

A Graduate Student's Guide to Making a Successful Transition to the Next Stage of Your Career

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Welcome and Introduction

Welcome to the Endocrinology & Reproductive Physiology Program at the University of Wisconsin-Madison. On behalf of the faculty and current graduate students we hope that you will have a positive experience in the program. As a new student you have many new people to meet, techniques to learn and policies and procedures to absorb. This document covers some issues that you will not find the "official" student handbooks from the Graduate School or program that will help you become a successful graduate student. Many of the items addressed are general in nature and can be applied to most laboratory situations, however be sure to discuss specific policies and procedures with your major professor. As always, please do not hesitate to contact either Tiffany Bachmann, Program Coordinator or Dr. Ian M. Bird, Program Director with any questions. Our doors and email boxes are open and we want to hear from you.

We are also regularly at the weekly ERP seminar and are happy to meet with you following the presentation. Please give us some advanced notice if you need to speak with us for an extended period of time so we can arrange for a room following the seminar to continue the conversation in private.

A few words about being an MS or PhD student

We feel that we must make mention that there are subtle differences in expectations for MS and PhD students, although you should always aim for a higher standard.

As an MS student, we understand that this is a starting point to further career development. Generally speaking, it takes approximately two and half years to complete the degree and write a satisfactory thesis for the MS degree. Depending your situation it may take a bit longer, although 2.5 years is a reasonable goal. To achieve this goal, it is imperative that you find a suitable project early in the process and have your course of study certified by your advisory committee. You will find that as an MS student your work will be more supervised and structured by the major professor. Likewise it is important to understand that a MS degree is a "mastery" of techniques and you will have a competent understanding of some of the literature in the field as well as be able to follow and execute laboratory work as directed by a senior person.

Students entering the PhD track are expected to go further, having a more detailed understanding of both techniques and the principles which underlie them, awareness of the literature in the study area but also related fields, and ultimately an ability to perform independent research to advance the field. As part of the progress to PhD, contributions of original knowledge to the field is expected under normal circumstances, often taken to mean, that papers will have been published or at least submitted prior to defense.

Planning for Success

You have to plan for success as a graduate student. Careful planning requires that you are aware of the timelines for completing certain steps such as the formation of your committee, registration requirements and the host of other deadlines that will be announced. If you are unsure how they affect you, ask. Your advisor is there to keep you on track in the lab, but is most likely unable to keep track of the numerous deadlines and administrative procedures for each of his/her students. You are welcome to contact the Program Coordinator at any time to review deadlines or procedures relevant to the ERP as your situation warrants.

Getting your graduate student career off to a good start also entails working with your research advisor in setting realistic timelines and deadlines to complete key milestones that impact your progress to degree. It is imperative that you and your advisor schedule meetings and prepare documents in timely manner and distribute information to committee members with adequate time to review and respond. (See also preliminary exam and final defense procedures in the official handbook on our web site). Keep in mind that your lack of planning does not constitute an emergency for the other person. Good planning and organization benefits not only you, but also your advisor and committee and most importantly gives a positive impression to others that you are developing skills needed to be successful throughout your career in the scientific community.

The second critical step in planning for success is the formation of your Certification Committee no later than the first year of enrollment. This committee is comprised of 3 faculty members for the MS degree or 5 for the PhD degree or for MD Fellows. The purpose of the committee is the same for each degree, to ensure that you have a knowledgeable group of faculty members to oversee your development as a scientist. The selection of members is described in the "official" ERP student handbook online. They will help you develop an academic plan that meets your career goals as well as ensure you leave the ERP Program as a capable member of the scientific community. Be thoughtful in your selection of committee members and keep them informed on a regular basis of your progress. Plan to meet with your committee at least once per year.

Once your committee has been established, regularly review the composition to ensure you have the right members on it. Committee membership can be changed as circumstances dictate. Speak with your faculty advisor and Program Director prior to making changes to your degree committee.

After your Certification Committee has been formed and approved, you must meet with them to approve your course study. Complete the Certification proposal as found in the "official" student handbook or on the web. Typically this meeting is an hour and half long with time to discuss the elements of your project, determine what courses are necessary

for you to obtain the knowledge needed to complete the project or address any other concerns.

Other Important Events to Plan For:

Preliminary Exam:

If you are a PhD student in the second semester of your second year, you should begin to discuss the Preliminary Exam with your supervisor. Ideally this would be completed during the third year or no later than the beginning of the fourth year of graduate study. The completion of the Preliminary Exam indicates that you have completed the fundamental course work necessary to complete your research project and are ready to devote the remaining time of your graduate career to your research project. You should not expect to complete the preliminary exam and defend your thesis in the same semester or in reality even the following semester under normal circumstances.

The actual exam is taken in two distinct parts, a written "grant format" proposal and the oral exam. Specific details are discussed in the "official" ERP Student Handbook online. Scheduling the oral exam takes some time to coordinate schedules, allow you and your research advisor plenty of lead time to schedule a date and prepare the document. A helpful and FREE meeting organization tool is available on-line at www.doodle.com.

We believe it is important to explain further the purpose of the preliminary exam as it relates to the PhD. The first purpose is to critically assess your preparation and ability to be a candidate for a PhD. Through the assessment of the written document and oral presentation, your committee is trying to assess the following: your knowledge of the field of endocrinology and reproductive physiology through appropriate coursework and literature; your knowledge of the scientific method as it relates to your proposed laboratory work; the suitability and feasibility of the research project you plan to conduct; and your potential to become an independent investigator upon completion of the degree.

The second purpose of the preliminary exam is to provide a mechanism to address a change in career goals or research interests since your initial enrollment. Passage of the preliminary exam is essentially a "vote of confidence" by five faculty members that given additional training and that your project is scientifically sound, you are capable of meeting the academic and professional standard needed to uphold the PhD credential behind your name. The ERP Program offers every student the opportunity to accomplish the degree goals they set, that said, there is an obligation to ensure students who do not meet the academic and professional standard expected of PhD to reevaluate their course of study and career goals.

A third purpose often overlooked by both students and research advisors is to develop the preliminary exam document into a "real" grant application for a fellowship in your own

name. You have the benefit of five experienced faculty members providing detailed technical feedback on strengths and weaknesses of your proposal, just like a panel review by a granting agency. Often a few modifications to the scientific proposal and time spent on developing a budget and supplementary forms are all that is needed to proceed with submission to a funding agency.

Note: A common shortcoming of many otherwise well prepared preliminary exam documents is the lack of discussion and plans that include alternative methods, hypothesis or strategies to cope with unexpected results of a specific aim. You can be sure that one of your committee members will ask "what happens if (fill in the blank) doesn't work?" Also give some thought on how you will make adjustments to the work if time or resources are threatened.

Scheduling your final seminar:

For each degree, you must present a full-length seminar to the ERP Program faculty and students. Some guidelines for planning your final seminar:

1. Your advisor is responsible for confirming that you are ready to proceed with a final seminar. This is accomplished by submitting the Advisor Approval and Warrant Request Form.
2. Your final seminar is to be given during the same semester you defend your thesis unless there are extenuating circumstances. **Prior approval is required to deviate from this standard.**
3. Ideally the majority of your committee members would be present at this seminar.

You must inform the Program Coordinator that the seminar is to be formally announced as a thesis defense seminar.

Joining a Lab

Selecting a lab is one of the biggest challenges and most important decisions you will encounter in the first year. Your objective should be to find an environment that you are comfortable in, provides the type of training you seek and will further your career. Before you make a final selection, determine what is important to you - availability of the supervisor, the training style of the faculty member (a lot of oversight, guidance when asked or needed, general independence), laboratory reputation, publication record, resources available, and the environmental factors that are not objectively quantifiable like personality, structure, competitiveness. Each lab has its pro's and con's, your goal is to find the one that is right for you.

How to identify a research advisor and laboratory for your graduate degree training

One frequently asked question by first year students is "how do I identify a research advisor?" Over the course of 10 years of advising new graduate students, we offer the

following strategy.

Step 1: Consider your career goals in relation to the type of research training you seek.

Bench research is a significant investment of both time and financial resources. Start by thinking broadly about what career direction you want to pursue. Some questions to consider...

- Are you interested in being a tenured faculty member at a University or are you seeking a position outside of academia?
- Are you interested in being an independent investigator with your own research group or a collaborator with another investigator?
- Are you interested in basic molecular research or translational research?
- What are your clinical practice expectations? (MD Fellows)
- What family or personal constraints exist?

Once you have considered these questions, you will be able to use your time effectively in step 2.

Step 2: Meet with your assigned first year advisor the ERP Program Director (and MFM Fellowship Director if appropriate) to discuss the requirements of both training experiences and be prepared to discuss your research interests, prior laboratory experience etc.

This critical step cannot be overlooked and will have an impact on your progress to degree in a timely manner. Early discussions about requirements, interests and expectations and identifying suitable faculty members for rotation will get you off to a good start on meeting ERP Program requirements and/or the Fellowship goals. It is important to keep in mind the Fellowship and ERP Program are two distinct training and professional development activities and each entity has a responsibility to ensure its goals are fulfilled. The ERP Program is committed to retaining its flexibility within the standards and guidelines of the Graduate School. Early discussion about career goals, previous laboratory experience, and research interests provide the most opportunities.

Step 3: Contact potential faculty to schedule a laboratory rotation.

Once you have identified who you will rotate with and timing of each rotation, this information must be sent to ERP Program Coordinator to keep in your student file. The purpose of the laboratory rotation is two fold: first to determine if the laboratory is working on a question / project of interest to you; second, to determine if the laboratory environment is a "good fit" for you. The ERP Program has developed a rotation evaluation form for both you and the rotating faculty member to complete at the end rotation period.

Forms must be returned to the ERP Program office before a final placement is made. You will more than likely find someone in the lab who is more than willing to vent their frustrations with the lab or the supervisor, keep in mind that you are not the cause of these problems and cannot solve them, but keep this in mind as you evaluate the lab environment. We emphasize that the rotation period is not designed for you to collect significant data; rather it is a time for you and the faculty member to critically assess the potential for a long term relationship to complete a degree.

During the rotation, consider and evaluate the following questions...

- What stage of development is the potential project in?
- What funds and resources are available to support this work?
- Is the faculty member available when I have questions or concerns?
- Who do I contact or work with in the faculty member's absence?
- What is his/her management style of the lab?
- What are the faculty member's expectations in the lab? How are these communicated?
- How do I fit in with the existing laboratory staff and students?

Step 4: Review the completed rotation evaluation forms with the Program Director (and MFM Fellowship Director) and discuss placement.

We caution all first year students not to accept or commit to a permanent laboratory placement until the rotation period is complete. This is your time to make a critical assessment of both the project and laboratory environment before making a long term commitment. The best laboratories will allow you a reasonable amount of time to make an informed decision and ask questions for clarification without undue pressure.

Our best advice when evaluating laboratories is to look for an environment that offers the best training in techniques and methods. While the project itself is important, training in techniques and methods are transferable and can sustain a career even if your research area changes.

Step 5: Negotiate the placement and discuss the project.

Once you have worked with your 1st Year Advisor (the ERP Program Director (and MFM Fellowship Director if applicable) on assessing your placement options, get the new relationship off with the research advisor to a good start by discussing your course workload, times available to be in laboratory (dedicated blocks of time are best), training needed including animal care and use, biological safety and human subjects certification. Schedule a time to get orientated to the laboratory and staff. Finally, schedule a time to develop a plan with your new advisor to establish your project and meet ERP milestones including establishing your degree committee and certification.

Step 6: Relationship Maintenance.

As you settle into the laboratory, keep building and maintaining the relationship with your research advisor, laboratory colleagues, Fellowship Director and ERP Program Director. Celebrate your successes and learn from setbacks. Keep in mind that students make scientific progress at different rates depending on multiple variables that are not always in your direct control. The best advice is to work from a solid plan and reassess your plan on a regular basis with your research advisor, degree committee, Fellowship Director and ERP Program Director.

Endocrinology and Reproductive Physiology Program

Rotation Evaluation-Faculty Sponsor

(All evaluations will be reviewed by the Admissions Committee, Program Director and Program Coordinator.)

Faculty Member: _____ Rotation Dates: _____ to _____

Student Name: _____

Description of Research Project: (Write a brief summary of the project or activities you had the student work on during his/her rotation.)

Evaluation of Rotation

1. Did the student meet your expectations in the following areas?
 - a. Scientific method:

 - b. Laboratory technique:

 - c. Time spent in laboratory:
2. Did the student ask thoughtful and interesting questions?
3. Was the student courteous and respectful to others working in laboratory?
4. In what areas did the student excel?
5. In what areas could the student use the most improvement?

Signature of Faculty Sponsor: _____

Signature of Student: _____

Please return evaluations to the Program Coordinator, 1465 Medical Sciences Center, 1300 University Ave. after the conclusion of **each** rotation.

Endocrinology and Reproductive Physiology Program
Rotation Evaluation—Student

(All evaluations will be reviewed by the Admissions Committee, Program Director and Program Coordinator.)

Faculty Member: _____ Rotation Dates: _____ to _____

Student Name: _____

Description of Research Project: (Write a brief summary of the project or activities you worked on during your rotation including any techniques you learned.)

Evaluation of Rotation

1. Did you have enough interaction with the Rotation Sponsor?
2. Do you feel that you received enough instruction regarding new techniques and protocols?
3. Was the research experience appropriate for a rotation? (length, type)
4. Did you like the laboratory environment?
5. Did the research style of the Rotation Sponsor match yours?
6. Were you satisfied with this rotation as a learning experience?

Signature of Faculty Sponsor: _____

Signature of Student: _____

Please return evaluations to the Program Coordinator, 1465 Medical Sciences Center, 1300 University Ave. after the conclusion of **each** rotation.

The research advisor versus a mentor: Is there a difference?

Your research advisor will be responsible for the technical training of your bench work by providing you with the appropriate tools and resources needed to carry out the planned experiments needed to satisfy degree requirements. This relationship is generally thought of as a "master- apprentice" model. The concept of mentoring takes the advisor relationship beyond simply imparting technical knowledge and skills to a less experienced scientist; it involves "whatever is needed to develop a trainee's professional development" (Howard Hughes Medical Institute, Making the Right Moves, Chapter 5, p. 99).

The ERP Program has multiple layers of professional development and mentoring built in to its structure. While we hope and encourage you to have a mentor relationship with your research advisor, however it is possible this doesn't mature into this type of relationship and you will rely on the other structures for career development. The second structure is your degree advisory committee. This committee will be comprised of individuals who can not only provide you with scientific expertise related to your research, but also be a source of professional development opportunities, collaborations, and networking. Do give careful consideration to the composition of the advisory committee and look for members who can and are willing to be mentors.

The Mentor / Mentee Compact

A growing trend in graduate and post-doctoral training is the use of a Mentor/Mentee Compact that seeks to clarify the roles and expectations of individuals involved in your training. UW-Madison is currently piloting a compact document for graduate students in selected programs and departments; however, early feedback has been positive and we anticipate campus wide implementation in the near future. In the meantime, the American Association of Medical Colleges (AAMC) has an excellent document to use as a starting point between you and your research advisor. This document is provided in your orientation binder.

Security of Funding

In time you will see that in order for your major professor to continue his/her research pursuits, funding from external sources such as NIH, NSF, USDA and the private sector are critical to the lab's existence. Many of the grants your faculty member works with provide funding in three or five year periods. Towards the end of the funding period, they will be looking for additional funds to sustain the project to conclusion. The faculty are very skilled in negotiating the grants process and will do their very best to find funds to continue or enhance their research, however, there is no guarantee the same pool of money will be available again or the same project will be viewed favorably by the grant agencies.

Don't despair, there are emergency and contingency resources available for short term gaps. If funding becomes an issue, talk to the Program Coordinator or Program Director

as a break in funding will impact your health insurance and tuition remission eligibility. The sooner the concern is brought to our attention, the more options we have available to assist you.

If you are intent on working with one faculty member and RA funds are not available, you may consider taking a teaching assistantship (aka TA). The ERP Program's general guideline is that first year students are not encouraged to TA as it places a significant burden on the individual who is trying to take courses and establish a research project in the lab. Most TA positions require approximately 30 hours a week to manage including reviewing course materials, lab notes and discussion groups. This is done in addition to your course work and time in the laboratory. PhD students who are in the middle to end of their graduate student career are welcome to consider a TA position to gain experience in the classroom.

There are many opportunities to gain teaching experience including the K-Infinity fellowship, the Delta Project among others. If you are interested in pursuing one of these extra curricular activities, speak to your advisor first to ensure these additional commitments do not interfere with your research work or are a distraction to completing your degree.

The Program Seminar and other activities

Due to the highly diverse nature of the ERP Program, the weekly seminar series is the central gathering point for students and faculty. The seminar format of student presentations alternating with an invited guest speaker is designed to give you the opportunity to present your work in a friendly and supportive environment as well as to learn from respected scientists in the field. It is also important that the seminar have a robust turn-out of students and faculty at each meeting. The more students and faculty come together out-side of their lab groups, the greater synergy the program will produce. This gives the appearance that the Program is strong and vibrant in the University community.

The Program Director and Program Administrator are regularly at each seminar and are happy to meet with you to address concerns. Advanced notice will help us secure a meeting room where we can address your concerns in a confidential manner if you would like to talk for an extend period of time.

The ERP Program functions best when all students take an active role in program activities including meeting with seminar speakers, meeting with prospective students, attending social events and serving on program committees. Effective with Fall 2008, the ERP seminar grade will be comprised of points based on total attendance, the oral presentation, the submission of the annual progress report in the Spring, asking questions of the invited weekly speaker, and hosting activities (lunch with the speaker or prospective students),

taking an active role in coordinating the guest speaker's schedule. (**See seminar policy in the Official student handbook**) We find it best for students to willingly volunteer for activities than for the Program Director to unilaterally appoint or compel students to serve.

Authorship and Publications

Each lab has established practices for determining authorship credit and should be reviewed by all individuals involved in the project. If you are unclear about the procedures or what contributions merit authorship credit ask for clarification. There are many resources available from NIH and professional societies on authorship and conflict of interest. Take some time to review these guidelines throughout the course of your career.

Where to turn for help and answers to your questions

The University of Wisconsin-Madison is a complex organization with many formal and informal procedures that can be overwhelming when you first arrive. We trust that you are resourceful, critical thinkers who will take the initiative to be able to identify the people and resources needed throughout your graduate education. Our office will always offer students and faculty assistance to the best of our ability and resources; however, the ERP Program cannot remedy problems that are beyond our jurisdiction.

Finding answers to your questions and concerns begins with good communication between you and the person or office you are seeking assistance from. Begin by reviewing any handbooks, websites or documents you were given at orientation, many general questions can be answered quickly if you take time to review the materials distributed. If the material is not clear or does not answer your question, ask for clarification or more information. Ask clear and concise questions, this will help the person or office assess your situation and provide the resources needed to solve your problem or make the appropriate referral.

To help you and your advisor identify where to turn to for help, we offer the following recommendations:

Speak with your advisor:

- Establishing a work schedule in the lab, time off, notifying them of absence or illness
- Lab protocols and when techniques are in question
- Course advising and project development
- Selection of Certification members
- Satisfactory progress in the lab - what this means and how progress will be measured and evaluated

Primary departmental staff associated with the academic department of your research advisor:

- Payroll and benefits - letters of appointment, increase in appointment, health insurance forms, direct deposit, tax documents, stipend check, tuition remission etc.
- Authorization for research credits by the Timetable representative.
- Building keys/ security passes and permits (including parking)
- Departmental e-mail accounts and mailboxes

ERP Program Coordinator:

- Any question pertaining to the ERP Program including: course requirements, warrants, degree deadlines, the seminar, symposium and student progress issues
- Responsible Conduct of Research Course
- Student records submitted as part of your application for admission and continued enrollment
- Travel funds and reimbursements related to ERP funds
- Program Policy
- Student affairs issues or concerns
- Registration Holds placed by the Program Coordinator
- Satisfactory Progress in the Program including annual student evaluations

ERP Director:

- To review faculty members on your advisory committee
- Program policy
- Student affairs issues or concerns
- Satisfactory Progress

The Graduate School:

- Questions about academic affairs not addressed by the either the Program Coordinator or Director - includes harassment, ethical misconduct, academic misconduct etc...
- Fellowships and awards
- Degree conferral including review of PhD dissertations, deadlines, minimum degree requirements and residency requirements
- Appeals for late enrollment

The Office of International Student Services:

- **All** Visa and immigration related questions
- Enrollment requirements for visa purposes such as dropping below full-time status
- Change of major or program
- Short-term loans and financial concerns
- Extensions of degree time limits
- Short-term practical training opportunities

Life Balance

We offer you some advice on seeking a balance between your academic and personal life. First you must realize that just because you want a graduate degree, doesn't mean you will get it. Considerable time, effort and sacrifice will be required to make this a reality. You have to establish your priorities.

Many problems that arise often have less to do with the student's ability to succeed in the course work and have more to do with external factors. One common problem is that the student's social/personal life interferes with course work or time in the lab. It is your responsibility to let your family, friends, significant others and parents know that you have commitments to your academics and lab work. Lost time on your social/personal life can not be recouped.

Graduate students with families can have an especially difficult time maintaining a reasonable balance between academics and family. We understand that as a parent, you have a significant responsibility to provide for your child. You should take great care in establishing a work schedule that is realistic and achievable for your situation. If care giving duties are causing significant problems for you or members of your lab, ask yourself if it is fair to transfer your work onto others? Colleagues will understand that once in a while your family responsibilities take precedence over lab work as long as you get back on track and don't use this as a crutch to avoid making a decision on where your career is going. In cases where there is a serious illness of a parent, child or spouse, an extended leave of absence may be requested. Specific guidelines are available from the Program Office.

While your studies and research is of great importance to you, it is also essential to have a few non-lab interests to fill your time with. These outside interests can be a great stress reliever when your lab activities are leaving you frustrated. There are many free or low cost activities to take advantage of; check out the campus calendar for events, the Isthmus newspaper or the many bulletin boards around campus for announcements. Don't forget you have access to the campus fitness facilities (the NAT, SERF, the Shell) with a swipe of your campus id card. Schedules are posted on the Recreational Sports home page.

Final Comments

This guide is an evolving document created to give students some guidance on issues that may not be addressed in other "official" or formal documents. Each lab will have its own policies and procedures that take precedence over these general guidelines, however most of the comments provided here will be helpful to new students just entering the Program.

As always, if you are unclear about any procedure or expectation, ask your major professor, the Program Coordinator or Director for assistance.

The Unofficial Guide- Part II Navigating the Research Laboratory

We hope that part one of this guide has provided you with some helpful tips in making the transition to graduate studies. Part two will provide tips in making the laboratory experience a positive one for everyone involved.

Basic Guidelines

The laboratory is a communal place where you will interact with a variety of people including undergraduate students, graduate students, faculty, technicians, other support staff and post-docs. As a researcher, you are expected to develop and maintain a professional relationship with those that you work with.

1. Wear appropriate protective clothing (lab coat, safety glasses, gloves, coveralls, masks etc.) and follow all safety protocols in the laboratory. Talk to your advisor or lab manager about protective equipment and clothing such as access to scrubs for surgeries or laundry service. If you need training or are uncertain about a procedure, ask.

2. Keep your work area and bench clean. Chemicals and other agents can remain on the work surface for weeks and contaminate another experiment. Promptly clean up spills and broken glassware following safety protocols. Do not leave the mess for someone else to find.

3. Leave both the equipment and the lab area in better condition than you found it. If you used consumable supplies, re-stock them. Also if you notice supplies are running low, let the appropriate person know to re-order them.

4. Return cleaned and dry equipment to its proper location when not in use.

5. If you find that the equipment is not working, notify the lab manager or your supervisor. Again, don't leave it for someone else to find or try to repair it yourself. See also #7.

6. Plan ahead by discussing extended usage of shared or core facility equipment if you have large project that will prevent others from using the equipment at peak periods.

7. Do not adjust equipment settings without first checking with either your major professor or laboratory manager. Many of the instruments have been specifically calibrated for an explicit purpose or experiment; adjustments by untrained staff can lead to lost productivity, unusable results for the rest of the lab or a broken piece of equipment that is costly to repair.

8. Use your best judgment when to call in sick to avoid infecting your colleagues or sensitive research experiments. Also follow good laboratory hygiene habits by washing your hands often (before and after being in the lab), removing your gloves when you leave the lab and enter a common area (i.e. bathroom, break room, lounge, office). You may want to keep a change of clothes at the lab in case of a spill or other contamination.

Interpersonal Guidelines

Aside from following the basic guidelines above, developing and maintaining effective interpersonal relationships with your co-workers is essential. Often a productive lab group can unravel because of a communication problem, either real or perceived. Here are some tips to keep in mind:

1. Keep the "water-cooler" discussion to a minimum in the lab. Discussing your weekend exploits are not appropriate topics of conversation in a work area and can be misinterpreted by others passing by. Catch up with your friends at lunch or after hours.
2. Remember sensitive topics of politics, religion, gender issues or cultural differences are not issues for discussion on lab time. These subjects invariably cause good relationships to become strained.
3. Keep personal business to a minimum on lab time. It is understandable that there are times when other businesses or individuals will need to reach you during work hours, but be considerate and discrete when you are discussing a sensitive subject such as medical information, finances etc in a communal area. If you have a smart phone, be considerate of others around you. Continue your call where you have some privacy or schedule time to return the call away from the lab.
4. Remember that personal opinions are just that. Everyone is entitled to theirs just as you are to yours. Opinions do not necessarily represent fact.
5. Lab time is not personal time to "convert" other people to your cause. This is against state work-rules and could be considered harassment.
6. Be a team player. There will be times when you are asked to pitch in and help another colleague meet a deadline or project goal. Do so willingly and to the best of your ability. Keep in mind that one day too, you will need help from your colleagues.
7. Get to know the post-docs and technicians. They have a wealth of experiences to draw from and are excellent resources to help you with your project.
8. Communicate regularly with your supervisor about the project, both the good and bad.

9. Remember that you are responsible for your own work. Support staff members are resources and are not to do your work or clean up after you.

10. Lean to be self-sufficient in handling routine tasks in the lab including clean up, re-stocking the paper trays, filling supplies, photocopying, mailing items etc. No task is beneath you.

11. Respect is not given out easily; it is earned over time through your actions.

Other Issues

Music in the Lab:

People have varying degrees of tolerance for listening to music in the lab. Ask your supervisor what the protocol is and be sensitive to the desires of the group. Some music is not appropriate for the workplace, if you are unsure, don't bring it or play it on a lab computer. Choices of music in the lab should never become issues of contention. Genre and volume should be acceptable to all, and volumes should not be set to be audible beyond the room. Likewise, music at your desk should not disrupt others in the area. The popularity of iPod's allows you the freedom to listen to your own music without disturbing your colleagues, but they can also isolate you from the conversation (both good and bad). While listening to your personal music device, when someone approaches you with a question or to engage in conversation, take both ear phones out and give the person in front of you your full attention.

Conflict Resolution-

Don't let little problems escalate into bigger problems that impact the functionality of the lab. If you have a concern, bring it up with the individual directly and try to work it out in a professional manner. If this is not possible, then address it with your supervisor to seek assistance. Refer to the Graduate Student Handbook for proper procedures for issues dealing with harassment, academic misconduct, ethical conduct etc.

Professional counseling resources including the Ombuds Office , the Dean of Students Office, University Health Services and your health care provider can also assist you in addressing individual concerns.

Professional Development-

Seek professional development opportunities throughout your graduate career through networking, giving presentations, publishing and honors and awards. These accomplishments will distinguish you from similar applicants. Look for mentors at each stage of your development. While your advisor may be a mentor, make connections with other people too.

Handling the networking, presentations and publishing your work can be guided by your advisor and through structured activities of the ERP Program. Seeking honors and awards is based very much your initiative and effort to both seek opportunities and follow through on applications. While you can not control the final outcome once an application is submitted, not applying assures you that you will not be a recipient, regardless of how valuable your work is.

There are several types of honors and awards that are valuable assets to your CV or résumé when applying for the first position following graduation.

Training Grant Funding: These awards are made to support a period of your graduate education, in some instances used to bring new talent into the field, other cases, to support the critical scientific activity of a designated research project of interest to the grant agency. Benefits of Training Grant support generally include payment of both tuition and fess, a share of the health insurance premium and fixed stipend for typically two years pending satisfactory progress and continued funding of the grant. Institutional awards made to existing programs will have a fixed number of positions that can be funded in any given budget year. A call for applications of eligible students will be announced before a selection committee makes final recommendations to the PI. Selection of applicants typically involves consideration of the student's academic credentials, a description of the research project or statement of interest, career goals / interests and recommendations by other faculty members. Current NIH training grants can only directly support US citizens and Green Card holders.

Individual Fellowships: Like training grant funding, individual fellowships serve a similar purpose in funding a portion of your graduate education. Individual fellowships are an attractive funding source because they directly support the student and in some cases be portable to another institution. Individual fellowships include both internally and externally funded opportunities from private funds/foundations, professional societies and government agencies and can be open to both US citizens/ Green Card Holders and International Students. Selection criteria of recipients varies by type of fellowship and organization, but most likely be based in part on your academic credentials, letters of recommendation, research project and career goals. Additional criteria may include membership within a group or organization, potential for career success, a personal or telephone interview or other activity. The amount of financial support for the fellowship can be a few thousand dollars to a multi-year award that covers tuition, fees, insurance, travel and supplies.

Travel Awards: Many professional societies sponsor competitive travel awards to help defray the cost of graduate students attending a meeting. When submitting your abstract for an oral or poster presentation, you should also consider applying for a travel award. A typical meeting in a major metropolitan area including airfare, registration, and hotel

expenses can cost over \$1,000; funds to defray the costs from your both your advisor's grant plus your own out of pocket expenses can be the difference between going to the meeting or not. Some meetings will formally recognize travel grant recipients at the business meeting, banquet or in the program.

Honors/Awards: It can be difficult or even uncomfortable to seek public recognition for your efforts so in many instances your actions and commitment to an activity or career will be noticed by others who can support your recommendation/nomination. Of course there are many, many well-deserving graduate students and advisors who should be recognized for their efforts, but are overlooked by selection committees. What is a student to do? If you know about honors and awards given by a particular organization, share the information with your advisor and colleagues about the nomination process. Sometimes awareness that an activity exists is all that is needed to get the process started. If you know that someone has recently received an award, circulate the announcement to others in your group; again this might prompt others to look into submitting a nomination.

Student Travel

Developing your professional network is an important aspect of student training. One method is attending an annual societal or professional organizational meeting. Participation at these events is an excellent way to meet colleagues, learn new about new developments in the field from the leading experts, share your own research and discuss research in a relaxed atmosphere. It is expected that PhD students in their 3rd year or later will have presented at one meeting or conference.

To that end, all students are encouraged to submit abstract and poster materials to societies and professional organizations for presentation. Your major professor can advise you on groups relevant to your area of interest. When you have an accepted abstract or poster, you are eligible for a \$300 travel grant from the ERP Program to offset your costs. Keep in mind that only one travel grant per fiscal year is available and you must contact the ERP Program Coordinator with a copy of your abstract and confirmation letter to release the funds.

Writing Your Thesis: Advice for the apprehensive degree candidate

Introduction

By now you realize that you can not move on in your career until you have successfully written, defended and deposited your thesis / dissertation with the Graduate School. The information contained in this document has been developed to help you make a smooth transition from student in training to future colleague. The first part of this guide is from Dr. Bird's presentation on Preparing a Thesis. The second part of this guide offers advice and guidance on handling subtle and not so subtle rules regarding degree completion.

Before reading any further, remember: **This is your thesis/ dissertation and is a result of your own work towards this degree.**

Preparing a Thesis

By: Ian M Bird PhD

This document is accompanied by two very different but complimentary documents on preparing a thesis and I recommend you read them both. This document is a starting point only to get the concept of the Thesis and defense expectations clear before you even begin. In this way you can fully understand the relevance of the points raised in the following documents.

1) What is a thesis and what is the difference between PhD and MS/Mphil?

Both of the terms PhD and MPhil refer to philosophy, i.e. original thought. In the USA, MS is widely used but in most other countries the term used more appropriately is MPhil. The reason is any degree that concludes with a Thesis is philosophical in nature while those requiring coursework and exams only is an MS or MSc.

The point here is the *philosophical* nature of the Thesis. It takes a question about the unknown, investigates it, and reports the findings and the meaning of the findings.

Both a Masters and PhD require formulation of a question, investigation of the question, reporting of the results and a discussion of the immediate implications. The difference between the two degrees (Masters vs PhD) is the extent of the investigation and, most importantly, the extent to which the findings are discussed beyond the immediate objective/conclusions.

Put another way a **Masters** is exactly that, Mastery of science ie excellence of investigative technique/ability in an ongoing project, knowledge and understanding of Methods including principles, quality of data collection, appropriate analysis of data and an understanding of the meaning of the outcome. The background knowledge of the literature and the discussion of the data is more in relationship to that needed to undertake the work and publish the data. As a rule the successful completion of the study and publication of the data is largely sufficient in itself and as such the Masters thesis could quickly be prepared around a shell of say two manuscripts. The final chapter should include some more general discussion but the extent to which this is undertaken is not that great in most cases. Most commonly this is actually drawn out from the student in the thesis exam.

A **PhD** is all this but much more. First of all a more thorough knowledge of the background to the question is expected and a fair representation of all side of any possible disagreement in the field should never be overlooked. In such a case a clear description of

why you start where you do should be stated. Knowledge of the literature should go beyond the immediate papers in the field- examples include a knowledge of possible differences in cell signaling in a number of cells and not just your chosen cell.

Beyond the Introduction and background there is a choice to be made.

Traditionally a PhD thesis is written as :

Abstract	
Introduction	
Background	
Methods	Detailed methods commonly used
Data chapters 1,2,3,4	Brief Intro, Methods including unique methods or variants, Results, Immediate conclusions only/ as needed to set up the next chapter.
Conclusions	More general conclusions- what the implications are and how the data/findings have changed our appreciation of the problem as well as answered the hypothesis.
Future Directions	Speculation way beyond what you are normally allowed in the form of a paper but a chance to also show how you think and how well you think.
Acknowledgements	

However there is an increasing trend to prepare a thesis as a supplemented collection of papers:

Abstract
Introduction
Paper 1
Paper 2
Paper 3
Conclusions
Future Directions
Acknowledgements

The problem with this is the fact that the preparation of papers and the preparation of a thesis creates a conflict. It also potentially misses an opportunity (see last point). These can be resolved but it takes careful consideration. These are the conflicting issues:

- 1) Originality: Often a paper will need to be submitted revised and resubmitted. While the paper benefits from this there is the question of who wrote it. In the rush to publish the paper may be written by the student but have to be revised by someone

more experienced. It is normal for this to occur in the first paper but it is hoped by the examiners the second and certainly third will be authored by the student with input from the co-authors/advisor, not written by the advisor. If the Thesis is simply the paper reproduced we will never know but if the traditional style is used the chapter must be the students own words even if reiterated. The paper can be bound in the back of the thesis if already published, for comparison.

- 2) Introduction: I have seen students submit a thesis of bound papers where the introduction to each paper is nearly identical, i.e. a modular approach is used for paper generation. This is hardly appropriate. You can handle this by appropriately preparing the paper in the first place but if you don't then expect a longer thesis defense.
- 3) Methods: A journal may want you to minimize methods to save costs but a thesis requires demonstration of understanding of methods as well as information needed for critical evaluation of the methods used. Again if it is absent expect a long defense.
- 4) Results: Not much of an issue but some data may be relevant yet missing for publication purposes (a big array table for instance, or method validation). Consider the use of appendices for this purpose.
- 5) Conclusions: The problem with papers format in a thesis is the need to speculate in the discussion of every paper, so the thesis will end up with a lot of repetition in the final general discussion of what was said in each chapter. So you basically fail to 'build' towards your finale since you have already given much of the final conclusions away. Perhaps more seriously you may conclude one thing at the beginning of the thesis studies but have to reverse that decision at a later date in the light of new evidence. This in itself is neither uncommon nor unacceptable- we all do it through our careers but you cannot go back and change what was said if it was published and you reproduced that paper as is. You can only readily modify the conclusions without a lot of obvious backtracking /apologies if you write a traditional thesis.
- 6) Lost opportunity: Data collected early in a study should rightly be published in a timely manner. However, many students will rush to submit a paper just in time for the thesis defense but it may well be of benefit to get the thesis committees input first on these and then submit the final papers. You may well have missed something but you can be sure the referees of the submitted paper will not.

So for a PhD in particular, I would urge all candidates to not just abandon the traditional format - it actually allows a much better representation and consideration of the work and in the days of computer editing, is not as hard a transition as you would think.

Regardless of the choice made the *final discussion* should be a demonstration of your understanding of the results and their implications with reference to both the immediate question but also the broader literature. Remember, regardless of why you undertook the study (reproductive efficiency in agriculture, signaling mechanisms in mouse tumor cells etc) RELATE TO THE BIGGER PICTURE! Does your data from mice relate to human health? Could data from tumors help with stem cell research? Think wider. Use this opportunity to set up the *future directions* part of your thesis conclusions as well as demonstrate your scientific maturity.

Common Mistakes:

I am sure I have not got half of them but some common mistakes I have seen are:

- 1) Pasting methods from the proposal but failing to update and/or correct the tense. This shows a poor focus/rushed approach. Also incomplete methods or sources information.
- 2) Lack of any abstract at all.
- 3) Inconsistent abbreviations due to changes between 'papers'.
- 4) Conclusions in a 'paper' style results chapter that are ignored or contradictory to the final conclusions and not explained or discussed further
- 5) Completely ignoring any opposing view from another lab even if they are 'obviously wrong'.
- 6) Graphs or tables which are incompletely titled/labeled and no mention of n values in legends.
- 7) Failure to acknowledge other peoples work/data. The fact the student may not have collected all the data is not the issue but integrity is.
- 8) Use of wooly language - the most common of all is saying two things were different or one increased but then showing a lack of significance. So what is meant by 'different'?
- 9) Use of pages of text when one good diagram would work a lot better.

The Bottom Line

The bottom line is the same as for the prelim- the better you prepare and check your thesis with input from your advisor and other students/postdocs the easier the final exam will be. Remember however that the thesis is yours- you can get input but no-one else can

write it for you. What you fail to address before hand will be addressed in the final defense. So you can go in prepared and enjoy the experience of a dialogue between equals, or you can rush it and have a rough defense or worse. There are plenty of resources to help you do the former. Make full use of them.

A Final point: In addition to all of this the thesis must comply to the university guidelines for layout etc- be sure to comply because refusal to meet the guidelines (available on the web) means you cannot graduate. Also to gain a Masters in ERP you **MUST** deposit your thesis in the library (see student handbook), just as we do for a PhD.

Writing Resources

While the process of writing your thesis / dissertation may feel overwhelming, there are resources to help you. Your advisor will most likely have the most impact on the style and content of your thesis/ dissertation, but external help is also available. The Writing Center located at Helen C. White Library offers writing assistance, support groups and workshops for graduate students. More information about services for graduate students is available on the web at <http://www.wisc.edu/writing/AboutUs/DoForYou.html#grads>

Support services from McBurney Resource center are also available to qualified student clients. Visit the McBurney website for more information on services <http://www.mcburney.wisc.edu/students/howto.php>.

Working with your Advisory Committee

The role of your advisory committee is to mentor you through the process of scientific development. At this stage of your training, we hope, you have established a good relationship with your committee members and have sought their advice and counsel in the development and execution of your project through regular meetings and discussions. In doing so, you have built a foundation of collegiality necessary to not only survive but also thrive in today's work place.

Before scheduling your final defense, it is a good idea to examine the composition of your committee as changes can be made. You will want to consider the following:

- Is your current committee composed of the right people who have the scientific and technical knowledge to critically evaluate your project in context with the rest of the field?
- Does your committee meet the Graduate School's requirement of 3 (MS) or 5 (PhD) tenured or tenure track faculty members with at least one member outside your faculty member's primary department?

- Is your committee balanced in terms of diversity of view points beyond your own laboratory's perspective?
- Can the members objectively evaluate your work and contribution separate from your advisors?

If the answer is yes to each of these questions, your committee does not need to be changed. However, if you answered no to one or more of these questions, you and your advisor in consultation with the Program Director should discuss the re-composition of your committee. Options include:

- Adding additional members to the committee to remedy the gaps.
- Replace members who do not meet the criteria described above.

While adding members is often times the easiest and most effective method to adjusting the composition of your committee, you should not discount the option to replace members when it is clear their continued participation is not in your best interest.

Once it has been agreed by you, your faculty member and the Program Director to add additional members, you may simply approach the new person with your request and inform the Program Coordinator of the addition. You will want to make time with the new member to discuss the status of your project and ask for their input in key areas.

The decision to replace a member requires the situation be handled with sensitivity and discretion. It is paramount to handle the request in a professional manner by sending a polite letter (email) to the individual faculty member outlining the concerns of their continued participation on your advisory committee. The letter should stick to the specific facts or circumstances of the request and provide the faculty member with a graceful exit opportunity. Your letter would also want to convey your appreciation for the assistance they have given up to this point and the opportunity to respond to the request before a final decision has been reached regarding the composition of the committee. Travel schedules, teaching loads, and administrative duties can overwhelm even the most seasoned faculty member and having a graceful opportunity to be relieved of service can be a big relief. In many instances the faculty member will gladly step aside and do what is in your best interest - having a committee that is able to provide the mentorship you need, when you need it.

If the faculty member is not willing to excuse him /herself from the committee after providing a written response to your concerns, you and your advisor should consult with the Program Director to make further decisions. The Program Director may be able to discuss the situation with the faculty member involved and gather additional information pertaining to your concern.

Handling the job search and your first position after graduate school

At this point we want to offer our congratulations for your perseverance and determination to see your degree goal through to completion. While the job search can be an exciting time to explore new cities, organizations and research areas, don't lose sight that you still must pass the defense and deposit your thesis before the degree will be granted and you have truly earned the title of "Dr." or "graduate". A successful job search will depend on a number of factors some of which you can control and some you cannot. A common mistake that graduate students make is starting their job search prematurely when they have not discussed the current state of their research with their major professor and thesis committee. The consequences of this premature search lead to an unrealistic expectation of completion timelines. Before you send out CV's or respond to job announcements, schedule time with your research advisor and committee members to honestly assess where your research is at if adjustments to your research plan need to be made since passing your preliminary exam.

When you are ready to make applications, get your CV or résumé up to date and polish your cover letters (email). Take advantage of the job search workshops offered by the Graduate School Office of Professional Development. These sessions offer a wealth of information and resources that the ERP Program alone cannot provide. Don't forget to network with invited guest speakers at the seminar or symposium if they are working in your area of interest or at particular institution for leads.

As you advance through the search process, you will be asked to provide names of individuals to serve as references. In many cases, it is common if not expected that your current research advisor will be asked for a reference. Help your selected references with this request by providing them with a copy of your CV, the job announcement and contact information for the position. It is also helpful to send them some key accomplishments or points that you would like them to address in their letter. References need to convey in their letter they can adequately assess your qualities as a candidate for future employment and are a good match for the advertised position.

Some students have been uncomfortable in seeking a reference from their current research advisor because the relationship is strained in some capacity. Now is the time for you to critically assess your career goals and if possible take steps to repair broken relationships. Our best advice is to make an appointment with your research advisor and talk about what he/she is willing to say on your behalf in a letter of reference. A neutral and balanced reference is often the best outcome when relationships are strained. Don't overlook members of your advisory committee as potential references, they too will be able to provide insight on your abilities and career potential. Finally, let your references know the outcome of your job search and thank them for their assistance along the way when it leads to an offer.

While you are excited about a new job offer, it is vitally important that you make reasonable and thoughtful plans to transition to the next job. In particular, make sure your thesis defense is scheduled well in advance of accepting an offer, you have time to make the necessary corrections and revisions to your thesis before leaving Madison—a plane ticket the day following your defense is **very unrealistic**, your laboratory notes are in good order (electronic and paper documents) reagents and chemicals have been properly documented, stored or disposed of and you and your advisor have reached a mutually agreeable plan for writing up manuscripts that result from your final studies. It is also your responsibility to deposit your thesis with the Graduate School and to pay the final fees associated with degree completion.

Final Thoughts

By the time you have finished reading this document, we hope you will appreciate that navigating the research laboratory and making a successful transition to your next career stage is a shared effort between you, your research advisor, thesis committee, the ERP Program and the University of Wisconsin-Madison; however, it is your graduate degree to earn. Support and encouragement is available from multiple sources, yet you must find the strength within to learn from your set backs and celebrate your successes during your time here.

"All of life is a journey which paths we take, what we look back on, and what we look forward to is up to us. We determine our destination, what kind of road we will take to get there, and how happy we are when we get there."

Source: http://thinkexist.com/quotation/all_of_life_is_a_journey_which_paths_we_take-what/9578.html