



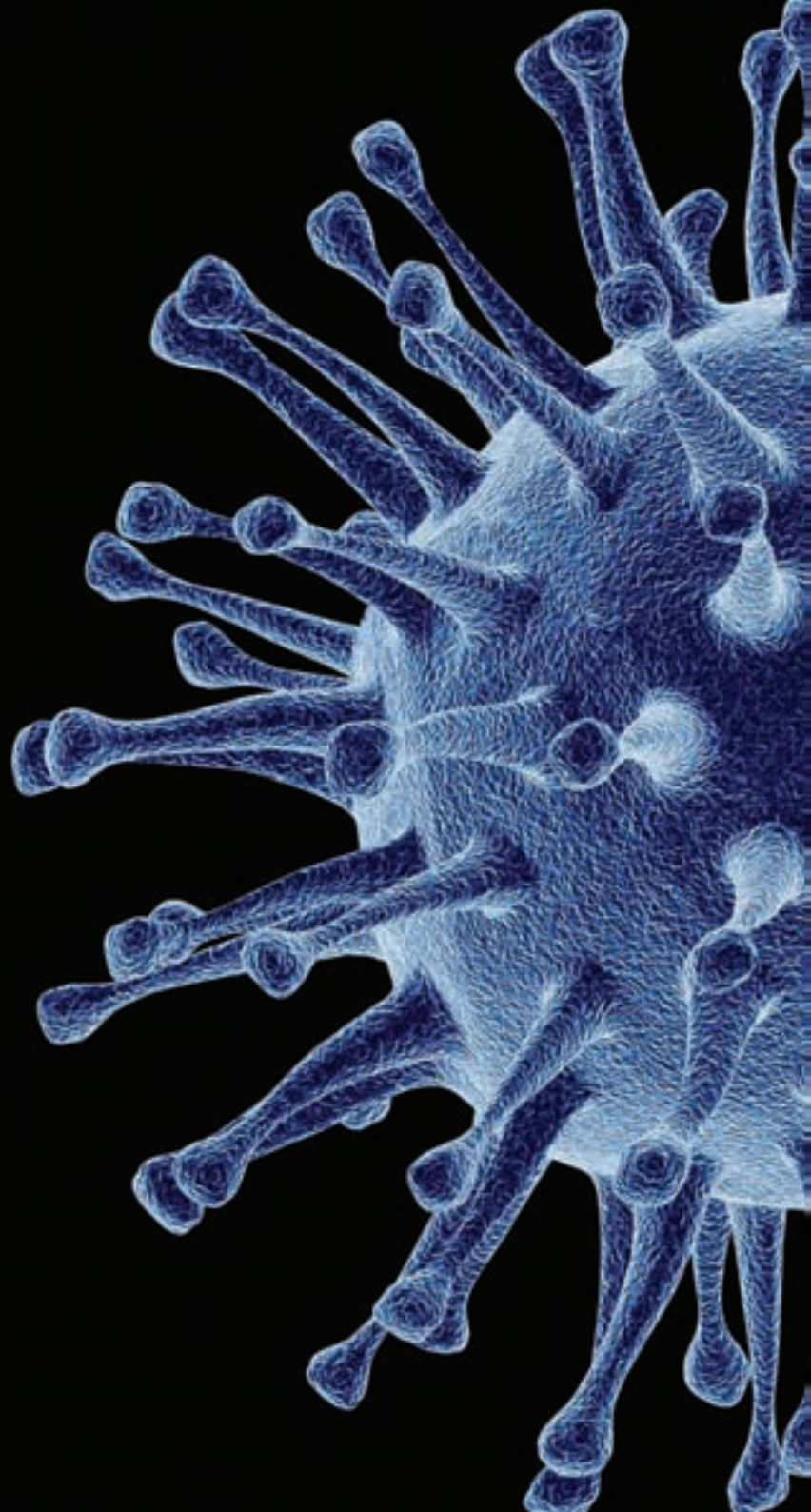
Royal Veterinary College  
University of London

# BSc (Hons) Bioveterinary Sciences

THREE-YEAR COURSE UCAS CODE: D300

Explore your options





The Royal Veterinary College is a unique institution. It was the first veterinary school in the UK and has a proud history of innovation and quality in education, science and clinical service.

Our BSc (Hons) Bioveterinary Sciences is a unique blend of the biological sciences relating to animals, the way they work, their health, their diseases and their relationships with humans.

We are the largest veterinary school in the UK and therefore you will be taught by an extensive range of scientists and clinicians who are knowledgeable from their own experience of animal disease and research.

This means we will cover virtually every aspect of animal biology, management and disease that is likely to interest you.

We are a constituent college of the University of London which is one of the great universities in the world, so you will be part of a large academic, social and sporting community. We can therefore meet all your needs, both for work and play!

If you want to be a bioveterinary scientist, then the Royal Veterinary College has a course designed with you in mind. I hope that you will join us.



Professor Quintin McKellar  
Principal



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‘The RVC is a proud, strong college community that encourages and embraces diversity of thought and expression. My course encourages original, independent research too. Instead of being ‘spoon-fed’, we’re free to pursue any interests we have in specific areas. What’s more, we are taught by lecturers who lead their respective fields, have a genuine enthusiasm for their material and expose us to the latest advances, findings and theories; and due to the nature of our community, they are never difficult to track down for a natter.’

Ben Stileman, BSc (Hons) Bioveterinary Sciences and SUS President 2007-08

The BSc (Hons) Bioveterinary Sciences gives you a unique opportunity to explore animal and human sciences in all their diversity, within an active research culture that enriches your learning experience.

A UNIQUE COURSE

- Integrates the anatomical, developmental, physiological, pathophysiological and pharmacological aspects of mammalian biology
- Places a strong and early emphasis on the importance of relevant research
- Taught by academics who are actively involved in cutting-edge research
- Focuses on species of economic and biomedical importance
- Provides plenty of practical, hands-on experience
- Delivers a comprehensive education and an appreciation of science in all its diversity

INSPIRATIONAL SUPERVISION

- Offers you access to many, knowledgeable experts and a rich source of in-depth biological research
- Gives you the opportunity to undertake biological, medical and veterinary projects
- Exposes you to internationally recognised scientists specialising in musculoskeletal biology, reproduction, genes and development, cardiovascular biology and inflammation, infection and immunity and animal welfare

#### IMPRESSIVE CONNECTIONS

- We are part of the largest bioscience research cluster in Europe
- We are an integral part of London’s extensive scientific community
- We have links with the London School of Hygiene and Tropical Medicine, the Zoological Society of London, UCL, Animal Health Trust (Newmarket) and the Veterinary Laboratories Agency
- We have strong alliances with world-leading corporations
- We attract visiting UK and international lecturers of the highest calibre

#### EXCELLENT RESOURCES

- Our spacious research laboratories are state-of-the-art
- Our teaching and learning facilities include one of the best stocked and managed specialist libraries in the field
- Our clinical, scientific and academic facilities are the best in the UK
- The University of London’s scientific research resources are also at our disposal

#### PRIME LOCATIONS

- Our London Campus puts you at the capital’s academic and cultural heart
- Our Hertfordshire Campus gives you access to fantastic clinical research facilities and the RVC Farm
- The University of London campus is the capital’s scientific centre
- All three benefit from excellent national and international transport links

#### FRIENDLY PEOPLE

- Our close-knit community is in the habit of looking after its own
- Your academic and personal tutors will support you at every turn
- An active Students’ Union Society organises lots of lively social and sporting events

# Career prospects

Today there is a growing need for bioveterinary scientists who play an important part in the nationwide promotion of animal and human health and welfare. Veterinary scientists hold prominent positions in the pharmaceutical and agricultural industries and in the medical research sector.

A BSc (Hons) Bioveterinary Sciences could take you in almost any direction you choose, scientific or otherwise. The only limit is your imagination.

As a qualified bioveterinary scientist, you might work in:

- a natural science laboratory
- a university medical school
- the UK or overseas
- a medical or scientific research institute
- an organisation that deals expressly with animal health and disease

Alternatively, you could work for a pharmaceutical or biotechnology company, or pursue a career in academic research.

Clinical and non-clinical graduates are employed as research scientists by the Biotechnology and Biological Sciences Research Council, the Animal Health Trust, industrial research organisations and the Department of the Environment, Food and Rural Affairs (DEFRA).

Within DEFRA alone, the choice is wide. You could join:

- the Veterinary Field Service
- the Veterinary Medicines Directorate
- the Meat Hygiene Service
- the Veterinary Laboratories Agency
- or a regional Veterinary Investigation Centre

If postgraduate study appeals, you might join a wide variety of taught and research degree courses, at the RVC or elsewhere. If you develop an interest in teaching and research work, UK veterinary schools have opportunities for non-clinical veterinary scientists with postgraduate training in basic biological sciences, such as microbiology, nutrition, genetics and statistics. And if you were to specialise in veterinary pathology in Year Three, even more doors might open into the pharmaceutical, biotechnology or agrochemical industries.

To help you make the most of your degree, we will give you plenty of opportunity to investigate career choices while you are studying here.

**A BSc (Hons) Bioveterinary Sciences degree does not make you a member of the Royal College of Veterinary Surgeons, or allow you to practise as a veterinary surgeon.**

‘I never realised how useful my BSc would be. It has helped me land a fantastic job as a medical rep, and meets my need for science knowledge on a daily basis. I also believe my time at the RVC has given me the confidence to counter assertive objections (also on a daily basis!), to deliver presentations and meet tight deadlines. During my professional training, I coped better than any of my colleagues; which I put down to the workload I had to learn to manage on the BSc.’

Annie Weckie, BSc (Hons) Bioveterinary Sciences Graduate

# Research

Develop your investigative skills and benefit from the findings of others at a college with an unassailable international reputation for innovative research in animal and human science and health.

Research will play an integral part in your degree programme. Your studies will be informed and enriched by the latest advances in knowledge, understanding and medical and veterinary treatments. You will be guided through every stage of the research process, from writing and submitting grant applications, to project management and the dissemination of results.

At the RVC, research crosses departmental boundaries and co-operation between clinicians and basic scientists is actively encouraged. Broadly speaking, we focus on the areas that reflect the particular expertise of our staff – bone biology; locomotion; reproduction genes and development; cardiovascular and inflammation biology and infection and immunity.

Currently, major research interests include:

- Physiological responses of bone to strain
- Genes involved in muscle growth and development
- Tendon biology – what determines tendon strength
- Biomechanics of locomotion – relating structure and function
- Reproduction and development – effects of nutrition on fertility
- Physiology of sperm and factors influencing its viability in the female tract
- Coronary heart disease – the importance of dietary lipoproteins in atheroma development and the role of various genes in protecting from ischaemia
- Allergic and inflammatory diseases and their control
- Cardiovascular diseases of veterinary species
- Pathogenesis of viral and bacterial infections, particularly of the gastrointestinal and respiratory tracts
- Host response to prion infections
- Innate immunity to infectious diseases
- Antibiotic resistance and the pharmacology of antibacterial drugs
- Epidemiology and control of infectious diseases
- Canine diabetes mellitus – the role of autoimmunity
- Animal welfare – the physiological responses of pigs and poultry to their physical and social environments

With the sequencing of human and other animal genomes, we are now in the so-called post-genomic era, where understanding gene function in the physiological context is the primary goal of much biological research. So when you graduate, should you wish to, you could pursue a career in the biological sciences, from biomedicine to the transfer of technology into industry and agriculture.

#### UNDERGRADUATE RESEARCH TEAM

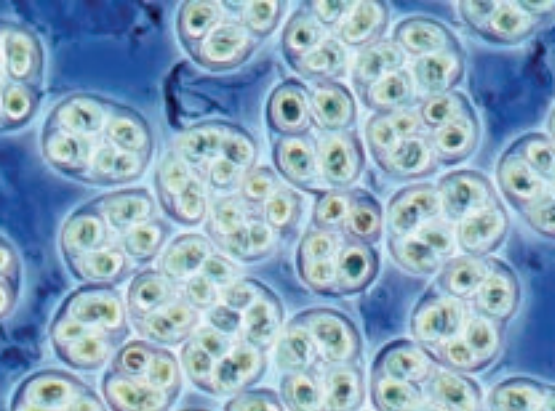
If you would like to get involved in an overseas research project, you can join our Undergraduate Research Team. Students from all disciplines come together to structure a research project that will benefit people in developing countries. Having raised expedition funds, they travel to the country in question, conduct their research and gain unforgettable, invaluable experience.

Recent projects have been completed in Botswana, the West Indies and Mexico, where the team worked alongside a veterinary school in the Yucatan. They undertook a base level study of subsistence livestock in order to investigate the parasitic and viral causes of production loss in semi-humid, deciduous jungle villages.

The next trip is a bovine tuberculosis survey in Malawi, coupled with the initiation of an education programme to increase disease awareness in poverty-stricken rural areas. The programme will focus on animal husbandry, disease transmission and milk pasteurisation. Animal and human health will benefit, and increased productivity will have a positive effect on the local economy.

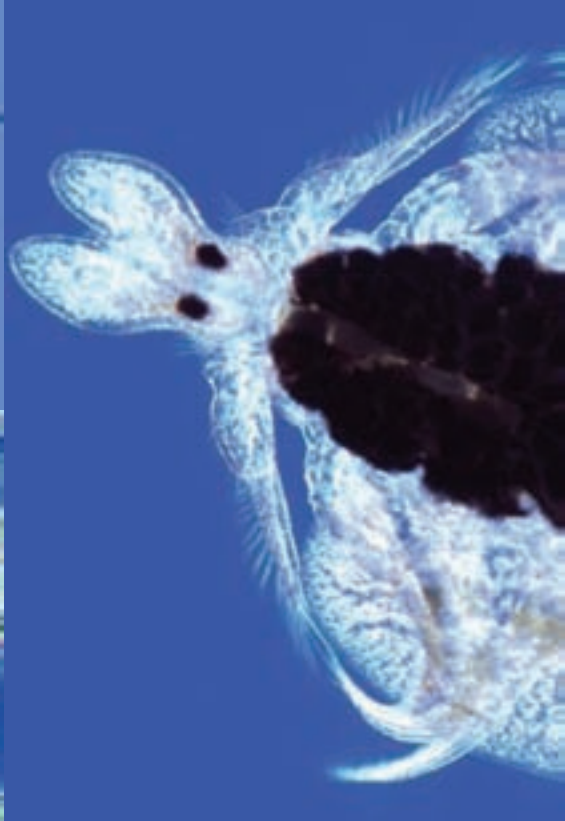
‘This course is unique because it links science to animals and incorporates human medicine. Originally I was set on being an equine vet and that’s still my end goal. But the people here are so passionate about their research that I’ve been inspired to follow in their footsteps first. A prestigious degree like this is sure to be well received, making it a great way into the science profession, wherever your interests lie.’

Nicola Berryman, BSc (Hons) Bioveterinary Sciences Graduate

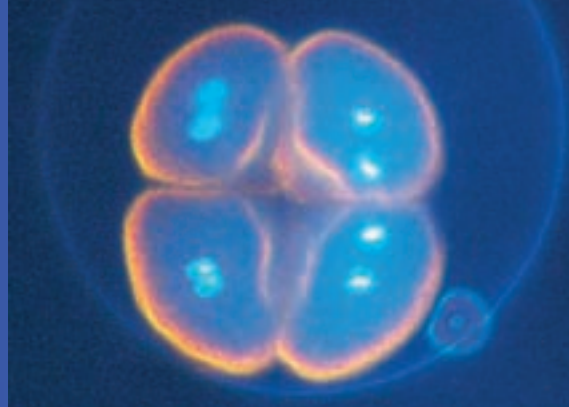
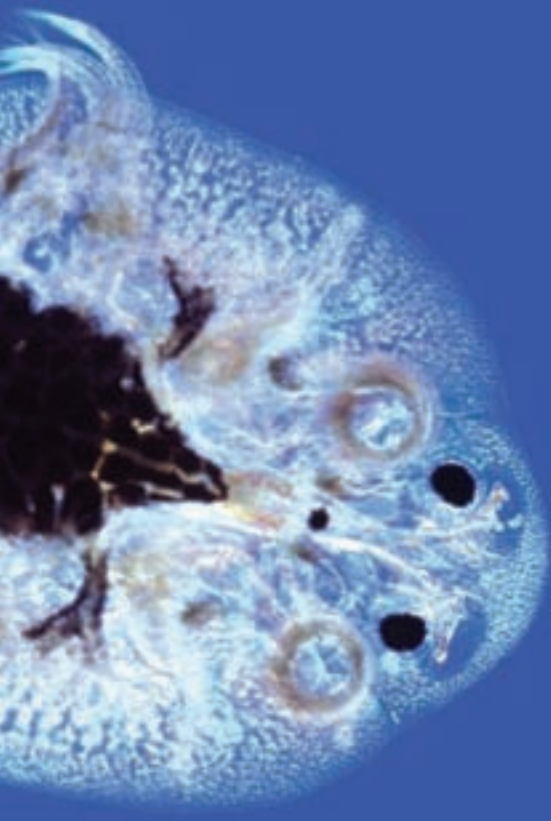


*Peranema trichophorum*

Blue green algae



Fish louse



Sea urchin embryo four cell stage

E. coli bacterium

# Programme content

The three-year BSc (Hons) Bioveterinary Sciences is aimed at enthusiastic students with a keen interest in both animals and science who wish to study the basic biological sciences that inform and support clinical practice and research.

By focusing on the domesticated animals that form the bulk of veterinary work, this programme aims to give you a sophisticated understanding of their physiology, cellular and molecular biology, and the mechanisms of disease.

## YEAR ONE

The first year deals with the healthy animal, and includes the following modules:

- The Foundations of Science is a two-year module that covers experimental design, scientific method, statistics and epidemiology
- Form and Function is a systems-based introductory course in mammalian physiology and anatomy
- Control and Regulation moves beyond organs and tissues to reveal the cellular and molecular mechanisms underpinning normal animal function
- Problem Definition and Investigation introduces you to problem-based learning approaches and the research laboratory environment
- The project in Year One is an extended library-based literature review of a current research topic in animal or biomedical science

## YEAR TWO

The second year deals with disease and its treatment, and includes the following modules:

- The Foundations of Science continues to explore experimental design, scientific method, statistics and epidemiology
- The Enemy Without covers microbiology and the role of infection in animal disease, including the factors determining transmission and virulence
- The Enemy Within explores the molecular basis of more challenging degenerative and proliferative conditions, including neoplasia, cancer and autoimmune diseases
- Pharmacology: Principles and Practice shows how the biotechnology industry's cutting-edge pharmaceuticals can be used to probe normal and diseased mechanisms, and form a basis for therapy
- The project in Year Two is a practical exercise undertaken during a supervised research laboratory placement

### YEAR THREE

In your third year, you will progress to more specialised, in-depth study. You may choose from a variety of subjects, including Comparative Animal Locomotion, Advanced Skeletal Pathobiology, Infectious Disease and Reproduction and Development. Or you might prefer one of a range of courses offered by King's College London.

One or two students a year get the chance to spend Year Three specialising in veterinary pathology. Pathology is the science of disease. As such, it is central to the understanding and conduct of veterinary research, clinical medicine and surgery. This is a wonderful opportunity for a couple of exceptional bioveterinary science undergraduates to experience first-hand the excitement of contemporary pathology, and its far-reaching scientific relevance.

### PROJECTS

You will also undertake a substantial research exercise and report. At the end of Year Two, you will have completed a supervised research laboratory placement, developing sound laboratory and analytical skills alongside your theoretical knowledge. This will really help you set about the design and execution of your third-year project. Independent project work will also be extremely valuable later on in your career, should you decide to pursue academic or industrial research.

### SUMMER VACATION PLACEMENTS

Funding for these supervised research laboratory placements is supplied by the RVC. They run for between six and ten weeks according to the subject area. Recent first- and second-year summer vacation projects have investigated:

- the role of MYO and MYF-5 in thymocyte development
- the relationship between compromised blood circulation and striated muscle development
- the vitrification of bovine spermatozoa

# Entry requirements

Wherever you're from, if you have the following qualifications or their equivalent, your application (which will be considered on a case-by-case basis) will be more than welcome.

## ENTRY REQUIREMENTS

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### A LEVEL

You must have three B grades or above in Chemistry and either Mathematics, Physics or Biology. Your third A Level can be in any subject you please (except General Studies).

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### AS LEVEL

Any AS Levels you have will stand you in good stead, but are not a requirement.

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### GCSE

You will need at least five GCSEs at grade C or above including B grades in English, Maths and Double Science (or in two separate science subjects).

### MATURE STUDENTS

Applications from mature students are also welcome, although there is no quota of places or special entry scheme if you are over 21. If you have not fairly recently acquired them, you will probably be asked to obtain high grades at A Level in the subjects prescribed above. Beyond that, you will be considered on individual merit.

### ANY QUESTIONS

For more information or advice on any aspect of our entry requirements, please don't hesitate to contact the Academic Registry. You can telephone us on +44 (0)20 7468 5149 or email us at [enquiries@rvc.ac.uk](mailto:enquiries@rvc.ac.uk)















