological Sciences Research Council, intended to create a mathematical model that can predict poor welfare in groups of pigs.

Dr Neil Holden
Senior Lecturer

Dr Neil Holden recently joined the School of Life Sciences from pharmaceutical company AstraZeneca, where he was Associate Principal Scientist. Previously, he was part of the Airway Disease Research Group at Novartis, researching inflammatory lung diseases such as chronic obstructive pulmonary disease (COPD) and asthma. He received a post-doctoral Killam Fellowship while working in the Airway Inflammation Research Group at the University of Calgary in Canada. Dr Holden plans to develop his work in airways disease, specifically how the inflammation caused by respiratory syncytial virus interacts with the anti-inflammatory properties of corticosteroids. He will be based in the Joseph Banks Laboratories and also teach virology and immunology on a number of courses in the School.

Professor Lord Robert Winston
Honorary graduate

Eminent scientist, doctor, author and presenter Professor Lord Robert Winston is an honorary graduate of the University and visits the campus to share his expertise by giving public lectures.

Learn from experts

Our students are taught by, and work alongside, academics with world-renowned expertise and professional industry experience. In addition, some of the finest thinkers in their fields come to Lincoln to deliver inspirational talks to our students.

Chris Packham
Visiting Professor

Broadcaster, presenter and naturalist, Chris Packham, is a Visiting Professor at the University of Lincoln and teaches undergraduates on our Zoology, Biology, Biomedical Science, Bovine Veterinary Science and Animal Behaviour and Welfare courses. Professor Packham says: "If you really care for a subject, you should teach it and I am delighted by this opportunity to share my passion for wildlife and my experiences of some of the most urgent conservation issues we face.

“The future is in the hands of this generation and I hope to contribute to preparing them for this responsibility. There is simplicity in nature’s perfection and so much to learn. I am envious of the students at Lincoln who are embarking on that journey of discovery.”
University of Lincoln graduates go on to successful careers around the world. Nine out of ten of our most recent graduates were in work or further study six months after finishing their course, with two thirds in graduate level roles.

Our team of employment professionals are here to support you to develop the knowledge, skills and confidence necessary for your future career.

Careers and employability guidance
You will have access to careers information and guidance from our Careers & Employability Team, including advice and support on developing your CV, applying for jobs and obtaining paid and voluntary work experience while you study.

During your time at Lincoln, you will have the opportunity to complete the Lincoln Award, which enables you to develop transferable skills in addition to those learnt on your course, and to showcase your achievements to prospective employers. The Lincoln Award is achieved by completing a series of workshops alongside part-time employment, voluntary experience or extracurricular activities.

Sparkhouse, the University’s award-winning business incubator, is on hand to help those who have ideas for new enterprises and wish to set up their own businesses. Support from the University does not end when you finish your studies. As a member of our global alumni community, you can receive free tailored careers support and guidance for up to three years after you graduate.

Tailored services
A number of specialist services are available to ensure that you have access to relevant information about the many opportunities on offer to you upon graduation.

The School has a dedicated Careers and Employability Adviser who runs a drop-in clinic, providing personal guidance appointments. A programme of group workshops and course-specific presentations runs throughout the year, often involving national and international companies.

Here, some of our graduates talk about life after Lincoln. As an alumnus or alumna, you will continue to have access to tailored support and careers advice, as well as the opportunity to stay involved with the School.

Laura Deacon
BSc (Hons) Conservation Biology
“My degree was exciting and opened my eyes to the variety of future careers I could have in science.

“The academic staff were inspiring, particularly when they taught us about their own research and contributions to the field. Lectures were stimulating and the addition of practical sessions and field trips helped put theory into practice.

“I am now doing my MSc by Research at Lincoln and am part of the Evolution and Ecology research group where I am investigating the effects that climate change will have on species distributions.

“The cutting-edge facilities at the new Joseph Bank Laboratories and the support of academics and other students, means I am able to strengthen my skills and expertise in a crucial area of research.”

Stephen Wade
BSc (Hons) Biomedical Science
“I work as a Technical Operations Scientist within the diagnostics division at Siemens Healthcare. My role involves troubleshooting and working on projects to fix or improve our processes and the products we produce. This involves project management, designing and running experiments to investigate a particular element, data analysis, writing summary reports and presenting data to other teams. I also provide scientific and technical expertise during risk assessment and mitigation activities.

“My job allows me to utilise the knowledge I gained during my Biomedical Science degree; my understanding of immunology and the biology of disease is crucial to my work with the immunoassays we produce. I’m using the skills I developed at the University of Lincoln every day, such as scientific research, confidence in presenting and concise writing.”
Find out more

There are many ways for you to engage with the School of Life Sciences and the University of Lincoln. Whether you want to visit us and take a look around, join our online community or simply find out more about the opportunities available, we are here to help. Contact our friendly team on 01522 886654 or sls@lincoln.ac.uk

Open Days
We hold Open Days throughout the year, which offer the perfect opportunity for you and your family to explore our campus, speak to lecturers and find out more about student life at Lincoln. To find out more and to book your place, please visit: www.lincoln.ac.uk/opendays

Postgraduate visits and masterclasses
At a postgraduate masterclass, you can take part in a lecture or workshop in a subject of your choice to develop your knowledge, as well as meet our academics and other prospective students.

Social media
To keep up to date with the latest news and information from the University, you can follow us on Twitter @UniLincoln or like us on Facebook. The School of Life Sciences also has its own Facebook page at facebook.com/lincolnlifesciences.

International students
The University of Lincoln provides a vibrant and dynamic atmosphere for international students who are looking to study in the UK. Lincoln is one of the safest and friendliest university cities in the UK with great transport links to London and other major cities. A wealth of information is available at: www.lincoln.ac.uk/international

Open Day dates for 2015
• Friday 10 July
• Saturday 11 July
• Saturday 26 September
• Wednesday 7 October
• Saturday 17 October
• Saturday 14 November
• Thursday 10 December.

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University of Lincoln School of Life Sciences
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A life-changing education.
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