

GRADUATE STUDENT HANDBOOK

2007 – 2008



DEPARTMENT OF GENETICS

YALE UNIVERSITY

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DIRECTORY

A. GENETICS FACULTY

Allen E. Bale	Professor	SHM I-321	785-5745
Susan Baserga	Associate Professor	HRT 317	785-4618
Douglas Brash	Professor	HRT 213A	785-2988
Kei-Hoi Cheung	Assistant Professor	300 George 501	737-5783
Lynn Cooley	Professor	SHM I-363	785-5067
Daniel DiMaio	Professor	SHM I-141B	785-2684
Bernard G. Forget	Professor	WWW 403	785-4154
Joel Gelernter	Professor	VAMC Bldg. 2, VA116A2	932-5711 x3590
Antonio Giraldez	Assistant Professor	SHM I-142A	785-5423
Peter Glazer	Professor	HRT 140	737-2788
Jeffrey Gruen	Associate Professor	464 Congress	737-2202
Arthur Horwich	Professor	BCMM 154	737-4431
Paula Kavathas	Professor	TAC S-641A	785-6223
Kenneth K. Kidd	Professor	SHM I-353	785-2654
Tae Hoon Kim	Assistant Professor	SHM I-142B	785-7501
Richard P. Lifton	Professor and Chairman	TAC S-341D	737-1091
Maurice J. Mahoney	Professor	WWW 330A	785-2661
James Noonan	Assistant Professor	SHM I-120	737-1946
Valerie Reinke	Associate Professor	NSB 392	785-5228
Shirleen Roeder	Professor	KBT 804	432-3501
Margretta Seashore	Professor	WWW 305	785-4938
Carolyn W. Slayman	Professor	SHM I-202	785-1770
Stefan Somlo	Professor	TAC S-369A	737-2974
Matthew State	Assistant Professor	TAC S-341A	785-4342
Zhaoxia Sun	Assistant Professor	NSB 393	785-3589
Joann Sweasy	Associate Professor	HRT 313D	737-2626
Peter Tattersall	Professor	CB 408	785-4586
Sherman M. Weissman	Professor	TAC S-319	737-2281
Tian Xu	Professor	BCMM 236C	737-2623
Hongyu Zhao	Professor	LEPH 201	785-6271

Research Faculty

Terry Ashley	Research Scientist	SHM I-134	785-4473
Wayne Fenton	Research Scientist	BCMM 154	737-4441
John Flory Sr.	Sr. Research Scientist	SHM I-136	785-2680
Efim Golub	Research Scientist	SHM I-147	785-2681
Edward Goodwin	Research Scientist	SHM I-166	785-2685
Judith Kidd	Research Scientist	SHM I-357	785-6117
James McGrath	Research Scientist	LSOG 120	785-2686
Andrew Pakstis	Research Scientist	SHM I-351	785-2432

B. GENETICS GRADUATE PROGRAM

Director of Graduate Studies Charles Radding TAC S-317 737-2942

Graduate Program Registrar Bonnie Ellis SHM I-313 785-5846

1st Year Students, BBS/MCGD Track

(22) Mahala (Katherine) Burn, Laura DeMare, Sophia Gayle, Camille Hardiman, Sara Heitkamp, Xia Huan, Callen Hyland, Chengcheng Jin, Sam (William) Kapelle, Sara Klemin, Philippe Lefrancois, Jingyi Li, Xinmeng Mu, Maeve O'Huallachain, Xie Pingxing, Natalie Powers, Kelly Romano, Lidsay Rush, Jamie Schwendinger, Emily Stoops, Wei Zhang, Lu Zhao.

Genetics Graduate Students (61)

Stephanie Airoidi	Cooley Lab	SHM I-363	737-2953
Lara Appleby	Leave of Absence	SHM I-354	737-2279
Isabel Beerman	Lifton Lab	TAC S341	737-1599
Daniel Bennett	Koelle Lab	SHM CE-30	737-2271
Franziska Bleichert	Baserga Lab, TherRadl	SHM C-114	785-6229
Tiffany Briere	Somlo Lab, Int Med	TAC S-360	737-2972
Erica Champion	Baserga Lab, TherRadl	SHM C-114	785-2984
Marc Chatenay-Lapointe	Shadel Lab, Path	TAC S-110	785-2485
Woo Chi	Reinke Lab	NSB 386-388	785-4840
Joanna Chin	Glazer Lab, TherRadl	HRT 316	737-2787
Allison Clark	Bale Lab	SHM I-321	785-5745
Sierra Colavito	Sung Lab, MB&B	SHM C-130	785-4569
Katherine Donigan	Sweasy Lab, TherRadl	HRT 334	785-4441
Michael Donnelly	Kidd lab	SHM I-353	785-2653
Anna Drejer-Teel	Schatz Lab, ImmunoBio	LH 409	785-3247
Neil Duldulao	Z. Sun Lab	NSB 393-395	785-3546
Julia Etchin	Sung Lab, MB&B	SHM C-130	785-4569
Khalid Fakhro	Lifton Lab	TAC S-341	737-1599
Sorin Fedeles	Somlo Lab, Int Med	TAC S-360	737-2941
Jia Nee Foo	Lifton Lab	TAC S-341	737-1599
Emily Freed	Baserga Lab, TherRadl	SHM C-114	785-2984
Kara Hamilton	Baserga Lab, TherRadl	SHM C-114	785-2984
Catherine Hofler	Koelle Lab	SHM CE-30	737-2271
Susan Jun	DiMaio Lab	SHM I-141	785-2685
Molly Kottemann	Bale Lab	SHM I-321	785-5745
Michelle Kudron	Reinke Lab	NSB 386-688	785-4840
Kristy Lamb	Kim Lab	SHM I 147	785-7504
Maria Lebedeva	Shadel Lab, Path	TAC S-110	785-2485
Han Lee	Forget Lab, Int Med	WWW 403	785-4154
Jade Li	Z. Sun Lab	NSB 393-395	785-3546
George Lin	Sweasy Lab, TherRadl	HRT 334	785-4441
Thomas Migaldi	DiMaio Lab	SHM I 141	785-2685
Danielle Martin	Bale Lab	SHM I-321	785-5745

Catherine Mendenhall	Lifton Lab	TAC S-341	785-1599
Janine Mok	Snyder Lab, MCDB	KBT 914	432-3510
Kathleen Moy	Cooley Lab	SHM I-363	737-2953
John Murdoch	Kidd lab	SHM I-353	785-2653
Thomas Ni	Xu Lab	BCMM 236	737-2621
Brian O'Roak	State Lab	TAC S-330	785-6066
Alice Park	Z. Sun Lab	NSB 393-395	785-3546
Cory Pelletier	Somlo Lab, Int Med	TAC S-360	737-2972
Joelle Perusse	White Lab	U of Chicago	785-5846
Molly Rorick	Wagner Lab, Evol. Bio.	OML 327	432-9998
Beth Russell	White Lab	U of Chicago	785-5846
Erica Schleifman	Glazer Lab, TherRadl	HRT 316	737-2787
Carlos Stahlhut	Giraldez Lab	SHM I 147	785-5450
Carolyn Stankiewicz	Reinke Lab	NSB 386-688	785-4840
Alison Staton	Giraldez Lab	SHM I 147	785-5450
Althea Stillman	State Lab	TAC S-330	785-6066
Joy Tanaka	Cooley Lab	SHM I-363	737-2953
Jason Walker	Alexander Lab, LEPH	LEPH 702	785-7895
Kathleen Wilson	D. Stern Lab, Path	BML 350	785-6496
Katherine Waters	Reinke Lab	NSB 386-388	785-4840
Ming Wu	Xu Lab	BCMM 236	737-2621
Orlando Yarborough III	Lifton Lab	TAC S-341	737-1599
Jennifer Yamtich	Sweasy Lab, TherRadl	HRT 334	785-4441
Kristin Yates	DiMaio Lab	SHM I-166	785-2684
Shiau Lou Yuan	Sun Lab	NSB 393-395	785-3546
Feng Zhou	Agaisse Lab, Micro Path	BCMM 337	737-4663
Xiao-Feng Zheng	Sung Lab, MB&B	SHM C-130	785-4569
Cornelia Zorca	Flavell Lab, Immunobio	TAC S 560	785-5383

Steering Committee

Faculty: A. Bale, D. DiMaio, C. Radding, J. Sweasy, T. Xu,
Students: I. Beerman, J. Walker, K. Waters

Admissions Committee

V. Reinke (Director), T.H. Kim, Z. Sun

The Director of Graduate Studies (DGS) is responsible for the overall operation of the graduate program. The DGS ensures that academic requirements are met, advises students, communicates with faculty and the administration concerning the graduate program and individual students, and in consultation with the Steering Committee, implements changes in the graduate program.

The Genetics Graduate Program Registrar keeps the graduate student files and pre-doctoral training grant records, enters graduate student payroll, provides administrative support to the students, the Director of Graduate Studies, the Steering Committee, the Admissions Committee, and the Program Director, Pre-doctoral Training Program. The Graduate Program Registrar also schedules the Department's Journal Club and the Graduate Students' Research-in-Progress.

The Steering Committee is comprised of both faculty and students appointed by the Director of the Graduate Studies Program. Its role is to review, on an ongoing basis, the operation of the graduate program, to discuss issues that arise concerning the program, and to recommend changes in the operation of the program. All substantive issues will be discussed in addition by the full faculty.

Lynn Cooley (785-5067), Professor of Genetics and of Cell Biology, is the Director of the Programs in the Biomedical and Biological Sciences (BBS) and is responsible for coordinating the various BBS tracks and the academic departments. She also serves to represent the interests of the BBS to the Graduate School.

Richard Sleight (432-2274), Associate Dean of the Graduate School (Biological Sciences), is the Graduate School official responsible for the graduate program in Genetics and is the appropriate individual to contact for issues related to the Graduate School.

Robert Harper-Mangels (432-1884), Assistant Dean of the Graduate School, assists Dean Sleight in his functions.

Dr. James Jamieson (785-4317) is the Director of the MD/PhD program; individuals in this program or considering this program should consult with him or Cheryl DeFilippo, program coordinator (785-2103).

C. GENETICS DEPARTMENT ADMINISTRATION AND BUSINESS OFFICE (I-308)

Chairman	Richard Lifton, M.D., Ph.D. Janet Budzinak	TAC S-341 (Dr. Lifton's Assistant)	737-4420 737-1091
Administrator	Linda Chiaraluce	SHM I-308	785-2650
Associate Administrator	Gabriel Pethick	SHM I-308	785-5408
Accountants	Linda Estacion Barbara Amendola Diana Jones Peggy Stephens	SHM I-308 SHM I-308 SHM I-308 SHM I-308	785-3262 785-3257 785-5411 785-6966
Assistant Administrator	Kim Zarra	SHM I-308	785-5403
Office Assistants			
Sr. Administrative Assistant	Joan Hinchcliffe	SHM I-308	785-2650
Administrative Assistant	Randi Cochran	SHM I-308	785-2649

These offices support the work of all members of the Genetics Department. They maintain grant and personnel records, arrange for the purchase of supplies, secure the services of Physical Plant and Housekeeping, assist in the preparation of grant applications, provide secretarial service, and act as a general information center with regard to University policies and procedures.

D. GRADUATE SCHOOL OF ARTS AND SCIENCES, HGS

Dean	Jon Butler 432-2733
Associate Dean, Biological Sciences	Richard Sleight 432-2744
Assistant Dean, Biological Sciences	Robert Harper-Mangels 432-1884
Assistant Dean, Office of Diversity and Equal Opportunity	Liza Cariaga-Lo 432-0763
McDougal Graduate Student Center at the Graduate School Director of Student Life	432-BLUE Lisa Brandes 432-8273
Admissions Office (questions related to admission or readmission to the Graduate School)	Robert Colonna 432-2749
Financial Aid Office (pay check address changes; loan applications; questions concerning pay checks and fellowships)	Jennifer Brinley 432-7980 Susan Wrzosek 432-2899 Marybeth Brandi 432-2738 HGS 126-128
Registrar, FAS 246 Church St.	Jill Carlton 432-2330
Deputy Registrar, Graduate School HGS, 320 York St. (course schedules & changes; dissertation progress reports; grades; leave-of-absence, petitions for degrees; petitions for extended registration; registration forms; SSN, address, and name changes)	Stephen Goot 436-0492
Information Office (general information; submission of petitions for degrees and dissertations)	432-2770 or 2771

E. MEDICAL SCHOOL OFFICES

Dean	Dr. Robert Alpern SHM C-203 785-4672
Deputy Dean for Academic & Research Affairs	Carolyn Slayman SHM I-202 737-4300
Associate Dean, Academic Development Ombudperson, School of Medicine	Merle Waxman SHM L-202 785-4680
Assistant Dean of Multicultural Affairs	Dr. Forrester Lee ESH 109 785-7545

F. COMBINED PROGRAMS IN THE BIOLOGICAL AND BIOMEDICAL SCIENCES (BBS)

Director	Lynn Cooley SHM I-363 785-5067
Associate Director	John Alvaro SHM L-200 785-3735
Assistant Administrative Director	Danielle Berhel SHM L-203 785-5683

G. THE MD/PHD PROGRAM

Director	Dr. James D. Jamieson ESH 310 785-4317
Program Coordinator (MD/PhD)	Cheryl DeFilippo ESH 319 785-2103
Registrar	Susan Sansone ESH 316 785-4403

H. OTHER UNIVERSITY OFFICES

Student Financial and Administrative Services (SFAS) (Bursar's Office, 246 Church St.)	432-2700
International Students & Scholars Office (246 Church St., 2nd floor)	432-2305
International Center (85 Trumbull St.)	432-3410
Night Student Security Transit Service	432-6330
University Housing Department (155 Whitney Ave.)	432-2160
University Police Communications Center, 344 College St. / Phelps Gate Administrative Offices, 98-100 Sachem St	432-4400
Yale Visitor Center (149 Elm St.)	432-2300
Yale University Health Service/Yale Health Plan (17 Hillhouse Ave.)	
Emergency	432-0123
Graduate Student Medicine	432-7529
General Information	432-0246

INTEGRATION OF THE MCGD TRACK WITH THE DEPARTMENT OF GENETICS

The main functions of the *Combined Program in the Biological and Biomedical Sciences* (BBS) concern recruitment of students, direction of their course of study in their first year at Yale, and assignment to the academic departments for their subsequent course of study including their thesis research.

Applicants apply to one of the eight tracks of the BBS rather than to an individual department or an individual investigator. Applicants to each track are evaluated by an admissions committee made up of faculty affiliated with the track, and they are admitted to the BBS and not to an individual department.

The tracks are designed to be more interdisciplinary and more broadly based than the departments. There are currently eight tracks:

- Computational Biology and Bioinformatics
- Immunology
- Microbiology
- Molecular Biophysics and Biochemistry
- Molecular Cell Biology, Genetics and Development (MCGD)
- Neuroscience
- Pharmacological Sciences and Molecular Medicine
- Physiology and Integrative Medical Biology

The Department of Genetics, in conjunction with the Department of Cell Biology and the Department of Molecular, Cell and Developmental Biology (MCDB), helps administer the Molecular Cell Biology, Genetics and Development Track (MCGD) of the BBS. The faculty of the three sponsoring departments share an interest in understanding the molecular basis of life and organismal development through research using genetics, biochemistry, molecular biology and cell biology.

The following is an overview of the MCGD Track; a more extensive description can be found in the MCGD handbook.

Participating Faculty: The track is made up of faculty from the three core departments plus associated faculty from other BBS departments.

Administration:

Track Directors	Shirleen Roeder (Academic Affairs) Susan Ferro-Novick (Admissions)
Registrar	Shirlene Scott
Admissions	DGA's Ron Breaker (MCDB), Peter Novick (Cell Biology), Valerie Reinke (Genetics).
Advising	Directors & DGS's: Shirleen Roeder (MCDB), Carl Hashimoto (Cell Biology) Charles Radding (Genetics).

First year curriculum:

During the first year, all MCGD students must carry out three research rotations. MCGD students should attend weekly journal clubs and departmental seminars sponsored by at least one of the departments affiliated with the Track. In addition, all MCGD students should attend the departmental annual retreats held in the fall.

Laboratory Rotations:

September 24 to December 14, 2007

January 2 to March 14, 2008

March 17 to May 18, 2008

Required course:

MCDB/CBIO/GENE 900a (Fall) / 901b (Spring): First Year Introduction to Research. This course consists of three laboratory rotations of about 10 weeks each, student presentations of their work during their three laboratory rotations (rotation talks), and a weekly seminar that covers ethics, grant writing and research methods in cellular and molecular biology.

Core courses:

GENE/MBB/MCDB 625a (Fall)

Basic Concepts of Genetic Analysis

CBIO 602a (Fall)

Molecular Cell Biology

MCDB/MBB 630b (Spring)

Biochemical & Biophysical Approaches in Molecular and Cellular Biology

At the end of the first year, each MCGD student declares a laboratory for thesis research. MCGD students generally join the department of his or her thesis advisor and are subject to the policies and requirements of that department. The qualifying examination will be administered by the academic department in the second year.

The requirements of the Genetics Department are described in detail in this Handbook; the requirements of other departments can be found in the appropriate departmental booklet.

DEPARTMENT OF GENETICS PROGRAM OF STUDY

The Department of Genetics offers a broadly based program of instruction and research in genetics and molecular biology leading to the Ph.D. degree, preparing its graduates for independent careers in research and teaching. The central component of the graduate program is the successful completion of original dissertation research and the preparation of a written dissertation under the direct supervision of a member of the faculty. Prior to undertaking full-time dissertation research, each student must successfully complete six graduate level courses, pass the departmental Qualifying Examination, and fulfill a number of additional requirements. Throughout a student's stay at Yale, he or she is expected to participate in departmental activities. Most students require five to six years to complete the program.

This Handbook, together with the Yale University Graduate School of Arts and Sciences *Programs and Policies* 2007-2008 booklet are the sources of information on the requirements in Genetics. The student is responsible for knowing the requirements and for meeting them in a timely manner.

A. Course Work

1. *Formal Graduate Level Courses*

Because students enter the MCGD track with widely varying backgrounds and interests, each student's program of courses is designed individually in consultation with the DGS and must be approved by the DGS, who may require a student to take a specific course to correct a deficiency. The Department requires that each student pass at least six graduate level semester courses, and the DGS may require additional courses for individual students. Course grades in the Graduate School are recorded as *Honors, High Pass, Pass, and Fail*. The Graduate School requires doctoral students to achieve a minimum grade average of *High Pass* and to meet an Honors requirement in each of the first two years of study. Typically, our students take 2 or 3 courses each semester for their first three semesters. Research and some seminar courses are graded as Satisfactory or Unsatisfactory and cannot be used to fulfill either the six-course or the honors requirement. For example, *First Year Introduction to Research* (GENE 900a and GENE 901b) and *Graduate Student Seminar* (GENE 675) may not be used to fulfill the six-course or Honors requirements. In addition, students must satisfy a departmental breadth requirement by demonstrating basic knowledge of genetics in at least three of four broad areas: molecular, cellular, organismal, and population genetics. Normally this requirement will be met by satisfactory completion of courses, many of which cover more than one of these areas. It is recommended that course requirements be completed by the end of the third term, so that students will be able to take the Qualifying Examination during the fourth term.

2. *Research Conduct*

All students are required to take a course on scientific ethics in their first year (i.e., *Gene 901b First Year Introduction to Research*). This course does not count towards the six course or Honors requirement, and it is graded on a satisfactory/unsatisfactory basis. Students must sign in to receive credit for this training; more than one absence results in a grade of unsatisfactory.

3. *Graduate Student Seminar*

All second-year students in the Genetics Department are required to take *Gene 675 Graduate Student Seminar (GSS)*. In this seminar course, each student prepares and delivers a seminar based on the literature and discusses presentations by other students. See Appendix 2 for *Guidelines for Graduate Student Seminar Presentation*. Each semester, the seminar course is led by different faculty members, and the topics chosen reflect the breadth of interest in genetics within the department and elsewhere at Yale. This course does not count toward the six course or Honors requirement, and is graded on a satisfactory/unsatisfactory basis.

B. Laboratory Rotations

All students are required to carry out research rotations in at least three separate laboratories in their first year. This exercise is formally listed as *Gene 900a and Gene 901b First Year Introduction to Research* and is an MCGD Track requirement. Each rotation typically lasts between 8 and 12 weeks, during which time the student is expected to actively participate on a daily basis in a research project under the direction of a faculty member. This course does not count toward the six course or Honors requirement, and is graded on a satisfactory/unsatisfactory basis.

A primary purpose of the research rotations is to identify a laboratory in which dissertation research will be carried out, so rotations should be performed in laboratories that are being considered as possible homes. Rotations allow the student to find out what particular laboratories and faculty members are like, and give the faculty a chance to assess how well a particular student fits into the laboratory. Rotations also serve to introduce students to a variety of techniques and scientific approaches. Therefore, the three-rotation requirement will not be waived merely because a student has already made a final decision concerning a dissertation laboratory.

C. Qualifying Examination

The qualifying examination is administered by the Department of Genetics for all students who have affiliated with the department. It is normally taken during the spring semester of a student's second year at Yale, but can be taken during the fall semester with the permission of the DGS. Students must have completed all course requirements and selected a thesis advisor before taking the qualifying examination. In addition, the exam should be scheduled after the student has obtained preliminary results on his or her thesis project. The examination is an opportunity for students to read in depth in areas of interest (including the thesis topic), to gain experience in the formulation and preparation of coherent research proposals, and for the faculty to identify whether areas of weakness exist in a student's knowledge that should be corrected. The qualifying examination is described in detail in Appendix 1.

D. Teaching

An important aspect of graduate training in Genetics is the acquisition of teaching skills through participation in courses appropriate for the student's scientific interests. These opportunities can be drawn from a diverse menu of lecture, laboratory and seminar courses given at the undergraduate, graduate, and medical school level. Ph.D. students are expected to participate in two semesters (or its equivalent) of teaching. Students are not expected to teach during their first year or during their qualifying exam. The teaching requirement for Genetics students often includes *GENE 500a, Principles of Human Genetics (A. Bale)*, the formal medical genetics class taught to medical students at Yale. Teaching assignments in fulfillment of the requirement must be approved in advance by the DGS.

Students teaching for the first time are required to participate in a session called *Teaching at Yale Day* conducted at the Graduate Teaching Center. This year the *Teaching at Yale Day* is scheduled for Tuesday, September 4, 2007 from 10:00 a.m. – 3:30 p.m. including lunch. *Teaching at Yale Day* is designed to help new teachers develop the skill and confidence to make an effective start to the semester. Typical themes include: establishing rapport with students, finding an effective style or teaching persona, setting expectations, and the Yale College system. Activities include: panels of experienced Teaching Fellows, small-group discussions with experienced facilitators, and skits and role plays.

Genetics students wanting to serve as teaching fellows after completion of their teaching requirement must obtain the approval of their thesis advisor and the DGS beforehand.

The Genetics Graduate Program is a full-time commitment and any part-time jobs for pay, including tutoring to Yale College students, requires the approval of the thesis advisor and the DGS.

E. Dissertation Research

The centerpiece of graduate education is the dissertation research and the preparation of the written dissertation.

1. Selection of a Dissertation Advisor

The single most important decision made by a graduate student is the selection of a dissertation advisor and laboratory. Each advisor has a distinctive style and approach to science and to graduate education, and it is important to carefully investigate potential laboratories before committing to that laboratory. The best way to assess a laboratory and one's "fit" to it is to carry out a research rotation in that laboratory. Students should talk to the current members of the laboratory: Are they happy and productive? What is the experience of the faculty member in having students successfully complete a dissertation? A student should consider whether he/she wants a big lab with lots of activity or a smaller lab with more day-to-day contact with the advisor. Some students prefer a lab with a high-profile director and potentially more visibility, whereas others thrive with a younger faculty member who is more accessible and who has a more recent memory of graduate student concerns. Other useful sources of information are more advanced students, the DGS, and other faculty. A student should discuss candidly with a potential advisor his or her goals and interests, and request the advisor to outline realistic potential projects. However, it is important to realize that a student is selecting an advisor and a laboratory, not a project, because several shifts of project may occur before a workable one is identified. The DGS must approve the selection of a laboratory. Occasionally an advisor may decide not to admit a student into a laboratory for any of a variety of reasons, such as lack of space, concerns about funding, or the belief that a particular student would fit in better in a different laboratory. Although students and potential thesis advisors are encouraged to discuss possibilities at any time, they are requested not to make a final commitment to each other for thesis research until the end of the last rotation.

On rare occasions, students switch dissertation laboratories after dissertation research has begun. When such a switch is contemplated, this should be discussed with the DGS as soon as possible, so that all options can be considered in a timely fashion.

The selection of a lab marks the assignment of a student from a BBS track to an academic department. Many MCGD students join the Department of Genetics. Students electing to be in the Department of Genetics but who join laboratories headed by faculty without appointments in the Department are expected to participate fully in the academic life of the Department. This includes attendance at journal clubs, research in progress talks, Genetics seminars, and the annual retreat. In addition, all academic requirements such as attendance at graduate student seminar must be met. As for all scientists at Yale, students are also encouraged to attend activities that are relevant to their particular scientific interests and to broaden their scientific knowledge.

2. Thesis Advisory Committee

The thesis advisory committee is an important body that helps each student navigate the shoals of dissertation research. The function of this committee is to periodically review and evaluate progress, provide advice and expertise about the project, and certify when a student has completed sufficient work to begin writing the dissertation. Therefore, the committee should be regarded as an ally and a resource, not an obstacle. On occasion, the thesis committee can help resolve differences between a student and an advisor.

a. Constituting a Thesis Committee

The thesis committee is chaired by the thesis advisor and normally is comprised of three or four faculty members, at least two of whom must have faculty appointments in the Department of Genetics. Additional members may be added at later times if deemed appropriate. The thesis committee is assembled by the student in consultation with the thesis advisor and approved by the DGS. Faculty who supervised first year research rotations and who served on qualifying examination committees are often appropriate as thesis committee members. Faculty members with expertise in the area of the dissertation research are particularly helpful and should be sought out as thesis committee members.

A student should be cautious about suggesting committee members who are frequently unavailable, because their presence on the committee may make it difficult to schedule meetings in a timely fashion. Names, addresses and telephone numbers of committee members should be given to the Genetics Registrar, following approval by the DGS.

b. Thesis Committee Meetings –

The thesis committee must meet for the first time no later than December 15th of the fall term of the third year. The student should canvas the committee members and the advisor for acceptable dates and times and schedule a meeting. Subsequent meetings must be held once a year or more frequently if desired by the student, the advisor, the committee, or the DGS. Meetings should be convened more often if the research has run into difficulty or if a change of research direction is contemplated. If a student experiences difficulty in scheduling thesis committee meetings, he or she should inform the DGS immediately rather than delay scheduling the meeting.

Prior to the first meeting of the thesis committee, the student must prepare a 10-page thesis research proposal in consultation with the advisor and distribute it to committee members (see Appendix 3 for guidelines). This will normally be a revised version of the proposal prepared for the qualifying examination. Prior to subsequent committee meetings, each student should prepare a 2-3 page outline of progress made and of proposed research. This outline should be distributed to the committee members one week before the meeting and should be discussed with the committee during the meeting. **After each committee meeting, the advisor must submit to the DGS a summary of progress and the discussion of the committee.** In some cases a more detailed report may be required by the DGS. This report is also distributed by the DGS to the other members of the committee and the student. In addition to formal committee meetings, each student should keep in close contact with the individual members of the committee so as to make the best use of their expertise. **Note: a student will not be permitted to register for subsequent terms unless an annual committee meeting is held and the report is submitted to the DGS.**

F. Research-in-Progress (RIP) Series

All students, beginning in their third year, are required to present their research once a year at *Graduate Student Research-in-Progress*, held weekly on Tuesday morning during the second-half of the spring term. These presentations are intended to give each student practice in presenting his or her own work before a sympathetic but critical audience and to familiarize the faculty and the rest of the department with the research. Students should not feel compelled to present only polished, finished pieces of work, but also to present on-going projects including a discussion of difficulties, because useful suggestions are often made at RIP. Students in their sixth year do not have to present in this series if they will present their thesis seminar in that academic year.

G. Dissertation Prospectus

By May 15th of the third year at Yale, each student must prepare a written summary of the proposed nature and scope of the dissertation research, together with a provisional title for the dissertation. This document should be written in clear, plain English with minimal jargon, abbreviations, or colloquialisms. Because the prospectus is required fairly early in a graduate career and because of the uncertainties of research, the content of a thesis may change over time, and a student should not feel bound by what is submitted. The dissertation prospectus for Genetics students is usually an updated and somewhat abbreviated form of the thesis research proposal prepared for the student's first thesis committee meeting. (*Appendix 4 The Dissertation Prospectus, Suggested Guidelines from the Executive Committee of the Graduate School* outlines the components that must be included.) The prospectus must be signed by the advisor indicating that the prospectus has been approved and submitted to the DGS. The DGS may require additional changes. Once the DGS has approved the prospectus, it will be submitted to the

Graduate School Registrar. **Students will not be admitted to candidacy, nor will they be allowed to register for the 4th year of study, without an approved Prospectus.**

H. Admission to Candidacy

After all pre-dissertation requirements are successfully completed (Course requirements, Honors requirement, Qualifying Examination, Dissertation Prospectus), a student will be admitted to candidacy for the Ph.D. degree. These requirements are normally met in three years. **A student who has not been admitted to candidacy will not be permitted to register for the fourth year. Exceptions must be approved in advance by the DGS, the department faculty, and the Graduate School Associate Dean.**

I. Master's Degrees

M.Phil. - The Master of Philosophy degree can be awarded to Ph.D students who have been admitted to candidacy. See the Yale University Graduate School *Programs and Policies* booklet.

M.S. - Students are not admitted for this degree but may be awarded this degree if they leave Yale without completing certain requirements for the Ph.D. degree. See the Yale University Graduate School *Programs and Policies* booklet.

J. Evaluation of Progress

Students may view their academic record (unofficial transcript) on-line.

All students are encouraged to have frequent conversations with the DGS, course instructors, and (in later years) the thesis advisor as well as members of the thesis committee. In addition, students will receive a copy of the summary statement of each thesis committee meeting. In this way, students will develop an accurate, ongoing sense of their own progress. The department faculty will formally evaluate the progress of each student at the end of every academic year. The evaluation will be based on performance in courses, laboratory rotations, and the Qualifying Examination. In later years, the advisor and thesis committee will report to the faculty on the student's thesis research progress. If at any point the faculty finds deficiencies in a student's performance, a detailed letter will be sent to the student by the DGS describing those deficiencies and making suggestions to remedy them.

Finally, at the end of the academic year by (April 28, 2008) the Graduate School requires a *Dissertation Progress Report* from students in their 4th, 5th, and 6th year. This report is now completed on-line at the following web site: <http://www.yale.edu/sis/dpr/>. The DPR needs to be approved by the faculty advisor, and by the Director of Graduate Studies. It is a good idea to type the report into word and copy and paste into the on-line Dissertation Progress Report site to avoid losing the data.

GENERAL TIMETABLE

Year Requirement

- 1 Course Work in Accordance with MCGD Track Requirements (including GENE 900a and GENE 901b First Year Introduction to Research: laboratory rotations and rotation talks, ethics, grant writing, methods in MCGD)
Choose Thesis Advisor and Department

- 2 Course Work (including graduate student seminar)
Honors Requirement must be met by the end of the second year
Begin Thesis Research
Qualifying Examination (***generally in the spring term***)

- 3 Thesis Research
Teaching Requirement (one term, often GENE 500b Principles of Human Genetics)
Thesis Committee Meeting (***first meeting must occur before December 15th***)
Thesis Research Proposal (prepared for 1st thesis committee meeting)
Research-in-Progress (RIP) Presentation (***middle of spring term***)
Thesis Prospectus (***end of spring term May 15th***)
Admission to Candidacy

- 4, 5 Petition for MPhil in Fall Semester of 4th year
Teaching Requirement is normally fulfilled before the 5th Year
Thesis Research
Thesis Committee meeting
Research-in-Progress (RIP) presentation
Annual Dissertation Progress Report

- 6 Complete Thesis Research
Final Thesis Committee Meeting to obtain approval of advisor and committee members to write thesis
Petition for PhD Degree and submit final thesis to the Graduate School
Present Thesis Seminar
Review Readers' Reports and make any corrections
Present hard-bound copy of thesis to the Genetics Department

MD/PhD STUDENTS

MD/PhD students affiliate with the Department of Genetics Graduate Program via a different route than other incoming graduate students in the Department, resulting in some modification of the academic requirements for the PhD portion of the MD/PhD degree. Typically, one or more research rotations are done during the first two years of medical school (in many cases, the first rotation is done during the summer between years one and two). No set number of research rotations is required. MD/PhD students officially affiliate with the Department of Genetics after selecting a thesis advisor and consulting with the DGS. MD/PhD students interested in Genetics are required to consult with the DGS prior to formal affiliation to determine an appropriate set of courses tailored to the student's background and interests.

The courses, rotations, and teaching requirements for MD/PhD students entering the Genetics Graduate Program (see below) are modified from the normal requirements for PhD students. Besides the modifications in these three requirements, MD/PhD students in the Department of Genetics are subject to all of the same requirements as the other graduate students in the department.

Coursework

Four graduate level courses taken for a grade are required (two Yale graduate level courses taken for a grade during Medical School may be counted towards this requirement at the discretion of the DGS). Coursework is aimed at providing a firm basis in genetics and in cellular molecular mechanisms, with graduate-level proficiency in genetics, cell biology and biochemistry. In addition to these four courses, all Genetics students are required to take two semesters of Graduate Student Seminar and Scientific Ethics.

Required Courses

Basic Concepts of Genetic Analysis (GENE 625a)
Graduate Student Seminar (2 semesters; GENE 675, graded Sat/Unsat)
Scientific Ethics (as part of GENE 901b, graded Sat/Unsat)

Recommended Courses

Molecular Genetics of Eukaryotes (MB&B 743b)
Human Molecular Genetics (GENE 810a)
Biochemical and Biophysical Approaches in Molecular and Cellular Biology (MCDB 630b)
Cellular Basis of Human Biology/and Histology Lab (CBIO 502)
Molecular and Cellular Basis of Human Disease (CBIO 601)

Electives

Other courses may be taken in a wide variety of fields relevant to the biological and biomedical sciences.

Laboratory Rotations

One or more rotations are necessary to identify a thesis advisor. No set number of research rotations is required.

Teaching

One semester of teaching is required. Previous teaching while enrolled at Yale Medical School may count toward this requirement at the discretion of the DGS.

Qualifying Exam

MD/PhD students take their qualifying exam in the semester following the completion of their coursework. The structure of the qualifying exam is identical to that for other Genetics PhD students. Students read with three faculty members for five weeks, one of whom supervises the reading on the thesis research topic, but who is not the thesis advisor. The following two weeks are devoted to writing two research proposals, one on their thesis research. An oral exam follows in the eighth week. For details, see the Qualifying Exam section of this handbook.

Prospectus

MD/PhD students submit their prospectus once their qualifying exam has been completed, but no later than the 30th of June following their exam.

Candidacy

MD/PhD students will be admitted to candidacy once they have completed their coursework, obtained 2 Honors grades, passed their qualifying exam, and submitted their dissertation prospectus.

Thesis Committee

All students are required to have one thesis committee per year, beginning the semester after passing their qualifying exam. However, students are strongly encouraged to consider having additional meetings if they feel their project could benefit from the assistance of members of the thesis committee.

DEPARTMENTAL ACTIVITIES

In addition to the formal academic requirements outlined in previous sections, students are expected to participate in various departmental activities.

A. Journal Club and Research-in-Progress

Departmental *Journal Club* meets Tuesday mornings from 9:30 to 10:30 a.m. in the Genetics Seminar Room (SHM I-304). Members of the faculty and research staff present new and exciting papers from the literature.

During the second half of the spring semester, the graduate students conduct a *Research-in-Progress* series in which two students talk about their research every Tuesday. Students are expected to attend *Journal Club* and *Research-in-Progress* and are encouraged to participate in the discussion.

B. Seminars

Genetics Seminars are held on Tuesday afternoons at 4:00 p.m. in Brady Auditorium preceded by coffee/tea at 3:45 p.m. Geneticists from around the world are invited to describe their research. Students are expected to attend Genetics seminars. Interested students will be invited to meet with seminar speakers for an informal lunch. In addition, students are encouraged to invite and serve as host for two speakers each year.

C. Retreat

The Department Retreat, a weekend program of informal research talks and discussions, is scheduled for October 19-20, 2007 at the Inn at Jiminy Peak, Massachusetts. Faculty, students and fellows attend this function. This Retreat provides an outstanding opportunity to keep up to date with the diverse research underway in the department and to participate in vigorous scientific discussions. Students are expected to attend the Retreat, and are encouraged to present their research in a poster session. For information about the 2007 Genetics Retreat, see Kim Zarra in the Genetics Administrative Office.

D. Clinical Genetics Conferences

Students and other non-clinical members of the Department are invited to attend the Clinical Genetics Conferences, in which clinical cases recently referred to the Genetics Consultation Service are presented and discussed. This provides exposure to genetic problems as they present in families and individuals. The postdoctoral clinical fellow and the attending physician on service are responsible for the presentations, and other specialists are frequently invited to participate. Although patients presented are not identified by name, the rules of confidentiality of patient-related information (according to standard medical practice) are extended to all those participating in the conferences. The conferences are held on Tuesdays at 10:45 a.m. (after Journal Club) in SHM I-304, and last 1 hour. Topics are generally posted in the Genetics Clinic Office, WWW 305.

RESEARCH EXPENSES

A. Supplies

In general, costs of research supplies and equipment are covered by grants or contracts held by the faculty member in whose laboratory research is carried out.

B. Travel to Scientific Meetings

Attendance at scientific meetings is an important part of graduate education. Limited travel funds are available to students in years 1-3. Students should see the Genetics registrar regarding the travel/supply allowance and provide the following information: title, place and time of the meeting; relevance to the research; title and authors of paper being presented (if applicable); amount required for travel, registration, food, and lodging. Preference for travel funds will be given to students who have passed the qualifying examination and especially to students scheduled to present a paper or a poster at the meeting.

Travel Advances and Expense Reports for students in years 1-3 are processed through the Graduate Program Office by the Genetics Registrar.

C. Use of Computers

Most labs are well equipped with computers or other shared resources for graduate students to analyze data for their dissertations.

FINISHING UP

A. Completion of Dissertation Research

Prior to beginning the writing of the thesis, the thesis committee must meet and certify that the experimental results necessary for writing the dissertation have been completed. It is very helpful for the student to present an outline of their thesis to their committee members for this meeting. Often, additional experiments are still being performed, and it is important for the committee to decide if the outcome of those results is necessary for completion of the thesis or whether the thesis can be submitted successfully without the results of those remaining experiments. If difficulties arise or if it is unclear whether the final experiments were successful, another meeting of the thesis committee should be held and a decision reached whether or not further experimentation is required. As always, a report of the meeting must be sent to the DGS, committee members, and the student.

B. PhD Dissertation

See *Appendix, The Nature and Role of the Doctoral Dissertation. Principles and Suggested Guidelines from the Executive Committee of the Graduate School.*

1. *Writing the Dissertation*

The Graduate School provides a booklet of instructions for the preparation and presentation of the doctoral dissertation. A Dissertation Submission Packet is available from the Genetics registrar as well as at the Graduate School Information Office. Thesis-quality paper is available through Yale RIS; this is far cheaper than other sources, they will deliver, and they can charge a grant.

Most students devote one to several months' full-time effort to writing their thesis. Submission deadlines always come up faster than is imagined; be sure to allow ample time to receive and incorporate the comments of the thesis committee members. The Department and the Graduate School expect the thesis advisor and the thesis committee members to be actively involved in assuring the quality of the thesis by reading unbound copies and offering constructive criticisms. Some advisors are willing to read the thesis on a chapter-by-chapter basis as it is being written, while others prefer to see a complete version. Most committee members prefer to see the complete version after the comments of the advisor are incorporated. Each student should discuss the schedule of writing and review with the advisor and committee members early in the process. A completed draft of the thesis should be given to all committee members at least 3 weeks prior to the submission date. Each committee member will provide written and/or verbal comments that the student should address in the final copy of the thesis that is turned in to the Graduate School. The student must obtain approval from the advisor or DGS of the final version before it is finally submitted.

Graduate School degrees are awarded in December and May. Students must file a *Petition for Degree* with the Registrar (see *Appendix 5, Schedule of Academic Dates and Deadlines* and the Yale University Graduate School *Programs and Policies* booklet). Forms and instructions are available from the Genetics registrar, the Graduate School or on-line. Final deadlines for petition and submission of dissertations to the Graduate School are around October 1, 2007 (for December degrees) and March 17, 2008 (for May degrees).

The Graduate School requires one original unbound copy as well as one softbound copy for each reader (usually 2 inside and 1 outside). The student should be prepared to make any changes required by any of the readers in the final copies. Prior review by the thesis advisor and thesis committee makes revisions in the final, submitted version a rare exception. If necessary, however, revisions must be submitted to the Graduate School. One bound final copy is required for the Department and students normally prepare additional copies for their thesis advisor and for themselves. The student is reimbursed for the Department hardbound copy by submitting a receipt with the bound dissertation to the Genetics registrar.

2. *Evaluation of the Dissertation*

The dissertation will be evaluated by two "inside" readers (usually members of the thesis advisory committee, but not the thesis advisor) and one "outside" reader (who cannot be a member of the thesis committee, a member of the faculty of the Department of Genetics, or a collaborator on the thesis project or on a closely related project of the advisor). Outside readers are usually from another institution. The outside reader provides an impartial critique that helps the Graduate School to judge the quality of the thesis and to evaluate its own processes of review. Readers should be chosen by the advisor in consultation with the student.

Six weeks before the submission date, the student must provide the names and contact information for at least two potential outside readers to the DGS for approval. After the DGS approves the selection of the readers, the student invites the inside readers to evaluate the thesis. **The DGS invites the outside reader to evaluate the thesis; neither the student nor his/her advisor should communicate directly with the outside reader about the thesis at any time.**

A *Notification of Readers* form must be signed by the DGS and accompany the dissertation at the time of submission. After the student submits the thesis to the Graduate School, the Registrar will

send these copies of the thesis to the readers, who are asked to judge the acceptability of the dissertation and to provide comments. Students, in consultation with their advisor, are expected to incorporate any additional changes required by the readers into the Graduate School's unbound copy. After the Graduate School and the Department receive written copies of all readers' reports and the requested changes have been made, the DGS, acting as the representative of the faculty of the Department of Genetics, signs a departmental recommendation form for conferral of the Ph.D. degree. The Graduate School Deans committee and the Corporation vote to approve that recommendation. The student is notified by the Dean that the degree has been conferred.

3. Thesis Seminar

Each student is required to give a department seminar on his/her research. The thesis seminar is scheduled through the Genetics registrar and can occur after submission of the thesis. However, the seminar must be presented **before** the DGS signs the departmental recommendation form for conferral of the Ph.D. degree. **See the Graduate School Calendar for the date that the departmental recommendations are due.**

4. Thesis Research Publications

When material is published from dissertation research, the Graduate School requires that it include a statement saying that the paper is taken from (or based on): "a dissertation submitted to fulfill in part the requirements for the degree of Doctor of Philosophy, Yale University".

Where a student has been supported by a training grant, regulations require that the following statement be included in publications: "This investigation was supported by National Research Service Award (number of the training grant) from the NIH (awarding unit)".

The Genetics registrar can supply the relevant grant information. If a student has received other grants (for example, NSF), these should be acknowledged, as should any financial aid received from faculty research grants.

5. Starting Postdoctoral Positions

Students frequently start postdoctoral positions before the degree has been formally awarded. In such cases, most institutions require a letter from an appropriate University official, such as the Registrar, DGS, or Department Chairman, which certifies that the student has satisfactorily completed all the requirements for the degree. Such a letter cannot be written until the Department has received the readers' evaluation of the thesis.

REGISTRATION

Also see the Yale University Graduate School *Programs and Policies* 2007-2008.

A. General Information

All students are required by the Graduate School to register, whether they are in residence, *in absentia*, or submitting a dissertation. An unregistered student is not permitted to use University facilities, including the libraries and the Health Service. For advanced students, certain requirements must be fulfilled prior to registration. These include annual thesis committee meetings and the submission of the Thesis Prospectus and the annual Dissertation Progress Report. For information about registration for new and returning students, please see the Graduate School Academic Calendar.

NB: Registration packets (including ID/sticker and course enrollment information) for all returning students will be available and should be picked up in the Genetics Graduate Program Office.

Late registration incurs a Graduate School fine and must have permission from the DGS and Associate Dean.

All registration and course enrollment is done on-line and must be approved by the DGS. Any changes, i.e. course added or dropped, changed from credit to audit or vice versa, must be reported to the Graduate School by submitting a course-change form signed by the DGS to the Genetics Registrar. Forms are available in the Genetics Graduate Program Office, the Graduate School, or on-line.

NB: Please see the Graduate School Academic Calendar (Appendix 5) for deadlines for submitting course schedules and changes. Course schedules and changes submitted after the Graduate School deadlines incur late fees, payable by the student.

Summer registration is also required of all students supported on Yale-administered funds and students in residence who wish to use University facilities during the period June 1 through August 31 (*i.e., essentially all students in the Genetics Graduate Program*). There is no fee for summer registration if you have been registered during the preceding academic year. Information about summer registration is sent to students during the preceding spring term and summer ID stickers are available at the Graduate School.

B. Foreign Student Registration

Foreign students must register at the International Students/Scholars Office, 246 Church Street, 2nd floor, **before** registering at the Department. This office also helps with visa procedures and concerns.

C. In Absentia Registration

A student whose program of study requires full-time study at another institution, or dissertation research on a full-time basis outside of the New Haven area, may (on recommendation of the DGS and with permission of the Dean) register *in absentia*. Students contemplating *in absentia* registration should consult with the DGS as soon as possible in order for the requisite approvals to be obtained.

D. Leave of Absence

A student in good standing who is current with his/her degree requirements and wishes to interrupt study temporarily for personal reasons (for example, maternity leave; financial necessity; health problems) may be granted a leave of absence with approval of the Department and the Dean. A PhD student is **not** eligible for leave of absence after the 4th year of study except for reasons of pregnancy, maternity or paternity care, or military service. Students contemplating taking a leave of absence should consult with the DGS as soon as possible to determine eligibility and be informed of the rules regulating leaves, and in order for the requisite approvals to be obtained. See the Yale University Graduate School *Programs and Policies* booklet.

E. Residence Requirement, Six-Year Limit

Each student must be registered in New Haven for at least three (3) academic years. Any exception to the residence requirement must be approved by the Department and the Graduate School Associate Dean. At the other extreme, the Graduate School sets a six-year limit for completion of the Ph.D. A student who has not completed all degree requirements at the end of six years must petition the Graduate School for an extension of his/her terminal date. This is done through the DGS; forms are available in the Genetics Graduate Program office, the Graduate School, or on-line.

TUITION AND FINANCIAL AID

Also see the Yale University Graduate School *Programs and Policies* 2006-2007 and the BBS funding guidelines.

A. Tuition

With rare exceptions, all Ph.D. students are charged full tuition for four years (eight terms). In essentially all cases, tuition for graduate students in Genetics is paid by NIH NRSA institutional training grants, individual predoctoral awards from various agencies such as NSF, or by the Department, supplemented with Yale fellowships. Tuition and stipend for advanced students is paid by advisors' research grants.

After four years of tuition have been paid, the student is expected to continue registering until the dissertation is submitted or the terminal date is passed. The fee for continuous registration (*CRF*) is paid by a student's thesis advisor.

B. Financial Aid

The Department of Genetics attempts to ensure that all students registered in its Ph.D. program are provided with adequate financial aid. Because financial aid is budgeted

on a year-by-year basis, it is not possible to guarantee any particular level of financial aid in subsequent years. However, it is our expectation that graduate students in the Department of Genetics will be supported in the years to come at least at the level described below.

1. *Sources of Support*

For the 2007-2008 academic year, tuition (\$30,500/AY) will be paid for all students. In addition, a stipend of \$28,000 will be paid over 12 months. **All** stipends are considered taxable income, and students are expected to file a tax return with the IRS. The University will withhold tax on all research, teaching and other assistantships; on casual wages paid; and on the fellowship stipends of foreign students. Taxes are not withheld on fellowship or traineeship stipends for U.S. citizens. For the latter, most students file quarterly estimated tax reports. **NB:** Withholding forms for Connecticut State and Federal taxes must be on file at the Payroll Office, 155 Whitney Avenue and updated annually, otherwise the maximum amount will be deducted

from stipend checks. Students who are on assistantships in research (ARs) should file a Federal and State W4 form. See *Appendix 5 - Taxation of Scholarships and Fellowships*. Also, please refer to IRS publications *520 Scholarships and Fellowships* and *920 Explanation of the Tax Reform Act of 1986* for information on taxes. Foreign students should also refer to IRS publication *901 U.S. Tax Treaties*.

a) USPHS National Research Service Awards (NRSA) – Training Grants

These awards (which are also called traineeships) support the great majority of students in the Department during their initial years of study. NRSA's (training grants) are awarded to the Department by the National Institutes of Health (NIH), and pay one-half to two-thirds tuition plus a partial stipend of \$20,772. A supplement is added by the BBS or the Department of Genetics and the School of Medicine to bring the total tuition and stipend to the current University levels. These positions are only available to US citizens and permanent residents. Predoctoral students are supported by NRSA's for three years. Taxes are not withheld for students on NRSA's, and such students are expected to file estimated tax reports with the IRS.

b) External Fellowships

There are several fellowships administered by federal sources for which students may be eligible (e.g., National Science Foundation, Department of Defense). Announcements of these fellowships are forwarded to eligible students and are on-line at the respective websites. Also, Dean Sleight's office maintains an extensive file of fellowships and publishes the on-line *Graduate School Fellowship Guide*. Students should be aware of the fellowships that are available, and should make every effort to apply for those for which their training and background are appropriate. Being awarded a competitive individual fellowship carries with it several advantages. Stipends on such fellowships are occasionally higher than the NRSA level, funds for travel and laboratory expenses may also be available, and the award will strengthen a student's *curriculum vitae*. In addition, students who are awarded a competitive fellowship that is open to students on a national level are paid a substantial bonus to their stipend, currently \$4,000/year, in accordance with the Graduate School's *Combined Awards Policy*.

c) University Fellowships

These are awarded by the Graduate School, but **Graduate students in Genetics do not usually apply for University Fellowships**. However, University Fellowships are provided by the Graduate and Medical Schools for HHMI and NSF awards to make up the difference in tuition and as an additional stipend supplement incentive (Combined Award Policy). These fellowships are only for the duration of the award period.

d) Research Assistantships

Federal and non-Federal research grants and contracts awarded by outside agencies to support the research projects of faculty members may contain funds for research assistantships that can be held by graduate students. Appointments as research assistants are usually only made to students who have been admitted to candidacy for the Ph.D. This is the most common source of support for advanced students, and federal taxes are withheld.

2. How Are Stipend Checks Paid?

The Graduate Student Payroll System (GSPS) is a **semi-monthly** payroll; checks are paid on the 15th and the last day of each month. Students may have their checks deposited directly to their banks. Forms are available in the Graduate Program Office, the Financial Aid Office of the Graduate School or on-line. Questions about pay checks should be directed to the Genetics Registrar.

3. Loans

Students should consult the Financial Aid Office, 127 HGS, tel. 432-2737. This office can provide short-term loans during temporary financial crises (for example, if a stipend check is delayed). This office also has up-to-date information on federally sponsored student loan plans.

OTHER INFORMATION OF INTEREST

A. Graduate Program Steering Committee

This Committee is comprised of faculty and students appointed by the Chairman and the DGS, and oversees various aspects of the graduate program in Genetics. Students with general concerns about the graduate program or suggestions for improvement should contact the DGS or a member of the Steering Committee.

B. Grievance Procedures

A situation can arise where you disagree with a decision made about you, or where you feel you have been treated wrongly by someone in the University. There are several courses of action open to you. You may ask a faculty member, the DGS, the Director of the BBS, or the Department Chairman for advice or assistance. Alternatively, if the matter is one that you do not wish to raise within the Department, there are University-agencies that can act for you.

The Dean of the Graduate School (432-2733) is the initial contact for students for cases in which a student has a complaint against a member of the Faculty of Arts and Sciences or a member of the administration. The Provost of the University (432-4444) governs cases against a faculty member who is not a member of the Faculty of Arts and Sciences or against an employee who is not an administrator in the Graduate School or who is not subject to discipline by the student's Dean. In addition, there is a standing committee to consider student complaints of sexual harassment. Also see the Yale University Graduate School *Programs and Policies*, 2006-2007. Also see the *Yale University Graduate School Grievance Procedures* booklet which students receive at the start of the academic year or on-line.

C. Vacation Policy

Students making satisfactory progress toward the completion of their PhD degree will have two weeks vacation in addition to the stated University holidays and the break from Christmas Eve through New Year's Day. Refer to the academic calendar. Additional vacation time will require permission from the thesis adviser.

D. Ethical Conduct of Research

If you believe you have identified a potential case of scientific misconduct, there are a number of steps you should take to resolve the matter. First, you should informally discuss the matter with a faculty member you know, such as your thesis advisor or member of your thesis committee. Such discussions may help define the problem, put it in perspective, and help you decide whether further steps are warranted.

If you believe the matter requires official notice, the next level of discussion is at the departmental level involving either the Director of Graduate Studies or the Chairman. The department takes these matters seriously, and will not penalize an individual for raising reasonable concerns. All steps will be taken to preserve confidentiality to safeguard all parties involved in the dispute.

If the matter is not satisfactorily resolved at the departmental level, the following individuals in the School of Medicine have an interest and experience in dealing with such problems and may be a good source of advice and help:

Sara Rockwell, Ph.D. (737-1870)
Director, Office of Scientific Affairs
L-203 SHM

Merle Waxman (785-4680)
Associate Dean, Academic Development and Ombudsperson
Director, Office of Women in Medicine
L-202 SHM

Finally, if the matter is not satisfactorily resolved, you should contact the Deputy Dean of the Medical School, Professor Carolyn Slayman (737-4300).

E. Graduate Student Representation

Graduate Student Assembly (GSA): Students in the Graduate School of Arts and Sciences have their own student legislative body as a forum for dealing with issues across the School, for providing student representation on University and Graduate School committees, and for consultation with administrators. The Graduate Student

Assembly (GSA) is based on a proportional representation model, with student representatives selected by their individual departments or degree programs. Each department or program in the Graduate School has at least one student representative, with further representatives allotted proportionally by the size of the student population. For comprehensive and up-to-date information on the Graduate Student Assembly, please visit their web page.

Graduate and Professional Student Senate (GPSS): The GPSS is predominantly a social group made up of representatives from each of the graduate and professional schools. Each department in the Graduate School of Arts and Sciences elects one Senator. GPSS members plan parties and events for all graduate and professional students, are members of various university committees, and help run the graduate/professional student pub. For more information about GPSS, please visit their web page.

F. Science Education Outreach Program

The Department of Genetics sponsors a Science Education Outreach Program (SEOP). This program is comprised of a faculty member, graduate students and postdoctoral fellows working together to bring hands-on science to school children in the New Haven area. The purpose of this program is to encourage students, especially from a minority background, to enter the fields of science and medicine. For the 2007-2008 academic year, the program includes 4 TA positions. It is expected that students in years 1-3 will volunteer to teach in SEOP. Graduate students will receive information in the fall from Paula Kavathas, the Genetics faculty minority representative. Advanced graduate students wishing to share their interests and talents should also contact her (785-6223 or 785-6518).

G. McDougal Graduate Student Center

The McDougal Center in the Hall of Graduate Studies (HGS) has facilities and services designed specifically for the graduate student community. Created through a generous gift from Alfred McDougal, a Yale alumnus, and his wife, Ms. Nancy Lauter, the McDougal Center's mission extends beyond the walls of HGS. It's a great physical space where students can socialize, study and attend workshops, but also a forum where students can create opportunities to interact with the larger Yale and New Haven communities. The Center has a Common Room with the student-run Blue Dog Café, tables and seating for reading, eating, and relaxing; internet ports, and computer kiosks. The McDougal Center also houses the Dossier Service, the

Resource Library, meeting rooms, a recreation room, and a computer cluster. Students and postdocs gather here for social, cultural, and professional development activities developed by the McDougal Center offices of Graduate Career Services, Student Life, and Teaching Fellow Preparation and Development. Current graduate students, the McDougal Fellows, and WAT staff work with Center staff to plan programs and events for the graduate student community.

Lisa Brandes, Director of Student Life, oversees the development of the Center and its programs. Students with questions or interest in the Center are encouraged to contact Lisa Brandes in person (HGS 123), by phone (2-2583) or email (Lisa.Brandes@Yale.Edu).

H. Yale Health Plan (YHP)

The Yale Health Plan is a prepaid comprehensive health care program, located at the University Health Services Center (YUHSC), 17 Hillhouse Avenue. All Yale graduate students enrolled at least half-time are automatically members of the YHP, and are eligible for ambulatory care services and use of the infirmary at no additional charge. For entering students, membership in YHP begins on the day of registration. Yale requires that students have hospitalization coverage as well. For the 2007-2008 academic year this coverage will cost \$1,176 and will be included as part of the regular financial aid package.

For a separate fee, students may purchase a YHP prescription plus supplemental benefit plan to extend the basic benefits. The prescription plus supplemental benefit plan is automatically assigned to students each year and **MUST BE WAIVED** if not wanted. Waiver forms are available from the Genetics Graduate Program office, the YUHSC, or on-line.

Students may enroll their spouses and dependents under age 19 by filing an application with the YHP. A fee is applied through the Bursar's Office. Only those spouses and dependents enrolled are eligible to receive YHP benefits and service.

Members of the YHP use the University Health Services for both routine and emergency outpatient care. The YHP encourages its members to select a personal physician from its full-time primary care medical staff. Appointments are scheduled weekdays between 8:30 a.m. and 5:00 p.m. There is a Graduate Student Medicine Service (432-0312) through Internal Medicine. Emergency care is available 24 hours a day. In addition to primary care and emergency care, a full range of specialty services are available, including Allergy, Dermatology, General Surgery, Mental Hygiene, Neurology, Obstetrics and Gynecology, Ophthalmology, Optometry, Orthopedic Surgery, Otolaryngology and Urology.

For further information about the Yale Health Plan please call or visit the Yale University Health Services Center subscriber services office at 17 Hillhouse Avenue (432-0246).

I. Security

All members of the Yale community are alerted to the fact that Yale is not immune to crime, property loss or even personal injury. Security services are provided in the Medical School by both the Yale Campus Police and members of the University Security Programs Department. The Yale Campus Police are state-certified officers with full arrest powers. Security officers assigned to the Security Programs Department are not police officers. They provide services such as building patrol, access control, escort services, and parking lot security. Individuals are urged to walk in groups or request an escort (785-5555). Visit the Department of Security on the web.

Night-time transportation is available via the *Nighttime Shuttle*, free of charge with a valid ID, for students working late in the evenings. The Nighttime Shuttle also provides door-to-door service between 6:00 p.m. to 1:00 a.m. Call 432-6330 or visit them on their website <http://www.yale.edu/parkingandtransit/shuttle/>. A brief outline of *Security Services & Policies in the Medical Area* and a booklet and flyers on security are available at the SHM Rotunda or at the Security Office, room IE41 SHM (785-5555).

J. Photo ID/Composite Student Picture

All new incoming students will receive a photo ID at registration. Information on the student ID is included in information to matriculating students from the Admissions Office during the summer. Lost/stolen IDs will be replaced at a cost of \$25 payable by the student. Visit them on the web.

The Genetics Department does a composite of student photos in the fall coordinated through the Medical Media Services Department, room IE-93 SHM. Incoming students will receive information at the BBS orientation.

K. Keys and ID Access

The Graduate Registrar issues a key to the graduate student lounge (SHM I-112), which also grants access to more generally accessible departmental rooms, including the library, mailroom, and conference rooms. Laboratory keys are issued by the administrative offices of the individual laboratories: Genetics labs in SHM (Room SHM I-308), BCMM labs (BCMM 109), KBT labs (KBT 1204); and MB&B labs (North: JWG 304 / South: SHM C-106).

In the Medical School we have photo ID access for all entryways. ID access to the Medical School, the Boyer Center for Molecular Medicine, Hope/Brady Bridge Door, Child Study Center Door, and Yale-New Haven Hospital Bridge Door is arranged for incoming students prior to their arrival by the BBS Office or the Medical School Security Office. ID access to Kline, BASS, or OML must be arranged through the main campus security office.

L. Student Parking

Daily parking is available at the Medical School at SFAS-billable, monthly rates. Limited off-peak parking is available free of charge to students. Information and applications are available in the Medical School Parking Office, SHM IE-41. Visit them on the web 24-hour parking is available on campus at Pierson-Sage Garage at SFAS-billable monthly rates. Applications are available at the Central Parking Office, 155 Whitney Avenue.

M. Graduate Student Lounge

Room SHM I-112 has been set aside as a graduate student lounge (GSL), to be used for studying, informal get-togethers, and other graduate student functions.

N. Department Library

Journals are now available on-line through the Yale Medical Library. Some current journals, books and reference materials are donated from faculty collections. *Books and journals should not be taken from the library except for photocopying in room SHM I-307. Users are also requested to reshelve books and journals.*

O. E-Mail

Students automatically receive an email account. This information is sent to new incoming students during the summer by the Office of Student Financial and Administrative Services (SFAS). NetIDs control access to Yale's email servers (Pine on a UNIX system or IMAP or POP), various internet features, other computer hosts, and the student information system web page. Before you can use these services you must activate your net ID. If you encounter problems with your NetID, please see John Alvaro in the BBS office.

P. Mail

The departmental mailroom is SHM I-307. All students have a mailbox. Advanced students may also receive mail in their lab's box.

THE QUALIFYING EXAMINATION

(Revised 10/93, 08/95, 07/98, 07/99, 08/00)

The Qualifying Examination provides an opportunity for the faculty to evaluate students before their admission to candidacy to the Ph.D. degree. It is also a valuable learning experience where a student has a chance to read critically with faculty on the thesis topic and two other topics of interest to the student. The overall structure of the Qualifying Examination is as follows:

- A five-week reading period during which three topics (thesis topic and two non-thesis topics) selected by the student are studied in depth.
- A two-week period for the preparation of two research proposals (thesis and non-thesis).
- An oral examination covering the reading topics, the proposals, and other areas of genetics.

The Qualifying Examination requires the full-time attention of each student. Accordingly, students are exempt from laboratory and classroom activity. Ideally, the student should not be enrolled in courses during the qualifying examination period. If the student wishes to take a course concurrently with the Qualifying Exam, prior permission must be obtained from the DGS, and any necessary special arrangements must be made with the instructor of the course.

Guidelines for the Qualifying Examination

Setting up the exam

Several weeks before the beginning of the exam, the student consults with his/her advisor about topics and potential faculty readers. At least **one** of the three faculty members on the qualifying exam committee must have an appointment in the Genetics Department. The student should first identify faculty who can cover literature relevant to the thesis proposal. The other two reading topics must be unrelated to the thesis topic. The student may pick either the topic first and then find a faculty member to read with, or pick a faculty to read with and then jointly choose the topic. The student should have some familiarity with the non-thesis topics (from coursework or independent reading) so that current research in the field can be critically evaluated. Once the student has some ideas about the qualifying exam committee and topics, the student sends this information and a short description of the topics to the DGS for approval. The DGS may require modification of the reading topics if they are too broad, too focused or too closely related to the thesis topic. Based on this information the DGS, in consultation with the student, will appoint the committee and designate a Genetics faculty member as the Chairman. In consultation with the exam committee, the student establishes a schedule for the reading and writing weeks, and (most importantly) the date of the oral exam. A list of the final approved exam committee, the chairman and topics must be distributed by the student to all committee members, the advisor, the DGS, and the Genetics registrar.

- ◆ Select three faculty (at least one in Genetics) and three topics (one thesis, two non-thesis)
- ◆ Establish an exam schedule
- ◆ Obtain approval from the DGS
- ◆ Circulate the topics, reading period schedule, time & place of the oral exam, a list of committee members and the name of the chairman to the DGS, committee and advisor
- ◆ Give each committee member a copy of the Guidelines for the Qualifying Exam (available in the Graduate Program office)

Reading Period (5 weeks)

The reading period should not exceed 5 weeks. During the reading period, the student meets for one to three hours per week with each faculty reader to discuss and critically evaluate specific scientific papers; however, the frequency and length of the meetings may vary at the discretion of the faculty readers. The focus of the reading period should be on primary research literature, supplemented when necessary by reviews. The choice of papers may be made by the student, the reading faculty or both, and the thesis advisor may be consulted about the reading. Typically, students read in depth 2-5 papers per week for each of the faculty readers.

- ◆ Meet with each of the faculty readers at least once per week
- ◆ Develop outlines for the research proposals
- ◆ Remind committee members and advisor of the time and place of the oral exam

Writing Period (2 weeks)

The student will prepare two brief research proposals (8-10 pages each, double spaced), one on the thesis topic and the second in one of the other reading topics. Each proposal should concisely review the pertinent background information, logically and clearly state the questions being asked, and intelligibly lay out the experimental plan according to the following outline:

Specific Aims (1 page or less). A concise statement of the general problem under study and the explicit goals of the project.

Background and Significance (no more than 3 pages). This section should place the experiments in context and describe the system in a manner intelligible to a non-specialist. This should include a critical evaluation of the relevant literature and a description of how this project will advance knowledge in the field.

Experimental Plan. Outline the experiments envisioned at this time and indicate how they will help you attain the overall goals of the project. Acknowledge pitfalls and limitations of your experimental approach, and if possible suggest alternative strategies. Suggest possible results and how they would be interpreted.

References should be included at the end and do not count in the page limit. It is often helpful to include a page or two of diagrams/figures/tables.

The proposals are normally written during the writing period, although the student may elect to begin working on them sooner. The proposals should demonstrate the student's ability to recognize important unsolved questions and to design experiments to answer them. They should, therefore, be original proposals, developed solely by the student and not read by anyone else before being handed in to the exam committee. The thesis proposal may reflect discussions with the research advisor, but it should emphasize the student's priorities and original ideas. The non-thesis proposal should be developed from one of the reading topics, and it will serve as an example of independent scholarship. The committee will judge the proposals on the basis of logic, feasibility and originality.

- ◆ Write the thesis and non-thesis proposals (do not have them read by other students or faculty)
- ◆ Submit the proposals at the end of the writing period to each member of the exam committee, the advisor, and the Graduate Program Registrar

Preparation for Oral Examination

The oral examination must take place no more than one week after submitting the written proposals. To prepare for the oral exam, the student is strongly encouraged to organize and take a practice oral exam with students and postdocs from their lab or from the laboratories of their qualifying exam committee. It is helpful to give the mock exam committee drafts of the research proposals. The thesis advisor and other faculty are not allowed at the practice exam.

- ◆ Prepare short talks on each proposal
- ◆ Recruit a mock exam committee consisting of students and postdocs
- ◆ Hold a practice exam

Oral Examination

All oral exams will follow the same general format. The oral examination will focus on the student's ability to present and defend the two research proposals. The student should come to the exam with short (~15 minute) presentations for each proposal and visual aids, such as overheads. The actual presentations will take longer since faculty will interrupt with questions. The committee can also ask questions on topics

covered during the reading period and general topics in genetics that will have been covered in courses and recent Genetics seminars. The thesis advisor will not be present at the oral exam. The exam usually lasts about 2 hours.

At the beginning of the exam, the committee will excuse the student for a brief period so it may consult. At the end of the oral exam, the student will again be excused. Following this, the student will return to the exam room and the committee will tell the student its evaluation, as well as provide feedback on the entire exam period. Students are also encouraged to meet individually with committee members to receive additional input regarding their proposals.

Evaluation

The final evaluation by the exam committee faculty takes into account the student's performance on the examination and performance in lab (based on the advisor's evaluation). A written summary of the qualifying examination evaluation will be prepared by the examination committee chair and submitted to the DGS. Copies of the written evaluation will be forwarded to the student, committee members, advisor, and Genetics registrar.

The three possible outcomes are:

Pass - the student did well during the reading period and satisfactorily defended the research proposals.

Conditional pass - there were deficiencies in literature proficiency, the written proposals **or** the oral defense of the proposals. Possible recommendations for further work (to be specified by the examination committee) include additional reading, revisions to written proposals, additional coursework and a repeated oral examination. If a student is required to take a course, it should be taken for credit and the student should receive an Honors or High Pass grade. The DGS may be consulted about the specific recommendations.

Fail - the student's grasp of the literature, written work **and** defense of the proposals were unsatisfactory. The student will be informed of the problems at the end of the exam. The student may be given the opportunity to re-take the exam after the student has had time to do remedial work. Usually, the same examination committee will preside over the second oral exam. Failure to pass the exam a second time will be grounds for dismissal. The committee and DGS may also fail the student without an option to retake the exam, which would result in dismissing the student from the graduate program. The committee must consult with the DGS and advisor before its recommendations are finalized.

Overall exam timing

The qualifying examination must be completed by the end of the second year (fourth term, May 31). Extensions must have prior approval of the DGS. A timeline for the exam is:

- ◆ Several weeks before the exam: meet with advisor and DGS to discuss the exam
- ◆ Before exam starts: meet with reading faculty to decide on reading for first week
- ◆ Weeks 1-5: meet weekly with each reading faculty
- ◆ Weeks 6-7: write proposals
- ◆ End of week 7: hand in proposals to committee, advisor, Graduate Program Office
- ◆ By end of week 8: oral examination

Role of the Thesis Advisor

The student should start his/her exam only after a thesis project is well established in the lab. The thesis advisor should already have had substantial input to the aims and experimental approaches for the project. The student should already have done significant reading on the thesis topic, including all recent papers from their lab, and discussed these papers with the thesis advisor. Therefore, the student will enter the qualifying exam with the benefit of intellectual support from his/her advisor, possibly including the opportunity to read grant proposals written by the advisor. The reading period will provide the student with dedicated time for additional in-depth reading of literature relevant to the thesis project. The student is encouraged to modify his or her thesis project aims based on the reading period.

During the exam, the student may continue to consult with the advisor about specific papers to read, especially on the thesis topic. However, the student must write the thesis proposal independently and the thesis advisor may not read the proposal. There will be ample opportunity for the advisor to discuss the proposal with the student after the exam is completed.

The thesis advisor will provide a written evaluation of the performance of the student in the lab to the DGS. The thesis advisor will not be present at the oral examination.

Responsibilities of the Committee Members

- Read the entire Qualifying Examination guidelines!
- When you are asked to serve on an examining committee, you should feel free to comment upon and modify the topic on which you are reading. Is it too broad or too narrow? Is it worded clearly? Could the topic be revised to make it more interesting or more appropriate in scope?
- Before the beginning of the reading period, you should help the student embark upon an appropriate program of reviewing and reading. The student will probably have his/her own ideas regarding general references (reviews or chapters which survey each topic as a whole) and specific references (key research papers), but may have overlooked other valuable references and will benefit from your advice and help.
- During the reading period, the student will return to see you regularly to ask questions and discuss the reading. It is best to set up a schedule of meetings at the beginning of the reading period.
- If during the course of the reading period it becomes apparent that the student is having difficulties, the committee chairman should be notified immediately.
- At the finish of the writing period, the student will deliver to you two brief research proposals designed to illustrate the student's capacity to develop interesting ideas for research. You must read both proposals, regardless of whether your reading topic is represented in them.
- At the oral examination, you should design your questions to serve three functions: to amplify and clarify the proposals; to explore the breadth of the student's knowledge within each subject area; and to assess the student's overall preparedness for independent Ph.D. research.

Responsibilities of the Chairman of the Examining Committee

In addition to the duties shared with the other committee members, the Chairman has two special responsibilities:

- *To monitor the student's performance during the reading period.* The Chairman should contact the other committee members mid-way through the reading period to find out if there are any problems. If it becomes apparent that the student is experiencing difficulties during the reading period, discuss the problem candidly with the student and other committee faculty to identify the source of the problem and to try to resolve it. The Chairman should not hesitate to contact the DGS in such a situation.
- *To preside over the oral examination and to communicate the results of the entire examination to the student and DGS.* At the beginning of the oral examination, the usual procedure is for the committee to meet without the student for 5-10 minutes to discuss the proposals and the student's overall performance up to the oral examination. Following the oral questioning, the student is asked to leave the room again, and then the Chairman presides over a discussion of the student's performance on the examination as a whole. The Chairman should take a vote on which of the recommendations to make to the DGS (see **Evaluation** section). The student then returns and the committee reports its evaluation and transmits specific advice, feedback & recommendations. Finally, the chairman sends a written summary to the DGS stating the student has taken the Qualifying Examination, the date, the committee members present, and the outcome of the examination.

Responsibilities of the Director of Graduate Studies

- To discuss with each student their qualifying exam topics and faculty, modify them if necessary, and give final approval.
- To be available for consultation with the committee.
- To obtain a written evaluation of the performance of the student in the lab from the thesis advisor and send a copy to the exam committee chairman. The evaluation does not need to be extensive, but should alert the committee to any significant problems the student is having in the lab. This letter will not be forwarded to the student.
- To send copies of the examining committee's report to the student and advisor.
- To notify the Graduate School of the grade of the Qualifying Examination.

Graduate Student Seminar Guidelines

Marketing yourself and your research are important ingredients for success. The Graduate Student Seminar has two major goals:

To improve the presentation skills of graduate students To assist students in critical evaluation of the literature

- Second year students are required to attend. Second year students will present *Current Papers* during the fall semester, and *Classic Papers* during the spring semester.
- The seminar begins at 4:00 PM. Presentations are expected to start promptly at 4:00 PM and last no longer than 50 minutes.
- Everyone is expected to have read the papers before the seminar and to participate in discussion following the presentation. Be critical – not every paper is a good one.
- Each student is required to prepare a one page summary of the paper that is due on the day of the seminar.
- All students are required to attend every seminar. Failure to attend without an excused absence from the instructor will result in failure of the course. Excused absences are rare but may include illness or family emergencies. Preparation for the qualifying exam does not qualify for an excused absence. Students who are excused must prepare a three page in depth summary and critique of the papers, and hand it in no later than the following week.

Presentation

The student should read the paper, prepare an outline of it, and be prepared to discuss it with the faculty advisor prior to the seminar. The student is required to meet with the faculty advisor before presenting the seminar. Meetings will be monitored by the faculty coordinator of the seminar course.

a. Introduction

State the title and the authors.

Give the overall goal of the study.

Tell us why the goal is an important one; if the goal is not important tell us why.

Give us the background. This involves explaining the foundation the work is built upon and why these results are noteworthy. This will usually involve reading more on the subject than is included in the papers you will present. This is why you must begin working on your seminar some time before the day you will present it.

b. Results

There will not be time to present all of the results. Therefore, present only the crucial ones. For each result there is usually a specific question being addressed and a methodology being employed. State the question first. Second, go over the method. Do not assume everybody is familiar with the methods. However, if during earlier presentations, a method was described very carefully, just touch upon it. If the methods used were not the best ones to address the question, state this and tell us why and describe methods that might better address the question.

Show us the results. You may wish to edit tables or label graphs etc. to make them clear. Evaluate the results. Are there error bars? Are the results significant? How many flies/worms/fish/yeast were used in the experiment? How many times were the experiments conducted? Are they presented clearly?

c. Conclusions

State the important conclusions. Remember that a conclusion and an interpretation are different. Are the conclusions justified by the results? Do the results support the model presented? Do the authors make conclusions or is a laundry list of experiments presented? What is the interpretation of the study? Are there other interpretations? What are they and why? Explain why the papers are significant, different, and selected to be read in this class.

Practice

One of the most effective ways to improve your presentation skills is to practice your talk out loud. Perhaps your friends and roommates will listen to your practice talks and give suggestions.

Evaluations

An evaluation form will be handed out to students attending the seminar. The form will be filled out and returned to the speaker to assist the speaker in improving her/his presentation skills. This evaluation will be anonymous. The faculty advisor will also provide an evaluation as well as a grade for the seminar.

Course Materials

The current paper in the fall or classic paper in the spring will be emailed to the student presenter by the designated faculty member at least a week prior to class. The student presenter must forward the pdf article to Joann Sweasy, the course instructor, by the Thursday morning prior to the next week's class. The paper will then be uploaded to the class server on the Yale web site. Once this has been done, each student in the class will automatically be emailed to log on to the server and download the paper.

GUIDELINES FOR GENETICS RESEARCH PROPOSAL FOR FIRST THESIS COMMITTEE MEETING

The thesis proposal written for the qualifying examination will serve as a starting point. The revised proposal should incorporate important suggestions from your qualifying committee and your advisor. In addition, the focus or plans for your thesis work may have shifted since your qualifying examination. The proposal should be no more than 10 double-spaced pages and conform to the following format:

1. **Specific Aims** (1 page or less). A concise statement of the general problem under study and the explicit goals of the project.
2. **Background and Significance** (no more than 3 pages). This section should place the experiments in context and describe the system in a manner intelligible to a non-specialist. This should include a critical evaluation of the relevant literature and a description of how your research project will advance knowledge in the field.
3. **Preliminary Results** (2-3 pages). Description of the experiments you have already carried out and the results and your interpretation of them.
4. **Proposed Experiments** (3-4 pages). Outline the experiments envisioned at this time and indicate how they will help you attain the overall goals of the project. Acknowledge pitfalls and limitations of your experimental approach, and if possible suggest alternative strategies.
5. References should be included at the end and are not counted in the page limit. If necessary, you can also include a page or two of diagrams/figures/tables.
6. The complete proposal should be distributed to the thesis committee and the DGS *one week before* the committee meeting.

The main objective of writing this proposal is to familiarize your committee with your project. It also gives you a chance to refine your goals based on comments from your advisor and qualifying committee and any additional preliminary results you have obtained.

Prepare a short talk with overheads. The committee meeting is not an exam; it is intended to aid the productivity of your research efforts.

THE DISSERTATION PROSPECTUS

Suggested Guidelines from the Executive Committee of the Graduate School (April 1990)

The Executive Committee recognizes that the form and content of dissertations develop and change as work on them proceeds. The prospectus should therefore be viewed as a preliminary statement of what the student proposes to do and not as an unaltered contract. We also recognize that the appropriate form and typical content of a prospectus will inevitably vary somewhat from field to field. In most cases, however, we would expect a prospectus to contain the following:

1. A statement of the topic of the dissertation and an explanation of its importance. What in general might one expect to learn from the dissertation that is not now known, understood, or appreciated?
2. A concise review of what has been done on the topic in the past. Specifically, how will the proposed dissertation differ from or expand upon previous work? A basic bibliography should normally be appended to this section.
3. A statement of where most of the work will be carried out—for example, in the Yale library or another library or archive, in the laboratory of a particular faculty member, or as part of a program of field work at specific sites in the United States or abroad.
4. If the subject matter permits, a tentative proposal for the internal organization of the dissertation—for example, major sections, subsections, sequence of chapters.
5. A provisional timetable for completion of the dissertation.

* * * *

Although it is difficult to prescribe a standard length for the prospectus, it should be long enough to include essential information for all proposed topics but concise enough to focus clearly on the subject. About seven pages, including bibliography, should be sufficient in most cases.

The Genetics Dissertation Prospectus

A thesis research proposal, updated from the student's first thesis committee meeting, generally suffices for the formal Dissertation Prospectus. A cover page should be included with signature lines for the advisor and DGA to indicate their approval.

ACADEMIC DATES & DEADLINES FALL TERM 2007

Monday, August 27	New student orientation week begins.
Wednesday, August 30	SPEAK test for new international students in PH.D. programs.
Thursday, August 30	Matriculation ceremony.
Friday, August 31	Fall-term Online Course Selection (OCS) begins. Orientation in departments for all new students begins.
Monday, September 3	<ul style="list-style-type: none"> • Labor Day. • Administrative offices closed.
Tuesday, September 4	<ul style="list-style-type: none"> • Registration for returning students begins. • Orientation for all new teaching fellows
Wednesday, September 5	Fall-term classes begin, 8.30 a.m.
Friday, September 7	Final day to pick up registration materials from academic departments.
Friday, September 14	<ul style="list-style-type: none"> • Final day to apply for a fall-term <i>personal leave of absence</i>. • The entire fall-term tuition charge or Continuous Registration Fee (CRF) will be canceled for students who withdraw from the Graduate School on or before this date or who are granted a <i>leave of absence</i> effective on or before this date.
Wednesday, September 19	Fall-term online course selection (OCS) ends. Final day for registration. <i>A fee of \$25 is assessed for course schedules submitted after this date.</i>
Friday, September 28	One-half of the fall-term full-tuition charge will be canceled for students who withdraw from the Graduate School on or before this date or who are granted a medical leave of absence effective on or before this date (The CRF is not prorated.)
Monday, October 1	<ul style="list-style-type: none"> • Final date for the faculty to submit grades to replace Temporary Incompletes (TI's) awarded during the 2006-2007 academic year. • Due date for dissertations to be considered by the Degree Committees for award of the Ph.D. in December. • Final day to file petitions for degrees to be awarded in December.
Friday, October 26	<ul style="list-style-type: none"> • Midterm. • Final day to add a fall-term course. • One-quarter of the fall-term full-tuition charge will be canceled for students who withdraw from the Graduate School on or before this date or who are granted a <i>medical leave of absence</i> effective on or before this date. <i>The CRF is not prorated.</i> • Teaching appointments will not appear on the transcripts of students who withdraw from the assignment on or before this date.
Friday, November 2	<ul style="list-style-type: none"> • Readers' reports are due for dissertations to be considered by the Degree Committees for award of the PH.D. in December. • Final day to change enrollment in a fall-term course from Credit to Audit or from Audit to Credit. Final day to withdraw from a fall-term course.
Friday, November 9	<ul style="list-style-type: none"> • Departmental recommendations are due for candidates for December degrees. • Final day to withdraw a degree petition for degrees to be awarded in December.
Thursday, November 15	SPEAK test for international students in PH.D. programs.
Friday, November 16	Fall recess begins, 5.20 p.m.
Monday, November 26	Classes resume, 8.30 a.m.
Friday, December 7	Classes end, 5.20 p.m.
Friday, December 21	Fall term ends; winter recess begins.

ACADEMIC DATES & DEADLINES SPRING TERM 2008

Wednesday, January 9	Final grades for fall-term courses due.
Thursday, January 10	SPEAK Alternative Test for new international students in Ph.D. programs.
Monday, January 14	<ul style="list-style-type: none"> • Registration and spring ID validation begins. • Spring-term classes begin, 8:30 a.m.
Friday, January 18	Friday classes do not meet. Monday classes meet instead.
Monday, January 21	<ul style="list-style-type: none"> • Martin Luther King Jr. Day. • Administrative offices closed. Classes do not meet.
Thursday, January 24	<ul style="list-style-type: none"> • Final day to apply for a spring-term <i>personal leave of absence</i> • The entire spring-term tuition charge or CRF will be canceled for students who withdraw from the Graduate School on or before this date or who are granted a <i>leave of absence</i> effective on or before this date.
Friday, January 25	Registration and spring ID validation end. Spring-term online course selection (OCS) ends. Final day for registration. <i>A fee of \$25 is assessed for forms submitted after this date.</i>
Friday, February 8	One-half of the spring-term full-tuition charge will be canceled for students who withdraw from the Graduate School on or before this date or who are granted a <i>medical leave of absence</i> effective on or before this date. <i>The CRF is not prorated.</i>
Friday, March 7	<ul style="list-style-type: none"> • Midterm. • Spring recess begins, 5.20 p.m. • Final day to add a spring-term course. • One-quarter of the spring-term full-tuition charge will be canceled for students who withdraw from the Graduate School on or before this date or who are granted a <i>medical leave of absence</i> effective on or before this date. <i>The CRF is not prorated.</i> • Teaching appointments will not appear on the transcripts of students who withdraw from the assignment on or before this date.
Friday, March 17	<ul style="list-style-type: none"> • Due date for dissertations to be considered by the Degree Committees for award of the PH.D. in May. • Final day to file petitions for degrees to be awarded in May.
Friday, March 21	Good Friday. Classes meet. Administrative offices closed.
Monday, March 24	Classes resume, 8.30 a.m
Monday, March 31	<ul style="list-style-type: none"> • Final day to change enrollment in a spring-term course from Credit to Audit <i>or</i> from Audit to Credit. • Final day to withdraw from a spring-term course.
Monday, April 14	Readers' reports are due for dissertations to be considered by the degree committees for award of the PH.D. in May.
Thursday, April 17	SPEAK test for international students in PH.D. programs.
Wednesday, April 23	Departmental recommendations are due for candidates for May degrees.
Friday, April 25	Final day to withdraw a degree petition for degrees to be awarded in May.
Monday, April 28	<ul style="list-style-type: none"> • Classes end, 5.20 p.m. • Final day to submit Dissertation Progress Reports and Petitions for Extended Registration.
Tuesday, May 13	Spring term ends.
Friday, May 16	Final grades for spring-term courses are due for candidates for M.A. and M.S. degrees to be awarded at Commencement.
Sunday, May 25	Graduate School Convocation.
Monday, May 26	University Commencement.
Monday, June 2	Final grades for spring-term courses and full-year courses are due.
Friday, June 8	SPEAK Alternative Test for new international students in Ph.D. programs.

THE NATURE AND ROLE OF THE DOCTORAL DISSERTATION

Principles and Suggested Guidelines from the Executive Committee of the Graduate School

Distinguishing characteristics of the doctoral dissertation

The dissertation should demonstrate the student's mastery of relevant resources and methods and should make an original contribution to understanding the field.

Originality

The originality of a dissertation may consist in the discovery of significant new information or principles of organization, the achievement of a new synthesis, the development of new methods or hypotheses, or the application of established methods to new materials.

The idea of a dissertation need not originate with the student, nor must the line of research followed by the student be exclusively of his or her own design. We take it for granted that the ideas of faculty advisors will often play a significant role in shaping the dissertation.

Collaboration

It is permissible for students to use research done in collaboration with others as the basis of their dissertations, and more than one student may obtain the Ph.D. by using a body of data derived from a common research project. In the physical and biological sciences such collaboration is now normal. Each student is expected, however, to write a separate dissertation from an independent and original contribution to the research was.

Since the dissertation is expected to embody an original contribution to scholarship by a particular individual, multi authored dissertations are not permissible, and more than one student may not obtain the Ph.D. by using the same dissertation.

It may occasionally be appropriate to append to a dissertation the results of original, unpublished research by other scholars (with their permission). Such a contribution should normally appear as an appendix, and its authorship should be made clear both at the beginning of the appendix and in the table of contents of the dissertation.

The use of previously published work

Previously published work by the student may be used in the dissertation as long as it represents work done after the student was enrolled in the PhD program and as long as it has not been used previously to obtain another degree. It is not

permissible, however, simply to append off prints to the dissertation. The previously published research must be rewritten in such a way that it fits logically into the structure of the dissertation. There is no restriction on the kind of previously published research that may be used, but if the results of the research appeared in a multi-authored article, the independent contribution by the author of the dissertation must, as always, be made clear.

Unity and diversity within the dissertation

Normally it is expected that a dissertation will have a single topic, however broadly defined, and that all parts of the dissertation will be interrelated. This does not mean that sections of the dissertation cannot constitute essentially discrete units. Dissertations in the physical and biological sciences, for example, often present the results of several independent but related experiments.

The question arises from time to time of whether or not a series of unrelated, or at least loosely related, article-length essays can be submitted as a dissertation in the Humanities and Social Sciences. This has seldom been done at Yale and is not encouraged. We feel, however, that the faculty should keep an open mind on the question and that a student who wishes to present a case for a dissertation of this sort should be given the opportunity to do so.

Length and time to completion

Given the diverse nature of the fields in which dissertations are written and the wide variety of topics that are explored, it is obviously impossible to designate an "ideal length" for a dissertation. Virtually every one agrees, however, that a long dissertation is not necessarily a better one, and that quality of thought and clarity of exposition, not sheer bulk, are what value.

As was stated at the outset, we feel that the dissertation should demonstrate the student's mastery of relevant resources and methods and make an original contribution to understanding in the field. We do not feel, however, that it should be the major scholarly achievement of the student's entire lifetime as a scholar. The dissertation should help the student get launched on his or her professional career and not be a towering obstacle that delays the beginning of that career by many years.

Yale's official period of candidacy is six years, and we feel that all students should be able to complete the Ph.D. within that period. Normally three, or at the most three and one-half, years should be devoted to the completion of pre-dissertation requirements (courses, examinations, selection of a dissertation topic) and the remaining time, i.e., two to three years, to the dissertation.

This means that students, faculty advisors, and Directors of Graduate Studies should give serious thought to the scale of the proposed dissertation topics. There should be a reasonable expectation that the project can be completed in two to three years.

* * * *

This working paper has been prepared by Jerome Pollitt, Dean of the Graduate School, on the basis of deliberations by the Executive Committee of the Graduate School. Its members are:

Marie Borroff, Lampson Professor of English
 Leo Hickey, Professor of Geology and Geophysics and Biology
 George May, Sterling Professor of French
 Martha Constantine-Paton, Professor of Biology
 T. Paul Schulz, Brachman Professor of Economics and Demography
 H. Bradford Westerfield, Wells Professor of International Studies and Professor of Political Science

Also participating in the discussions were three Associate Deans of the Graduate School: Robert E. Bunselmeyer, David C. Spadafora, and Deborah G. Thomas.

TAXATION OF SCHOLARSHIPS AND FELLOWSHIPS

This is a summary of the federal and state tax treatment of scholarships, fellowships and assistantships. It has been prepared for distribution to students enrolled in the Graduate School. *Please be aware that University staff members may not provide income tax advice or assistance to individuals.* Since the tax laws are complex and may apply differently in individual circumstances, please consult your accountant or other tax advisor in order to ensure proper compliance. For additional information, you should read IRS Publication 520, Scholarships and Fellowships, available at <http://www.irs.ustreas.gov/>.

General Rule of Taxation

Under federal tax law, a scholarship or fellowship provided to a student in a degree granting program is not taxable if the entire fellowship amount is used to pay the costs of tuition, fees, books, equipment and supplies (required fees, books, equipment and supplies are limited to those specifically required of all students in a course).

Amounts in excess of these costs are taxable, as are any payments for services rendered such as the performance of research. Because the State of Connecticut income tax is based on taxpayer's federal adjusted gross income, taxable portions of scholarships and fellowships as well as payment for services rendered are also subject to State of Connecticut income tax.

Withholding and Reporting

Scholarships and Fellowships

With several important exceptions described below, the University does not withhold federal or State of Connecticut income taxes from scholarship or fellowship stipends and is not required to report these stipends to the respective taxing agencies as income. Students are responsible for reporting to the IRS and the State of Connecticut Department of Revenue Services any portion of their awards that is properly taxable. Therefore, students who receive fellowships or scholarships should keep their award letters and receipts for tuition and required expenses in order to substantiate their taxable and/or nontaxable fellowship income.

Important: Students who are not subject to withholding may be required to file quarterly estimates tax payments with the International Revenue Service and the State of Connecticut. Failure to file may result in interest and penalty assessments.

Exceptions

International Students

For international students, the University and other grantors are generally required to withhold federal income taxes at a rate of 14% of that part of the award which is in excess of tuition, required fees, books, equipment and supplies. This provision applies to non-resident alien students who hold F, J, M or Q visas. Other international students may be subject to withholding at a rate of 30% of their stipends. Students may receive refunds of amounts in excess of taxes owed after they file appropriate federal and state tax returns.

Students should be aware of any tax treaties between the U.S. and their country of residence and, where applicable, may reduce or eliminate the required amount of federal income tax withholding by filing the appropriate forms with the University Tax Department located at 155 Whitney Avenue, second floor, Room 22. To schedule an appointment with the University Tax Department, please call 432-5530 or 432-5597 or email Jodie.stewart-moore@yale.edu or daysi.cardona@yale.edu. We encourage you to visit the International Tax Office website at http://www.yale.edu/finance/tax/int_tax/index.html for more information regarding payments to international students. The University reports taxable fellowship and scholarship income paid to international student on a Form 1042-S, a copy of which is also sent to the student.

Teaching Fellowships

Most students are admitted to the Graduate School with the expectation that they will teach for some period of their awarded fellowship period. The University is obligated to withhold federal and state income taxes on the stipend paid for teaching or, in some cases, on a portion of the fellowship stipend paid during the fellowship period. The University reports taxable teaching stipend income to the IRS, the State of Connecticut and the student on a Form W-2.

Research and Assistantship Stipends

Research and Assistantship stipends are taxable income and the University withholds federal and state income taxes on these amounts. The University reports taxable assistantship and research stipends to the IRS, the State of Connecticut and the student on a Form W-2.

Note; The IRS does not require the University to withhold Social Security taxes (FICA) on the earning of students who perform services while they are enrolled as at least half-time students. Payments to non-resident aliens who hold F-1, J-1, M-1 or Q-1 immigration status may also be exempt from FICA.

Personal Tax Considerations

As students assess the effect of federal and state tax law, they should keep in mind the personal exemption and standard deductions available to taxpayers. Generally, taxpayers whose income is below the combination of the standard deduction and the personal exemption pay no federal income tax. For the calendar year 2006, the federal standard deduction was \$ 5,150 for single persons (\$10,300 for married couples who file jointly) and the personal exemption is \$3,300. However, if a student is eligible to be claimed as a dependent on another taxpayer's tax return (e.g. parents), the student may not claim the standard deduction. In certain instances, a student may have an obligation to file a return even where no tax is due. A student may likewise be required to file a State of Connecticut tax return.

Other Resources

Federal and States if Connecticut tax forms as well as tax publications and instruction booklets can be obtained by contacting the following agencies:

Internal Revenue Service	1-800-829-1040	www.irs.ustreas.gov
CT Department of Revenue Services	1-800-382-9463	http://www.ct.gov/drs/site/default.asp