



University of California, Santa Barbara
Program Learning Outcomes

PhD in Molecular, Cellular and Developmental Biology

Upon graduation with a PhD in Molecular, Cellular, and Developmental Biology (MCDB):

Core Knowledge

- Students will be able to demonstrate a broad knowledge of modern molecular and cellular biology, including areas outside of their specific research specialty.
- Students will be able to demonstrate mastery of at least one select area of the molecular biosciences relevant to their dissertation topic.

Research Methods and Analysis

- Students will be able to design and conduct a well-controlled and hypothesis-driven experiment.
- Students will be able to collect, analyze, and present original research data.
- Students will be able to critically analyze published research reports in their area of expertise.
- Students will understand new research methods and analytical approaches.

Pedagogy

- Students will develop the ability to communicate (in English) technical material to audiences ranging from general to specialized.
- Students will demonstrate skills for mentoring undergraduate students in the context of a discussion or laboratory section.
- Students will be able to critically assess the quality of undergraduate exams and writing assignments.
- Students will be able to make a technical presentation on both their own research and on published studies.

Scholarly Communications

- Students will be able to write effectively (in English) at the levels found in relevant peer-reviewed journals, conference proceedings, posters and other written formats.
- Students will be able to produce graphics of their own research for peer-reviewed publication.
- Students will be able to write critical summaries of published research articles.
- Students will be able to prepare and present oral presentations of both their own research and published studies of other researchers.

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Program Learning Outcomes, continued

Professionalism

- Students will understand and demonstrate the importance of effective communication in the molecular biosciences.
- Students will appreciate and demonstrate the cooperative and collaborative nature of research in the molecular biosciences.
- Students will demonstrate an understanding of the importance of research honesty and professional ethics and conduct themselves in an ethical manner in all aspects of their scientific careers.
- Students will have a thorough knowledge of different career options.
- Students will contribute to professional societies in their areas of specialization.

Independent Research

- Students will develop and conduct a creative, independent research project in the area of molecular, cellular, or developmental biology that meets high standards of conceptual, experimental and methodological scientific rigor.
- Students will complete original research studies that are comparable in scope and format to articles that appear in leading peer-reviewed venues in the field of molecular, cellular, and developmental biology.