

Program in Systems Biology Preliminary Qualifying Exam Part 2

The PQE Part 2 exam must be held no later than March 31st of the student's second year.

Assembling the Committee

Subject to program approval, any three Systems Biology Program faculty may be on the PQE Part 2 committee (excluding the Dissertation Advisor). Members of the PQE committee may also be appointed to the student's DAC, however they are not required to be. A Program Co-director will attend every exam to ensure uniformity.

The student should email the Systems Biology Coordinator with their proposed committee members and a brief abstract summarizing their PQE topic in December. Once the program has approved the committee members, the student should invite the faculty. Students should notify the program coordinator when the faculty members have agreed to be on the committee. The coordinator will then schedule the exam.

Advisor Role

The advisor should view the process of preparing for the exam as a training opportunity and should guide their students in planning the dissertation project and in writing the proposal. However, the advisor must not write any part of the proposal, and the ideas in the proposal must be the student's. The Program expects that preparation for the PQE Part 2 will be an iterative process in which the student expresses their ideas to the advisor, either verbally or in writing, and receives constructive criticism and feedback, leading to another cycle of creative thought, literature review, and discussion with the advisor.

Prior to the exam, the Advisor will be invited to speak briefly with the chair of the committee.

Written Proposal

Students will prepare and defend an original research proposal derived from the student's proposed dissertation research. The proposal should define the important questions to be addressed, provide adequate background and describe some details of experiments, computation and/or theoretical work to be undertaken. Examples of successful proposals will be provided to students. The proposal should be designed so that the work can realistically be completed in approximately four years. It is appreciated that research directions may change during the course of the dissertation research.

Students are strongly encouraged to discuss their proposal and practice their oral presentation with faculty, postdocs and students in preparing for the exam.

The final written proposal should be submitted to the student's Committee and the Systems Biology Coordinator **by 5pm one week prior to the oral defense**. The overall length of the proposal, not including figures and references, should not exceed five pages.

The general format for the written proposal is:

- An abstract summarizing the questions, aims and significance of the proposed research
- A section on relevant background
- The specific aims of the research proposal
- A brief description of how the research aims will be accomplished, and what the anticipated outcomes are – both positive and negative.

Diagrams and figures can be included in the body of the proposal for clarity; these items will not be counted against the proposal's length limit.

Oral Exam

Students should not supply food or drinks for their committee

The format of the oral portion will be:

- The exam is organized around the presentation of the proposal in the form of a "chalk talk." PowerPoint presentations are NOT allowed.
- During the presentation and after it, faculty members will ask questions regarding the proposed research. Faculty may also probe the student's general knowledge, beyond the specifics of the proposal.
- The oral exam is expected to last no longer than two hours.

Outcomes

The faculty committee will convene to evaluate the student's performance on the exam. The evaluation will take into consideration both the written and the oral parts of the exam. The outcome of the examination will be communicated to the student by the examining faculty within a week of the end of the exam (often on the same day as the exam).

The faculty will consider whether or not the student successfully justified the proposed research, the significance of the research, and will evaluate the degree of independent thinking that went into the proposal, the clarity of the writing, and the student's breadth of knowledge relevant to the proposed research.

There are several possible outcomes:

- The student will receive a pass and continue with the proposed research.
- The faculty may find problems with the proposed research and/or the presentation (either written or oral). The student may then be asked to prepare and defend a new proposal. The student must retake the exam no later than the end of June.

- If the problems with the proposal and/or presentation are serious, the faculty may conclude that the student is best served by leaving the Program to pursue other interests. In such cases, the student will be asked to leave the program at the end of the semester.

The Next Step

After passing the PQE, the student will assemble a Dissertation Advisory Committee (DAC). The initial meeting of the DAC should take place within 6 months of approval of the student's PQE proposal.