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As Hangzhou once again embrace the warm sunshine and gentle breeze, ZJUers have embarked on their journey in the new semester. Here in this edition, I am pleased to present you ZJU’s new initiative and inspiring breakthroughs in the fields of arts, science and public engagement.

On March 24, Zhejiang University hosted the Global University Presidents’ Online Forum, where a joint statement on the 2030 Agenda for Sustainable Development was formally announced. Presidents of 61 universities from 31 countries and regions have signed onto the statement, reaffirming collective commitment of the global higher education community to solidarity, resilience and prosperity.

ZJU scientists have been consistently engaged in serving the local and global community. A new round of research findings in soft robots, sensing device, Alzheimer’s disease, brain science demonstrate our commitment to addressing the challenges of the time.

As always, we wish you pleasant reading and sincerely invite you to follow us on social media and share with us your thoughts!

LI Min, Editor-in-Chief
Director, Office of Global Engagement
Global universities call for concerted efforts for 2030 Agenda

A joint statement on the 2030 Agenda for Sustainable Development was formally announced at an online forum hosted by Zhejiang University on March 24.

As of the opening of the forum, presidents of 56 universities from 30 countries and regions have signed onto the statement. It is the first time that leading universities across six continents have jointly made a statement on sustainable development goals (SDGs), reaffirming collective commitment of the global higher education community to solidarity, resilience and prosperity.

The virtual forum brought together a diverse group of speakers including UN high-ranking officials and presidents of 13 universities around the world. In three sessions, speakers explored the approaches to educating for a sustainable future, examined the importance of scientific collaborations and called on universities to transform themselves into sustainable testbeds.

At the forum, Zhejiang University launched its own sustainable action plan to enhance its engagement with the SDGs: A Global ZJU for Social Good (Z4G).

The forum was livestreamed to over one million viewers around the globe via different platforms of social media. Participants agreed that the forum would help to forge a dialogue on paths forward among multiple stakeholders as the world is facing a pressing need to scale up efforts to deliver on the 2030 Agenda.
On March 3, Alibaba-Zhejiang University Joint Research Institute of Future Digital Health was officially launched on Zijingang Campus. Co-directed by Prof. ZHOU Tianhua, vice president of ZJU, and Mr. HUA Xianshen, vice president of Alibaba Group and head of the City Brain Lab of DAMO Academy, the Institute will be committed to building an ecosystem featured by the in-depth industry-university-institute integration and expanding the joint research in the field of future digital health. Three labs will be set up for smart medicine, digital medical imaging and smart pharmacology.

**Alibaba-Zhejiang University Joint Research Institute of Future Digital Health officially launched**

On March 24, a blood-delivering drone landed slowly on the blood station of the Second Affiliated Hospital of Zhejiang University School of Medicine (SAHZU). Three packets of blood dispatched from the Zhejiang Provincial Blood Center were delivered to the medical staff in altogether 5 minutes, half of the ground transportation time. This success marks a milestone for SAHZU and Zhejiang Provincial Blood Center’s joint efforts in establishing China’s first dedicated flight route for the blood delivering drone, which was designed to guarantee timely blood use in emergency conditions. Before the drone-delivery of blood, SAHZU had successfully used drones to deliver medical supplies such as AED and medications.

**Drone delivery of blood, first in China**

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ZJU scientists unravel the mystery of anger and aggression

Aiming at unraveling the mystery of “anger and aggression”, the research team led by Prof. DUAN Shumin and Prof. YU Yanqin in the School of Brain Science and Brain Medicine published an article entitled “A Substantia Innominata-midbrain Circuit Controls a General Aggressive Response” in the journal Neuron. Focusing on the armed forces in the brain, their research reveals that posterior substantia innomina-ta (pSI) neurons respond to several aggression-provoking cues with the graded activity of differential dynamics. How to control untimely aggression will be the next item on the agenda for the team.

ZJU scientists discover that watermelons grow faster at night

A wearable electronic sensor for plants has been jointly developed by Prof. LIU Xiangjiang and Prof. YING Yibin from the College of Biosystems Engineering and Food Science, Prof. WANG Xiaozhi from the College of Information Science and Electronic Engineering and Prof. HU Zhongyuan from the College of Agriculture and Biotechnology. The study was published in the March 9 issue of the journal Advanced Science.

Through this wearable electronic sensing device, researchers continuously monitored the stem flow inside a watermelon and found that fruit growth and photosynthesis are not synchronized, which not only alters the traditional understanding but also opens the door to new technologies in crop breeding and cultivation.
**New approach to treating Alzheimer’s disease**

As Alzheimer’s disease (AD) has become an increasingly severe public health and social problem, the research team led by Prof. ZHOU Ruhong from the Institute of Quantitative Biology investigated the dynamic interactions between secreted amyloid-β precursor protein (sAPP) peptides and the natively unstructured sushi 1 domain, offering insights and opening up new avenues into the future development of relevant therapeutics. Their study was published in the journal *Chemical Science* entitled “Molecular Mechanism of Secreted Amyloid-β Precursor Protein in Binding and Modulating GABABR1a”.

**ZJU scientists develop the world’s first self-healing soft pump for robots**

Inspired by the unique biological hydraulic system of spiders, the research team led by Prof. ZOU Jun from the School of Mechanical Engineering designed the world’s first self-healing soft electronic pump. Utilizing electrical energy, it is able to pump liquid through the electron and ion migration mechanism and includes special functional liquids that can automatically heal the damages of soft robots. This study was published in an article entitled “Customizing a self-healing soft pump for robot” in the April 14 issue of *Nature Communications*. 
Soft robot for exploration in Mariana Trench

The research team led by Prof. LI Tiefeng from the Center for X-Mechanics at the School of Aeronautics and Astronautics and Zhejiang Lab published an article entitled “Self-powered soft robot in the Mariana Trench” in Nature on March 4. The team developed an untethered bio-inspired soft robot for deep-sea exploration that can eliminate the requirement for any rigid vessel and adapt themselves to complex environments, which will surely promote the research progress of deep-sea robotics.

Inspired by a snailfish, the soft robot developed by LI Guorui (the first author) et al. bears a striking resemblance in appearance and exhibits remarkable swimming performance due to its soft actuator, including dielectric elastomers (DEs) and flapping fins, which enable it to live in high-pressure environments. In addition, researchers from Zhejiang University and the CAS Institute of Deep Sea Science and Engineering verified the feasibility of materials and structures through a large quantity of simulation experiments in high-pressure environments, ensuring its ability to work properly in harsh and special environments.
More affordable and efficient propene production

Researchers including Prof. XIAO Feng-Shou and Prof. WANG Liang from the College of Chemical and Biological Engineering and Prof. MENG Xiangju from the Department of Chemistry developed a more active and durable catalyst which is expected to make propene production due to the rise in the consumption of face masks and an acute shortage of their raw material—propene. Their study was published in an article entitled “Isolated boron in zeolite for oxidative dehydrogenation of propane” in the journal Science on April 2.

To meet the increasing demands for propene, oxidative dehydrogenation of propane (ODHP) has emerged as one of the key industrial technologies. However, due to the active nature of propene, it may be easily over-oxidized, causing poor selectivity of the catalyst. To this end, Xiao and Wang developed a zeolite molecular sieve catalytic material centered on isolated boron with a more common structure and has achieved remarkable catalytic performance. This work breaks the conventional knowledge that isolated boron centers cannot catalyze propane dehydrogenation reactions and further deepens the understanding of propane dehydrogenation and its active centers.
Source of well-being and happiness

As a messenger molecule that produces a sense of well-being and happiness, Serotonin, or 5-hydroxytryptamine (5-HT) is also known as the “happy hormone”. However, the biological mechanism as to how 5-HT generates a sense of well-being has yet to be deciphered.

In the past three years, the research team led by ZHANG Yan from the School of Medicine and the research team led by H. Eric Xu & JIANG Yi from the CAS Shanghai Institute of Materia Medica carried out collaborative research in order to unravel this mystery. Their study was published in the March 25 issue of Nature.

With their concerted efforts, the team succeeded in deciphering the precise 3D structures of different chemical substances and various subtypes of 5-HT receptors and elaborating on the role of 5-HT and chemical drugs. These findings play a positive role in selecting precise targets during drug development. “With more in-depth research in the future, it will be a dream come true to develop anti-depression drugs with better efficacy and fewer side effects,” said Zhang.
[Message from the editor: In March, a new university video titled "Bigger Starts Here" was released to mark the 124th anniversary of Zhejiang University. It tells how teachers and students find higher goals in the campus, and brave risks for the social good. Let’s find out the stories of the two main characters featured in the video.]

Students

GAO Jinshuang: From a dream-chaser to a dream-sharer

Born and raised in Tengchong, a mountainous region in southwest China, GAO Jinshuang had very limited access to the outside world. When he first met the student summer social practice team from Zhejiang University eight years ago, he didn’t know his life would change from then on. The short-term volunteer program had a far-reaching impact on him and he was determined to study at ZJU from then on.

Countless days and nights of hard work earned him a letter of admission from ZJU, making him the first-ever student in his village to go to the university. During his college years, Gao joined in all forms of volunteerism and community service and clocked more than five hundred hours of social service. In early 2020, he participated in the epidemic prevention and control work in his hometown—Xinhua Village as a volunteer taking temperature of passers-by at a checkpoint.

After graduation, Gao joined the ZJU volunteer teaching group at Xinhua Wanquan Primary School in Jingdong, Yunnan province. Together with other graduates, he helped with local poverty alleviation through field research, fund-raising and distribution of donations, pursuing his lifelong commitment through volunteering.
Back in the autumn of 2011, Prof. LI Zhirong came to Zhejiang University in Hangzhou from Beijing, the capital of China. Currently vice director of the Cultural Heritage Institute of Zhejiang University, LI has led the interdisciplinary team to create the world’s first movable 3D grotto replica.

Noticing the lack of large-scale digitalization of archaeological sites and re-creating these sites from the garnered digital data, Prof. LI was determined to preserve China’s rich cultural heritage and went on to further develop and utilize advanced photogrammetry and high-fidelity 3D printing. These methods became integral components in the digitization and preservation of some of China’s more significant archaeological sites and its impact extends beyond the borders of China.

Looking ahead, LI and her team hope to build a large-scale data base that can safely store and preserve the digital information of as many cultural sites and artifacts as possible, enabling future generations to have the same high quality access to historical sites that our forefathers enjoyed.
Seeking Truth
Pursuing Innovation

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