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.”

– Rosyln 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.
**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/occupational goals, timelines, and any required accommodation plans.
  - Attend and participate in graduate seminars such as Departmental Seminars, FEB, Limnology, and MCIT Seminars, as well as the Al Dome Lecture.

- **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, Habitat.
  - Seek experiential/professional development opportunities.

- **Year III**
  - Continue to meet regularly with your supervisor, review research progress, and write your dissertation. Check out the SGS, Dissertation Boot Camp or Dissertation on the Lake.
  - Use conferences presentations to create, discuss, and explore ways to disseminate research findings. Learn from the Expanding Horizons, Publishing workshop.
  - Begin discussion of potential thesis defense examination.
  - 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 or at conferences and work with supervisor to prepare 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**

- **Year I**
  - Think about audiences for your research.
  - Complete ROMEO online module on research ethics if doing research with living people or sensitive topics.
  - Apply to NSERC, OGS, and other funding.
  - Attend conferences in your field.

- **Year II**
  - Attend or present at a graduate conference such as those hosted by the Canadian Society for Ecology and Evolution, Society for Experimental Biology, Canadian Society of Plant Biology, or any other groups that feature graduate research.
  - Apply for the Graduate Dears Travel Grant for Doctoral Field Research.

- **Year III**
  - Hone skills for non-academic employment by continuing involvement on committees and in the community.
  - Start keeping an eportfolio of your skills, experiences and competencies.
  - For help with teaching, get support from the Centre for Teaching and Learning. Enroll in SGDP1 or the PUTF certificate for more professional development in teaching and learning.

- **Year IV & Transitioning**
  - Begin teaching as a departmental Teaching Fellow.
  - Find opportunities for extra training through CTL, Expanding Horizons, Mitacs, or other sources to boost your skills. Investigate internships from Mitacs and other sources.
  - Prepare for work or studies in a multi-cultural environment taking the Intercultural Awareness Training Certificate hosted by QuIC and FDISC.

**Build Skills and Experience**

- **Year I**
  - 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 SGS, or media outlets like the Queen’s Journal, CFRC, and the SGS Blog. Look in the AMS Clubs Directory.
  - Use a Teaching Assistant or Research Assistant position to develop your skills and experience.

- **Year II**
  - Consider volunteering with different community organizations such as Science Rendezvous.
  - Consider volunteering with different community organizations, museums, and cultural studies groups, such as the Kingston Field Naturalists.

- **Year III**
  - Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.

- **Year IV & Transitioning**
  - Do some targeted networking with people working in careers of interest, through QueenConnects on LinkedIn, the Queen’s Alumni Association, professional associations, and at conferences. Get help from a Career Services workshop.
  - Join professional associations like Science for Peace and the many discipline-specific societies that host annual meetings.
  - Join groups on LinkedIn reflecting specific careers or topics of interest.

**Engage with Your Community**

- **Year I**
  - Consider volunteering with different community organizations such as Science Rendezvous.
  - Consider volunteering with different community organizations, museums, and cultural studies groups, such as the Kingston Field Naturalists.

- **Year II**
  - Participate in your graduate and professional community through activities such as graduate student outreach programs, organizing conferences, and research groups.

- **Year III**
  - Do some targeted networking with people working in careers of interest, through QueenConnects on LinkedIn, the Queen’s Alumni Association, professional associations, and at conferences. Get help from a Career Services workshop.

- **Year IV & Transitioning**
  - Join professional associations like Science for Peace and the many discipline-specific societies that host annual meetings.
  - Join groups on LinkedIn reflecting specific careers or topics of interest.

**Launching Your Career**

- **Year I**
  - Finding a career that fits starts with knowing yourself. Get help by taking a Career Services workshop or meeting with a career counselor. Check out looks like so What Are You Going to do With That? or Planning a Scientific Career in Industry. 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.

- **Year II**
  - Start building your teaching portfolio including student evaluations, and seek mentorship.
  - Explore different careers of interest by reading alumni profiles on the SGS website, and using QueenConnects on LinkedIn to connect with Queen’s alumni, or find alumni in various careers through ‘Ask an Alum’. For more information check out Career Counseling.
  - Investigate requirements for full-time jobs or other opportunities related to careers of interest.

- **Year III**
  - 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.

- **Year IV & Transitioning**
  - 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, or interviews.

**What Will I Learn?**

A graduate degree in Biology can equip you with:

- Knowledge and technical skills
- Effective communication skills in multiple forms for diverse audiences
- Information management: prioritize, organize and synthesize large amounts of information
- Time management: meet deadlines and manage responsibilities despite competing demands
- Project management: develop ideas, gather information, analyze, critically appraise findings, draw and act on conclusions
- Creativity and innovation
- Perseverance
- Independence and experience as a collaborative worker
- Awareness and understanding of ethical, social, professional 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 a strong foundation for careers in:

- Academia and teaching
- Agriculture
- Pharmacy and medicine
- Environmental law, patent law
- Government research centres 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.
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 School of Graduate Studies requires the following minimum scores: TOEFL (paper-based): 550, (2) TOEFL iBT: Writing (24/30); Speaking (22/30); Reading (22/30); Listening (20/30), for a total of 88/120 (applicants must have the minimum score in each test as well as the minimum overall score), or (3) IELTS: 7.0 (academic module overall band score), or (4) PTE Academics: 65.

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 assistantships.

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 use this map?

Whether you are considering or have embarked on graduate studies at Queen's, use this map to plan for success in five overlapping areas of your career and academic life. The map helps you explore possibilities, set goals and track your individual accomplishments. Everyone's journey is different – the guide offers options for finding your way at Queen's and setting the foundation for your future. To make your own customized map, use the online My Grad Map tool.

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 HABITAT 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.