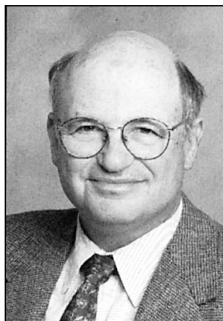

for their eminent faculties and excellent academic programs. Graduate programs in arts and science, education, engineering, business administration, and nursing—dating from the 1950s, 1960s, and 1970s—quickly came to prominence because of the University's commitment to offer outstanding educational and research opportunities in these areas as well.

Early Selection Program

Outstanding high school graduates can apply for acceptance to an eight-year combined bachelor/M.D. curriculum at the University of Rochester. The Rochester Early Medical Scholars (REMS) program is extremely competitive, and students accepted into the program are truly exceptional. REMS participants (up to 10 undergraduate freshmen annually) are accepted conditionally to the medical school, which allows them to tailor their undergraduate education at the University to their interests, while meeting traditional undergraduate medical school course requirements. In addition, a variety of special community service and research experiences are available to students in this program. REMS participants must have continued high academic achievement during their undergraduate studies, and are encouraged to participate in shadowing experiences with area physicians. Several times a year social functions are held at which physicians share their personal stories with students. The proximity of the main campus and Medical Center facilitates the academic and other special opportunities provided.

THE MEDICAL CENTER



*Jay H. Stein, M.D.
Senior Vice President and
Vice Provost for Health Affairs
Medical Center and
Strong Health CEO*

The University of Rochester Medical Center is an exciting place to be. It is building for the future in every way, and positioning itself as a major leader in the field of health care for decades to come. The Medical Center's principal components are the School of Medicine and Dentistry, the School of Nursing, Strong Memorial Hospital, and Eastman Dental Center.

The School of Medicine and Dentistry is described below, followed by the other three components. The medical school offers distinctive medical education programs in four areas—medical student, graduate student, continuing medical, and graduate medical education—and is in the midst of an exciting 10-year, \$550 million initiative that is rapidly expanding its research programs in the basic sciences.

The School of Medicine and Dentistry Educational Programs

MEDICAL STUDENT EDUCATION

The School of Medicine and Dentistry is implementing the most sweeping curricular changes since its founding more than 80 years ago. It developed and is pioneering the Double Helix Curriculum (see Undergraduate Medical Education section), so called because, similar to the two strands of the DNA double helix, it weaves the learning of basic science and the learning of clinical medicine through all four years of medical education. As the curriculum that began in fall 1999 continues to be rolled out, the redesign is proving itself in the success of the first students to go through the new program, in the praise and support the medical school is garnering from educators and community preceptors, and in the attention Rochester is receiving from medical programs across the country.

Although the curriculum redesign represents a bold departure from tradition—that is, from the way physicians have been trained for most of the past century—it builds upon the medical school's commitment to excellence and innovation, and Rochester's hallmark biopsychosocial approach to medicine. We firmly believe the

Double Helix Curriculum is a necessary and appropriate response to the changing demands of medical education in the 21st century—an era when medical knowledge is doubling at least every 10 years, and possibly every five years, and the pace is accelerating all the time.

Our new curriculum has literally transformed everything and everything involved with the medical school. A custom-designed learning environment that supports the curriculum has been added to the University's Medical Education Wing; the medical school has changed how it assesses student competency; and the curriculum has transformed how faculty members teach. Traditional departmental boundaries and turf have been broken down, and Rochester has put real teeth into the word "interdisciplinary."

Based on three years of intense planning and preparation, the Double Helix Curriculum has numerous innovative features in addition to its integrated basic science/clinical science design. These features include:

- Mastering Medical Information—a course that provides students at the beginning of their education with a solid foundation for locating, managing, analyzing, and appraising medical information
- An 18-month Ambulatory Clerkship with required core competencies that begins in January of the first medical school year
- Two-week comprehensive exams in the second and third years, taking into account all basic and clinical sciences and including an assessment of knowledge, skills, and attitudes
- A fourth-year community health improvement course, a collaboration with the local health department, through which students learn about public health issues and interventions by addressing real public health needs in Greater Rochester
- An innovative approach to the use of curricular themes, with the six themes of nutrition, prevention, ethics and law, diversity, aging, and health care financing/organization woven through every course and clerkship

What the medical school has crafted, both through its new curriculum and established supporting elements, is an approach to medicine designed to produce lifelong learners and practitioners of evidence-based biopsychosocial medicine. In fact, after the Liaison Committee on Medical Education (LCME), the nationally recognized accrediting authority for medical education programs leading to the M.D. degree in the United States and Canada, conducted its survey of Rochester in 2000, the School subsequently received a report noting LCME's enthusiasm for Rochester's overall medical student education program. The School was granted full accreditation with no citations—a remarkable, and rare, achievement.

For the most recent information about medical student education, visit our Web site (www.urmc.rochester.edu/smd/admiss/mededu.html). Visit a second

Web site (www.urmc.rochester.edu/smd/CA/dh/index.html) to learn more about the Double Helix Curriculum.

GRADUATE MEDICAL EDUCATION

The School offers over 70 accredited residencies and fellowships (65 medical and seven dental graduate training programs) and several of them are top ranked nationally in their fields. Students come to us from many different medical schools in the country. After completing training they go on to practice in their particular areas of expertise throughout the United States and abroad. The Medical Center's graduate medical education programs are particularly strong, not only because Strong Memorial Hospital is the tertiary care center for a major, multi-county region, but also because training and teaching opportunities involve many other hospitals in our community. As a result, our residents learn to treat a wide variety of patients and conditions. Our full- and part-time faculty, who come from throughout the Greater Rochester region, are also key to the strength of our residency and fellowship programs.

The Medical Center is positioning itself to play a leadership role at the national level in what is known as the "Outcomes Project," a long-term initiative launched in 1998 by the Accreditation Council for Graduate Medical Education. The Council accredits some 7,600 United States residency education programs that include some 97,000 residents. The goal of the initiative is to assure, in residency and fellowship training programs, physician competency in six areas:

- Patient care (e.g., managing patient health conditions, patient counseling skills)
- Medical knowledge
- Practice-based learning and improvement (e.g., accessing and assessing medical literature, making evidence-based decisions)
- Professionalism (e.g., ethics, sensitivity to differences in cultures)
- Systems-based practice (e.g., quality assurance, medical cost issues)
- Interpersonal and communication skills (e.g., effectively exchanging information with patients and their families)

Rochester received the highest possible rating from the Accreditation Council for Graduate Medical Education as an institutional sponsor of graduate medical education programs in 1999. The School also has a rich tradition that ties directly to the objectives of the Outcomes Project. The foundation of Rochester's medical education programs—the biopsychosocial model—is a scientific approach to the biological, psychological, and social factors that cause disease. Developing truly competent physicians, schooled in a biopsychosocial approach to care, is a defining goal of both our medical school and our graduate medical education programs. To learn more about graduate medical education, see our Web site (www.urmc.rochester.edu/smd/gme/).

CONTINUING MEDICAL EDUCATION

The Office of Continuing Professional Education is regularly reviewed and is presently accredited by the Accreditation Council on Continuing Medical Education. The office is authorized to grant Category I CME credit for physician education programming and can arrange American Academy of Family Physicians prescribed credit when appropriate.

The Office of Continuing Professional Education offers extensive program offerings annually. Typically these include 60 to 80 independent conferences and symposia, held primarily in the Greater Rochester area but also across the United States and internationally. Additional CME activities include approximately 50 separate, certified grand round and teaching seminar series at all University affiliated teaching hospitals and 80 to 100 different program sessions at a half-dozen community hospitals in the region.

Staff meet with faculty members and/or organizing committees and assist with the development of educational programs to ensure they meet requirements for awarding CME credit through the School of Medicine and Dentistry. Programs can be organized in any medical specialty with local, regional, or national appeal, using a variety of educational formats. The office also offers professional conference planning services.

In addition, Continuing Professional Education maintains transcripts of all CME credits earned through the School of Medicine and Dentistry, and coordinates participation by faculty asked to present at regional CME activities. A schedule of regional CME activities is available online (www.urmc.rochester.edu/smd/cpe/).

GRADUATE EDUCATION

In most United States biomedical sciences graduate education programs, education has been departmentally oriented—physiologists train future physiologists, biologists train future biologists, etc. The biomedical sciences graduate program in the University of Rochester Medical Center now utilizes research and educational cluster approach, which extends beyond traditional departmental/discipline boundaries.

Since the late 1990s the School has brought together groups of faculty with common research interests, representing different disciplines (e.g., a cluster might consist of a pathologist, geneticist, and biochemist). Admitted Ph.D. candidates study in these unique groups. Bringing together faculty with expertise in different areas of research and education is advantageous because the advances in biomedical research and education require bringing into focus knowledge, techniques, and approaches of broad disciplines to new problems—molecular biology relies on biochemistry, genetics relies on molecular biology, etc.

As part of a School-wide commitment to providing graduate students with opportunities designed to broaden their education, we also permit them to take specific portions of the Double Helix Curriculum, the new undergraduate medical curriculum. As a result, graduate students learn material that is not taught in classical graduate programs, and develop an apprecia-

tion for medical education, human biology, and disease. The School recognizes that many of our graduate students will some day work in academic medical centers, and we strongly believe that their broad educational training will translate into their making greater contributions to their fields in the future.

Yet another distinctive feature of graduate education at Rochester is the growing emphasis we are placing on our already strong M.D./Ph.D. program (www.urmc.rochester.edu/smd/mdphd/). By 2005 the School expects to have 50 to 60 students in the program—essentially doubling the number of M.D./Ph.D. students in a five-year period. The planned growth is tied to the fact that M.D./Ph.D. graduates are key to the increasingly important effort to bridge science, including basic science, and the clinical disciplines. Translational research, whereby fundamental discoveries made in basic science labs are brought through various systems to impact disease processes, is growing at Rochester. For example, the University recently received a patent for a new class of drugs that ease pain and inflammation without causing serious side effects such as stomach pain, bleeding, and ulcers. The patent is due to the work of Medical Center researchers, including an investigator with an M.D./Ph.D., who discovered, over the course of more than a decade, the COX-2 gene that has enabled two pharmaceutical companies to produce blockbuster drugs. Such a scenario clearly demonstrates the enormous potential of medical research to transform the physical and economic health of communities—and by extension, it demonstrates the wisdom of expanding Rochester's M.D./Ph.D. program. (For additional information about graduate education go to our Web site at www.urmc.rochester.edu/smd/grad.)

School of Medicine and Dentistry Research Programs

Just a few years after the University of Rochester launched an initiative to dramatically expand medical research at the University, the Medical Center is in the midst of an exciting \$550 million expansion of its research programs in the basic sciences. The Aab Institute of Biomedical Sciences (www.urmc.rochester.edu/Aab/), which opened in 1999 in the brand new \$73 million, 240,000-square-foot Arthur Kornberg Medical Research Building, is the centerpiece of the 10-year initiative. The Institute houses seven research areas: aging and developmental biology, cancer biology, cardiovascular research, human genetics and molecular pediatric disease, musculoskeletal research, oral biology, and vaccine biology and immunology. To accelerate the amount of progress in these areas—all of them strengths of the Medical Center's research program—an international recruitment effort to attract top research talent to Rochester to hold more than 50 new faculty positions was made part of the overall initiative. By concentrating its resources on the seven fields, the Medical Center is assembling a scientific powerhouse in each discipline.

As a result, the Medical Center is receiving an infusion of new research grants from the National Institutes of Health. The amount of federal funding received from NIH increased 18 percent in 2000, to \$89.9 million. The increase represents the largest funding boost at the Medical Center in two decades. Of the \$13.8 million in new research funding, about half was awarded to newly recruited scientists and about half to veteran faculty.

While the Medical Center is fostering growth in the seven selected areas, its overall goal is to strengthen the Medical Center's research program in its entirety. The second phase of the Medical Center's initiative involves a second new research building, with 143,000 square feet of space for research in the areas of surgery, medicine, pediatrics, genetics, and pulmonary biology. It is scheduled for completion in 2002.

The total planned investment in the research initiative represents the single greatest investment in people and facilities in the more than 150-year history of the University of Rochester.

Note: For current information on specific research areas in the Aab Institute of Biomedical Sciences, visit the following Web sites: Center for Aging and Developmental Biology (www.urmc.rochester.edu/Aab/aging2.htm); Center for Cancer Biology (www.urmc.rochester.edu/Aab/Cancer.htm); Center for Cardiovascular Research (www.urmc.rochester.edu/Aab/Cardio.htm); Center for Human Genetics and Molecular Pediatric Disease (www.urmc.rochester.edu/Aab/geneped/); Center for Musculoskeletal Research (www.orthopaedioclub.com); Center for Oral Biology (www.urmc.rochester.edu/Aab/OralBio2/Welcome.html); Center for Vaccine Biology and Immunology (www.urmc.rochester.edu/Aab/vaccbio/index.html).

The School of Nursing

Like the medical school, the School of Nursing has a new vision for the future. A new curriculum, one that responds to the tumultuous changes in the health care delivery system and nurses' own rising expectations, is a key part of that vision. Several broad strategies—embracing the nursing school's hallmark concept of unification to include teaching, practice, and research—characterize the strategic plan for the new century. They include:

Focusing on the needs and flexibility requirements of adult learners. Today the average age of the Rochester nursing student is over 30 years and the typical student brings a body of knowledge and a maturity gained in the workplace. Program options include evening and online classes, and credit for prior learning through experience.

Integrating nursing education with real-world experience in the Strong Health network, an integrated health care delivery system offering patients everything from primary care to tertiary-level services, long-term care services and home care options. Most nursing faculty spend 40 percent of their time actively working within the clinical care arena or conducting research.

Emphasizing research. The School of Nursing seeks to grow research funding and hire new researchers. A Center for Clinical Research in Aging, a Center for High-Risk Children and Youth, and a Center for Clinical Trials and Medical Device Evaluation have been established.

Strengthening the connection with the community. The nursing school's outreach program grew threefold in a recent three-year period, and the goal is to continue to build on this community connection. Within the nursing elective choices, students may opt to become part of a research team of the Monroe County Health Department.

For a description of the programs offered by the School of Nursing see the *Official Bulletin: Undergraduate Studies*, the *Official Bulletin: Graduate Studies*, and the *School of Nursing Student Handbook*, or visit the School's Web site (www.urmc.rochester.edu/son/).

Strong Memorial Hospital

Strong Memorial Hospital offers facilities and services for approximately 700 inpatients and is a principal site for clinical teaching for the medical and nursing schools. The hospital admits over 30,000 patients annually, and the resident and attending staff participate actively in the education of medical students and in graduate medical education programs. Strong Memorial's Ambulatory Care facility, a 240,000-square-foot outpatient clinic, opened in 1996 and also provides excellent clinical care and ambulatory educational experiences for students and residents.

In addition to primary care services, Strong Memorial offers a wealth of expert, subspecialty services, including the only comprehensive epilepsy center in upstate New York, solid organ transplant programs with success rates that eclipse the national experience, a Can-

cer Center that is one of 55 centers designated by the National Cancer Institute, and regional trauma, neonatal intensive care, and burn units. Its specialized services also include high-risk obstetrics and gynecology, kidney stone lithotripsy, reproductive endocrinology, and spinal cord injury. Additionally, Strong Memorial is a nationally funded AIDS Research Center and one of the first National Institutes of Health–designated AIDS vaccine evaluation units in the country.

In 2001 the hospital opened the region's largest and most modern emergency department. The 55,000-square-foot Frank and Caroline Gannett Emergency Center is three times larger than the one it replaced. Designed to improve efficiency in a facility that now handles 75,000 visits per year, it is designated a Level One Regional Trauma Center by the New York State Department of Health. It is the only emergency facility in the region to have a dedicated Children's Emergency Center.

HIGHLAND HOSPITAL:

KEY PARTNER TO STRONG MEMORIAL

Highland Hospital is a part of the Strong Health system (www.stronghealth.rochester.edu/), and it is Strong Memorial's acute care partner. Founded in 1889, this small general hospital is located at 1000 South Avenue, approximately one mile from the Medical Center. Medical student and resident educational programs are provided in obstetrics and gynecology, surgery, internal medicine, and family medicine. The Departments of Surgery, Internal Medicine, and Obstetrics/Gynecology are fully integrated into the respective University residency training programs. The Department of Family Medicine is based at Highland Hospital, and its residents train in inpatient medicine, surgery, and obstetrics. Full-time faculty direct the educational programs in family medicine, surgery, internal medicine, and obstetrics. Highland is the site of the Primary Care Institute, which promotes excellence in the delivery and scholarly inquiry of primary care.

Eastman Dental Center— Dentistry at the University of Rochester

In the early 1900s, the School of Medicine and Dentistry and Eastman Dental Center, an independent institution cooperating with the University, began offering a number of joint programs in dental science and in areas of clinical dentistry, including general dentistry and the sub-specialties. In 1997, the Center and the University merged, becoming partners in the provision of research, postgraduate education, and oral health care. The following year, the University's Department of Clinical Dentistry and the Department of Dental Research were integrated into the Eastman Department of Dentistry and the Center for Oral Biology.

The structural elements of dentistry at the University of Rochester as a department within the School of Medicine and Dentistry, the division of Eastman Dental Center within the Medical Center, and the Center for Oral Bi-

ology in the Aab Institute of Biomedical Sciences provide the organizational entities and relationships necessary to function optimally in the Medical Center setting; and to become the preeminent academic dental institution in the world.

BALANCING BASIC SCIENCE AND CLINICAL RESEARCH

The Center for Oral Biology focuses on basic science research in oral biology and has an outstanding record attracting extramural funding. The Eastman Department of Dentistry emphasizes clinical and translational research. Because of this synergy, the research enterprise has grown substantially and there is a commitment to create an optimal balance between basic science and clinical research.

GRADUATE EDUCATION

Postdoctoral training includes advanced education in general dentistry (AEGD) and the general practice residency (GPR) programs, oral and maxillofacial surgery, orthodontics and dentofacial orthopedics, pediatric dentistry, periodontology, and prosthodontics. A fellowship in temporomandibular disorders is also available. There are approximately 80 dentists enrolled in the programs at any one time.

- The educational programs are fully accredited by the Commission on Dental Accreditation, which operates under the auspices of the American Dental Association.
- Dentists who complete the specialty programs are eligible for board certification.
- Training sites include Eastman Dental Center, Strong Memorial Hospital, Highland Hospital, Rochester General Hospital, Monroe Community Hospital, and a number of community health centers.
- Foreign students may apply to the International Dental Postdoctoral Program offered in all the clinical areas except pediatric dentistry.

PATIENT CARE

The Division of Eastman Dental Center is the oral health arm for the Medical Center and Strong Health network. It provides community-oriented, oral health clinical services with over 115,000 patient visits per year. Specialty clinics provide oral health care for adults and children with complex oral/facial diseases or disorders, the medically compromised, and the developmentally disabled. The division continues to remain a model for community involvement by an academic dental center and preserves and extends George Eastman's vision of making dental care accessible to those most in need. Eastman, founder of Eastman Kodak, was the benefactor most responsible for the founding of the School of Medicine and Dentistry in 1920.

ORAL HEALTH CARE

Dentistry's vision is to be the premier dental research and postgraduate training environment for the education of dentistry's future academic leaders; to develop a serv-

ice/education system, which is a national model for the integration of dentistry with medicine and the health care system at all levels of research, education, and clinical service; to be a local and national leader of high-quality oral health care that is evidence-based with an emphasis on prevention and community service; and to link the research efforts of the Center for Oral Biology and Eastman Department of Dentistry and move into the top three ranking in National Institutes of Dental and Craniofacial Research funding. To learn more about dentistry at the University of Rochester, visit our Web site (www.urmc.rochester.edu/Dentistry/EDC/index.html).

Additional Information for Applicants

1. *Undergraduate medical education.* The School of Medicine and Dentistry accepts approximately 100 students into its first-year class for the four-year program leading to the degree Doctor of Medicine.
2. *Graduate medical education.* Approximately 600 residents and fellows are appointed annually to Strong Memorial Hospital. Most of the clinical departments in the medical school have integrated residency programs whose rotations involve one or more affiliated hospitals in addition to Strong Memorial. Brochures describing these programs are available from the office of the department chair or program director.
3. *Graduate study for advanced degrees.* Programs of study leading to the degrees of Master of Science and Doctor of Philosophy are offered in all biomedical science departments. More information can be found in the *Official Bulletin: Graduate Studies*.
4. *Fellowships.* Numerous fellowships are available to medical students, graduate students in the basic sciences, and candidates who have attained either the M.D., D.D.S., or Ph.D. degree. Support is provided through endowment, by benefactors, and by public and private agencies.
5. *Dentistry.* Graduate education programs for dentists and others with an interest in oral biology include the following:

Cariology Training Program. Support is available for pre- and postdoctoral candidates to receive training in cariology to the Ph.D. level. The objective of the program is to develop teachers and researchers to address the many facets of the pathogenesis and prevention of dental caries.

Oral Cellular and Molecular Biology Training Program. A training program designed to provide rigorous, multidisciplinary scientific training at either the pre- or postdoctoral level.

M.S. in Dental Science. A master of science degree in dental science is offered for individuals with a D.D.S., D.M.D., or equivalent degree. Special permission may be granted to predoctoral candidates in some circumstances. The course of study for the M.S. degree usually takes two calendar years and consists of 30 credit hours;

18 of formal coursework and seminars, and 12 of research. Requirements include: (1) participation in didactic courses and seminars offered by the Center for Oral Biology; (2) the selection of a basic science area as a "minor" for advanced study; (3) selection and completion of a research project in an area of oral biology; and (4) preparation and presentation of a thesis on the research work and the results. Fellowship stipends sufficient to meet living costs are available to selected students on a competitive basis.

Training in Oral Health Clinical Trials. The purpose of this program is to develop clinical researchers conversant with the design, budgeting, implementation, data management, and statistical methodology of controlled dental/oral and craniofacial clinical trials. This program can be linked to clinical residency training.

Specialty Training Programs. Specialty training is offered in oral and maxillofacial surgery, orthodontics and dentofacial orthopaedics, pediatric dentistry, periodontology, and prosthodontics. The training leads to eligibility for certification by the relevant specialty board. The primary site for the specialty programs is Eastman Dental Center.

The Advanced Education Program in Oral and Maxillofacial Surgery at the University of Rochester is a seven-year program during which the trainee earns a M.D. degree, completes a postgraduate year of surgical or medical residency, and trains in oral and maxillofacial surgery. The program is based at the University's Eastman Department of Dentistry and is cosponsored by Strong Memorial and Rochester General hospitals.

General Dentistry. Eastman Department of Dentistry offers two general practice residency programs: the general practice residency (GPR) and the advanced education in general dentistry (AEGD) program. The GPR program provides a one- or two-year accredited didactic and clinical experience in general dentistry in a hospital setting at Strong Memorial and Rochester General Hospitals. The AEGD program is a one-year advanced general dentistry program with the option of a second year and is primarily at Eastman Dental Center. Application forms for entrance into all the general dentistry programs can be obtained by writing to the Associated General Dentistry Training Programs of Rochester, Box 683, Rochester, NY 14642-8683.

In addition, the following short-term program is offered:

Summer Research Training Program for Minority Students in Dental School. Support is available for highly qualified minority students who are United States citizens or permanent residents, and who are currently matriculated in a dental school. Selected students receive intensive research training during an eight- to 10-week summer session. The objective of the program is to expose students who are members of underrepresented groups to the research professions and the opportunities available in an academic-based career.