Molecular Biology

Faculty
Greg L. Harris, Ph.D., Professor of Biology
(Molecular Biology Institute Director)
Sanford I. Bernstein, Ph.D., Albert W. Johnson Distinguished Professor of Biology
Richard L. Bizzoco, Ph.D., Professor of Biology
Christopher C. Giemlowski, Ph.D., Professor of Biology
Scott T. Kelley, Ph.D., Professor of Biology
Stanley R. Maley, Ph.D., Professor of Biology and Dean of the College of Sciences
Kathleen L. McGuire, Ph.D., Professor of Biology
Forest Rohwer, Ph.D., Professor of Biology
Anca Mara Segali, Ph.D., Professor of Biology, Chair of Department
Mark A. Sussman, Ph.D., Albert W. Johnson Distinguished Professor of Biology
Constantine Tsoukas, Ph.D., Professor of Biology
Robert W. Zeller, Ph.D., Professor of Biology
Kelly S. Doran, Ph.D., Associate Professor of Biology (Graduate Adviser)
Ralph Feuer, Ph.D., Associate Professor of Biochemistry
Tom Huxford, Ph.D., Associate Professor of Chemistry and Biochemistry
John J. Love, Ph.D., Associate Professor of Chemistry and Biochemistry
Penelope J.E. (Jenny) Quintana, Ph.D., Associate Professor of Public Health
Peter van der Geer, Ph.D., Associate Professor of Chemistry and Biochemistry
Elizabeth R. Waters, Ph.D., Associate Professor of Biology
Roland Wolkowicz, Ph.D., Associate Professor of Biology
Ricardo Zayas, Ph.D., Assistant Professor of Biology

Adjunct Faculty
Salvatore Albani, M.D., Sanford Burnham Medical Research Institute
Piero Anversa, M.D., Harvard Medical School
Jeremy Barr, Ph.D., San Diego State University
Michael Buchanan, Ph.D., University of California, Irvine
Alex Burgin, Ph.D., Emerald Biosciences
Anthony Cammarota, Ph.D., Johns Hopkins University
Maurizio Capogrossi, M.D., L’Istituto Dermopatico dell’Immacolata (IDI - IRCCS)
Joseph Cleary, Ph.D., National Renewable Energy Laboratory
Karen Clinegerman, D.V.M., The Scripps Research Institute
Thomas Cojoc, Ph.D., Eli Lilly
Adrienne Dubin, Ph.D., The Scripps Research Institute
Kim Finley, Ph.D., SDSU Donald P. Shiley BioScience Center
Roger Allyn Forsyth, Ph.D., San Diego State University
David G. Giegie, Ph.D., SDSU Donald P. Shiley BioScience Center
Natalie Gude, Ph.D., San Diego State University
Doron Herr, Ph.D., National University of Singapore
Valentine Lance, Ph.D., San Diego State University
Louise Laurent, Ph.D., University of California, San Diego/
The Scripps Research Institute
Phyllis-Jean Linton, Ph.D., SDSU Donald P. Shiley BioScience Center
Patrick McDonough, Ph.D., Vala Sciences, Inc.
Aram Meghigian, Ph.D., University of Patova
Girish Melkani, Ph.D., San Diego State University
Robert Menterz, Ph.D., SDSU Donald P. Shiley BioScience Center
John Mokil, Ph.D., San Diego State University
Brett Monia, Ph.D., Isis Pharmaceuticals, Inc.
Ulrich Mueller, Ph.D., The Scripps Research Institute
James Neel, Ph.D., San Diego State University
Kent Osborn, Ph.D., San Diego State University
Joy A. Phillips, Ph.D., SDSU Donald P. Shiley BioScience Center
Clementina Pinilla, Ph.D., Torrey Pines Research Institute
Harry Pymale, D.V.M., San Diego State University
Joseph Pogliano, Ph.D., University of California, San Diego
Coralie Poizat, Ph.D., King Faisal Specialist Hospital & Research Centre in Riyadh
Moeselio Schaechter, Ph.D., San Diego State University/University of California, San Diego
Marlyn Thoman, Ph.D., SDSU Donald P. Shiley BioScience Center
John Trawick, Ph.D., Genomatica
Mirko Volkers, M.D., San Diego State University
Kathrine Whitenos, Ph.D., San Diego State University
Gregor Zlokarnik, Ph.D., Vertex Pharmaceuticals

General Information
The Molecular Biology Institute (MBI) administers the Master of Arts and Master of Science degrees in biology with a concentration in molecular biology. The MBI is currently composed of members from the Departments of Biology, Chemistry and Biochemistry, and the Graduate School of Public Health, and is designed to serve these departments in the coordination, support, and enhancement of research and training in the molecular biological sciences. See Biology in this section of the bulletin for information on how to apply. Graduate teaching associateships in biology and chemistry are available to qualified students. Application blanks and additional information may be obtained from the graduate coordinator of biology and are also available at http://www.bio.sdsu.edu.

Admission to Graduate Study
Candidates for admission may come from a variety of disciplines in the biological and physical sciences. Ultimately, the research programs of individuals wishing to pursue master’s degree work in molecular biology will be carried out under the supervision of MBI members.

In addition to the general requirements for admission to the university with classified graduate standing as described in Part Two of this bulletin, a student must satisfy the following admission requirements before being recommended for admission:
1. Possess a bachelor's degree with a major in a biological or physical science equivalent to that offered at San Diego State University.
2. Have a grade point average of 2.85 or better in work taken for the baccalaureate degree.
4. Supply two letters of reference that describe the applicant's potential for graduate work.

Students who do not meet all of the above requirements for admission may be admitted with conditionally classified graduate standing upon the recommendation of the MBI faculty. Students so admitted will be advised as to the nature of their deficiency and the time allowed to achieve full classified graduate standing.

Advancement to Candidacy
All students must satisfy the general requirements for advancement to candidacy, including the foreign language requirement for the master of arts degree, as stated in Part Four of this bulletin. Satisfactory progress on the thesis research will be prerequisite to obtaining departmental approval for advancement.

Specific Requirements for the Master of Arts or Master of Science Degree
(Major Code: 04161) (SIMS Code: M.A. 771459; M.S. 771458)

In addition to meeting the requirements for classified graduate standing and the basic requirements for the master’s degree as described in Part Four of this bulletin, the student must complete a graduate program of 30 units of 500-level and above courses selected, with the approval of the MBI graduate adviser. A list of suggested courses is presented on the following page. All students entering the Master of Science program in molecular biology will be required to take an advanced course in molecular biology. At least 15 units of the courses selected must be in 600- and 700-numbered courses including 799A, Thesis. The student must complete at least three units of Molecular Biology 601 and six units of Molecular Biology 610. With the approval of the graduate adviser, one of the above courses may substitute for Molecular Biology 610 another 600- or 700-numbered course. A final oral examination on the thesis will be administered by the thesis committee.
Molecular Biology

Courses Acceptable for the Concentration in Molecular Biology (M BIO)

Refer to Courses and Curricula and Regulations of the Division of Graduate Affairs sections of this bulletin for explanation of the course numbering system, unit or credit hour, prerequisites, and related information.

UPPER DIVISION COURSES

Biology (BIOL)

BIOL 510. Molecular Evolution (3)
BIOL 549. Microbial Genetics and Physiology (3)
BIOL 554. Molecular Virology (3)
BIOL 556. Scanning Electron Microscopy Laboratory (2)
BIOL 557. Transmission Electron Microscopy Laboratory (3)
BIOL 558. Advanced Biochemistry, Cellular, and Molecular Biology (4)
BIOL 568. Bioinformatics (3)
BIOL 570. Neurobiology (3)
BIOL 575. Molecular Basis of Heart Disease (3)
BIOL 576. Developmental Biology (3)
BIOL 584. Medical Microbiology (3)
BIOL 585. Cellular and Molecular Immunology (3)
BIOL 590. Physiology of Human Systems (4)
BIOL 594. Biotechnology Research Rounds (2) Cr/NC
BIOL 596. Special Topics in Biology (1-4)
BIOL 597A. Univariate Statistical Methods in Biology (3)

Chemistry (CHEM)

CHEM 510. Advanced Physical Chemistry (3)
CHEM 550. Instrumental Methods of Chemical Analysis (2)
CHEM 560. General Biochemistry (3)
CHEM 562. Intermediary Metabolism (2)
CHEM 563. Nucleic Acid Function and Protein Synthesis (2)
CHEM 564. Receptor Biochemistry and Protein Modification (2)
CHEM 567. Biochemistry Laboratory (3)
CHEM 596. Advanced Special Topics in Chemistry (1-3)

GRADUATE COURSES

Biology (BIOL)

BIOL 600. Seminar (1-3)
BIOL 696. Advanced Topics in Biology (1-3)
BIOL 797. Research (1-3) Cr/NC/RP
BIOL 798. Special Study (1-3) Cr/NC/RP

Chemistry (CHEM)

CHEM 712. Chemical Kinetics (3)
CHEM 751. Separations Science (3)
CHEM 763. Cellular Regulation (2)
CHEM 790. Seminar (1-3)
CHEM 791. Research Seminar (1)
CHEM 792. Bibliography (1)
CHEM 797. Research (1-3) Cr/NC/RP
CHEM 798. Special Study (1-3) Cr/NC/RP

GRADUATE COURSES

M BIO 600. Seminar in Molecular Biology (1-3)
Prerequisite: Consent of instructor.
Evaluation of current literature in molecular biology. May be repeated with new content. Maximum credit six units applicable to a master’s degree.

M BIO 601. Colloquium in Molecular Biology Research (1) Cr/NC/RP
Recent research advances in selected areas of modern molecular biology presented by faculty of the Molecular Biology Institute and established outside investigators. May be repeated with new content. Open only to students admitted to the molecular biology program or by permission of the graduate adviser for molecular biology. Maximum credit six units, three of which are applicable to a master’s degree.

M BIO 610. Advanced Topics in Molecular and Cell Biology (1-4)
Prerequisite: Graduate standing in a life or physical science.
Intensive study in specific areas of molecular and cell biology. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units applicable to a master’s degree.