

CONNECTION

The Official Newsletter of Zhejiang University

Issue 7

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**Pedagogical frontline-
VR course with Harvard P. 10**



*Seeking Truth
Pursuing Innovation*

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Running app: new way to
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How a circadian output
circuit controls sleep-
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MESSAGE FROM THE EDITOR-IN-CHIEF

As the fall is in full swing, we embrace each challenge with great vitality. Inspiring breakthroughs are seen in the field of genetics, neuroscience and clinical studies. Our scholars and students shone brightly on the global stage. And you may find it refreshing that smart technology has made a difference to campus life: running app helps students to break a sweat, and VR technology brings people to the Pyramids of Giza in an instant.

I am also proud to share with you ZJU's leap in world university rankings. With a global vision and concrete actions, we are committed to an innovative and shared future.

Please feel free to share your thoughts with us.



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An undergraduate education survey that has been conducted for five years by ZJU and Mycos Inc. shows that ZJUers are happy about the education quality. (p.5)

Z J U N E W S R O O M

INTERNATIONAL

What's happening

- According to the highly-regarded Academic Ranking of World Universities, ZJU is now rated at 67th in the world, a leap from last year's No. 101-150.
- ZJU rises to No.4 in China and No.101 in the world, according to the latest Times Higher Education World University Rankings.
- On Sept. 14, a Memorandum of Understanding for strategic cooperation was signed between ZJU and Springer Nature, aimed at exploring international cooperation on a broad range of areas.
- On Sept. 24, the Italy Office of ZJU Press was inaugurated in Florence, becoming the first Chinese publishing house to be set up in Italy.
- Reuters identifies ZJU as one of the "2018 Top 100 World's Most Innovative Universities".

Conference on heritage studies fuels multi-disciplinary thinking

The 4th Biennial Conference of the Association of Critical Heritage Studies (ACHS) kicked off at ZJU on Sept. 1. More than

400 scholars from over 40 countries and regions participated in this grand academic feast in heritage studies.

Themed on "Heritage across Borders", 2018 ACHS embraces a better understanding on how heritage is valued, preserved or destroyed, politicized, mobilized, planned and financed.

ZJU leading scholars attended the Summer Davos

Four leading scholars of ZJU attended the 2018 World Economic Forum's Annual Meeting of the New Champions (a.k.a the Summer Davos), themed on "Shaping Innovative Societies in the Fourth Industrial Revolution".

Vice President YAN Jianhua attended the University Leaders Dialogue and engaged in in-depth discussions with presidents of top universities around the globe.

ZJU co-chaired an IdeasLab entitled "New Approaches to Improving Mental Health". Dean of ZJU's Faculty of Medicine DUAN Shumin, Prof. HU Hailan and Prof. MA Huan shared with the participants their dazzling breakthroughs in the field of brain science.

China and Russia join hands to establish Aviation Technology Joint Research Center

ZJU-MAI-Haika Aviation Technology Joint Research Center was unveiled on Sept. 16 in Shanghai. A cooperation agreement was signed between ZJU and Moscow Aviation Institute (MAI) in the field of aerospace technology.

"MAI is outstanding in aerospace technology globally. In recent years, ZJU has achieved tremendous progress in the fields of aeronautics and astronautics. I hope that with joint efforts, ZJU-MAI-Haika Aviation Technology Joint Research Center will become a paradigm for cooperation in talent cultivation and scientific innovation." said ZJU President WU Zhaohui.



Public Engagement

ZJU-Wanke New Energy Joint Research Center launched

On Sept. 14, ZJU-Wanke New Energy Joint Research Center was unveiled on Yuquan Campus, jointly established by ZJU's College of Electrical Engineering and Wanke New Energy Technology Co., Ltd. The Center aims to promote technology transfer and talent training in new energy research.

ZHANG Shunke, chairman of Wanke Energy, emphasized three key words in his talk: focus, openness and complementarity. "Focused on the integration of AI, IoT and energy operation services, the Center will give full play to the complementary strengths of both sides."

ZJU-LG Electronics Joint Lab unveiled

ZJU-LG Electronics Joint Lab was unveiled on Yuquan Campus by ZJU's Vice President YAN Jianhua and LG Group's Vice President Jeon Simoon.

"I hope more extensive and in-depth technical cooperation will be carried out with ZJU. With joint

efforts, I believe we will maximize the benefits of our research outcomes to create a better life," said Jeon Simoon.

Sir Run Run Shaw Hospital shares practices of an "Internet+" hospital in China

Sir Run Run Shaw Hospital (SRRSH), one of the affiliated hospitals of ZJU's School of Medicine, has become a shining example of "Internet+" hospital in China.

Since 2014, SRRSH has enabled patients to skip the lines by online appointment and payment based on big data analytics, which significantly decreases the average out-patient service time. Through the pre-arrival emergency information system, information of patients on transport can be gathered simultaneously.

Furthermore, SRRSH established SRRSH-Nali Health Cloud, the first smart clinic cloud platform in China to provide better online medical services. The cloud platform has been extended to 34 public hospitals across the country and connected to hundreds of community clinics

RESEARCH

University launches "Intelligence Convergence"

On Sept. 14, ZJU announced the Convergence Research Project for Brain Research and Artificial Intelligence (AI), referred to as Intelligence Convergence (IC). This is the first project launched in *Innovation 2030*, a key university-wide strategic framework to advance the "Double First-Class" Initiative.

Rooted in the broad spectrum of disciplines, ZJU IC will explore the convergence and integration between brain research and AI, as well as accelerate the innovation and development of natural sciences and humanities.



Researchers track down the culprit of deafness

A research team led by Prof. GUAN Minxin from the Institute of Genetics "captured" a particular gene for hearing impairment: *mtu1*. Their discovery that *mtu1* mutation triggers deafness may be translated to an effective cure for over 11 million deaf people and the establishment of a pre-warning deafness system.

The study reveals that the genetic defect of *mtu1* destroys mitochondria—a source of energy in the cell that the faculty of hearing requires. When *mtu1* affects the function of mitochondria adversely, this "power shortage" will lead to auditory dysfunction. The team is currently searching for more deafness-inducing genes among thousands of human genes.

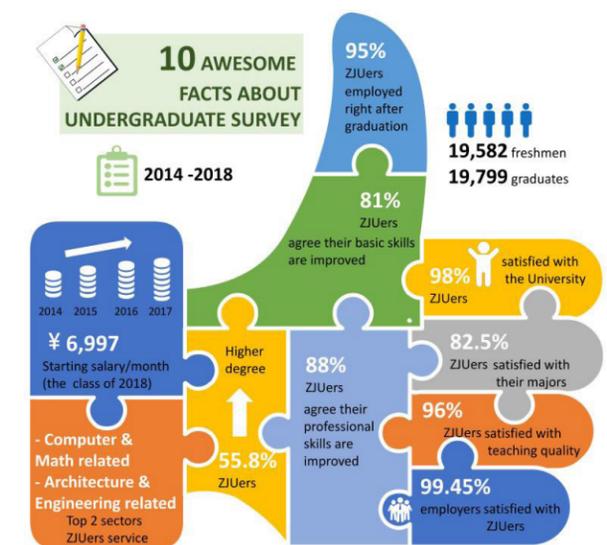
EDUCATION

New PIEGL students started their journey at ZJU

On Sept.13, 28 new PIEGL students from 23 different countries were warmly welcomed at the opening ceremony on Zijingang Campus.

Jointly developed by ZJU's International Campus and School of Management, the Program in Innovation, Entrepreneurship and Global Leadership (PIEGL) is a two-year master program, aiming to globally recruit people who are interested in innovation and entrepreneurship and help them "understand the Chinese development story as well as create global business knowledge together".

ZJUers are happy about the education quality



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IN THE MEDIA



Member of ZJU's Cultural Heritage Institute is documenting cultural relics in Cave 3 of Yungang Grottoes, Datong.

Zhejiang University's largest movable 3D printed grotto depicts origins of Chinese Buddhist art

Conservationists from the Yungang Grottoes Research Institute and Zhejiang University (ZJU) have created movable replicas of its 3D printed ancient Buddhist statues.

The Yungang Grottoes, a UNESCO world heritage site located west of Beijing near the city of Datong, contains over 50,000 statues, carved into golden sandstone cliffs and displays the origins of Chinese Buddhist art.

The full-size reproduced grotto is 14 meters long, 11 meters wide, nine meters high and weighs less than 5 metric tons and is said to be the world's largest movable grotto printed by 3D technology.

Zhejiang University and 3D printing

Zhejiang University has demonstrated its understanding of 3D printing technologies through its innovative research. Earlier this year, a group of researchers from the university proposed a new method of 3D nanofabrication by combining ice and electron beam technology to print large-scale metal parts.

Prior to this, Zhejiang University, in collaboration with the University of Birmingham and Stockholm University, identified ultra-mechanical properties in a popular 3D printable steel alloy which can potentially "program" steel molecules to make high-strength, ductile products, for high-performance applications. (3D Printing Industry)

Chinese university encourages exercise through running app

Students in Zhejiang University, a prominent research university in east China's Zhejiang Province, have recently been jogging in groups on campus in early mornings, late afternoons and even late at night. They were motivated to put on training shoes and join the fitness trend after the university launched a running app, which monitors the students' exercise records and helps assess their performance in PE class, Shanghai-based media outlet The Paper reported.

Students are encouraged to jog for at least 2.5 kilometers every running session, and complete the exercise in 12 to 45 minutes. Uploading a selfie is required at the end of each exercise session to validate the record. The new running app was designed by

Zhejiang University as part of the school's effort to reform its PE course system and raise students' awareness about health and fitness. (CGTN)





The research involves collaborative efforts by many healthcare professionals in ZJU's 2nd Affiliated Hospital.

RESEARCH HIGHLIGHTS

Major breakthroughs in molecular imaging in epilepsy diagnosis and treatment

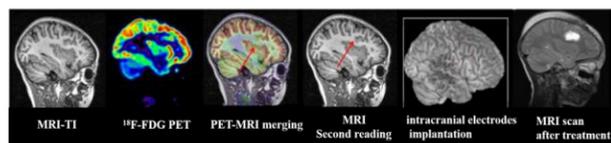
Recently, ZJU clinical scientists have made much progress in research into precision diagnosis via molecular imaging and worked out a new approach to identifying insidious causes of epilepsy.

The research team has devised an effective imaging pathway to assessing the severity of physical conditions of epileptic patients by creating a Positron Emission Tomography (PET) database for cerebral metabolism, adopting techniques such as Magnetic Resonance Imaging (MRI) and electroencephalogram (EEG), and conducting clinical interviews.

The success rate of detecting lesions in epileptic children ranges from 15% to 39% according to relevant studies, but PET can elevate the rate to a surprising 79%. The key to pre-surgery detection is the "positioning system" of PET. By comparing the PET image of a patient

with the database, scientists are able to identify the volume of the lesion and keep surgeons well-informed of the area that should be removed via a 3D image.

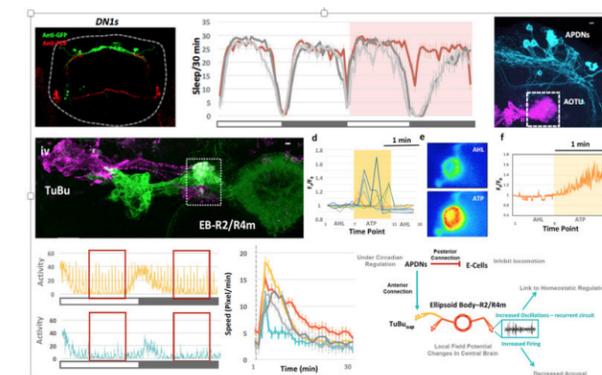
Clinical studies indicate that PET molecular imaging technology can not only reflect the changes in cerebral functions and metabolism, but also play an indispensable role in locating lesions precisely, assessing cognitive damages caused by antiepileptic drugs and performing PET-directed surgery, thereby offering a precise plan for the diagnosis and treatment of epilepsy.



How a circadian output circuit controls sleep-awake arousal

A study led by Dr. GUO Fang in Department of Neuroscience of ZJU's School of Medicine identified a neural circuit of *Drosophila* linking circadian neuron APDN1 to the sleep center ellipsoid body EB-R2. The research findings were published in *Neuron* on September 27.

The study suggests a possible mechanism as to how the neural circuit determines the sleep and arousal level, providing a very important experimental basis to understand the connection between the circadian clock and the sleep regulation.



GUO Fang *et al.* discovered that the anterior-projecting DNs (APDNs) "exit" the circadian circuitry and communicate with the homeostatic sleep center in higher brain regions to regulate sleep and sleep-wake arousal. This research offers significant clues to the enigma of sleeping.

It is amazing that the identical characteristics different animals display in sleeping can be regulated by the circadian output circuit that controls sleep-awake arousal.

Revealing cognitive dimension of social decision making

CHEN Fadong, a researcher in ZJU's School of Management and Ian Krajbich, an associate professor in the Ohio State University, co-published an article entitled "Biased sequential sampling underlies the effects of time pressure and delay in social decision making" in *Nature Communications*.

research confirms that the biased DDM can mirror intuition remarkably. Model fitting and out-of-sample predictions prove that this model can depict and predict human behavior in a better way.

Understanding the cognitive dimension of cooperative behaviors has become one of the major concerns in management, economics, psychology and neurotics. Through an in-depth experiment, the study indicates that choice biases are magnified under time pressure and attenuated under time delay. Hence, human nature cannot be arbitrarily deemed as good or evil.

This research presents a clear picture about the cognitive process of social decision making. Moreover, it highlights the importance of modeling the dynamics of the choice process from the perspective of cognitive processing, thus opening the door to explaining, describing and predicting human behavior.

CHEN Fadong and Ian Krajbich proposed a diffusion model with biased starting points (biased DDM) to account for the cognitive process of social decision making. This model assumes that if one's intuition favors selfishness or pro-sociality, the starting point will be biased towards the option of selfishness or pro-sociality respectively. Meanwhile, this



SPOTLIGHT ON: STUDENTS



■ Pedagogical frontline – VR course with Harvard

On Sept. 26, ZJU students “met” their counterparts from Harvard University at “the Pyramids of Giza”, benefiting from an internet connection and Virtual Reality (VR) technology.

“What an experience!” exclaimed Tansi, a Mexican student at ZJU just after taking the VR device off his head. “I am walking around Giza!” He is not alone in his amazement. “While studying with Harvard students is an excitement all by itself, the lectures on recent discoveries at Giza and the best practices of excavation techniques are also great attractions,” says TIAN Zhuowei, a ZJU doctoral candidate.

“The Pyramids of Giza: Technology, Archaeology, History”, a joint archaeology course originally de-

signed by Harvard University is introduced to ZJU classrooms, owing to the great efforts by DIAO Changyu, the initiator and leader of the program.

“The class examines Giza in the context of ancient Egyptian history, art, digital archaeology and visualization,” according to Harvard description of the course, “and we are delighted to add ZJU students to the course by remote video conferencing.”

Now DIAO is expecting further development of ZJU’s VR course. “ZJU is building a brand new VR teaching classroom. And my colleagues at Cultural Heritage Institute have spent years working on the digital documentation of cultural sites in China. Remember, the big screen isn’t just for playing films.”



■ Students win Finalists Certificate in 2018 TECO Green Tech International Contest

ZJU students with their design “Leaf for Life—Deciduous Powder 3D Printer” were awarded the Finalists Certificate in 2018 TECO Green Tech International Contest on Aug. 22 in Taipei, China.

The “Leaf for Life” team was headed by WU Jie and YUE Sicong from ZJU’s College of Energy Engineering. This work was completed by seven undergraduates from different majors.

The team developed a deciduous powder 3D printer, through which fallen leaves can be converted into an elaborate work of art. Its economic value will amount to 11 times as large as that of incineration power generation or composting.

■ Mega-Structure awarded Silver Prize in ARCASIA Student Competition 2018

On Sept. 8, a team from College of Civil Engineering and Architecture won the silver award in the ARCASIA (Architects Regional Council Asia) Student Competition 2018. Their work—“Mega-Structure” shone out amongst more than 40 entries from over 20 Asian nations.

Students were inspired by Changshen Highway, an indispensable artery connecting the north and south of Zhejiang Province. Influenced by their belief that high-speed overpasses can co-exist in harmony with the countryside landscape, the students integrated agricultural and public activities in the space under the viaduct.

