

Developmental and Cell Biology, B.S.

The Developmental and Cell Biology major is intended to provide students with intensive training in cutting edge approaches to understanding the structure and function of cells and how they interact to produce a complex organism, starting with a fertilized egg. The focus of the B.S. in Developmental and Cell Biology is to provide students with intensive training aimed at preparing them for graduate programs in modern Developmental and Cell Biology or other biomedical sciences. In-depth training in the molecular basis of cell and developmental biology will be coupled with integrating knowledge obtained from the recent explosive advances in genomic technology to provide a strong working understanding of how to approach problems in basic research.

The major has distinctive features. The first is a reduction in the number of required courses, allowing students the opportunity to focus more deeply on training in Developmental and Cell Biology. The second is the implementation of a new course in Genomic and Proteomic analysis that is closely tied to problems in genetics, developmental, and cell biology. Understanding the connections among these disciplines and how to apply the appropriate tools for defining and answering fundamental questions in biomedical research is a critical tool for success in research. Another distinctive feature of the major is the opportunity to replace two upper-division laboratory courses with mentored BIO SCI 199 individual research in faculty laboratories. This offers students the opportunity to apply the tools they have acquired during formal course work to current problems at the frontiers of research. Lastly, students majoring in Developmental and Cell Biology have faculty advisors with whom they meet at least quarterly. The faculty advisors help students plan their curriculum, select appropriate 199 projects and sponsoring labs, and as a group grant petitions and certify the degree. The combination of new upper-division courses, more flexibility in the curriculum, the option for mentored research, and close interaction with faculty advisors will help the Developmental and Cell Biology majors to develop an appreciation of the nature of research and establish a strong foundation for future success in graduate or professional schools.

Application Process to Declare the Major: The major in Developmental and Cell Biology is open to junior- and senior-level students only. Applications to declare the major can be made at any time. Information can also be found at the UCI Change of Major Criteria website (<http://www.changeofmajor.uci.edu/>). Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, Nursing Science, or Pharmaceutical Sciences are not permitted.

All students must meet the University Requirements (<http://catalogue.uci.edu/informationforadmittedstudents/requirementsforabachelorsdegree/>).

All students must meet the School Requirements (<http://catalogue.uci.edu/charliedunlopschoolofbiologicalsciences/#schoolrequirementstext>).

Major Requirements

A. Required Major Courses:	
BIO SCI D103	Cell Biology
BIO SCI D104	Developmental Biology
BIO SCI D114	Developmental and Cell Biology Majors Seminar
BIO SCI D145	Genomics, Development, and Medicine
B. Upper-Division Laboratories:	
BIO SCI D111L	Developmental and Cell Biology Laboratory
and select two of the following: ¹	
BIO SCI E106L	Habitats and Organisms
BIO SCI E112L	Physiology Laboratory
BIO SCI E115L	Evolution Laboratory
BIO SCI E131L	Image Analysis in Biological Research
BIO SCI E140L	Evolution and the Environment Laboratory
BIO SCI E160L	Biology of Birds Lab
BIO SCI E166L	Field Biology
BIO SCI E179L	Field Freshwater Ecology
BIO SCI M114L	Biochemistry Laboratory
BIO SCI M116L	Molecular Biology Laboratory
BIO SCI M118L	Experimental Microbiology Laboratory
BIO SCI M121L	Advanced Immunology Laboratory
BIO SCI N113L	Neurobiology Laboratory
C. Upper-Division Biology Electives:	
Select one of the following:	
BIO SCI D136	Human Anatomy

BIO SCI D137	Eukaryotic and Human Genetics
BIO SCI D170	Applied Human Anatomy
and select one of the following:	
BIO SCI D133	Advances in Regenerative Medicine
BIO SCI D135	Cell Biology of Human Disease
BIO SCI D190	Topics in Developmental and Cell Biology
BIO SCI M144	Cell Organelles and Membranes
and select three of the following:	
BIO SCI D105	Cell, Developmental, and Molecular Biology of Plants
BIO SCI D130	Photomedicine
BIO SCI D132	Introduction to Precision Medicine
BIO SCI D133	Advances in Regenerative Medicine
BIO SCI D136	Human Anatomy
BIO SCI D137	Eukaryotic and Human Genetics
BIO SCI D170	Applied Human Anatomy
BIO SCI E109	Human Physiology
BIO SCI M114	Advanced Biochemistry
BIO SCI M116	Advanced Molecular Biology
BIO SCI M125	Molecular Biology of Cancer
BIO SCI M137	Microbial Genetics
BIO SCI M143	Human Parasitology
BIO SCI M144	Cell Organelles and Membranes
BIO SCI N110	Neurobiology and Behavior
BIO SCI N151	Neurobiology of Aging
BIO SCI N153	Neuropharmacology
BIO SCI N154	Molecular Neurobiology

NOTE: No course may be used to satisfy more than one requirement.

¹ Students may petition to substitute Excellence in Research (BIO SCI 199) for two upper-division laboratories (other than BIO SCI D111L); 199 research is strongly encouraged. The 199 laboratory must be approved by the Department, and Excellence in Research must be successfully completed. Final approval is given by the Department.

Application Process to Declare the Major: The major in Developmental and Cell Biology is open to junior- and senior-level students only. Applications to declare the major can be made at any time. Information can also be found at the UCI Change of Major Criteria website (<http://www.changeofmajor.uci.edu/>). Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, Nursing Science, or Pharmaceutical Sciences are not permitted.

Freshman		
Fall	Winter	Spring
BIO SCI 93	BIO SCI 94	CHEM 1C- 1LC
BIO SCI 93L	BIO SCI 94L	STATS 7 (or Math 5A or General Education)
CHEM 1A	CHEM 1B	Lower-Division Writing ¹
BIO SCI 2A	Lower-Division Writing ¹	
General Education		
Sophomore		
Fall	Winter	Spring
BIO SCI 97	BIO SCI 98	BIO SCI 99
CHEM 51A	CHEM 51B- 51LB	CHEM 51C- 51LC
CHEM 1LD	MATH 5B (or General Education)	General Education
MATH 5A or 5B		
Junior		
Fall	Winter	Spring
BIO SCI D103	BIO SCI D104	PHYSICS 3C
PHYSICS 3A	PHYSICS 3B	PHYSICS 3LC
BIO SCI 100	PHYSICS 3LB	BIO SCI D114

General Education	BIO SCI D145	UD Bio Sci Elective General Education
Senior		
Fall	Winter	Spring
BIO SCI D111L	BIO SCI 199 or UD Bio Sci Lab	UD Bio Sci Lab or UD Bio Sci Elective
BIO SCI 199 or UD Bio Sci Lab	UD Bio Sci Elective	UD Bio Sci Elective
UD Bio Sci Elective	BIO SCI 199 or General Education	BIO SCI 199 or General Education General Education

¹ Students have the option of taking HUMAN 1AS, HUMAN 1BS, HUMAN 1CS or WRITING 40, WRITING 50, WRITING 60 in order to fulfill the lower-division writing requirement.

- Genetics, B.S.