

POLICIES AND PROCEDURES HANDBOOK

Genetics & Genomics Graduate Program

July 2023

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I. PURPOSE

The purpose of the Graduate Program in Genetics & Genomics is to provide an educational opportunity for students who wish to pursue a career in research, education, and service in this field.

The program will award a Doctorate of Philosophy degree and will prepare graduates to assume careers in both basic and clinical research. Research areas and interests are broad, spanning topics from the molecular basis of human disease to basic research in model organisms and microbes, but they are all centered on genetics and genomics.

The faculty of the graduate program has a sincere commitment to provide training in basic sciences that will enable the students to become leaders in research and in diverse careers in the biomedical field. Students are expected to make an equally strong commitment to their training. Graduate students are expected to engage full-time in advanced study and research. The Graduate Program in Genetics & Genomics requires a high level of motivation and initiative on the part of the students.

The requirements for graduation include the successful completion of required courses and electives, the successful completion of the Qualifying Examination, the conduct of an appropriate research project, and the submission and defense of a doctoral dissertation and the acceptance of the same by the student's Thesis Research Advisory Committee and the Graduate School.

The policies and procedures set forth in these guidelines are addenda to the **Policy Handbook**, Graduate School, Baylor College of Medicine. Requests for exceptions to these policies should be submitted as a written petition to the Program Executive Committee for discussion and approval or disapproval.

II. GRADUATE PROGRAM DIRECTOR

The Graduate Program Director is responsible for coordination of the graduate program. The Graduate Program Director is appointed by the Dean of the Graduate School. The Graduate Program Director serves as chair of the Program Executive Committee (PEC) and is responsible for transmitting information between the Graduate School Office, the graduate students and faculty in the Program. The Graduate Program Director may be assisted by one or more Associate Director(s) and may delegate specific responsibilities to the Associate Director(s).

The Graduate Program Director represents the Program by serving as the delegate to the Executive Council of the Graduate School and may also serve on other Graduate School committees. However, it is expected that other faculty members, especially members of the Program Executive Committee will also be available to serve on these committees.

III. PROGRAM EXECUTIVE COMMITTEE (PEC):

A. Responsibilities

The PEC is responsible for formulating and executing policies and practices dealing with graduate education. The major areas of responsibility for the PEC include: recruitment, admissions, orientation, establishment and review of curriculum, the qualifying examination, and monitoring progress of students toward the Ph.D. degree.

B. Membership and Terms of Office

The membership of the PEC includes the Graduate Program Director and Associate Director(s), a minimum of five (5) additional faculty representatives who are full members of the Graduate Program Faculty, and two (2) graduate students. The Graduate Program Director serves as chair of this committee. All members have voting privileges.

Committee members from the faculty, other than the chair, usually serve terms of at least three years. The committee makes recommendations for new members from the training faculty to the Graduate Program Director who appoints new members to the PEC. Student representatives must have been admitted to candidacy and are in good standing. Student representatives are nominated by the G&G graduate student body. Student representatives serve for two years each, in partly overlapping terms. The program administrator serves as ex officio.

IV. STUDENT THESIS ADVISORY COMMITTEES

A. Thesis Advisory Committee for First Year Students

Members of the PEC serve as temporary advisors for the first year graduate students. The Graduate Program Director serves as the major advisor and the chair of the temporary Thesis Advisory Committee.

The Graduate Program Director and the Associate Director(s) counsel the graduate students through the early phase of their graduate program. The Graduate Program Director and the Associate Director(s) meet with the first year graduate students at least once per term in the first three (3) terms to ensure that students register for required courses and make suggestions for elective courses, laboratory rotations, and thesis advisor selection.

B. Thesis Advisory Committee

1. Major Thesis Advisor: The Major Thesis Advisor together with the student is responsible for maintaining steady progress toward the degree. The Major Thesis Advisor guides the student in effective and maximal use of the faculty and other resources within the Program and the academic community to ensure that the student becomes well educated. The relationship between the Major Thesis Advisor and student should be established only after careful consideration by both the student and prospective advisor.

All full-time tenure-track faculty with an appointment in the Graduate School, and holding the rank of Assistant Professor or above may serve as Major Thesis Advisors for graduate students in the program in Genetics & Genomics. All faculty who wish to serve as Major Thesis Advisors must show evidence of being established principal investigators directing a strong, independent program in basic and/or clinical research. A Major Thesis Advisor is expected to assume financial responsibility for the student during his/her tenure in the faculty member's laboratory.

First year graduate students who initiate studies in the first term (August) must submit in writing their choice for a Major Thesis Advisor to the Program Executive Committee no later than July 1 of the academic year of their matriculation in the program. Students matriculating after the first term or who are delayed in their progress should consult with the PEC regarding the deadline for choice of Thesis Advisor. The faculty member selected as a major advisor must also submit in writing to the PEC his/her willingness to serve as advisor to a particular student; this verification should be made by July 1. It is strongly recommended that no faculty member be assigned or accept more than two incoming students per academic year. Faculty members and graduate students who

seek exception to this guideline should petition the Program Executive Committee for such.

The Genetics & Genomics Graduate Program strongly encourages its students to participate in collaborative research and to seek advice and mentorship from multiple faculty members. Nevertheless, formal co-advising (having more than one Major Thesis Advisor) is not allowed.

2. Thesis Advisory Committee Membership: The Thesis Advisory Committee (TAC) for each student consists of the student's major thesis advisor who serves as the TAC chair, one Reporting Member who will be selected by the student and the thesis advisor from a pre-approved list, at least two (2) additional members of the Genetics & Genomics Graduate Program faculty, and at least one (1) external faculty member. Major Advisors who are less experienced in student mentoring should select a Reporting Member who would be willing to assist them in developing their mentoring skills. Detailed policy can be found in the Graduate School Policy item 9.2.2. The list of faculty who participate in the graduate program (available at <https://www.bcm.edu/education/schools/graduate-school-of-biomedical-sciences/programs/genetics-genomics/faculty>) should be used to determine the appropriate faculty selections. The list of preapproved Reporting Members is available at [G&G Reporting Members June 2022](#)

The TAC is to be selected before the end of the third term of the student's second year in the graduate program. The list of committee members should be submitted to the Graduate Program Director for approval. The student's advisory committee is then appointed by the Dean of Graduate School.

The student must maintain contact with all members of the TAC for advice and counsel not only in regard to thesis research but to the character and progress of the student's total graduate program.

3. Modification of Thesis Advisory Committee Membership: It is the prerogative of the student to request a change of Major Thesis Advisor and/or modify the composition of the TAC.

A student who finds it necessary to change advisors must submit a written request with justification to this effect to the Program Executive Committee for approval.

Changes in the composition of a student's Thesis Research Advisory Committee may be necessary for a number of reasons, e.g., change in research problems, resignation of faculty. The student can modify the committee's membership following consultation with the Major Advisor, and approval of a written request with justification by the Graduate Program Director.

V. PROGRAM DESCRIPTION

A. Required Courses

The program provides didactic training in a variety of areas of genetics and genomics.

Required courses are listed in the Genetics & Genomics program plan. Students in the Bioinformatics, Genomics and Systems Biology (BiGSB) track are required to take the course Introduction to Data Mining and to coordinate their program requirements with the Associate Director in charge of the track.

Genetics & Genomics Journal Club (GS-GG-5105) is a required course for all first and second-year students.

Student Research Seminar (GS-GG-5100) is a required course for all students in all years.

Attending 75% of the Molecular and Human Genetics (MHG) Tuesday Noon seminars and the MHG annual retreat are required for all students in all years.

B. Elective Courses

Students are required to complete a minimum of 60 term hours of course work, of which 30 term hours must be in courses that either have a letter grade assignment or are specifically designated by the Graduate School as “approved pass/fail” graded courses. Please note that completion of the required courses above will satisfy 20 of the 30 hours; therefore, a minimum of 10 course hour of electives will be required for students entering in 2021. Selection of elective courses will be made in consultation with the thesis advisor or the Graduate Program Director.

Transfer of credit for work completed at another university or in another advanced program may be requested. No more than 60 term hours (30 semester) may be submitted for transfer. Transfer credit can only be granted for courses receiving a grade based on performance on an examination. No research or seminar credit will be transferred. Subsequently, the request is sent to the Promotions Committee of the Graduate School for final decision on acceptance.

C. Laboratory Rotations

Laboratory rotations (Research Rotations) are to be conducted in a minimum of three different laboratories. Incoming students who worked full-time during the previous summer for a minimum of four weeks in the lab of a faculty member participating in the Genetics & Genomics Graduate Program may count that work as a research rotation. To request approval for summer work to count as a rotation, the student should submit a written request to the PEC. Working in any other capacity in a faculty member’s lab (e.g. technician, intern, PREP scholar) will not be recognized as a rotation.

Laboratory rotation (Research Rotation) credit hours are considered course hours by the Graduate School and contribute to the total of 60 credit hours that are required for graduation. Students should expect to spend approximately 3 hours per week per credit hour in the laboratory during a rotation. The rotation period ends when classes end at the beginning of the study period before exams. Students and faculty should discuss the work schedule of the student, the class time and course load. The specific issue of time off for studying for mid-term and final examinations should be addressed at the time the student is considering doing a rotation in the lab. Major MHG departmental events (the annual retreat and Tuesday Noon seminar) are required activities for the students and rotation demands should not compromise their ability to attend these activities.

The grade of Pass/Marginal Pass/Fail is given for a rotation. The students should discuss with the faculty how they will be evaluated and should meet to evaluate the student's progress during the rotation period at various points (for example 2 to 3 weeks after the rotation starts, after mid-term and at the end). One of the major purposes of the rotation is to permit students to explore various experimental systems and laboratory settings in order to better select a thesis advisor. If a faculty member is unable to take a student for the coming year for thesis research, the student should be advised of this situation.

Because the terms are only 8-10 weeks in length, the academic demands are high, and many of the students are inexperienced in laboratory work, much of the "education" of the rotation is likely to be introducing students to the overall goals of the laboratory's research and instruction in basic laboratory skills.

Faculty and students should discuss the possibility of joining the laboratory at the end of the rotation but faculty shall not make commitments nor request a commitment from a student prior to the completion of three rotations. The students need the opportunity to explore various labs without the pressure of "losing out" for a position in a particular lab that has more than one student interested.

D. Seminars and Retreats

1. Faculty Research Presentations: In the first term, faculty will meet with students to briefly describe their research interests. This activity is not a course and no credit is received; nevertheless it is an integral part of the training program. It is a particularly valuable way for students to learn about research activities of the program and to select future rotation advisors and potential thesis advisors. First year students must attend all faculty research presentations.

2. Required Seminars and Annual MHG Retreat: Participation and attendance at the departmental seminars and annual MHG Retreat are an important part of graduate training. Student attendance is required throughout enrollment as a graduate student and should be strongly encouraged by the faculty preceptor. Students in their 3rd year of Graduate School are required to present a poster and students in their 4th year are required to present a talk about their research at the MHG retreat.

VI. TYPICAL PROGRAM IN GENETICS & GENOMICS

[Graduate Degree Plan for a Ph.D. in Genetics & Genomics](#)

[Possible Elective Courses](#)

VII. QUALIFYING EXAMINATION

Requirements for G&G students include:

1. Students must attend all G&G Qualifying Examination (QE) training sessions.
2. The QE topic will be based on the student's research, but preliminary results are not necessary.
3. The Major Advisor is expected to guide the student through the QE process, help the student identify major deficiencies and alternative approaches, and conduct mock exams.
4. BiGSB students must include at least one specific aim that involves bioinformatics, genomics or systems biology approaches.
5. Students are encouraged to use their QE proposal as the basis of a grant application, such as an F30 or F31 Individual Predoctoral NRSA fellowship.

Information and forms about the Qualifying Exam as well as other Graduate School matters are provided on the Graduate School website at <https://www.bcm.edu/education/graduate-school-of-biomedical-sciences/current-students/forms>. Please be advised that the Qualifying Exam procedures and rules often change at the beginning of the academic year.

VIII. THESIS AND THESIS DEFENSE:

The Genetics & Genomics program considers publication in peer-reviewed journals to be an integral part of the student's training. Publication of at least one first-author or co-first-author paper in a peer-reviewed journal is a minimal requirement for receiving permission to write (GSBS Policy 9.4.5). Requests for exceptions to this rule must be submitted by the student to the PEC after discussion with the Major Advisor and with the TAC. The request must include a thorough justification and a statement that the TAC supports the request. The student, the Major Advisor and all TAC members must sign the request.

IX. FINANCIAL RESPONSIBILITIES:

Students admitted to the Ph.D. Program in Genetics & Genomics will receive tuition scholarships, and a stipend. The student's stipend is to be paid by the Program in the first eleven months. Subsequent years are to be paid by grants from the laboratory in which the student will conduct his/her thesis research.

Students are expected to pursue graduate study on a full time basis and should arrange their financial situation so that outside employment is not necessary. Unusual situations of financial need should be brought to the attention of the Program Executive Committee and the Dean's office in order to provide information regarding student loans and/or scholarship awards.

X. TRAINING FACULTY

Faculty members of the Genetics & Genomics Graduate Program are listed at <https://www.bcm.edu/education/schools/graduate-school-of-biomedical-sciences/programs/genetics-genomics/faculty>. These faculty members are considered 'Program Faculty' for service on committees such as QE and TAC. Students are encouraged to select rotation advisors and major advisors from this list. Students who wish to conduct rotations outside the program or select a BCM thesis advisor outside the program should request prior approval from the Graduate Program Director.

XI. TEACHING ASSISTANT

Genetics & Genomics students are encouraged to serve as teaching assistants (TA) in Graduate School courses. In addition to the Graduate School requirements, Genetics & Genomics students must pass their Qualifying Exam before they can serve as TAs.