Science, Technology, Education and Health News from China

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Please note that the previous newsletters can be downloaded from the website of the Embassy of Switzerland in China: www.eda.admin.ch/beijing. To subscribe/unsubscribe or send us your comments, please send an email with the corresponding subject to chenchen.liu@eda.admin.ch.

Introduction
Story of the month covers the newly published Academic Ranking of World Universities 2013 (also known as Shanghai Jiaotong Ranking). In science and technology, study finds H7N9 virus “highly transmissible” through air, Daya Bay announced new research finding, and China will launch Chang'e 3 by the end of the year. In education, top universities in China receive complaints for gender discrimination in admission. Chinese universities seek more international students. The University of Applied Sciences Northern Switzerland partners with Heilongjiang Provincial Government to open a Swiss SME Research Center.

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1 Please click on the blue texts to activate the hyperlinks to either email addresses or related websites.
Story of the Month

2013 Academic Ranking of World University Published

The 2013 Academic Ranking of World Universities (ARWU) is released today by the Center for World-Class Universities at Shanghai Jiao Tong University. Starting from a decade ago, ARWU has been presenting the world Top 500 universities annually based on transparent methodology and reliable data. It has been recognized as the precursor of global university rankings and the most trustworthy one.

Harvard University continues to take the first place in the 2013 list. The Top 10 universities are: Harvard, Stanford, Berkeley, MIT, Cambridge, Caltech, Princeton, Columbia, Chicago and Oxford. The best ranked universities in the Asia-Pacific region are the University of Tokyo (21st) and Kyoto University (26th) in Japan, and the University of Melbourne (56th) in Australia.

Swiss universities continue to be highly competitive on the ARWU. Swiss Federal Institute of Technology Zurich ETHZ, ranks 20th worldwide, is consistently the highest-ranked university in continental Europe. It also marks the first time for a continental European university to be among the top 20 of ARWU. In field-specific ranking, ETH ranks 8th worldwide in Science and 5th in Chemistry.

7 out of 12 Swiss universities made it to the top 300 of ARWU, including ETHZ (20), University of Zurich (60), University of Geneva (69) and University of Basel (83), Federal Institute of Technology Lausanne (101-150), University of Bern (151-200) and University of Lausanne (201-300).

28 Chinese universities made into ARWU Top 500 this year, the same number as in 2012. Tsinghua University, Peking University, Shanghai Jiaotong University, Fudan University and Zhejiang University were among the top 200 (all ranked 151 – 200). Science and Technology University of China, Nanjing University and Sun Yet-Sen University ranked between 201 and 300.

Peking University was ranked among Top 100 in science field, specifically in the subjects of mathematics, chemistry and computer sciences. Peking University was also among the Top 200 in social sciences. China Agriculture University was the only mainland university that made into the Top 200 ranking in life science and agriculture sciences. Tsinghua University and Zhejiang University were both listed among top 100 in the subjects of mathematics and computer sciences. 7 Chinese universities were among top 100 in engineering, including Tsinghua University (34), Zhejiang University (48), University of Science and Technology of China (49), Fudan University (51 – 75), Shanghai Jiaotong University (51 – 75), Beihang University (76 – 100) and Harbin Institute of Technology (76 – 100).

ARWU ranked universities with several indicators of academic or research performance, including alumni and staff winning Nobel Prizes and Fields Medals, highly cited researchers, papers published in Nature and Science, papers indexed in major citation indices, and the per capita academic performance of an institution. Over the years, although Chinese universities’ academic output were steadily on the rise and the number of publications on Nature and Science were growing by year, the overall academic influence as well as the number of Nobel-prize winning alumni and faculty continued to lag behind their international counterparts.
1. **Swiss SME Research Center in China**

(FHNW, 28-08-2013)

At the invitation of the highest political body in the Province of Heilongjiang, the FHNW School of Business opened the "Swiss SME Research Center China" in Harbin on 28 August 2013.

Under the auspices of the Free Trade Agreement between Switzerland and China, the School of Business of the University of Applied Sciences Northwestern Switzerland (FHNW) was invited to open the Center, the aim of which is to support Swiss SMEs to enter the Chinese market, by the Government of the Province of Heilongjiang under the leadership of Party Secretary Wang Xiankui.

The "Swiss SME Research Center China", which opened on 28 August 2013, is a platform for Swiss companies who would like to test their products and services in the Chinese market, deepen their experience of the market or seek Chinese business partners. The companies will be supported by FHNW staff and students in their activities.

Following the signing of the Free Trade Agreement between Switzerland and China, the Swiss SME Research Center China is a first concrete initiative by the University of Applied Sciences and Arts Northwestern Switzerland, providing SMEs with a viable opportunity to gain a foothold in China. FHNW staff and Chinese employees will be available as on-site contact partners.

The Swiss SME Research Center in China will offer a portfolio of services, including consultancy for market entry in China (market and location analyses, etc), a vast network of business and political contacts in China, operational start-up support for SMEs, attractive sales and display areas, office spaces as well as meetings and networking events.

The FHNW School of Business is a leading establishment in education, executive education and internationalisation in Switzerland. With over 150 academic programmes and related activities (EMBA, Master of Advanced Studies, courses seminars and workshops), the School of Business of the University of Applied Sciences Northwestern Switzerland FHNW is Switzerland’s leading provider of continuing education in business management. It tutors more than 2000 students in Bachelor and Masters degree programmes, undertakes applied research and development and is an active player in the field of consultancy.

(http://www.fhnw.ch/business/international/china/ssrcc/ssrcc?set_language=en)

2. **Study Finds H7N9 Virus “Highly Transmissible” Through Air**

(Wall Street Journal, 19-07-2013)

A new bird flu virus that has infected 132 people in recent months and killed 43 is capable of spreading from mammal to mammal through the air, a study by a team of Chinese virologists has found, rekindling fears that the virus could eventually pass from person to person.

The study, published online on July 18th by the journal *Science*, found that one strain of the H7N9 virus isolated from a human subject in eastern China’s Anhui province was “highly transmissible” between ferrets by respiratory droplets, according to a summary posted to *Science*’s website.

Led by Ms. Chen Hualan, one of China’s top virologists, researchers tested the ability of multiple strains of the virus to spread by placing three healthy ferrets in one cage next three infected ferrets in another cage. In most cases, only one of the healthy ferrets became infected, but in the case of the Anhui strain, all three of the healthy ferrets became infected with the virus. A repeat of the experiment with the Anhui strain produced the same result.
Ferrets respond to flu viruses similarly to humans and thus are often used to test the potential of avian flu viruses in infect and spread between people.

H7N9 was confirmed to have made the jump from birds to humans for the first time in March, when state media revealed that two people in Shanghai had died after being infected with the virus the previous month. Other deaths soon followed, prompting officials to shut down wet markets and slaughter poultry in a number of cities amid fears of a potential epidemic. Despite discovering a handful of “family clusters” – or infections of multiple family members – health authorities have yet to turn up evidence that H7N9 is capable human-to-human transmission, which would make it far more dangerous.

But the new study reinforces earlier warnings from the World Health Organization and Chinese authorities that the virus has a higher potential for human-to-human transmission than any other known bird-flu virus. “The findings suggest that only a few amino acid changes would be needed to make the avian H7N9 viruses highly transmissible,” the official Xinhua news agency quoted Ms. Chen as saying on July 19th.

In its summary of the new study, Science notes that the results conflict with an earlier study by the U.S. Centers for Disease Control featuring a similar experiment using the same Anhui strain of the virus. In that experiment the virus spread to only two of six healthy ferrets, leading researchers to conclude that the virus did not spread readily through the air.

A third study led by virologist Yoshihiro Kawaoka produced similar results to the CDC. The researchers concluded nevertheless that H7N9 represented a significant public health threat.

The number of human H7N9 infections has dropped off significantly in recent months, though Ms. Chen warned in her interview with Xinhua the virus continues to exist in animals. The fact that the virus doesn’t produce symptoms in birds means it can “replicate silently” and transmit to unsuspecting humans, providing multiple chances for it to mutate and potentially become more dangerous, she said.

(http://blogs.wsj.com/chinarealtime/2013/07/19/study-finds-h7n9-virus-highly-transmissible-through-air/)

3. **New Results from Daya Bay: Tracking the Disappearance of Ghostlike Neutrinos**

The international Daya Bay Collaboration has announced new results about the transformations of elusive, ghostlike neutrinos, particles that carry invaluable clues about the makeup of the early universe. The latest findings include their first data on how neutrino oscillation – in which neutrinos mix and change into other “flavors,” or types, as they travel – varies with neutrino energy, allowing scientists to measure a key difference in neutrino masses known as “mass splitting.”

The new results are based on four times the data, with twice the precision, of the first Daya Bay results released in 2012, which established the value of the third and final neutrino “mixing angle.” Mass splitting represents the frequency of neutrino oscillation. Mixing angles, another measure of oscillation, represent the amplitude. Both are crucial for understanding the nature of neutrinos.

Understanding the subtle details of these neutrino oscillations and other properties of these shape-shifting particles may help answer some of the most mysterious questions about the universe.

The Daya Bay Experiment is located close to the Daya Bay and Ling Ao nuclear power plants in China, 55 kilometers northeast of Hong Kong. The Daya Bay Collaboration includes more than 200 scientists from six regions and countries.

Neutrinos come in three “flavors” (electron, muon, and tau) and each of these exists as a mixture of three masses. Measuring oscillations of neutrinos from one flavor to another gives scientists information on the probability of each flavor occupying each mass state (the mixing angles) and the differences between these masses (mass splitting).
Daya Bay measures neutrino oscillation with electron neutrinos – actually antineutrinos, essentially the same as neutrinos for the purpose of these kinds of measurements. Millions of quadrillions of them are created every second by six powerful reactors. As they travel up to two kilometers to underground detectors, some seem to disappear.

The missing neutrinos don’t vanish; instead they have transformed, changing flavors and becoming invisible to the detectors. The rate at which they transform is the basis for measuring the mixing angle, and the mass splitting is determined by studying how the rate of transformation depends on the neutrino energy.

Daya Bay’s first results were announced in March 2012 and established the unexpectedly large value of the mixing angle theta one-three ($\theta_{13}$), the last of three long-sought neutrino mixing angles. The new results from Daya Bay put the precise number for that mixing angle at $\sin^22\theta_{13}=0.090$ plus or minus 0.009. The improvement in precision is a result of having more data to analyze and having the additional measurements of how the oscillation process varies with neutrino energy.

The energy-dependence measurements also open a window to the new analysis that will help scientists tease out the miniscule differences among the three masses. The KamLAND experiment in Japan, and other solar neutrino experiments have previously measured the mass splitting $\Delta m_{21}$ by observing the disappearance of electron antineutrinos from reactors about 100 miles from the detector and the disappearance of neutrinos from the sun. The MINOS experiment in the U.S., and the Super-K and T2K experiments in Japan, have determined the effective mass splitting $|\Delta m_{2\mu}|$ using muon neutrinos. Daya Bay scientists have now measured the magnitude of the mass splitting $|\Delta m_{2e}|$ to be $(2.59\pm0.20)\times10^{-3}$ eV$^2$.

The result establishes that the electron neutrino has all three mass states and is consistent with that from muon neutrinos measured by MINOS. Precision measurement of the energy dependence should further the goal of establishing a “hierarchy,” or ranking, of the three mass states for each neutrino flavor.

The latest results from the Daya Bay Collaboration will be announced at the XVth International Workshop on Neutrino Factories, Super Beams and Beta Beams (NuFact2013) in Beijing, China.

(4. Top Universities Break Rules on Gender Discrimination)

(University world news, 24-08-2013)

Around two-thirds of China’s top research universities still have policies that can be used to limit the proportion of women students, despite tighter government regulations issued this year against gender discrimination in universities and the workplace.

In some regions the proportion of female university students has been rising year on year, particularly in cities like Beijing and Chongqing. But some of the best universities have not abandoned restrictions on the proportion of women for some subjects.

Huang Yizhi, a Beijing-based lawyer, and Lu Pin, project leader at the Media Monitor for Women Network – a Chinese non-governmental organization – sent a letter to the Ministry of Education requesting information on universities and degree programmers that have different admissions standards based on gender.

According to the NGO’s recently released survey of student recruitment at China’s top universities, recruitment plans of 34 out of 112 ‘Project 211’ universities – 66% of them – could be in violation of a directive released by China’s State Council in May this year stipulating that universities should not set
gender ratios for students. Exceptions to the May 2013 notice are only allowed for military and security-related institutions.

Some ‘Project 211‘ institutions such as Sichuan University and the Communication University of China have stated that male and female students would be recruited separately, according to the survey. Some of the 40 top research universities designated as world-class universities by the Chinese government, known as ‘Project 985‘ universities, were also found to have policies seen as discriminatory.

Although the government’s May directive states there should be no gender ratio for foreign language and broadcasting degrees, Lu Pin said gender ratios that discriminate against women still exist for some subjects where women applicants outnumber men, “because male graduates are more employable than their female counterparts”.

According to a report by the Hong Kong-based China Labour Bulletin, published in November last year, gender-based quotas and enrolment policies are widespread at China’s universities. For some subjects, including languages and science, women applicants must score much higher than men in university entrance exams, also known as the gaokao.

Institutions such as Renmin University and Shanghai International Studies University set higher admission scores for female students, despite publicity and opposition from women’s organizations. Minimum admission scores for some science courses at the Shanghai-based university are as much as 60 points higher for women students. At another institution in the city, Shanghai Language University, men with gaokao scores as low as 551 were accepted while the lowest accepted female score was 616.

The Ministry of Education defended the policy after a Beijing-based legal counselling centre for women lodged a complaint. “In consideration of the national interests, the ministry has permitted some universities to adjust their ratio of female and male students in some majors, to fulfil the demand for special talents for special posts,” the ministry said in July 2012.

Discrimination continues even after graduation, according to the All-China Women’s Federation, which has been monitoring the issue. The problem has become acute as graduate unemployment rises and a record number of students graduating are chasing work in a tight jobs market.

Zheng Churan a women’s rights activist and sociology graduate from the prestigious Sun Yat-sen University in Guangzhou, Southern Guangdong province, told local media that many female graduates received few responses to job applications while many less qualified male classmates easily found jobs. Lack of enforcement of gender equality regulations was largely to blame for widespread discrimination, she said.

University graduates have begun to fight against discrimination, including suing companies under the new laws. Zheng recently sent a letter signed by more than 100 women students to the Committee for Internal Affairs and the Committee of Judicial Affairs at the Beijing Municipal People’s Congress and the Haidian District People’s Congress in Beijing, regarding the case of Cao Ju, a recent college graduate.

“I hope the letter can help re-open the case, punish the company, and truly protect the equal employment rights of women college students,” Zheng said, appealing to the Haidian District Court to file the ‘first case of sexual discrimination‘ under the new regulations.

Cao Ju was rejected by a training organization last year on the grounds that only male applicants would be accepted. She sued the institution in the Haidian District People’s Court in July 2012 under the existing 2008 employment promotion law. But the court did not accept the suit, saying there was no legal basis for it.

(http://www.universityworldnews.com/article.php?story=20130823114249619)
5. **Universities Seek More Enrollment from Abroad**

(China Daily, 26-08-2013)

Samuel Goldstein is spending his gap year in China. While the Washington University political science student still has a year to go before graduation, he has decided to apply for a master's degree course in Chinese. But there is a twist in his plan. Instead of applying to a Chinese university, the 20-year-old wants to attend a satellite school of a US university in China, which he believes will guarantee the quality of education.

China's culture and economy may attract overseas students, but the education system does not. And that's a big problem, because the government is trying to attract more foreign students as part of an internationalization strategy in an attempt to grab a slice of the international education market.

In 2011, there were approximately 4.3 million internationally mobile students in tertiary education worldwide, with 77,400 studying at colleges in China, according to statistics from the Organization for Economic Cooperation and Development. The Chinese Ministry of Education reported a higher number, saying that the country played host to 119,000 overseas students in 2011, including 88,500 college and undergraduate students, 23,600 graduate students, and 6,900 postgraduates.

According to the ministry's action plan, China will host 500,000 international students at all levels by 2020, becoming the top Asian destination for overseas students. The number of overseas college and university students is expected to reach 150,000.

However, Darryl S.L. Jarvis, associate dean of research and postgraduate studies, and professor of global studies at the Hong Kong Institute of Education, doubts that China can be truly competitive in the international education market, even though the country, "is trying to achieve the goal via the development of English language programs and increasing the number of scholarships for overseas students to 50,000 by 2015".

The biggest barrier is linguistic, according to Jarvis. "While Mandarin will, of course, be an important language going forward, the main language for international commerce as well as the adopted language for scholarly engagement in the hard sciences and social sciences will remain English." Jarvis also cited other factors influencing student numbers, including academic reputation, university facilities and career opportunities. Moreover, overseas graduates of Chinese universities can expect a lower starting salary than their counterparts with a degree from a US institute, for example.

Goldstein decided not to apply to a Chinese university because of concerns about the quality of education. Apart from the academic environment, many foreign students are uncomfortable with the culture at Chinese universities.

Yang Rui, professor of education at Hong Kong University, said: "The general situation is that formal education globally has largely become Western education. But most Chinese educators still lack a thorough understanding of Western ideas and approaches. Because of that, they are often unable to satisfactorily incorporate the Chinese content into their curriculum and teaching practice."

For Sang Peng, the problem lies in the government's regulations on international students. "I think the government should pay more attention to education rather than regulations," he said. Globally, countries are paying great attention to attracting foreign students because internationally mobile students bring financial and cultural benefits to their host countries.

In addition, non-educational issues such as pollution, food security and heavy traffic are keeping potential professorial recruits away if they have an option elsewhere. These issues could equally be keeping international students away.

Yang said China's desire and need to attract more international students is in line with the country's rising global profile. "It is in China's interests to host more students from overseas. They will help their own societies understand China better and interact with China more effectively across a range of social areas."
It's also in the interests of those who interact with China. International students have always been the best way of building intercultural relations and improving a country's influence. China is no exception and this has been proved by its own history and by contemporary practice among major world powers."

There is still a lot for the government to do; most important is educational reform that would benefit both domestic and foreign students, plus reform of the salaries of university teachers and the regulations on international students.

For Rahul Choudaha, director of research & strategic development at World Education Services, a nonprofit organization that specializes in international education and research, greater knowledge of the outside world is key: "China has untapped potential, but to realize grandiose goals, a deeper understanding of international students is required - shooting in the dark is a sure way to miss the goal."

(http://usa.chinadaily.com.cn/china/2013-08/26/content_16919440.htm)

6. **China Chang'e Unmanned Moon Lander Launch “By Year-End”**

(BBC, 28-08-2013)

China plans to send an unmanned space probe to the moon this year for the country's first lunar landing. State media said preparations were now under way for the launch of Chang'e-3, the latest stage in its efforts to put a person on the moon. The craft will use a radio-controlled rover to transmit images and dig into the moon's surface to test samples.

In June, three Chinese astronauts spent 15 days in orbit and docked their craft with an experimental space laboratory. According to Chinese legend, Chang'e is the name of a woman who lives in a palace on the moon.

"Chang'e-3 has officially entered its launch implementation stage following its research and construction period," said a statement released by the administration after a meeting on Wednesday about the mission, the state news agency Xinhua reported.

The Chang'e-3 and another lander will remain on the moon's surface, although China plans to follow those with landers that will return to Earth with samples, the Associated Press news agency reports. China would need experts from its lunar exploration programme and its separate human spaceflight programme to work together on a possible crewed lunar mission. Attention has focused recently on China putting humans in space. Two missions have been made to work on the Tiangong-1 experimental space station.

Launched in 2011, the station is due to be replaced by a three-module permanent station, Tiangong-2, in seven years' time.

China sent its first astronaut into space in 2003, becoming the third country after Russia and the United States to achieve manned space travel independently. The military-backed space programme is a source of national pride.

(http://www.bbc.co.uk/news/world-asia-23870765)
Events (September – October 2013)

Science, Technology and Education-related Events in China

World Economic Forum Annual Meeting of the New Champions 2013
Date: September 11th to 13th
Place: Dalian
Contact: http://www.weforum.org/events

Zhongguancun Forum
Date: September 12th to 13th
Place: Beijing
Contact: http://www.zgcforum.org/

Beijing Science Festival
Date: September 12th to 16th
Place: Beijing
Contact: Beijing Science and Technology Association

Shenzhen International Biotech Innovation Forum & Exhibition
Date: September 25th – 27th
Place: Shenzhen
Contact: http://www.sibife.com/

International Astronautic Federation Assembly
Date: September 23rd to 27th
Place: Beijing
Contact: China Astronautic Society

EU – China Business and Technology Cooperation Fair
Date: October 21st to 24th
Place: Chengdu
Contact: http://www.eu-china.org.cn/en/

International Congress on Learning Cities
Date: October 21st to 23rd
Place: Beijing
Contact: UNESCO

Electric Vehicle Technology and Innovation Forum
Date: October 24th to 25th
Place: Beijing
Contact: http://www.autotecshow.com/pop/evtif2013.html

Swiss-related S&T, Education and Health Events and Announcements

Geneva Cantonal Delegation Visit
Date: September 16th to 18th
Place: Beijing
Contact: Embassy of Switzerland in China

Beijing Design Week / Young Swiss Design
Date: September 26th to October 6th
Place: Beijing
Contact: Swissnex China / Pro Helvetia

“Act Like You Mean It”
Date: October 15th to 18th
Place: Beijing
Contact: Embassy of Switzerland in China