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Global Trends

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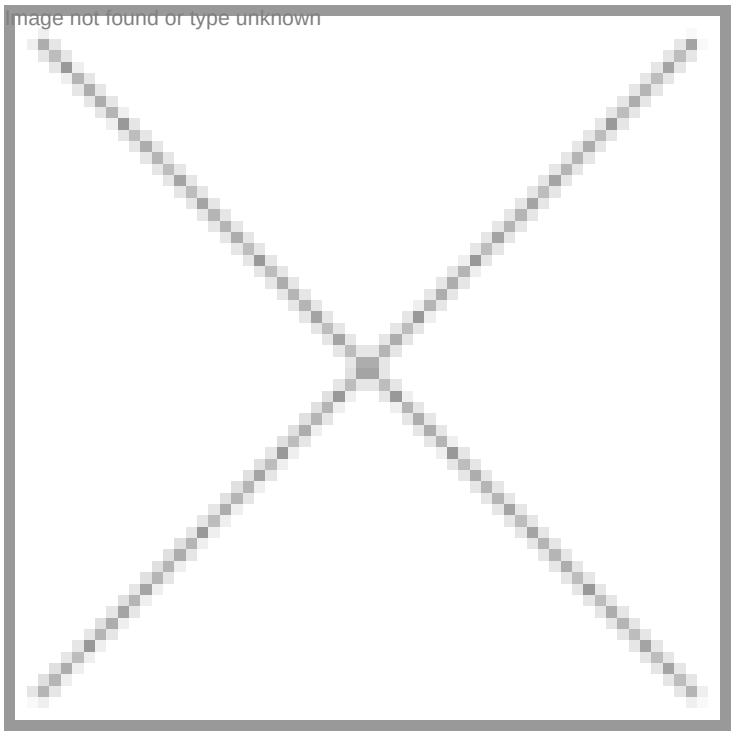

Any discussion of biotechnology industry development across Asia-Pacific cannot overlook the diversity of cultural traditions among the nations of this great region and the sheer market and intellectual power represented by the size of the population

The nine countries discussed in "On the Threshold", the Global Biotechnology Report 2004 on Asia-Pacific account for 43 percent of the world's population; 37 percent of the planet's 6.3 billion people live in just two of these nations, China and India. The other seven are Australia, Japan, Malaysia, New Zealand, Singapore, Korea and Taiwan.

The rapid economic growth in Asia-Pacific highlights the enormous potential purchasing power of the region, accelerating the pace of biotechnology industry development.

Asia-Pacific biotechnology at a glance			
PublicCompany Data(in US $)	**2003**	**2002**	**%Change**

The International Monetary Fund(IMF) shows China and India's economies growing by 7.5 percent and 5.9 percent respectively, in 2004, as measured by inflation adjusted growth of gross domestic product(GDP), compared to 3.9 percent for the US and 2 percent for the European Union.

Much of Asia-Pacific's rapid growth has been fueled by technology-initially through manufacturing and recently in some countries through information technology (IT) services.

Biotechnology now has the potential to replace IT as the engine of economic development for the 21st century. The recent success of Biocon India's public offering in early 2004 generated the sort of media attention showered on IT companies only a few years earlier, with much speculation that the company's founder and chairman, Kiran Mazumdar-Shaw had become India's wealthiest woman.

Revenue	1,504.70	1,375	9
R&D Expense	216.7	196.8	10
Net Loss	170	112	52
Number of employees	**9,810**	**9,760**	**1**

Source: Ernst & Young

While attention is often paid to the rapid economic growth in Asia-Pacific, less attention is given to the fact that some of these countries are already among the world's largest economies. Many economists argue that using "purchasing power parity" exchange rates is a better gauge of the relative size of different economies than official exchange rates. Using purchasing power parity exchange rates, China, Japan and India rank second, third and fourth, respectively, after the US in terms of GDP.

When Ernst & Young first expanded its US, European, Canadian and Australian biotechnology reports to include other major biotech centers in Asia-Pacific in 2002, it applied a uniform definition of biotechnology companies to collect data on the industry in an effort to make comparisons across all regions.

The definition is based on the entrepreneurial, independent biotech business model that gave rise to the industry in the West-from start-ups such as Amgen, Biogen, Chiron, Genentech and Genzyme. These companies launched the global biotechnology revolution. They were founded in the late 1970s and early 1980s in the US to apply recombinant DNA technology to manufacturing vaccines for infectious diseases, such as hepatitis B and protein therapeutics, such as insulin for diabetes. Since then, the global industry has grown to nearly 4,500 companies that are discovering unique, gene-based medicines for illnesses that previously were considered untreatable.

Number of Companies	2003	2002	% Change
Publiccompanies	120	108	11
Privatecompanies	547	493	11
Public and private companies	667	601	11

Source: Ernst & Young

The Ernst & Young definition of biotechnology also includes entrepreneurial companies that apply biotechnology to developing innovative products for agriculture, environment management, and industrial manufacturing. In some Asia-Pacific nations, the impact of biotechnology in agriculture is as great as in health care.

Unlike the West, much of the biotechnology activity conducted by publicly traded companies in Asia-Pacific is within conglomerates , particularly in Japan and Korea. Consequently, the financial performance indicators Ernst & Young quotes for Asia-Pacific publicly traded companies are estimates of the research-driven biotechnology activities conducted by the conglomerates, factoring out non-biotech activities. In addition, a significant share of the Asia-Pacific industry includes contract research and manufacturing activities that are outside the scope of Ernst & Young's definition of biotechnology companies.

Some differences between Western regional biotech industries and the Asia-Pacific industry are reflected in the financial indicators. For examples, the R& D expenses are significantly lower in Asia-Pacific than in other regions. Estimated R & D expenses of the Asia-Pacific industry are about 14 percent of estimated revenues, compared with more than 35 percent in the US, Europe and Canada.

These differences also make estimation of the Asia-Pacific industry's financial performance challenging. While Ernst & Young Asia-Pacific data show an aggregate net loss for the industry in the region, many Asia-Pacific publicly traded companies report considerably higher levels of profitability, reflecting that much of the financial gain experienced by these companies falls outside of their core biotechnology activities.

The financial data for 2003 show that Asia-Pacific publicly traded companies account for about 3 percent of global revenues compared with 77 percent for the US, 16 percent for Europe and 4 percent for Canada. The US recorded the most significant gain in share of revenues, a 5 percent increase from 72 percent in 2002. The US dominates the global biotechnology industry and has led the industry's 2003-04 recovery following two years of depressed stock market values worldwide.

Asia-Pacific, however, outperformed Europe, whose biotech industry registered drops in revenues, R&D expenses, number of companies and number of employees in 2003 compared with 2002. Asia-Pacific company revenues increased by 9 percent in 2003 over 2002, R&D expensed jumped 10 percent and the number of companies surged 11 percent.

Australia leads the Asia-Pacific region in number of public and private companies with 226. China, including Hong Kong, is

second with 136, and India, Taiwan and Korea round out the top five with 96,52 and 41 respectively.

Australia is sixth in the world in number of biotech companies. China and Hong Kong are tenth and India is 11th. The US is first , followed by Canada, Germany, the UK, and France to complete the Top Five.

Australia's biotech industry in 2003 experienced increase in revenues, R&D expenses and number of companies. The industry's total market capitalization also surge 21 percent or nearly $ 1 billion over 2002.

Ranking of Asia-Pacific countries in terms of number of companies		
1	Australia	236
2	Hong Kong and China (PRC)	136
3	India	96
4	Taiwan	52
5	Korea	41
6	Japan	40
7	New Zealand	28
8	Singapore	27
9	Malaysia	18
10	Philippines	9
11	Thailand	8

The biotechnology profile of Asia-Pacific, in which Australia is most prominent, is likely to change over the next few years. Japan's biotech industry is growing rapidly through the support of government funding and domestic investors. Investors, in the past several years, have been more aggressive in breaking with tradition to support start-up companies that record deficits instead of profits. In addition, Japan's university system has undergone recent changes that encourage scientists to form companies.

The Chinese biotech industry also is growing, fueled by demands for improved health and quality of life by the world's largest domestic market-1.3 billion people. The Chinese industry has evolved from companies that were formed in the late '1980s and early 1990s to manufacture therapeutic proteins developed in the West.

The new generation of Chinese companies are also copying the West, but this time it is the Western business model for creating unique, patent-protected medicines that command higher profit margins than the biogenerics or biosimilar drugs. The Chinese biotech companies of the 21st century are receiving considerable support from the government in funding in recognition of the significant of intellectual property protections.

The infrastructure for the Indian biotech industry, like that in China, was established to manufacture the therapeutic proteins developed in the West. Both Indian and China are positioned to take advantage of moves by governments in the US and Europe to create a regulatory framework for approving generic versions of successful protein drugs, such as erythropoietin, whose patent exclusivity is expiring. In 2003, sales of various patented versions of the anemia drug totaled more than $ 9 billion.

While the US and European biotech industries and their regulators debate whether the manufacturing of safe and effective biologics can be copied, companies in India and China have been doing it for years and are ready to enter Western markets with their likely lower-cost versions of these medicines.

In addition, Singapore, India, China, and Taiwan are promoting business advantages, such as reduced labor costs, to Western companies, in efforts to become the nations of choice for outsourcing R&D, clinical testing and manufacturing of biologics and pharmaceuticals.

The Ernst & Young report, On the Threshold has examined in detail the evolution of biotechnology in Asia-Pacific. What emerges is a portrait of a region whose biotech engine is revving loudly, fueled by aggressive government funding, that likely will drive many nations over the next decade to surpass competitors in Europe and begin to challenge the US for global dominance in production of biotechnology products.

Courtesy: Ernst&Young. Extracted from "On The Threshold: The Asia Pacific Perspective in the Global Biotechnology Report 2004." The full report is available with Ernst & Young.