



SCHOOL OF MEDICINE

School of Medicine

Dean: Norman H. Edelman

Vice Deans: Craig C. Malbon, scientific affairs; Peter C. Williams, academic affairs and faculty development

Associate Deans: Thomas Biancaniello, medical affairs; Jack Fuhrer, admissions; Frederick M. Schiavone, medical education; Aldustus Jordan, student and minority affairs; Latha Chandaran, academic advising; Dorothy S. Lane, continuing medical education; Derinda Pell, administration and finance

Associate Deans for Clinical Affiliations: John F. Aloia, Winthrop University Hospital; Edward J.C. Mack, Veterans Affairs Medical Center at Northport; Michael Mastow, Nassau University Medical Center.

Assistant Deans: Grace Agnetti, Marilyn London, Elza Mylona, John Riley

Executive Administrator Health Science Center: Barbara E. Katz

Assistants to the Dean: Mary Jean Allen, Burke Kincaid, Judy Lum

The School of Medicine consists of basic science and clinical departments that have the responsibility for pre-clinical and clinical instruction of students in all the schools of the Health Sciences Center, as well as university-wide responsibility to students in other schools on the campus. Basic science departments include the departments of anatomical sciences, biochemistry and cell biology, biomedical engineering, microbiology, neurobiology and behavior, pathology, pharmacological sciences, and physiology and biophysics. Clinical departments include the departments of anesthesiology, dermatology, emergency medicine, family medicine, medicine, neurological surgery, neurology, obstetrics, gynecology and reproductive medicine, ophthalmology, orthopaedics, pediatrics, physical medicine and rehabilitation, preventive medicine, psychiatry and behavioral science, radiation oncology, radiology, surgery, and urology.

In addition to instruction at the undergraduate and professional levels, these departments have major responsibility for graduate, postgraduate, and continuing education. The goal of each of these departments is to:

- 1) integrate as rapidly as possible new scientific knowledge and the advances of basic research into the training of every health professional
- 2) promote input from all university disciplines into education and research in the health sciences
- 3) ensure that every healthcare professional trained in the school is prepared to provide the highest level of patient care. In the basic sciences, these efforts are enhanced by collaboration with colleagues at the biology and medical departments of the Brookhaven National Laboratory, the Cold Spring Harbor Laboratory, and other research institutions in the vicinity. In the clinical departments, these

objectives are enhanced by the Medical Center of the University at Stony Brook as well as by the clinical affiliates of the Nassau University Medical Center, Winthrop University Hospital, the Northport Veterans Affairs Medical Center, and various community clinical facilities integrated under a variety of arrangements.

Admission to the MD Program

The Medical College Admission Test (MCAT) must be taken no later than the year prior to the year for which the student seeks admission. By law, applicants must have completed a minimum of two years of college before matriculation; however, medical school admissions committees favor applicants with more complete educational preparation. Premedical course requirements include one year each of biology, physics, inorganic chemistry and organic chemistry (all with lab), and one year of English. A basic course in biochemistry is helpful in preparing students for the first year of medical school.

The school hopes to acquire a student body representative of a variety of backgrounds, experiences, and interests. The school examines rigorously the preparation and promise for creative work in medicine of all applicants, and asks to meet personally with those in whom it is most seriously interested. Although it is desired that many backgrounds are represented in the student body, the school does not attempt to maintain a quota to fill any one "category" of student. It does, however, want to make clear its commitment to seek a significant representation in its student body from groups who have long remained under-represented in medicine.

Grades, MCAT scores, letters of evaluation, extracurricular and work experiences are carefully and personally examined. Motivational and personal characteristics, as indicated in an individual's application, letters of evaluation, and a personal interview, are also a major part of the admissions assessment*. Decisions will be influenced by an applicant's scholarship, aptitude, character, personal qualities, and promise of future value to society through the medical profession. There is no discrimination in the admissions review and selection process on the basis of sex, race, religion, national origin, age, marital status, or disability. Although residents of New York State constitute the majority of the entrants, the School of Medicine encourages applications from out of state residents. State residency bears no importance in the selection of students for the M.D./Ph.D. program.

All questions concerning admission should be addressed to:

Office of Admissions, School of Medicine
Health Science Center, Room 147A, Level 4
Stony Brook University
Stony Brook, NY 11794-8434
Telephone: (631) 444-2113

Applications are available through the American Medical Colleges Application Service (AMCAS).

*The submission of false or misleading information in the application materials or in connection with the application process shall be grounds for rejection. If such submission is discovered after the rendering of an offer of admission, matriculation in the school, or award of the degree, it shall be grounds for withdrawal of the acceptance offer, for dismissal, or for revocation of degree.

Technical Standards for Admission and Retention

The MD degree is, and must remain, a broad undifferentiated degree attesting to the mastery of general knowledge in all fields requisite for entry into graduate medical education programs (residencies) of diverse types. It follows that graduates must possess the essential knowledge and skills to function in a broad variety of clinical situations, and to render a wide spectrum of patient care in a safe and effective manner.

The School of Medicine faculty has, therefore, specified non-academic criteria, Technical Standards for Admission and Retention, which all applicants/medical students are expected to meet in order to participate in the medical education programs. These criteria include the following five categories: 1) observation; 2) communication; 3) motor skills; 4) intellectual-conceptual, integrative and quantitative abilities; and 5) behavioral and social attributes. A copy of the Technical Standards may be obtained from the Admissions Office.

Grading Policy

The School of Medicine does not assign specific credits to medical student courses. Students must complete the entire curriculum successfully to graduate. Students are graded H (Honors), P (Pass), or F (Fail). Other grades used are I (Incomplete), an interim grade that must be resolved before the beginning of the next academic year; and W (Withdrawal). Although the official transcript lists only the grades above, our internal records list high pass (HP) and low pass (LP) as well.

Alpha Omega Alpha

A chapter of Alpha Omega Alpha, the national honor medical society, was established at the School of Medicine in 1985. The society's purpose is to recognize and perpetuate excellence in the medical profession. Each year member chapters elect outstanding medical students, graduates, faculty and honorary members to its ranks.

MD Curriculum

The MD curriculum in the school is a series of courses offered by individual departments or integrated units that are planned and taught in an interdisciplinary manner by faculty from many departments.

The first year curriculum consists of basic science courses and introductory courses related to patient care. Basic Science courses include: Molecules, Genes and Cells; The Body; Neurosciences; Nutrition; Medical Physiology; and Pathology. Other required courses are Medicine in Contemporary Society, a course that spans all four years and contains components of Social Issues in Medicine, Ethics, Law, and Health Economics; Preventive Medicine, Introduction to Human Behavior; Basic Life Support, including Cardiopulmonary Resuscitation (CPR) leading to certification in CPR; and Introduction to Clinical Medicine, a two-part course, spanning the latter half of both the first and second years, which introduces history taking and physical examination skills.

The second-year curriculum contains the study of organ pathophysiology in the Systems Approach to Medicine course. This course consists of integrated presentations of basic and clinical science. It includes coverage of neurosciences, blood, cardiovascular, endocrine, gastrointestinal, connective tissue, renal, reproductive, and respiratory systems. In addition, Pharmacology, Microbiology, and Medicine in Contemporary Society courses are included in the second-year curriculum. The Introduction to Clinical Medicine course, in the second year, fosters development of patient interview, examination and correlative skills as the student acquires additional knowledge of physiology, pathology, and the natural history of diseases with the systems course.

The third-year curriculum consists of a twelve-week clerkship in medicine; eight-week clerkships in pediatrics and surgery; six-week clerkships in obstetrics-gynecology, and family medicine; a four-week clerkship in psychiatry and two-week clerkships in radiology and emergency medicine, or one month of elective time.

The fourth-year curriculum consists of the following requirements:

1. A one month subinternship (medicine, family medicine, pediatric or surgery)
2. A one-month didactic course (emergency medicine, laboratory medicine, clinical therapeutics or surgical anatomy)
3. A Medicine in Contemporary Society requirement
4. A one-month neurology experience
5. A two-week experience in Psychiatry in Medicine
6. A one-month experience in Surgical Selectives
7. Students must complete three (3) and one half months of electives.

During the four years, a student's acquisition of clinical and laboratory skills necessitates attendance and demonstration of competence at patient-contact exercises and laboratories. Passing USMLE Step 1 and Step 2 is required for promotion and graduation.

MD/PhD Program (MSTP)

The MD/PhD program normally requires six to eight years to complete. During the first two years, the MD/PhD curriculum closely follows the MD curriculum, with the addition of basic science tutorials during the first year, and two summers of laboratory research. The next two to four years are spent completing the requirements for the PhD in a basic science. To be awarded the PhD degree, the student must satisfy the Graduate School and Basic Health Science Graduate Studies requirements. At the conclusion of the research period, MD/PhD candidates complete medical school clerkships, selectives and electives required for the awarding of the MD degree.

MD With Recognition in Research Program

Students must complete six months of research during medical school and present their results at a student research seminar in their senior year.

MD With Recognition in Medical Humanities

This program is structured within the four-year medical school framework. During medical school, students in this program complete six months of scholarly activity with the faculty of the Institute for Medicine in Contemporary Society.

Scholars for Medicine (BA/MD Program)

Scholars for Medicine will earn a BA/MD degree with four years of undergraduate course work and four years of medical school. All Scholars of Medicine will be individually counseled on their careers throughout their participation in the program. Benefits include full or partial scholarship funds, help in finding laboratory placements for undergraduate research projects, regular advising from both the Honors College Master and the Premedical Advisor, opportunities to meet faculty in the School of Medicine, seminar participation with invited guest speakers in the Scholars for Medicine Lecture Series, and support and encouragement in the exploration of undergraduate and career opportunities.

Scholars for Medicine positions will be available to select entering freshmen who have been accepted to the Honors

College Program. Eligibility criteria are: nomination of high school seniors by the Honors College; 1350 or above on the SATs; maturity; evidence of social commitment; evidence of interest in science; high moral character; breadth of interests and strong communication skills.

All acceptances to the Scholars of Medicine Program (BA/MD Program) are conditional. Of critical importance will be an ongoing assessment of the candidate's maturity, academic ability and his/her motivation and readiness to pursue a medical education. Scholars must continue to present exemplary academic accomplishments and those personal characteristics that exemplify a Scholar for Medicine. Students must accrue a GPA of 3.4 during the first three undergraduate years. All scholars will be required to take the MCAT no later than spring of their junior year in college. Students need to attain cumulative MCAT scores comparable to the national average of matriculants to medical school. All scholars must attend Scholars for Medicine lectures and seminars, and prepare assignments as required.

Scholars for Medicine accepted into the BA/MD program before matriculating at Stony Brook will have a place reserved in Stony Brook Medical School contingent upon the above criteria. Final acceptance will be placed on the ongoing evaluations by program advisors, letters of evaluation, MCAT performance, and an interview with the Committee on Admissions of the School of Medicine. All students in the BA/MD program must apply for early decision to Stony Brook School of Medicine.

Institute for Medicine in Contemporary Society

The Institute for Medicine in Contemporary Society was established in 1990 at the School of Medicine to develop interdisciplinary programs that explore the relationship of medicine to other dimensions of contemporary culture. Philosophy, law, the arts, social sciences, literature, and religion all have significant roles to play in reflecting on the insights into ourselves which arise from studying the complex experience of being ill and caring for the ill. With a primary interest in connecting the schools of the Health Sciences Center, other departments of the university and the Long Island community, the Institute serves as a catalyst for discussion, educational experiment, and research in the multi-cultural environment of Stony Brook.

Academic Standing

It is the intention of the School of Medicine to assure that students are adequately prepared, both for the practice of medicine and a life in medicine. Such assurance requires both an overall academic performance that goes beyond merely marginal and an unblemished record of professionalism.

Different courses have different requirements, but in all courses, grades are determined by course directors and reported to the Office of Office of Medical Education (OME) and the Committee on Academic Standing, the body charged with oversight of student progress. Students must complete all coursework in one year before proceeding to the next. Moreover, students must pass USMLE, Step 1 before continuing in the third year, and must pass Step 2 to graduate.

The Committee on Academic Standing also evaluates reports of professional misconduct and makes recommendations to the dean. The School of Medicine's policy is to ensure the integrity of its examination process, to promote ethical behavior in academic and clinical situations, and to develop in students a commitment to the integrity of the medical profession. Students have an obligation to refrain from any act that is designed to obtain for themselves or others academic credit, grades, or other recognition which is not properly earned. They also have an obligation to

take an active role in ensuring that other students refrain from such acts. Each student therefore has the responsibility to prevent or report acts of academic dishonesty. There is a discussion of professionalism in the school's Policies and Procedures and students are evaluated for professionalism in their course work using a form that specifies elements of personal responsibility, cultural sensitivity, self-improvement, integrity and altruism. There is also a student honor code created by the students to which all medical students must adhere.

Violations of the student honor code are reviewed by a student committee which reports recommendations to the dean. In cases of academic difficulty or dishonesty, the student is offered an opportunity to appear before the Committee on Academic Standing. Decisions of this committee are reported to, and may be appealed to, the Dean of Medicine.

Students with learning or other disabilities will be evaluated by the University's Disability Support Services and, in discussion with the dean's office, appropriate accommodations made.

Graduate Studies in Basic Health Sciences

Graduate studies leading to the PhD degree in basic health sciences are offered in the fields of anatomical sciences, molecular microbiology, cellular and molecular pathology, molecular and cellular pharmacology, or physiology and biophysics. The department of oral biology and pathology also offers a Master of Science degree in Basic Health Sciences.

Basic health sciences departments of the School of Medicine also collaborate with the Division of Biological Sciences and other academic units to operate graduate study programs in various areas of the biological sciences, such as molecular biology and biochemistry, cellular and developmental biology, genetics, and neurobiology and behavior.

Each graduate studies program is guided by its own director and executive committee and establishes its own entrance standards and degree requirements, described in detail in the Graduate Bulletin. Inquiries regarding graduate admission to a specific department should be addressed to the director of the department's graduate program. Please see the "Admissions Section" in this Bulletin for more information.

Financial Aid

Inquiries concerning these and other sources of financial aid should be directed to the School of Medicine financial aid officer, Office of Student Affairs. For additional financial data, refer to the "Financial Assistance" section at the beginning of this Bulletin.

School of Medicine Chairs and Visiting Professorships

The Edmund D. Pellegrino Professorship of Medicine

In 1986, the university established a professorship in the School of Medicine to honor Edmund D. Pellegrino, MD, founder of the Health Sciences Center. The endowment specifies that the Edmund D. Pellegrino Professorship of Medicine will be occupied by "an individual who exemplifies the breadth of interests and achievements in education, research, and the practice of medicine that have characterized Dr. Pellegrino's career." The first occupant of that chair was Dr. Pellegrino, who held it for a brief period. Following Dr. Pellegrino's tenure, the chair was occupied by Harry W. Fritts, MD, who is now the Pellegrino Professor Emeritus and former chairman of medicine at Stony Brook. Currently, Benjamin J. Luft, MD, professor of medicine, occupies the chair.

The Evelyn Glick Chair in Experimental Medicine

In 1990, Mrs. Evelyn Grollman Glick of Baltimore, Maryland, created an endowment designed to support a Chair in the Department of Pharmacological Sciences. Income from this fund provides research or salary support for the Chair. The current occupant of the chair is Arthur P. Grollman, MD, Leading Professor of Pharmacological Sciences and Professor of Medicine.

The Marvin Kuschner Professorship of Pathology

An endowed chair in the School of Medicine, The Marvin Kuschner Professorship of Pathology was established by the University in 1988 in honor of Marvin Kuschner, MD, dean emeritus of the School of Medicine at Stony Brook. The endowment specifies that the "Marvin Kuschner Professorship of Pathology will be occupied by an individual who exemplifies the breadth of interests and achievements in education, research and the practice of pathology and environmental medicine that have characterized Dr. Kuschner's career." Frederick Miller, MD, professor of pathology, currently occupies this chair.

The Leo and Judy Zickler Visiting Professorship in Pharmacological Sciences

A Visiting Professorship in Pharmacological Sciences was established in 1988 through a gift from Leo and Judy Zickler of Bethesda, Maryland. Under the terms of this endowment, a distinguished scientist is invited to spend up to five days at the University at Stony Brook, to engage in teaching and discussion with faculty and students. During the visit, the professor delivers a general lecture on a subject of his choice. Zickler Visiting Professors have included Daniel Nathans, Howard Temin, Gobind Khorana, Victor McKusick, Sydney Brenner, Leroy Hood, Dirk Boostma, Sir James Black, Alfred G. Gilman and Joseph L. Goldstein.

Advancement

The strength of the synergistic relationship between the schools of the Health Sciences Center and the Stony Brook University Hospital is the basis for a new approach being taken toward institutional advancement. The hallmarks of this approach are an emphasis on fundraising, marketing, and communicating with alumni, corporations, private foundations, and the community. The goal for the new office is to obtain philanthropic support that will enable the HSC and SBUH to continue their tradition of excellence in medical care, research, education, and community service.

In addition, the five schools of the Health Sciences are also reaching out to alumni like never before. The Stony Brook Alumni Association works to increase communication, encourage involvement, and expand services for alumni, while building support for the University. A volunteer Board of Directors governs the Stony Brook Alumni Association which represents the 110,000 alumni, including more than 15,000 alumni from the schools in the Health Sciences Center.

There are five alumni chapters in the Health Sciences Center – one for each of the schools. Each chapter has its own elected alumni board of directors, chapter membership, and hosts its own special events, besides participating at those that are university-wide, such as Homecoming and Alumni Weekend.

The alumni chapters strengthen the relationship between the graduates and the schools in the Health Sciences Center by providing ongoing support for alumni career development. In response, this relationship allows the alumni to participate in school and university affairs and to contribute to the financial strength of the university through donation, endowments, and participation at special fundraising events. For more

information about making a contribution to a school in the Health Sciences Center or the Stony Brook University Hospital, please call 631.444.7916. For more information about alumni activities, please call 631.444.2988, or log onto the website <http://www.hscalumni.stonybrook.edu>.

Grants and Awards

The Arthur Berken Fellowship

Dr. Arthur Berken, a long-time member of the clinical faculty at the School of Medicine, always worried about the impact of technology on men and women in medical school. With the advances in diagnostics and treatment made possible through technology, he feared that young doctors might come to see their patients as little more than biochemical machines. And, so when Dr. Berken passed away in the late spring of 1994, his wife Roberta, his family and a number of friends and colleagues decided to endow a fellowship that would encourage would-be physicians to remember that, in the end, it is people who matter most. The Arthur Berken Fellowship has made possible a new addition to the School of Medicine's MD with Recognition Awards, an MD with Recognition in Medical Humanism.

Sir James Black Award for Excellence in Research

An endowment has been established with a gift from Sir James Black, FRS, Nobel Laureate in Physiology or Medicine, to provide an award to the graduating undergraduate pharmacology major who has achieved the highest scholastic excellence in both course work and a senior research project.

The Catacosinos Cancer Awards

Dr. and Mrs. William Catacosinos have generously donated funds for annual grants to support cancer research. The Catacosinos Cancer Award recognizes significant contributions to the illumination of the cancer problems of the past and anticipates major advances coming from these investigations. A committee of scientists, appointed by the Dean of Medicine, oversees these awards which are administered by the Stony Brook Foundation.

Jean M. Devlin Achievement Award

This endowment, created by generous gifts from Richard A. Auhll and Rudi R. Schulte of Santa Barbara, California, matched by the Department of Pharmacological Sciences, honors Jean M. Devlin, founding Director of Stony Brook's undergraduate program in pharmacology. The Jean M. Devlin Award is presented at commencement to the graduating pharmacology major judged to have the greatest potential for making future contributions to the pharmacological sciences.

Radmila and Gabor Inke Anatomical Research Fund

The Department of Anatomical Sciences at University Medical Center Stony Brook is the beneficiary of a generous testamentary gift from Dr. Gabor Inke. Dr. Inke became the Department's first member in 1969 and served the Medical Center for more than 20 years. Dr. Inke, a recognized expert on the development of the human skull as well as the kidney, dedicated his life to research and teaching. Upon his death the Radmila and Gabor Inke Anatomical Research Endowment Fund was created to support the research mission of the department that he helped to create.

William G. Van der Kloot Awards

An endowment has been established by Professor Robert Nathans and the Department of Pharmacological Sciences in honor of William G. Van der Kloot, PhD, Professor of

Physiology and Pharmacological Sciences, and founding Chair of the Department of Physiology. The endowment provides awards annually to two students in the molecular and cellular pharmacology graduate program. The Van der Kloot Teaching Award recognizes the most significant teaching contributions to the undergraduate major. The Van der Kloot Research Award recognizes outstanding accomplishments in research.

Emil C. Voll Bequest

A bequest of more than \$1.7 million from Emil C. Voll was made in 1992 to fund a professorship in cancer research in the School of Medicine. Mr. Voll's wife, Geraldine, died of cancer in 1987. Awards to four faculty investigators enable them to play a major leadership role in the school of Medicine's cancer program.

Continuing Medical Education

The educational mission of the medical school lies in three areas of physician education. These are the education of medical students, residency training and the continuing education of physicians. This is consonant with the philosophy that education is a continuing process throughout a professional career. The purpose of Continuing Medical Education is to optimize patient care and maintain and improve physician competency by means of offering high quality learning experiences for physicians. The activities offered permit physicians to fulfill CME requirements for relicensure, maintenance of certification, hospital privileges, and medical or specialty society membership.

The School of Medicine's continuing education program is fully accredited by the Accreditation Council for Continuing Medical Education. Through its Office of Continuing Medical Education the School of Medicine sponsors, co-sponsors or jointly sponsors CME activities including regularly scheduled conferences, courses and enduring materials. The methods of instruction are varied to offer different types of learning experiences, appealing to diverse and individual learning styles and practice setting requirements. They include live conferences; interactive audio, video and electronic programs; self-study materials and hands-on training.

Department of Anatomical Sciences

Chair: Jack T. Stern

Professors: Peter R. Brink (joint), Brigitte Demes, Leland H. Edmunds, Jr., John G. Fleagle, Frederick E. Grine (joint), Francoise Jouffroy (adjunct), David W. Krause, William L. Jungers, Susan G. Larson, Lawrence Martin (joint), Russell A. Mittermeier (adjunct), Clinton Rubin (joint), Jack T. Stern, Jr., Randall L. Susman, David L. Williamson (Emeritus)

Associate Professors: Diane Doran (joint), Catherine A. Forster

Assistant Professors: Nathan Kley, Maureen O'Leary, Scott Sampson (adjunct)

Post Doctoral Associate: Kristian Carlson

The department conducts graduate studies leading to the PhD. degree, through its own and interdisciplinary programs. It also provides instruction in the anatomical sciences for students in the Schools of Health Technology and Management, Dental Medicine, Medicine, and Nursing. In addition, the department participates in the teaching of undergraduates in biology, anthropology, and art.

Courses

HBA 109 Life through Time

An examination of biodiversity as presented in the fossil record and how it contributes to the understanding of evolution. Species examined include invertebrates, plants, dinosaurs, paleontology, phylogeny reconstruction, and conservation will be discussed.
3 Credits, Fall, Dr. O'Leary

HBA 360 Regional Human Anatomy

An introduction to gross structure of the human head, neck and trunk. Includes neuroanatomy. Lectures and laboratory dissections.
Prerequisite: Permission of instructor for non-Health Sciences students.
Variable credits, 1-2 per term, fall term, staff

HBA 393, 394 Special Topics from the Anatomical Sciences Literature

Tutorial readings in anatomical sciences with periodic conferences, reports and examinations arranged with the instructor. Open to junior or senior students.
Prerequisite: Permission of instructor.
Variable credits, 1-2 per term, fall and spring terms, staff

HBA 398, 399 Research Projects in Anatomical Sciences

An independent research project under faculty supervision emphasizes the principles of experimental design, data collection, evaluation of findings, and reporting of results. Project report required. May be repeated.
Prerequisites: Laboratory experience and permission of instructor.
2-4 credits per term, fall and spring terms, staff

HBA 461 Regional Human Anatomy

An overview of the gross anatomy of the human body. Studies the limbs in an extra period. Includes neuroanatomy. Lectures and laboratory dissections.
Prerequisite: Permission of instructor for non-Health Sciences students.
5 credits, summer modules, Dr. Demes

HBA 521 Gross Anatomy of Head, Neck and Trunk

Tutorial laboratories. Emphasizes dissections of the human head, neck and trunk.
Prerequisite: Permission of instructor.
4 credits, fall modules, Dr. Krause

HBA 522 Human Embryology for Dental Students

The development of human structure with emphasis on normal adult anatomy and the more common congenital anomalies, particularly those of the head and neck. Covers the events of early embryonic formation and subsequent organogenesis, excluding that of the urogenital system.
Prerequisite: HBA521
1 credit, fall term, Dr. Krause

HBA 531 The Body

A lecture and laboratory with emphasis on dissection of the entire human body. Includes functional and topographic anatomy, embryology, clinical correlations and an introduction to radiology.
Prerequisite: Permission of instructor.
8 credits, fall modules, Dr. Stern

HBA 536 Biological Clocks

Considers the temporal dimension of biological organization and of periodic phenomena that are a basic property of living systems. Topics include a survey of circadian rhythms; influence of light, temperature and chemicals; use of the clock for adaptation to diurnal, tidal and lunar cycles, for direction-finding (homing and orientation) and for day-length measurement (photoperiodism); chronopathology and chronopharmacology; aging and life cycle clocks; possible molecular mechanisms of the clock. Cross-listed with BCD 536.
Prerequisite: Permission of instructor.
3 credits, spring term, Dr. Edmunds

HBA 537 Physiology and Biochemistry of the Cell Cycle

An integrated view of the cell developmental cycle in prokaryotes and eukaryotes. Topics include cell cycle anatomy; measurements on fixed

and living cells; kinetics of cell population growth; theory and methodology of batch, synchronized and continuous cultures; general patterns of nucleic acid synthesis; regulation of enzyme activity during the cell cycle; temporal control of gene expression; development and function of cellular organelles during the cell cycle; and the control of cell division. Cross-listed with BCD 537.

*Prerequisite*Permission of instructor.
3 credits, fall term, Dr. Edmunds

HBA 541 Evolutionary Anatomy

A lecture and laboratory with emphasis on dissection of the entire human body. Includes functional and comparative anatomy with special emphasis on the musculoskeletal morphology of humans and higher primates.

*Prerequisite*Permission of instructor
8 credits, fall term, Dr. Jungers

HBA 550 Vertebrate Paleontology

Survey of the fossil record of vertebrate evolution. The course emphasizes the origin, phylogeny, comparative and functional morphology, biogeography, and paleontology of vertebrate animals. Laboratory included. The lectures and laboratories will utilize an extensive collection of comparative anatomical material, fossil casts, and slides.

*Prerequisite*Previous course in human or vertebrate anatomy and permission of instructor.
4 credits, spring term, alternate years, ABCF grading, Dr. Forster

HBA 560 Advanced Regional Anatomy

Advanced human gross anatomy for graduate students or advanced undergraduates in biology, anthropology and other life sciences.

*Prerequisite*Permission of instructor.
Variable credits, 3-8 per term, spring term, Dr. Fleagle

HBA 563 Aspects of Animal Mechanics

An introduction to biomechanics. Covers free-body mechanics and kinetics as applied to vertebrate locomotion. Also covers scaling, stress and strain, and muscle physiology as these topics relate to adaptations of the musculoskeletal system.

*Prerequisite*Introductory physics and biology or permission of instructor.
2 credits, spring term, alternate (odd) years, Drs. Stern, Jungers and Demes

HBA 564 Primate Evolution

The taxonomic relationships of the primates and evolutionary history as documented by the fossil record and structural and chemical evidence. Emphasizes primates prior to the origin of the human lineage. Laboratory included. Open to senior undergraduates.

*Prerequisite*Permission of instructor.
4 credits, spring term, alternate years, Dr. Fleagle

HBA 565 Human Evolution

Surveys the fossil record of human evolution from the later Tertiary through the Pleistocene with emphasis on the record of morphological evolution including evolution of the skull, teeth and limbs. Includes the ape-human furcation, radiation of the early hominids, the evolution of Homo Erectus, Neanderthal man, later human ancestors, the evolution of the brain and intelligence, bipedalism and other morphological complexes. Utilization of comparative anatomical material, fossil casts, and slide collection. Cross-listed with ANT 565.

*Prerequisite*Permission of instructor.
4 credits, fall term, alternate years, Dr. Grine

HBA 566 Studies in Functional Morphology

Introduces the theory and methods of functional morphology. Covers various methods of analysis and the application of experimental techniques such as electromyography or bone strain analysis as they pertain to the understanding of the interaction between form and function. Emphasizes the analysis of human and non-human primate morphology, and its application to the interpretation of fossil evidence for human and non-human primate evolution.

*Prerequisite*Permission of instructor
2 credits, spring term, alternate (even) years, Dr. Larson

HBA 580 Comparative Anatomy and Evolution of Mammals

The comparative anatomy, evolutionary history and radiation of fossil and living mammals. A major research project on any aspect of mammalian comparative anatomy is required. Supplemented by lectures on the evolutionary history and radiation of mammals. Comparative osteological and fossil cast collections will be utilized. Lecture series can be taken separately as HBA 581.

*Prerequisites*Previous course in human or vertebrate anatomy and permission of instructor.
4 credits, spring term, alternate years, Dr. Krause

HBA 581 Evolution of Mammals

The evolutionary history and radiation of mammals from the Mesozoic to the present from a paleontological and anatomical perspective. Emphasizes the origin of mammals and the origin, evolution and anatomical diversity of modern and extinct orders of mammals.

*Prerequisites*Previous course in human or vertebrate anatomy and permission of instructor
2 credits, spring term, alternate years, Dr. Krause

HBA 582 Comparative Anatomy of Primates

Laboratory dissection that emphasizes relating structural diversity to behavior and biometrics.

*Prerequisites*HBA 564 and previous course in human or vertebrate anatomy and permission of instructor.
4 credits, alternate spring term, Dr. Fleagle

HBA 590 Projects in Anatomical Sciences

Individual laboratory projects closely supervised by faculty members to be carried out in staff research laboratories.

*Prerequisite*Permission of instructor.
1-6 credits per term, fall and spring terms, staff

HBA 690 Graduate Seminar

Seminars by graduate students on current literature in the areas of the anatomical sciences.

*Prerequisite*Permission of instructor.
1 credit, fall and spring terms, staff

HBA 692 Advanced Topics in Anatomical Sciences Literature

Tutorial readings in anatomical sciences with periodic conferences, reports and examinations arranged with the instructor.

*Prerequisite*Permission of instructor.
Variable and repetitive credits, 1-2 per term, fall and spring terms, staff

HBA 695 Practicum in Teaching

Practical instruction in the teaching of anatomical sciences carried out under faculty supervision.

*Prerequisite*Permission of instructor.
Variable and repetitive credits, 1-4 per term, fall and spring terms, staff

HBA 699 Dissertation Research

Original investigation under supervision of thesis adviser and committee.

*Prerequisite*Permission of thesis adviser.
Variable and repetitive credits, 1-9 per term, fall and spring terms, staff

HBA 800 Full-Time Summer Research

Full-time laboratory research projects supervised by staff members.
*Prerequisite*Permission of instructor and full-time graduate student status.
0 credit, summer term, staff

Department of Anesthesiology

Chair:Peter S.A. Glass

Professors:Helene D. Benveniste, Peter S.A. Glass, Robert I. Katz, Ira J. Rampil, Bharathi H. Scott, Stephen A. Vitkun

*Associate Professors*Rishimani S.N. Adsumelli, Carole W. Agin, W. Walter Backus, James P. Dilger, F. Barry Florence, Maria R.G. Lagade, Farrokh R. Maneksha, Mario Rebecchi, Kenneth Rosenfeld, Joy E. Schabel, Ellen S. Steinberg, Paul Willoughby

Assistant Professors Syed Azim, Alvin Bicker, Nelson Barcelon, Christine Cokinos, Lauren H. Fleischer, Abdel Aziz Gaber, Anthony J. Ippolito, Ronald C. Jasiewicz, Roseline Jerome, Neeti Kohli, Ursula N. Landman, Josette Legaspi-Tamayo, Bo Liu, Irina Lokshina, Daryn H. Moller, Slawomir P. Oleszak, Leslie Ojea, Srinivas Pentyla, John A. Petrie, Martin Redmond, Laura J. Reid, Eleanor J. Romano, Mihai R. Sadean, Madhumita Saikia, Tracie A. Saunders, Syed Y. Shah, Francis Stellaccio, Andrea K. Voutsas

The Department of Anesthesiology provides instruction in the clinical science of the specialty, and the physiology, pharmacology, and biochemistry on which it is founded. Emphasis is placed upon the integration of basic and clinical sciences, and upon an interdisciplinary approach to attain optimal care of patients. Instruction is provided to medical students during their clinical training years. All students rotate through anesthesiology for two weeks during their surgery selective month. Those students interested in more advanced training are encouraged to apply for a third year elective or a fourth year sub-internship, during which they will be exposed to all aspects of clinical anesthesia management of surgical and obstetrical patients. They will administer anesthesia under supervision, participate in pre- and post-operative care, and become familiar with specialized aspects, such as intensive care, cardio-pulmonary resuscitation, cardiac and neurosurgical anesthesia, perinatal medicine, and the therapy of acute and chronic pain. Participation in ongoing clinical research projects and all teaching exercises is encouraged.

The Department of Anesthesiology also provides comprehensive instruction to dental, ER, and periodontal residents, and to orthopaedic surgery, otolaryngology and medicine interns.

In its graduate program, the department provides a three-year training program of residents specializing in anesthesiology, following completion of a basic first year of postgraduate training.

Fellowships in subspecialties and clinical research are available to physicians who have completed the requirements toward specialization.

Department of Biochemistry and Cell Biology

Chair: William J. Lennarz

Distinguished Professors: William J. Lennarz, Rolf Sternglanz

Professors: Deborah Brown, David Bynum, Vitaly Citovsky, Peter Gergen, Robert Haltiwanger, Masayori Inouye (adjunct), Erwin London, Kenneth Marcu, Nisson Schechter, Jakob Schmidt, Richard Setlow (adjunct), John Shanklin (adjunct), Sanford Simon, Steven Smith, F. William Studier (adjunct)

Associate professors: Paul Bingham, Neta Dean, Dale Deutsch, Nancy Hollingsworth, Bernadette Holdener, Leon Lewandowski (adjunct), Harvard Lyman, Hermann Schindelin, Gerald Thomsen, Ilya Vasker (adjunct)

Assistant professors: Jen-Chih Hsieh, A. Wali Karzai, Aaron Neiman

This department offers fundamental courses in biochemistry and cell biology to students in the health professions, as well as to undergraduates and graduates in biochemistry and biology. Its graduate studies are centered on an interdisciplinary program in molecular biology, biochemistry and cell biology, and also a graduate program in structural biology.

Courses

Refer to the Undergraduate Bulletin (Biological Sciences Section) for a complete listing of undergraduate course offerings.

HBC 331 Introductory Biochemistry

An introduction to biochemistry including all aspects of metabolism and the synthesis, structure, and function of DNA, RNA, and protein stresses the medical significance of these aspects of biochemistry.
3 credits, fall modules, Dr. Schechter

HBC 531 Molecules, Genes and Cells

An integrated course covering the important aspects of biochemistry, cell biology, human and molecular genetics, and histology. Includes lectures, small group conferences and laboratories and stresses the clinical relevance of the basic science material.
8 credits, fall term, Dr. Simon

MCB 500 Directed Readings in Molecular and Cellular Biology

Directed readings in topics of current interest, under supervision of a faculty sponsor culminating in one or more critical review papers.
Prerequisites: matriculation in graduate program or permission of instructor.
1-3 credits, yearly, faculty

MCB 503 Molecular Genetics

Covers gene structure and regulation in prokaryotic and eukaryotic organisms, mutational analysis and mapping, transposable elements and biological DNA transfer mechanisms. Bacteriophage as well as lower and higher eukaryotic systems, are used to illustrate aspects of molecular genetic structure and function.

(Note: this course jointly listed as HBM 503)

Prerequisites: matriculation in graduate program or permission of instructor.
3 credits, fall term, staff

MCB 509, 510 Experimental Molecular & Cellular Biology

An introduction to modern biochemical research techniques. The student spends a half term in the laboratory of each of four different members of the staff selected in consultation with the course director. In each laboratory the student participates in some aspect of the ongoing research pursued by the faculty member.

1-4 credits each term, variable, fall and spring terms, faculty

MCB 512 Physical Biochemistry

Theoretical principles and experimental methods used in the study of proteins and nucleic acids, e.g., spectroscopy, magnetic resonance and diffraction.

Prerequisites: MCB 520, or undergraduate physical chemistry course, plus matriculation in graduate program or permission of instructor.
2 credits, spring semester, Dr. London

MCB 517 Membrane Biochemistry

Examines the molecular architecture of membranes; the organization, functions, and assembly of lipids and proteins in biological membranes.

Prerequisite: matriculation in graduate program or permission of instructor.

1 credit, fall term, Dr. London

MCB 520 Graduate Biochemistry I

Several topics in modern biochemistry are treated at an advanced level. Topics covered will include protein structure, enzyme kinetics and mechanisms, and enzyme regulation.

Prerequisite: HBC 331, or undergraduate biochemistry course, plus matriculation in graduate program or permission of instructor.
3 credits, fall term, Dr. Schmidt

MCB 529 Organelle Development

Covers the development of the mitochondrion and the chloroplast. Includes the biogenesis of these organelles and their relation to the interaction with the nucleus. Emphasizes genetic and biochemical analysis.

3 credits, fall term, alternate years, Dr. Lyman

MCB 580 Teaching Honors

Selected students whose performance in the basic required courses for the graduate program is in the top 10 percent conduct tutorials for first-year graduate students in the program and other students taking graduate courses for credit. The tutors are supervised and graded by program faculty of the graduate program. Successful completion of this course will make the students eligible to receive an "Honors in Teaching" on their transcript.

1 credit, fall and spring terms

MCB 599 Dissertation Research

Original investigation under the supervision of a member of the staff. *Prerequisite:* matriculation in graduate program or permission of instructor

1-12 credits, fall and spring terms, SU grading

MCB 601, 602 Colloquium in Molecular and Cellular Biology

A weekly series of talks and discussions by visiting scientists covering current research and thinking in various aspects of molecular and cellular biology. Required for all MCB graduate students. Attendance is mandatory. Visitors are welcomed.

Prerequisite: matriculation in graduate program or permission of instructor.

1 credit, fall and spring terms, SU grading

MCB 603, 604 Student Seminar in Molecular and Cellular Biology

Seminars given by graduate students on the progress of their own thesis research. Required of all students every term in which they are registered in Graduate Studies in Molecular Biology and Biochemistry. Attendance is mandatory. Visitors are welcomed.

1 credit each, fall and spring terms, faculty

MCB 656 Cell Biology

Introduces the structural and functional organization of cells and tissues and the way structure relates to function. Emphasizes cell organelle structure and function in specialized cells in tissues. The organization and interaction of cells in tissues also covered. The course is comparative and includes examples of tissues from vertebrates, invertebrates, and plant prokaryotic systems. Cross-listed with HBA 656.

4 credits, spring term, Dr. Deborah Brown

MCB 657 Principles of Development

Covers developing systems at all levels from the morphological to the molecular. Illustrative material from both animal and plant kingdoms are used. Special attention given to gametogenesis, genetic control of early development, transcriptional and translational control of protein synthesis, the role of cell division and cell movements, and cell-to-cell interactions in defining developing systems. Cross-listed with HBA 657.

Prerequisite: MCB 656

3 credits, fall term, Dr. Lyman

MCB 688 Advanced Seminars

Topics to be arranged. Visitors are welcomed.

Prerequisite: matriculation in graduate program or permission of instructor.

1 credit each, fall and spring terms

MCB 699 Dissertation Research on Campus

Prerequisite: must be advanced to candidacy (G5). Major portion of research must take place on Stony Brook campus, at Cold Spring Harbor, or at the Brookhaven National Lab.

Prerequisite: matriculation in graduate program or permission of instructor.

1-6 credits, fall, spring, and summer terms, SU grading

May be repeated for credit.

MCB 800 Summer Research

Prerequisite: matriculation in graduate program or permission of instructor.

0 credits, SU grading

BSB 509, 510 Experimental Biochemistry and Structural Biology

An introduction to modern biochemical research techniques. The student spends a half-semester in the laboratory of each of four different members of the faculty. In each laboratory, the student participates in some aspect of the research being pursued by the faculty member.

1-6 credits, fall and spring terms, ABCF grading

May be repeated for credit.

BSB 512 Introduction to Structural Biology

Theoretical principles and experimental methods used in the study of proteins and nucleic acids. Lectures and laboratory demonstrations will cover optical spectroscopy, NMR spectroscopy and x-ray diffraction.

2 credits, spring term, ABCF grading

May be repeated for credit.

BSB 515 Computational Methods in Biochemistry and Structural Biology

Computational methods used in sequence searching and analysis, bioinformatics, graphical analysis of proteins, and nucleic acids.

Prerequisite: this class is restricted to first year BSB, HBM and HBH Ph.D. students and second year MCB Ph.D. students. Exceptions require approval from the course instructor.

1 credit, fall term, SU grading

BSB 517 Membrane Biochemistry

Examines the molecular architecture of membranes; the organization, function and assembly of lipids and proteins in biological membranes.

Prerequisites: undergraduate biochemistry.

1 credit, fall term, ABCF grading

May be repeated for credit.

BSB 531, 532 Journal Club in Biochemistry and Structural Biology

Provides students with a forum for acquiring skills involved in the critical analysis and presentation of scientific data by active participation in seminars of major topics in structural biology and biochemistry, and critical discussion of selected topics with presentation of papers from the literature.

Prerequisites: must be registered in the BSB Program.

1 credit, fall and spring terms, ABCF grading

May be repeated for credit.

BSB 580 Advanced Structural Biology

Advanced topics in NMR spectroscopy and structural biology.

Prerequisites: introduction to Structural Biology (BSB 512) or Physical Biochemistry (MCB 512).

2 credits, spring term, ABCF grading

May be repeated for credit

BSB 581 Teaching Honors

Selected students whose performance in the basic required courses for the graduate program is in the top 10 percent conduct tutorials for first-year graduate students in the program and other students taking graduate courses for credit. The tutors are supervised and graded by faculty of the graduate program. Successful completion of this course makes students eligible to receive "Honors in Teaching" on their transcripts.

1 credit, fall and spring terms, SU grading

May be repeated for credit.

BSB 599 Research

Original investigation undertaken with the supervision of a faculty member.

1-12 credits, fall and spring terms, SU grading

May be repeated for credit.

BSB 601, 602 Colloquium in Biochemistry and Structural Biology

A weekly series of talks and discussions by visiting scientists covering current research and thinking in various aspects of structural biology and biochemistry.

Prerequisites: must be registered in the BSB Program.

1 credit, fall and spring terms, SU grading

May be repeated for credit.

BSB 603, 604 Student Seminars in Biochemistry and Structural Biology

Seminars given by graduate students on the progress of their own thesis research. Required of all students every semester in which they are registered in the Graduate Program in Biochemistry and Structural Biology. Attendance is mandatory. Visitors are welcomed.

Prerequisites must be registered in the BSB Program.

1 credit, fall and spring, S/U grading

Visitors are welcome

BSB 699 Dissertation Research on Campus

Original investigations undertaken as part of the Ph.D. program under supervision of a research committee.

Prerequisite: advancement to candidacy (G5). Major portion of research must take place on Stony Brook campus, or at the Brookhaven National Laboratory.

1-6 credits, fall, spring, and summer terms, S/U grading

May be repeated for credit.

BSB 800 Summer Research

0 credits, S/U grading

May be repeated for credit.

Department of Biomedical Engineering

Chair: Clinton T. Rubin

Vice Chair: Partap Khalsa

Graduate Program Director: Partap Khalsa

Undergraduate Program Director: Danny Bluestein

Professors: Christopher Berndt, Fu-Pen Chiang, Benjamin Chu, Richard Clark, Yuefan Deng, Peter Djuric, Joanna Fowler, Fred Grine, Donald P. Harrington, Benjamin Hsiao, Lawrence C. Hurst, Chris Jacobsen, Jolyon Jesty, Arie E. Kaufman, Janos Kirz, Irvin Krukenkamp, Jerome Liang, Serge Luryi, Harold Metcalf, Miriam Rafailovich, Nathaniel Reichel, Clinton T. Rubin, Edward Schliessel, Charles Springer

Associate Professors: Danny Bluestein, Ki Chon, Avraham Dilmanian, Petar Djuric, Gene Gindi, Vera Gorfinkel, Michael Hadjiargyrou, Chris Jacobsen, Partap Khalsa, W.R. McCombie, Yi-Xian Qin, Jahangir Rastegar, John Reinitz, Lawrence E. Reinstein, Callum F. Ross, Steven Skiena, Lincoln Stein, Peter Williams, Ilya Vakser,

Assistant Professors: Janet Anderson, Helene Benveniste, Terry Button, Weiliam Chen, Anil Dhundale, Yu-Shin Ding, Emilia Entcheva, Mary Frame, John Gatley, James W. Goldfarb, Rita Goldstein, James Hainfeld, Wei Huang, Stefan Judex, Kathryn Kolsky, Lisa Miller, Michiko Miura, Klaus Mueller, Andrew Neuwald, Yingtian Pan, Bill Rooney, David Schlyer, Robert Shorr, Helmut Strey, Lilianne Strey, Peter Thanos, Paul Vaska, Mark Wagshul, Yi Wang, Stanislaus Wong, Kenny Ye, Michael Q. Zhang, Wei Zhao, Zhong Zhong, Wei Zhu

The Program in Biomedical Engineering trains individuals with baccalaureate degrees in engineering, applied mathematics, and the sciences to provide them with the synthesis, design, and analysis skills necessary to contribute effectively to the advancement of science and technology in health and medical care.

Graduate degree programs are offered at the Master's (M.S.) and Doctoral (Ph.D.) levels. These programs provide two distinct avenues of graduate study in biomedical engineering: the doctoral level is directed toward the student interested in a research or academic career, and the master's level for those primarily interested in the application of biomedical engineering

concepts in the development of advanced technology in biomedical products and processes. A third option is the Advanced Graduate Certificate program that is specifically designed to provide graduate students and engineering professionals with the knowledge and skills necessary to transfer recent developments in the basic sciences into commercially viable products and processes. The department's goal of actively promoting the development of a creative, versatile biomedical engineer is accomplished by exposing the individual to the biology, engineering, and business concepts critical to succeeding in the biomedical research and development environment. The program's goal is to actively promote the development of versatile biomedical engineers. This includes in-depth exposure to the biological and the engineering concepts underlying physiological processes.

To provide the permanent foundation on which to build a career in biomedical engineering, an integrated core set of biomedical engineering courses have been implemented. These provide our biomedical engineering students with the underlying engineering principles required to understand how biological organisms are formed and how they respond to their environment. Students will attain a credible level of sophistication in their understanding of cell, tissue, and organ physiology. The student is then able to complement this background with additional engineering courses either within the Program in Biomedical Engineering (PIBE), or in the other disciplines of engineering.

The graduate program relies on the core set of courses to provide our biomedical engineering students with an overview of the biophysical principles involved in cell, tissue, and organ biology. The progression of the four PIBE core courses requires three resident terms to complete. In addition to these four courses, a seminar series providing exposure to the breadth of bioengineering research and development activities both within the university, as well as throughout the scientific/industrial community, is required of all PIBE students through their first two years of study. Finally, each course has a component of independent study to nurture the student's abilities to pursue a topic specialized interest.

Curriculum Requirements

Master's Degree Curriculum: thirty graduate credits are required to earn the Master of Science or Master of Engineering degrees in biomedical Engineering (BME). Thirteen credits must consist of the five core BME courses, and six credits from business, Technology, and Engineering Policy courses. The student has the option of earning the Master of Science degree in BME on either a thesis or non-thesis track. In the non-thesis track, the student undertakes elective graduate coursework to complete the 30 credits. In the thesis option, the student must complete two research rotations and at least six credits of thesis research, and submit and defend a written thesis. A grade of B or better must be attained in each of the core BME courses taken, and an overall grade point average of 3.0 out of 4.0 must be maintained overall.

Doctoral Degree Curriculum: a minimum of fifteen graduate credits, beyond the Masters in BME level, is required for completion of the Doctor of Philosophy degree in BME. There are no course requirements per se, though certain courses may be required to fill any gaps in the student's knowledge. Following completion of a qualifying exam, and independent basic research program will be undertaken. One semester of teaching practicum must be satisfactorily performed. Completion of this research program will culminate in the submission and oral defense of a dissertation. The University requires at least two consecutive semesters of full-time graduate studies. All requirements for the Ph.D. must be

completed within seven years after the completion of 24 credits of graduate study.

Certificate Curriculum: to obtain the Advanced Graduate Certificate in Biomedical Engineering, students will be required to complete the five core courses (BME 501, 502, 503, 504, and 505/506) and maintain a 3.0 to 4.0 grade point average. In addition, six credits of elective coursework selected from business, technology, and engineering policy courses, ensure that the students attain a reasonable level of sophistication in the business concepts that will provide the graduate with the ability and confidence to succeed in the field of biomedical engineering.

Undergraduate Biomedical Engineering Program

To provide the permanent foundation on which to build a career in biomedical engineering, an integrated, core set of biomedical engineering courses have been implemented. These provide our biomedical engineering students with the underlying engineering principles required to understand how biological organisms are formed and how they respond to their environment. As well, the students will attain a credible level of sophistication in their understanding of cell, tissue, and organ physiology. The student is then able to complement this background with additional engineering courses either within BME, or in the other disciplines of engineering.

The Department of Biomedical Engineering offers several pathways for undergraduate students to obtain an understanding of Biomedical Engineering:

- Minor program for Arts and Sciences majors
- Biomedical Engineering Track for Life Sciences majors
- Bachelor of Science (B.S.) in Biomedical Engineering

Graduate Biomedical Engineering Program

The graduate program relies on the core set of courses to provide our biomedical engineering students with an overview of the biophysical principles involved in cell, tissue, and organ biology. The progression of the four BME core courses requires three resident terms to complete. In addition to these four courses, a seminar series providing exposure to the breadth of Biomedical Engineering research and development activities, both within the University as well as throughout the scientific/industrial community, is required of all BME students through their first two years of study. Finally, each course has a component of independent study to nurture the student's abilities to pursue a topic of specialized interest. Certificates and degrees available through this program include the following:

- Advanced Graduate Certificate in Biomedical Engineering
- Master of Science (M.S.)
- Master of Philosophy (M.Phil) in Biomedical Engineering
- Doctor of Philosophy (Ph.D.) in Biomedical Engineering

The First Year

For M.S. and Certificate students, the first year of study includes core courses, electives, and attending the PIBE seminars. Students in the M.S. research track are required to identify a research advisor by the end of their first spring semester in the program. For doctoral students, the first year includes preparation for the qualifying examination, taking any classes as directed by their Dissertation Defense Committee, and initiation of independent research. Most Doctoral students will take their qualifying examination within the first year. Some international students may be required to take remedial English courses, depending upon their mastery of the language. Students who are being financially supported by teaching assistantships will assist designated faculty in instructing undergraduate students.

The Second Year and Beyond

In the second year, most students will finish any remaining core and elective courses. M.S. research track students will have begun their research projects under a faculty member's supervision.

Once Ph.D. students have successfully passed their qualifying examination, they have no further requirements except the completion and defense of an original dissertation. To improve scientific communication skills, all students participate in the weekly program laboratory seminars where faculty, postdocs, and graduate students present the latest research from their laboratories. These intimate, yet informal, meetings allow students to learn by watching and presenting research in a friendly and critical environment.

Graduate Course Offering

BME 501 Engineering Principles in Cell, Tissue and Organ Systems

Course content is directed towards describing the microscopic physical interactions between cells and their environment as electro-mechano-chemical processes occurring at surfaces. This is provided in the context of basic molecular biology and cell physiology concepts. Emphasis is placed on developing an understanding of the critical role of non-linear dynamics, physical chemistry of adsorption and desorption processes, self-assembly in cellular automata, and how complexity arises within simple physical systems.

Course Outline:

Part 1. Biological Building Blocks and the Dynamics of Living Systems Water and ionic balance, small molecules/energy balance Non-linear continuum, discrete, and stochastic processes.

Part 2. Cell Structures and Self Assembly Proteins, lipids, cytoskeleton, and intracellular organelles Colloids, long-range forces, colloidal stability, adsorption from solution.

Part 3. Cell Physiology and Adaptive Processes Genetic mechanisms, cell division, cell signaling, cell-cell contacts Cellular automata, Boolean networks, complexity, non-linear time series analysis

3 credits, fall Semester

Course Director: Danny Bluestein

BME 502 Advanced Numerical and Computation Analysis Applied to Biological Systems

Course Objectives:

Numerical analyses of Biological Data. A unified mathematical/time series framework for modeling and mining biological data. Applications range from cardio-respiratory, renal blood pressure/flow and sequence (DNA, RNA, proteins) to gene expression data. Tools of data analysis include linear algebra, interpolation and extrapolation, parametric and nonparametric spectral estimation with the FFT and singular value decomposition, statistical description of data and integration of ordinary differential equations.

Special focus will be placed on the use of linear and nonlinear numerical methods for the identification of physiological system dynamics and the development of computer simulation techniques to study dynamic response of physiological systems.

3 credits, spring semester

Course Director: Ki Chon

BME 503 Cell & Molecular Imaging

This course will cover basics of optics, microscopy, spectroscopy and fluorescence in the context of imaging at the cellular and molecular level. Recently developed advanced imaging techniques for probing protein interactions and live cell functions will also be discussed. The course is organized in 3 modules:

- Optics and Spectroscopy (e.g., Properties of light, polarization, diffraction, spectra)
- Fundamentals of Fluorescence and Applications to Molecular and Cellular Measurements (e.g., Jablonsky diagram, Stokes' shift, emission, excitation spectra, fluorescence anisotropy)
- Signal Processing, Image Analysis Techniques and Scientific Visualization (e.g., temporal and spatial filters, 1D and 2D Fast Fourier transform, spectral analysis, cross-correlation)

Theory will be complemented by extensive use of Matlab and its Image Processing Toolbox.

3 credits, fall semester

Course Director: Emilia Entcheva

BME 504 Biomaterials Science and Analysis

Course content is directed toward providing an introductory treatment of the engineering issues implicit in understanding living tissue interactions with processed materials. Emphasis on identifying and eliminating surface contamination, corrosion, and optimizing material surface properties and compatibility.

Course Outline:

- Applications - prostheses, coatings and adhesives, implants, biosensors, drug delivery
- Biocompatibility
- Biofilm contamination, bacteria, viruses, yeast, fungi
- Immunity and inflammation
- Metallo-biochemistry
- Interface Considerations - surface energy, adsorption, permeability
- Surface contamination (inorganic and organic)
- Electro-chemical interactions
- Biomaterials and processing - metal alloys, polymeric, ceramic, reinforced materials, surface modified materials, structural property considerations
- Tissue engineering - use of biology and biological substrates in bio materials

3 credits, spring semester

Course Director: Partap Khalsa

BME 505 (Fall) & Principles and Practice in 506 (Spring) Biomedical Engineering

Introduces first year graduate students to the basic and clinical research at the cutting edge of biomedical engineering. The course has two key components: the first is a seminar series presented by internationally renowned bioengineers. An interactive discussion of topic-specific scientific literature precedes the formal presentation. The second component of the course is teaming up with a physician, in rounds, the operating theatre, clinics, etc., to get exposure to the real-life problems that face the medical community. It is hoped that the mix of science and clinic will move students towards determining how they can make contributions to health and society.

2 credits, fall and spring semesters

Course Directors: C. Rubin and Y.X. Qin

BME 507 Fundamentals of Biomedical Engineering Management

This course exposes the engineering student to the responsibilities that focus on the management issues in biomedical engineering. Management functions are explored and the students learn how to integrate these functions with engineering responsibilities.

Course Director: Rob Shorr

BME 508 Molecular and Cellular Biomechanics

Course content revolves around the effects and interactions of mechanical forces at the cellular and molecular level. The topics will range from describing the molecular and cellular basis of the adaptation of tissues to physical signals, through prescribing specific mechanical environments for improved tissue engineering, delineating relevant molecular, cellular, and biomechanical techniques, all the way to issues involved in the development and approval of diagnostics and therapeutics in molecular engineering. For a deeper understanding of the course material as well as to allow students to apply their newly gained knowledge, this course will contain a module on the design and analysis of experiments (i.e., applied biostatistics) and incorporate practical exercises in both laboratory (e.g., a real time PCR experiment) or simulated computer settings (e.g., modeling of cell behavior).

Course Director: Stefan Judez

BME 509 Fundamentals of the Bioscience Industry

Fundamentals of the Bioscience Industry is a 4-module course whose goal is to provide students with a comprehensive introduction to the complexities of the bioscience business environment. In the first module of the certificate program, students will learn the basic concepts of business management pertaining to the Bioscience Industry. The second module details the product development process from a

technical, scientific, and strategic perspective. In the third module, students will gain an understanding of the regulatory process required to bring a scientific product to market. The fourth and final module will provide students with an understanding of corporate culture and effective career development strategies. The course will be augmented with extensive mentoring by the industry executives who teach and participate as guest lecturers in the course.

3 credits, spring semester

Course Director: Jane Boswick

BME 517 Radiation Physics

This graduate offering provides an initial physical background required for the study of the medical physics. Sources of ionizing radiation including radioactivity (natural and manmade) and x-ray producing devices are studied as well as sources of non-ionizing radiations such as radiofrequency and ultrasound. The physical aspects of these radiations are characterized by their interaction with matter and methods for their detection.

Course Director: Terry Button

BME 518 Radiobiology

The biological consequences of irradiation (ionizing, ultrasound, laser, RF etc.) will be examined. Interaction mechanisms will first be examined followed by examination of the radiation impact at the molecular and cellular level. The use of radiation for therapeutic gain will be considered. As well, models will be developed for risk estimates. Topics to be covered will include: target theory, biological response, NSD and risk estimates.

Course Director: Terry Button

BME 520 Lab Rotation I

The first of two required semester-long research rotations in BME Faculty laboratories. Students learn and perform new research skills with the aim of completing a research project that would be suitable for presentation at a national BME research conference.

BME 521 Lab Rotation II

The second of two required semester-long research rotations in BME Faculty laboratories. Students learn and perform new research skills with the aim of completing a research project that would be suitable for presentation at a national BME research conference.

BME 526 Biological Systems Engineering

This course is a hands-on study of systems engineering in biology, using computer modeling to conceptualize and simulate a wide variety of applications. Computer wizardry not required; all skills taught in class. Appropriate and applicable to all BME tracks.

Course Director: Lilianne Mujica-Parodi

BME 531 Biosensing and Bioimaging

This graduate course will teach graduate students in biomedical engineering current techniques used biosensing and bioimaging with an emphasis in optical methodology. It will start with a brief introduction to a simplified version of optics (ray optics, fiber optics, scattering & absorption, fluorescence, lasers and optoelectronics), followed by an in-depth discussion about fiber-optic sensors, advanced microscopy (confocal and multi-photon excitation microscopy), NIR absorption and fluorescence spectroscopy, optical coherence tomography, photo-acoustic imaging, and time-of-flight and frequency-modulation photon migration imaging. For cellular and molecular imaging, it will discuss the principles of Q-dots, molecular beacons for bio labeling and bioMEMS form minimally invasive biosensor readout. Experiments may include fluorescence microscopy of multi-labeling of cellular components, optical coherence tomography of tissue micromorphology.

BME 532 Time Series Based Modeling of Biological Data

Unified mathematical/time series framework for modeling and mining biological data. Applications range from cardio-respiratory, renal blood pressure/flow and sequence (DNA, RNA, proteins) to gene expression data. Tools of data analysis include neural networks, time-invariant and time-varying spectral methods, fractal and nonlinear dynamics techniques, hidden markov model, clustering analysis, and various system identification techniques.

BME 557 Computational Biology

This course focuses on current problems in computational biology and bioinformatics. Our emphasis will be algorithmic, on discovering appropriate combinatorial algorithm problems and the techniques to solve them. Primary topics will include DNA sequence assembly, DNA/protein sequence assembly, DNA/protein sequence comparison, hybridization array analysis, RNA and protein folding, and phylogenetic trees (cross-listed as CSE 549).

BME 559 Biomolecular Modeling

This course addresses the basic principles of biomolecular modeling and the algorithmical aspects of existing and emerging methodologies. A special emphasis is on modeling of proteins and on structural aspects of bioinformatics. The course focuses on methodologies, which are practically applicable to real biomedical problems. The course is directed to students interested in the development of modeling methods (cross-listed as AMS 691).

BME 572 Biomolecular Analysis

This interdisciplinary course is intended for graduate students and advanced undergraduates in departments such as Biomedical Engineering, Chemistry, Physics, Biology and Chemical Engineering. This course will give an introduction to single molecule experiments using fluorescence, optical traps, AFM cantilevers, microneedles, magnetic microbeads as well as micro and nanofluidic devices.

BME 599 Biomedical Engineering Research

Research to be supervised by a faculty member of the Program in Biomedical Engineering. Students must have permission of instructor and enroll in appropriate section. Faculty to be identified by the student.

BME 601 Cardiovascular Fluid Mechanics

The course will cover the application of fluid mechanics principles to the analysis of blood flow in the cardiovascular system under normal and pathological conditions. It will follow an historical time line by beginning with the most basic models of arterial blood flow, and proceed to the most advanced theories related to physiology and pathology flow phenomena, including an examination of the most up to date research in the area and the development of devices and implants.

BME 602 Topics in Biomedical Applications of Neural Networks

This is a project-based course, which includes weekly seminars discussing advanced topics in fuzzy logic and neural networks and their applications, in biomedical devices. Applications include drug delivery, diagnostics, management information handling. Students utilize simulation software to develop algorithms to deal successfully with training data sets of their own choosing.

BME 604 Finite Element Modeling in Biology and Medicine

Both finite difference and FEM are applied to solve the equations of incompressible and compressible fluid flow in porous media with emphasis on flows in skeletal tissues, i.e., bone and cartilage. Steady-state, transient flow, permeability and surface boundary conditions are discussed. Practical and recent studies in the field are also discussed. Programming using FORTRAN or C languages will be required. The student is also introduced to commercially available software packages.
Course Director: Y.X. Qin

BME 605 Biomechanics of Tactile Sensory Systems

Detailed study of the biomechanics of tactile neurophysiology for engineers entering the field of haptics and robotics manipulations. Anatomy and electrophysiology of transducer cells and neurons starting at the fingertips and extending to the somatosensory cortex. Characteristics of the external stimulus and its peripheral transformation. Relations of these topics to perceptual and/or behavioral responses.

BME 606 Drug Gene Delivery

Applications of biodegradable and biocompatible polymers in the design of drug and gene delivery systems for site-specific applications. A broad overview on the origin and development of controlled release therapeutic devices will be provided. Existing and proven commercial products will be examined. The second half of the course will be

devoted to the use of DNAs as a therapeutic entity and issues relevant to DNA delivery will be explored. An assessment of the most up-to-date DNA delivery technologies will be presented. Students are required to write a term paper on a drug or gene delivery topics of their choice. Students are also expected to give presentations on drug delivery and gene therapy related topics during the course.

Course Director: Weiliam Chen

BME 610 Magnetic Resonance

This course provides a comprehensive study of magnetic resonance and its applications in medical imaging. An introduction of NMR is followed with development of the hardware and processing aspects required for MR image formation. An overview of basic and advanced MR imaging techniques is provided. Each student will select a topic in MR imaging for presentation at the conclusion of the course.

Course Director: Mark Wagshul

BME 612 Biomedical Engineering Aspects for the Use of Radiation in Medicine

This course provides a comprehensive study of the use of radiation in medicine. Physical aspects of the interaction of radiation with matter and for the radiation production are initially considered. The underlying principles of current radiation based medical imaging is considered next. Topics include radiography, fluoroscopy, radionuclide imaging and computed tomography. The use of radiation for the treatment of malignancy is considered with the focus on required technology. Finally advanced applications of radiation are considered with focus on imaging and treatment. Each student will select a topic examining the engineering or technical application of radiation in medicine for presentation at the conclusion of the course.

BME 666 Advanced Cardiac Electrophysiology

This course deals with the inherent electrical properties of cardiac tissue. It presents a comprehensive quantitative treatment of ion channels, transmembrane and intracellular ion fluxes and other bioelectricity-related events on the molecular and cellular level. The course will present a balanced experimental and theoretical overview of cardiac bioelectricity. Approximately half of the course is dedicated to the review of state-of-the-art experimental measurement techniques and data analysis tools used in cardiac electrophysiology today. The other half of the course deals with modeling approaches in cardiac electrophysiology, from the nano- to the mesoscale. Clinical importance of the discussed phenomena is emphasized and the acquired knowledge is put into perspective.

BME 698 Practicum in Teaching

Undergraduate teaching to be supervised by a faculty member of the Program in Biomedical Engineering. Course to be identified by the student and graduate studies director.

BME 699 Biomedical Engineering Dissertation Research

Research to be supervised by a faculty member of the Program.
Prerequisite: students must be advanced to candidacy (G5); permission of instructor and enroll in appropriate section.

Department of Dermatology

Chair: Richard Kalish (Acting)

Professors: Richard Clark, Barry Gruber, Richard Kalish, Marcia Simon, Lorne Taichman

Associate Professors: Marcia Tonnesen

Assistant Professors: Bernard Berger, Chih-Shan Jason Chen, Paul Chu, David Counts, Scott Flugman, Tara Kaufmann, Azim Khan, Peter Klein, David Kriegel, Leonard Kristal, James Krivo, Laurie Levine, Lawrence Lieblich, Ashfaq Marghoob, Steve McClain, Richard Miller, Gavin Moynihan, Antoinette Notaro, Peter O'Neill, Lawrence Pacernick, Peter Reisfield, Xiang-Dong Ren, Lynn Silverstein, Robert Skrokov, Amy Steinberg, Diana Sun, Shyam Verma, Marvin Winston

Adjunct Professors: Frank DeMento, Joel Gordon, Kenneth Marenus

Clinical Instructor: Deborah Deierlein

The Department of Dermatology is committed to providing quality education in cutaneous biology and skin disease to medical students, residents and fellows. Emphasis is placed on the integration of principles of basic pathophysiology with clinical manifestations and preventive medicine, and on the development of problem solving and diagnostic skills.

In conjunction with the Department of Orthopedics, Department of Pathology, Department of Radiology, and Department of Medicine/Divisions of Allergy, Immunology and Rheumatology, the Department of Dermatology participates in the Connective Tissue and Skin Systems Course for second year medical students. The format varies from didactic lectures to workshops and clinical pathologic correlations, including an opportunity for students to interact with patients.

A one-month clinical elective is offered during the fourth year, which provides exposure to the diagnostic and management of cutaneous disorders in both the ambulatory and inpatient settings at the University Medical Center, Stony Brook Technology Park, and the Northport Veterans Affairs Medical Center.

Dermatology has been integrated into the surgical subspecialty selective for fourth year medical students. Every two weeks, two students rotate through Dermatology - shared with plastic surgery. Students are scheduled in teaching clinics in the ambulatory facility and the Northport Veterans Affairs Medical Center Dermatology clinical sessions. Students with a specific interest in Dermatologic Surgery will be scheduled accordingly.

A three-month research elective provides in-depth exposure to academic dermatology, and the application of laboratory science to clinical problems through participation in a laboratory or clinical research project.

A three-year dermatology residency training program provides structured education in basic cutaneous biology and pathophysiology, and extensive exposure to patients with skin disorders. The training experience comprises all aspects of ambulatory and in-patient dermatology, including dermatologic surgery, dermatopathology, and phototherapy. Opportunity is provided for involvement in basic science and/or clinical skin research.

Postgraduate fellowships are offered in basic and/or clinical research and dermatologic surgery. The Department of Dermatology is actively involved in continuing medical education for staff, community practitioners, and health care professionals, through CME accredited Grand Rounds, conferences, seminars, and through participation in local dermatologic societies.

Department of Emergency Medicine

Chair: Mark C. Henry

Vice chair: Peter Viccellio

Professors: Mark C. Henry, Frederick M. Schiavone, Adam Singer, Peter Viccellio

Associate professors: Thomas R. Caraccio, Lester Kallus, Subir R. Maitra, Henry Thode

Assistant professors: Gerald M. Brody, Christopher Carleo, Stuart Chale, David Cohen, David S. Cooling, Kerry Cronin, Richard Dickinson, Robert Ehlers, Thomas Fischer, Gregory P. Garra,

Clark S. Homan, Scott Johnson, Melina LoGuidice-Khwaja, Cori Ann McKean, Joan L. McInerney, Maria Mortimer, Erika Newton, Theodore Packy, Edward R. Stapleton, Ioanis Siderias, Victor Tarsia, Andrew Wackett

Instructor: Eric Niegelberg

The Department of Emergency Medicine offers exposure to a wide range of clinical problems and to an evolving regional emergency medical services system. The academic department provides a home for dedicated faculty and students to learn, teach, and pursue basic science, clinical, and health policy research. Stony Brook offers ample opportunity for collaboration and exchange with faculty and students from many other disciplines.

The department conducts advanced life support training for medical students at the end of the second year. During the third year, the department offers a two-week clerkship in Emergency Medicine. The course includes 84 hours of clinical time in the Emergency Department, labs, and case review.

For fourth year medical students, the department offers four-week didactic courses in Emergency Medicine, twice a year. Those interested in pursuing a career in Emergency Medicine may take the course with incoming first year Emergency Medicine residents in July. Lectures are offered on management of common emergency department presentations including chest pain/acute MI, trauma, burns, stroke, seizures, pediatric airway disorders, GI bleed, trauma, and toxic syndromes. Labs include airway management, wound care, advanced surgical skills, splinting, ultrasound, regional nerve block and slit lamp. Special sessions include a Pediatric Advanced Life Support course and Advanced Trauma Life Support. In addition to the clinical and didactic experiences, the department also offers a "sub-internship" in Emergency Medicine, where students take on the roles/responsibilities of a PGY-1 in Emergency Medicine. This course is repeated in February as an elective for medical students.

The department offers an accredited three-year residency, which includes training in all aspects of emergency medicine. The clinical site of the program is the Emergency Department of University Hospital, a tertiary facility offering the high acuity and varied pathology for an outstanding clinical learning experience. The department has a strong commitment to Emergency Medicine research. Under the mentorship of the Vice-Chairman for Research, the residents have an opportunity to explore and develop a background in research.

The department's goal is to offer students a path to develop the clinical competence, academic excellence and administrative acumen to assume leadership roles in the field of Emergency Medicine.

Department of Family Medicine

Chair: Jeffrey S. Trilling

Associate professors: Robert S. Bobrow, Edward L. Feldman, Raja Jaber, Arnold Jaffe, Colin P. Kopes-Kerr, Donna Meltzer, Gwendolyn Stretch, Jeffery S. Trilling

Assistant professors: Marsha Alger, Josephine Connolly-Schoonen, Elizabeth Daneels, Gerald Kelly, Richard Murdocco, Anthony Pesce, Jedan Phillips, Manal Soliman, Howard Sussman, Vivica Vollmer, Catherine Wightman

Clinical Instructors: Janet Bienkowski, Lorraine Danowski, Lauren Gargiula-Brand, Sandra Leonard

Community Faculty

Associate Professors: Richard Bonanno, Clive Caplan, Maury Greenberg, Augustus Mantia, Joseph White

Clinical Assistant Professors: Carlo Annese, Jill Baron, Louis Bateman, William Bennett, Scott Bloom, Stanley Blyskal, Frederick Caston, Joseph Calandrino, Michael Confusione, Francine Cormier, Maria Del Vessy, James Dragone, George Dunn, Raymond Ebarb, Michael Fishkin, Theodore Flaum, Melanie Frank, Jerry Reed Frank, John Gil, Louis Greenblatt, Anthony Guida, Hussan Hito, Mark Jagust, Sabrina Johnson, Danelle Kenny, Scott Kirsch, Michael Ladinsky, Nicholas Livrievi, Frank Lobacz, Mian Long, Kuma Mandel, Ashfaq Margoob, Alan Nelson, Christopher Ng, Andrea Nomberg, Russell Porter, David Prentiss, Michael Randell, Annette Rancaniello, Lesley Rechter, Anne Robbins, William Robbins, Linda Roethel, Ronald Roth, Samuel Sandoski, Deborah Schaefer, Eric Schoenfeld, Jill Sisselman, John Slade, Jay Slotkin, Cindy Smith, Meryl Soloman, Farzad Tabibzadeh, Paul Tchao, Louis Verado, William Wright, Michelle Young, Ephraim Zackson

Clinical Instructors: Alfred Belding, Alan Cooper, Laura Corsello, Christine Delguizo, John Franco, Genine Francis, Francis Gleason, David Goldman, Susan Groh, Ellen Kambi, Marc Lewandoski, Joseph Liodice, Antoun Mitromaras, Lynn Marie Nitti, Steven Selter, Mark Shapiro, Sam Smith, Joseph Venezia, Teresa Vlahos

We are an academic Department of Family Medicine that holds as its "mission" the high quality delivery, dissemination, continual evaluation and creation of the principles of Family Medicine.

The Department emphasizes teaching, clinical practice and research in the practice of continuing, comprehensive and family-oriented care to patients. The many educational missions of Family Medicine include management of common illnesses, health promotion and disease prevention, family practice obstetrics, behavioral medicine, sports medicine, chronic illness, and geriatric care. The department has five divisions: Nutrition, Wellness, Chronic Illness, Sports Medicine, and Geriatrics.

The department's role in the medical school curriculum includes directorship of Introduction to Clinical Medicine (years 1 and 2), Introduction to Human Behavior (year 1), a required Clerkship in Primary Care (year 3), and a subinternship and elective (year 4). An elective Summer Preceptorship in Family Medicine (year 1) is available with limited enrollment. In postgraduate education, the Family Medicine Residency Program provides 21 residents with comprehensive training in the discipline. It also directs a consortium of residency programs at Southside Hospital, South Nassau Community Hospital, and Community Hospital at Glen Cove.

Resident training in Family Practice occurs primarily at Stony Brook University Hospital and includes several rotations at affiliated sites. Currently, the program accepts seven residents each year.

The excellent faculty/resident ratio and the fact that residents are involved in teaching third and fourth year medical students illustrate some of the advantages of conducting residency training in a major academic health center. Our affiliation with local community hospitals allows residents to experience the community-based practice of medicine. This combination of knowledge has resulted in all graduates of the program successfully passing the American Board of Family Practice

certification examination, 99% on the first attempt.

This residency will be attractive to candidates who wish to participate in an active teaching program while they acquire clinical skills in family medicine. It is our goal to produce competent family practitioners who may pursue careers in full-time clinical practice or academic medicine. Over the years, our graduates have migrated and now practice in all areas of the country. Many have demonstrated a continued interest in teaching, either on a voluntary basis or by holding full time faculty positions in academic departments.

The three-year residency program in Family Medicine provides experiences in the continuing, comprehensive and personal care which characterizes Family Practice. These experiences range from providing ambulatory care in the Family Practice Center to inpatient service in family medicine, pediatrics, obstetrics/gynecology, psychiatry, medicine and other specialties.

For our residents, the goals of the program are to:

- understand comprehensive care, including the psychological, familial and socio-economic factors that affect health and disease
- understand the importance of continuity of care and coordination of medical services to patients and their families
- fully develop cognitive abilities and clinical skills to maximize effectiveness as a family physician
- acquire competency in office and hospital based procedures
- develop a sense of ethics and responsibility applicable to the practice of medicine
- understand the concepts of community and social involvement that will elevate the health standards of the community, as well as the health status of patients
- understand the professional and personal needs necessary to developing an emotionally and intellectually satisfying medical practice
- gain ability to practice medicine within the framework of a team approach, using the skills of other professionals, community agencies, and support groups
- appreciate academic achievement and prepare for future learning and teaching in medicine
- prepare for success in this rapidly changing managed healthcare environment.

In conjunction with the School of Health Technology and Management, the department offers through its residency a Masters in Primary Care Health Policy.

The Department of Family Medicine has demonstrated a commitment to the community through its outreach programs and primary care initiatives. These programs are coupled with teaching and clinical responsibilities in the ambulatory and inpatient services of University Medical Center as well as at community based sites throughout Suffolk County. The Department of Family Medicine coordinates and delivers continuing medical education programs to the medical community and conducts healthcare and service research.

Department of Medicine

Chair: Benjamin J. Luft

Vice Chair, Clinical Affairs: Peter F. Cohn

Vice Chair, Academic Affairs: Mark Graber

Associate Chair, Director of Inpatient Service: Richard Barnett

Associate Chair, Director of Student Programs: David Tompkins

Associate Chair, Director of Residency Program: William Wertheim

Medical Director LI State Veterans Home: Frank Cervo

Affiliation Chairs: Jacob Sokol, Nassau University Medical Center; Michael Niederman, Winthrop-University Hospital; Mark Graber, Veterans Affairs Medical Center, Northport

Professors: John F. Aloia, Reese Alsop, Wadie Bahou, Douglas Brand, Harold Carlson, Steven Carsons, Wen-Tien Chen, Richard Clark (Dermatology), Ira Cohen (Physiology & Biophysics), Peter F. Cohn, Stanton Cohn, Barry Collier (Adjunct), John Coulehan (Preventive Medicine), Burke Cunha, Raymond Dattwyler, Ralph DellaRatta, Philip Domico, Norman H. Edelman, Donald A. Feinfeld, Getachew Feleke, Suzanne Fields, Hussein Foda, Susan Forlenza, Marianne Frieri, Harry W. Fritts, Jr., Edmund D. Pellegrino (Emeritus), Pierce Gardner, Marie Gelato, Berhane Ghebrehiwet, Irving Gomolin, Peter Gorevic (Emeritus), John Gottdiner, Mark Graber, Robert Greenwald (Adjunct), James Grendell, Arthur P. Grollman (Pharmacology), Barry Gruber, Leonard Hamilton, Mae Hultin, Adam Hurewitz, Jolyon Jesty, George J. Kaloyanides (Emeritus), Ashok Karnik, John Kovach, William Lawson, Martin R. Liebowitz, Benjamin J. Luft, Stefan Madajewicz, John Maesaka, Thomas Manis, Dwight Martin, Edward Meilman, Leonard E. Meiselas (Emeritus), Michael Niederman, Edward Nord, Robert Olson (Emeritus), David Parkinson, Jonathan Plehn, Nathaniel Reichel, Ira Rezak, Basil Rigas, John R. Sachs, Sami Said, Lawrence Shapiro, Walton Shreeve, Gerald Smaldone, Roy Steigbigel, William Van Nostrand, James Veh, Michael Viola (Emeritus), Steven Vitkun (Anesthesiology), James Yeh, Stephen Vlay, David W. Westring, Kenneth Zamkoff, Mohammad Zarrabi, Stanley Zucker

Associate Professors: Olakunle Akinboboye, Leonard Arbeit, Syed Asad, Eddy Barash, Richard Barnett, Jeffrey Berger, Linda Carosino, Edward Cheng, Joseph Chernilas, Todd Cohen, Arnold Conrad, Mark J. Corapi, Troy Dixon, Philip Domenico, Michael Dubin, Peter Ells, Steven Fishbane, Luz Fonacier, Israel Freeman, Howard Frucht, Jack Fuhrer, Dennis Galanakis, Aaron Glatt, David Goddard, Avram Gold, Beatrice Golumb (Preventive Medicine), Aasha Gopal, William H. Greene, Maritza Groth, James Gordon, Joanne Holland, Jonathan Ilowite, Junichi Iwai, Raja Jaber (Family Medicine), Victor Jimenez, Ernesto Jonas, Anoop Kapoor, Alan Katz, Jordan Katz, Hossein Keyvan, Robert J. Kramer, Walter Noah Kromholz, Irwin Kurland, Tai-Ping Lee, Richard Lin, Edward Mack, Erich Mackow, George Mallis, Augustus Mantia, Robert J. Michtom, Sidonie A. Morrison, Sriram Naidu, Howard Novotny, Thomas O'Riordan, Sanford Pariser, Enrique Pastoriza-Munoz, Crescens Pellecchia, Melvin Praissman, Florence Prigent, Louis Ragolia, Earnst Raeder, Linga Raju, Suhail Raouf, Martin S. Roginsky, Robert Shaw, Tsiporah Shore, Michael Silverberg, E. Marvin Sokol, Harry Staszewski, Sorel Sulimovici, Herbert Susskind, Charles Steinman, David Tompkins, Marcia

Tonnesen (Dermatology), Nand Wadhwa, Edward Weissman, Shing-Shing Yeh, Stephen Zeldis, Myron Zitt

Assistant Professors: Marc Adler, Shadab Ahmed, Michael Ammazalorso, Prachi Anand, Joseph Anderson, Eugene M. Aronow, Evangelia Augoustiniatos, Quaiser Bakht, Wendy Balopole, Leah Balsam, Daniel Baram, Donald J. Behr, Elise Belilos, Nicholas Berbari, Richard E. Berman, Robert Bertcher, John Birk, Akram Boutros, Pierre Brutus, Bernard Brennan, B. Lawrence Brennan, John Bruno, Anthony Calio, Jian Cao, Maria Carney, Joseph Cervia, Frank A. Cervo, Stuart Chale (Emergency Medicine), Howard Citrin, Gail Cohan, Sandra Cohen, Stephen Cokinos, David Cooling (Emergency Medicine), Lisa D. Cupit, Noshir DaCosta, Feroza Daroowalla, Frank J. DeMento, Oscar A. Devera, Kathleen Dickman, Regine Diaz, Karen Dominguer, Susan Donelan, Michael Dosik, Regina Druz, Thomas J. Ekkers, Bradley Flansbaum, Cornelius J. Foley, Kenneth Freese, Phyllis Freed, Steven P. Friedling, Gary Friedman, Stephen W. Furst, Anthony Gambino, Liziamma George, Gino L. Giorgini, Jr., Douglas Gladstone, Dmitri Gnatenko, Steven Golub, Mark A. Goodman, David Goodrich, Michael N. Greenblatt, Seymour Greenwald, Marwan Habeeb, Carylann Hadjyane, Nabil Hagag, Aaron Harrison, Janet Hearing, Donna Heinemann, Alexander Hindenburg, Herbert Hirsch, Melvin Holden, Ingolf Holm-Andersen, Rosalind Hopmeier, David Horowitz, Richard Horowitz, John Hui, Stanley Hyman, Bassiema Ibrahim, Louis J. Imbriano, Gary R. Joachim, Alan Jacobson, Diane Johnson, George Juang, Hosam Kamel, Ali Karakurum, Inderjit Katyal, Jeffrey Kazzaz, Eugene M. Kern, Todd Kerwin, Diane L. Klein-Ritter, Natalie Klein, Robert Klein, Kavita Kongora, Edward Kowalski, Gamesh Kumar, Harvey Kuschner (Emeritus), Susan Lane, Alice Lee, Susan Lee, Harvey L. Lerner, Younghee Limb, David Lin, Zeena Lobo, Janice Lu, David T. Lyon, Gregory Macina, Lucy Macina Vincent V. Madonia, Robert Malacoff, Noelle Mann, Abeera Mansur, Philip A. Mantia, Dwight W. Martin, Kevin Marzo, Evangelos Mavrogeorgis, Joan McInerney, William McKean, Sandeep Mehrishi, Alan Mensch, Marco Michelson, Dennis Mihalatos, Mageda Mikhail, Humair Mirza, Nobuyuki Miyaswaki, Felix A. Monaco, Howard D. Morgenbesser, Robert Mormando, Dennis Mynarcik, Ian Newmark, Catherine Nicastrì, Laurence I. Novick, Edwin Oberstein, Jeong Oh, Olukayode Ojutiku, Abuzafar Osman, Lucy Palmer, Kiran Pandey, Leo G. Parmer (Emeritus), Shenyi Peng, Lester N. Ploss, Martin D. Podgainy, Bonnie Pollack, Ronald A. Primis, Samia Qazi, Robert J. Rabinowitz, Frank Raio, Ramona Rajapakse, Frederick Reindl (Pediatrics), William Rifkin, Seymour D. Ritter, Mohammed Rizvan, David S. Rosenthal, Ranjan Roy, Sharona Sachs, Harold S. Sandhaus, Arnold E. Sands, Ghulam Saydain, Ira H. Scheinerman, Frederick Schiavone (Emergency Medicine), Jeffrey Schneider, Anuja Shah, Kalpana Shere, Anshu Singh, Jay Slotkin, Richard Smith, Philip Spadafora, Jacob Sokol, Leonard Stein, Alan Steinberg, Lisa Strano-Paul, Adam Stys, Jaishree Subramani, Heesuck Suh, Krishnamurthy Suresh, Anthony Szema, Dennis Tansiongco, Shirley Tansiongco, Wen-Wei Tchou, Louis H. Tiger, Adrian Torres, Joseph Tripedi, Albert Tse, Gayle Vaday, Ashok Vaswani, Janice Verley, Peter Viccellio, Isabelle von Althen, Rosalind Watman, Michael Weinstein, William Wertheim, Evelyn Wolf, Richard Li-Cheng Xu, Daniel Yellon, Melvin W. Young, Qamar M. Zaman, Athena Zias, Jerome Zisfein, Sheldon Zuckerman

Instructors: Charles Annunziato, Vincent Avila, Michele Becker-Hamou, Elena R. Berkowitz, Stephen Bernstein, Michael Carl, Sandeep Chandra, Igor Chernyasvskiy, Shiela Cheruvelil, Eugene Coman, Stephen Cusumano, Vijay K. Das, Elliott Dreznick, Yasser-El-Hennawy, Charles Famulare Theodore

Flaum, John Folan, Michael Garrison, Barry Gimbel, Roderick Go, Richard Gold, Perry Gould, Marie Gray, Alice Greene, Andre Haddad, Lisa Hammer (Pharmacology), Shirley Hanna, Alan I. Harris, Edmund Hayes (Pharmacology), Linda Honkanen, Bruce Horowitz, David M. Horowitz, Mohammed S. Hossain, John Hsueh, Shashi B. Jhamb, Robert C. Johnson, Wei Kao, Frank Karpowicz, Shyamala Karuvannur, Jungyop Kim, David Klein, John Lanzone, Renee Lefland, Agim Leka, Jeffrey Leonardis, Mark Davis-Lorton, Deborah McBane, Angela Mitrani-Schwartz, Harvey Mossman, John A. Ostuni, Lawrence Pacernick, Gary Rosenblum, William Ross, Francis J. Safina, Majeed Ahmed Sayeed, Paul Schulman, Sanjiv Sharma, Gary Schwartz, John J. Scomillio, Anuja Shah, Shahin Shaikh, Sheldon C. Simon, Gregory Spisak, Philip Stein, Roopa Suresh, Michael Sussman, Mark Tan, Mandar Tank, Djin Y. Tjioe, Andrew Weber, Marc A. Weinberg, Ranvic Yadav

The Department of Medicine encompasses ten divisions: Cardiology, Endocrinology & Metabolism, Gastroenterology & Hepatology, General Internal Medicine and Geriatrics, Hematology, Infectious Diseases, Nephrology & Hypertension, Medical Oncology/Neoplastic Diseases, Pulmonary & Critical Care Medicine, and Rheumatology, Allergy & Clinical Immunology at Stony Brook, as well as at its clinical affiliates listed above. The combined faculties of these institutions are charged with the responsibility for the following:

- 1) Directing and teaching the Introduction to Clinical Medicine program for first and second year medical students
- 2) Oversight and teaching of the Systems Approach to Medicine for second year medical students
- 3) Directing the Clerkship and Sub-Internship in Medicine
- 4) Developing curriculum and supervising electives in the medical subspecialties
- 5) Training 104 residents and 60 fellows
- 6) Providing Continuing Education in Medicine
- 7) Providing superb clinical care for patients across Long Island who require Internal Medicine primary care and subspecialty services in both the inpatient and outpatient settings.

These efforts are coordinated by an Executive Committee composed of faculty from Stony Brook and all of the clinical affiliates.

The Department of Medicine education program is designed to provide medical students, residents and fellows with a solid foundation in general internal medicine and its subspecialties, including quality patient care and research. This goal is exemplified in the design of the medical clerkship. Under the tutelage of full-time faculty and community preceptors, students learn the arts, skills, and modes of reasoning in making diagnoses and managing patients. In addition, students become a part of the medical staff by delivering patient care. These educational activities are supplemented by conferences, a comprehensive lecture series of topics identified as a target "Core Curriculum," the Chairman's lecture series, small group sessions with the Program Director, and multi-departmental clinical pathology conferences. The study of the patient as the keystone to learning medicine is stressed throughout the inpatient and ambulatory experience. A fourth year sub-internship is offered for those students with an interest in careers in Internal Medicine and as a foundation for many students pursuing other disciplines. The one to two months internal medicine sub-internship provides the students with an intensive patient care experience in the inpatient setting with faculty mentoring and oversight. Additionally, many fourth year students elect to participate in a variety of subspecialty electives that provide in-depth, focused learning experiences in the internal medicine disciplines.

The Graduate Training program's goals and objectives

emphasize the Department's mission to educate compassionate, life-long learner physicians who are capable of delivering the highest quality of medical care. The core program consists of 104 residents in 5 different tracks including Primary Care Medicine, Med/Peds, Med/Neuro, and Med/Dermatology. In addition, the core program supports 11 Fellowships, including Interventional Cardiology.

The post-graduate program offers training in research. Post-doctoral traineeships are available in both applied and basic research for senior house officers planning careers in academic medicine. Senior students and residents may take electives in general medicine and the medical subspecialties.

In keeping with the goals of our education program, continuing education is provided at various hospitals through regularly scheduled rounds and conferences. These activities, aimed at not only the members of the medical staff but for all healthcare professionals, emphasize the importance of interdisciplinary approaches in analyzing problems, whether at the bedside or in the laboratory.

Department of Molecular Genetics and Microbiology

Chair: Dafna Bar-Sagi

Professors: Dafna Bar-Sagi, William R. Bauer, Jorge Benach, James B. Bliska, Carol A. Carter, Nicholas Delihias, Michael J. Hayman, Patrick Hearing, Eugene R. Katz, James B. Konopka, Kenneth B. Marcu, Nancy C. Reich, Roy Steigbigel, Eckard Wimmer

Associate Professors: A. Bruce Futcher, Janet K. Leatherwood

Assistant Professors: Janet C. Hearing, Aniko Paul, David Thanassi

Research Assistant Professors: Maria Gomes-Solecki, Sangeet Honey, Laura Katona, Philomena Ostapchuk

Adjunct Professors: Carl W. Anderson, John J. Dunn, Winship Herr, Huilin Li, Jane K. Setlow, Bettie M. Steinberg, Bruce W. Stillman, William F. Studier

Instructional Support: George J. Burton, Christine Ginocchio

The Department of Molecular Genetics and Microbiology provides a focus for research activities ranging from the analysis of mechanisms responsible for the pathogenicity of microorganisms to the identification of genes involved in human cancer. Key discoveries in molecular genetics have been made in this department and world-renown scientists have flourished in this environment.

The department occupies laboratories and offices in the Life Sciences Building and the Centers for Molecular Medicine, a state of the art research and teaching facility. The research laboratories are fully equipped and, in addition, the department provides access to a variety of central facilities and services: a cell culture and hybridoma facility, microinjection facility, state of the art DNA sequencing, microscopy facilities, glassware washing, microarray facility, an analytical equipment lab, environmental rooms, darkrooms, and other department-shared equipment which are readily available to students and trainees.

As a basic science department of the School of Medicine, the department offers a diversified course of study leading to the Ph.D. degree in Molecular Genetics and Microbiology. The major areas of study are the basic mechanisms of viral and

bacterial pathogenesis, cell growth, signal transduction and the molecular mechanisms of cancer. The pre-doctoral training program offers its students the opportunity to study topics in virology, bacteriology, immunology, biochemistry, and cell and developmental biology utilizing the experimental approaches of the molecular biologist and geneticist. Instruction and course planning involve faculty members from the Department of Molecular Genetics and Microbiology, and selected members from the Departments of Biochemistry and Cell Biology, Medicine, Pathology, and Pharmacology, and from two outside institutions, Cold Spring Harbor Laboratory and Brookhaven National Laboratory. The department also offers undergraduate and graduate courses that are required for majors in the health-related professions as well as the basic sciences.

The department has an active seminar program of outside speakers who present topics relevant to molecular microbiology and genetics. In addition, there is a yearly symposium in which ongoing research in the department and recent progress in the field are presented and discussed.

Our training opportunities lead the way in interdisciplinary research with clinical and basic research cooperation in the fields of cancer research and infectious disease.

Courses

HBM 320 General Microbiology

A study of the molecular structure, functional anatomy, growth, genetics, and pathogenic mechanisms of microbial agents with an emphasis on bacteria and viruses. Non-specific and specific host defenses and the control of microorganisms will also be covered. Satisfies the microbiology requirements for admission to most allied health, nursing, optometry, and veterinary medicine professional schools.

Prerequisites: BIO 202; CHE 132.

3 credits, spring term

HBM 321 General Microbiology Laboratory

Complementing the lecture material of HBM 320, this optional laboratory covers basic and applied microbiological methods. Students are introduced to methods for isolating pure cultures, microscopy and staining, quantitation of bacteria, and determination of sensitivity to antimicrobial agents. This laboratory is limited to pre-veterinary, and pre-health professional students.

Corequisite: HBM 320

1 credit, spring term

HBM 393, 394 Special Topics from the Microbiology Literature

Directed readings in molecular genetics and microbiology with periodic conferences, reports, and examinations arranged with the instructors in the department, culminating in a final paper reviewing the literature.

Prerequisite: Permission of instructor.

1-2 credits, fall/spring terms

HBM 398, 399 Research Project in Microbiology

An independent research project under faculty supervision, with emphasis on the principles of experimental design, data collection, evaluation of findings and reporting of results. Project report required.

Prerequisites: Laboratory experience and permission of the supervising instructor.

2-4 credits, Fall/spring term

May be repeated for credit.

HBM 503 Molecular Genetics

Introduces the classical work and current developments in lower and higher genetic systems. Covers gene structure and regulation in prokaryotic and eukaryotic organisms, mutational analysis and mapping, transposable elements, and biological DNA transfer mechanisms. Bacteriophage as well as lower and higher eukaryotic systems are used to illustrate aspects of molecular genetic structure and function. This course is offered as both MCB 503 and HBM 503.

Prerequisite: Matriculation in graduate program or permission of instructor.

3 credits, fall term, ABCF grading

May be repeated for credit.

HBM 509, 510 Experimental Microbiology

An introduction to modern microbiological research. The selection of laboratories is made in consultation with the student's advisory committee. By taking part in ongoing projects, the student will learn experimental procedures and techniques, and become acquainted with research opportunities in the department.

Prerequisites: matriculation in a graduate program and permission of the graduate studies director and the lab director.

1-8 credits, fall term, SU grading

HBM 511 Introduction to Biophysical Chemistry

Introduces the chemical principles and techniques needed for the study of biological macromolecules. Topics to be covered include solution chemistry, chemical thermodynamics, binding and dissociation equilibrium, denaturation phenomena, spectroscopy, and hydrodynamics. This course is intended to prepare non-chemistry majors for more advanced work in biophysics.

3 credits, fall term, ABCF grading

May be repeated for credit.

HBM 522 Biology of Cancer

A short course with the emphasis on cancer as a disease of man. Lectures address human cancer as seen by the clinician and as basic research relates to human disease. This course provides students with a link between courses in cell and molecular biology and the application of this basic information to tumor management.

1 credit, spring term, even years, ABCF grading

May be repeated for credit.

HBM 531 Medical Microbiology

Information derived from molecular and experimental cellular biology is presented to provide a foundation for understanding the basic aspects of the growth, regulation, structure and function of viruses and prokaryotic and eukaryotic cells. The properties of the infectious agents are correlated to human diseases caused by these agents. Laboratory experiments demonstrate basic techniques to identify and quantitate microorganisms.

Prerequisite: Permission of instructor; matriculation as a Stony Brook medical or dental student.

1-4 credits, fall term, ABCF grading

May be repeated for credit.

HBM 599 Graduate Research Microbiology

Original investigations under faculty supervision.

Prerequisite: Permission of instructor.

1-9 credits, fall/spring terms, ABCF grading

HBM 640 Molecular Mechanisms of Microbial Pathogenesis

This course covers the principles and molecular mechanisms of pathogenesis of a selected group of the best understood viral and bacterial pathogens. A major focus of the course relates to pathogen modification of host extracellular and intracellular signalling events, as well as pathogen-host interactions pertaining to the innate, humoral and cellular responses to infection. The material is presented by invited lecturer who are leaders in their fields. This course is directed to graduate students, post-doctorate and medical fellows, and advanced medical students who are contemplating careers in infectious disease research.

Prerequisite: HBM/BMO 503 and BMO 520

3 credits, fall term, ABCF grading

May be repeated for credit.

HBM 690 Microbiology Student Seminar

A weekly meeting devoted to current research in the department. Enrolled students present seminars each week throughout the term.

Prerequisite: Permission of instructor.

1 credit, fall/spring term, SU grading

HBM 691 Readings in Microbiology Literature

Readings in microbiology literature that covering areas of molecular biology and genetics.

Prerequisite: Permission of instructor.

1 credit, fall term, ABCF grading

May be repeated for credit.

HBM 699 Dissertation Research on Campus

For the student who has been advanced to candidacy. Original research will be under the supervision of the thesis adviser and advisory committee.

Prerequisite: Advancement to candidacy; permission of the thesis advisor; major portion of research must take place on SBU campus, at CSHL, or BNL.

1-9 credits, fall/spring/summer terms, ABCF grading

May be repeated for credit.

HBM 800 Full-time Summer Research

Full-time laboratory research projects supervised by staff members.

Prerequisites: Permission of instructor and full-time graduate student status.

0 credits, summer term, SU grading

Department of Neurobiology and Behavior

Chair: Lorne M. Mendell

Professors: Paul R. Adams, Paul Brehm, John B. Cabot, L. Craig Evinger, Joseph Fetcho, Simon Halegoua, Joel M. Levine, Gail Mandel, Gary G. Matthews, Lorne M. Mendell, S. Murray Sherman, Stephen Yazulla

Associate professors: William F. Collins III, James Gnadat, David McKinnon, Mary Kritzer, Maurice Kernan

Assistant professors: Howard Sirotkin, Lonnie Wollmuth

This department offers fundamental courses in neurobiology to students in the health professions as well as to undergraduates and graduates in biology. Its graduate studies are centered around the program in neurobiology.

Courses**BIO 203 Cellular and Organ Physiology**

The fundamentals of cell and organ physiology in mammalian and non-mammalian organisms. The structure and function of cell membranes and the physiology of cell to cell signaling, cellular respiration, and homeostasis of organs and organisms are examined with an emphasis on the comparative physiology of vertebrates and invertebrates. Three hours of lecture and one three-hour laboratory per week.

Prerequisite: Bio 150

Pre- or Co-requisite: CHE 111 or 121 or 131 or 141; MAT 125 or higher (or the discontinued MAT 124)

4 credits

BIO 208 Cell, Brain, Mind

The human brain allows movement, thought and emotion. As an electrochemical computer, it is the target of diseases, drugs and psychological disturbances. Explores these topics through a knowledge of basic cell neurobiology and considers the implications of brain science for human behavior in society. For students not majoring in the biological sciences. A core course satisfying natural sciences category B.

Prerequisites: High school chemistry or CHE 111; BIO 101 or 150.

3 credits, fall term, faculty

BIO 210 Human Physiology

The basic principles of human physiology. The subject matter covered includes presentations on the anatomical organization and physiological functions of central and peripheral nervous systems; skeletal and smooth muscles; cardiovascular, respiratory, and renal systems; and endocrine and reproductive systems. The course is designed for pre-nursing students. May not be taken for credit by biology majors. Three hours of lecture, one hour recitation, and one three-hour laboratory per week. Not for credit in addition to BIO 203.

Prerequisite: BIO 150, Advisory prerequisite: ANP300

5 credits

BIO 307 Computer Modeling of Biological Systems

Tools for visualizing and modeling biological systems. Tools include graphics programs, spread sheets, software for modeling dynamical systems and instruments for real-time data collection and data analysis including image acquisition and analysis. Study of models of population growth, ecology, and neuron and other biological systems.

Prerequisites: BIO 201 or 202 or 203; CHE 132; MAT 125 or higher

3 credits, spring term, faculty

BIO 317 Principles of Cellular Signaling

Basic principles of cellular signaling and maintenance of cellular and organismic homeostasis through intra and intercellular signaling mechanisms. Emphasizes relationships between nuclear events and ongoing processes of the cell. The roles of membrane receptors and second-messenger pathways in mediating such diverse events as bacterial chemotaxis, protozoan locomotion, and secretion are discussed.

Prerequisites: BIO 202 or 203

3 credits, fall term, faculty

BIO 328 Mammalian Physiology

The basic principles of human physiology. Includes circulation, respiration, nutrition, excretion (and their control by the nervous and endocrine systems), and sensation and coordination. May not be taken for credit in addition to HBY 350.

Prerequisites: BIO 203

3 credits, fall term, faculty

BIO 334 Principles of Neurobiology

Discusses the ionic basis of nerve potentials, the physiology of synapses, sense organs and effectors, and the integrative action of the nervous system.

Prerequisites: BIO 203; CHE 131 or 141

3 credits, fall term, faculty

BIO 335 Animal Physiology Laboratory

Laboratory exercises illustrate principles learned in BIO 328. Topics include muscles and hormones, physiological activities of nerves, circulation, respiration, excretion, digestion, sensory function, and central processes of coordination. One hour of lecture, one hour of recitation and one three-hour laboratory per week.

Prerequisites: BIO 328; CHE 132 or 133

3 credits, fall term, faculty

BIO 338 Self-organization of the Brain

Exploration of basic neural and synaptic mechanism and the operation of representative brain circuits, using both theoretical approaches and experimental evidence. Particular attention is given to Hebb's Rule, its cellular basis, its consequences for circuit self-organization, and its limits. A solid background in a mathematical, physical, or biological science is desirable, but most relevant background material is covered in the course.

Prerequisite: BIO 203 or CHE 132 or PHY122

Advisory Prerequisite: BIO 334

3 credits, fall term, faculty

BIO 339 Molecular Development of the Nervous System

An introduction to the molecular events that underlie development and plasticity of both the peripheral and central nervous systems, with a focus on neuronal mechanisms. Molecular and genetic approaches to the analysis of neural induction, neuronal differentiation, neuronal death and survival, neurotrophic factors, synapse formation and plasticity are presented.

Prerequisite: BIO 202

Advisory Prerequisite: BIO 203 or 325

3 credits, spring term, faculty

BNB 446 Readings in Neurobiology and Behavior

Tutorial studies on recent advances in neurobiology.

1 credit, fall and spring term, faculty

BNB 486 Research in Neurobiology and Behavior

1-4 credits, fall and spring terms, faculty

BNB 547 Readings in Neurophysiology
Discusses and evaluates neurophysiological research published in biological journals. Provides critical analyses of techniques, methodology and conclusions of such research.
1-3 credits, fall and spring terms, faculty

BNB 552 Neurobiological Techniques
A series of laboratory exercises and lectures to give students "hands on" experience in the basic laboratory techniques of contemporary neuroscience. Includes intracellular and extracellular recording, neuronal tissue culture, neuroanatomical techniques, and integrative physiology.
2 credits, fall term, faculty

BNB 555 Neuropharmacology
Develops an advanced understanding of neuropharmacology and research. Introduces the nerve cell structure, synaptic and chemical transmission, and develops three themes of receptors-receptors as channels, and G-protein-coupled receptors. Recent advances in cell and molecular biology provide the framework for instruction and discussion. Cross listed with HBH 555.
Prerequisite: Faculty approval.
3 credits, fall term, faculty

BNB 560 Laboratory in Neuroanatomy
This course consists of a series of laboratory exercises and supplemental lectures providing an overview of the structural organization of the nervous system. The mammalian nervous system and its sensory, motor and cognitive components are emphasized. Laboratories include examination of whole brains and histological sections, and some hands-on experience with basic neuroanatomical techniques. Computer programs illustrating the three-dimensional and circuit organization of the human brain are also used.
Prerequisites: BIO 334 or equivalent and permission of instructor
2 credits, fall term, faculty

BNB 561 Neurobiological Basis of Vision
This course introduces students to the basic principals of neurobiology from a cellular perspective. Topics covered include the ionic basis of electrical excitability, the biophysics and molecular biology of ion channels, and synaptic transmission. Additional topics include the molecular regulation of key development events such as the emergence of the neuronal phenotype, patterning of the nervous system, and axon growth and path finding. The motor system is studied as an example of how molecular and cellular properties intermesh. This course is the first of a two semester sequence of courses intended to provide a broad and comprehensive basis for advanced study of the nervous system. This course is primarily for graduate students.
Prerequisite: BIO 334 or equivalent and permission of instructor
4 credits, fall term, faculty

BNB 562 Motion: Motor Control and the Reflex Pathway
The physiology, development and molecular biology of motor systems will be described. Basic aspects of the nervous system including reflex arcs, ion channels, gene expression and nerve growth are described in the context of the spinal cord.
4 credits, spring term, faculty

BNB 599 Research
Original investigation undertaken with supervision of a member of the staff.
Variable credit, fall and spring terms, faculty

BNB 697 Advanced Neurobiology and Behavior Seminar
Seminar presentations delivered by faculty, associates, students and visiting speakers.
1 credit, fall and spring terms, faculty

BNB 699 Dissertation Research
Original investigations undertaken as part of the PhD program under the supervision of the dissertation committee.
Credits to be arranged, fall and spring terms

Department of Neurological Surgery

Chair: Raphael P. Davis

Professors: Michael Egnor, Joseph D. Fenstermacher (Emeritus), George W. Tyson, Harvey Wachsman

Associate Professors: Raphael P. Davis, James V. Manzione, Eric Smouha

Assistant Professors: Robert Galler, Jack Greenwood, Frederick B. Gutman, Ira Rampil, Clemente T. Roque, Craig Rosenberg, Arthur Rosiello, Robert G. Roth, Michael O. Sauter

Instructors: Donna Andricopoulos, Ricardo Aranguren, Marilyn Higgins, Mary Lane, Jacqueline Paveling, Elaine Sepe, Catherine Sheng, Nancy Strong

The Department of Neurological Surgery is an important clinical component of the neurosciences program at Stony Brook. The objectives of the department are to provide the best possible patient care using the latest technology while integrating a commitment to teaching and research in the neurosciences. Faculty members are engaged in multidisciplinary, translational research exploring fluid dynamics in hydrocephalus and intracranial flow disorders. Sponsorship is provided to qualified graduate students in the basic sciences.

The clinical faculty provides care to both adult and pediatric patients who require surgical treatment for diseases and maladies of the spine and brain. The Skull Base Surgery Program, a collaboration of neurosurgery and otolaryngology, encompasses a wide variety of highly specialized operations performed at the interface of the head and neck. Selected residents from neurology and surgery programs may rotate on the neurological surgery service for intensive exposure to the surgical management of spine and brain maladies, in particular trauma and more complex neurosurgical problems that are characteristic of an academic practice.

Medical students may be instructed on processes relating to the nervous system and pre-clerkship lectures are given periodically with emphasis on craniospinal trauma, cranial pressure dynamics, central nervous system tumors, and cerebrovascular disease.

Department of Neurology

Chair: Patricia K. Coyle (Acting)

Professors: Mary R. Andriola, Anita Belman, Patricia K. Coyle, Lauren B. Krupp

Associate Professors: Oded Gerber, Mark A. Kaufman, Joanna Smirolfo, Philippe Vaillancourt

Assistant Professors: David Anshel, Francis Antonawich, Anthony K. Bolton, Mike Guido, Cara Harth, Mirjana Maletic-Swatic, Candice Perkins,

Instructors: Ann Marie Byers, Susan Vitale

The Department of Neurology includes Divisions of Pediatric Neurology, Clinical Neurophysiology and Neuropsychology, as well as sections in Stroke, Multiple Sclerosis/Neuroimmunology, EEG, and Neuromuscular Diseases. The department's mission is to provide excellence in Neurologic care for the patient, research, education, and community service. The department provides

basic and clinical training in neurological science to medical students, fellows and residents. The intent of this training is to provide a basis for scientific neurology and practical instruction in patient care. The department carries on a broad program of research in neurological science and contributes to the understanding of the structure, function and diseases of the nervous system. The clinical faculty provide tertiary, as well as basic, level clinical care in neurology, carried out within the context of medical student and house staff training. The department strives to increase community awareness about neurologic disorders.

Instruction is provided at all levels of medical education. Members of the department participate in the teaching of basic neuroscience to medical students in pre-clinical years. A clinical clerkship are offered during the clinical years. The clinical clerkship consists of an intensive inpatient and outpatient experience in neurology during the third and fourth years. The intent is to provide the student with the background to take a neurological history and carry out a neurological examination in order to evaluate patients with neurological disease in an appropriate and logical manner. The emphasis in this experience is on improving clinical diagnostic skills and the ability to formulate a plan of care for patients with neurological disease. Attention is also directed to learning the techniques and interpretation of electroencephalography, electromyography and neuroradiological procedures, including tomography. Students are expected to participate in all aspects of the clinical activities of the department.

In addition to instruction of medical students, a three-year residency program is offered to prepare postgraduate physicians for board certification in adult or pediatric neurology. The residency training program provides a firm background in basic neuroscience disciplines and extensive exposure to clinical neurology. Residents complete separate rotations in neuropathology, neuroradiology, child neurology and psychiatry and are encouraged to become involved in clinical and/or basic neuroscience research. Special postgraduate fellowship programs are available in areas such as clinical neurophysiology, pediatric neurology, vascular neurology and neuropsychology.

The faculty maintains a strong commitment to clinical neurology through operation of the neurology service at University Hospital and at the Northport Veterans Affairs Medical Center. Faculty research programs complement the clinical and academic functions of the department. Research in the department of neurology covers a wide spectrum of activities in basic and clinical neuroscience, ranging from basic neuroanatomical, neurochemical and neurophysiological studies to basic and clinical research in neuroimmunology, neurotoxicology, epilepsy, neuroophthalmology and developmental neurobiology.

Department of Obstetrics, Gynecology and Reproductive Medicine

Chair J. Gerald Quirk

Professors J. Andrew Fantl, David A. Baker, Paul L. Ogburn Jr., Dev Maulik, Boris Pertrikovskiy, J. Gerald Quirk, Martin L. Stone (Emeritus), Siamek Tabibzadeh, Linda Tseng

Associate Professors: Frank Bonura, Richard A. Bronson, Eva Chalas, Mark I. Funt, Magdalen Hull, Cynthia Kaplan, Jerry Ninia, Daniel Kenigsberg, Alan Monheit, Ellen Steinberg

Assistant Professors: Rishimani Adsumelli, Michael Arato, Patricia Ardise, Cecilia Avila, Adam Buckley, Lauri Budnick, Ann Buhl, Kristen Cain, Kent Chan, Christine Conway, Valerie Cucco, Deborah M. Davenport, James N. Droesch, Kathleen E. Droesch, Kristi Egner, Andrew Elimian, David Garry, Todd

Griffin, Abraham Halfen, Robert Hock, Douglas S. Lee, Michael Lydic, Philip J. Makowski, Charles T. Mann, Noel O. Mohammed, Teresa Mular, Michelle Murphy, Hitesh Narain, Robert O'Keefe, Hiramani R. Pardanani, Michael Pearl, G. Michael Peters, Sara Petruska, Jeffrey A. Porte, Viswanathan Ravishankar, David Reavis, Steven I. Ross, Tracie Saunders, Gabriel San Roman, Joy Schabel, David M. Shobin, Ian VanPraagh, Malathy Varanasi, Christian Westermann, Jerry Wider

Instructors: Susan Altman, Maureen Barbara, Eliot Birnbaum, Theodore Blaszczyk, Robin Bliss, Dana Brenner, Karen Coburn, Karen Lohan, Eleanor Dunham, Lance Edwards, Gloria Escamilla, Heather Findletar, Margaret Fischer, Susan Fish, Marie Frey, Sally Gambill, Michael Gentileco, Stephen Golub, Jennifer Griffin, Richard L. Halpert, Arlene Kaelber, Nicholas Kleopoulos, Christina Kocis, Laura Lesch, Paul Lograno, Morisa Marin, Linda Mahler, Jennifer Marshak, Careen Mauro, Michelle Mayer, Dayna McCauley, Brian McKenna, Thomas Paone, Dreux Patton, John Petraco, Amy Richter, Gerardo San Roman, Gustavo San Roman, Philip Schoenfeld, Mindy L. Shaffran, Keith Sommers, Maxine Spicer, Karen Stampf, James Stelling, Susan Sterlacci, Dennis Strittmatter, Doris Weisman, Dina Weiss, Julie Welischar, Joseph Xerri

The Department of Obstetrics, Gynecology and Reproductive Medicine is organized into the following divisions, each with its own chief: Gynecology and General Obstetrics, Gynecologic Oncology, Maternal-Fetal Medicine, Reproductive Endocrinology and Infertility, and Nurse Midwifery.

The department is responsible for instruction of medical students in each phase of their development. During the second-year curriculum, the department participates in the Introduction to Clinical Medicine course. Students are taught male and female genitourinary physical examinations in a program using prepared "professional patients." Following the study of exam techniques utilizing audiovisual aids and pelvic models, small groups of students spend one session with a physician instructor and specially trained professional patients who assist the individual student in conducting the exam.

The objective of the program is to provide an experience for students to perform non-traumatic genital exams to minimize the initial technical and psychological difficulties of the exam, and to introduce to them the importance of communication with their patients.

Second year medical students also have an intensive three-week course in Reproductive Pathophysiology. Building on and expanding the students' knowledge of the basic sciences, this course covers every aspect of human reproduction and the normal and abnormal conditions of the male and female reproductive systems.

The Clinical Clerkship in Obstetrics and Gynecology is a six-week core curriculum presentation for students to become intimately involved with the ambulatory and hospital care of female patients with pregnancy and/or diseases of the reproductive tract. Educational objectives are attained through didactic lectures, seminars, rounds, and clinical exposure – the latter essentially by integration into the service as a subintern. In addition to gaining experience with examination, diagnosis, and principles of treatment, opportunities are provided for exposure to the preventive medicine aspects of the discipline, including family planning, adolescent guidance, cancer screening, patient education and detection and prenatal health.

For students already career oriented in obstetrics and gynecology, and for those who desire greater depths than permitted by the core curriculum, fourth year electives are

offered in maternal-fetal medicine (high-risk pregnancy), reproductive endocrinology and infertility, gynecologic oncology and general gynecology and obstetrics. Participation in faculty research projects as well as in independent student research projects, utilizing the department's laboratory facilities in endocrinology, immunology, fetal physiology, and virology.

The principal goal of the department is to train physicians who will maintain and improve the highest standards in women's healthcare.

The department offers an accredited four-year residency, which includes training in all aspects of obstetrics and gynecology. The program provides a structured educational experience that is planned in continuity with undergraduate and continuing medical education. Participants are afforded structured, sequentially-developed exposures using a continuity of care model in the ambulatory and inpatient setting. This includes primary medical management and a variety of surgical experiences appropriate to the level of training.

Department of Ophthalmology

Chair: Patrick A. Sibony

Professors: Craig Evinger, M. Cristina Leske, Nisson Schechter, Patrick A. Sibony

Associate Professors: Fadi El Baba, Stuart B. Fourman, Marcelle Morcos, Elsa K. Rahn, Elinor Schoenfeld

Assistant Professors: Marc Dinowitz, Barry Golub, Robert A. Honkanen, Richard Koty, Maury A. Marmor, Dorothy Reynolds, Eric Roberts, Gideon Schneck, Pamela Weber, John Wittpenn

Instructors: Philip Bonanno, James F. Collins, Stephen Greenberg, Nancy Kwon, Jeffery Martin, Sidney Martin, John Romanelli, Scott Sheren, Eric T. Vinokur, Michael Weiner, Geoffrey Weisman

The Department of Ophthalmology provides instruction /training to both medical students and residents. As the only full-time university based multi-specialty group practice on Long Island, it offers the full range of ophthalmic services. Using the most current diagnostic and therapeutic modalities in primary and subspecialty ophthalmology, the department represents a complete clinical center for the testing/treatment of the gamut of ophthalmic disorders. Medical students and residents are thus given the opportunity to gain the necessary depth and breadth of education in ophthalmology.

The department provides the following clinical services that reflect the faculty's specialized expertise:

- General ophthalmology service
- Neuro-ophthalmology service
- Vitreoretinal service
- Cornea and anterior segment service
- Glaucoma service
- Oculoplastics and reconstructive surgery service
- Pediatric ophthalmology and adult strabismus service
- Optometric service

These busy services are directed by members of the full-time faculty, all of whom are board certified and fellowship trained. The faculty plays an active role in the teaching of medical students, contributing to several of the organized teaching blocks. They participate in the first-year neuroscience course, in the second-year rheumatology block, and in the third-year surgical rotation. In addition, the department offers a two-to-four-week clinical clerkship in ophthalmology.

The faculty participates in a fully accredited three-year joint residency with the Nassau University Medical Center. This training program has 12 residents, four of whom rotate at both University Medical Center and the Northport Veterans Affairs Medical Center, and also contribute to the education of medical students.

The faculty contributes to the training of residents from other departments of the School of Medicine as well, including the Department of Family Medicine, Department of Maxillofacial Surgery, and Department of Emergency Medicine. In addition, neurology residents may elect to do a two-to-four week rotation on the department's neuro-ophthalmology service.

To enhance the experience of ophthalmology residents and to serve as an educational resource for Stony Brook's medical students and residents, the department offers a series of open lectures in ophthalmology. Research participation within the department adds a valuable dimension to its educational programs, demonstrating the faculty's commitment to scholarly activity and the advancement of ophthalmic knowledge and patient care.

Among the research programs in which members of the faculty have recently been involved are: a multi-center clinical trial for supplemental oxygen treatment for retinopathy of prematurity; ultrasoniclisis of retinovascular thrombosis; a preliminary trial of pirfenidone in the treatment of proliferative vitreo-retinopathy; the establishment of a human eyelid movement laboratory; HIV-related studies; an evaluation of cataract extraction in the Third World; a project involving corneal amyloidosis; a national study on ocular hypertension, ocular manifestations of Lyme disease, botulinum toxin effects and pathophysiology of Blepharospasm.

Department of Orthopaedics

Chair: Lawrence C. Hurst

Professors: Marie A. Badalamente, Roger Dee, Lawrence C. Hurst

Affiliated Professor: Peter C. Altner

Associate Professor: Steven P. Sampson

Assistant Professors: Wesley Carrion, Nicholas Divaris, Susan Haralabatos, Stephen Kottmeier, James Penna, Louis Romeo, Mark Stephen, Yan-Qun Sun, Edward Wang

Affiliated Assistant Professor: Frank DiMaio

Orthopaedics is concerned with the pathology and physiology of the musculoskeletal system. Clinical divisions include Hand and Foot Surgery, Microsurgery, Oncology, Pediatric Orthopaedics, Spinal Surgery, Sports Medicine, Joint Replacement and Reconstruction, and Upper Extremity Surgery. The academic resources of the program, including the Orthopaedic Cellular Biology/Structure Lab and Musculoskeletal Lab, provide basic research experience. Instruction in cellular physiology and biochemistry of musculoskeletal tissues (bone/cartilage; muscle/nerve; tendon/ligament) is given by the Ph.D. faculty of the Orthopaedic Department. Lectures in Orthopaedic Surgery and elective rotations are provided for students in the School of Medicine. The research divisions provide training on an elective basis for medical students and orthopaedic residents in the School of Medicine. Anatomy is taught on a regular basis, both in the operating room and the lab, by lecturer and occasional work with student dissection. We provide a portion of the lectures for Musculoskeletal Systems Course. Cross-sectional anatomy is taught in combination with radiodiagnostic techniques such as CT and

MRI, both for the extremities and spine. Students rotate electively in Orthopaedics during their surgery rotation. Fourth year students are provided the opportunity to be acting interns in Orthopaedics during their elective.

The department supports a fully accredited residency program in orthopaedic surgery, and post-residency fellowships in hand surgery.

Department of Pathology

Chair: Jay L. Bock (Acting)

Professors: Jorge Benach, Jay L. Bock, Arland L. Carsten, Eloy Caracuel, Marianne Frieri, Berhane Ghebrehwet, Dimitry Goldgaber, Martha Furie, Gail S. Habicht, Mae Hultin, Jolyon Jesty, Darrel D. Joel, Marc Golightly, Bernard P. Lane, Leslie Lukash, Kenneth Marcu, Frederick Miller (Marvin Kuschner Professor), Ute M. Moll, Nancy Peress (Emeritus), Mildred E. Phillips (Emeritus), Sanford Simon, Leon Sokoloff (Emeritus), Roy Steigbigel, Charles Wetli

Associate Professors: Richard Bronson, John C. Chumas, Thomas S. Cottrell, Virginia Donovan, Howard Fleit, Dennis Galanakis, Alan Heimann, Philip B. Kane, Cynthia Kaplan, Jen H. Lin, Stanley Lipper (Emeritus), Sergey Lyubsky, Roberta Seidman, Eric Spitzer, Silvia Spitzer, Gary Zieve

Assistant Professors: Gary Clarke, Nolan Core, Stuart Dawson, David Durand, William Engellener, Andrea Fleider, Mala Gupta, Youjun Hu, Laura Katona, Richard Kew, Ahmed Khapra, Edward Klein, Poonam Khullar, Sharon X. Liang, Jingxuan Liu, James S. Magidson, Prahba Pai, Mary Parisi, Peter Perrotta, Alexei Petrenko, Kanokporn Rithidech, Alan Schuss, Katarina Szabo, Ali Tamsen, Denise Trocheset, George Turi, James Wilson, Beverly Wyrick

Instructors: Joseph Chiofolo, Michael DeMartino, Steven Drexler, Lester Freedman, Stephanie Horowitz, Maria Plummer

The Department of Pathology is concerned with the pathogenesis of disease, as well as with its manifestations of diagnosis. The department serves as a bridge between the pre-clinical and clinical sciences for students, clinicians and non-clinicians at all stages of training. It has responsibility for teaching students in each school of the Health Sciences Center, in the College of Arts and Sciences, and in the Graduate School, and has responsibility for the postgraduate and continuing education of residing physicians, house staff and practitioners. In addition to its teaching responsibilities, the department operates the hospital laboratories. At the graduate level, programs leading to the Ph.D. degree are developed within the department and in cooperation with other departments.

Courses

HBP 310 Pathology

Studies the basic mechanisms of disease and the pathophysiology of the important illnesses of man. Primarily for Health Sciences students; others admitted with special permission.

Prerequisites: Permission of instructor, BIO 151 and 152
3 credits, fall modules 3-6, Dr. Furie

HBP 390 Basic Mechanisms in Pathology

Molecular mechanisms underlying human diseases. Includes inflammation, coagulation mechanisms, fibrinolysis, immunological defenses, viruses, oncogenes, and cancer.

Prerequisites: BIO 361 or BIO 362 required. Cell Biology and Genetics recommended.
3 credits, spring term, staff

HBP 393, 394 Special Topics from the Pathology Literature

Tutorial readings in pathology, with periodic conferences, reports, and examinations arranged with the instructor.

Prerequisite: permission of supervising instructor

1-2 credits per term, fall and spring terms, staff

HBP 398, 399 Research Project in Pathology

An independent research project under faculty supervision, that emphasizes the principles of experimental design, data collection, evaluation of findings, and reporting of results. Project report required. May be repeated.

Prerequisites: laboratory experience and permission of the supervising instructor

0-4 credits per term, fall and spring terms, staff

HBP 401 Applied Immunology

Introduces the principles of immunology for allied health professions students. Emphasizes applications of immunological principles to clinical and laboratory immunology.

Prerequisite: biology or Pre-Med major, or enrollment in School of Health Technology and Management

3 credits, spring modules 5 and 6, Dr. Golightly

HBP 411 Applied Pathology

For physician assistants, advanced nursing students and other allied health profession students who are concurrently registered in HBP 310 or who have demonstrated mastery of that material. Extends the range and depth of HBP 310 with emphasis on clinical application. Limited enrollment with permission of the Dean.

1 credit, fall modules 3-6, Dr. E. Spitzer

HBP 511 Pathobiology

For graduate students who have obtained primary healthcare baccalaureate degrees through the case study approach. Covers the underlying principles of modern experimental pathology. Focuses on the clinical aspects of the body system, including relevant underlying biochemistry, structure, or pathophysiology at the organ, tissue, cell or molecular level.

Prerequisites: undergraduate degree, healthcare experience, biochemistry or cell biology, anatomy and microbiology

3 credits, fall modules 3-6, Dr. E. Spitzer

HBP 531 General Pathology

Introduces the nature and causes of disease, death, reaction to injury, and repair. Analyzes associated structural changes in cells and tissues, with reference to their functional correlates.

Prerequisites: histology, gross anatomy, physiology and biochemistry, prior or concurrent microbiology or permission of instructor

3-6 credits with lab, 3 credits without lab, spring modules 5-8, course coordinator: Dr. Fleit

HBP 533 Immunology

Principles of immunology for graduate students in the biological sciences, including definition of antigens and antibodies, specificity of the immune response, immunoglobulin structure, the genetics of immunoglobulin synthesis, cellular cooperation in the immune response, hypersensitivity, tolerance immunogenetics. Open to advanced undergraduates.

Prerequisites: advanced courses in biology and biochemistry, and permission of instructor.

3 credits, fall term, course coordinators: Drs. Fleit and Habicht

HBP 554 Advanced Immunology

Selected topics in immunology are discussed using original research literature as the central focus. Students present and discuss the literature in a seminar format.

Prerequisite: HBP 531 or 533 and permission of instructor
2 credits, spring term, Drs. Fleit, Habicht and Miller

HBP 556 Laboratory Medicine

A four-week full-time (6 hr/day) course dealing with clinical laboratory decision making and the basis for the laboratory evaluation of human evaluation of human disease. Didactic and practical presentations by interdepartmental faculty. Intended principally for senior medical students, but also for advanced microbiology or biochemistry students interested in clinical applications.

Prerequisite: permission of instructor

6 credits, spring module 5, Dr. Bock

HBP 561 Electron Microscopy for Experimental Pathologists

Uses electron microscope (EM), alone and in conjunction with other methodologies in studies of biological dysfunction. Special techniques include histochemistry, enzyme histochemistry, immunohistochemistry, diffraction, stereo-EM and scanning EM. Design of protocols, preparation and interpretation of data.

*Prerequisite*permission of instructor

Variable credits, 2-6 per term, fall and spring terms, Dr. Lane

HBP 580 Teaching Honors

Selected students whose performance in the basic required courses for the graduate program is in the top 10 percent conduct tutorials for first-year graduate students in the program and other students taking graduate courses for credit. The tutors are supervised and graded by program faculty of the graduate program. Successful completion of this course will make the students eligible to receive an "Honors in Teaching" on their transcript.

*Prerequisite*permission of instructor

1 credit, fall and spring terms, graduate program faculty

HBP 590 Seminars in Immunology

A series of monthly seminars focusing on research in progress by the participants, current journal articles in the field of immunobiology, and prepared reviews of specified areas in the general field.

*Prerequisite*MCB Graduate Students

1 credit per term, fall and spring terms, staff; course coordinator: Dr. Fleit

HBP 622 Clinical Pathologic Correlations: Gross Pathology

Correlative exercises in clinical pathology and human gross anatomic pathology including surgical biopsy material. Open to students in medical sciences.

*Prerequisites*systems pathology and general pathology course; permission of instructor

Variable credits, 1-3, fall term, course directors: Drs. Kane and Miller

HBP 691 Journal Club in Pathology

Provides students with a forum for acquiring skills involved in the critical analysis and presentation of scientific data by active participation in seminars of major topics in cellular and molecular pathology, and critical discussion of selected topics with presentation of papers from the literature.

*Prerequisite*MCB graduate students

1 credit, fall and spring terms, Dr. Kew

HBP 966 Hematology Conference

Teaches a given aspect of hematology, oncology or immunology. Staff from medicine, pathology, and nuclear medicine, participate, and usually present, a case to introduce the subject. Various teaching aids, such as review of pathological material, are used. Primarily for health sciences professionals.

*Prerequisite*permission of instructor

Variable credits, 1-2, fall, spring and summer terms 1 and 11, staff (medicine, pathology and nuclear medicine)

HBP 967 Tumor Conference

Considers problems in the management of patients with a malignancy and recommendations for a course of therapy for each patient including a review of a particular aspect of cancer treatment or natural history in depth. Functions as the link between the hospital and the Eastern Oncology Cooperative Group. Primarily for health science professionals.

*Prerequisite*permission of instructor

Variable credits, 1-3, fall, spring and summer terms 1 and 11, staff

HBP 968 Advanced Clinical Pathologic Correlations: Gross Pathology

Postgraduate correlative exercises in human gross pathologic anatomy that emphasize the gross pathologic basis for altered function and clinical manifestations of disease. Open to physicians and others with advanced degrees in medical sciences.

*Prerequisite*permission of instructor

Variable credits, 1-3, fall and spring terms, Dr. Kane

HBP 969 Anatomical and Surgical Pathology for Residents in Pathology

To provide practical and clinical experience in tissue pathology. During the four week elective the student is given the opportunity to participate in all aspects of autopsies as well as gross and microscopic examination of surgical specimens. There is ongoing review of general and organ system pathology to reinforce structural-functional correlations. This elective is selected by students who plan a career in pathology as a "hands-on" introduction to the specialty. The elective is also chosen by others, particularly individuals who will enter radiology, and who seek to correlate radiographic and pathologic anatomy. Students who are sufficiently interested and motivated may become involved in relatively independent work-up of selected cases. Primarily for health sciences professionals.

*Prerequisite*permission of instructor

Variable credits, 1-3, fall, spring, and summer terms, Dr. Kane

HBP 970 Gross Neuropathology

This elective is intended to expose the student to what it means to be a neuropathologist and to allow the student to read and directly study major diseases of the brain, spinal cord, nerve and skeletal muscle. The focus of such study will be individualized. Available to the student will be (1) attendance at two weekly neuropathology autopsy brain clinical correlation conferences held at University Hospital and at the Suffolk County Medical Examiner's Office in Hauppauge (2) individual autopsy brain case assignment with attending student review and case sign-out (3) Neurosurgical, neuropathological rotation to include: review of films and patient data, participation in frozen section diagnosis and final neurosurgical sign out (at University Hospital only) (4) focus on peripheral nerve and skeletal muscle to include independent review of: clinical findings, muscle histochemistry, routine microscopy, electron microscopy, teased fiber preparations and immunofluorescence to be followed by participation at final case review and sign-out with neuropathology attending (at University Hospital only) (5) independent study of study sets, which include Kodachrome sets and microscope slide sets by topic (at University Hospital only).

*Prerequisite*permission of instructor

Variable credits, 1-3, fall, spring, and summer terms, Dr. Seidman

HBP 971 Renal Clinicopathologic Correlations

Acase-oriented, postgraduate course in renal biopsy interpretation and its relationship to patient management.

*Prerequisites*M.D. or Ph.D. degree and clinical experience

1 credit, fall, spring and summer terms, Dr. Miller

Department of Pediatrics

*Chair:*Richard N. Fine

*Professors*David Annunziata, Thomas M. Biancaniello, Marion Castro-Magano, Jonathan Davis, Gabrielle Carlson, Richard N. Fine, Janet E. Fischel, Hossein Ghadimi, Joseph Greensher, Martin Gruber, Avinash C. Jerath, Ronald V. Marino, Howard C. Mofenson, Sharon A. Nachman, Margaret M. Parker, Robert I. Parker, Cedric J. Priebe, Warren N. Rosenfeld, Leonard Rosenzweig, Grover J. Whitehurst, Thomas A. Wilson

*Associate Professors*Eleni Bacola, Walter Backus, Anita Belman, John B. Branche, Mary Cataletto, Latha Chandran, Anupama Chawla, Mariano Lev Chernobilsky, Peter Ciminera, Joseph D. DeCristofaro, Leo Dvorken, Marian J. Evinger, Fred Ferguson, Hershel H. Glatt, Cynthia Kaplan, Stephen Katz, Harvey Kolker, Marion L. Koomey, Haesoon Lee, Boris Lustik, V. T. Maddaiah, Steven A. Maitinsky, Leonard Marino, Seymour B. Musiker, Pramod Narula, Michael Nussbaum, Stephen Parles, John C. Pomeroy, Leslie Quinn, Irwin L.Schwartz, Jack Sherman, Thomas Smith, Richard Sosulski, Peter S. Tolins, Rita P. Verma, David Volkman, Robert Wasnick

*Assistant Professors:*Renu R. Aggawal, Milton Agulnek, Arie Aloni, Alisa Altman, Richard Ancona, Robert Angert, Jane

Aronson, Viswanathan Balachandar, Howard Balbi, Alexander Benitt, Rachel A. Bergeson, Harvey Bernstein, William H. Bikoff, Robyn Blair, Denise Blumberg, John F. Bisocco, Harriet S. Boxer, Ivy I. Boydston, William Bryson-Brockman, Jose Canas, Aileen Cannon, Shang Yao Chen, Thulasi Cheruvanky, Cathy Coleman, John A. Colucci, Hema Dalal, Christopher DeSanto, Carla DeVincent, Mehmet Yilmaz Dincsoy, Divna Djokic, Charles J. Dunn, Michael Egnor, Nelson S. Erhart, Juan Espinoza, Stanley Everett, Kimberly Fenton, Robert Festa, Damian Forletti, Michael Friedman, Patricia Galvin-Parton, Blanca R. Gamboa, Joseph Gartner, Polina S. Gelfer, Lynda L. Geller, Linda Genen, Mohammad Ghofrani, Louis M. Goldblum, Abby J. Greenberg, Susan Gunduz, Susan Guralnick, Anne G. Hansen, Gerald R. Hartman, Martin Hauptman, David Hyman, Sharon L. Inkeles, Jay Iype, George M. Johnson, Ivan Kalina, Adaobi Kanu, Martin P. Kaplan, Eileen Kelly, Catherine E. Kier, Mitchell Kleinberg, Sujatha Kosuri, Leonard Kristal, Mark J. Kropf, Andrew H. Lane, Edward Langenback, Patricia Latorre, Betty Chimei Lee Kuo, Mark S. Lowenheim, Boris Lustik, David Makowski, Susan Mangiameli, Adelaide Masakayan, Daniel Mayer, Carolyn Milana, Peter Morelli, Lisa Mueller, Richard Nickerson, Bettina Niederer, Patricia Nolan, Ellen Oppenheimer, Jagan N. Pahuja, Anil G. Palekar, James Parles, Kalpana Patel, Ammukutty Paulose, Nancy Pearson, Paul H. Penzer, Lucy Pontrelli, Joseph Puccio, Devina Prakash, Prasanthi Reddy, Frederick J. Reindl, Carolyn Robbins, Irina Rubin, Dominick Sabatino, Richard Salo, Arnold W. Scherz, Howard Schreiber, Arthur J. Schwager, Michelle Seitz, Jila Sharif, Saroja Siddharth, Robbyn Sockolow, Yosef Soleymani, Daniel E. Sloniewsky, Neelkamal S. Soares, Shanthi Sridhar, Raphael Strauss, Behzad Talebian, David H. Tegay, Lilliana Tique, Joseph Thomas, Janice Valmassoi, Nora E. Wecker, Dilys A. Whyte, Santiago A. Wong, Janaki Yadlapalli, Barbara Young, Rose Marie Young, Shelly Zeira

Instructors: Albert Adler, Farzana Ahsan, Keith Ancona, Taik Yong Ban, Lena Baram, Donna Baranek, Anita Belman, Laura Bennett, Stuart Berman, Jennifer Byrne, Teresa Carney, Siobhan Cassidy, Maribeth Chitkara, Lisa Clark, Jennifer Clarke-Nastasi, Michael Cohen, William W. Colden, Zenaida Cruz, Christine Danzi, Katherine Delaney, Traci Downs, Agboola O. Fatiregun, Ada Fenick, Jay A. Freed, Laurence J. Galinkin, Ilene Goldstein, Jack M. Greenwood, Jeanne Greenfield, Deborah Guigliano, Mohinder K. Guram, Ann Hajduk-Bennett, Jennifer Haimowitz, Jason Halegoua, Harriet Hellman, Claudia Herbert, Celso Hofelena, Darius Holmes, Roy Horowitz, Kenneth G. Huml, Kerry Gallagher-Walsh, Soma S. Johnkutty, Gail Kaden, Susan Katz, Mitsuo A. Kee, Michele Kelly, Nikhat S. Khan, Jason Kronberg, Bernard Lau, George V. LoVece, Rosemary Mahan, Richard E. Manners, Phyllis Marion, Paul Martinez, Kumar Mecheri-Madom, Patricia Mele, Maria Mineo, Pamela Minett, Kerry B. Moore, Stephan Nagler, Jeanmarie A. Napolitano, Tulika Narain, Roberta Nataloni, Magalena Oleszak, Fernando Ordonez, Marc Ovadia, John Pastore, Linda H. Perangelo, Jane Perillo, Mihailo Petrovic, Linda H. Ponzer, Shahina Qureshi, Sarala Radhakrishnan, Youchan Rhee, Carlos J. Rivera, Anne Rohan, Lisa Romard, Marion Rose, Dov Rosen, Debra Sansoucie, Linda Schreiber, Despina Scheyer, Anna Schwartz, Patricia Schwarz, Barbara Seifert, Reid Selden, Marjorie Serotoff, Foazia Siddiq, Tracey L. Spinnato, Michael P. Stein, Karen Sulitzer, Rohit Talwar, Alexander A. Tocher, Gerardo Tolentino, Robert Trepel, Decerina Uy, Mona Vani, Barbara Wieder, Ian Winkler, Maicie M. Wong

The Department of Pediatrics defines three broad areas within its mission:

- 1) Excellence in patient care and patient education in our service to the communities around us

- 2) Excellence in medical education within each phase of the training of physicians, allied health professionals and scientists
- 3) Excellence in scholarship and research related to child health and development, childhood diseases and disorders.

Our goals align with the three-part mission, including the provision of the highest standards of care for children and families, while providing exemplary training programs, highest quality educational and service leadership, and opportunities for research and scholarship so that the department can continue improve pediatric medical care both in our surrounding communities and at the national level. Faculty roles in teaching encompass trainee education from the start of undergraduate medical and allied health education through residency and subspecialty fellowship training, combining basic and clinical knowledge with inpatient and ambulatory clinical experiences to facilitate the development of astute, competent, knowledgeable, and caring professionals. Ongoing research among the faculty and trainees helps to prepare new investigators with the skills to expand our understanding of pediatric diseases, and provide evidence-based and effective interventions for the challenging health problems of the pediatric population.

The department is comprised of the following clinical and academic divisions, each with its own designated Division Chief.

Division of Pediatric Cardiology: inpatient and outpatient consultations are available for premature and newborn infants, children, and adolescents with congenital heart defects. Complete diagnostic services include electrocardiography, echo-doppler studies, ambulatory ECG monitoring, stress testing and cardiac catheterization. In addition, percutaneous interventional catheterization procedures and fetal echocardiography are performed. A comprehensive pediatric cardiac surgical service works in conjunction with pediatric cardiology to provide complete surgical care. The division also manages a lifestyle modification program for obese, hypertensive and hypercholesterolemic children. Cardiology consultations are also available at our South Shore satellite office, located in Patchogue.

Division of Pediatric Critical Care Medicine: this division provides staff and oversight to the Pediatric Intensive Care Unit at Stony Brook University Hospital. The 12-bed Intensive Care Unit, staffed by Board Certified Pediatric Intensivists, offers state of the art care for children, unavailable anywhere else in Suffolk County.

Division of Developmental and Behavioral Pediatrics: diagnosis and treatment are available for a wide range of behavior problems and developmental disturbances of infancy and early childhood. Specialties include assessments of concerns about high-risk and premature infants, disorders of parenting and problems of early childhood (such as sleep disturbances, tantrums, toilet skill training and self-control). Developmental assessment is provided for children from birth, to five years of age. For children with complex medical management needs, joint consultation in the behavioral and developmental aspects of the disease is provided.

Division of Developmental Disabilities: the division operates the Matt and Debra Cody Center for Autism and Developmental Disabilities. The mission of the Cody Center is to:

- Advance the standard of care for individuals with autism spectrum disorders and other developmental disabilities
- Provide an educational setting for professionals
- Contribute significant research outcomes to the body of science surrounding autism and related disorders

- Practice a multidisciplinary approach to treating people with developmental disabilities.

Division of Pediatric Endocrinology: the endocrine division consists of board-certified pediatric endocrinologists, and a pediatric endocrine nurse-practitioner. Consultations, diagnostic testing and ongoing treatment are available for the full range of pediatric endocrine disorders, including those involving abnormalities of growth, puberty, sexual differentiation, thyroid and adrenal function, rickets, calcium regulation, hypoglycemia, diabetes, hypertension and hyperlipidemia. Full ancillary laboratory, radiological, dietary, surgical and social work services are available for those patients who require them. Outpatient services are available in University Hospital as well as our satellite facility in Patchogue.

Division of Pediatric Gastroenterology: inpatient and outpatient consultations are available for children with illnesses including inflammatory bowel disease, chronic hepatitis, failure to thrive, lactose intolerance, malabsorption syndromes, chronic constipation, esophageal reflux as well as unexplained abdominal pain. Lactose breath testing, endoscopy/colonoscopy, placement of percutaneous feeding gastrostomies, liver and rectal biopsies as well as esophageal pH studies are performed. Nutritional counseling in conjunction with a registered dietician is offered. Outpatient services are available in University Hospital as well as our satellite facility in Islip.

Division of Genetics: the division at the Children's Medical Center at Stony Brook offers evaluation of any child with dysmorphic features, unexplained mental retardation or birth defects on an inpatient or outpatient basis, as needed. Services include comprehensive genetic counseling for families with a child who has a genetic disorder and for prenatal patients. Evaluation and treatment is also offered for patients suspected of having inborn errors of metabolism.

Division of General Pediatrics and Adolescent Medicine: comprehensive and confidential health care is offered for teens and young adults between birth and 21 years. Full service General Pediatrics is offered at the following locations: University Hospital, University Pediatrics at Tech Park, Stony Brook Primary Care at Patchogue, Stony Brook Primary Care at Islip, Stony Brook Primary Care at East Moriches, and Stony Brook Pediatrics at Southold.

Evaluation and treatment for gynecological and menstrual problems, referral for eating disorders and sexually-transmitted diseases are available. Referral for drug/substance use and behavioral and psychosocial issues is possible.

Division of Pediatric Hematology and Oncology: staffed by a team of physicians, specialized nurses and ancillary personnel, this division provides the most advanced diagnostic and treatment modalities for pediatric patients with hematologic and/or oncologic disorders. Care is provided in a multi-disciplinary, team setting to offer state of the art care to children. Some of the services offered include:

- Inpatient and outpatient services for chemotherapy and transfusion needs
- Autologous and cord blood stem cell transplantation
- Care of patients with sickle cell disease, thalassemia and other hemoglobinopathies, bleeding disorders, Gaucher's Disease and other metabolic disorders.

Division of Pediatric Infectious Diseases: inpatient and outpatient services include diagnosis and treatment of all pediatric infectious diseases using a team approach to track children with infections. Special attention is paid to involving the family in their treatment plan. Additionally, the Children's Medical Center at Stony Brook is a New York State certified pediatric AIDS unit and a National Institute of Health Pediatric AIDS Clinical Trial Unit.

Division of Neonatology: The Division of Newborn Services provides comprehensive care for sick and well babies throughout Suffolk County. Approximately half of the 2,600 children born each year at University Hospital are cared for by perinatal-neonatal board-certified physicians. Well babies in our 32-bed newborn nursery may also be cared for by their private pediatrician or family practitioner.

The Newborn Division has particular interest and expertise in developmental renal physiology, developmental neurobiology, lung injury and cell biology. This division has adopted innovative fluid and electrolyte management in the less than two-pound babies and actively participates in the national collaborative surfactant replacement study.

Division of Pediatric Nephrology: diagnosis and treatment of pediatric kidney disease and hypertension are available. Advanced diagnostic techniques include urinary tract imaging modalities, ambulatory blood-pressure monitoring and renal biopsy. Dialysis and transplantation services are active components of the division.

Division of Pediatric Pulmonology/Allergy and Immunology: inpatient and outpatient consultations are available for premature and newborn infants, children, adolescents with allergy and immunology problems, chronic or acute asthma, and recurrent pulmonary infections. Complete inpatient and outpatient diagnostic services include pulmonary bronchoscopy and comprehensive laboratory services. Outpatient services are available in University Hospital as well as our satellite facility in Patchogue and Islip.

Cystic Fibrosis: as a Cystic Fibrosis Center certified by the Cystic Fibrosis Foundation, our Center at Stony Brook University Hospital offers the most up-to-date diagnostic and management techniques available for pediatric and adult patients. A multi-disciplinary approach to patient care is provided by a staff that specializes in children and adults with cystic fibrosis. Services including pulmonary medicine, gastroenterology, otolaryngology surgery, radiology, pathology, nursing, respiratory therapy, genetic counseling, physical therapy, nutrition, and social work are provided. Staff is available for consultation, patient management issues and diagnostic procedures, such as sweat testing and genotyping. A Cystic Fibrosis support group for patients and families meets monthly on Wednesday evenings.

The pediatric teaching program is an accredited three-year residency program designed to provide a solid foundation for clinical practice or for further study in the pediatric specialties, including pediatric research. The program emphasizes basic principles of scientific medicine and reasoning, training pediatricians to apply evidence-based medicine to the clinical care of children. While learning to care for the sick child in the inpatient setting, the residents also develop an outpatient primary care continuity practice throughout their three years of training. The program is based at University Hospital, which provides 40 pediatric beds, 10 Pediatric Intensive Care (PICU) beds, 40 newborn intensive care beds, 30 bassinets and active ambulatory care, including the Urgent Care Center. In addition, the service operates in the Coram Health Center, an ambulatory care center of Suffolk County; in the University Health Service, for adolescent medicine; and in satellite affiliates in Central Islip, East Moriches, East Setauket, Patchogue, Southold, and the Cody Center for Autism & Developmental Disabilities, which together provide for 65,000 ambulatory encounters per year. Elective experiences are available in all fields of pediatrics, either at University Hospital or at affiliated programs at Nassau University Medical Center or Winthrop-University Hospital.

Department of Pharmacological Sciences

Chair: Jeffrey E. Pessin

Distinguished professors: Seymour Cohen (Emeritus), Arthur P. Grollman, William vander Kloot (Emeritus), Edward Reich

Professors: Paul R. Adams, Daniel Bogenhagen, Moises Eisenberg, Paul Fisher, Francis Johnson, Craig C. Malbon, Joav Prives, Roy Steigbigel, Joel Sussman, Masaru Takeshita (Emeritus), Stephen Vitkun

Associate Professors: Miguel Berrios, Laura Fochtmann, Michael A. Frohman, Charles Iden, Caroline Kisker, Masaaki Moriya, Sidonie A. Morrison, Shinya Shibutani

Assistant Professors: Roger Cameron, Margery Connelly, Howard Crawford, Carlos de los Santos, Dax Fu, Holly Miller, Thomas Rosenquist, Styliani-Anna Tsirka

Adjunct Professors: Rodney Bednar, Richard Miksicek, Fernando Salles, Sidney Strickland

Instructor: Kimberly Conlon, Daryl Henderson, Fayanne Thorngate

Pharmacology is an interdisciplinary science that deals with the effects of chemicals on biological systems. Faculty research interests emphasize the molecular mechanisms of the action of drugs, hormones, and toxins. Teaching is directed towards an understanding of the basic principles underlying the therapeutic and toxic actions of drugs and chemicals.

The department provides instruction for professional students in the schools of the Health Sciences Center and offers graduate and upper-division courses in pharmacology, toxicology, and therapeutics. An undergraduate pharmacology program is provided through the College of Arts and Sciences.

Courses

HBH 330 Fundamentals of Pharmacology I
Covers the basic principles that underlie the action of drugs on physiological processes. These principles are applied to the specific action of drugs on the autonomic nervous system. In addition, the pharmacology of cardiovascular drugs are covered in detail.
2 credits, module 3, Dr. Prives

HBH 331 Fundamentals of Pharmacology II
A continuation of HBH 330. Covers the action of drugs on individual systems as well as drug-drug interactions emphasizing the mechanisms of drug action. Surveys therapeutic applications and adverse drug reactions.
Prerequisite: HBH 330
3 credits, modules 4-6, Dr. Prives

HBH 332 Pharmacology in Cardiorespiratory Sciences
Includes the basic principles of drug actions and covers drug applications in the autonomic, cardiovascular and respiratory systems. For cardiorespiratory sciences students enrolled in the School of Health Technology and Management.
3 credits, modules 3, 4, not offered all semesters, Dr. Prives

HBH 393, 394 Topics in Pharmacology*
Tutorial readings in pharmacology with the periodic conferences, reports and examinations arranged with the instructor. Open to third and fourth year students.
Prerequisite: Permission of the instructor.
1-5 credits per term, fall and spring terms, staff

HBH 396, 398, 399 Research Project in Pharmacology**
Independent research under faculty supervision, emphasizing principles of experimental design, data collection, evaluation of findings and reporting of results. Project report required. May be repeated.
Prerequisites: Laboratory experience and permission of supervising instructor.
1-6 credits per term, summer, fall and spring terms, staff

HBH 531 Principles of Medical Pharmacology
Basic principles that underlie actions of drugs on physiological processes with particular reference to their therapeutic and toxic actions. Primarily for medical, dental and graduate students.
Prerequisites: Physiology, biochemistry, and permission of instructor.
5 credits, modules 4-6, Dr. Frohman and staff

HBH 545 Biochemical Laboratory Techniques
Introduces theoretical principles and experimental techniques used in modern biochemical research. Lectures and demonstrations present topics in laboratory computers, chromatography, nuclear magnetic resonance, mass spectrometry, protein sequencing, cloning technology, sedimentation, electrophoresis, and ligand binding. Includes procedures for the safe handling of toxic chemicals and radioisotopes.
Prerequisite: Permission of instructor.
3 credits, fall term, Dr. Bogenhagen and staff

HBH 553 Signal Transduction
The course will emphasize fundamental concepts in signal transduction (e.g. membrane-protein and protein-protein interactions, amplification signals) and individual lectures will apply these concepts at each stage of cell signaling from the cell surface to the nucleus, where signal transduction leads to specific gene expression. Crosslisted with HBH 533. ABCF grading.
3 credits, spring term / odd years, staff

HBH 580 Selected Topics in Pharmacology
Student seminars and readings on topics arranged through consultation with staff.
Prerequisite: Permission of instructor.
Variable and repetitive credits, 1-8 per term, fall and spring terms, staff

HBH 590 Pharmacology Seminars
Advanced research seminars by staff and visiting lecturers.
Prerequisite: Permission of instructor.
1 credit, repetitive, fall and spring terms

HBH 599 Graduate Research in Pharmacological Sciences
Original research projects under faculty supervision.
Prerequisite: Permission of instructor.
Variable credits, 1-12 per term, fall, spring and summer terms, staff

HBH 601 Practicum in Teaching Pharmacology
Practical experience and instruction in the teaching of pharmacology carried out under faculty orientation and supervision.
Prerequisite: Permission of instructor and full-time graduate status
1 credit, fall and spring term

HBH 631 Principles of Drug Action
This course is designed to provide a quantitative understanding of the basic principles by which drugs interact with living systems at the cellular and organismal levels. Topics include the mechanisms of drug transport through membranes, interaction of drugs with receptors and binding proteins, drug distribution, biotransformation of drugs, enzymes of stage I and stage II metabolism, cytochrome p450 gene families and regulation of p450 gene expression, mechanisms of renal excretion of drugs and metabolites, pharmacokinetics of constant drug infusions and intermittent dosing regimens, and application of pharmacokinetic principles to protein and mRNA induction and turnover. Students apply pharmacological principles in a series of

*Joint Appointment, Cold Spring Harbor Laboratory

**Arts and Sciences students may receive no more than a total of six credits in one term of any combination of courses numbered HBH 393 through 399.

problem-solving exercises.

*Prerequisite*Permission of instructor, Dr. Williams
Fall semester1 credit, ABCF grading

HBH 632 Molecular Interactions of Drug Structures

This course provides an overview of the most current approaches to analyze and understand the interactions between a drug and its target and how this information is used for the design and development of new drugs. The individual lectures will cover the use of microarray technology for broad gene expression analysis and to analyze differential gene expression for therapeutic gene target identification. Bioinformatics will be used as a tool for homology searches, especially in light of the genome projects. The detailed structural analysis of drug target interactions by X-ray crystallography and NMR spectroscopy as a basis for the design of new drugs will be discussed on the basis of very recent examples. Advanced computer simulation techniques will be discussed and will include the use of molecular mechanics energy functions to optimize biomolecular structures, predict ligand binding modes and energetics.

*Prerequisite*Permission of instructor, Dr. Kisker
Fall semester1 credit, ABCF grading

HBH 633 Physiological Action of Drugs

Selected applications of drugs used in clinical medicine, illustrating current concepts and problems at the intersection of pharmacological basic science and therapeutic treatment. Settings to include the management of obesity, psychiatric disease and cardiac disease.

*Prerequisite*Permission of instructor, Dr. Frohman
Fall semester1 credit, ABCF grading

HBH 634 Chemical Manipulation of DNA Metabolism

This course will focus on drugs that act by inhibiting DNA synthesis, including inhibition of precursor synthesis. The course will include original research papers on biochemical mechanisms and clinical applications of antiviral and anti-cancer therapeutic agents.

*Prerequisite*Permission of instructor, Dr. Fisher
Spring semester1 credit, ABCF grading

HBH 635 New Concepts in Chemotherapy

This course compares mechanisms of action of drugs used for antibacterial and anti-cancer chemotherapy. The lecture material stresses how selective toxicity is achieved to obtain cytostatic or cytotoxic effects. Original research papers are discussed on drug-induced apoptosis, mechanisms whereby cells develop resistance to chemotherapy and novel strategies to overcome this resistance.

*Prerequisite*Permission of instructor, Dr. Bogenhagen
Spring semester1 credit, ABCF grading

HBH 636 Drug Discovery and Toxicity

Drug Discovery and Toxicity will present methods used to identify new drug candidates and how these substances may be modified chemically to construct active drugs with excellent pharmacodynamic and pharmacokinetic properties. Toxicity of drugs and new drug compounds will be explored using studies of specific drugs. Toxic responses that appeared in the general population and mechanisms leading to toxicity will be discussed.

*Prerequisite*Permission of instructor, Dr. Iden
Spring semester1 credit, ABCF grading

HBH 655 Neuropharmacology

An advanced course for graduate students interested in developing an understanding of neuropharmacology and research on this topic. Following a general introduction to the nerve cell structure, synaptic and chemical transmission, three themes receptors, receptors as channels and G-protein-coupled receptors are developed. Recent advances in cell and molecular biology provide the framework for instruction and discussion. Crosslisted with BNB 655.

*Prerequisite*Permission of instructor
3 credits, fall term, Dr. Morris

HBH 660 Research Proposals in Regulatory Biology

A special topics course in which faculty present current research proposals for discussion and critical review. Students develop short

research proposals for their midterm evaluation and present a full research proposal for the final evaluation. The goal of this course is to help students develop the skills required to design, present and defend a focused research plan. Since proposals developed during this course form the basis of a student's Qualifying Exam, registration is limited to students in the Graduate Program in Molecular and Cellular Pharmacology.

Prerequisite:Graduate biochemistry, molecular genetics, cell biology. Previous or concurrent registration in Principles of Pharmacology I and II.

3 credits, spring term

HBH 686 Minicourse: Advanced Seminars in Pharmacological Sciences

A series of five to six lectures by members of the Stony Brook faculty in conjunction with distinguished outside speakers on topics of current importance in pharmacology and related areas of biochemistry, molecular biology, and cell biology.

1-2 credits, fall and spring term

HBH 669 Thesis Research in Pharmacology

Original investigation undertaken as part of the Ph.D., program under supervision of thesis adviser and committee.

*Prerequisite*Permission of thesis adviser.

Variable and repetitive credits, 1-12 per term, fall and spring terms

HBH 699 Dissertation Research on Campus

Original investigation undertaken as part of the Ph.D., program under supervision of thesis adviser and committee on site, where major portion of their research will take place on Stony Brook University Campus, Cold Spring Harbor or Brookhaven National Laboratory

*Prerequisite*Permission of thesis adviser.

Variable and repetitive credits, 1-12 per term, fall and spring terms

HBH 700 Dissertation Research in Pharmacology off Campus - Domestic

Original Investigation undertaken as part of the Ph.D., program under supervision of thesis adviser and committee off site, and is to be registered for when a major portion of the student's research will take place off-campus but in the United States and or United States provinces.

*Prerequisite*Permission of thesis adviser.

Variable and repetitive credits, 1-12 per term, fall and spring terms

HBH 701 Dissertation Research Off Campus - International

Original Investigation undertaken as part of the Ph.D., program under supervision of thesis adviser and committee off site, and is to be registered for when a major portion or research will take place outside of the United States and or United States provinces.

*Prerequisite*Permission of thesis adviser.

Variable and repetitive credits, 1-12 per term, fall and spring terms

HBH 800 Full-time Summer Research

Full-time laboratory research projects supervised by staff members.

Prerequisites:Permission of instructor and full-time graduate student status.

0 credit, summer term, staff

HM 800 Clinical Pharmacology

This course is designed to provide fourth-year medical students with practical information about therapeutics. Using a case-oriented approach, students are taught to develop a systematic approach to specific, more common, therapeutic interventions. Basic principles of clinical pharmacology are emphasized with the goal of having students understand drug interactions, dosing schedules, alterations needed in treating the elderly and patients with renal or hepatic dysfunction. Restricted to fourth-year students only.

*Prerequisite*Permission of Instructor

Drs. Grollman, and Steigbigel

For the undergraduate pharmacology program offerings in the College of Arts and Sciences, please refer to the Undergraduate Bulletin.

BCP 394 Environmental Toxicology and Public Health
Principles of toxicology will be presented and problems associated with major classes of toxic chemicals to human and environmental health examined. Case studies dealing with current waste management issues will also be discussed. Students will be required to integrate basic information on the chemistry and biology of toxic compounds and apply this knowledge in a multidisciplinary context.
Prerequisite: BIO 201 (or the discontinued BIO 151) CHEM 131 (or equivalent) or permission.
This course fulfills an upperdivision DEC requirement in Category H.

BCP 400 Writing in Pharmacology
See requirements for the major in pharmacology, upper-division writing requirement. Satisfactory/Unsatisfactory grading only.
Prerequisites: Pharmacology major; upper-division standing
Fall and spring, 0 credits

BCP 401 Principles of Pharmacology
Basic principles and mechanisms of drug distribution, absorption, metabolism, and elimination. Principles of chemical carcinogenesis and tumor promotion. Autonomic, smooth-muscle, and CNS pharmacology. Pharmacology of specific drugs of historical interest including alcohol, antibiotics, aspirin, nicotine, and morphine. Review of anticoagulants and thrombolytic agents, antiparasitics, and drugs for the treatment of allergic conditions and gout.
Prerequisites: BIO 362; CHE 322 and 327; a G.P.A. of 3.0 or higher in these courses and their prerequisites
Corequisite: BCP 403
Fall, 3 credits

BCP 402 Advanced Pharmacology
Advanced concepts of drug metabolism, pharmacokinetics, biochemical and molecular mechanisms of drug action, and drug resistance in human disease states. Toxicological agents and environmental pollutants. The pharmacology of autotoxins, anti-inflammatories, immunosuppressants, and antiasthmatics. Rational drug design and drug receptor interactions using computer molecular modeling techniques.
Prerequisites: BCP 401 and 403
Corequisite: BCP 404
Spring, 3 credits

BCP 403 Principles of Pharmacology Laboratory
The use of computer software for data collection and analysis. Illustrations of the principles of drug absorption, distribution, metabolism, and elimination. In vitro assays that demonstrate dose response relationships. Principles of bioassays. Determination of drug potency using isolated tissue preparations. Determination of the affinity of an antagonist for an agonist at a receptor site. Evaluation of potencies of anesthetics, analgesics, and anticonvulsant agents.
Corequisite: BCP 401
Fall, 2 credits

BCP 404 Advanced Pharmacology Laboratory
The use of molecular modeling software for the understanding of structure activity relationships. In vivo studies to demonstrate the pharmacological mechanism of action of drugs acting on the autonomic, cardiovascular, and renal systems. Pharmacokinetic studies, using HPLC, to determine the rate of absorption, distribution, and excretion of therapeutic agents. Radio- and enzyme-immunoassays for the detection of circulating hormones. Cell culture techniques for drug determination and evaluation.
Prerequisites: BCP 401 and 403
Corequisite: BCP 402
Spring, 2 credits

BCP 406 Pharmacology Colloquium
Research Seminars in Pharmacology and toxicology presented by faculty and distinguished scientists from academic and industrial institutions. A one-hour Journal Club/Discussion Session precedes seminar to review a reference paper relevant to the research concepts to be presented. Students are expected to develop an understanding of the scientific principles given in the colloquium. Speakers meet with the students after the seminar to discuss research concepts and to answer questions. May be repeated.

Prerequisites: BIO 202 and 203; CHE 322; g.p.a. of 3.0 required in these courses and their prerequisites; permission of department
Spring, 2 credits

BCP 475 Undergraduate Teaching Practicum in Pharmacology
Prerequisites: Pharmacology Major; U-4 standing; s/u grading; permission of department
3 credits - S /U grading

BCP 487 Research in Pharmacology
Completion of an individual student research project under the supervision of a faculty member. Previously acquired laboratory course techniques and new procedures are utilized. Experimental results must be submitted to the department for grade evaluation in the format of a research report. Not for credit in addition to HBH 396, 398, and 399. May be repeated.
Prerequisites: BIO 202 and 203 (or the discontinued BIO 152); CHE 322 and 327; a G.P.A. of 3.0 in these courses and their prerequisites; permission of instructor and department
Fall and spring, 0 to 3 credits

BCP 488 Internship
Research participation in off-campus laboratories, the pharmaceutical industry, and other academic and public agencies. Students are required to submit to the department a proposal at the time of registration and a report at the end of the semester. Satisfactory/Unsatisfactory grading only.
Prerequisites: BIO 361; CHE 322; G.P.A. of 3.0 or higher in these courses and their prerequisites; permission of department and Office of Undergraduate Studies
Summer 3 to 6 credits

Department of Physical Medicine and Rehabilitation

Chair: Jennifer Semel-Concepcion (Acting, St. Charles)

Professor: Lyn Weiss (NUMC)

Associate Professor: Sandra Barrett (NUMC)

Assistant Professors: Ernesto S. Capulong (South Nassau), Magda Fahmy (VA), Walter Gaudino (NUMC), Harvey Goldberg, Adam Isaacson (NUMC), Dae-Song Kim (VA), Thomas Pobre (NUMC), Ajendra Sohal (NUMC), Susan Stickevers (VA), Jay Weiss

Attendings: Adam Carter (St. Charles), Alan Ng (St. Charles), Wing Ng (St. Charles), Yu-Jen Lai (St. Charles)

The Department of Physical Medicine and Rehabilitation provides an educational experience for fourth-year students who are interested in the specialty. Students will gain exposure to the field of rehabilitation medicine in a variety of settings including inpatient, outpatient and electromyography. Students will learn the psychiatric approach to patient care, and the roles of the various rehabilitation team members. The elective is based at St. Charles Hospital.

Students may contact Jennifer Semel-Concepción, MD, Acting Chair of the department, at 631-474-6011.

Department of Physiology and Biophysics

Chair: Peter R. Brink

Professors: William B. Benjamin, Peter R. Brink, John B. Cabot, Carol Carter, Ira S. Cohen, Norman H. Edelman, Emelia Entcheva, Jack Fajer, Roger A. Johnson, Irvin B. Krukenkamp, Richard T. Mathias, Stuart G.A. McLaughlin, Lorne Mendell, W. Todd Miller, Leon C. Moore, Michael R. Rosen, John Sacks, Sami Said, Suzanne Scarlata, Gerald Smaldone, Steven O.

Smith, George Stephano, John C. Sutherland, William Van der Kloot (Emeritus)

Associate Professors: Ki H. Chon, Chris Clausen, James P. Dilger, Raafat El-Maghrabi, Yaacov Hod, James B. Konopki, David McKinnon, Irene C. Solomon, Ilan Spector, Hsien-Yu Wang

Assistant Professors: George Baldo, Roger Cameron, Howard Crawford, Sergey Doronin, John Flanagan, Mary Frame, Junyuan Gao, Sindhu Kaumari, Richard Lin, Scott Lowe, Nicholas Nassar, Srinivas Pentyala, Irina Potopova, S.V. Ramanan, Mario Rebecchi, Barbara Rosati, Michael Sampson, Ramakrishna Seethala, Virginisus Valiunas, Kulandiaappan Varadaraj, Thomas White, Noriko Yokoyama

The department of physiology and biophysics offers a program of study leading to the Doctor of Philosophy degree. Physiology and biophysics has responsibility for teaching in the schools of the Health Sciences Center and for graduate studies. Molecular, cellular, organ physiology and biophysics are the principle areas of teaching and research specialization. The department's focus of interest is in three general areas:

- 1) Hormonal regulation of cell function and metabolism, with special emphasis on intercellular and intracellular signalling mechanisms
- 2) Biophysical studies of membranes and proteins
- 3) Cellular physiology and electrophysiology
- 4) Preconditioning and arrhythmia prevention Studies are conducted at the molecular, sub-cellular, cellular, organ and intact animal levels.

Courses

HBY 350 Physiology

The normal functioning of human tissues and organs and their regulation and integration by the nervous and endocrine systems. Emphasizes physiological control systems and the preservation of the constancy of the internal environment.

Prerequisites: College courses in biology and chemistry and some background in physical sciences or permission of the instructor. Primarily intended for students in the SHTM Program and Pharmacology majors.

4 credits, fall term, Dr. Clausen and staff

HBY 393, 394 Special Topics from Physiology and Biophysics Literature

Tutorial readings in physiology and biophysics with periodic conferences, reports and examinations arranged with the instructor. Open to junior and senior students.

Prerequisite: Permission of instructor.

Variable credits, 1-2 each, fall and spring terms, staff

HBY 398, 399 Research Project in Physiology and Biophysics

An independent research project under faculty supervision, that emphasizes the principles of experimental design, data collection, evaluation of findings, and reporting of results. Project report required. May be repeated.

Prerequisites: Laboratory experience and permission of the supervising instructor.

2-4 credits per term, fall and spring terms, staff

HBY 501 Physiology

Introduces normal function of human tissues and organs and their regulation by nervous and endocrine systems. Emphasizes the organization and function of physiological control systems and the maintenance of a constant internal environment. Enrollment restricted to fully matriculated graduate students, with permission of instructor.

4 credits, fall term, staff

HBY 502 Medical Physiology

A graduate level approach to the physiology of the organ systems is

addressed in a lecture format with the emphasis on problem-solving. Relevant clinical correlations are addressed at the end of each block insofar as they illustrate how symptoms and signs of disease result from disordered physiology. Organ Systems addresses the structure and function of the cardiovascular, respiratory, renal, gastrointestinal, endocrine, skeletal, reproductive and integumentary systems.

Prerequisite: permission of instructor

4 credits, spring term, ABCF grading, staff

HBY 511 Introduction to Biophysical Chemistry

Introduces the chemical principles and techniques needed for the study of biological macromolecules. Topics covered include solution chemistry, chemical thermodynamics, binding and dissociation equilibria, denaturation phenomena, spectroscopy, and hydrodynamics. This course is intended to prepare non-chemistry majors for more advanced work in biophysics. Crosslisted with HBM 511.

Prerequisite: Permission of instructor.

2 credits, fall term

HBY 530 Cellular Physiology and Biophysics

Cellular structure and function. Topics include ion channels, excitability, transport, energetics and metabolism, contraction, secretion, and communication within and between cells. Emphasizes quantitative analysis of cellular processes.

Prerequisite: Undergraduate physics, physical chemistry, biology, calculus, or permission of instructor.

4 credits, fall term

HBY 531 Medical Physiology

A graduate-level introduction to the physiology of the organ systems with ultrastructural correlations. Ultrastructural correlations are demonstrated in a laboratory setting using histological preparations in conjunction with electron micrographs illustrating the relevant ultrastructure needed to understand the normal functioning of tissues and organs. The physiology of the major organ systems is addressed in a lecture format with the emphasis on problem solving. Relevant clinical correlations are addressed at the end of each block insofar as they illustrate how symptoms and signs of disease result from disordered physiology. Organ Systems addresses the structure and function of the cardiovascular, respiratory, renal, gastrointestinal, endocrine, skeletal, reproductive, and integumentary systems.

Prerequisites: Admission to medical or dental school and permission of instructor.

8 credits, spring modules, Dr. Cameron

HBY 552 Physiology of Excitable Membranes

Covers the resting potential, the basis of the action potential, linear cable properties and synaptic transmission. Studies squid axon, the neuromuscular junction and the cardiac Purkinje fiber model systems.

Prerequisite: Physics, physical chemistry and calculus.

3 credits, spring term, even years, Drs. Cohen and Mathias

HBY 553 Signal Transduction

The course will emphasize fundamental concepts in signal transduction (e.g. membrane-protein and protein-protein interactions, amplification of signals), and individual lectures will apply these concepts at each stage of cell signalling from the cell surface to the nucleus, where signal transduction leads to specific gene expression.

3 credits, spring term, odd years, ABCF grading, staff

HBY 554 Principles of Neuroscience

The aim of this course is to highlight and create an understanding as to how the human nervous system operates.

Prerequisite: Undergraduate biochemistry, biology and chemistry. Permission of instructor.

2 credit, fall term

HBY 561 Statistical Analysis of Physiological Data

1 credit, fall term

HBY 562 Model-based Analysis of Physiological Data

1 credit, fall term

HBY 563 Measurement and Analysis in Physiological Research

1 credit, spring term

These courses are designed to introduce the principles of experimental

design relevant to modern physiological research. Emphasis will be placed on data acquisition, signal processing and statistical analyses associated with the basic experimental approaches currently used in physiological research.

Prerequisites Introductory statistics and permission of instructor.
1 credit each, fall and spring terms, ABCF grading

HBY 564 Experimental Teaching in System Physiology

A series of lectures and laboratory exercises designed to introduce students to in vivo experimental techniques used in systems physiology. Emphasis will be placed on the ethical use of rodents in biomedical research the measurement of physiological variables. Data acquisition and analysis procedures used in cardiovascular, respiratory, neural, and renal physiology will also be covered.

*1 credit, spring semester
ABCF grading.*

HBY 557 Advanced Physiology

This course is designed to introduce students to integrative approaches in biomedical research. Emphasis will be placed on the primary physiological concepts of control, communication, signal processing, metabolism and replication.

Prerequisites: Systems Physiology, Biochemistry, an permission of instructor
3 credits, fall term

HBY 570 Student Journal Club

Graduate student presentation on a selected topic with faculty consultation.

Prerequisite: Limited to students of the Physiology and Biophysics program.
1 credit each semester, repetitive, fall and spring term

HBY 590 Special Topics in Physiology and Biophysics

Students seminars on topics to be arranged through consultation with faculty members.

Prerequisite Permission of instructor.
Variable and repetitive credits, 1-2 per term, fall and spring terms, staff

HBY 591 Physiology and Biophysics Research

Original investigation under the supervision of a staff member.

Prerequisite Permission of instructor.
Variable and repetitive credits, 1-12 per term, fall and spring terms, staff

HBY 690 Seminar in Physiology and Biophysics

Seminars and discussions on major topics in physiology and biophysics by students, staff and visiting scientists.

Prerequisite Permission of thesis adviser
Variable and repetitive credits, 1 per term, fall and spring terms, staff

HBY 695 Practicum in Teaching in Physiology and Biophysics

Practical experience and instruction in the teaching of physiology and biophysics carried out under faculty orientation and supervision.

Prerequisite Permission of instructor.
Variable and repetitive credits, 1 per term, fall and spring terms, staff

HBY 699 Dissertation Research in Physiology

Original thesis research undertaken with the supervision of a member of the staff.

Prerequisite advancement to candidacy (G5); permission of thesis advisor
*1-9 credit, fall, spring and summer semesters
ABCF grading.
May be repeated for credits.*

HBY 800 Full-time Summer Research

Full-time laboratory research projects supervised by staff members.
Prerequisite: Permission of instructor and full-time graduate status.
0 credit, summer term, staff

Department of Preventive Medicine

Chair: John S. Kovach (Acting)

Distinguished Professor: M. Cristina Leske

Distinguished Service Professor: Dorothy S. Lane

Professors: Evelyn Bromet, John Coulehan, Raymond Goldsteen, Wajdy Hailoo, David Harris, Steven Jonas, Dorothy S. Lane, M. Cristina Leske, Nancy R. Mendell, Mary Nies, John Rizzo, Andre O. Varma (Emeritus), Peter C. Williams

Associate Professors: Clare B. Bradley, Steven Finch, Iris A. Granek, Roger Grimson, Anselm J. Hennis, Mary E. Hibberd, Leslie Hyman, S. Van McCrary, Barbara G. Nemesure, Elinor Schoenfeld

Assistant Professors: Catherine Belling, Matthew Caddell, Mary F. Cavanagh, John Chen, LiMing Dong, David G. Graham, Abby T. Greenberg, Eugene Komaroff, David Kreiner, Sara L. Mendelsohn, Hongdao Meng, Catherine R. Messina, Erin S. O'Leary, Alice O'Shaughnessy, Reed E. Phillips, Michael Vetrano, Suh-Yuh Wu

Lecturers: Eugene Theissen, Mahfouz H. Zaki

Instructors: Leo DeBobes, Lynette Dias, Patricia I. Dillon, Brian L. Harper, Daniel J. Kuhles, Terry Mahotiere, John Marchese, Linda K. Mermelstein, Shibani Ray-Mazumder, Hector Sepulveda, Anthony Shih, Bette Taylor, Lucille I. Weinstein

The Department of Preventive Medicine has five divisions: Epidemiology; Community and Behavioral Health; Evaluative Sciences; Medicine in Society; and Occupational and Environmental Medicine.

The department applies its expertise toward three major goals:

1. Teaching of the disciplines of preventive medicine (e.g. biostatistics and epidemiology) and the social and ethical context of health care
2. Conducting a broad range of research in the epidemiology and prevention of disease as well as in healthcare delivery, evaluation and policy
3. Practicing occupational and preventive medicine.

The Division of Community and Behavioral Health focuses on testing of interventions to promote health and prevent disease. The interventions are directed to the major causes of morbidity and mortality and on improving the health behaviors among community population groups and the preventive practice behaviors of community health providers.

The Division of Epidemiology focuses on the epidemiology and prevention of chronic diseases. The major emphasis is on the epidemiology and treatment of eye diseases, cancer and osteoporosis and is achieved by conducting clinical trials, cohort and case-control studies, and community intervention trials. The division also has responsibility for the biostatistical services of the General Clinical Research Center.

The Division of Evaluative Sciences is concerned with the effectiveness and efficiency of resource allocations related to population health. The division also plays an active role in the Graduate Program in Public Health through teaching and research in health economics and health sciences research.

The Division of Medicine in Society focuses on innovative medical pedagogy in ethics, law, and humanities in healthcare.

The major emphasis of the *Division of Occupational and Environmental Medicine* is diagnosis, treatment and prevention

of work and environmental illnesses. Disciplines include healthcare delivery systems and analysis; the planning, operating, and evaluation of disease prevention; healthcare and health maintenance programs; and employee health services.

The Department of Preventive Medicine has teaching responsibilities at every stage of education in the Stony Brook School of Medicine. The department offers a required Introduction to Preventive Medicine course to first-year medical students. This course presents basic epidemiological and statistical concepts used to study health and disease in populations and describes their application in primary, secondary and tertiary prevention. The department also offers a coordinated, four-year curriculum titled Medicine in Contemporary Society. This series of courses deals with ethics, law, economics, history and other social aspects of medicine. Teaching of social issues in medicine continues into the clinical and postgraduate years. A broad range of electives ranging from clinical experience in a neighborhood health center to basic research in epidemiology, injury control, computing, occupational medicine and health services systems, is offered in the fourth year.

In addition to teaching medical students, under the leadership of the Division of Community and Behavioral Health, the department offers an ACGME-accredited, two-year, combined academic and practicum residency training program in General Preventive Medicine and Public Health. Residents in the program are taught the components of specialty training in preventive medicine, including a core curriculum in epidemiology and biostatistics, health services administration, environmental and occupational health, cultural and behavioral factors in health and disease, and clinical applications of preventive medicine. The program is designed to develop knowledge and skills in the preventive medicine core and specialty area competencies. Residents can take one-third of the course requirements for their Master in Public Health degree, which is offered by Columbia University Mailman School of Public Health, within the Department of Preventive Medicine at Stony Brook.

The department also provides a Biostatistical Consulting Core to serve the biostatistical needs including the faculty and staff of the Health Sciences Center. Services range from biostatistical guidance and programming support to full partnership in research design, grant preparation, and the conduct of research.

Department of Psychiatry and Behavioral Science

Chair: Mark J. Sedler

Professors: Evelyn Bromet, Gabrielle A. Carlson, Judith Crowell, Max Fink (Emeritus), Laura Fochtman, Andrew Francis, Kenneth Gadow, Dmitry Goldgaber, Jan Loney (Emeritus), Richard Mattison, Lawrence Morin, Nisson Schechter, Joseph Schwartz, Arthur Stone, William J. Turner (Emeritus), Nora Volkow, Rex Wang

Associate Professors: Steven Cole, Peter Halperin, Marta Maczaj, Harold Pass, Michael Schwartz, Joyce Sprafkin, Jeffrey Sverd

Assistant Professors: Ashraf Abaza, Joseph Blader, Lory Bright-Long, Darla Broberg, Joan Broderick, Christopher Burke, Arvind Chopra, Eduardo Constantino, Erik Fink, Fred Friedberg, Paul Garson, Yakov Greenstein, Jay Harris, Marsha Tanenberg-Karant, Daniel Klages, Lilianne Mujica-Parodi, Donna Osikowicz, Steven Prenzlauer, Horacio Preval, Wolfgang Quitschke, E. Victoria Rundberg-Rivera, David Schlager, Alan Steinberg, Robert Vincent, Sheldon Weintraub,

Deborah Weisbrot, Adeeb Yacoub

Instructors: Dominick Candido, Antoinette Foster, Rita Gal-Vetrano, Marlene Gralnick, Michael Greenberg, Kevin Kelly, Maureen Largan

The Department of Psychiatry and Behavioral Science provides a complete range of instruction from beginning medical education through post-residency fellowships. Members of the department are involved in teaching in psychology, neurobiology, pharmacology, and biomedical engineering, as well as psychiatry. The faculty within the department is dedicated to research related to an understanding of psychiatric disorders, ranging from basic neurobiological research to applied clinical studies. Through joint appointments with other departments, many faculty members supervise and support graduate and post-doctoral students in related disciplines.

Clinical Services: the department is organized into three clinical divisions. The clinical divisions include Adult Psychiatry, Child Psychiatry, and Medical/Geriatric Psychiatry. Services in these divisions may be provided at Stony Brook University Hospital, at the Northport Veterans Affairs Medical Center, and at Eastern Long Island Hospital. University Hospital services provide 30 adult care beds, adult day hospital facilities, 10 children's beds, a comprehensive psychiatric emergency program, a consultation-liaison service and out patient clinics for adults and children. Northport Veterans Affairs Medical Center provides a 50-bed acute in-patient service and a 50-bed chronic care service. Eastern Long Island Hospital provides an 18-bed and adult inpatient service.

Medical Student Education: The department is committed to an interdisciplinary approach to mental health throughout its curricular activities. Within the curriculum of the medical school, the department provides psychiatric curriculum in the first year introduction to human behavior course, the second year neuroscience course, the third year clerkship in clinical psychiatry (four weeks), and the fourth year clerkship in behavioral medicine (two weeks). A psychiatry sub-internship is available to students in their third and fourth years on an elective basis.

Residency Program: the Department of Psychiatry and Behavioral Science offers a four-year residency program in psychiatry with the first year designed as a categorical postgraduate-1 "mixed" clinical experience. The residency program provides a broad variety of situations, subjects and settings from which residents and students may select their learning experiences. The program goal is to train a physician who specializes in the treatment and understanding of diseases and abnormalities that manifest themselves in behavioral change. Such a physician should be well grounded in diagnostics, psychopharmacological interventions and behavioral management techniques. The training program pays particular attention to the neurobiological foundations of psychiatry, while at the same time providing training in psychotherapeutics and other skills necessary to the general practice of psychiatry.

Fellowship Training: the department offers several fellowships including accredited clinical fellowships in child psychiatry, sleep medicine, and geriatric psychiatry.

Institute for Mental Health Research: founded in 1982, the IMHR is the research division of the department. With several million dollars of extramural support annually the research and clinical research faculty are engaged in psychiatric research ranging from basic science investigations of circadian rhythms, the molecular biology of Alzheimer's disease, to cutting edge research in behavioral medicine and in the epidemiology of mental disorders.

In addition to this umbrella research organization the department is also home to the Alzheimer's Disease Center of Long Island, and the Applied Behavioral Medicine Research Institute.

Department of Radiation Oncology

Chair: Allen G. Meek

Professors: Allen G. Meek, Lawrence E. Reinstein

Associate Professors: Wyman A. Bethune, Tae L. Park

Assistant Professors: Leon Forman, Jonathon Hass, Alan Katz, Bong S. Kim, Magdy S. Shady, Edward S. Valentine, Tamara E. Weiss

Instructor: Edward Glenn

The Department of Radiation Oncology, which functions at the Health Sciences Center at Stony Brook and at a satellite facility at Brookhaven National Laboratory, is organized to develop and teach the disciplines of radiation physics, radiation biology and therapeutic radiology as applied to the treatment of malignancies and selected benign disorders. Active basic and clinical research programs operate in conjunction with other medical school departments and the Brookhaven National Laboratory.

For students already career oriented in radiation oncology and for those who desire greater depths than permitted by the core curriculum, fourth year electives are offered in radiation oncology for medical students.

Undergraduate and graduate as well as medical students interested in research collaboration or the clinical oncology of solid tumors, are encouraged to apply for elective rotations.

The mission of the Department of Radiation Oncology is to develop a well-rounded academic program in radiation oncology, which includes:

- Expert cost effective radiation therapy services
- Education of medical professionals in the management of oncology patients
- Improvement of patient care through science and technology transfer
- University leadership in oncology

Courses

HBI 398/399 Research Projects in Radiation Oncology Medical Physics

An independent research project under faculty supervision. Emphasizes the principles of experimental design, data collection, evaluation of findings and reporting of results. Project report required. May be repeated.

Prerequisite: Laboratory experience and permission of the supervising instructor and URECA coordinator. Completion of 57 credits in the College of Arts and Sciences.

2-4 credits, fall and spring terms, staff

HBI 599 Graduate Research in Radiation Oncology Medical Physics

Original research projects under the faculty supervision in areas of medical physics relating to radiation oncology and computer science.

Prerequisites: Bachelors of Science in Physical Science or Engineering; permission of instructor.

1-8 credits, fall and spring terms, staff

Department of Radiology

Chair: Donald P. Harrington

Professors: Harris L. Cohen, Donald P. Harrington, Arie E. Kaufman, Jerome Z. Liang, Harold L. Atkins, Jack S. Deitch, Morton A. Meyers, Zvi H. Oster (Emeritus), Robert G. Peyster

Associate professors: Terry M. Button, John A. Ferretti, Paul R. Fisher, Gene R. Gindi, Elaine S. Gould, James V. Manzione, Steven Perlmutter, Clemente T. Roque, Thomas H. Smith, Sol Spector

Assistant professors: Corazon J. Cabahug, Bruce M. Chernofsky, Eddie Fiore, Dinko Franceschi, Margaret Johnstone, Seth O. Mankes, Hong Meng, William H. Moore, Roxanne B. Palermo, Erica J. Posniak, Patricia E. Roche, Laurette Sauter, G. Lucy van de Vegte, Paul L. Vitulli, Mark E. Wagshul, Zengmin Yan, Marlene Zawin, Wei Zhao

Divisions

- Division of Breast Imaging
- Division of Diagnostic Radiology (Breast Imaging, Emergency GI/GU, Pediatric Imaging, Thoracic Imaging)
- Division of Cross-sectional Imaging
- Division of Interventional Radiology
- Division of Musculoskeletal
- Division of Neuroradiology
- Division of Nuclear Medicine
- Division of Special Procedures

Our Department transverses both institutions and our common mission is a commitment to excellence in medical imaging, responsive service and the responsible use of our resources in clinical care, education and research. Our goal is to help our customers achieve their goals.

The third year medical students rotate on the radiology service for two weeks. The course combines daily lectures, which address basic image interpretation and an algorithmic approach for the selection of imaging studies. In addition, the student completes a series of programmed learning seminars and teaching files, which review principles of image interpretation. There will be extensive exposure to many of the subspecialty areas with observation of procedures and participation in film review sessions with Radiology faculty. Schedules will be distributed at the start of the clerkship.

A fourth year medical student elective is offered. Rotation is for two or four weeks. The student will be able to exercise choice in time commitment to various subspecialties according to perceived need. The student will attend departmental conferences, participate in daily activities of the department, meet with visiting professors, and attend student rounds for case presentations. Overall supervision is by the Course Director, with day-to-day contact with attending staff members. Self-teaching with teaching files is also part of the curriculum.

The Department offers a four-year residency in diagnostic radiology. The program includes all aspects of radiology, including neuroradiology, musculoskeletal, thoracic, cardiac, interventional, abdominal, and pediatric radiology, as well as nuclear medicine. The residency provides the resident with a strong foundation to meet his or her goals, whether in clinical practice, academic teaching or in research. Teaching is the core mission of the department. The clinical rotations, core curriculum, and research project provide each resident with the

fundamentals necessary to pursue a clinical and/or academic career. All modalities, including evolving technologies, are included in the program. A one-month research rotation is supplemented by elective research opportunities. The rotations are primarily at Stony Brook University Hospital, with additional rotations at the Northport Veterans Administration Hospital. The department offers fellowships in abdominal imaging, neuroradiology, interventional radiology, MRI, and breast imaging.

Department of Surgery

Chair: John J. Ricotta

Professors: Thomas V. Bilfinger, Martin S. Karpeh, Jr., Arnold E. Katz, Irvin B. Krukenkamp, Cedric J. Priebe, Jr., William P. Reed, Jr., Marc J. Shapiro, Harry S. Soroff

Associate Professors: Martyn W. Burk, Enrique Criado, Alexander B. Dagum, Subir R. Maitra, Kazimierz Malinowski, Margaret A. McNurlan, Eugene P. Mohan, Frank C. Seifert, Maisie L. Shindo, Eric E. Smouha, Joseph J. Sorrento, Jr.

Assistant Professors: Balvant P. Arora, John S. Brebbia, Duc T. Bui, Antonios P. Gasparis, Steven M. Katz, Thomas K. Lee, Allison J. McLarty, Louis T. Merriam, Denise C. Monte, Brian J. O'Hea, David E. Rivadeneira, Ghassan J. Samara, Richard J. Scriven, James A. Vosswinkel

Instructor: Vimala S. Sivaraman

The Department of Surgery is organized into clinical divisions, each with its own chief: general surgery, including trauma and surgical critical care; cardiothoracic surgery; otolaryngology-head and neck surgery; pediatric surgery; plastic and reconstructive surgery; surgical oncology; and vascular surgery. In addition, the department includes two nonclinical divisions, namely, education and surgical research.

The department provides instruction for medical students throughout their four years of training. Most of the department's effort is directed at third- and fourth-year students in the form of a general surgery clerkship and surgical selectives/electives, plus a sub-internship.

The third-year clerkship in surgery is designed to provide students with a broad experience in the general surgical disciplines. This experience emphasizes direct patient contact, including all phases of evaluation, diagnosis, and treatment. Students spend a period of time on a general surgical service. During this portion of the clerkship, they are given the opportunity to follow patients from initial presentation and evaluation, participate in the patient's surgical therapy, and care for the patient in the postoperative recovery period until discharge from the hospital. Opportunity is also provided to participate in surgical office practice or in outpatient clinics, allowing greater participation in both the pre-hospital evaluation of elective patients and the long-term follow-up of patients seen in-hospital.

To give students a broad experience in the surgical disciplines, one-week electives are offered in the associated surgical services, such as cardiothoracic surgery, urology, orthopaedic surgery, otolaryngology, and head and neck surgery.

While patient care responsibilities are foremost, didactic teaching sessions are held each week throughout the rotation. These sessions utilize group presentations, lecture, and problem-based learning formats. During these sessions, the student is expected to master and demonstrate the fund of

knowledge necessary for the general practice of medicine as it relates to surgical disease. Performance on problem sessions, presentations, and ward responsibilities form the basis of the clinical grade. In addition, each student meets regularly with a faculty preceptor. Finally, evaluations include a written (in-house) exam, written board examination, and oral examination.

The objective of the fourth-year surgical electives is to provide additional exposure in surgery not gained in the third-year clerkship. The intent is to allow students to pursue areas of interest, to expand their knowledge, to further strengthen existing areas of personal interest, and to foster future interest in the fields of surgery and anesthesiology.

During a required one-month selective, students are exposed to the mandatory two-week rotation in anesthesiology. During the other two weeks, they have the opportunity to choose from several elective courses. Although not designed to provide in-depth training, the courses offered during this month provide students with a foundation of knowledge adequate to reach the objectives set forth above. Regardless of each student's chosen upcoming residency and ultimate career, this one-month rotation can prove an invaluable resource for future training.

The surgical sub-internship is a focused month designed to prepare fourth-year students for upcoming residency. Students participate directly in the care of surgical patients; that is, initial evaluation, formulation of differential diagnoses, establishment of treatment plans, and eventual daily care of the patient. Students function at the PGY-1 level with close supervision from the resident and attending surgical team. Students actively participate on rounds, daily care tasks, procedures, and conferences.

The sub-internship provides an opportunity for the soon-to-be resident to gain and/or polish the clinical skills critical for entering residency. Students actively participate in procedures, clinical decision-making, and patient interaction. This month is a chance to establish a preliminary comfort level in taking care of patients, and is designed to simulate what it may be like as a PGY-1, with appropriate supervision. Although the patient population is primarily of a surgical nature, students gain a broad clinical exposure that provides a solid experience for entrance into any type of residency program.

An advanced surgery elective (sub-internship) is also offered at an affiliated hospital. This rotation provides greater in-depth experience in the management of patients with a wide spectrum of surgical problems. Students are exposed to patients in different surgical specialties: general, oncology, pediatric, head and neck, colorectal, and trauma surgery. Students participate in both clinical and educational activities of the general surgery service including rounds, conferences, surgeries, and office hours. Students learn pre- and post-operative management of surgical patients and participate in the operating room, assisting surgeons, to expose and train in various surgical techniques and learn to problem solve surgical issues in patients.

Opportunity is also available there to participate in the inanimate and animal laboratory to learn laparoscopic skills. Interested students are given the opportunity to spend one half day per week in the office of practicing surgeons in the community. Clinical research opportunities are also available.

All told, the department's fourth-year programs encourage students interested in choosing a career in surgery, and enable them to develop their skills and knowledge in surgical problem solving and apply their acquired knowledge in evaluating patients with surgical disease. Students have broad exposure to operative technique and an opportunity to develop technical skills. Thus, they are able to function at a more advanced level on the surgical floors and in the operating room.

Residency/Fellowship Programs

The department offers a five-year nonpyramidal residency in general surgery that fulfills the standards for professional excellence adopted by the American Board of Surgery, and leads to eligibility for board certification. This residency is fully accredited by the Accreditation Council for Graduate Medical Education (ACGME). Five surgical residents are selected each year through the National Resident Matching Program.

In addition, individual divisions within the department offer an ACGME-accredited residency in otolaryngology-head and neck surgery, ACGME-accredited residency (fellowship) in vascular surgery, and ACGME-accredited residency (fellowship) in surgical critical care.

All residency/fellowship programs in the department require residents to develop the six competencies, as defined by the ACGME, in the following areas: patient care; medical knowledge; practice-based learning and improvement; interpersonal and communication skills; professionalism; and systems-based practice. To successfully complete residency/fellowship training, these competencies must be developed to the level expected of a new practitioner.

General Surgery

The department has assembled a faculty interested in resident education, clinical innovations, and advances in basic and clinical research. In this way, the department has assured that its resident trainees are not only exposed to the scientific basis of surgical practice, but interact with faculty who are dedicated to the pursuit of new knowledge and the development of new technologies in surgical care.

The department is committed first and foremost to providing surgical residents with both broad and in-depth exposure to surgical diseases. This is achieved by rotations at three hospitals, each of which provides a somewhat different environment for learning. The department's training program is based on graded resident responsibility with the emphasis in the first two years on preoperative assessment, perioperative care, and performance of basic procedures, followed in later years by progressive responsibility for increasingly complex operative procedures and clinical management. As a result, graduating residents are solidly grounded in all aspects of the essential components of general surgery.

The department also puts significant emphasis on teaching the fundamentals of surgery and on surgical research. This is accomplished through a regular series of structured educational sessions that follow a standard curriculum and occur both departmentally and in each individual hospital on a weekly basis. A visiting professor series is an essential component of the curriculum, which allows exposure of both faculty and residents to national leaders in surgery.

Opportunities for basic and applied research exist within many divisions of the department and through collaborations with other basic science departments. Residents are encouraged to produce and analyze data for both local, regional, and national presentation and publication in peer-reviewed journals. The faculty is dedicated to working closely with each of the residents to achieve these ends. This intellectual and academic exercise is designed to be useful in forming patterns of scholarly activity and analysis that will be useful in the future for all residents whether or not they choose an academic career.

In sum, the department's residency in general surgery has a broad clinical base that enables residents to experience a variety of educational environments with faculty dedicated to resident education and the advancement of surgical science. As such, this residency is a superior program for clinical training.

Otolaryngology-Head and Neck Surgery

The department's residency in otolaryngology-head and neck surgery is devoted to the task of educating and training physicians to function independently as specialists in the field. This residency is based in the Division of Otolaryngology-Head and Neck Surgery. Residents are trained to be competent in all aspects of the specialty. They learn to diagnose medical problems of the head and neck, and acquire surgical skill in this complex area, mastering the fundamental knowledge of this specialty and related specialties. They also gain first-hand experience with basic science. This residency consists of one year of general surgery followed by four years of otolaryngology-head and neck surgery. Upon completion of the residency, trainees are ready to enter into clinical practice, into fellowship training, or into basic medical or clinical research.

Vascular Surgery

The vascular residency (fellowship) recently received residency review committee approval. It is based in the Division of Vascular Surgery, and is a two-year program (one resident per year) that involves both University Hospital and the Northport VAMedical Center. Fellows are taught open and endovascular interventions, medical management of vascular disease, and use of noninvasive techniques. Particularly during the first year, the vascular resident is exposed to clinical research.

Surgical Critical Care

The surgical critical care residency (fellowship) is a one-year experience (two fellows per year) centered at University Hospital. The fellows are provided clinical experience in surgical critical care, including burn care, and do rotations on the hospital's specialized intensive care units. Fellows are actively involved in clinical research with members of the Division of General Surgery, Trauma, Surgical Critical Care, and Burns.

Department of Urology

Chair: Wayne C. Waltzer

Professors: Zelik I. Frischer, Sardar Ali Khan, Wayne C. Waltzer, Robert J. Wasnick

Associate Professors: Frank Darras, Yefim Sheynkin, Shahar Madjar

Assistant Professors: Howard L. Adler, Alan Nieder, Jamil U. Rehman, David A. Schulsinger

Instructors: Anne Klassert, Yvonne Kwok, Kathy Kelly-Lyons, Jeanne Martin, Robert Newman

The Department of Urology at Stony Brook University Hospital provides a wide range of general and tertiary urological care. Subspecialty services include urologic oncology, female urology, laparoscopy, infertility and microsurgery, kidney stone disease and lithotripsy, pediatric urology, reconstructive urology, sexual dysfunction, and kidney transplantation.

Many of the faculty of the Department of Urology are fellowship trained at some of the most elite institutions in the country. They offer a wide berth of experience in all aspects of urological procedures. The department has a four-year ACGME accredited residency program, and works with the School of Medicine in the training of medical students.

The department participates in the second-year medical student curriculum. In the Introduction to Clinical Medicine course, students are taught the male genitourinary physical examination. Following the study of the exam techniques

utilizing audiovisual aids and models, small groups of students spend a session with the instructing physician and professional patients, who assist the student in conducting the physical examinations.

Stony Brook medical students, during their fourth year, are not required to rotate to the urology service; however, they may elect a clerkship. During this rotation, emphasis is placed on the urologic history, physical examinations, and differential diagnosis of urologic problems. The basic pathophysiology of urologic disease is emphasized and the rationale for medical and surgical intervention will be reviewed. This consists of a four-week rotation, which gives a more in-depth exposure to urology. Research-based electives are also available to medical students within the Department of Urology.

All students are taught directly by the attending faculty and urology residents. The residents are responsible for orienting the medical students to the day-to-day activities of the service. This gives the residents a chance to exhibit their professionalism, communications and system-based practice skills. These activities include morning rounds, selection of participation in specific surgical cases performed within the department, and participation in the out-patient clinic. The residents are also directly responsible for assisting the medical students with history and physical examinations and other routine patient care activities. The Chief Resident participates with the attending staff in evaluating all medical students while on their Urology Rotation.

Residency Program: the educational philosophy of the Department of Urology at Stony Brook University Hospital is to provide the urology resident with an in-depth understanding of the practice of urology, including, but not limited to, patient care, communication skills, medical knowledge, practice-based learning and improvement, professionalism, and system-based practices are taught. In addition to the six competencies, the department provides a strong understanding of the basic scientific, medical and surgical principles of urology. The department believes that basic and clinical sciences should be integrated into the residency in order to cultivate a physician/urologic surgeon who is well versed not only in the technical aspects of the specialty, but also in a fundamental understanding of the disease processes which affect the urinary tract and the male genital system. The objectives of the urology resident education at Stony Brook are to:

1. Provide a strong didactic, educational environment focused on the six competencies listed above
2. Provide a supervised surgical education with the appropriate evaluative tools
3. Reinforce the concept of self-motivated education, which will serve the resident well in his/her practice in the community, in research, or in academics
4. Provide a strong understanding of the six competencies and emphasize how they are important to the functioning of the physician in today's complex health care environment.

In summary, the overall emphasis of our program is to provide residents with a well rounded educational experience that will prepare them for a productive and satisfying career in urology. Since the career goals of individual residents may differ, it is our goal to provide a broad base of urologic education from which any career in urology can be achieved.