

CONNECTION

The Official Newsletter of Zhejiang University

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*Seeking Truth
Pursuing Innovation*



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MESSAGE FROM THE EDITOR-IN-CHIEF

As the lotus flowers blossom in our Qizhen Lake and bring some coolness to the hot summer days, I am pleased to share with you our progress in the fields of both arts and science.

A brand new college, the School of Art and Archaeology was established in May, whose goal is to integrate education, research, cultural preservation and social services.

Here in the 12th issue, you will find the breakthroughs ZJU scientists have recently made in rare plants preservation, bipolar depression diagnosis and AI to tackle environmental issues. It is also worth mentioning that two innovative solutions related to stanch bleeding, a T-shirt and a new "bio-glue", were published in the *Journal of Nature Communication* and attracted enormous attention both at home and from abroad.

As always, we wish you pleasant reading and hope you follow us in the social media and leave your comments!



LI Min, Editor-in-Chief
Director, Office of Global Engagement



浙江大学艺术与考古学院 成立仪式

时间
2019 5.20

地点
浙江大学艺术与考古博物馆一楼报告厅



ZJU NEWSROOM

Education



President WU speaks at the International Conference on AI and Education

The International Conference on Artificial Intelligence and Education themed "Planning Education in the AI Era: Lead the leap" was convened on May 16. Over 300 participants from 110 countries gathered at the conference to discuss the implementation of AI strategies for education.

WU Zhaohui delivered a speech entitled "The Learning Revolution in the Era of Augmented Intelligence". He believes, the AI Plus Education' mode, which will definitely go beyond imagination, will lead education back to its origin and provide a better experience.

School of Art and Archaeology inaugurated at ZJU

On May 20, Zhejiang University established the School of Art and Archaeology. The School currently has about 60 full-time faculty members and an enrollment of over 430 students.

"We aim to become the best school of art and archaeology in China," said BAI Qianshen, dean of the School and a world-renowned expert on the history of Chinese art. "Through the integration of state-of-the-art technology, research with great academic and social importance will be carried out, which will help to further enhance the visibility and impact of Chinese culture on a global stage."

ZJUers will soon house a museum located in the southwestern end of the Zijingang Campus, the *Zhejiang University Museum of Art and Archaeology (ZUMAA)*.

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In the media



Artificially cultivated rare plant returns to wild

ZJU researchers have sent three artificially bred *Abies beshanzuensis* seedlings back to the wild, in an effort to save the endangered species.

Professor Chen Liping, from the School of Agriculture and Biotechnology, said the embryo rescue technology they used to study the breedings of *Abies beshanzuensis* could carry out "cesarean section" for embryos of the plant that have encountered developmental difficulties.

The plant has unique biological characteristics and high academic value in the study of flora and the impact of climate change. (XINHUA NEWS)



Research



AI facilitates the prediction of CO2 adsorption

The research team led by FU Jie, an associate professor in the College of Chemical and Biological Engineering, constructed an artificial intelligence (AI) system for the prediction of CO₂ adsorption. In this study, the conspicuous consistency between experimental and predicted value about CO₂ adsorption capacity is achieved only when Vmicro Vmeso SBET are chosen as the input neurons simultaneously. More importantly, the trained deep neural network (DNN) can make an accurate prediction about CO₂ adsorption capacity for more than 1000 data samples. This unprecedented deep learning neural network approach exhibits great potential to predict gas adsorption and guide the development of next generation carbons.



Gut flora changed in patients with bipolar depression (BD)

A recent study on the gut microbiota changes in Chinese adolescent patients with bipolar depression sheds light on BD diagnosis and treatment outcome.

The research team led by Prof. XU Yi and Prof. HU Shaohua from the First Affiliated Hospital of School of Medicine engaged in an analysis of 16S-ribosomal RNA gene sequences of a total of 52 BD patients and 45 healthy controls (HCs). It revealed that gut microbial composition and diversity were significantly different between BD patients and HCs, with greater gut microbial diversity in HCs, as estimated by Obs, Chao 1, and ICE index, compared with untreated BD patients. This study characterizes the gut microbiota in BD and is the first to evaluate microbial changes following quetiapine monotherapy.

Public Engagement



■ Alliance of Research Universities in Yangtze River Delta established

At the Development Forum on Yangtze River Delta Integration in Wuhu City, Anhui Province on May 22, the Alliance of Research Universities in Yangtze River Delta, proposed by Zhejiang University and co-initiated by Fudan University, Shanghai Jiao Tong University, Nanjing University and the University of Science and Technology of China, was officially inaugurated.

"The Alliance aims at creating an inter-connected, collaborative and sharing platform for higher-tier, higher-level and higher-caliber strategic cooperation, thereby promoting the integrated development of tertiary education in the Yangtze River Delta." said WU Zhaohui, President of Zhejiang University.

■ ZJU contributes to "Belt and Road" Education Action Plan

On April 25-26, the second Belt and Road Forum is hosted in Beijing. As an important part of BRI, "Belt and Road" Education Action Plan was published by Ministry of Education in 2016.

Since the launch of the action plan, Zhejiang University has made significant contributions by cementing ties with 30-plus universities and research institutes in BRI countries in terms of talent cultivation, research cooperation, intellectual support and cultural dissemination, and making every endeavor to construct a shared community of education and science.

LV Jian, BAO Xinhe, WU Zhaohui, JIAO Yang and DING Kulling (left to right) Jian, BAO Xinhe, WU Zhaohui, JIAO Yang and DING Kulling (left to right)



■ Novel neurobiological circuit architecture uncovered for flight response

The team led by Prof. LI Xiaoming from the School of Medicine engaged in research into whether the thalamic reticular nucleus (*TRN*) may be involved in attentional regulation for the selection of relevant sensory information during the fear process. Their findings are published in an article entitled "A novel *cortico-intrathalamic* circuit for flight behavior" in the *Journal of Nature Neuroscience*.

LI Xiaoming et al. discover that it is activation of parvalbumin-expressing neurons in the limbic *TRN* rather than those in the sensory *TRN* that mediates flight. Glutamatergic inputs from the cingulate cortex (*Cg*) selectively activate the limbic *TRN*, which in turn inhibits the intermediodorsal thalamic nucleus (*IMD*). Activation of this *Cg*→limbic

TRN→*IMD* circuit results in inhibition of the *IMD* and produces flight behavior. Conversely, removal of inhibition onto the *IMD* results in more freezing and less flight, suggesting that the *IMD* may function as a pro-freeze center.

The study delves deep into fear behavior and offers novel approaches to understand how animals make a decision when confronted with a fearful environment.

Light-activated bio-glue has potential for human use

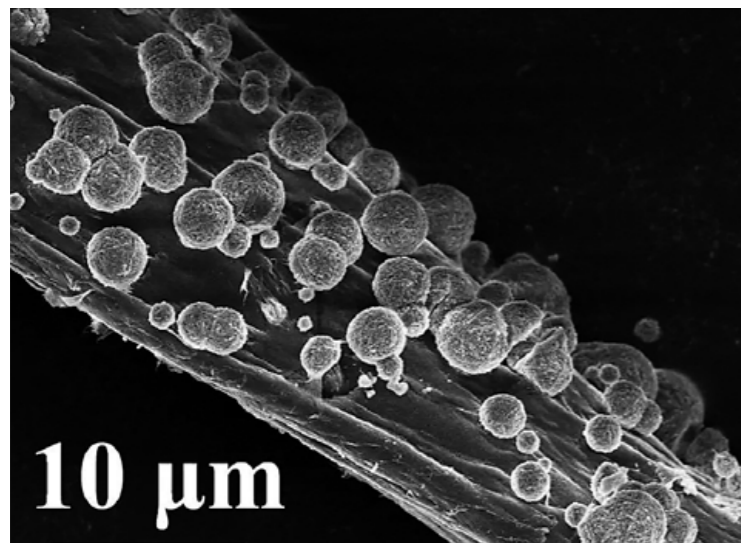
Surgical suturing is especially difficult when dealing with diseased, damaged or small blood vessels. A team of researchers from the School of Medicine created a gel composed of a network of proteins and other molecules. The product, which requires ultraviolet light to activate, can adhere within seconds and then bond to wet biological tissue surfaces.

In early experiments, the team showed that their *bio-glue* could seal wounds to pig livers. Next, they demonstrated that wounds and punctures of hearts—among the most difficult of surgical challenges—could also be sealed using only the *bio-glue*, no stitches.

Based on these early experiments, the bio-glue shows promise for use in human surgeries and to stop emergency bleeding. The relevant finding is published in the *Journal of Nature Communications*.(CNN)



FE-SEM images of mCHA-C

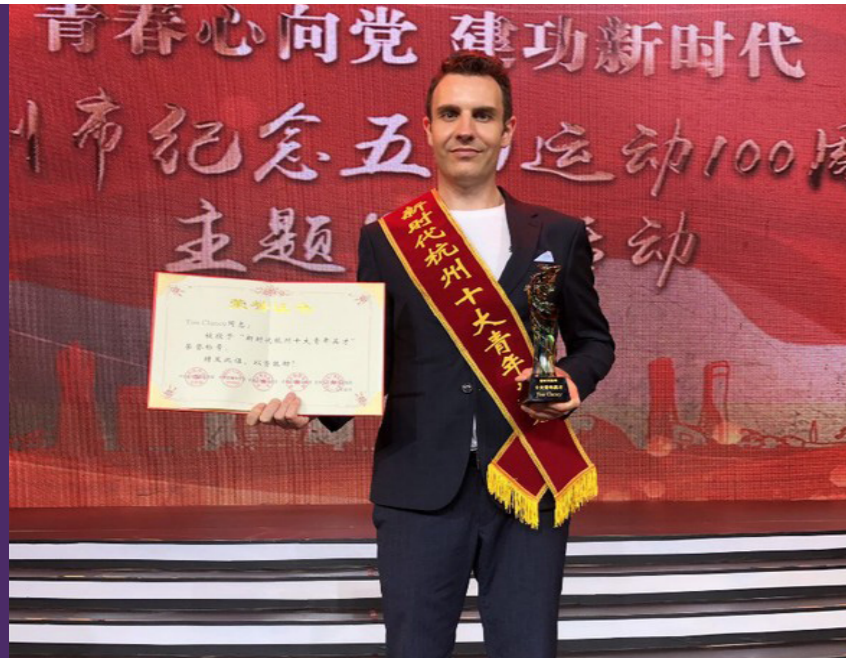


A T-shirt to help stanch bleeding

The research team, led by Prof. FAN Jie from the Department of Chemistry, develops an on-site template-free growth route of mesoporous zeolite CHA (mCHA) onto the surface of cotton fibers, which forms a tightly-bonded and flexible mesoporous zeolite CHA-cotton (mCHA-C) hybrid hemostat. It is featured by salient hemostasis and reliable safety. The relevant finding is published in the *Journal of Nature Communications*.

FAN Jie et al. integrate meso-/micro-porosity, blood coagulation and stability into a flexible zeolite-cotton hybrid hemostat. The hemostatic device outperforms other clay or zeolite-based inorganic hemostats in terms of higher procoagulant activity, minimized loss of active components and better scalability for practical applications. The most reliable rescue way is to develop this zeolite fiber into a hemostatic life vest, therefore ensuring immediate medical care. This special T-shirt is expected to come on the market in August this year.

SPOTLIGHT ON: STUDENT



Tim Clancy: one of the "Ten Outstanding Young Talents in Hangzhou"

Tim Clancy, an Australian student at ZJU was named one of the "Ten Outstanding Young Talents in Hangzhou" in April. As the first-ever non-Chinese winner of the award, Tim Clancy has lived in Hangzhou for nine years and served as an international volunteer for around five years. He and his Chinese wife have been committed to helping foreigners settle down in the city and introducing Hangzhou to the world.

As an enthusiastic learner, Tim Has been pursuing degrees in four totally different areas in China and Australia and is about to graduate this year as a bachelor of clinical medicine in ZJU.

In the future, he hopes to couple his background in engineering with his medical expertise to make some improvements in some way, shape, or form. He will also continue promoting China and Chinese culture to the world after graduation.

FACULTY



LU Yingying: Doing research is a spiral of trial and error

Born in 1988, LU Yingying from the College of Chemical Engineering is one of the youngest PhD supervisors at ZJU.

Prof. Lynden A. Archer, her PhD supervisor at Cornell University spoke highly of her doctoral research findings which were regarded as a major breakthrough in the battery industry. Despite wide recognition of her work, LU said that the major challenges in the development of lithium metal battery cannot be tackled by any one person. "We expect to see further enhancement in energy density through improvement of materials and battery safety, so that the research of lithium metal battery can be regenerated." says LU.

LU addresses that devotion and independent thinking are the most important traits as researchers. In addition to finding the truth, doing research is more of proving the false. As female, LU supports women in becoming housewives as well as joining the workforce, as long as you "make your own decision, not being told by others." She sees doing research is a spiral of trial and error, and encourages women to think independently.