

CELLULAR AND MOLECULAR PHYSIOLOGY

Sterling Hall of Medicine B147, 203.785.4041

<http://medicine.yale.edu/physiology>

M.S., M.Phil., Ph.D.

Chair

Michael Caplan

Director of Graduate Studies

David Zenisek (SHM B114, 203.785.6474, david.zenisek@yale.edu)

Professors Nadia Ameen (*Pediatrics*), Peter Aronson (*Internal Medicine/Nephrology*), Angeliqe Bordey (*Neurosurgery*), Cecilia Canessa, Lloyd Cantley (*Internal Medicine/Nephrology*), Michael Caplan, Alan Dardik (*Surgery*), Jonathan Demb (*Ophthalmology and Visual Science*), Marie Egan (*Pediatrics*), Barbara Ehrlich (*Pharmacology*), Anne Eichmann, Tore Eid (*Laboratory Medicine*), Shuta Ishibe (*Internal Medicine/Nephrology*), Leonard Kaczmarek (*Pharmacology*), Richard Kibbey (*Internal Medicine/Endocrinology*), George Lister (*Pediatrics*), Pramod Mistry (*Internal Medicine/Digestive Diseases; Pediatrics*), Michael Nitabach, Vincent Pieribone, Patricia Preisig (*Internal Medicine/Nephrology*), W. Mark Saltzman (*Biomedical Engineering*), Joseph Santos-Sacchi (*Surgery/Otolaryngology*), Gerald Shulman (*Internal Medicine/Endocrinology*), Fred Sigworth, Susumu Tomita, C. Shan Xu, Xiaoyong Yang (*Comparative Medicine*), Lawrence Young (*Internal Medicine/Cardiology*), David Zenisek, Z. Jimmy Zhou (*Ophthalmology and Visual Science*)

Associate Professors Nii Addy (*Psychiatry*), Sviatoslav Bagriantsev, Nigel Bamford (*Neurology*), Stuart Campbell (*Biomedical Engineering*), Jean-Ju Chung, Julie Goodwin (*Pediatrics/Nephrology*), Elena Gracheva, Erdem Karatekin, Jesse Rinehart, Matthew Rodeheffer (*Comparative Medicine*), Carson Thoreen

Assistant Professors Rui Chang, Ji Yeon Kim (*Urology*), Rachel Perry, Marc Schneeberger, Hongying Shen

FIELDS OF STUDY

Fields of study range from cellular and molecular physiology to integrative medical biology. Areas of current interest include: ion channels, transporters and pumps, membrane biophysics, cellular and systems neurobiology, protein trafficking, epithelial transport, signal transduction pathways, cardiovascular biology, sensory physiology, metabolism, organ physiology, genetic models of human disease, pathophysiology, structural biology of membrane proteins, and physiological genomics.

To enter the Ph.D. program, students typically enter via the Translational Molecular Medicine, Pharmacology, and Physiology (TMMPP) track within the interdepartmental graduate program in Biological and Biomedical Sciences (BBS), <https://medicine.yale.edu/bbs>.

SPECIAL REQUIREMENTS FOR THE PH.D. DEGREE

Formal requirements for the Ph.D. degree include two or three terms of course work, a qualifying examination taken by the end of the second year, submission of a thesis prospectus, two terms of teaching, and completion and satisfactory defense of the thesis.

Students are expected to design a suitable program of courses in consultation with a faculty adviser. The director of graduate studies (DGS) will provide general oversight of the course selections. These courses will provide a coherent background for the expected area of thesis research and also satisfy the department's subject and proficiency requirements. Students must satisfactorily pass at least six graduate-level courses, including C&MP 550, C&MP 630, and either C&MP 560 or C&MP 580. Also during the first two terms, each student should explore research projects by performing rotations in at least three laboratories to create an informed basis upon which to select a thesis project by the end of the first year. There is no foreign language requirement. The qualifying examination, which must be passed by the end of the student's fourth term, will cover areas of physiology that complement the student's major research interest.

An important dimension of graduate training in Cellular and Molecular Physiology is the acquisition of teaching skills through participation in courses appropriate for the student's academic interests. Ph.D. students are expected to participate in two terms (or the equivalent) of teaching. Students are not expected to teach before passing the qualifying examination.

In addition to all other requirements, students must successfully complete C&MP 650, The Responsible Conduct of Research, prior to the end of their first year of study; and, in their fourth year of study, all students must successfully complete B&BS 503, RCR Refresher for Senior BBS Students.

After satisfying the departmental predissertation requirements, passing the qualifying examination, submitting a satisfactory thesis prospectus, and presenting a satisfactory report to the appropriate thesis advisory committee, students are admitted to candidacy. The completed dissertation must describe original research making a significant contribution to knowledge.

HONORS REQUIREMENT

Students must meet the Graduate School's Honors requirement by the end of the fourth term of full-time study. Students must also maintain an overall High Pass average. Student progress toward these goals is reviewed at the end of the second term. Note that Honors grades in C&MP 630 or Lab Rotations courses are not counted towards the Honors requirements.

SPECIAL REQUIREMENTS FOR M.D.-PH.D. STUDENTS

M.D.-Ph.D. students must pass at least three graduate-level courses that are not part of the Yale School of Medicine's regular M.D. program, including at least one C&MP course, preferably C&MP 560 or C&MP 580. Courses taken toward the M.D. degree can be counted toward the graduate school's Honors requirement, provided that the course carries a graduate course number and the student has registered for it as a

graduate course. Two laboratory rotations, each lasting five weeks, and one term of teaching are required.

MASTER'S DEGREES

M.Phil. See Degree Requirements under Policies and Regulations. Awarded to students who have fulfilled all the requirements for the Ph.D. except the prospectus, teaching requirement, and dissertation, normally at the end of the second year. Students are not admitted for this degree.

M.S. Awarded only to students who are not continuing for the Ph.D. degree but who have successfully completed one year of the doctoral program (i.e., passing of at least four graduate-level courses, including two Honors grades, and three successful laboratory rotations). Students are not admitted for this degree. Students who are eligible for or who have already received the M.Phil. will not be awarded the M.S.

Program materials are available upon request to the Department Registrar, Department of Cellular and Molecular Physiology, Yale School of Medicine, PO Box 208026, New Haven CT 06520-8026.