



Science, Technology and Education News from China

Number 94 – April 2012

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Introduction

This month's newsletter starts with a summary of China's science, education and health ministries' budget for 2012. In science and technology, China eyes to devise even faster high-speed trains in its new 5 year plan for speed train development. The World's first handmade cloned transgenic sheep was born in China. In education, the independent South China University of Science and Technology was finally approved by the Ministry of Education after 2 years of efforts. In Health, a tobacco research going for a national science award becomes a controversy in light of scientists' opposition. The drug industry was plagued by toxic capsules incidents.

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



Policies

Chinese Government Releases Budget for 2012

Responding to the call of Premier WEN Jiabao that ministries should go open with their budget, more than 64 ministries and organizations directly under the administration of the Chinese State Council released their annual budget in April.

The Ministry of Education budget for 2012 reaches a record high of **RMB 185.6 billion (USD 29.4 billion)**, up from RMB 148.4 billion (USD 23.5 billion) in 2011. The tremendous growth on education budget is an indication of the Chinese government's commitment to achieve the long-lasting goal that education expenditure shall reach 4% of the GDP.

The budget will mainly be spent on diplomacy (RMB 205 million, on foreign representations, foreign aid, membership to international organizations), administrative affairs (RMB 167 million), primary school education (RMB 461 million), high school education (RMB 1.76 billion), higher education (RMB 162 billion), study in China programs (RMB 1.5 billion) and key university labs (RMB 1.13 billion). Despite the repeated call of the Ministry for accelerated development of vocational education, the Ministry plans to spend only RMB 50 million on higher vocational education this year.

The Ministry of Health reached **RMB 80.19 billion (USD 12.72 billion)** with an increase of RMB 13.3 billion compared to 2011. Such dramatic increase is due to a boost of investment in medical science education (+RMB 236 million), medical research (+ RMB 1.72 billion) and public healthcare (+RMB 10 billion).

RMB 71 billion is set aside for healthcare, among which RMB 68 billion is to be invested into public hospitals (+ 468 million) which echoes with the Ministry of Health's vow to strengthen financial support to public hospitals. Diplomacy expenditure is expected to reach RMB 651.6 million, among which RMB 513.5 million is dedicated to foreign medical aid and RMB 1.5 million for international cooperation projects. Medical research spending is estimated at RMB 4 billion, including RMB 32 million for basic research, RMB 1.18 billion for applied research and another 2.8 billion for key science and technology projects.

The Ministry of Science and Technology MoST budget stood at **RMB 28.5 billion (USD 4.5 billion)**, enjoying another 12% bump compared to 2011, putting China consistently among one of the fastest growing countries in terms of investment on research and innovation.

The lion's share goes to science and technology affairs (RMB 28 billion). Basic research, applied research and technology development received respectively RMB 4.2 billion, RMB 10.2 billion and RMB 9.6 billion, mainly as project funding. Diplomacy continues to be a key element, with RMB 72 million allocated for international aid projects and another RMB 10 million for international organization projects. Budget for International exchange and cooperation increased by 26% to RMB 2.38 billion in 2012, and a significant increase on planned funding of key science and technology cooperation projects (RMB 735 million in 2011 and RMB 1.2 Billion in 2012, +38%).

China National Science Foundation NSFC, the second most important research funding agency in China next to the MoST, presented a budget of **RMB 15 billion (USD 2.38 billion)**, which features 18.92% growth from 2011. NSFC budget has been maintaining a double-digit growth for 3 consecutive years. 99.61% of the budget will be used to support research projects in various funding programs.



News

1. **A New Uproar over Chinese Tobacco Research**

(Science, 13-04-2012)

China's scientific community is up in arms again over tobacco. Last year, researchers protested the election of a tobacco scientist to the prestigious Chinese Academy of Engineering (CAE); this month many are criticizing the nomination of a tobacco research project for the 2012 National Science and Technology Progress Award.

Candidates for the award were announced in March by the Ministry of Science and Technology (MOST). Among them is a research project titled "formulation and application of a theoretical system for Chinese cigarettes," nominated by the State Tobacco Monopoly Administration (also known as the China National Tobacco Corporation). The cited achievements include improving quality and marketability of Chinese cigarettes and new sales revenue of about \$27.5 billion over the last 3 years.

The invitation for public comment produced an uproar. On 3 April, Yang Gonghuan, former deputy director of the Chinese Center for Disease Control and Prevention and now a professor at Peking Union Medical College's School of Basic Medicine, published an open letter to science minister Wan Gang calling on MOST to ban tobacco research from being considered for national science awards.

Then on the 8th, editors at China's foremost science Website and blog, ScienceNet.cn, began collecting signatures from readers opposed to cigarette research's consideration for a science award. As of the 13th, some 700 people have signed. ScienceNet will continue to collect signatures for 2 more weeks, and then forward them to MOST on 30 April, the deadline for comments. In addition, 30 members of CAE, mostly from the division of medicine and public health, wrote to ScienceNet editors on Monday in support of the petition.

Responding to the outcry, a MOST spokesperson said that the tobacco research nomination has followed normal procedures.

Yang sees the vigorous response as a sign that Chinese society has awakened to the importance of tobacco control. When tobacco scientist Zhu Zunquan was elected to CAE in 1997, there was little comment. But last year, after a second tobacco researcher, Xie Jianping, was elected to CAE, Chinese media and many citizens denounced the academy's decision. Xie's low-tar research had received the National Science and Technology Progress Second Prize three times: in 2003, 2004, and 2010. Some CAE members who voted for Xie cited the prizes as partial justification for electing him, according to Chinese reports.

CAE member and food safety expert Chen Junshi, who has written in his blog that he was ashamed of CAE's decision to elect a tobacco scientist, is now calling on MOST to avoid another embarrassment like the "tobacco academician" and drop tobacco research from its list of prize candidates.

(<http://news.sciencemag.org/scienceinsider/2012/04/a-new-uproar-over-chinese-tobacco.html>)

2. **Toxic Capsules Reignite Concerns over Drug Safety**

(Xinhua, 16-04-2012)

Rage and condemnation surged in China once more after media reports revealed that some capsule medication contain excessive amount of chromium, which is hazardous to human health.

A total of 13 commonly used drugs were packed into capsules made from industrial gelatin, which contains a much higher degree of chromium than edible gelatin, China Central Television (CCTV) reported on the 15th in a program on quality issues.

The gelatin for industrial use is made from waste leather materials, usually highly contaminated by chromium, as a result of the tanning agent used when processing leather. Chromium can be toxic and carcinogenic if ingested in excessive amounts.



The public has expressed their anger over the issue through various outlets. Sina's Weibo.com, a popular Twitter-like microblogging service in China, was flooded with comments, mostly condemnations, about the incident.

State Food and Drug Administration (SFDA) issued an emergency notice on the 15th of April to suspend the selling and consumption of the 13 kinds of drugs packed in capsules confirmed to have excessive levels of chromium.

The SFDA said it has ordered its provincial-level bureaus to investigate the cases and examine the drugs mentioned in the report.

Police in east China's Zhejiang Province said on April 16th that they had captured 22 people who allegedly produced and sold the substandard capsules.

By noon, police had detained 11 of the suspects from four capsule manufacturing companies in Xinchang county, according to a spokesman from the county's public security bureau.

The Chinese Pharmacopoeia, a code representing the national standard for drugs, has set a clear standard for capsules and requires drug makers only to purchase capsules from manufacturers with appropriated drug-making licenses, said the notice.

The code stipulates that the content of chromium in capsules and the gelatin for making them must be no more than 2 milligram (mg) per kg, or 0.0002 percent.

However, the TV program exposed that 13 kinds of capsules from 9 companies have higher chromium content than the upper limit required by the Chinese Pharmacopoeia. The highest content among those contaminated capsules was 181.54 mg/kg, or more than 90 times of the upper limit.

[...]

(http://news.xinhuanet.com/english/china/2012-04/16/c_131530504.htm)

3. **Traditional Chinese Medicine Ok'd for EU Market**

(China Daily, 19-04-2012)

A Chinese traditional medicine has been authorised for sale in a European market for the first time, the Chinese Academy of Sciences announced on April 18th.

Industry experts said the approval would lead the way for Chinese traditional medicine to enter the mainstream European market.

Di'ao Xin Xue Kang, a well-known herbal medicine produced by the Chengdu-based Di'ao Group, received marketing authorisation from the Medicines Evaluation Board of the Netherlands, making it the first Chinese traditional drug to be identified as a therapeutic medicine in the European Union.

"This is an important step for Traditional Chinese Medicine (TCM) to enter mainstream markets of developed countries," Health Minister Chen Zhu said at a news conference organised by the Chinese Academy of Sciences in Beijing yesterday.

This first success was "proof that Chinese firms are capable of producing top-level medicines", he said.

Bai Chunli, president of Chinese Academy of Sciences, urged TCM research institutions to increase their focus on the European market now.

"As well as strengthening research, I hope they can also study the authorisation requirements of different countries, so that more and more medicines will have access to the high-end market," he said.

Sang Guowei, vice-chairman of the Standing Committee of the National People's Congress, said that TCM could finally enter European "rightfully".



The certification of Di'ao Xin Xue Kang follows an EU ban on traditional Chinese medicine in May 2011, imposed to prevent unlicensed herbal medicines being sold as food supplements.

"This new authorisation marks the first time that Chinese traditional medicine steps into the mainstream health market," said Zhang Boli, a member of the Chinese Academy of Engineering and president of the China Academy of Chinese Medical Sciences.

Zhang said another seven or eight Chinese TCM firms were trying to get access to the EU market.

"Maybe one or two of them will receive authorisation next year. And this may lead to more applicants, as the influence of TCM expands on international market," he added.

[...]

(<http://www.asianewsnet.net/home/news.php?id=29763&sec=2>)

4. **Education Ministry Approves First "Independent" University**

(CRI, 25-04-2012)

The Ministry of Education has officially approved the launch of South University of Science and Technology of China (SUSTC) as a national education and comprehensive reform experiment, Beijing News reports.

Educational authorities also have demanded that SUSTC comply with the country's Education Law and Higher Education Law as well as with the Chinese educational system during the course of starting the university.

According to China's Higher Education Law, high school students are required to take the National Entrance Examination each June to gain admittance to college. SUSTC, however, plans to recruit students independently through its own selection methods. In addition, the university has adopted a board of directors as an alternative to the typical academic bureaucracy. SUSTC also plans to award degrees on its own rather than through the State Council.

Zhu Qingshi, the founding president of SUSTC and former president of the University of Science and Technology of China, said this year's recruitment plan had yet to be decided, but the recruitment of 8,000 students was the university's long-range goal.

SUSTC, located in Shenzhen, south China's Guangdong Province, is the country's first "independent" university. Last year, it recruited 45 students who had taken an independent entrance exam rather than the National College Entrance Exam. But educational authorities had refused to certify SUSTC degree courses, which prompted one student to drop out.

(<http://english.cri.cn/6909/2012/04/25/2561s695465.htm>)

5. **Super-fast Trains on Drawing Board**

(SCMP, 20-04-2012)

Mainland authorities have revealed plans to develop a "super-high-speed train" that can reach speeds of 500km/h or more.

Rail experts were surprised by the news, with some calling the plan "ridiculous".

The Ministry of Science and Technology on Wednesday released a five-year plan on high-speed train research and development, stressing the need to address issues of speed, safety, energy efficiency and developing export markets.

But perhaps most shocking was that making the trains faster topped the ministry's to-do list.

"Continuously increasing train speeds ... meets the demand of our country's high-speed-rail development strategy," the document said.



Mainland researchers were asked to study and develop a "super-high-speed train system" in "super-high-speed conditions". And to start with, they will be given an experimental train that was built last year with a top speed of 500km/h.

The ministry did not reveal the cost of the project.

On safety - undoubtedly the public's top concern after a number of high-speed-rail accidents last year - the ministry plans to develop various technologies such as an "intelligent" train-control system that automatically detects problems, diagnoses them and decides how to solve them.

Wang Mengshu, deputy chief engineer of China Railway Tunnel Group and a drafter of the country's high-speed-rail blueprint, said on April 19th that he opposed plans for a super-high-speed train.

The mainland's high-speed rails were built for trains operating at 350km/h, the professor said.

[...]

The ministry did not respond to a South China Morning Post request yesterday for more details of the project, but in the document it cited scientific and technological benefits in justifying the development of a super-high-speed train.

The super-high-speed technology would also place a higher benchmark on the quality of hardware and software, thus providing a greater margin of safety on lower speed systems, the document said.

China set an ambitious goal during the financial crisis in 2008, setting the total length of the nation's high-speed rail network at 16,000 kilometres by 2020.

But last year's disaster in Wenzhou Zhejiang province that killed 40 people and severely damaged the public perception of China's high-speed rail technology forced authorities to lower the trains' operating speeds from 350km/h to 300km/h.

(<http://www.scmp.com/portal/site/SCMP/menuitem.2af62ecb329d3d7733492d9253a0a0a0/?vgnnextoid=d07d71b516bc6310VgnVCM100000360a0a0aRCRD&ss=china&s=news>)

6. **World's First Handmade Cloned Transgenic Sheep Born in China**

(Chinese Academy of Sciences, 20-04-2012)

Chinese scientists from BGI together with the Institute of Genetics and Developmental Biology, Chinese Academy of Sciences (CAS), and Shihezi University, Xinjiang province, made a significant breakthrough in animal cloning. The world's first transgenic sheep produced with a simplified technique, handmade cloning, was successfully born at 12:16pm, March 26, 2012, in Xinjiang Uygur Autonomous Region, China. The project was also supported by the Animal Science Academy of Xinjiang.

"The transgenic sheep is named 'Peng Peng' (after the identical given names of the two cloners), his birth weight was 5.74 kg." said excitedly Dr. Yutao Du, Director of BGI Ark Biotechnology Co., LTD. (BAB), one of BGI's affiliates focusing on large scale production of transgenic and cloned animals. "Peng Peng is developing normally and appears healthy" she added.

The project has been launched more than two years ago. Apart from the general inefficiency of cloning (only a small fraction of the reconstructed embryos develop to healthy offspring) cloners had to overcome additional difficulties including the special climate and compromised laboratory environment with very basic instruments. Accordingly, an innovative simplified technique called Handmade Cloning (HMC) was used, with less demand for sophisticated equipment, simplified procedures, lower costs and higher production efficiency. In 2009, donor cells were collected from a Chinese Merino sheep, and by genetic manipulation a transgenic cell line was established. After numerous attempts, the HMC system for sheep cloning was successfully established in October 2011. The transfer of the produced embryos has eventually led to the present achievement.



The genetic modification may result in improved meat quality by increasing the unsaturated fatty acid content. According to the researchers, the gene associated with ω -3 poly unsaturated fatty acid (ω -3PUFA) was successfully transferred into Peng Peng. ω -3PUFAs serve as essential fatty acids for humans reducing the risk of coronary heart disease and supporting the normal development of the brain, eye and neurons. "The birth of Peng Peng means that people could absorb ω -3PUFAs by drinking milk or eating meat in the future." said Dr. Du, "The most difficult task has been accomplished, the transgenic sheep production platform is established, we are ready for the industrial-scale development."

(http://english.cas.cn/Ne/CN/201204/t20120420_84092.shtml)

Events (May – June 2012)

May 2012

SKLRB Symposia: Frontier Reproductive Biology

Date: May 6th

Place: Beijing

Contact: Institute of Zoology, CAS

Place: Shanghai

Contact: Shanghai Advanced Research Institute, CAS

2012 China International Weighing Instrument Exhibition

Date: May 9th

Place: Nanjing

Contact: China Weighing Instrument Association

3rd International Conference on the Advances in Microfluidics and Nanofluidics

Date: May 23rd

Place: Dalian

Contact: Dalian Institute of Chemical Physics, CAS

2012 China International Heavy Machinery Equipment Fair

Date: May 10th

Place: Beijing

Contact: Chinese Mechanical Engineering Society

14th International Friction & Sealing Material Technology Exchange and Product Exhibition

Date: May 23rd

Place: Xi'an

Contact: China Friction and Sealing Material Association

The 16th International Symposium on Electromagnetic Launch Technology

Date: May 15th

Place: Beijing

Contact: China Electrotechnical Society, CAST

2012 China International Machinery and Electronics Expo

Date: May 24th

Place: Ningbo

Contact: The China Machinery Industry Federation

2012 International Solar Energy and PV Projects Exhibition and Solar PC Conference

Date: May 15th

Place: Shanghai

Contact: Shanghai S&T Development and Exchange Center

Swiss Day at Tongji University

Date: May 24th

Place: Shanghai

Contact: www.swissnexchina.org

Swissnex China Lecture: Intellectual Property

Date: May 15th

Place: Shanghai

Contact: Swissnex China

2012 World Congress on Medical Physics and Biomedical Engineering

Date: May 25th

Place: Beijing

Contact: Chinese Society of Biomedical Engineering, CAST

1st Low-Carbon City Forum-Top level design of low carbon city

Date: May 23rd

9th International Conference on Molten Slags, Fluxes and Salts

Date: May 28th

Place: Beijing



Contact: The Chinese Society of Metals,
CAST

**1st International Symposium of Polymer
Ecomaterials**

Date: May 28th
Place: Beijing

Contact: Changchun Institute of Applied
Chemistry, CAS

**The 7th International Green Energy
Conference**

Date: May 28th
Place: Dalian
Contact: Dalian Institute of Chemical Physics

June 2012

**5th International Symposium on Polymer
Chemistry**

Date: June 2nd
Place: Changchun
Contact: Changchun Institute of Applied
Chemistry, CAS

Contact: Institute of Computing, CAS

**2012 4th Shanghai International Wear-
Resistant Materials, Industrial Ceramics
Exhibition and Mining Equipment
Exhibition**

Date: June 13th
Place: Shanghai
Contact: Shanghai S&T Development and
Exchange Center

**7th International Symposium on High
Technology Polymer Materials**

Date: June 3rd
Place: Xi'an
Contact: Institute of Chemistry, CAS

**The 3rd (2012) Shanghai International
Surface Engineering and Ceramics
Industry EXPO**

Date: June 13th
Place: Shanghai
Contact: Shanghai S&T Development and
Exchange Center

**10th International Symposium on Polymer
Physics**

Date: June 4th
Place: Chengdu
Contact: Institute of Chemistry, CAS

World Dairy Expo and Summit

Date: June 16th
Place: Zhengzhou
Contact: China Great Wall International
Exhibition Co. Ltd.

11th Brain Connectivity Workshop 2012

Date: June 6th
Place: Chengdu
Contact: Institute of Automation, CAS

**The 2nd China International Exhibition on
Coal Processing & Utilization and Coal
Chemical**

Date: June 6th
Place: Beijing
Contact: China National Coal Association

The 12th International PGE Symposium

Date: June 18th
Place: Guiyang
Contact: Institute of Earth Chemistry, CAS

6th International Weed Science Congress

Date: June 18th
Place: Beijing
Contact: China Society of Plant Protection
CAST

**8th China International Pressure-casting
Congress and Exhibition**

Date: June 19th
Place: Shanghai
Contact: Shanghai S&T Development and
Exchange Center

**The 33rd International Conference on
Programming Language Design and
Implementation**

Date: June 11th
Place: Beijing

**4th International River Land-scape
Summit**

Date: June 23rd
Place: Wuhan
Contact: Wuhan Botanic Garden, CAS