

2012-2013 Ph.D. in Genetics and Genomics Academic Assessment Plan

College of Liberal Arts and Sciences
Connie J. Mulligan
cmulligan@ufl.edu
College of Medicine
Jorg Bungert
jbungert@ufl.edu

Office of the Provost

*University of
Florida*

*Institutional
Assessment*

*Continuous Quality
Enhancement*

Table of Contents

Academic Assessment Plan for Ph.D. in Genetics and Genomics.....	3
A. Mission	3
B. Student Learning Outcomes and Assessment Measures	4
C. Research.....	6
D. Assessment Timeline.....	7
E. Assessment Cycle	7
F. Measurement Tools.....	9
G. Assessment Oversight.....	9
Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric....	10
University of Florida Graduate/Professional Program Assessment Plan Review Rubric, continued.....	Error! Bookmark not defined.

Academic Assessment Plan for Ph.D. in Genetics and Genomics

College of Liberal Arts and Sciences
College of Medicine

A. Mission

Graduate Division

The Genetics and Genomics Graduate Program is a PhD program to train the next generation of genetics researchers and teachers. Our philosophy is that top-rate geneticists are integrative geneticists, who incorporate different subfields of genetics and genomics into their work. Accordingly, interests in the UF Genetics Institute faculty and students span everything from basic research to applied work, with an emphasis on synergy between faculty. Our core mission is to improve the quality of life of people throughout the world *via* integrative, genetics- and genomics-based research. Accordingly, our faculty interests, and graduate research opportunities, include areas from advances in gene therapy to understanding the maintenance of genetic variation, from understanding plant immune responses to developing improved algorithms for identifying regulatory motifs in DNA sequences, and from the challenges of bioethics to strategies for controlling malaria. These research interests are represented in multiple colleges throughout UF, including the College of Agriculture and Life Sciences, College of Liberal Arts and Sciences, and College of Medicine, as well as the College of Pharmacy, College of Veterinary Medicine, and College of Engineering.

Colleges

Our mission is to train genetics and genomics scholars for positions in academia, biotechnology, health organizations, and other fields in which knowledge of genetics and genomics is generated, exchanged, and practiced. Multiple colleges at UF share this goal and faculty from these colleges participate in training students in the Genetics and Genomics Graduate Program. Our faculty are committed to training professional genetics and genomics scholars who will participate in a global society by generating and sharing new genetics and genomics knowledge.

University

It is the mission of the University of Florida to offer broad-based, exclusive public education, leading-edge research and service to the citizens of Florida, the nation and the world. The fusion of these three endeavors stimulates a remarkable intellectual vitality and generates a synthesis that promises to be the university's greatest strength.

The university maintains its dedication to excellent teaching and researching by creating a strong and flexible foundation for higher education in the 21st century. The university welcomes the full exploration of our intellectual boundaries and supports our faculty and students in the creation of new knowledge and the pursuit of new ideas.

Teaching is a fundamental purpose of this university at both the undergraduate and graduate levels. Research and scholarship are integral to the education process and to the expansion of our understanding of the natural world, the intellect and the senses. Service reflects the university's obligation to share the benefits of its research and knowledge for the public good.

(This section on the university mission is taken from the PhD in Mass Communication Academic Assessment Plan that was provided as a template)

B. Student Learning Outcomes and Assessment Measures

SLO	Student Learning Outcome	Assessment Method	Degree Delivery
Knowledge	Students will identify, describe, and explain the core knowledge for the Genetics & Genomics Graduate Program (genetics, genomics, bioinformatics, statistics, ethics, molecular biology).	Core knowledge will be assessed during the fall and spring semesters of the first year via written examinations and class assignments. The ability to integrate the combined knowledge from the courses of the first year will be tested during a comprehensive first-year qualifying exam that the students need to pass in order to be allowed to continue their graduate studies. The Academic Status committee evaluates the overall performance of all 1 st year graduate students and makes the final determination of each student's continuance in the program.	Campus
Knowledge	Students will identify, describe, and explain the discipline and research project-related knowledge necessary to complete their dissertation research.	Research methods and expertise are first assessed in laboratory rotations during the 1 st year and the ability of students to identify a dissertation mentor by the end of their 1 st year. During the entire graduate study, additional assessment of research knowledge will be made through written examinations and assignments in courses, and journal club participation and presentation. Discipline and research-focused knowledge will be assessed at the third-year qualifying examination, regular committee meetings of the student, and ultimately at the dissertation defense.	Campus
Skills	Students will demonstrate the ability to read, interpret, and critically analyze the published literature of	Skill in use of the literature will be assessed via journal clubs, which are mandatory during every semester throughout the tenure of the student. Presentation skills will be assessed through regular presentations at the weekly	Campus

	<p>their selected field. They will master the skill in presenting analysis of the literature in a formal, structured class-like setting.</p>	<p>program seminar (GMS 6290).</p>	
Skills	<p>Students will demonstrate the skill of the scientific method: formulating hypotheses based on their ability to explore and interpret primary literature, their own experimental observations, and those of others; designing a technically sound and up-to-date experimental plan with appropriate controls; executing the experimental plan in a technically proficient manner; interpreting the data; reformulating hypotheses; and ultimately in publishing the research results in peer-reviewed scientific journals and students' dissertations.</p>	<p>The scientific method will be assessed primarily via the student's committee at regularly scheduled committee meetings, the qualifying examination, and ultimately the dissertation defense. However, certain formal courses may include assessment of mastery of the scientific method in exercises and examinations.</p>	Campus
Professional Behavior	<p>Students will demonstrate knowledge of and adherence to ethical conduct in research.</p>	<p>Ethical research conduct will be covered initially during the 'Ethics in Genetics' core course (GMS 6221). Ethical questions and situations will also be included in class discussions at the weekly program seminar (GMS 6290) that all students are required to attend throughout the entire program.</p>	Campus

Professional Behavior	Students will demonstrate professionalism in their presentation of their own research results in oral and written formats.	Oral and written professional presentation behaviors will be assessed during the weekly program seminar (GMS 6290), by the student's dissertation mentor, the student's committee, the faculty instructors of the weekly journal club, and all associated faculty who contact the student during presentations such as research conferences. Students will also present at professional conferences and publish peer-reviewed scientific articles.	Campus
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C. Research

During their first year, all Genetics and Genomics graduate students take five required courses as well as conduct at least three laboratory rotations with faculty from at least two different colleges. Students formally begin their dissertation research after the end of the Spring semester of their first year. In addition to conducting original research for their dissertations, students are expected to publish peer-reviewed scientific articles, attend and present at national and international professional conferences, and develop a high-quality *curriculum vitae* necessary for securing a professional position.

Preparation: Genetics and Genomics graduate students take five core courses in advanced genetics and related fields during their first year in order to acquire the necessary knowledge to conduct cutting-edge genetics and genomics research. In the first semester, students take an advanced genetics course and an advanced statistics course. In the second semester, students take a genomics/bioinformatics/proteomics course and an advanced molecular biology course that build on the information they learned in the first semester. They also take an ethics course to provide the necessary ethical framework for conducting genetics and genomics research. Finally, students conduct at least three laboratory rotations in their first year to expose them to the range of genetics and genomics research being conducted at UF and to help develop their dissertation research projects. At the end of the first year, all students must identify one faculty member as their dissertation mentor under whose guidance they will conduct their dissertation research.

Students also participate in a program seminar every semester in which they are enrolled in the program (GMS 6290); the purpose of the seminar is to allow students to practice their presentation skills, acquire professionalization knowledge and skills, learn about various positions available to PhD students, and to encourage camaraderie, feedback, and networking with fellow students. Students also either attend the weekly UF Genetics Institute seminar or participate in one-credit journal clubs every semester in order to acquire specific and up-to-date knowledge in specific sub-fields of genetics and genomics.

From the end of their first year until their dissertation defense, students will conduct original research for their dissertations. Students are also expected to present papers at national and

international professional conferences and the program provides funding for travel to at least one domestic and one international conference.

In sum, the core courses, training and research opportunities described above provide students with the knowledge and skills necessary to complete their dissertation research from conceptualization through publication

D. Assessment Timeline

Use this Assessment Timeline template for your plan. Add or delete rows and columns to accommodate your SLOs and assessments.

Program Ph.D. in Genetics and Genomics

College of Liberal Arts and Sciences, College of

Medicine

Assessment SLOs	Assessment 1	Assessment 2	Assessment 3	Additional Assessment
Knowledge				
Core knowledge	1 st year core courses	1 st year comprehensive exam	Evaluation by Academic Status Committee	
Research methods and knowledge	Laboratory rotations	3 rd year qualifying exam	Dissertation defense	
Skills				
Literature analysis and presentation skills	Journal clubs	GMS 6290 Seminar in Genetics		
Scientific method and research design	Annual committee meetings	3 rd year qualifying exam	Dissertation defense	
Professional Behavior				
Ethical conduct	GMS 6221 Ethics in Genetics			
Oral/written professional presentations	Annual committee meetings	Conference presentations and scientific publications		

E. Assessment Cycle

Use this Assessment Cycle template for your plan. Add or delete rows as needed to accommodate your SLOs.

Assessment Cycle for:

Program Ph.D. in Genetics and Genomics

College of Liberal Arts and Sciences, College of
Medicine

Analysis and Interpretation:

May-June

Program Modifications:
Dissemination:

Completed by August 31
Completed by September 30

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge							
Core knowledge				X	X	X	X
Research methods and knowledge				X	X	X	X
Skills							
Literature analysis and presentation skills				X	X	X	X
Scientific method and research design				X	X	X	X
Professional Behavior							
Ethical conduct, safety regulations				X	X	X	X
Oral/written professional presentations				X	X	X	X

Note: Data collection for these assessments will begin in the 2012-2013 academic year.

F. Measurement Tools

Measurement tools involve a combination of methods. First year **knowledge SLOs** are measured by examinations in the five core courses, including written tests, for which letter grades are given. In addition, a final examination during the first year will test the knowledge acquired during course work. The performance in the final examination and the ability to identify a mentor for the dissertation research are assessed by the Academic Status committee in June of students' first year; possible evaluations are pass, eligible to retake the exam, or fail. **Knowledge SLOs** after the first year are measured by performance in the qualifying exam (taken in the fall of the 3rd year with possible evaluations of pass, eligible to retake the exam and fail) and the final dissertation defense.

Skills SLOs are measured by a combination of methods. First, students must receive passing grades in the weekly seminar, GMS 6290 (measured by a letter grade), and journal clubs (measured by a letter grade or satisfactory/unsatisfactory grade). Scientific method and research design capabilities are assessed by the dissertation committee through annual meetings; students' progress is measured as satisfactory or unsatisfactory. The performance in the third year qualifying examination is assessed by the dissertation committee and is measured by pass, eligible to retake the exam and fail. The same measurement will be used for the dissertation defense. Oral and written presentation skills will be assessed in the Genetics seminar series (GMS 6290), in journal clubs, and by the mentor and committee. Research papers and poster presentations are evaluated by the mentor and collaborating scientists.

Professional behavior SLOs will be assessed primarily by the dissertation mentor, the dissertation committee, and teachers. Knowledge of ethical conduct will be assessed by written examinations in the ethics course (GMS 6221) in the first year (measured by a letter grade) and the portion of the first year exam focused on ethics (measured as pass, eligible to retake the exam or fail). Further assessment of ethics conduct will be made by the dissertation mentor and committee. It will be the primary duty of the dissertation mentor and program graduate coordinators to encourage and monitor presentation at professional meeting and publication of peer-reviewed journal articles.

G. Assessment Oversight

Here, list the names and contact information of those who oversee the assessment process in your program. Add or delete rows as needed.

Name	Department Affiliation	Email Address	Phone Number
Connie Mulligan	Anthropology	cmulligan@ufl.edu	352-273-8092
Jorg Bungert	Biochemistry and Molecular Biology	jbungert@ufl.edu	352-273-8098
Patrick Concannon	Pathology	patcon@pathology.ufl.edu	352-273-8290

Appendix Figure 1. Ph.D. in Genetics & Genomics for SLO1, SLO2

Related resources are found at <http://www.aa.assessment.edu>

Program: Ph.D. in Genetics and Genomics

Year:

Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
First year evaluation (SLO1 Core Knowledge)	Students are required to pass the core courses with grades A or B				There is no particular rating, only pass or not pass.
	Students are required to pass the first year examination which consists of in class and take home examinations.				The Academic Status committee evaluates students with respect to their first year exams. The students can pass, partially pass, or not pass. Sections of the examination can be repeated.
Qualifying examination (SLO2 Scientific Method & Research Design)	Written proposal: Consists of a background section, preliminary data section, proposed research section, and a bibliography. Proposal will be evaluated based on clarity of writing, overall organization of proposal, and description of rationale and experimental strategy of the proposed research.				The qualifying examination consists of three parts that are rated separately and used by the dissertation committees to evaluate the students. Students can pass, conditionally pass (will retake the portion of the exam that was unsatisfactory), or not pass.
	Oral presentation: Should include background, preliminary data and presentation of proposal. The student should be able to present the research in a larger context.				
	Oral examination: The student should exhibit broad knowledge in the respective field of study.				
Final Defense (SLO2 Scientific Method & Research Design)	Written thesis, satisfactory progress in research goals and ability to present and discuss the work in a larger context.				Pass, conditionally pass, or not pass as determined by the dissertation committee.

