



# Department of Genetics

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## Graduate Student Manual

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**Chindo Hicks, PhD**, Professor

**Andrew Hollenbach, PhD**, Professor

**Bolin Liu, MD**, Professor

**Wanguo Liu, PhD**, Professor

**Michael Lan, PhD**, Professor

**Diptasri Mandal, PhD**, Professor

**Lucio Miele, MD, PhD**, Professor and Department Head

**Fern Tsien, PhD**, Associate Professor

**Yaguang Xi, MD, PhD, MBA**, Professor and Vice Chair

## **A. Mission Statement**

The Graduate Program in Genetics provides students with a working knowledge of human functional and molecular genetics, genomics, and animal model systems. Students are mentored by exceptional faculty who guide them through their training and enable them to become active members of the scientific community. The departmental curriculum is designed to form the foundation for their future career development through a combination of coursework, seminars, proposal writing, and laboratory-based research. The Department of Genetics provides students with all the skills they need to become successful, independent scientists.

## **B. Requirements**

The Graduate School requires that students maintain a minimum grade point average of 3.0 in all course work; however, a student who receives more than two (2) Cs or one (1) or more Ds or Fs in core courses is automatically dismissed. Any instructor who feels that a student in class will be unable to complete the requirements for a graduate degree in Genetics will notify the Department Head in writing, sending a copy to the student and to the Graduate Student Coordinator. Students seeking exemption from any course must request that exemption in writing. The faculty evaluates the request, together with the student's records. As a matter of Departmental policy, exemptions are strongly discouraged.

Students are required to meet with the Graduate Student Coordinator well before registration to discuss course work for the next semester. At the end of each semester, students are evaluated by the faculty with regard to progress and performance. Unsatisfactory performance or unethical behavior, as determined by the faculty, can be grounds for probation or dismissal.

## **C. Registration**

The students will register for classes each semester by filling out a Schedule of Courses form that they receive from the School of Graduate Studies. Once the planned coursework is approved by the graduate student coordinator, the graduate student coordinator or the Major Professor will forward the approved form to the School of Graduate Studies (currently Leigh Smith-Vaniz at [lsmi30@lsuhsc.edu](mailto:lsmi30@lsuhsc.edu)). If the Major Professor forwards the registration to the School of Graduate Studies, the student must notify the graduate student coordinator about the status of his/her registration and forward a copy of the form to the coordinator within the registration deadline. Failure to do so may not guarantee the tuition waiver and receipt of stipend from the department. A minimum of nine credit hours is required in the fall and spring semesters and six credit hours in the summer semester to be considered as a full-time student.

## **D. Graduate Student Stipends**

Depending on the availability of funds, the Genetics Department awards tuition payment and/or assistantships to a limited number of students. Students who accept assistantships agree to work in the Department for twenty (20) hours per week. Continuation of an assistantship depends on satisfactory academic and work progress.

If at any time a student with an assistantship has a cumulative GPA of less than 3.0, the student's Advisor will be notified. If the student does not bring his/her GPA up to 3.0 after the next semester, the Department Head will notify the student in writing that he/she will lose the assistantship if the cumulative GPA is not at least 3.0 within one semester.

## **E. Graduate Student Leave Guidelines**

The Department's graduate student leave provisions are in alignment with those of the Graduate School, and are universally applied to all Genetics' graduate students, even if they are not financially supported through the Department or University.

When applicable, the Department will utilize the Ruth L. Kirschstein National Research Service Awards (NRSA) leave policy as a guideline for student leave. Those guidelines can be found at the link below:

<https://grants.nih.gov/grants/guide/notice-files/NOT-OD-18-154.html>

However, it is recognized that Graduate Students/Assistants do not accrue vacation or sick leave. Therefore, this document serves as an advisory for students requesting a leave of absence from the laboratory.

Any students wishing to take up to one week absence from laboratory work, coursework or other school duties must get prior approval from their advisor and the Graduate Program Director (Graduate Student Coordinator). In the absence of a permanent advisor, the Graduate Program Director should be consulted. With prior approval, stipend payments will be unaffected. Students who do not seek prior approval will be removed from the payroll for a duration equivalent to their absence.

Any students wishing to take more than one week off must adhere to the same guidelines as stated above; however, continuation of stipend payments will be reviewed on a case by case basis depending on the length and reason for the absence.

It is essential for students to discuss any planned absence with their supervisor well in advance, so that the timing of leave can be coordinated with the work requirements of their area.

The request for leave form can be obtained under 'program information' at:

[http://www.medschool.lsuhscc.edu/genetics/grad\\_programs.aspx](http://www.medschool.lsuhscc.edu/genetics/grad_programs.aspx)

## **F. Miscellaneous Regulations**

- The Department has an orientation meeting for incoming students each August. All students are expected to attend.
- Students are expected to meet honorable and ethical standards during examinations and while preparing out-of-class assignments. Failure to do so may be grounds for dismissal.
- Drop/Add and late registration charges are normally the responsibility of the student, but this rule may be waived in exceptional cases.

## G. Course Requirements: Doctor of Philosophy Degree- Program

Minimum requirements for the Doctor of Philosophy degree in Genetics are 60 credit hours (including graduate course work, laboratory rotations, seminars and research) as outlined below:

<b>Courses</b>	<b>Credit Hours</b>
Core	33
Elective	8
Seminar (Genet 299)/Journal Club (Genet 290)	4
Laboratory Methods (Genet 253)/Dissertation Research (Genet 400)	15
<b>Total</b>	<b>60</b>

At least third (30) hours of total courses must be with a letter grade. The core requirements include 23-25 of these hours. Electives must provide the other 5-7 hours. The student selects electives with the advice and approval of the Graduate Coordinator and the mentor.

<b>Core Courses</b>	<b>Credit Hours</b>
Biochemistry (Inter 111)	4
Molecular Biology (Inter 121)	3
Cell Biology (Inter 122)	3
Microbial Pathogenesis (Inter 125)	3
Introduction to Genetics (Genet232/Inter 141)	2
Pharmacology (Inter 142)	2
Experimental Design & Analysis (Inter 143)	2
Biostatistics (Bios 6100)	4
Genetic Epidemiology & Population Genetics (Genet 236)	3
Ethics in the Biomedical Sciences (Inter 220)	1
Responsible Conduct in Research (Inter 260)	1
Proposal Writing (Genet 247)	2
Medical Genetics Clinic (Genet 271)	3
<b>Electives</b>	<b>Credit Hours</b>
Cancer Molecular Genetics & Applications (Genet 245)	3
Cytogenetics (Genet 292)	3
Epigenetics (Genet 234)	3
Practical Bioinformatics (Genet 256)	3
Animal Models of Human Diseases (Genet 242)	2
Advanced Genomics (Genet 258)	1
Special Topics in Human Genetics (Genet 291)	1-3

Blue indicates the courses offered in spring and green indicates fall

### **Seminar (Genet 299)**

PhD students are required to present three (3) Seminars in addition to their Dissertation Defense. Students must attend all Seminars sponsored by the Department of Genetics. In addition, students are required to attend at least one seminar per week sponsored by other departments or institutions. After three (3) absences from Seminar, the Department Head will ask the student for an explanation.

### **Teaching Requirement**

Students entering the Department of Genetics Graduate Program on or after Summer 2014 will be subject to a teaching requirement, which will include one formal lecture in any of the courses offered by the departmental faculty members to undergraduate or master's level students. The teaching plan states:

- Teaching shall only take place after the second year qualifying exam and before the semester in which the student is defending their thesis.
- Students will be provided with information on the available courses [For example, Nursing, Allied Health] and instructors with whom they may partner to teach.
- Students will be responsible for communicating with the faculty lecturers with whom they will partner, and informing their dissertation advisor and the departmental of their teaching.
- Students will be responsible for developing the lecture material to be covered and presenting it in a format that is agreed upon both by the faculty lecturer and the student.
- Students are strongly recommended to seek help from their advisors in preparing the lectures.
- Students in the final year will be given priority for the fall semester of the academic year in which they graduate.

### **Thesis Research (Genet 300)**

[1-6 Credits] (S/U) Research related work for PhD degree students prior to passing Preliminary Exam.

### **Dissertation Research (Genet 400)**

The Dissertation research must be a contribution of new knowledge in the field of Genetics and be eligible for publication in a major peer-reviewed journal. The student is expected to have at least one publication, preferably a first author manuscript submitted and positively reviewed for publication before the dissertation defense.

### **Exam Only (Genet 999)**

[10 Credits] (P/F) Students may register for "Exam Only" when they have completed their Preliminary Exam and expect to complete PhD requirements and graduate within 3 semesters. Students are allowed to register for "Exam Only" for a maximum of 3 semesters.

**[Courses for each semester are listed below for \(1\) Directly admitted Genetics Students, \(2\) Genetics students from the Interdisciplinary Program \(IDP\) and \(3\) MD/PhD students](#)**



**Courses for the directly admitted Genetics Students**

<b>Year 1 (Credit Hours)</b>	<b>Year 2 (Credit Hours)</b>
<p><b><u>Fall Semester (Required at least 9 credit hrs.)</u></b></p> <p>Biochemistry Inter 111 (4)</p> <p>Cell &amp; Molecular Biology – CMB (6)</p> <p style="padding-left: 40px;">A. Molecular Biology Inter 121 (3)</p> <p style="padding-left: 40px;">B. Cell Biology Inter 122 (3)</p> <p>Microbial Pathogenesis Inter 125 (3)</p> <p>Ethics in the Biomedical Sciences Inter 220 (1)</p> <p>Journal Club Genet 290 (1)</p> <p>Seminar in Human Genetics Genet 299 (1)</p> <p>Laboratory Rotation Genet 250 (3) – Rotation #1</p>	<p><b><u>Fall Semester</u></b></p> <p>Biostatistics Bios 6100 (4)</p> <p>Population Genetics Genet 236 (3)</p> <p>Responsible Conduct of Research Inter 260 (1)</p> <p>Laboratory Methods Genet 253 (3)</p> <p>Genetics Journal Club Genet 290 (1)</p> <p>Genetics Elective Courses</p> <p style="padding-left: 40px;">Cancer Molecular Genetics Genet 245 (3)</p> <p style="padding-left: 40px;">Cytogenetics Genet 292 (3)</p>
<p><b><u>Spring Semester (Required at least 9 credit hrs.)</u></b></p> <p>Intro to Genetics Genet 232 (2)</p> <p>Pharmacology Inter 142 (2)</p> <p>Experimental Design &amp; Analysis Inter 143 (2)</p> <p>Seminar in Human Genetics Genet 299 (1)</p> <p>Laboratory Rotation Genet 250 (6) – Rotation #2 &amp; #3</p> <p>Genetics Elective Courses<sup>†</sup></p> <p style="padding-left: 40px;">Human Epigenetics Genet 234 (3)</p> <p style="padding-left: 40px;">Animal Models of Human Disease Genet 242 (2)</p> <p style="padding-left: 40px;">Practical Bioinformatics Genet 256 (3)</p>	<p><b><u>Spring Semester</u></b></p> <p>Medical Genetics Clinic Genet 271 (3)</p> <p>Proposal Writing Genet 247 (2)</p> <p>Genetics Elective Courses<sup>†</sup></p> <p style="padding-left: 40px;">Human Epigenetics Genet 234 (3)</p> <p style="padding-left: 40px;">Animal Models in Human Diseases Genet 242 (2)</p> <p style="padding-left: 40px;">Practical Bioinformatics Genet 256 (3)</p> <p style="padding-left: 40px;">Advanced Genomics (From base-pairs to bedside) Genet 258 (1)</p> <p>Laboratory Methods Genet 253 (3)</p>
<p><b><u>Summer Semester (Required at least 6 credit hrs.)</u></b></p> <p>Laboratory Methods Genet 253 (3)</p> <p>Thesis Research Genet 300 (1-6)</p> <p>Biostatistics Bios 6100 (4)</p>	<p><b><u>Summer Semester</u></b></p> <p>Thesis Research Genet 300* (6)</p>

<sup>†</sup> Electives from other departments approved by mentor may also be chosen

\* Research related work for PhD degree students prior to passing Qualifying Exam

**Courses for Genetics Students from the Interdisciplinary Program (IDP)**

<b>Year 1 (Credit Hours)</b>	<b>Year 2 (Credit Hours)</b>
<p><b><u>Fall Semester</u></b> (Required at least 9 credit hrs.)</p> <p>IDP courses</p>	<p><b><u>Fall Semester</u></b></p> <p>Biostatistics Bios 6100 (4)</p> <p>Population Genetics Genet 236 (3)</p> <p>Responsible Conduct of Research Inter 260 (1)</p> <p>Laboratory Methods Genet 253 (3)</p> <p>Genetics Journal Club Genet 290 (1)</p> <p>Genetics Elective Courses</p> <p style="padding-left: 40px;">Cancer Molecular Genetics Genet 245 (3)</p> <p style="padding-left: 40px;">Cytogenetics Genet 292 (3)</p>
<p><b><u>Spring Semester</u></b> (Required at least 9 credit hrs.)</p> <p>IDP courses</p>	<p><b><u>Spring Semester</u></b></p> <p>Medical Genetics Clinic Genet 271 (3)</p> <p>Proposal Writing Genet 247 (2)</p> <p>Genetics Elective Courses<sup>†</sup></p> <p style="padding-left: 40px;">Human Epigenetics Genet 234 (3)</p> <p style="padding-left: 40px;">Animal Models in Human Diseases Genet 242 (2)</p> <p style="padding-left: 40px;">Practical Bioinformatics Genet 256 (3)</p> <p style="padding-left: 40px;">Advanced Genomics (From base-pairs to bedside) Genet 258 (1)</p> <p>Laboratory Methods Genet 253 (3)</p>
<p><b><u>Summer Semester</u></b> (Required at least 6 credit hrs.)</p> <p>Laboratory Methods Genet 253 (3)</p> <p>Thesis Research Genet 300 (1-6)</p> <p>Biostatistics Bios 6100 (4)</p>	<p><b><u>Summer Semester</u></b></p> <p>Thesis Research Genet 300* (6)</p>

<sup>†</sup> Electives from other departments approved by mentor may also be chosen

\* Research related work for PhD degree students prior to passing Qualifying Exam

**Note:** Biological System courses taken by IDP students count for 7 credit hours of electives in their first year of IDP curriculum

### **Required courses for MD/PhD Students:**

- Biostatistics – Bios 6100 – 4 hours (Fall semester)
- Molecular Biology – Inter 121 (CMB-A) – 3 hours (Fall semester)
- Introduction to Genetics – Inter 141 – 2 hours (Spring semester)
- Ethics in Biomedical Sciences – Inter 220 – 1 hour (Fall semester)
- Responsible Conduct in Research – Inter 260 – 1 hour (Fall semester)
- Proposal Writing – Genet 247 – 2 hours (Spring semester)
- Elective courses – 3 hours
- Journal Club/Seminar – 4 hours
- Dissertation Research – Genet 400 – 15 hours

### **Elective Courses for MD/PhD Students:**

#### **Fall semester:**

Genetic Epidemiology and Population Genetics  
Genet 236 (3)

Cancer Molecular Genetics Genet 245 (3)

Cytogenetics Genet 292 (3)

#### **Spring Semester:**

Human Epigenetics – Genet 234(3)

Animal Models in Human Diseases Genet 242  
(2)

Practical Bioinformatics – Genet 256(3)

Advanced Genomics (From base-pairs to  
bedside) Genet 258 (1)

Medical Genetics Clinic – Genet 271(3)

## **H. Doctor of Philosophy Degree**

Students are accepted in the Department of Genetics either with a direct admission to the department or through the Interdisciplinary Program. Students joining the Genetics department from the Interdisciplinary program are required to fulfill the course requirements beginning in the second year (please see page 6 for list of courses).

### **Advisors & Committees**

In the first year, students are required to complete three (3) laboratory rotations, with an optional fourth four-week rotation. The laboratory rotation familiarizes the student with faculty research and aids in the selection of an Advisor.

The rotation will consist of three 10-week rotations in three different laboratories in the Department to receive introduction to research projects and techniques used in any specific laboratory. At the end of the third rotation the student may choose the laboratory that best suits his/her scientific research goals **OR** if the student requires additional time, he/she may elect a fourth four-week rotation in another laboratory in the lab of an eligible faculty mentor in the Department (ref. page 4).

Before or during the last semester of the first year of course work the student chooses an Advisor. The Advisor may be any faculty member in the Department with primary or conjoint appointment that has full/associate membership in the status in the graduate school and who is willing to direct the student's Doctoral Dissertation work. The Advisor helps the student select additional members for his or her

Dissertation Committee. Committees for PhD candidates consist of five (5) faculty, four of those members should have the graduate school faculty status approved. The Chairman of this Committee is normally the Dissertation Advisor. In the unusual case that the advisor is not the Chair, the Chair of the committee must also have a primary or conjoint appointment in the Department of Genetics and must be a full /associate member of the Graduate School Faculty. Every Committee must have at least one (1) person from another department. Committee members may be full, associate or affiliate members of the graduate school. The membership of all Committees must be approved by the Head of the Department and by the Dean of the School of Graduate Studies at the time of the Preliminary Examination.

The student is responsible for filing all forms required by the Department and the Graduate School at the proper time. Students will meet with their committee on a regular basis (usually every six to twelve months) to monitor the progress of the dissertation work.

### **Written Qualifying Examination**

Genetics students must take the departmental Doctoral Degree Qualifying Examination, which requires the writing and revising of a grant proposal following the NIH format. This Exam is offered annually, usually in May. Mentors and examinees receive e-mail notification 30 days before the qualifying examination concerning the test schedule. Subsequently, the students and mentors are reminded about the deadline and time commitment of the examinees 15 days before the deadline. In the final step, the student will make an oral presentation of the written proposal to the qualifying committee members. In certain circumstances, a student who does not meet the criteria for qualification in the PhD program will be allowed to remain in the Master's program.

**Note:** MD/PhD students are required to take the departmental Doctoral Degree Qualifying Examination at the end of their first year in Genetics department.

### **Preliminary Examination (Prospectus)**

Within eighteen (18) months of satisfactory completion of the qualifying exam, the student's committee must be selected and approved by the Department Head and the first meeting with the Committee must occur. The first meeting with the committee will serve as the institutional preliminary examination.

At least two (2) weeks prior to the Examination date, the Request for Preliminary Examination must be submitted to the Graduate School office. This document formally names the student's Committee and sets the date of the Preliminary Examination (Prospectus Defense). The Prospectus should have the following sections (12 point font and double-spaced):

1. Specific Aims (What do you intend to do?) 1-2 pages
2. Background and Significance (Why the work is important, including a comprehensive literature review of the research topic.) 20-25 pages
3. Preliminary Studies (What has been done to date?) 3-4 pages
4. Research Design and Methods (How are you going to do the work?) 3-4 pages

At least one week before the Preliminary Examination, the student presents a finalized Dissertation Prospectus to the members of the Dissertation Committee. On the scheduled date, the Committee examines the student orally on both the content of the Prospectus and the content of the core courses. The Committee decides whether the student should proceed with the Dissertation research and communicates its decision to the student, the Department Head and the School of Graduate Studies. The Report on the Preliminary Examination must be signed by all Committee members and sent to the Graduate School.

## **Final Examination**

After the student has completed the Dissertation project, dissertation committee members should be contacted about scheduling a defense date. All committee members must be notified about the defense date at least one calendar month (30 days) prior to the final examination date. With permission and consent of committee members at least two (2) calendar weeks prior to the Final Examination date, the student must provide all members of the Committee with a finalized version of their Dissertation. In addition, at least two (2) calendar weeks before the Examination, a Request for Dissertation/Thesis Defense must be sent to the Graduate School to set the date for the Final Examination.

Each student presents their Dissertation project to the Department at a regularly scheduled Seminar. Following the public presentation, the dissertation Committee examines the student orally on the scope and content of the Dissertation work. The Committee determines whether the student has passed the Final Examination and communicates its decision to the student, the Department Head, and the School of Graduate Studies.

The Final Examination Report must be signed by all Committee members and then submitted with the Dissertation to the Graduate School. A bound copy of the final Dissertation should be provided to the Department and to each Committee member. There must be at least three (3) semesters between the Preliminary Exam and the Final Exam.

## **I. Summary of Steps in Graduate Student's Program for PhD Students**

### First Year:

- Pick faculty member/s you want to do rotations with.
- Whenever you have decided which lab you want to join, talk to Dr. Mandal about your decision.
- Tell Leigh Smith-Vaniz at the graduate school which department and mentor you have picked.
- **Note:** MD/PhD students are required to take the departmental Doctoral Degree Qualifying Examination at the end of their first year in Genetics department. Dr. Grabczyk will email you about the details of the qualifying examination and timeline.

### Second Year:

- Qualifying Exam: Dr. Grabczyk conducts the qualifying exam. He will email you about the details of the qualifying examination and timeline.

### Third Year: Preliminary exam

- The Major Professor/mentor acts as chair of dissertation committee
- A minimum of four committee members (five members including the major professor and all of them should be the members of Graduate School faculty) are required for dissertation committee
- Dissertation committee selected with the help of the mentor must be approved by the Department Head at least two weeks prior to the Preliminary Examination date

- Signed by the Department Head, the Request for Preliminary Examination must be submitted to the Graduate School office and this form sets the date of the Preliminary Examination (Prospectus Defense)
- Link to the Request for Preliminary Examination form: <http://graduatestudies.lsuhsoc.edu/forms.aspx>
- Typically the student does a presentation and faculty will ask follow-up questions and/or provide recommendations that guide the research
- On the day of the preliminary examination, students need to bring the pre-typed Report of Preliminary Examination form for the signature of the dissertation committee members
- Link to the Report of Preliminary Examination form: <http://graduatestudies.lsuhsoc.edu/forms.aspx>
- Submit the signed form to Leigh Smith-Vaniz at the Graduate School

#### **Fourth year and above:**

- Every six months after preliminary exam, student must meet with committee members to discuss research progress.
- This involves presenting work done so far to committee members and getting their feedback.
- Once committee members give the go ahead to defend, start writing your dissertation.
- Depending on graduating semester, look at the Grad School webpage for defense deadline.
- Schedule (date, place and time) your defense date such that it is at least 2 weeks before defending deadline for semester. Notify the departmental coordinator of defense date, place and time.
- Submit your dissertation to committee members and the request for final exam form to Leigh Smith-Vaniz 2 weeks before your defense date.
- On the day of defense, print out final exam form with names of committee members and bring to defense.
- Submit signed final exam form to the departmental coordinator to get Dr. Miele's signature and then submit this to the Graduate School.
- Make edits to dissertation (if any) and contact the departmental coordinator well in advance to figure out dissertation printing.
- Print at least 5 copies for others (two for Grad School, one for department, one for yourself, and one for your mentor) plus however many for personal use and for committee members. **NOTE:** 2 copies for Grad School are paid for. Additional copies need to be paid for by students.
- Submit printed copies of dissertations to Leigh Smith-Vaniz for binding by specified deadline.

## J. Course Requirements: Master of Science Degree Program

Under special circumstances determined by the Department Head, students enrolled for the Doctoral program may be awarded a Master of Science Degree. Requirements for the Master of Science degree are thirty (30) hours of graduate course work, as listed below:

Subject Area	Required Credit Hours
Core Courses	19
Electives*	3
Seminar (Genet 299)/Journal Club (Genet 290)	2
Thesis Research (Genet 400)	6
<b>Total</b>	<b>30</b>

\*The student selects electives with the advice and approval of the Graduate Coordinator and the mentor. In addition to course work, the students must write a Thesis and attend all Seminars.

## K. Master of Science Degree for the students in Biomedical Science

	YEAR 1		YEAR 2	
	Courses	Credit Hours	Courses	Credit Hours
<b>Fall</b>	Biochemistry (INTER 111)	4	Gen Epi & Pop Gen (GENET 236)	3
	Molecular Biology (INTER 121)	3	Responsible Conduct (INTER 260)	1
	Cell Biology (INTER 122)	3	Journal Club (GENET 290)	1
	Microbiology (INTER 125)	3	Seminar (GENET 299)	1
	Ethics in Biomed. Sc. (INTER 220)		Thesis Research (GENET 300)	2 (6*)
	<b>Total hrs.</b>	<b>13</b>		<b>8</b>
<b>Spring</b>	Genetics (INTER 141)	2	Exam Only (GENET 999)	0
	Exp. Design & Analysis (INTER 143)	2		
	Genetics Elective Course	3		
	Seminar (GENET 299)	1		
	<b>Total hrs.</b>	<b>8</b>		<b>0</b>
<b>Summer</b>	Thesis Research (Recommended)*	<b>4</b>		

**TOTAL 35 Credit Hours**

***\*Need 30 hours of graduate work 22 hours of coursework, 2 hours of seminar, and 6 hours of research***

### **Advisors & Committees**

The Advisor helps the student select additional members for his or her examining Committee. Committees for MS candidates consist of three (3) members. The Chairman of this Committee is normally the Thesis Advisor. In the unusual case that the advisor is not the Chair, the Chair of the committee must also have a primary or conjoint appointment in the Department of Genetics and must be a full member/associate member of the Graduate School Faculty. Every Committee must have two Graduate School Faculty members from the Department of Genetics. In addition, every Committee must have at least one (1) Graduate School Faculty member from another department. The membership of all Committees must be approved by the Graduate Student Coordinator and the Head of the Department.

### **Candidacy and Thesis Defense**

After the student and Advisor have determined the Thesis topic and all members of the proposed Thesis Committee have agreed to serve, a committee meeting is held to discuss the thesis research and time line. The following elements should be included in the research proposal to be submitted to the Committee two weeks prior to the first committee meeting:

1. Review of pertinent literature (10 - 15 pages)
2. Statement of research topic outlining what is needed in the area of interest (2 pages)
3. Research Aims (1 page)
4. Presentation of any preliminary data done to date (optional) (2-3 pages)
5. Proposed research and experimental design (4 – 6 pages)

The student is required to initiate a follow up committee meeting in three to four months after the initial committee meeting.

At least two (2) weeks prior to the Defense date, the student must submit a Request for Thesis Defense to the Graduate School, and provide the Committee with a copy of the Thesis. The student presents the thesis work to the Department at a regularly scheduled Seminar.

Following the public presentation, the student is examined orally by the Thesis Committee on the scope and content of the Thesis work. The Committee determines whether the student has passed the Final Examination and communicates its decision to the student, the Department Head, and the School of Graduate Studies. The Final Examination Report must be signed by all Committee members and submitted with the student's Thesis to the Graduate School.

### **Thesis Structure**

The thesis should consist minimally of three chapters (~ 50 pages):

1. Introduction (an extensive review of the literature similar in nature to a PhD thesis)
2. Data chapter (structured according to a manuscript publication, including Introduction, Methods, Results, and Conclusions and expected to have enough data for publication)
3. Summary and Future Directions (very brief [3 -5 pages])

### **MS Timeline**



- Summer 1st year: Committee set up (3 members)
- Summer 1st year/early fall 2nd year: First Committee meeting suggested  
At least two committee meetings (summer/early fall and late fall) are recommended before final defense.
- Fall of second year: Must give a departmental seminar.
- Spring of second year - Exam only registration and defense.
- Additional Information:
  - MS in Biomedical Sciences students can choose between Genetics Research Track and Genetics Clinical Track.
  - Students are recommended to follow the Genetics Research track unless the student and the mentor agree on taking extra medical school classes in the first/second spring semester for Genetics Clinical track. This decision will be based on the need of an individual student and to be determined by the mentor and the student.

#### **L. Additional Information for all PhD and MS students**

- Guidelines for formatting and writing the dissertation:  
[http://www.medschool.lsuhschool.edu/genetics/grad\\_programs.aspx](http://www.medschool.lsuhschool.edu/genetics/grad_programs.aspx)
- Upon successful completion of Dissertation, students will submit an electronic copy and a bound paper copy to the Department Coordinator; the bound copy will be housed in the Genetics Conference Room. Students are also required to provide bound copies of their dissertation to their committee members.
- Forms for School of Graduate Studies: <http://graduatestudies.lsuhschool.edu/forms.aspx>
- Before making any travel arrangements for study related travel, administration staff (i.e. business manager, assistant business manager and/or coordinator) within your Department must be consulted.
- Emergency response policy and procedure: Please check with Department Administration.

#### **M. Faculty Research Interests**

##### **Judy Crabtree, PhD, Assistant Professor, Genetics**

- Genetics & epigenetics of endocrine tumor disorders.
- Signaling pathways in neuroendocrine tumors
- Influence of hormones on oncogenesis

##### **Edward Grabczyk, PhD, Associate Professor, Genetics**

- Progressive genetic disorders caused by DNA repeat expansion such as Friedreich ataxia, Huntington's disease and ALS.
- Interactions between transcription, DNA structure and DNA mismatch repair that drive repeat expansion diseases.
- Therapeutic targeting of key enzymes that promote repeat expansion.

##### **Paula Gregory, PhD, Professor, Genetics**

- Research in genetics education for teachers, students, the public, and health care professionals
- Psychological barriers to understanding genetics information and the impact of predictive genetic testing on family dynamics
- Determining whether there is a founder mutation for hereditary colorectal cancer in the Cajuns

**Chindo Hicks, PhD, Professor, Genetics**

- Bioinformatics and computational genomics with application to common human diseases and other biological species
- Genomic and epigenomic basis of health disparities in common human diseases
- Population and functional genomics
- Modeling gene regulatory networks and biological pathways
- Knowledge and biomarker discovery using Big Data
- Drug discovery and repositioning using Big Data
- Gene by environmental interactions

**Andrew D. Hollenbach, PhD, Professor, Genetics**

- The regulation of transcription factors through phosphorylation
- Biochemical mechanisms of chromosomal translocation gene products in cancer formation
- Oncogene-induced global gene and microRNA changes in sarcoma development
- Development of target based drug therapies for sarcoma treatment

**Michael S. Lan, PhD, Professor, Pediatrics and Genetics**

- Transcription factors in neuroendocrine differentiation
- Insulin gene regulation via INS-VNTR and AIRE in human thymic epithelial cells
- Role of islet transcription factor in endocrine pancreas development
- Mechanisms of neuroendocrine transformation and therapeutic study

**Wanguo Liu, PhD, Professor, Genetics**

- Wnt signaling regulation in tumorigenesis
- Androgen receptor activation in prostate tumorigenesis

**Diptasri Mandal, PhD, Professor, Genetics**

- Genetic Epidemiology of hereditary lung cancer and prostate cancer in the population in Louisiana
- Genetic linkage and association analyses of complex disorders, in particular humans cancers
- Copy Number Variations (CNVs) in hereditary cancer families

**Lucio Miele, MD, PhD, Professor and Department Head, Genetics**

- Breast Cancer
- Cancer Immunogenomics
- Notch signaling
- Triple-Negative breast cancer genomics
- Translational research
- Bioinformatics

**Fern Tsien, PhD, Assistant Professor, Genetics**

- Chromatin instability
- Congenital hearing disorders in the Louisiana Acadians and genetically isolated populations
- Science education research of K-12 and undergraduate students and instructors
- Multicultural and diversity community outreach programs in the health sciences

**Yaguang Xi, MD, PhD, MBA, Professor and Vice Chair for Research**

- Cancer biology
- Cancer chemoprevention
- Tumor metastasis and progression
- Non-coding RNA biology
- Biomarker discovery and validation
- Novel cancer therapeutics development
- Breast Cancer, GI cancer

## **N. Graduate Student Expectations**

1. All graduate students are expected to adhere to the Graduate School's expectations of graduate study available at <http://graduatestudies.lsuhsu.edu/> and [http://www.medschool.lsuhsu.edu/genetics/grad\\_programs.aspx](http://www.medschool.lsuhsu.edu/genetics/grad_programs.aspx)
2. All graduate students are expected to take primary responsibility to inform themselves about specific regulations and policies governing their graduate studies at the department and Graduate School levels, including ensuring that they meet departmental and graduate school deadlines.
3. All graduate students are expected to conduct themselves in a mature, professional, courteous manner toward students, staff and faculty regardless of their race, gender, religion, sexual orientation, or national origin.
4. All graduate students are expected to manage time effectively for maximum professional development as well as personal health and well-being, balance competing demands such as being a student, a graduate assistant, a parent, a spouse, a caregiver, etc. All graduate students must be present in laboratory during normal business operations or as mutually agreed between students and mentor. Students must also attend laboratory meetings as scheduled.
5. To help with professional development and to allay concerns about safety all leave (vacation, absences, etc...) time must be requested on the Grad Student Leave Request Form in accordance with the leave guidelines.
6. Graduate students will be granted time to attend professional meetings and meetings in which they are representing the Department or University. These meetings will not be counted as student vacation time. All students should discuss attendance of these meetings with their advisor prior to planning to attend. Money to attend professional meetings is not guaranteed to any student from the department or their advisor.
7. Stipends will be awarded based on performance (academic and research), funding availability and qualifications.
8. The student is expected to have at least one first author manuscript submitted and positively reviewed for publication before the dissertation defense.

## **O. Faculty Expectations**

### **The faculty advisor is expected to:**

1. Interact with students in a professional, civil, and collegial manner in accordance with University policies and relevant laws.
2. Impartially evaluate student performance regardless of the student's religion, race, gender, sexual orientation, nationality, or other criteria that are not germane to academic evaluation.
3. Promise a reasonable degree of confidentiality in communication with students, taking care not to discuss a student's performance, research results, or behavior with other students.

4. Serve on graduate student committees without regard to the race, gender, sexual orientation or national origin of the graduate student candidate.
5. Acknowledge student contributions to research presented at conferences, in professional publications, or in applications for copyrights and patents.
6. Ensure that a student's experience as a research assistant contributes to his/her professional development and does not impede the student's progress toward the degree.
7. Create in the lab, supervisory relations with students that stimulate and encourage students to learn creatively and independently while respecting the academic freedom for students to express opinions that may differ from those of faculty.
8. Refrain from requesting students to do tasks not closely related to their academic or professional development for the personal advantage of a faculty member.
9. Familiarize themselves with policies that affect graduate students.
10. Respect students' need to allocate their time among competing demands, while maintaining timely progress towards degree.

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