

The Qualifying Examination, A Guide by Students
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Introduction: Whether you are preparing for an examination to complete the work for your Master's degree or are attempting to advance to candidacy within the Ph.D. program, the qualifying examination is an excellent opportunity to pull together and organize the significant amount of information you've picked up thus far. The Qualifying Exam, also known as the "QE," "Oral Exam," or "Orals," (QE for remainder of this document) is generally a comprehensive exam that is given orally by 3 (for Master's) or 5 graduate group professors (Ph.D.). The exam for advancement to candidacy consists of a presentation of a thesis proposal followed by examination in 4 separate topics. The QE can last from 2.5 to 3 hours. One should look upon this experience with a positive attitude and anticipate it with excitement. With the proper preparation and a bit of luck, you'll look back upon your QE with fond memories.

Logistics - Submitting Committee Suggestions: In the Plant Biology Graduate Group, students do not pick their qualifying exam committee members directly. Students nominate professors whom they would like to have on the exam committee. Please consider that several students may request the same professor to sit on their exams, and that final committee assignment decisions are made by a committee composed of PBGG-affiliated professors to evenly distribute the work-load. This process occurs during your second year in the graduate group.

Forms for committee nomination can be downloaded from the PBGG website. The completion of the form will require the contemplation of several factors - who you want to suggest and what subject areas you wish to be tested on.

When considering your committee composition, it is very helpful to speak with senior graduate students who have successfully completed the exam. Find out who was on their committee and whether or not that person might be right for your committee. Consider the courses that you've taken, courses for which you have served as a TA, and your impressions of potential committee members from those interactions. Consider also that your PI can be a good source of information; he or she has probably served on QE committees with several of the professors under consideration and potentially knows them very well. A final note when considering committee members: a historically CHALLENGING member is not a problem, while a historically UNPREDICTABLE member can be considerably more detrimental.

CHECK LIST: COMMITTEE SUGGESTIONS

- 1) Download the nomination form from the PBGG Website:
<http://biosci3.ucdavis.edu/GradGroups/PB/People/QENomination2007REVSep2011.pdf>
- 2) Consider faculty you know personally; particularly those who have lectured in courses you have taken and those you have TAed for. Consider also those faculty that have been helpful to your research by allowing you to use their equipment or materials. Please note however that the Graduate Group discourages asking close collaborators and academic advisors to serve on the committee.
- 3) Talk to senior graduate students for suggestions
- 4) Speak with your PI about your choices
- 5) Visit with your Academic Adviser, who needs to sign the form
- 6) Fill in the nomination form and turn it into PBGG office before the announced deadline.

Committee Assignments: After you have completed and submitted your Qualifying Exam Committee Nomination Form, the graduate group will inform you of your proposed committee sometime during Fall Quarter of your second year. The only thing you can do at this time is to determine if there is an individual on your committee that you deem to be unacceptable. If that is the case, consult with the Master Adviser to determine your options.

Once you have settled on the members of your committee, you can go ahead and get them organized. Your committee assignment will also assign the individual members to their respective categories for your exam, as well as the committee Chair; the Chair is whom you want to speak with first.

Organizing Your Committee and Setting a Date: E-mail your chairperson and set up a brief meeting. It is the responsibility of the chairperson to organize your committee such that all six of you can meet at one time in one place in the near future for your exam. However, you should take the lead for this organization. If there is time pressure for you to complete the exam, you should begin as soon as possible to ensure it is accomplished in a timely manner. With the committee Chair, discuss when you feel would be the appropriate time to take the exam, i.e. Spring Quarter., summer, early or late Fall Quarter as well as the time of day. Make sure that you will be done with all required coursework before the exam day. You will need to submit to Graduate Studies the formal application, which requires the Master Adviser's signature, confirming that you have completed all required course work. Do consider that Graduate Studies asks for up to 4 weeks to process your application. Plan accordingly. You will receive an email from Graduate Studies when they have approved your committee. Follow-up with Graduate Studies if you have not received the email within four weeks of submitting your formal application.

In general, you'll want to meet with each of your committee members at least once, very early on. Send out a general e-mail to your entire committee letting them know that they are on your committee, and that you'll be contacting each individually to discuss what's expected of you. Then do just that!! Talk to each member and ask what they will expect from you as well as any

general advice they could give you on this experience. They have each completed the QE as a student and most have already served on QE committees; take advantage of their experiences. Some faculty members will offer to meet with you periodically during the preparation period, and if such an offer is made - take it! But do not take the offer lightly, if a faculty member is willing to spend extra time with you to help you prepare for the exam, prepare for each meeting with that individual appropriately. In general, such an offer will not be made, but a more general "If you have any questions, let me know" seems to be a common event. Don't be afraid to take advantage of this offer either.

The bottom line to passing the exam is whether or not the faculty feels that you are competent and possess sufficient knowledge. The more time you spend with your committee members before (hopefully showing your eagerness to learn and think, and showing how much you have learned!!!), the less that you'll have to "prove" during the actual exam.

Preparation: Once you've determined when you want to take the exam, build yourself a timetable between now and then for studying. Again, this is another area that is personal, but in general if you take 6-8 weeks total for preparation, you will be MORE than ready for the exam. Those 6-8 weeks should be broken down into 3-4 weeks part-time reading (evenings, 1-2 hours a day; you'll be amazed how much you can get through in that amount of time) and the final 2-4 weeks for full-time studying. The time you take to study is an important decision. One can view the strategy for preparation as a parallel to the strategy for running a race. In the beginning, you need to warm up your muscles slowly and gradually build speed, otherwise you could pull something. Likewise, in the end, if you start sprinting too early you'll burn out and have a horrible finish; alternatively, if you start sprinting too late you won't finish in time. In both cases, an equally detrimental consequence is incurred.

A good general suggestion for preparation is to start reading in the evenings six (6) weeks prior to the exam. This is a good time for reading/reviewing suggested textbooks and TAKING NOTES! Don't just read the book thinking that's all you need. DO TAKE NOTES. Writing things down helps you to remember both broad concepts and details; additionally, your notes will be critical for your success during the final week of preparation. This is also a good time to talk with your PI and see if you can get time off from research in the upcoming weeks as you move into full-time studying. If you're TAing during this preparative period, plan appropriately and give yourself a full 4 weeks out of the research scene.

Once you've filled your schedule with nothing but studying time, stop, go back and erase a couple of hours of time every day. Take these couple of hours each day and break them up into study breaks. SCHEDULE THESE BREAKS!! And do not take them if you haven't earned them by making a concerted effort to read. By scheduling breaks for exercise or free time, you'll be more apt to work through the material because you'll have something to look forward to in a few hours. It also gives your brain a chance to rest and absorb what you've been reading. This suggestion is a personal recommendation; the main point is to find a daily schedule that is PRODUCTIVE!

As the weeks progress, finish any needed textbook reading and start reviewing from your previous reading notes and class notes. This review of notes only should comprise the last week of your studying. If you've seen everything only once, you may have a difficult time; by taking this week to review, it will really cement things in your head. During this time it is also very important to practice and polish your presentation.

Proposal: During "full-time study" start going back to the primary literature, review articles and specific class notes concerning your proposal. You'll want to get that written (at least a rough draft) the first thing into your full-time studying period, if not before. This will provide you with ample time to read and build the knowledge base to defend your proposal. Spend some time and a number of revisions on your proposal. This is your principal opportunity to display your writing skills and present your ability to generate a logical approach to answering a particular scientific question. This proposal should not exceed five (5) pages including figures, excluding a list of references (single-spaced, 12 pt. font, 1" margins). In writing your proposal, consider that faculty members have a considerable amount to do other than examining you. Focus upon writing a clear proposal. Keep in mind those areas that may be covered cursorily in your proposal; these will likely be points for questions during the exam:

Once you've had input from your PI and friends on your proposal, get a final draft together and get copies to your committee members. Ideally this should happen two weeks before your exam. It's a good idea at this time to e-mail your committee, providing a polite reminder that your exam is in about two weeks, and that you'll be getting them a copy of your proposal. You should **PERSONALLY HAND** a copy to each committee member if at all possible. This gives them the opportunity to see your face again (which they may not have seen in several weeks or months) and provide reinforcement to the reminder that the exam is **WHERE** and **WHEN, NEXT WEEK!!**

As you are preparing your written proposal and presentation, expect the conversation concerning your proposal to last for sixty (60) to ninety (90) minutes. However, you should not prepare an uninterrupted presentation of this length. Rather, prepare a fifteen (15) to twenty (20) minute presentation describing your research proposal. Anticipate that this brief presentation will grow in length to the longer discussion once your committee members begin asking questions about your hypothesis, objectives, methodologies, etc. Importantly, during the introduction you will have to focus every fact and statement to support your hypothesis and proposed experiments. If you introduce interesting, yet extraneous, information at this point your committee members may begin to ask you questions that you don't want / are unable to answer, specifically questions that lie outside the focus areas of your research. One potential result of including extraneous information in your introduction is that you may be unable to successfully finish your introduction, and you may be dragged into unfamiliar territory that a professor finds particularly interesting even though it may lie outside of your expertise and research areas. Consider, therefore, particularly in the introduction, but throughout your proposal, that if you bring up a topic, then you have volunteered to be questioned on that particular topic. If there are areas that lie outside your expertise and focus, eliminate or minimize your discussion of them.

Mock QE: A mock QE is one of the best ways to study. Plan to do this at least twice, once at the beginning of your studying and once about 1 or 2 weeks before your exam. Talk with more

senior graduate students, students of your committee members, or people with expertise in the fields which individuals on your committee study, and ask them to participate. Specifically, ask people, if they know your committee members, to “role-play” and act as they think (or KNOW), an individual on your committee would. The initial mock QE should inform you where the gaps in your knowledge are, and the second inform you the areas you need to fine-tune before your exam. Also, the second mock QE should include your thesis proposal presentation. If at all possible, try to do mock QEs in the same room in which you’re going to have your real QE. This will give you the opportunity to get a feel for the physical conditions in which you’ll be asked questions, as well as using the board (chalk or marker; purchase and bring your own chalk or markers). The QE can be viewed as testing two things: 1) your factual knowledge and its implementation; 2) your ability to think on your feet and maintain emotional stability even when you don’t know the answer. Mock QE sessions are your time to develop the latter of these skills. Have your participators push you to a point where you must say that you don’t know the answer. It will make you a little uncomfortable and frustrated, but that’s to be expected. You **MUST** develop and practice strategies for dealing with these emotions. Your committee **WILL** push you to a point where you don’t know the answer. That’s OK! It’s how long it took you to get there, and how you think when you get there that will be judged. It is essential that you **DO NOT** become flustered when this happens. Preparing for this event is what mock QEs are all about.

Final days: To reiterate, clear thinking and problem solving are as much a part of this exam as factual knowledge. Therefore it is **VERY** important that you take at least the day before if not the **TWO** days before your exam off! Participate in activities that relax you: take naps, exercise, watch movies, etc. Only if you’re well rested and relaxed on the day of your exam will you have a chance to recall the information you’ve learned.

During these last few days and the week before, you will experience the true test of what the QE is about. Trust yourself and do not panic. You will go through periods of intense anxiety in these days and weeks immediately prior to the exam. These feelings will come and go, and it is up to you to master them. Again, you **MUST** learn to trust yourself, your education, your preparation and your abilities. Remember, no one in the exam room will know your particular field as well as you. No one can know everything; you must keep this in mind too during this period.

Time Table: Preparation

- 1) Plan on completing all the required course work. Upon completion, get the necessary signatures, including the Master Adviser’s, and submit the formal application form to Graduate Studies at least a month before your exam day.
- 2) Meet with all your committee members and determine what they expect of you (**TAKE NOTES**)
- 3) Make a game plan for the time you have before the exam and talk to your PI about taking some time off from research
- 4) Implement your plan: begin reviewing the basics a couple of hours a day (**TAKE NOTES**)
- 5) **MOCK QE I**
- 6) Move into full-time studying, but stay active by having organized breaks. Hit the primary literature and write your proposal first
- 7) **MOCK QE II** (including your presentation)

- 8) Move into the last phase of studying by reviewing old class notes and the notes from your reading. Start this no later than one week before the exam
- 9) Provide a copy of your thesis proposal to all your committee members (about two weeks before the exam)
- 10) Check all of the major journals one last time for new articles relevant to your proposal. This will prevent any surprises during your research presentation.
- 11) Two days before the exam, stop or at least start winding things down. An absolute must is the cessation of studying the day before. RELAX.

Taking the Exam: When the fated day finally arrives, you will be ready!! Sleep in if you can, and try not to be anxious. You'll want to wear something nice, but something that you are comfortable in. You want to convey the impression that you're taking this seriously and that your committee should take you seriously. Though this is an event that you've been preparing for, and has been consuming your thoughts for several weeks, the faculty on your committee do this quite often, and probably didn't even consider your proposal but a few days before.

Before the exam, purchase white and colored chalk or dry erase markers. Currently the exam is a "chalk talk" format, and you must not expect your committee to supply you with writing materials. You'll want to bring a bottle of water or juice because you're going to be talking for several hours.

When all five committee members have arrived, they will ask you to step out for a few minutes while they get organized. When they call you back into the room, it will begin. Start the examination with a 2 minute personal introduction. You'll want to include your educational background, why you study plant biology, and what your career goals include. This will break the ice, and give you the opportunity to talk about something, which you know a considerable amount - YOURSELF!! Then you should move smoothly into something about which you know nearly as much - your thesis proposal. It is IMPERATIVE that you've polished your presentation to a point where it simply glows!! It is the beginning of the exam and your committee's first impressions of you during this event. This is a topic that you will know more about than any one of your committee members. It will build your confidence and it will truly set the tone for the entire exam. Your committee may or may not interrupt you during your presentation - be prepared for either situation.

After your presentation, the individuals of your committee will question you in each of their respective categories. You may be able to dictate the order, and if you proceed in an order of decreasing knowledge, you'll be able to build more momentum at the beginning of the exam that will carry you through some rough spots.

When answering questions, a couple of things should be kept in mind. One, always make sure that you understand what is being asked of you, i.e. ask questions of your committee aimed to clarify what they are asking! This will also provide you with an opportunity to show what you know even if you can't answer the question asked. For example, if a question concerning X is asked, you could respond with related topics such as, "Do you mean A, B, or C in relation to X?" The second thing to consider while answering questions is to never answer right away, even if you know the answer. ALWAYS: pause, take a breath, turn to the board (even if you don't need

it) and write something down, before answering the question. The pause and breath gives you the opportunity to recall the necessary information, or at least begin to process the question, and relaxes you a bit. Turning to the board helps to shut out the committee and bring you to a state where it's just you and the board, reducing the pressure on you.

During your exam, keep in mind that the committee members WANT to pass you, they are NOT trying to fail you; what your committee needs is justification to pass you. Consequently, they will continue asking questions on a topic until you are forced to admit that you do not know the answer. These are some of the most important moments of the exam; you have successfully demonstrated your depth of knowledge on a particular topic. If the answer to the question at hand is unknown or controversial in your field (and you KNOW this), feel free to mention that. At this point, the committee will generally ask you propose an answer to the question that you do not know the answer to, and provide justification for your answer. During the exam, be prepared to compose more than one answer on the spot, to a question that you may have never considered before! It is important to be clear that you do not KNOW the answer in these situations, but that you believe the answer could be X. Once you have provided your proposed explanation, it is likely that your committee will ask you to propose an experiment to challenge your hypothesis 'X.' In all cases, be certain that you let the committee see and understand your thought processes and rationale when answering questions; instead of quickly answering a question, feel free to work out the answers on the board, this both consumes time and lets the committee peek inside of your head.

As a final note concerning your influence on the exam atmosphere - do not seem too self-assured. ALWAYS maintain the proper deference for your committee members and never sound arrogant. Keep in mind that if they really wanted to, each of the committee members could intellectually CRUSH YOU, and make you look like a FOOL! Pay them the proper respect.

Check list: Taking the Exam

- 1) Make sure that you get your formal application approved by Graduate Studies.
- 2) Arrive early and make sure the exam room is in the proper order
- 3) Bring white and colored chalk or a set of dry-erase markers
- 4) Enter the exam dressed nicely and comfortably; bring water or juice
- 5) Start with a short, personal introduction
- 6) Move into an award-winning delivery of your thesis proposal presentation
- 7) When answering questions, remember to pause, breathe, and write on the board
- 8) Maintain a proper demeanor of deference
- 9) Don't panic when you can't answer a question, move on and put it behind you
- 10) Enjoy yourself!!

Final Notes: The QE is a rite of passage. It should be a time to pull things together like never before and hence should be an enlightening and ENJOYABLE experience. Try to keep that in mind during the entire preparation and actual exam. It is an emotionally trying time though as well, and pull on support from friends and family get you through it -especially people that have gone through it will understand your situation, though you will not see that until after the fact.

The authors hope that this composition has been helpful. GOOD LUCK!!!!!!!