Make the World's Best Anti-cancer Drugs (Dream Chaser)

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Do not, or do the best – it is a motto of Wang Xiaodong, Director of National Institute of Biological Sciences, Beijing (hereinafter referred to as "NIBS").

In April 2004, by virtue of outstanding achievements in the field of apoptosis, 41-year-old Wang Xiaodong was elected as a member of the National Academy of Sciences. Out of more than 200,000 people studying in the United States, Xiaodong became the first person to receive this honor after the reform and opening up of China.

"As a Chinese scientist, wherever you go and how much success you get, China is always my motherland." In 2003, he was invited to return to the motherland and founded the experimental field of the national science and technology system - NIBS. Five years later, an international science steering committee comprised of 10 of the world's top scientists conducted a field assessment on NIBS. The conclusion was: there were no other institutions that could occupy such an important seat, in such a short time, in the international scientific world.

In early 2011, Wang Xiaodong made a bold decision; he initiated and founded BeiGene (Beijing) Co., Ltd (hereinafter referred to as "BeiGene"), to develop the world's leading anti-cancer drugs. Just a few years later, three targeted type small molecule new drugs completed Phase I clinical trials in Australia. Phase I trials showed that the efficacy and side effects of the three new drugs were superior to other similar drugs. One immunity and anti-tumor new drug has completed pre-clinical development and will soon carry out clinical trials in Australia.

"R & D of anti-cancer drugs is my burden and duty."

Xiaodong is engaged in the study of cell apoptosis with aims of revealing the law of cell growth and death, as well as providing a theoretical basis for treatment of cancers and other incurable diseases. Since the independent leadership laboratory was founded in 1996, Xiaodong has published more than 50 papers (50,000 times cited by peers) in international journals, and obtained a number of major breakthroughs.

But Wang Xiaodong often feels uneasy. "My research relates to cancers, after returning home, I am often consulted as follows: 'do you have a better treatment?'" Wang Xiaodong said, "especially in recent years, more and more friends and family have cancers, but most advanced cancers basically can't be cured, patients can only wait to die." After a brief pause, he said, "I am moved by these things deeply. Theory and concepts can't cure the disease. R & D of anti-cancer drugs is my burden and duty."

Wang Xiaodong feels excited, yet worried, about the rapid momentum of global anti-cancer drugs development in recent years. "Due to studying accumulation of the past few decades, foreign anti-tumor drug development has made rapid progress and there have been new drugs brought to market in the field of targeted anti-cancer drug and immunosuppressive drugs. Compared to, the conventional, chemotherapy these two types of drugs are similar to 'sophisticated bombs', which have obvious effects, are sustainable, and have minimal side effects." Xiaodong said, because R & D capability of new drugs in China is weak, some patients are forced to buy expensive foreign drugs through smuggling, one course often costs hundreds of thousands of yuan. If it continues for a long time, it will cost patients expensively, and China's pharmaceutical industry will be more controlled by others."

Don't hope… do! In early 2011, Wang Xiaodong and John Oyler (an American entrepreneur with 10 years of management experiences in pharmaceutical company) financed US$32 million, and BeiGene was founded.

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At the inception of the company, Wang Xiaodong and John Oyler reached a consensus: make the world's best anti-cancer drugs.

How can we make the world's best drugs? Wang Xiaodong's answer is: take the road less traveled while simultaneously aiming high.

They invested RMB100 million, purchased the world's best equipment, and built a world-class chemical pharmaceutical laboratory and biological pharmaceutical laboratory.

No expense was spared in the hiring of more than 20 management, research, and development key talents from: Merck, Pfizer, Johnson & Johnson, and other multinational companies. Xiaodong built a high-level, multi-disciplinary research and development team with more than 150 people.

Not just attacking one line of drugs, but aiming at the international forefront, BeiGene researchs both small molecule targeted chemical drugs and macromolecules immune anti-cancer biological drugs. This has led to the R&D of more than 10 drugs.

Xiaodong is very proud of BeiGene's superior drugs-testing capabilities. "We have a drugs-testing team with more than 50 people, there is not such a large proportion of drug-testing people even in the most well-known multinational pharmaceutical companies." Xiaodong told, "as a result, we can carry out drug-testing at each stage of a drug's development, if the drug is not good enough then we will stop so as to minimize resource consumption and avoid detours. At the same time, after the latest foreign drugs patents are issued, we will

analyze them soon, and compare them with the drugs developed by us. If we find that our research and development of new drugs is not as good as abroad, we will stop development, and re-design new drugs. "

"Survival of advanced lung cancers is generally not more than three months, and a patient in Australia has taken our drugs for a year and two months."

Due to strong scientific background, strong research and development capabilities, as well as strong scientific research and development strategy, BeiGene's drug development will soon "bear fruit." The veteran German pharmaceutical company, Merck, showed great interest in two targeted type drugs, BGB-283 and BGB-290 developed by BeiGene. In November 2013, after a rigorous inspection, testing, and evaluation, Merck Serono, a biopharmaceutical subsidiary of Merck, signed an agreement with BeiGene. Merck invested US$500 million to buy the overseas markets development rights of these two drugs, creating a milestone in the history of new drug development in China.

Xiaodong is far more pleased at the following news: Phase I clinical trials of these two drugs and another targeted drug (BGB-311) have been completed in Australia. The clinical results showed that these three drugs had significant effect on melanoma, ovarian cancers, lymphoma, and other cancers. They were better than other similar drugs, and the side effects were minor.

"84 patients who participated in clinical trials were dying patients with advanced cancers, after taking our drugs, the diseases were controlled, or improved significantly." Wang Xiaodong said, "survival of advanced lung cancers is generally not more than three months, and a patient in Australia has taken our drugs for a year and two months, and still lives well. "

“The original, and continued, intention behind establishing this company is to allow domestic cancer patients access to innovative and world class drugs from China"

On May 13, 2015, BeiGene completed the second round of financing; three biotech investment funds from Wall Street, as well as Hillhouse and CITICPE invested US$97 million in BeiGene. Including the first round of financing in 2014, BeiGene has received US$200 million investment from the domestic capital market – the only company with an investigative drug pipeline to receive such high financing in China.

"Of course, we also have ups and downs." Xiaodong said with a smile, drug development not only burns money, but has a high risk. For example, if a problem occurs in the design, production, or developmental process all the effort comes to naught. "The difficulty is not a problem for me." Wang Xiaodong said, "The only thing that makes me feel uncomfortable is that domestic patients can’t quickly use new drugs developed by us."

The clinical trial applications of BGB-283 and three other drugs were submitted in China and Australia simultaneously. As a result, it was approved by Australia in five working days, and is still "waiting in line" in China. According to reports, the domestic drugs approval process is unusually slow, thus these three new drugs have not yet been allowed to carry out clinical trials in China. For BGB-283, BeiGene’s drug with the fastest progress, it took more than a year of "waiting in line" at the Center for Drugs Reevaluation, CFDA (CDE), before entering the review process in February of this year. Phase I clinical trials can only be carried out in the second half of the year at the earliest. The other two drugs are still "waiting in line", and Xiaodong does not know when they will enter the review process.

"My friend’s mother has advanced thyroid cancer, after learning the clinical outcomes of BGB-283 in Australia, he sincerely hoped to use our drugs. Repeatedly saying 'they will voluntarily use drugs on their own account,' but I really can’t give the drugs to them – because the drugs clinical trials have not been carried out in China, and it is illegal to give him the drugs."

One small comfort is that the drug watchdogs are begining to pay attention to the problem. Not long ago, leaders of CFDA made a special investigation trip to the Zhongguancun, and immediately pledged to seriously study the problem after listening to Wang Xiaodong.

"After these three new drugs are approved in the domestic market, we are willing to sell at a price which can be afforded by public. Our research and development costs can be made up by the overseas market.”

Wang Xiaodong said, “The original, and continued, intention behind establishing this company is to allow domestic cancer patients access to innovative and world class drugs from China"

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