Department of Microbiology & Immunology

2007-08 Graduate Student Handbook

We hope that your graduate training will be stimulating, your research fruitful, and your overall experience with colleagues and friends at Stanford enjoyable. This handbook is meant to be a guide for the requirements, both academic and administrative, that you will need to accomplish on your way to a Ph.D. It is by no means complete, but in conjunction with the *Stanford Bulletin*, it will help you achieve your doctorate with a minimum amount of hassle.

When questions arise (and they will, if they haven't already), use the resources available in the department: David Schneider (Program Director), Mary Jeanne Oliva (Student Services Administrator), your rotation and thesis lab advisors, and your best resource, your fellow students.

Welcome to Stanford!

Contents **Page**

Appendices:

PROGRAM OF STUDY

Admission

Prospective Ph.D. candidates should possess a bachelor's degree in a discipline of biology or chemistry, including some experience in biochemistry and molecular biology, chemistry, and genetics. Deadline for receipt of applications with all supporting materials is December 4, 2007, for Autumn 2008-09.

The Department of Microbiology and Immunology at Stanford University School of Medicine is committed to increasing its training of underrepresented minority groups.

Applicants must file a report of scores on the general test of the Graduate Record Examination (GRE). It is strongly recommended that the GRE be taken in October so that scores are available when applications are evaluated. The MCAT is not a substitute for the GRE.

In the absence of independent fellowship support, entering predoctoral students are fully supported with a stipend and tuition award. Applicants are expected to apply for predoctoral fellowships such as those from the National Science Foundation and Howard Hughes Medical Institute.

Students enter the Stanford graduate program in the Biosciences through one of a number of "home" departments or programs, of which Microbiology and Immunology is one. Students often remain in that program but are free to do their second and third rotations in any lab at Stanford and, should their interests lead them in a different direction, to transfer to any other Ph.D. program in the Biosciences for the remainder of their thesis work. This offers the optimal combination of flexibility and small size so that new students are not simply one of a hundred incoming graduate students but are instead, one of five or six who are quickly known by all in their program. For the remainder of this handbook, we will assume that students are entering and staying within the program. Students who transfer in and out will be fit into this overall scheme in the most sensible way possible. In most cases this will simply mean the addition of one or two courses. Where necessary, qualifying exams and other requirements can be adjusted according to individual circumstances.

The Medical Scientist Training Program (MSTP) provides funding and structure for a select group of incoming MD students to train in biomedical research with a view to attaining the PhD. MSTP students generally apply and are accepted to the MSTP program through the MD admissions process and sometimes do their Ph.D. work in M&I.

Curriculum

At the start of their first quarter, each new graduate student meets with Dr. David Schneider, the current Graduate Program Director, to chart the coursework needed to complete the requirements for a Ph.D. This is to ensure that all students have had appropriate undergraduate preparation for the program, and to identify gaps in basic science to be remedied during the initial period of graduate study. The required background coursework which most individuals have already had when entering the

program is listed here:

General Biology (2 quarters or 1 year)
Organic Chemistry (2 quarters or 1 year)
Physical Chemistry (1 quarter or 1 semester)
Physics (2 quarters or 1 year)
Biochemistry (1 quarter or 1 semester)
Biostatistics (1 quarter or 1 semester)
Advanced Genetics (1 quarter or 1 semester)
Advanced Molecular Biology (1 quarter or 1 semester)
Advanced Cell Biology (1 quarter or 1 semester)
Microbiology, Virology or Immunology

Gaps are filled by identifying Stanford courses given at the advanced undergraduate and graduate level by the Departments of Biological Sciences, Chemistry, Microbiology and Immunology, Cellular and Molecular Physiology, Genetics, Biochemistry, Cell Biology, Developmental Biology.

The core course requirements for students entering this year are given below and in **Appendix I.** Typical entering students satisfy all of these requirements within their first three to six quarters (this usually means taking three courses per quarter, two to five hours per week each).

Course requirements (Total of 11 different courses, not including Research)

Aut:	BIOSCI/DBIO/GENE 203	Advanced Genetics (4 units)
	BIOSCI 230	Molecular and Cellular Immunology (4 units)
	MI 250*	Frontiers in Microbiology & Immunology (1 unit)
Wtr:	MI 209	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites, Part I (4 units)
	BIOSCI 214/BIOC 224	Cell Biology of Physiological Processes (5 units)
	MED 255	Ethics: The Responsible Conduct of Research (1 unit)
Spr:	MI 204	Innate Immunology (3 units)
	MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites, Part II (4 units)
	MI 215	Principles of Biological Technologies (3 units)
One of the following:		
	DBIO 210	Developmental Biology (Spr, 5 units)
	IMMUNOL 201/MI 211	Advanced Immunology I (Wtr, 3 units)
	IMMUNOL 202/MI 212	Advanced Immunology II (Spr, 3 units)
	MCP 256	How Cells Work: Energetics, Compartments and Coupling in Cell Biology (Spr, 4 units)
	CSB 210	Signal Transduction Pathways and Networks (Wtr, 4 units)
	CSB 220	Chemistry of Biological Processes (Aut, Alternate Yrs., 4 units)
	SBIO/BIOC/BIOPHYS 241	Biological Macromolecules (Aut., 3-5 units)

Additionally: At least one elective chosen by the student and advisor.

*Register for MI 250 (Journal Club) once in first year and once in second year, for a total of 2 units.

Register for MI 399 Graduate Research as needed to maintain enrollment in 10 units each quarter, including Summer, until you reach TGR status (135 units) and begin register for MI 802 (zero units).

A minimum of 135 units is required for receipt of the Ph.D. from Stanford. A full load is considered 15 units. However, most students are supported by an assistantship (as are all M&I grad students), and are only allowed to take 10 units/quarter.

Transfer students may receive credit for up to 45 units of appropriate graduate study elsewhere. Transfer credit will be discussed at the initial meeting with the Director.

Grading Policy

All courses taken to complete the degree requirements must be taken for a letter grade and a "B" or better must be obtained. M&I graduate students who earn a “C” in a required course must retake the course. If the course is one of the two required electives, then the student may either retake the course or choose another course with the equivalent number of units.

Registering for Classes

Students can fill out their study lists through AXESS. The Study List is usually due 10 days after the first day of classes. Late fees are assessed if study lists are turned in after the deadline date. Students receiving fellowship or training grant stipends will not receive their quarterly checks until they have registered for at least 6 units, so it is advisable to register early.

All departments offer courses for formal or informal participation. You will need to complete certain departmental courses; many others are offered that may be of interest. Students frequently take advantage of the opportunity and take dance, music, language, and physical education classes as well as other bioscience courses. Request approval from your advisor before registering for any non-research related courses. The *Stanford Bulletin* gives complete details of courses offered.

Time Schedule

Quarterly time schedules are available at the M&I Student Services Office or the Registrar’s Office. The quarterly time schedule comes out roughly two weeks before the quarter begins and includes the university calendar, information on courses, registration, and payment of fees. This information is also available on AXESS.

Student Honor Code

First year graduate students are given a booklet, "Student Conduct Policies," in which policies and codes of conduct that all graduate students are expected to observe are described.

Regarding plagiarism, keep the following guidelines in mind:

> *When you use background material in introductions and discussions to research manuscripts and reviews: 1) If you take an idea, always reference the original paper that describes that idea; 2) If you paraphrase someone else's words, always reference the individual or paper immediately after making the statement; and 3) If you use the text or the words of someone else verbatim, always use quotation marks and credit the individual or published manuscript immediately following the quote* (9/93 Memo to M&I Graduate Students from Dr. Edward Mocarski).

Rotations

All entering students complete a minimum of two and usually no more than four lab rotations; one rotation per academic quarter on a quarterly basis. The first rotation must be done in an M&I lab, but students are welcome to rotate outside the department in their later rotations.

A first match is made to try to familiarize each student with the laboratory pursuing research in the area closest to his or her initial interests. During subsequent rotations the first-year graduate student may continue in the same interest area or may go on to other areas that become of interest after s/he is exposed to various research projects in another laboratory. Through consultations with individual faculty, midway through the first quarter the student chooses a program faculty member to work with for his or her second, third and possibly fourth rotation projects. Because there is great breadth of opportunity in research training, and because of the many labs with related interests, the student's performance during rotations will be evaluated by faculty (**Appendix II**). During the year, the student may continue to attend group meeting for any lab in which s/he has rotated.

Students who rotate in laboratories outside of the department and who subsequently choose to do their thesis work in these laboratories will either transfer into the relevant program or remain in the Microbiology and Immunology program. The latter route would be appropriate when the thesis work falls within the overall disciplines of microbiology and immunology. In such cases, the program maintains involvement with such students by requiring a co-advisor in the same scientific discipline.

Decisions will be made about the lab in which the student will do his or her thesis work sometime on or after April 1, assuming the student feels s/he has enough information to make a decision. Neither students nor faculty may make commitments as to which lab a given student will do their thesis work in before April 1. This is to ensure that only mature decisions are made and that everyone is able to exploit the rotation system to acquire all the information necessary to make this very important choice. In making the decision, students should talk to the faculty member concerned. The *Biosciences Student*

Handbook offers some excellent advice on choosing your rotation and thesis labs.

Seminar Programs and Journal Clubs

Fall Quarter Seminar Series. Microbiology and Immunology faculty will make presentations at Tuesday evening seminars for new graduate students throughout the Fall quarter to explain the general aspects of their research areas. Each of the Biosciences programs offers a similar seminar series and students are encouraged to attend as many of these other seminars as they would like.

Friday Noon Seminar Series

External. The external program invites well-known, cutting-edge investigators from both inside and outside the university to visit the department for the day on a Friday. The speakers are chosen through discussions between graduate students, postdocs and a faculty advisor early each summer. Invitees give a seminar on their recent work at noon, followed by a departmental lunch with students. They also meet individually with faculty and specific labs through the day. This seminar program serves several purposes, including keeping graduate students abreast of the most important work going on in their fields and giving them important opportunities to meet and talk with distinguished scientists.

Internal. On Fridays when no external speaker is scheduled, the Friday Noon Seminar is presented by individual labs within the department. A senior graduate student or post doc is chosen by her or his lab to present a half-hour talk on the current research. All senior graduate students are required to talk either at the Friday Noon Seminar series or in a comparable format (Cellular & Molecular Biology Symposium, select meetings, etc.) periodically.

Journal Club. First- and second-year graduate students are required to participate in the M&I Journal Club (MI 250), held on the Thursday evening immediately preceding a Friday external seminar.

Each invited speaker is asked to suggest one of her or his published articles for discussion at the journal club meeting. The paper is presented by a first- or second-year graduate student, and the faculty member whose laboratory is hosting the speaker will serve as a resource during this presentation.

To facilitate the journal club discussion, the presenter is asked to prepare a list of 2-3 experiments that s/he might propose should be done next to further the work of the visitor. These should not be the very obvious immediate next experiments, but a little more ambitious in terms of where the project should go in the immediate timeframe. They certainly can be the product of group discussion at the journal club. The presenter should at least toss a few ideas out to start the discussion. Of course, some of your ideas may turn out to have been done when you hear the seminar itself; in such cases, the challenge will be to think on the fly and adjust your suggestions between the seminar and lunch!

Students are required to attend both the internal and external departmental seminar presentations, and should, therefore, be able to deal with questions relating to those talks.

Students are also expected to be up-to-date on modern developments within the fields of microbiology and immunology, i.e., they should stay current with recent publications within the more relevant journals.

Other seminars available. There are eight basic science departments in the Stanford Medical School, the Departments of Biological Sciences and Chemistry in the School of Humanities, and several Interdepartmental Programs. Each has its own training and research program including advanced courses, seminars, and journal clubs. Integration with these other departments is done through attendance at seminars and courses as well as through interdisciplinary meetings held in many subject areas. These meetings, usually held weekly, include:

Cancer Biology minicourses (frequency varies)
Cell Biology Research and Journal Club series
Genetics Colloquium
Herpesvirus Journal Club
Immunology Journal Club
The Bay Area Parasitology Club (monthly)
The Bay Area RNA club (monthly)
Parasitology Journal Club (biweekly)
Prokaryotic Journal Club
Retrovirus Journal Club

Departmental Retreat

In Autumn Quarter each year, the department holds a Research Colloquium and Retreat at which faculty and students present their recent research. Two members of each lab speak at these retreats. This allows entering students to become familiar with the wide range of biological systems offered in the program while remaining close to one area that they may continue studying for their thesis research. At this departmental retreat, third-year graduate students are required to chair a session of talks and fourth-year students are required to speak. At least once during their graduate careers at Stanford, all students are required to present a poster at the retreat.

Teaching Assistantships

Teaching is an integral part of the graduate program training experience. All graduate students, regardless of support source, are required to act as teaching assistants for two courses. Whenever possible, the assigned courses are close to the student's area of interest and are assigned by the Director after consultation with the student. Teaching assistantships (TAs) are usually completed during the third year of training. If the student elects to do a third teaching assistantship, s/he must have the advisor's permission to do so, long before the course begins.

Scheduling of TAships is done well in advance with every attempt to distribute the load evenly. The Graduate Program Director assigns the courses based on requests from the faculty, requests from the students, and the student’s expertise.

Terminal Graduate Registration (TGR)

TGR status is reached when Ph.D. students have been admitted to candidacy, completed 135 units of coursework, and submitted the Doctoral Dissertation Reading Committee form. The Student Services Administrator will contact students when they are approaching TGR eligibility. Students should then register for TGR Dissertation, M&I 802 through AXESS. (Do not sign up for TGR Project, M&I 801, which is the Master's Project Thesis.)

TGR Grading is as follows: "S" for satisfactory progress, "N-" for unsatisfactory progress, and "P" for a final grade when everything has been finished. A hold on registration is placed for a student who receives an "N-" grade for more than two consecutive quarters. If a student withdraws by the deadline date specified by the Time Schedule, a "W" will appear on his/her transcript. A failing grade is "NP." Further registration following a grade of NP is contingent upon approval from the advisor, the department, and graduate program office.

Once a student goes TGR, s/he may enroll in up to 3 units. It might be a good opportunity to take that golf class! These units do not count towards the 135-unit graduation requirement.

Satisfactory Degree Progress

Students who are not making satisfactory degree progress will be placed on probation and will meet with the Director and Student Services Administrator to discuss the factors involved and steps that can be taken to improve their situation. A copy of the results of this meeting will be kept in the student's file. Unsatisfactory degree progress can include grades below "B" in formal coursework, N- or NP grades in graduate research, or substandard performance in other department requirements (including, but not limited to, attendance at journal club and performance of teaching assistantships).

In the event of a second quarter of unsatisfactory degree progress, the department steering committee may elect to dismiss a student. Procedures for the dismissal of students, and for the appeal process, can be found in the *Stanford Bulletin*.

THESIS COMMITTEE

General Philosophy

The faculty recognizes that students admitted to the Stanford Bioscience Program are among the best prepared and most motivated scientists-in-training throughout the world. We feel that students will best explore their creative potential and develop their intellectual and analytical skills through frequent collegial interactions with faculty. In this spirit, committee and proposal meetings are designed to allow an open and exciting exchange of scientific ideas and results. Through this, the student learns to develop, organize, and present his/her ideas and results while benefiting from the experience and insights of committee members. These meetings also provide an opportunity to identify areas for students to focus on as they develop as independent scientists.

Choosing a Thesis Committee

During Autumn Quarter of the second year, a thesis advisory committee is chosen by the student in consultation with her/ his advisor. This committee is composed of four faculty members: the advisor, two other M&I faculty, and one extra-departmental faculty member from the Stanford community. The decision as to the composition of the committee is based on the criterion of who are most able to assist in the overall advancement of the student's training with particular attention to their research direction. Additional members are possible, but is should be recognized that scheduling complications may arise with a larger committee. This committee is separate from the steering committee that administers the qualifying exam, but its composition is subject to approval by the steering committee.

The faculty members are committed to direct and frequent interactions with, and mentoring of, all students within the department; such close interactions are often critical for obtaining the strongest reference letters possible at the close of one's graduate training. Nevertheless, there may be instances in which students would like to have a larger number of committee members from outside of Program and fewer from within the department. In such cases, the student should petition the Program's Graduate Advisor, briefly explaining the underlying reasons.

Finally, students may invite to any committee or proposal meeting any Stanford faculty member whom they believe would enhance discussion and provide valuable feedback.

Research Proposal

A 10-page (double-spaced) research proposal based on the student's intended thesis topic is submitted to his or her thesis committee no later than **November 1st** of the second year. The research proposal is discussed with the student and feedback given on the appropriateness of all aspects of the project. The proposal is normally defended by the end of fall quarter, unless it is not possible to convene the committee before the holiday break.

Proposal Format

The aim of the proposal is for the student to describe and discuss his/her planned thesis research. It cannot be emphasized too strongly that there is no expectation at this meeting for the inclusion of any initial data. Rather, the following is expected:

- A clear and compelling grasp of why the proposed research question is interesting and important.
- A thorough understanding of the literature that provides the background directly leading to the student's thesis project and the literature pertinent to framing the thesis question and carrying out the proposed research.
- A clear experimental plan, with contingencies, for carrying out the research. A crude estimated timeline should be presented.
- Generally, the student should have developed the intellectual skills required for him/her to carry out the research project in a thoughtful, well-directed, and logical manner.

How to prepare

Starting as soon as you join a lab:

- Have frequent discussions with your advisor about your ideas and her/ his suggestions regarding the general area of your thesis research and specific ideas for your project.
- Become familiar with other projects in the lab and how they relate to your project.
- Read at least four papers related to your research each week. If you need help, ask your advisor for suggested topics and papers. Over the months prior to the proposal presentation this will provide initial depth and breadth in the thesis research area and will provide the background necessary for the student to make critical decisions regarding his/her own project.

Students are not expected to be expert in all literature related to their thesis work at the time of the proposal; this is the expectation for graduation and could not be accomplished in a 3-6 month period.

The Written Proposal

The written proposal should follow the general format of an NIH grant: Specific Aims, Background and Significance, and Description of the proposed research. It should not be longer than 10 double-spaced pages. Students should consult with their Program's Graduate Advisor for additional information.

The Oral Proposal

Proposal meetings will be scheduled for 90 minutes, and will include time for faculty consultation and post-meeting discussion. At the end of each meeting, the student and faculty committee members will decide together whether feedback will be given as a group or individually. Students are encouraged to take advantage of their committee members for direct responses following proposal and committee meetings, as well as any

other time. It may be useful in these discussions to articulate clear goals for the upcoming year.

Thesis Committee Meetings

After the oral proposal, **this committee will meet at least annually**, to receive a progress report from the student. Following each meeting, they will complete the committee report (**Appendix IV**) and give copies to the student, the supervisor and the Student Services Administrator. Any changes must be approved by your advisor, the Director, and the Department Chair, so please inform the Student Services Administrator if you are considering a change to your committee composition.

Beginning in the 4th year of study, the committee will meet semi-annually. The first meeting of the fifth year will include a discussion of what additional experimental approaches are expected to be performed by the student prior to writing the thesis. In addition, postgraduate plans will be discussed.

The Student Services Administrator will monitor and maintain the official records of thesis committee meetings. The primary responsibility of arranging meetings lies with the student, and the student maintains the responsibility to communicate information about his/her course schedule and other commitments rapidly to Student Services to facilitate scheduling if they need assistance.

In general:

- Proposal meetings will be scheduled for ninety minutes, and will include time for faculty consultation and post-meeting discussion. At the end of each meeting, the student and faculty committee members will decide together whether feedback will be given as a group of individually. Students are encouraged to take advantage of their committee members for direct responses following proposal and committee meetings, as well as any other time.
- At the end of each meeting, the faculty will discuss the student and faculty committee members will together decide whether feedback will be given as a group or individually. Students are encouraged to take advantage of their committee members for feedback directly following proposal and committee meetings as well as any other time. It may be useful in these discussions to articulate clear goals for the upcoming year.
- Students should treat these meetings much as they would a group meeting but presenting material over the past year.
- Students should hand out a 2-3 page outline or summary 1-2 days before the meeting.
- Students can request scheduling of an additional committee meeting at any time.
- It is the expectation of the faculty that the PhD project should be carried out and defended in five years or less under normal circumstances. Students enrolling for a sixth year must petition to the Graduate Advisor with a timeline for graduation and a statement of post-graduation plans. This petition will be required for registration.
- Any exceptions to the above timeline must be approved by the Program's Graduate Student Advisor.

University Oral Examination/Dissertation Defense

The purpose of the university oral examination is to test the Ph.D. candidate's command of his/her field after completion of the written Ph.D. thesis. Oral examinations are announced in the *Campus Report.* A one-hour public seminar is presented by the student, followed by the private exam. The following guidelines must be followed:

1) The University chair must be an academic council member from a department not represented by members of the examining committee.
2) Four examiners are required, of whom three must be on the academic council. A fourth member not on the academic council may be chosen by petitioning the Graduate Program Office if the advisor feels that s/he is expert in an area not easily filled by the department faculty.
3) The student's registration and candidacy must be valid for that quarter. A doctoral reading committee list must be on file at the Graduate Program Office.
4) The University Chair signs the university oral examination form after the committee votes on the candidate’s defense.

The "Notice of Intention to Complete Advanced Degree Requirements," (usually due in the first week of the quarter) should be completed through AXESS once the student is certain in which quarter they will deposit their dissertation. A list of deadline dates for the thesis to be submitted to the University's Graduate Program Office and is online at the registrar's office website, and may be requested from Student Services.

QUALIFYING EXAMINATION

In the late Spring/early Summer quarter of the second year, each student orally defends a formal research proposal on a topic outside the intended thesis project. Based upon successful defense of the proposal, the student is admitted to candidacy.

This proposal is on a subject of the student's own choosing but must be other than the intended thesis work. It may, however, be on a related subject, even within the same biological system. Obviously, neither another student's thesis work nor a proposal required for a course should be used as the basis of a proposal. The Qualifying Exam is intended to give the student an opportunity to carry out the first three stages of a research effort independently: the creation of an idea, the justification of that idea in terms of significance and feasibility, and the design of an experimental approach. The scope of the project should be appropriate for a single competent postdoctoral fellow who will devote three years to its successful outcome.

General goals of the exam are for the student to develop

1. a broad knowledge and understanding of the field
2. an historical perspective, and identification of seminal contributions
3. a knowledge of experimental procedures
4. critical judgment in the evaluation of data and results
5. new approaches and experiments
6. an ability to draw conclusions from proposed experiments and to propose alternatives.

Before the student starts on a proposal in earnest, he or she must submit short summaries of three possible topics to the Graduate Program Director, who, in consultation with the steering committee, will approve one or more as acceptable, in principle. These summaries should be submitted by **April 1st of the second year**. Students should consult their advisors well in advance of this date and do sufficient background reading to ensure that the chosen topics are of interest, experimentally accessible, and offer opportunities to be examined on both microbiologic and immunologic topics. Attending seminars and general reading over the second year should provide numerous possibilities.

Format

The format of the proposal should follow (including page limitations) that of an NIH grant proposal (including Abstract, Specific Aims, Background, Preliminary Results [where appropriate], Experimental Design, and References [with titles]). Sample postdoctoral fellowship proposals will be available to use as templates. The most common shortcoming of students' proposals in the past has been lack of development in the experimental design section where the planned methods are described. This is just as important as the background section and should be dealt with in reasonable detail. In most cases, there will be little if any in the preliminary results section. If you have chosen a topic in the system on which you are currently working, or perhaps as an offshoot of one of your rotation projects, then you can include any results already obtained. The written proposal must be submitted to the Graduate Program Director no later than May 1st of the second year.

The oral defense is an opportunity to explain and defend the proposal, and must be completed by July 1st of the second year of study (although most students prefer to defend within 2-3 weeks of completing their proposal, when possible). Remember that your committee has read the proposal, so do not regurgitate what you have written. Use this time to supplement the written proposal.

Recommended structure of the 90 minutes

1. Introduction (5 min.). State the goals of the project (i.e., the hypothesis being tested and/or the question being asked), the reasons why you feel it is worthy of support from a scientific (and, perhaps, medical) view, and summarize any background information which you feel is critical to an appreciation of the subject.
2. Summarize the main experimental approach (10 min.) and expected accomplishments.
3. Give a very short discussion of where you see the line of inquiry leading in the future (i.e., beyond the three-year period).
4. Conclude with a brief recap of the most important features of your proposal.
5. An open question period will follow your presentation. You should be able to defend your choice of problem and approach to solving it as well as the technology selected.

The qualifying examination committee is composed of members of the department's steering committee, and **Appendix III** will be used to record the results of the examination. If your topic is within the expertise of a departmental faculty member not on your committee, s/he may be asked to participate in this exam.

The committee evaluates the student's performance and gives one of three ratings: "pass unconditionally," "pass with the condition that some part of the proposal or oral defense be redone," "fail with the need to rewrite and re-defend the proposal." Where relevant, students must pass the proposal defense on the second try, in order to continue in the Program.

Because of course commitments specific to M.D. training, medical students are given the option of taking the qualifying examination in their second or third year, and most have chosen the third year.

Be sure to file an *"Application for Candidacy for Doctoral Degree"* form with M&I Student Services, upon successful completion of the Qualifying Examination. This form is available from the registrar's office website, http://registrar/shared/forms.htm.

What Reviewers Look For

Some Suggestions and Hints on Writing a Good Application (based in part on "Grant writing [and getting]," by Roland Ciaranello -- courtesy of Cancer Biology Program):

1. A good problem. This can be the most important aspect of the grant. Reviewers like to see a clear, well-stated description of the problem being studied and why it is important.
2. A clear proposal. Reviewers react badly to having to figure out what you are trying to say or do. Reviewing grants takes a lot of time, so, whereas most reviewers are

willing to spend this time to give you a fair review, they are not eager to waste their time. It's your job to be clear.

3. A clear direction to the work. Focus on what you are going to do and make sure it is logical and clear. Provide sufficient information and detail that the reviewer can track your methods and logic. Use topic headings freely.
4. A doable project. As much as possible, stay within your technical limits. Often, a well-written grant with a good idea is not funded because there is no demonstration that the P.I. could actually do the work, either because they haven't trained in the area, published anything on it, or have failed to provide information under the preliminary studies section that they can perform the techniques.
5. For this particular mock grant application, imagine that you have the expertise of the senior author of the study upon which you are building. If you need techniques which are significantly outside of the area of the P.I.'s lab, then identify one or more real investigators whom, we will assume, you have persuaded to collaborate with you. Provide some real references indicating that these investigators can perform the types of studies that you want.
6. You know the literature. It is important to be familiar with the most recent literature in the field in which you are submitting a grant. Although the reviewers realize that they are reviewing the grant several months after you wrote it, it will be very damaging to the grant if there are relevant important papers that were published before you wrote the application.

Finally, some comments overheard by a fly on the wall during a recent IRG (Study Section) meeting:

> "This grant has no new concepts. It will not expand our present knowledge."
> "It shows a lack of imagination."
> "This is just a data-gathering exercise. It is a fishing expedition."
> "There is an inadequate attention to statistics. How will the data be analyzed?"
> "This is 'method' and not 'hypothesis'-driven."
> "How are the data to be interpreted in terms of the hypothesis?"
> "There is no acknowledgement of the problems that may be met and how they may be handled."

FINANCIAL AID

The department's policy is that all students who successfully complete the necessary requirements as they progress toward their Ph.D. are guaranteed support in the form of tuition, health insurance, and a living stipend. The level of this support is set annually and is generally the same (after tax) for all students regardless of the source of their support, and is equal to the levels paid by similar departments at Stanford. Beyond the third year, by which time students are normally expected to have completed their non-thesis work, departmental support is not guaranteed. The thesis advisor takes responsibility for providing support through completion of the Ph.D. degree, assuming satisfactory progress.

The support used for a graduate student's tuition and stipend can be derived from a variety of sources including governmental grants, contracts and fellowships, private, industrial, and philanthropic sources, and University funds. Students will be informed of the initial source of their funding when they arrive at Stanford, and are informed of changes as they occur. All students follow the same program, as outlined below, regardless of the source of their support and similarly, the source of support will not impact on the rights of the student in any way (e.g., freedom to publish, etc.).

Some students are supported by fellowships that require that they devote full time to study (usually 10-15 units of research or courses per quarter). They are, however, expected to do some teaching as required by the department (see above). Others are officially employed by the University as Student Research Assistants or Teaching Assistants on a half-time basis and, as such, are funded for ten units of instruction per quarter. This is the maximum number of units for which such students may register in any quarter. Others are on training grants, also at ten units per quarter. In these latter cases, the University's requirement of a minimum of 135 credits of advanced study for awarding of the Ph.D. will take 14 quarters or 3-1/2 years. This, then, is the minimum time possible to complete the Ph.D. in this department if you are officially employed as a research or teaching assistant.

Tuition

Students' tuition is usually covered by either fellowships or research assistantships and students will receive tuition credit on their University bills.

Stipends

Students on research assistantships are paid semi-monthly, on the 7th and 22nd of each month (or the preceding workday if these dates fall on a holiday or weekend). Checks are sent directly to the department. Semi-monthly checks may be deposited directly to the bank of your choice by filing an automatic direct deposit form online, through Axess.

Fellowship stipend checks are paid quarterly, issued no sooner than the day before classes begin. Stipend checks are not issued if the student is registered for fewer than 6 units of credit in a given quarter. The Bursar will automatically deduct the student activities fee and housing bills from your stipend check; the deductions will be reflected in your online account (viewable in Axess). Automatic direct deposit is encouraged.

Graduate students are required to apply for external fellowships. Most fellowship deadlines are in the Autumn. Students should apply with the help of their rotation advisor and/or the Director.

Health Insurance

Health insurance for Stanford's Cardinal Care plan is provided for each student. The funds for this health insurance are derived from training grants, departmental funds, advisors' grants, and/or University funds. The Department will reimburse each student for dental insurance premiums, up to $70 per year.

Miscellaneous Expenses

The department provides each student with approximately $3,000 over the course of their graduate career for educational expenses. These funds are provided by training grants and department funds, and are to be used for travel, books, computers, and similar academic incidental expenditures. These funds should not be used to purchase lab supplies, save in exceptional circumstances and with approval of Student Services. Any fellowship allowances awarded to the student will be supplemented up to, but not exceed, the $3,000 level.

Taxes

M&I administrators are not tax professional and cannot give definitive tax advice. But here is some basic information that may at least start your search for advice.

Graduate students on fellowships (HHMI, NIH Training Grants, etc., i.e., almost all students in their first three years) will be taxed on their fellowship income, but no taxes will be withheld from their quarterly stipend checks. Therefore, you are encouraged to pay estimated quarterly taxes in order to avoid having to make one large tax payment on April 15th. Forms to make estimated quarterly tax payments can be obtained by calling the IRS (800-829-3676) or by inquiring at http://www.irs.gov. Your taxes as a graduate student may be very different from the accustomed ones so prepare early! Do not wait until April 14th to begin to gather necessary forms!

For more complicated tax questions, make a HelpSU ticket, choosing “Central Office Issues” as the Request Category, and “Payroll Question” as the Request Type.

Graduate students on research assistantships will have taxes withheld from their bi-monthly paychecks.

International students are subject to a 14% tax rate and can claim only one tax exemption regardless of the number of dependents they have. However, the tax rate for an international student may be modified by foreign tax treaties; be sure to check with Student Services or with the Stanford tax office at 723-0241.

The cost of books, supplies, and equipment for graduate study may often be listed as a tax deduction, if you itemize deductions.

HEALTH AND SAFETY

Stanford is committed to providing a safe and healthy environment for faculty, staff, and students. These programs are run by the Health and Safety Office: Health Physics (Radiation Safety), Biosafety, Industrial Hygiene & Fire Safety, and Chemical Safety. The P.I. (or a designated member of the lab) is responsible for providing information and training about lab equipment, procedures and chemicals. Additionally, all new students must sign up for a lab safety training seminar offered at the beginning of each quarter; information will be provided at the Biosciences Orientation. Depending upon the type of work undertaken in your rotation and thesis labs, you may have to take additional training for blood-borne pathogens, radioactivity, human and/or animal subjects.

Nancy Magee (nmagee@stanford.edu) is Lab Manager for the department, and will help you comply with University guidelines for health and safety. Any questions about policy or concerns about the safety of your surroundings should be addressed to her.

FACILITIES

General

This is going to be your home away from home for the next several years. As such, it is our collective responsibility to make those many hours as enjoyable as possible. Probably the most common complaint and source of discontent is irresponsible or inconsiderate behavior. This is simple to avoid and simply requires that people conform to a common set of ethics. Namely, be considerate of others around you and follow the guidelines discussed below.

Lab Equipment and Supplies

Lab materials are incredibly expensive and often fragile or sensitive so it is extremely important that a few basic rules are adhered to by all. These are:

Never borrow anything from another lab without seeking their permission (ideally the person responsible for the material). In desperate conditions, you can usually take an item, but be sure to leave a note.

Learn a machine's proper operation before you try to use it. This means reading the directions that accompany it and check with a knowledgeable person (there should be at least one name attached to the machine). If you have questions, ask! A typical titanium ultracentrifuge rotor costs around $10,000; a single cesium spill left unattended can ruin it. An ultracentrifuge costs about $50,000 and one improperly attached bucket can virtually destroy it. Service for most of the equipment in our department starts at around $400/hr.

Always sign up to use a piece of major equipment, even if it is free and you plan to use it immediately. If it malfunctions during your use but you are not there, people will know whose samples to save. If a problem occurs after your run, the service people will know who to ask to help figure out the problem. Accidents happen - we all cause a few sooner or later - but it is important to know details as soon as possible. Breakage of equipment through negligence will be charged to your lab. The cost of repairs due to wear and tear

is shared by the major users, thus sign up sheets are also used for accounting.

Handle borrowed reagents meticulously. That means keep them dry/cold/sterile, take only what you need and return the stock immediately. Never introduce anything into a dry reagent stock - tap it out; dispense liquids with clean sterile tips/pipettes.

Keep common areas orderly, labeling anything that is yours. Purges of the cold and warm rooms are done frequently and unlabeled items will be disposed. It is also important to be able to identify the "owner" of an item in case of problems (e.g., the flask breaks, the rotator stops, the space is needed, etc.).

Secretarial/Administrative

Generally, all secretarial work should be passed to your lab's assigned person. Since there are several people in any given lab requiring this type of assistance, give as much time as possible for ordering/typing, etc. as possible. In other words, think ahead.

Most laboratories provide access to computers and there are public use computers in several locations in the Medical Center.

The photocopy machines receive exceptionally heavy use. Personal copying should be arranged through the individual labs. Personal telephone calls outside the United States must be logged and paid for by whatever system operates in your lab. Postage for personal mail is your responsibility and cannot be charged to any university or lab account. All use of the stamp machine must be logged according to your lab.

Library

We have a departmental library with a reasonable collection of relevant journals. These may leave the library ONLY for photocopying (i.e., not for reading in your lab). This is to ensure that they don't vanish and are there when you (and others) need them.

There is also the main library for the medical school (Lane Library) which is less than ideal for casual journal browsing because of the massive number of subscriptions and heavy use. It is, however, very good for helping with literature searches or obtaining material through inter-library loan. Falconer Library, an excellent facility located in the Department of Biological Sciences, has some journals not found in Lane.

Holidays

Two to three weeks per year is the guideline for the amount of graduate student holiday time. This is intended to represent only a reasonable maximum and will vary according to personal work habits. Clearly, the supervisor and student must judge what is appropriate on an individual basis. Be sure to inform your supervisor of any absences in advance.

ANNUAL EVENTS

Welcoming Reception for New Graduate Students. Soon after you arrive and begin classes there will be a social gathering of faculty to welcome you to the department. This will be a time to begin to familiarize yourself with some of the names and faces of the faculty you may not have met yet.

Departmental Retreat. As mentioned earlier, our annual 2-3 day departmental retreat is held each Autumn on the coast or at the Stanford Sierra Camp near Lake Tahoe. At this retreat, each lab presents an overview of its work and what is particularly hot at the time in a relaxed and informal atmosphere. It is a great opportunity to find out what's going on around you, get to know people, hatch some project ideas, and have fun.

There's the *Holiday Party*, at which our graduate students display their thespian talents in the departmental skit. We also hold the *M&I Happy Hour* about twice a month in the basement of the Fairchild Building. There are also birthdays, the department softball team and intra-lab events to celebrate and enjoy!

In the Department, you will find groups interested in hiking, mountain climbing and other sports, and in cultural activities such as opera, concerts, etc.

Appendix I

Microbiology and Immunology Requirements 2007-08

Course requirements (Total of 11 different courses, not including Research)

Aut:	BIOSCI/DBIO/GENE 203	Advanced Genetics (4 units)
	BIOSCI 230	Molecular and Cellular Immunology (4 units)
	MI 250 *	Frontiers in Microbiology & Immunology (1 unit)
Wtr:	MI 209	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites, Part I (4 units)
	BIOSCI 214/BIOC 224	Cell Biology of Physiological Processes (5 units)
	MED 255	Ethics: The Responsible Conduct of Research (1 unit)
Spr:	MI 204	Innate Immunology (3 units)
	MI 210	Advanced Pathogenesis of Bacteria, Viruses, and Eukaryotic Parasites, Part II (4 units)
	MI 215	Principles of Biological Technologies (3 units)

One of the following:

DBIO 210	Developmental Biology (Spr, 5 units)
IMMUNOL 201/MI 211	Advanced Immunology I (Wtr, 3 units)
IMMUNOL 202/MI 212	Advanced Immunology II (Spr, 3 units)
MCP 256	How Cells Work: Energetics, Compartments and Coupling in Cell Biology (Spr, 4 units)
CSB 210	Signal Transduction Pathways and Networks (Wtr, 4 units)
CSB 220	Chemistry of Biological Processes (Aut, Alternate Yrs., 4 units)
SBIO/BIOC/BIOPHYS 241	Biological Macromolecules (Aut., 3-5 units)

Additionally: At least one elective chosen by the student and advisor.

*Register for MI 250 (Journal Club) once in first year and once in second year, for a total of 2 units.

Register for MI 399 Graduate Research as needed to maintain enrollment in 10 units each quarter, including Summer, until you reach TGR status (135 units) and begin register for MI 802 (zero units).

Other requirements

1st year	M&I seminar and speaker luncheon attendance M&I Journal Club (MI 250) participation Aut., Wtr., Spr. quarters Two to four laboratory rotations (commitment to join a lab is made after 04/01/08) Faculty research seminars (“Tuesday Talks” in Autumn quarter)
2nd year	M&I seminar and speaker luncheon attendance M&I Journal Club (MI 250) participation Aut., Wtr., Spr. quarters Thesis committee (10-page double-spaced thesis research proposal, due 11/1/08) Qualifying exam (20-page double-spaced research proposal, due 5/1/09; oral defense)
3rd year	University Teaching Assistant orientation and training Two courses Teaching Assistantship Seminar attendance Thesis committee meeting Poster presentation at Department Retreat (chair a session)
4th, etc.	Semi-annual thesis committee meeting Seminar attendance Oral presentation at Department Retreat

One additional oral presentation (Friday Noon Seminar Series, CMB Symposium, National or International Meeting or Department Retreat)

Appendix II

LAB ROTATION EVALUATION

Rotation Advisor: _____ Graduate Student: _____
Quarter and Year: _____

Intellectual Abilities:

Knowledge in Microbiology & Immunology:

Creativity:

Laboratory Skills ("Hands"):

Effort in the Lab:

Communications Skills:

Personality in the Lab:

Return this form to M&I Student Services at the end of the rotation.

Appendix III

QUALIFYING EXAM

Name:

Title:

Date:

Committee:

_____

_____

_____

Outcome:

Comments:

Immediately following the examination, the committee should dismiss the student and briefly discuss his/her performance. The committee may choose among the following outcome options: pass, pass with minor revisions, pass with major revisions (such as rewriting an aim), or no pass. If the 'no pass' or 'pass with major revisions' grade is given, please indicate whether the student should rewrite the examination (or portion thereof) and/or re-defend it orally. Set a date for the rewrite or defense. Note any dissentions under comments. The committee should then discuss their decision with the student.

Appendix IV

THESIS COMMITTEE.
COMPOSITION AND RECORD OF MEETINGS

Composition of Committee:

1.

2.

3.

4.

5.

Record of Meeting:

Date: _____ Student's Name: _____

Purpose:

_____

Progress Report/Comments/Goals:

Date of Next Meeting: _____

(Committee meets at least annually. Beginning in 4th year of study, it meets semi-annually.)

Instructions:

For each meeting of the committee, enter the details requested. The chair of the committee should summarize the general feeling of the committee as regards performance and future directions. Return this form to the Student Services Administrator.

Appendix V

FACULTY RESEARCH INTERESTS

Manuel Amieva, M.D., Ph.D. Assistant Professor. Strategies pathogens utilize to colonize and subvert the epithelial barrier. Epithelial junctions as a target for bacterial pathogens. How the gastric pathogen Helicobater pylori may cause cancer by interfering with cell signaling at the epithelial junctions.

Ann M. Arvin, M.D., Professor. Molecular virology of and immunity to varicella-zoster virus (VZV); virus–target cell interactions in the pathogenesis of VZV infection in the natural human host and in the SCID-hu model; analysis of the T-cell-mediated host response.

Helen M. Blau, Ph.D., Professor. Plasticity of stem cells; immune responses in tissue regen-eration; RNAi and signal transduction pathways; blood vessel growth and inhibition.

Mathew Bogyo,Ph.D., Assistant Professor. Chemical, biochemical, and cell biological methods to study protease function in human disease.

John C. Boothroyd, Ph.D., Professor. *Toxoplasma* pathogenesis, with emphasis on population biology, gene regulation, protein trafficking, invasion, and developmental biology.

Chang-Zheng Chen, Ph.D., Assistant Professor. Genetic networks controlled by regulatory RNAs, such as microRNAs and small interfering RNAs, and the roles of these RNAs in modulating the development, function and pathogenesis of vertebrate immune systems.

Yueh-Hsiu Chien, Ph.D., Professor. Contribution of T cells to immunocompetence and autoimmunity; how the immune system clears infection, avoids autoimmunity and how infection impacts on the development of immune responses.

Christopher H. Contag, Ph.D., Assistant Professor. Molecular mechanisms of pathogenesis and host response to insult using in vivo cellular and molecular imaging to reveal biological processes in living animal models of disease. Emphases on gene expression and cell migration in vivo.

Mark M. Davis, Ph.D., Professor. Mechanisms of T-lymphocyte recognition and differentiation; thymic selection; dynamics of cell surface molecules during T-cell recognition.

Stanley Falkow, Ph.D., Professor. Genetic and molecular mechanisms of microbial pathogenicity; Disruption of the epithelial apical-junctional complex by *Helicobacter pylori* CagA.

Stephen J. Galli, M.D., Professor. Regulation of mast cell and basophil development, phenotype, and function; roles of mast cells in innate and acquired immunity and inflammation; pathogenesis of asthma and allergic inflammation.

Harry B. Greenberg, M.D., Professor. Gene coding assignments for rotavirus, with specific emphasis on the molecular determinants of virulence, host range, and immunity; immunity to hepatitis C and influenza viruses.

Karla Kirkegaard, Ph.D., Professor and Chair. Molecular genetics and biochemistry of RNA viral genome replication, including the mechanism of RNA-dependent RNA polymerases and of cellular membrane rearrangements during viral infection.

A. C. Matin, Ph.D., Professor. Drug resistance in bacteria and their biofilms; stress response under zero gravity; molecular approaches to bioremediation.

Hugh O. McDevitt, M.D., Professor. Structure-function analysis of H2 and HLA-D region gene products; how these proteins regulate the immune response and predispose to autoimmunity; development of methods to selectively alter Ia/DR function in vivo.

Denise Monack, Ph.D., Assistant Professor. Genetic and molecular mechanisms of intracellular bacterial pathogenesis.

Garry P. Nolan, Ph.D., Associate Professor. Multi-dimensional proteomics of phosphoproteins by FACS, HIV-1 host protein parasitism; retroviral libraries for complementation cloning of signaling molecules in T-cell biology, angiogenesis.

Peter Parham, Ph.D., Professor. Regulation of cytotoxic T cells and natural killer cells by MHC class I polymorphisms, with emphasis on the diversity of MHC class I in human populations and comparisons in other species.

Charles G. Prober, M.D., Professor. Conduct of clinical research focused on infections in children with an emphasis on viral infections, especially those caused by herpes viruses.

David A. Relman, M.D., Associate Professor. Molecular, genome-wide analysis of pathogen-host cell interactions; *Bordetella sp.* Pathogenesis and genomics; pathogen discovery using cultivation-independent molecular methods; exploration of human microbial ecology.

Peter Sarnow, Ph.D., Professor. Molecular biology of RNA virus-host interactions; mechanism of internal initiation of protein synthesis in viral and cellular mRNA.

David S. Schneider, Ph.D., Assistant Professor. Using the fruit fly *Drosophila* as a model vector to study the cell biology and genetics of malaria transmission.

Gary K. Schoolnik, M.D., Professor. Pathogenesis of *M. tuberculosis*; pathogenesis of enteropathogenic *E. coli*; environmental persistence of *V. cholerae* in environmental habitats.

Upinder Singh, M.D., Assistant Professor. Genetic and genomic studies of protozoan parasites (*Entamoeba histolytica* and *Toxoplasma gondii)* with an emphasis on host-pathogen interactions, pathogenesis, and developmental biology.

Man-Wah Tan, Ph.D., Assistant Professor. Genetics and genomics dissection of host-pathogen interactions using a multipathogen *C. elegans* pathogenesis system; genetics and molecular analyses of signaling pathways in host innate immune response.

Julie A. Theriot, Ph.D., Assistant Professor. Cell biology of interactions between infectious bacteria and the human host cell actin cytoskeleton; actin-based motility of bacterial pathogens.

Lucy S. Tompkins, M.D., Ph.D., Professor. Molecular pathogenic studies of *Helicobacter* and *Campylobacter*; genetic and molecular studies to characterize the host-parasite interaction. *Helicobacter pylori* enter and survive within multivesicular vacuoles of epithelial cells.

Appendix VI

CURRENT M&I GRADUATE STUDENTS AND THEIR ADVISORS

Name	Advisor	Year start
Randal Curtis Cevallos	Peter Sarnow	2001-02
Tamara Doukas	Peter Sarnow	2001-02
Kirk David Christian Jensen	Yueh-Hsiu Chien	2001-02
Linh Nguyen Pham Stewart	David Schneider	2001-02
Matthew Pendleton Taylor	Karla Kirkegaard	2001-02
Gal Almogy	Garry Nolan	2002-03
Anna Elizabeth Brotcke	Stanley Falkow/Denise Monack	2002-03
Janelle Samantha Ayers	David Schneider	2003-04
Leigh Ashley Baxt	Upinder Singh	2003-04
Trever Bradley Burgon	Karla Kirkegaard	2003-04
Patrick Ryan Eimerman	Christopher Contag	2003-04
Michael Richard Howitt	Manuel Amieva	2003-04
Madeleine Grace Moule	David Schneider	2003-04
Mickey Joseph Pentecost	Manuel Amieva	2003-04
Carolyn Ines Phillips	Matthew Bogyo	2003-04
SandeepRavindran	John Boothroyd	2003-04
Tobi Lyn Schmidt	Christopher Contag	2003-04
Paul David Bryson	Jeffrey Glenn	2004-05
Leremy A. Colf	Christopher Garcia	2004-05
Emily Marie Deal	Harry Greenberg	2004-05
Andrew Neely Hotson	Garry Nolan	2004-05
Jonathan Wiley Jones	Stanley Falkow/Denise Monack	2004-05
Jeremy Juang (MSTP)	Mark Davis	2005-06
Josephine Yuenming Lee	Manuel Amieva	2004-05
Gwen Liu	Chang-Zheng Chen	2004-05
Jeffrey Jacobs Margolis	Stanley Falkow/Denise Monack	2004-05
Kostandin Pajcini	Helen Blau	2004-05
Poornima Parameswaran	Andrew Fire	2004-05

Elizabeth Lenz Ponder	Matthew Bogyo	2004-05
Robin Deis Trujillo	Chang-Zheng Chen	2004-05
Susan Elizabeth Vleck	Ann Arvin	2004-05
Emmy Evangeline (Yana) Hoy	Julie Theriot/David Relman	2005-06
William Edward O'Gorman	Garry Nolan	2005-06
Yi-Ching Ong	John Boothroyd	2005-06
Justine Michelle Pompey	Upinder Singh	2005-06
Shumin Tan	Manuel Amieva	2005-06
Moria Chambers	David Schneider	2006-07
Jose Antonio Gomez	Karla Kirkegaard	2006-07
Audrie Lin	Upinder Singh	2006-07
Kaitian Peng	Denise Monack	2006-07
Erin Simonds	Garry Nolan	2006-07
Miling Yan	David Relman	2006-07
Junaid Ziauddin	David Schneider	2006-07
Jennifer (Jen) Brady	1st year – rotating	2007-08
Smita Gopinath	1st year – rotating	2007-08
Erica Machlin	1st year – rotating	2007-08
Dinah (Diana) Proctor	1st year – rotating	2007-08

Appendix VII

DEPARTMENT ADMINISTRATION

Nanette Beacham
Accounting Associate
Department
3-2753

Mayumi Beppu
HR/FA Coordinator
Department
4-9920

Yen Chau
Admin Associate
Sarnow, Kirkegaard, Schneider Labs
8-7074

Sara Fisher
Reports Editor
Falkow, Tompkins Labs
5-4754

Mari Hartnett
Assistant DFA
Department
5-3839

Bonda Lewis
Admin Associate
Boothroyd, Matin, Student Services
5-4753

Nancy Magee
Lab Manager, DPA, STAR
Department
5-3838

Susie Mitchell
DFA
Department
5-4756

Mary Jeanne Oliva
Student Services Administrator
Department
5-8541

Barbara Whyte
Admin Associate
Davis Lab
5-4755

Kathy Shaw
Admin Associate
Chien Lab
3-5035

Rebecca Ritger
Admin Associate
Blau Lab
5-5090

Howard Guss
Admin Associate
Nolan Lab
5-7002

Robin Holbrook
Admin Services Manager
Baxter Lab
3-6270

Gina Jager
Facilities Manager
Baxter Lab
3-9955

Kassie Koleckar
Procurement Administrator
Blau Lab
4-2995

Rosalyn McCambridge
Admin Associate
Nolan Lab
8-5436

All phone numbers have prefixs:
723-, 724-, 725- or 498-XXXX

Area Code is 650