Content

Science News from Chinese Media in August 2006
Collected and Compiled by the Helmholtz Beijing Office

Helmholtz News in China

The Helmholtz Association and the China Scholarship Council have come to the last stage of finalizing an agreement on young scientist exchange. In this agreement, which should be signed on the 14th September, up to 50 selected Chinese students should be jointly founded for a further education in the Helmholtz research centres every year. It concerns only three types of people: PhD students who are to accomplish their degree in Germany; Sandwich PhD who will just spend sometime in Germany doing their laboratory research in a partner group; also Post-doctors. The first group of Chinese will be sent into Helmholtz centres in September 2007. According to this agreement, CSC will also provide assistance to the German young scientists who are selected for a stay or further education in China.

Prof. R. Balling, scientific director of HZI, is from 26th July again for two weeks in China. As a guest professor of the prestigious Beijing University, he has a partner research group there, which has also been founded by the Linda-Bill Gates Foundation. LBGF requires both parties to work closely on the humanized mouse models against HIV and hepatitis. Another excellent group working on mouse genetics has been identified in Nanjin University, Province Jiangshu. Prof. X. Gao, who returned from US in 2002, has attracted much of Prof. Balling's attention.

Dr. C. Stein, CEO of ASCENION, an IPR management company co-founded by the Helmholtz health research cenres, has come over to China. The first goal of this visit is to help HZI to draft the IPR agreement concerning the future cooperation with Beijing and Nanjin University. His second mission is to explore the possibility of jointly organizing a training programme on IPR assessment and management in the field of biotechnology and pharmacology, and taking a few young Chinese for a several months practice in Germany. This initiative has raised very positive response both among the Chinese patent firms, university IPR people and also the Chinese ministry department. Political and financial support from government departments is promised.

There is also some new progresses on the Sino-German cooperation on the Environmental Impacts of the Three Gorges Dam. The Standing Office of the Three Gorges Dam Construction Commission and the Chongqing Committee of Science and Technology have vowed to coordinate their efforts and submit their concrete research proposals to MOST, the Chinese Ministry of Science and Technology. MOST officials have greeted this coordination.

Helmholtz Beijing Office

1 Science News

1.1 Energy

A grid-connected PV power station operational in Tibet
(CAS, 2006-08-22)

A 100 kW demo photovoltaic (PV) station was formally connected to the grid recently in Yangbajain (Yangbajing) in southwest China's Tibet Autonomous Region. It is the first PV power station with parallel connection to the high voltage grid in China.

With the support from the Ministry of Science and Technology, the Station, a Sino-South Korea S&T cooperation project, was built up by researchers from the CAS Institute for Electrical Engineering and Beijing Corona Science & Technology Co., Ltd.

While implementing the project, the researchers and engineers carried out studies on the impact of the distributed power supply of a grid-connected solar PV power station on the grid, the relationship between the PV station and the other power plants in the grid, and change rules during the load alteration.

Through the design, construction and operation practice of the power station, the researchers and engineers obtained various local environmental parameters such as solar energy resources, monitored the operation data of the PV power station, and made a technological and economical estimation of the PV power station in the desert. They also performed a feasibility study on the construction of a 1~10 MW large-scale PV power station.

CAS scientists make breakthrough in converting coal to petrochemicals
(CAS, 2006-08-25)

A research project on dimethyl ether/methanol-to-olefin (DMTO) technique jointly developed by the CAS Dalian Institute of Chemical Physics and two local firms has achieved a landmark research breakthrough. As announced at a recent press conference held in Beijing, the technology has realized a 100% conversion rate of methyl alcohol and a higher-than-90% selectivity ratio of light olefins (such as ethylene and propylene) at an experimental facility for industrial production with a daily capacity up to 50 tons.

China to start building its biggest nuclear power station before 2007
(China News, 2006-08-30)

China has invested 60 billion yuan to build its biggest nuclear power station in the southeast of Haiyang, Shandong Province. The first phase of the project will start in the end of 2006.

Currently, the preparatory work of the project has already been completed. The power station is scheduled to start operation in 2010. The construction of the supporting project of Haiyang Nuclear Power Station -- Haiyang Pumped Storage Power Station -- is well on the way, too. The annual capacity of the two power stations will be 6 mega kw, nearly as much as 90% of the capacity of Three Gorges Hydropower Station.

China Power Investment Corporation is responsible for the construction of Haiyang Nuclear Power Station and its supporting project. The first phase of the project will provide 2 mega kw of capacity according to the construction plan. According to the feasibility report of the project, written by the State Development and Reform Commission, Haiyang Nuclear Power Station will be able to hold a maximum capacity of 8.7 mega kw.

1.2 Earth and Environment

China mulls diverting Tibet's water to help NW
(China News, 2006-08-02)

China is considering spending 300 billion yuan in diverting water from the upper reaches of Yangtze River at the Qinghai-Tibet Plateau to the upper reaches of the Yellow River at the thirsty northwestern areas.

Li Guoying, head of the Yellow River Conservancy Commission under the Ministry of Water

Resources, said on Tuesday at a press conference that the western route of the South-to-North Water Transfer Project will use a 300 kilometer-long relay of tunnels and channels to divert water from the Yalong, Dadu and Jinsha Rivers that flows from the Qinghai-Tibet Plateau into southwest China to the upper reaches of the Yellow River.

The final construction timetable of the western route has not been nailed down, but the project is planned to be constructed in three phases. In its first phase, the project will transfer 4 billion cubic meters of water annually to the Yellow River. And after the third phase of the project is completed, the project will divert 17 billion cubic meters of water a year.

"When the economic and social development of the northwest reaches a certain level and the potential of water saving measures is exhausted, this project will be launched," Li said.

He said the route is not especially long, but it's technologically challenging.

Rocky desertification regions enclosed to plant trees

(China News, 2006-08-03)

In southwest China, there are many karst rocky desertification regions. In order to protect them from being damaged by human activities, China has enclosed these regions for afforestation.

There are now 300,000 square kilometers of rocky desertification regions in China. Among these, 110,000 square kilometers of areas are seriously affected, and such areas are expanding at a rate of 2-4% a year. Rocky desertification has become one of the most serious problems for the ecological environment of southwest China.

Many of these regions are located in Guizhou, Guangxi, Yunnan, Sichuan, Hunan, Hubei, Chongqing and Guangdong, and large areas of rocky desertification lands are located especially in Guizhou, Guangxi, and Yunnan. Rocky desertification damages the ecosystem of karst regions, reduces the acreage of arable land, and creates natural disasters. People living in these regions suffer from poverty and economic development there is seriously affected.

“Large-scale felling of trees is mainly responsible for rocky desertification,” said Xiong Kangning, a professor from the Guizhou Normal University. The best way to fight against the problem, he suggested, was to enclose the mountains for afforestation.

Over the past five years, the central government has invested 200 million yuan to plant 17 million mu of trees in Guizhou, Guangxi and Yunnan.

Round-the-world research ship docks in Xiamen

(Xinhua Net, 2006-08-07)

China's first research ship to circumnavigate the globe returned from its 18th voyage yesterday, docking in East China's coastal city of Xiamen to give the public a chance to understand more about what it does.

The latest mission lasted for 86 days and focused on the northern Pacific Ocean. It was a follow-up voyage for last year's first-ever round-the-world oceanic research mission, and it brought back more than 800 kilograms of mineral deposits, most of which are rich in cobalt.

Setting off from East China's coastal city Qingdao in mid-May, Dayang Yihao (Ocean No. 1) traveled 13,080 nautical miles.

Chief Scientist Chu Fengyou said studies on the distribution of valuable minerals on the ocean

floor were carried out "to accumulate accurate data for future deep-sea mining operations, and results will be submitted to the United Nations for the benefit of all mankind."

He said the further exploration of marine resources for better recognition, utilization and protection of the ocean is one of the key necessities of scientific development worldwide, and the Chinese Government is carrying out its international obligations to meet rising demands from society for oceanic development."

The UN International Seabed Authority granted China the right to conduct exploration work in a 150,000-square-kilometre area of international waters in 1991 and the nation acquired a contract area of 75,000 square kilometres in the region for exclusive and priority exploration years later, after it gave the rights to the other half back to the UN.

"Dayang Yihao" will leave Xiamen today for new journeys in the South China Sea and, according to Captain Lu Huisheng, more major voyages are scheduled for the latter part of the year and next year.

"The new missions will focus on the southern Pacific Ocean and Indian Ocean," he added.

The 5,600-ton Dayang Yihao, which boasts the most advanced deep-sea research equipment in the world, has traveled 260,000 nautical miles in total, equivalent to circling the equator 12 times.

Hundreds of Xiamen citizens took the opportunity to visit the ship yesterday, the first time it has opened to the Chinese public outside Qingdao. Crew and scientists were on board to explain the workings of the ship, provide demonstrations of equipment and answer questions.

"This is a great chance for families to learn about our oceans and how real working scientists on board live," said Chu.

There are more than 10 laboratories on board the ship, which are devoted to research of gravity, ocean currents, magnetism, seism, comprehensive electrons, geology and biological genes.

Huang Qijie, an 11-year-old primary schoolboy, said he enjoyed the high-tech show very much, and was particularly amazed at the visual deep-sea sampling system that can transmit topographic photographs from 6,000 metres underwater to the surface and can take mineral and biological samples on the ocean floor.

"If possible, we want to invite people of all ages to come out and see what we are doing with the ocean," said Captain Lu, noting that the ship is usually too busy to be available for the general public to visit.

"However, we did manage to open our doors in Micronesia and Jamaica during last year's global voyage," he added.

Technology to turn garbage into building bricks

(Xinhua Net, 2006-08-09)

A new technology will be used to convert garbage into construction materials, said the Baoshan District Public Sanitation Bureau and a local environmental company.

The technology, developed by Shanghai Tiannan Environmental Protection Technology Co Ltd, can convert garbage into bricks. The bricks can then be used for sidewalks or pathways in parks, according to officials.

It will be used to treat 3.5 million tons of garbage at a dump site in suburban Baoshan.

"The technology can realize 100 percent resource utilization of the waste," said Zhu Yuchao, vice

office director of the Shanghai Promotion Association of Tech-transfer, which introduced the technology to the Baoshan government. "The workshop beside the dump won't cause any pollution."

Tiannan estimates that the 3.5 million tons of garbage will create 1.4 million tons of construction materials.

The company first compresses the waste and sterilizes it several times. An additive then turns the waste into bricks. The technology was patented in 2003.

At present, there are about 200 garbage dumps in Shanghai, most in suburban areas, according to the Shanghai Public Sanitation Bureau.

"Getting rid of waste has always been a problem and it's really hard to solve," said Liu Weiguang, a bureau spokesman.

In the 1980s and early 1990s, when few garbage treatment facilities existed, waste was piled up in remote places, Liu said.

As the city developed, however, garbage dumps became a headache for urban planners. Yet, the public sanitation officials face two major problems - lack of money and the technology to ensure any change won't cause new pollution, according to Liu.

The garbage dump in Baoshan - one of the biggest in the city - has troubled the sanitation bureau for years.

According to the district's plan, the site will eventually be developed into a residential and commercial area. To transport the garbage to a landfill would cost about 240 million yuan (US$30 million), according to Zhu.

"It will still cost about 200 million yuan if we use the new technology," said Zhu. "However, it won't create new pollution and will also give us construction materials."

The new technology has already passed quality control and environmental safety tests. The company also completed a trial run.

The association hopes it will be a better way to handle waste in addition to traditional methods - burning, landfill or biochemical treatment.

CAS to set up a new institute for coastal research

(CAS, 2006-08-10)

Joining hands with the Provincial Government of Shandong, CAS is to set up a new institute for coastal research at Yantai, a beautiful seaside city at the northwest tip of the Shandong Peninsula. A leading group and a preparatory office for the new institute have recently been established.

Preliminarily named as the Yantai Institute of Coastal Research for Sustainable Development (YIC), the new lab is designed to address various issues concerning coastal regions like the development of water and energy resources, disaster control and prevention, and the off-shore environment, says SHI Ping, head of the preparatory office and director of the CAS South China Sea Institute of Oceanology in Guangzhou.

China should work harder to protect lakes and swampland, experts

(China News, 2006-08-10)

130 experts gathered in Xining this week urging the government to pay more attention to the

ecological problem of lakes and swamplands and make more efforts to protect them.

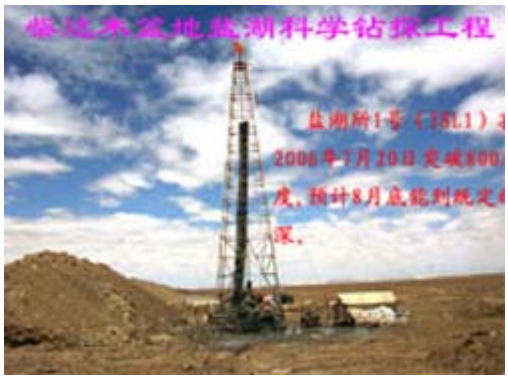
Experts said that in China, natural and semi-natural lakes accounted for 21.7% of swampy land area, and only 40% of them were protected effectively. For the rest of the natural lakes, especially those in the Qinghai-Tibet and Yunnan-Guizhou plateaus, their area had shrunk considerably. As a result, freshwater resources had reduced greatly.

At present, 30% of the big lakes across the country have been polluted. The eutrophication problem in these lakes is serious and in some places, the lakes are changing into marshlands. Protective measures are relatively backward and there are no sufficient funds for use in the protective work.

Experts therefore suggest that China should take measures immediately to protect the lakes and swampy land in the country. They advise that the government should publish regulations on protection of the swamplands and nature reserves in the country.

Meanwhile, the government should set up a monitoring system for the lakes and swampy areas, conduct more scientific researches and provide more technical support for their protection.

Scientific drilling in Sanhu Region of Qaidam Basin
(CAS, 2006-08-17)



On August 13, a scientific drilling penetrated 1050.24 meters into the salt lake sediment in the Sanhu (three lakes) area of the Qaidam Basin in northwest China 's Qinghai province, well-known for its salt lake resources. It is the deepest drilling in the region so far.

The 62-day drilling operation, named ISL1, started on June 6, 2006 by researchers from the CAS Qinghai Institute for Salt Lakes in collaboration with the CAS Institute of Microbiology, the CAS Institute of Geology & Geophysics and the Lanzhou Center for Hydrocarbon Research.

Besides the 947.52m-long core with an average recovery rate of 94.73%, the scientists sampled 271 specimens of halophilic bacteria, 30 specimens of methane bacteria and 51 specimens of natural gas from drilling site. Among the four obvious gas showings during the drilling, one at the depth of 185m shows a more than 3m-high blowout. This indicates a promising perspective for exploiting the locality's shallow natural gas deposits.

The drilling operation is designed to find out the natural resources badly needed for the national development such as salt sediments, natural gas and microbiological resources in extreme conditions in the Qaidam Basin. Its research is focused on the following four aspects: paleo-environmental mechanism through for the salt forming in the lakes; the biogenic mechanism of the natural gas trove in the Quaternary; the evolutionary course of the characteristics of the salt lakes, and paleo-climate data recorded under extreme conditions.

The research project has been carried out by combining the formation about changes in the special natural conditions innate to the Qinghai-Tibet Plateau (such as the hostile environment on the Plateau, the westerly circulation and East Asian monsoon) and exploitation of the natural legacies

in Qinghai Province such as the salt resources, biogenic gaseous and microbe deposits.

China's salt lake science was founded by the pioneering research work conducted by Chinese geologists including CAS Members LIU Dagang, YUAN Jianqi, ZHANG Pengxi, GAO Shiyang. Based on this academic build-up, the drilling operation at the Qaidam Basin will turn a new page for further exploration of the salt lake resources. It is expected to provide eye-opening theories on the mineralization and biogenesis of the salt and hydrocarbon trove during the Quaternary epoch in the Basin so as to update people's understanding of their generative processes and enrich the contents of related disciplines. In practical applications, in addition, the research project is to offer innovative scientific grounds for mineral prospecting & comprehensive exploitation of China's largest salt lake of Qarhan in the Basin and for microbiological engineering in the national production of chemical salts as well as the increase of national hydrocarbon output. Furthermore, the project will make substantial contributions to the province's economic development, supplementary reserves in the proven resources set for the national program of natural gas shipment from the hinterland China to the coastal areas and the implementation of the national program for the western China's large-scale development.

While the work on ISL1 is being finished, the design and preparations for the drilling of the ISL-2 and ISL-3 are under way.

Scientist decodes air pollution in mountain glaciers
(CAS, 2006-08-23)

Air pollution caused by human activities has left its mark in the glaciers of the Tianshan Mountains in Xinjiang, at least 105 km away from the hustle and bustle of Xinjiang's regional capital, Urumqi.

CAS scientists say they have found evidence of air pollution in the Tianshan Mountains in a 14-meter-long ice core formed between 1955 and 1998.

The peak of the Tianshan Mountains is 5,445 meters above sea level and a geological label of the Xinjiang Uygur Autonomous Region, which covers one sixth of Chinese territories. The Tianshan Mountains are also famous among tourists and climbers.

The ice core is located on the Heyuan-1 Glacier east of Urumqi in an area surrounded by deserts and previously believed to be free from human influence.

"We have analyzed its organic acid content, which we think is a result of air pollution and acid rain," said Li Xinqing, a geochemist from the CAS Institute of Geochemistry (IGCAS) in Guiyang, southwest China's Guizhou Province.

The analysis of the acid content suggests that the air over Tianshan Mountain has been contaminated by pollutants from forest fires, vehicle emissions and industrial waste in Urumqi and its surrounding regions.

"The organic acid content can reflect the direct impact of human activity on the environment, even in uninhabited areas," said Li, a senior researcher with the State Key Laboratory of Environmental

Geochemistry attached to IGCAS.

Glaciers or icecaps are thought to be the best recorders of organic substances in the atmosphere as well as changes in their chemical composition.

The researchers also found abrupt changes in the organic acid content in the "ice chip" in the 43 years between 1955 and 1998. "The average content change is basically consistent with the industrial development and environmental protection efforts over the years," said Li.

Based on the research finding, he has co-authored a thesis with Qin Dahe, head of China Meteorological Bureau, and Ding Wenci, a scientist with the Chinese Academy of Sciences.

The thesis is published in the latest supplement edition of the *Bulletin of Mineralogy, Petrology and Geochemistry*, a quarterly science magazine published in China.

Air quality is a pressing issue worldwide now that more scientific evidences have linked fine aerosol with human illnesses.

China's ecological environment worsening
(China News, 2006-08-25)

Forty percent of China's cities suffer from moderate or heavy air pollution after its rapid economic development over the past two decades.

China's ecological environment has deteriorated according to two major pollution indicators in the first half of the year, said an environmental protection official in Beijing Friday.

The amount of chemical oxygen demand (COD), used to estimate the amount of organic matter in waste water, rose 4.2 percent while discharges of sulfur dioxide (SO2) were up 5.8 percent, said Yang Chaofei, an official with the State Environmental Protection Administration.

The government would impose a stricter system for environmental protection responsibility on officials who would be evaluated on their performance in enforcing protective measures, he said.

Forty percent of China's cities suffer from moderate or heavy air pollution after its rapid economic development over the past two decades.

Li Wenhua, head of China's ecological compensation mechanism and policy research team, said lawmaking was vital to environmental protection.

"The imperative task in China is to define through lawmaking the scope, subjects, methods, compensation standards and set up a transfer payment system favorable to ecological protection." he said.

Efforts pay off at reviving pastureland ecosystem
(CAS, 2006-08-29)

A research project for reviving degenerated pastureland in the Sanjiang headwater region has recently passed the appraisal check of a panel of experts entrusted by the Ministry of Science and Technology.

The term of Sanjiang means three mighty rivers: the Yangtze, Yellow River and Lancang River

(the up-stream of the Mekong River), all of whose mainstreams being originating from west China's Qinghai Province.

With the support from the National Key Technology R&D Program, the project, under the title of Vegetation-restoring Tests and Related Technology on the Typical Ecologically Degenerated Pasturelands on the Sanjiang Headwater Area, was implemented by scientists at the CAS Northwest Institute of Plateau Biology in Lanzhou.

In cooperation with the Provincial Academy of Livestock Veterinary Medicine, the CAS scientists have established a 200,000-square-meters experiment and demonstration zone for promoting vegetation revival on various tracts of the pastureland by integrating relevant agronomic practices and in line with the characteristics of the native floral populations and soil conditions.

Their work included the investigation of the seed banks on various soil conditions, the measurement of soil characteristics and the germination tests on the high-elevation and frigid meadows. Their analyzing assays also involved the enzyme's bio-activity in the grasslands at different degenerating stages, the ups and downs in the floral enzyme's anti-oxidizing bio-activity, related quantities of the anti-oxidants or protein content as well as their interaction.

In light of the local pedological settings, the scientists conducted various experiments on a host of new technologies by applying the plant growth modifier, photo-synthesis promoter, ABT root-growth powder, anti-adversity enhancer, recipe for compatibility of chemical fertilizers, etc. By making field estimation, the experts succeeded in raising the grass coverage by 35%-45% on a degenerated plot of pastureland and the forage-yielding rate by 25%. On a degenerated stretch of grassland in medium degree, the proportion of the superb herbage species may go up by 10%.

1.3 Health

First institute on Tibetan medicine unveiled

(People's Daily, 2006-08-01)

The first institute of Tibetan medicine was launched on Tuesday at the Tibet Autonomous Regional Hospital of Tibetan Medicine.

Zhamdui, president of Tibet Autonomous Regional Hospital of Tibetan Medicine, hoped that the new institution would help modernize research on Tibetan medicine, which is said to have a history of 2,300 years.

"The new establishment will play an active role in rescuing, researching and compiling ancient documents on Tibetan medicine and promoting relevant clinic application," said Zhamdui.

Businesses that cater to Tibetan medicine have become one of the six major industries supporting regional economic development of Tibet. The new institute, together with the regional hospital of Tibetan medicine and a Tibetan medicine factory, will optimize the use of resources, talent, funds and technologies.

As one of the world's major traditional medicines, Tibetan medicine has found growing interest among people around the globe. English, French, German and Russian versions of Tibetan medical books are now available, and universities and research institutions in countries such as

India, Britain, the United States, France and Germany offer specialties on Tibetan studies and Tibetan medicine.

Chinese medicine promises hope for lung cancer
(China News, 2006-08-01)

A new Chinese medicine for treating lung cancer officially entered the market on Sunday, promising new hope for patients, researchers said.

After clinical trials on hundreds of patients, the new drug, approved by the State Food and Drug Administration (SFDA), had proved to be more effective than chemotherapy in controlling the tumor, strengthening the immune system, prolonging life and improving life quality, said Pu Bingkui, chief researcher of the China Academy of Chinese Medical Sciences.

If the herbal drug was applied in conjunction with chemotherapy, it could reduce the toxicity of the chemical agents to the alimentary tract, blood, liver and kidneys, Pu said.

The medicine comes in a form of dry granules, which the researchers say can best preserve the biological quality of the natural Chinese medicine.

Chinese medicine had fewer side effects in treating tumors and was relatively inexpensive, said She Jing, director of the State Administration of Traditional Chinese Medicine. It was quite promising to find a role for Chinese medicine in the treatment of tumors.

Lung cancer is one of the top killers in China. It affected about 500,000 people last year and the number is growing by 26.9 percent annually. It is estimated that China will have one million new lung cancer patients by 2025.

They don't have to bear such pain
(China News, 2006-08-01)

Fear of being addicted, and subconscious encouragement of enduring the pain, are the two factors preventing most Chinese cancer patients from using morphine to ease their pain. Only 41% of them accept proper analgesic treatment. In fact, to control the pain with medicine under doctors' supervision is not harmful at all, and it can greatly improve the life quality of the patients.

Currently there are 4.5 million cancer patients in China, to be joined by another 1.8 million every year on average. The disease causes a death toll of 1.4 million every year, many of whom actually died of unbearable pain. Statistics show that more than 60% of cancer patients suffer from pain, and 70% of terminal cancer patients complain of "unbearable" pain.

WHO once promised to ease the pain of all cancer patients around the globe within 2000; but even today it has a long way to go to realize this humanitarian promise. In China, the way is even longer, as every cancer patient in the country only consumes one third of the amount of morphine consumed per capita in other developing countries. The figure is only 1/170 compared with developed countries.

Three hundred and two patients in Guangdong Province accepted the analgesic treatment suggested by WHO, and the life quality of 86% of them has been greatly improved.

The newly published pharmacopoeia in China no longer puts limitation on the using of morphine on cancer patients, which will offer them a hope to live on, without pain.

HIV-infected persons found in all the districts in Beijing
(China News, 2006-08-04)

The statistics of AIDS epidemic in Beijing in 2006 were first publicized on the AIDS Prevention Meeting held by Chaoyang District Disease Prevention and Control Center on August 2, which show that 313 new patients and HIV-infected persons have been found in Beijing. It was also the first time to find HIV-infected persons in Pinggu District, which had been considered the only zero-AIDS district in the city. Now the accumulative total of AIDS patients and HIV-infected persons are 3,142 in the city, a new record.

Among the infected persons, 36.7% got the disease from sharing injectors in intravenous injection of addictive drugs. Thirty-four percent are sexually infected, while less than 16% are the victims of illicit blood transfusion, or mother-baby infection. Other 14.9% claim that they don't know how they were infected.

Currently most of the HIV-infected persons in Beijing are aged from 20 to 49. What makes the public worried most is that the epidemic is not limited to the traditional high-risk group like drug addicts, prostitutes and homosexuals only. General public like housewives and children should watch out for the disease, too.

CAS scientists find a new mechanism for neuron polarity formation
(CAS, 2006-08-08)

The human brain is a network made up of hundreds of thousands of nerve cells, or neurons. Each neuron connects and regulates one other through a synapse in some way so as to control various levels of physical activities ranging from respiration to recognition. Although huge differences exist between the nerve cells, they share a common feature in structure: a narrow and long axon and many complicated dendrites. The development process for this unique form is called the polarity formation, which is the basic foundation for the nervous system to constitute a functional network.

Scientists have found that the asymmetric distributions of activities of the protein kinases Akt and glycogen synthase kinase 3beta (GSK-3beta) are critical for the formation of neuronal polarity. However, the mechanisms underlying the polarized regulation of this pathway remain unclear. A recent work by a research group headed by WANG Yizheng from the CAS Institute of Neuroscience has shed new light on the mechanism for the polarity formation. The work was reported at the July 31 issue of the *Journal of Cell Biology*.

As a result of two-and-half-year hard work, Wang and his students YAN Dong and GUO Li discovered that the instability of Akt regulated by the ubiquitin-proteasome system (UPS) is required for neuron polarity. Preferential distribution in the axons was observed for Akt but not for its target GSK-3beta. A photoactivatable GFP fused to Akt revealed the preferential instability of Akt in dendrites. Akt but not p110 or GSK-3beta was ubiquitinated. Suppressing the UPS led to the symmetric distribution of Akt and the formation of multiple axons. These results indicate that local protein degradation mediated by the UPS is important in determining neuronal polarity.

New SARS vaccine under clinical trials in Guangzhou
(Xinhua Net, 2006-08-15)

China's first clinical gene vaccine that fights SARS, or severe acute respiratory syndrome, is expected to be launched after clinical testing.

The news came after the opening of a genetic vaccine research centre last week in Guangzhou, capital of South China's Guangdong Province.

The centre, a co-operative project between Guangzhou-based Sun Yat-sen University and the US-based University of Pennsylvania, is the first of its kind in Guangdong Province.

"We will conduct research into vaccines against tropical epidemic diseases that greatly threaten human health," said Li Gang, vice-president of the Third Affiliated Hospital of Sun Yat-sen University.

According to Li, the centre is currently working on research into vaccines against AIDS, SARS, dengue fever, Avian flu and other epidemic disease.

In terms of a genetic vaccine against SARS, Li said the research has already been conducted at the University of Pennsylvania.

Further clinical trials on the vaccine will be conducted after its approval by the State Food and Drug Administration, according to Li.

"After clinical testing, China will see its first genetic vaccine against SARS," Li said in an interview with China Daily yesterday.

The SARS vaccine has been tested on animals and proved a success, according to Gao Guangping, vice- director of the research centre.

"The genetic vaccine is totally different from other vaccines; it has been developed from the gene of a disease source, such as animals," Gao said.

He said civet cats had not developed SARS after being vaccinated by the genetic vaccine.

"The genetic vaccine is able to deal with any variation of the SARS virus," Gao said.

He also revealed that China would soon begin testing a genetic vaccine against AIDS on humans.

According to Gao, co-operation on vaccine research at the centre has been approved by the US Department of Defence, the State Department and the Department of Commerce, and China's Ministry of Education.

Sun Yat-sen University signed an agreement with the University of Pennsylvania on the vaccine research last September.

According to the agreement, both sides will share the intellectual property rights of genetic vaccines.

He said investment in the co-operation projects totalled 20 million yuan (US$2.5 million), which has come from the Guangzhou municipal government, Sun Yat-sen University and the Third Affiliated Hospital of Sun Yat-sen University.

Studies shed light on pathogenic mechanism of SARS virus

(CAS, 2006-08-16)

Outbreak of the severe acute respiratory syndrome (SARS) in 2002 caused alarm across the world. A corona virus in humans, called SARS-CoV, has been identified as the causative agent for this killer disease. It is discovered to have a large single-positive-strand RNA genome that contains as many as 14 open reading frames (ORF), which are sequences of DNA or RNA that can be translated into a protein. Identification and characterization of new functional proteins from the

ORFs will be helpful for understanding the pathogenesis of SARS-CoV.

A recent study by CAS researchers has revealed a new pathological mechanism for the ion channel 3a protein, an ORF of SARS-CoV that they brought to light in 2004. Reported in the August 14 issue of the *Proceedings of the National Academy of Sciences* (PNAS), the work is considered helpful in development of effective drug candidates for SARS therapy.

Over the past two years, a research team led by SUN Bing from the CAS Institute Pasteur of Shanghai, teaming up with colleagues both inside and outside CAS, has been trying hard to expound ion channel 3a protein and its function in the generative mechanism of the SARS endemic. As a result, they confirmed the 3a protein expression and investigated its localization at the surface of SARS-CoV-infected or 3a-cDNA-transfected cells.

Their experiments showed that recombinant 3a protein can form a homotetramer complex through interprotein disulfide bridges in 3a-cDNA-transfected cells, providing a clue to ion channel function. The putative ion channel activity of this protein was assessed in 3a-complement RNA-injected Xenopus oocytes by two-electrode voltage clamp. The results suggest that 3a protein forms a potassium sensitive channel, which can be efficiently inhibited by barium. After FRhK-4 cells were transfected with a siRNA, which is known to suppress 3a expression, followed by infection with SARS-CoV, the released virus was significantly decreased, whereas the replication of the virus in the infected cells was not changed.

Experts say that as no effective drugs or vaccines against SARS-CoV are available yet, the identification of new viral proteins and the elucidation of their functions will provide potential targets for design of drugs or vaccines against the kill disease.

New progress in bio-adhesion by contact mechanics

(CAS, 2006-08-16)

Ever more experiments show that a cell is very sensitive to the mechanic force and deformation, and its shape, structure and functions change accordingly. Protein molecules play an important role in the cellular adhesion and signal transfer. For example, the adhesive contact between two cells or a cell and its base is found to be formed via adhesion between a receptor and its ligand, which is a protein molecule. On the other hand, being acting by a mechanic force, a protein molecule may be deformed and in this condition, the adhesive strength between a receptor and its ligand will be reduced. In recent years, the theory of contact mechanics saw many applications and encouraging developments in explanation of adhesive mechanisms of some organism such as gecko, flies and cricket.

In cooperation with a GAO Huajian from Brown University, CHEN Shaohua from the CAS Institute of Mechanics recently revealed a possible mechanic mechanism for a cell or a bio-molecule to perceive of environmental changes. The work was published in a recent issue of Journal of the Mechanics and Physics of Solids.

The researchers established a generalized JKR model for non-slipping adhesive contact between two dissimilar elastic spheres subjected to a pair of pulling forces and a mismatch strain. They explore the full elastic solution to the problem as well as the so-called non-oscillatory solution in which tension and shear tractions along the contact interface is decoupled from each other. The model indicates that the mismatch strain has significant effect on the contact area and the pull-off

process. Under a finite pulling force, a pair of adhering spheres is predicted to break apart spontaneously at a critical mismatch strain. This study suggests an adhesion mediated deformation sensing mechanism by which cells and molecules can detect mechanical signals in the environment via adhesive interactions.

Clinical trials show Chinese AIDS vaccine safe and possibly effective: government
(People's Daily, 2006-08-19)

At least 800 volunteers will be needed for China's second and third phases of AIDS vaccine trials, health officials said Friday.

The second phase of clinical trials of China's AIDS vaccine would need at least 300 volunteers and the third phase at least 500, said Sang Guowei, director of the National Institute for the Control of Pharmaceutical and Biological Products.

Sang revealed the plan at a press conference held jointly by the State Food and Drug Administration (SFDA) and Ministry of Science and Technology.

The later trials would involve the participation of high-risk groups, said Chen Jie, deputy director of the Guangxi Regional Center for Disease Control and Prevention (CDC).

The first phase of clinical trials indicates China's first AIDS vaccine is safe and possibly effective, government officials announced at the press conference after a two-month-odd assessment.

"Forty-nine healthy people who received the injection showed no severe adverse reactions after 180 days, proving the vaccine was safe," said Zhang Wei, head of the pharmaceutical registration department of the SFDA.

"The recipients appeared immune to the HIV-1 virus 15 days after the injection, indicating the vaccine worked well in stimulating the body's immunity," he told the press conference.

The results mark the end of the first phase of the clinical trials of the AIDS vaccine, which focused on the vaccine's safety.

The first phase was launched in Nanning, capital of Guangxi Zhuang Autonomous Region, on March 12 last year. The volunteers, 33 men and 16 women aged between 18 and 50, had received the vaccine by Oct. 20.

They were divided into eight groups. Six groups received a single AIDS vaccine and two other groups were injected with a combined AIDS vaccine, according to the Guangxi CDC.

Some recipients' cells and body fluids in the combined group appeared immune to the HIV-1 virus, said Sang Guowei.

"The HIV-1 specific cells injected into the recipients were the DNA fragments of the virus which don't cause infection," he told Xinhua.

A total of 344 blood samples were taken from the volunteers with each one donating five to ten samples, said Kong Wei, leader of the research team and a professor at Jilin University.

By June, all the volunteers had completed 180 days of observation and showed no serious ill effect, the Guangxi CDC announced on June 11.

The volunteers were paid 2,000 yuan (250 U.S. dollars) for their participation, which was set by the Chinese Medicine and Ethnics Society.

They signed an agreement with the Guangxi CDC for getting the injection, which is responsible for future possible adverse reactions from the vaccine, said one of the volunteers Peng Zhi.

"We were told the vaccine contains no live HIV virus and we wouldn't be infected by getting the injection, and only partial inflammation or pain might occur due to individual differences," said Peng, a student from the Guangxi Medical University.

Half of the volunteers are from the university. Others include government employees.

The scientists were analyzing the results of the first phase and the SFDA would approve the second phase after a stringent assessment, SFDA officials said.

"It is a breakthrough in China's AIDS vaccine development, which was achieved by joint support from the central and local governments, scientific researchers, the public and international partners," said Liu Yanhua, vice minister of science and technology.

The State Food and Drug Administration approved the first phase of clinical trials of the new AIDS vaccine in November 2004.

Before that, China had participated in several human trials of AIDS vaccines, but they were all carried out in other countries.

The new vaccine must undergo three phases of clinical trials before going into production. The second phase will assess both safety and immunity nature of the vaccine while the third will target the protection it offers for high-risk groups.

By the end of 2005, China had recorded more than 140,000 people infected with HIV. Officials estimate that China has approximately 650,000 people living with HIV, including approximately 75,000 AIDS patients.

A group of scientists and experts have advised the State Council, the Chinese cabinet, to raise funding for and encourage innovation and cooperation in research, warning the disease is spreading quickly to ordinary people.

According to the report disclosed at Friday's press conference, there have been 120 AIDS vaccine tests on humans throughout the world. The ongoing tests in China include 29 in phase I, four in phase I and II, three in phase II and one in phase III.

The phase-III tests on the first-generation vaccine failed, the report said.

China's research into AIDS vaccines has been going on for 15 years but the country does not have the intellectual property rights over its AIDS vaccines in trial and the research has limited global influence, the report said.

The total infections of HIV in the world had exceeded 40 million and more than 30 million AIDS patients had died by the end of 2005, according to figures released by the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS).

Ministry: Thai bird flu outbreak did not originate in China

(China News, 2006-08-19)

The Ministry of Agriculture denied on Friday a number of foreign reports that the recent outbreak of avian influenza in Thailand was due to a strain of the virus that probably came from southern China.

"This is groundless and irresponsible," sources with the ministry's press office told China Daily on Friday.

According to the current information held by the Chinese authorities, a verdict arrived at by the United Nations Food and Agriculture Organization (FAO) and the bird flu research and test centre

of Thailand was arbitrary and based on the fact that the virus found in Thailand and Laos was similar to recent finds in southern China, the ministry's statement said.

The ministry has not found the full text of the test report by the FAO and the Thai centre and knew little about the test procedure, and origin and type of the examples used.

However some media reports quoted the FAO conclusion and correlated the outbreak in Thailand with southern China.

According to statistics provided by China's customs, the country has not exported any poultry products to Thailand or Laos since 2004 when China first reported a H5N1 outbreak in its poultry.

"Nakhon Phanom in Thailand and the Laotian capital of Vientiane, where the virus strain was detected, are both very far from the Chinese border," the ministry's statement said.

In conclusion, the ministry denied the possibility that the virus was transmitted through poultry trade across the borders, as was mentioned in several foreign reports.

The ministry emphasized that as the prevention and control abilities of different Asian countries varied, most reports were inconclusive and could not safely be used to detect new trends.

Also complicating the case is the fact that the virus can be transmitted by wild birds.

"So it is irresponsible to decide that the strain of virus detected in Thailand was from a certain country before having sufficient evidence," the statement said.

The ministry said that as a responsible country, China was ready to co-operate with all countries in to fight against the bird flu epidemic.

Chinese scientists aim to produce "super animals" through bio-engineering
(Xinhua Net, 2006-08-22)

After great breakthroughs in developing "super rice", hybrid high-yield rice strains, Chinese scientists now plan to produce "super animals" to increase stockbreeding output.

China's animal husbandry output can double with the same input, provided the fruits of the country's genome project are adopted in time, said Li Ning, top scientist on the genetic breeding and cloning of agricultural animals research project.

Li, from the state key laboratory of agricultural bio-technology under China's University of Agriculture, said the research project is currently focusing on producing "super pigs" and "super chickens".

The "super animal" project is being undertaken by the China Agriculture University, the Hydrobiology Institute of the Chinese Academy of Sciences (CAS), Huazhong Agricultural University, CAS Kunming Zoology Institute and the Poultry Institute of the Chinese Academy of Agricultural Sciences.

Scientists are trying to find the genetic characteristics of livestock that relate to quality and quantity, said Li.

The project has recently finished investigating the variety of China's agricultural animals, collecting DNA samples, and proving the origin and evolution of many domestic animals, including 92 varieties of pig, 37 varieties of cattle, 11 types of yak, 18 types of sheep and 25 different sorts of goat across China, Li said.

"We already have abundant genetic resources which are of benefit to livestock breeding and the quality of pork, chicken and beef," said Li, adding that they will provide a basic foundation for

cloning as the best way of increasing the breeding rate of high yield animals.

Li said the project is also beneficial to the country's species resources protection, and will contribute to life evolution research worldwide.

China faces a challenge in maintaining a secure food supply given its growing population. The government started the "super rice" project in 1996 to improve the production and quality of rice.

CAS proposes strategy for HIV vaccine research and development in China
(CAS, 2006-08-24)

A national strategy for the HIV vaccine research and development (R&D) should be formulated as soon as possible so as to ensure a sound progress in this field, says a report by the Academic Divisions of the Chinese Academy of Sciences (CASAD), the top national advisory body in science and technology. Entitled "A Proposal on China's Strategy of the HIV Vaccine Research and Development," the report has recently been submitted to the State Council, the country's cabinet.

This is the third report by CASAD on the issue. Two other advisory reports were presented to the central government in 2000 and 2004 under the title of "Checking the Rapid Spreading of AIDS in China" and "Suggestions on the Enhancement of the Anti-AIDS Educational & Behavioral Intervention."

The human immunodeficiency virus (HIV), the cause of the acquired immunodeficiency syndrome (AIDS), remains one of the greatest threats to global health, says the report, which was drafted by a panel headed by ZENG Yi, a virologist with the CAS Academic Division of Life Sciences and Medicine. According to the World Health Organization in 2005, almost 40 million people worldwide are living with HIV/AIDS, and the accumulative number of AIDS deaths is more than 30 million.

Recent years have witnessed the rapid HIV transmission through sexual contact in China, the report says. By the end of 2005, the aggregate number of reported HIV-infections has totaled more than 140,000. It is estimated that about 650,000 people are currently living with HIV with around 70,000 new HIV infections each year in this country. The report points out that China is at a critical juncture that the epidemic spreads from high-risk groups to the general population.

The task of its prevention and treatment becomes heavier and more difficult according to the report. To check the epidemic, a preventive and therapeutic strategy, which integrates the approaches of education, intervention and vaccination simultaneously, has to be worked out. The report makes proposals on the country's HIV vaccine development strategy and three frameworks for its action plan.

Studies indicate that about 120 clinical trials for HIV vaccine candidates have been carried out across the world. At present many tests are under way, including 29 in Phase I trial, four in Phase I/II and three in Phase II and one in Phase III. Although the Phase III clinical test for the first-generation anti-body vaccines turns out to be ineffective, a larger scale second-generation vaccine candidate is in Phase III trial.

China's exploration of HIV and its vaccination over the past 15 years since the initiation of the Eighth Five-year Plan (1991-1995) has cultivated a competent R&D contingent and amassed resources and experience for taking part in worldwide fight against AIDS.

Since the 1990s, a systematic and large-scale research into the molecular epidemiology of HIV has been carried out in China, providing gene-cloning and sequencing materials for various vaccine research teams in this country. During the period of the national 10th Five-year Plan (2001-2005), a number of domestic pharmaceuticals started studies on the manufacturing technology and quality control over DNA and virus vector vaccines. They have developed a set of manufacture and quality standards which are compatible with the country's production conditions, the State-mandated GMP (Good Manufacturing Practices for Drugs) and international conventions.

Despite encouraging progress that have been made toward HIV development in China, the report stresses, its international influence is generally limited and the country does not have the intellectual property rights for the vaccine candidates under test. Many things are to blame for the situation, says the report, including the serious shortage of financial input in the upstream R&D, the lack of research innovations, clogged channels for cooperation among different research units and between the up- and down-stream research projects. As a result, the cycle is too long from vaccine candidate development and GMP production, and between the production and the endorsement of clinical trials. At the same time, national S&T policies are in short of a continuous and tracing mechanism when financing a consistent and cohesive bio-engineering system such as vaccine development.

To realize a leapfrog progress in this regard, the report urges the national government to formulate a national strategy, named CNAVSP (China's National AIDS Vaccine Strategic Plan), and three framework plans for HIV vaccine development as soon as possible. Its objectives are to coordinate the development work in an all-round way on the basis of national financial and policy, reshape the layout of research projects and orientations, set up the key or demonstrative programs and build various bases for related clinical studies and industrialization. The initiative is helpful for raising the independent innovation capacity, accelerating hi-tech industrialization process, organizing researchers in the international cooperation, and making contributions to the final success in developing the vaccine.

The report also gives an analysis about China's potential superiority in the move. First, the country has both a social institution that is noted for its capability of dealing with major issues by effectively concentrating resources and a market-oriented mechanism for optimizing resource allocations. Next, China has accommodative venues, academic build-up and a contingent of research professionals for carrying out the clinical evaluation of the vaccines. Furthermore, the country is rich in primate animals and has initially establishes testing grounds for anti-HIV vaccination. The last but not least, China has the infrastructure, including equipment and enterprises for large-scale GMP production, capable of mass production of the vaccine to furnish clients both at home and abroad.

The report makes recommendations on three relevant frameworks for the national strategy for the AIDS vaccine development: fundamental and cutting-edge technologies, research bases and platforms, and key research projects. The fundamental and frontier research projects fall into three categories: basic research, applied basic research and applied research. The base and platform development could include centers for pre-clinical and clinical experiments (such as those for ex-situ immunoassays, for in-vivo immunoassays on primates and a statistic data bank), pilot study bases for the vaccine's GMP production and clinical experiment bases for the large-scale

appraisal of Phase-II and III clinical trials. The key R&D projects should constitute the strategy's main part, which is to form a complete R&D system and speed up the process from bench to beside by integrating core resources and backbone contingents. In this way, the target for HIV vaccine development preset by the National Plan for Medium and Long-term S&T development might be reached: which is to complete the Phase-III clinical trial for HIV vaccine candidates with Chinese characteristics by 2010.

The report also makes relevant suggestions on the strategy's R&D cycle, budget and managerial mechanism.

China has started to study TCM herbal medicine toxicity

(China News, 2006-08-24)

Many Chinese have long believed that the medical herbs used in traditional Chinese medicine (TCM) are completely safe, as most of the herbs are directly collected from nature. However, this is not true, and China Academy of TCM has started a study on the toxicity of medical herbs, to guide people to use them correctly.

As a matter of fact, in China's annual national pharmacopoeia of 2000, 72 kinds of herbal medicine were on the list of the fatally poisonous. Though these medicines are poisonous, they can become parts of a remedy to many diseases if the dosage is correct.

One of the most attractive features of TCM is that prescriptions are exclusive to different patients according to their various conditions. A remedy to a patient might even kill another patient of a similar disease, which makes it even more urgent to study the side effect and exact toxicity of all herbal medicines.

Though China has paid much attention to the study of TCM herbal medicine toxicity, it is still not enough. Doctors and scientists must make clear all the possible side effects and correct dosage of herbal medicines, especially of those OTC (over-the-counter) patent medicines, as soon as possible.

Chinese human bird flu vaccine tests safe, effective

(People's Daily, 2006-08-29)

Preliminary clinical tests show that a bird flu vaccine for human use developed by Chinese researchers is safe and effective, researchers said on Monday.

The vaccine was jointly developed by China's Ministry of Science and Technology, Center for Disease Control and Prevention and Beijing Sinovac Biotech Co., a Beijing-based pharmaceutical company.

They said on Monday that the first phase of clinical trials has proved the vaccine is safe and effective for humans.

Six volunteers took part in the clinical tests last November at the Beijing China-Japan Friendship Hospital, after the State Food and Drug Administration granted the vaccine developers the green light for clinical trials.

Results from the first phase trails, which ended in June, showed that the four antigens worked at different levels in stimulating the production of antibodies, according to the company.

It said the 10 microgram dosage of the vaccine proved most effective, stimulating 78.3 percent

protective antibodies, exceeding the European Union standard of 70 percent for a flu vaccine.
The 120 participants who were vaccinated have shown no serious adverse reactions, researchers said. Blood tests and urine tests all indicate that the vaccine is safe for human use.
The vaccine was developed from the virus's NIBRG-14 strain which was provided by the World Health Organization (WHO) and protects against the deadly H5N1 strain of avian influenza.
The vaccine can be mass produced, according to researchers.
Beijing Sinovac Biotech Co. said it is ready to apply for the second phase of clinical trials
In China, a vaccine is allowed to enter the market after it completes three phases of clinical trials.
Bird flu remains essentially an animal disease, but experts fear that the H5N1 virus could mutate into a form that could pass easily among humans.
Worldwide, about a dozen companies are currently conducting clinical trials on bird flu vaccines.
According to the WHO, the H5N1 virus has proven difficult to predict, and as drug companies move forward with their pandemic vaccine development, they may be gambling on which virus they think is most likely to mutate into a killer strain.
The virus has killed 14 people in China since 2003 and 21 Chinese have contracted the virus.
The latest case was a 62-year-old man in Xinjiang Uygur Autonomous Region, who died on July 12.

Young biologists meet for discussing cutting-edge development
(CAS, 2006-08-30)

A seminar on the frontiers of life sciences was held from August 18 to 20 in Shanghai. The participants were promising young stars in the field at CAS, as most of them are winners of prestigious programs for young talents in China: the CAS *Bairen* (or 100 talents) Program and National Funds for Outstanding Young Scientists of the National Natural Science Foundation of China.
All together over 100 top-notch young scientists in the field of life sciences were presented at the three-day seminar. Prestigious overseas scholars including ZHONG Weimin from Yale University, YANG Jian from Columbia University and YANG Zhenbiao from University of California at Riverside gave key-note speeches and held hot discussions with the participants on frontier issues in molecular biology, plant molecular biology, neuroscience and nutrition, medication & disease.
The seminar hopes to inspire innovative ideas in the young leading scientists through communications and discussions on the latest research results with overseas scholars, so that they can play a more effective role of disciplinary pacesetters in CAS' future development.
PEI Gang, president of Shanghai Institutes for Biological Sciences (SIBS) and vice-chairman of the seminar, regarded it as a "thorough retrospection upon the works of Bairen Program young talents," who are "key task force of CAS Knowledge Innovation Programs, supervisor anticipating innovative postgraduates and advanced technicians, mainstay power to bridge CAS' past and future."

Home and abroad, more than 200 outstanding young researchers in life sciences have been selected for support by the Bairen Program since it was inaugurated in 1994. At present they have carried out studies in molecular biology, biochemistry, cell biology among other disciplines, and some of them have acquired important results up to international standards.

As a pioneering move of its kind in China, the Bairen Program was noted for its ambitious goals, high standards and handsome financial support. When CAS Knowledge Innovation Programs were first launched in 1998, the recruitment and cultivation of academic pacesetters at CAS speeded up and more supportive projects have been developed for Bairen Program, for instance Outstanding Overseas Talents Recruitment Program, Celebrated Overseas Scholar Recruitment Program, National Outstanding Young Scientists Funds with supportive policies from Bairen Program and so on.

From 1994 to 2005, some 1,443 young people have been recruited and supported by the Bairen Program, among whom 849 were outstanding overseas professionals, 224 celebrated overseas scholars and 218 leading domestic personnel. In addition, 152 awardees of National Funds for Outstanding Young Scientists got support from the program. The success of Bairen Program has led to the emergence of a group of young leading scientists, the achievement of a large number of important research results, the optimization of the CAS research contingent and the upgrading of its disciplinary layout, featuring as a well-known talent recruitment program around the world.

Researcher says vaccine ready to go

(People's Daily, 2006-08-31)

China now has the ability to vaccinate people against the H5N1 avian influenza virus, the doctor in charge of vaccine research said yesterday.

"Chinese researchers have successfully carried out the first phase of clinical tests of the made-in China vaccine with safe and effective results," Lin Jiangtao, head aspiratory physician at China-Japan Friendship Hospital in Beijing, told China Daily yesterday.

While a vaccine must pass three phases of tests before it can be put into general use, Lin said: "The vaccine can now be used among residents, especially high-risk groups, if there is an epidemic emergency."

"Chinese scientists are considering giving the vaccine to some people highly vulnerable to the virus, such as workers in chicken-breeding farms, to examine the vaccine's effect in real circumstances," Lin said.

Lin was in charge of tests that started last December and finished two months ago, the results of which were revealed on Monday.

"The vaccine has been proved effective because it stimulates 78.3 per cent of protective antibodies, exceeding the European Union standard of 70 per cent for a flu vaccine," said Lin.

The vaccine proved safe because the 120 participants who were vaccinated showed no serious adverse reactions.

Now the developers of the vaccine, including the Ministry of Science and Technology, Chinese Centre for Disease Control and Prevention, and Beijing Sinovac Biotech Co, are applying for the second phase of clinical tests.

About 200 volunteers will be included in the second phase test, the date of which will be

confirmed when the drug authority gives the green light.

The second-round test will focus on the best vaccination procedure, Lin said.

Researchers will try to find how long the vaccine can last, what is the best dose, how many injections should be done for one vaccination, and what the intermittence rate should be.

China builds gene bank of 54 ethnic minorities

(People's Daily, 2006-08-31)

Chinese scientists on Wednesday announced that they have completed a gene bank with over 8,000 DNA samples from all its ethnic minorities except the Gaoshan in Taiwan.

It took more than four years to build the country's largest gene bank of minorities with funding from the government, said Professor Xiao Chunjie, of southwest China's Yunnan University, which organized the project.

He said the move was vital to preserve the human genetic diversity as many nationalities throughout the world had interbred and disappeared.

"Anthropologists and geneticists have shared the hope of building a gene bank since 1980, when the falling ethnic populations began to attract attention."

Home to 25 of the nation's 55 ethnic minorities, with its remote mountains keeping its ethnic minorities isolated, Yunnan Province was designated home of the gene bank, he said.

"The gene bank is indispensable to China and even the world."

China boasts one of the world's most diverse genetic pools.

Xiao said the bank would help to prevent and cure regional genetic diseases.

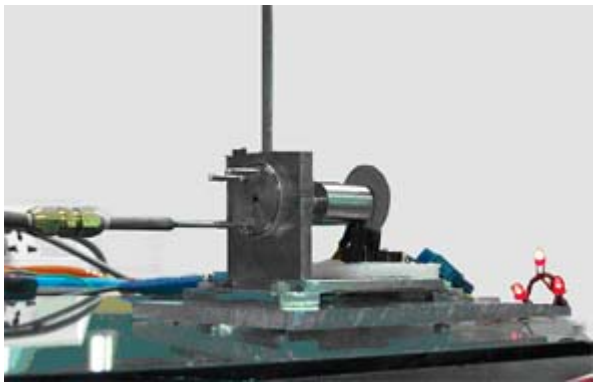
Scientists had identified the genes that cause diseases like hypertension after studying the samples.

More than 6,600 diseases are known to be caused by single gene disorder and many fatal and chronic diseases, including coronary heart disease, diabetes, cancer and immune deficiency diseases, are caused by multiple gene disorders.

1.4 Key Technologies

A centimeter-sized micro energy system developed by CAS scientists

(CAS, 2006-08-01)



A micro energy system, which is only a few centimeters in diameter, has been invented by CAS researchers. Experts say it has a bright application prospect.

First advanced by U.S. scholars, the concept of a micro energy system is to compress a conventional power plant into a small system with its overall dimension at a level of a few centimeters and its key components at microns. The system is

expected to replace lithium-ion cells to provide long-standing power for field workers. It could also be used to give energy to micro air vehicles (MAVs), micro electromechanical systems (MEMS) or other electronic devices in special scenarios with a wide range of applications.

However, due to the difficulties in interdisciplinary efforts between such fields as materials, thermo-physics, and micro system etc., reports on actual electricity energy outputs from such a system are rarely heard.

A research team headed by XU Jinliang from the CAS Guangzhou Institute of Energy Conversion (GIEC) has recently been successful in developing a prototype for a micro energy system being just 3.5 centimeter in external diameter and 7 centimeters in length. With a speed of 20,000 rotations per minute (rpm), it spins much faster than that of a macro-scale rotating machinery. The system could produce about one watt of power, enough for making three light emitting diodes shining brightly. It encompasses various state-of-the-art technologies ranging from micro-combustor to micro-engine.

Although some distance remains to be overcome for its practical use, says Xu, director of Micro Energy System Laboratory at GIEC, we have seen the dawn of its application.

With the support of CAS, the lab has been conducting a research project, among others, on a micro energy system, which consists of a micro combustor, a micro turbine and micro generator components using the hydrogen and liquid as fuel.

International Training Workshop on Biomass held in Liaoning
(MOST, 2006-08-18)

The International Training Workshop on Technology and Utilization of Biomass Gasification, sponsored by Department of International Cooperation, Ministry of Science and Technology, has been held from August 4 to 24 in Liaoning Province.

The workshop aims at helping developing countries improve the technologies and application of biomass gasification and enhance technological cooperation and exchanges with these countries. It will enable participants to have a clear understanding of the biomass gasification principles, structures and functions of facilities and the operation of the whole system.

1.5 Structure of Matter

New way to study life in detail
(Xinhua Net, 2006-08-02)

A massive project launched by the Chinese Academy of Sciences (CAS) seeks to allow scientists across the world to better observe the basic components of material and life.

With an investment of up to 1.2 billion yuan (US$140 million), the Beijing Spallation Neutron Source (BSNS) accelerator complex will be completed in 2011, according to Zhang Jie, a physicist and Director General of the CAS Basic Research Office.

The accelerator will produce a strong pulsed neutron beam, with which scientists could target objects to better observe their structure and microscopic movements.

The technology can be widely used to improve the structure of high-tech material, such as credit cards, compact discs and agricultural pesticides.

"Unlike an electronic accelerator we are familiar with, a spallation neutron source is a public tool, with which scientists in different disciplines can observe a wide range of objects such as the structure of proteins," Zhang explained.

Zhang said BSNS is among nine "big science" projects launched or to be launched by the government in the coming decade, with a total investment of 6 billion yuan (US$750 million). All of them are designed to offer public tools for basic science researches.

Among the nine projects, another major public facility used to observe material structure is the Shanghai Synchrotron Radiation Facility, set to be completed in 2009 with an investment of 1.2 billion yuan (US$140 million).

Synchrotron radiation technology can be applied to trace the movement of electrons, while the spallation neutron source is particularly sensitive to atomic nuclei. This makes synchrotron radiation technology more suitable for heavy elements, such as metal atoms, while the spallation neutron source can be used to trace lighter atoms like hydrogen and carbon.

China's fast development in science and economy has created big demands on the spallation neutron source, according to Jinkui Zhao, a senior scientist at the world's largest such facility at Oak Ridge National Laboratory, United States.

The facility has been used to observe the structural change of gasoline in the operated engines, so that a more energy-efficient way can be developed.

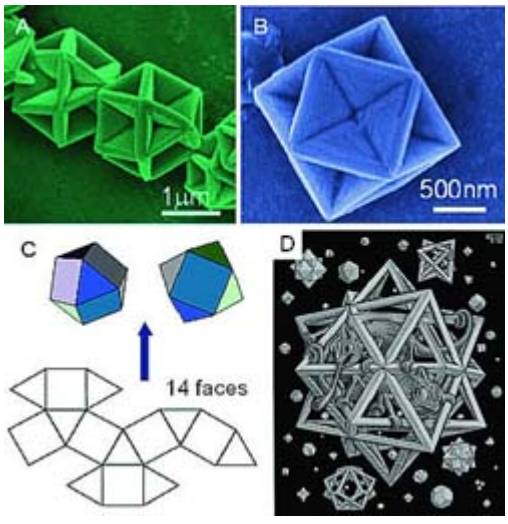
"I believe the BSNS will be a major boost to China's energy research and life science studies," Zhao told China Daily.

Zhang said that when it is finished, BSNS will be opened to scientists across the world, and time will be equally distributed among scientists who need to use it.

"That's why we have repeatedly convened meetings of potential users to discuss BSNS's future applications," Zhang said.

Micro-crystals featuring Escherian architecture

(CAS, 2006-08-09)



An artistic-flavored breakthrough in the field of crystal studies made by YU Shuhong from the Hefei National Laboratory for Physical Sciences at Microscale (HFNL), the University of Science and Technology of China (USTC), and his colleagues has recently been published by *Chemistry of Materials* and highlighted by the August 3 issue of *Nature* under the title of "Crystal growth: Star Quality."

"Recipe for making geometric 'stars': dissolve copper nitrate in ethylene glycol, add sulphur and bake well. The result, report Shu-Hong Yu of the University of Science and Technology of China in

Hefei and his co-workers, is microscopic crystals of copper sulphide that have a beautiful cuboctahedral form, reminiscent of the cages drawn by M. C. Escher in his 1948 engraving Stars. They are composed of four intersecting hexagonal plates and contain 14 concave cavities," *Nature* indicates.

Before that, in *American Chemical Engineering and News* published on July 24, a detailed report and comment had already been given on the new outcome in an article entitled "Escher goes chemical," which is quoted as saying:

"In his 1948 wood engraving Stars, Escher celebrated geometric symmetry in a composition of polyhedrons, including a cuboctahedron, in which an octahedron infiltrates a cube. Now chemists from Hefei National Laboratory for Physical Sciences at Microscale, in China, and the Max Planck Institute of Colloids & Interfaces, Germany, have made micrometer-scale cuboctahedral structures.

"Each copper sulfide cuboctahedron consists of four intersecting hexagonal flakes, each about 2 mm across, yielding cuboctahedra with eight tetragonal and six pyramidal cavities.

"To make the Escherian crystals, the researchers prepared an ethylene glycol solution of Cu(NO3)2 and elemental sulfur, which they autoclaved at 140°C for a day. After they collected the resulting black solid by centrifugation, scanning electron microscope imagery gave Shu-Hong Yu and his coworkers a most welcome surprise.

"It is appealing that a synthetic technique as simple as the one presented here can produce such beautiful objects that even a skilled craftsman cannot touch on the microscale level," the researchers noted.

They also suggested "building blocks for larger structures and encapsulating agents for other materials are among the structures' potential uses."

Yu"s research group has been focusing on the studies of multilayer structures of bio-mineralization materials for an effective control over the construction, measurement and performance of special nanostructured materials, and explorations have been made in designing specially-structured and multifunctioned materials under natural circumstances. Their research has been supported by CAS Outstanding Overseas Scholars Recruitment Program, National Outstanding Young Scientists Funds and CAS-MPG partner group in USTC.

Escher was a Dutch graphic artist well-known for his prints and engravings using realistic details to achieve bizarre optical illusions. His works were of interest to mathematicians, cognitive psychologists and the general public, and were widely reproduced especially in the 1960s and 1970s.

Expert panel backs the Daya Bay neutrino experiment
(CAS, 2006-08-25)

After careful scrutiny and discussion, a panel of 14 renowned Chinese physicists said yes to a proposal for a 240-million-yuan project of neutrino experiment at the Daya Bay Reactor in the east of Shenzhen, Guangdong Province.

The project, which is to be hosted by the CAS

Institute of High Energy Physics in cooperation with US colleagues, will afford an important historical opportunity for the development of particle physics, stresses the panel, which convened under the auspices of the Ministry of Science and Technology on August 15 and 16 in Shenzhen, south China's Guangdong Province.

The Neutrino, being considered as one of the fundamental particles, has a very important role in both of the microscopic view of particle physics and the macroscopic view of evolution of the Universe. Breakthroughs have been made in recent years, including the discovery of non-zero neutrinos masses, 'neutrino oscillation' phenomenon or neutrinos mixing. Experts say that neutrino physics has been a hot research topic of high energy physics, astrophysics and cosmology.

The Daya Bay Neutrino Experiment is a neutrino-oscillation experiment to measure the smallest lepton flavor mixing angle θ13 using electron anti-neutrinos produced by the reactors of the Daya Bay Nuclear Power Plant (NPP) and the Ling Ao NPP. As the Daya Bay is the best site for conducting such experiments among similar locations in other parts of the world, the experiment is expected to provide a great opportunity for exciting discoveries.

The project has recently received 50 million yuan (about $6.25 million) support from CAS. Funds from other Chinese funding agencies, such as Ministry of Science and Technology and China National Natural Science Foundation, are expected within months.

1.6 Transport and Space

Contracts on Round-moon Probing Project signed

(People's Daily, 2006-08-01)

The Moon Probing Center of the Commission of Science Technology and Industry for National Defense (CSTIND) have inked three contracts on the development of carrier rockets and a satellite and the system of ground application with research institutions involved in the Round-moon Probing Project, signifying a major step taken by the Round-moon Probing Project in its management with a sense of legality.

It is learned that the idea that "the project should be managed in the form of contracts" has been defined as soon as the Round-moon Project was first undertaken. Sun Laiyan, vice chairman with CSTIND and director with China National Space Administration (CNSA), urged all the relevant parties to implement the terms of their contracts effectively, carry out the projects "strictly, carefully, prudently and substantially" and fulfill the tasks with high standards, high quality and high efficiency.

China has made major progress with its round-moon probing project in five main spheres, namely the project satellite, carrier rockets, surveying and control, ground application and launching fields, ever since the lunar probe project was initiated in 2004. The "Chang'e 1" satellite and its sample products have been turned out and passed appraisals before entering into the phase of system-level assembly, integration and testing. The Satellite is expected to be launched at the Xichang Satellite Launch Center next year.

China to launch 1st environment monitoring satellite

(Xinhua Net, 2006-08-11)

In the second half of 2007, China will project its first satellite for monitoring environment and natural disasters, the "HJ-1", to improve the country's abilities in monitoring environmental changes and reducing calamities.

The satellite constellation is composed of a number of small satellites, the ground system, and the application system. "Environment-1" consists of two small optical satellites, the "HJ-1A" and the "HJ-1B", and one radar satellite, the "HJ-1C".

Currently, the satellites and transmitters are being manufactured in accordance with the technical demands of its owners, the State Environmental Protection Administration and the National Committee for Disaster Reduction.

XSLC preparing for China's lunar mission

(China News, 2006-08-21)

Currently Xichang Satellite Launching Center (XSLC) is having its NO.3 launching tower reconstructed. The reconstruction will enhance both the height and strength of it, thus it will be able to launch China's lunar orbit satellite in 2007.

The reconstruction project will be completed in the beginning of next year, and the tower will be put into use next March, to launch the first Chinese lunar orbit satellite, Chang'e, as the first step in China's lunar mission.

Lunar mission is the third phase in China's space development project, after launching man-made earth-orbit satellite and manned spacecraft.

In the next five years, more than 30 other satellites of China and other countries will be launched in XSLC. Since 1997, XSLC has successfully launched 17 satellites in succession, which really is a miracle in space flight history.

China to launch 3 satellites for disaster-monitoring

(Xinhua Net, 2006-08-22)

China will launch three small disaster-monitoring satellites in 2007, which is to form an all-around disaster-forecasting network with another five satellites to be shot in 2010, said an ministerial official Monday.

"Based on the network, China will construct a ground-to-air satellite constellation system for disaster-forecasting and -monitoring in 2010 when another five satellites is to be shot into the air."

Wang Zhenyao, director of the disaster relief department of the Ministry of Civil Affairs, made the above statement at a training session on disaster management jointly sponsored by China's Ministry of Civil Affairs and the International Civil Defence Organization.

"Since 2001, especially after 2003, China's disaster-relief system has developed fast, with many technological elements injected," said Wang.

During the 1990s, a proposal on the building of a satellite constellation system monitoring and forecasting disasters was put forward by the State Environmental Protection Administration of China, the National Commission for Disaster Reduction and the China Aerospace Corporation Organization

The satellite constellation system is listed as a key in civilian satellite development in "China Space Development White Paper" published in 2001. In February 2003, China's State Council approved the satellite constellation project.

Wang said the satellite constellation system is the most advanced and complicated of the kind up to date in China.

Currently, China has more than 2,000 environment-monitoring stations nationwide which produce about 30 million environment monitoring-related data.

"However, China's disaster-monitoring means are still backward," Wang said.

China is one of the most frequent disaster-hit countries in the world, with about 200 million victims of various natural disasters every year.

Natural disasters occurred in China caused 2,475 deaths and 204.2 billion yuan (25.5 billion U.S. dollars) of direct losses in2005.

China should build space station based on its national conditions
(China News, 2006-08-23)

Wang Yongzhi, an Academician of Chinese Academy of Engineering and former chief designer of China's manned space project, said yesterday that in building the space station, the third step of the project, China should base on its national condition and practical needs when considering the scale and technological routes of the space station.

Regarding the construction and operation of the space station construction, he suggested four points: firstly, it is very necessary for China to build its own space station; secondly, the space station should not be very big, it should have its own features and be economically feasible, thirdly, with technological innovation, it is not necessary to send astronauts to stay on the space station for a long time; fourthly, technologies applied in the space station should have the potential for sustainable development.

As a renowned scientist in Chinese manned space project, Wang said it is possible for China to build its space station that has the following characteristics:: it consists of two to three 20-ton cabins; it can carry six to seven tons of equipment for conducting scientific experiments; it can be operated with a remote control system and astronauts will visit and check the space station from time to time.

“This can reduce the construction and operation costs of the space station at the same time, the space station should also have some technological innovation,” said Wang. He hoped that by working towards the goal of setting up a complete manned space system, China could design a space station that is technologically and economically feasible. "We should master related technologies independently, and the space station should reflect the idea of technology advancement and space application," he added. Taking this into consideration, he hoped that discussion on relevant matters should be kicked off as soon as possible.

China seeks closer int'l co-op in space industry
(Xinhua Net, 2006-08-28)

China will strengthen cooperation with the international community in the space industry, aiming

for the peaceful development of space, a senior Chinese official said here Monday.

China would also seek to expand its share of the international market for satellite launches and other space services, said Jin Zhuanglong, deputy director of the Commission of Science, Technology and Industry for National Defense.

Jin told an international conference on the space industry that China had already signed 16 pacts with 13 governments and organizations and established space industry cooperation with more than 40 countries and international organizations.

Specifically, he said, China would deepen cooperation with Russia, the Ukraine and other European countries as well as South American countries such as Argentina, Chile and Peru.

In Asia, it would work towards the establishment of the Asia-Pacific Space Cooperation Organization, which would be based in Beijing.

China, Pakistan, Peru and six other countries had signed a treaty on the organization's establishment last year, and it would take effect upon ratification by five members. China's legislature ratified the treaty in June.

China will also seek to engage in "substantive" cooperation with space organizations in the United States and Canada, Jin said.

In the next five years, China will work with Pakistan in the development and launch of three earth resources prospecting satellites.

China will also manufacture and launch telecommunications satellites for Nigeria and Venezuela, according to contracts already signed.

2 News from Universities

China to double foreign student intake by 2020

(People's Daily, 2006-08-08)

China will enroll 300,000 foreigners in universities by 2020, up from 140,000 in 2005, a Chinese educational official said Monday.

The current 20 percent annual growth rate in student enrollments is expected to drop to eight percent from 2020, Cao Guoxing, director-general with the International Cooperation and Exchanges Department of the Ministry of Education, told a conference here.

"China is increasingly popular with foreign students because its economy is booming, so the number of foreign students enrolling will continue to increase over the next few years," he said.

China recruited more than 140,000 foreign college students from over 190 countries in 2005, the official said.

A total of 568 universities in China are qualified to enroll foreign students, and most of the foreigners studying in China major in Chinese language and traditional Chinese medicine, he added.

Statistics from the National Statistics Bureau show that more than 30 million people outside China are studying Chinese, including 5 million who study Chinese at school.

Improvements in education quality are a magnet for overseas students, said Guo Wei, who is in charge of foreign student affairs in Shihezi University, northwest China's Xinjiang Uygur Autonomous Region.

All Clinical Medicine courses are taught in English with multimedia support, to make things easier for foreign students, he said.

In addition, the Chinese Government plans to increase the number of scholarships for foreign students to 10,000 per year from the current 6,700 in order to lure more foreigners to China, the official said.

3 Innovation Management

International S&T Cooperation Management System Achieved One-Stop Service
(MOST, 2006-08-22)

For a fair and transparent management of international S&T cooperation plans, for a better management and implementation of international cooperation programs and for higher efficiency and better service, Department of International Cooperation, Ministry of Science and Technology (MOST) has responded actively to the general requirement of one-stop program application made by MOST. The Department has modified the management system, which has been fully integrated into MOST's one-stop Program Application System and became part of the application service platform of S&T plan.

Nobel laureates to spark scientific curiosity in Beijing
(Xinhua Net, 2006-08-24)

Seven Nobel laureates are hoping to spark a wave of scientific curiosity in Beijing next month with a series of lectures on life sciences.

The topics include human diseases, drug development, basic science and science education at a forum from Sept. 5 to 7.

The laureates are Chinese-born Lee Tsung-dao, winner of the 1957 Nobel prize for physics, Robert Mundell, winner of the 1999 economic science prize, Robert Huber and Hartmut Michel, who shared the 1988 chemistry prize, Ferid Murad and Louis Ignarro, who shared the 1998 medicine prize, and Aaron Ciechanover, winner of the 2004 chemistry prize.

Scientists from the Chinese Academy of Sciences (CAS) will also speak on bird flu, new diseases and the human genetic projects.

Prominent scientists have gained celebrity status among the Chinese public. In June, 6,000 people came to hear world famous astrophysicist Stephen Hawking in Beijing's Great Hall of the People, although many said they couldn't really understand his theory and they just wanted to see a famous figure in person.

4 China's International Science Cooperation

CAS, MPS set up new partner groups in Shanghai
(CAS, 2006-08-07)

CAS and the Max Planck Society (MPS) for the Advancement of Science have established two more partner groups in China. On August 3, CAS President LU Yongxiang and MPS President Peter Gruss were presented at the launching ceremony of the groups in Shanghai.

First set up in the late 1990s, CAS/MPS Partner Groups are designed to promote network building between Chinese scientists and German research institutes. All the group leaders are young scientists who have returned to China after working at an MPS institute as a fellowship holder. Within a fixed period of up to five years, they will be supported to continue and develop research partnership with their corresponding partners at MPG institutes.

One of the new groups, headed by Dr. ZHAO Jingtai from the CAS Shanghai Institute of Ceramics, will focus its research on the molecular design of novel Functional Compounds. The other group is to carry out research into fluid numerical simulations and galaxy formation under the leadership of Dr. YANG Xiaohu from the CAS Shanghai Astronomical Observatory.

A Sino-US center for eco-environment research inaugurated in Beijing
(CAS, 2006-08-21)

The signing ceremony for the framework agreement on the establishment of a China-US Joint Research Center for Ecosystem and Environmental Changes was held on July 20 on the campus of the CAS Institute for Geographic Science & Natural Resource Research (IGSNRR) in Beijing.

Hosted by CAO Jie from the CAS Bureau of International Cooperation, the ceremony was attended by celebrities of the two sides in the field, including Director of the UT-ORNL Joint Institute for Biological Sciences (JIBS) Gary S. Sayler, Director of IGSNRR LIU Jiyuan, and Vice Director of the CAS Research Center for Eco-environmental Sciences (RCEES) OUYANG Zhiyun.

Experts say, as the first Sino-US research center in the field, its efforts on comparative studies on the ecosystems, environmental changes and their driving mechanism will be conducive to the exploration of the related mechanisms at a regional or the global scale as well as their regulating routes. In this way, disciplinary grounds, strategies and methods may be developed in the

sustainable human management of the ecological and environmental systems. So far, IGSNRR and RCEES from the Chinese side and their US partners have established a solid foundation for collaboration in the field.

In line with the agreement, the Center's overall objectives are targeted at a multi-scale and comprehensive research, data exchanges, academic exploration and mutual swap of young scholars, technical training and joint upbringing of graduate students via the unclogged channels provided by the Center.

Japan and China join forces to combat bird flu

(China News, 2006-08-23)

Japan and China have joined forces to study bird flu and other infectious diseases through an exchange of researchers, despite strained political ties.

The heads of Japan's National Institute of Infectious Diseases and the Chinese Center for Disease Control and Prevention signed an agreement to jointly study infectious diseases and cooperate in finding vaccines.

"There are no borders for infectious disease-causing agents," said Tatsuo Miyamura, director of the Japanese institute.

"What happens in one country is a threat to its neighbor, so we would like to exchange information and personnel on a systematic basis," he added.

Japan signed a similar agreement in April with South Korea, opening the way for cooperation among the three countries in research and personnel exchanges, a spokeswoman for the Japanese institute said.

The deadly H5N1 strain of bird flu has spread to 55 countries, up from 45 that had reported infections in April, although its speed has slowed, the UN Food and Agriculture Organization warned Monday.

"Joint research with Japan will play an important role in detecting an early bird flu outbreak," said Yang Weizhong, the head of the Chinese organization.

The disease has killed about 140 people, mostly in Asia including 14 in China, since 2003.

Japan has reported infections in birds but no human deaths from aviation influenza, which is spread through contact with sick animals.

The agreement comes despite strained political relations between Japan and China, in part stemming from the legacy of Japanese imperialism.

China, Russia to launch joint Mars probe mission

(Xinhua Net, 2006-08-23)

China and Russia are planning a joint mission to Mars that will not only bring samples back to earth but also land on one of the red planet's tiny moons, a Chinese space scientist here has said.

Ye Peijian, a leading scientist with the Chinese Research Institute of Space Technology, made the announcement at an ongoing forum on China's space technology development.

Ye said Russia will launch the spacecraft in 2009 and it will carry China-made survey equipment. It will collect samples on Mars and the planet's nearest moon.

Sun Laiyan, administrator of the China National Space Administration said last month at an

international space conference that China is actively planning its deep space exploration over the next five years, focusing on lunar and Mars exploration.

"We will encourage other countries to take part in space science programs initiated by China, and Chinese scientists will participate in international space science programs," Sun said.

In February 2004, China began the Lunar Exploration Mission and started research and development on the Chang'e lunar probe.

China's space agency plans to launch its first lunar orbiter Chang'e I in 2007. In 2010, it will launch an unmanned spacecraft for a soft landing on the Moon.

In October 2005, Shenzhou VI initiated manned space lab experiments. China also launched four recoverable satellites.

Also attending the ongoing forum held by the Chinese Academy of Engineering, Sun said that the priorities in China's future space program were manned space missions, lunar probes, the development of high resolution observation systems, second generation navigation and positional systems, and a new generation carrier rocket.

Wang Xiaojun, deputy director of the general department of the China Academy of Launch Vehicle Technology, said that China urgently needs to develop a new generation carrier rocket to increase China's space capacities.

Research and development of the heavy carrier rocket, in-orbit assembly and launch technology, and reuse of carriers will be key areas, Wang said.

Wang Yongzhi, former chief designer of China's manned-space project, said at the forum that China will need to construct its own space station in the future.

But the construction of the space station should reflect China's situation and practical needs, said the scientist, who has made a very significant contribution to China's manned space missions.

"China's future space station should be small and economical," said Wang, adding that it may not be manned all the time.

5 Miscellaneous

Grand canal water tests normal after acid leak

(China News, 2006-08-06)

Water quality tests in a section of China's Grand Canal on Saturday have shown no trace of contamination by a massive leak of concentrated sulfuric acid.

Local environment officials said an operation to neutralize the 200 tons of acid with about 900 tons of liquid alkali appeared to have been successful.

Test results from 15 monitoring stations near the leak site in Hangzhou, capital of Zhejiang Province, showed water quality had returned to "normal" by noon Saturday, said Shen Liyue, of the Environmental Protection Bureau of Yuhang District.

The results also indicated that the liquid alkali had caused no contamination in the waterway after reacting with the sulfuric acid to produce sodium sulfate, a kind of harmless salt.

The spill occurred early Thursday when a ship carrying 200 tons of concentrated sulfuric acid ran aground in the Yuhang section of the canal linking Beijing and Hangzhou, which was built in the 10th Century.

Traffic along the Yuhang section and the upper reaches was halted, but resumed late Thursday afternoon.

The ship, two thirds of which sank, was removed from the canal on Friday.

The total length of the canal is 1,794 kilometers. The navigable sections, mainly between Jining City, Shandong Province, and Zhejiang, stretch for about 1,000 kilometers.

''Science Tunnel'' opens in Shanghai

(CAS, 2006-08-07)

CAS President LU Yongxiang, Shanghai Mayor HAN Zheng, and President of the Max Planck Society (MPS) for the Advancement of Science Peter Gruss were present at the opening of an innovative multimedia exhibition held on August 3 in Shanghai. Entitled "Science Tunnel," the exhibition is co-sponsored by MPS, Shanghai Museum of Science and Technology and some other organizations.

Science Tunnel was shown for the first time during the World Exposition EXPO 2000 in Hannover; then as a traveling exhibition. It attracted more than two million visitors until 2004. In 2005, the exhibition was completely modernized with respect to content and technology and successfully started its international tour in Tokyo and Singapore.

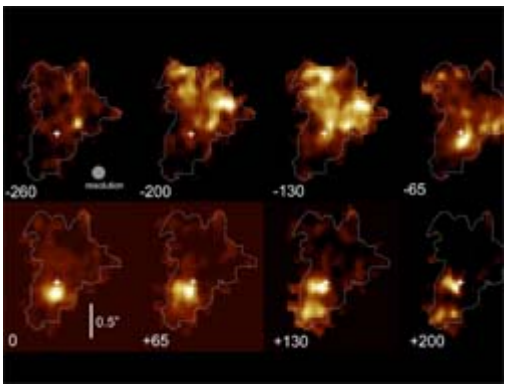
In the comprehensive and futuristic Science Tunnel, visitors can move through 12 stations and learn more about the functions of microscopic elements of our world such as atoms, molecules, cells or tissues through to the largest structures in the universe.

On display are hundreds of large-format images and video clips from current projects from

modern research areas, many of which have never been seen before, to provide visitors with a fascinating insight into the hidden worlds of the micro- and macro-cosmoses, and get a glimpse of the challenges that scientists are facing.

Accompanied by an audio guide, some of the challenges that the visitors will encounter include searching for the innermost components of matter, i.e., the building blocks of life, researching the causes of diseases, understanding how the brain works, looking into problems of human coexistence, assessing the future of the earth's biosphere, and finally researching the universe. Many of the exhibits are interactive, allowing visitors themselves to observe and discover what scientists explore.

Peeking into galaxies in early days of the Universe
(CAS, 2006-08-28)



Velocity maps of Hα emission in BzK-15504

An international consortium of astronomers, including a CAS astrophysicist, has revealed how galaxies looked like in the Universe's early days. They discovered that massive galaxies already existed when the Universe is one fifth of its current age, posing challenges to the widely accepted hierarchical model of galaxy formation.

Together with his co-workers from Germany, Italy, US, Israel and Japan, KONG Xu from the Center of Astrophysics at the CAS-affiliated University of Science and Technology of China (USTC) obtained the most detailed glimpses so far of the formation of a galaxy similar to our own Milky Way. The work was reported in the August 17 issue of *Nature*.

Scientists generally assume that the Universe was born from the Big Bang some 13.7 billion years ago, but they are not clear how and when the early galaxies were formed. A most widely accepted theory of galactic formation, called the hierarchical theory of galaxy formation, says that galaxies formed from "collisions" of smaller structures, which is a long process that could evolved over the past 8-11 billion years into the galaxies we see today.

By combining state-of-the-art adaptive optics techniques with the new SINFONI spectrograph on the Very Large Telescope at the European Southern Observatory, Kong and his colleagues found the rapid formation of a large rotating disk galaxy after the birth of the Universe. Their observation is not in accord with the hierarchical model.

They found a giant spiral galaxy, with a size and mass similar to that of the Milky Way, three billion years after the Big Bang. Known as BzK-15504, the luminous, star-forming galaxy has many similarities to present-day spiral galaxies, with rotational properties that are nearly identical to those of the Milky Way. These similarities are notable because they imply that at least some large disk galaxies were broadly in place even at these early cosmic epochs.

The work also provides immediate evidence to the presence of numerous massive galaxies in the early cosmic epoch, says Kong. No trace has been found for the mergers inside the galaxies,

indicating the merging process was not the only approach for the formation of massive galaxies.

Also according to Kong, the possible scenarios for an early galaxy's birth and development may be depicted like this: under gravity, the interstellar molecular cloud undergoes a series of evolutionary processes of contraction and densification and finally leads to a collapse, resulting in the birth of a new spherical galaxy. Then a large and massive rotating protodisk is channeling gas towards a growing central stellar bulge hosting an accreting massive black hole. Within three billion years, it grows into a "mammoth lump" in the universe through "gulping down" a great amount of neighboring masses.

Italian firm buys propagation right of a kiwifruit pollinator developed by CAS researchers (CAS, 2006-08-30)

One year after granting the world-wide propagation and commercialization rights of *Jintao*, a female cultivar plant from the novel variety of kiwifruit (*Actinidia chinensis* Planchm) to the Italian firm Kiwigold Consortium, the CAS Wuhan Botanical Garden (WBG) reached a new agreement with the firm on the similar right of a male plant cultivar Moshan-4.

As the kiwifruit is a dioecious plant, the male cultivar plays a significant role in the fruit-bearing process. Moshan-4, which is developed by WBG pomologists, is an outstanding male plant for pollination characterized by long flowering length (twice as long as ordinary ones) and more viable pollens.

Over the next 28 years, the Italian firm will have the propagation and commercialization rights of Moshan-4 by paying royalties.

The move is hailed as a successful attempt of Chinese researchers in commercializing their research results with independent property rights on the market, says WBG director Huang Hongwen.

6 Information for upcoming Workshops in October

Fluvial Conference on IGCP-518 and IAG Working Group on Large Rivers
Date: October 9 – October 11
City: Nanjing, Jiangsu Province
http://www.rivers.ecnu.edu.cn/

International Conference on Bio-Nano-Informatics Fusion & International Forum on Biochio Technologies
Date: October 9 – October 12
City: Beijing
http://www.capitalbio.com/BNI&IFBT2006/

34 Congress of International Association of Hydrogeologists
Date: October 9 – October 13
City: Beijing
http://www.iah34bj.com/

IROS2006---IEEE/RSJ International Conference on Intelligent Robots and Systems
Date: October 9 – October 14
City: Beijing
http://www.iros2006.org/

2006 International Symposium on Distributed Computing and Applications for Business, Engineering, and Sciences
Date: October 12 – October 15
City: Hangzhou, Zhejiang Province
http://www.dcabes2006.org/

Science and Technology for Desertification Control
Date: October 14 – October 16
City: Changsha, Hunan Province
http://www.iseis2006beijing.com/pageEn/DefaultEn.html

The 4th International Symposium "The Science and Technology of Skin Engineering"
Date: October 15 – October 17
City: Shanghai
http://www.skintechno2006.com/welcome.html

2006 IPMA World Congress on Project Management
Date: October 15 – October 17
City: Shanghai

http://www.ipma2006.com/

The 1st International Symposium on Digital Manufacture
Date: October 15 – October 17
City: Wuhan, Hubei Province
http://public.whut.edu.cn/isdm2006/

1st International Conference on Communications and Networking in china
Date: October 16 – October 19
City: Beijing
http://www.chinacom.org/

8th International Symposium on Science & Processing of Cast Iron
Date: October 16 – October 19
City: Beijing
http://www.spci8.com/

The Tenth International Symposium on Aquatic Oligochaeta
Date: October 16 – October 26
City: Wuhan, Hubei Province
http://www.ihb.ac.cn/isao2006/index.htm

2006 CIE International Conference on Radar
Date: October 16 – October 19
City: Shanghai
http://radar2006.xidian.edu.cn/

2006 International Workshop on NGI and P2P Systems(INPS 2006)
Date: October 21
City: Changsha, Hunan Province
http://p2p.grids.cn/other/inps06cfp.html

International Workshop on Environmental Health & Pollution Control 2006
Date: October 22 – October 25
City: Nanjing, Jiangsu Province
http://hjxy.nju.edu.cn/EHPC2006/

8th International Conference on Solid-State and Integrated-Circuit Technology
Date: October 23 – October 26
City: Shanghai
http://www.icsict2006.com/

2006 International Symposium on Safety Science and Technology (2006ISSST)
Date: October 24 – October 27
City: Changsha, Hunan Province
http://www.issst.com.cn/

The 7th International Symposium on Antennas, Propagation, and EM Theory
Date: October 26 – October 29
City: Beijing
http://www.cie-china.org/isape2006/

Abbreviations

CAS - Chinese Academy of Sciences
MOST - Ministry of Science and Technology