MOLECULAR AND EVOLUTIONARY SYSTEMS BIOLOGY (PH.D.)

https://colsa.unh.edu/mcbs/mesb/mesb-phd

Description

Molecular and Evolutionary Systems Biology (MESB) is a coherently designed doctoral program that promotes interdisciplinary research, deep knowledge in specific disciplines, and technical, professional, and personal skills needed by 21st century Ph.D. scientists and educators. MESB provides innovative graduate education and training across the range of disciplines that span molecular and cellular biology, bioinformatics, genetics and genomics, microbiology, molecular evolution and ecology, neurobiology, and structural biology.

The MESB program offers the following features:

- It is intentionally interdisciplinary, requiring co-mentorship across traditional disciplines.
- Program faculty mentors are national and international experts in their research areas.
- We offer an innovative graduate curriculum that emphasizes ethical, legal and social implications of bioscience research (ELSI), scientific communication, genome-based scientific inquiry, bioinformatics, and expertise in contemporary instrumentation.
- Graduate students in MESB are encouraged to develop competencies and skills that span and integrate molecular to evolutionary biology.

Requirements

Degree Requirements

Degree requirements for the MESB Ph.D. degree include a series of core courses in scientific communications, applied bioinformatics, and ethical, legal, and social implications of modern biotechnology, as well as a research proposal, qualifying examinations, and the completion of a dissertation.

Research Proposal and Oral Defense: No later than at the conclusion of the second full semester of dissertation research (typically the third semester if rotating) students prepare a succinct synopsis of their thesis project, with citations. The synopsis includes:

1. Background: a summary of problem and general knowledge in the field.
2. Hypotheses, Questions, and Relevance: articulates specific hypotheses, questions to be addressed, and importance of research.
3. Approach: a general description of approaches with caveats, possible problems, alternative approaches, and resources of expertise.
4. Timeline: a general timeline for completion of the work.
5. Communication: potential audiences for the work (meetings, publications).

Students submit this proposal to their guidance committee who will read it and provide input in a committee meeting, which should take place no later than the end of their third semester. Upon review by the guidance committee, students must defend their proposal in an oral examination.

Qualifying Examination: The inter-disciplinarity inherent in the MESB graduate program requires that students integrate their training and research objectives across different fields of inquiry. This integration across fields is intended to foster unique perspectives on persistent questions in biology. To demonstrate the significance of the new perspectives inculcated by their research proposals, students must also submit an additional written qualifying examination. Written qualifying examinations may take the form of a review or synthesis article that emphasizes the integration of the research disciplines of the primary and secondary mentors and the significance of doing so given the problem. The specific format and outline of the written examination is to be determined by the guidance committee. Once complete, the written qualifying examination will be submitted to, and assessed by, the guidance committee on a pass/fail basis.

Advancement to Candidacy: The student is advanced to candidacy after the qualifying examination has been successfully passed and other requirements have been fulfilled.