

Life Sciences

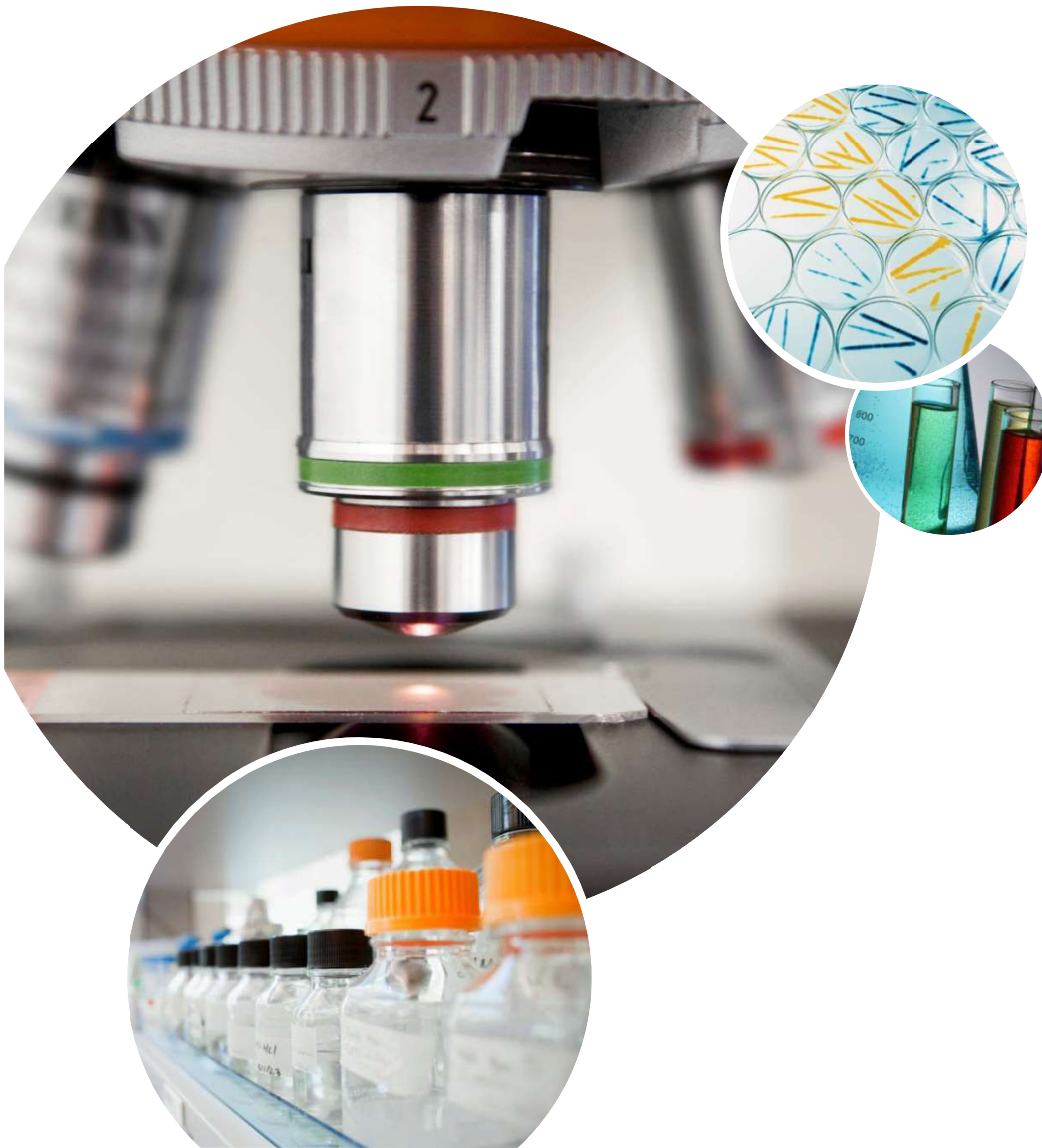
Cluster Report

Global . 2012

Portfolio optimization and strategic site selection are crucial for success in the industry's new reality

In the new reality for life sciences companies – one where the product development formula of the past no longer applies, where extensive M&A activity is needed to fill pipelines and mitigate risk, and where an increasing amount of attention and opportunity lie in emerging markets – prudent measures and strategic solutions are critical to succeed.

More than ever, it is essential to achieve the ideal portfolio balance, with the proper size and type of facilities in the right locations.





Global clusters

A review of established and emerging clusters within the three global regions of the Americas, EMEA and Asia Pacific

Americas

EMEA

Asia Pacific



Global themes

As the life sciences landscape continues to evolve, opportunities to optimize facility and real estate portfolios and site-select for enhanced innovation efficiencies emerge.

In the new reality for life sciences companies – one where the product development formula of the past no longer applies, where extensive M&A activity is needed to fill pipelines and mitigate risk, and where an increasing amount of attention and opportunity lie in emerging markets – prudent measures and strategic solutions are critical to succeed. Yet with all this change and uncertainty comes an immeasurable amount of opportunity.

Beyond the costs to develop new drugs and treatments, facility and real estate costs are among the highest expenses for life sciences companies, and are therefore top of mind as the industry refocuses and reprioritizes. The industry is challenged by the conflicting need to right size in mature markets, where sales and demand are waning and where M&A activity oftentimes results in excess or duplicative facilities, while strategically growing in emerging clusters in order to capture market share and savings opportunities. More than ever, it is essential to achieve the ideal portfolio balance, with the proper size and type of facilities in the right locations. Given that the industry is contracting in mature markets, creatively positioning dispositions and knowing how and when to hit the market, can greatly impact the timeline, and thus expense, of divestiture. Additionally, knowing in which locations to maintain and expand operations has major bearing on the ability to capitalize on skilled labor force and fiscal resources, and thus, efficiently achieve new product breakthroughs.

Location strategy in mature market clusters hinges on deep resources for innovation excellence

Established clusters in the United States, Europe and to some extent Japan realize that although the industry is increasingly looking to emerging markets for growth opportunities, much of the core R&D functions will remain domestic. It is also apparent that the industry is becoming more strategic with site selection, choosing locales with rich industry resources and capital and higher propensities for discovery and innovation. Although the mature clusters in the United States and Europe continue to be reliable choices, with deep and well-developed resources, emerging clusters within the United States and Canada are working feverishly to bolster their industry infrastructure.

Within the United States, the coastal cornerstone locales and certain mature clusters in EMEA continue to enjoy industry growth, oftentimes due to strong support from their world-class academic, healthcare and private sector institutions. Greater Boston, Philadelphia, New York City and Zurich

all reported development activity and demand from partnerships with area universities and hospitals. And although other established global clusters like the San Francisco Bay Area, San Diego, New Jersey, Seattle, Paris and much of the United Kingdom all reported constrained demand due to rampant M&A activity, each remain confident that their supportive industry infrastructure will furnish the resources and environment for new start-ups to backfill vacated space.

Economic development groups and public-private partnerships in emerging United States and Canadian clusters are making efforts to position their markets for success. Clusters like Westchester / New Haven, Central & Southern Florida, Indianapolis and Montréal offer targeted incentive packages and newly constructed, state-of-the-art incubator centers and parks specialized for the industry. Beyond incentives, each of these clusters are bolstered by research institutions and enjoy the same government-instituted regulations and protections; however, real estate in these clusters can be attained at a lower cost.

Emerging global economies strengthen R&D capabilities and infrastructure

Although emerging clusters in Asia Pacific and Latin America have been an industry choice for outsourced manufacturing for some time, the governments of emerging global economies are laser-focused on growing their high technology capabilities, due to increasing local demand and the positive impact they have on the economy and export revenue potential.

One of the biggest ways that emerging global clusters are increasing their competitiveness is through economic incentives and industry-dedicated funds. Clusters such as China, Brazil, India and Singapore all reported recent funding opportunities dedicated to the industry, and although many aim to ramp up the innovation potential of domestic start-ups, multinationals are able to capitalize on these offerings too, and have already done so in many cases. Additionally, nearly all the emerging global clusters cited have reported increased spending on overall public healthcare, widening the prospective patient pool and increasing consumer demand.

Beyond the fiscal resources directly available to industry companies, government and economic development group dollars have also supplied funds for prospective development projects that are

specialized to the needs of life sciences companies and start-ups. China, Singapore and Japan are home to some of the biggest government-funded life sciences parks and incubator centers.

The topic of globalization and movement into emerging economies always raises concerns over consistent and transparent regulations and intellectual property (IP) protection. In the past, emerging governments struggled to effectively outline and govern practices comparable to those in the United States and European Union. Knowing these issues are top of mind for multinational

firms, emerging governments are reacting quickly to improve their competitiveness in the global marketplace. India, for instance, has improved its patent protection laws with a signatory to the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights, and introduced GMP and ASEAN Common Technical Dossier guidelines to increase quality standards. Colombia continues to expand its Free Trade Agreements with global partners, which has an impact on important trade sectors, such as pharmaceuticals.

Global industry statistics

Cluster	Researchers in science, per thousand total employment ¹	Graduate students in science, engineering, manufacturing & construction, as a % of total graduate students ⁵	Gross expenditure on R&D, as % of GDP ⁷	Total patent applications, residents only ⁸
Brazil	1.4	12.2%	1.2%	2,705
Canada	8.5 ²	21.1% ⁶	1.9%	4,550
China	1.5	N / A	1.7%	293,066
Colombia	0.4	24.2%	0.2%	133
France	8.9	26.2% ²	2.3%	14,748
Germany	8.1	23.3%	2.8%	47,047
India	0.4 ³	N / A	0.8% ⁴	7,262 ⁹
Indonesia	0.2	21.7%	0.1%	N / A
Japan	10.5	21.9%	3.4%	290,081
Mexico	1.0	25.6%	0.4%	951
Netherlands	5.2	14.0%	1.8%	2,575 ⁹
Singapore	12.0	N / A	2.3%	895
Switzerland	6.0 ²	21.6%	3.0% ²	1,622
United Kingdom	8.8	21.7%	1.9%	15,490
United States	9.5 ⁴	15.3%	2.9%	241,977

Footnotes:

1. UNESCO, 2009

2. 2008 data

3. 2005 data

4. 2007 data

5. UNESCO, 2009

6. 2002 data

7. UNESCO, 2009

8. World Bank, 2010; includes total patents from all industries

9. 2009 data

Asia Pacific

The attractiveness of Asia Pacific as a market, as a research location and as a manufacturing base keeps growing. Demand for medicines is rising rapidly in countries such as China, India, Indonesia, Thailand and Vietnam.

Manufacturing standards are improving region-wide and the talent pool is enlarging.

Japan ranks second globally in terms of prescription drugs, after the United States, and has the region's second highest total health expenditure. Demand driven by the country's growing elderly population, faster new drug launches and easing pricing policies might not be enough to compound the weak growth of the domestic pharmaceutical market. On a buying spree, Japanese multinational companies are getting serious about expanding overseas.

By 2016, China will leapfrog Japan as the region's largest and the world's second biggest pharmaceutical market. China's eroded cost advantage as a production base is balanced by the quality of its talent pool, by its massive yet still largely underpenetrated domestic consumer market and by government support for the sector. Life sciences clusters in China are quickly emerging as top investment destinations. Beyond the major hubs that are already on Western multinationals' radars, Chinese domestic companies are taking position in less known clusters.

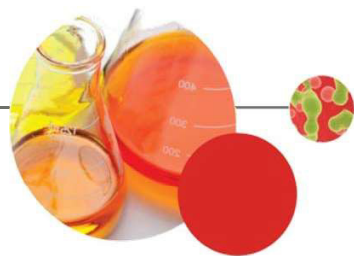
Fueled by a large population base and a growing middle class, India's life sciences industry has achieved double-digit growth in many areas and the country has the potential to become a major pharmaceutical hub and a lucrative destination of clinical trials for global giants. Foreign companies, however, may still encounter some challenges, such as legal infrastructure, when operating in the country. Existing clusters will benefit from progress made in high-tech infrastructure and human capital.

Another double-digit growth market, Indonesia, is anticipated to rank as the sixth largest pharmaceutical market in the region by 2016. Change in legislation will boost the attractiveness of this "pharmerging" market. The country is also set to tap into increasing outsourcing opportunities from Western countries.

Already housing contract research and manufacturing activities, Singapore's life sciences clusters are aiming to develop in the high-tech aspects of research and innovation. Supported by strong intellectual property protection laws, stable political structures and favorable tax policies, growth in the industry is expected to continue, in particular in the biologic sector on the back of massive investment by several large biotech and pharmaceutical multinational companies.

Four of the largest global pharmaceutical companies already earn a third of their revenues outside of their traditional markets of the United States, Western Europe and Japan. A vast majority of the sector's multinationals are reinforcing their presence in Asia Pacific. At the same time, domestic pharmaceutical companies are consolidating and expanding outside their home bases, competing with Western multinationals for space in the region's most dynamic life sciences clusters.





China is quickly emerging as a top destination for life sciences investment due to its huge market potential (large population, improving public healthcare systems and increasing healthcare expenditure as a percentage of GDP) and relatively low cost manufacturing sector.

Global trends

The aftereffects of the recession, coupled with the European sovereign debt crisis, continue to plague business operations in the mature market clusters of North America and Western Europe, including those of life sciences companies of all sizes and maturity levels. Although most life sciences companies continue to enjoy higher profit margins than those of other industry segments, it has become markedly clear that the product development formula of the past no longer applies. As a result, greater emphasis is being placed on the next wave of drugs and treatments – those stemming from biological organisms. Additionally, companies are increasingly diversifying their portfolios to mitigate risk and help fund the lofty costs of innovation, adding generic brands, crop and animal science and even consumer products through mergers and acquisitions.

New product developments have become ever more costly and difficult to achieve. Drug makers are attempting to achieve greater breakthroughs with less funds than in years past. The need to increase a company's likelihood of developing a new treatment continues to steer conversations around location strategy. Although many companies maintain R&D in mature markets rich with people capital and renowned research universities, others are turning to emerging global clusters due to dedicated private and public funding.

China market overview

China's pharmaceutical industry has enjoyed massive growth over the past decade. With the world's largest population, second largest economy and a growing middle class, China's prospective consumer base is unmatched by any country worldwide. The country's emergence onto the radar screen of multinational life sciences companies parallels its growth into one of the world's dominant economies with an increasingly open and inviting marketplace and waves of foreign investors lined up to take part. As for multinational companies that have been active in China for decades, they are changing strategy and shifting their focus away from merely exporting to domestic markets.

In the past, one of the primary reasons for interest in China was its low-cost manufacturing capabilities, but this advantage is gradually diminishing. Historically, Western pharmaceutical makers enjoyed a 30 to 50 percent cost savings by relocating the manufacturing of intermediates, APIs, starting materials and some finished drugs to China. Today, effort has shifted toward expanding capabilities beyond production into more high-tech R&D functions, as manufacturing costs and wages have increased and concerns over the protection of intellectual property are diminishing.

The life sciences industry has expanded beyond traditional clusters in China's eastern and southeastern regions to new areas around major cities in central and western China. Clusters remain the strongest around the sources of the best talent, so Shanghai and Beijing remain the key pharmaceutical R&D candidate bases, due to the presence of China's top five universities and proximity to renowned hospitals. For example, Merck rolled out a five-year, RMB 9.5 billion (\$1.5 billion)¹ project to build a new facility in Beijing for 600 researchers focused on drug discovery and translational research. Other clusters include cities such as Tianjin, Guangzhou, Suzhou, Wuhan and Xi'an.

¹ Six-month average conversion rate of 6.31 Chinese Yuan Renminbi (RMB) per U.S. dollar, as of October 2012.

Industry statistics

1.5 Researchers in science, per thousand total employment

Total patent applications, residents only **293,066**

1.7% Gross expenditure on R&D, as percent of GDP

Active manufacturing clusters include:

- China Medical City in Taizhou China Medical City High-Tech Zone – AstraZeneca, Boehringer-Ingelheim, Takeda and other leading pharmaceutical companies have construction projects here
- Greater Hangzhou region – MSD, Novartis, Lilly and Sanofi Aventis have operations here
- Greater Tianjin - where companies such as GlaxoSmithKline, Takeda and Novo Nordisk are based
- Yangtze River Delta (which includes Suzhou, Taizhou, Hangzhou and Wuxi) and Tianjin – two key candidate regions considered by multinational pharma firms

China is estimated to have over 4,500 pharmaceutical manufacturers and 8,000 distribution companies, with a fairly even distribution among state-owned, private domestically owned and foreign-owned enterprises. The market is fragmented, with no dominant domestic companies.

Chinese pharmaceutical manufacturers largely focus on nonbranded generics, whereas large foreign companies have so far been interested primarily in manufacturing. However, state funding and a return of domestic talent from abroad have fueled the rapidly growing biotechnology sector. Domestic start-ups and multinational companies now compete in this growing market. Domestic companies involved in bio and pharmaceutical R&D include C&O Pharmaceutical Technology headquartered in Hong Kong, NYSE-traded Wuxi Pharmatech in Jiangsu Province, Shijiazhuang Pharma Group from Shijiazhuang in Hebei Province, state-owned Harbin Pharmaceutical Group, NASDAQ-traded Sinovac Biotech in Beijing and Zensun Sci & Tech Co in Shanghai.

Multinationals are taking bolder steps to secure a strong foothold in the market, as highlighted by AstraZeneca's announcement in 2011 to invest over RMB 1.3 billion (\$200.0 million)¹ on a new plant in Taizhou Medical High Tech Zone (China Medical City). This investment represents AstraZeneca's biggest ever investment in a single production facility and is in addition to the group's decision to open its China Innovation Center in Pudong, Shanghai, in June 2012. The facility will turn out injectable and oral drugs for the domestic market.

In a decision strengthening China's position as a leading destination for contract research organizations (CRO), Quintiles announced in June 2012 that it would invest RMB 88.3 million (\$14.0 million)¹ to build its new regional headquarters in Shanghai and establish a partnership with the Shanghai Clinical Research Center (SCRC) to provide lab testing capabilities for local customers. Pharmaceutical multinationals are increasingly outsourcing and the list of companies looking to Chinese CROs to slash R&D budgets, lower development costs and enter the China drug market is growing. Beijing-based Pharmaron is in a partnership with Merck Serono since 2011 and inked a multiyear deal with AstraZeneca in 2012. The deal adds a few hundred scientists to AstraZeneca's China team of about 300 and is its biggest move in China to date. It was preceded by another CRO deal with WuXi PharmaTech to develop and commercialize a biologic product.

In 2011, Pfizer decided to relocate its antibacterial research unit from Groton in the United States to Shanghai, where it is setting up its new Pfizer China Research and Development Center. The move

was meant to get closer to important hubs for science and technology research and to give the company better access to the Chinese drug market. Other large pharmaceutical companies with research operations in China include Eli Lilly, Roche, Novartis, Bayer, Bristol-Myers Squibb, Novo Nordisk and Sanofi-Aventis.

The drug distribution system in China is highly fragmented with innumerable small-scale, local distributors, generating huge inequalities between urban and rural patients and increasing the risk of counterfeit drugs entering the supply chain. To fight these issues, improve delivery times and reduce costs, the latest "Five-Year Plan" emphasizes the goal of building up the distribution network for pharmaceutical products, following more mergers and acquisitions by biotech companies. The plan envisions that, by 2015, China will have up to three Tier I pharmaceutical distributors with a national reach and revenues of RMB 100.0 billion (\$15.8 billion).¹ The plan also suggests the establishment of 20 Tier II regional distribution businesses with revenues of RMB 10.0 billion (\$1.6 billion).¹

Industry framework

Intellectual capacity

The lack of a workforce with specialized knowledge and skills relevant to the pharmaceutical industry used to pose a real challenge in China, as in most emerging markets. To combat this, the government has been working to attracting expatriates. Financial incentives and modern laboratories offered by the government as part of the "Five-Year Plan" have, to date, attracted 150,000 Chinese professionals back to their native country, along with the education and industry experience they gained abroad. Over 80,000 PhDs in the life sciences from Western establishments have returned to China, bringing expertise to a wide range of fields. Today, the talent availability is excellent, thus companies can hire increasing numbers of science graduates who have globally competitive skills.

Innovation capital

Since 2010, China has invested massive amounts of capital in order to become a center for pharmaceutical R&D with global status via its national R&D drug research programs. For example, the five-year Mega New Drug Program launched in 2009 includes a stimulus package for new drug development of RMB 12.0 billion (\$1.9 billion)¹ to be invested between 2011 and 2015.

¹ Six-month average conversion rate of 6.31 Chinese Yuan Renminbi (RMB) per U.S. dollar, as of October 2012.



Traditional Chinese medicines (TCM) are also receiving unprecedented government support and funding to develop drugs and diagnostic tools targeted at chronic illnesses. Researchers are encouraged to identify and reproduce active ingredients from roots and herbs to submit them to Western-style clinical tests to gain wider acceptance. A few TCM are already recognized worldwide, such as the malaria treatment artemisinin.

Although the main recipients are likely to be domestic laboratories and e-pharmaceutical companies, foreign firms and universities with industry expertise or proprietary technology can also partner with Chinese groups and thus access this attractive funding and large domestic patient pool.

Several research parks, some of them funded by the government, are located throughout the country, supporting budding science and technology enterprises. They include Zhangjiang Hi-Tech Park in Shanghai, Zhongguancun (ZGC) Life Science Park in Beijing Municipality and Suzhou BioBay in Dushu Lake Science and Innovation Education District.

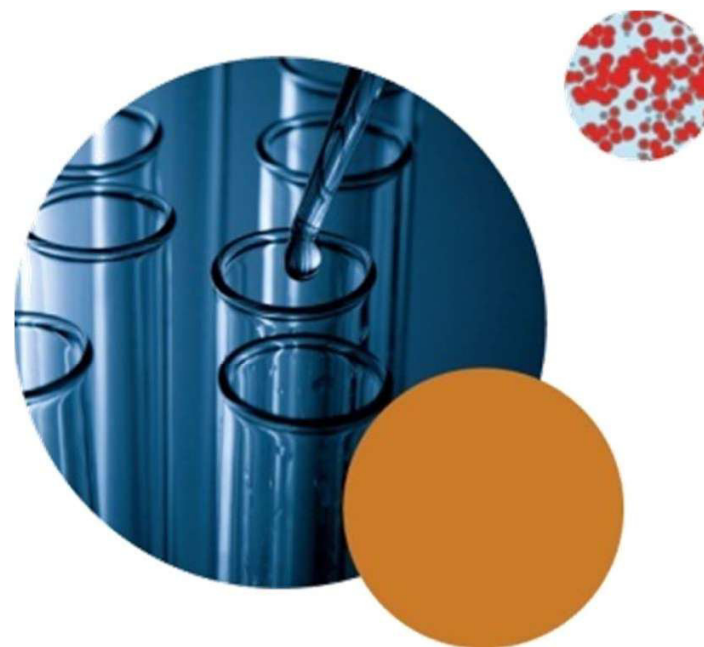
Fiscal and political resources

The Chinese government is trying to entice foreign and domestic investments in the life sciences industry, spending billions on the advancement of science and technology. The “12th Five-Year Plan” proposes a budget dedicated to biotechnology applications in the life sciences industry; the Chinese government will reportedly use RMB 10.0 billion (\$1.6 billion)¹ to fund major new drug innovation, with an average funding of RMB 5.0 to 10.0 million (\$792.4 million to \$1.6 billion)¹ per project from 2011 to 2015.

Recognizing the potential of its emerging life sciences industry, the government is working on multiple initiatives to encourage further development. As part of an economic stimulus package, the government allocated over RMB 850.0 billion (\$134.7 billion)¹ for healthcare improvements and intends to strengthen its basic health system while deepening reforms during the 2011 to 2016 period. Thanks to the RMB 782.4 billion (\$124.0 billion)¹ boost supplied during the first tranche of the 2009 to 2020 Healthcare Reform Plan, the country's health spend as a percentage of GDP increased to 5.1 percent, from 4.7 percent, and national medical insurance coverage now exceeds 90.0 percent.

As part of this national effort, price controls were put in place on several hundred drugs by the National Development and Reform Commission (NDRC) to improve their affordability. Biotechnology – including agricultural biotechnology, bio-manufacturing and fuels – is one of seven strategic emerging industries identified in the “12th Five-Year Plan.” The plan calls for government spending of over RMB 12.0 billion (\$1.9 billion)¹ to support the growth of the biotech sector through 2015.

New Good Manufacturing Practices (GMP) rules became effective in March 2011, rolling out elevated standards and greater emphasis on pharmaceutical quality control systems. Although the new GMP rules are expected to raise manufacturing and production costs, the enhanced standards will level the playing field in terms of quality and safety of drugs produced in China. Multinational



companies and Chinese manufacturers already operating at high GMP standards will be largely unaffected.

Outlook

IMS Health predicts that, by 2016, China will leapfrog Japan as the second biggest pharmaceutical market in the world behind the United States, with sales of about RMB 1.0 trillion (\$160.0 billion).¹ The expected 15.0 to 18.0 percent growth rate to be derived mainly from government spending will be made possible by economic growth and rising healthcare demand as the insurance market matures. Further, for 37.0 percent of pharmaceutical and life sciences CEOs interviewed by PwC for its 15th Annual Global CEO Survey, China is a top source of future growth.

As a production base, China's cost advantage has been eroded by inflation, rising wages, currency appreciation and challenges to the many tax reductions and rebates that China has traditionally offered to its own exporters. These various pressures will certainly reduce China's ability to undercut foreign markets. Balancing these trends, current talent availability, the improved funding environment via government support and the increase in quality facilities will all change the manner in which China competes in the industry. China no longer has to be viable as a low-cost destination to attract industry interest and investment. Certainly, the outlook for life sciences in this immense and growing economy is good. Challenges faced by pharmaceutical companies include China's rising but still weak protections for intellectual property and GMP compliance, navigating the legislative environment and ensuring market access comparable to domestic companies.

¹ Six-month average conversion rate of 6.31 Chinese Yuan Renminbi (RMB) per U.S. dollar, as of October 2012.

Industry Framework Trends

Venture Capital funding incentivized by opportunities beyond manufacturing

Capital has flowed into China's medical and pharmaceutical industries in growing volumes over the past few years as companies look to secure a strong market share in one of the most promising sectors in one of the world's strongest economies.

In 2011, total investment in the form of private equity and venture capital investment reached a high of RMB 5.7 billion (\$907.0 million).¹ During the same year, foreign direct investment in the industry grew to an all-time high of RMB 7.6 billion (\$1.2 billion).¹ More and more, foreign pharmaceutical companies are looking beyond China's low-cost manufacturing capability, and are now motivated to increase their investment in the country to access the domestic market for healthcare products and services.

Government support is key to the long-term growth of a life sciences cluster in China

In addition to implementing stimulus measures to improve investment and resource allocation to the industry as a whole, municipal governments continue to play a key role in the planning and development stages for major clusters such as Zhangjiang Hi-Tech Park and Zhongguancun Life Science Park.

Zhangjiang Hi-Tech Park, sometime referred to as the Silicon Valley of China, has become the destination of choice for pharmaceutical companies in Shanghai thanks to its long track record of investment by multinationals and its convenient location – a 45-minute drive from downtown Shanghai in Pudong District.

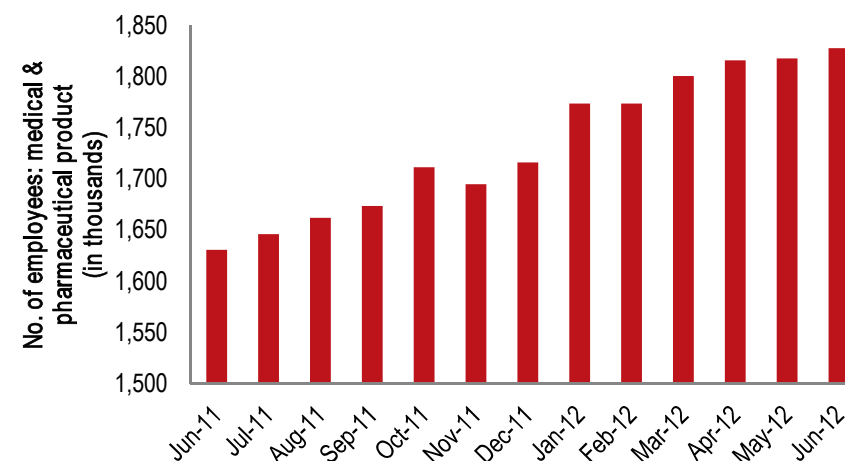
Industry employment steadily increases

Employment in this industry has grown rapidly alongside the increase in investment and resource allocation for medical and pharmaceutical products in China. As of June 2012, employment in the medical products field had grown to more than 1.8 million workers, adding an impressive 196,000 workers from one year earlier.

Higher quality education and industry experience abroad have ensured that the talent necessary for growth in China can now be sourced from within the country rather than relying primarily upon outside talent. As the government continues to encourage medical industry education and as Chinese professionals return in growing numbers from abroad to work in life sciences-related fields, employment shows no signs of slowing down in the future.

¹ Six-month average conversion rate of 6.31 Chinese Yuan Renminbi (RMB) per U.S. dollar, as of October 2012.

Employment



Source: CEIC

Beijing Daxing District

Overview

Compared with other science parks, the most competitive advantage of Daxing District is the industrialization and the efficient public service platform for the life sciences industry. The government provides strong support for innovation and new drug approval.

There are two parks oriented toward life sciences in Daxing District: the Beijing Economic and Technological Development Zone (BDA) and the Daxing Biomedicine Industrial Base (CBP).

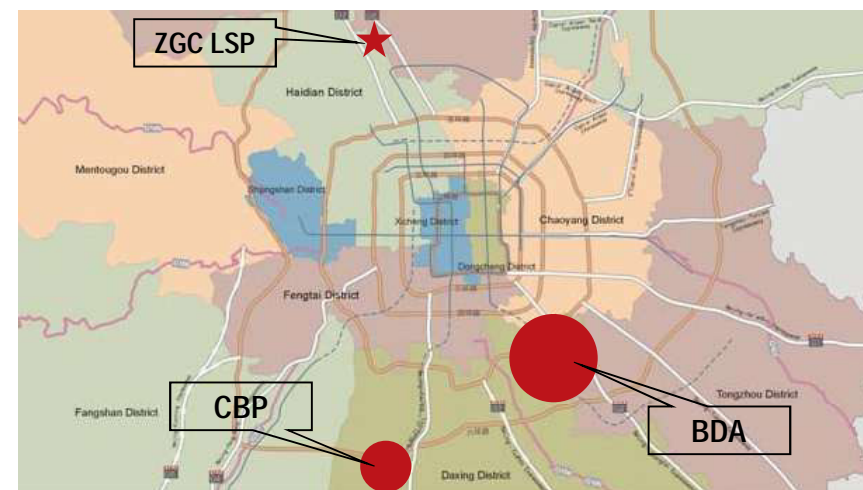
Known as “medical valley,” BDA is one of the three national biological pharmaceutical innovation incubator bases. Biomedicine is one of the leading industries in BDA. Foreign and domestic companies based here include Bayer, Sanofi, Tide and Tongrentang. Since its integration in Daxing District in 2010, BDA has counted life sciences among its six leading industries. The area offers many advantages in terms of fiscal incentives, tax concessions, innovation, talent and distribution. The E-town Biomedical Park, located in BDA east zone, is the public biomedical service platform of technology support, public infrastructure and incubation, with 178,176 square meters of gross floor area (GFA).

Conveniently located at the intersection of Jingkai Expressway and South Sixth Ring Road, CBP covers a 9.6-square-kilometer phase I planning area. In 2006, the park was allocated into the Zhongguancun Science Park and benefited from the ZGC's “1+6” policy. CBP's revenue reached RMB 9.1 billion (\$1.4 billion)¹ in 2011, with its industrial activities having diversified from pure manufacturing to R&D, as well as high-end manufacturing and health services.

Outlook

The Daxing District aims to become a leading modern biomedical industry hub, covering all aspects of the life sciences industry chain, from R&D and manufacturing to sales and service.

¹ Six-month average conversion rate of 6.31 Chinese Yuan Renminbi (RMB) per U.S. dollar, as of October 2012.



BIOCYTOGEN

leased a whole floor of 2,000 sqm in the E-town Biomedical Park. The asking rental rate was RMB 2.90 per sqm per day in mid-2012.

CRO / CMO SERVICE PLATFORM

The CBP cooperated with several outsourcing enterprises to establish a CRO and CMO service platform to facilitate the application of R&D into production.

BEEHALL

In February, BeeHall purchased 25,060 sqm industrial land in CBP, the turnover was RMB 25.5M with land price of RMB 1,018 per sqm.

BIOTECH PHARMA

In May, Biotech bought 17,759 sqm industrial land in BDA core area, the land price was RMB 1,100 per sqm with planning GFA of 35,517 sqm.

Compared with other parks, BDA and CBP's unique competitive advantages are the convenient drug approval procedure and the strong support to innovation. The Daxing District is trying to become a national biomedical innovation base with global influence.



(left to right): the Tongrentang CBP factory and the Bayer BDA factory

Activity key:

Leasing

Development

Sales

Tenants in the market

Large blocks of space

Beijing Zhongguancun (ZGC) Life Science Park

Overview

Developed by the Beijing municipal government, Zhongguancun (ZGC) Life Science Park includes a two-phase master plan that will cover over 240.0 hectares. Phase I of the project includes a new enterprise incubation center, a small business development center, R&D facilities, industrial production facilities and a medical service area, totaling roughly 540,000 square meters. Phase II includes 830,000 square meters of medical care and commercial space that integrates the clinical, research and teaching resources of the Chinese Academy of Medical Sciences and the Peking Union Medical College. In April 2012, Zhongguancun Development Group and China State Construction established a joint venture to carry out Phase III that will focus on three functions: high-end industrial transfers, R&D centers and the regional headquarters of major global biopharmaceutical and healthcare companies.

Outlook

In August 2012, Zhongguancun Life Science Park was identified as the first batch of foreign trade transformation and upgrade by the government. The Beijing Commercial Municipal Commission will introduce a foreign trade service platform and upgrade the branding and the distribution network to attract more world-leading biomedical companies to the life sciences park.

J&W BIOTECH
a recent JSR and Wantai JV, leased 600 sqm of manufacturing space from Wanhai.

BOYA C-CENTER
is the only project for sale, with a 117,000 sqm GFA and an asking price of RMB 17,000 per sqm.

PHASE II
A 45,000 sqm GFA Biotech R&D Center is under construction, and will be completed at the end of 2012.

PKUCARE PARK FOR LEASING
Phase I (80,000 sqm) will be on the market in Q4 2012, the asking rent is RMB 3.50 per sqm per day.

After the Changping subway line opened in 2010, the convenience of travel to the ZGC Life Science Park attracted more attention from global pharmaceutical enterprises.

To date, the park owns seven state-level R&D centers, and has received over RMB 20.0 billion in investment.

Suzhou Industrial Park's BioBay

Overview

Located in Suzhou Industrial Park's Dushu Lake Science and Education Innovation District, the Suzhou BioBay park spans 86.3 hectares and offers innovation incubator and accelerator support for the development of the emerging biological and nanotechnology industries. Suzhou BioBay includes an industrialized area, an administrative office and several residential facilities. The Suzhou Institute of Nano-tech and Nano-bionics and the Chinese Academy of Sciences are present at Suzhou BioBay.

Suzhou BioBay has developed capabilities for gene technology and nanotechnology with the most complete industrial chain and the highest industrial agglomeration level in China. The gene technology cluster covers the complete industrial value chain consisting of the gene reagent development, gene detection service, gene diagnostic and gene therapeutic drug research and development (R&D), gene engineering drug and vaccine R&D. Based on the strength of the existing microelectronic and photoelectric manufacturing in Suzhou Industrial Park, BioBay's nanotechnology cluster focuses on developing five major nanotechnology applications: new nano materials, nano-photoelectronics, nano-biopharmaceutical, micro/nano system manufacturing, nano energy saving and environment protection.

Outlook

Phase III of BioBay will be completed in late 2012 and will contain larger size R&D offices, laboratories and light factories.

APPTec
Mid-2012, Apptec leased a build-to-suit (BTS) building of about 6,000 sqm.

SHURE
is in the market for 20,000 sqm, including manufacturing, R&D and administrative space.

BIOBAY PHASE III
To be completed in 2012, Phase III includes larger size R&D offices, laboratories and light factories.

SUZHOU INT'L SCIENCE PARK VIII
To be completed in 2014, includes lab, R&D, office and manufacturing

Led by strong incentive policies and professional services along the industry chain, BioBay has successfully attracted over 160 companies and gained an annual revenue of over RMB 880.0 million.

Chengdu's TLSP and CIHC Parks

Overview

Tianfu Life Science Park (TLSP) in High-Tech Zone and Chengdu International Health City (CIHC) in Wenjiang Zone are Chengdu's two life sciences-oriented parks.

As the gateway for the life sciences industry in Western China, TLSP is supported by the Chengdu municipal government and the Chengdu High-Tech Zone. Foreign and domestic companies located in TLSP include Renhe Pharmaceutical Group, Jiangsu Hengrui Medicine, ChemPartner and West China Hospital.

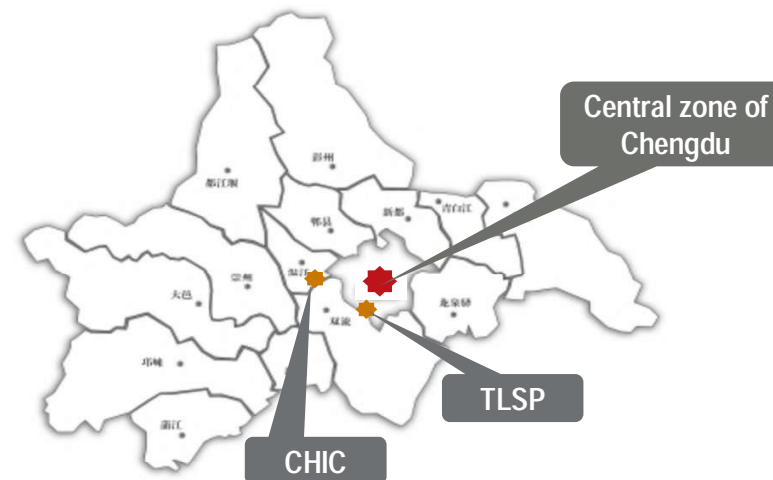
Approved in 2008 by the Chengdu Municipal Government, the CIHC project is a professional, international, diversified medical rehabilitation and health service platform covering a total area of 30.0 square kilometers. CHIC is a pioneer as a Chinese modern medical industry cluster that integrates health interventions, health services, medical tourism, education and research and business supports.

Outlook

The biomedicine and health sector is included in Chengdu's "12th Five-Year Plan" as a major developing industry, and benefits from fiscal incentives, tax concessions and other supporting policies for innovation, talent and distribution. CIHC will pool domestic and international resources to develop this industry. TLSP will reinforce its role as a cooperation platform between international and western China medical institutions



(left to right): Chengdu International Health City and Tianfu Life Science Park.



TLSP ASKING RENTS

At TLSP, the approximate asking rental price is RMB 1.33 per sqm per day in 2012.

CIHC ASKING RENTS

At CIHC, the asking rental price for an office building is around RMB 1.50 per sqm per day.

MEDICAL TRANSFORMATION CENTER FOR SALE

The asking sales price for West China Hospital's 17,500-sqm Medical Transformation Center is about RMB 6,500 per sqm.

DEVELOPMENT COMPLETE

Construction of TLSP's 221,553-sqm area, including seven R&D buildings, two offices and one incubation center, is completed and is available for sale and leasing.

With strong support and attention from the Chengdu municipal government, the biomedical and health industry is expected to attract more leading companies. Both TLSP and CHIC are aiming to become national best practice parks.

Activity key:

Leasing

Development

Sales

Tenants in the market

Large blocks of space

Shanghai Zhangjiang Hi-Tech Park

Overview

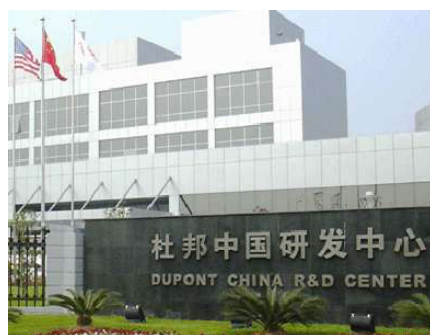
Zhangjiang Hi-Tech Park was established in Shanghai in 1992 as China's state-level, high-technology, industrial development zone. A multitude of national companies are based here, in addition to start-ups and other companies looking to benefit from its incubator program. According to the "12th Five-Year Plan," Zhangjiang Hi-Tech Park will maintain its investment in industrial fixed assets at RMB 20.0 billion (\$3.2 billion)¹ a year to total RMB 100.0 billion (\$15.8 billion)¹ by year-end 2015. Earlier this year, EMD Millipore opened a 2,601-square-meter Biopharmaceutical Technical and Training Center in the park to support manufacturers in the area with GMP compliance.

Zhangjiang Biotech and Pharmaceutical Industrial Base was founded in 1994 as the core area of the Shanghai State Bio-Industrial Base. After more than 15 years of development, the base has gathered over 400 domestic and foreign life sciences companies, research institutes and related service institutions.

Outlook

There were 69 new projects under construction in 2012 in Zhangjiang Hi-Tech Core Park and Shanghai Pudong Kangqiao Industrial Park. Ten projects in Shanghai International Medical Zone (SIMZ) exceed a total construction volume of 4.0 million square meters, with a total investment of RMB 3.8 trillion (\$602.2 billion)¹ over an area of 689,300 square meters. SIMZ's ambition is to become a modern medical science hub with advanced technology and sustainable design. The most representative project is the Shanghai International Medical Center, which has a total investment of RMB 800.0 million (\$126.8 million).¹ It will form "1+x," a complex hosting a general hospital and many specialized hospitals providing high-end medical service for patients from the Yangtze River Delta Region.

¹ Six-month average conversion rate of 6.31 Chinese Yuan Renminbi (RMB) per U.S. dollar, as of October 2012.



(left to right): Zhangjiang Pharma Valley and Dupont R&D center in Zhangjiang.



Source: www.zjpark.com

RIISING RENTAL RATES

Due to the lack of new supply in the Zhangjiang Biotech & Pharmaceutical Industrial Base, the average asking rental rate reached RMB 3.7 per sqm per day in 2012, up 12 percent from 2011.

4.0M SQUARE METERS UNDERWAY

Major industrial projects kicked off in 2012 in Zhangjiang Hi-Tech Park, amounting to a GFA of 4.0M sqm for a total investment of RMB 26.0 billion.

INDUSTRIAL LAND SALE

In January 2012, a domestic biochemical enterprise purchased 40,806 sqm of industrial land in the South Zhangjiang area. The average land price is RMB 3,071 per sqm.

ROCHE

is in the market for 20,000 sqm in Shanghai.

Zhangjiang Hi-Tech Park was recently expanded to incorporate Kangqiao Industrial Park and Shanghai International Pharmaceutical Park. Its total area reached 75.9 square kilometers after the three areas merged together.

Activity key:

Leasing

Development

Sales

Tenants in the market

Large blocks of space