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.

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.

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**

- 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, EEB Limnology, and MCB Seminar, as well as the Al DeWine Lecture.

**Maximize Research Impact**

- 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.

**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 (CFRQ) and the SGGS Blog (look in the AMS Clubs Directory).
- Like 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, museums, and cultural studies groups, such as the Kingston Field Naturalists.

**Launch Your Career**

- Finding career fit starts with knowing yourself. Take a Career Services career planning workshop or meet with a career counsellor for help. 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 Graduate Student Career Week to explore your career pathways.

**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, EEB Limnology, and MCB Seminar, as well as the Al DeWine 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 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 committees.
- 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 defense.
- Review submission and examination guidelines.
- Secure necessary oral defense accommodations.
- Discuss career pathways, references letters, and publication options with your supervisor.
- Complete the Annual Research Progress Report (2/2).

**What Will I Learn?**

- A graduate degree in Biology can equip you with valuable and versatile skills, such as:
  - 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, draft and act on conclusions.
  - Creativity and innovation.
  - Persistence.
  - Independence and experience as a collaborative worker.
  - Awareness of an 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.
  - 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.

Visit careers.queensu.ca/gradmaps for the online version with links!

* This map is intended to provide suggestions for activities and careers, but everyone’s abilities, experiences, and constraints are different. Build your own Grad Map using our online My Grad Map tool.

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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 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 $23,895 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 $10,000 top-up to PhD winners of federal government tri-council awards. For more information, see the School of Graduate Studies' information on awards and scholarships.