

World's first handmade cloned transgenic sheep born in China

April 19 2012

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

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

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

numerous attempts, the HMC system for sheep cloning was successfully established in October 2011. The transfer of the produced embryos has eventually led to the present achievement.

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

Since HMC was introduced in 2001, offspring of several important species including cattle, pig, goat and water buffalo have been produced by using this technique. The procedure may contribute to efforts to save endangered species and to produce medicines for human diseases through transgenic animals.

Last year, BGI has made great achievements on cloned transgenic mini-pigs and micro-pigs. Last August, a heroic pig, named Zhu Jiangqiang (Strong-Willed Pig), who had survived more than a month buried under rubble after the 2008 earthquake in China's Sichuan province was also cloned, producing 6 piglets identical with the famous animal. "With each new species cloned, we learn more about the possible contribution of HMC to improve the health of animals and humans." said Dr. Du. "I expect more breakthroughs on transgenic and cloned animal research in the foreseeable future."

More information: www.genomics.cn

Provided by BGI Shenzhen

Citation: World's first handmade cloned transgenic sheep born in China (2012, April 19)
retrieved 2 May 2024 from

<https://phys.org/news/2012-04-world-handmade-cloned-transgenic-sheep.html>

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