

# Tsinghua Newsletter

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Tsinghua Student Supercomputing Team becomes the Student Cluster Competition (SC18) Overall Winner



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# Tsinghua Student Supercomputing Team becomes the Student Cluster Competition (SC18) Overall Winner

On November 15th, the Student Cluster Competition (SC18) concluded in Dallas. The supercomputing team from the Department of Computer Science and Technology (DCST), Tsinghua University, won the championship with a total score of 88.398 (full score of 100), 11.518 higher than Nanyang Technological University of Singapore who won the second place. With this, the Tsinghua team has won all three top international student cluster competitions in 2018, which are ASC, ISC and SC, and achieved another grand slam after 2015. It is also the 11th championship won by the team in these three top international student cluster competitions.

The Tsinghua team who took part in the competition are composed of six undergraduate students: Yu Jiping, Yu Xinjian, He Jiaao, Zheng Liyan, and Zhao Chenggang, who are all from DCST and Lou Chenyao, from the Institute for Interdisciplinary Information Sciences. Technical support was provided by Cao Huanqi, Feng Guanyu and Wang Miao, graduate students of the Institute of High-Performance Computing in DCST, who



have participated in many international competitions. The advisors are Associate Professor Zhai Jidong and Postdoctoral Researcher Han Wentao from DCST. Meanwhile, five undergraduate students: Tang Shizhi, Chen Yu, Gu Yuxian, Chen Shengqi and Zhang Chen, also participated in the training.

Undergraduate students from 15 universities all over the world formed teams to take part in the competition. During the competition, the teams were required to design and build their own computing clusters and compete in the performance of six applications. The power of the cluster must not exceed 3000 watts during the entire 48-hour competition. The applications were High-Performance

Linpack (HPL) benchmark, High Performance Conjugate Gradient (HPCG) benchmark, parallel deep learning, particle transport simulation, earthquake simulation, and a mysterious application announced on-site, which is a weather forecasting model. Meanwhile, sessions including interviews, attending expo and poster design were also set up, where the team members were required to introduce their optimization on applications to the judges in the competition, as well as writing a report which is eligible to be published in an academic journal within 48 hours.

# MIT Executive Committee Strategy Roundtable held

On November 12th, the MIT Executive Committee, led by MIT President L. Rafael Reif and Robert B. Millard, Chairman of the MIT Corporation and Chair of the MIT Executive Committee, visited Tsinghua University. Tsinghua President Qiu Yong, Vice Presidents Xue Qikun, Yang Bin, Wang Xiqin, and Zheng Li, together with the Chairman of the Academic Committee of Tsinghua and Vice President of the National Natural Science Foundation of China Zhang Xi met and conducted in-depth exchanges and discussions with the delegation members. The Tsinghua University-MIT Executive Committee Strategy Roundtable was held the same day.

On behalf of Tsinghua University, President Qiu welcomed the members of the MIT Executive Committee. He said that Tsinghua has had a longstanding partnership and friendship with MIT. The two universities have carried out extensive cooperation in the fields of economics, management, computer science, architecture, engineering, medicine, and climate change. It is hoped that the two sides will further expand cooperation in more disciplines and fields on the basis of successful cooperation in the past.

In response, MIT President, L. Rafael Reif, stated that the Executive Committee of MIT is delighted to be able to visit Tsinghua University. China has made great development achievements and MIT hopes to gain a deep understanding of China's



innovation, and entrepreneurship education in Chinese universities, and to promote further future cooperation between both universities.

In the afternoon, the Tsinghua University-MIT Executive Committee Strategy Roundtable was held in Tsinghua's main building. Senior administrators of both MIT and Tsinghua met to discuss their recent achievements in education, research, international cooperation and future development.



Tsinghua Vice President Yang Bin and MIT Provost Martin A.

Schmidt introduced the participants of their respective universities at the beginning of the roundtable, hosted by Yang Bin.



President Qiu made a speech entitled "Tsinghua: Heritage and Reform." He pointed out that universities are evergreen institutions that pursue knowledge and truth in eternity. Tsinghua and MIT are both more than a hundred years old and both cherish their own heritage and constantly adjust themselves to respond to the needs of the age. He

reviewed the special historical connections between Tsinghua and MIT, noting that Tsinghua was founded in 1911, 50 years after the establishment of MIT in 1861, and that both universities have a history of more than 100 years. The heads of the three engineering departments established by Tsinghua in 1932 all graduated from MIT. In December 2016, Tsinghua conferred the honorary doctorate of Tsinghua on President Rafael Reif. On behalf of Tsinghua, President Qiu Yong expressed his sincere welcome to President Rafael Reif on his return to Tsinghua once again.

“As we celebrate the 107th anniversary of Tsinghua this year, we are at a transitional phase from the first to the second century in the history of Tsinghua. At this critical turning point, we are reflecting upon our own history and heritage, and thinking about the next step; what should we cherish and what should we change?” asked President Qiu. He explained Tsinghua’s traditions and educational concepts around the two key words of “heritage” and “reform,” and introduced the reform initiatives and important achievements of Tsinghua in recent years. President Qiu noted that Tsinghua carried forward the fine tradition of attaching importance to faculty, and had established a tenure track system in the university. The new system encouraged a batch of young faculty to join Tsinghua, bringing fresh blood to the campus. Based on the university motto of “Self-discipline and Social Commitment,” and the Tsinghua spirit of “Actions Speak Louder Than Words”, Tsinghua proposed a new educational paradigm: the shaping of values, the cultivating of skills and the imparting of knowledge, while vigorously promoting education in innovation and entrepreneurship and focusing on general education. In scientific research, the university has a tradition of addressing the critical challenges of national

priority, and now actively promotes interdisciplinary and cutting-edge research. In terms of international cooperation, Tsinghua launched its global strategy in 2016. Tsinghua highly values international cooperation and exchange with its partners around the world.

President Qiu remarked that in three years, Tsinghua University will celebrate its 110th anniversary and MIT will celebrate its 160th anniversary. He expressed the hope that the two universities can further deepen their cooperation in the coming years. Noting that this year marks the 930th anniversary of the birth of university, and in 70 years’ time, its millennium will be celebrated, President Qiu said, “I believe MIT and Tsinghua should join hands to welcome the upcoming millennium of the establishment of universities.”

MIT President Rafael Reif introduced MIT’s students, Nobel Prize winners, alumni, innovation, technology transfer, cooperation and its engagement with industry.



Reviewing the close relationship between the two universities, both Presidents hoped to bring the two universities even closer together, respecting their heritage whilst also reforming to accommodate changing academic and social demands.

Entitled “Partnership and Collaboration for Innovation”, Tsinghua Vice President Xue Qikun outlined the recent research development and achievements of Tsinghua.



Li JinLiang, Dean of International Cooperation & Exchange, introduced the Global Strategy and international education at Tsinghua University.



During the discussion session, the participants exchanged their views on issues, including future development strategy, AI, and big data.

Members of the MIT Executive Committee also visited the Schwarzman College of Tsinghua University, the Tsinghua Science Park, and Tsinghua’s X-Lab. They also exchanged ideas with representatives of the alumni entrepreneurs of Tsinghua University.

# In China and for the World: Global Health Drug Discovery Institute (GHDDI) Embarks on a New Journey of Innovative Drug Discovery



key milestone for in-depth cooperation between Beijing and the Gates Foundation, is becoming a driving force for the city's fast-growing biomedical and healthcare industry. "Beijing is now building a National Science and Technology Innovation Center, as part of the national strategic plan," Yin said. "Moving forward, we will continue to provide strong support for the GHDDI and attract more GHDDI-like, global innovative resources to Beijing, and have them grow and flourish here."

**B**eijing, November 7th, 2018 – to celebrate the opening of its new state-of-the-art research facility, the Global Health Drug Discovery Institute (GHDDI) hosted a grand opening event in Beijing.

Chen Jining, Mayor of the Beijing Municipality, Qiu Yong, President of Tsinghua University, Bill Gates, Co-chair of the Bill & Melinda Gates Foundation and Ding Sheng, Institute Director of the GHDDI, attended the ceremony and unveiled the GHDDI's official logo plaque. Moving into the new facility marked a new chapter for the GHDDI, a young drug discovery institute.

The GHDDI, established in Beijing in August 2016, is an independent,

not-for-profit organization devoted to addressing global health challenges and tackling the most pressing disease crises that affect the world's poorest populations, such as tuberculosis, malaria and other parasitic diseases.

Being the first of its kind in China, the GHDDI adopts a unique trilateral partnership (Public-Private Partnership, PPP) that drives institutional innovation, multi-sectoral alliance and global collaboration. The Institute's three founding partners – the Beijing Municipal Government, Tsinghua University and the Gates Foundation – have worked closely to provide various resources as well as policy support.

According to Yin Yong, Deputy Mayor of Beijing, the GHDDI, as a



Qiu Yong, President of Tsinghua University, pointed out that drug R&D requires multi-disciplinary synergy as well as efficient conversion of research discovery into new medicine. "Pharmaceutical science is one major development focus of the University. By partnering with the Beijing Government and the Gates Foundation, we aim to establish a transformative drug discovery

platform and global public health institution with advanced biomedical R&D capabilities,” President Qiu added. “I believe the use of the new facility will accelerate the GHDDI’s growth and help Tsinghua develop its pharmaceutical disciplines and talents, while making greater contribution to Beijing and global health.”



In March 2017, Bill Gates participated in the Inauguration Ceremony of GHDDI. “It was not much more than a blueprint in our minds for a new model of innovation in global health drug research and development,” he said, “Fast forward 18 months and we are standing in front of this beautiful, modern laboratory where amazing discoveries are being made. The GHDDI team should be

congratulated for overcoming many obstacles and building a high-caliber and dedicated team that is now tackling some of the toughest global health diseases”.

Following the ceremony, Ding Sheng gave the participating guests a tour of the GHDDI’s new labs. “Since 2016, we have been focusing on developing modular drug discovery infrastructure and disease-specific expertise,” Ding said. “The GHDDI will maximize the probability of success by creating a diverse project portfolio within each disease

program and focuses its resources on projects that demonstrate a high likelihood of progressing to the clinic. So far, our team has worked on over 10 projects in tuberculosis, malaria and other diseases that affect the developing countries.”

“The GHDDI represents a new approach to product development. The foundation will continue to support GHDDI’s collaboration with other foundation grantees,” Gates added. “Ultimately, the work done here will benefit people in China and around the world.”



# President Qiu Yong Receives Honorary Doctorate from the Chinese University of Hong Kong

On November 29th, at the 86th Congregation for the Conferment of Degrees of the Chinese University of Hong Kong 2018, Carrie Lam Cheng Yuet-ngor, Chief Executive of the Hong Kong Special Administrative Region and Chancellor of the Chinese University of Hong Kong, presented a Degree of Doctor of Science, *honoris causa*, to Tsinghua University President Qiu Yong. The conferment ceremony was presided over by the Vice-Chancellor and President of the Chinese University of Hong Kong Prof. Rocky S. Tuan.

The award is in recognition of the outstanding achievements and contributions made by President Qiu



in academia and to greater society, including the promotion of scientific research and development, cross-disciplinary research in the field of organic optoelectronics, as well as the important role he has played in university management, talent cultivation, education and teaching, and cooperation between the two universities.

More than 1500 participants were present at the conferment ceremony, including Council Chairman of the Chinese University of Hong Kong Dr. Leung Nai-pang, and from Tsinghua University - former President Gu Binglin, Vice President and Provost Yang Bin, Assistant President and Director of the Academic Affairs Office Peng Gang, and alumni representatives.

Sze-Wing Tang, Professor and Chairman of the Department of Chinese Language and Literature at the Chinese University of Hong Kong, gave the conferment speech to President Qiu. He praised his journey and achievements, saying that once a young freshman pursuing a dream, Professor Qiu is now the head of a university driving the collective pursuit of an exalted goal. In this 35-year journey, Professor Qiu has been studying and working in one place - his alma mater, embodying the quintessential Tsinghuanese from head to toe. Professor Qiu has dedicated himself to scientific research, material development, and the translation of research findings. He is an advocate of novel cross-disciplinary research, and much renowned for

his belief and efforts in integrating the laboratory with entrepreneur research platforms paving the way for product research commercialization. Professor Qiu's dedication and passion for nurturing young scholars is also inspiring. He has won countless accolades for his scientific innovations and pedagogic passions. Throughout his career, Professor Qiu has taught by example and impressed many young minds. He has persevered in discovering new knowledge and scaling new heights. He has championed cross-disciplinary research, promoted the integration of academic research and industry applications, setting new trends in the community with his vision and vigor. Both as a scholar and as an individual, he epitomizes the true spirit of Tsinghua University encapsulated in its motto 'Self-Discipline and Social Commitment'. He practices what he preaches and acts as a role model.

On the day, three distinguished individuals were awarded the Degree of Doctor, honoris causa, of the Chinese University of Hong Kong, for their outstanding contributions to culture, art, scientific research, education, and the promotion of people's well-being. In addition to President Qiu, the former Chairman of the Hong Kong Jockey Club, former Member of the Legislative Council of

Hong Kong, and recipient of the Gold Bauhinia Star of Hong Kong Simon Ip Sik-on; and former Chief Executive of the Hong Kong Monetary Authority, recipient of the Golden Bauhinia Star and the Grand Bauhinia Medal of Hong Kong, Joseph Yam Chi-kwong were awarded the Degree of Doctor of Social Science, honoris causa, of the Chinese University of Hong Kong.

Subsequently, the ceremony also held a degree-awarding session, where 451 graduating students enjoyed the momentous occasion.

Tsinghua University and the Chinese University of Hong Kong signed their first exchange agreement back in 1985. In recent years, teacher-student exchange and academic cooperation between the two universities have become increasingly frequent. On May 29th, 2017, President Qiu was appointed as Honorary Professor of the Faculty of Science of the Chinese University of Hong Kong and other renowned Tsinghua professors, including Chen-Ning Yang, Honorary Director of Institute For Advanced Study of Tsinghua University; Andrew Chi-Chih Yao, Dean of the Institute for Interdisciplinary Information Sciences, and Shing-Tung Yau, Director of Yau Mathematical Sciences Center, are also distinguished professor-at-large at the Chinese University of Hong Kong.



# Announcing the Establishment of the Tsinghua Urban Institute

The establishment of the Tsinghua Urban Institute, jointly sponsored by the Ministry of Housing and Urban-Rural Development and Tsinghua University, was announced at Tsinghua University on November 20th. The Minister of Housing and Urban-Rural Development Menghui Wang and the Chairperson of the University Council Chen Xu attended the ceremony to open the institute.

In her speech, Chen Xu said that Tsinghua University always gave a high priority to the study of urban issues and the construction of related systems that could serve the national long-term strategic development. She pointed out that the establishment of the Tsinghua Urban Institute, with the mutual support of the Ministry of Education, was an important step toward meeting the needs for high-quality development in Chinese cities. She looked forward to the nurturing of a new generation of urban management talents in the Institute with deep understanding of the challenges facing urban development in China, including planning, housing, ecology, environment, transportation, economy, and public security, and the ability to identify and apply novel strategies and solutions with unique Chinese characteristics. Ms Chen anticipated that the Tsinghua

Urban Institute would harness the benefits of the multidisciplinary environment offered by the University and cooperating partners, using this platform to promote cross-disciplinary research and innovation, strive for social support, and establish a new brand in urban development policy that would broadcast Chinese voices and tell good Chinese stories in the world.

Minister Wang explained the intent behind the establishment of the Tsinghua Urban Institute: to implement new concepts and strategies within the “respect the rules, and the five co-ordinations” requirements for urban development put forward by President Xi Jinping at the

Central Urban Work Conference. He hoped that the Tsinghua Urban Institute would become a think-tank that combined theoretical research with practical innovation and mobilized the collective wisdom of experts from around the world in building a new urban science discipline in China. He envisioned the creation of urban theories that suited the national condition, thus guiding the development of harmonious, livable, and dynamic cities with unique Chinese characteristics. He pledged to help build the Institute into a comprehensive platform for theoretical and practical innovation that would cultivate scholars with open minds and inclusive perspectives, and affirmed the full support of the Ministry of Housing and Urban-Rural Development as the Tsinghua Urban Institute developed.

At the ceremony, an advisory committee was also established. This committee comprises 18 eminent members, including Chen Qingtai, Xu Guanhua, Wu Jinglian and Gao Shiji. Minister Wang and Chen Xu each issued letters of appointment for the members of the advisory committee in attendance at the ceremony. The Director of the advisory committee, the former Deputy Director General of the Development Research Center of the State Council,



Chen Qingtai, spoke on behalf of the advisory committee. He anticipated that the Tsinghua Urban Institute would contribute to forward-looking, systematic, and scientific strategies for long-term urban development and management, with deep respect for history and culture.

The ceremony was chaired by Peng Gong, Chair of the Department of Earth System Science at Tsinghua University and President of the Tsinghua Urban Institute. Huang Yan, the Vice Minister of the Ministry of Housing and Urban-Rural Development, Chang Qing, the Director of the General Office, and Gao Shiji, the Director of the Institute of

Resources and Environment of the Development Research Center of the State Council, joined other members of the advisory committee. Xiang Botao, Deputy Director of the University Council, Su Jun, Director of the Think-tank Center, and leaders and representatives of the Institute for China Sustainable Urbanization, the Schools of Civil Engineering, Architecture, Public Administration, Continuing Education, the Tsinghua Urban Institute, and the Department of Earth System Science attended the ceremony.

The Tsinghua Urban Institute, Tsinghua University, may be referred to in short as the Urban Institute,

with the English abbreviation TUI. The Institute was founded by the Ministry of Housing and Urban-Rural Development and Tsinghua University. Minister Wang Menghui serves as the chair of the steering committee of the Tsinghua Urban Institute. Chen Xu and Huang Yan serve as the deputy chairs of the steering committee. The Tsinghua Urban Institute is led by the Department of Earth System Science of Tsinghua University in cooperation with other relevant research units on campus, including the Schools of Social Sciences, Architecture, Civil Engineering, Economics and Management, and Public Administration.

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## Anming Meng's group and Qinghua Tao's group publish a Science article revealing the basis of vertebrate body axis formation

On November 23rd 2018, Anming Meng's group and Qinghua Tao's group from Tsinghua University cooperatively published an online research article entitled "Maternal *Huluwa* dictates the embryonic body axis through  $\beta$ -catenin in vertebrates" in *Science*. They reported the function of a maternal gene *huluwa* in the embryonic dorsal organizer and body axis formation in vertebrates, which marks tremendous progress in the field of developmental biology. (Paper link: <http://science.sciencemag.org/content/362/6417/eaat1045>)

The rostral-caudal (or anteroposterior) axis and the dorsoventral axis are two major body axes, along which the tissues and organs are placed. The formation of these two body axes

mainly relies on the organizer at the early stage of vertebrate embryonic development. Back in 1920s, two German embryologists, Hans Spemann and Hilde Mangold, discovered the organizer using newts. Spemann was awarded the Nobel Prize in Physiology or Medicine in 1935 for this work. Following studies revealed that the embryonic organizer acts as a signaling center for correct patterning through cell fates and cell movements control. Nuclear  $\beta$ -catenin functions as a key factor of organizer induction by activating target gene expression. However, it is unclear which maternal factor is responsible for  $\beta$ -catenin nuclear translocation.

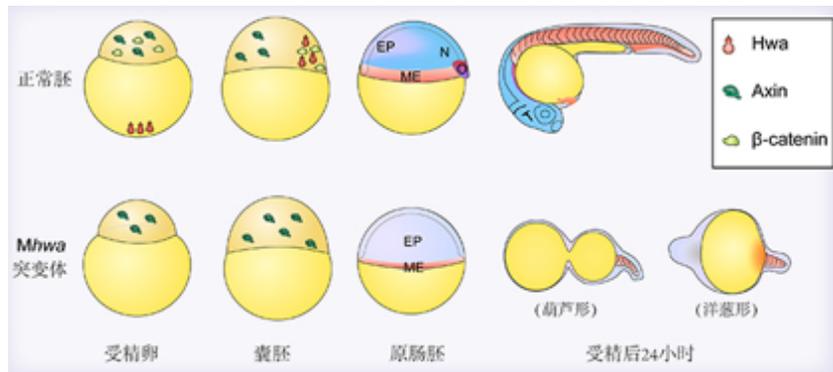
Anming Meng's group found a zebrafish maternal-effect mutant.

None of the maternal mutant embryos, whose mother is a homozygous mutant female fish, could form a dorsal organizer, head or normal body axes (rostral-caudal axis and dorsoventral axis) (Fig. 1). After positional cloning and candidate gene testing, the researchers found the mutated gene, which was previously uncharacterized. They named it *huluwa*, meaning calabash boy in Chinese, in reference to the calabash (bottle gourd)-like shape of some mutant embryos and the superpower of the calabash brothers to defeat monsters in the Chinese animation TV series *Calabash Brothers*. Injection of *in vitro* synthesized *huluwa* mRNA into one blastomere of the 16- to 32-cell stage embryos could induce

a secondary organizer/body axis, indicating that Huluwa has potent organizer-inducing activity. Furthermore, Qinghua Tao's group examined the role of the *Xenopus huluwa* gene. In *Xenopus*, maternal depletion of *huluwa* transcripts leads to the loss of the organizer, head and body axis and *huluwa* mRNA injection could also induce a secondary body axis. Therefore, *huluwa* is functionally conserved in fish and amphibians.

Further studies showed that Huluwa protein is located on the plasma membrane of future dorsal blastomeres during early blastulation. It recruits Axin protein, which binds to  $\beta$ -catenin and promotes its degradation. Axin can be degraded after binding to Huluwa, which protects  $\beta$ -catenin from degradation and promotes  $\beta$ -catenin nuclear translocation. It is widely believed that dorsal  $\beta$ -catenin is protected by signals transduced by maternal Wnt ligands and receptors, but this study showed that Huluwa can function through  $\beta$ -catenin in a Wnt ligand/receptor-independent manner. In conclusion, Huluwa is very likely the long-sought dorsal determinant in vertebrate embryos.

Prof. Anming Meng and Prof. Qinghua Tao are the co-correspondence authors of this article. PhD student Lu Yan, and postdoctoral fellows Jing Chen and Xuechen Zhu from the School of Life Sciences at Tsinghua University are the co-first authors. Other co-authors, including Jiawei Sun, Xiaotong Wu, Weimin Shen and Weiyang Zhang, also participated in the experiments. This study was funded by the National Natural Science Foundation, the Tsinghua University Initiative Scientific Research Program, and the China Postdoctoral Science Foundation.



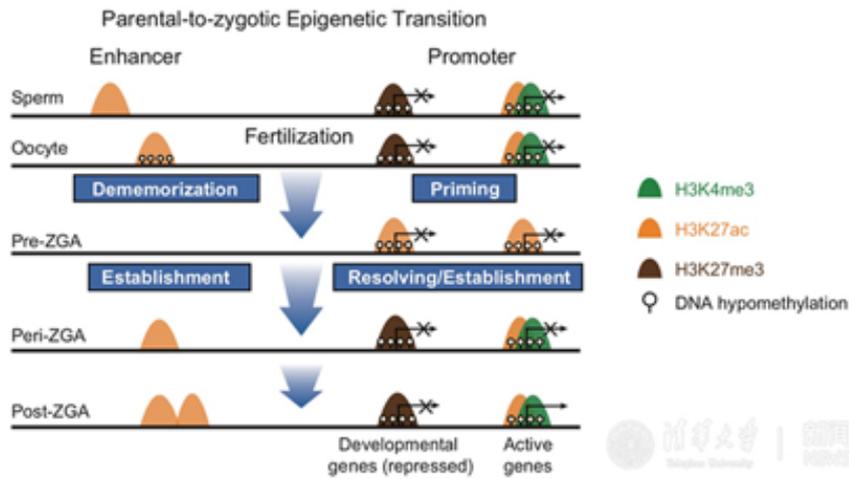
**Fig. 1. Working model of Huluwa (Hwa) in the zebrafish embryo. In the wild-type fertilized egg, hwa mRNA is localized in the vegetal pole region, whereas Axin and  $\beta$ -catenin proteins are located in the cytoplasm. During early blastulation, Hwa protein is located in the dorsal blastomeres, where it locally promotes Axin degradation and results in the stabilization and nuclear transportation of  $\beta$ -catenin. At the onset of gastrulation, the dorsal organizer, also known as the embryonic shield, is formed by the action of  $\beta$ -catenin. The organizer regulates the cell fates along the dorsal-ventral and anterior-posterior axes as well as cell movements during gastrulation, which leads to the formation of the main body. In the absence of hwa (as in Mhwa mutants), cytosolic  $\beta$ -catenin is destroyed by the Axin-containing machinery. As a result, the organizer is not formed and the head, neural tissues, and body axis do not develop, but there are residual mesendodermal tissues in the tail-like region. O, organizer; N, neuroectoderm; EP, epidermis; ME, mesendoderm.**

## Wei Xie's group and Anming Meng's group published research in Molecular Cell on epigenetic reprogramming during parental-to-zygotic transition in zebrafish

**B**y investigating the reprogramming of histone modifications during parental-to-zygotic transition in vertebrates, a team led by two groups in the School of Life Sciences of Tsinghua University (Wei Xie's group and Anming Meng's group), has revealed the conserved "erase-and-rewrite" principle for epigenome transition through distinct paths

during parental-to-zygotic transition in zebrafish. Their findings, published in *Molecular Cell* on Nov. 15th, 2018, not only revealed a multi-step establishment of the zygotic epigenome in zebrafish but also shed light on the conservation and divergence of epigenetic reprogramming during early vertebrate development.

The epigenome plays a crucial



**A model shows the erasure of parental epigenomes and the “step-wise” establishment of zygotic epigenome at enhancers and promoters before and after ZGA in zebrafish**

role in gene regulation during animal development. Recent progress using highly sensitive technologies revealed the extensive erasure of parental epigenetic information after fertilization, with only some inherited to the progeny which plays a critical role in embryonic development. However, it remains elusive how the zygotic epigenome is established. In addition, as early development is highly divergent during evolution, it is unclear whether the epigenomic reprogramming modes are conserved among different species. Zebrafish, a non-mammalian vertebrate model, provides a chance to answer these questions due to its unique developmental features.

Firstly, there are about 10 cell cycles before zygotic genome activation (ZGA), endowing an extended time window to explore the epigenetic reprogramming during parental-to-zygotic transition. Secondly, unlike mammals, there are no protamine-histone exchanges or global DNA demethylation in zebrafish embryos. Using a combination of sensitive ChIP-seq methods developed from Wei Xie’s group (STAR ChIP-seq (Zhang et al., *Nature*, 2016)) and a novel genetic tool from Anming Meng’s group (Oocyte Microinjection

in situ (Wu et al., *JMCB*, 2018)), they investigated the reprogramming and re-establishment of histone modifications from gametes to post-ZGA embryos.

Through the study of histone modifications in zebrafish gametes and early embryos, the researchers first systematically examined the genome-wide presence of H3K4me3, H3K27ac, H3K27me3 and H3K36me3 in sperm, oocyte, 4-cell, 256-cell and dome stage embryos. By comparing the epigenomes between gametes and early embryos, they found that parental epigenetic memory at enhancers is quickly erased after fertilization. Surprisingly, such “dememorization” of DNA methylation signatures starts even earlier prior to fertilization in the sperm. Histone marks at parental enhancers are already removed by the 4-cell stage, and the reactivation of zygotic enhancers does not occur until around ZGA. By contrast, the deposition of histone acetylation H3K27ac at hypomethylated regions occurs as early as the 4-cell stage, indicating an extensive priming event in promoters prior to ZGA. Upon ZGA, these promoters resolve themselves to become either repressed or activated promoters. Importantly,

the maternal depletion of histone acetyltransferases results in aberrant ZGA and embryonic lethality. The resolution of primed promoters upon ZGA is largely driven by maternal factors while the re-activation of enhancers involves both maternal and zygotic regulators. Taken together, these data uncovered a theme of epigenetic reprogramming during parental-to-zygotic transition by “dememorizing” enhancers and priming promoters. Importantly, when compared to results in mouse embryos from earlier studies, they found similar “erase-and-rewrite” principles that are conserved between different species. Thus their work revealed divergent modes but conserved principles for epigenetic reprogramming during parental-to-zygotic transition in vertebrates.

Prof. Wei Xie from the School of Life Sciences of Tsinghua University, and Prof. Anming Meng from the School of Life Sciences of Tsinghua University are the co-corresponding authors of this work. PhD students Bingjie Zhang and Xiaotong Wu, from the School of Life Sciences at Tsinghua University, and PhD student Wenhao Zhang, from the CLS-program of the School of Life Sciences at Tsinghua University, are the co-first authors of this work. The study was supported by funding from the National Key R&D Program of China, National Basic Research Program of China (973 program), the National Natural Science Foundation of China, funding from the THU-PKU Center for Life Sciences and the HHMI International Research Scholar Award, and also by the animal facility, the sequencing facility and the computation facility at Tsinghua University.

(Paper link: [https://www.cell.com/molecular-cell/fulltext/S1097-2765\(18\)30877-3](https://www.cell.com/molecular-cell/fulltext/S1097-2765(18)30877-3))

# 3 Tsinghua professors and 16 alumni among newly elected IEEE Fellows

Recently, the Institute of Electrical and Electronics Engineers (IEEE) announced its list of the newly 295 elected Fellows of 2019, which includes three professors and 16 alumni of Tsinghua University.

The three professors of Tsinghua University are: Professor Wei Shaojun, from the Institute

of Microelectronics, Professor Sun Fuchun, from the Department of Computer Science and Technology, and Professor Yang Fan, from the Department of Electronic Engineering. Among the 16 alumni, five of them currently work in China, while 11 of them work in universities and research institutions abroad.



# Two Tsinghua teachers and five Tsinghua alumni win HLHL Prizes 2018



The HLHL (Ho Leung Ho Lee) Prize conferral ceremony was held in Beijing on November 6th, 2018. A total of 56 scientists received this special honor. Academician Zhang Miman, researcher of the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences, won the HLHL Prize for Scientific and Technological Achievement, the top HLHL award this year, while 37 researchers won the HLHL Prize for Scientific and Technological Progress and 18 won the HLHL Prize for Scientific and Technological Innovation.



Among them, Professor Pan Feng and Academician Nie Jianguo of Tsinghua University, Academician Xiang Tao, Academician Li Licheng,

Academician Yang Zhifeng and Academician Zhou Zhicheng, all Tsinghua University alumni, won the HLHL Prize for Scientific and

Technological Progress, and researcher Wu Beili, a Tsinghua University alumna, won the HLHL Prize for Scientific and Technological Innovation.

## AUA Graduate Education Forum 2018 held at Tsinghua University

*AUA education experts gather at Tsinghua University to discuss the development of graduate education*

On November 18th, the Asian Universities Alliance (AUA) Graduate Education Forum 2018 was held in the Main Building of Tsinghua University. Education experts from 12 member universities of the AUA gathered and carried out study on the difficulties and current leading issues in education. They also discussed the

principles behind the management of higher education in Asia, at the same time promoting cooperation and innovation in the field of education.

In his opening speech, Yang Bin, Vice President of Tsinghua University, welcomed the representatives from the member universities of AUA on behalf of the university. He said



that innovative, interdisciplinary and international have become matters of general concern in graduate education among the member universities of AUA. Each member university used the forum as a platform to discuss important issues on the reform and development of higher education in Asia, at the same time promoting cooperation, innovation and cultural exchange in the field of higher education in Asia.

Keynote speeches, round table discussions, and sub-forums on doctoral education also took place during the forum.



## Tsinghua University becomes the pathway university for MIT MicroMasters program

On November 13th, Tsinghua University and the Massachusetts Institute of Technology (MIT) signed a Letter of Agreement on MIT MicroMasters program in Beijing. Now, Tsinghua is the first pathway university for MIT MicroMasters program

in the Chinese mainland. Within this frame, the first cooperating institute at Tsinghua is GIX for a Master of Science in Engineering degree, Data Science and Information Technology, also known as MSE (DSIT).

Yang Bin, Vice President and

Provost of Tsinghua University, and Sanjay Sarma, Vice President for Open Learning at MIT, signed the LOA during the MIT China Summit in Beijing. Shi Yuanchun, Dean of Tsinghua GIX Institute, Guo Wenyan, representative from Tsinghua GIX North America, and Tracy Tan, Director of MIT MicroMasters program also attended the signing ceremony.

MicroMasters program is a professional and academic credential for online learners from anywhere in the world. Learners who pass an integrated set of MIT graduate-level courses on edX.org, and one or more proctored exams, will earn a MicroMasters credential from MIT, and can then apply for an accelerated, on campus, master's degree program at MIT or other top universities. MicroMasters courses offer the same learning and challenge as MIT courses. The MIT MicroMasters programs now have enrolled learners from 195 countries and 230 regions. Learners who successfully earn the credential are eligible to earn credits at MIT and the program pathway universities. This newly signed LOA provided MIT MicroMasters credential holders



of “Statistics and Data Science” an opportunity to earn Tsinghua University credits, if they apply and are accepted by Tsinghua University.

The LOA was signed on the site of MIT China Summit in Beijing, the first of its kind. The Summit brought together the leaders of industry, government and academia, to explore some of the most exciting topics at the frontiers of science and technology, and the role of research and education in shaping tomorrow’s world. The Summit also highlighted the importance of U.S.-Chinese collaborations in the effort to solve the complex challenges that the world was facing today.

As leading figures from MIT and Chinese institutions of higher

education, both Yang and Sanjay spoke on the Summit panel “New Visions of Education and Research for the Benefit of Humankind”, both of them mentioned the newly signed MIT MicroMasters LOA in their speeches, and pointed out that we should embrace the new ideas and innovative ideas that could benefit the next generation of talented young people, and reshape our future.

It is not an accident that the Tsinghua GIX Institute is selected to provide the master’s degree program that will connect with the MIT MicroMasters program. As part of the Tsinghua global strategy, Tsinghua GIX has been running a successful Dual Degree program with the University of Washington for two

years in the greater Seattle area, and gained valuable experience of building a global education platform. Tsinghua GIX North America representative Guo Wenyan said that this agreement between Tsinghua and MIT will have a very positive impact on Tsinghua’s globalization strategy, and for MIT as well. “Tsinghua has always welcomed young people, who have global vision and are full of innovative ideas, to study in Tsinghua. We want to encourage as many as possible MIT MicroMasters credit holders to pursue a master’s degree from Tsinghua. They will not only gain an advanced degree, but also the understanding of world’s two biggest markets, plus firsthand experience of the Chinese supply chain and manufacturing power.”

# Tsinghua University Female Basketball Team takes the women’s title at the 3x3 FISU World University League - 2018 Finals



On November 18th, the Tsinghua University Female Basketball Team took the women’s title at the 3x3 FISU World University League – 2018 Finals after beating the basketball team of Vasyl Stefanyk University, Ukraine, in the finals.

Ma Jiaying, Yang Lu Chenhong, Song Kexin and Shi Mingyan represented Tsinghua University in the competition.

The 3x3 FISU World University

League is an international university sports event initiated by the International University Sports Federation (FISU). The 3x3 FISU World University League 2018 Finals was held in the Xiamen Campus of Huaqiao University from November 15th to 18th. 32 basketball teams (16 men’s teams and 16 women’s teams) from 24 countries and regions of five continents around the world participated in the competition.

# 500 Years of Western Paintings — Collections of Tokyo Fuji Art Museum



The Exhibition “500 Years of Western Painting” displays the western paintings collected by Tokyo Fuji Art Museum. The 60 exhibits selected are divided into five sections: Personality Discovery and Humanity Promotion, Resplendent Movement and Exquisite Nostalgia, Classical Rationality and Romantic Emotion, Real Mirror Image and Construction of Light and Colors, and Pure Concept and Diversification. Taking time as the main narrative line and genre as the development form, it shows the developmental process of Western art, from Renaissance, Baroque and Rococo, realistic trend and Classicism, to Neoclassicism and Romanticism, Realism, Impressionism and Post-Impressionism, up to the modernism and post-modernism movements. Based on this, a 500-year history of Western art from the 16th to 20th centuries is outlined, leading the audience to explore the mysteries of those great times, artists and their works.

The Tokyo Fuji Art Museum (TFAM) was founded by Daisaku Ikeda in 1983. The TFAM collection is comprised of some 30,000 Japanese, Eastern and Western artworks, ranging from paintings, prints,

photography, sculptures, ceramics and lacquer ware to armor, swords and medallions of various periods and cultures. Especially noteworthy is its outstanding collection of Western oil paintings that spans a five-hundred-year period from the Renaissance to the Baroque and postmodernist eras, as well as its exceptional collection of photographic masterpieces.

Co-sponsored by the Tsinghua University Art Museum and the Tokyo Fuji Art Museum, and supported by Chinese People’s Association for Friendship with Foreign Countries and Kouzan Fin-arts Company, this exhibition will be held at the Tsinghua University Art Museum from October 23rd to December 23rd, 2018.



## Hannover Day at Tsinghua and MOU Signing Ceremony Held



On October 30th, the Hannover Day at Tsinghua and MOU Signing Ceremony was held at the School of Environment, Tsinghua University. Volker Epping, the President of

Leibniz University Hannover, led 18 professors who participated in the event, while Yang Bin, Vice President of Tsinghua University, He Kebin, Dean of the School of Environment and more than 30 teachers and students participated in the event.

Yang Bin, on behalf of Tsinghua University, welcomed the Hannover delegation and introduced the history and recent development of Tsinghua University. He expressed appreciation towards the results of the cooperation between the two universities and looked forward to more cooperation

projects in the future. Volker Epping introduced the research fields and outstanding achievements of Leibniz University Hannover, hoping that Tsinghua delegation would visit and hold a Tsinghua Day in Leibniz University Hannover, while conducting more in-depth cooperation and exchanges between the two universities.

At the meeting, He Kebin, Dean of the School of Environment and Winrich Voss, Dean of



the Faculty of Civil Engineering and Geodetic Science of Leibniz University Hannover, signed a memorandum of cooperation between the two universities on behalf of their respective universities, with a view to further enhancing cooperation

in water treatment technology and promoting in-depth academic and scientific research exchanges between the teachers and students of the two universities.



## Former U.S. Secretary of State John Kerry Visits Tsinghua

On October 31st, the former U.S. Secretary of State, John Forbes Kerry, visited Tsinghua University. Chen Xu, the Secretary of the CPC Tsinghua Committee and the Chairperson of the University Council, met with Mr. Kerry at Gongziting.

In the meeting, Chen Xu welcomed Mr. Kerry to Tsinghua University and thanked him for the great support that he has given to the Schwarzman College of Tsinghua. She stated that the college's goal is to educate future leaders who, with a global perspective in mind, will contribute to the progression of human civilization. Since the beginning, the program has received widespread global attention. Right now, with the attention and support from people



at home and abroad, the college has already successfully enrolled three cohorts of students.

Chen Xu stated that Tsinghua University has continued to make progress on its global strategy. After having collaborated with the University of Washington for the establishment of the Global Innovation eXchange (GIX) Institute in Seattle and the Polytechnic University of Milan for the creation of the China-Italy Design Innovation Hub in Milan, the university witnessed the ground-breaking ceremony for the Tsinghua Southeast Asia Center (Tsinghua SEA) that recently took place in Indonesia. Chen Xu hoped that Mr. Kerry could share his rich diplomatic experience and political

wisdom with the students during his visit to Schwarzman College and further communication with the students of Tsinghua in the future.

John Kerry congratulated Tsinghua University on the continuous progress that has been made in its effort to develop education through international collaboration. He said that Tsinghua University has



actively contributed to peace and development in China and the world. In the contemporary world, countries increasingly depend on one another. The international community faces all sorts of complex challenges. While a new generation of young people prepares to start work towards a better future for humanity, people must not forget that success comes through collaboration. It is important to continue the pursuit for world peace and development. The former Secretary of State also discussed with Chen Xu the enrolment of international students, the employment of graduate students and the international education of students.

After the meeting, Mr. Kerry visited the Schwarzman College and held a discussion session with students on the topics of leadership development, climate change and the international situation in a multi-polarized global political environment.

## Pro-Vice-Chancellor Eilís Ferran of the University of Cambridge visits Tsinghua University



On November 2nd, Professor Eilís Ferran, Pro-Vice-Chancellor for Institutional and International Relations of the University of Cambridge, visited Tsinghua University. Vice President and Provost of Tsinghua University Yang Bin met the guest at Gongziting and they had a discussion on cooperation between the two universities.

During their talks, Yang Bin welcomed the visit of Professor Ferran and introduced the recent

achievements of Tsinghua University in global strategy and the recent development of the university. Yang Bin hoped to strengthen the cooperation with top world universities such as the University of Cambridge in cultivating public management talents and promoting more quality joint education and training projects to contribute to achieving the United Nations Sustainable Development Goals.

Professor Eilís Ferran congratulated Tsinghua University on its progress in international cooperation and exchanges. She expressed the hope that the University of Cambridge would be willing to further cooperate with Tsinghua University in areas including joint degree education and public policy training.

## Wang Yunxiao of Tsinghua University Academy of Arts and Design wins first prize in the Stanislav Libensky Award 2018

On October 20th, the kiln glass work “Succulent plan-Individual diversity” by Wang Yunxiao, a graduate student from the Department of Arts and Crafts of the Tsinghua University Academy of Arts and Design, won first prize in the Stanislav Libensky Award 2018.

A total of 35 young artists from 17 countries were nominated for

the Stanislav Libensky Award 2018, including Wang Yunxiao and Li Chengyu from the Tsinghua University Academy of Arts and Design. Wang Yunxiao is an undergraduate student of 2014 and a graduate student of 2018 in the Department of Arts and Crafts of Tsinghua University Academy of Arts and Design, majoring in glass art. Associate Professor Guan

Donghai is his tutor.

The Stanislav Libensky Award (established in 2009) is a glass art award named after Stanislav Libensky, the late Czech glasswork artist. Held annually, it is the world’s only international glass exhibition with a graduate call for entry. The aim of the competition is to help the development of glass art in the young and



to compare different approaches and methods. The work of 2018 award finalists will be exhibited from September 20th until November 19th at the Prague Contemporary Art Center, Czech Republic.



## Photos featuring life at Tsinghua attract London locals

Last week, London had a glimpse of what life is like at Tsinghua, thanks to the photograph exhibition that the Tsinghua Global Communication Office put on, together with the Confucius Institute for Business London (CIBL). Over fifty photos were selected to present Tsinghua and promote the university on a global stage.

Titled “Where History Meets the Future: Opportunities from Tsinghua, China”, the exhibition follows up the most recent developments by Tsinghua, including Tsinghua Southeast Asia Center, China-Italy Design Innovation Hub, Tsinghua-Berkeley Shenzhen Institute, Global

Innovation eXchange (GIX) Institute, Schwarzman College, Asian Universities Alliance (AUA), Tsinghua University Art Museum as well as the beautiful scenery and colorful life on campus.

“On behalf of the Embassy of the People’s Republic of China in UK, I would like to share our warmest welcome to Tsinghua’s visit and your effort in introducing one of the most prestigious universities in China. As China and UK communicate and cooperate more closely these days, it is important that people of the two countries know and understand each other,” said Ruan Shao, Secretary of the Education Section of the Embassy



of the People’s Republic of China in UK.

“The photos displayed are fantastic. I just started to learn Chinese, because I would like to know more about Chinese opera. After seeing this exhibition, I am even more looking forward to my language learning experience ahead,” said Phoebe Haines, an opera singer and Cambridge University alumna.

