Ethical Guideline for Organoid Research

Policy Express

By WANG Manxi & LIU Yin

China's Ministry of Science and Technology has issued an ethical guideline for human organoid research, clarifying the basic ethical principles and general and special requirements for human-derived organoid research.

This provides comprehensive guidance for researchers on ethical norms and the code of conduct when carrying out related studies.

The guideline establishes stricter operational standards and ethical boundaries for research with high ethical sensitivity and potential controversy, including the brain organoid and human stem cell-based embryo model.

"Organoids are three-dimensional models constructed in vitro using human stem cells to simulate the structure and partial functions of specific human tissues or organs. They have been widely used in basic research, disease modeling, drug screening and toxicology evaluation," said Peng Yaojin, an expert at the life sciences ethics subcommittee of the National Science and Technology Ethics Committee.

Organoid technology has become a frontier field in international life science and technology competition due to its application prospects in precision medicine and regenerative medicine.

The construction of organoids involves the acquisition of human biological materials and simulation of human tissue and organ functions, which raises ethical concerns. Particularly, highly complex models like brain organoids and reproductive system organoids generate more prominent ethical considerations.

Medical staff adjust equipment in the Neuromodulation Department at Beijing Anding Hospital. (PHOTO: XINHUA)

Regarding brain organoid research, the guideline stresses that researchers should pay special attention to the complex neural networks and spontaneous electrical activities that may develop during long-term cultivation of sophisticated brain organoids.

The document highlights the need to monitor potential risks of consciousness development, requiring standardized detection mechanisms to monitor the electrophysiological activity levels and complexity of brain organoids, enabling identification of potential ethical thresholds.

For the integrated stem cell-based embryo model with higher developmental potential that simulates complete embryos and extraembryonic structures, the guideline requires preemptive ethical assessment and risk prevention plans to prevent boundary-crossing in related research.

The guideline also draws on international consensus, prohibiting the implantation of stem cell-derived embryo models into human or non-human animal uteruses, and upholding the red lines of scientific ethics.

Guideline to Meet 2035 Agricultural Innovation Goal

By LIANG Yilian & MA Aiping

By 2035, China aims to establish a highly efficient agricultural innovation system that closely integrates research with industry, cultivates globally competitive agricultural technology enterprises, and achieves breakthroughs in core technologies.

To create a structured, collaborative and competitive system for agricultural science and technology innovation, seven government departments, including the Ministry of Agriculture and Rural Affairs and the Ministry of Science and Technology, have jointly released a document to accelerate the overall efficiency of the agricultural science and technology innovation system.

The guideline emphasizes the strategic importance of placing scientific and technological innovation at the forefront of agricultural modernization. It says the strengths of China's new nationwide system should be leveraged, reinforcing the role of enterprises as key drivers of innovation, and coordinating innovation resources and forces.

Organizational models and innovation paradigms will be optimized and the research environment and innovation ecosystem will be improved. The goal is to enhance the system's capacity for organized and systematic innovation in agricultural science and technology.

The key principles include deepening reform, focusing on industry needs, preserving core values while encouraging innovation, and advancing talent-driven growth.

Several priority actions have been outlined. Research institutions and universities are expected to play a stronger role in driving scientific advancement. At the same time, the growth of leading agricultural tech enterprises will be accelerated to enhance industry transformation.

Innovation mechanisms will be refined to promote collaboration and operational efficiency across sectors. Talent development will be strengthened through improved training systems, recruitment strategies, and incentive structures.

Infrastructure and support for agricultural research will be upgraded to meet evolving demands. The commercialization of scientific achievements will be accelerated, ensuring that research outcomes benefit production and society.

International cooperation will be expanded to strengthen global partnerships in agricultural innovation. Finally, the overall innovation ecosystem will be improved to foster a more dynamic, inclusive, and sustainable environment for scientific progress.

To ensure effective implementation, monitoring systems will be established to evaluate innovation performance at both the institutional and regional levels.

Tissue culture seedlings of dates are photographed in a room of the Coconut Research Institute of Chinese Academy of Tropical Agricultural Sciences in Wenchang, Hainan province, April 23, 2025. (PHOTO: XINHUA)

China-Europe Cooperation Brings Stability to Global Economy

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Realizing the green dream

The nearly 350-km Budapest-Belgrade Railway, connecting Serbia and Hungary, is a flagship project of the Belt and Road Initiative (BRI). The contractor, China Railway Group Limited, paid particular attention to environmental sustainability and cultural preservation while implementing the project, adopting EU-compliant measures to minimize the environmental impact along the route. The railway goes through an area that is the habitat of sand martins. Not far from the tracks, there are rows of burrows where the birds have built their nests. During the construction, extra care was taken to ensure that they came to no harm.

The construction of the Budapest-Belgrade Railway epitomizes the joint efforts of China and Europe to realize the green BRI dream. Chinese enterprises are also promoting green and digital transformation at the Port of Piraeus in Greece, committed to building a sustainable, efficient and intelligent port.

Marsaxlokk, a picturesque fishing village in southeastern Malta, suffered the destruction of its marshland and pollution after the construction of a power station in the early 1990s. But since a Chinese company began to operate it after renovation, the Delimara 3 power station's carbon footprint has dropped, and the improvement far exceeds the EU's environmental protection standards. Once a "major polluter," it has now become a "green pioneer."

The prospects for trade and investment cooperation between China and Europe are broad, especially in areas such as addressing climate change. Both sides share common goals and offer huge business opportunities, according to Fabian Zuleeg, chief executive and chief economist at the European Policy Centre.

Favorable Financial Services to Boost Innovation

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For investors, due to insufficient information, they cannot assess the potential of enterprises in the early stage, and cannot provide high-standard financial services that meet the needs of industrial development in the later stage, said Xiao Yi, founding partner of All-in Business Venture.

The guidelines state that the PBOC and MOST, in conjunction with the NFRA and other authorities, will establish a financial mechanism for promoting sci-tech innovation in a coordinated manner, and enhance policy linkage and information sharing.

The most prominent feature of the guidelines is the comprehensive coverage of all aspects of sci-tech innovation and industrial integration, as well as its consideration of the investment demands for enterprise development, Xiao said.

China will leverage the role of its national venture capital guidance fund, encourage the development of secondary-market private equity funds, and optimize structural monetary policy tools such as re-lending loans for sci-tech innovation, the document states.

It will take advantage of the capital market in serving sci-tech innovation, and prioritize the public offerings of enterprises that achieve breakthroughs in critical core technologies. This measure will provide considerable support for the R&D of core technologies, Zhang added.

MOST said it will work with related departments to ensure the implementation of the measures, coordinate major issues in policy execution, and evaluate the major policies and tasks proposed in the guidelines.

In terms of enhancing fiscal policies, the guidelines call for the full use of fiscal tools such as loan interest subsidies and risk compensation to support enterprises in sci-tech innovation, and for the effective implementation of related tax policies for angel investment and venture capital.

Notably, China will support foreign investment in domestic technology-based enterprises and support technology enterprises to list overseas in accordance with laws and regulations.

Case Study

Smart Farming Shapes Future of Agriculture in Xinjiang

By LIN Yuchen & LIANG Le

Fabric of Lives, a new documentary film on cotton farmers in Xinjiang Uygur autonomous region in northwest China released on May 7, is a powerful testament to the resilience of Xinjiang's farmers and the role of technology in shaping their future.

The documentary portrays the lives of two cotton farming families in Aksu prefecture in southern Xinjiang as they navigate the challenges of a changing agricultural landscape.

Xinjiang, a region known for its vast agricultural landscape, is embracing remarkably advanced agricultural technology. Smart farming techniques, driven by smart equipment, are transforming the region's agriculture.

The Huier Smart Farm in the Xinjiang Changji national agricultural high-tech industry demonstration zone exemplifies this shift. Farmers here remotely control irrigation systems on their phones, while cutting-edge machines perform tasks that once required manual labor much faster. Mechanized planting, precision irrigation and intelligent fertilizer application are becoming the norm.

Xinjiang has made notable progress in agricultural mechanization. For example, the production of cotton, a staple crop of the region, has been 97 percent mechanized; for processing tomatoes, the mechanization rate exceeds 98 percent.

The technological advancements are also making farming more sustainable by significantly reducing water usage and boosting crop yields.

At the Huier Smart Farm, Internet of Things equipment including plant phenotyping observation devices is being installed.

Once that is done, the farm will have an integrated "space-air-ground" multidimensional intelligent sensing system, enabling real-time monitoring of crop growth, soil conditions and pest infestations. These innovations will help farmers make data-driven decisions, ushering in a new era of smart agriculture.

Efforts to modernize farmlands are also underway in Yuli, a county in the center of Xinjiang and a key production area for high-quality fine-staple and long-staple cotton.

Within a cotton farm, autonomous planting machines, guided by the BeiDou Navigation Satellite System, have revolutionized traditional planting. Once it took five people an entire day to plant 20 mu (about 1.3 hectares). Today a single machine can plant 120 mu in just one day.

As smart equipment reshapes farming in Xinjiang, the ongoing revolution in agricultural practices, fueled by data and mechanization, promises a brighter, more sustainable future for the region.

This transformation, captured in *Fabric of Lives*, reflects the spirit of innovation and determination that defines Xinjiang's agricultural sector today.

The documentary *Fabric of Lives* portrays the lives of two cotton farming families in southern Xinjiang as they navigate the challenges of a changing agricultural landscape. (PHOTO: HUAXIA FILM DISTRIBUTION CO. LTD)

Foreign Experts' Visit to Changsha

By YU Huiyou & BI Weizi

The 2025 Xiaoxiang Foreign Experts Volunteer Activity was held in Changsha, Hunan province, central China, on May 7.

Five experts from the UK, Germany and Nigeria joined more than 100 students from Changjun Bilingual School in a cross-border "scientific dialogue."

At the meeting, experts conducted on-site teaching on topics such as high-performance lithium-ion new materials, molecular diagnostic equipment detection technology, new energy vehicle system research, youth health sports knowledge, and the practical way to jointly promote the high-quality development of the Belt and Road Initiative.

In recent years, Hunan has attached great importance to improving services for foreign experts, launching several talent projects such as the "Furong Plan" for scientific and technological innovation, building platforms such as the National Demonstration Base for Talent Attraction and the Foreign Experts Workstation, and improving the innovation and entrepreneurship environment for foreign experts in the province.

Deng Xianjue, level II bureau rank official of Department of Science and Technology of Hunan Province, said that nearly 500 foreign experts from more than 60 countries have participated in these volunteer activities over the past five years, providing career guidance to international students, giving academic reports and disseminating popular science knowledge to students.

In addition, a series of other activities, such as the "Beautiful Countryside Tour in Wangcheng" and "Chinese and Foreign Experts Plant the Friendship Tree," have been carried out to enable foreign experts to experience Hunan's historical heritage, humanistic sentiments and social life up close, so that they can better understand and integrate into Hunan.

Deng said foreign experts are an important force in building Hunan into a highland of scientific and technological innovation.

Hunan will make more efforts to improve services for volunteer foreign experts and encourage them to tell the story of Hunan's scientific and technological innovation to the outside world.