



Heads of Terms Changes in China

Investment in biotech and pharmaceuticals continues to change in China and at PharmaVentures we have seen a more outward looking country, after decades of focus on internal growth and development. China has seen remarkable economic growth in the last two decades, becoming the 2nd largest economy of the world after the US. Despite such growth and a rapid consolidation of Chinese pharmaceutical companies in the past decade, they are still behind their Western counterparts, when it comes to market cap and the level of innovation. This is because they have largely focused on their own internal market and generally not looked far beyond their borders. As a result, no Chinese pharmaceutical company is currently among the world's top 20 pharma/medtech companies list.

However, changes are happening rapidly that will likely transform the outlook for Chinese pharmaceutical companies. For example, venture capital is moving away from Health IT to more biotech/medtech companies, led by expert pharma and biotech expats returning to China from the West. Chinese venture capital is also seeking opportunities internationally, in order to access innovation and knowledge outside of China, an example of which is our successful client mandate with Biosceptre which has brought Chinese VC capital to the UK.

We expect such significant changes to continue in all aspects of Chinese pharmaceutical research and development, including funding, R&D, deal trends, regulations and pricing & reimbursement. For example, in the past pharma companies had to repeat their clinical trials in China, even if the same product was already approved and marketed in other territories. Now they can use clinical trial data from other jurisdictions for Chinese regulatory approval. This will help both domestic and overseas companies.

With these drivers transforming the Chinese pharmaceutical industry, we find from our own activities that they are now actively pursuing opportunities globally, thus leading to increased cross-border deal volume and subsequent value.

Dr Fintan Walton
Chief Executive,
PharmaVentures Ltd.

industry insight

China Healthcare 2.0

Age of Consolidation, Innovation and Capital Deployment



Eric Liu
Business Analyst, PharmaVentures Limited

Despite the impressive growth observed in China over the last two decades and with a projected healthcare market of RMB 8 trillion (USD 1.2 trillion), Chinese life science companies lag behind top-tiered Western counterparts, both in terms of market capitalisation and innovation. What makes 2017 remarkable is that the age of pure window shopping by Chinese players seems to be something of the past and companies are actively pursuing international strategies. Ambitious and visionary pharmaceutical companies and healthcare investors are all establishing their footprints across the world. The next five years point to exponential growth in cross-border knowledge and capital exchange, offering unprecedented opportunities for deal making between the West and the East for those who are prepared. This article highlights some of the changes, opportunities and challenges. We believe that three key themes will dominate this coming period: industry consolidation, technological innovation and optimisation of capital operation and deployment.

China Today

Currently, the Chinese healthcare market is experiencing a golden period of growth, with the healthcare market projected to grow to RMB 8 trillion (USD 1.2 trillion) in 2020 and healthcare costs as a percentage of GDP growing from 5.6% in 2014 to 6.5% and 7% by 2020. Over the last 12 months, there have been a number of key initiatives established by the government to boost growth. The latest significant one happened in March 2017, where the National Health and Family Planning Commission and thirteen other ministries jointly issued the 13th Five-Year Healthy Aging Plan, which strongly encourages private capital deployment and increased healthcare services for the elderly.

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deal update

PharmaVentures' Client Closes Series A Funding

PharmaVentures Capital Limited advises Biosceptre International Limited, a clinical stage oncology company, on its Series A private placement by Tuspark S&T.

[Read the full press release on page 4.](#)

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China Healthcare 2.0

From an R&D perspective, reformation of the China Food and Drug Administration (CFDA) in the last few years has seen a decline in clinical trial registration and generic drug registration, as quality control toughened and companies turned to innovative drug development. In 2016, Category 1, which is the route for innovative drugs, saw 276 clinical trial applications and 127 clinical trial application approvals. Additionally, 4 new drugs were approved by the CFDA in the same year, which compares with that of the US FDA, which approved 22 novel drugs in 2016.

Internationalisation of regulatory frameworks is a new incentive for growth of the industry. Aligning CFDA to international regulatory standards and supporting bidding policies means there is an increasing number of Chinese enterprises engaging in generic and new drug registration in other jurisdictions, with increasing numbers of clinical trials for innovative medicines. Pharmaceutical manufacturing also continues to show great improvements in quality, with an increasing number of enterprises passing EU and US GMP on-site inspections. Moreover, there has been a significant increase in outbound biotech investment, exceeding a total of USD \$5 billion for 2016, despite the money flow controls imposed by the government.

Domestic investment preferences have also changed. Healthcare IT investments cooled down drastically in 2016 with significant reductions in valuations. On the other hand, early stage biotech companies led by Western educated Chinese scientists who have returned to the mainland, as well as medical device and precision medicine companies operating in clear niche segments, have been favoured by venture capital investment. Healthcare services and retail chain pharmacies, as the two major terminal users, have also gained increased attention of investors.

Fast changing political and regulatory dynamics

The Chinese healthcare market is heavily influenced by demand in general but also by government policies, which have been fast changing in the last 12 months.

In addition to the impact of Centre for Drug Evaluation (equivalent to US Center for Drug Evaluation and Research) increasing its staff size five-fold to help with regulatory backlogs, there have been four major changes impacting the industry:

- 1 The central government in August 2016 held the first national health conference since the turn of 21st century. Since then, the Healthy China 2030 plan, the 13th Five-Year Health and Wellness Planning and the 13th Five-Year Deepening Medical and Health System Reform Plan have all been developed.
- 2 Changes and improvements in quality control and regulatory supervision.
- 3 Significant healthcare reforms, including structural reforms of national medical insurance, healthcare institutions and medicine supply to improve access to care and medicines for the public.
- 4 Multiple policies supporting the growth of the life science industry, including from the State Council, Development and Reform Commission, Ministry of Industry and others in areas such as taxation, R&D support and funding.

Opportunities and Challenges

In our opinion the Chinese market presents five areas of opportunity:

- 1 A steady increase in the demand for healthcare driven by the aging population and increased healthcare product consumption.
- 2 Technological advancements such as breakthrough therapies and smart medical devices are opening new market segments.
- 3 Supportive policies for manufacturing, research and innovation.
- 4 Significant regulatory changes as described above. This brings closer alignment of CFDA regulations to those of the US and EU. Regulatory inefficiencies have been a major roadblock for the industry in the last decade. New discussions and proposals on orphan drugs and multi-region clinical trials are particularly exciting.
- 5 Commercial insurance, as a proportion of the total insurance market, is still emerging but it is deemed to have tremendous growth potential and will serve as a significant pillar in supporting health of the populace.

Overall, the operating environment for life science companies is improving. The demands for faster approval by the general population and improving regulatory environment, coupled with reduced bureaucracy, is making it increasingly favourable to do business in China.

At the same time, it should not be understated that, despite the potential for tremendous growth, it comes with significant challenges. The biggest challenge is due to tightening of public expenditures. This includes controls on total healthcare expenditure, public hospital expenditure and new policies to standardise national medical insurance payments. As a result, the tremendous growth enjoyed by the industry since the national healthcare reform of 2008 has slowed down. Pricing pressures are also significant. The average gross margin on many generics is just over 10% and local governments are pushing for price cuts of up to 20%. Furthermore, listing unprofitable companies is still not allowed by the China Securities Regulatory Commission making it very difficult for biotech start-ups to raise public money.

The Future: consolidation, innovation and capital

The future of the Chinese healthcare industry can be summed up with 3 key words: consolidation, innovation and capital.

Consolidation

An excessive number of companies is indicative of ineffective competition. By the end of 2016 there were at least 5,065 domestic drug manufacturing companies. The consensus amongst the industry is there are still too many undifferentiated companies, despite roughly 160 licenses from firms with suboptimal standards having been revoked last year. China has been the largest Active Pharmaceutical Ingredient (API) manufacturer, exporter and formulation manufacturer in the world but with 97% of these drugs being generics, the industry is overcrowded with low-value duplications. A recently released government report "Over-repeated Drug Bulletin" stated that there are more than 129 drugs that are manufactured by over 100 companies. At the same time, there is no Chinese representation in the top 30 global pharmaceutical companies list and elsewhere the top 4 global in vitro diagnostic (IVD) companies control over 70% of the market share whereas of the 300 Chinese IVD companies, fewer than 20 have sales over RMB 1 billion (USD 150 million).

At the B to C interface, there are roughly 450,000 retail pharmacies, accounting for only 20% of the pharmaceutical sales market. This

contrasts with the West, where 80% of drug sales in U.S. and Europe takes place at retail pharmacies. At the same time, the franchising of these pharmacies in China is very low, with only one franchise (a subsidiary of Sinopharm) that has revenues above RMB 10 billion (USD 1.5 billion) and 3,500 stores. It has been predicted that in the next five years, there will be over 10 franchises with RMB 10 billion turnover. How China differs from other countries is that non-profit public hospitals are the principal provider of medical service and there is a single-payer system, provided by the state. Currently over 90% of the annual 7 billion outpatient visits in China are via public institutions but private hospitals and clinics are growing rapidly.

Innovation

The state has vigorously encouraged innovation and introduced a series of supportive policies. Much of the innovation is dominated by the not so innovative me-too drugs and the gap in R&D investment is still large. To put things in perspective, Roche spends roughly USD 10 billion each year on R&D whereas Shanghai Pharma invests around USD 0.1 billion. For the top quartile of the Chinese pharmaceutical industry, R&D spend relative to revenue is about 5%, which is dwarfed by the average 20% spent of the top global pharmaceutical companies.

What is heartening is that for historical reasons, China has one significant advantage. Back in the 1980s and 1990s, almost all top university students studied biology, as it was widely published that the 21st century would be the century of biology. This lasted not just one or two years but over two decades. This means that there is a large and exceptional talent pool of people, a significant number of which had a Western education or experience at global pharmaceutical companies and are returning to China to build truly innovative companies.

Capital

If consolidation solves the problem of numbers and innovation solves quality issues, then capital provides an essential booster to raise the competitiveness of the whole industry. Today, China has over 200 listed pharmaceutical companies. Pharmaceutical companies made up of roughly 3% of all public companies 10 years ago. This increased to 7% in 2017. In the next 5 to 10 years, life science

companies collectively are predicted to make up 10-15% of the total market value of China's capital market.

China now has two listed companies that are worth more than RMB 100 billion (USD 15 billion), which are Shanghai Pharma and Hengrui Pharma. The market capitalisations of a lot of listed pharmaceutical companies are concentrated around the RMB 10 to 20 billion (USD 1.5 to 3 billion) range. These can be contrasted with the top 10 pharmaceutical companies globally, which on average has market capitalisation around USD 100 to 200 billion. As China's public capital market evolves, this will likely drive a narrowing of the gap.

Private placement in the form of the number of private equity and venture capital firms focused on healthcare has increased steadily. Healthcare-focused venture capital firms has now exceeded 260, which is double that of five years ago.

Conclusion

The demand for medicines in China is rising as its population ages and the incidence of chronic diseases including cancers, heart diseases and diabetes continues to increase. This trend is boosting the business of local and international pharmaceutical companies in China, but they also face challenges as the government seeks to curb drug prices and manage healthcare expenses. Rising middle class income, an aging population, greater coverage of medical insurance and changing views on healthcare as well as more demand for first class, innovative healthcare means the future of China's healthcare market has tremendous potential. Significant activities surrounding the themes of consolidation, innovation and capital deployment will, we believe, drive this transformation to make healthcare for 1.3 billion people truly of international class, with better care, better access and tailored to suit the local situation. Addressing and closing the innovation and provision gaps between China and its Western counterparts will also help to encourage more cross-border and collaborative transactions, ultimately allowing capability, knowledge and capital to flow in both directions.

Exchange rate used: 1 USD = 6.64 RMB

For more informaton:
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meet the team



Summer Park
 Business Development Director

Summer is a Business Development Director, with experience in business consultancy and public sector strategy. Prior to joining PharmaVentures, she took part in developing and executing the governmental growth plan for New Zealand's start-up ecosystem. Summer has also won and worked on numerous projects to solve technical, market, and supply chain related problems for technology businesses, and has experience in digital marketing.

Prior to embarking on her career, Summer played a pivotal role in fundraising for and expanding the footprint of Chiasma - a professional organisation – of which she is now a Board Member. Summer holds a Master of Biomedical Sciences (First Class Honours) from The University of Auckland, which studied the effects of the small molecule kinase inhibitor PR610 on melanoma. Summer is a native English and Korean speaker.

summer@pharmaventures.com



Shelly Wang
 Associate

Shelly joins Pharmaventures as an Associate and brings over 8 years of life science BD and transaction experience in China, where she represented small biotechs through to multinational pharmaceutical companies.

Prior to joining Pharmaventure, Shelly worked as a senior business development analyst at Astellas China, where she completed a number of strategic advisory, licensing and M&A deals with both Chinese and global pharmaceutical firms. Shelly has an extensive network in this area.

Being Chinese British, Shelly is fluent in Mandarin and Cantonese Chinese. She graduated from University of Manchester with a Master degree in Pharmacy, and qualified as a registered pharmacist in the UK. Shelly holds an MBA from Aston University.

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Press Release

PharmaVentures Capital Limited Advises Biosceptre International Limited, a Clinical Stage Oncology Company, On Its Series A Private Placement By Tuspark S&T



PharmaVentures Capital Limited is pleased to announce that it acted as adviser to Biosceptre International Limited ("Biosceptre") for the successful Series A private placement from the Chinese conglomerate Tuspark Science & Technology Service Group (Tuspark) through its investment vehicle, Bluesky Partnership II L.P. As Tuspark's first major overseas investment into biotech, this represents a strong belief in the Biosceptre team and the potential transformative effects their therapies may bring to cancer patients.

Biosceptre's therapies are focused upon a novel cancer target, nfp2X₇, that is completely absent in healthy tissue, but present on tumour tissue in the majority of cancers, including lung, breast, colorectal and prostate. For more information on Biosceptre's therapies see <http://www.biosceptre.com/pipeline/>.

This first institutional raise will allow Biosceptre to advance its three oncology clinical assets which are BIL010t, a polyclonal antibody ointment for the topical treatment of non-melanoma skin cancers, BIL06v, a peptide protein conjugate and BIL03s, fully human domain monoclonal, both for systemic uses targeting solid and blood cancers. Clinical trials are being planned in Australia, UK and EU.

Fintan Walton, Chairman and Chief Executive of PharmaVentures, said: "This investment by the Chinese company Tuspark S&T in Biosceptre represents a significant landmark for both the UK Biotechnology sector and PharmaVentures Capital Limited."

Adrian Dawkes, Managing Director at PharmaVentures, added; "As a long-standing client, PharmaVentures is pleased to have advised Biosceptre on this transaction. We are delighted to have been able to leverage our relationships in China to secure this investment for the company."

For the past 25 years, PharmaVentures has acted as an advisor to over 700 global pharmaceutical and biotechnology clients in transactions; many covering licensing, mergers, acquisitions, divestments and joint venture activities for companies.

For further information, contact:

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Biosceptre is a Cambridge, UK headquartered biotechnology company focused on developing next generation cancer treatments targeting nfp2X₇, an oncology target with exquisite specificity.

Sir Greg Winter, Founder of Domantis and Cambridge Antibody Technologies, is the Acting Chairman of the Biosceptre Board of Directors and he also chairs the company's Science Advisory Board.

Biosceptre's clinical programs include systemic antibody-based therapeutics and vaccines, intended to treat a significant range of cancer types. With one successful Phase I trial completed, Biosceptre will be progressing a number of clinical trials across a range of cancer indications. These trials will seek to further advance the establishment of nfp2X₇ as a new and important target for the successful treatment of a range of human cancers.



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TUSHOLDINGS

Tus-Holdings is a large integrated enterprise established in reliance on Tsinghua University. It takes full responsibility for developing, constructing, operating and managing the Tsinghua University Science Park, and is one of the first National Demonstration Enterprises in modern service industry. It is the controlling shareholder of over 500 listed & non-listed enterprises, and the total assets under its management have exceeded GBP 15 billion. Tus-S&T Service Group is the equity investment platform of Tus-Holdings, who directly lead this cooperation.



PharmaVentures is a premier transaction advisory firm; a world leader in partnering, pharma M&A deals and strategic alliances.

An unrivalled bank of specialist experience, deal analytics and network of contacts among innovators and large pharma makes PharmaVentures uniquely placed to support healthcare businesses in all aspects of deal making and strategic planning. PharmaVentures is well known for its deep insight into deal structures and its success for generating partnering interest.

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Have Your Say

PharmaVentures Insights, produced by our subsidiary media production company PharmaTelevision, is an on-demand series of interviews showcasing the best and the latest of the life science industry. In the past 10 years, we have interviewed more than 500 executives of pharmaceutical, biotech and medtech companies, as well as policy makers and investors.

Following the filming session, we will edit the footage and send it to you for approval prior to publishing it on our website and YouTube channel. Once live, you're welcome to use the video on your own marketing channels as well.

This is a great chance to promote your company to the life science audience around the world.

PharmaTelevision will be filming interviews at:

Genesis (14 Dec 2017), London

Biotech and Money World Congress (5-6 February 2018), London

BIO-Europe Spring (12-13 Mar 2018), Amsterdam

We are currently recruiting interviewees for these events, so if you are interested please email:

Matt Royan, Studio Manager at matt@pharmaventures.com

PharmaVentures in Action



Adrian Dawkes, Managing Director of PharmaVentures, hosts the "Big Pharma's Pipeline and Partnering Strategy" panel at the 17th Annual Biotech in Europe Forum in Basel, Switzerland.

Panelists:

Klaus Mendla, Global Head of CNS Business Development & Licensing, Boehringer Ingelheim Pharma GmbH

Lubor Gaal, Head of Licensing and External Innovation, Ammirall S.A.

Nathalie ter Wengel, European Head Global Scouting, External Science & Innovation, Pfizer, Inc.

Stephen Sands, Business Development and Licensing Director, F. Hoffmann-La Roche AG

Stewart Kay, Director Transactions in Worldwide Business Development, Pharma R&D, GlaxoSmithKline

Opportunities to Join a First Class Team

PharmaVentures is currently seeking talented, self-motivated individuals to join our dynamic team in three key roles:

Vice President

To provide transactional support for financing, M&A and licensing engagements with Pharmaceutical, Biotechnology, Medtech and Diagnostic (Life Sciences) companies.

PharmaVentures is seeking to appoint an individual at Vice President level to take a leadership role in the winning and execution of M&A, Licensing and fundraising mandates. The role requires a proven track record of transactional strategic advisory consultancy in the healthcare industry, and a strong industry network. Crucial to the role is the ability to build strong relationships with clients at Board and corporate level. The ability to manage multiple project teams is essential.

Business Development Analyst

Responsible for the development and execution of marketing activities, incorporating creative digital content, email and social media. Assist the Business Development Director in generating leads.

Business Analyst

To assist in the research and analysis of pharmaceutical biotechnology, medtech and diagnostic companies, products and technologies.

How to apply

Download the application form from: <http://bit.ly/2zljOj0> and email it with your CV to ellie@pharmaventures.com

Upcoming Conferences

J.P. Mogan 36th Annual Healthcare Conference

8-11 January 2018, San Francisco, US

Biotech and Money London

5-6 February 2018, London, UK

European Life Sciences CEO Forum Sachs

26-27 February 2018, Zurich, Switzerland

Bio-Europe Spring

12-14 March 2018, Amsterdam, Netherlands

To meet with PharmaVentures' experts at any of these conferences, please contact

Rosy Von Sternberg: rosy@pharmaventures.com

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