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## **Interdisciplinary Graduate Program in Genetics**

**November 2023**

Information contained in the accompanying pages is a summary of the procedures and curriculum requirements that apply to graduate students in the Interdisciplinary Graduate Program in Genetics.

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## **I. Introduction**

### **A. Greetings from the Program Director**

Welcome to the Interdisciplinary Graduate Program in Genetics. I am delighted that you have selected our program to pursue your PhD in Genetics. We are committed to providing you with a strong scientific foundation and helping you develop success skills that will allow you to achieve your career goals. This graduate student manual contains resources in the program and on campus that are available to you. In addition to these resources, you are always welcome to ask for assistance. With our guidance and your strong work ethic, we are confident that you will achieve your educational goals.

Approximately 2% of the US population holds a degree. Thus, deciding to pursue your PhD in Genetics is honorable and represents a significant step in your education. You will need to make a commitment to achieving this goal and understand that it will fully occupy your life for several years. You should be passionate about research and motivated to gain training in the best research practices. In addition to scientific practices, during the course of your PhD training you will learn many success skills such as how to critically evaluate data and communicate research to diverse audiences. The knowledge and skills that you gain will benefit you regardless of the career path you pursue after completion of the PhD. The training you will receive will prepare you for a career in academia, scientific industry, clinical trial design and management, teaching, patent law, government policy, science museum directorship, and many others. With countless career opportunities, the future is yours to discover!

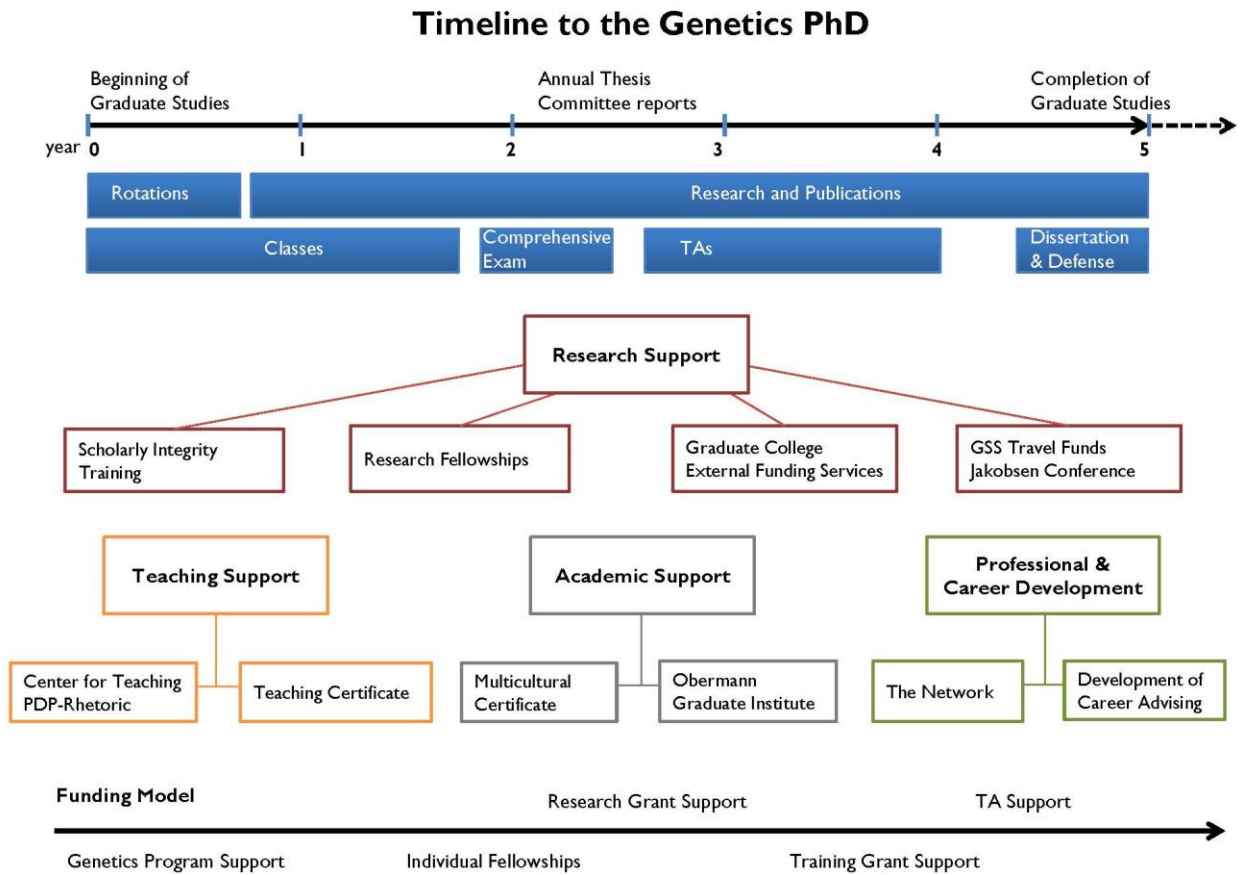
This manual is designed to help you navigate your path to a PhD. The flowchart on the following page, developed by the Graduate College, and adapted for the Interdisciplinary Graduate Program in Genetics, depicts some of the major steps and considerations you will encounter along the path.

The guidelines in this manual reflect the operations and requirements of the Interdisciplinary Graduate Program in Genetics, taking into consideration the Graduate College requirements and procedures. As an interdisciplinary program student, you will have an affiliation with your PhD mentor's primary department as well as the program. This arrangement will broaden your experiences and introduce some individual variation in the administration of students in the program. Regardless, this manual serves to standardize the procedures and requirements as much as possible. Please feel free to contact the program office or me with any questions or concerns along the path to your PhD.

I look forward to working with you,

Lori L Wallrath, PhD  
Director, Interdisciplinary PhD Program in Genetics  
Professor of Biochemistry and Molecular Biology

## B. Timeline to a PhD degree in Genetics



Aug 2014

## **II. Program Administration**

### **A. Contacts:**

#### **Program Website:**

<http://genetics.grad.uiowa.edu/>

#### **Lori L Wallrath, PhD, Program Director**

Professor, Department of Biochemistry and Molecular Biology  
3136 MERF

University of Iowa

Iowa City, IA 52242

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Office phone: 319 335 7920

#### **Bryan Phillips, PhD, Associate Director**

Professor, Department of Biology

200 Biology Building East

E-mail: [Bryan-Phillips@uiowa.edu](mailto:Bryan-Phillips@uiowa.edu)

Office Phone: 319-335-2071

#### **Rob DuBay, Program Administrator**

Genetics Interdisciplinary Graduate Program

354 Medical Research Center

University of Iowa

Iowa City, IA 52242

E-mail: [robert-dubay@uiowa.edu](mailto:robert-dubay@uiowa.edu)

Office Phone: 319-335-7748

#### **Abby Dalton, Program Associate**

Genetics Interdisciplinary Graduate Program

357 Medical Research Center

University of Iowa

Iowa City, IA 52242

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Office Phone: 319-335-6512

#### **East Side Office**

Rob DuBay works in the Biology Building on most Tuesdays. If you work on the East side of campus, and you need an appointment with Rob, he will gladly meet you in 314 BB.

## **B. Information You Need to Provide to the Program Office**

### **Educational Milestones**

*Students need to contact the Program Office (copy both Rob and Abby) at each of these milestones:*

- Anytime your name, address, home phone number, cell phone number, or office/lab contact information changes
- When you make rotation mentor choices
- When you begin and complete TAs (the primary contact for this is the chair of the Student Affairs committee, Jan Fassler, but you should inform the office staff, too)
- When you choose your mentor
- Anytime your funding source changes
- When you choose your committee members
- When you have changes in your committee membership
- When you need Abby to schedule committee meetings
- If you prefer to schedule your committee meetings independently, immediately upon scheduling the meetings
- As soon as you know the date of your comprehensive examination
- As soon as you know the semester in which you will defend your PhD thesis
- As soon as you know the date of your PhD thesis defense
- As an alumnus, whenever you change of position, institution, name, or contact information

### **Noteworthy Accomplishments**

*For website updates and to assist the Program Administration with other Genetics Program public relations, promotional, and training grant goals, please contact the Program Office when:*

#### **Students**

- You receive fellowships, grants, or other monetary awards
- You publish papers or book chapters
- You receive any honors or awards
- You receive any positive media attention

#### **Faculty**

- You receive moderate or high-level accolades of any sort
- You receive any award related to either teaching or research
- You receive noteworthy grants or other monetary awards
- You publish an article or book particularly noteworthy
- You receive any positive media attention
- Anything else you think may be announcement worthy

### C. First contacts according to topic

Although Rob and Abby are both happy to assist you or guide you in the right direction, the table below lists the task distribution for some common Program Office requests.

First Contact	Topic of request
Rob DuBay	Course registration
	Registration changes (adds, drops, and change of hours forms)
	Stipend questions
	Budget questions
	U-Bill questions
	Grant and fellowship questions
Jan Fassler and Rob	Rotation approval
	Lab affiliation
Abby Dalton	Rotation evaluations
	Room reservations
	Website updates and corrections
	Travel arrangements and reimbursements
	Meeting arrangements
	Invoice payments (e.g. restaurant or supply bills)
	Reports for committee meetings
	Poster printing
	Course evaluations
Abby and Rob	The educational milestones listed above
Lori Wallrath	Complaints/concerns/problems
Lori and Rob	Policy questions

### D. Additional Contacts

Office of the Ombudsperson

The Office of the Ombudsperson (3rd floor of Jefferson Building, 129 East Washington Street) provides conflict management and problem solving to the entire campus community. Their services are confidential, neutral, informal, and independent.

Appointments are suggested and can be scheduled by phone, 319-335-3608, or by email, [ombudsperson@uiowa.edu](mailto:ombudsperson@uiowa.edu). Meetings can take place in person or virtually.

Detailed information is available on their website: <https://uiowa.edu/ombuds/>.

### III. Financial Support (stipend, tuition, covered fees)

Graduate students in the Genetics Program at the University of Iowa are normally fully supported (stipend, tuition, covered fees) throughout their training in the Program, contingent on satisfactory progress, for a period that normally runs 4 to 6 years (total expected training time). Support commitments are reviewed annually and are normally



renewed each year if the student is making satisfactory progress. Whether the student is making satisfactory progress is determined by the student's mentor and Thesis Committee, the Graduate Affairs and Post-Comps Advisory Committees, and the Program Director.

Graduate student appointments include a stipend, which is subject to change each year commensurate with recommendations of the Research Advisory Committee of the College of Medicine. The stipend is set to be competitive with peer institutions. Stipends for students appointed to federal training grants (T32s, F31s, see below) are typically capped at levels below the University of Iowa biomedical stipend level, and in such cases, the difference is made up by the Program, mentor, and/or from other funds. For students appointed to the Genetics Training Grant (appointments normally run from 7/1 through 6/30), the stipend difference will be the responsibility of the mentor.

Tuition and covered fees include the following: (1) Base tuition and associated mandatory fees (arts & cultural events, mental health, professional enhancement fee for grad students, recreation fee, student activities fee, student health fee, student services fee, student union fee, international student fee [if applicable]); (2) All fees associated with core, required, and directly relevant elective coursework; (3) All fees associated with registration changes, credit hour changes, and other changes that occur in connection with required and directly relevant courses, except for late fees as noted below.

Fees that are NOT covered by the Program include: (1) key deposits; (2) fees associated with extracurricular or other elective courses not relevant to the program of study in Genetics; (3) international tax withholding fee; (4) English proficiency evaluations; (5) fines, penalties, parking tickets, and other such violation-associated fees; (6) mandatory fees associated with submitting a dissertation, including a degree application fee, a publication and binding fee, and a thesis fee; (7) fees and regalia rental charges associated with participating in commencement; (8) costs associated with providing the Program Office and your mentor with bound copies of final thesis and (9) late fees due to change of registration without prior notification to the Office.

Stipend, tuition, and covered fees are paid by either University and/or departmental funds, and/or by extramural sources. Graduate students receive support through the mechanisms listed below.

#### **A. Training Grants**

Students in the early years of training may be appointed to federal traineeships, including the Genetics Training Grant (T32). Such appointments are competitive and based on merit, and thus should be listed as honors on your C.V.

Eligible students may be appointed to the Genetics Training Grant. Applications for Trainee positions on the Genetics Training Grant are solicited annually by the Training Grant Primary Investigator, Genetics Executive Committee, and the Program Director. Students may be eligible for other T32 training grants, such as the Interdisciplinary Training Program in Pain Research and the Predoctoral Training in Pharmacological

Sciences. Applications to training grants normally require submission of specific materials by certain deadlines, and interested students are encouraged to consult with their mentor, the Genetics Program Director, and Program Directors of other potential T32 funded programs.

### **B. Genetics Program Graduate Research Assistantships**

Students in the first year of training may be appointed to graduate research assistantships and awarded tuition scholarships, from funds allocated to the Genetics Program by the Graduate College. On occasion, students beyond the first year may be appointed to such graduate research assistantships, at the discretion of the Director.

### **C. Other Graduate Research Assistantships**

Students may be appointed to a graduate research assistantship from a research grant or may receive funding from the department in which their research is being performed or may be awarded support from funds provided by the Graduate College.

### **D. Teaching Assistantships**

Students may be appointed to a graduate teaching assistantship from funds provided indirectly through affiliated departments and programs (e.g. Biology).

### **E. Other Means of Support and/or External Funding**

Students may receive support from other sources, including, Lulu Merle Johnson Graduate Fellowships, Graduate College Fellowships (Post Comprehensive Research Award, Summer Fellowship, Ballard Seashore Dissertation Fellowship, etc.), and a variety of nationally competitive NIH, NSF, and other individual awards.

Students are encouraged to solicit external funding. The University of Iowa provides numerous resources to assist students in the identification and pursuit of extramural funding. Two excellent consultation resources are: (1) The Graduate College Office of Graduate Success (<http://www.grad.uiowa.edu/external-grants-and-fellowships>), and (2) The Division of Sponsored Programs (<http://dsp.research.uiowa.edu/>). The Scientific Editing and Communication Core in the Carver College of Medicine is also a great resource for editing your fellowship applications.

<https://medicine.uiowa.edu/sercc/resources>

The Graduate College sponsors a Fellowship Incentive Program for UI graduate students (including students of the Genetics Program) and offers a stipend incentive to apply for some competitive grants and fellowships (see <https://grad.uiowa.edu/fellowship-incentive-program>).

Students who receive extramural fellowships of \$10,000 or more are eligible for a Supplement for External Fellowship from the Carver College of Medicine.

<https://medicine.uiowa.edu/biomed/admissions/ui-internal-fellowships>

## **F. Summer Registration**

Graduate students in the Program normally do not register for summer term. There are four exceptions to this: (1) first-year students, some of whom will take courses during their first summer in order to maintain progress in satisfying the required core and elective coursework, (2) students taking the Comprehensive Examination during the summer term, (3) students who are defending their PhD during the summer term, and (4) students who receive a Graduate College Scholarship which pays for Summer tuition. Outside of these exceptions, students will not register for the summer. (This policy is broadly in effect for all the bioscience-related programs at the University of Iowa.)

## **G. Tax Information**

To receive tax advice, consult a professional income tax preparer. Information regarding how your paycheck may be impacted by taxes can be found at this [University website](#).

Students should be aware that a tightening of IRS regulations has led to FICA withholding for summer stipend checks for students not registered for the summer term. This income loss can be substantial, depending on the student's particular circumstances.

For students who are on a training grant or other fellowship (e.g., T32, Post-comp fellowship, Summer fellowship, Ballard & Seashore, etc.), it is recommended that you talk with a tax professional to determine the impact your appointment may have on your tax obligation. Information regarding taxes of Fellowship payments can be found on this [University website](#).

If you are awarded Federal financial aid through the Office of Student Financial Aid, you should check with that office regarding the potential impact of training grant appointments and other fellowship's stipend and tuition on your financial aid award (loans, etc.). You may contact the office via email ([financial-aid@uiowa.edu](mailto:financial-aid@uiowa.edu)), telephone (319-335-1450) or walk-in (2400 UCC).

## **H. University Bills – Program Specific Set-up Requirements**

Students may NOT enroll in automatic U-bill payment methods offered by the University. Prohibited programs include payroll deduct of your U-bill from your paycheck and automatic payment from your checking/savings accounts. The Program Office does not have direct control of your tuition payments at all points in your academic career. Tuition payment delays are common for a variety of reasons.

*If you enroll in these programs, your tuition and stipend bill (sometimes over \$6,000) could be automatically deducted from your paycheck or your bank account. While the University of Iowa would eventually reimburse you for the tuition and fees deducted, most students do not have an extra \$6,000 available to cover these expenses.*

## IV. Curriculum

This section outlines required courses for Genetics PhD students, some example schedules, and policies and procedures. Courses listed under Electives, and under Seminars, should not be considered restrictive—if there is a course that you and your advisor believe would enhance your training in relation to your research, you can submit a request to the Curriculum Committee for the course to be considered for credit under one of these categories. The request should include the course number and title, the course description, a copy of the syllabus if available, and a note from your advisor indicating how this course will enhance your training. All students are required to register for GENE:6200: Current Topics in Genetics every Spring semester. Pre-comps students will receive a letter grade; post-comps students will be graded on a S/U basis unless they use this course to contribute to the seminar requirement (section D below). All students are required to register for GENE:6210: Seminars in Genetics every semester of their PhD training.

### A. Courses Required for all Genetics PhD Students

BMED:5207	FA	Principles of Molecular and Cellular Biology	3 sh
GENE:6150	FA	Genetic Analysis of Biological Systems <sup>1</sup>	3 sh
GENE:6200	SP	Current Topics in Genetics (graded for pre-comps students; counts toward the 5 required seminar hrs)	1 sh
GENE:6210	FA/SP	Seminars in Genetics <sup>2</sup>	1 sh
GENE:7191	SP even yr	Human Molecular Genetics <i>or</i>	3 sh
BIOS:4120	SP	Introduction to Biostatistics <i>or</i>	3 sh
BIOL:3172	FA/SP	Evolution <i>or</i>	4 sh
BIOL:3713	(SP 2024)	Molecular Genetics <i>or</i>	3 sh
BIOL:4333	SP	Genes and Development	3 sh
STAT:3510	SP	Biostatistics	3 sh
BMED:7270	FA	Scholarly Integrity/Responsible. Conduct of Research I	0 sh
BMED:7271	SP	Scholarly Integrity/Responsible. Conduct of Research II	0 sh

### B. Electives (7 sh chosen from the following courses)<sup>3,4</sup>

BIOL:3172	FA/SP	Evolution <sup>3, 4</sup>	4 sh
BIOL:3212		Bioinformatics for Beginners <sup>5, 6</sup>	3 sh
BIOL:3713	FA	Molecular Genetics <sup>3, 4</sup>	4 sh

<sup>1</sup> Must satisfy this requirement during the first year as a graduate student. In exceptional cases, credit will be allowed at the discretion of the Graduate Affairs Committee for an equivalent advanced course taken previously.

<sup>2</sup> Must be taken each semester as a graduate student. Does not count toward requirements in part D.

<sup>3</sup> Must be taken as a graduate student.

<sup>4</sup> The same course cannot be used to satisfy a requirement in part B and the elective requirement in part C.

<sup>5</sup> Not allowed as an elective if previous bioinformatics coursework has been taken.

<sup>6</sup> GENE:4213 Bioinformatics is preferred. BIOL:3212 Bioinformatics for Beginners may be taken if GENE:4213 is not being offered.

BIOL:4333	SP	Genes and Development <sup>3,4</sup>	3 sh
BIOL:4386	SP	Intro to Scientific Computing	3 sh
BIOS:7330	FA	Advanced Biostatistical Computing	3 sh
BIOS: 7700	SP	Special Topics: Machine Learning for Biomedical Data <sup>7</sup>	3 sh
BMB:4310	FA	Computational Biochemistry	3 sh
BME:5335	SP	Computational Bioinformatics	3 sh
CS:5430	SP	Machine Learning	3 sh
EPID:5241	SP	Statistical Methods in Epidemiology	4 sh
EPID:6250	FA odd yr	Genetics & Epidemiology	3 sh
FRRB:7001	SP	Molecular and Cellular Biology of Cancer	3 sh
GENE:4213	FA	Bioinformatics	4 sh
GENE:7191	SP	Human Molecular Genetics <sup>3,4</sup>	3 sh
IGPI:5450	FA	Machine Learning	3 sh
IGPI:6480	FA	Knowledge Discovery	3 sh
IMMU:6241		Writing a Scientific Proposal	2 sh
MICR:6268	SP	Biology and Pathogenesis of Viruses	2 sh
MMED:6220	FA	Mechanisms of Cellular Organization	3 sh
MMED:6226	SP	Cell Cycle Control	1 sh
MMED:6227	SP	Cell Fate Decision	1 sh
NSCI:7235	FA	Neurobiology of Disease	3 sh
PCOL:6225	SP	Growth Factor Receptor Signaling	1 sh
STAT:4580	SP	Data Visualization and Data Technologies	3 sh

**C. Seminars (5 sh chosen from the following courses) <sup>2,8</sup>**

ACB:6237	FA/SP	Critical Thinking in Biochemistry and Molecular Biology	1 sh
ACB:6238	FA/SP	Critical Thinking in Genetics	1 sh
ACB:6239	FA/SP	Critical Thinking in Cell Biology	1 sh
ACB:6248	FA/SP	Critical Thinking in Development	1 sh
ACB:6249	FA/SP	Critical Thinking in Cellular Physiology	1 sh
BIOL:6188	SP	Seminar in Writing in the Natural Sciences	2 sh
GENE:6200	SP	Current Topics in Genetics	1 sh
MMED:6280		Critical Thinking in Molecular Medicine	1 sh
PCOL:6015		Topics in Pharmacology and Neuroscience	1 sh

**D. Scholarly Integrity / Responsible Conduct of Research**

BMED:7270	Scholarly Integrity/Responsible Conduct of Research 1 (Fall semester)
BMED:7271	Scholarly Integrity/Responsible Conduct of Research 2 (Spring semester)

<sup>7</sup> For non-Biostatistics majors

<sup>8</sup> For purposes of this requirement, the same seminar course(s) cannot be repeated if taught by the same instructor(s) without special permission from the Curriculum Committee. Seminar course offerings are quite dynamic, so additional courses may be included each year at the discretion of the Curriculum Committee. Other seminar courses may be used to satisfy the seminar requirement when approved on a year-by-year basis by the Curriculum Committee

*Most students will enroll in these courses in their second year in the Genetics Program. MSTP students will enroll in these courses during their first year. During their first year all students must complete web-based training modules of Collaborative Instruction Training Initiative (CITI).*

### **E. ESL Requirement for Foreign Students**

All foreign students for which an English proficiency evaluation is required must pass to the “B” level on the “University Request for Evaluation for TA Certification” form by the end of their 2nd year. If the student does not, they will be making insufficient progress and can be terminated. They will need to petition to the Executive Committee to continue, but there will be no guarantee that they will be allowed to do so.

### **F. Individual Development Plan (IDP)**

The IDP is a tool to assist trainees with career and professional development. The IDP provides a platform for trainees to identify professional goals, assess competencies relevant to these goals, and develop a plan to achieve specific objectives related to their career goals. The trainee developed IDP becomes a platform for discussion with their Ph.D. mentor and the post-comprehensive exam Advising Committee and serves to foster communication important for the trainee’s professional development.

- Basic steps for Trainees
  - Conduct a self-assessment
  - Define your time commitment to various components of the graduate experience.
  - Assess your skills and interests.
  - Use outside resources to get feedback on your skills, strengths, and weaknesses. The following self-assessment tools provide a nice resource for this self-assessment.
    - <http://myidp.sciencecareers.org>
    - <https://www.grad.uiowa.edu/individual-development-plan>
  - Survey opportunities with mentor
  - Identify career opportunities that interest you.
  - Define differences between your current skills and additional skills needed for your identified career objectives.
  - Prioritize areas for development and discuss strategies for addressing objectives with your mentor.
  - Write/update your IDP, share it with your mentor, and review together
  - Identify specific skills that you need to develop in the short-term (e.g. 1 – 2 years)
  - Define strategies to develop each skill. Use the “SMART” principle:
    - **Specific** – is it focused and unambiguous
    - **Measurable** – define metrics to know whether the objective is achieved
    - **Action-oriented** – identify concrete steps to achieve the objective.
    - **Realistic** – is the strategy feasible.
    - **Time bound** – define a deadline.
  - Discuss draft with mentor

- Implement the plan, and revise as needed
- Review your plan with your mentor on a regular basis. Completion of the IDP is required on a yearly basis and after completion must be submitted to the Program no later than July 1.
- Revise as necessary.
- Basic steps for mentor
  - Be familiar with training requirements and opportunities.
  - Discuss opportunities with trainee.
  - Review your trainee's IDP and help revise. Provide written comments at the end of the document.
  - Establish regular periods for IDP review and revisions, as needed but at least annually.

## **G. Teaching**

### **1. Teaching Requirement**

Students are expected to gain experience in teaching and to establish their credentials in teaching excellence. Students are required to serve as a teaching assistant (TA) in at least two different courses during their graduate career with each assignment being 1/4-time or greater. At least one of these TAs must be considered a major assignment, while the other can be a minor assignment. The major and minor designations reflect how many aspects of teaching are incorporated into the TAship. MSTP students are required to perform one teaching assignment. It is recommended that students complete their teaching assignments during their 3<sup>rd</sup> and 4<sup>th</sup> year. The Graduate Affairs Committee determines which Teaching Assistantships fulfill this requirement; therefore, students must seek approval of TA positions through the Genetics student assistance web portal. Students who are ready to pursue a TAship may either contact the Graduate Affairs Committee Chair for suggestions or directly approach an instructor of a course they wish to teach. Regardless, all TAships must have approval of the Graduate Affairs Committee.

### **2. Office of Graduate Teaching Excellence**

Additional instruction in teaching, designed specifically for graduate students, is offered through the [Office of Graduate Teaching Excellence](#). The College of Education (COE) opened the Office of Graduate Teaching Excellence (OGTE) in Fall 2008. In partnership with the COE and the Graduate College, OGTE enables all University of Iowa doctoral students to complement their home discipline's curriculum and research training with the development of effective teaching skills. OGTE provides doctoral students with the knowledge and skills needed for success in the classroom when they accept academic positions upon graduation and/or after completion of post-doctoral training. OGTE's goal is to provide students who intend to enter academia with the tools and preparation to be effective teachers.

### **3. Graduate Certificate in College Teaching**

The Graduate Certificate in College Teaching is offered through the University of Iowa Graduate College. In some cases, Genetics Program students will be allowed to complete the certificate's requirements during their time in the program. See

Appendix III: Certificate in College Teaching at the back of this Graduate Student Manual for more information.

## **H. Laboratory Rotations**

### **Purpose**

The purpose of the rotation system is to: (1) provide students with information that will help them in their selection of a PhD mentor, (2) experience new research techniques, and (3) gain knowledge in a new research area. It is also intended to educate students about more than one approach to doing genetics research and provide them with personal contacts with as many of their peers and mentors as possible.

### **1. The Rotation System**

- a. All students will be required to rotate among three laboratories during their first year in graduate school.
- b. The choice of laboratories will be determined by the student in consultation with the Graduate Affairs Committee and is subject to approval by the head of the laboratory. The committee will encourage the student to speak to as many faculty members as necessary to make an informed decision that takes into account the student's likely research interests. Students will be encouraged, but not required, to do one rotation in a laboratory that may not be directly related to their probable areas of research interest.
- c. Students will register for research credit in each Fall and Spring semester (see Section I.4 for more information on summer registration). It is expected that students devote a significant portion of their time to their rotation research. Faculty members in whose labs the student rotates should establish in advance the method by which the student's work will be evaluated. This may include an oral presentation or written report. Since students will rotate in more than one laboratory each semester, the two faculty supervisors involved will consult with each other to arrive at a joint evaluation of the student's work.
- d. For students beginning work with the start of the Fall semester, the rotation schedule will be set up to permit ~12 weeks in each laboratory (e.g., August 24 – November 13; November 16 – February 12; and February 15 – May 7). The middle rotation includes 1 week for winter break (e.g. December 24 – January 1). Students should discuss with their rotation sponsor an acceptable arrangement for time away from the laboratory.
- e. For the first rotation selection, students should contact faculty based on their interview visit and reading of faculty profiles and websites, and publications listed in PubMed and Google Scholars. It is encouraged that students start contacting potential labs for the first rotation early in the summer. Students should choose the first rotation lab by August 1<sup>st</sup>.
- f. The second and third rotations should be scheduled approximately halfway through the prior rotation.



- g. Near the end of the third rotation, students will give a short presentation on the rotation of their choice. This need not be selected based on the laboratory of affiliation. Students can present from any of their three rotations, with the rotation mentor's approval.
- h. Alternative arrangements can be made (subject to approval by the Graduate Affairs Committee) for MSTP students or DSA fellows, for students with extensive graduate training prior to coming to Iowa, and for students who have a strong reason to begin their thesis research immediately.
- i. The student must affiliate with the laboratory of their new PhD mentor upon completion of the third rotation, at which time the PhD mentor will assume responsibility for the student's stipend support. (The student's eventual choice of research sponsor need not be limited to faculty members in whose labs the student rotated, and fourth rotations are possible. These exceptional cases are handled in consultation with the Program Director.)
- j. It is strongly recommended that Computational Subtrack students acquire some experience in a wet lab through rotations. However, this might have already occurred during an undergraduate or masters experience. If a Computational Subtrack student does not have wet lab experience, they should work with their mentor to gain the experience through collaboration.

#### **I. General Requirements (Hours, GPA, Summer Registration, etc.)**

1. Students are required to take 15 semester hours each semester during their first two years in the program. Additional genetics or other biology, chemistry, mathematics, and physics courses will increase the number of hours taken toward the degree. These courses should be selected by students after consultation with their advisers and/or thesis committees. Such course programs will be tailored to fit individual students' research interests, abilities, and career objectives. As additional courses become available, the Curriculum Committee will add them to the groups of electives. In addition, the student must meet Graduate College requirements (minimum of 72 hours of registration, plan of study, etc.).
2. The student must maintain a cumulative grade point average (GPA) of 3.0 in coursework. No research or independent study taken during a student's graduate training counts in the GPA for this purpose.
  - a. In calculating the GPA required for purposes of meeting the Program's 3.0 requirement, plus and minus grades will be considered. Grades received for courses below the 3000 level (in the instance of a student making up deficiencies) should not count in the student's GPA; if the grade is a D or F, the student is required to repeat the course. Students who repeat a course will have both grades counted in calculating the GPA required for purposes of meeting the Program's 3.0 requirement.
  - b. The student shall be placed on academic probation by the Graduate College if, after completing 9 hours of graded (A, B, C, D, F) graduate work at The

University of Iowa, the student's cumulative grade-point average falls below 3.00. A student will be returned to good standing when his or her cumulative grade-point average becomes equal to or greater than 3.00. If, after completing 9 more semester hours of graded (A, B, C, D, F) graduate work at this University, the student's cumulative grade-point average remains below 3.00, the student shall be dropped from the degree program and denied permission to reregister within any Graduate College doctoral degree program. The student may apply for and be accepted into a nondoctoral degree or certificate program.

3. All students must inform the Program Office if they make registration changes (i.e. add or drop courses) following the deadline provided by the program. After the semester begins, no student will be allowed to drop a course without authorization by the program.

4. Summer Registration

Graduate students in the Program normally do NOT register for summer term. There are three exceptions to this: (1) students on a Graduate College Fellowship which pays for summer courses, (2) students taking the Comprehensive Examination, (3) students who are defending their PhD during the summer term. Outside of these exceptions, students will NOT register for the summer. (This policy is broadly in effect for all biomedical science related programs.)

## J. Example Schedule

<b>First Year</b>		
<i>First semester:</i>	<i>sh</i>	<i>Notes</i>
GENE:6150 Genetic Analysis (GABS)	3	Required
BMED:5207 Principles of Molecular and Cellular Biology	3	Required
GENE:6210 Seminars in Genetics	1	Required
GENE:7301 Graduate Research in Genetics	8	Research rotation
Total:	15	
<b>Second semester:</b>		
<i>sh</i>	<i>Notes</i>	
BIOL:4333 Genes and Development	3	One of 4 courses to fulfill requirement
GENE:6200 Current Topics in Genetics	1	Required
GENE:6210 Seminars in Genetics	1	Required
BIOS:4120 Introduction to Biostatistics	3	One of 2 courses to fulfill requirement
MMED:6226 Cell Cycle Control	1	Elective
GENE:7301 Graduate Research in Genetics	7	Research rotation
Total:	15	

**International Students will fulfill ESL requirements during summer session**

### Second Year:

<i>First semester:</i>	<i>sh</i>	<i>Notes</i>
BIOL:3172 Evolution	4	Used here to fulfill elective
BIOL:5117 Topics in Molecular Genetics	2	Seminar elective
ACB:6238 Critical Thinking in Genetics	1	Seminar elective
BMED:7270 Scholarly Integrity/Responsible Conduct of Research 1	0	Required
GENE:6210 Seminars in Genetics	1	Required
GENE:7301 Graduate Research in Genetics	7	Research
Total:	15	
<i>Second semester:</i>	<i>sh</i>	<i>Notes</i>
GENE:7191 Human Molecular Genetics	3	Used here to fulfill elective
GENE:5173 Computational Genomics	3	Elective
GENE:6200 Current Topics in Genetics	1	Required
GENE:6210 Seminars in Genetics	1	Required
BMED:7271 Scholarly Integrity/Responsible Conduct of Research 2	0	Required
GENE:7301 Graduate Research in Genetics	7	Research
Total:	15	

## V. Genetics Program Subtrack: Computational Genetics

The explosion of big data science generated in the fields of genetics and molecular biology has generated a demand for sophisticated computational methods to extract meaningful information. Computational genetics has emerged as an important discipline in the biosciences fostering a connection between genetics and the computational sciences. To meet the needs of students interested in this area of

research, a subtrack was formulated within the Interdisciplinary Graduate Program in Genetics that leads to a PhD in Genetics with a specialization in Computational Genetics.

Due to the present shortage of researchers with computation biology/bioinformatics skills, the training of scientists whose primary career focus is computational biology/bioinformatics has been identified by NIH as an urgent need. This area includes the use of theory, computer implementation and application to the broad spectrum of molecular research in biological and biomedical fields including molecular sequence and structure, molecular function, cellular function, physiology, genomics, genetics, computational modeling, population biology, mathematical biology, and analysis of complex systems. The demand for bioinformatics professionals is pronounced among academia and biotechnology and pharmaceutical companies. The requirements are for individuals with substantial training in computer science and are well a foundational understanding of biology, including genetics. Thus, there is a significant demand for individuals who can communicate with both geneticists and computer scientists to accomplish impactful research goals.

*Essential details concerning the subtrack are summarized below. For more information or to express interest in becoming a Computational Genetics subtrack student, please contact the Program Director.*

#### **A. Computational Genetics Curriculum**

All students in the Computational Genetics subtrack, regardless of their disciplinary origin, are required to master a set of core concepts in: (1) genetics, (2) computing, (3) statistics, (4) bioinformatics tools and applications, and (5) responsible conduct. These requirements can be met by enrolling in upper-level undergraduate courses prior to matriculation or by a combination of undergraduate and graduate courses selected to address individual student needs after matriculation. Satisfactory completion of the prescribed courses is to be accomplished during the first two years of the program. Current topics courses in areas of direct impact to the thesis may be taken as electives in post-comp years.

- a. Genetics (9 sh) (assuming Fundamental Genetics and Biochemistry are taken as prerequisites)
  - i. Principles of Molecular and Cellular Biology (BMED:5207; 3 sh)
  - ii. Core Genetics (BIOL:3713, BIOL:3172, BIOL:4333, GENE:7191, or equivalent; 3-4 sh)
  - iii. Genetic Analysis of Biological Systems (GENE:6150; 3 sh)

- b. Computing (6-9 sh) (credit for previous classes available, see IV.M.a.2)
    - i. Programming Languages and Tools (CS:3210, may be taken multiple times)
    - ii. Other appropriate computing courses (e.g., Intro to R programming: BIOS:5510, CS:5110)
  - c. Statistics (3 sh)
    - i. Biostatistics (STAT:3510 or equivalent)
  - a. Bioinformatics Electives (12 sh)
    - i. Bioinformatics (BIOL:4213)
    - ii. Bioinformatics Techniques (BME:5320)
    - iii. Computational Genomics (GENE:5173)
    - iv. Data Visualization and Data Technologies (STAT:4580)
    - v. Advanced Biostatistical Computing (BIOS:7330)
    - vi. Knowledge Discovery (MSCI:4480)
    - vii. Machine Learning (CS:5430)
    - viii. Deep learning (IE:6380)
    - ix. Special Topics: Machine Learning for Biomedical Data (BIOS:7700)<sup>5</sup>
    - x. Regression and ANOVA for the Health Sciences (BIOS:5120)
1. Seminar and Scholarly Integrity (2 sh)
- a. Scholarly Integrity/Responsible Conduct of Research (BMED:7270 & BMED:7271)
  - b. Current Topics in Genetics (GENE:6200) taken at least twice

## B. Computational Genetics Example Schedules

### **Example 1. Students entering with a computational background**

(assuming Biochemistry already taken as prerequisite)

#### First Year

<i>First semester:</i>	sh	<i>Second semester:</i>	sh
BIOL:2512 Fundamental Genetics (as pre-req)	4	STAT:3510 Biostatistics	3
BME:5335 Computational Bioinformatics	3	BIOL:3172 Evolution	4
	0		
Required		Required	
GENE:6210 Seminars in Genetics	1	GENE:6200 Current Topics in Genetics	1
GENE:7301 Graduate Research in Genetics	7	GENE:6210 Seminars in Genetics	1
Total:	15	GENE:7301 Graduate Research in Genetics	6
		Total:	15

**Second Year:**

<i>First semester:</i>	sh	<i>Second semester:</i>	sh
xxxx:xxxx Elective in Bioinformatics	3	GENE:5173 Computational Genomics	3
GENE:6150 Genetic Analysis of Biological Systems	3	xxxx:xxxx Elective in Bioinformatics	3
BMED:5207 Principles of Molecular & Cellular Biology	3	GENE:6200 Current Topics in Genetics	1
BMED:7270 Scholarly Integrity/Responsible Conduct of Research 1		GENE:6210 Seminars in Genetics	1
GENE:6210 Seminars in Genetics	1	GENE:7301 Graduate Research in Genetics	7
GENE:7301 Graduate Research in Genetics	5	BMED:7271 Scholarly Integrity/Responsible Conduct of Research 2	0
Total:	15	Total:	15

**Example 2. Students entering with a genetics/life science background****First Year**

<i>First semester:</i>	sh	<i>Second semester:</i>	sh
GENE:6150 Genetic Analysis of Biological Systems	3	xxxx:xxxx Elective in Computing or Informatics	3
BMED:5207 Principles of Molecular & Cellular Biology	3	STAT:3510 Biostatistics	3
GENE:6210 Seminars in Genetics	1	GENE:6200 Current Topics in Genetics	1
GENE:7301 Graduate Research in Genetics	8	BIOL:3713 Molecular Genetics	3
Total:	15	GENE:6210 Seminars in Genetics	1
		GENE:7301 Graduate Research in Genetics	4
		Total:	15

**Second Year:**

<i>First semester:</i>	sh	<i>Second semester:</i>	sh
xxxx:xxxx Elective in Bioinformatics	3	GENE:5173 Computational Genomics	3
BME:5320 Bioinformatics Tech & Tools	3	xxxx:xxxx Elective in Bioinformatics	3
CS:3210 Programming Languages and Tools	3	GENE:6200 Current Topics in Genetics	1
GENE:6210 Seminars in Genetics	1	GENE:6210 Seminars in Genetics	1
GENE:7301 Graduate Research in Genetics	5	GENE:7301 Graduate Research in Genetics	7
BMED:7270 Scholarly Integrity/Responsible Conduct of Research 1	0	BMED:7271 Scholarly Integrity/Responsible Conduct of Research 2	0
Total:	15	Total:	15

**C. Computational Genetics Course Descriptions****(a) Core Group**

## 1) Genetics

BIOL:2512 Fundamental Genetics (4 sh): Pre-requisite coursework on nature, function of genetic material: classical, molecular, developmental aspects.

One of:

- BIOL:3172 Evolution 4 sh
- BIOL:4333 Genes and Development
- BIOL:3713 Molecular Genetics
- GENE:7191 Human Molecular Genetics

BMED:5207 Principles of Molecular & Cellular Biology (3 sh): Protein structure, genomes, nuclear organization, prokaryotic transcription, eukaryotic transcription, epigenetics, RNA processing, protein translation/modification, biomembranes, membrane trafficking, cell biology methods, cell migration, signaling, and cell cycle.

GENE:6150 Genetic Analysis of Biological Systems (3 sh): Genetic techniques and approaches for analysis of biological processes; comparison of strengths, weaknesses of a variety of experimental systems.

## 2) Computing

Demonstrated competency in at least one programming language [e.g. Java (ECE:3330) or C++ (CS:3620)]. Full credit for this course requirement (up to 6 sh of credit) can be approved for coursework already taken, at the discretion of the Graduate Affairs committee.

## 3) Statistics

STAT:3510 Biostatistics (3 sh) Statistical methods primarily for research in health sciences and related fields; descriptive statistics, estimation, test of hypotheses. A student may select a more advanced statistics course in coordination with their advisor, and with approval by the Curriculum committee.

## 4) Bioinformatics Electives

Elective in Genomics or Bioinformatics. These electives should be chosen in consultation with your advisor from available courses to strengthen your tools and techniques in computational genetics. See the listing in section IV.K (Computational Genetics Curriculum) for a list of potential/suggested electives. Other elective courses can be substituted, with approval of the Curriculum Committee.

## 5) Seminar and Scholarly Integrity

GENE:6200 Current Topics in Genetics (1 sh): Current research in a selected field of genetics: different topic each year; companion to a genetics seminar series.

BMED:7270 Scholarly Integrity / Responsible Conduct of Research 1 (0 sh)

BMED:7271 Scholarly Integrity / Responsible Conduct of Research 2 (0 sh)

## **VI. Genetics Program: MSTP Curriculum**

MSTP students affiliating with the Genetics PhD Program have some unique characteristics that call for specialized curriculum requirements. These students enter the Genetics program with 3 years of medical school coursework completed.

Compliant to the MSTP MOU regarding preclinical medical curriculum included in MSTP students' plan of study. The following courses are approved by the Graduate College for inclusion in total number of PhD hours required to graduate (72 sh).

Medical Gross Anatomy	5 sh	
Foundations of Medical Science	5 sh	
Mechanisms of Health and Disease I		5 sh
Mechanisms of Health and Disease II	5 sh	
Mechanisms of Health and Disease III	5 sh	
Mechanisms of Health and Disease IV	5 sh	
Grant Writing Basics: Predoctoral Applications	1 sh	

For these, the Genetics Program will allow 10 sh of credit. Thus, the core requirements will be considered as satisfying the Genetics Program electives.

Mechanisms of Health and Disease I	5 sh
Mechanisms of Health and Disease III	5 sh

The course requirements for the Genetics PhD Program will be satisfied by taking 9 additional sh of coursework relevant to genetics or computational genetics approved by the Graduate Affairs Committee on an individual basis.

The seminar requirement, normally 5 sh, will be satisfied by taking the Current Topics in Genetics course (GENE:6200) twice for graded credit. Thereafter, all students will register for this course each spring on a S/U basis. Grand Rounds will satisfy the remaining 3 sh of the seminar requirement. MSTP Students will also register for Seminars in Genetics (GENE:6210) each semester.

MSTP students are required to take the Scholarly Integrity / Responsible Conduct of Research 1 & 2 courses (BMED:7270 & BMED:7271).

## **VII. Establishing a PhD thesis committee and holding the first meeting**

The student's PhD thesis committee members are typically selected and approved by the end of the second academic year in the program (May 15<sup>th</sup> of second year). The committee will be chaired by the research adviser, who will not take part in the comprehensive examination.

Four of the five PhD thesis committee members must be members of the Interdisciplinary Graduate Program in Genetics, and one member must be a tenure-track University of Iowa Graduate Faculty that is not a member of the Interdisciplinary Graduate Program in Genetics. To represent a reasonable diversity of research interests, no more than three members may be



from any one department. In case of PhD thesis committees with more than five members, the limitation of no more than three members from any one department remains.

The research adviser does not participate in any aspect of the comprehensive examination. Instead, an additional ad hoc member must be chosen from the Genetics Program Faculty to participate in the comprehensive exam in place of the PhD research adviser. The proposed composition of the PhD thesis committee and the comprehensive exam committee must be submitted to the Graduate Affairs Committee for approval.

The student must schedule a pre-comp PhD thesis committee meeting approximately six months prior to anticipated date of the comprehensive exam (If possible, the ad hoc member should attend as well.) This meeting is typically before the end of the second year in the program (May 15th). The thesis committee meeting will be chaired by the PhD thesis adviser. In preparation for this meeting the student will submit the completed thesis proposal to the committee (see details below). The thesis proposal will have significant input from the thesis advisor. This meeting, and the thesis proposal itself, will NOT be evaluated as part of the comprehensive examination. Rather, this meeting will achieve several major goals. First, it will encourage the student to think about the thesis project early in their training. Second, it will allow the student to practice writing a proposal (with adviser's help) and to present it to the committee. Third, it will inform the comprehensive examination committee of the thesis topic, so this committee can make an informed decision regarding relatedness of the comprehensive examination proposals. Fourth, it can form the basis of an individual fellowship application, which is strongly encouraged.

It is highly recommended that the thesis proposal is prepared in the format (and on actual forms, if available) of a doctoral fellowship application appropriate to your research and eligibility. This will serve the purpose of the thesis proposal AND it will facilitate submission of the fellowship application after polishing in response to your thesis committee feedback. Length of this proposal is 20 double-spaced pages, 11-point Arial font, not including figures and references, OR as dictated by the fellowship application instructions. The thesis proposal should be distributed to the thesis committee two weeks prior to the scheduled meeting.

## **VIII. The Comprehensive Examination**

### **A. Requirements for the Timing of the Comprehensive Examination**

If a student entered the program in either 2021, 2022, or 2023, they have the option of selecting either the prior or new timeline and have either an off topic or semi-off topic proposal.

#### **1. Prior Timeline**

Graduate students who initially enrolled in the program at the start of a summer session or a fall semester prior to 2024 can take the comprehensive examination (defend their proposals) by January 15<sup>th</sup> of their third year in the program. Students who fail to meet this deadline may not be eligible to continue in the program. For students who enroll initially in a spring semester, the deadline will be six months after completing four full semesters of graduate work (not including summer sessions). Students will schedule their comprehensive exam in consultation with their research advisor, typically during their second year of their training in the program and inform the Program Office of

their intentions to take the exam by September 16. The student must notify the Program Office of the date of the exam at least three weeks prior.

**Required deadlines for PRIOR timeline:**

These are the required deadlines to be met PRIOR TO JANUARY 15<sup>th</sup> of your THIRD year.

**Comprehensive Exam Schedule**

There is a **60-day limit** from date student is notified of accepted abstract to final submission. Students must work with program office and their committee to make these deadlines.

Timeline				
Dates below are the last possible dates for each step (assuming propositions are accepted with no revisions required).*				
Sept. 16	Oct. 21	Oct. 28	Minimum 2 weeks before oral exam	Jan. 15
Notify Program Office of exam plans and complete Plan of Study	Submit abstracts to Committee	Student notified of committee decision in 1 week	Submit final proposals to Committee by the end of December	Oral Exam Scheduled by January 2

\*If a date falls on a weekend, then the next Monday is the deadline.

**2. New Timeline**

Graduate students who initially enrolled in the program at the start of the 2024 fall semester or after need to take their comprehensive examination (defend their proposals) by the last day of finals week of their second year in the program. Students who fail to meet this deadline may not be eligible to continue in the program. For students who enroll initially in spring semester 2024 or a subsequent spring semester, the deadline will be at the end of four semesters (not including summer semester). Students will begin their comprehensive exam process in consultation with their research advisor, typically by the end of their third semester of their training in the program and inform the Program Office of their intentions to take the exam by the first day of Spring semester of their second year in the program. The student must notify the Program Office of the date of the exam at least three weeks prior.

**Required deadlines for NEW timeline:**

These are the required deadlines to be met PRIOR TO THE LAST DAY OF FINALS WEEK of SPRING SEMESTER of the SECOND YEAR.

**Comprehensive Exam Schedule**

There is a **60-day limit** from date student is notified of accepted abstract to final submission. Students must work with program office and their committee to make these deadlines.

Timeline				
Dates below are the last possible dates for each step (assuming propositions are accepted with no revisions required).*				
First day of Spring semester	February 19	March 26	April 26	Last day of finals week
Notify Program Office of exam plans and complete Plan of Study	Submit abstracts to Committee	Student notified of committee decision in 1 week	Submit final proposals to Committee two weeks prior to oral defense	Oral Exam scheduled by

\*If a date falls on a weekend, then the next Monday is the deadline.

## **B. Requirements for Membership of Comprehensive Examination Committee**

1. The comprehensive examination committee shall consist of five members who will be the same as members of the thesis committee, with the exception that the thesis adviser is replaced by an ad hoc member on the comprehensive examination committee. Four of the comprehensive examination committee members must be members of the Interdisciplinary Graduate Program in Genetics and one member must be a tenure-track University of Iowa Graduate Faculty who is not a member of the Interdisciplinary Graduate Program in Genetics. To represent a reasonable diversity of research interests, no more than three members may be from any one department.
2. The ad hoc member will be chosen by the student and the student's PhD thesis adviser with the approval of the Graduate Affairs Committee (GAC). The ad hoc member ordinarily will not be a permanent member of the thesis committee but can remain so after the comprehensive exam if desired. Students must leave sufficient time (at least two weeks) to achieve GAC approval of their committee membership prior to the pre-comps meeting.
3. The student and their thesis adviser will select one member of the comprehensive examination committee to act as chair during administration of the comprehensive examination. It is recommended that a faculty member familiar with the Interdisciplinary Graduate Program in Genetic comprehensive exam procedures be chosen as the chair.
4. The proposed comprehensive examination committee, with ad hoc member and chair designated, will be submitted to the Graduate Affairs Committee for approval.

The comprehensive examination committee must be in place prior to submission of propositions.

The thesis adviser will not be present during administration of the comprehensive examination.

## **C. Comprehensive exam proposals**

### **1. Off topic**

The chair of the comprehensive exam committee will meet with the student to discuss the examination format. The student will prepare two original research propositions (up to four double-spaced pages, not including figures and references) on topics chosen from the literature unrelated to their major research interest and will submit them to the committee chair. "Unrelated" is to be interpreted by the comprehensive examination committee using the following considerations. A typical thesis project involves three major properties:

1. The biological problem or process
2. The research organism
3. The techniques or methodological approaches

Ideally, the comprehensive exam proposition topics will differ from the thesis project in all three of these properties. However, it is suggested that at least two of these be different. Final determination of what is sufficiently unrelated will be left to the comprehensive examination committee, and the student may consult with the comprehensive exam committee chair for more specific guidance in preparation of the propositions.

## 2. Semi-off Topic

The chair of the comprehensive exam committee will meet with the student to discuss the examination format. The student will identify two semi-off topic propositions, one of which is chosen by the committee to be developed into a full proposal for the exam. Semi-off topic means that at least one of the following criteria must differ substantially from the student's proposed PhD thesis research: (1) specific biological problem or process, (2) organism, and (3) technique or methodology. Final determination of what is sufficiently semi-off topic will be made by the comprehensive examination committee, and the student may consult with the comprehensive exam committee chair for more specific guidance in preparation of the propositions. Questions during the oral exam are not limited to the proposal and can include general topics of genetics.

### D. General Guidelines for the proposal

The chair will distribute the propositions to the committee. After reviewing the propositions (one week deadline), the student will be notified if the abstracts are accepted and if so, which one of the propositions is to be expanded into a detailed proposal to serve as the basis for the comprehensive examination. If one of the two propositions is deemed unsatisfactory, then the student must improve this proposition to meet the committee's standards within a time frame specified by the committee. If both propositions are deemed unsatisfactory by the examination committee, then the student is required to prepare two new propositions within a time frame to be specified by the committee. If the second set of propositions are also deemed unsatisfactory by the examination committee, then this will be considered as a fail for the student and the student must wait 4 months prior to the second and last attempt at the comprehensive examination (see section G-5).

The basic ideas and concepts in the written proposal should be original thoughts from the student. However, the student is free to consult with faculty members and other graduate students concerning the details of certain techniques or the feasibility of a particular approach. The input of faculty should be limited to factual information. The thesis adviser should not be involved in preparation of the written proposal. In addition, students are encouraged to organize "mock oral comprehensive exams" involving other graduate students and postdoctoral fellows as part of the preparation process.

Since the proposal is a major component of the examination, it should be of the highest quality. A poor proposal can (in exceptional cases) be rescued by a good oral examination. In preparation of the full proposal, the student must meet the two-week timeline to allow the committee sufficient time to consider the proposal. Failure to do so will result in failure of the comprehensive exam.

*There is a sixty-day limit between the notification of which proposition to expand, and the final submission of the complete Comprehensive Examination proposal. This is a maximum limit and can often be done in a shorter time.*

Full proposals will be developed in the format of any national grant format (typically an NIH F30/31/32, NSF, AHA) or a 20-page double spaced limit (excluding figures and references). Proposal must be accompanied with a one-page cover letter describing development of the proposal, including the mentor's contributions.

### 1. Proposal Preparation

The construction of an experimentally feasible research proposal is a test of both imaginative and critical ability of the candidate. The following statements provide additional information and direction for a graduate student submitting a proposal for the comprehensive examination.

The proposal should include the following:

- a. A concise summary of the pertinent information upon which the proposal is based, adequately but not exhaustively referenced. This summary should logically develop a point of view to be used in stating the hypothesis. It should not contain lengthy quotations from the literature.
- b. A concise and precise statement of the proposal.
- c. A concise statement of the experimentation to be performed including the purpose of each experiment, a general summary of protocol, and interpretation of the anticipated results.
- d. A statement of the significance of the project.

The maximum length of the proposal is 20 pages, double-spaced with 11-point Ariel font, excluding figures and references.

**Proposals will be submitted to the examination committee at least two weeks prior to the scheduled date of the examination.** An oral examination will be conducted on whatever is submitted; there is no opportunity for revision.

#### **E. Criteria for Evaluation of the PhD Comprehensive Examination**

- *Clarity of written proposal:* Is it easy to see what is being presented? Is the background information clear enough to understand the problem? Is the proposed solution to the problem developed in a logical sequence? Are highly specialized terms or abbreviations explained?
- *Importance of proposal:* Is the problem relatively minor or would its solution result in an important contribution? Is the problem so narrowly conceived that only a few approaches are possible to solve it? Is the project too vast to be solved by alternative sets of experiments? What is the value of a solution to the problem? What are the biological or practical implications of the research?
- *Creativity:* Is the approach entirely new in respect to the problem? Are the ideas novel and imaginative or ordinary? Does the solution require the development of a new technique or instrument or a new way to use existing equipment? *Knowledge of the subject and methods:* Does the student understand the genetics of the problem area; what is known and what is not? Is the student's knowledge superficial or is it relevant to solving the problem? Is the student sufficiently aware of the limitations of the methods used to solve the problem?
- *Suitability of methods:* Are the proposed methods the best ones? What are alternatives? Does the student recognize experimental difficulties in the selection or use of methods? Would these methods be suitable for a solution to the problem in a reasonable period of time?
- *Reasoning and data interpretation:* Can the student interpret all reasonable data so as to come to a conclusion or to suggest another experiment? Have alternative interpretations been considered sufficiently? When presented a set of data, can the student interpret it properly?
- *Ability to explain difficult or unusual concepts:* This pertains to the student's oral performance rather than the written proposal which was evaluated according to criteria listed above. Is the student understandable or confusing in explaining difficult material?
- *Knowledge of material peripheral to the proposition:* Are there serious gaps in the student's knowledge of genetics when questioned about material somewhat removed from the proposition?

## **F. Oral Comprehensive Examination**

For the PRIOR timeline, the oral comprehensive examination must be completed no later than January 15<sup>th</sup> of the third year. For the NEW timeline, the oral examination should be taken no later than the last day of finals week of Spring semester of the second year. The length of the oral exam is approximately two hours and will cover the full proposal prepared for this purpose, and any other areas of foundational topics in genetics. Following successful completion of the comprehensive examination and courses in the plan of study, the committee will certify the student to the program as a candidate for the PhD degree.

A formal report of the student's performance on the comprehensive examination will be placed in his/her permanent file. This report should be sufficiently detailed and approved by all members of the committee for the first and, if applicable, the second attempt (see section G-5).

## **G. Protocol for Taking the Oral Comprehensive Examination**

1. It is the responsibility of the student to notify the Genetics Program Office of the intention to take the comprehensive examination by September 16 (Prior Timeline) or the first day of Spring semester (New Timeline). The student must also notify the Program Office of the exam date at least three weeks prior to the exam date. The Program Office completes and submits the Plan of Study along with the Request for Doctoral Comprehensive Examination to the Graduate College.
2. If desired, it is the responsibility of the Comprehensive Examination Committee Chairperson to obtain the student's file (from the Program Office), in advance of the examination. The student's file must be kept confidential.
3. Examinations are considered passed when at least 2/3 (66%) of the committee evaluates it as satisfactory. Based on a five-person committee, four of the five committee members must vote positively ("satisfactory") that a student has passed the examination for the student to receive a passing grade. If two members vote unsatisfactory, the grade reported to the Graduate College will be an "unsatisfactory,,". If one member votes "reservations" and one member votes "unsatisfactory", the grade reported will be reservations. See Section XII. Doctor's Degrees of the Graduate College Manual of Rules and Regulations for additional explanation.
4. If the student receives "reservations". The Comprehensive Exam Committee will set the specific conditions required for lifting the reservations and the time limit within which these conditions must be met. The conditions and time limits must be presented to the student in writing and must be sent by the Program Office to the Graduate College no more than 3 working days after the exam is taken. If the conditions are not met satisfactorily in the specified time, the comprehensive exam decision will be "unsatisfactory", and will be considered a fail for the student. It is the Comprehensive Exam Committee Chairperson's responsibility to notify the Program Office if the reservations have been satisfactorily met within the specified timeline. This result must be sent by the Program Office to the Graduate College.
5. If a student fails the Comprehensive examination, the student may be allowed, with the advisor's support and approval of the program, to begin the comprehensive exam process again. A second attempt cannot be started until a minimum of four months has passed from the date of failure, which is according to the University's policy.
6. For the second attempt, an additional committee member will join the comprehensive examination committee and is expected to be an active participant during the oral comprehensive examination;

however, they will not have a formal satisfactory/unsatisfactory vote. Thus, with a five-person voting committee, two “unsatisfactory” votes in this second attempt will be considered an “unsatisfactory” or one vote of “reservations” and one vote “unsatisfactory”, will be considered reservations. and the grade reported to the Graduate College.

This additional member will be assigned by the Director of the Interdisciplinary Graduate Program in Genetics and should be a member of the Graduate Affairs committee (GAC) to ensure that similar evaluation criteria among students. The limitation of no more than three members from any one department is maintained when considering this sixth, ad hoc, comprehensive examination committee member.

A student must pass the comprehensive exam by the second attempt to remain in the PhD program.

## **H. Additional Recommendations in Preparing for the Oral Comprehensive Examination**

The student is expected to know the most important literature related to the proposal. One recommendation is to identify the 10 most important papers from your reference list and make notes regarding the salient information in those papers, so that you can quote (author/date) as you respond to questioning during your oral exam. For the remaining papers, identify key points of information that are relevant to your proposal.

2. Refresh your foundational knowledge of genetics by reviewing a standard textbook in Genetics. You should already know these principles, but it may have been some time since you studied them, and this approach will make them more accessible to you when you are on your feet in front of the committee. You will not remember everything, but you should be able to remember some important basics and demonstrate a working knowledge of them.
3. The subject of the oral exam will be based on your written comprehensive exam proposal (not your thesis proposal) and can include questions on foundations of genetics.

## **I. Responsibilities of the comprehensive examination committee chair**

1. Read and understand the comprehensive exam procedures outlined in this hand book.
2. Provide consultation and general direction about procedures, deadlines, formats, and relatedness to thesis.
3. Refrain from providing guidance about specific experiments proposed, though some general guidance as to proposed approaches or scope may be provided.
4. Provide consultation regarding changes to the proposal after the proposition has been approved. The student should base their proposal on the proposition, with flexibility to make minor changes in specific

proposed experiments. However, sometimes a more major change is required, usually based on further reading, to generate a defensible proposal — these should be discussed with the committee chair.

Enforce submission deadlines, receive submissions from the student, circulate proposals to committee members, assimilate feedback from committee members, and correspond with the student throughout the process.

Ensure that committee members are aware of electronically reporting their evaluation (pass, fail, or reservations) through the electronic workflow system.

## **IX. The PhD thesis**

### **A. The PhD thesis committee**

As described above, the PhD thesis committee, which is chosen and approved by the end of the second academic year in the program (May 15<sup>th</sup> of second year), will be chaired by the research adviser.

Four of the five thesis committee members must be members of the Genetics PhD Program, and one member must be a tenure-track University of Iowa Graduate Faculty that is not a member of the Interdisciplinary Graduate Program in Genetics . To represent a reasonable diversity of research interests, no more than three members may be from any one department.

The names of the proposed thesis committee members must be submitted to the Graduate Affairs Committee for approval.

The first committee meeting will be held before the end of the second year, typically by May 15<sup>th</sup>). In preparation for this meeting, the student, with the help of the adviser, will prepare the thesis proposal and distribute it to the thesis committee. (See Section IV.A. for more information about preparation of the thesis proposal.) During this meeting the thesis research plan will be presented and the format for the upcoming comprehensive exam will be discussed. The ad hoc member chosen to replace the thesis advisor on the comprehensive exam committee, will normally attend this meeting.

The thesis committee serves as an advisory body for preparation of the thesis. The thesis committee's responsibilities are as follows:

- 1.To assist the student in deciding on a plan of study.
- 2.To meet with the student at least annually to review progress in research (and courses) and provide a written report to the Graduate Affairs Committee (copy of the report should be sent to the student).
- 3.To administer the oral dissertation examination (thesis defense) upon completion of all other degree requirements.

The student, thesis advisor or thesis committee may request a meeting at any time.



## B. Protocol for the PhD thesis examination

1. It is the responsibility of the student and research adviser to notify the Genetics Program Office of the place, date, and hour of the Thesis Examination and to provide a thesis title 4-6 weeks prior to the exam date. The Program office must submit the Request for Final Examination and the thesis title to the Graduate College *at least* 3 weeks prior to the thesis exam.
2. The student must give the final draft to all members of the thesis committee at least **2 weeks** before the final examination. Failure to meet this deadline may require re-scheduling the final examination so that all committee members have at least two weeks to read the thesis.
3. When a thesis chapter includes work from others, it is the responsibility of the student and research adviser to include an introductory page indicating the specific contribution of the student. This is particularly important when the work is, or is prepared to be, a published article.
4. Although the Genetics program does not establish a firm minimum number of publications as requirement to be awarded the Ph.D. degree, it is the expectation of the program that all students will have their thesis research published in peer-reviewed journals. When no thesis-related research has been published or submitted for review at the time of the thesis defense, the research advisor and thesis committee should include a brief description of the causes for this anomaly to the program office together with a final copy of their dissertation.
5. The final PhD examination consists of a formal seminar presented to the public, including opportunity for questions, comments, and discussion. The seminar will be followed by a private meeting with the thesis committee for the final thesis defense.
6. The PhD degree is not awarded until the thesis is deposited with the Graduate College and signed by the thesis committee with all required revisions being completed before this signing.
7. **Graduates of the Interdisciplinary Graduate Program in Genetics are required to submit a final printed copy of their dissertation to the Genetics Program office.**

### Thesis Exam Schedule

4-6 months prior to exam	4-6 weeks prior to exam	2 weeks prior to exam
Meet with Thesis Committee	Notify Program Office of date, time, place and thesis title	Submit final draft of thesis to the Thesis Committee

## X. Dismissal of graduate students from Interdisciplinary Graduate Program in Genetics

### A. Committee responsibilities

Two committees are responsible at different stages for the primary review of the progress of individual graduate students. These are initially the Graduate Affairs Committee and subsequently the student's thesis committee. The Graduate Affairs Committee will also be

responsible for advising the student and reviewing the student's progress if at any time it becomes necessary for the student to form a new thesis committee.

## **B. Procedures**

If, in the judgment of the responsible committee, the student is not making satisfactory progress toward the PhD degree, the procedure shall be as follows:

1. The student will be advised by the committee of potential dismissal and will be given an opportunity to meet with the committee and defend his/her work. Following any such meeting the committee will forward to the Director and to the student its written conclusions and recommendations. These recommendations may be for no action, for a probationary period to be followed by a new review, or for dismissal.
2. If the committee recommends dismissal, the Executive Committee must review the matter with the student and with the recommending committee. For example, the Executive Committee could resolve some cases by helping the student form a new Thesis Committee. Any member of the Executive Committee who participated in the original recommendation shall abstain in subsequent decisions.
3. If, after the review of the Executive Committee, the student continues to believe that dismissal is improper, the student may request in writing that an ad hoc Appeals Committee be established to consider the case. In this request, the student will nominate five faculty members and two graduate students in the Interdisciplinary Graduate Program in Genetics for the Appeals Committee.
4. From among those nominated, the Executive Committee shall appoint three faculty members to the Appeals Committee and designate a chairperson. The Executive Committee shall also appoint one of the nominated graduate students to be a reviewer who will meet with the Appeals Committee in all proceedings but will not vote.
5. The Appeals Committee chairperson shall convene the committee promptly. The committee will give the student an opportunity to discuss his/her grievances with it and will review all pertinent materials.
6. Upon completion of its review, the Appeals Committee shall communicate its findings and decision in writing to the student and to the Executive Committee. These reports should include the major considerations in the decision.

*Note: This procedure does not apply to an appeal of a decision on passage or failure of the comprehensive examination or PhD Thesis defense.*

## **XI. Best Practices for Graduate Students and their Research Advisors**

The progress, development, and success of a graduate student hinges on the commitment of both the student and the research advisor. Basic principles of best practices in mentoring and graduate student life appear in the two lists that follow. Graduate students should be aware of what is necessary for their success and their advisors likewise should be aware of practices that promote their students' best interests.

Although the concepts of commitment and responsiveness underlying the lists of expectations apply to all disciplines, the specifics of these principles vary considerably among the biological sciences, physical sciences, social sciences, and humanities. The following guidelines are generally construed and are generally appropriate for students in the Genetics Program, but not every detail will apply to every student.

#### **A. Expectations of Graduate Students**

1. A graduate student has the primary responsibility for successful completion of his or her degree. A graduate student should be committed to his or her graduate education and should demonstrate this by efforts in the classroom and in research. A graduate student is expected to maintain a high level of professionalism, self-motivation, engagement, excellence, scholarly curiosity, and ethical standards.
2. A graduate student should meet regularly with the research advisor and provide updates on the progress and results of ongoing research.
3. A graduate student should be knowledgeable of the policies and requirements of the graduate program, the graduate college, and the institution. The student should strive to meet these requirements, including teaching responsibilities.
4. A graduate student should work with the research advisor to develop a thesis/dissertation project. This will include establishing a timeline for each phase of the work. The student should strive to meet the established deadlines.
5. A graduate student should work with the research advisor to select a thesis/dissertation committee. The student should meet with this committee at least annually (or more frequently, according to program guidelines) and be responsive to the advice of and constructive criticism from the committee.
6. A graduate student should discuss policies on authorship and attendance at professional meetings with the research advisor. The student should work with the advisor to submit all relevant research results that are ready for publication in a timely manner prior to graduation.
7. A graduate student should attend and participate in meetings, seminars and journal clubs that are part of the educational program.
8. A graduate student should seek opportunities for career enhancement, including individual fellowships. The student should work with the research advisor in the preparation and submission of the fellowship applications.
9. A graduate student should contribute to maintaining a research environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment.

10. A graduate student must participate in the institution's Responsible Conduct of Research Training Program and practice those guidelines in conducting thesis/dissertation research.
11. A graduate student should discuss policies on work hours, sick leave and vacation with the research advisor or graduate director. The student should consult with the advisor in advance of any planned absences.
12. A graduate student should acknowledge primary responsibility to develop a career following the completion of the doctoral degree. The student should seek guidance from available resources, including the research advisor, the post-comps advising committee, career counseling services, thesis/dissertation committee, and any other mentors.
13. A graduate student should comply with all institutional policies, including academic program milestones. The student should comply with both the letter and spirit of all best practices and policies of the institution.

#### **B. Expectations of Research Advisors**

1. The research advisor should be committed to the education and training of the graduate student as a future member of the research community.
2. The research advisor should meet one-on-one with the student on a regular basis. The advisor should provide timely feedback on the student's written work to facilitate ongoing progress on the thesis/dissertation.
3. The research advisor should be knowledgeable of the requirements and deadlines of his/her graduate program as well as those of the institution, including teaching requirements and human resources guidelines. The research advisor should guide the student in these areas to ensure academic and professional success of the student.
4. The research advisor should help to plan and direct the graduate student's project, set reasonable and attainable goals, and establish a timeline for completion of the project. The research advisor should anticipate conflicts between the interests of externally funded research programs and those of the graduate student and should help keep these interests from interfering with the student's thesis/dissertation research.
5. The research advisor should help a graduate student select a thesis/dissertation committee. The advisor should help assure that the committee meets at least annually (or more frequently, according to program guidelines) to review the graduate student's progress.
6. The research advisor should discuss authorship policies regarding papers with the graduate student. The advisor should acknowledge the graduate student's contributions and work with the graduate student to present and publish his/her work.

7. The research advisor should encourage the graduate student to attend scientific/professional meetings and make an effort to secure and facilitate funding for such activities.
8. The research advisor should encourage the student to seek appropriate individual fellowships and work with the student in the preparation and submission of the fellowship applications.
9. The research advisor should provide an environment for his/her graduate students that is intellectually stimulating, emotionally supportive, safe, and free of harassment.
10. The research advisor should discuss intellectual policy issues with the student regarding disclosure, patent rights and publishing research discoveries.
11. The research advisor should not require the graduate student to perform tasks unrelated to his/her academic and professional development.
12. The research advisor should provide career advice and assist in finding a position for the graduate student following his/her graduation. The advisor should provide honest letters of recommendation and be accessible for advice and feedback on career goals.
13. The research advisor should lead by example and facilitate the training of the graduate student in complementary skills needed to be a successful researcher, such as oral and written communication, grant writing, lab management, animal and human research policies, the ethical conduct of research, and scholarly professionalism. The advisor should support the student's opportunities for teaching to meet the requirements of the program.
14. The research advisor is primarily responsible for providing or securing financial resources for the graduate student to facilitate the student's thesis/dissertation research. Advisors have the prerogative to pay their student's mandatory fees associated with submitting a dissertation, including a degree application fee, a publication and binding fee, and a thesis fee. However, they are not required to do so.

## **XII. Scientific Ethics: Guidelines/Other Resources**

### **A. Policy on Authorship of Publications**

*(The following guideline has been suggested by Virginia Commonwealth University, Dean S. G. Bradley.)*

To merit authorship, an individual should:

- Contribute significant ideas and experimental design to the project,
- Take part in the actual experimentation and data analysis,
- Be able to present and defend the work at a scientific meeting. (Exceptions may be made when one author has carried out a unique, sophisticated study or analysis.)

Students should also read "*Ethical Obligations of Authors*" in *Accounts of Chemical Research* 18(12), pp. 356-57 (1985).

This is one example of a *guideline*; the major point to remember is that in the event of allegations of scientific fraud, all authors can be held accountable.

## **B. Scientific Misconduct**

The U.S. Public Health Service has a formal policy dealing with misconduct. It is described in a special July 19, 1985, issue of the *NIH Guide to Grants and Contracts*. At the very least we must respect this statement. It says in part:

It is the policy of the PHS to maintain high ethical standards in research and to investigate and resolve promptly and fairly all instances of alleged or apparent misconduct.

As defined by the policy, "misconduct" is: (1) Serious deviation from accepted practices in carrying out research or in reporting the results of research. This includes fabrication, falsification, or plagiarism of data. (2) Material failure to comply with Federal requirements affecting specific aspects of the conduct of research; e.g. the protection of human subjects and the welfare of laboratory animals.

Misconduct does not include errors of judgment, errors in the recording, selection, or analysis of data or differences in opinions involved in the interpretation of data.

Scientific misconduct is grounds for dismissal from the Genetics PhD Program.

## **C. Academic Misconduct**

Any form of cheating or plagiarism in respect to curricular requirements is grounds for dismissal. Plagiarism is taking another's ideas, words, or creative works and presenting them as your own, or presenting them without proper attribution (giving credit to the original source).

## **D. Sexual Harassment**

The University of Iowa has clearly stated guidelines and regulations pertaining to sexual harassment. A [copy of these rules](#) is available and is considered required reading for all incoming students. The Genetics Program will follow and adhere to these guidelines and regulations.

## **E. Counseling Resources**

We need to be constantly vigilant about not only the scientific health and status of our students and faculty, but also about their mental health. Graduate school is an extremely stressful time for students and faculty alike. We would like to remind our students and faculty that if concerns arise about their mental health status, for whatever reason, that it is appropriate to seek help. The University offers counseling services for students at University Counseling Service (3223 Westlawn, 335-7294) and for faculty at Faculty Services (5101A D, 335-2085). Individual faculty or students should feel free to contact those services directly or, if they feel it appropriate, to talk with the Director of

the Genetics Program or any member of the Graduate Affairs Committee about the possible need for interventions.

### **XIII. Food & Beverages for Meetings**

The Genetics Graduate Program does not expect students to provide food and/or beverages for Committee meetings, Comprehensive Exams, or defenses. Further the lack of food/beverages will not be looked at negatively by those attending. This policy is supported by the Graduate Student Senate Resolution Addressing Food at Meetings.

### **XIV. Pay and Time Off**

Successful graduate education in the sciences does not begin and end with the usual academic calendar, but rather is a full-time occupation. Reasonable vacation periods are certainly appropriate, but long or repeated absences are generally not permitted. Vacations or any other planned absences should be discussed in advance with the research mentor/PI in whose laboratory a student is rotating or working.

Kirschstein-NRSA trainees and fellows are eligible for other types of leave (vacations and holidays, sick leave, parental leave). Please refer to NIH Parental Leave Policy for NRSA's <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-18-154.html>

Currently enrolled University of Iowa Ph.D. students with a 25% or more appointment are employed as:

- Teaching Assistants (FT19)
- Research Assistants or
- Graduate students appointed on federal training grants or federal fellowships

#### **Paid Leaves**

Ph.D. students are entitled to University-designated holidays and up to (15) working days per fiscal year of absence without pay deduction. All paid leave must be scheduled with the approval of the research mentor. Ph.D. students may be absent for the University-designated holidays unless the mentor specifically requires the Ph.D. student to work. At such time, the mentor and the Ph.D. student shall schedule alternate paid time off. Mentors will make an effort to minimize holiday work for Ph.D. students and if they require work on a holiday, shall provide Ph.D. student(s) with no less than thirty (30) days written notice, whenever feasible.

#### **University-designated Holidays:**

- New Year's Day
- Dr. Martin Luther King, Jr.'s Birthday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Friday after Thanksgiving Day
- Christmas Day

- A day before or after Christmas Day

Monday will be recognized as a holiday for all holidays occurring on a Sunday and Friday for all holidays occurring on a Saturday.

Any further paid leave should have the additional approval of the DEO/Director, which may be granted without financial support.

#### Sick Leave

Ph.D. students may be absent due to illness without loss of pay not to exceed (18) days during a twelve-month fiscal year appointment.

If a Ph.D. student has exhausted paid sick leave due to illness, they may request an unpaid leave of absence which will be granted at the sole discretion of the Program and mentor, and subject to any relevant policies of the Graduate College.

#### Family Illness Leave

PhD students may use available sick leave for care of and necessary attention to ill or injured members of the immediate family or for parental leave including birth and adoption.

#### Bereavement Leave

Ph.D. students may use available sick leave for three (3) workdays when a death occurs in the employee's immediate family.

Ph.D. programs may grant additional paid leave - such leave may be granted provided the Program and mentor determine that the Ph.D. student is able to meet the time and effort obligations reflected in the percentage of appointment over the full term of the student's appointment.

#### Unpaid Leave of Absence

A Ph.D. student may be granted an unpaid leave of absence during the term of their appointment, upon request to and at the sole discretion of the Program and mentor. Unpaid leave of absences will take effect after all available paid and sick leave has been exhausted.

The Program and mentor shall authorize leave requests in accordance with the provisions of the Family and Medical Leave Act of 1993 for qualifying individuals.



## **XV. Resources for Equal Opportunity and Diversity**

The Genetics PhD Program is committed to equal opportunity and diversity. For more information and resources, see the following website:

<http://www.uiowa.edu/~eod/>

## **XVI. Appendices**

### **Appendix I: Committees of the Interdisciplinary Graduate Program in Genetics**

#### **Executive Committee**

Assists and advises the Director in the administration of program. Composed of: (1) the Director of the Interdisciplinary Graduate Program in Genetics (appointed by the Graduate College Dean in one year renewable terms), (2) one member of the Program elected at large (for a 3-year term); (3) one student members of the Program elected by the students (for a rotating 2-year term), (4) the PI of the Training Grant (if distinct from the Program Director), (5) the chair of the Admissions Committee, (6) the chair of the Graduate Affairs Committee, (7) the chair of the Curriculum Committee, (8) the chair of the Recruitment and Outreach Committee, and (9) the chair of Post-Comps Advising Committee. The last four positions will be appointed by the Program Director. For all committees, term appointments made by Program Director and consultation with the executive committee.

#### **Admissions Committee**

Reviews and evaluates qualifications of applicants; invites outstanding applicants to interview; recommends admission decision to program Director.

#### **Graduate Affairs Committee**

Advises first-year students on requirements and registration; assists first-year students in lab selection and arranging rotations; advises students until they have a designated PhD mentor and a thesis committee; may advise students who are in the process of changing PhD mentors; monitors progress of all students and reviews GPAs once per semester; notifies students of academic probation; handles all student appeals

#### **Curriculum Committee**

Conducts yearly review of curricula. Evaluates new courses for appropriateness of inclusion. Recommends addition (and category) or deletion of courses to Director.

#### **Recruitment and Outreach Committee**

Coordinates program activities aimed at expanding and communicating with a broad and diverse applicant pool, at conferences, visits to campuses, recruitment fairs, and networking with alumni.

#### **Post-Comps Advising Committee**

Meets at least annually with each post-comps student to evaluate research and publication progress and advise on career planning.

### **Seminar Committee**

The course director for Current Topics in Genetics solicits nominations from the faculty at large and selects from the pool to ensure a seminar speaker program with broad representation. In addition, the student representative solicits nominations from all students in the program; the student vote for a student-represented seminar speaker and play a major role in hosting the speaker

### **Retreat Committee**

The committee consists of two faculty and two students. Schedule external speakers, invite alumni speakers; select oral presentations from abstracts; organize all aspects of the retreat schedule

### **Faculty Membership Committee**

Reviews new faculty applications before submission to Executive Committee; monitors faculty participation and makes recommendations to the Director regarding faculty 3-year reappointments

### **Website Committee**

Responsible for Program website content, design, and presentation

### **Financial Outreach Committee**

Responsible for soliciting funds to support the student-run seminar and events hosted by the student-run Social Activities Committee

### **Genetics PhD Program Director**

Appointed for a one-year renewable term by the Dean of the Graduate College.

## **Appendix II: Certificate in College Teaching**

The [Graduate Certificate in College Teaching](#) is offered through the University of Iowa Graduate College. For some students, completion of this certificate is a possibility during their time in the program, with eligibility determined on a case-by-case basis. Prior to affiliating with a lab, a student who is interested in pursuing the Graduate Certificate in College Teaching must discuss their interest with their potential advisor and complete the *Certificate in College Teaching Completion Agreement for Genetics Students* (see Appendix). Advisors have the prerogative to allow or deny students to pursue the certificate. The *Certificate in College Teaching Completion Agreement for Genetics Students* requires signatures from the student, advisor and program.

The Graduate Certificate in College Teaching requires students to complete courses in the 3 categories listed below, and meet a minimum of semester hours of approved coursework.. Previous teaching experience will not be permitted to waive any of these requirements. For additional information, full requirements, and to enroll in the certificate program, visit the [College Teaching, Graduate Certificate website](#).

### **Category 1**

Provides an overview of basic instructional issues and methods in college teaching. The work requires students to engage in discipline-specific thinking as they consider their own teaching situations. Full list of available courses and semester hour requirements are on the [College Teaching, Graduate Certificate website](#).

Note: By completing one Category 1 course, Genetics students enrolled in the Graduate Certificate in Teaching fulfill 1 of the 5 seminar credits required in the standard Genetics Program curriculum.

### **Category 2**

Requires students to complete practicum courses under the guidance of two different professors. Prior or current experience as teaching assistant does not count toward this requirement.

Note: By completing the Practicum in College Teaching, Genetics students enrolled in the Graduate Certificate in Teaching may fulfill one of the two TAships required in the standard Genetics Program curriculum, provided that the conditions outlined in the *Certificate in College Teaching Completion Agreement for Genetics Students* are met.

### **Category 3**

Students develop a full portfolio that demonstrates their skills and competencies in teaching, research, and service. The portfolio requires sample syllabi, a statement of teaching philosophy, samples of assignments and student work, and reflective essays on critical issues in teaching in higher education.

## Certificate in College Teaching Agreement for Genetics Students

Student: \_\_\_\_\_

Research Mentor: \_\_\_\_\_

For details of the Certificate, the student and mentor should consult the GCCT website:  
<https://education.uiowa.edu/services/office-graduate-teaching-excellence-ogte/graduate-certificate-college-teaching>

The student plans to complete the Graduate Certificate in College Teaching by enrolling in the courses checked below.

### **Category 1: Coursework (2 courses/6 sh minimum)**

At least one of the following courses MUST be taken:

- EDTL/EPLS/GRAD/RCE/PSQF:7385 Teaching and Learning in Higher Education 3 sh
- GRAD/PSQF:6217 Seminar in College Teaching 3 sh
- EPID:7200 Teaching in Epidemiology 3 sh
- SOC:7010 Teaching Sociology 3 sh
- PSQF:6205 Design of Instruction 3 sh

One of the following courses MAY be taken:

- PSQF:6211 Universal Design and Accessibility for Online Learning 3 sh
- PSQF:6215 Web-Based Learning 3 sh
- PSQF:6216 Tools and Utilities for Online Teaching 3 sh

Note: By completing one Category 1 course, Genetics students enrolled in the Graduate Certificate in College Teaching fulfill 1 of the 5 seminar credits required in the standard Genetics Program curriculum.

### **Category 2: Required Teaching (2 practica/3 sh minimum)**

Please fill out the semester hours you plan to take for each practicum (1-2 sh per practicum).

- EDTL/EPLS/RCE/PSQF:7380 Practicum in College Teaching supervised by a College of Education faculty member. Number of practica:\_\_\_\_, Total sh: \_
- GRAD:7400 Practicum in College Teaching, supervised by a faculty member outside of the College of Education. Number of practica:\_\_, Total sh: \_\_\_\_

By completing the Practicum in College Teaching, Genetics students enrolled in the Graduate Certificate in College Teaching may fulfill one of the two TAships required in the standard Genetics Program curriculum, provided they satisfy both the practicum requirements and at least two of the following:

1. Hold weekly office hours
2. Lead a weekly discussion section
3. Contribute to materials for assessment (quizzes, exams, clicker questions, etc.)

Note: Like all TA positions, the use of a teaching-certificate practicum to fulfill a TA requirement must be approved in advance by the Graduate Advising Committee.

**Category 3: Required Portfolio (3 sh minimum)**

EALL:7475 PhD ePortfolio in College Teaching 3 sh

**Tuition Agreement**

Tuition for Teaching Certificate Coursework will be paid by:

Student

Mentor

Other (describe) \_\_\_\_\_

By signing below, I agree to complete the Graduate Certificate in College Teaching as prescribed above.

Student Signature: \_\_\_\_\_ Date: \_\_\_\_\_

By signing below, I agree to the student completing the Graduate Certificate in College Teaching as prescribed above.

Mentor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

The Genetics Program approves this plan and consents to student completion of the Graduate Certificate in College Teaching.

Program Signature: \_\_\_\_\_ Date: \_\_\_\_\_