

GRADUATE PROGRAM HANDBOOK

DEPARTMENT OF MOLECULAR GENETICS

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Preface

This handbook, prepared by the Graduate Studies Committee (GSC), contains guidelines and information for graduate students and faculty in the Molecular Genetics Graduate Program. Key provisions have been discussed and approved by a vote of the graduate faculty of the Department.

Throughout the handbook, reference is made to the Graduate School Handbook, available at

<https://gradsch.osu.edu/handbook>

Departmental guidelines define or extend Graduate School policies, particularly regarding procedures for Candidacy and Dissertation Exams, as well as maintenance of good academic standing. In unusual circumstances not explicitly addressed in this handbook, students should turn to the GSC for advice. These guidelines may be modified and are subject to change.

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Program Overview

The Department resides within the Division of Natural and Mathematical Sciences of the College of Arts and Sciences. The Graduate Program offers a course of study leading to the Ph.D. degree. Although students cannot currently be admitted for the purpose of pursuing a terminal M.S. degree, they may earn one en-route to the Ph.D., as described below.

Research in faculty laboratories addresses fundamental questions in molecular, cellular, and developmental biology, using genetic approaches. A wide range of model organisms is employed in ongoing research. The goal of the Program is to train scientists for careers in academia, government, or industry.

Graduate Studies Committee

The Graduate Studies Committee (GSC) oversees and administers the Program and is the liaison between the Graduate School and the Department. It also serves as a source of support, guidance, and mentoring for all students in the program. Actions of the Committee are subject to approval by the faculty of the Department. The GSC is responsible for formulating and administering rules of the Program concerning faculty membership, student admission, transfer and registration, as well as the requirements for the Ph.D. and M.S. degree programs.

The GSC consists of at least three members of the graduate faculty of the Department, one of whom serves as the Chair. GSC members are appointed annually by the Chair of the Department, in consultation with the faculty.

Committee members for the 2021-2022 academic year are:

- Anita Hopper, Professor, Chair of the Committee
- Susan Cole, Professor
- Craig Burd, Assistant Professor

The Program Coordinator is Ms. Deborah Lipp (lipp.60)

This handbook is available on the Departmental website:

<https://molgen.osu.edu/graduate-studies-molecular-genetics>

Ethics

Appropriate ethical standards are at the core of the training mission of the program, since transparent and honest presentation, evaluation, and criticism of experimental results constitute the foundation of scientific research. In the preparation of Candidacy Exams, research presentations, scientific manuscripts, and dissertations, students are required to acknowledge ideas, figures, and conclusions of others in the field. These and other issues are addressed in Molgen 7600, which is required of students in the first year. Finally, University guidelines and policies regarding academic and research misconduct can be found at:

<https://gradsch.osu.edu/handbook/c-research-standards-and-misconduct>

Overview of the typical graduate student experience

In Year 1, students focus on laboratory rotations and courses, laying the foundations for independent research. In the Spring semester of year one, students choose a thesis advisor for their dissertation. In Year 2, students finish course electives and serve as teaching assistants; teaching experience is useful in preparation for careers in academia, industry, or other careers requiring the dissemination of scientific knowledge.

Students are expected to complete the Doctoral Candidacy Exam by the end of the summer term of the second year and must complete the exam by the end of the following term (fall of third year) unless granted a waiver by the GSC. The second year can be particularly challenging, as students balance the demands of coursework, teaching responsibilities, research, and preparation for the candidacy exam.

Beginning in the third year, each student presents their research annually in a formal talk to the Department. Throughout their course of study, students are expected to regularly attend seminars. After completion of the Candidacy Exam, students focus on completing their thesis research project and ultimately preparing a doctoral dissertation. A successful dissertation depends on the generation of a significant body of original research; as such, there is no timeline for completion. Most students finish in <6 years.

Lab rotations

Lab rotations are an important aspect of the first-year experience because students explore different lab environments, scientific problems, and experimental systems with the goal of choosing a research topic and thesis advisor. Students do three seven-week rotations during their first year, two in the autumn and one in the spring semester. The formal dates of lab rotations will be communicated at the beginning of Year 1. In many cases students may elect to stay in their second rotation past the formal end date or start their third rotation before the formal start date in order to have a richer experience in a potential thesis lab.

The GSC will provide advice and approve rotation choices. At the end of the third rotation, students and advisors "match," making mutual choices. In the rare case that a student does not identify a thesis lab after three rotations, they may complete an additional rotation in the second half of Spring semester. Students must identify an advisor by the end of their first year in the program. Students may petition the GSC to do fewer than three rotations, although such waivers are rarely granted because exposure to multiple lab settings, techniques and systems is a critical part of student education. Although students are encouraged to set up rotations upon enrollment in the graduate program, it is understood that students may develop new interests or insights and wish to change their rotation selections in consultation with the GSC.

Department faculty present short talks to incoming students during the week before classes start in August. After these presentations, students generate a short list of at least four faculty with whom to meet to discuss rotation projects. The GSC will consult with each student regarding their final short list. At least three rotations must be completed in Department labs; one of those may be in the lab of an Adjunct Member [listed on the Molecular Genetics website](#). If a fourth rotation is desired or necessary, a student may (with the advice and consent of the GSC) seek a rotation in a lab outside the department. The primary goal of the rotations is to introduce students, labs, and advisors, facilitating an appropriate match for thesis research. As part of this experience, rotating students are

expected to engage fully in a semi-independent research project, acquiring necessary background knowledge and participating in lab meetings. Students give short presentations on their rotation projects to the Department at the end of each of the first three rotations.

Seminars and Research Presentations

Seminar Attendance

There is a rich variety of seminar series available at OSU. During the transition from the classroom to the bench, attending research seminars is another vital aspect of graduate education. During the first three years in the program, students are required to attend at least two seminars per week and to share the titles of the seminars attended in Carmen each Friday as part of their enrollment in Molgen 7890. When a Molecular Genetics departmental seminar is scheduled, students should attend unless they have a class or teaching conflict. In choosing a second seminar (or two seminars in weeks when no departmental seminar is scheduled), students are encouraged to prioritize the interdisciplinary Molecular Life Sciences (MLS) series which draws outside speakers in a variety of research areas. Attendance at more specialized talks (e.g., RNA center, CAPS, MBI, Microbiology, Cancer Center, Grand Rounds) suggested by a rotation or thesis mentor, or of particular interest to the student, may serve as a second choice when no MG seminar is scheduled. Students in all years of the program are welcome and encouraged to attend more than two seminars per week.

Attendance at additional Departmental talks and seminars is also required for all students in the program (unless they have course or teaching conflicts). These include:

- First year rotation talks
- Fourth year presentations
- Fourth year practice talks (Years 1-5)
- Falkenthal Colloquium, Waller Lectures, and Biao Ding Memorial Lecture
- MG thesis defense seminars
- MG Faculty search candidate seminars

Attending Fourth-year talks, the Falkenthal Colloquium, the Waller Lectures, and the Biao Ding Memorial Lecture satisfies the requirement to attend an MG seminar.

Student Presentations

In Years 3 and 5, students give short talks at the Falkenthal Colloquium (similar in format to those given at national scientific meetings). In Year 4, students present 45-minute research talks to the Department in the Spring semester. Prior to the formal departmental presentation, students present a practice talk that is moderated by the Molgen 7890 course instructors and attended by program peers in their 1st through 5th years in the program. Practice talk attendees provide valuable feedback prior to formal departmental presentation. Presenting these talks and providing feedback in practice talks is part of Molgen 7890 enrollment requirements.

Attendance at External Scientific Meetings

Most students attend and present at several local or regional meetings over the course of their graduate careers. Most also present posters and/or talks at one or more national or international scientific meetings. To defray costs associated with attendance, post-candidacy students may apply to the GSC Chair for a **Berl Oakley Travel award**, a one-

time award of up to \$500 for travel to a meeting at which they make an oral or poster presentation. In some cases, students may apply for a Berl Oakley Travel award to attend a specialized training course instead of a scientific meeting.

Coursework

In the first two years of the program, students pursue coursework that lays a scientific foundation and provides exposure to a variety of experimental systems and approaches. The second year is transitional, with a greater emphasis on research. Teaching obligations are typically completed in Year 2 as well. Students have reduced coursework in Year 2, and typically no formal coursework in following years, though they still register for and attend seminars. Before registering each semester, students should consult with the Program Coordinator, Deborah Lipp, for enrollment advice, and with their advisor as needed. Students are responsible for registering for the appropriate courses by [posted deadlines](#). A detailed description of the enrollment requirements for maintenance of status and degree requirements, is found in the [Graduate School Handbook](#).

Pre-candidacy students supported as Graduate Research Associates (GRAs) or Graduate Teaching Associates (GTAs) should register for at least 8 credit hours in the Autumn and Spring semesters and 4 credit hours in Summer semesters. Pre-candidacy students appointed as Graduate Fellows should register for at least 12 credit hours in Autumn and Spring semesters and 6 credit hours in Summer semesters. The nature of a student appointment can be clarified with Program Coordinator Deborah Lipp prior to registration. Students who want to register for additional credit hours in Summer need to consult in advance with the GSC and their advisor. Post-candidacy, all students should register for 3 credit hours each semester, regardless of their appointment type or source of support, and need to discuss alternate plans with the GSC and their advisor. No student should register for more than 18 credit hours in any semester.

A typical curriculum is shown below. The credit hours in MG 7780 (Lab Rotations) and MG 8999 (Dissertation Research) are flexible and can be increased to reach minimum credit hour requirements or decreased to prevent exceeding credit hour limitations. At least one credit hour in MG 8999 is required every semester after the Autumn semester of Year 1.

Year 1 Autumn Semester

- Molgen 5700 Systems of Genetic Analysis
- Molgen 5701 Molecular Genetics: DNA Transactions
- Molgen 7600 First Year Orientation
- Molgen 7890 Seminar Program
- Molgen 7780 Lab Rotations

Year 1 Spring Semester

- Molgen 5705 Advances in Cell Biology
- Molgen 5715 Eukaryotic Developmental Genetics
- Elective #1 (Most common choices Molgen 7807 or Molgen 5623)
- Molgen 7890 Seminar Program
- Molgen 7780 Lab Rotations (first 7 weeks)
- Molgen 8999 Dissertation Research (second 7 weeks)

Year 1 Summer Semester

- Molgen 8999 Dissertation Research

Year 2 Autumn Semester

- Elective #2 (Most common and highly encouraged choice BSGP 7070, Fundamentals of Grant Writing)
- Molgen 7890 Seminar Program
- Molgen 8999 Dissertation Research
- BIO 5001 Topics in Biological Teaching if needed (taken during semester of CLSE teaching, usually Autumn but occasionally Spring semester)

Year 2 Spring Semester

- Elective #3
- Molgen 7890 Seminar Program
- Molgen 8999 Dissertation Research
- Biology 5001 Topics in Biological Teaching if needed (taken during semester of CLSE teaching, usually Autumn but occasionally Spring semester)

Note that Biology 5001 is a co-requisite for being a Graduate Teaching Assistant in a Center for Life Sciences Education (CLSE) course, a program requirement that students typically satisfy in Year 2.

Starting in the autumn of Year 3 and continuing until graduation, post-candidacy students typically register for 1 credit hour of Molgen 7890 and 2 credit hours of Molgen 8999 in Autumn and Spring semesters and 3 credit hours of Molgen 8999 in Summer semester. In the unusual case that a student has not completed their candidacy prior to Autumn of Year 3, they should contact the GSC and Program Coordinator, Deborah Lipp, to coordinate their registration. Any coursework in addition to Molgen 8999 and 7890 must be discussed with the research advisor and the GSC.

Elective Courses

Although not required, students are strongly encouraged to enroll in BSGP 7070 (Fundamentals of Grant Writing) as a Year 2 Autumn semester elective to help them prepare the written portion of the candidacy exam. Other commonly chosen electives from the list below are Molgen 7807 and Molgen 5623, though all listed courses have been used as electives by at least one student. Students may identify additional coursework that is relevant to their research and propose those courses as new electives. The GSC will review proposed courses to confirm that they will fulfill their program requirements. The GSC welcomes the chance to evaluate and add additional courses to the elective list as appropriate.

- BSGP 7070 Fundamentals of Grant Writing
- Molgen 7807 Post-Transcriptional Control
- Molgen 5623 Genetics and Genomics
- BMI 5730 Intro to Bioinformatics
- BMI 8150 Rigorous and Reproducible Design and Data Analysis
- CBG 5700 Intro to Personalized Therapeutics & Pharmacogenomics
- Microbio 8050 RNA World
- Molgen 5300 Cancer Genetics
- Molgen 5630 Plant Physiology
- Molgen 5650 Analysis and Interpretation of Biological Data
- Molgen 774 Molecular Biology and Pathogenesis of Viruses

English Proficiency Requirements

Some international students may be required to take additional coursework because of Graduate School policies regarding proficiency in written and spoken English. We anticipate that successful acquisition of this proficiency will in the long term support these students' success in science.

[Per Graduate School policy](#), International students who did not receive a bachelor's degree or higher from a country exempt from the English proficiency requirements are required to demonstrate proficiency in written and spoken English. Further details about what to expect can be found at the [English as a Second Language program website](#).

Proficiency in written English can be demonstrated by meeting the TOEFL/IELTS score [listed in the Graduate School handbook](#). Students who do not meet the score requirements must complete an ESL Composition Placement Essay administered before Autumn semester of Year 1 begins. Students who take the Composition Placement Essay may be required to successfully complete coursework in written English: either EDUTL 5901 and 5902 or just EDUTL 5902 depending on placement. The Graduate School requires that proficiency in written English be demonstrated within one calendar year after entering graduate school.

International or permanent resident graduate students for whom English is not the first language must certify their proficiency in spoken English before assuming their required Graduate Teaching Associate (GTA) instructional duties. This can be done by scoring 28 or higher on the spoken portion of the TOEFL IBT, 8.5 on the IELTS, or by scoring at the appropriate level on the Oral Proficiency Assessment (OPA) administered by the ESL Spoken English Program. International students should prioritize certification of proficiency in spoken English by the end of Year 1 so that they can complete their required GTA responsibilities in Year 2.

Student Advisory and Exam Committees

The thesis advisory committee serves as a source of mentoring and scientific support. Students typically choose an Advisory Committee, in consultation with their advisor, in the Autumn semester of Year 2, and the committee makeup must be reviewed by the GSC before it is finalized. The same Committee usually serves throughout the student's career for annual advisory meetings, as the Candidacy Exam Committee, and as the Dissertation Defense Committee. The Advisory Committee is chaired by the student's advisor and includes three additional faculty. To ensure that candidacy expectations are consistent among all Molecular Genetics students, at least three members of the Candidacy Exam Committee must hold salaried appointments (not adjunct) within the Department. Additionally, if the student has taken the BSGP 7070 Grant Writing course, their course instructor may not serve on the Candidacy committee and must be replaced for the purposes of the candidacy exam. For annual advisory meetings and the Dissertation Defense, at least two members of the Committee must hold salaried appointments within the Department. The composition of all Committees is subject to approval of the GSC. The GSC encourages students to limit formal committee membership to 4 faculty to minimize scheduling difficulties. However, students are welcome to seek informal advice from faculty outside the committee and to invite additional faculty to thesis committee meetings when they feel such faculty would provide important scientific input. Because these individuals

are not formal committee members, they do not attend or hold voting rights during the Candidacy Exam or the exam portion of the Dissertation Defense.

Annual committee meetings provide guidance and support for students, helping to ensure timely progression to degree and promoting student welfare. A general timeline of committee meetings can be found in Appendix A. Beginning in Summer or Autumn of their second year, students are required to hold annual committee meetings by November 15th. The first committee meeting serves as an opportunity for the committee and student to meet and discuss the broad plans and trajectory for the student's Candidacy Exam and Thesis. Because this first committee meeting focuses on ongoing work and future plans, the student is not expected to demonstrate significant project progress at this meeting. The candidacy exam does not replace the expectation for Advisory meetings in Years 2 and 3.

Program Coordinator, Deborah Lipp, and the GSC chair should be informed of committee meetings at least one week in advance. Students submit a progress report (2-3 pages detailing their progress over the prior year) and CV to their thesis committee in advance of each committee meeting and to CarmenCanvas after the meeting. The GSC will collect and share feedback from the committee members with the student.

Occasionally, students may wish to change the membership of the Committee, (for example, when the direction of their research changes). Changes to the Committee are approved by the advisor and the GSC Chair. Composition of the Committee is recorded with the Graduate School for the Candidacy and Dissertation Exams.

In the event of conflict between a student and advisor, the student is encouraged to seek advice from the Advisory Committee and/or the GSC. In rare circumstances, students may be best served by changing research projects and advisors.

Resources

The research advisor, advisory committee, and GSC serve as a network of mentoring and support for the student. In some cases, conflicts may arise between a student and one of more of these groups. When students encounter a professional conflict or obstacle that is not mitigated by discussion with the research advisor, we encourage them to (in roughly this order):

- Consult their advisory committee and/or the GSC
- Consult the Chair of Molecular Genetics
- Seek advice from the [Graduate Ombud](#)

Additionally, mental health support and/or counseling can be found at:

- Younkin Success Center, 1640 Neil Ave.
- Counseling and Consultation Service (614-292-5766) 1030 Lincoln Tower, 1800 Cannon Dr.
- Psychological Services Center 614-292-2345 105 Psychology Building, 185 Neil Ave.
- Stress Trauma & Resilience 614-293-STAR Harding Hospital, 1670 Upham Dr.

Teaching

Students are required to teach for two semesters, one in an Introductory Biology course taught by CLSE; the other semester is usually in a Departmental course. This required teaching typically is done in the Fall and Spring semesters of the second year, though

occasionally it can be completed later in the graduate career if a student has a fellowship that does not permit a GTA appointment or is supported in Year 2 as a GRA by their advisor. As described by the Graduate School, serving as a Graduate Teaching Assistant (GTA) is an apprenticeship that provides practical experience to complement formal classroom instruction and lab research and is an important component of a student's professional growth. In addition to preparing students who wish to pursue an academic career, teaching develops skills useful for the dissemination of scientific knowledge in a variety of occupations. As detailed above, International students must pass the ESL exam before serving as GTAs. In cases where a mentor lab does not have sufficient funding to support graduate students as Graduate Research Associates, students may be supported as GTAs for more than the required two semesters. The GSC encourages students to speak with rotation mentors about funding and teaching expectations as they make their decision about dissertation labs.

Exams and Degree Completion

Graduate School rules govern the administration of candidacy exams as well as written and oral exams required for the Ph.D. and M.S. degrees. These rules supersede any Departmental guidelines below, and students are strongly encouraged to consult the [Graduate School Handbook](#) for current regulations as they prepare for candidacy or to defend a degree.

Candidacy Exam

- 1) Purpose. The Candidacy Examination is a test of a student's comprehension of the field of Molecular Genetics and allied areas of study and their capacity to undertake independent research and ability to think and express ideas clearly and succinctly. It is a rigorous examination composed of both written and oral portions.
- 2) Timing. Students typically defend their Candidacy Exam in the Spring or Summer of Year 2. To meet this timeline, it is critical to have an approved exam topic early in the Spring term. To ensure timely progression toward degree, students must complete the candidacy exam by the end of Autumn semester of Year 3. Under extraordinary circumstances (e.g., change in advisor, serious illness), a petition to further delay the examination may be made to the GSC. Students who do not complete the exam by the end of Autumn semester of Year 3 and who do not apply for a delay will no longer be in Good Academic Standing.
- 3) Role of the Advisory Committee. The Advisory Committee, chosen as described above, serves as the examination committees for both written and oral portions of the Candidacy Examination. If a member of the Advisory Committee is not able to participate in the Candidacy exam, another MG faculty member, with the approval of the advisor and the GSC, may be recruited for the purpose of the Candidacy exam.
- 4) Candidacy Examination Procedure
 - a. Selection of the Topic. The student should identify a topic for the development of an original research proposal in consultation with the advisor and the advisory committee. The student should write and present a single page Specific Aims document (with at least half-inch margins and 11-point font) outlining the goal of the research and the specific aims of the proposal.

The Advisory committee has one week to unanimously approve the topic and general aims. This may be done either by email, or in a meeting. If not approved, the student will be asked to identify another topic or to make major changes to the existing topic, and the process described above is repeated. Once the Specific Aims page is approved, the student consults the committee and tentatively schedules an oral exam to be held 8 to 9 weeks later. Formal scheduling of the oral exam via Gradforms is completed after approval of the full written portion of exam (see below) and must be done at least two weeks in advance of the oral exam.

- b. The Written Portion of the Examination. Upon approval of the Specific Aims page, students have 4 weeks to prepare a written proposal. The advisory committee will work with the student to define the expectations for the grant, but in general, the proposal should follow the expectations for a research grant or fellowship proposal that would be submitted to a national funding agency, such as the NIH (R01 or F31) or NSF. However, the proposal (excluding abstract, specific aims, and references) should be no more than 15 pages double-spaced, with 1-inch margins and 12 point font, including all figures and tables. The abstract, specific aims page, any figure or table legends, and the references may be single-spaced. Figures legends must be a minimum of 10-point font. Since additional material may not be included in an Appendix, the proposal must contain figures of sufficient size and quality to ensure legibility. All pages must be numbered.
- c. Guidelines for Preparing the Proposal. Sufficient information should be included in the proposal to facilitate an effective review by committee members without requiring reference to the literature. The proposal should be focused, informative, and avoid redundancies. Brevity and clarity convey knowledgeability of the author and facilitate easy review. While the Background should be sufficient to convey the rationale for the proposal as well as a command of the relevant literature, this portion should not dominate the proposal: the primary focus should be on designing experiments to test hypotheses rather than reviewing the literature. Students must cite literature they have used in the writing process. Each citation should include the names of all authors; title of the paper, name of the book or journal; volume number; page numbers; and year of publication. The entire proposal must be written in the student's own words; quoting of text from published works (even if properly cited) is not acceptable, though figures from the literature can be included if properly cited. Students are strongly encouraged to read successful proposals before writing their own.
- d. Faculty input. During preparation of the proposal, faculty input should be minimal. The work must largely represent the student's own thinking, and the student should be prepared to defend and justify the proposal. However, students are encouraged to solicit advice and criticism from student peers or post-doctoral fellows. With the permission of the Candidacy Committee, students may use either a proposal developed in BSGP 7070 or a fellowship application as the basis of their candidacy exam, although the committee is free to require the addition or substitution of a novel aim, absent from prior work.

- e. Evaluation of the Written Proposal. Upon completion, a draft proposal is submitted to the Advisory Committee, who are given two weeks to formulate evaluations. Each Committee member submits a written evaluation via e-mail to the advisor, who copies all such evaluations to other members of the Committee. After consultation among Committee members, the proposal is graded: "Pass," "Pass with revisions," or "Fail," as follows.
- i. Pass Presentation of a strong proposal, combining a well-designed, well-chosen, realistic project with a well-reasoned experimental approach. The proposal is appropriate for oral defense as written.
 - ii. Pass with revisions Presentation of a fundamentally sound proposal containing flaws that, in the judgement of the committee, can be remedied during a two-week period of revisions. The proposal contains scientific errors in experimental design, poor organization or format, or confusing prose. After meeting with specific committee members to discuss criticisms (as necessary), a revised proposal should be submitted within two weeks. The revised proposal will form the basis for evaluation of the written component of the candidacy exam; no further faculty approval or input is required at this stage.

NOTE: Only one round of revisions is allowed. As a best practice, students who receive evaluations of either "Pass" or "Pass with revisions" should immediately schedule the oral exam with the Graduate School for a date at least three weeks in the future, allowing two weeks for revision and an additional week for faculty to read the revised document. Students **must** file the appropriate form with the Graduate School ("Application for Candidacy" [through gradforms](#)) **at least two weeks prior to the scheduled oral defense date**. Students should additionally inform the Program Coordinator, Deborah Lipp (lipp.60), and the Chair of the GSC of their exam date as soon as it is scheduled.

- iii. Fail A grade of fail will result if, for example, the proposal contains serious misconceptions or is fatally flawed; the basic premise or experimental approach is faulty; the experiments proposed are unreasonable or implausible; the proposal cannot be salvaged without major revisions. If one or more members of the Committee determine the written proposal is unacceptable (Fail), the Committee meets with the student as soon as possible to discuss the evaluations. If, after further consideration, any member of the Committee continues to believe that an overall satisfactory performance on the Exam is unlikely, the student may be advised to forgo the oral portion. As stated in the Graduate School Handbook, should the student accept this advice they must present a written request to waive the oral portion of the exam, in which case the committee registers a grade of U on the Report on the Candidacy Exam and submits a copy of the waiver request to the Graduate School. If a second exam is permitted, the student must then prepare an entirely new proposal and repeat the procedure outlined above. The Candidacy Examination Committee for a second examination must be the same as in the first examination unless the Dean of the Graduate School approves a substitution. However, even if the committee finds the written document unacceptable, the student

may choose to disregard their recommendation, and proceed to the oral defense of the proposal, where the Committee will evaluate the written and oral portions of the exam in total. In such cases, the Committee and student are strongly encouraged to consult rules of the University, which are described in detail in the Graduate School Handbook.

- 5) The Oral Examination The student should be prepared to begin the exam with a brief presentation (~ 10 minutes) that introduces the core ideas and approaches of the proposal. Questioning by the Committee may begin during this presentation, or be delayed until its' conclusion, as decided by the committee. The Oral examination cannot exceed two hours.

The written proposal serves as a backdrop for questioning of the student, but the oral examination must be sufficiently wide-ranging to permit an assessment of the student's overall knowledge of Molecular Genetics and allied fields. The oral examination should also test the student's ability to think and express ideas clearly. At the end of the examination, the committee will decide whether the student has passed the Candidacy Examination. The oral and written portions are considered one exam. It is possible that one portion could be unsatisfactory but other portions of the exam of sufficiently high quality to merit an overall satisfactory grade. Committee approval must be unanimous. Per Graduate School policy, If the Committee decides that the student has failed the Examination, the Candidacy Examination Committee must decide whether the student will be permitted to take a second Candidacy examination and must record that decision on the Candidacy Examination Report form. If the written document was originally graded "Pass" or "Pass with revisions" only the oral exam must be repeated. If the written document was graded "Fail" the student must then prepare an entirely new proposal and repeat the procedure outlined above. No student may take the Candidacy Examination more than twice; students who are judged unsatisfactory after two examinations are dismissed from the Program.

- 6) Following the exam, the Committee reports the outcome to the Chair of the GSC, and in the event of failure, to the Chair of the Department as well.
- 7) Upon successful completion of the candidacy, the student is eligible for an M.S. degree in Molecular Genetics and can apply for one *en route* to the Ph.D. as described below.

Dissertation

The Graduate School maintains a complete description of [requirements for the Dissertation here](#). The descriptions provided in this handbook are advisory and are superseded by changes at the Graduate School level. [Per Graduate School policy](#), the Dissertation should be completed within 5 years of being admitted to candidacy. In rare cases where this is not possible, students can petition for a one-semester extension, or can petition to re-take the candidacy exam.

As described in the Graduate School Handbook, the Ph.D. dissertation is "a scholarly contribution to knowledge in the student's area of specialization." In the field of Molecular Genetics, contributions to the field are directly reflected in research publications. Published papers are the most important indicator of productivity and original thinking; thus, students should strive to publish first-author papers and contribute to additional collaborative papers

in well-regarded journals. A dissertation should contain, at a minimum, work in one major first-author paper that has been published, submitted, or is on the verge of submission.

Before proceeding with preparation of the dissertation, the student calls a meeting of the Thesis Committee, which determines whether the student is ready to write and defend. Many factors ultimately contribute to the length of time a student pursues experimentation before they have completed a significant body of research. Readiness to defend is determined by research accomplishments, not following a pre-determined timetable. A timeline for the general process is included in Appendix A.

Thesis Document

The nature of current research is that most students participate in collaborative projects. However, the dissertation should highlight the student's individual contributions to such projects, such that the document reflects the original thoughts and work of the Ph.D. candidate. Data and figures to which the student did not contribute should generally be included in the background section. In cases where one or more chapters in the dissertation are based on a published or submitted manuscript, a citation should appear at the beginning of the chapter, and the student should acknowledge the contributions of other authors as necessary in text and figure legends. In these cases it is customary for the student to write independent introductory and conclusion chapters.

The Committee must be given a finished version of the thesis (typically as a PDF sent via e-mail) sufficiently in advance of the oral defense to allow time for reading and thoughtful consideration. This review period is set by the Committee, but typically is about three to four weeks in advance of the intended defense date, giving the Committee time to approve the written document for defense at least two weeks before the defense date, allowing the student to schedule the oral exam with the Graduate School via GradForms (Application for Final Examination <https://gradforms.osu.edu/>) at least two weeks in advance.

Oral exam

The final oral exam consists of two parts. The first is a public seminar attended by faculty and graduate students of the Department as well as other guests. The entire public portion of the exam (introduction, presentation, and questions) cannot exceed one hour. Immediately following the seminar, the Committee meets with the candidate for approximately an hour to discuss the originality of the research, the independence of the candidate, and the ability of the candidate to interpret their work and place it in the broader context of the field. The two-hour timeslot filed with the Graduate school should include both the public seminar and the oral exam, and the seminar and defense must be completed during that window. Program Coordinator Deborah Lipp (lipp.60) and the GSC Chair must be informed when the oral exam time is scheduled to allow for the presentation date to be publicized.

A successful outcome requires unanimous agreement from the committee. In the event of an unsatisfactory outcome, the Committee determines whether a second final exam will be permitted. In such circumstances, the Committee is encouraged to consult relevant portions of the Graduate School Handbook.

Maintenance of Good Academic Standing

Students must remain in good academic standing in order to continue in the Program. Academic standing is assessed by performance in graduate classes, timely preparation of

the Candidacy Exam, and demonstration of reasonable progress toward the Ph.D. Poor academic standing results from:

- failure to maintain an overall GPA of 3.0 (see below)
- for International students, failure to pass the ESL requirements by the end of the Autumn semester of year two (unless a waiver is granted by the GSC and Graduate School)
- failure to hold the Candidacy Exam before the end of the Autumn semester of year 3 (unless a waiver is granted by the GSC)
- failure to hold a Committee meeting prior to November 15th of Year 2, and annually thereafter (unless a waiver is granted by the GSC)
- failure to participate as a member of the audience or, commencing in year three, speaker in the various Departmental seminars (unless a waiver is granted by the GSC)
- poor research performance, resulting in receipt of an unsatisfactory (U) grade in MolGen 8999
- excessive, unexcused absences

The Graduate School monitors academic performance and defines “poor academic performance” as an overall GPA < 3.0. The ramifications of poor academic performance are outlined in the [Graduate Student Handbook](#). Briefly, when a student’s overall GPA falls below 3.0 they will receive a warning letter from the Graduate School. The student (and research advisor if applicable) will work with the GSC to develop a remediation plan designed to raise the student’s GPA above 3.0 in the next semester. If the student does not achieve this goal in the next semester, they will be placed on probation by the Graduate School. Students on probation cannot be appointed as GRAs or as GTAs, so placement on probation usually results in dismissal from the program. Students should be aware that due to a lack of appropriate graded coursework, it can be challenging to develop an appropriate remediation plan for students whose GPAs fall below 3.0 at the end of the Spring semester of Year 1, but the GSC will make every effort to provide support.

In cases where a student’s attendance or performance in the lab threatens their progress towards the degree, the GSC will work with the student, advisor, and advisory committee to formulate a plan that will support student success.

Graduate Associate Appointments

Students generally receive financial support in the form of Graduate Associate appointments, which consist of a stipend and waiver of University fees and tuition. Students are typically appointed as Teaching (GTA) or Research (GRA) Associates, and occasionally as Administrative Associates (GAA). Other students may be supported by internal or external fellowships (Graduate Fellows) for some portion of their graduate career. Appointments are made each semester, beginning in the Autumn semester. Students are not permitted to hold employment outside the University. Students who fail to maintain Good Academic Standing lose eligibility for appointment as a Graduate Associate (GRA, GTA, or GAA).

Many of our students receive intramural or extramural fellowship support at some point during their graduate career. While supported by fellowships, students are appointed as

Graduate Fellows. We are unable to provide tax advice, but students appointed as Graduate Fellows should be aware that the University will NOT withhold taxes from their paychecks during terms in which they are appointed as fellows, even though their stipends are subject to taxation. Fellows should be careful to set aside enough funds to cover their income taxes (usually paid on a quarterly basis).

Students holding appointments as Teaching Assistants should expect to be continuously present in Columbus throughout the semester appointment. Some courses require advance preparation; Teaching Assistants for such courses should also be available before the start of the semester and are encouraged to consult with course instructors in advance.

Graduate Associate Vacation and Leave

The University classifies students appointed as GTAs, GRAs, GAAs, or Fellows as trainees and not hourly workers. Therefore, per University policy, students do not formally accrue annual vacation hours or sick leave. Students are entitled to all University holidays (generally 10 business days [outlined here](#)). The Department understands that by having time off, graduate students are more creative and productive when they return to their research and teaching. Thus, students may take two additional weeks of vacation in addition to University holidays. Specifically, departmental policy is that students are granted sick and vacation time as follows:

- For cases of short-term illness or emergency leave (one or a few days) students should inform their current research advisor (or the GSC if they do not have an advisor) and GTA or GAA supervisor.
- In cases of illnesses or emergencies with longer term implications, the student should talk with their advisor and the GSC to coordinate a longer-term leave that will protect the student's appointment while conforming to University policy.
- Students are entitled to two additional weeks of vacation time in any given year, in addition to University holidays. Vacations should be coordinated with the research advisor. University holidays that fall during a planned vacation do not count towards the two weeks allowed by Department policy.

Note that by University policy, planned vacation time cannot impact required GTA responsibilities. Cases of illness or of personal or family emergencies during GTA appointments are handled on a case-by case basis with the student's advisor, the instructor of the assigned course, and the GSC.

International students need to be aware that any travel outside the US (personal or professional) may have unanticipated VISA implications. Restrictions on such travel are governed by University and Federal policies outside the control of the GSC or Department, and beyond the scope of this document. It is critically important that international students planning travel outside the U.S. begin a discussion with the Departmental Human Resources representative and their advisor as far in advance as possible to make sure they fully understand all ramifications of such travel.

In cases where students have difficulty scheduling leave/vacation for any reason, they should reach out to the GSC who will assist them

Admissions

Applications are due by November 30th for admission the following Autumn. Applications are considered only for admission in the Autumn semester, except in extraordinary circumstances. All components of the application should be submitted electronically to the Graduate School at

<http://gpadmissions.osu.edu/programs/>.

Details about application requirements and answers to frequently asked questions can be found on the departmental website at

<https://molgen.osu.edu/program-admissions-and-aid>

<https://molgen.osu.edu/faqs>

In general, admitted students are offered financial aid that includes payment of tuition and fees as well as an annual stipend of (\$29,856 as of September 2021). Students awarded a University Fellowship receive a stipend supplement from the Department of Molecular Genetics.

Master's Degree

The Department currently offers three paths to an M.S. degree.

First, upon successfully passing candidacy, Ph.D. students may choose to acquire an M.S. on that basis, while continuing to pursue their Doctorate, as outlined in the [Graduate School Handbook](#). The application to graduate with an M.S. is submitted in GRADFORMS during the semester of the candidacy or during any later semester until the candidacy expires. Note that although the document is called an “application to graduate” it does not terminate the student’s tenure in the program. The GSC **strongly** encourages all students to formalize the M.S. degree upon completion of the candidacy exam.

Second, the M.S. degree may be offered to students unable to finish the Ph.D. program for a variety of reasons. Ph.D. students should consult with their Advisory Committee and the GSC Chair before changing degree program status and applying to graduate with a M.S. In addition, current rules of the Graduate School should be carefully considered. The Master's degree must be completed within six years of entering the Ph.D. Program. The most common route to this terminal M.S. is based upon having passed the Ph.D. candidacy exam, as described.

Less commonly, pre-candidacy students may pursue either non-thesis or thesis-based M.S. degrees.

- For the non-thesis based M.S. degree, the Exam Committee is composed of the advisor and either one or two other members of the faculty. The Exam format is set by the rules of the Graduate School.
- For the thesis-based M.S. degree, students prepare a thesis as described in the Graduate School Handbook. The final examination is similar in format to that of the Ph.D. exam, except that the private meeting with the Committee following the student's seminar presentation to the Department typically lasts for approximately one hour. The Master's Exam Committee is composed of the advisor and two other members of the faculty.

Third, the M.S. degree can be earned as part of a joint B.S./M.S. program by students who begin as undergraduates. Consultation with the Graduate Studies Committee is required to

develop a course of studies that simultaneously satisfies Undergraduate, Graduate, and Departmental requirements.

Graduate Faculty Membership

Faculty with 50% or greater salaried appointment in the Department are eligible for appointment as Category M or P Graduate Faculty in the Department (as appropriate), provided they meet the qualifications described in the Graduate School Handbook. Faculty with less than 50% salaried appointment in the Department are eligible for Graduate Faculty appointment commensurate with the appointment in their home department of the University.

Regular, salaried faculty in other departments of the University or affiliated institutions (e.g., Nationwide Children's Hospital) may request a non-salaried appointment to the Department for the purpose of mentoring a graduate student member of the Program. Such individuals nominate themselves by submitting a CV to the Chair of the GSC for consideration at a meeting of the entire faculty, which votes on the nomination. The appointment of such individuals as Graduate Faculty ends when the mentored student leaves the Program.

APPENDIX A: An approximate timeline for the Molecular Genetics PhD program

This section details the approximate timeline for major candidacy and thesis exam requirements and meetings during the Molecular Genetics PhD program. Deadlines can almost always be met early, whereas deadline extensions must be reviewed and approved. Special circumstances are handled on a case-by-case basis via discussions among the GSC, the student, and the student's advisor.

ACADEMIC YEAR 1:

- Thesis lab identified by the end of Spring semester

ACADEMIC YEAR 2:

- Thesis committee identified and approved by GSC by early Autumn semester
- Short thesis advisory committee meeting by November 15th to review the proposed project and set expectations for the candidacy exam. Documentation of the meeting will be filed in CarmenCanvas.
- Specific Aims page approval strongly encouraged during spring or early summer
- Candidacy exam completion strongly encouraged before end of Summer semester (**required** by end of Autumn semester in Year 3)
- M.S. degree application (coordinated with candidacy)

ACADEMIC YEAR 3 and beyond:

- Annual thesis committee meeting completed by November 15th each year.
Note: the committee meeting should still occur in Autumn of Year 3 even if the candidacy exam happened in Summer of Year 2. Documentation of the meeting will be filed in CarmenCanvas by student and committee.

Planned graduation semester: (<https://gradsch.osu.edu/final-semester-procedures-and-timelines>) NOTE the information in this handbook is NOT intended to replace the items listed at the linked site. It is the student's responsibility to look at the Graduate School checklist and complete all items in a timely fashion. Here, we highlight the areas that most frequently cause issues.

- File the application to graduate in GRADFORMS by third Friday of term (the student should file even if they aren't completely sure -- if a student files to graduate but does not follow through, it is not a problem, but it IS a problem to graduate if a student hasn't filed by the deadline.)
- To graduate in a given semester, ALL requirements listed here (<https://gradsch.osu.edu/handbook/7-13-doctoral-summary-phd-degree-graduation-requirements>) (oral exam and final document approval by the grad school) must be completed by the published deadline here: <https://gradsch.osu.edu/calendar/graduation>
- Students should discuss their timeline with their committee, keeping in mind that:
 - The committee needs time to read the document before they approve it for oral defense
 - The committee must approve the document for oral defense AT LEAST two weeks before the planned oral defense, so that the student can submit the "Application for Final Examination" in GRADFORMS and the committee and GSC sign it before the deadline

- The thesis must pass a dissertation format check at the graduate school AT LEAST two weeks before the planned oral defense (this is unrelated to approval by the committee).
- Students should budget additional time after the oral defense to edit the document for final committee approval and to submit the final document to Ohiolink
- Students should aim to schedule the oral defense at least one week before the final grad school deadline. To ensure that all deadlines are met, students should submit a thesis draft that will pass the Graduate School formatting review to their committee 3 to 4 weeks before the planned defense date to give faculty sufficient time (1-2 weeks) to review it.
- When the thesis is sent to the committee for review, students should inform Program Coordinator Deborah Lipp of their defense date so that it is advertised on Department calendar.

If it is impossible to meet the published deadline, some students choose to use the "end of semester deadline". Basically, this means completing all the steps above by a slightly later date -- specifically before the last business day before the start of the next semester. This typically gives students an extra two to four weeks to complete the requirements.

If a student meets the end of semester deadline, their degree will be formally conferred at the end of the FOLLOWING semester (i.e., if they meet the end of semester deadline for the Autumn semester, the degree will be conferred at SPRING graduation). In this case, the student will not register for spring classes and can begin their next position. However, if a student's next position requires a degree in hand, this approach could cause an issue, but most employers are satisfied with a letter confirming that all degree requirements have been met.

APPENDIX B: Annual Committee Meeting Report Template

Student name:

Advisor Name:

Date of meeting:

Committee members present:

The objectives of the Annual Progress Report are to:

- (1) help students acknowledge their accomplishments, establish goals, and develop a strategy for realizing those goals and*
- (2) facilitate dialogue among the student, their advisor, and their committee members that will support the student's progress to degree and career plans*

General Structure (parts A and B together will generally be 2-3 pages, excluding figures and references):

A) Brief background including progress that was reported to the committee at prior meeting(s). This section should set up your overarching hypothesis or model and place it in a broad scientific context.

B) Brief description of research progress in the last year (Have any results furthered your hypothesis? What aspects of your current efforts are causing problems that might be assisted by input from the committee?)

C) Research plans and milestones for next year (include plans for fellowship submissions, manuscript submissions, defense, etc):

D) Teaching, outreach, and service commitments in last year:

E) Attach a CV that includes all publications, abstracts, fellowships, awards and recognitions.

Circulate A-E to your committee in advance of the meeting

After the meeting, write a brief paragraph outlining any changes to your research plans that arose out of the meeting.

Combine all into a single document and submit on CarmenCanvas.