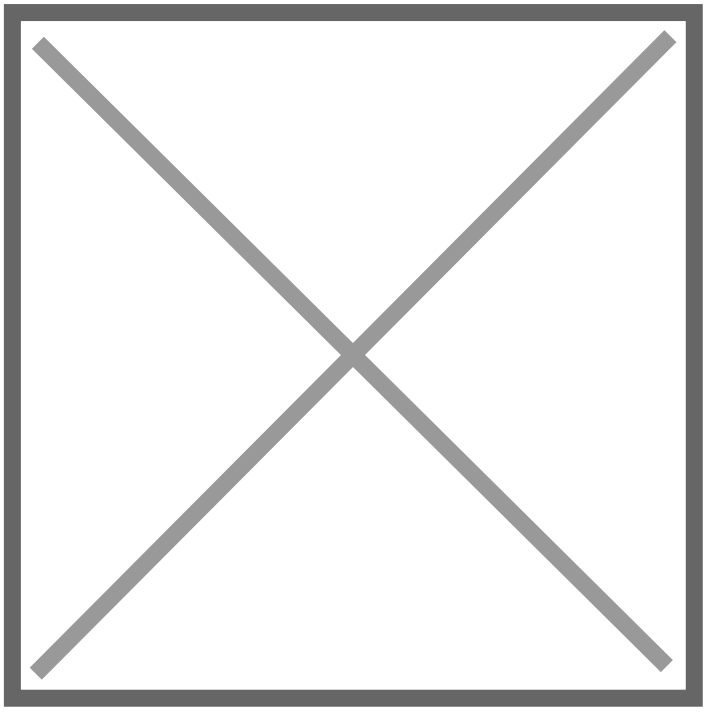
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The Dragon's biotech thrust

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In recent years, with the emergence of China as an economic giant, its performance in various sectors is monitored closely by entrepreneurs and policy makers in India. In biotechnology too, China is emerging as a key player riding on large-scale investments made by the government since the Eighties. India too started major biotechnology investments around the same time. Where do we stand vis-a-vis China in biotechnology. The second Ernst & Young report, " Beyond Borders: The Global Biotechnology Report 2003"provides an insight into the biotech industry in China. For the report, Ernst &Young asked Yuanhong Robin Ma, president of Clingenix, to discuss the progress of biotechnology development in Greater China. Clingenix is based in Sunnyvale, Calif., and has operations in Taipei, Taiwan, and Beijing. Excerpts:

Will China be a major global player in biotechnology*?*

China is becoming a world center for biotech R&D. A key factor in this transformation is the ample supply of well-trained chemists and biologists produced in recent years by the nation 's leading universities. The cost for this high caliber work force is very low Ã¢â?¬â?•as little as one-tenth the cost in the US. This situation is similar to what has happened in the infotech industry. Biotech is one of the key industries identified by the Chinese government. China's entry into the World Trade Organization (WTO) in 2001 and its determination to promote high-tech, knowledge-based industries will shape the future of biotech enterprise in China, This government support will have a positive impact on how innovative biotech R&D will be conducted and protected in China. The Chinese government spent more than $180 million between 1996 and 2002 to help build a life science industry with a work force of more than 20,000.Government funding will increase to $600 million (Rs 3,000 crore) by 2005.

The focus for China's biotech industry has been agriculture production and sales of imported vaccines and biotech protein drugs such as recombinant insulin and interferon-alpha and Traditional Chinese Medicine (TCM). Major research centers are the Beijing Genomic Institute and the Chinese National Human Genome Center in Shanghai, the National Engineering Research Center for Biochip Technology, Beijing, the Beijing Hypertension League Institute and Shanghai Traditional Chinese Medicine Innovation Center. Going forward, China is most likely to focus on developing its own innovative technology for molecular diagnostics, management of infectious and metabolic diseases, stem cell research, pharmacogenomics and clinical trials of TCM. There is pressure on China to comply with international standards. The Chinese biotech industry will abide by international rules simply because most companies want to collaborate with foreign research groups, publish in international journals and attract overseas investments.

Does China have a private biotechnology sector? How are companies funded?

Many Chinese biotech companies specialize in production and sales of biotech protein drugs and vaccines using recombinant DNA technology. Most of these biotech drugs are approved protein drugs and vaccines that have been in the US and European markets for many years. Chinese companies imported the complementary DNA sequences for these genes and

can produce eight of the 10 best-selling biological drugs in the US Sales are limited to China. By the end of 2000, there were 21 biotech products available on the Chinese market. Only three were developed in China with patent protection.

The biotech sector has turned out to be one of the most promising industries in China, generating a total sales revenue of nearly $3 billion (Rs 15,000 crores)in 2001 compared with $31 million (Rs 155 crores)15 years ago. The biotech companies are funded through four main sources: state-sponsored grants; joint ventures with research institutions such as commercial biotech ventures spun off from existing state-run medical and technology institutions; venture funds from traditional, well-established private companies such as China Petro and China Tobacco; and foreign investments from Hong Kong, Taiwan and Singapore. The concept of venture capital investing was recognized by the Chinese government as early as 1985. Many official policies promoting tech transfer from research institutions to private industry have since been published. However, the progress has been very slow mainly due to the lack of meaningful laws and regulations that adequately protect the venture capital investments in biotech. Private money is beginning to flow into China's biotech sector. However, most private fund managers are not as sophisticated as their Western counterparts. They lack the technical knowledge required to adequately evaluate the potentials as well as the risks involved. As a result, investments by the Chinese venture capitalists tend to be small. A typical China venture capital portfolio concentrates on companies with biotech products already approved or near approval in the West. At present, most foreign investors are from Taiwan, Hong Kong and Singapore. With a few exceptions, most venture capital firms in the US and Europe are still holding off until they are assured of a realistic exit route for their investments. The total investment for an average biotech company in China ranges from $1 million to $6 million(Rs5-30 crore).

What are the challenges in setting up collaborations in China and the US?

Funding is one challenge. Biotech, especially innovative biotech, is not cheap. It requires a long development time and can carry a very high risk. Very few Chinese venture capitalists realize that. Intellectual property (IP) protection is another challenge. Because of IP concerns, the US companies should take special care to state clearly in contracts the provisions for technology transfer to the Chinese company or joint venture. Most Chinese are also unfamiliar with Western management methods. Standard operating procedures are a must. There is also a lack of marketing know-how in China. Although highly trained technically, many Chinese workers lack the necessary business skills to market and commercialize sophisticated, hightech bio-products.

Pricing is another challenge. The government and its affiliates act as both the primary clients for products and the authority that sets prices. This can lead to unreasonable pricing that can change unexpectedly. In the US, there is a lack of knowledge about Asia. Most of the US venture capitalists still have a wait-and see attitude. Many are misinformed about China today. They are unwilling to acknowledge cultural differences between the East and the West. This can result in misunderstandings between corporate managers and investors. The depressed US market conditions affect China. Because of the geopolitical situations, many US investors are reluctant to put more money into any biotech or high tech venture. There is a higher burden of proof for biotech companies with plans to invest in China.

How have the current depressed market conditions in the US and Europe affected biotech development in China?

These depressed market conditions in the US and Europe actually provide an opportunity for companies with the right technology and right management team to succeed in both regions. Young talent, trained in the US and Europe, is returning to China, reversing decades of brain drain. Thousands of well-trained, bilingual, bicontinental Chinese who got their education in the West are returning to China as entrepreneurs to seek technology and business opportunities in China's development boom. These soon-to-be leaders, with a professional standard and global mindset, are helping to reshape the Chinese society and its way of doing business with the rest of the world. Some academics are returning to China for the intellectual freedom that they cannot find in the US and Europe, especially in the area of stem cell research.

How long will it take the emerging biotech industry in China to become competitive with the US?

It will take from five to 10 years, depending on which areas of biotech you are discussing. In China, the one-child policy has resulted in a severe population imbalance. By 2015,China will have 200 million people over age 60 and this number will double to 400 million by 2050,representing 25 percent of the total Chinese population. Disease prevention and management in the elderly is becoming a national priority and is driving biotech research. In the area of stem cell research and its clinical applications, China may quickly become a leader because the Chinese scientists have resources to conduct research in this area. Stem cell research and related medical applications are viewed favorably by the Chinese government and Chinese people.

Agricultural biotech is another focus of the Chinese government. Feeding a population of 1.3 billion requires constant improvement of crops. This includes the guided use of genetically engineered foods. In recent years, tight, new international standard regulations have been proposed by the government. China spent about $40 million Rs 200 crore) on plant biotech in 2000. The developers of TCM in China, working with Western companies and scientists, are using modern research tools and standards to develop next generation TCM products. These include fractionation of TCM to identify active compounds, testing first in mice and rats, then conducting standard human clinical trials. About 40 clinical trails of TCM products are being conducted in China and Taiwan.

Courtesy : Beyond Borders: The Global Biotechnology Report 2003 by Ernst & Young.