

CONNECTION

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*Seeking Truth
Pursuing Innovation*



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MESSAGE FROM THE EDITOR-IN-CHIEF

Various activities are held on campus this month in celebration of ZJU's 122nd anniversary. With the 11th edition of *Connection* we wish to present you a colorful picture of the campus and the activities.

At the Times Higher Education Asia Universities Summit, ZJU was awarded *International Strategy of the Year* for its distinctive global approach across teaching and research. We'll continue our commitment to working with global partners to tackle world challenges.

Here in this edition, you'll also find new discoveries in facilitating treatment for genetic disorders and improving machine vision. Besides, ZJU will offer new undergraduate programs in robotics engineering and AI, and open the Turing Class from this fall.

We 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

Editorial office :

Global Communications
Office of Global Engagement, Zhejiang University
866 Yuhangtang Road, Hangzhou, P.R. China 310058
Phone: +86 571 88981259
Fax: +86 571 87951315
Email: newsletter@zju.edu.cn

Edited by :

CHEN Weiyang, HE Jiawen, XU Weiqin, QIU Jiaxuan

Designed by :

XIONG Ka'er

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ZJU to offer two majors in robotics engineering and AI and open Turing Class this year

China will launch around 400 programs related to big data, artificial intelligence (AI) and robotics in universities in 2019, according to China's Ministry of Education announced recently. From this fall, Zhejiang University will offer two new undergraduate programs in robotics engineering and AI, which will meet a growing workforce need for more robotics engineers and AI scientists both locally and globally. Meanwhile, Turing Class in the Chu Kochen Honors College will open its door to the first cohort of students.

Bearing the fruits of cooperation: Sino-French Master's Program celebrates its first graduating cohort

A graduation ceremony was held on Zijingang Campus on March 31 for the first graduating cohort of the Sino-French double degree master's Program in Innovation and Entrepreneurship. The Presidents of ZJU, École Polytechnique, ENSTA ParisTech and Télécom ParisTech joined together in Hangzhou to celebrate this important milestone of the program and this outstanding achievement for the 10 graduating students. The history of the program can be traced back to 2011, when ZJU and ParisTech officially confirmed their partnership by signing an MoU at the institutional level.

Education

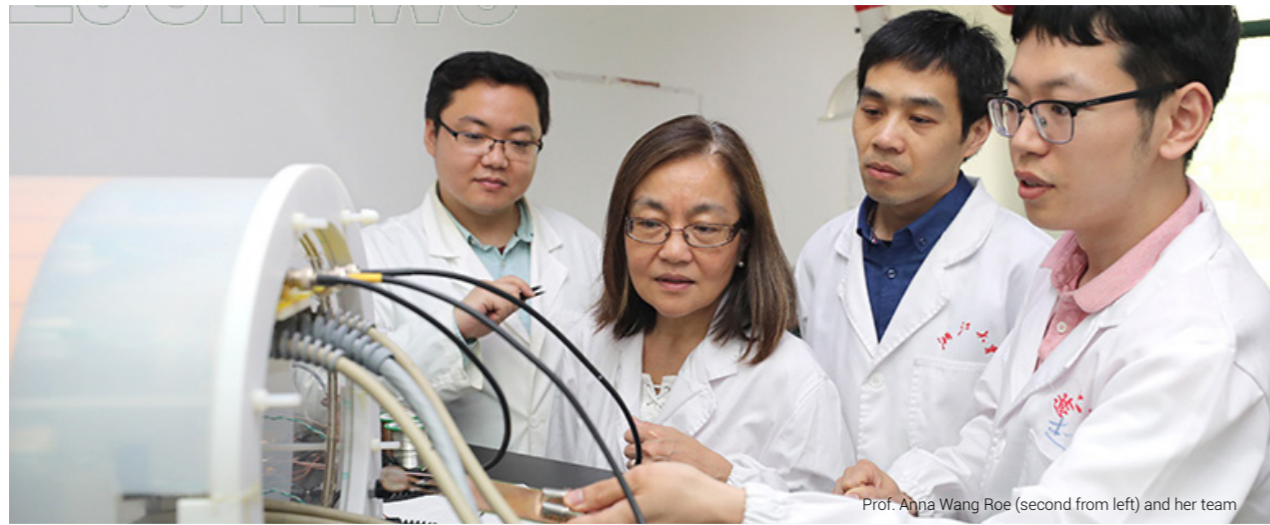


ZJU President WU Zhaohui and President of École Polytechnique Eric LABAYE present diplomas to the graduating students.



Each student receives a graduation honor stole from President of Télécom ParisTech Yves POILANE, and a gift book from President of ENSTA ParisTech Elisabeth CRÉPON.

Research



Prof. Anna Wang Roe (second from left) and her team

Can digitalization help preserve cultural relics forever?

Recently, the calamitous fire of Notre Dame Cathedral pulled a tug at the heartstrings of many experts in relics protection. Fortunately, Andrew Tallon, a professor of art at Vassar College, used lasers to painstakingly scan the cathedral in 2015, which could help architects and engineers rebuild it. "Storing digitalized documents of cultural relics will provide reliable resources for future exploration," said DIAO Changyu, an associate professor in the Cultural Heritage Institute at ZJU, "The current technology is far from perfect, but it may be the only hope for the restoration of Notre Dame Cathedral after the fire.

Previously, the Institute worked with Yungang Grottoes Research Institute to create 3D printed replicas of ancient Buddhist statues and bring back to life the third grotto in the Yungang Grottoes, a UNESCO world heritage site.

From the evolution of MCR-4 to the functional unification of the MCR family

The research team led by FENG Youjun at the School of Medicine has made major breakthroughs in research into the mechanism behind mobile colistin resistance (MCR) recently. Their findings were published in two articles in *Advanced Science* on April 3, 2019. Through genomic, evolutionary, structural, and mechanistic studies, FENG Youjun *et al.* take a closer step towards developing novel therapeutic agents and adjuvants that can address the whole MCR family.

Brain connectome mapped at the mesoscale

The research team led by Prof. Anna Wang Roe at the ZJU Interdisciplinary Institute of Neuroscience and Technology published an article about their research into brain-wide networks in the April 24 issue of *Science Advances*. They employed focal pulsed infrared neural stimulation in functional magnetic resonance imaging (fMRI) to develop an alternative approach to mapping brain connections that combines pulsed near-infrared neural stimulation (INS) with ultra high-field fMRI (INS-fMRI).

A new method to synthesize positively charged sequence-defined polymers

A team headed by Prof. GAO Chao, director of ZJU Institute of Polymer Science, developed a new polar-inverse strategy for scalable synthesizing sequence-defined polymers with positively charged backbone.

"Our research enables cost-effective large-scale production of multifunctional positively charged polymers, paving the way to their applied research and real applications, such as gene transfection and drug delivery. It's a good start," Prof. GAO Chao said. Their work was published in the *Journal of the American Chemical Society (JACS)*.

International

International Conference on Technology and Design held at ZJU

The International Conference on Technology and Design and the Chinese Congress on Innovation Design Zijingang Summit, jointly initiated by Zhejiang University and Singapore University of Technology and Design (SUTD), were held at Qiushi Great Hall on Zijingang Campus.

The conference served as an international platform that bridges world-renowned institutions of higher education and leading industrial organizations to discuss the trends, challenges and opportunities in technology and design.



International Campus showcases vibrant campus life at Open Day 2019

On April 14, some 500 prospective students and their families arrived at the Haining International Campus (IC) for the second IC open day.

Visitors explored the Campus by engaging in various activities and speaking to the current lecturers and students. The Annual Student Cultural Festival was held on the same day. Dressed in traditional costumes, students from over 20 countries showcased their talents, fascinating the visiting students and parents.

In the media



Across China: Chinese researcher fights kitchen waste with insect army

A researcher in eastern China's Zhejiang Province has found a novel way of treating kitchen waste — using insects to eat it.

On Zhang Zhijian's farm in Yuhang District of Hangzhou, the provincial capital, rows of breeding sinks with little white worms inside stand in a greenhouse. These worms can eat over 3,400 tonnes of food waste annually, solving the problem of waste disposal for local residents.

"These little worms are larvae of black soldier fly, or *Hermetia illucens*, the secret to our waste disposal," said Zhang, an associate professor with Zhejiang University.

He set up the insect farm in 2016 under the support of his university and the local government. Now the farm can dispose of the 12 tonnes of kitchen waste that is produced every day by the surrounding 180,000 residents. (Xinhua)

The evolution of bird-of-paradise sex chromosomes revealed

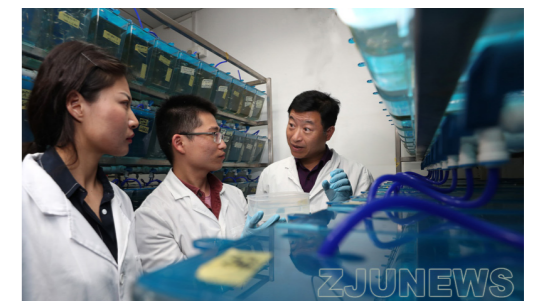
Birds-of-paradise are a group of songbird species, and are known for their magnificent male plumage and bewildering sexual display. Now, an international collaborative study involving the University of Vienna, Zhejiang University of China and the Swedish Museum of Natural History has analyzed the genomes of 11 songbird species, including those of five bird-of-paradise species, and reconstructed the evolutionary history of their sex chromosomes.

Birds have opposite sex chromosomes to those of mammals. That is, females have one Z chromosome and one female-specific W chromosome, while males have two Z chromosomes. The W chromosome is much smaller and gene-poor, similar to the Y chromosome of humans. By sequencing the female songbird genomes, the researchers have uncovered the details of how Z and W chromosomes became separated for their evolutionary trajectories, and which factors dictate the fates of the genes on the W chromosome. (Phys.org)



RESEARCH HIGHLIGHTS

Hope for treating genetic disorders via genetic compensation response



ZJU scientists discovered a genetic compensation mechanism in zebrafish, which could bring new prospects in the treatment of genetic disorders.

The study by Prof. CHEN Jun at the College of Life Sciences and Prof. PENG Jinrong at the College of Animal Sciences, "PTC-bearing mRNA elicits a genetic compensation response via Upf3a and COMPASS components," was published in *Nature*.

Genome sequencing results show that there are many homozygous genes carrying nonsense mutations in normal populations. Missense mutations of these genes may cause serious human genetic diseases, such as Parkinson's, leukemia, scoliosis. Prof. CHEN speculated that genetic compensation response (GCR) may lead to these diseases. "This study may help with the development of therapeutic strategies that treat missense mutations associated with genetic disorders by either creating a PTC in the mutated gene or introducing a transgene containing a PTC to trigger a GCR," he said.

Lose less water without affecting carbon fixation in plants? Recent study offers a novel approach

Michael Blatt, Qiushi Chair Professor of ZJU and a professor of plant physiology and biophysics at the University of Glasgow, teamed up with Prof. John Christie from the University of Glasgow and Researcher WANG Yizhou from ZJU Institute of Crop Science to engage in research into a potential way to improve carbon assimilation, water use and growth. Their findings are published in an article entitled "Optogenetic manipulation of stomatal kinetics improves carbon assimilation, water use, and growth in the March 29 issue of *Science*.

In the study, they used the synthetic, blue light-induced K⁺ channel1 (BLINK1) as a tool for modulating guard cell K⁺ conductance and accelerating changes in stomatal aperture with light. This study demonstrated the potential of enhancing stomatal kinetics to improve water use efficiency without penalty in carbon fixation, thus providing vital theoretical and technological support for genetic breeding.

Researchers at ZJU and the University of Sydney propose record-breaking text-to-image-to-text framework

The Generative Adversarial Network (GAN) has opened new frontier. Researchers from Zhejiang University and the University of Sydney have proposed a novel global-local attentive and semantic-preserving text-to-image-to-text framework. This framework, called MirrorGAN, exploits the idea of learning text-to-image generation by redescription.

MirrorGAN has improved semantic consistency between the text description and visual content and achieved the best results in the COCO and CUB datasets. It is expected to empower the digitalization of cultural relics, adding vitality to ancient texts and bringing us closer to history.



Scientists discover a 3D structure of PTH1R

Scientists in China and the US report a high-resolution cryo-electron microscopy (cryo-EM) structure (3.0Å) of the human parathyroid hormone type 1 receptor (PTH1R) bound to a long-acting parathyroid hormone (PTH) analog and the stimulatory G protein. The study, published in *Science* on April 12, provides valuable insights into structural basis and dynamics of PTH binding and long-term activation of the receptor, thereby laying a solid foundation for discovering novel therapeutics against osteoporosis and other diseases.

Altogether four teams have been engaged in the research: Dr. XU Huaqing's and Dr. WANG Mingwei's teams at the Shanghai Institute of Materia Medica, Chinese Academy of Sciences, Dr. ZHANG Yan's team at Zhejiang University School of Basic Medical Sciences and Prof. Jean-Pierre Vilardaga's team at University of Pittsburgh School of Medicine.



SPOTLIGHT ON

ZJU awarded International Strategy of the Year by THE



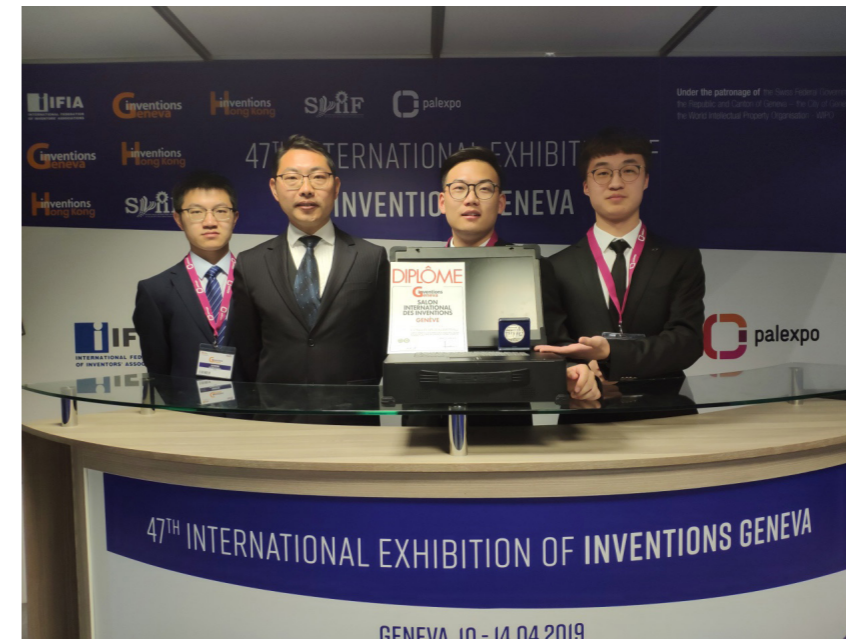
ZJU was named *International Strategy of the Year* at 2019 Times Higher Education (THE) Awards Asia on May 1.

The judges said that they were impressed by Zhejiang's "exceptionally broad and advanced" international strategy. "From the scale of its financial investment to support its international student population of 7,000, to its bilateral exchanges and research collaboration, Zhejiang has led the way as a truly globally networked Chinese university."

In 2018 the University launched its international strategy "Global ZJU: CREATE to impact". Large financial resources are allocated to launch scholarships for international students and provide funds for in-depth research collaborations. In addition, forty administrative staff were hired to support international activities at individual college level.

The presentation of awards was one of the highlights of THE Asia Universities Summit in Abu Dhabi, during which THE Asia University Rankings 2019 were also revealed. This year, Tsinghua University overtakes National University of Singapore to be Asia's top university. Climbing three spots from last year, ZJU is now the 14th in the region.

ZJU undergrads win Silver Award in the 47th International Exhibition of Inventions Geneva



Three juniors at ZJU, HOU Yaochun, WANG Yuxuan and LIU Qin, all majoring in process control in the College of Energy Engineering, clinched a silver medal in the 47th International Exhibition of Inventions Geneva. The team, mentored by Dr. CHU Ning, is one of the few award-winning undergraduate teams from China.

The team developed a "Doctor Wu-kong" platform – a smart operation and maintenance platform for the heating and ventilating system in rail transit based on deep learning and thermal imaging.

ZJUI students win Outstanding Winner Award in Mathematical Contest in Modeling 2019

The ZJU-UIUC Institute team clinched the Outstanding Winner Award and the INFORMS Award for their exceptional performance at the Mathematical Contest in Modeling (MCM) 2019.

The MCM 2019 presented six problems for the teams to choose from. Members of the ZJUI team, LIN Hangzheng, TONG Xinhao and YUAN Jinsong competed online in Problem B – Send in the Drones: Developing an Aerial Disaster Relief Response System. The team was one of the 22 outstanding winners and the only recipient of the INFORMS Award.

"We benefit tremendously from the fusion of western and eastern educational philosophies on International Campus," LIN Zhenghang said, "We are often asked to write in English in class, so we feel much at ease in finishing our paper, thereby able to dedicate more time and energy to modeling and calculating."

