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2023 Pujiang Innovation Forum Bulletin XIII

**Promoting global health development continually through
multi-party cooperation and cross-border collaboration**

Editor's Note: The Global Health and Development Summit of the Pujiang Innovation Forum 2023, with the theme of "New Applications and Markets for Innovative Technologies Accelerating Global Health and Development", renowned experts and scholars from universities, institutions, hospitals, enterprises and society conducted in-depth discussions on accelerating the development and transformation of innovative products to serve global health and development. This bulletin summarizes views of guests at the Global Health and Development Summit for your reference.

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Promoting global health development continually through multi-party cooperation and cross-border collaboration

Currently, emerging technologies represented by digital technology and genome sequencing have improved the level of health management for mankind. Digital technologies such as AI, big data and cloud computing have expanded new applications and markets of pharmaceutical and medical products in the global health sector. Drugs, medical devices and innovation platforms based on new technologies have bridged gaps in medical resources among countries, and improved the global ability to combat the COVID-19 pandemic. The guests present agreed that with **scientific and technological cooperation as the tie, international organizations, government agencies, research institutions, enterprises and other parties should collaborate across borders to jointly explore new application scenarios of innovative technologies and new market changes, and find new paths and solutions to promote the development of the global health sector continually and efficiently.**

I. The application of emerging technologies gives rise to new changes in the medical sector.

Zheng Zhijie, Director, China Country Office, Bill & Melinda Gates Foundation, pointed out that mankind has kept pushing the boundaries of

science and technology into such fields as agriculture, medical care and medicine, enabling more people to enjoy a longer, healthier, more vigorous and fulfilling life. The application of new technological achievements has promoted the well-being of mankind.

First, new technologies have changed traditional diagnosis and treatment methods, and improved the quality of medical services.

Marta Fernández Suárez, Chief Technology Officer, Foundation for Innovative New Diagnostics (FIND), thought that during the pandemic, many countries have introduced regulatory regulations and related policies for pharmacy testing, making it increasingly popular. Pharmacy has become the first stop for many patients seeking testing and care, and diagnostic testing and medical care services in unconventional environments will become a future trend. She also pointed out that AI technology will not only help patients identify symptoms, make decisions on the need for diagnosis and treatment, provide treatment suggestions, and screen symptoms, but also assist patients in making clinical treatment decisions, such as judging what kind of testing is required, and even assist in conducting epidemiological analysis, and designing intervention measures and public health policies. **Steve Kern, Executive Director, Global Health Labs (GH Labs)**, stated that AI is becoming an auxiliary medical tool that provides care consultation to people through remote medical systems, improves nursing capabilities in situations of unreasonable patient to healthcare staff ratios, and narrows clinical

medical gaps arising from resource shortage.

Second, new technologies have greatly reduced drug development lead times. Ren Feng, Co-CEO of Insilico Medicine, thought that traditional drug R&D faces bottlenecks such as high R&D costs, low success rates and long R&D lead times. The application of AI technology can greatly shorten R&D lead times, reduce R&D costs, and solve the three problems that hinder drug development efficiently: how to discover target points, how to design preclinical candidate compounds with better druggability, and how to better design clinical experimental methods. **Ni Dong, Deputy Dean of the School of Biomedical Engineering, Medical School, Shenzhen University and Founder of RayShape,** pointed out that the field of prenatal ultrasound is highly specialized, and in the whole scanning process, a doctor has to find dozens of standard sections based on personal experience to screen and eliminate a number of common deformities. It takes about 10 years to train a prenatal ultrasound doctor, and using AI to guide doctors to find different standard sections can reduce the training period of prenatal ultrasound doctors greatly.

II. Challenges to the application of emerging technologies

On the one hand, population and regional differences should be taken seriously. **Marta Fernández Suárez** pointed out that to give fully play to AI, it must undergo training and development. The dataset

required for AI development must be geographically diverse, otherwise algorithms developed based on North American populations may not be suitable for African populations. This is also a problem that must be addressed and improved in the process of promoting the development of AI. **Steve Davis, Senior Advisor of McKinsey & Company, and Lecturer of the Stanford Graduate School of Business,** stated that digital technology and AI have many applications in developed countries and markets, but are rarely applied in resource-scarce and relatively poor countries.

On the other hand, potential risks of AI technology cannot be ignored. **Gao Fu,** Academician of the CAS Member and Researcher of the Institute of Microbiology of the Chinese Academy of Sciences, pointed out that if the data obtained by AI is not cleaned manually, its inference may mislead people and cause huge consequences. **Guo Jinjiang, Head of Data Science Department, Global Health Drug Discovery Institute,** emphasized that data quality not only includes the authenticity of data, but also depends on whether AI understands operational mechanisms of organisms or disease development. Therefore, researchers need to input more dynamic, temporal, multimodal and multi-level information, including environmental variables, into AI to truly understand mechanisms of disease development and operational patterns of organisms. This will provide researchers and drug developers with more insights to generate new and more effective drugs.

III. Relevant suggestions

First, establish institutional support for the application of new technologies. **Zhao Wei**, Academician of the International Eurasian Academy of Sciences, emphasized that social progress requires data sharing, but the effectiveness and non-gratuitous nature of data sharing should be protected by technical and legal means so as to create a healthy business model that benefits mankind. **Li Xin**, Deputy Director-General of the Department of Foreign Expert Services, Ministry of Science and Technology, stated that better arrangements are needed for intellectual property rights. Although drug patents are subject to compulsory licensing, in many cases, they are not just final products or certain drugs, but enabling or platform technologies. The protection of intellectual property rights plays a role in the better diffusion and application of these technologies. **Sun Kun, Director of Xinhua Hospital Affiliated to Shanghai Jiao Tong University School of Medicine**, said that taking the newly established department of intrauterine pediatrics at Xinhua Hospital as an example, the establishment of new disciplines requires the support of new teams, standards, mechanisms and systems, and even legal and insurance considerations.

Second, establish a powerful data foundation platform. **Steve Davis** pointed out that the influence of innovative products is closely related to digital infrastructure. We should build the entire digital

underlying technology and infrastructure. Only with powerful infrastructure and systems can innovation achievements be sustainable and most influential. **Chen Chong, CEO of Pluslife**, suggested that the R&D of technologies and products must originate from needs of target markets. Products should be developed in a targeted manner as required by target markets, and be practical to empower grassroots healthcare.

Third, gather worldwide outstanding talents and strengthen cooperation for a win-win situation. Gao Fu emphasized that talents are the primary resource, and the ultimate subject of innovation is people. Shanghai, as an international metropolis, should gather worldwide outstanding talents and maximize human potential in order to play a great role in future product innovation. **Li Xin** thought that whether in North-South or South-South cooperation, it is expected to further bridge gaps in the health field through cooperation. **Zhao Wei** pointed out that ethnic differences bring about differences in drug efficacy, and progress in human health cannot be made without cooperation among countries.

Compiled by: Chen Shaopeng, Zhou Shaodan