

PQE Part 1 Guidelines

Systems Biology PhD Program

Part 1 of the PQE must be completed no later than June 1st of the first year.

This exam is intended to be a creative exercise in biological theory, computation or informatics. Students will formulate a question related to any problem in biology (on any scale) and develop a simple set of equations and/or a computational or bio-informatic analysis designed to address the question in a quantitative way.

This exam is intended to catalyze a period of exploration and creativity as well as exploration of an area of biology that is new to the student. Students are encouraged to discuss possible questions and models with each other and with faculty in preparing for the exam, but the final project should be their own work. The project should not be based directly on work from a rotation or a course.

Students will prepare a short written summary and an oral presentation on their project. The written summary should be no more than 4 pages.

- Background
- Question
- Approach
- Results/Conclusion
- Future Directions
- What I learned

Students should also think about whether the results are or are not consistent with the literature and think about some experiments or other approaches to test their project.

The proposal should be submitted to the committee members and Samantha Reed 1 week prior to the oral defense. In the oral exam students will present the results of their analysis. If students choose to use PowerPoint, the number of slides is limited to 10.

The presentation will be made to 3 Program faculty members formed from an examining committee consisting of 9 faculty members from the program. The examination committee will ask questions about the project itself and about background information associated with the project.

The committee may also ask explore the student's general knowledge beyond that of the project. It is expected that students will be familiar with the content covered in *Essential Cell Biology* by Bruce Alberts et al. These general questions will help the faculty committee assess if the student is adequately prepared to undertake a PhD project. Gaps in general knowledge not associated with the

project will not affect the outcome of the exam (pass/fail) but may result in the student being assigned additional reading or coursework.

Possible outcomes:

Students pass and move into their dissertation research.

Serious flaws are found in the proposal. Students will be asked to correct flaws or submit a new problem and solution and defend it no later than August 31. Failure to do so will result in the student not being allowed to register for the second year of graduate school. In some rare cases, students may be counseled to consider leaving the program.

Important gaps are found in the student's education. In this case the committee may assign additional reading or coursework, in consultation with the student's advisor. This will not affect passing or retaking the exam.