

R&D Outsourcing In China

Time to dismiss fears?

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THE MAJORITY OF THE OUTSOURCING activities presently conducted in China by western pharmaceutical and biotech companies are mainly restricted to the area of manufacturing of bulk materials, including custom synthesis and contract manufacturing. Outsourcing has not become popular in China for early stage drug discovery and development. There are several reasons for that; key among them are worries about IP protection and the westerners' perceptions about the technical level of the Chinese pharmaceutical industry.

However, the situation in IP protection in China has changed dramatically in the last decade, and the technical skills and service capabilities of the Chinese pharmaceutical service companies have also advanced greatly in recent years. Excess concern about these issues will only hurt the western companies in the end if they fail to take timely advantage of the available resources in China.

Changes in IP Protection in China

It is true that the history of IP protection in China is very short. For centuries the ordinary Chinese people had not had any sense of protecting their own invention or respecting the invention of others, until 1984, when the Chinese government established its first patent law. The Chinese government has realized that creating a positive environment for IP protection is not only important to protect the rights of foreign companies engaged in the business collaboration with their Chinese partners, but also critical to fostering a creative environment for

technology advancement of Chinese companies themselves. The Chinese government, mainly through the State Intellectual Property Office (SIPO), has already put tremendous efforts to promote IP protection.

After years of education on the IP issue and the importance of protecting IP, the ordinary Chinese people have now become more self-conscious about the importance of IP. For example, 12 Chinese pharmaceutical companies recently banded together to challenge the validity of Pfizer's patent for Viagra in China. Instead of simply pirating production and sales of Viagra in China, these companies decided to lawfully challenge the product in Chinese court (and eventually lost their lawsuit). This is an indication that Chinese companies have grown aware of intellectual property rights.

In another example, Simcere Pharmaceutical Group (Nanjing, Jiangsu Province) in 2006 in-licensed the manufacturing and sales rights to Zanamivir, an antiviral influenza drug, from GlaxoSmithKline, for sale in both China and south Asia. In one more example, Shanghai Sunway Biotech Co. recently in-licensed the worldwide rights to Onyx-015, a potential anticancer drug, from Onyx Pharmaceuticals, Inc. (Emeryville, CA). Onyx-015 is structurally the same type of

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compound as Nexavar, a novel, mechanism-based anticancer drug co-developed by Bayer and Onyx and approved recently by FDA and the European authorities. Onyx once abandoned this compound; however, after conducting testing and observation of its potency in certain cancer cell lines, Sunway decided to in-license this drug and continue its development.

These examples illustrate the self-awareness of IP protection among Chinese pharmaceutical companies and their willingness to follow the international rules of business conduct. Nowadays, Chinese pharmaceutical service providers are committed to protecting their customer's IP rights and have practical operation procedures in place to safeguard them. Employees in these companies, if breaching the commitment signed on the first day of employment, will be fired immediately.

Change in Chinese CROs' Service Capabilities

The structure of the Chinese pharmaceutical industry has changed dramatically in the last five years or so, largely due to the emergence of a group of new CROs in China. In addition to the conventional custom synthesis and contract manufacturing service (which still is quite a big portion of the Chinese CRO industry), an increasing number of chemistry-oriented pharmaceutical service companies are now able to provide integrated, full-scale service for early-stage drug R&D. For example, high throughput screening (HTS), the popular tool used by the western pharmaceutical and biotech companies for fast screening of drug-like compound libraries for the discovery of lead compounds, is now also available in China (offered by HD BioScience Co. Ltd., a Shanghai-based CRO specializing in assay development).

Full-scale medicinal chemistry services for drug discovery and development, including structure-based rational drug design, activity/potency optimization using the structure-activity-relationship (SAR) technique, optimization of pharmacological properties (both PK and PD) for lead compounds in a preclinical trial environment, etc., are also available from a number of Chinese companies (such as Beijing HongHui MediTech, Shanghai Medicilon, WuXi PharmaTech (Shanghai), etc.). These companies also possess the full capability of synthesis of drug-like small molecules of all types, including chiral compounds. Beside the synthesis capability of a full scope of small molecules, synthesis services of macro-compounds such as peptides, peptidomimetics, and even recombinant proteins are also available (from Shanghai Sunway Biotech, Co. which recently signed a contract with Genzyme to manufacture Genzyme's gene therapy drug Ad2/HIF-1a). Full-scale services in chemical process research and development and large scale synthesis for clinical trial compounds are also available (SinoPharm, Sondia-United PharmaTech, etc.).

Chinese pharmaceutical companies are now even able to independently conduct the full-scale research of drug discovery and development. This capability has recently attracted the attention of major western pharmaceutical companies. For example, Hutchison MediPharma, a Shanghai-based pharmaceutical R&D company, recently out-licensed a Phase II drug to Eli Lilly & Co. In addition to the licensing, Lilly also asked

Hutchison to continue developing the drug at its site, consequently resulting in the need for Hutchison to hire a significant number of new scientists (between 200 to 250) next year. This licensing deal represents a new contract model in the Chinese contract research industry and may have indicated a new development trend for this industry.

Dismiss Fears and Myths of Early-Stage Outsourcing

When considering outsourcing of early stage drug R&D to China, western companies should not be overwhelmed by the fears of risking IP protection. IP disputes occur in any industry, anytime and anyplace. The key is to have practical plans to protect your IP and to identify the projects that have reasonable risk tolerance to outsource (to China). To be safe, western companies should bring in the western standard of business conduct at the very beginning. Nowadays, an increasing number of Chinese pharmaceutical service companies are run by scientists who returned to China from overseas countries, where they received advanced education and training in drug discovery and development and further gained direct work experience in the western pharmaceutical and biotech companies. These returnees also played important roles training the locally graduated scientists. Consequently, the operating culture in these companies is quite westernized.

The practices and policies to protect the customer's IP that are common in a western CRO — such as CDA and employee confidentiality agreements — are also common in these Chinese CROs. Company executives should feel comfortable dealing with such type of Chinese CROs for business negotiation and collaboration. Just as in western CROs, the service capability among Chinese CROs also varies from company to company, largely depending on the experience and background of the founder(s) of the CRO company. The key is to identify the right partner that has appropriate capability to provide the desired services.

I believe outsourcing of early stage drug R&D to China will become inevitable in the near future. Myths about the risks of operating such a task in China should be dismissed as soon as possible. Pioneering western companies have taken the advantage of the available resources in China and made significant benefits from the emerging Chinese pharmaceutical market, which is still rising and enlarging. Smart pharmaceutical and biotech companies should follow their successful predecessors to collaborate with the Chinese companies. The remaining part is how to effectively manage the collaboration, establish an excellent partnership, and finally reach a mutual trust. These tactics are applicable in every place. ■