Genome, Cell, and Developmental Biology (GCDB) Graduate Program

Table of Contents

Overview
Welcome to the Genome, Cell and Developmental (GCDB) Program within the Biology Department and the College of Arts and Sciences at Indiana University! The GCDB interdisciplinary graduate program provides classroom and laboratory training in key areas of genetics, genomics, cell biology, developmental biology, molecular biology, biochemistry, biology, cell biology, bioinformatics, and evolution. Students in our program learn how to plan, execute, critically analyze, and communicate scientific research. Professional development includes learning how to present seminars and write high-quality research papers and grants. The GCDB program provides students with research training and professional development to pursue careers in academic biomedical research, biotech industry, university-level teaching, and other life science careers (see GCDB LinkedIn page: https://www.linkedin.com/groups/12628538/ and join!).

We hope you are excited about the numerous opportunities that lie ahead of you as you embark on your graduate school journey. This handbook provides the basic information that you will need to complete each step of your degree. It is intended to serve as a complement to the official graduate school bulletin (http://graduate.indiana.edu/index.shtml). Another great resource is the IU College of Arts and Sciences information page for graduate students: https://college.indiana.edu/student-portal/graduate-students/index.html

On page 28, you will find all the individuals that can assist you with help/feedback during your graduate career. However, your two main points of contact for the first semester will be:

Assistant Director of Graduate Studies – *Sam Allen,* MY 150, 812-855-2785, saiallen@iu.edu
Graduate Program Director (GPD) – *Heather Hundley, Ph.D.* BB327B hahundle@iu.edu

Degree Overview

Doctor of Philosophy (Ph.D.) Degree Requirements: This handbook, other information, and required forms for the GCDB program can be in the Biology Graduate Student Portal and in the One Drive/Sharepoint folder: GCDB Grad Docs**.** Many of the forms that are required by the Graduate School are now submitted and routed through the electronic system on "One IU." Another important resource is the Graduate School website: http://graduate.indiana.edu/. That site contains information about forms and rules for graduate students, the written Ph.D. thesis, and thesis defense seminar. It also has a .pdf of the official Graduate School Bulletin, which contains more detailed information about the general requirements of the Graduate School and the specific requirements of each program. See the end of this document for links to other useful web sites.

Degree Information: Students entering our program are expected to earn a major in Genome, Cell and Developmental Biology and a minor in a subject area that is of interest to the individual student and related to their thesis project. Most students choose the Genetics minor offered by GCDB, but other minors (Biotechnology, Cell, Molecular and Cancer Biology (CMCB), Bioinformatics) are possible.

Teaching Requirement: Ph.D. candidates within the GCDB graduate program are required to teach for at least one semester during their graduate career. To prepare graduate students for their teaching assignments, the Department of Biology offers a Teacher Training Workshop. All graduate students must enroll in this workshop prior to the onset of your first teaching assignment; however, we strongly suggest that students complete this workshop during orientation week prior to the start of your first year in graduate school. In addition, all graduate students must enroll within the Associate Instructor Workshop on Campus Climate, which is offered by Indiana University, also offered during orientation week.

English Proficiency Exam: Students whose native language is not English must pass the Test of English Proficiency for Associate Instructor Candidates (TEPAIC), an English fluency examination. If the TEPAIC has not been passed at the time of entry into the program, students must take a formal course in English fluency (T502) in their first semester. Further information about this course is available in the Graduate Office. Students must pass the TEPAIC by the end of the fall semester of the first year in order to guarantee further support.

Plagiarism Tutorial: During orientation week, all first year GCDB graduate students **must** complete an online tutorial on plagiarism and submit a confirmation certificate to the Biology Graduate Office. The online tutorial can be found at the following website: https://plagiarism.iu.edu/index.html. Note that violation of the plagiarism rules is a serious infraction and can result in dismissal from the program and graduate school.

Attendance at GCDB Program Seminars: All Ph.D. candidates are required to attend the weekly Tuesday GCDB seminar series throughout their entire career within the program. These seminars are an opportunity to hear about the latest research from prominent invited scientists and are an *integral* part of a diversified scientific training program. The seminars are held Tuesday afternoons at 3:30 pm during the fall and spring semesters. A complete listing of the invited speakers is available on the Biology Department website (https://biology.indiana.edu/news-events/seminars/index.html).
They are also announced via "This Week in Biology (TWIB)" emails, an important email to read.

GCDB Trainee Research Seminars: During these seminars, two GCDB graduate students or post-docs will present their research. These seminars are held during the regular Tuesday seminar time of 3:30 p.m. All GCDB students are required to present in this seminar series at least twice during their graduate work and beginning no later than their 4th year in the program. All GCDB students who are not presenting that week are required to attend.

Community Participation: GCDB graduate students are also expected to attend the public portion of the thesis defenses of their fellow GCDB graduate student colleagues, and other special lectures including the Carlos O. Miller Lecture, the James P. Holland Lecture, the Tracey M. Sonneborn Lecture, the Muller Lecture, tenure and promotion seminars by GCDB faculty, and GCDB job candidate seminars. The dates and times of these seminars can be found on the Biology Department website (https://biology.indiana.edu/news-events/events-iu-calendar.html). In short, attendance at these events is part of graduate scientific and professional development and important for GCDB community cohesion.

Publications: To earn a Ph.D., your research must make a significant contribution to your field. By definition, a significant contribution requires that you publish your thesis research. Ph.D. students within the GCDB program are expected to publish at least two, significant, peer-reviewed paper prior to the thesis committee approving the student for graduation. Exceptions to this expectation must be approved by the thesis committee and GCDB Graduate Program Director. In such cases, the thesis is expected to contain a submission ready publication.

Course Requirements

General Course Requirements: A total of 90 credit hours are required for partial fulfillment of the Ph.D. degree. Of these, 18 credits are earned by completing the course requirements for the GCDB major. The Research ethics requirement may be fulfilled by an additional 1.5 credit course or workshops as outlined below. An additional 6-12 credits are earned by completing the requirements for the minor, depending on type of minor. All remaining credits are earned through laboratory research rotations (first semester) and enrollment in L800, independent thesis research. A listing of courses for which graduate credit is offered can be obtained from the Biology Graduate Office or from the Indiana University Office of the Registrar website http://registrar.indiana.edu/.

Course Requirement for the GCDB Major[1]

Required:
BIOL-L501 Rotations (3.0 cr)
BIOL-L523 Critical Analysis Lit. (1.5 cr)
BIOL-Z620 Grant Writing (1.5 cr)

Four out of the five core courses listed below:
- BIOC-B511 Duplicating and Expressing the Genome (3.0 cr)
- BIOL-L585 Genetics (3.0 cr)
- BIOL-L586 Cell Biology (3.0 cr)
- BIOL-L587 Dev. Biology (3.0 cr)
- BIOL-Z620 Digital Biology: Introduction to Bioinformatics (3.0 cr)

BIOL-Z620 Research Ethics and Career Development (1.5 cr) or Responsible Conduct of Research workshops offered through the Offices of the Vice Provost for Graduate Education and Health Sciences, Research Compliance, and the Vice Provost for Research.

2020-2021 Covid-specific amendment: A subset of GCDB students from the 2020 and 2021 classes were given permission to replace BIOC-B 511 with BIOL-L511/Z620 Advanced Gene Regulation.

Students should register for additional minor courses and/or independent research (L800) to total 12 credits each semester prior to G901.

Students can register for 0-6 credits during the summer but should first consult with their mentor and the Biology Graduate Office as enrollment will require tuition payments.

[1]The GCDB Graduate Program Director must approve any exemptions or substitutions of listed classes with equivalent courses. Exemptions / substitutions also require official approval from the Graduate School. These exemptions / substitutions are rare.

G901 Status: Once 90 credits are earned, students are in "G901 status." Once this status is achieved, the tuition costs and fees charged by the college drop dramatically. G901 status is typically attained during the 5th year. Students then register for six G901 credits each semester instead of L800 research credits, but students cannot register for any more formal coursework. Students can use G901 status for six semesters, after which they lose G901 status and full tuition is charged again, even if 100% of their time is engaged in laboratory research.

2020-2021 Covid-specific amendment: Students who were enrolled as graduate students during the Spring 2020 semester are eligible to register for two additional G901 semesters. The paperwork for requesting additional G901 semesters should be filed during the fifth semester of G901 enrollment.

Course Requirement for Minor: Indiana University requires that all graduate students obtain a minor. Ph.D. candidates must declare a minor by the end of the fall semester of the second year; however, we encourage students to declare a minor by the end of the first year so that minor coursework can begin in the second year. The GCDB program offers a six-credit minor in Genetics. An approved list of courses for the Genetics minor can be found by entering the "student portal" on the GCDB program website https://biology.indiana.edu/student-portal/graduate/index.html Students wishing to use courses for the minor that are not on this list must get advanced approval from the GCDB Graduate Program Director and the Graduate School. Important: a course that is used to fulfill the minor requirement cannot count towards the major requirement and vice versa.

Information relating to the course requirements for minor degrees outside of the GCDB program can be obtained from the University Graduate School bulletin (https://graduate.indiana.edu/academics-research/bulletin.html) as well as the program director of the relevant graduate program. GCDB graduate students must obtain approval for minor degrees outside of Genetics from their thesis advisor and the GCDB Graduate Program Director. All course requirements for the minor degree should be completed by the end of the spring semester of the third year.

Academic Standing: For all graduate degrees, students must maintain a minimum GPA of B (3.0) in order to remain in good standing in the Graduate School. Courses to be counted toward the degree must be passed with a grade of B- (2.7) or better. To be eligible for financial support, the Department of Biology requires students to maintain a minimum GPA of 3.2. A student who has a GPA of less than 3.0 will be recommended to the College of Arts and Sciences Graduate Office for academic probation. If the student satisfactorily completes the probation terms, then a recommendation to lift the probation will be initiated. If the student's progress toward the established probation terms is unsatisfactory, then the student may be recommended for dismissal.

In addition to meeting all University individual course and semester grade requirements, a student must be making sufficient progress in their research and effective teaching in order to remain in "good standing" within the GCDB program. If the research advisor and/or other members of the Thesis Advisory Committee become dissatisfied with a student's progress or efforts, a meeting of the student with the Thesis Advisory Committee must be called to discuss the reason(s) for concern. If the Committee determines that the student's progress is not satisfactory, then the student will be recommended to the College of Arts and Sciences Graduate Office for academic probation. The terms for demonstrating effectiveness and progress in research (either in the original thesis lab or a new lab) will be clearly provided to the student. If the student satisfactorily completes the probation terms, then a recommendation to lift the probation will be initiated. If the student's progress toward the established probation terms is unsatisfactory, then the student may be recommended for dismissal.

Registration
(adapted from IU Biology Microbiology Handbook)
Please refer to the Registrar's website for detailed instructions on how to register. OneStart is IU's web-based system for managing your registration, payments, and other tasks. You can register for classes on OneStart starting from your registration appointment through the first week of classes.

If you do not enroll before the Open Registration deadline, you may register during the first week of classes (Late Registration) using OneStart. You will incur a late fee unless it can be clearly demonstrated that the University made an error. After the first week of classes and after Late Registration closes, all classes requested must have prior department authorization.

Once registered, you can adjust your schedule using add/drop. Consult the "Drop or Add a Class" section of the Registrar's website on add/drop policies and fees.

If there are holds on your registration, OneStart will provide information about the reason, the department who issued the hold, and the steps to release the hold.

Student Academic Appointees are expected to be enrolled each semester on appointment. All appointees at or above 37.5% FTE must enroll in six credit hours each semester, and all appointees at less than 37.5% FTE must enroll in at least one credit hour each semester (summers excluded).

All doctoral candidates who have accumulated 90 graduate credit hours and Master of Fine Arts Students who have completed 60 graduate credit hours and who have completed all course requirements for the degree except the dissertation or final project, if applicable, may enroll in **G901, Dissertation Research**, which carries a value of six credit hours. A student may enroll in G901 no more than six times. G901 vs L800 can have significant financial impacts on a lab so consult with your PI and the Grad Office as you near the entry and exit of G901 status. After G901 status has expired, the student must enroll in at least 1 credit hour of M800 each semester until the degree is completed (even if the student lives outside of Bloomington).

Students receiving fellowships must enroll in $\geq$ 6 credit hours each semester. Students scheduled to receive fellowships during the summer must register $\geq$ 1 credit hour to receive the fellowship.

Research Rotations: Each Ph.D. candidate is required to complete three research rotations (L501) during the fall semester of the first year. Students may rotate with GCDB core and affiliated training faculty. A complete listing of these faculty can be found on the GCDB program section of the Department of Biology website: https://biology.indiana.edu/graduate/genome-cell-development/faculty/index.html. In addition to their departmental webpages, many faculty members have lab webpages. During orientation week, some faculty will give short talks to new students to help them select a rotation lab. However, GCDB students can rotate and do their Ph.D. research with any approved graduate training faculty in the Department of Biology.

The goal of rotations is for you to get involved in a short research project so that you may learn about the research of the lab, interact with the faculty advisor and meet potential future colleagues. The rotation experience will help you evaluate whether the research and lab environment will be a good match for your goals as a PhD student and allow your potential thesis advisor to determine whether you will be a good fit for their research program.

While everyone appreciates that courses are demanding, it is imperative that you make your laboratory research a high priority. It is expected that students will be spending at least 25-30 hours/week in the lab on your research project (bench work, developing protocols, reading the literature, recording and analyzing your data, observing/assisting others working on experiments outside of your project). At the end of the rotation, you will most likely be asked to present your findings during lab meeting of the group (this will vary between labs). You may also need to submit a written rotation report that summarizes the background of your project, the goals of the project and what you accomplished during the rotation (this will vary between labs).

Please note, the rotations and first year coursework are a time for you to grow and discover your research interests, which are likely to change as you become exposed to more challenging topics. It is therefore recommended that you only set up one rotation at a time. **However, as many faculty members participate in more than one graduate program and may not take more than one student per rotation, you are encouraged to meet with multiple faculty members before each rotation choice is submitted.**

The GCDB Graduate Program Director will go over the rotation timeline document and instructions for selecting a laboratory with incoming students during orientation week.

Fall 2024 Rotation Schedule
Aug 19, 20: Faculty Presentations
Aug 23: Students' requests for the first rotation advisor are due to the GPD by 5 pm
Aug 26/Sep 27: Start/End First Rotation
Sep 25: Students' requests for the second rotation advisor are due to the GPD by 5 pm
Sep 30/Nov 1: Start/End Second Rotation
Oct 30: Students' requests for the third rotation advisor are due to the GPD by 5 pm
Nov 4/Dec 13: Start/End Third Rotation
Dec 18: Student commitment requests due by 5 pm
Dec 20: Faculty Commitment decisions due by noon

At the end of each rotation, the research supervisor must complete the "Rotation Assessment" form and discuss it with the student. The faculty member and student must both sign the form and the student must then uploaded the signed form using the following website: https://biology.indiana.edu/faculty-intranet/forms/gcdb-rotation-rpt.html

The final grade for BIOL-L501 will be assigned by the Graduate Program Director based on the three rotation reports.

Choosing a Thesis Lab

At the end of the third rotation in December, Ph.D. candidates are required to select a laboratory within which they will conduct their thesis research. In the rare case that students wish to do a 4th rotation, they must obtain permission from the GCDB Graduate Program Director. The selection of a thesis home is a negotiation process between the faculty and student. Some questions you might consider/discuss as you choose a thesis lab are:

- How much input does the PI provide on a new graduate student's thesis project?
- What projects does the PI have in mind for you? These could be different from your rotation.
- How will I be supported during graduate school?
- How often can I expect to attend a conference, and what do I need to achieve in the lab to attend a conference?
- How do graduate students in your lab develop independence during their thesis project?
- What are the expectations for publications prior to graduation?
- What are your ultimate career goals at this point in time and how will this adviser help you obtain those goals?

You were assigned faculty mentors. You could talk to them for advice or just use them as a sounding board. If you'd rather talk with another faculty mentor, that's fine too.

Talk to people in the lab. Ask them why they made their decision. Ask them if they regret their decision. Ask them if they learned something about the lab that they didn't expect.

Be wary of rumors. If you hear something, ask an informed source about it, and ideally multiple sources. The informed could be the PI, lab members, or other faculty. What doesn't work for someone else could be a good fit for you; conversely, what could be a good fit for someone else, might not work for you.

Students are not guaranteed positions in laboratories, although in practice, this is rarely an issue. It is important to note that entry into a research lab is a requirement for our graduate program, and students must have joined a lab by the end of the spring semester of the first year, at the very latest, to remain in good standing.

Time to Degree/Major Milestones and Expectations
Your path may be different based on your circumstances – please ask questions (Graduate Advisor, your thesis mentor, GPD, etc.) if you are unsure of your ability to meet these milestones (adapted from IU Biology Microbiology Handbook)

Semester	Courses (cr)	Other Actions/Notes (Checklist)
1 Year 1 Fall	BIOL-L523 (1.5) BIOL-L501 (3.0) At least 1 of the 5 choices for major courses	☐ Engage in GCDB events, Attend seminar ☐ Meet with 1st year faculty mentor ☐ Rotations ☐ Select a lab at end of semester
2 Year 1 Spring	At least 1 of the 5 choices for major courses BIOL-L800 (to 12)	☐ Immerse yourself in thesis research ☐ Engage in GCDB events (GRW?), Attend seminar ☐ Assemble a thesis advisory committee before end of semester ☐ Complete advisory committee eDoc ☐ Discuss with mentor appropriate minor and plan path of classes to fulfill minor
3 Year 2 Fall	BIOL-Z620 Grant Writing (1.5) 1 of the 5 choices for major courses or a Minor course (0-4.5) BIOL-L800 (to 12)	☐ Work with mentor to outline a strong thesis project ☐ Gather preliminary data for grant writing and committee meeting ☐ Engage in GCDB events, Attend seminar ☐ Complete Individual Development Plan ☐ Submit committee meeting report and hold meeting by end of semester
4 Year 2 Spring	BIOL-L524 (1.5) 1 of the 5 choices for major courses or a Minor course (0-4.5) BIOL-L800 (to 12)	☐ Continue gathering preliminary data and improving thesis project outline for preliminary exam ☐ Engage in GCDB events (GRW), Attend seminar ☐ Present at a local or regional meeting?
5 Year 3 Fall	1 of the 5 choices for major courses or a Minor course (0-4.5) BIOL-L800 (to 12)	☐ Generate publication quality data, guide research more independently ☐ Submit and orally defend your preliminary exam by 7th week of the semester ☐ Engage in GCDB events, Attend seminar ☐ Present at local or regional meeting?
6 Year 3 Spring	1 of the 5 choices for major courses or a Minor course (0-4.5) BIOL-L800 (to 12)	☐ All major and minor coursework complete? ☐ If so, submit Nomination to candidacy application Once candidacy is approved by the UGS, submit your: ☐ NORC eDoc completed ≥ 6 months prior to graduation. Include 1-2 page dissertation prospectus.
7 Year 4 Fall	BIOL-L800 (to 12)	☐ Generate publication quality data, guide research more independently, begin writing first manuscript? ☐ Hold annual committee meeting ☐ Engage in GCDB events, Present in GCDB trainee seminar series ☐ Present at local or regional meeting?

8 Year 4 Spring	BIOL-L800 (to 6)	☐ 90 credit hours reached ☐ Generate publication quality data, guide research more independently, have written drafts of research contributions ☐ Engage in GCDB events (GRW), Attend seminar
Year 5+	With 90 credit hours, you can now enroll in G901. (6 semesters max of G901)	☐ Generate publication quality data, drive research projects ☐ Publish your work ☐ Present research at a regional or national meeting? ☐ Hold annual committee meetings ☐ Engage in GCDB events, Attend seminar

Dissertation Defense and Graduation:
☐ committee meeting ~ 6 months prior to defending
☐ write your dissertation in the specified format
☐ submit a defense announcement ≥ 45 days prior
☐ successfully defend your dissertation and revise
☐ obtain defense signatures after your defense
☐ Submit your dissertation

Thesis Committee

At the end of the spring semester of the first year, students will need to select a Thesis Advisory Committee. The final committee must include the thesis advisor and at least three other faculty members, for a total of four members. The student has the option to recruit two faculty members at the end of the first year, with a third added no later than the end of the fall semester of the second year – who could be the minor representative. The committee members should be selected based on their ability to contribute to the student's thesis project, and do not necessarily have to be members of the GCDB section. However, the thesis committee must include at least one core member of the GCDB PhD program. The student should fill out an electronic **"Appointment of Advisory Committee"** form. The form can be found on the College's website:https://college.indiana.edu/student-portal/graduate-students/academic-procedures/index.html

Annual Requirements

Annual Progress Reporting: After the first year, all GCDB students must fill out an annual progress report at the beginning of the academic year (deadline of September 1st). The information gathered by this form will be used by the Graduate Program Director and the Biology Graduate Office to track progress towards completion of the PhD. The form can be found here: https://biology.indiana.edu/faculty-intranet/forms/gcdb-annual-grad-student-rpt.html

Annual Committee Meetings: Students must have their first thesis committee meeting no later than the end of the fall semester of second year. Ph.D. candidates are *required* to formally meet with their thesis advisory committee once a year. The meeting is designed to assess the progress of the student in the past year and to provide advice on the upcoming year's experiments. Best practices for scheduling a committee meeting are 1) to email your committee members to identify a range of dates where they are generally available BEFORE sending a specific poll (e.g., WhenToMeet, Doodle) then 2) Pick a small range of dates (typically one week) that is open for all members (including the PI) and send a poll (WhenToMeet is usually better to identify overlapping availability. Alternatively, use a Doodle poll with two-hour time slots.) and last 3) once date/time is set, reserve a room and email the entire committee the final date/time/place.

Prior to meeting with the committee, the student must provide a written document summarizing progress over the past year and the experiments that are proposed for the upcoming year. Please see the **"Thesis Committee Meetings and Report Guidelines"** form on Sharepoint for how to schedule a meeting and the format of this report. The report should be distributed to all committee members no later than one week prior to the annual meeting. The student is responsible for filling out the first page and emailing the **"Committee Meeting Evaluation"** form to their committee. After the meeting, this electronic form is completed by the committee and signed by the committee. The student and advisor should then discuss the contents of the form and submit a signed copy to the biology graduate office using the following web form: https://biology.indiana.edu/faculty-intranet/forms/gcdb-committee-mtg-rpt.html.

At the end of the annual committee meeting, the thesis advisor will leave the meeting and the student will meet with the committee to discuss confidential concerns that the student might have with their lab or advisor.

In rare circumstances of high concern, the committee meeting evaluation can be used to initiate a probationary period in coordination with the GPD, the DGS, and the College. Typically, one semester is allowed to rectify the deficiency and avoid dismissal from the program.

Failure to schedule an annual committee meeting will be considered grounds for academic probation.

Individual Development Plans (IDPs): In addition to their thesis report, each year the student must fill out a GCDB IDP form in consultation with their mentor and then email it to the committee with their thesis report. This IDP form can be found in the GCDB program folder on Sharepoint. An IDP is a useful tool that helps students plan activities, develop skills, and set milestones as they prepare for their future career. It is also a vehicle for the student to have substantive career advising discussions with their mentor and thesis committee members. Please see further instructions on the IDP form. The filled out IDP form must be submitted to the graduate office at the same time as the Committee Meeting Evaluation form using the following website: https://biology.indiana.edu/faculty-intranet/forms/gcdb-committee-mtg-rpt.html

Preliminary Exam Requirement

All Ph.D. candidates in the GCDB graduate program are required to take the Preliminary Exam, no later than the end of the 7th week of the Fall semester of their 3rd year. Students write a proposal on their thesis research and then defend it orally. During the oral exam, students are also examined for general knowledge relevant to their research area. The GCDB Graduate Program Director will meet with all second-year students in the spring semester to discuss the preliminary exam format and instructions. See also the "**Preliminary Examination Format**" document on Sharepoint for more information.

The Preliminary Exam Committee will normally consist of the members of the thesis committee (minus the thesis advisor), or other members selected by the GCDB program director. After the examination an electronic **"Preliminary Exam Evaluation**" form must be completed and e signed by the committee, advisor, and student. The form is then emailed to the GCDB program director, who e signs it. The chair of the thesis committee then uploads the signed form to the following website: https://biology.indiana.edu/faculty-intranet/forms/gcdb-prelim-exam-rpt.html.

If the committee is satisfied with the student's performance on the written and oral exam, then the student passes. If the members of the committee feel that the student's performance does not warrant a passing grade, then they can either fail the student or provide the student with the opportunity to remediate one or more portions of the exam. Students who fail the qualifying examination are normally allowed to retake it only once. Students must successfully complete the remediation or retake the entire exam by the end of the fall semester of the third year. If a student does not pass the preliminary exam by this date, they may not continue in the Ph.D. program. Students that withdraw from the Ph.D. program prior to a recommendation for dismissal may be admitted to a program leading to a Masters Degree (either research or literature-based) on a case-by-case basis.

Nomination to Ph.D. candidacy
After passing the preliminary exam, and fulfilling all major and minor requirements, the student moves on to Ph.D. candidacy. The student must complete the "**Nomination to Candidacy"** form that is located on their personal One.IU site. This form is then submitted electronically to the Biology Graduate office. A list of courses taken to meet the major and minor requirements is submitted with the Candidacy form. Completion of major and minor courses and submission of the candidacy form should be at the end of the third year.

Thesis Requirement
Submission of a written thesis to Indiana University is required for a Ph.D. degree. The graduate school calls these "dissertations" for Ph.D. students. The thesis / dissertation must represent a body of independent, published work that makes a significant contribution to science. Once the student and advisor agree that the thesis research is nearly done, a student should begin to plan the thesis defense. ***At least*** **six months in advance of the defense**, the members of the Thesis Advisory Committee and the University Graduate School must approve the thesis prospectus. The student should provide the committee with an updated CV, copies of manuscripts that have been published, accepted, or are in a state of revision, and a detailed outline of the thesis. The student should also meet with the committee and present in seminar format the completed and anticipated research progress. The student should then select a date for the defense when all thesis committee members can be present.

Instructions on the proper thesis format are available at: https://graduate.indiana.edu/thesis-dissertation/formatting/doctoral.html and hard copies of theses of former students are available in the Biology Graduate Office. Each thesis committee member must receive a copy of the thesis. This version of the thesis must be considered complete by both the student and advisor, including all figures, tables and references. The thesis must be submitted to the committee no later than **four weeks prior to the defense**. Committee members are expected to read the thesis promptly and carefully. If they have major objections, they will express them at this stage and the defense may be postponed. It is more common that committee members will suggest revision of only portions of the thesis and will reserve these comments for the thesis defense.

The thesis defense comprises two parts: a public presentation followed by a private exam by the Thesis Advisory Committee. The public presentation (i.e. a seminar) must be announced in advance: the Indiana University Graduate School - Bloomington requires the submission of a Defense Announcement (electronic) page, which can be found on One.IU. This one-page summary should be submitted 40 days prior to the scheduled defense (to allow time for processing to meet the 30 day Grad School deadline). The student is also required to post a seminar announcement in the Biology Department "This Week in Biology." After the exam, thesis may be accepted in the current form (rare), rejected (also rare), or accepted pending revision (common). Once a thesis has been revised to meet the committee's standards and the University's format requirements, the committee and research advisor certify its acceptance to the Graduate School and recommend that the Ph.D. degree be awarded. It should be noted that the thesis must be accepted formally no later than 7 years from the date of admission to candidacy (successful passing of the preliminary exam). In most cases, however, it is expected that it will take much less time for a student to publish their research and defend their Ph.D.

As stated by the Indiana University Graduate School - Bloomington: "*In-person defenses are the standard exam format at IUB, however, candidates and research committees may elect to conduct defenses online using tools such as Zoom and Skype without prior UGS approval.*" The GCDB program will follow IUB graduate school guidelines. In most instances, thesis defenses are expected to be held in person.

General Outline of Graduate Training in the GCDB Program

First Year

Important goals of the first year include successfully completing required coursework, selecting a research lab, beginning thesis research, and selecting a thesis advisory committee.

Fall: Students conduct three research rotations and then select a thesis research lab by the end of the fall semester. Students also enroll in a set of core courses that cover topics essential to molecular biology, cell biology, developmental biology, genomics, and genetics. Please see the "Course Requirements for Major" list for details.

Spring / Summer: Students begin their thesis research and continue to take required courses. In rare cases, and with approval by the GCDB program director, students may do a 4th rotation that extends into the second half of the year. By the end of the spring semester each student must assemble a thesis committee to help oversee their progress toward the Ph.D. All rotations, the selection of a thesis advisor, and the assembly of a thesis committee must be completed by the end of the spring semester of the first year. At the end of spring semester, students assemble a thesis advisory committee and submit an **"Appointment of Advisory Committee"** form. During the summer, students focus on making significant research progress. Another important summer goal is to write the first draft of the thesis research proposal in preparation for the Grant Writing course and their first thesis meeting in the fall.

Second year

The second year of graduate school is primarily focused on becoming fully immersed in thesis research, preparing for the preliminary examination, and completing required coursework for the major and minor degrees. A student should continue to strive to become increasingly adept at reading the scientific literature and directing their own research – important goals of graduate training.

Fall: In addition to the Grant Writing course and minor course work, **students must meet with their thesis advisory committee before the end of the fall semester**. There are also a number of external graduate fellowship deadlines in the fall (ex. NSF GRFP) to which eligible students should apply. Information about these fellowships can be found online in the GCDB folder and will be discussed in the Grant Writing course. The thesis proposal that students began writing during the previous summer should be a good first draft for these external proposals.

Spring / Summer: At the end of the spring semester, the GCDB program director will meet with all second-year students to discuss the upcoming preliminary examination that will take place in the fall semester of the third year.

Third year: The important goals of the third year of graduate school are preparing publication quality data, preparing for the preliminary examination, completing all major and minor coursework, and transitioning to full-time research where the student is driving the daily goals and making significant progress towards a publication. This is also a great year to focus on obtaining an external fellowship (ex. NIH F31 or American Heart Association Predoctoral).

Fall: As described above, students must take the preliminary examination during the first seven weeks of the fall semester. This examination seeks to determine whether each student has successfully prepared for a career as an independent scientist. Students who pass the exam

and complete all coursework are eligible for formal candidacy for the Ph.D. degree. Once admitted to candidacy, students spend the majority of their time working on their research projects. Students who, after two attempts, fail this exam will be dismissed from the Ph.D. program.

Spring / Summer: All students are required to complete a course in research ethics in the spring of their third year. The student must also submit an electronic **Nomination to Candidacy** form and then the graduate office will formally nominate them for candidacy if they have fulfilled all requirements. To be admitted to candidacy, all coursework for minor and major must be completed as well as passing the preliminary exam.

Fourth and Fifth Years: During the fourth and fifth years of graduate school all students are expected to devote 100% of their time and efforts towards completion of their thesis research. Students who are serving as associate instructors must budget extra time for their thesis research. Students *must* meet with their thesis committees once a year to remain in good standing. During this time, students must also present twice in the GCDB trainee series. Each Ph.D. candidate should be working towards publishing manuscripts and writing and defending their thesis at the end of their fifth year. The GCDB program expects that all students publish two peer-reviewed primary research articles. As the publication process typically takes 9-12 months from the start of a written draft of the manuscript until completion of satisfactory peer review, students are encouraged to begin preparing figures and writing drafts of their research sooner than later.

Given the inherent uncertainties of research, it is not uncommon for a graduate career to extend somewhat beyond the fifth year. Students should, however, exert significant effort to ensure that their career in graduate school is as short and productive as possible. By the end of the fourth year you must submit the **Nomination of Research Committee** form, which is required by the University Graduate School. This form is located on the One.IU site. This form formalizes your thesis title, provides a brief prospectus of your research, and solidifies your research committee. **You must submit this form at least 6 months prior to advancing to your defense.**

Additional Milestones for Measuring Progress

Conference presentations: All GCDB students are expected to attend scientific conferences as part of their PhD training. Conference attendance provides students an important opportunity to showcase their work and interact with potential future post-doc mentors and employers. Students should discuss expectations for conference attendance with their PI. In general, students are expected to have generated enough data for a poster or oral presentation to attend a conference. Students are encouraged to apply for conference travel awards from both IU and scientific societies. These awards not only provide immediate funding for travel, but also increase competitiveness for future positions.

Publications: Most dissertation documents will contain a minimum of three major data chapters, each of which will constitute a publishable unit of research. Therefore, first-author publications are an important indicator that a student is making adequate progress towards completion of the PhD.

Grant applications: GCDB students are strongly encouraged to apply for both intramural funding, such as the Kindig Fellowship, as well as extramural funding from private foundations and federal agencies. In the past, GCDB students have successfully obtained funding from the National Institute of Health, the National Science Foundation, the American Heart Association, and the US Department of Agriculture. Successful grant applications are a strong sign that a student is successfully progressing towards degree completion. All GCDB students should regularly discuss the possibility of submitting a grant with their PI and thesis advisory committee. These awards not only provide funding for yearly stipends and often some extra research funds, but also increase competitiveness for future positions.

Some links for funding opportunities

- Biology awards page (contains links to departmental, College, University, and external awards)
- IU College of Arts and Sciences
- National Science Foundation Graduate Research Fellowship Program (GRFP)
- National Institutes of Health Predoctoral Fellowship (NRSA F31)
- American Heart Association Predoctoral Fellowship

Academic Misconduct

Academic misconduct, including plagiarism, cheating, fabrication, interference, and facilitating dishonesty by others will be punished severely when detected. For members of the scholarly community, the cardinal rule guiding both academic and research work is one of honesty and open attribution. Credit for ideas, experiments, models, etc. must be given to their originators. Graduate students are expected to be informed on such matters, and faculty are alert to intellectual theft whether in papers, examinations, or purportedly original work. Definitions of academic misconduct can be found in IU's Code of Student Rights, Responsibilities, & Conduct, including plagiarism, referenced in 2023 as:

"Plagiarism is defined as presenting someone else's work, including the work of other students, as one's own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered "common knowledge" may differ from course to course.

a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.
b. A student must give credit to the originality of others and acknowledge indebtedness whenever:
    1. directly quoting another person's actual words, whether oral or written;
    2. using another person's ideas, opinions, or theories;
    3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
    4. borrowing facts, statistics, or illustrative material; or
    5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment"

In class assignments, preliminary exam documents, and research manuscripts, your writing should:

- reflect your thinking and interpretation of what you read and hear
- express ideas in your own words
- give credit to the sources of the ideas

A good strategy is to make yourself to do the writing without the primary references in front of you. That will force you to use your own words.

When cases of plagiarism are discovered, the disciplinary actions are severe and will follow the IU guidelines for addressing academic misconduct.

Note that IU currently considers the submission of content generated by artificial intelligence (e.g., ChatGPT, Google Translate, etc.) to be an example of academic misconduct, though there are ways to use artificial intelligence that would not be considered academic misconduct. Users of artificial intelligence should (i) consult the PI, instructor, examiners, etc. about its use (ii) disclose, its use including how it was used, and (iii) cite resulting content properly, (iv) ensure that any resulting information is accurate, permissible for re-use, and original such that it couldn't be classified as plagiarism. Strengths and limitations of AI-based tools are at: pubs.acs.org/doi/full/10.1021/acsnano.3c01544.

Student Academic Appointee (SAA) requirements and expectations

Students have responsibilities both as scholars and as teachers. Students must meet the expectations outlined in the SAA contract to remain in good standing. The current contract will be signed prior to each semester and coordinated by the Payroll Office in the Department of Biology. More information, including grievance procedures are in this portal.

SAA contracts apply to both research and teaching. However, SAA contracts are separate from a student's expectations as a student, which also including adequate research progress and maintaining a GPA above 3.2. **Thus, the required SAA hours are not meant to indicate the hours necessary to succeed as a productive graduate student.**

As teachers, graduate students are subject to the same rules that apply to faculty, rules that are designed to protect the students they teach against bias and harassment. Associate Instructors (A.I.s) should make themselves aware of these rules. Beyond the rules, A.I.s should be aware that they will be important role models to undergraduates and that their behavior toward their students should be beyond reproach.

See the following documents related to expectations of student academic appointees (SAA's) and of their faculty supervisors:

- **Supervision plan**: The College has provided guidance for supervision of SAAs located in this portal.
- **Evaluation form**: AIs with instructing capacities (beyond just grading) will be evaluated following this form.
- **Grievance policy for SAAs**: Biology has established grievance policies for SAAs. Please note that this grievance pathway is separate from issues of academic standing (and described by and managed by the College Graduate Office here).

Expectations for the GCDB Community

Graduate Student Expectations: The GCDB program and the Department of Biology has created a large array of resources that can assist you with successfully earning a PhD. However, students bear the primary responsibility for staying on track to complete their degree in a timely fashion. In this regard, the requirements for completing the PhD are listed in this handbook and the GCDB bulletin – we expect students to be aware of these policies and take an active role in ensuring that they are met in a timely fashion. Moreover, there are several expectations, which while often unwritten, are nevertheless essential for completion of the PhD degree. A partial list of these requirements and expectations is listed below.

- Take an active role in your education and scientific training. All GCDB students are expected to be constantly reading scientific literature and actively applying this knowledge to their ongoing research.
- Understand the requirements for successful completion of a PhD thesis in the GCDB program listed in this handbook. These are rigorous expectations that normally require 5-6 years to complete if a student is working at least 40 hours per week in the lab.
- Communicate regularly with your advisor about scientific progress, obstacles, and expectations. Successful PhD students usually meet with their advisor on a weekly or bi-weekly basis.
- Take accurate and thorough notes describing your experiments, recording the resulting data, and interpreting your results. Your lab notebook must be accessible by your thesis advisor.
- Synthesize experimental data into a form that can be effectively communicated with a scientific audience via peer-reviewed publications and conference presentations.
- Write manuscripts for publication in peer-reviewed journals.
- Take responsibility for scheduling annual committee meetings.
- Register for classes during the appropriate times.
- Attend and participate in all classes.
- Participate in GCDB events designed to enhance your academic training (e.g., seminars, journal clubs, recruitment events).
- Engage with your scientific community through conferences, workshops, and other networking events.
- Take an active role in career development.
- Act in a professional manner towards other students, staff, and faculty.

Faculty Research Advisor Expectations: The research advisor plays an essential role in ensuring that a graduate student can successfully complete their PhD in an enriching, productive, and safe environment. While the role of the research advisor will vary with the needs of each student, all advisors should:

- Promote an intellectually stimulating environment where the student has the potential to become a productive and independent scientist.
- Foster a lab environment where all students and staff are treated fairly and given equitable opportunities to succeed as scientists.
- Set clear expectations and goals for the student regarding academic performance, research activities, and progress. These expectations must be made clear upon joining the lab and are ideally outlined in a lab culture statement. All students should understand what is expected in terms of hours worked in the lab, productivity, independence, writing

of manuscripts, and time-off policies. All students should be given clear expectations for what is required to complete a PhD thesis.
- Meet regularly with the student to discuss scientific and academic progress, experimental design, long-term project goals, plans for publications, and concerns about progress towards completion of their PhD.
- Ensure that the student is given opportunities to develop the writing and communication skills required to complete a PhD and succeed in future careers.
- Clearly outline expectations for authorship. For manuscripts that include multiple authors, the advisor and student(s) must engage in a discussion regarding how contributions towards the final manuscript will dictate the order of authorship. All parties must be aware that the order of authorship on a manuscript can change over time.
- Support and encourage the student to participate in activities that will enhance their scientific training and career preparation. Such activities include presenting at conferences, participating in scientific workshops, and submitting grant applications.
- Provide the student with a safe work environment, free of both occupational hazards and harassment.
- Address conflicts of interest and abuses of power that arise in both the lab and the surrounding academic environment.
- Act in a professional manner towards other students, staff, and faculty.

Departments and Programs Expectations (This is adapted from a website at Penn State: https://science.psu.edu/future-students/graduate-students/guidelines-and-policies): The department and graduate program plays an essential role in ensuring that a graduate student can successfully complete their PhD in an enriching, productive, and safe environment. The GCDB program and IU Biology will:

- Provide the student with a safe work environment, free of both occupational hazards and harassment.
- Provide students with up-to-date information that includes policies, practices, resources, degree requirements, and expectations for progress
- Assist students with selection of their advisors as needed, providing general guidance on expectations for effective mentoring
- Ensure that all students have a faculty member with responsibility for advising them
- Monitor graduate student progress toward their degrees and professional development, including committee meetings, exam completions, and other benchmarks toward the degree.
- Provide students and faculty with contacts, resources, and a clear process for potential conflict resolution (e.g., ombudsperson, director of graduate studies, or department head) and campus resources that promote health and wellness
- Assist students who wish to change advisors or research groups in identifying new advisors within the department or program who are receptive to accepting the student
- Provide appropriate infrastructure to allow students to complete their education and research in a timely and productive manner
- Provide opportunities for professional development that will be relevant to students seeking careers outside academia and/or their research discipline

Student Representation

The following representative organizations are available within the GCDB program for students to enhance their training:

1. GCDB Graduate Student Association: The GCDB Graduate Student Association (GGSA) organizes social and professional events for the GCDB community. The organization works with a faculty advisor and GPD to enhance the GCDB student experience. GGSA activities are typically announced via email as well as social media (https://twitter.com/GGSAatIU and https://www.instagram.com/ggsa.at.iu/?igshid=NTc4MTIwNjQ2YQ%3D%3D)

2. GCDB Student Executive Committee: The executive committee serves to communicate student issues with the GCDB Graduate Program Director. The committee is composed of two students elected from each GCDB class. The Executive Committee should meet with the GPD at least once a year. The current executive committee is composed of the following GCDB students:

Class	Representatives	
2019	Emily Erdmann	Timothy Cioffi
2020	Shefali Shefali	Justin Bryant
2021	Sophie Fleck	Sophie Warren
2022	Ethan Golditch	Dorian Dale
2023	Madison McReynolds	Michael Kwakye

Students are also encouraged to join professional communities (ex. Genetics Society of America) and serve in leadership and committee roles designed to enhance training and increase competitiveness for future positions.

Expectations for Career Preparation

Students should consider post-graduation career options early in their PhD training. Ideally, students should start considering career-relevant training requirements prior to candidacy. Students should fill out the IDP every year and discuss career plans with their PI, their research committee, and others as appropriate. In addition, all students are encouraged take advantage of the Walter Center for Career Achievement, including the Graduate Career Coach.

Regardless of whether a student intends to pursue a career in academia, industry, education, or policy, the of the degree requirements described in this handbook are essential for success. Publications, conference presentations, and external funding are required for a competitive job application in nearly all fields. Thus, students should prioritize scientific success to ensure they will be competitive after graduation.

In some cases, students interested in industry might carry out an internship. GCDB has an internship policy that is available in the GCDB Sharepoint folder (Internship Policy). In general, a student must have agreement from their PI and must have completed all requirements but the dissertation before leaving for an internship.

There are a few important considerations prior to undertaking an internship:

- Students must realize that internship funding normally comes from the companies/organizations recruiting the student and the PI is not expected to fund the student during their time away from the university. If the internship period spans only a portion of the semester, the student and PI must come to an agreement as to how to fund the remainder of the semester.

- The student must discuss with their Advisory/Research Committee how the internship will impact '**satisfactory progress**' toward degree completion. The Committee then should describe, in their committee meeting report, how the internship factored into the annual evaluation.

- All PhD students are required to maintain **continuous enrollment**, either via G901 (if eligible) or a minimum of 1 credit of L800 or equivalent (must be paid for by the student/internship provider and may be higher for international students). This enrollment also enables the College of Arts and Sciences to find ways to supplement stipends, route insurance, etc. Students cannot take a leave of absence for an internship.

- The student should identify ahead of time how their **health insurance** will be covered – this may be through COBRA extension bought by the recruiting company. Coverage from an SAAship during spring could extend during summer. However, an internship in spring would not receive SAA insurance (eliminating coverage for spring and summer). IU's Fellowship insurance for graduate students (link for DGS/GPD/Grad Staff) could be purchased.

- **International students** interested in internships may need a letter of support from the Office of International Services due to visa considerations. A letter from the PI to OIS that explains how the internship is vital to the dissertation may be all that is needed, but responsibility will fall on the student to ensure all visa requirements are met.

Mechanisms for Student Feedback and Reporting

GCDB students have many avenues for reporting concerns about their training, environment, and interactions with faculty, staff, and other students. Below are list of people and mechanisms available for reporting concerns:

1. Your Advisor: Your advisor should be the first person you contact for nearly all problems. Their goal is to help you successfully complete your PhD. In general, you should discuss issues related to your science, productivity, career planning, lab dynamics, and most other aspects of your PhD training with your advisor. When selecting a thesis lab, be sure that you would feel comfortable discussing these issues with a potential advisor.

2. Your Committee: Similar to your advisor, your thesis committee plays an essential role in assisting you with nearly all aspects of your PhD training. You should foster a productive relationship with your committee. If an issue arises that you feel uncomfortable discussing with your advisor, consider discussing the issue with a member of your committee.

3. Your Peers: Many of the issues that you face as a graduate student have also been encountered by other students. Often, your peers can point you towards a potential solution. Furthermore, as members of the Graduate Executive Committee regularly interface with the GPD, these individuals are well versed in many issues and are a great resource. Contact information for all Biology graduate students is located here: https://biology.indiana.edu/about/graduate-students/index.html

4. Assistant Director of Graduate Studies – *Sam Allen,* MY150, 812-855-2785, saiallen@iu.edu

The Assistant Director of Graduate Studies serves as the staff advisor for graduate students and can help you navigate the myriad complexities of the partially overlapping bureaucracies at IUB. They are extremely knowledgeable about the many deadlines, forms, requirements, etc., that you must complete. They can also offer career guidance and general help with graduate life. They represent a first point of contact for:

- Issues related to degree requirements
- Leave of absence requests

They can also offer career guidance and general help with graduate life, including:

- Conflicts with your advisor
- Switching labs

5. The Graduate Program Director (GPD) – *Heather Hundley*, hahundle@iu.edu

The GPD leads the GCDB PhD program and is the first person you should contact if you are encountering issues that cannot be addressed by your thesis advisor, the Biology Graduate Advisor and/or committee. The GPD can assist you with a variety of issues, including:

- Conflicts with your advisor
- Issues related to degree requirements
- Leave of absence requests
- Switching labs
- Emergency funds requests
- Transfer credits from other programs

In general, the GPD will keep student discussions confidential (unless constrained by Federal law, such as Title IX). If a conflict of interest exists between the student and GPD, the student can contact the DGS or SAC (see below).

6. Bio Director of Graduate Studies (DGS) – *Heather Reynolds,* biodgs@iu.edu
The GPD communicates regularly with the DGS about problems that arise with graduate students. That said, if students do not find satisfactory resolution of problems with the GPD, the DGS stands ready to help. Typically, the DGS interfaces with UGS and College Administrators, while GPDs manage day-to-day functions of the graduate programs in Biology.

7. GCDB Section Associate Chair (SAC) – *Andrew Zelhof,* azelhof@iu.edu
The GPD serves alongside the DGS, the SAC, and Department Chair. Problems that cannot be resolved by the GPD (or problems involving the GPD) can be brought to the SAC. The GPD and SAC communicate regularly about problems that arise, but typically involving faculty or funding.

8. Biology Department Chair – *Armin Moczek*, 812-856-1468, armin@iu.edu
The Chair oversees operations of the entire department and should NOT be consulted early on, as the Chair has a very large portfolio of matters to tend to. Instead, students should first work with the GPD and then, if necessary, the DGS and SAC. That said, the Chair will welcome conversation about your concerns. Additionally, the GPD communicates with the Chair about concerns arising with students in the program.

9. Ombudsperson – *Rich Holdeman, 812-855-3793, rholdema@iu.edu*
The ombudsperson is tasked with serving as a neutral mediator in matters concerning Biology coursework. Examples of matters to bring to the ombudsperson can be found here.

Resources Outside of the Department of Biology
Several resources are available to help you with issues related to mental health, harassment, sexual assault, and discrimination. **All of these resources can be directly accessed by the student.**

1. Mental Health - Graduate students at IU have access to two sources of mental health care providers – a local (on-campus) provider – CAPS and a virtual (online) service – Timely Care.
Counseling and Psychological Services - CAPS | Care referral (link)
Students praise effectiveness of the counselors, therapists, and psychiatrists at CAPS. The GPD can refer students to CAPS and encourages that students manage their mental health challenges with the effective and supportive help offered by CAPS. Anyone – students, PIs, committee members, GPDs, etc. – can submit a care referral. These tips activate various services in support of students experiencing stressors from mental health, physical health, financial insecurity, etc.
Timely Care – timelycare.com/IU
Students have access to TimelyCare services 365 days a year. That means you have access during breaks, after-hours, and any time you need support. Services range from health coaching to scheduled counseling to on-demand emotional support.

2. Title IX - Stop Sexual Violence (link)
IUB is committed to providing a safe work and learning environment, free from sexual violence. Students with Title IX concerns should voice them with their advisor first. If that is not possible or desired, students should confer with a Title IX officer (liaison) in Biology. These liaisons are:
* Jennifer Tarter, Administrative Assistant to the Chair, jenjones@iu.edu
* Shana Wigington, Human Resources Representative, shwiging@iu.edu

If you are experiencing a title IX concern as a victim:
We encourage consultation with both advisors and Biology's liaisons. Additionally, the University has Title IX coordinators if those consultations are not possible (see here for IUB contacts).

Reports of Title IX concerns to advisors, Biology liaisons, or any other persons considered 'responsible employees' (described in the policy), **must** be reported to the Title IX Office on campus. The advisor and/or Biology liaison should also consult with the Department Chair if the problem could pose a threat to others or reflect a systemic problem beyond the focal incident.

If you are learning of a Title IX concern:
All grad students should consider themselves as "responsible employees" following Biology's policy (which is grounded in University policy UA-01, UA-03). ALL graduate students have responsibility to report Title IX concerns to the Title IX Office on campus. No one can keep Title IX concerns "confidential" - you must report them. *It is important that all graduate students understand this part of the policy from Biology and the University.*

What this means for the GPD's relationship to graduate students:
Title IX creates legal situations in which the GPD is usually **not** the first point of contact. The Chair will inform the GPD if necessary about concerns. Concerned students can still consult with the GPD but if the GPD is the only 'responsible employee' informed, the GPD must contact IUB's Title IX office. Confidentiality is not guaranteed in this case (unlike in other, non-Title IX issues). For Title IX concerns, confidentiality is only assured if they talk to a 'confidential employee' (see Biology policy for more information).

3. Office of Institutional Equity (link) | Fill out a Bias report (link)
IUB is committed to ensuring that the work and learning environment is free of discrimination of any sort. While the GPD also wants to know right away of any discrimination or harassment concerns, students should know that they can consult with and get advice from the Office of Affirmative Action. They can file complaints with this Office as well.

4. Division of Student Affairs.
Some matters involving the Division of Student Affairs don't need to go through the GPD, DGS, or Advisor. This division can also help with matters outside of IUB, such as legal support in disputes with landlords.

5. Office of International Services (OIS)
International students can face unique challenges in both adjusting to the culture of the United States and maintaining immigration status that are beyond the knowledge base of faculty and staff in the Department of Biology. In this regard, the following list contains immigration issues that all international students must be aware of:

- When does your i20 expire?
- When does your visa expire?
- Do you need an i20 extension?
- If do you plan to graduate in the next year, have you started on your OPT application? (Keep in mind OPT is only valid for 90-days after you receive your degree, and you must acquire a new job or a new visa status to legally stay in USA).
- If you switch from the PhD to the Masters program, you must contact Office of International Services and file the appropriate forms.

Please note that the GCDB handbook does not provide legal advice and immigration policies will vary depending on the country of origin. The issues listed above are meant to highlight some of the most common issues faced by our students, however, this list is not exhaustive. For all legal advice, please seek assistance from the Indiana University Office of International Services (https://ois.iu.edu/index.html).

GCDB Contact Information

The following individuals will serve as your primary contacts for information about the GCDB graduate program.

Heather Hundley, Ph.D.
GCDB Graduate Program Director
Biology Building, Room 327B
hahundle@iu.edu
812.855.0675

Heather Reynolds, Ph.D.
Director of Graduate Studies
Biology Building, Room 142
hlreynol@iu.edu
812.855.0792

Sam Allen
Assistant Director of Graduate Studies
Myers Hall, Room 150
saiallen@iu.edu
812.855.2785

Helpful Websites
GCDB OneDrive/Sharepoint folder: GCDB Grad Docs
Indiana University, Bloomington: http://www.iub.edu
Biology Department: http://www.bio.indiana.edu
GCDB Program: https://biology.indiana.edu/graduate/genome-cell-development/index.html
Graduate Awards: https://biology.indiana.edu/graduate/awards-scholarships.html
Lectures and Seminars: https://biology.indiana.edu/news-events/index.html
Indiana University Graduate School Bloomington: http://graduate.indiana.edu
College of Arts and Sciences: https://college.indiana.edu/
College of Arts and Sciences Graduate Information Page: https://college.indiana.edu/student-portal/graduate-students/index.html
Teaching Resources for AIs: https://citl.indiana.edu/programs/ai-support/

Appendix A.

Guidelines on the use of AI in graduate scholarship - GCDB graduate program

Created by GCDB faculty in Spring of 2024 with guidance from EEB guidelines, last updated on March 13, 2024

Large language models (LLMs) and other generative AI tools (e.g.,ChatGPT; Bing Chat Enterprise, now Copilot) are increasing in availability and quality. LLMs have the potential to streamline some elements of PhD scholarship but if used uncritically, they can hinder the development of skills and knowledge. *The goal of this document is to provide guidelines for graduate student use of LLMs in their scholarship, particularly prelims and dissertation chapters.*

General considerations about Ph.D. scholarship

The purpose of graduate scholarship and writing a dissertation is to (1) develop mastery in a core area, and (2) develop, implement, interpret, and write up original research on a topic that addresses a critical gap in the literature. Dissertations are meant to address significant problems by promoting new ways of thinking and by unifying disparate concepts. This process provides opportunities to develop ideas, question assumptions in the literature, hone communication skills, and grow as thinkers.

LLMs and Ph.D. scholarship

- LLMs may produce content that is *inaccurate, incomplete or biased.* LLMs can present untrue statements as facts, can include outdated information and can reproduce biases that exist in the content on which they were trained. If a student uses LLMs to learn ideas, find papers, write code, etc. and the output is wrong, the student knowingly or unknowingly replicates that error. Thus, the responsibility of ensuring that information gleaned from LLMs is correct falls solely with the student, as students are responsible for the content of their scholarship (no matter the sources used).
- LLM use is a rapidly changing area of research policy, and students are responsible for adhering to requirements put forth by funding agencies, societies, and journals in which they intend to publish dissertation chapters. For example, some journals restrict LLM use to only those actions that “improve readability and language.”
- IU’s Code of Student Rights, Responsibilities, & Conduct prohibits plagiarism, which includes insufficient paraphrasing of work generated from someone other than the student (including LLMs), as well as using text derived from other people or programs without attribution.
- IU has its own guidelines for acceptable uses of LLMs. While many of these guidelines are not directly related to Ph.D. scholarship, students should adhere to them as well.

With these considerations in mind, we recommend the following guidelines. We recognize the guidelines do not address all possible uses. Thus, we encourage students who want to use LLMs in ways not covered below to seek out and document unambiguous approval, in advance, from their advisory/research committee chair (and committee members). The focus of these guidelines relates mostly to prelims and dissertation chapters, as class instructors may have their own LLM guidelines/policies.

Acceptable uses:[1]

1. LLMs can be used to accelerate the process of searching for literature
2. LLMs can be used to help draft, debug or annotate your code (e.g. in R, Python)
3. LLMs can be used for 'light editing', similar to spelling or grammar checks that already exist in many word processing programs.
4. LLMs can be used for 'conversation' and 'chat' (back and forth exchanges) to learn about unfamiliar terms and principles, similar to the way you might read a wikipedia article before researching the primary literature.

Unacceptable uses:

1. LLMs should not be used to critique or synthesize literature for prelims or dissertation chapters. LLMs (at present) are a poor substitute for reading papers critically and carrying out one's own synthesis. Pasting prelim questions directly into LMMs to generate a first draft of an answer is discouraged.
2. LLMs should not be used to generate new text (i.e. *de novo* writing) for committee meetings, including prelims, or dissertation chapters.
3. LLMs should not be used to condense text on prelims to fit within word limits, as this is essentially a form of *de novo* writing.

[1]Students who use LLMs should document and acknowledge exactly how they have used AI via a 'Declaration of Generative AI Use' (or similar). Many journals are already requiring these statements, which are placed in the Acknowledgements, Methods, or Cover Letter. The statement should specify the tool used and how it was used. Some groups have called for making the input and output LLMs available with the publication" (see recent article in Nature).

Appendix B.

GCDB program guide to the IU College of Arts and Sciences Graduate Office's mentoring criteria

The following is a guide to how the GCDB program addresses the 9 mentoring criteria specified by the College Graduate Office.[1]

1. **A timeline showing a typical path through the degree, milestones, and how advising/mentoring fit in**.
    - A timeline/checklist for the program is on pages 10-11 of the GCDB Handbook. A narrative of a typical timeline is also present on pages 16-17 of the GCDB Handbook and more details are provided throughout the book.

2. **A distinction between discipline-specific advising and more holistic mentoring, acknowledging the need for multiple mentors for different needs.**
    - Students are assigned a faculty mentor in their first semester or until they join a lab.
    - A detailed list of resources and personnel, including those with mentoring roles, can be found on pages 25-26 of the GCDB Handbook. This list includes brief explanations of when to consult specific people both within and outside of the department.
    - A slightly modified version of the College's best mentoring practices are described in the GCDB Community expectation pages of the GCDB handbook (pages 21-22).

3. **An outline of the roles and responsibilities of students, advisors, and departments, such as that provided by the College.**
    - This information is summarized on pages 21-22 of the GCDB Handbook.

4. **An outline of the expectations of student academic appointees (SAA's) and of their faculty supervisors**
    - Supervision plan: The College has provided guidance for supervision of SAAs located in this portal.
    - Evaluation form: AIs with instructing capacities (beyond just grading) will be evaluated following this form.
    - Grievance policy for SAAs: Biology has established grievance policies for SAAs. Please note that this grievance pathway is separate from issues of academic standing (and described by and managed by the College Graduate Office here).
    - This information is summarized on page 20 of the GCDB Handbook.

5. **Indication of how students can report their experience, for example through a climate survey**
    - A list of contacts (within the program, department and University) with some potential issues arising can be found on pages 25-27 of the GCDB Handbook.

[1] Some statements herein were originally crafted by Prof. Spencer Hall for the EEB PhD program and/or Prof. Jake McKinlay for the Microbiology PhD program

- The GCDB Graduate Program Director holds a townhall meeting with graduate students every Fall and holds additional meetings and surveys as needed. There is a Google Form where students can leave anonymous feedback prior to the townhall meetings.
- The Biology graduate advisor holds a yearly townhall meeting for biology PhD students.
- Anonymous feedback from students is collected after each graduate-recruiting weekend, both on GRW and student impressions on prospective students.
- The Biology graduate office conducts an exit survey when students graduate.

6. Discussion of the role of the unit's graduate student association in student well-being

- Contact information and a brief description of the GCDB Graduate Student Association (GGSA) and other student representation within the department is in the GCDB Handbook on pages.
- GGSA organizes several events each year, focused on professional development and strengthening social ties between students and between faculty and students.

7. Information on conflict resolution and grievance procedures within the department and beyond

- Students can consult pages 25-27 of the GCDB Handbook to identify the appropriate people and offices to report various grievances.
- Grievance policy for SAAs: Biology has established grievance policies for SAAs. Please note that this grievance pathway is separate from issues of academic standing (and described by and managed by the College Graduate Office here).
- Academic misconduct procedures are described on page 19 of the GCDB Handbook.

8. Attention to professionalization that stretches beyond any required course

- Programmatic requirements are described on pages 3 and 4 of the GCDB Handbook. These include presentations within the department, publication of research findings, and service as an associate instructor for at least one semester.
- Students complete an individual development plan (IDP) every year and discuss it with their PI. Part of the IDP is focused on career plans.
- GCDB has a weekly seminar series featuring external speakers. Students can have lunch with the external speakers to ask them about research, career paths, etc.
- Expectations for career preparation are discussed explicitly on page 24 of the GCDB Handbook. In addition, possibilities to increase competitiveness for future positions are indicated throughout the handbook.
- Students are made aware of the possibility of internships, with the policy described on page 24 of the GCDB Handbook.

9. Annual Evaluation - Academic

- The Annual requirements for GCDB students are described on page 13 of the GCDB Handbook. These include an annual reporting form of milestones achieved and an annual committee meeting.
- Students also evaluate their own strengths and weaknesses annually using an Individual Development Plan. Students talk through the IDP with their PI and provide the document to the thesis advisory committee at their annual committee meeting.