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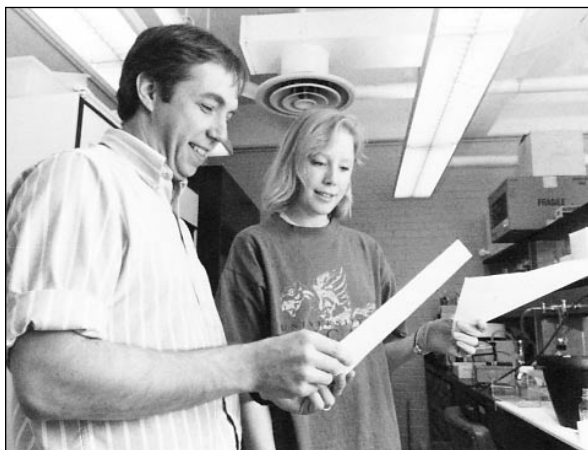
of approximately 10,000 alumni. Over 50 percent are medical degree holders, another 20 percent are graduate degree holders, and the remainder have completed at least one residency program at the Medical Center.

The Association sponsors a variety of programs, including a biannual magazine, an alumni directory, on-line community, special alumni programs, student-alumni activities, and the alumni annual fund.

*Special Alumni Programs:* A number of special alumni programs and get-togethers are held throughout the year. Most notably, the Medical Alumni Reunion is held in Rochester in the fall of each year. In addition, receptions are held at various professional conferences and in cities around the country. For information on alumni programs in your area, call the Office of Alumni Relations at (800) 333-4428.

*Student Alumni Programs:* The Alumni Association welcomes the incoming members of the medical school class and first-year graduate students at the Dean's picnic. It also sponsors the annual commencement dinner for the graduating class to welcome them as official members of the Alumni Association. In addition, there is a hosting program in which alumni from across the country host fourth-year medical students who travel in search of residency programs. The Alumni Association has implemented a noncredit Mini Shadowing Program, established to allow both medical and graduate students the opportunity to spend a few days with an alumnus in his or her work environment to explore various career options.

*The Annual Fund:* The Medical Alumni Annual Giving Program raises over \$1,600,000 annually to support medical student scholarships and loans, graduate fellowships, the alumni professorship, a short-term student loan program, and the Edward G. Miner Library. Over 40 percent of alumni participate in the program. Leadership donors are members of the Gold-Headed Cane Society for an unrestricted gift of over \$5,000 a year, the Whipple Fellows for over \$2,500 a year, and the George Hoyt Whipple Society for a gift of over \$1,000 a year.



## GRADUATE EDUCATION IN BIOMEDICAL SCIENCES

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The biomedical sciences offer challenging career opportunities for individuals with interest and aptitudes in research and teaching. The Ph.D. in one of the biomedical sciences, or combined with the M.D., provides the appropriate preparation for a career in biomedical research, teaching, work in the private sector, and government. For students interested in biomedical science careers, the School of Medicine and Dentistry offers opportunities for study in an environment focused on academic and scientific excellence.

Graduate education provides a broad-based research experience supervised by highly committed faculty in an environment with outstanding research facilities. The School accepts and encourages students who wish to enter graduate studies for Doctor of Philosophy, Master of Science, or combined M.D./Ph.D. and M.D./M.S. programs (see the Undergraduate Medical Education section, Special Opportunities for Medical Students for more information). The goal of the School's graduate education program is to prepare students for productive careers in biomedical research, education, and administration.

The School offers 13 Ph.D. programs. In addition, our faculty members participate in four interdisciplinary programs in biomedical engineering, neuroscience, genetics, and toxicology. The genetics program involves faculty in the biology and chemistry departments and from several Medical Center departments. Faculty in the Department of Brain and Cognitive Sciences, Computer Science, and the Center for Visual Science participate in the neuroscience program, in cooperation with medical school faculty. The medical school also offers Ph.D. programs in health services research and statistics. The Ph.D. programs in biology, chemistry, and biomedical engineering lead to degrees in corresponding departments in the College.

Terminal masters' programs in biochemistry, dental science, marriage and family therapy, microbiology, public health, and statistics provide the basis for launching professional careers. The Department of Psychiatry offers academic and A.A.M.F.T. credit through the Family Therapy Training Program.

Students in oral biology may pursue the Ph.D. in one of the above noted Ph.D. programs with financial support from the dental fellowship program. Advanced clinical training in dentistry is available combined with work for the Ph.D. in one of the basic science departments.

In the first year, Ph.D. candidates enroll in a core curriculum designed to provide fundamental concepts and knowledge in the biomedical sciences, including biochemistry, cell biology,

and molecular biology and genetics. Students admitted to the graduate program have the option of pursuing doctoral research with a wide range of faculty members in a variety of disciplines in biomedical research.

At the end of the first year, graduate students choose their Ph.D. mentor and the Ph.D. degree to be earned. Degree programs include neurobiology and anatomy, biochemistry, biophysics, microbiology and immunology, pathology, pharmacology, physiology, neuroscience, genetics, and toxicology.

Interdepartmental training clusters, composed of faculty having interests in common research areas, serve as the route of admission to the Ph.D. program. This arrangement provides students with an exceptionally diverse choice of research topics, encompassing the range of modern biomedical sciences. Because clusters are more flexible than traditional academic departments, graduate training is more effectively maintained at the leading edge of today's rapid advances in biomedical sciences. The cluster organization provides our graduate students with the best of two worlds. They are part of a unit that has a strong scientific focus, yet they are able to independently explore research opportunities in all our departments, centers, and programs. The system promotes exposure and improves access to an expansive array of research opportunities.

The training clusters in our graduate education program include biochemistry, molecular biology, and genetics; cell regulation and molecular pharmacology; immunology, microbiology, and vaccine biology; integrative biomedical science; molecular biophysics and structural biochemistry; molecular oncology and cancer biology; molecular toxicology and environmental medicine; neuroscience; oral biology; pathobiology and molecular medicine.

Graduate students in the medical school are under the administrative oversight of the Senior Associate Dean for Graduate Education. The associate deans of all schools in the University are subject to the University Dean for Graduate Studies as well as the Dean of the corresponding school. The University Dean for Graduate Studies is responsible for the authorization of departments to accept students in degree programs and for the final examination for the Ph.D. degree.

Master's programs are the responsibility of the school or college within the University offering the degree program, except for initial approval and periodic review by an all-University mechanism.

This decentralized plan allows for flexibility of educational programs, yet maintains University-wide standards. It is particularly advantageous in the medical school, allowing combinations of graduate and medical studies. For a comprehensive list of graduate courses see the *Official Bulletin: Graduate Studies*.

Qualifying graduate students may receive financial remuneration as fellows, trainees, or assistants. Stipends assist with living expenses. Tuition scholarships and health insurance fees (or payments from supporting funds) are provided. In addition, there are appointments in which tuition scholarships in whole or part are provided but do not provide additional stipend.

There is no routine service to the University required of graduate fellows but, as an important part of their educational experience, a period of time may be devoted to assisting in teaching.

Students should refer to the *Official Bulletin: Graduate Studies* for further information pertaining to the Graduate Education in the Biomedical Sciences Program, tuition, and fees. Copies are available upon request from the Senior Associate Dean for Graduate Education, School of Medicine and Dentistry, Box 316, 601 Elmwood Avenue, Rochester, NY 14642.

## Financial Information

Ph.D. candidates in the School of Medicine and Dentistry receive fellowships (also called scholarships, assistantships, or traineeships) through their cluster, department, or program from endowment, income, foundations, corporations, and government. If additional financial assistance is necessary, graduate students may apply to the medical school's Financial Aid Office for Perkins Loans or college work-study funds. When applying for a Stafford Loan, applications should be submitted to the Financial Aid Office in the School for processing. For additional information regarding these programs, application procedures, and aid policies, see the Financial Information section of this bulletin.

Financial aid awards are made by the Financial Aid Office based on student need, taking into consideration expected family contribution, department assistance, and outside sources. Financial need is based upon educational budget, which includes tuition, fees, room and board, books and supplies, personal expenses, and transportation allowance. The total educational budget for a single graduate student is approximately \$44,807. This estimate is based on the prevailing cost at the time this bulletin was published in spring 2001.

### Summary of Annual Educational Expenses

Tuition . . . . .	\$24,160
Health Fee . . . . .	1,147
Books and Supplies . . . . .	1,000
Housing and Food . . . . .	12,000
Personal Expenses . . . . .	3,500
Transportation . . . . .	3,000