The inside track from academia and industry

Translating science into business

The right kind of postgraduate training could help you to realize biotech's potential as well as your own.

Sheldon Schuster

Biosciences are revolutionizing our ability to understand and manipulate life. Yet the biotech sector has lost money over the past 25 years, while promised revolutions in the development of new drugs have not come to pass. The average cost of launching a new drug is now roughly the same for 'small' biotech and 'big' pharma: about $1.2 billion. In 2005, the US Food and Drug Administration approved just 20 new drugs. Phase III trial failures have doubled in a decade to 40%.

One critical problem has been the lack of properly trained talent, although the number of promising scientific discoveries is greater than ever. The US Department of Labor estimates the biotech workforce is growing at 12% annually. By 2012, the demand for biological scientists and technicians is expected to grow by 19%.

"Because the industry is experiencing such rapid growth," a department report notes, "biotechnology firms often demand more skilled workers than are available and are projected to need more workers than are currently enrolled in training programs."

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To turn this trend around, we must get better at translating basic scientific insights to commercial realities. In 1997, the Keck Graduate Institute of Applied Life Sciences (KGI) in Claremont, California, was established for this purpose. The institute is dedicated to a single mission: education and research translating the power and potential of the life sciences into practice for the benefit of society. It is the only US graduate school created exclusively to educate leaders for the life-sciences industry and offers a master of bioscience (MBS) degree, which combines business and science in a team-based, project-focused curriculum. Students concentrate on five practical families of skills: biomedical devices and diagnostics; bio/pharmaceutical discovery and development; bioprocessing; the business of bioscience; and clinical and regulatory affairs.

We regularly consult leading scientists, managers and executives on trends in the industry. As a result, we've increased our offerings in regulatory and clinical affairs, intellectual property and licensing, and operations and manufacturing. It is not a coincidence that these are all areas with strong overlap between science and business.

The industry professionals on our advisory council have told us they have all the traditionally trained PhDs and MBAs they need. Instead, they are looking for people with solid, but broad, scientific training; strong backgrounds in business, finance and management, and an in-depth understanding of how the biosciences industry functions. Moreover, they want scientists who can work in teams to achieve integrated scientific and business goals, and can communicate these outcomes effectively.

"The KGI prepares students for what they will face in the industry," says Dennis Fenton, executive vice-president of operations at Amgen. "In the real world, you have to have business, people skills and science to get a product to market."

The success of KGI graduates proves the point: 97% are employed in the life-sciences industry within six months of graduation, as clinical scientists, research associates, business analysts and in regulatory affairs.

Scientists trained in traditional disciplines are simply not taught how to function in the bioscience industry under the pressure of deadlines, high-risk ventures and capital shortages. At the KGI, our students gain real experience in businesses through mandatory, paid internships and corporate visits — and 35% of our students convert their internships into full-time posts. The capstone of the MBS is a year-long, industry-sponsored team project. With the help of an industry and a faculty mentor, groups of four or five students address business and scientific problems at the sponsoring company, signing confidentiality agreements and agreeing to strict timelines and budgets — as they will do throughout their careers. Last year, for example, one team helped Amylin Pharmaceuticals develop a line-extension strategy for its newly approved diabetes drug, Symlin. The team assessed drug-delivery options, regulatory requirements and business opportunities to present Amylin with a commercialization strategy. The project was so well received that two of the team members now work for Amylin.

Advances in the life sciences are occurring through the application of knowledge, tools and methods across traditional academic fields. Translating these advances into applications requires complex clinical and regulatory evaluations, market research and intellectual-property assessments. As the life-sciences industry looks to the future, it will need more scientists like the KGI's: technically savvy, commercially literate and adaptable.

As companies and research institutions think about preparing themselves for the decades ahead, they should consider adopting elements of the KGI model. Hybrid education, team-based learning, and project-centred curricula produce a flexible, mature and experienced workforce. That can improve decision-making throughout the chain of development, production and delivery.

Sheldon Schuster is president of the Keck Graduate Institute.