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China's New Regulations on the Administration of Chinese Human Genetic Resources: will 'China first' prevail over 'science first' in the Biotechnology Era?

On 28 May 2019, the People's Republic of China State Council promulgated the People's Republic of China Human Genetic Resources Administrative Regulations, which took effect on 1 July 2019 ("2019 Human Genetic Resource Regulations", our unofficial in-house translation is available on request to existing or potential clients by emailing Karen Yang<karen.yang@hoganlovells.com>) to replace the interim measures issued two decades ago (i.e. the Human Genetic Resources Administration Interim Measure ("Former Human Genetic Resource Regulations").

In broad terms, the 2019 Human Genetic Resources Regulations regulate the collection, preservation, utilization, and provision to third parties including the export of Chinese human genetic resources, as well as spelling out the punishments that may accompany violations of the rules. Trading in Chinese human genetic resources is expressly banned. The promulgation of the 2019 Human Genetic Resource Regulations shows the clear intent of the Chinese regulator to position Chinese human genetic resources as a national strategic resource. While biotechnology research using Chinese human genetic resources is encouraged, what runs through the 2019 Human Genetic Resources Regulations is the strong emphasis on national security and public interest considerations as the driving force of permitted activities. These are malleable concepts and are open to discretionary interpretation by the Chinese government. Foreign educational institutions, research institutions, and pharmaceutical companies whose research or clinical trials will involve the use of Chinese human genetic resources, are particularly affected by the 2019 Human Genetic Resource Regulations.

Redefined term of "human genetic resources"

The 2019 Human Genetic Resource Regulations divide human genetic resources into two sub-categories, namely (i) "human genetic materials," which mean genetic materials such as organs, cells, and tissue that contain the human genes and the genome; and (ii) "human genetic information," which refers to information and data generated from human genetic resource materials.

What emerges overall is that it is during international collaboration research projects and drug/medical device clinical trials in China where the cross-border transfer of human genetic information (but not human genetic materials) is subject to a lighter regulatory touch compared with the Former Human Genetic Resource Regulations, which required prior approval from the Ministry of Science and Technology ("MOST") for the cross-border transfers of human genetic information.

National security concerns and national interests first

From Article 1 of the 2019 Human Genetic Resource Regulations, there is an emphasis on the importance of safeguarding public health, national security, and the public social interest in the protection and administration of Chinese human genetic resources, and the "national interests first" concept is reflected throughout the 2019 Human Genetic Resource Regulations. For instance, Article 8 of the 2019 Human Genetic Resource Regulations requires that the collection, preservation, utilization and export of Chinese human genetic resources must not jeopardise public health, national security and the public interest in China. Article 27 cites "the export of such materials would not jeopardise public health, national security and the public interest" as one of the main criterion for approving the export of human genetic materials as part of collaborative international scientific research using Chinese human genetic resources. Furthermore, Article 28...
preconditions the making available of human genetic information to foreign organizations or individuals or their controlled entities ("Foreign Entities") on such provision not jeopardising Chinese public health, national security and the public interest and makes it subject to a security review by the MOST where there may be a negative impact in addition to the record filing with MOST for the act of making such resources available to Foreign Entities. As noted above, the boundaries of "public health, national security and the social public interest" can be extremely murky, therefore it is foreseeable that regulators will have broad discretionary powers to interpret which circumstances would be deemed as impacting negatively on these, thus giving them an effective veto on such provision.

Foreign parties banned from direct collection and preservation of Chinese human genetic resources

Whilst Foreign Entities are, under Article 7, expressly prohibited from directly collecting and preserving Chinese human genetic resources, the door remains open to international scientific collaborative research projects whereby, subject to MOST approval, Foreign Entities are able to use Chinese human genetic resources (Article 22).

Article 7 of the Human Genetic Resource Regulations prohibits Foreign Entities from collecting or preserving Chinese human genetic resources; nor are they allowed to supply human genetic resources overseas. However, Foreign Entities are permitted to collaborate with Chinese research institutions, higher education institutions, medical institutions, and enterprises to utilize Chinese human genetic resources for scientific research, subject to complying with Chinese laws regulations and other provisions and obtaining prior approval from MOST. In order to obtain prior approval from MOST, such international collaboration research projects must satisfy all of the following criteria:

- The international collaboration research project is not harmful to public health, national security, and the public interest in China;
- Both the collaborating parties have legal person status, and have the basis and capabilities to carry out the research collaboration in question;
- The purpose and contents of the collaborative research are clear and lawful, and will continue for a reasonable duration;
- The research plan is reasonable;
- The human genetic resources to be utilized come from lawful sources, and are consistent with the research contents in terms of type and quantity;
- The research project has passed ethics review by both parties; and
- The ownership of research achievements is clear, and there is a reasonable and clear profit distribution plan in a collaborative international scientific research project.

There is considerable discretion built into the first and fourth legs of the test in particular.

The Chinese party cannot just 'tag along for the ride'

To prevent a situation occurring whereby the Chinese party(ies) is merely engaged for the purpose of satisfying the regulatory requirements without being provided access to the core records and data of the program, Article 24 requires that the Chinese party(ies) must substantively participate in the research throughout the process and that all records and data and other such like information preserved or generated during the research must be made fully available to the Chinese party. Article 28 further provides that human genetic information generated from the international collaborative research projects may be used by both the foreign party and the Chinese party,
suggesting unilateral use rights in favor of the Foreign Entities are not permitted.

Article 24 goes on to say that where a patent application is filed as a result of a collaborative international scientific research project, using Chinese human genetic resources, the application must be jointly filed by both the Chinese Entity and the Foreign Entity, and patent rights will be jointly owned by both parties. How the parties share rights to other scientific achievements arising out of such projects, including use rights, transfer rights and profit shares can be agreed contractually, but it also provides for a default division where the parties have failed to agree contractually on these matters. This confirms that unilateral granting of patent rights arising out of a cross-border scientific collaboration using Chinese human genetic resources to the Foreign Entity will not be permitted.

**Lower regulatory burden for use of human genetic information in medical device and drug clinical trials conducted in China**

The 2019 Human Genetic Resource Regulations introduce a simplified record filing mechanism which compares favorably against the previous approval requirement under the Former Human Genetic Resource Regulations for foreign pharmaceutical or medical device companies that receive human genetic information generated during pharmaceutical or medical device clinical trials in China for the purpose of seeking registration of their drugs or medical devices with the National Medical Products Administration, provided that the Chinese human genetic materials (for example, human samples) will not be exported overseas. Specifically, the foreign sponsor and the Chinese clinical trial site(s) need to jointly file information on the (i) type and quantity of human genetic resources to be used; and (ii) the purpose of using such resources with the MOST for record filing purposes before conducting clinical trials.

**The export of human genetic information: a vexed question**

The 2019 Human Genetic Resource Regulations require a prior record filing with the MOST when exporting human genetic information out of China. Where the international flow of human genetic information may impact public health, national security or the public interest in China, a "security review" must be organized by MOST before the information can be sent abroad.

The export of human genetic materials out of China is subject to even stricter supervision compared with that of human genetic information. Article 7 sets out the basic position that Chinese human genetic resources must not be supplied overseas by Foreign Entities. As an exception, under Article 27, where it is truly necessary (a test that is open to interpretation) to export human genetic materials out of China as part of a collaborative scientific research project using Chinese human genetic resources, prior approval from MOST must be obtained. This step can be combined with the application for carrying out an international collaboration research project, or separately at a later stage when during the course of the project it is deemed to be truly necessary to export such human genetic materials.

Chinese customs will examine the export approval, without which the human genetic materials cannot be cleared by customs.

**Specified penalties for violation**

The 2019 Human Genetic Resource Regulations use a full 10 articles to impose penalties for a variety of violations. Compared with the position under the Former Human Genetic Resource Regulations, the 2019 Human Genetic Resource Regulations drastically extend the scope and amount of the penalties. For example:

- The act of carrying out an international scientific research collaboration using
Chinese human genetic resources without obtaining MOST approval, or carrying out clinical trials without carrying out record filing, is liable to a fine of between RMB 500,000 and RMB 5,000,000. If the unlawful gains exceed RMB 1,000,000, the amount of the fine should be 5 - 10 times the amount of the unlawful gains;

- The act of obtaining an approval through submitting fraudulent application materials or employing other fraudulent means is liable to a fine of between RMB 500,000 and RMB 5,000,000, and a blackout period for 5 years for new applications for licenses; and

- A Foreign Entity collecting, preserving or exporting human genetic resources, or utilizing Chinese human genetic resources without cooperating with a Chinese partner is subject to a fine of between RMB 1,000,000 and RMB 10,000,000. If the unlawful gains exceed RMB 1,000,000, the amount of fine should be 5 - 10 times the amount of the unlawful gains.

- Unlawfully trading in [Chinese] human genetic resources is liable to an order to cease the unlawful activities, confiscation of unlawful revenue from illegal collection/preservation activities and a fine of between RMB 1,000,000 and RMB 10,000,000. If the unlawful gains exceed RMB 1,000,000, the amount of fine should be 5 - 10 times the amount of the unlawful gains.

Certain breaches can give rise to bans from engaging in collection preservation or provision to third party activities for between 1 to 5 years, or permanently in particularly egregious cases.

Legal representatives or other main persons in charge of with direct responsibility or other responsible persons can be punished by confiscation of revenues and fines of up to RMB 500,000, and may have similar practising bans imposed on them personally. Entities or individuals will have entries made in their social creditworthiness files (see our previous briefing on this issue here) for violations of the 2019 Human Genetic Resources Regulations (Article 43). Finally, those who suffer as a result of violations have a right to bring civil suits against the infringer (Article 44). Criminal liability will be imposed where a crime has been committed.

**Conclusion**

The 2019 Human Genetic Resource Regulations were born in difficult circumstances, against the background of trade tensions with the US, and a heightened sense of nationalism in China. They also inhabit a much more complex world than their predecessor. It is, therefore, no surprise to see how the 2019 Human Genetic Resources Regulations are not coy about promoting a 'China first' policy in this sensitive area. The fundamental issue is whether the 'package' offered by the 2019 Human Genetic Resource Regulations will put off Foreign Entities from seeking to engage in cross-border scientific collaboration research projects which are critical to the advancement of scientific knowledge and the development of new life-saving therapies, using the combined advantages and skills of the teams in both places that are inevitably greater and more powerful than the sum of the parts. It remains to be seen whether MOST will embrace that potential or stymie it by taking a narrow, risk-averse and nationalistic approach to such collaborations, frustrating the ambitions of its most promising researchers and preventing developments that will no doubt not just benefit China, but humanity as a whole.

The 2019 Human Genetic Resource Regulations also contain a number of quite glaring oversights and omissions. For instance, the Former Human Genetic Resource Regulations stipulated an obligation on part of reviewers and experts engaged in reviews to maintain the confidentiality of the know-how of applicants; however this obligation no longer exists in the 2019 Human Genetic Resource Regulations.
This could exacerbate Foreign Entities' concerns in terms of information disclosure during the process of administrative applications and around loss of intellectual property (including trade secrets) and make them less willing to disclose cutting-edge technologies as part of such collaborations. In addition, the 2019 Human Genetic Resource Regulations are silent on the detailed procedures and documentary requirements for the "security reviews" which are triggered when the cross-border transfer of human genetic information may have a negative impact on public health, national security or the public interest in China, which, as noted above, could be widely interpreted. "Public health, national security and the public interests" could potentially encompass all undesirable factors identified by the regulators, including the destination country of the proposed export. In a recent press conference, the head of the MOST indicated that implementing rules for the 2019 Human Genetic Resource Regulations are on their way. The hope is that the implementing rules will address the loopholes, but the more important issue is whether MOST will stand in the way of cross-border collaborations that are essential to developing promising gene therapies. Only if reasonable access is given to the Chinese genetic pool will it be possible to marshall the combined skills of the best and most innovative minds in the world to develop therapies that are able to address the unique nature and specification of the Chinese genome and produce targeted therapies that work for the Chinese population, as well as identifying any population-specific side effects.