PROFESSIONAL DEVELOPMENT

Further study within microbiology

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MICROBIOLOGY SOCIETY

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1. Introduction

Studying a postgraduate degree is an excellent opportunity to gain in-depth knowledge about microbiology and support your progression into a research career. Furthermore, a postgraduate degree often provides greater autonomy to students, allowing you to specialise in a topic you find interesting.

However, it is important that you evaluate your options carefully as a postgraduate degree can come with a greater workload and financial pressures. This guide aims to inform you about the different postgraduate paths you can explore to learn about microbiology and progress into a research career.

2. Types of postgraduate degrees

There are several postgraduate qualifications available, but these can be divided into 'taught' or 'research' postgraduate degrees. A 'taught' postgraduate degree is similar to an undergraduate experience as you enrol in a series of modules. However, you gain specialised knowledge of your subject area through your lectures and seminars. Additionally, some courses will offer the opportunity for a short research project, if you are taking a full Master's degree.

A research postgraduate degree provides the opportunity for an independent research project in your subject area in collaboration with an academic supervisor. There are usually no teaching modules and instead you focus on developing skills in research methodology and project management, which can prepare you well for a career in academia and industry. However, both routes can provide you with a pathway into a research career as a microbiologist. The option you choose depends on how you learn, and what experience and skills you want to develop. The table below summarises the postgraduate options available.

Degree	Experience	Assessment	Length
Doctor of Philosophy (PhD)	A PhD is an extensive independent research project where you can make a novel contribution to a research field, usually measured by quality publications. During this, you will work as part of a research group and with a supervisor to support the direction of your project.	Submission of a thesis and assessment through a viva.	Typically, three to four years of full-time study, or up to seven years part-time.
Master's by Research (MRes)	Carry out an independent research project with a supervisor. There are no classes, as the degree is entirely research based. These are an excellent stepping stone towards a PhD or research career.	Submission of a thesis and assessment through a viva.	Usually one-year full time or two-years part-time.
Master of Philosophy (MPhil)	An MPhil also involves an independent research project but is awarded after two years. Students can usually transfer to a full PhD programme after this or choose to exit with this qualification.	Submission of a thesis and assessment through a viva.	Two years full-time or four years part-time
Postgraduate Certificate and Diplomas (PGCert/PGDip)	This resembles the structure, content and teaching of a taught Master's. However, a PGCert or PGDip are equivalent to one third or two thirds of a full Master's, respectively. These are a good option if you want to study for your Master's in stages or do not want to commit to the full degree.	Mainly assessed through essays and practical work. There is no dissertation in these degrees.	A PGCert lasts four months and a PGDip lasts nine months.
Taught Master's (MSc/MA)	Develop expertise in a specific subject through taught modules, seminars and tutorials. Additionally, some will involve a research project which will provide experience that can prepare you for a PhD.	Usually assessed through examinations, essays, presentations and a short dissertation on your research project.	One-year full time or two-years part-time.

3. Choosing your postgraduate degree

3.1 Taught postgraduate degrees

To find a taught postgraduate degree, you should search on a university's website directly. This institution will also have their own admissions system, with requirements and guidelines, and your application should be made directly with this university. Institutions will also set their own deadlines for applications, so it is important to check this when applying. The entry requirement for a full taught Master's is an undergraduate degree, normally to a 2:1 standard. In addition, your application should aim to demonstrate enthusiasm, skills, knowledge of discipline or relevant work experience. For PGCert and PGDip courses, the requirement is usually just an undergraduate degree.

When choosing the taught degree, you should consider:

- Does the course offer modules that interest you?
- How are modules assessed?
- What are the fees for the course?
- How will this support my future career?
- Is there any funding available? More information on this below.
- Does the university have a good reputation for teaching and/or research in your area of interest?
- Is the university in the right location for you?
- Is there an opportunity for a research project?
- Do you want to commit to a full Master's, or study in stages through a PGCert or PGDip?
- Are you looking to study full-time or part-time?

3.2 Research Masters' degrees

To find a research Master's, a good place to look is on the Find A Masters website. Most universities will have a pre-defined list of projects available for these which you can apply for. However, you can also identify potential supervisors in your field and reach out to them directly as they may be looking to take on a new Master's student.

For a research Master's, most universities want an undergraduate degree (grade 2:1 or higher), often in a relevant area. However, entry requirements can vary between universities and if you do not have this grade, you may still be able to apply with additional work experience to support your application.

In addition to the questions for a taught Master's, you should consider:

- Do I find the project interesting?
- What research methods will I learn about?
- Will the research skills I develop support my career?
- Is the supervisor supportive?
- Does the university's values match your own values?
- Does the university offer flexible working hours, if you require this?
- What is the research environment at the university like?

3.3 Doctor of Philosophy (PhD)

It is possible to proceed directly from an undergraduate degree into a PhD if you have significant research or work experience. However, most applicants will have a Master's degree in a relevant subject with experience of working on a research project.

As research-based postgraduate degrees require you to work closely with an academic supervisor, it is recommended you contact potential academic supervisors prior to submitting a formal application, to find out whether this is the right opportunity for you. Many programmes have their own requirements, which should be checked for eligibility.

How to find a PhD

To find a PhD, a good place to start is by searching for a subject of interest (such as microbiology) on the Find a PhD website. This will display PhD opportunities with a pre-defined research project, supervisor and host institution where you will carry out your research. The opportunities displayed will usually come from supervisors who have received funding for a PhD student for a specific project, or from doctoral training programmes (more information about this below). There are also PhD opportunities available through charitable trusts, including the Wellcome Trust and the Leverhulme Trust. You can find out more about their opportunities through their websites.

It is possible to contact potential supervisors in your research area to find out whether they have funding for a PhD student, or submit your own research proposal to them. When reaching out to supervisors, make sure that you tailor your communications to each supervisor by demonstrating that you have an understanding of their contributions to the field.

Doctoral training programmes

Doctoral training programmes are fully funded PhDs. These are usually structured as four-year degrees, with the first year focusing on skills training to help you excel in your research. The programme is funded by UKRI research councils, the most relevant to microbiology being the Biotechnology and Biological Sciences Research Council (BBSRC) and Medical Research Council (MRC), or charitable trusts.

Centres for Doctoral Training (CDT)	Provides training for cohorts of PhD students within a focused research area, often defined strategically by the funder.
Doctoral Training Partnership (DTP)	Provides training for a cohort of PhD students across a broad range of subjects and with a consortium of institutions and research institutions within a specific geographical location.
Industrial CASE studentships	Provides training for cohorts of PhD students; their project is in collaboration with an industry partner and incorporates a strong focus on real-world applications.

These doctoral training programmes are usually run by a specific organisation and they will have a pre-defined list of research projects which you can apply for. Applicants are invited to apply at a specific time each year and these can be very competitive. The assessment process will usually involve submission of a personal statement and CV, followed by an interview and practical task.

3.4 What to consider when choosing a PhD

As a PhD is an intensive research project lasting several years, there are several things to consider before you commit to it. For a PhD, interest in your research project, your research environment and funding are key. In addition to the questions raised in the previous sections, on taught and research Masters' degrees, you should also consider:

- Am I interested in the research project and will I still be interested in this in four years time?
- Does the project provide thorough training in an area I'm interested in?
- Is the supervisor supportive of my application and will they be supportive during my PhD?
- Is the research group a supportive environment for my training?
- Does the PhD provide funding for my living costs or waive my tuition fees?
- Is there funding for research, fieldwork and conferences included?
- Do I want to do research in academia or with an industry focus?

4. Postgraduate funding

For a postgraduate degree, it is important you are aware of the options to fund your degree. This is especially important for a PhD, which lasts multiple years. Additionally, receiving a competitive scholarship is an excellent addition to your professional experience and can demonstrate your communication skills to employers.

4.1 Government loans

The UK government provides loans for postgraduate study, including Masters' and PhD degrees. The amount you receive is not based on your income or your family's income and can be used to cover course fees and contribute to living costs. However, in some cases, a postgraduate loan may not be enough to fund all the costs of your postgraduate degree and you may need to find additional support or fund it yourself.

It is also worth noting that these loans are subject to interest and you will have to repay the loan once you finish your degree and are earning above a threshold amount. For full details on these loans, visit the UK Government website.

4.2 Scholarships and bursaries

Many universities offer scholarships to support postgraduate study. The benefit of scholarships and bursaries is that you will not have to pay the money back to the university and, therefore, it is always worth checking whether you are eligible for any support when applying. A good place to find a scholarship is on the Postgraduate Search website or by reaching out directly to the university you are applying to.

If you are an international student, the UK government fund Chevening Scholarships to support international students through Masters' degrees. It is important that you check the eligibility requirements for these before you apply, to make sure you are from an eligible country. Commonwealth Scholarships are also available for students from eligible countries and provide Master's and PhD scholarships. The GREAT Scholarships offer students from 15 countries £10,000 towards tuition fees for a one-year postgraduate course. As an international student, you are also eligible to apply for funding through research councils, including doctoral training programmes (more details below). It is important to check the time limits involved in such scholarships, as you may be required to leave the country soon after your programme ends.

4.3 Doctoral training programmes

As discussed above, doctoral training programmes are fully funded. This includes a tax-free stipend to cover living costs during your study (which is increased in line with inflation each year). Additionally, all your tuition fees are funded and there is a budget provided for your research costs. Some training programmes will also contribute to fees for fieldwork and conferences.

However, if you are an international student you will need to check whether they can contribute to your visa costs, as you may still need to fund these yourself.

5. Writing a personal statement

A personal statement is a key part of your application for all postgraduate courses. It is a useful opportunity to demonstrate that you are a unique candidate for the course and highlight your interests and expertise. This is especially important for courses that are competitive to enter, such as doctoral training programmes.

5.1 Self-reflection

You should start the process of writing a personal statement with some self-reflection. Ask yourself the following questions:

- Why do you want to study this subject?
- What appeals to you about this specific course?
- What relevant experience do you have from your undergraduate degree?
- What work experience do you have?
- What are your academic and professional skills?
- What life experiences do you have that are relevant to the course?
- What are some of your achievements?
- Why do you want to study at this institution?
- What are your future career plans?

5.2 Structuring your personal statement

Usually, a personal statement is 500 words, but requirements can vary between institutions. Make sure you follow their instructions and tailor each personal statement to every course you are applying for. The following structure is useful for a personal statement:

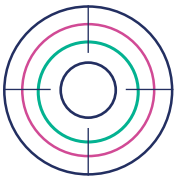
Section	What to include
Opening	Provide a positive introduction where you explain why you are enthusiastic about microbiology and motivated to study this in-depth.
Why this course?	Demonstrate your passion for and knowledge of microbiology. How have your previous educational experiences led you to this moment and how will the course support your future career? Demonstrate how your career goal matches with the goals of the programme.
Your skills and achievements	Talk about the key skills you have developed during work or university and the achievements you are most proud of. What makes you a unique candidate for this course? Include any communication and language skills.
Your work experience and career plans	What work experience, placements or voluntary work do you have that is relevant to microbiology. Discuss your future career plans, will this degree help you to become a researcher?
Conclusion	Leave a lasting impression with your reader. This could be something specific you want to achieve with the course, talk about your future career or reiterate your key skills and experiences which make you a unique candidate.

5.3 Top tips for writing

Your personal statement should be:

Unique

Focus on the skills and achievements which make you stand out from the crowd.



Specific

Use specific examples to illustrate your skills and achievements.

Positive

Sell your accomplishments to the reader.

Structured

Make the statement easy to read by dividing it into paragraphs.

Tailored

Demonstrate that you have researched the course and university and explain how your background and experience fits the programme.

6. Preparing for a postgraduate interview

As part of the assessment process, you may be invited for an interview. This will aim to determine whether you are prepared for postgraduate study and that you have researched the course and university. You should also demonstrate enthusiasm and a willingness to learn.

6.1 Postgraduate interview questions

To prepare for your interview, you should think about how you would answer the following questions:

- Tell us about yourself.
- Why have you chosen this course?
- Why do you want to study at this university?
- What skills do you have for this course?
- How will this course support your career plans?
- Why do you want to study this subject/What are your goals for the future?
- What modules have you studied that are relevant to this course?
- How will you fund this course (if funding is not provided)?
- What are your strengths and weaknesses?

6.2 PhD interviews

Most PhDs will require an interview with a panel of academics or your prospective supervisor to discuss your eligibility for the PhD in more detail. Depending on the PhD you are applying for, this may also include a short presentation on your research experience, field or proposal, a practical task or the chance to meet current PhD students and staff. The full structure and expectations for your interview will be confirmed beforehand.

To prepare for the interview, you should review the research project you are applying for, select a few research papers from your potential supervisor, or field of interest, and study them in detail. If you are applying for a doctoral training programme, make sure you are aware of what training modules you will be taking and think about how these will help your PhD.

In addition to the questions for general postgraduate interviews, there may be more specific questions for a PhD interview. These include:

- Why do you want to do a PhD?
- Why do you want to do this specific PhD project?
- What are the future implications of this project?
- What skills will you need to learn?
- Any PhD will have highs and lows, how do you think you will cope with this?
- Why do you think you are a good fit for this project?
- If you were offered the position, would you accept?

Be prepared to answer basic questions on concepts and techniques which you may have to routinely perform in the lab and some trouble shooting questions related to the project.

Always have a set of questions ready for the interview panel. This demonstrates your enthusiasm and is a good opportunity to find out whether the PhD is the right fit for you.

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