

Captive and wild panda mating completed in China



Giant panda Caocao. [Screenshot: CNTV]

Chinese researchers confirmed that Caocao, a female giant panda in captivity, has completed natural mating with a wild male companion on March 23, 2017, which marks the first such instance in the world and is regarded as a breakthrough in the country's panda breeding.

On March 27, researchers with the China Conservation and Research Center for the Giant Panda (CCRCGP) reclaimed a voice recorder installed in the collar of Caocao, a subject of the organization's wild mating trial program. Caocao was released into the wild early in March, in a field monitor station in the Wolong National Nature Reserve in southwest China's Sichuan Province.

Researcher recently announced that Caocao mated for 90 seconds with a wild male giant panda on March 23.

Previously a wild panda, Caocao was reportedly found injured and rescued by researchers in 2003, when the then cub was only months old.

The female bear has undergone wildlife training and possesses rich wildness survival experience. She has delivered cubs four times, giving birth to a total of six baby pandas.

According to Zhang Hemin, Deputy Director of the CCRCGP, China's captive panda breeding program has witnessed an increasing population for the species but how to enhance the pandas' genetic vitality and diversity under artificial propagation remains a challenge.

The center hopes that its captive-bred giant pandas released into the wild could mate with wild companions, thus bringing new blood into their existing group.

So far, China has 471 captive pandas, and most of them succeeded in mating via artificial intervention in the past years.

Polluted pools spur nationwide probe

China has launched a thorough investigation into the pollution of soil throughout the country and will release the final results to the public later, top environmental protection officials said on Friday.

"I can declare today that the Ministry of Environmental Protection will treat all soil polluting cases with no tolerance once we have found them," Tian Weiyong, head of the Environmental Inspection Bureau under the Ministry of Environmental Protection, said on Friday, after an NGO discovered two untreated sewage pits filled with hazardous industrial waste.

Photos of the polluted pools, provided by the Chongqing Liangjiang Voluntary Service Center, went viral on Tuesday. The pits were found in Dacheng county of Langfang, Hebei province, and in Tianjin's Jinghai district.

The ministry launched an investigation with the Hebei government immediately after the photos were shown online. According to the Langfang government, several officials of Dacheng county in charge of environmental protection have been suspended from their posts, and the local government has invited experts to work on a plan for restoration of the area.

Restoration will be completed by the end of September, the local government vowed.

A preliminary local investigation found that the sewage had strong acidic qualities, which was caused by waste from acid-washing at steel and iron plants and electroplating factories, said Yan Jingjun, deputy head of the ministry's Environmental Inspection Bureau. Yan is in charge of the joint investigation teams with Hebei and Tianjin.

"But all the pits are located at deserted land that is far away from residential areas, and no villagers nearby drink underground water," Yan said.

As for the pits in Tianjin, the ministry said the municipality solved the pollution in 14 out of 18 similar pits in Jinghai district since 2014, and plans to deal with the remaining four pits.

"Actions of pouring hazardous waste into the pools has broken the law and will be dealt with seriously," said Tian, the inspection bureau head.

"We are extremely open to all kinds of NGOs, the public and the media helping to provide oversight, so we can improve our environment," he added.

According to China's Water Pollution Prevention and Control Law adopted in 2008, discharging noxious sewage water and other waste into wells, pits, cracks and caves is forbidden.

Discharging pollutants into pits and wells has been defined as a crime of contaminating the environment based on a judicial interpretation released in 2013 by the Supreme People's Court and Supreme People's Procuratorate.

China experiments human stem cells in cargo spacecraft

China is conducting stem cell experiments to investigate the possibility of human reproduction in space aboard cargo spacecraft Tianzhou-1, according to the Tianzhou's engineer.

The experiments include the studies of the proliferation and differentiation of stem cells, the differentiation of germ cells, and the impact on bone cells of a microgravity environment, said Li Xuzhi, deputy chief designer of the space application system of China's manned space program.

Scientists on the ground will remotely control the research equipment, and receive the images of the cells under the microscope.

Experiments in microgravity will provide theoretical ground and technical support for the study of the human reproduction in space, said Li.

Other experiments on Tianzhou-1 include the research on fluid evaporation and condensation in a microgravity environment, in-orbit tests of a high-precision electrostatic accelerometer and others, added Li.

Tianzhou-1 started its five-month journey in space Thursday evening.

The ship will dock with China's orbiting Tiangong-2 space lab, and provide fuel and other supplies before falling back to Earth.

Scientists to test medicine for bone loss on Tianzhou-1

Scientists will test a medicine to treat bone loss during the maiden voyage of China's first cargo spacecraft Tianzhou-1.

The medicine has been specially developed for astronauts, but they hope it will benefit ordinary people too.

The main mission of Tianzhou-1 launched on Thursday is to test propellant refueling technology, which is crucial for the construction and operation of China's planned space station. But each voyage is a precious opportunity to conduct space experiments.

Chinese scientists will use the micro-gravity environment to test the effect of 3-hydroxybutyric acid (3HB) in preventing osteoporosis, said research leader Chen Guoqiang, who is also director of the Center for Synthetic and Systems Biology at Tsinghua University.

Normally, the solid structure of bone tissue is stimulated and maintained by gravity and physical exercise. But the micro-gravity environment in space eases the load on bones, causing rapid bone loss and osteoporosis, Chen said. "One day of bone loss in space is equivalent to a year on earth," he said.

Research shows astronauts suffer average monthly bone loss of 0.5 percent to 2 percent in space, especially in weight-bearing bones such as the tibia, femur and vertebrae. Back on earth, they can take double or triple the time of their flight period to recover. Sometimes bone loss is permanent.

Micro-gravity mainly inhibits the differentiation of osteoblasts (bone-forming cells), which is accompanied by the mass growth of osteoclasts (bone-resorbing cells), causing bone structure to change, said Chen.

Standard drug treatments for osteoporosis have a range of side effects, including tumors or cardiovascular diseases. The medicines are also relatively ineffective for treating osteoporosis caused by micro-gravity.

Chen said 3HB is one of the main components of ketone bodies, which occur naturally in mammals. It had been used to treat epilepsy for many years. "We found that 3HB can promote bone formation," said Chen.

In an experiment simulating the micro-gravity environment, the effect was obvious. Unlike the chemical synthetic 3HB for treating epilepsy, Chen's team use microbial fermentation to produce 3HB, which has entirely the same structure as the 3HB naturally existing in the human body. So it's safer than chemical synthetic drugs, Chen said.

Experiments simulating the micro-gravity environment have been conducted on the ground. Scientists hung up mice by their hind legs, and found that those given 3HB had normal bones, while those without suffered serious bone loss. "We hope to test the effect of the medicine in a real space micro-gravity environment," Chen said.

Since Tianzhou-1 cannot carry animals, scientists will compare the osteoblast cell samples treated and not treated with 3HB. Microscope images of the samples will be transmitted to earth.

Although China has conducted many experiments on the Shenzhou series spacecraft and the Tiangong-1 and Tiangong-2 space labs, opportunities for

space experiments are still rare.

"After more than a decade of research we have one chance to conduct an experiment in space. We cherish the chance. We hope Chinese scientists will have more opportunities to conduct experiments in China's space station in future," Chen said.

Scientists believe the science and technologies developed in space exploration can benefit ordinary people. For instance, modern baby diapers were originally developed for astronauts on extended space walks. And the intensive care unit (ICU) system was first developed to monitor astronauts preparing to go to the moon in the 1970s.

The medicine for treating bone loss could also be used by ordinary people.

Osteoporosis is the seventh most common disease in the world. Each year it causes 8.9 million cases of fractures worldwide.

China has 90 million osteoporosis sufferers. The morbidity of osteoporosis among Chinese over 60 years old is 56 percent, while the rate among postmenopausal women is between 60 percent and 70 percent.

With China's aging population, osteoporosis cases will continue to rise. Experts estimate the number of patients in China will reach 200 million in 2050, accounting for 13.2 percent of the total population. "We hope to solve this global problem," Chen said.

[Xi urges Guangxi to play bigger role in Belt and Road](#)

Chinese President Xi Jinping has urged Guangxi Zhuang Autonomous Region to capitalize on its unique advantages to play a bigger role in the Belt and Road Initiative.

Guangxi should make full use of its geographical location to promote opening up and development, Xi made the remarks during an inspection tour to the south China region between Wednesday and Friday.