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"Academic and workforce track are two models of biotech education in the US"

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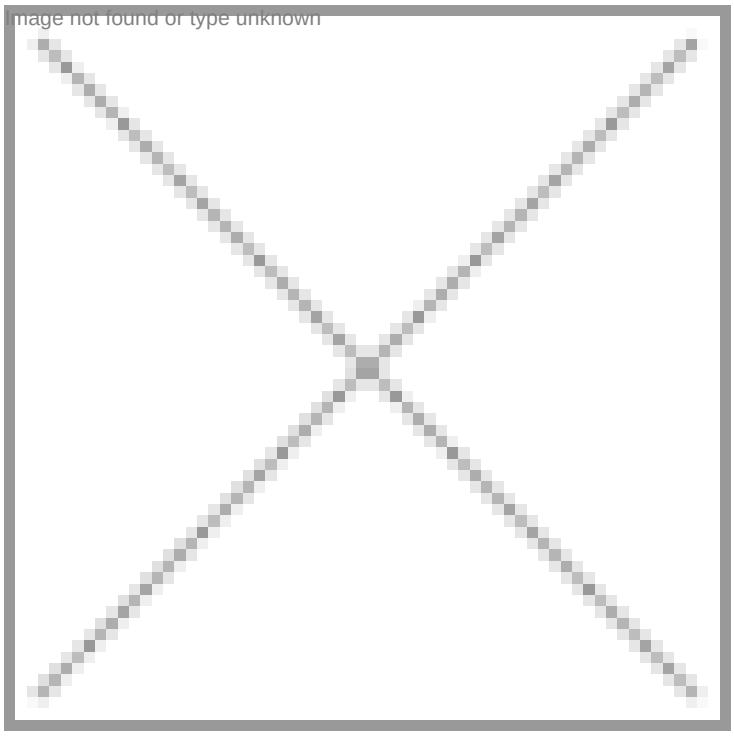
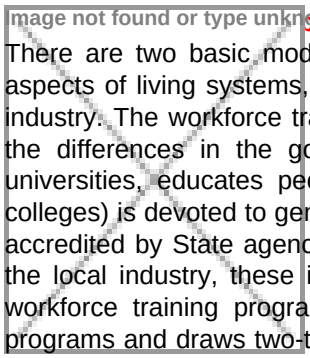


Dr Chandra Mittal, professor and associate chair, Department of Biotechnology, Houston Community College (HCC), shares his views about biotech education in the US. He can be reached at chandra.mittal@hccs.edu



biotech education offered in the US?

There are two basic models of education in the field of biotechnology. These are academic-track emphasizing theoretic aspects of living systems, and the workforce-track dealing purely with the development of skilled manpower for the biotech industry. The workforce track emphasizes the training in hands-on technical skills. The American system lays emphasis on the differences in the goals and approaches for the two tracks. While the academic track, primarily represented by universities, educates people to enhance scholarly skills, the workforce track (primarily represented by the community colleges) is devoted to generate technical manpower for the industry. Training programs at the community colleges (CCs) are accredited by State agencies and are administered by the workforce deans. Since the CC programs focus on the needs of the local industry, these institutions work closely with the industry, and seek their active inputs and advice. Each of the workforce training programs are required to have an advisory committee which monitors the progress of the training programs and draws two-third of its members from the industry. To enroll in workforce training programs, one needs to have K-12 level education.

What are the different biotech courses offered (at the graduate, postgraduate and PhD level)? What typically is their duration? And what are the prerequisites?

The different types of biotech courses available in the United States include associate degree, bachelor's degree and graduate (MS and PhD) degree. The typical duration for associate and bachelor's degree is two and four years respectively,

after high school (K-12). PhD takes about five years after BS degree. The associate degree in biotechnology requires prerequisite courses in biology, chemistry, algebra, computer applications, and English composition. Students with associate degree can also move on to universities and earn a bachelor's degree in biotechnology.

Can you elaborate about the courses offered and mandate of the HCC?

Since Houston is the world-renowned center for healthcare and energy sectors, HCC is an integral part of the community providing trained workforce in these areas. It has programs in biotechnology, health technologies, petroleum technology and biomedical engineering technology. The courses/degrees offered by HCC in these areas prepare the workforce for each sector. The key element of the training at HCC is the hand-on skill development and required practical training (internships) in the industry. This gives students the actual taste of the workplace. Our logo is "We make Houston work". Our main focus is four-fold - creating workforce at the technician level; corporate training where we cater to the development of certain niche skills; advanced certificates in different sub-sectors of biotechnology like bio-manufacturing and clinical research methodology, and to help small business in a collaborative manner by providing them the opportunity to incubate their ideas but all geared towards the industry.

How can Indian students be oriented towards the needs of the biotech industry?

Participation of the industry in the training program coupled with institutional flexibility to respond to the change in theindustry is at the core of success of workforce program. I am not sure if there are institutions in India, which share this feature. But these are most certainly needed. Creating such training programs from scratch is likely to take a long time and finances. In the short term, partnership and collaboration with institutions like HCC is a viable option for India. This will help India jump-start things and also sensitize students to the needs of the industry. There would be dual benefits of going in for such a partnership. First of all biotech businesses are becoming global, so the trained manpower, whether it is from India and some other country, has to be on par with the existing international standards. Secondly, India is developing to be a global hub for products and services. HCC type programs would be ideally suited for students who have an undergraduate degree in India. Such collaborative relationships can help the Indian industry meet their workforce needs as well as provide employment opportunities.

What are the different scholarships/ fellowships available?

There are various mechanisms and provisions available to finance college education in the US. These include loans guaranteed by the Federal and State governments, which are offered at very flexible terms. Additionally, there are also grants from government, private foundations and industry.

Are there any tie-ups with a counterpart Indian institute? Any agreements between the countries/universities?

Some of the institutions from India have shown interests in creating collaborative relationships with US community colleges in the area of workforce training. A few years ago, several Indian states took part in an Indo-US conference on developing collaborations with the US community colleges. With the increase in business activity in India by the US corporations, such relationships are likely to grow in the future.

Rolly Dureha