



The Indian biotechnology industry is growing at a phenomenal pace of 37 per cent annually, and is expected to burgeon into a \$5 billion industry by 2010.
A report by **Shivkamal**

BIOTECH BOOM Gathering steam



India, which has earned a name worldwide as the most preferred destination for global Information Technology (IT) outsourcing and software services firms, is gradually making a mark in another high-tech sector – biotechnology.

This sunrise sector, which has seen the entry of many new players both Indian and international, is poised to take the country to the big league with investments flowing in from all corners. The country has traditionally done well in the pharmaceutical and drug industry. As an offshoot of the pharmaceutical industry, the biotechnology sector took shape over the last 10 years with many entrepreneurs making substantial investments in it.

According to Dr M.K. Bhan, Secretary, Department of Biotechnology, Government of India, the industry – currently expanding at 37 per cent per annum – is growing phenomenally, and this can easily be sustained. It is projected to burgeon into a \$5 billion sector by 2010.

The biotechnology sector is now showing promises of expanding rapidly. From a small beginning 25 years ago, the sector has emerged as a dominant one providing employment to hundreds of thousands of skilled and qualified people. Its revenues crossed the \$2 billion-mark last fiscal (2006-07). The 30-plus per cent growth rate is faster than the worldwide industry average.

The bio-pharmaceutical segment led the growth, accounting for \$1.4 billion of the total revenue, with 20 per cent year-on-year growth. Similarly, bio-services and bio-agritech accounted for about \$500 million in revenues, and the rest was accounted for by bio-industrial and bio-informatics. The total exports from the sector amounted to \$250 million.

“With healthy and consistent growth rate, the emergent biotech sector is on track to achieve the \$5-billion target set for 2010,” says Kiran Mazumdar-Shaw, chairperson of Karnataka’s Vision Group for Biotechnology, and also head of Biocon India Ltd, the country’s largest biotechnology company. “The agri-biotech segment witnessed 50 per cent year-on-year growth, the highest globally with the largest acreage of nine million.”

The sector also witnessed 37 per cent increase in investment of \$580 million in the last fiscal. As the biotech capital of India, Bangalore attracted the lion’s share of investments of about \$250 million.

It is not just multiplying revenues, however. The biotechnology sector also witnessed the emergence of new companies and investments. Out of the total 340 biotech firms in the country, 183 of them are located in Karnataka, with 137 in Bangalore alone. The rest of them are evenly spread in other Indian cities such as Ahmedabad, Panaji (Goa), Mumbai, Pune, Vadodra, Hyderabad and Kolkata.

In an effort to support the biotechnology industry, the Government of India has chalked out an ambitious pro-

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gramme. Dr Bhan says the focus is on public-private partnerships and a lot of projects have been cleared. Last year, about two-dozen projects had been initiated, and countries like Australia, Sweden and Denmark had partnered with India. Several states have also announced their own programmes to pursue biotechnology as a major investment sector. To address the widening demand-supply gap in human capital, the Karnataka government is partnering with the Deakin University in Australia to start post-graduate and doctoral (PhD) programmes for high-end scholars and biotech scientists.

According to a study by the biotechnology industry body ABLE (Association of Biotechnology-led Entrepreneurs) and

INDIAN BIOTECH: POISED FOR GROWTH

Kiran Mazumdar-Shaw, one of India's most prominent biotechnology entrepreneurs, is closely involved with the rapidly growing sector in the country. Invited to join the Prime Minister's Council on Trade & Industry, she is chairperson and mission leader of the Confederation of Indian Industry's National Task Force on Biotechnology.

Mazumdar-Shaw also chairs Karnataka's Vision Group on Biotechnology, and also served on the Board of Science Foundation, Ireland. The chairperson of Biocon India Ltd – the country's pioneering biotech enterprise – also serves on the Advisory Council of the Government's Department of



Kiran Mazumdar Shaw, chairperson, Biocon.

Biotechnology, and is a board member of Bio-Ventures for Global Health.

The biotech entrepreneur spoke to India Now on the rapidly growing sector. Excerpts:

What are the challenges faced by the Indian biotechnology industry?

First and foremost is that innovation has to replace the generics and service mindset of the Indian biotechnology

industry. There are other important developments that cannot be neglected at the same time.

For instance, in discovery research, we have to make a transition from generics to new molecules. In the pre-clinical development stage, we need large animal house facilities. From the regulatory infrastructure perspective, genetically modified crops and non-disclosure agreements have to be addressed. Of course, there is the risk for investments. We need to look for more private and public funding. We should also tap Venture Capital (VC) investment in innovation.

How is the Indian biotechnology industry shaping up to meet the global demands?

Firstly, there is a trend of increasing availability of trained and skilled human resource. A number of Indian scientists with regulatory expertise are returning to this country. Also the regulatory infrastructure is fast improving.

From the companies' perspective, the standards of bio-manufacturing are improving. The companies are also increasing capabilities in clinical development. They are also increasing R&D collaborations with US/EU companies. Indian biotechnology sector is rapidly climbing up the drug development path.

What does the future hold for India in biotechnology sector?

India is poised for stupendous growth in the biotechnology sector. India is following the correct current global strategies to win more deals. India's cost and skill base supports affordable drug development.

The country is fast attaining global leadership in BT cotton cultivation. India is an emerging preferred hub for contract research organisations and contract manufacturing organisations. Also, the transnational partnership models with Indian companies are on the rise. The future is interesting.

BioSpectrum, India's cost and skill base supports affordable drug development. The scientific headcount has doubled to about 16,000 from the previous fiscal.

"India is an emerging preferred hub for contract research organisations and contract manufacturing organisations," notes Mazumdar-Shaw. "The transnational partnership models of global firms are suitable to Indian firms. Discovery research is leading to new molecules in place of generics. Pre-clinical development and presence of large animal facilities is set to attract investments in biopharma and bio-agritech segments."

The challenges before the sector are about securing private and public funding despite risk aversion among VCs (venture capital funds).

Over 200 multinationals have set up their operations in India, because of the low-cost-high value proposition.

The industry is lobbying for the need to improve the regulatory infrastructure, bio-manufacturing standards, clinical development capabilities, research and development (R&D) collaborations with US/European Union firms and acceptance of Indian clinical data by the US Food and Drug Administration and the European Agency for Evaluation of Medicinal Products of Europe.

The biotechnology sector is witnessing heightened activity with a number of companies, especially MNCs, showing interest in India. Sridhar Mosur, managing director, Jubilant Biosys Ltd, says over 200 multinationals have set up their operations in India, because of the low-cost-high value proposition.

Some of the major biotechnology

companies, which are on an expansion mode, include Biocon, Jubilant, Advinus, AstraZeneca, GE Healthcare, Avesthagen, Agilent and SRA Security. Many firms are spending an average of three per cent of their sales on research and development activities.

According to Ernst and Young, India ranks third after Japan and South Korea in the Asia Pacific Region in the biotechnology sector.

A number of merger and acquisitions have also taken place in the sector in recent years. Reliance Life Sciences, a unit of the Mukesh Ambani controlled Reliance Industries Ltd, acquired 74 per cent majority stake in the UK-based GenMedix. Mumbai-based Nicholas Piramal, the second-largest pharmaceutical

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health care company in India, acquired UK's Avecia Biopharma.

Biocon acquired the intellectual property assets of US-based Nobex Corp. It also entered into co-development of Intranasal Insulin with Bentley Pharma of the US. Another international company, Merieux Alliance, picked up a 60 per cent stake in Hyderabad-based Shantha Biotechnics, for global vaccine production. And the Tata group-promoted biotech firm Advinus inked a \$150 million research deal with Merck.

Biotech companies have also been attracting investments. Avesthagen attracted over \$40 million from a leading European venture capital. Indian entrepreneurs have started a number of new companies in the biotechnology sector.

INDIAN BIOTECHNOLOGY SECTOR: SOARING INVESTMENTS

YEAR	INVESTMENT (Rs. Crores)*	GROWTH
FY 2000-01	250	-----
FY 2001-02	504	101%
FY 2002-03	635	26%
FY 2003-04	850	34%
FY 2004-05	1215	43%
FY 2005-06	1650	36%
FY 2006-07	2270	37%

Source: ABLE-Spectrum Survey, 2007 (* Rs.1 crore = Rs.10 million; \$1 = Rs.40.5) (# FY = financial year).

THE BIOTECH BREAK-UP

SEGMENT (Rs. Crore)	REVENUES (2006-07)	% GROWTH	REVENUES (2005-06)	REVENUES (2004 -05)
BioPharma	5,600	20	4,700	3,570
BioServices	1,000	38	720	425
BioAgri	1,100	50	580	330
BioIndustrial	400	20	375	320
BioInformatics	130	20	110	100
Total	8,300	30	6,485	4,745

Source: ABLE-Spectrum Survey, 2007 (* Rs.1 crore = Rs.10 million; \$1 = Rs.40.5)



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ATTRACTING MNCs: Over 200 MNCs have set up operations in India because of the low-cost-high value proposition

OF BIOTECH VALLEYS, PARKS AND CLUSTERS

THE boom in the biotechnology sector is driving the growth of biotech parks across the country, as state governments try to lure both international and domestic investors to these clusters.

According to the Department of Biotechnology, nearly a dozen such parks are expected to come up in the country over the coming months. Over half a dozen parks housing biotech and life sciences companies are already operational.

They include one of the biggest, Genome Valley on the outskirts of Hyderabad, a sprawling, 600-sq km complex that includes the Shapoorji Pallonji Biotech Park and the ICICI Knowledge Park. Other ambitious parks include the Bangalore Helix, the International Biotech Park at Hinjewadi in Pune, the Tisel Biopark near Chennai and the Lucknow Biotech Park.

Genome Valley is a natural cluster for biotech research, training, collaboration and manufacturing activities, and offers state-of-the-art infrastructure to over 100 biotech companies. Interestingly, Genome Valley was recently issued a registration for the certification mark (intellectual property rights) by the United States Patent & Trademark office, Virginia. About two years ago, it had been granted a community trademark in the European Union.

These certifications entitle the Andhra Pradesh government to promote the Genome Valley brand both in the US and Europe. The Confederation of Indian Industry (CII), the apex industry body in the country, together with the Andhra Pradesh Technology Development and Promotion Centre and the state government initiated the process of registration.

Genome Valley includes the Shapoorji Pallonji Biotech

Park and the ICICI Knowledge Park. The former has attracted about a score of companies with investments of over \$100 million. Plans are on to expand the facility, considering the huge demand from industry.

The ICICI Knowledge Park has also had a good response from industry. Both the parks have been promoted as 'public private partnerships' with the state government having a stake in the projects.

Andhra Pradesh is also setting up other facilities, including a Marine Biotech Park at Visakhapatnam and an Agri Science Park.

In the neighbouring state of Karnataka, its capital Bangalore – dubbed the Silicon Valley of India – is home to the ambitious Bangalore Helix, a nearly \$100 million facility located on a 100-acre site near the Electronics City.

The Maharashtra government has tied up with the Chatterjee Group in promoting the International Biotech Park near Pune. Nearly a dozen companies have bought space in the 110-acre park that is coming up along side the Mumbai-Pune Expressway, which has been dubbed the 'Knowledge Corridor' by the government.

Other state governments, including Tamil Nadu and Uttar Pradesh, Himachal Pradesh, Haryana, Punjab, Uttarakhand, Madhya Pradesh, Rajasthan and Kerala have unveiled plans to set up biotech parks and clusters.

States that missed out on the action in the IT sector are apparently not willing to repeat the same mistake in the BT segment; they are building the right infrastructure to meet the expected surge in biotech investments.



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EXCITING TIMES: The industry is attracting a lot of global attention

They include Biozeen, Boston Biologicals, Navya Biologicals, Stempeutics, Silicocyte, Advinus Therapeutics, DGK Agro Foods, Polyclone Bioservices and Cell Works.

The industry is also working with various states to develop biotechnology clusters. Says Dr. K. K. Narayan, president, ABLE, and managing director, Metahelix Life Sciences Pvt. Ltd: "We have worked closely with the Government of Karnataka to develop Bangalore and the state as a top bio-cluster. There are programmes lined up for different interest groups, particularly Agri-Biotechnology."

The Indian biotechnology industry is also seeking opportunities and tie-ups around the world. The Confederation of Indian Industry (CII), the country's premier business body, has been organising 'biotech missions' to the US for the past five years.

These missions have helped boost

visibility and credibility for the emerging Indian biotech sector and for exploring global partnerships.

The CII led the sixth Biotechnology Mission to the US in May, which coincided with the BIO 2007 exhibition held at Boston, the largest biotech event in the world. For the first time India participated under a single roof – the India Pavilion – and the country's presence was one of the largest at the event.

The pavilion, spread over 4,400 sq ft, provided an opportunity to the Indian biotech industry, state governments and academic institutions doing research in life sciences to showcase their work.

For the Indian biotechnology sector, these early days are indeed exciting. Though still at a nascent stage, it is attracting a lot of global attention, thanks to the enormous potential that the country has – in terms of manpower, skills and infrastructure. 🌱