Find out which programs will be molding future pharma professionals from the President of the Keck Graduate Institute, SHELDON SCHUSTER

**Pharma Vision** What is happening in the life sciences industry? What do you see as today’s issues, and how do you see the future shaping up?

**SHELDON SCHUSTER** The industry is changing very quickly and dramatically, and the forces that are pushing that change are clear. There’s an enormous explosion in the amount of new information, as well as new technologies that are vastly increasing our store of knowledge and understanding of basic biology and utilization of biology in creating cures and treatments. That is changing the biological basis of the entire life sciences industry. In addition, people are recognizing the value of this information.

This is all coming together at a time when everyone is worried about cost and allocation of resources. These things are all converging to create a very difficult, while very interesting, time in our life sciences industry.

**PV** How is KGI positioned to address some of these issues and contribute to the industry?

**SS** The biggest limitation in the industry is not going to be in ideas or knowledge, but in scientifically educated management—people who understand both science and business. Due to this, we created a new educational model and were the originator of the professional science master’s degree. We created, from the ground up, a new strategy for graduate professional education. It is very team-based and is focused on things that go on in the industry. There are many other ways of learning how businesses operate, but in this particular industry, it’s important to understand the goings-on of this industry’s issues and challenges. The way that Amgen developed is very different than McDonald’s, for instance. There are different issues of intellectual property, funding and more that are all very specific to this industry. In particular, the students need to understand how regulation in this industry overlays everything. The standards are very high for efficacy concerns, safety and reproducibility.

The other thing to realize is the way we are going to be competitive in the world is by having more of innovation managed in the U.S. We need to have young people understand the value of entrepreneurship and educate them to be able to take a technology and develop that into a contributing part of society and industry.

**PV** How do your Centers at KGI contribute to your overall goals and vision?

**SS** It’s important as an institution to grow our teaching programs and our research programs and to coordinate them together; so we have established four Centers that are vital to this. One that is crucial to understanding how our industry works is the Amgen Bioprocessing Center. This Center is an important example of the core of the industry, which is in operations and
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producing the actual product. The beginnings of the life science industry occurred with the ability to produce molecules for therapeutics — operations and bioprocessing. In addition, we have the research expertise in our Center to enhance the ability of those bioprocessing operations.

We also have a Center for Rare Disease Therapies. When we looked at the unmet medical needs in the world, we found many diseases not getting the attention they deserve in therapeutics. When the numbers of people diagnosed are small, there is less money available. So the incentive is difficult. This Center is an opportunity to study rare diseases and to highlight them educationally to students as well as to the country. This Center is working with the National Organization of Rare Disorders and the FDA among others to try to put together information and opportunities for people who have these diseases. Rare diseases by themselves are indeed rare, but as a class they are not.

The Center for Biomarker Research is involved in validating markers for disease, like cholesterol for heart disease. If we have biological markers, we could determine much earlier whether people have a disease, as well as if the therapeutics are working. That Center is going to establish a good laboratory practice (GLP) facility. The environment is very rigorously controlled and defined, unlike other educational laboratories. This will be a unique opportunity for research, as well as to train young people how to operate under these conditions.

Finally, we have a Center for Network Studies. This was initiated due to our strength in systems biology — the ability to take enormous databases and put them together and manage them in a way to understand what is happening in other contexts. This is important as a research facility, but is very important in understanding how the industry is going to operate. The industry is going to look much more like a network in the future.

Those four Centers encompass our research activities as an institution, but they also integrate very carefully in what we are attempting to do with our educational programs.

PV KGI has introduced new degree programs; what options are now available to students?

SS Our crown jewel as an institution has been the Master of Bioscience degree. That is going to remain our focus; we’ve learned that there is a great need for students with this degree. Ninety-seven percent of our graduates get jobs in the industry within six months.

Recently, we have been thinking about other areas where our expertise could add value to students. One of these is in our post-baccalaureate program. This program is for students who want to get into medical school or other professional programs, but want to enhance their science skills first. This program will give them more science experience or science knowledge in areas they may not have had. This gives them an opportunity to work in a team environment, which is where we see the medical field going.

We are just launching this program and are seeing great interest in it.

The other area we have launched is the Postdoctoral Professional Master’s program. The job opportunities for many postdoctoral students in the academic arena are quite difficult, due to older faculty staying on longer and shrinking budgets. So we have discussed this with industry leaders and asked what type of skills they would like to see in postdoctoral graduates. They are looking for people with a science background who can also fit into the industrial culture. They’re finding it difficult now to hire Ph.D.s who have no experience and don’t know much about business.

We found this to be a good opportunity to focus this degree on business, management, and team management skills for postdoctorates. We’ve had a very rewarding response. We feel we are innovating again in the educational arena, and additionally, we are seeing a very good interaction between the Master of Bioscience students and Postdoctoral Professional Master’s students.

PV What are some other degree programs you are innovating at KGI?

SS We work with Western University and their School of Pharmacy where we have created an option for a dual degree program. Students can receive a doctorate in Pharmacy as well as a master’s in Bioscience in a total of five years. We think that is a very interesting idea because it combines the skills of pharmaceutical work with the business management and team-based skills we emphasize so heavily in our Master of Biosciences program. It will enable young people who graduate to move quickly into the biopharmaceutical industry. We are very excited about the launch of this program, and are confident from our talks with industry leaders that these will be very valuable skill sets.

We also have two Ph.D. programs. One is a combined MBS degree with Ph.D. in life science. It will prepare students for research and development positions in a variety of bioscience industrial or academic environments. Another Ph.D. program we offer is in Computational Biology. This is a joint degree with Claremont Graduate University that trains
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scientists, mathematicians, engineers and quantitative biologists in modern approaches in the life sciences.

**PV** How are your alumni faring in today’s job market?

**SS** Our alumni go into all the various parts of the life sciences industry. There are widely dispersed into both small and large companies. One of our trustees, the Vice-Chairman of our Board, Dennis Fenton, who was the Executive VP of Amgen, has seen many of our graduates go to Amgen, and characterized them as “stem cells”: They can go into any area of the business and be successful.

When companies hire our graduates they know these students have had a deep understanding of both business and science and have gone through rigorous training while working well in a team environment.

**PV** What areas of life sciences do you find your students going into after graduation?

**SS** Our students go into pretty much all areas of life sciences — biopharmaceutical, traditional pharmaceutical and diagnostic and devices. A lot of the skills are transferable throughout the life sciences industry: the regulatory concerns, the ability to put science and business together. We’ve also seen a significant number of our graduates go into the biofuels industry, especially those with bioprocessing experience. In addition, we are getting an increasing number of our students going into consulting. This is an area where our students can use their broad range of skills to work on whatever kinds of companies a consulting firm needs.

Our training experiences are unique; we are very closely aligned with leaders in the bioscience industry. It starts with our Board of Trustees, who are CEOs and Senior Vice Presidents of the largest biopharma companies, the National Academy of Sciences, and other leaders of industry. Our Board, among other reasons, represents our efforts to be closely aligned and supported by industry.

We have an industry advisory council who are also interested in our educational goals. They meet with students and conduct a mentoring program for students. It is well known that people hire who they know and feel comfortable with, so we have industry activities continuously on campus.

**PV** What sets you apart from other, similar programs?

**SS** KGI was born out of an environment that required innovation. Our college consortium, Claremont Colleges, looks at unmet educational needs. We came about from the idea that there were no programs that were teaching students how to be leaders in the life sciences industry. The other beauty of the consortium is, we started with a clean slate: there were no political or turf issues. We were able to look at the outcome we wanted to achieve and focus on the best way to get there. We were designed as an interdisciplinary team-based program. We have developed this very carefully, and the proof of the success of this model is that there are now about 160 professional science master’s programs in the U.S., and we are thrilled to see that growth.

**PV** How specifically do you develop leadership?

**SS** Developing leaders is a real challenge. It is important to understand that leadership is not just in CEOs but everyone in a company, as a member of a team and as a leader of a team. We have courses in leadership as well as bioethics; it is critical that leaders understand ethical responsibility. We really do need to achieve the highest ethical standard possible. We have a strict honor code; everything students do is measured on ethical priorities and transparency.

**PV** Where can our audience go for more information?

**SS** The easiest way to find more information is to go to KGI.edu, or they can contact me directly at president@kgi.edu.