



Queen Mary  
University of London

**School of Biological  
and Chemical Sciences**  
**Postgraduate Study 2018**



**RUSSELL  
GROUP**

[sbcs.qmul.ac.uk](http://sbcs.qmul.ac.uk)



Cover image: The large ant is a *Solenopsis invicta* fire ant queen, surrounded by smaller worker ants and a white larva, on a subset  
Credit: Romain Libbrecht and Yannick Wurm




Students on a recent field trip to Danum Valley, Borneo, offered as part of our Ecology and Evolutionary Biology MSc and Ecological and Evolutionary Genomics MSc programmes

Photo courtesy of student Gemma Golding

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The Queens' Building, Mile End, has a proud association with not one, but four queens: Queen Victoria; Queen Mary (wife of King George V); Queen Elizabeth The Queen Mother; and our Patron, Queen Elizabeth II

### QMUL highlights

- 9th in the UK among multi-faculty universities (Research Excellence Framework 2014)
- 162 nationalities among students and staff making us one of the world's most diverse universities (December 2016)
- Brand new £39m Graduate Centre with dedicated space for postgraduates
- £137m research income (2015/16)
- More than 550 masters students benefited from scholarships in 2016/17
- 130 years of education, support and success in the capital (est. 1887)
- One of the largest residential campuses in London at Mile End
- Member of the Russell Group of leading UK universities.

# Welcome to Queen Mary University of London (QMUL)

Queen Mary has been at home in the East End since 1887. Starting out as a Victorian ideal, our founders aspired to create a place where everyone would have access to the same opportunities in education, recreation and culture – regardless of background.

We've continued to grow throughout our 130 years, opening centres across the city and bringing students and staff together to study from all over the world. One of the first colleges to provide higher education to women, Westfield College, joined us in 1989, and the internationally distinguished medical colleges of St Bartholomew's and the Royal London Hospitals combined to form our own medical school in 1995.

Today, we are one of the UK's top research universities and our postgraduate programmes offer a chance to explore subjects as diverse as the world in which we live. We would love for you to become a part of our story.

## **Come and share our knowledge**

We know our postgraduate students are passionate about their subjects. In the tradition of our early expansion, we've continued to develop degrees across our world-leading expertise, from humanities and social sciences to medicine, dentistry, science, and engineering. Our programmes are directly informed by our academics' latest research. As professionals, they work side-by-side with industry, government, business,

communities and charities. In doing so, they understand the demands of modern-day society and can, in turn, share their insights with you.

## **Become a part of the capital**

We retain close links with our local communities across London and remain dedicated to public good. We are an intrinsic part of east London, and have five campuses across the capital. Set beside the beautiful and historic Regent's Canal, our main site at Mile End is one of the largest residential campuses in the city and is home to our new £39m Graduate Centre. With the City of London to our west, the Queen Elizabeth II Olympic Park to our east, Canary Wharf and Docklands to our south and beautiful Victoria Park to our north, you'll be in the perfect position to explore the capital.

## **Meet us – in person or online**

Our Postgraduate Open Evenings offer you the chance to explore our campus and meet our tutors and students. If you can't visit in person, don't worry; we run Postgraduate Virtual Open Days online. We also have representatives in 51 countries and staff who regularly travel overseas. For more information and a list of open events, see page 35 or [qmul.ac.uk/postgraduate/meet-us](http://qmul.ac.uk/postgraduate/meet-us)



# Join Queen Mary and become a part of our story

## **Love London**

Immerse yourself in a capital city

## **Explore your passion**

Work side-by-side with top academics

## **Join a global community**

Meet people from across the world

## **Empower others**

Contribute to society

## **Advance your career**

Stand out in a competitive jobs market



View from our Mile End campus

# Why choose us?

The School of Biological and Chemical Sciences at Queen Mary University of London (QMUL) is one of the UK's leading research departments, with long-standing research and teaching expertise across the biological, chemical and psychological sciences. We offer a vibrant research culture alongside a friendly and lively study environment.

As a postgraduate student, you will experience teaching that is led and influenced by our world-leading research. You will be taught by academics who are internationally recognised for shaping scientific discourse. Our staff regularly produce work that appears in high-impact multidisciplinary journals like *Nature* and *Science*, as well as leading specialist journals including *Current Biology* and *Journal of the American Chemical Society*. They also write books, lead international conferences and comment in the media.

## Links with industry

We have strong collaborative links with other academic departments at QMUL, as well as with external universities, research institutes and industry, including: the Environment Agency, GlaxoSmithKline, Proctor & Gamble, AstraZeneca and Syngenta. Depending on the programme you choose, we will offer opportunities for research projects in conjunction with collaborators such as the Institute of Zoology; Royal Botanic Gardens, Kew; and the Natural History Museum.

## Global fieldwork opportunities

We offer one of the best portfolios of fieldwork courses of any UK university, with study locations in Dorset and Cumbria as well as travel opportunities abroad: recent field courses have taken place in Borneo, Madagascar and Cape Verde. International research and teaching projects have included studying the molecular ecology of Round Island petrels in Mauritius, population genetics in the Alps, and using the latest molecular and telemetry techniques to develop novel conservation programmes for the Cape Verde Loggerhead Turtles.

## Your postgraduate study with us

As a student with us, you will be able to take advantage of London's position as a major international centre for scientific meetings and conferences. Our research resources include excellent library and information services, access to a wide range of databases, and other electronic sources of information. The School benefits from an increasingly strong bioinformatics infrastructure, including Apocrita, a 1,800-core computing cluster based at QMUL.

## Laboratories and facilities

As a postgraduate student, you will have access to specialist teaching and research facilities, working alongside established researchers in your chosen field.

A brand new £39m Graduate Centre opened in early 2017 at our Mile End campus and provides excellent teaching and learning spaces for all postgraduate students.





**“One of my goals is to understand how Complex I works – a giant molecular machine essential for producing the chemical that powers most bodily cell functions. I hope this will enable the cure of mitochondrial diseases resulting from Complex I dysfunction”**

**Dr Maxie Roessler, Lecturer in Chemistry and Biochemistry**

# Why choose us?

## Facilities for purification and analysis of macromolecules include:

- Fast protein liquid chromatography (FPLC)
- Gas chromatography mass spectrometry (GCMS)
- Liquid chromatography mass spectrometry (LCMS)
- Electrospray mass spectrometry, nuclear magnetic resonance (NMR)
- Electron paramagnetic resonance (EPR) and electron nuclear double resonance (ENDOR)
- Circular dichroism (CD)
- Fluorescence spectroscopies and X-ray crystallography.

## Facilities for molecular biology include:

- DNA extraction and purification equipment
- PCR cyclers and DNA quantification machinery
- Library prep instruments for Next Generation Sequencing
- Irys whole genome optical mapping system for improving sequencing contigs
- RNA clean room, ultra-high molecular weight DNA extraction laboratory
- Cat1 and Cat2 labs with sterile PCR hoods, flowhoods and microbiological cabinets.

The QMUL Genome Centre provides the latest genomic technologies including high-throughput sequencing on Illumina platforms. These can be used to investigate genomes, epigenomes and transcriptomes of any

organism. The Centre has an experienced, dedicated team and can advise on the design and analysis of experiments.

Our imaging facilities include confocal (two-photon) and EM microscopy, and an efficient and well-equipped chemical store. We also have a plant growth facility, controlled environment rooms, cold rooms, one of the largest CO<sub>2</sub> flux monitoring facilities in the UK, and marine and freshwater aquaria. Some of our academic staff are based at the River Laboratory (Dorset) and its research facilities are available for use by our students.


## Collaboration with the Royal Botanic Gardens, Kew

We have worked with Royal Botanic Gardens, Kew, to develop a Plant and Fungal Taxonomy, Diversity and Conservation MSc, which offers you the unique opportunity of being based at Kew for much of the duration of your studies (see page 26).

QMUL and Kew have long-established research links, and this partnership means that our students can benefit from outstanding teaching and facilities in both institutions.

Kew has the largest and most diverse collections of plant and fungal specimens and associated biodiversity databases in the world. The combination of extensive specimen collections, databases, and scientific research conducted on a global scale is unique, and means that Kew plays a leading role in facilitating greater access to basic plant information, underpinning science and conservation activities worldwide.





**"I really like being immersed  
in all things botanical at Kew  
among influential and welcoming  
researchers, irreplaceable historical  
and active collections, stimulating  
lectures, and beautiful gardens.  
My qualification will help my future  
career in plant ecology through the  
connections I've made"**

**Shawn O'Donnell, Plant and Fungal Taxonomy,  
Diversity and Conservation MSc 2017**

## **School highlights**

- Close links to industry partners including the Environment Agency; Royal Botanic Gardens, Kew; Natural History Museum; Institute of Zoology; GlaxoSmithKline; Proctor & Gamble; and AstraZeneca
- More than £1m investment in new equipment for cell, structural and biology, plus a further £5m investment for biology planned for the next five years
- Fieldwork in inspiring locations including Borneo, Madagascar and Cape Verde
- Excellent research ranking: our Clinical Medical submission was placed 7th in the UK, Biology and Chemistry were both placed 22nd; and Materials was placed 10th (REF 2014\*)
- Chemistry ranked equal 6th for outputs (REF 2014).

\*Research Excellence Framework 2014.

Photo credit: Stuart  
Cable, RBG Kew

# Careers and alumni

Our masters graduates progress on to a range of sectors, from clinical and laboratory work to consultancy and conservation. Others continue their research in either industry or academia, while some progress into science communication.

The range of skills developed through our programmes, coupled with opportunities for extracurricular activities, has enabled our students to enter varied careers and undertake further research at international institutions.

## Careers support

QMUL's Careers team can work with you to support your career planning and to connect you to employers through their fairs and events. Services include:

- one-to-one appointments to help with career direction, to review your skills and experience to-date, to give advice on job applications, to offer insight into the job market and to give mock interview preparation
- tailored workshops for career preparation and job hunting
- employer-led events focusing on sectors relevant to your knowledge or area of interest
- recruitment support for internships, part-time jobs and work placements.

## Enterprise support

Many students and graduates across Queen Mary start new or grow existing business and social ventures each year. QMUL's Enterprise team can help you with support through:

- funding
- one-to-one advice and workshops
- workspace
- access to experts and entrepreneurial networks.

Visit: [careers.qmul.ac.uk](https://careers.qmul.ac.uk)

## Graduates from our masters programmes

Some of our graduates apply their degree knowledge directly, working in research-focused positions such as chemistry consultants, molecular microbiologists and conservation officers in labs as far afield as Australia, South Africa and the USA. Recent graduates from our masters degrees have gone on to do further research in the UK and abroad, while others have secured employment in industry and academia, including environmental consultancies, UK and overseas government agencies, the pharmaceutical industry, and a global oil-field services provider. Others work in areas including teaching, museums and journalism.



Graduate destinations include:

- **Lead Generation Specialist**, Illumina
- **Laboratory Technician**, GlaxoSmithKlein
- **Communications Officer**, European Geosciences Union (EGU)
- **Lead Marine Adviser**, Natural England
- **Freshwater Ecologist**, QMUL

### Further study

Our masters graduates often continue on to PhD research, either at QMUL or in other institutions. Many of our PhD graduates go on to research assistantships, fellowships or lectureships at universities in London, the UK and beyond. They have included:

- PhD in Bioinformatics, Biotechnology and Biological Sciences Research Council London Interdisciplinary Biosciences Consortium (LIDo) at UCL
- PhD in Biomaterials, Chemistry at QMUL
- PhD in Biosciences, University of Padua
- PhD in Marine Ecology, QMUL
- PhD in Genomics, QMUL (Natural Environment Research Council Doctoral Training Partnership).

Recent career events open to our postgraduates included our Industrial Liaison Forum, featuring small- and medium-sized employers, and workshops on studying for a PhD.

### Alumni profile: Adelyne Chan



**Studied:** Bioinformatics MSc 2015

**Currently:** Undertaking a fully-funded PhD in Cancer Research UK Cambridge Institute.

### What attracted you to the MSc at QMUL?

Being part of a small cohort meant we were close friends. The group project, which was daunting, helped us get close but it felt so good when we succeeded. All of us were from a biology background with little prior experience in computing or programming.

### What are you and your classmates doing now?

Two of us have gone on to do fully-funded PhDs in cancer research, one has gone back to her postdoctoral role at QMUL and the other is now working for the genomics company Illumina. I started my PhD at Cancer Research UK Cambridge Institute less than a month after graduating from QMUL. I think this shows that the MSc prepares students for all sorts of possible careers.

### What was it like being a student in London?

Being a student in London was a fantastic experience and I miss living in the capital.

# Our masters programmes

## Aquatic Ecology by Research MSc

One year full-time, two years part-time  
[qmul.ac.uk/msc-aebr](http://qmul.ac.uk/msc-aebr)

Aquatic ecosystems are under continued and growing threats such as habitat loss, invasive species and pollution. To conserve, manage and provide responsible and sustainable solutions to these threats requires a fundamental understanding of the structural and functional elements of ecosystems, from shallow lakes to the open oceans.

Our Aquatic Ecology by Research programme provides comprehensive practical training by application in the laboratory or field, rather than by formal tuition in the lecture theatre. The format places special emphasis on developing practical skills and the transferal of science to hands-on conservation and applied research. QMUL is home to a leading research group in aquatic ecology, which means you will receive expert supervision and have access to advanced research facilities.

### Programme outline

#### Taught modules

- Ecosystem structure and functioning
- Quantitative techniques for surveying and monitoring in ecology
- Statistics and bioinformatics

#### Research module

- Extended nine-month research project (75 per cent of final grade)

### Programme highlights

- Develop an enhanced experience of a working research environment
- Fieldwork opportunities in Dorset at our unit based at the Freshwater Biological Association, and in Cumbria
- Strong foundation for employment with environmental protection and conservation agencies, the water industry and environmental consultancies, or PhD research
- Access advanced analytical facilities within the Centre for the Aquatic and Terrestrial Environment
- Develop practical skills including research planning and experimental design, data analysis and statistics, reporting and research paper preparation.

### Entry requirements

A minimum of an upper second-class degree or equivalent international qualification in biology or other relevant natural sciences subject. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

#### Contact

Dr Christophe Eizaguirre, Programme Director  
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**“London is a great place to work, even for an aquatic ecologist, because it is such a focus of world-leading research, ideal for fostering collaborations. There are also wider cultural benefits to working in the capital. Our students take advantage of both aspects”**

**Dr Christophe Eizaguirre, Senior Lecturer**

# Our masters programmes

## Bioinformatics MSc

One year full-time, two years part-time

[qmul.ac.uk/msc-bioinfo](http://qmul.ac.uk/msc-bioinfo)

As biological sciences have become more data-driven, bioinformatics is now central to modern biological research, playing an essential part of genetics, biochemistry, analytical science, neuroscience, epidemiology, nutrition, ecology and biomedicine. This programme will teach you how to manage and manipulate large datasets to reveal new insights in biological sciences. You will be given intensive training in a computer-based approach to biological research, with the opportunity to develop specialist skills in computer programming, data analysis, statistics and computational biology.

Prior experience of computer programming is not required as you will be taught the latest tools and techniques in bioinformatics, which you will then apply to your own research project. You will also collaborate with peers to build new bioinformatics solutions to real-world problems as part of an innovative group project.

## Programme outline

### Taught modules

- Genome bioinformatics
- Coding for scientists
- Statistics and bioinformatics
- Post-genomics bioinformatics

### Research modules

- Group bioinformatics software development project
- Bioinformatics research project (50 per cent of final grade)

## Programme highlights

- Training to manage, analyse, integrate and visualise big data using technologies such as Python and R
- Development of skills applicable to software development, data analytics and finance
- Teaching by academics who are actively engaged in developing bioinformatics tools and applying them in areas such as genome sequencing, proteomics, evolution, ecology, psychology, cancer, diabetes and other diseases
- Opportunities to publish scientific papers (a recent graduate had her paper published in *Science*)
- Strong foundation for employment in biotechnology, life sciences and pharmaceutical sectors or PhD research.

## Entry requirements

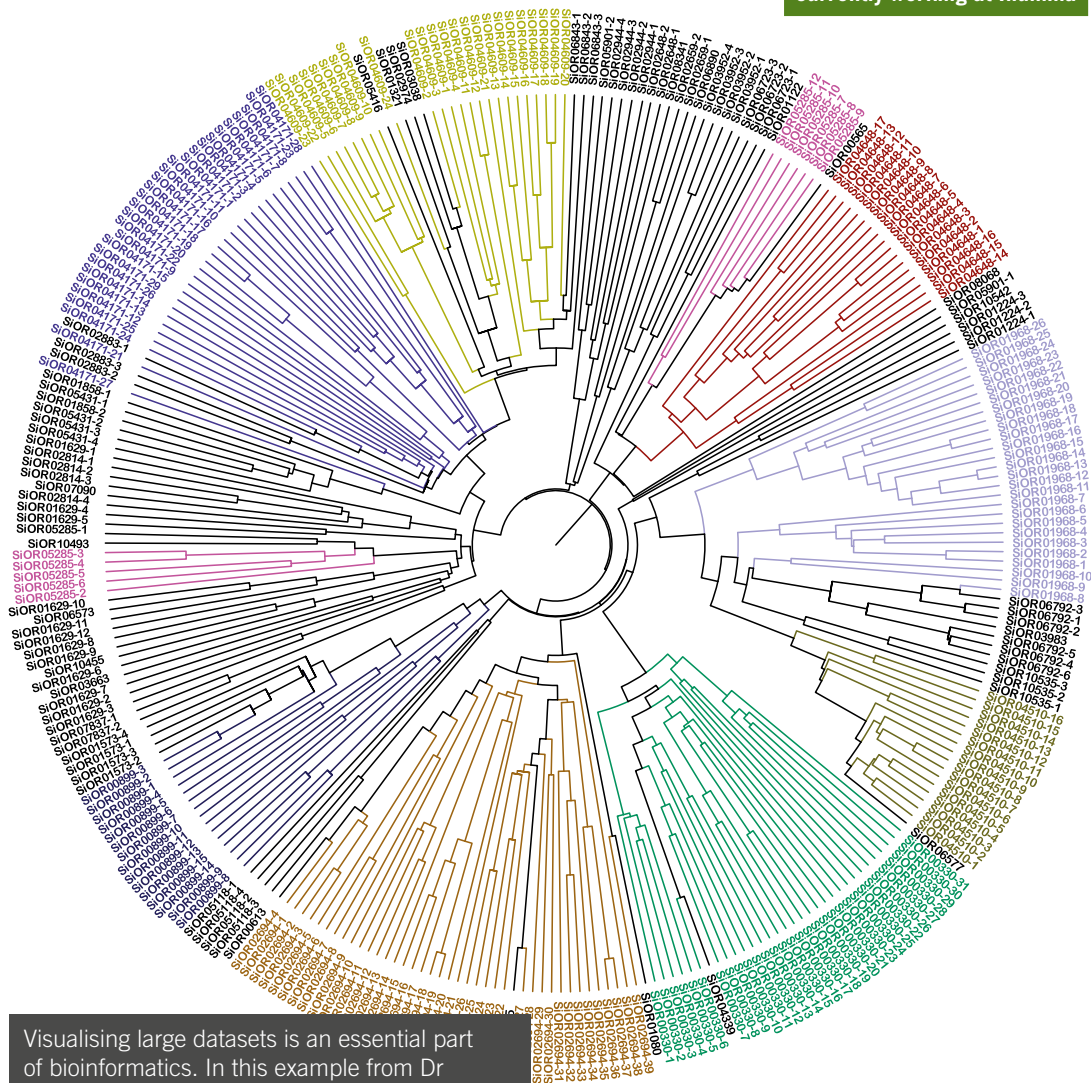
A minimum of an upper second-class degree or equivalent international qualification in biology or other relevant natural sciences subject. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

### Contact

Professor Conrad Bessant, Programme Director  
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“Developing bioinformatics skills has allowed me to work in one of the best companies when it comes to smart science. They help me understand our customers’ needs as they seek to implement bioinformatics pipelines to extract new knowledge from the data generated by our sequencers”

Yasmine Benbrahim, Bioinformatics MSc 2015,  
currently working at Illumina



Visualising large datasets is an essential part of bioinformatics. In this example from Dr Yannick Wurm's lab, a tree diagram shows the relationships between olfactory receptors in the genome of the fire ant *Solenopsis invicta*



# Our masters programmes

## Chemical Research MSc

One year full-time, two years part-time

[qmul.ac.uk/msc-chem-research](http://qmul.ac.uk/msc-chem-research)

This is a research-intensive programme which will give you the opportunity to develop specialist research skills and expertise in your chosen area of chemistry. With the support of a supervisor, you will conduct a major individual project that will give you comprehensive preparation for a research career in academia or industry.

You will receive training in a wide range of research techniques to enable you to build up a substantial profile of modern experimental and/or computational skills, helping to evolve your ability and experience in tackling research projects in the chemical sciences. Typically, this includes hands-on use of instrumentation for nuclear magnetic resonance spectroscopy, chromatographic and vacuum systems, and the manipulation of air-sensitive materials, in addition to the latest scientific computing and modelling.

## Programme outline

### Core module

- Chemical research project (80 per cent of the final grade)

### Taught modules

You will be able to choose two from the following:

- Computational chemistry
- Drug development and design
- Advanced analytical chemistry and spectroscopy

- Advanced pharmaceutical chemistry
- Advanced physical chemistry
- Advanced inorganic chemistry
- Organic synthesis

## Programme highlights


- An in-depth individual research project
- Develop transferable professional skills such as data analysis, wet lab experience and communication
- Use of modern, well-equipped laboratories, such as our Homogeneous Catalysis Laboratory and Laboratory of Physical and Theoretical Chemistry
- Strong links with the chemical industry, including AstraZeneca, GlaxoSmithKline, Pfizer, Syngenta, Roche, and Sanofi
- Strong foundation for a career in research and development or PhD study.

## Entry requirements

A minimum of an upper second-class degree or equivalent international qualification in a science subject with a significant chemistry component. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

## Contact

Dr Gregory Chass, Programme Director  
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The background image shows a vast industrial or research facility. In the foreground, there are red metal structures and safety railings. In the middle ground, a man in a dark jacket and lanyard stands near a blue and white machine. In the background, there are large red overhead cranes, various scientific instruments, and other people working. The overall environment is a complex, high-tech industrial space.

“I research modern and ancient (bio)cements as well as natural antioxidants such as those in tea and wine. I develop insights from these chemical systems to understand possible applications across the physical sciences. Being active in research allows me to disseminate important scientific advances to students”

Dr Gregory Chass, Programme Director

Dr Gregory Chass conducting experiments at the neutron and muon facility of the Rutherford Appleton Laboratory, a resource MSC students can access as part of their research

# Our masters programmes

## Ecology and Evolutionary Biology MSc/PgCert

One year full-time, two years part-time

[qmul.ac.uk/msc-eco-evo-bio](http://qmul.ac.uk/msc-eco-evo-bio)

Global ecological change is occurring at a rapid rate and we are seeing an unprecedented spread of diseases, collapses in biodiversity and disruption to ecosystems. We aim to understand not just patterns in the natural environment, but the ecological and evolutionary factors that drive them, from the behaviour of individual organisms to population- and whole-community dynamics.

You will study the concepts and theory essential for understanding factors underpinning global ecology, including the latest techniques in environmental process research, invasive species ecology and conservation genetics. You will learn how to convert science to environmental policy or management; and, as such, our graduates are well-placed to progress on to PhD research or careers in industry, management and conservation.

## Programme outline

### Taught modules

- Ecosystem structure and functioning
- Science into policy and management (includes a week in Dorset)
- Statistics and bioinformatics
- Ecological theory and applications
- Research frontiers in evolutionary biology

### Fieldwork module

- Tropical ecology field course (currently to Borneo)

### Research module

- Research project (50 per cent of final grade)

## Programme highlights

- Two-week tropical ecology field trip (currently to Borneo), as well as fieldwork in Dorset, UK
- Modules that develop pure research and applied practical skills
- Guest lectures by stakeholders and potential employers
- Opportunities for research projects in the UK and overseas, and in conjunction with collaborators such as the Institute of Zoology; Royal Botanic Gardens, Kew; and the Natural History Museum.

Alternatively, you may enrol for the Ecology and Evolutionary Biology PgCert, comprising of four taught modules that contribute towards the MSc.

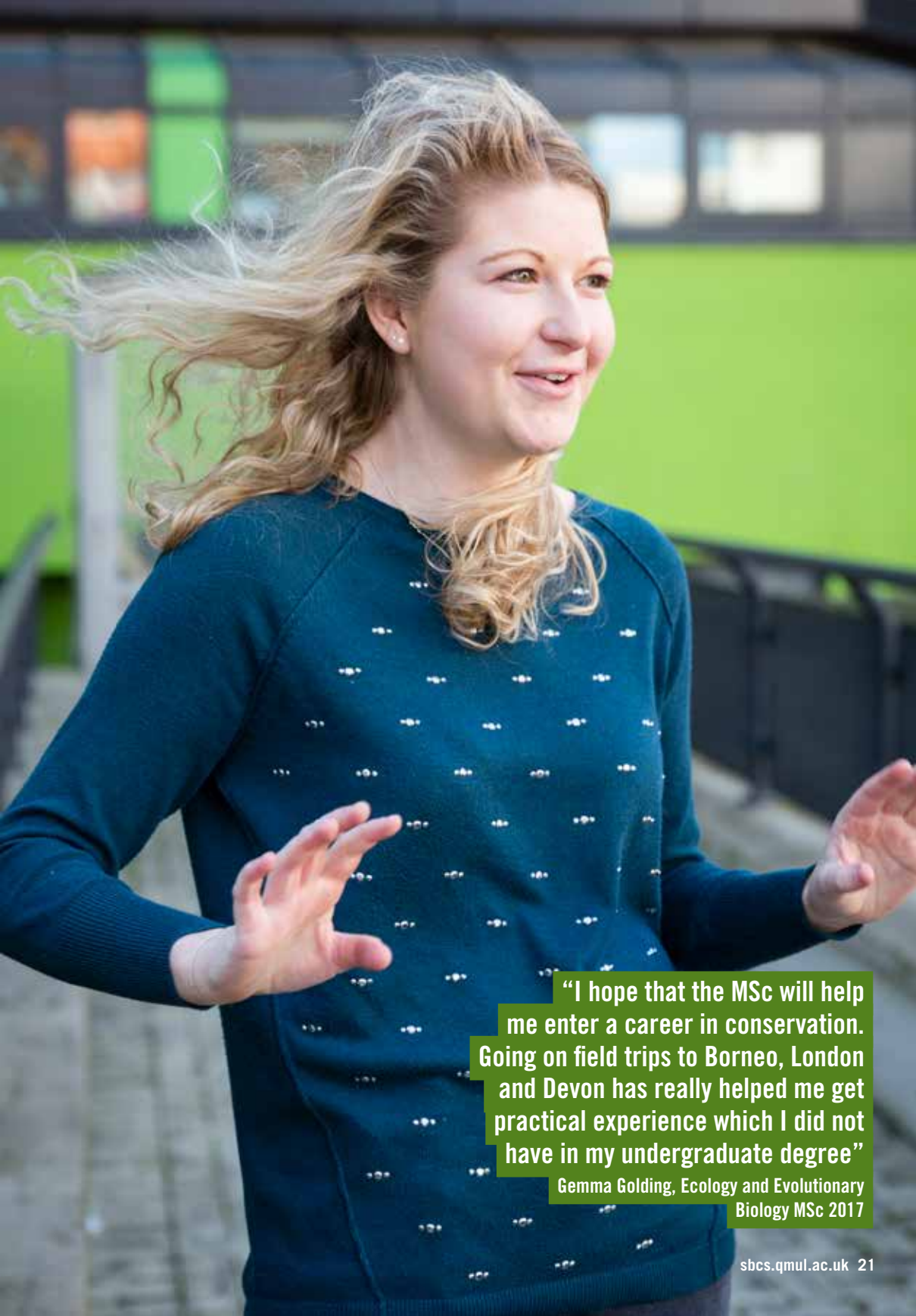
## Entry requirements

A minimum of an upper second-class degree or equivalent international qualification in a relevant subject, such as ecology, environmental science, biology or zoology. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

### Contact

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**"I hope that the MSc will help me enter a career in conservation. Going on field trips to Borneo, London and Devon has really helped me get practical experience which I did not have in my undergraduate degree"**

**Gemma Golding, Ecology and Evolutionary Biology MSc 2017**

# Our masters programmes

## Ecological and Evolutionary Genomics MSc

One year full-time, two years part-time

[qmul.ac.uk/msc-eco-evo-geno](http://qmul.ac.uk/msc-eco-evo-geno)

Ecologists and evolutionary biologists now routinely use next-generation DNA sequencing in their research, and graduates who are skilled in both genome analysis as well as ecology and evolution are rare. Genome-enabled approaches are helping to rapidly advance our understanding of the dynamic relationship between genotype, phenotype and the environment.

Our programme will give you cross-disciplinary skills in a rare combination of areas of expertise, from bioinformatics and evolutionary inference to computational biology and fieldwork. You will be taught by researchers who apply genomic methods to a wide range of issues in ecology and evolution, from bat food webs and genome evolution to microbial biodiversity in natural and engineered ecosystems. This means that teaching on our programme is informed by the latest developments and research in this field.

## Programme outline

### Taught modules

- Genome bioinformatics
- Coding for scientists OR Ecosystem structure and functioning
- Statistics and bioinformatics
- Research frontiers in evolutionary biology OR Post-genomic bioinformatics

### Fieldwork module

- Tropical ecology field course (currently to Borneo)

### Research modules

- Ecological and evolutionary genomics group project
- Individual research project (50 per cent of final grade)

## Programme highlights


- Work with leading researchers in environmental genomics
- Two week tropical ecology field trip (currently to Borneo)
- Strong foundation for careers in consultancy, environmental policy and management or research
- Strong foundation for PhD training in any area of genomics, ecology, or evolution.

## Entry requirements

A minimum of an upper second-class degree or equivalent international qualification in biology or other relevant natural sciences subject. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

### Contact

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A woman wearing a tan long-sleeved shirt, a tan bucket hat, and glasses is standing in the foreground of a desert canyon. She is smiling at the camera. In the background, there are steep, reddish-brown rock walls of the canyon. Another person is visible sitting on a rock ledge in the distance. The sky is overcast.

**“My lab uses forensic DNA techniques to reconstruct ecological events, such as where a bee has picked up pollen or which prey a spider has consumed. Using these methods, we generate large food webs to try and understand the ecological effects of landscape-level changes in habitat”**

**Dr Elizabeth Clare, Lecturer**

Dr Elizabeth Clare conducts research into food webs in the Chihuahuan Desert in Texas, USA, on a research trip funded by a Royal Society grant



# Our masters programmes

## Freshwater and Marine Ecology MSc/PgCert

One year full-time, two years part-time

[qmul.ac.uk/msc-fame](http://qmul.ac.uk/msc-fame)

Ecosystems and species are under intense anthropogenic threats. These threats directly affect services such as sustainable fisheries or ecosystem resilience. To adequately respond to these 21st-century challenges, a fundamental understanding of the biodiversity and ecosystem processes is needed, as without knowledge there can be no application or effective management.

Considering both freshwater and marine ecosystems and species, we have designed a programme to equip you with the interdisciplinary practical skills and theoretical understanding to pursue a career in aquatic research, consultancy or environmental protection, and to give you a good understanding of how to apply scientific insight to science policy.

### Programme outline

#### Taught modules

- Ecosystem structure and functioning
- Ecological theory and applications
- Statistics and bioinformatics
- Science into policy and management (includes a week in Dorset)
- Quantitative techniques for surveying and monitoring in ecology

#### Fieldwork module (choose one option)

- Marine mammals and turtles (currently to Cape Verde)

- Evolutionary biology field course (currently to Borneo)

#### Research module

- Individual research project (50 per cent of final grade)

Alternatively, you may enrol for the Freshwater and Marine Ecology PgCert, comprising of four taught modules that contribute towards the MSc.

### Programme highlights


- Balances the latest in ecological theory with practical application
- Residential field courses for practical, hands-on training in the field
- Access to analytical, mesocosm and temperature-controlled facilities within the Centre for the Aquatic and Terrestrial Environment
- Strong foundation for employment with environmental protection and conservation agencies, the water industry and environmental consultancies or PhD research.

### Entry requirements

A minimum of an upper second-class degree or equivalent international qualification in a relevant subject, such as environmental science, biology, chemistry or geography. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

#### Contact

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A photograph of two young women standing in a shallow lake or river. They are both wearing green waders. The woman on the left is wearing a black long-sleeved shirt under her waders and is smiling. The woman on the right is wearing a purple long-sleeved shirt and a pink puffer vest over her waders, also smiling. In the background, there is a line of orange buoys connected by a green rope. The shoreline is covered with dry, tangled reeds and branches.

**“I learned from a wide range of experts, especially during the field trips, which were my favourite part. Going to Dorset, the Lake District and Cape Verde allowed me to learn outside the classroom and get hands-on field experience”**

**Adrienne Kerley, Freshwater and Marine Ecology MSc 2016, now a Natural Environment Research Council (NERC)-funded PhD student**

Freshwater and Marine Ecology students on a fieldtrip to the Lake District

# Our masters programmes

## Plant and Fungal Taxonomy, Diversity and Conservation MSc

### One year full-time

[qmul.ac.uk/msc-plant-fungal-diversity](http://qmul.ac.uk/msc-plant-fungal-diversity)

With only a small percentage of the planet's diversity formally described by science, it is more important than ever to train a new generation of taxonomists who will go on to understand and conserve biodiversity. There is a critical shortage of skilled scientists in plant and fungal taxonomy: these areas underpin much of bioscience, nature conservation and plant breeding work, as well as the development of environmental policy. This programme delivers vital training to fill that skill shortage and provides a thorough grounding in molecular systematics, evolutionary biology, and conservation policy, theory and practice.

This degree is delivered in collaboration with the Royal Botanic Gardens, Kew (RBGK) - four modules on the programme are taught at Kew and two at QMUL. You will apply new technologies to answer fundamental questions about the diversity of plant and fungal life on the planet, how it evolved and how we can best conserve it<sup>1</sup>.

## Programme outline

### Taught modules

- Plant taxonomy and diversity
- Fungal taxonomy and diversity
- Conservation and ecosystem science
- Statistics and bioinformatics
- Research frontiers in evolutionary biology

### Fieldwork module

- Field study skills in a biodiversity hotspot (currently to Madagascar)

### Research module

- Individual research project (50 per cent of final grade)

## Programme highlights

- Vast scientific collections of the Royal Botanic Gardens, Kew, available for investigative research
- Use of lab facilities at both QMUL and Kew
- Training in cross-disciplinary skills with applications in academia, government, industry and consultancy.

## Entry requirements


A minimum of an upper second-class degree or equivalent international qualification in biology or another relevant natural sciences subject. Applicants with a good lower second-class degree may be considered on an individual basis, taking into account their background and achievements.

### Contact

Professor Andrew Leitch, Programme Director  
Tel: +44 (0)20 7882 5294  
Email: [a.r.leitch@qmul.ac.uk](mailto:a.r.leitch@qmul.ac.uk)  
Royal Botanic Gardens, Kew: [kew.org](http://kew.org)

<sup>1</sup>As the RBGK's key function is to collect and disseminate plant-related information, students on the Plant and Fungal Taxonomy, Diversity and Conservation MSc will have to share any new plant and fungi-related information that may arise during the course of their studies. These findings will be used by RBGK to maintain its publicly available databases and there will be no restriction on your use of the data. This agreement does not preclude in any way publication of your findings.





“We train young scientists and conservation biologists in botanical and fungal sciences, with an unashamed emphasis on the diversity of plant and fungal life. We don’t focus on detailed plant and fungal physiology; instead, we explore the causes, constraints and consequences of diversity in the wild, in all its glorious complexity”

Andrew Leitch, Professor of Plant Genetics

On our field course in Madagascar, fungi are collected fresh and photographed back at camp before being dried

Credit: Stuart Cable, RBGK

# Our research

The School of Biological and Chemical Sciences is home to an active and multi-disciplinary research programme. Our research staff are engaged in a wide range of projects across the broad sweep of biological, chemical and psychological sciences.

Research in our School ranges from sub-atomic to global levels of analysis, and covers topics ranging from cognitive biology and behavioural ecology to synthetic chemistry, protein structure and function, as well as evolutionary genetics, aquatic ecology and cell biology.

Teaching on our postgraduate programmes is led by research: academic staff integrate their most recent discoveries into our taught programmes, meaning that as a postgraduate student in our School, you will directly benefit from the high-impact research carried out by our academics.

## Excellence

Our research is world-leading and internationally recognised for its excellence. According to the latest Research Excellence Framework (REF 2014), the UK-wide assessment of university research, 87 per cent of our School's chemistry research outputs are rated as either world-leading or internationally excellent. For biology research, this figure is 82 per cent.

## Research departments

Research in the School of Biological and Chemical Sciences is organised around our four departments, which are fully collaborative and often overlap:

- Biological and Experimental Psychology
- Chemistry and Biochemistry
- Cell and Molecular Biology
- Organismal Biology.

### Biological and Experimental Psychology

Staff in this department study and teach the psychology of humans and animals: its evolution, its mechanisms, its failures (psychopathology) and its triumphs (wellbeing). The team emphasises an interdisciplinary approach, focused at the interface between psychology (perception, cognition, communication and social life) and biology (genomics, neuroscience, ethology and evolution). Research focuses on the following areas:

- perception and decision-making
- resilience, health and wellbeing
- comparative psychology.

### Chemistry and Biochemistry

Researchers in this department come from a range of disciplines and work in a collaborative environment on synthesis, characterisation, molecular-assembly, and the structure and function of (bio)chemical systems. This research addresses key global challenges of healthy ageing, novel medical solutions, advanced materials and catalysis.



**“Our School has an amazing collection of scientists covering subjects from chemistry to biology and psychology. I can speak to a scientist studying culture in bees one day and a researcher discovering the mechanism of chromosome segregation the next”**

**Professor Richard Pickersgill, Head of the School of Biological and Chemical Sciences**



# Our research

The Chemistry and Biochemistry department has particular focus in three innovative areas:

- synthesis and catalysis, including the development of novel synthetic and catalytic methodologies and total synthesis of natural products as drug candidates
- physical and materials chemistry, with significant presence at central neutron, muon, synchrotron and laser facilities and pronounced activity in the computational modelling of materials and biomolecules
- chemical and structural biology, with research conducted using x-ray crystallography and NMR, including analysis and structure/activity relationships of proteins and the synthesis of biologically relevant systems.

## Cell and Molecular Biology

Staff in this department research and teach the function of biological systems at the cellular level. The team has strong links with QMUL's Barts and The London School of Medicine and Dentistry for both research and teaching. Research excellence lies in the following areas:

- plant biology and photosynthesis, including membrane protein structure and dynamics, light harvesting and electron transport - research which has profound implications for bioenergy
- biology of the nucleus, including chromosome segregation, genomic stability and epigenetic mechanisms
- microbial cell biology, including the cell biology of bacteria and protozoa

- disease mechanisms, including pathways relevant to neglected tropical diseases, schizophrenia and cancer
- bioinformatics, including data analysis, data integration and modelling of molecular dynamics. This work is applied in areas as diverse as plant science and clinical research.

## Organismal Biology

This department aims to develop a deeper understanding of how biological systems function. Research ranges from molecular life forms to the global biosphere with particular strengths in the following areas:

- aquatic ecology, including population and community ecology, conservation and climate change, food web structure and function and greenhouse gas production
- evolution and genetics, including genome and gene divergence. This work has relevance to food security, biodiversity and ecosystem functioning
- ecological aspects of parasites and infectious diseases, complementing research in the Cell and Molecular Biology department
- neurobiology and developmental biology, including the evolution and development of neural systems, and the mechanisms underlying changes in animal behaviour in response to environmental factors.

Visit our website to find out more about our academic staff, including their research interests, areas of research supervision and publications: [sbcs.qmul.ac.uk/people/academicstaff](https://sbcs.qmul.ac.uk/people/academicstaff)



**"I am currently studying a PhD at QMUL, which is funded by the London NERC DTP\*. The scholarship is very competitive, and undoubtedly the experience I had during the MSc and the help provided by the staff benefited me in getting selected"**

**Carlos Martínez Ruiz, Ecology and Evolutionary Biology MSc 2015**

\*Natural Environment Research Council Doctoral Training Partnership.

# Funding your masters

## Tuition fees

You can find a full list of both UK/EU and international tuition fees here: [qmul.ac.uk/tuitionfees](http://qmul.ac.uk/tuitionfees)

## Funding

We want to attract the best students to QMUL regardless of their financial situation and so every year, we offer a range of scholarships for academically excellent students.

For the latest information, visit:  
[qmul.ac.uk/postgraduate/taught/funding\\_masters](http://qmul.ac.uk/postgraduate/taught/funding_masters)

As a guide, in 2017 we were able to offer the following:

### Commonwealth Scholarships (international students only)

QMUL worked in partnership with the Commonwealth Scholarship Commission in the UK to offer a wide range of scholarships for postgraduate study at masters and PhD level. Scholars from developing and developed Commonwealth countries were eligible to apply for these awards.

### Chevening scholarships (international students only)

This is a worldwide scheme to fund masters-level study for international students, administered by the UK's Foreign and Commonwealth Office. QMUL attracted more than 80 Chevening Scholars in 2016/17.

Visit: [chevening.org](http://chevening.org) or your local British Council office: [britishcouncil.org](http://britishcouncil.org)

### International Science and Engineering Excellence Awards (international students only)

This extensive scheme provided awards of up to £5,000 for students based on academic achievement. To achieve the highest award, students had to hold a UK first-class bachelors degree or equivalent.

### QMUL Alumni Loyalty Awards

If you are a Queen Mary graduate, you may be eligible for our Alumni Loyalty Award for masters study (£1,000).

### Science and Engineering Taught Scholarships (Home/EU students only)

We award £1,500 to every\* Home/EU student accepted on to a science and engineering programme with a UK first-class bachelors degree or equivalent (\*excluding the Plant and Fungal Taxonomy, Diversity and Conservation MSc).





## Postgraduate Loan (Home/EU students only)

The government's Postgraduate Loan offers up to £10,280 per programme for 2017 entrants. The Loan is available for any taught masters programme as well as Master of Research (MRes), including part-time study.

You must be aged under 60 on 1 August of the year in which you start your programme, and other eligibility criteria will also apply (see the government's website below). If you already hold a masters degree or higher level qualification, you won't normally be eligible for this Loan.

For further information on how to apply, eligibility criteria, payment information, and loan repayments, including salary scales and interest rates, visit:

- The UK government's website: [www.gov.uk/postgraduate-loan](http://www.gov.uk/postgraduate-loan)
- QMUL's Postgraduate Funding advice guide: [welfare.qmul.ac.uk/guides/postgraduate-funding](http://welfare.qmul.ac.uk/guides/postgraduate-funding)
- QMUL's Funding a Masters webpages: [qmul.ac.uk/postgraduate/taught/funding\\_masters](http://qmul.ac.uk/postgraduate/taught/funding_masters)

Students on our Plant and Fungal Taxonomy, Diversity and Conservation MSc take GPS readings and describe the plants they collect on our field course in Madagascar

Credit: Stuart Cable, RBG Kew

# Essential information

## Contact

Postgraduate Admissions Officer

Tel: +44 (0)20 7882 3328

Email: [sbcs-pgadmissions@qmul.ac.uk](mailto:sbcs-pgadmissions@qmul.ac.uk)

## How to apply

You can apply for all our postgraduate programmes online. While there are no set deadlines for degree applications, we advise you to apply as early as possible to make sure your application is considered and to take advantage of any funding opportunities which may have early deadlines.

Visit: [qmul.ac.uk/postgraduate/howtoapply](http://qmul.ac.uk/postgraduate/howtoapply)

## Field trips

Costs for field trips (eg flights, accommodation and meals) taken as part of our masters programmes are fully covered by your tuition fees. This includes field trips within the UK and overseas field trips. Tuition fees on programmes that offer overseas travel are higher than standard tuition fees to incorporate costs for these field trips.

The following programmes offer compulsory overseas field trips:

- Ecology and Evolutionary Biology MSc
- Ecological and Evolutionary Genomics MSc
- Freshwater and Marine Ecology MSc
- Plant and Fungal Taxonomy Diversity and Conservation MSc

You should expect to undertake physically demanding work in remote locations on overseas field trips. Applicants from outside the UK should ensure that there are no

residency or travel restrictions that would prevent them from attending this field trip. If you have any disability that affects your ability to undertake such activities, seek advice from our School before applying to discuss any possible adjustments that may need to be made.

## Entry requirements

See individual programme entries.

### English language requirements

All applicants must show they meet a minimum English language standard. The English language levels vary between programmes, and you can read full details online at: [qmul.ac.uk/eng-lang-reqs](http://qmul.ac.uk/eng-lang-reqs)

If you have not achieved the required English language level yet, you may be eligible to take a Pre-sessional English course, or continue to take English language tests in your country to reach the level needed. Visit: [slf.qmul.ac.uk/language-centre/presessionals](http://slf.qmul.ac.uk/language-centre/presessionals)

## Accommodation

We offer approximately 500 spaces specifically for postgraduate students and the majority of these are at our Mile End campus. We can also provide advice on a range of alternative housing, such as renting, private halls or homestay.

Tel: +44 (0)20 7882 6474

Email: [residences@qmul.ac.uk](mailto:residences@qmul.ac.uk)

[residences.qmul.ac.uk](http://residences.qmul.ac.uk)

A crab-eating macaque, *Macaca fascicularis*, spotted on our recent MSc field trip to Borneo, Malaysia

Credit: Dr Rob Knell

## International students

We offer a range of support services for students joining us from around the world, including in-country meetings, pre-departure briefings, an airport collection service, and the International Welcome Programme. We also offer advice about accommodation, scholarships, funding, summer school, study support, visas and English language requirements.

Tel: +44 (0)20 7882 6530

Email: [internationaloffice@qmul.ac.uk](mailto:internationaloffice@qmul.ac.uk)

[qmul.ac.uk/international](http://qmul.ac.uk/international)

## Postgraduate open events for 2018

- 17 January 2018, Virtual Open Day
- 7 February 2018, Open Evening
- 9 May 2018, Virtual Open Day
- 18 July 2018, Virtual Open Day
- 5 September 2018, Open Afternoon

Visit: [qmul.ac.uk/postgraduate/meet-us](http://qmul.ac.uk/postgraduate/meet-us)

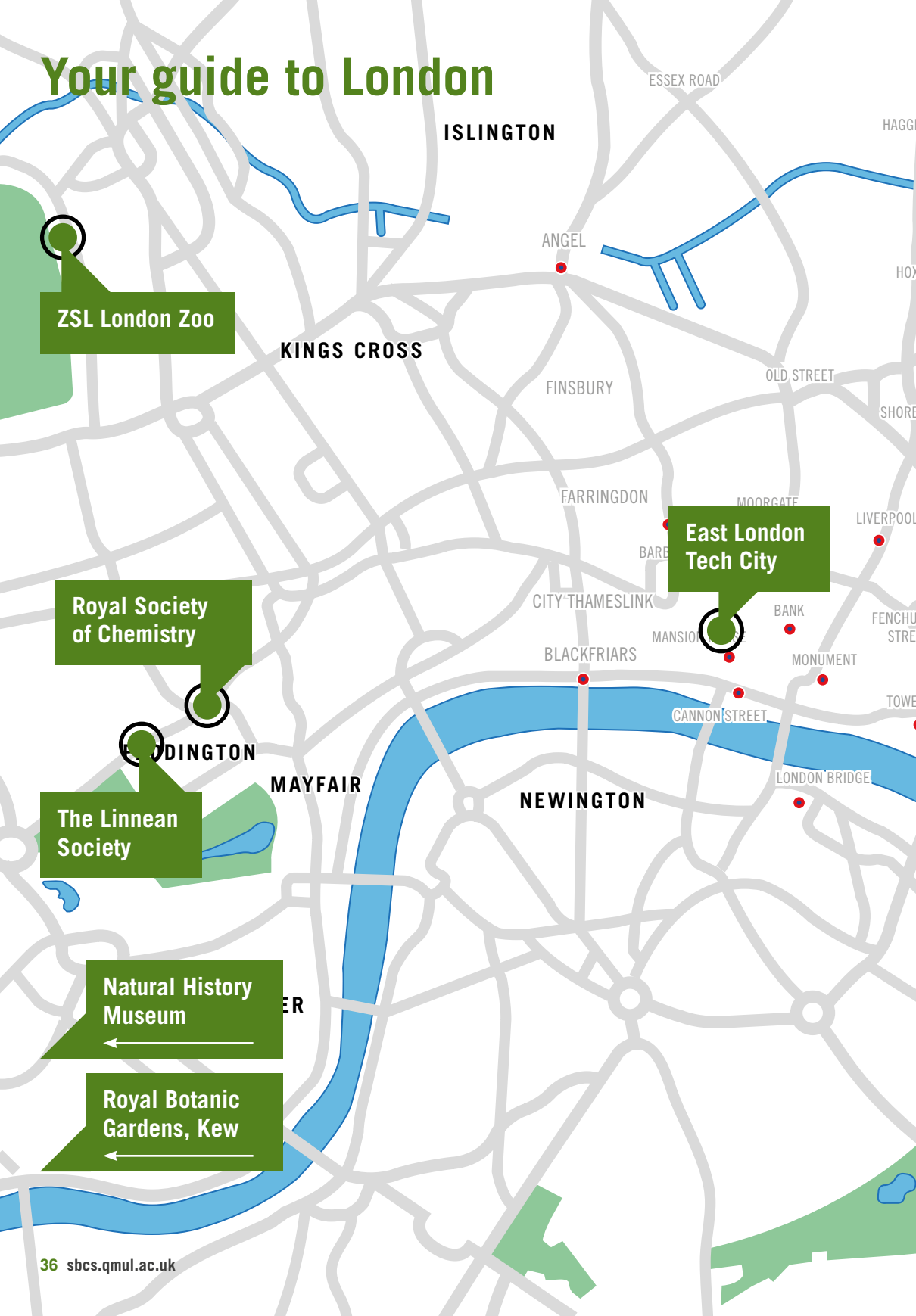
## QMUL Doctoral College

Many of our masters students go on to undertake PhD research too. If you would like to find out more about becoming a researcher, visit: [doctoralcollege.qmul.ac.uk](http://doctoralcollege.qmul.ac.uk) and [qmul.ac.uk/postgraduate/research](http://qmul.ac.uk/postgraduate/research)





# Your guide to London



ZSL London Zoo

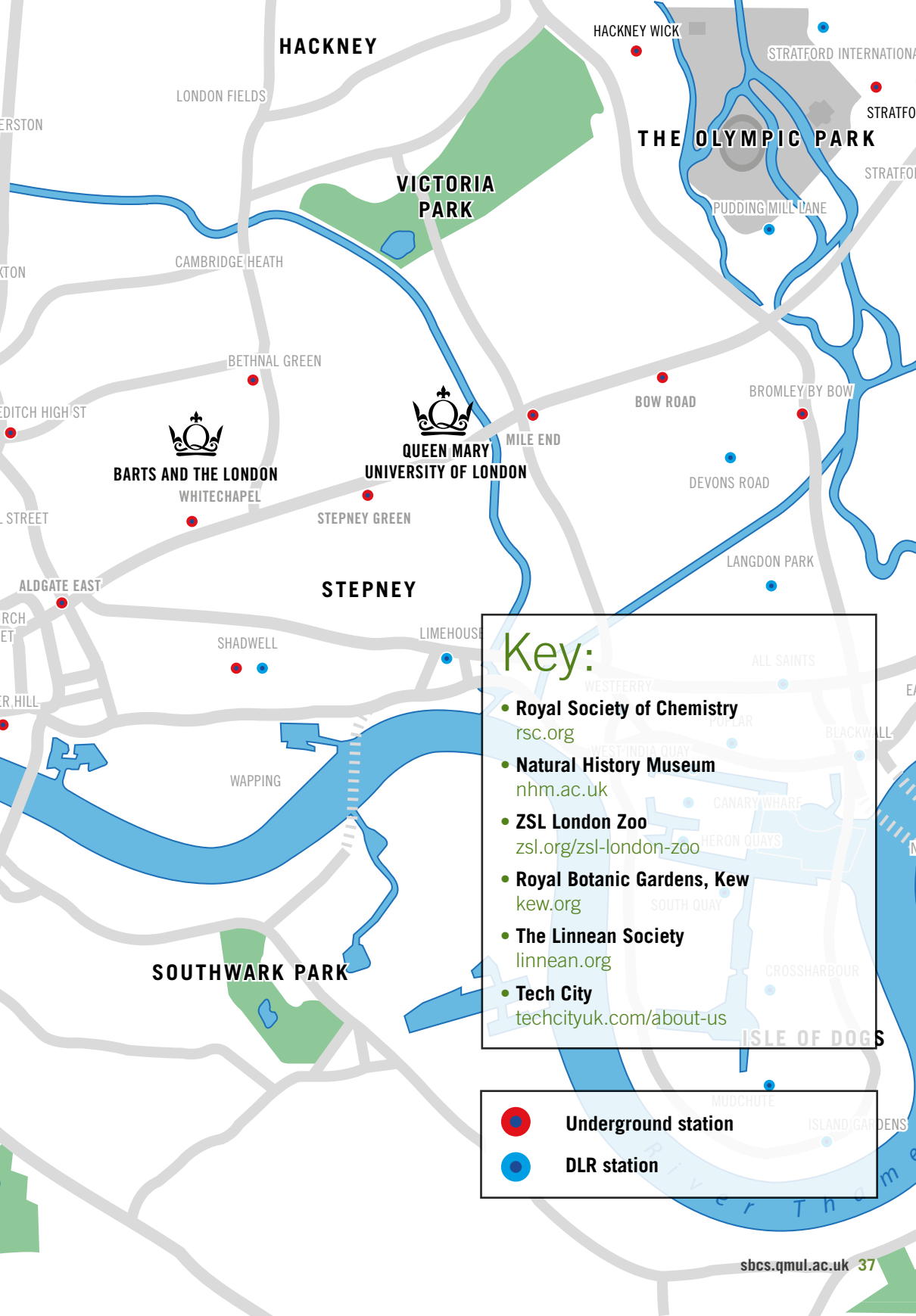
Royal Society  
of Chemistry

The Linnean  
Society

Natural History  
Museum

Royal Botanic  
Gardens, Kew

East London  
Tech City



HACKNEY

LONDON FIELDS

HACKNEY WICK

STRATFORD INTERNATIONAL

STRATFORD

THE OLYMPIC PARK

STRATFORD

PUDDINGMILL LANE

VICTORIA PARK

CAMBRIDGE HEATH

BETHNAL GREEN



BARTS AND THE LONDON  
WHITECHAPEL



QUEEN MARY  
UNIVERSITY OF LONDON

MILE END

BOW ROAD

BROMLEY BY BOW

DEVONS ROAD

STEPNEY GREEN

LANGDON PARK

STEPNEY

LIMEHOUSE

Key:

- Royal Society of Chemistry  
[rsc.org](http://rsc.org)
- Natural History Museum  
[nhm.ac.uk](http://nhm.ac.uk)
- ZSL London Zoo  
[zsl.org/zsl-london-zoo](http://zsl.org/zsl-london-zoo)
- Royal Botanic Gardens, Kew  
[kew.org](http://kew.org)
- The Linnean Society  
[linnean.org](http://linnean.org)
- Tech City  
[techcityuk.com/about-us](http://techcityuk.com/about-us)

SHADWELL

WAPPING

SOUTHWARK PARK

ALL SAINTS

WESTFERRY

POPULAR

WEST INDIA QUAY

CANARY WHARF

HERON QUAYS

SOUTH QUAY

CROSSHARBOUR

ISLE OF DOGS

MUDCHUTE

ISLAND GARDENS



Underground station



DLR station

# RUSSELL GROUP



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## Terms and conditions

We have endeavoured to ensure that the information contained in this prospectus is both helpful and accurate at the time of going to press. There are circumstances in which we may still make changes to the programmes and services that we provide. For this reason, it is important that you check our website ([qmul.ac.uk](http://qmul.ac.uk)) for the most up-to-date information, or contact us, using the details contained within this document, before you apply.

We regularly update our programmes so that students can learn from the latest academic research and to make improvements in dialogue with current students and employers. Other circumstances that can lead to changes include:

- changes of academic staff, which can lead to new modules being offered and existing modules being withdrawn
- new requirements from professional or statutory bodies or
- changes to the way in which universities and services are funded.

If you apply to us and we offer you a place to study at QMUL, we will endeavour to deliver your chosen programme as is advertised when we make our offer of admission. For this reason, it is important that you check our website for the most up-to-date information, or contact us using the details contained within this document, before you accept an offer. We will only suspend or withdraw

your chosen programme in exceptional circumstances, such as if a key member of academic staff or essential teaching facilities become unavailable without warning. Programmes may also be suspended where the demand from applicants makes them unviable. If we have to suspend or withdraw your chosen programme after you accept an offer, we will inform you at the earliest opportunity and make every effort to provide a suitable alternative.

For up-to-date descriptions of our programmes, visit: [qmul.ac.uk/postgraduate/coursefinder](http://qmul.ac.uk/postgraduate/coursefinder)

## Contact

Queen Mary University of London, Mile End Road,  
London E1 4NS [qmul.ac.uk](http://qmul.ac.uk)

We would like to thank the staff and students who took part in these photographs. Student and departmental photography by Jorge Estevao ([jdestevao.com](http://jdestevao.com)) and Jonathan Cole ([JonathanColePhotography.com](http://JonathanColePhotography.com)) and Layton Thompson ([LaytonThompson.com](http://LaytonThompson.com))

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**For further information contact:**

Postgraduate Admissions  
School of Biological and Chemical Science  
Queen Mary University of London  
Mile End Road, London E1 4NS  
Tel: +44 (0)20 7882 3328  
Email: [sbcs-pgadmissions@qmul.ac.uk](mailto:sbcs-pgadmissions@qmul.ac.uk)  
[sbcs.qmul.ac.uk](http://sbcs.qmul.ac.uk)



QMUL School of Biological and Chemical Sciences



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**Contact us**

For general admissions enquiries about the admissions process for taught masters programmes:

Tel: +44 (0)20 7882 5533

Email: [pgtadmissions@qmul.ac.uk](mailto:pgtadmissions@qmul.ac.uk)

For general admissions enquiries about the admissions process for research degree programmes:

Tel: +44 (0)20 7882 2207/5860

Email: [researchadmissions@qmul.ac.uk](mailto:researchadmissions@qmul.ac.uk)