

1996 Research Update: Training the Next Generation of Biomedical Scientists

by Mark Willis

The United States leads the world in biomedical research. The national investment in this research is highly valued by most Americans, who look to it for an ever-growing array of new therapies that will improve health and quality of life. Maintaining national leadership and meeting the public's expectations for future medical advances requires a dependable supply of biomedical scientists.

The Biomedical Sciences (BMS) Ph.D. Program at Wright State University provides an innovative model for meeting those needs. It was established in 1978 as Ohio's first interdisciplinary doctoral program in the biomedical sciences. The program's design anticipated a growing emphasis on interdisciplinary biomedical research that requires multiple skills that transcend any one scientific discipline. The Miami Valley region is well served by Wright State's BMS program, according to the Ohio Board of Regents. Its review of Ohio's doctoral programs last year concluded that Wright State's high-quality program should be maintained and continue to receive state support.

The BMS program is administered jointly by Wright State's School of Medicine and College of Science and Mathematics.

The faculty include 85 scientists drawn from 14 different academic units at Wright State and neighboring institutions, including Wright-Patterson Air Force Base and the Cox Institute. The program's areas of research concentration include molecular biology, biochemistry, cell biology, physiology, biophysics, immunology, neuroscience, biomedical engineering, and toxicology.

Wright State's first biomedical Ph.D. degree was awarded in 1984. Since then, 86 students have earned doctorates, an average of about 7 per year. The program receives over 1,000 inquiries and about 100 applications per year, from which 10-15 students are selected. Presently there are 50 full-time and 5 part-time graduate students in the program; 45% are from Ohio, 35% are from elsewhere in the U.S., and 20% are international students.

The average time for completion of the BMS Ph.D. degree is 5.1 years, compared to the national average of 6.5 yrs in the biomedical sciences. Wright State's retention rate (about 75%) is superior to the national average. Surveys of BMS graduates indicate that they are highly satisfied with the program and would recommend it to others.

"Our graduates are in high demand," says Robert Fyffe, Ph.D., professor of anatomy and director of the BMS program. Since 1984, 97% of the program's graduates moved immediately into degree-related postdoctoral positions in the biomedical and health sciences.

"The outstanding student outcomes reflect a faculty dedicated to the highest standards of training and mentorship," Dr. Fyffe says. The productivity of the BMS faculty is reflected in comparably successful outcome measures. In the last three fiscal years, the BMS faculty attracted more than \$18 million in external research grants and contracts from federal, state, and private sources. In 1995, external research funding exceeded \$7 million, the highest annual total in the program's history. During 1990-1995 the BMS faculty published more than 1,000 research papers, reviews, and book chapters. Many of the publications were written in conjunction with their BMS students. According to Dr. Fyffe, the BMS program is critical to the mission of the School of Medicine to enhance and disseminate biomedical knowledge by scholarly research. The BMS faculty and graduate students (many of

whom serve as graduate teaching assistants in Wright State's undergraduate courses) contribute significantly to the vitality of undergraduate, graduate and medical education at Wright State. "Their involvement in nationally competitive research helps to refine and expand their teaching abilities and allows them to convey the latest scientific information to their classes," he says.

The Ohio Board of Regents review noted that the BMS program is a magnet that enables Wright State to recruit outstanding new faculty members for the School of Medicine and College of Science and Mathematics. Faculty research productivity, in turn, enables Wright State to contribute significantly to the community. Since 1990, the BMS faculty have brought more than \$45 million in external funding into the regional economy.

"The BMS program is an important vehicle that enables Wright State University to meet its commitment to promoting economic and technological development in the Miami Valley through strong collaborative programs in basic and applied research. Employers in academia, industry, and government agencies are looking for graduates with broad training and expertise, of the kind provided by our interdisciplinary program," Dr. Fyffe says. "The interdisciplinary nature of the program naturally lends itself to collaborative activities that cross discipline and institutional boundaries. Given the current level of competitiveness for research funding, such collaborative activities, especially those that integrate basic and clinical research, are likely to become even more important." (For more information, contact Dr. Robert Fyffe at 937/775-2504).