

# PROGRAM REQUIREMENTS



## MCSB Ph.D.

- Attend first-year bootcamp (in September prior to the start of the first academic year)
- Perform at least 2 laboratory rotations
- 7 required core courses plus 5 elective courses
- Preliminary Exam - Normative time for completion is winter quarter of Year 2
- Advancement to Candidacy - Normative time for completion is 3 years
- Ph.D. Dissertation - Normative time to degree is 5 years

## MCSB M.S.

- Attend first-year bootcamp (in September prior to the start of the first academic year)
- Perform at least 2 laboratory rotations
- 7 required core courses plus 2 elective courses (*research thesis option*) or 5 elective courses (*literature thesis option*)
- M.S. - Normative time to degree is 2 years

## STATISTICS

- 108 Associated Faculty
- 10 Associated Departments: Biological Chemistry, Biomedical Engineering, Computer Science, Developmental and Cell Biology, Ecology and Evolutionary Biology, Mathematics, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, Physics and Astronomy
- 5 Associated Schools: Donald Bren School of Information and Computer Science, The Henry Samueli School of Engineering, The Francisco J. Ayala School of Biological Sciences, School of Physical Sciences, School of Medicine
- 98 students have entered program since 2007
- Approximately 10 students per class
- 20% are under-represented minorities; 35% are women
- Of 41 students who have graduated so far, 41% remain in academia and 59% are employed in private industry

## APPLY ON LINE

[www.grad.uci.edu/admissions](http://www.grad.uci.edu/admissions)

## CONTACT US

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Director: Dr. John S. Lowengrub, Ph.D.



**UCI** University of California, Irvine

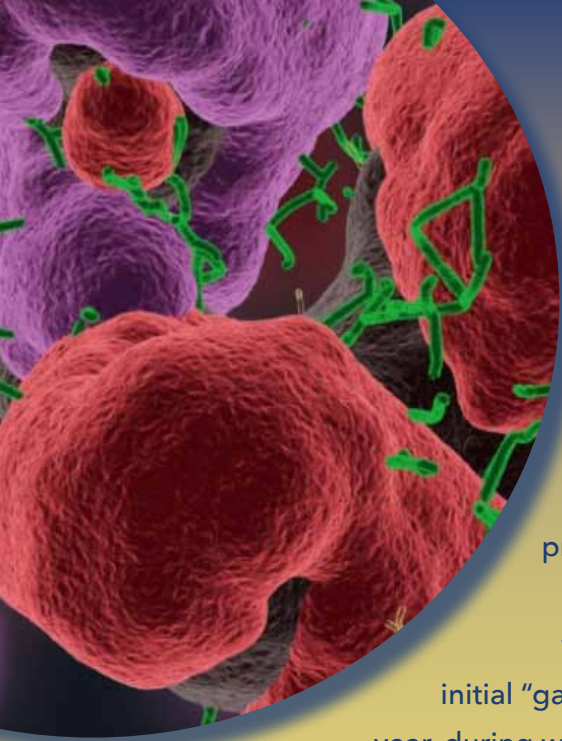


## Mathematical, Computational & Systems Biology (MCSB) Program



The biological sciences have entered a new era in which scientific advancement requires a quantitative understanding of large-scale and complex systems. There is a tremendous need to provide quantitative training for biologists, and biological training for mathematicians, physical and computer scientists, and engineers. To help meet this need, UC Irvine offers the **Mathematical, Computational and Systems Biology (MCSB) Program**, leading to M.S. and Ph.D. degrees.

The goal of UCI's program in **Mathematical, Computational and Systems Biology (MCSB)** is to provide students from a variety of educational backgrounds with training for research careers in the nascent field of Systems Biology. The program emphasizes in-depth classroom study, interdisciplinary research rotations, and individualized advising.



The program begins with an initial “gateway” year, during which all students receive basic training in principles of biology, as well as in mathematics, engineering and computer science. Students also participate in research rotations, workshops, and directed reading of the Systems Biology literature. Upon successful completion of the first year, students select a thesis advisor from among the participating faculty, who represent departments throughout the biological, physical and information sciences and engineering. Students have the option to pursue their degree directly from the MCSB Program; OR fulfill the remainder of their degree requirements according to the guidelines of the Departmental Programs to which their thesis advisors belong.



## **MCSB REQUIRED CORE COURSES**

### **FALL QUARTER**

Biological Physics (Physics 230A)  
Mathematical and Computational Biology I (Math 227A)  
Critical Thinking in Systems Biology (Dev Bio 203A)

### **WINTER QUARTER**

Systems Cell Biology (Dev Bio 232)  
Mathematical and Computational Biology II (Math 227B)

### **SPRING QUARTER**

Population Dynamics (Eco Evo 251) OR Systems  
Developmental Biology (Dev Bio 203C)  
Computational Systems Biology (Comp Sci 284C)  
OR Stochastic and Statistical Methods in Biology:  
Mathematical and Computational Biology (Math 227C)

**MCSB** students are able to participate in the NIH-funded GPS-BIOMED program, part of the campus-wide UCI-GPS (UC Irvine Graduate Professional Success) initiative. GPS programs aim to better prepare our scientists for a variety of careers within the biomedical research workforce, and empower them to become not only skilled researchers, but also polished professionals.



A hallmark of the **MCSB Ph.D. Program** has been the strength of its student financial support. The MCSB Program is supported by funding from UCI’s Graduate Division, by a National Institute of General Medical Sciences grant to UCI’s Center for Complex Biological Systems, and a training grant from the National Institute of Biomedical Imaging and Bioengineering.

During the first year of Ph.D. study, the **MCSB Ph.D. Program** provides complete financial support to admitted students, which includes an annual stipend, as well as full tuition and fee remission, including health benefits. After the first year, MCSB students are funded by a combination of institutional support, individual fellowships, and/or research support from their chosen thesis advisors. As long as students remain in good academic standing and make progress towards their Ph.D. degree, MCSB Ph.D. students are fully funded throughout their Ph.D. education.

Students applying to the program as Master’s students are self-funded; however, if interested, may apply for admission to the Ph.D. program at the end of their first year.