GUIDELINES FOR BIOMEDICAL SCIENCES Ph.D. STUDENTS TAKING THE PROPOSAL-STYLE COMPREHENSIVE EXAMS

This is not the only type of comprehensive exam format available. Not all students are required to take their comprehensive exams in this format. If the committee feels as though some other format is appropriate, then the committee can make that decision, hopefully in consultation with the student. Either format of comprehensive exam meets the university requirement as outlined in the “Candidacy Examination” section of the Graduate Catalog.

1) Topic is not to be directly related to your dissertation research proposal. It can be in the field of your research area but should not be directly related to work either you or your advisor is currently doing. It is hoped that your topic will be a challenge (but interesting) to you, and will allow you to show that you have the ability to think about a problem.

2) Your committee will give you your topic, or if you have some topic you would like to explore you can suggest it to your advisor/committee for consideration. If you chose your own topic, your guidance committee must approve it.

3) Your topic and/or your approach to solving the problem should show that you have the ability to obtain information, assimilate it, and logically think about a problem. This is not a test of whether you can do independent research but to gain insight into whether you can apply what you have learned during your graduate studies. We are however testing your ability to think about a problem.

4) When preparing your proposal you should consider the make up of your committee, and if possible address areas that are appropriate and of interest to your committee. However it should also be reflective of the types of courses you have taken during your graduate studies.

5) Your proposal should reflect your ability to assimilate information from primary literature sources and devise a set of experiments that can fill in missing gaps.

6) This is your comprehensive exam; it is to be your work and only your work. You are not to get outside assistance for scientific content or grammar (by this stage in your studies you should be able to put things into a logical and understandable format). You will not be directly graded on grammar, however if poor grammar leads to a poor understanding of the proposal that will be reflected in your grade.

   *If you are unsure about whether you are on the right track or not, this information can be obtained from your advisor/committee – however do not ask anyone to read and critique something you have written. You can talk about techniques etc to others but not directly ask them if they would be appropriate for the study you are proposing.*

7) If it is found that you obtain outside assistance, you will be given a FAIL grade for the exam. You will then be given the second chance to pass the written portion of the comprehensive exam using the question type format.

8) Proposal format
   a) Max 12 pages (figures and tables included). Bibliography not included within page limit.
   b) Format according to NIH R15 grant guidelines
9) You will be given up to 6-8 weeks from the time your committee provides you with your topic to turn in your proposal. Extensions beyond that will require permission of your committee. More than one or two extension periods, without a very good reason, may require that you change your topic and start again.

10) Your proposal should provide your committee with sufficient background information to ensure that you understand how to gather information and assimilate it in to some usable form. You should also be able to provide a series of experiments that would allow you to test the hypothesis or answer the question posed in your topic.

   a) You should do a thorough literature review, although it will be realized that a complete review may not be possible due to the time constraints. You should, where possible, use primary literature sources, and limit the use of textbooks.

   b) To examine your hypothesis/answer the proposed questions you should devise a series of experiments. These experiments should reflect your understanding of the field.

      i) It is realized that you have not been exposed to all possible techniques, along with their potential pitfalls etc. You should be able to justify why you think the technique you chose will provide you with appropriate results. If a committee member believes that such a test may not provide you with sufficient data, that issue can (and should) be addressed in the oral portion of the exam. Your experimental design should reflect the information you have been provided with over your graduate studies, and information you should be able to ascertain from current literature.

11) Suggested outline for the proposal. This is only a guide, you do not necessarily have to follow this guide exactly. How much you put in each section will be determined by your topic, and the amount of available literature.

   a) Abstract (500 words)
   b) Review of the literature (~ 2-3 pages)
   c) Statement of the problem/hypothesis
   d) Experimental approaches
   e) Analysis and significance of results (1 pages)

12) You are to turn in your proposal to all committee members. At that time you should ascertain a time when they will be available for the oral portion of the exam. This should be within 3-4 weeks of turning in the proposal.

13) Your proposal will be graded by your committee within two weeks of them receiving it. As stated above it should be reflective of your committee members' area of expertise and/or interests as well as showing that you have a fundamental understanding of the courses you have taken during your studies. Your committee will assign a pass/fail grade.

   • Committee members: the proposal is to be assigned a P/F grade. If two or more committee members fail the proposal it will be considered a fail. The committee will meet to discuss the proposal outcome if the resulting grade (P/F) is not unanimous. As a committee you have already agreed upon the topic for the student. From the information the student has now provided you need to consider the following in assigning a grade. (1) You are to ascertain whether the student has sufficient understanding of the fundamental areas of the course work they have taken, how to use the literature, and how to extract information from the literature.
(2) The experimental design should reflect an understanding of appropriate methods to which the students would have had exposure that would be suitable for the proposed studies. We do not necessarily expect a complete understanding of all the possible techniques. If it is felt, by a committee member, that such-and-such a method may be more appropriate, rather than the methods outlined in the proposal then this can be addressed in the oral. However, if a proposed method is not understood (e.g. use of PCR to amplify protein), or would not give the data the student suggests (e.g. use of scanning electron microscopy to determine the location of a nuclear protein) it would then this will be reflected in a lower grade as it shows a lack of understanding of the methods.

14) Oral exams

a) It would be expected that the oral portion of your exam will take about 2 hours, although depending on your committee it could be longer.

b) The oral portion of your exam is an intricate part of your comprehensive exam. It does not matter if your proposal would get top billing and funded in full from NIH; you will still be required to do the oral portion of the exam.

c) The oral will test your overall knowledge, as well as your ability to think on your feet.

d) The oral portion of your exam may potentially be the more difficult of the two components of the comprehensive exam. Within reason, anything and everything is available for discussion. Remember that this is a comprehensive exam, and topics are not limited solely to what you wrote in your proposal. Your committee is charged with ensuring that you have a sufficient level of fundamental information in the areas of your course work.

e) You should prepare an overview of the proposal that you submitted to your committee. This should be an overview, and not an in depth re-examination of the information provided in your proposal. It should be no more than 30 minutes in length. This gives you sufficient time to show your committee that you are familiar with what you have proposed. It also gives you the opportunity to justify why you have chosen particular methods or approaches.

f) Your comprehensive oral can, and should, cover any aspects that the committee feels were not adequately addressed/explained in the proposal. You should also be prepared to justify your approaches, including being able to adequately describe methods and expected outcomes.

g) You should expect in depth questioning from all your committee members. Remember that your course work encompassed a multitude of different classes, all of which in some way can probably be related to your proposal. [No course is probably more than 3 steps removed from what you put in your proposal and is therefore ‘fair game’ – no topic is probably more than 5 steps removed].

15) If you have any questions direct them to your advisor, committee, track coordinator or GPD. **GOOD LUCK WITH YOUR COMPREHENSIVE EXAMS**