USF Biotechnology Program Earns National Designation: Professional Science Master's

-- USF only Florida university with PSM programs --

USF is taking the lead in training more people to meet the global economy's growing demand for a business-savvy workforce skilled in science and technology. The university's Biotechnology Master's Program was recently designated a Professional Science Master's (PSM) Program by the Council of Graduate Schools. USF is currently the only Florida university to offer the PSM degree --- its Bioinformatics and Computational Biology Master's Program earned the first PSM designation in 2002.

Only about one in four students earning only bachelor's degrees in science or engineering end up with careers in those fields, according to the National Science Foundation. The PSM is designed to help change that. Sometimes described as the science version of the MBA degree, the PSM is being hailed as the one of the most promising innovations in graduate education in recent years.

Unlike traditional graduate training, which typically prepares students for independent research careers (often in academic settings), PSM programs offer students a way to establish rewarding science-based careers in business, government or nonprofit organizations without having to pursue a doctorate degree. The two-year interdisciplinary programs combine rigorous science or mathematics education with sought-after business skills emphasizing leadership, communication and team building. They include an internship in a relevant "real world" setting.

"In general these programs are for students who want to work in nonacademic settings, in emerging areas of science and scientific discovery, and aspire to managerial or other professional level positions," said Carol Lynch, PhD, Senior Scholar and Program Director of the Professional Masters Initiatives for CGS. "These are relatively new degrees responsive to 21st century workforce needs, and USF is in the vanguard by adopting the PSM and working with employers to prepare a highly skilled workforce for Florida."

While administered by the medical school, USF's two PSM programs emphasize an interdisciplinary curriculum taught by faculty from the Colleges of Medicine, Engineering, Public Health, Arts and Sciences and Business Administration as well as senior executives from industry and biotechnology companies.

Inge Wefes, PhD, directs the USF Biotechnology Masters Program, which expects to graduate its first students later this year. As former associate director of the Bioinformatics and Computational Biology Master's Program, she was primary author of a $76,000 Alfred P. Sloan Foundation grant that brought the first PSM program to Florida. The grant also funded the successful graduate seminar series "Bioinformatics and Proteomics" which Dr. Wefes continued in 2005 with independent funding for seminars

on “Functional Genomics and Genomic Medicine.” The Bioinformatics program is directed by Michael Barber, PhD.

The Sloan Foundation provided seed money for the first PSM programs in 1997 in response to industry leaders’ demands for a new approach to produce enough graduates equipped to enter the science and technology fields. USF was among the select universities participating in the Sloan PSM iniative. In 2006, the CGS assumed primary responsibility for supporting and promoting the PSM, with the goal of making the innovative degree a regular feature of U.S. graduate education.

“Both of our professional science master’s programs fill a niche for those students who may not want or be able to commit five years to obtaining a PhD degree,” said Dr. Wefes, an assistant professor of molecular medicine. “The programs give them a broad knowledge of either biotechnology or bioinformatics, which can then be refined and applied towards the specific needs of companies.”

Because of their ongoing relationships with employers, PSM programs are usually quick in adjusting to shifting workforce demands and to rapidly changing research strategies and technologies. This flexibility may help explain their growing popularity.

Since the first PSM program began in 1997, more than 120 programs have been established in more than 60 institutions across the United States. They offer applied training in biology, chemistry, genomics and proteomics, computer science, mathematics, epidemiology and other sciences for work in biotechnology, informatics, ecology, pharmaceutical discovery and development, forensics and other fields. The number of PSM programs grew 22 percent from 2004 to 2006, and student enrollment increased 54 percent in the same time span, according to a CGS survey. Three-quarters of PSM graduates in 2006 found employment in non-academic sectors, the survey found, and their salaries were generally considerably higher than for graduates with bachelor’s degrees in science or with traditional master’s degrees.

Because they have the training needed to advance in science as well as the professional skills to effectively bridge science and technology with business, companies find that PSM graduates typically require little additional time and money in professional development, Dr. Lynch said. “The PSM training prepares graduates to hit the ground running, and that gives these students an edge in an increasingly competitive job market.”

Story by Anne DeLotto Baier/USF Health Communications, May 2008