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WEEKLY EDITION

President Xi Offers Chinese Solutions for Post-pandemic World

Chinese President Xi Jinping delivered a special address to the 2022 World Economic Forum virtual session on January 17, calling on the world to do everything necessary to clear the shadow of the pandemic and boost economic and social recovery and development.

How to beat the pandemic and how to build the post-COVID world are major issues of common concern to people around the world. They are also major, urgent questions that must be answered, Xi said, noting that countries all over the world need to foster new opportunities amidst crises, open up new horizons on a shifting landscape, and pool great strength to go through difficulties and challenges.

President Xi then made several proposals. First, the world should embrace cooperation and jointly defeat the pandemic. Thanks to the concerted efforts of the international community, major progress has been made in the global fight against the pandemic. Countries need to strengthen international cooperation against COVID-19. Of particular importance is to fully leverage vaccines as a powerful weapon, ensure their equitable distribution, quicken vaccination and close the global immunization gap, so as to truly safeguard people's lives, health and livelihoods.

China has already sent over two billion doses of vaccines to more than 120 countries and international organizations. Still, China will provide another one billion doses to African countries,

including 600 million doses as donation, and will also donate 150 million doses to ASEAN countries.

Second, the international community needs to resolve various risks and promote steady recovery of the world economy. Economic globalization is the trend of the times. We should seek integration, not decoupling.

The world should make generally acceptable and effective rules for artificial intelligence and digital economy on the basis of full consultation, and create an open, just and non-discriminatory environment for scientific and technological innovation.

Third, the international community needs to bridge the development divide and revitalize global development. China stands ready to work with all partners to jointly translate the Global Development Initiative into concrete actions and make sure that no country is left behind in this process.

Fourth, the international community should discard Cold War mentality and seek peaceful coexistence and win-win outcomes. Different countries and civilizations may prosper together on the basis of respect for each other, and seek common ground and win-win outcomes by setting aside differences.

Xi also said that China will pursue high-quality development, and reform and opening-up, while staying committed to promoting ecological conservation. *See page 4*

Green Olympics

Sustainable Catering Serves Beijing 2022

Edited by TANG Zhexiao

Organizers of the Beijing 2022 Olympic and Paralympic Winter Games have released a menu of 678 dishes that will be served during the events, to athletes from diverse cultural backgrounds.

Chinese dishes will take up around 30 percent of the total, and the rest will be Western food. About 95 percent of food materials at the Winter Olympic villages are domestically produced, with only a small portion of foreign-exclusive ingredients imported.

The dishes in the athlete's dining halls adopt an eight-day rotation cycle. Regarding the selection of ingredients, experts said that skinless and boneless food, which can reduce food waste, are preferred among the various choices.

All restaurants in the Zhangjiakou

Winter Olympic Village (Winter Paralympic Village) use green electricity generated by wind and solar power stations in Zhangjiakou, helping to reduce the dining halls' carbon emissions, said Liu Jun, an engineer who worked there.

According to Zhang Hecheng, deputy director of catering for Zhangjiakou Winter Olympic Village, the dining hall in Zhangjiakou is a temporary building specially constructed for the events. This kind of building is easy to disassemble with almost no pollution.

As for environmental concerns, biodegradable tableware made from renewable resources including potatoes and straw will be used in an endeavor to host a green Olympic Games.

Biodegradable materials, also known as green ecological materials, are substances that decompose easily through the reactions of bacteria, fungi, and other living organisms.

Such degradable tableware is more healthy and environmentally friendly. With the participation of microorganisms, biodegradable wastes such as bioplastics and fibers will turn into water and carbon dioxide, and then return to nature through photosynthesis.



Main dining hall of Beijing Winter Olympic Village. (Graphic Design: TANG Zhexiao; PHOTO: VCG)



Volunteers for Beijing 2022 Olympic and Paralympic Winter Games from Beijing Jiaotong University. (PHOTO: S&T DAILY)

Editor's Pick

Beijing 2022: Smarter, Safer and Stronger

By LU Zijian

Marching closer, the Beijing 2022 Olympic and Paralympic Winter Games (Beijing 2022) are equipped with abundant and diversified sci-tech achievements, aiming to bring a great experience to the athletes, audience, staff and other involved. There are many aspects worth highlighting, and here we selected three of them.

Smarter experience

A bunch of innovative technologies will be adopted to bring a smarter experience for both staff and audience.

By January 4, the key information system of Beijing 2022 had been operating completely from a cloud computing platform. It is the first time in the Olympics history to replace traditional IT with cloud computing in the organization and operation of the games.

Rebroadcasting on cloud also makes it convenient for TV staff, especially those from overseas TV stations, as they can edit and rebroadcast the program without traveling and working onsite.

China's first 5G+ 8K outside broadcast vehicle is to be used. The first 8K TV channel already started broadcasting on December 31, 2021. The 8K ultra high definition can offer an experience closest to people's real vision, which will definitely uplift the audience's watching experience at home.

For audiences who are lucky enough to watch the games onsite, they can also have smart experiences at the venues. For example, there will be an app especially designed for the National Speed Skating Oval, or the Ice Ribbon. With the positioning and navigation function of this app, the audience can navigate their way within the stadium.

The National Aquatics Center was equipped with a smart environment adaptation platform. Through more than 4,000 sensors installed in the venue, the platform can maintain different temperatures right directly above the ice, 1.5 meters above the ice and in the auditorium at -8.5°C, 8-12°C and 16-18°C respectively, creating a relatively comfortable environment for the audi-

ence without influencing the competition.

Safer competition

Safety is also one of the top concerns for Beijing 2022, especially under the shadow of COVID-19.

An aerosol detection system for the novel coronavirus in public spaces was developed to warn and quickly detect the virus in the air of the various venues. The sensitivity level of the system is three times higher than that of traditional detection systems.

For outdoor competition venues, there are also safety guarantee measures. A domestically developed high-precision weather forecast system was adopted, which can forecast weather at 100 m distance and minute by minute.

Wind LiDAR is used to conduct real-time monitoring and warning in the competition areas in Zhangjiakou, Hebei province, as athletes are very easily influenced by the sudden change of wind direction on the track.

Quick and efficient diagnosis and treatment for athletes are also considered. *See page 3*

Water Contents in Lunar Surface Acquired

By Staff Reporters

A group of Chinese scientists acquired water contents of the lunar surface via in situ detection for the first time.

Published in *Science Advances* on January 7, the study estimated 120 parts per million (ppm) of water in the lunar regolith (superficial deposits covering solid rock), which equals about 120g of water in each ton of lunar regolith. This is based on the analysis of data acquired by the Lunar Mineralogical Spectrometer (LMS) in the Chang'e-5 lander.

Apart from the lunar surface, the LMS also conducted spectral observations on a piece of rock near the

Chang'e-5 Lander. Using the same model for estimating water content of the regolith, the researchers estimated that there could be about 180 ppm of water in the rock, which means 180g of water within one ton of rock.

Regarding the source of the detected water, the study found out that the water is mostly contributed by solar wind. Lin Yangting, researcher at Institute of Geology and Geophysics, Chinese Academy of Sciences (CAS), said that there are a lot of hydrogen ions in solar wind and they combine with oxygen in the lunar regolith to generate hydroxyl (OH) or water (H₂O) when they hit the lunar surface.

As to the 60 more ppm of water in the rock, the researchers estimated that the rock could come from somewhere else and there is more water in the lunar interior. The reason for lower water content in the lunar regolith could be that the lunar mantle where Chang'e-5 landed, is relatively dry or it has experienced massive degassing, according to Lin Honglei, first author of the paper and deputy researcher at Institute of Geology and Geophysics, CAS.

However, the water detected by the LMS refers to hydroxyl or water in the minerals, and can only be transformed into water for drinking under certain conditions, said Lin Honglei.

2 Bln COVID-19 Vaccines Bolster Global Immunization

By TANG Zhexiao

From elderly folk to school-age children, people from more than 120 countries, regions and international organizations have received China's COVID-19 vaccines throughout the past year.

According to statistics, China has provided a total of nearly two billion doses of COVID-19 vaccines to the world, mostly to developing countries, accounting for one-third of the global vaccine use outside of China, and in process becoming the biggest foreign provider of COVID-19 vaccines.

The Chinese vaccines' safety and effectiveness have been recognized by the World Health Organization (WHO), which has listed China's Sinopharm and Sinovac COVID-19 vaccines for emergency use last year, giving the green light for their global rolling out.

With high accessibility around the world, the two kinds of vaccines only need to be stored between 2-8°C, protected from light, and transported through cold chain logistics.

China has been living up to its promise of making COVID-19 vaccines an international public good via donations, sales and joint manufacturing.

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African Country Joins the BRI

By Staff Reporters

Morocco and China signed the convention relating to the Joint Implementation Plan of the Belt and Road between the two countries on January 5. Since its launch, Morocco has become the first country in North Africa to join the Belt and Road Initiative (BRI).

This convention, signed by Nasser Bourita, minister of Foreign Affairs, African Cooperation and Moroccan Expatriates, and Ning Jizhe, vice chairman of the National Development and Reform Commission (NDRC), outlines the road map for the two countries to jointly build the BRI, and specifies the cooperation principles, key tasks and coordination mechanisms.

The two countries will continue to deepen practical cooperation in multiple areas including infrastructure construction, logistics, trade and investment, industries, energy, finance and cultural exchanges. The agreement also covers cooperation in research and development (technology, energy, agriculture, etc.), and technological and technical cooperation, as well as vocational training.

The Chinese government undertakes, under this agreement, to encourage large Chinese companies to invest and set up branches in Moroccan territory, including the automotive industry, aeronautics, e-commerce, agricultural industry and textiles.

WECHAT ACCOUNT E-PAPER



Blueprint Set for One Million IP Professionals

By LI Linxu

In its latest move to build an intellectual property (IP) powerhouse, China is attaching increasing importance to talent development.

By 2025, the number of IP professionals in China is expected to reach one million from about seven hundred thousand today, according to a document released by China National Intellectual Property Administration.

The document, titled the *14th Five-Year Plan for Intellectual Property Talents*, details the country's goals and tasks for the development of IP talents during the period of 2021-2025.

As the first resource for IP undertakings, talent is essential to its high-quality development.

During the 13th Five-Year Plan period, significant progress has been made in the talent development of IP, not only in an ever-increasing quantity but also a continuously improving quality.

In the new Five-Year Plan period, China is aiming to fully integrate the talent resources, enhance the use efficiency, and improve the evaluation and incentive mechanism so as to meet the various needs.

By 2025, the number of practicing patent attorneys is expected to increase to 40,000. About 30 training bases and five academies/research institutes will be set up by 2025, according to the plan.

It puts forward a series of key programs, such as a training base construction program, e-learning course development program, building a talent hub,

and expert and talent base building program.

Beijing, Shanghai and Guangdong-Hong Kong-Macao Greater Bay Area are being promoted as future hubs for IP.

The plan calls for accelerating the development of internationalized talent and uplifting the international cooperation of IP to a new level.

A special cultivation program for internationalized talent will be implemented, and international training programs will be actively expanded, according to the plan.

To meet an increasing need for international negotiation expertise and overseas rights protection, the knowledge update will be accelerated, and the study of international rules and regulations will be enhanced, says the plan.

International cooperation is also greatly emphasized. It proposes providing a practicing platform, through international cooperation programs, offered by bilateral or multilateral mechanisms such as the World Intellectual Property Organization, the Five IP Offices, and BRICS IP Offices.

China's Manufacturing Power Close to Top Three

By ZHONG Jianli
CAO Xiuying

Against the backdrop of a complex international world order and the COVID-19 pandemic, China has witnessed the largest increase in the manufacturing power development index among major countries in the world, according to a recent report.

The *2021 China's Manufacturing Power Development Index Report*, published by the Chinese Academy of Engineering (CAE), China Machinery Research Institute Group, and China Industrial Information Security Development Research Center, shows that China's manufacturing power development index reached 116.02 in 2020, an increase of 5.18 compared with 2019, the largest increase among major economies in the world.

The index consists of four items including scale development, quality and efficiency, structural optimization and sustainable development, which reflects the development level of a country's manufacturing industry.

According to the report, China ranked fourth in 2020, after the U.S., Germany and Japan.

It also indicates that China's manufacturing has shown "resilience," despite the complicated global times especially the COVID-19 pandemic.

"China's manufacturing industry has a complete system and is constantly developing towards the mid to high end. It is accelerating its integration into the global industrial chain, and its competitiveness continues to improve," said Shan Zhongde, a CAE academician.

Shan added that in terms of some specific indicators, from 2015 to 2020, the proportion of the added value of China's manufacturing industry to that of the world has increased from 18.45 percent to 18.70 percent, ranking first among all major economies. China has become the largest exporter of global trade in goods for 11 consecutive years. In 2020, China surpassed Germany for the first time to become the world's largest machinery equipment exporter.

China's manufacturing power in 2020 has been close to that of Japan. Under the premise of no major changes in the domestic and foreign macroeconomic environment, it is expected that China will enter the second tier of global manufacturing powers by 2025, and now it's in the third tier, according to Zhu Gaofeng, also a CAE academician.

But Zhu also noted that China's manufacturing industry still faces the challenge of unbalanced, uncoordinated and insufficient development. To reach the country's goal, the "quality and efficiency" of the industry should be improved.



The building of China National Intellectual Property Administration. (PHOTO: VCG)

CAOPQ Streamlines Work Permit Process for Global Talent

By CHEN Chunyou

A foreign employee from a high-tech enterprise in Chaoyang district recently became the first person to get a work permit in Beijing, based on the *Catalogue of the Approved Overseas Professional Qualifications (CAOPQ) in the National Comprehensive Demonstration Zone for Expanding Opening-up in the Service Sector and China (Beijing) Free Trade Pilot Zone*, which was released in September 2021.

According to international practice, the professional qualification is the recognition of a person's ability and expertise in specific knowledge and technology.

In order to facilitate an exchange of talent, optimize Beijing's business environment and attract high-level professionals from abroad, Beijing has been ac-

tively exploring the recognition of overseas professional qualifications. CAOPQ is a practical way for Beijing to welcome global talent.

Eighty-two overseas professional qualifications covering 15 countries and regions are listed in CAOPQ, which involves urgently-needed professional skills, such as the financial analysts, actuaries, software developers and ski instructors.

For foreigners holding overseas professional qualifications recognized in the catalogue, their international employment experience can be counted as working experience in China.

When applying for the work permit, the certificate-holders' age restriction can be relaxed up to 65 years old regardless of the applicant's educational background and working experience. If the candidates are from high-level, high-

precision or advanced industries, the age restriction can be relaxed up to 70 years old.

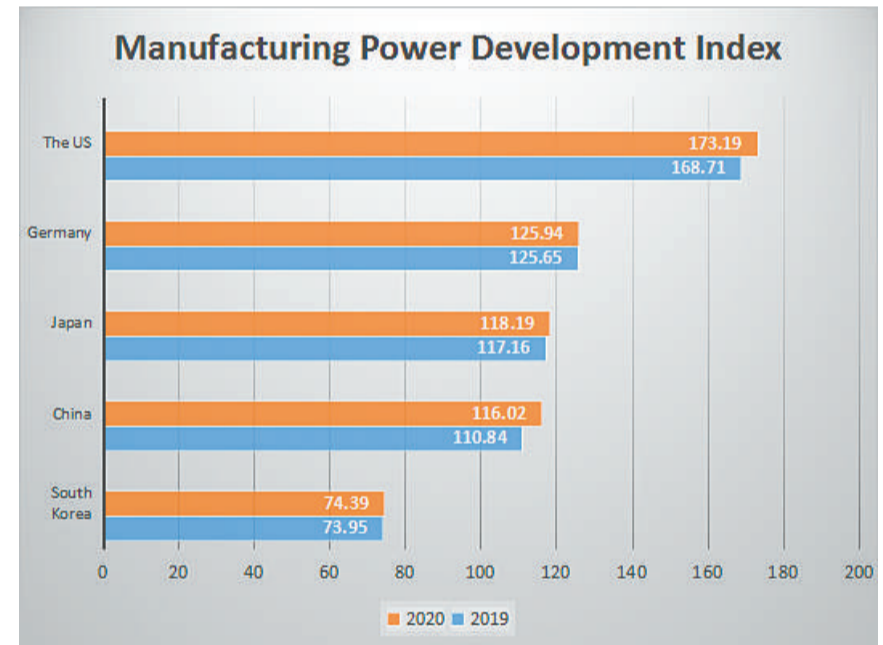
Also, the certificate-holders are allowed to apply for a visa valid within five years or a residence permit. Those who meet the requirements are allowed to apply for permanent residence in future. The port visa will also be open to apply when the port visa policy is restored.

Most of the overseas professional qualification certificates are issued by overseas institutions. The verification of the authenticity is complex, for it needs both to be notarized by the issuing places, and authenticated by Chinese embassies and consulates abroad. Moreover, it takes 30 to 90 working days and costs 1,000 to 2,000 RMB, making it an obstacle for international professionals to work in Beijing.

To free people from this inconvenience, the Beijing Municipal Human Resources and Social Security Bureau and Beijing Foreign Enterprise Human Resources Service Co., Ltd. set up the first provincial overseas professional qualification inquiry platform, in which the certificate-holder can enjoy the service for free through website, email and telephone, without the limitation of visiting specific official locations.

Thanks to the platform, the processing time has been reduced to 5-30 working days.

By December 31, 2021, Beijing had provided the service to 93 certificate inquiries for 74 enterprises. The verification results can be used in job hunting and seen as a reference for assessing a candidate's ability of innovation and entrepreneurship.



(Data source: 2021 China Manufacturing Power Development Index Report; Graphic design: ZHONG Jianli)

Talent Exchanges Elevate Innovation at Tongji University

By HUANG Aijiao
CHEN Chunyou

In recent years, a group of renowned foreign scientists from Tongji University (Tongji) in Shanghai have made outstanding achievements in their research fields, while also contributing to the scientific and technological cooperation between China and the world.

Based on international academic frontiers and major strategic needs, foreign scientists, represented by Professors Otto Heinrich Herzog, Pol D. Spanos and Herbert Mang, cooperated with Chinese scientists at Tongji to carry out joint research in key fields and core technologies, build high-level coopera-

tive research platforms, and cultivate young talent. These have injected vitality into practical international cooperation and exchanges.

"Brother Cooperation" in AI research

Professor Herzog is an artificial intelligence (AI) expert from Germany and was invited to work at Tongji for nearly seven years. He has engaged in the interdisciplinary innovation in AI and urban planning, and helped China to build a global hub for the scientific development and innovative application of AI. He is affectionately called "Brother Cooperation" by his colleagues.

Herzog won the 2021 Shanghai Magnolia Memorial Award and was

elected as a foreign academician of the Chinese Academy of Engineering (CAE) in November 2021.

Before arriving in Shanghai, Herzog had never tried to combine AI with urban planning and operation. In the past seven years, he and his Chinese counterpart, were joint leaders of the research and development of the Yangtze River Delta urban and rural dynamic monitoring database, and the world's largest city database, while providing technical support and suggestions for the Urban Elements Allocation Model and the Urban Intelligent Deduction and Diagnosis Platform.

Herzog has decided to settle in Shanghai and work at Tongji for the foreseeable future.

Tongji—my home in China

In November 2019, American Professor Spanos was elected a foreign academician of the Chinese Academy of Sciences, after receiving the International Scientific and Technological Cooperation Award of China in 2017.

Over the past 10 years, a series of important advances in stochastic dynamics research and stochastic dynamic stability have been made by him and his Chinese colleagues.

"Tongji University is my home in China," said Spanos. In 2016, he co-founded the International Joint Research Center for Engineering Reliability and Stochastic Mechanics (JCERSM) of Tongji with academician Li Jie, and served as the foreign director. They have

jointly held many important international academic conferences, trained doctoral students and published papers, committed to making JCERSM become internationally influential in this field.

Forty years' nurturing young talent

In January 2020, Austrian Professor Mang was awarded the 2019 International Science and Technology Cooperation Award of China after being elected a foreign academician of CAE in 2015, becoming the first Austrian scientist to receive this honor.

Mang started academic cooperation with China in the 1980s. Under his promotion, the Austria-China Research Center on Tunnel and Underground Engineering (ACTUE) was established in Tongji in 2007.

Thanks to this research platform, scientists from Tongji and Vienna University of Technology have maintained frequent academic exchanges and profound cooperation.

As a permanent cooperative project, the ACTUE International Symposium is held in China and Austria alternately every year. Many scholars and students from the two countries attend the symposium and exchange their ideas.

"One of the most important achievements of my 40-year partnership with China in civil engineering is the training of promising young people in academia and industry for both countries," said Mang.

Under Mang's guidance, many stu-

Hydrogen to Fuel Shandong's Greener Future

By ZHONG Jianli

The utilization of hydrogen energy has achieved phased results in east China's Shandong province, home to the country's first scientific and technological demonstration project for hydrogen energy.

On January 8, at a symposium held to assess the progress of the project, multiple application scenarios for hydrogen energy were introduced, including China's first fuel cell intelligent snow wax vehicle, the first highway hydrogen refueling station, and the first port hydrogen refueling station, which is under construction.

Supported by the Ministry of Science and Technology and the Shandong Provincial Government, the project aims to accelerate breakthroughs in key hy-

drogen technologies and systems, promote large-scale applications of hydrogen-powered terminals, and explore more effective ways of using the energy.

This is also part of China's efforts to pursue cleaner energy and achieve the goal of carbon emissions peaking by 2030 and carbon neutrality by 2060.

A total of 848 hydrogen-powered vehicles have taken to the road, and 22 hydrogen refueling stations have been built in Shandong, according to the provincial department of science and technology.

The province is also promoting the use of hydrogen in industrial parks. The country's first large-power container-type hydrogen fuel cell combined heating and power (CHP) system and the first 30 kW solid oxide fuel cell CHP system have been put into operation.



A campus landmark, which best manifests the university's educational concept, stands at the Sipinglu campus of Tongji University. (PHOTO: Tongji University)

dents have grown into academic leaders, and worked in internationally renowned academic organizations.

Adhering to the principles of "building a platform to attract talent, introducing projects to develop talent, offering good conditions to retain talent," Tongji is building a team of high-level dedicated foreign staff. In future, the

university will further integrate global talent attraction with scientific and technological cooperation, so as to promote the high-quality scientific and technological innovation, advance the building of world-class universities and first-class disciplines, and help achieve national self-reliance in sci-tech at higher levels.

Beijing 2022 Clock Counts Down

Voice of the World

By QI Liming

As the Beijing 2022 Olympics and Paralympic Winter Games edge closer, China has gone all out to ensure the international community are not disappointed.

Officials from the International Olympic Committee (IOC) and ambassadors to China have commented favorably on China's preparations for Beijing 2022. They believe that China will stage a magnificent Olympic Games for the world and the Chinese people.

China's contribution to the international Olympic cause

President of the IOC Thomas Bach spoke highly of the preparations for Beijing 2022, when he spoke to Cai Qi, head of the Beijing Organizing Committee for the 2022 Olympic and Paralympic Winter Games (BOCOG) via video. Bach said that the work for Beijing 2022 have once again demonstrated China's efficiency and vitality. Safety is a top priority and the IOC will continue to work side by side with BOCOG to guide all stakeholders to abide by pandemic prevention rules and win greater support from the international community. "We believe that Beijing will be the best host and the Beijing Winter Olympics will be held safely and smoothly as scheduled," said Bach.

Senior IOC member Dick Pound said in an interview with German media that politics does not come into any decision concerning the award of Olympics events to a country. "In the sense of having a host country that could organize and put on an excellent Games from a Games perspective, there's absolutely nothing wrong with China," Pound said, adding that "It's a very good and very organized country."

International community looking forward to a spectacular Olympic Games

Andrey Denisov, Russian Ambassador to China, said in an interview that the Beijing 2008 Summer Olympics was the best summer Olympics in recent



Mascots of the Beijing 2022 Winter Olympic and Paralympic Games. (PHOTO: VCG)

years, and he believed that the Beijing Winter Olympics will be an unprecedented event in the history of the Olympic Games. He is looking forward to the opening ceremony of the Winter Olympics in Beijing.

Denisov also confirmed that Russian President Vladimir Putin has already accepted an invitation and would attend Beijing 2022. This is also Putin's first overseas visit in 2022. "It is well known that President Putin is a sports lover and he is very much looking forward to the Beijing Winter Olympics."

Reza Salehi Amiri, the president of Iran's National Olympic Committee (NOC), praised the Chinese government and people for holding significant sports events. "We have already confirmed three athletes' places and have requested the IOC to allow us to add a sports-woman to our delegation. In addition, Iranian Minister of Sport and Youth Affairs Hamid Sajjadi and I also plan to attend the event in Beijing," said Salehi Amiri.

He said order, discipline and effective management have always been among the distinctive features of events held in China.

Luis Schmidt, Chile's Ambassador to China, talked about the upcoming Beijing 2022, saying it will be a grand gathering of all countries in the world and a fair stage for international athletes to compete.

"China's commitment to Beijing 2022 is world-class," he said. "It's amazing how many major games facilities China has created in the preparation process. I know a lot about winter sports and have skied in the U.S. and Swiss Alps. I can say that the venues in Zhangjiakou are the best in the world."

Hosting the Games in a green, sharing, open and clean manner

Florian Hajzeri, China general manager for TechnoAlpin, the Italian company that supplies the snow-makers, said that the equipment's automated systems reduce the kind of human error that can lead to wastage.

With resorts worldwide turning to artificial snow to operate smoothly through the winter, "no matter which Olympics, there will always be snow-making systems for all of the venues", he said.

Organizers of Beijing 2022 said the snow-makers are powered by renewable energy and would not damage mountain ecosystems, while the water they use would return to local reservoirs as the snow melts in spring.

Allison Malmsten, marketing director at China-based market research firm Daxue Consulting, said Beijing 2022 would help to accelerate the growth of snow sports in China, which has spent several years developing its infrastructure.

"As a country with many snow-capped mountains, China has great potential as a future ski destination. The legacy, which Beijing 2022 will leave, will be in marking a new growth point in the upgrade of the domestic market."

Comment

Potential Breakthrough Drugs Identified for Use in Next 5 Years

By Staff Reporters

Clarivate recently released its annual Drugs to Watch report, identifying drugs entering the market or launching key indications in 2022, which are predicted to achieve blockbuster status by 2026.

Clarivate, a public analytics company, identified seven late-stage experimental treatments will deliver annual sales of more than one billion USD within five years. These treatments span a remarkably diverse set of therapeutic areas, from conditions like Alzheimer's disease (AD), asthma and type 2 diabetes mellitus (T2DM), which afflict tens of millions of patients worldwide, to rare diseases, such as transthyretin amyloidosis, a protein misfolding disorder (ATTR), among others.

The new drugs and biologics concerned with the treatments, that have either won approval, or are poised to do so, include:

- **Adagrasib**, developed by Mirati Therapeutics Inc and Zai Lab Limited - This long-awaited, targeted treatment will likely be the first such treatment option in patients with colorectal cancer with the KRASG12C mutation, who historically have had very few treatment options. The common variants of the KRAS oncoprotein are traditionally considered intractable drug targets, which makes the forecasted entry of a KRAS inhibitor for patients with mutation-positive solid tumors so monumental.

- **Faricimab**, developed by Roche and Chugai Pharmaceutical - For patients with diabetic macular edema (DME) or wet age-related macular degeneration (AMD) - a degenerative condition affecting the central part of the retina, Faricimab offers a potentially more convenient option as it will be administered less frequently, on average, than the standard of care. As the first bispecific antibody to launch in ophthalmology, it also has the potential to be more efficacious than the current standard of care, although current data indicates it is non-inferior to the standard of care. Faricimab is the first dual VEGF/Ang-2 inhibitor to treat DME and wet AMD (and the first bispecific MAB in the ophthalmol-

ogy therapeutic area overall).

- **Lecanemab**, developed by Eisai Co Ltd and Biogen Inc, and **Donanemab**, from Eli Lilly and Company - In this underserved market, anti-Aβ MABs Lecanemab and Donanemab are poised to follow on the heels of the U.S. FDA's landmark accelerated approval of ADUHELM for the treatment of AD. Lecanemab and Donanemab could offer differentiated clinical profiles, which may be bolstered by phase 3 results that are expected to be reported beginning in late 2022. Data across clinical trials suggest that sufficient exposure to optimal doses of anti-Aβ MAB therapy could be clinically effective in early AD.

- **Tezepelumab**, developed by Amgen and AstraZeneca - Tezepelumab is a potential game-changer for patients with non-TH2 or TH2-low asthma, whose asthma is not well-controlled with inhaled corticosteroids, the current standard of care. If approved, it would be a first-in-class biologic for this patient population. Tezepelumab will likely be a first-line biologic for severe TH2-low asthma and a treatment option for patients with TH2-high asthma for whom existing therapies have been less successful.

- **Tirzepatide**, developed by Eli Lilly and Company - Tirzepatide offers indication-leading reductions in weight loss and improvements in glycemic control in a growing patient population, which has the potential to reduce the incidence of type 2 diabetes mellitus (T2DM)-related complications. A new treatment that can more effectively address both weight loss and glycemic control than existing treatments would potentially be of great benefit to patient outcomes.

- **Vutrisiran**, developed by Alnylam Pharmaceuticals - For a progressive disease with a lot of unmet need, this drug brings efficacy, a generally favorable safety profile, and improvements in delivery that will benefit patient quality of life. This patient population has few treatment options, especially for those with wild-type ATTR. Not only does this drug enter a relatively underserved market overall, it also has more convenient dosing than other ATTR-specific drugs on the market.

Source: Clarivate Plc.

Hi! Tech

CES 2022: Gearing Up for a Unique Driving Revolution

Edited by QI Liming

A color-changing BMW



A color-changing BMW. (PHOTO: Screenshot)

German automaker BMW unveiled its new concept vehicle called the iX Flow, with "E Ink" that can change colors, at the CES technology conference in Las Vegas last December.

The color changing is made possible by a specially developed body wrap that's similar to material used in an Amazon Kindle E-Reader, which is tailored

to the contours of the all-electric vehicle. When stimulated by electrical signals, the electrophoretic technology brings different color pigments to the surface, causing the body skin to take on the desired coloration, according to BMW.

The iX Flow, featuring E Ink, can only change colors through a scale of white, grey and black, but officials said the technology theoretically could offer other colors.

Stella Clarke, project leader for BMW iX Flow, said the color changing is "kind of crazy" but also could offer "some useful use cases." She said it gives the owner greater self-expression, could display messages such as charging status and even blink if you can't find it in a crowded parking lot. "We see a lot of sensible use cases behind it," said

Clarke.

Recharge twice a month for a solar cell-clad EV



Concept of Mercedes-Benz's solar cell-clad EV. (PHOTO: Screenshot)

At CES 2022, a new concept showed how Mercedes imagines the future of electric cars. Mercedes-Benz Vision EQXX is a solar cell-clad EV with a huge range.

The range of Mercedes' new con-

cept EV is the real headline - grabbing stat, claiming the vehicle can travel more than 1,000 km on a single charge, a market leading figure.

To make the distance easier to imagine, you could theoretically drive on a single charge from Berlin to Paris, from New York City to Cincinnati, Ohio, or from Beijing to Nanjing.

Based on average distances driven per year, Vision EQXX drivers in the U.S. and China would only have to recharge twice a month, while European drivers would typically only have to recharge once a month.

Since this is a concept vehicle, the EV won't actually go on sale, but it's very close to production, with a number of technologies featured here set to make their way into an electric car from the brand in 2024 or 2025.

Beijing 2022: Smarter, Safer and Stronger

From page 1

Mobile smart platforms, in the form of vehicles, for the diagnosis and treatment of frostbite and maxillofacial trauma have been built. Based on previous data, the two injuries are the most common for ice hockey athletes in winter Olympic games.

The advantage of the platform lies in maximizing the time, offering treatment for the injured athletes at once and exchanging information before the patient is transferred to the hospital.

There are also portable cardiopulmonary resuscitation machines and ventilators in the vehicle, providing timely treatment.

Better performance

Apart from offering a smarter experience for audiences and a safer journey for athletes and staff, sci-tech achievements also help athletes to achieve better performance.

Previously, coaches would record the training process of athletes and conduct analysis using the playback. However, the athletes are quite small in the video due to the long distances involved, making it harder to notice the detailed difference in their moves such as angle of arm swing, which has a great influence on their performance.

A group of researchers from the

Shanghai University of Sports developed a model of neuro biomechanics strengthening technology and intervention to enhance the efficiency and capability of snow sports athletes. The research group will install a real-time high speed video recording system at different key points of the sliding track, capturing the 3D motion of athletes using an artificial intelligence assisted system.

Wearable sensors are used to precisely follow and measure the athletes' speed, acceleration and condition of skiing board while on the slopes, optimizing the control of their actions.

The outfit of the athletes also matters. A research team led by the Beijing Institute of Fashion Technology developed a series of costumes for athletes based on data accumulated from Chinese athletes training and competition environment.

Comparing the data from the results of wind tunnel tests, the drag reduction of the newly design speed skating costumes is more than 11 percent higher than that of clothing purchased overseas.

These are only a small part of the sci-tech innovation that will make an appearance during the Beijing 2022, which will all ensure the world's premier winter sporting event is a winner all round.

2 Bln COVID-19 Vaccines Bolster Global Immunization

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The Sinopharm Group said it has built three P3 high-level biosafety laboratories and six P3 high-level biosafety production workshops, with an annual production capacity of more than seven billion doses to meet domestic and foreign demand for COVID-19 vaccines.

To date, the Sinopharm Group has successively cooperated with the United

Arab Emirates, Serbia, Morocco and other countries, and will continue to boost cooperation with countries in Southeast Asia and South America to build overseas factories.

In December 2021, the Myanmar's Ministry of Industry signed a supply agreement with Sinopharm for semi-finished vaccine products. Sinopharm vaccines will be rolled off the production

line in Myanmar and will be directly supplied to the local regions shortly after.

"We must say that the vaccines supplied by China played a vital role in the control of COVID-19 here. The infection rate and mortality rate are under control during the third wave of COVID-19, thanks to the help of a good neighbor," said Khin Khin Gyi, director of the Cen-

tral Infectious Disease Control Division of the Myanmar's Public Health Department.

Another Chinese biopharmaceutical company, Sinovac Biotech, has invested in vaccine production plants and R&D centers in Egypt, Chile and other countries, with the assistance of local vaccine partners, supply and distribution chains.

Foreign Experts Celebrate Spring Festival and Winter Olympics

By ZHONG Jianli and LONG Yun

With Spring Festival approaching, the China Association for International Exchange of Personnel held a tea party with foreign experts working in China on January 14.

On behalf of the Ministry of Science and Technology (MOST) and State Administration of Foreign Experts Affairs (SAFEA), Li Meng, the vice-minister of MOST and the administrator of SAFEA, extended festival greetings and best wishes to foreign experts in China and foreign friends who support China's development, international cooperation and contribute to Beijing 2022 Winter Olympics.

In Li's speech at the tea party, he said that President Xi Jinping replied to the letter from family members of some international friends on September 14, 2021. President Xi pointed out that we always remember their invaluable contributions to China's revolution, development and reform and their genuine friendship with the CPC and the Chinese people.

Noting the upcoming Beijing 2022 Winter Olympics and Paralympics, Li said the world looks forward to such an ice and snow sports event injecting positive energy for humankind to overcome difficulties, show solidarity and safeguard peace. China is confident and capable of delivering an extraordinary Winter Olympics to the world, while adhering to the principle of "green, inclusive, open, and clean" and emphasizing the features of "high-tech, smart, green, and frugal."

He concluded his remarks by expressing his sincere hope that foreign experts will serve as non-governmental ambassadors to facilitate cooperation between China and other countries.

The tea party focused on the theme "Gather a Family." Lu Ming, a member of CPC Leading Group of MOST, also participated in the event.

A 107-year-old special guest, Isabel Crook, also de-



Group photo of attendees in 2022 Foreign Experts Tea Party's Shandong venue in Jinan. (PHOTO: MOST)

livered a speech of welcome for the Winter Olympics. She has lived a full life and been a witness to the establishment of the People's Republic of China, as well as China's reform and opening up.

Furthermore, experts from Israel, Japan, Singapore, and the United Kingdom shared their perspectives for international cooperation, scientific exchanges, and the Beijing 2022 Winter Olympic Games.

Aside from Beijing's main venue, other sub-venues where foreign experts gathered to celebrate were Jinan, Chengdu, Fuzhou, and Wuhan. During the talent show, foreign experts demonstrated their diversity of culture. Some incorporated traditional Chinese elements into their programs, fully integrating different cultures and interpreting Chinese culture through their

eyes. Others used live performances to share their home culture.

Laurence J. Brahm, a big fan of Chinese kung fu from the U.S. shared his insights on this time-honored culture with the audience. In Fujian, William N. Brown, a U.S. expert, received applause for his soulful rendition of "No pain, no gain" in Hokkien dialect.

After the party, Mark Levine, a foreign expert working at the Minzu University of China, told *Science and Technology Daily*, "I attended the 2008 Olympics, which was very exciting. 2022 is different because when the plan started, nobody expected COVID-19. However, I have seen China's ability to organize and adapt. I am confident that the Winter Olympics will be magnificent," he said.

Letter to the Editor

Why China is a Good Study Option

By Rida Batool

Student-friendly study and research environment

China's economy is the world's second largest, and it is rapidly expanding. Meanwhile its higher education has also improved greatly in the world rankings in recent years, with exceptional achievements being made in research and teaching. The educational system has been transformed into one of the most promising, largest and most affordable ones in the world.

China is therefore attracting a large number of international students from all over the world. The quality of university education, social progress and the introduction of numerous scholarships, including China Government scholarships (CSC) and university scholarships, are all contributing to an ever-increasing student population at Chinese institutions.

With China's growing strength and people-to-people exchanges, an increasing number of foreign students have chosen to study in China in recent years, and I was fortunate to be one of them. I've learned a lot since I arrived in the country from Pakistan.

Huge gain and special experience in classes

When I started taking my major courses, my school arranged a class for international students through highly qualified professors who have international experiences. Teachers who were intimately familiar with their course content and medium of instruction taught our major courses in a distinctive manner. They used real-world examples. We also examined numerous case studies relating to economic development and technological scenarios of China.

We gained practical knowledge from these studies and teachers who explain and discuss the business culture and environment in more details so that we can learn more. This would not have been possible if I studied in my home country or any other country.

I expected course work to be simple for me, but was surprised when I approached my first class and saw the course content and assignment list. As I mentioned earlier, all teachers in the school have practical experience in the industry, so they are able to explain and discuss in a more comprehensive manner. The classroom environment was healthy, and we students are encouraged to ask questions. We have a discussion session in which all international students are encouraged to participate. Teachers provided us with practical scenarios and case studies to solve, discuss, and present in class, which exceeded my expectations. I had a positive and healthy experience in the classroom because of the teacher's professional attitude and knowledge.

I am unable to measure the advantages of conducting research in China as compared to other countries. However, I'd like to explain a few things first. China has lower tuition fees than other countries, and many international students choose to study in China to take advantage of scholarships from the Chinese Government and universities. They provide relatively low-cost options for obtaining a degree and living in China. Due to lengthy visa processes, inability to properly integrate into Western cultures, and high costs of education and living, most international students no longer attend universities in Western countries.

Aside from the aforementioned benefits, my university in China also provides a conducive environment to do research for all international students. My supervisor is a renowned professor in the field of management, who constantly encourages and motivates me to work harder. When I first joined my lab group, I had no idea how to conduct research. My supervisor never judged me based on my current abilities. Instead, she always encourages me to learn new skills and read more. Whenever I present an idea to her, no matter how bad it is, she always appreciates it. She is always there to guide me and provide feedback to help me improve my ideas. She gives me the confidence to do independent work, learn new software, improve my networking skills, and work harder without giving up.

We are all encouraged to participate in scientific and development projects as well as being given financial grants. As a result, we can pursue our research projects without thinking about grant proposals.

Rida Batool is a Post doctorate fellow at Northwestern Polytechnical University China since Jan, 2021.



Dr. Rida Batool. (COURTESY PHOTO)

Busting COVID-19 Rumors

By CHEN Xi

While we were confronting the pandemic, rumors regarding the novel coronavirus and vaccines never stopped circulating. Here we review some of the most pervasive rumors and bust them one by one.

Rumor: People vaccinated with mRNA vaccines may experience genetic modification.

Truth: An mRNA vaccine cannot enter cellular nuclei.

Messenger RNA (mRNA) vaccines' nanoparticle carriers send viral gene segments into cytoplasm, but do not enter cellular nuclei, hence it being integrated into the human genome is out of the question, according to Zhang Hongtao, associate professor of pathology and laboratory medicine at the Perelman School of Medicine, University of Pennsylvania.

Since its founding in 1989, mRNA vaccine technology has been mainly applied in the field of cancer treatment. It is the first time that such technolo-

gy has been adopted in pandemic prevention on a large scale. Most mRNA COVID-19 vaccines in development use COVID-19 spike glycoproteins as the antigen, encapsulating mRNA vaccines in nanoparticles through nanoparticle carrier technology.

Research found that about eight percent of genes in our genome is composed of sequences with ancient retrovirus origin. The novel coronavirus is an RNA virus, not a retrovirus. That's why its genes cannot be integrated into human chromosomes, said Zhang.

Rumor: COVID-19 vaccine protection lasts six months at most.

Truth: Six months at least. The exact protection duration has yet to be determined.

It is a false claim that the protection of COVID-19 vaccines lasts only half a year, said Pang Xinghuo, deputy head of the Beijing Center for Disease Control and Prevention.

A tentative guideline on the clinical evaluation of vaccine protection against COVID-19, issued by the National Medi-

cal Products Administration, stipulated that only when vaccines' protection could last at least six months can they enter the Chinese market.

In March 2020, major executives of the Sinopharm Group were voluntarily vaccinated, and their antibodies were still at relatively high levels after one year of constant tracking, showing no dramatic decline, said Yu Qingming, Sinopharm Group's board chairman, during last year's Two Sessions.

It is true that individual differences exist regarding antibody levels generated after vaccination, but the case mentioned above proved at least one thing: some people may have underestimated COVID-19 vaccines' protection duration.

COVID-19 vaccines should be effective and preventive for at least six months if they are expected to be approved to enter the Chinese market. As for how long the protection lasts, that has yet to be seen.

Rumor: Vaccinations are meaningless as the novel coronavirus continues

to mutate.

Truth: Vaccination can help to build a basic immune barrier.

When worldwide vaccination rolled out in early 2021, many people were hesitant, and some people believed that current vaccines are just protective against the currently circulating virus, and will become useless when the virus mutates.

The truth is, the COVID-19 vaccination will contribute to the build-up of basic immunity against the virus, said Shao Yiming, chief expert at the Chinese Center for Disease Control and Prevention (CDC).

Neutralizing antibody levels induced by COVID-19 vaccines may drop while fighting against variants, which is to say, vaccine efficacy may decline. Nevertheless, vaccinations will help the vaccinated build up basic immunity against the novel coronavirus. Even if a variant becomes more capable of vaccine escape, the booster vaccine shots could rapidly stimulate body's immunity against the variant.

Service Info



The Shennongjia National Park, which covers an area of approximately 3,253 square kilometers, is home to valuable flora and fauna that are unique to China. It was designated a UNESCO World Heritage site in 2016 and continues to draw large crowds of tourists each year due to its breathtaking landscapes, numerous wildlife species, and mysterious "wild man" legend. The photo shows the sea of clouds at Shennongjia National Park, central China's Hubei province. (PHOTO: XINHUA)

President Xi Offers Chinese Solutions for Post-pandemic World

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The Chinese economy enjoys a good momentum overall, Xi said. Shifts in the domestic and international economic environment have brought tremendous pressure, but the fundamentals of the Chinese economy, characterized by strong resilience, enormous potential and long-term sustainability, remain unchanged, he said, adding that China's development gains will benefit all its people in a more substantial and equitable way.

Xi pointed out that China will continue to expand high-standard opening-up, steadily advance institutional opening-up that covers rules, management and standards, deliver national treatment for foreign businesses, and promote high-quality Belt and Road cooperation. With the entry into force of the Regional Comprehensive Economic Partnership Agreement (RCEP) on 1 January this year, China will faithfully ful-

fill its obligations and deepen economic and trade ties with other RCEP parties. China will also continue to work for the joining of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Digital Economy Partnership Agreement (DEPA), with a view to further integrating into the regional and global economy and achieving mutual benefit and win-win results.

President Xi also spoke of achieving carbon peak and carbon neutrality which are the intrinsic requirements of China's own high-quality development and a solemn pledge to the international community. China will honor its word and keep working toward its goal, he said, adding that China will also actively engage in international cooperation on climate and jointly work for a complete transition to a greener economy and society.

Source: XINHUA