



EMORY

LANEY
GRADUATE
SCHOOL

Genetics and Molecular Biology
Graduate Program

Graduate Division of Biological and Biomedical Sciences

GMB Program Handbook

2022 - 2023

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**GUIDELINES FOR PROGRAM IN GENETICS AND MOLECULAR BIOLOGY
GRADUATE DIVISION OF BIOLOGICAL AND BIOMEDICAL SCIENCES**

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ORGANIZATION

The PROGRAM IN GENETICS AND MOLECULAR BIOLOGY (GMB) shall consist of a Program Director, a Director of Graduate Studies, an Executive Committee, the GMB faculty, and the GMB students.

The GMB shall be headed by a Program Director, elected by faculty vote, and approved by the Director of the Graduate Division of Biological and Biomedical Sciences (GDBBS) and the Dean of Laney Graduate School. The Director shall serve a three-year term and be responsible for the overall administration of the program and shall assure student performance to the University in the conferring of degrees achieved within the program. The Director will serve with the assistance of an Executive Committee.

The Executive Committee shall consist of GMB faculty, one member being the Director, and other members to include the Director of Graduate Studies, the Director of the Training Grant, the Chair of the Curriculum Committee, the Chair of the Oral Exam Committee, the Chair of the Faculty Review Committee, the Chair of the Diversity, Equity and Inclusion Committee, and the Chair of the Admissions Committee (described below). Additional members may include Faculty Representatives, which will be non-tenured faculty with a minimum of 2 consecutive years of active membership in the GMB program. Faculty Representatives will be elected to a 2-year term. Executive Committee members (other than the Training Grant Director) are elected by vote of the GMB faculty and communicated to the Director of the GDBBS. All elected positions (except Faculty Representatives and Student Representatives) are to be subject to nominations and elections every three years, with elections for three of the six positions staggered by one year. The Executive Committee shall serve to advise the Program Director in all matters. The Executive Committee shall, as a body and through its appointed committees, make recommendations to the Director on: a) admission of students to the program, b) the development of policy within the program, c) development of the curriculum of the program, including the development of new courses for the program, and d) the progress of students in the program. All members of the Executive Committee have voting rights.

Nominations- Candidates for membership on the Executive Committee may be nominated by students or faculty. An opportunity for anonymous nominations will be available but nominations need not be anonymous.

In addition to the above faculty positions, and to provide feedback regarding GMB policy and activities from the students to the faculty and leadership of the program, a senior (3rd or 4th year) and a junior (2nd year) student should be elected each year to serve a one-year term on the GMB Executive Committee. Student members of the committee have full voting rights in meetings they attend. To maintain confidentiality, the student representative will be excluded from any conversations involving disciplinary actions or other personal issues of faculty or students.

One member of the Executive Committee shall serve as the Director of Graduate Studies (DGS). The DGS is subject to approval by the Director of the Graduate Division and the Dean of the Graduate School. The DGS should serve for three years. The DGS will: a) supervise and monitor the progress of enrolled students; b) coordinate new student laboratory rotations; c) aid new students in choice of laboratory; and d) coordinate the qualifying exams.

Term Limits– Individuals filling any position on the Executive Committee, including the Director and DGS position will be limited to no more than two 3-year terms for that office.

The Director and DGS will be available to discuss all issues with students and faculty in the program. The Standing Committees will be chaired by the respective Executive Committee members and their responsibilities are as follows:

Admissions Committee: Responsible for enhancing and developing recruitment activities, reviewing applications, and selecting applicants suitable for interviews, and organizing the interview process and admissions selection process.

Curriculum Committee: Responsible for setting coursework requirements, reviewing existing courses, and formulating proposals to modify courses and coursework requirements.

Qualifying Exam Chair: Responsible for organizing, and ensuring the integrity, consistency, and goals of the Oral Qualifying Exam.

Faculty Review Committee: Responsible for the annual review of all faculty members. The committee chair will request a report from each member of the GMB faculty and this committee will be responsible for the review to ensure faculty are active and engaged in the program.

Diversity, Equity, and Inclusion Committee: Responsible for ensuring that GMB policies and procedures establish and maintain racial, ethnic, and gender equity across our student and faculty memberships. Through its work the Diversity, Equity & Inclusion Committee aims to promote the climate and opportunities for diversity, equity, and inclusion. The committee will liaise across the University community to achieve these goals.

ADMISSION OF STUDENTS

The Executive Committee or a separately appointed Recruiting Committee will serve as the admissions committee and will make admission recommendations to the Director.

Applicants must have a strong background in the biological and physical sciences. It is expected that applicants will have a grade point average (GPA) equivalent to a "B" or better, and letters of recommendation that indicate a high level of motivation for scientific research. All other requirements of the Laney Graduate School and the Graduate Division of Biological and Biomedical Sciences must be met. Students are also expected to have some research experience.

RESPONSIBILITY OF FACULTY TO STUDENTS

Upon agreeing to take a student into their laboratory, faculty agree to **advise** the student and provide the stipend for that student in the years that are not covered by the LGS/GDBBS. Taking a student into the laboratory requires approval by the Program Director and the Chair of the faculty's department to ensure compliance with the GDBBS policy manual, including the GDBBS Stipend Reserve regulations.

Faculty admitted to the GMB program who have not demonstrated previous training of Ph.D. students will be limited in accepting no more than an average of one GMB student/year for the first two academic years of their appointment into the program. Exceptions to this rule must be approved by the Executive Committee.

REQUIREMENTS OF STUDENTS

- **Coursework**

Details about the curriculum requirements can be found in **Appendix A1** (applicable to students entering summer 2022 and later).

Students matriculating summer 2022 and later must successfully complete IBS 519 (IBS 519 - Introduction to data analysis: Statistical Rigor, Reproducibility, and Experimental Design for Biomedical Data Analysis) within their first two years of graduate school.

Please keep in mind that IBS 519 is only offered in the fall semester each year.

Current students (or students who entered the program before 2022) are not required to take IBS 519 but may enroll in the course if they wish. All students must be registered for a minimum of 9 hours in each semester to maintain full-time enrollment status.

GMB T32 Trainees

During their graduate career (preferably in the second year) all T32 trainees must take one course from the courses listed below. This requirement ensures that trainees receive additional breadth in their foundation training, specifically in an area of quantitative biology and/or bioinformatics.

IBS 574 – Introduction to Computational Biology and Bioinformatics (spring); credit 4 hrs.

BIOS 505 – Statistics for Experimental Biology (spring); credit 4 hrs.

IBS 593 – Molecular Evolution (spring); credit 4 hrs.

EPI556 – Applied Genetic Epidemiology (fall), 2 credit hrs.

Additional courses that can fulfill the requirement include:

IBS 591 – Population Biology and Evolution of Disease (spring); credit 4 hrs.

IBS 592 – Quant. Methods in Population Genetics, Ecology, and Evolution (spring); credit 4 hrs.

IBS 594 – Evolutionary Biology (fall); credit 4 hrs.

Other courses may be supplemented with the permission of the T32 Director.

Grade Requirements

All GDBBS students must maintain a minimum term GPA of 3.0 in each semester of graduate work. If a student's term GPA is below 3.0 in any one semester of work, that student will be placed on academic probation. Grades of U or F in any course, regardless of credit hours, will also lead to the student being placed on academic probation. With regards to cumulative GPA, GDBBS students must maintain a minimum cumulative GPA of 2.7 throughout their time in the Program as required by the LGS.

Two consecutive terms of probation, or four terms of probation at any point in the student's graduate career will lead to the Division recommending to the LGS that the student be dismissed from the Program. If any student receives a grade of F in 597R, 599R, 699R, 799R or Directed Study the Division Director will recommend to the LGS that the student be dismissed from the Program, regardless of probation status. GMB stipulates that a student on academic probation cannot get a grade lower than a B or dismissal will be triggered by the Division Director's recommendation to LGS. The program may also recommend a student's dismissal due to failure to pass their qualifying exams.

If a student who has been recommended for dismissal from the Program believes there were extenuating circumstances that adversely affected their performance, they may submit a written grievance for consideration of reinstatement (see section on Grievance Policy below).

GMB Seminars

All GMB students are required to attend the weekly GMB seminar during their entire tenure in the program. Students receive one credit hour each semester as IBS546R, and this course is graded as satisfactory (S) or unsatisfactory (U). Attendance is recorded by submitting two written questions for the seminar speaker on a form and submitting this to the DGS. If a student cannot attend a seminar, then the student is obligated to email the DGS before or soon after the seminar, explaining the reason for the absence. Legitimate (excused) absences include illness, death in the immediate family, or attendance at national or international scientific meetings.

Each semester, a student is allowed only two unexcused absences. If a student has more than

two unexcused absences, the grade will be U.

GMB Retreat

Attendance at the annual GMB retreat is a requirement for all GMB students. Students who cannot attend the retreat due to a professional conflict should contact the Director. Other excuses for missing the retreat will be considered on a case-by-case basis and should be discussed with the Program Director.

Ethics Training Requirements

1. LGS Requirement: Jones Program for Ethics

Students who entered in Fall 2012 and later must fulfill the Laney Graduate School's Jones Program in Ethics (JPE) requirement, which consists of courses, JPE 600 and 610. Refer to the JPE website for the current policies and schedule of course meetings:

<http://gs.emory.edu/professional-development/jpe/index.html>.

2. GMB Requirements

Students in Years 1 and 2 will enroll in GMB 706 (Ethical Conduct of Research) in the spring semester. Additionally, students who entered in fall 2012 or later are required to complete an ethics refresher course before the end of their 6th year of study.

Professional Development

GMB students are expected to be planning for their career options from the time they enroll until they complete their PhD dissertation. As an initial component of this planning, all students are required to have completed the web-based career planning tool that is available at <http://myidp.sciencecareers.org>. In addition, all students are required to complete and present the short- and long-term planning "Meeting IDP Slides" templates available on the GMB website. The students are further strongly encouraged to attend any of the multiple workshops and presentations focusing on career options that are organized by the GDBBS and LGS throughout the year.

Directed Study

The purpose of Directed Study (GMB 797R) is to allow students the opportunity of specialized training in areas not represented by the current courses offered by either our program or other programs.

- GMB students will normally be allowed only 5 hours of Directed Study.
- An outline of the directed study must be submitted to the DGS or the curriculum committee for approval prior to registration.
- To receive credit, a brief summary of the course must be submitted with the grade at the end of the semester (e.g., list of papers, experimental approaches, etc.).

Lab Rotations

As per GDBBS policy, GMB students may perform their rotations and dissertation research in the lab of any faculty member who is a member of the GDBBS in good standing. Three (3) rotations are required, and the choice of each rotation must be approved by the DGS.

No GMB faculty member may accept more than a total of three (3) GMB rotation students per academic year and have no more than two (2) doctoral students from any graduate program rotating in their lab within any rotation period. Students may elect to rotate in additional labs but must select a laboratory for their dissertation research before the start of their second year. Exceptions must be approved by the Executive Committee and Program Director.

The format for the final evaluation and grading of the rotation shall be established by the DGS but must include a written and/or oral evaluation. The format and composition of the grading for

the rotation shall be specified before rotations start.

Dissertation Advisors

At the end of the third rotation period, or no later than the end of the summer of the first year, a student should choose a dissertation advisor and submit that choice to the Program Director for approval.

Approval by the GMB Director requires that the faculty member sign the “GDBBS Advisor-Advisee Agreement” form, which includes a pledge for financial support from the faculty member’s department chair. Final approval is made by the Director of the GDBBS. No GMB faculty member may take more than two GMB students per year into their lab.

Students entering labs of GDBBS, but non-GMB faculty must request specific permission from the Director to do so. For approval, the faculty must be a Full member of the GDBBS and must agree in writing to abide by the training policies for GMB students. Note that the student’s requirements for the degree remain governed by the GMB program, and not the program with which the dissertation advisor is affiliated.

Comprehensive Qualifying Exam

The GMB qualifying examination shall consist of an Oral Exam that will cover basic concepts in genetics, as well as concepts related to the student’s dissertation research.

Timing of the Qualifying Exam

- **April 1, Year 2:** Deadline for students to submit their *approved* list of four committee member names to the GMB Oral Exam Chairperson
- **Second Half of May, Year 2:** Oral Exam
- **Before Start of Academic Year 3:** Deadline for completion of any Oral Exam retakes (recommended 4-6 weeks after original exam)

Qualifying Exam

The qualifying exam is entirely an oral exam.

Goal: The purpose of the oral exam is to determine if a student has acquired an acceptable level of basic knowledge and is able to apply that knowledge in oral discussion to address scientific questions so that they may pursue a doctoral dissertation.

Performance will be based upon a number of aspects of scientific skills including:

- The student’s ability to demonstrate their fund of basic knowledge, their scholarly use of that knowledge, and their skill in making connections to allied fields.
- The student’s ability to analyze arguments and evidence that supports, refutes, or is consistent with hypotheses.
- The student’s ability to identify questions in modern molecular genetics, orally defend experiments they design to test hypotheses, critically interpret possible outcomes, and revise their working model.
- The student’s capacity to describe the basis for their thesis research in terms of their mastery of the underpinning literature and what is known, as well as what gaps remain to be resolved.
- The student’s understanding of their own laboratory’s contributions to the literature that forms the basis of their project.

Each exam is unique since each student’s focus and subdiscipline are distinct and the faculty bring differing informed perspectives to the topic area of study. Each examiner will make an overall Pass-Fail determination based on their experience and judgement as to

the student's level of mastery of the fundamentals in each area. Examiners recognize that flawlessness may not be achieved in all responses. Students should understand that each rubric may not be weighted equally by one examiner or across examiners. Examiners will be evaluating the student's level of competency in the above categories with the expectation that the student will be broadly proficient.

Examiners: The exam committee will contain FOUR members that do not include the Dissertation Advisor.

- In consultation with the student's Advisor and the Qualifying Exam Chair, the student will propose two faculty members for approval by the DGS. The DGS may exclude one of these at their discretion and ask the student to make another selection.
- Once approved, the student will secure the two members' signatures on the Qualifying Exam Committee form by April 1st of their second year.
- Also by April 1st, the DGS in consultation with the Qualifying Exam Chair will provide two additional faculty who agree to serve.
 - The student can challenge one of these in writing by providing a scientific basis for why the selection is not appropriate. If the DGS upholds the disqualification, the DGS will replace that member with a person of the DGS's choosing.
- This planning should ensure that three of the four committee members are members of GMB in full standing.
- The committee's composition does not need to be that of the final Dissertation committee, although it often will be (see below).

Before the Exam: At least one full week before the scheduled oral exam the student will distribute copies of the following documents to all members of their Oral Exam Committee:

- a list of the Emory courses they have taken,
- a copy of their dissertation proposal (typically in the form of the research proposal written for the "grants class" during the spring semester, but an updated or edited version thereof is also acceptable).

Structure of the Exam: The exam will begin with a 10-minute *uninterrupted* chalk-talk presentation by the student during which they are to introduce the essential background and rationale for their proposed research project, explain the aims and hypotheses to be tested, and outline the approaches to be applied and present any key preliminary data. After the 10-minute presentation the examiners will take turns around the table asking questions using a format of 10 minutes for each examiner to ask one-on-one questions followed by 5 min during which the other examiners may also ask questions related to that topic. Two full rounds of questioning with a brief break between the rounds will be conducted. Questions may address the proposed research topic or may be general in nature. The total time for the exam will be approximately 2 hrs. 10 min, or with breaks, about 2 hrs. 20 min. *The advisor's role during the exam is solely as a witness. The advisor may not initiate or participate in discussions about the student's performance before, during, or after the exam.*

Grading: At the conclusion of the exam the student and advisor will leave the room and the committee chair will ask each examiner for their initial vote of either Pass or Fail, to be submitted by secret ballot (slips of paper). If there is any disagreement the committee members will discuss the student's performance and as needed, verbally recast their votes. **A minimum**

of THREE of the FOUR committee members must vote “Pass” for the student to pass the Oral Exam.

Retakes: Any student who fails the Qualifying Exam may make a request to the GMB Executive Committee to make a second attempt. Unless otherwise determined by the GMB Executive Committee, the retake Exam Committee for any given student will be the same committee that administered the initial exam, and the format of the retake will be the same as for the initial exam. A minimum of THREE of the FOUR committee members must vote “Pass” for the student to pass their Oral Exam retake. *A student must pass the Oral Qualifying Exam in order to begin academic year 3 in the GMB program.*

Terminal Master’s Degree: Students who do not pass the Qualifying Exam may petition the Executive Committee to be allowed to redirect their studies towards the completion of a terminal Master’s Degree. Consideration for a Master’s Degree will require a brief proposal from the student and a letter from the student’s advisor. The advisor’s letter will:

- provide a recommendation addressing the student’s laboratory skills and expected progress;
 - state that they believes the experimental plan will lead to a Master’s Thesis;
 - indicate the time to completion and a schedule of benchmarks that needs to be met;
- and,
- provide a source of support for the student if completion of the project will extend beyond the Spring semester.

The length of GDBBS funding for support of the student will be decided by the Executive Committee, but in no case shall GDBBS funding extend beyond the end of August of that year.

Dissertation Proposal

GMB students shall compose a proposal that outlines the aims, background, and experimental design of their dissertation research. The proposal may be produced as a requirement of the IBS 522r Grant Writing and Professional Development course. A copy of the dissertation proposal will be submitted to all members of the student’s oral qualifying exam committee at least one full week before their scheduled oral exam. Students may receive advice on the contents of their proposal from any source, including their Dissertation Advisor. Dissertation committee members will provide critiques of the proposal and its content, with respect to organization, writing style, and the feasibility and value of the proposed science. The proposal format should conform to that used for the NIH Ruth L. Kirschstein Individual Predoctoral National Research Service Award (NRSA) award mechanism, or F31, application (<http://grants1.nih.gov/grants/guide/pa-files/PA-11-112.html>). Students are encouraged to use these proposals as the basis of an application for extramural funding. In this regard, if the target agency requires an application that differs from the format described above, the student can petition their Dissertation committee to allow their proposal to conform to the agency-specific format, so long as that format retains the general information (hypothesis, project goals/research aims, research strategy) included in the format outlined above.

Candidacy

Students who entered the program in 2016 or prior should apply for candidacy after passing their Comprehensive Qualifying Exam and completing 36 hours of advanced course credit hours (typically at the end of the third year). The deadline for reaching candidacy is August 1 before the fifth year.

Students who entered the program in 2017 or after should apply for candidacy after passing the Comprehensive Qualifying Exam but before September 15 of their fourth year. Students are

eligible for candidacy after meeting the following requirements:

- Complete all program requirements for candidacy: coursework and other training required by the degree program, including program required JPE training
- Earned 54 credit hours at the 500 level or above
- Select Dissertation Committee and submit LGS Dissertation Committee Form
- Complete TATT 600, TATT 605, and JPE 600
- Resolve any Incomplete (I) or In Progress (IP) grades
- Be in good standing with a minimum cumulative GPA of 3.0

More details on candidacy may be found at

<http://www.gs.emory.edu/academics/policies/candidacy.html>.

Students who do not meet the candidacy deadline will be placed on academic probation, will not be eligible for PDS funds, and may forfeit financial support. These sanctions will be lifted when the student enters candidacy.

Dissertation Committee Meetings

Assembling the Committee: In consultation with their advisor, and subject to approval of the program DGS, the student will select FOUR faculty members familiar with their field of research to serve on their dissertation committee. **The deadline for formation of the dissertation committee is September 1st of your 3rd year.**

- At least THREE of these FIVE faculty members (advisor + FOUR committee members) must be GMB faculty members in full standing.
- The Dissertation Committee does NOT need be identical to the Qualifying Exam Committee, although it often will be.

The purpose of these meetings is to evaluate the progress of the student towards obtaining a Ph.D. This includes progress in coursework and research. The first dissertation committee meeting must occur before December 15 of the student's third year, and every 6 months thereafter. Students in their sixth year and beyond must have dissertation committee meetings at least every four months. Holding committee meetings on this schedule and making satisfactory progress in research are required for a satisfactory grade in research each semester.

During the process of assembling their Dissertation committee, each student should consult with the DGS to choose one member who will serve as the committee "Head". The Committee Head acts as a student advocate and ensures that committee meetings meet all GMB requirements. It is ideal for the Committee Head to have a faculty rank of Associate Professor or higher. The Head will be responsible for ensuring that a summary of the meeting's proceedings is documented on the dissertation committee form. A series of statements in the form of "It is expected that the following will be completed by the next meeting..." should be formulated and entered into the Dissertation Committee form. Completion of these objectives will be deemed satisfactory progress at the next meeting. Scoring of the student's current progress on the committee form will be carried out by each committee member privately providing their score to the Committee Head who will add these scores to the form without attributing scores to any faculty member. Neither the Advisor nor any co-Advisor provide scores. The student then submits the form to the DGS for signature and sends it to the GMB Program Administrator/GDBBS for recording.

In scheduling Dissertation Committee meetings, students are allowed to have only one committee member absent from the meeting. In those cases, the student must meet with the absent committee member within two (2) weeks, in order to both consult on progress and get

the Dissertation Committee meeting form signed.

Before the main dissertation committee meeting, the advisor is temporarily excused, and the committee briefly meets with the student to discuss any concerns regarding the research environment. Following the meeting, the student is excused and can return to their lab to provide an opportunity for the advisor to discuss any concerns related to the student's progress. These individual meetings are not meant for further discussion of research progress or other topics where it would be more appropriate for everyone to be involved in the conversation but serve as a checkpoint to head off potential conflict between the student and advisor.

M.D./Ph.D. students should have their first committee meeting at the beginning of their second year. Committee meetings must occur in both the Fall and Spring semesters.

Dissertation Proposals should be updated yearly with a progress report section and distributed to their dissertation committees prior to each committee meeting, along with any manuscripts or papers published that the student has completed. The progress report should include two PowerPoint slides that outline the student's short-term and long-term goals, as part of the student's Individual Development Plan (IDP). Comments of the committee should be placed on the GMB Dissertation Committee Form and sent along with the proposal and/or progress reports to the DGS.

Dissertation Completion Time

Students are expected to complete their dissertations and apply for their degrees within six (6) years. If a student has not completed the degree at the end of the seventh (7) year, the program may grant a one-year extension. If a student has not completed the degree at the end of the eighth (8) year, the student may continue work for at most one additional year and only with approval from the Dean.

This policy is effective for students entering the program in 2017. Students who entered the program prior to 2017 will adhere to the policy that existed at the time they started.

For full details and most up-to-date information, including instructions and deadlines for obtaining approvals for completion time extensions, please read the LGS Handbook: <http://gs.emory.edu/handbook/>

Dissertation & Defense

Each student will be expected to submit a written dissertation in compliance with the requirement of the Laney Graduate School. The dissertation is based on research proposed and done by the student. Students must adhere to the following steps to prepare for defending:

- 1) The faculty advisor will submit to the student's committee an *advisor-approved* draft of the dissertation. This submission should be copied to the PA to confirm the Dissertation has been submitted.
- 2) After the advisor-approved draft of the dissertation has been provided to the committee, the student can then begin the process of scheduling the defense, which must be a minimum of two (2) weeks *after* the committee receives the advisor-approved draft.
- 3) Once the committee members all agree to a specific time and date for the defense, the Program Administrator works with the student to officially schedule the defense at the agreed upon date and time. This process involves the following:
 - a) The student must obtain all required signatures for the "Dissertation Defense Permission Form" and must submit the form to the DGS and PA as soon as

- possible, at least two (2) weeks prior to the defense date. *Notes:* Defense must be scheduled at a time where all the student's committee members are able to attend. The time of the defense should be between 9 AM and 4PM and should not conflict with a GMB scheduled event. The student is responsible for securing the room reservation.
- b) At least two weeks prior to the defense, student must also submit to the PA their flyer announcing the dissertation title, date, time, and location of the defense. The "GDBBS Defense Flyer" template can be found at <https://secure.web.emory.edu/biomed/intranet/students/index.html>. The flyer must be distributed university-wide and publicly at least two (2) weeks prior to the defense. Therefore, if the student does not submit the "Dissertation Defense Permission Form" and the customized "GDBBS Defense Flyer" to the PA in a timely fashion, the student will need to reschedule the defense.
 - c) At least one week prior to the defense, student must submit the defense program, which includes the abstract, publications, presentations, dissertation committee, etc., by sending the customized "GDBBS Defense Program" to the PA for program-wide distribution. The template can be found at <https://secure.web.emory.edu/biomed/intranet/students/index.html>.
- 4) Student defends on the agreed upon defense date/time by orally presenting their results at an open seminar. After a period of open discussion, the committee proceeds with a closed examination of the student and their work.
 - 5) If the written dissertation is judged acceptable and the student passes the oral examination, the committee signs
 - a) the "Doctoral Completion Form" (found here: <http://www.graduateschool.emory.edu/academics/completion/index.html>) and student submits it to the LGS; and
 - b) the "Committee Approval of the Oral Defense Examination" Form and students submits it to the GDBBS.
 - 6) Additional steps, specific to the LGS, toward officially completing the degree must be taken and can be found on the next section below.

Degree Completion

Along with the above steps for defending, students must complete the Degree Application and submit it to the Laney Graduate School by the degree application deadline for the semester in which they plan to defend and graduate. Students must also visit the LGS Degree Completion page and follow all instructions for submitting their dissertation, as well as submitting the LGS required forms for graduating:

<http://www.graduateschool.emory.edu/academics/completion/index.html>. Any questions regarding the degree completion process must be directed to Emily Neutens (emily.kara.neutens@emory.edu) in the GDBBS office or Renee Webb (rlwebb@emory.edu) in the LGS office.

Publication Requirements

The GMB program recognizes that each individual dissertation represents individual challenges, yet publications are a clear and measurable record of a student's productivity that impacts the student's future goals. It is the *expectation* that all students will have accomplished an original, significant, and scholarly body of work before the defense of the dissertation. The dissertation work should thus result in multiple publications with the students as the first author. It is therefore unlikely that the dissertation defense will be approved in the absence of at least one significant original research paper accepted for publication by a credible professional journal.

Time Off

Graduate study is a full-time endeavor. Students receive a stipend and are expected to be actively attending classes or conducting research and working toward the degree year-round, including the period between terms. The time between terms (along with Fall and Spring Break) is considered an active part of the training period. Students should discuss breaks with their DGS (if in the first year) or Dissertation Advisor (after advisor selection) and receive approval in advance. Breaks should typically be limited to two weeks per year. Unauthorized absences may result in an unsatisfactory research grade for the term (i.e., in fall, spring, or summer), and could thereby lead to probation.

Changing Advisors

When a student has to change advisors for any reason (first advisor leaving Emory, scientific/academic falling out, etc.) it's understandably stressful for the student. In most cases, a student will complete their dissertation with the advisor they originally selected following rotations. In extenuating circumstances, it may be necessary for a student to switch advisors. Should a student need to change advisors, they should immediately contact their DGS, PA, and the GDBBS Assistant Director of Student Affairs for guidance on their options and to form a plan of action.

Transfers to Another Graduate Program at Emory

Students admitted to GDBBS Programs are supported by the LGS/GDBBS in the first 21 months of graduate school. They may choose to do rotations or dissertation research with any of the Graduate Training Faculty of the Division regardless of their program affiliation. Thus, a student could be a member of one GDBBS program and their advisor could be a member of a different graduate program. In such a case the dissertation research committee must be selected according to the guidelines established by the student's program and not the program where their advisor resides.

1. Transfers Within GDBBS

A student in good academic standing can transfer to the graduate program where their proposed advisor holds a training appointment. This can result in changes in required coursework or exam scheduling to meet the requirements of the new program. The following is required:

- A letter of intent requesting the transfer should be sent to the student's current program, to the intended program, and to the GDBBS Director. The current program will acknowledge the program change request; the new program must approve the transfer.
- The program the student will be transferring to should also provide the student with written documentation of any program-specific requirements that the student will need to complete.
- The student must also complete the LGS Program Transfer Request form, and the Dean of the LGS will provide final approval of the transfer.

2. Transfers to Another LGS Program

If a student would like to transfer to a non-GDBBS program, the student needs to discuss this with both programs and then complete the LGS Program Transfer Request form, which will be reviewed and approved by the Dean of the LGS.

MD/PhD students need to complete this transfer process once they have started their G1 year in the fall.

Student Honor Code and Conduct Code

All students should familiarize themselves with and adhere to the Laney Graduate School Honor Code and the Laney Graduate School Conduct Code as outlined in the Graduate Student Handbook (<http://gs.emory.edu/handbook/>). This deals with the professional standards and conduct demanded of all graduate students, as well as the procedures for reporting and

adjudicating any violations. Continuance of stipend support is predicated upon satisfactory progress by the student toward a degree and adherence to the Honor and Conduct Codes.

Appeals and Grievance Policy

A. Appeals

The appeals process pertains only to issues of course grading. Students who believe that an assigned grade is incorrect should first discuss the assigned grade with the course instructor. After discussion, students who do not think the problem has been resolved in this manner should address their concern to the Program Director or DGS, who will seek to resolve the matter with the instructor and the student. Consistent with principles of academic freedom, responsibility for evaluation of a student's course performance rests with the course instructor. Use of this procedure for resolution of a grade dispute will not prejudice in any way a student's rights under their Program, GDBBS, Laney Graduate School, or University student grievance procedures.

B. Grievance Policy

Students who have a potential grievance related to some aspect of their Program may discuss it with their DGS, PA, the GDBBS Assistant Director of Student Affairs and/or the LGS Assistant Dean of Student Affairs for consultation before acting, if desired. If the student decides they want to file an official grievance, they should notify their Program Director and/or DGS by providing a letter addressed to the Director and/or DGS that describes the grievance and relevant details. **If the grievance is related to an academic component or milestone, the student should submit their grievance letter within 30 days of the date the outcome was conveyed (i.e., notice of qualifying exam result or posting of grade to transcript).** The Director and/or DGS may try, if possible and deemed appropriate, to resolve the grievance informally in conversation with the student and relevant parties. If this is not successful or not appropriate, the Director and/or DGS will inform the Division Director and Assistant Director of Student Affairs for GDBBS that the student is moving forward with a formal grievance process. Next, the Director and/or DGS will convene a meeting of the Program Executive Committee, which will review the grievance and provide an appropriate response. The Director and/or DGS may gather additional relevant information and will provide all information and the student's grievance letter to the Committee. The Committee will meet face-to-face to discuss the grievance and review relevant materials. A majority of the EC must be present and only those present may vote on the outcome. Votes will be taken via electronic ballot to ensure confidentiality. In all cases grievance decisions are confidential and should not be shared outside of the grievance meeting. The Director and/or DGS will notify the Division Director and Assistant Director of Student Affairs for GDBBS of the outcome. Finally, the Director and/or DGS will provide a letter to the student via email notifying them of the outcome and options for next steps.

If the grievance concerns the Director and/or DGS, the student should review the GDBBS Grievance Policy found in the GDBBS Handbook for guidance.

If the grievance concerns the GDBBS Director, the student should bypass the Program and Division and follow the LGS Grievance Procedure found in the LGS Handbook under Honor, Conduct, and Grievance, Section 4.

Finally, if the student does not feel their situation is resolved at the conclusion of the Program Grievance process, they can refer to the GDBBS Grievance policy for guidance on additional options for seeking resolution.

Laney Graduate School & Graduate Division of Biological and Biomedical Sciences

Policies Refer to the current Laney Graduate School Handbook

(<http://www.gs.emory.edu/academics/policies/index.html>) & Graduate Division of Biological and Biomedical Sciences Handbook

(<https://secure.web.emory.edu/biomed/intranet/handbooks/index.html>) for additional policies such as:

- Minimum Degree Requirements
- Teaching Assistant Training and Teaching Opportunity (TATTO). Refer to Section XVII of the [Laney Graduate School handbook](#) for more information.
- Jones Program for Ethics (JPE)
- Professional Development Support Funds Withdrawals and Leaves of Absence
- Parental Accommodation Policy
- [Student Support Services](#) offered by Laney Graduate School
- Degree Completion & Graduation

GMB GUIDELINES FOR THE COMBINED M.D./PH.D. DEGREE PROGRAM

Last Amended: April 2021

A. Participation in GMB Program

Medical Scientist Training Program (MSTP) students choose a dissertation research advisor and a graduate Program under the guidelines of the MSTP Program. Unless otherwise specified, the MSTP student is expected to fulfill all the requirements for the degree and participate fully in the GMB Program. MSTP students are subject to the rules outlined by the GMB Guidelines (see above).

Because MSTP students enter the GMB program at the end of the M2 academic year, the core course of study differs from that of PhD-only students. Participation in IBS546r (Presenting Genetics - spring of M2 and all of G1), GMB 706 (Ethical Conduct in Research - 2 spring semesters), IBS 519 (Statistical Rigor, Reproducibility, and Experimental Design for Biomedical Data Analysis), IBS 522r (Grant Writing and Prof. Develop. – Fall or Spring of M2. Must be taken before the oral qualifying exam), TATTO (August prior to G1) and IBS699r (Dissertation Research - all semesters) is the same for MSTP and PhD-track GMB students. The curriculum is described below but it is important that new students meet with the DGS to avoid any possible confusion.

B. Coursework

MSTP students are admitted to the Graduate Program in Advanced Standing and are required to complete 16 additional hours of coursework, which include the required participation in IBS546r, GMB 706, IBS 519, IBS 522r, and TATTO. The minimum course requirements consist of two core courses (from list below). Additional courses (optional electives) may be taken but are not required. MSTP students are expected to start coursework as close to the beginning of the spring semester of M2 as possible but no later than one week following completion of their board exams, around the end of January.

For more information on how TATTO works, please go to the [GDBBS website](#). The GDBBS Assistant Director of Student Affairs organizes all GDBBS student participation in TATTO 600 and 605 and will contact students the summer prior to the academic year in which you will participate.

Core Courses - At least 2 of the following core courses are required in addition to the aforementioned courses above:

- IBS 561 (Eukaryotic Chromosome Function)
- IBS 574 (Computational Biology and Bioinformatics)
- IBS 593 (Molecular Evolution, odd years)
- IBS 560 (Model Genetic Systems)
- IBS 504 (Prokaryotic Genetics)
- IBS 746 (Graduate Human Genetics)

Optional Electives:

In addition to the required coursework, MSTP students may, but are not required to, take any course under the IBS code or BIOS 506 and 507. Any of the core courses would be eligible, as would the following common choices:

- BIOS 506 (Biostatistical Methods I)
- BIOS 507 (Applied Linear Models)
- GMB 501 or 502 (Foundations of GMB)
- IBS 560 (Model Systems)
- IBS 515 (Current Topics)

Requests for exceptions to these course requirements and requests to enroll in courses outside the IBS series (with the exception of BIOS 506 and 507) must be approved by the Program Director and DGS of the GMB Program.

C. Qualifying Exam

MD-PhD students must pass an Oral Qualifying exam and may choose to take the exam either at the end of the Fall or Spring semesters of G1 (provided they have completed IBS522r). It will use the same structure as the PhD-track GMB Oral exam using the student's research proposal from IBS522r, or an edited or updated version thereof, as a starting point. It will begin with a 10-minute *uninterrupted* chalk-talk presentation by the student during which they introduce the essential background and rationale for their proposed research project, explain the aims and hypotheses to be tested, and outline the approaches to be applied and present any key preliminary data. After the 10-minute presentation the examiners will take turns around the table asking questions using a format of 10 minutes for each examiner to ask one-on-one questions followed by 5 min during which the other examiners may also ask questions related to that topic. There will be two rounds of questioning after which, the Exam committee will vote. A minimum of three of the four committee members must vote "Pass" for the student to pass. The exam committee will be comprised of at least two members of the student's Dissertation committee and two members of the GMB Oral Exam committee. Any modifications of the above policies may be granted on a case-by-case basis by the GMB Director.

Retakes: Any MSTP student who fails the Oral Qualifying Exam may make a request to the GMB Executive Committee for a second attempt to pass the Oral Qualifying Exam. Unless otherwise determined by the GMB Executive Committee, the retake Oral Exam Committee for any given student will be the same committee that administered the initial Oral Qualifying Exam, and the format of the retake will be the same as for the initial Oral Qualifying Exam. A minimum of THREE of the FOUR committee members must vote "Pass" for the student to pass their Oral Exam retake. All MD-PhD students must pass the Qualifying Exam by the beginning of the G2 year.

D. Teaching Requirement

The teaching requirement of the Graduate School is to be fulfilled by the end of the MSTP student's G2 year. Exceptions to meet the teaching requirement beyond the G2 year will be granted on a case-by-case basis.

Appendix A1. GMB Course Requirements
(Applicable to students entering summer 2016 and later)

All students must be enrolled in a minimum of 9 credit hours per semester to be a full-time student. For 1st and 2nd year students, a reasonable course load is 11-14 credit hours per semester. Consult your DGS or PD to choose electives.

All students are required to take the following core courses: GMB 501, GMB 502, GMB 570r, IBS 561, IBS 515, IBS 522r, and IBS 519.

The table below lists out the sequence in which students should complete these core courses.

In addition, students must also successfully complete the following requirements by the end of Year 2, but have some flexibility in when they choose to complete them:

IBS 519 (Statistical Rigor, Reproducibility, and Experimental Design for Biomedical Data Analysis) is required for all students entering summer 2022 and later. It is also a pre-requisite for IBS 574 (Comp Bio & Bioinformatics, 4 hrs), which is *not* required, but highly recommended. IBS 519 is only offered in the fall semester.

Students must also take **one** of the following courses before the end of Y2, which are only offered in the fall semester (note: many students take more than one of these):

- o IBS 504 (Prok Mol Genetics, 6 hrs)
- o IBS 560 (Model Genetic Systems, 4 hrs)
- o IBS 746 (Grad Human Genetics, 4 hrs)

Students entering summer 2022 and later are also required to take one additional elective course, either from the above list or from the other IBS or BIOS course offerings below (must be 4 hours and may also be achieved by taking two of the recommended 2-hour courses below). An elective outside this list requires the approval of the advisor AND the DGS.

A list of additional recommended electives in the basic and quantitative sciences is provided below, though students may use OPUS (<https://saprod.emory.edu/psp/saproduct/?cmd=login>) to identify other courses that meet their needs. All students are encouraged to consult with their advisor when selecting electives, and with the DGS or curriculum director if selecting electives outside of this list.

Fall	Spring
Basic science: IBS 523: Cancer Biology I (4 hrs) IBS 542: Concepts of Immunology (4 hrs)	IBS 506R: Basic Mech.Of Neurological Disease (4 hrs) IBS 548: Biology of the Eye (4 hrs)
Quantitative science: EPI 556: Applied Genomic Epidemiology (2 hrs) BIOS 555: High Throughput Data Analysis (2 hrs) IBS 741: Computational Systems Biology (2 hrs)	IBS 538/BIOS 505 – Statistics for Experimental Biology IBS 574: Computational Biology and Bioinformatics (4 hrs) IBS 593: Population and Quantitative Genetics (4 hrs; offered alternate years)

Many other BIOS classes are available that provide training in probability theory and statistical inference. For these, it is recommended that you consult with the Curriculum Director to identify appropriate choices based on your previous coursework and research needs.

First Year: Fall Semester Core Courses			First Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 501	Foundations of Genetics & Molecular Biology I	6	GMB 570r	Intro Grad Seminar	2
IBS 519	Statistical Rigor, Reprod, Experimental...	3	GMB 502	Foundations of Genetics & Molecular Biology II	4
GMB 597r	Lab Rotations			GMB 597r Lab Rotations	
^JPE 600	LGS Ethics Class	0	GMB 706	Ethical Conduct	1
			IBS 561	Euk Chrom function	4
Second Year: Fall Semester Core Courses			Second Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (8+)	GMB 699r	Adv Graduate Research	VC (8+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
			^TATT 605	Teaching Assistantship	2
Third Year: Fall Semester Core Courses			Third Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (8+)	GMB 699r	Adv Graduate Research	VC (8+)
Fourth Year: Fall Semester Core Courses			Fourth Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 700r	Dissertation Research	VC (8+)	GMB 700r	Dissertation Research	VC (8+)

^ LGS will register you for these courses

VC = Variable credits (system defaults to 1 hour)

Suggested Course Schedules if you want to focus on wet lab experiments:

First Year: Fall Semester Core Courses			First Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 519	Statistical Rigor, Reprod, and Exp	3	IBS 574	Comp Bio & Bioinform	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 501	Foundations of Genetics & Molecular Biology I	6	GMB 570r	Intro Grad Seminar	2
GMB 597r	Lab Rotations	VC (3+)	GMB 502	Foundations of Genetics & Molecular Biology II	4
^JPE 600	LGS Ethics Class	0	GMB 706	Ethical Conduct	1
And one of the following:			IBS 561	Euk Chrom function	4
IBS 504	Prok Mol Genetics	6			
IBS 560	Model Genetic Systems	4			
IBS 746	Grad Human Genetics	4			
Second Year: Fall Semester Core Courses			Second Year: Spring Semester Core Courses		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (3+)	GMB 699r	Adv Graduate Research	VC (3+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
And one of the following:			^TATT 605	Teaching Assistantship	2
IBS 504	Prok Mol Genetics				
IBS 560	Model Genetic Systems				
IBS 746	Grad Human Genetics				

Same wet lab focus as above, but if you do not have sufficient background:

Year 1 Fall Semester			Year 1 Spring Semester		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
IBS 519	Statistical Rigor, Reprod, and Exp	3	GMB 570r	Intro Grad Seminar	2
GMB 597r	Lab Rotations	VC (3+)	GMB 597r	Lab Rotations	VC (3+)
^JPE 600	LGS Ethics Class	0	GMB 706	Ethical Conduct	1
			IBS 561	Euk Chrom function	4
			*BIOS 505	Stats for Experimental Bio	4

And one of the following:

IBS 504	Prok Mol Genetics	6
IBS 560	Model Genetic Systems	4
IBS 746	Grad Human Genetics	4

Year 2 Fall Semester			Year 2: Spring Semester		
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (3+)	GMB 699r	Adv Graduate Research	VC (3+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
	Intro Data Analytics	3	^TATT 605	Teaching Assistantship	2
			IBS 574	Comp Bio & Bioinform	4

And one of the following:

IBS 504	Prok Mol Genetics
IBS 560	Model Genetic Systems
IBS 746	Grad Human Genetics

*Students interested in BIOS courses must receive prior approval from the course instructor and Melissa Sherrer (msherre@emory.edu) from the Rollins School of Public Health Biostatistics Department.

If you want to focus on dry lab quantitative experimentation or if you already have a strong quantitative background:

Year 1 Fall Semester			Year 1 Spring Semester		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 519	Statistical Rigor, Reprod, Exp	3	IBS 546r	Presenting Genetics	1
IBS 546r	Presenting Genetics	1	GMB 570r	Intro Grad Seminar	2
GMB 597r	Lab Rotations	VC (3+)	GMB 597r	Lab Rotations	VC (3+)
^JPE 600	LGS Ethics Class	0	GMB 706	Ethical Conduct	1
*BIOS 510	Intro to Probability Theory	4	*BIOS 511	Statistical Inference	4
			IBS 574	Comp Bio & Bioinform	4
Year 2 Fall Semester			Year 2: Spring Semester		
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (3+)	GMB 699r	Adv Graduate Research	VC (3+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
			^TATT 605	Teaching Assistantship	2
			IBS 561	Euk Chrom function	4
Elective (choose 1):					
IBS 504	Prok Mol Genetics				
IBS 560	Model Genetic Systems				
IBS 746	Grad Human Genetics				

If you want to focus on dry lab quantitative experimentation, but do not have a strong quantitative background:

Year 1 Fall Semester			Year 1 Spring Semester		
Course Number	Course Title	Credits	Course Number	Course Title	Credits
IBS 519	Statistical Rigor, Reprod, and Exp	3	IBS 546r	Presenting Genetics	1
IBS 546r	Presenting Genetics	1	GMB 570r	Intro Grad Seminar	2
GMB 597r	Lab Rotations	VC (3+)	GMB 597r	Lab Rotations	VC (3+)
^JPE 600	LGS Ethics Class	0	GMB 706	Ethical Conduct	1
			IBS 561	Euk Chrom function	4
			IBS 574	Comp Bio & Bioinform	4
Year 2 Fall Semester			Year 2: Spring Semester		
IBS 515	Topics Mol Genetics	2	IBS 522r	Grant Writing & Pro Dev	4
IBS 546r	Presenting Genetics	1	IBS 546r	Presenting Genetics	1
GMB 699r	Adv Graduate Research	VC (3+)	GMB 699r	Adv Graduate Research	VC (3+)
^TATT 600	TA Training	1	GMB 706	Ethical Conduct	1
*BIOS 510	Intro to Probability Theory	4	^TATT 605	Teaching Assistantship	2
			*BIOS 511	Statistical Inference	4
And one of the following:					
IBS 504	Prok Mol Genetics				
IBS 560	Model Genetic Systems				
IBS 746	Grad Human Genetics				

^ LGS will register you for these courses

VC = Variable credits (system defaults to 1 hour)

*Students interested in BIOS courses must receive prior approval from the course instructor and Melissa Sherrer (msherre@emory.edu) from the Rollins School of Public Health Biostatistics Department.