CHINA

Research could help find oral pill for cancer

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Immunotherapy, a form of cancer treatment that often requires expensive hospital-based injections, may one day be available in the form of a simple pill.

A team of Chinese scientists led by Fudan University in Shanghai has developed a new method for targeted protein degradation that could revolutionize how we treat cancer, metabolic disorders and neurological diseases. The research was published on Thursday on the website of the journal Cell.

Scientists often compare a cell to a factory where proteins are the primary products. Within this factory, a structure called the endoplasmic reticulum, or ER, acts as a quality control workshop.

Its job is to find misfolded proteins and mark them for disposal in the proteasome, which functions as the cell's version of a trash compactor.

This natural cleaning process is known as the ER-associated degradation, or ERAD, pathway. Until now, scientists believed ERAD mainly handled misfolded proteins. However, the Fudan team discovered they could hijack the system to destroy specific proteins that cause disease.

While current drugs are effective in attacking proteins inside a cell's fluid, they often struggle to destroy transmembrane proteins. These proteins are embedded in the cell's outer skin or membrane and often act as the "locks" that cancer uses to hide from the immune system.

The researchers created a bridge using a small molecule compound. This bridge links a specific enzyme in the ER's quality control workshop directly to a harmful transmembrane protein, which is typically produced and folded on the ER.

By tethering the harmful protein to the ER enzyme and subsequently triggering its entry into the ERAD pathway, the cell treats the disease-causing protein as trash and destroys it autonomously. The researchers name this novel strategy ERADEC, for ERAD engaging chimeras.

The team tested this strategy on PD-L1, a protein that cancer cells use as a shield to avoid being attacked by the immune system.

In human immune cells reconstituted mouse models, the new strategy was more effective at shrinking tumors than the PD-L1 antibody injections currently used in hospitals.

"The discovery may open up a paradigm shift in drug development targeting transmembrane proteins. Unlike current antibody treatments — which are made of large biological molecules that must be injected — ERADEC may enable the design of new small molecule degraders that are cheaper to produce and easier to deliver," said Lu Boxun, lead researcher and professor at Fudan University's School of Life Sciences.

While the specific compound used in the study is not yet ready to be swallowed as a pill, the researchers said they have already developed ERADEC molecules that show oral bioavailability. This means the body can absorb the drug through the digestive system rather than requiring an intravenous line.

This technology also shows platform potential, said Lu. By simply changing one part of the molecule, scientists can target different illnesses ranging from Alzheimer's to chronic pain.

If successful, patients of the future could manage their immunotherapy at home, avoiding frequent hospital visits and reducing the cost of care.

Music, food build bonds

Members of Yale University's Whiffenpoofs choir try their hand at making *ciba*, traditional glutinous rice cakes, in Liping county, Guizhou province, on Monday. The choir explored Dong ethnic culture, learned about traditional instruments, and experienced local customs. Founded in 1909, the Whiffenpoofs is a world-renowned collegiate a cappella group. The choir has been invited to participate in a series of exchange activities with Chinese youth. QU HONGLUN / CHINA NEWS SERVICE

Guangxi university uses AI to bridge healthcare gap with ASEAN countries

NANNING — In a high-tech hall at Guangxi Medical University in South China, a digital avatar came to life, speaking fluent Vietnamese to a room full of delegates from across Southeast Asia.

The scene unfolded on March 16 at the launch of the Guangxi Medical Artificial Intelligence Research Institute, the latest milestone in China's regional "AI + Healthcare" strategy.

Positioned as a platform for China-ASEAN medical intelligence sharing, the institute was established in Nanning, capital of the Guangxi Zhuang autonomous region. Its debut highlights the growing role of regional hubs in China's broader artificial intelligence push, aimed at exporting localized, cost-effective healthcare solutions to neighboring countries.

Guangxi, the only provincial-level region in China with both land and sea borders with ASEAN, benefits from what officials describe as a "shared clinical profile". From hereditary blood disorders such as thalassemia to tropical infectious diseases, health challenges in Guangxi closely resemble those across Southeast Asia.

"Given our unique advantage of possessing a massive volume of characteristic clinical data, the institute will serve as a strategic hub," said Li Lang, vice-president of Guangxi Medical University.

"We import top-tier algorithms from China's tech hubs like Beijing and Shanghai, train them on our disease profiles, and refine them with ASEAN-specific data so they meet local needs," Li said.

The launch drew regional stakeholders including Singapore's Agency for Science, Technology and Research as well as Vietnam's Hue Central Hospital, along with companies such as Beijing Yidu Technology Holdings Co and Shanghai SenseTime Shancui Healthcare Technology Co.

Among the flagship projects is "Urology's Talk", described as the world's first interactive medical AI focused on urology and supporting multiple ASEAN languages.

Unlike general-purpose chatbots, it is trained on specialized medical data to address what developers call the "last kilometer" problem — integrating clinical data into cross-border consultations. Cheng Jiwen, vice-president of the First Affiliated Hospital of Guangxi Medical University, said language barriers remain a key obstacle in telemedicine.

"We are bridging the clinical gap for minority dialects that global models often ignore," Cheng said. "It allows a specialist in Nanning to communicate effectively with a patient in rural Vietnam without a human translator."

The system currently supports Mandarin, English and Vietnamese, with Thai, Burmese and Khmer in development.

Cheng said building local-language datasets is critical, noting that patients often describe symptoms in colloquial terms that standard models fail to recognize.

Beyond modern medicine, the institute is also digitizing traditional Chinese medicine. Led by cardiovascular specialist Huang Feng, an AI-powered device analyzes the four traditional diagnostic methods — observation, listening, inquiry and pulse-taking — using computer vision and data modeling.

One of the institute's most significant developments targets thalassemia, which is prevalent across Southeast Asia.

An AI tool known as "Iron Detective" assesses iron overload in patients, a key factor in long-term survival. Built on more than 5,000 cases from China, Vietnam and Laos, it automates MRI analysis, reducing time and potential human error.

Developer Peng Peng, a radiologist at the affiliated hospital, said the system cuts diagnostic costs by about two-thirds compared with similar proprietary software. It has been adopted in 52 hospitals across China and is being extended to community-level facilities through remote diagnostics.

"AI is particularly powerful for grassroots healthcare in developing countries," Li said, adding that some systems already perform at the level of a physician with seven or eight years of experience.

The institute will operate through joint research with ASEAN partners, identifying regional needs, refining solutions using Guangxi's clinical infrastructure and scaling them across the region, said Zeng Zhiyu, president of Guangxi Medical University.

Zeng said Guangxi is shifting from a trade gateway to a hub for digital healthcare innovation.

"We are no longer just sharing medical talent," he said. "We are sharing healthcare intelligence for the two billion people in our region, making high-end diagnostics accessible to developing markets."

XINHUA

More than 300 robots warm up for Beijing half-marathon next month

By **ZHENG JINRAN** and **YANG CHENG**

More than 300 humanoid robots will line up alongside human runners at a half-marathon in Beijing next month, as the capital steps up efforts to turn competitive events into a global platform for robotics innovation.

The 2026 Beijing E-Town Half Marathon and Humanoid Robot Half Marathon, scheduled for April 19, is part of a flagship initiative aimed at offering companies and researchers opportunities for real-world testing and public demonstration, Liu Weiliang, spokesperson and deputy director of the Beijing Municipal Bureau of Economy and Information Technology, said on Monday.

The event has attracted 76 institutions from 13 provincial-level regions, including more than 80 corporate teams and over 20 teams from universities and training camps. In all, 26 robot brands and more than 300 humanoid robots are expected to take part.

Liu said Beijing aims to turn events such as the robot half-marathon and the World Humanoid Robot Games into a global "launch platform" and "arena" for cutting-edge technologies, where companies and research institutions can compete, collaborate and accelerate innovation.

This year's race reflects the sector's rapid expansion. The number of participating teams has increased nearly fivefold compared with the inaugural event, while university involvement has surged, with 20 institutions taking part — 10 times more than last year, according to Liu.

About 38 percent of teams will deploy robots capable of autonomous navigation, marking a notable step forward in real-world mobility.

In last year's inaugural race, the winning robot completed the 21-kilometer course in 2 hours, 40 minutes and 42 seconds. The event was also a major media success, with live broadcasts attracting 128 million viewers, highlighting public interest in robotics innovation, according to bureau data.

For industry insiders, the marathon is more than a spectacle — it is a demanding test of how far current technologies can go.

"Such events are not simply about speed, but about pushing robots to demonstrate stability, reliability and consistency under sustained and complex conditions," said Tang Jian, chief technology officer of the Beijing Innovation Center of Humanoid Robotics, at a recent training camp event.

In preparation for the race, the center has provided humanoid robot platforms and technical support to universities and corporate partners in a bid to accelerate collaboration and move innovations closer to real-world use.

Behind the race is a broader push to scale up the industry. Beijing has set up a government investment fund worth 100 billion yuan ($14.48 billion) to support future industries including humanoid robotics, while also encouraging private capital to flow into the sector. Since January 2025, 23 robotics companies in the city have secured a combined 19.24 billion yuan in financing, accounting for 41 percent of the national total in the field, Liu said.

Workers calibrate robots during the launch of a robot training camp in Beijing on Thursday, in preparation for the humanoid robot half-marathon event. HE GUANXIN / FOR CHINA DAILY

Signs of that transition are already emerging. Humanoid robots, once largely confined to staged performances, are beginning to move into more practical roles.

"From large-scale coordinated appearances to retail solutions and lower-cost consumer models, the technology is gradually edging closer to everyday life," Liu said.

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Innovations key to easing TB burden

Conventional measures also important to reduce incidence rate, expert says

By **WANG XIAOYU**
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China has made significant progress in reducing its tuberculosis burden and related deaths, but health experts say achieving global elimination targets will require major advances in scientific innovation, including novel vaccines, faster diagnostics and broader access to new tools.

Data from the World Health Organization shows an estimated 696,000 people in China contracted TB in 2024, a decrease of 6.1 percent from 2023.

The country's TB incidence rate dropped 5.8 percent year-on-year to 49 cases per 100,000 people in 2024, marking the first time China was classified as having moderate-to-low TB prevalence, according to a report released by WHO in November.

Zhang Hui, deputy head of the Chinese Center for Disease Control and Prevention's National Center for Tuberculosis Control and Prevention, said the number of people with rifampicin resistance declined by 50.9 percent — or about 29,000 fewer cases — from 2015 to 2024.

Compared with global averages, both the decline in TB-related deaths and the reduction in incidence have been more pronounced in China, she said.

However, China still had the fourth-highest number of TB cases in 2024, accounting for 6.5 percent of the global total.

It remains among the eight highest-burden countries, which together account for about two-thirds of worldwide infections.

"There remains a gap between the current situation and the WHO's End TB Strategy, which aims to reduce the TB incidence rate by 80 percent by 2030 and by 90 percent by 2035, compared with a 2015 baseline," Zhang said at a seminar held by Peking University's Center for Social Media Research and the Global Health Drug Discovery Institute in Beijing ahead of World TB Day on Tuesday.

To meet these goals, she stressed the need to strengthen conventional control measures, including proactive case detection and early intervention.

"Existing tools alone are insufficient to meet the objectives. Scientific innovation — in the form of more effective vaccines, lower-cost and more efficient technologies, and improved approaches for screening, diagnosis and treatment — is essential," she said.

Zhang added that intervention priorities should vary by region and align with local conditions.

Chen Zhongdan, a technical officer at the WHO Representative Office in China, said that while a variety of novel TB control tools have emerged in recent years, their accessibility remains far below the level required.

Globally, only 54 percent of people with TB were tested with a WHO-recommended rapid diagnostic test as an initial test, he said. The proportion of patients diagnosed through bacteriological confirmation — a more accurate method — has stagnated at about 58 to 64 percent over the past decade.

In addition, the number of people receiving treatment for multi-drug-resistant TB has remained stable since 2015, but is still far below the estimated number in need.

"More efforts are needed to develop novel tools, including better diagnostic technologies, safer, more accessible and affordable, shorter treatment regimens, and effective vaccines," Chen said.

"It is particularly important to drive innovation in funding, management and service models to ensure the population level coverage of novel tools," he added.

Chinese researchers say several innovations are in development.

Hu Ye, dean at Tsinghua University's School of Biomedical Engineering, said his team has developed a fast, portable TB test that can analyze blood, saliva and sputum samples using a handheld device.

The technology could be especially useful in resource-limited settings such as rural townships and mountainous regions.

Zhang Rumin, chief scientist at the Global Health Drug Discovery Institute, said artificial intelligence could help accelerate the development of therapies that precisely target TB bacteria, as well as combination drugs capable of tackling drug-resistant or dormant strains simultaneously.

"It would be ideal to have a single shot that works, rather than having to take pills every day," he said.

Gao Lei, vice-chairman of the Chinese Antituberculosis Association, said the WHO has already recommended AI-powered imaging diagnostics to screen and triage active TB cases.

He added that AI could also play a broader role, including identifying individuals at high risk of developing the disease.