Why **GRADUATE STUDIES** in **BIOLOGY**?

There is no end to the fascinating questions we can ask about how the natural world functions, from dissecting the molecular mechanisms at play in cells to understanding the complexity of interactions in the biosphere, the beauty and mystery of nature astounds. It is an incredibly exciting time to do biological research and we are learning about the natural world at a rate unprecedented in history. The remarkable power of modern research tools, from powerful gene-editing techniques to bioinformatics to ecosystem modelling, is driving exciting discoveries daily. These discoveries are made by graduate students. Regardless of your area of interest, there is something in biology for you, questions waiting to be answered, and riddles of natural to be solved.

“*When I started my [Biology graduate degree] at Queen’s, all of a sudden I had this new network of friends who were interested in the same biological questions that I was- it was a ton of fun.*”

— Roslyn Dakin, PhD

Why **QUEEN’S**?

The Biology Department at Queen’s is one of the largest departments on campus with approximately 100 graduate students supervised by 32 faculty with research opportunities in a range of disciplines. Our faculty are world leaders in several research fields, including many Canada and Queen’s Research Chairs and winners of national and international awards for research and teaching excellence.

We offer a broad and challenging program in one of the top Biology departments in the country. We have an impressive range of sophisticated infrastructure for cell biology, biochemistry, molecular biology, ecology, and evolutionary research including: a confocal microscopy suite, DNA and RNA sequencing services, aquatic research facilities, and a state-of-the-art phytotron. Our field station, comprising more than 3200 hectares of woodland, fields and lakes is a short drive away and has excellent research facilities and living quarters.

**Program STRUCTURE**

PhD (4 years): research thesis and defense. (Some courses may be required).

**RESEARCH Areas**

- Animal Physiology
- Cell and Molecular Biology
- Ecology, Evolution and Behaviour
- Plant Sciences
- Mathematical Modeling & Bioinformatics

We encourage you to identify an area of research interest and contact a potential supervisor before applying.

Visit the [Biology Department website](http://biology.queensu.ca) to read faculty profiles and learn more about faculty members’ research areas. When you find a faculty member with similar research interests to yours, contact him/her and tell them about your interest in graduate work and related experience.

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School of Graduate Studies
Create an impact

[www.queensu.ca/sgs](http://www.queensu.ca/sgs)
2021-2022

Biology PhD Map *

DOCTOR OF PHILOSOPHY (PHD)

WHAT WILL I LEARN?

A graduate degree in Biology can equip you with:
- Knowledge and technical skills
- Effective communication skills in both written and oral forms for diverse audiences
- Information management: prioritize, organize and synthesize large amounts of information
- Time management: meet deadlines and manage responsibilities despite competing demands
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- Creativity and innovation
- Perseverance
- Independence and experience as a collaborative worker
- Awareness and understanding of sound ethical practices, social responsibility, responsible research and cultural sensitivity
- Professionalism in all aspects of work, research, and interactions
- Leadership: initiative and vision leading people and discussion

WHERE CAN I GO?

A PhD in Biology can take your career in many directions. In Canada, less than 40% of all PhDs will work in post-secondary education; the majority will work in industry, government, or non-profits. Our PhD students are equipped with the foundation for careers in:
- Academia and teaching
- Agriculture
- Pharmacy and medicine
- Environmental law, patent law
- Government research centers and organizations
- Biotechnology industries
- Wildlife conservation and environmental consulting

Taking time to explore career options, build experience, and network can help you have a smooth transition to the world of work after graduation.

ACHIEVE YOUR ACADEMIC GOALS

YEAR I
- Key priorities include forming your committee, coursework, field exams, and language exams.
- Meet early with your supervisor to discuss and set expectations, roles, responsibilities, program requirements, resources, research/objective goals, timelines, and any required accommodation plans.
- Attend and participate in Departmental Seminars, such as the EEB, Limmology, MCB, and AI Downe Lecture series.

YEAR II
- Write and defend your thesis proposal.
- Embark on your substantive research.
- Set up regular meetings with your supervisor to discuss progress and obstacles to timely completion.
- Find your way through the academic process with the help of Expanding Horizons and the SGS website.
- Seek experiential/professional development opportunities.

YEAR III
- Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out SGS writing camps, such as Dissertation on the Lake.
- Use conference presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons publishing workshop.
- Begin discussion of potential thesis defense examiners.
- Complete the Annual Research Progress Report (1/2).

YEAR IV & TRANSITIONING
- Plan date of thesis submission for examination.
- Present your research to graduate students and faculty at conferences and work with supervisor to develop a comprehensive proposal for defence.
- Review submission and examination guidelines. Secure necessary oral defence accommodations.
- Discuss career pathways, references letters, and publication options with your supervisor.
- Complete the Annual Research Progress Report (2/2).

MAXIMIZE RESEARCH IMPACT
- Think about audiences for your research.
- Complete CORE online module on research ethics if doing research regarding sensitive topics.
- Apply to NSERC, OGS, and other funding.
- Attend conferences in your field.

BUILD SKILLS AND EXPERIENCE
- Serve on departmental, faculty or university committees. Talk to the Biology Graduate Student Council for tips on getting involved.
- Consider positions in student services, the SGPS, or media outlets like the Queen’s Journal, CFCR, and the SGS Blog. Look in the AMS Clubs Directory.
- Use a Teaching Assistant or Research Assistant position to develop your skills and experience.

ENGAGE WITH YOUR COMMUNITY
- Consider volunteering with different community organizations such as Science Rendezvous.
- Consider volunteering with different community organizations, such as the Kingston Field Naturalists.

LAUNCH YOUR CAREER
- Finding a career that fits starts with knowing yourself! Get help by taking a Career Services workshop, or meeting with a career counsellor.
- Check out books like So What Are You Going to do With That? or Planning a Scientific Career in Industry from the Career Resource Area for advice on various career options.
- Start reading publications like University Affairs and the Chronicle of Higher Education. Browse non-academic labour market websites. Stay on the lookout for special events like School of Graduate Studies Career Week to explore your career pathways.
- Start building your teaching portfolio including student evaluations, and seek mentorship.
- Explore different careers of interest by using Queen’s Connects on LinkedIn to connect with Queen’s alumni. For more information check out Career Cruising.
- Participate in hiring committees and attend job talks. Research academic careers of interest. Craft your CV and job application materials.
- Start focusing on non-academic areas of interest. Research organizations of interest and start putting together your industry resume and begin your job search plan.
- Build connections with faculty outside of your department. Pursue interviews for faculty positions and apply for post-doc fellowships and positions.
- Apply to jobs or make plans for other adventures. Get help from Career Services with job searching, resumes, and interviews.
- If considering jobs abroad, research possible immigration regulations. If you are an international student interested in staying in Canada, consider speaking with an International Student Advisor.

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WHAT CAN I do with a PhD in Biology?

- Biological science and education
- Biotechnology: plant biotechnology, genetic engineering
- Environmental science and conservation
- Demonstrated skills in: initiative and vision, critical thinking, analysis, research, leadership, communication, and leadership.
- Research planning and project management
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Application FAQs

What do I need to know to APPLY?

ACADEMIC REQUIREMENTS
- MSc in Biology or direct entry from B.Sc for exceptional candidates.

ADDITIONAL REQUIREMENTS
- Correspond with potential supervisors (may require C.V.).
- If English is not a native language, prospective students must meet the English language proficiency requirements in writing, speaking, reading, and listening. The following minimum scores are required: (1) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30). Applicants must have the minimum score in each test as well as the minimum overall score, or (2) IELTS: 7.0 (academic module overall band score and a 7.0 for each test band), or (3) PTE Academics: 65, or (4) CAEL CE -70 (minimum overall score).

KEY DATES & DEADLINES
- Application due: March 1 (domestic students), February 15 (international students).
- Notification of acceptance: Students are accepted on a rolling basis as applications are reviewed.

Before you start your application, please review the Graduate studies application process.

What about FUNDING?

The minimum funding guarantee for Biology PhD students is $24,800 per year, throughout years 1-4. The funding package may be comprised of graduate awards and teaching assistanships.

Apply for external funding from OGS, NSERC and other sources. Queen's will automatically issue a one time $10,000 award to Doctoral students who have won federal government tri-council awards. For more information, see the School of Graduate Studies' information on awards and scholarships.

How do I make the most of my time at Queen's?

Use the Grad Map to plan for success in five overlapping areas of your career and academic life. Everyone's journey is different - the ideas on the maps are just suggestions to help you explore possibilities. For more support with your professional development, take advantage of the SGS professional development framework and the new Individual Development Plan (IDP) process to set customized goals to help you get career ready when you graduate.

Where can I get help?

Queen's provides you with a broad range of support services from your first point of contact with the university through to graduation. Ranging from help with academics and careers, to physical, emotional, or spiritual resources - our welcoming environment offers the programs and services you need to be successful, both academically and personally. Check out the SGS website for available resources.

What is the community like?

At Queen's, graduate students from all disciplines learn and discover in a close-knit intellectual community. You will find friends, peers and support among the graduate students enrolled in Queen's more than 130 graduate programs within 50+ departments & research centres. With the world's best scholars, prize-winning professional development opportunities, excellent funding packages and life in the affordable, historic waterfront city of Kingston, Queen's offers a wonderful environment for graduate studies. Queen's is an integral part of the Kingston community, with the campus nestled in the core of the city, only a 10-minute walk to downtown with its shopping, dining and waterfront. For more about Kingston's history and culture, see Queen's University's Discover Kingston page.