DOUBLE HELIX

Business and Bioscience Twine Together in New Undergrad Program
The warm glow of yellow leaves lit by an autumn sun poured like molten gold through the windows of an auditorium in the Colonial Penn Center. Twenty-some freshmen were seated at tiered rows of tables that wrapped around three sides of biology professor Philip Rea. He was talking about cardiovascular disease, mortality rates and that peculiar alchemy of scientific discovery and business acumen that can yield what news outlets like to call a “miracle drug.”

In 2003, he told the class, there were about 70 million physician visits for cardiovascular illnesses and about 7 million medical procedures to treat what has been the number one killer of Americans since 1900. “Cardiovascular disease is the most profitable line of health care in the U.S.,” noted co-instructor Mark Pauly from his seat among the students. Pauly is a Wharton professor who specializes in health care, insurance and risk management, and public policy.

Together with Rea, he is teaching the first Life Sciences and Management Proseminar.

The class is the foundation course for the Roy and Diana Vagelos Program in Life Sciences and Management, run jointly by the School of Arts and Sciences and the Wharton School. Pauly and Rea are co-directors. The new program provides grounding in the sciences as well as an education in core management principles. Geared to undergraduates interested in the civic and entrepreneurial uses of scientific research, the Vagelos Program sorts through issues from health care and public policy through pharmaceutical and agricultural biotechnology to sustainable production and environmental remediation.

The burgeoning fields and industries spawned by the life-sciences revolution need managers who understand science and can translate discoveries into policies and products of value. “I think there’s a clash of cultures between people who come exclusively through business and those who come exclusively through the sciences,” Rea observes. The Vagelos Program brings the contrasting but complementary worldviews together.

Pauly contends that “it’s better to have somebody who’s comfortable in both areas than to have them learn one and then try to climb over the fence into the other. We want the students to be bilingual, so to speak. If we can train young people who begin their intellectual careers in management and science, that ought to lead to the ideal manager-scientist of the future.”

In his lecture, Rea lays out the chemistry of cholesterol (a lipid), the biology of its production in the liver and the pathology of high cholesterol in the vascular system. He then tells the story of the discovery of statins, molecular inhibitors of an enzyme that helps the body make cholesterol. The first statin was isolated in 1973 by the Japanese company Sankyo, but that research was not carried forward. Rea and Pauly speculate that because Japan did not suffer from an epidemic of cardiovascular disease, Sankyo did not have the American pique of urgency that would turn the laboratory breakthrough into a cholesterol-lowering drug. It was the pharmaceutical giant Merck that brought the discovery to market 14 years later. Early tests showed that Merck’s miracle drug Mevacor lowered by one-third the death rate of patients with cardiovascular disease. The life-saving product became the company’s first billion-dollar pill.

At the time, Merck was headed by P. Roy Vagelos, C ’ 50, Hon ’ 99, a research biochemist and cardiologist as well as CEO. “It often takes a very special scientist-leader to make things like this happen,” Rea observes. “My hunch is that Vagelos’ deep insight into lipid metabolism — he’d been doing pioneering research in that one area for more than a decade — and his direct experience of cardiology — the loss of patients — was the tipping point.”

Underscoring the vagaries of scientific discovery and business success, Pfizer later developed a more potent statin, Lipitor, which is equally effective but at far lower doses, making it a bigger seller than Mevacor or its successor, Zocor. “Sometimes it’s not bad to be second,” Pauly comments about Pfizer’s $10-billion pill.

“We need decision makers with a thorough understanding of the life sciences,” Rea affirms, “and fundamental researchers prepared to take the leap into the world of management with an eye to the general good of society.” Fundamental knowledge and real social benefits are both crucial, he insists. “Otherwise you can count Mark and me out.”

—PETER NICHOLS

Mark Pauly (left) and Philip Rea with students from the Life Sciences and Management Proseminar