NEW YORK, New York — For the first time, researchers have used the cloning method to create two healthy monkeys. The breakthrough brings science an important step closer to being able to do the same with humans.

A clone is an exact, man-made genetic copy of a living thing. When one animal is a clone of another, it is not the same animal, but it has exactly the same genes. It is similar to the way identical twins share the same genes, even though they are two different individuals. Genes are made of DNA, a string of molecules that contains the genetic code which governs how a living being develops.

The world's first successfully cloned animal was a sheep named Dolly, born in 1996. Since then, scientists have cloned nearly two dozen kinds of mammals, including dogs, cats, pigs, cows and ponies. Until now, however, they have been unable to create clones of primates, the category that includes monkeys, apes and people.

## **Monkey Cloning Makes Some People Nervous**

Chinese scientist Muming Poo led the team responsible for the breakthrough. He and his fellow scientists announced their success in a paper released last week.

The female baby macaque monkeys are now about 8 and 9 weeks old. They are named Zhong Zhong and Hua Hua.

In principle, their birth means humans could now be cloned. However, Poo said his team has no intention of doing that. Most scientists oppose making human babies by cloning, and Poo said society would likely reject the cloning of humans for moral reasons.

Instead, he said, the goal is to clone monkeys for use in medical research. They would be particularly valuable to researchers because they are more like humans than other lab animals such as mice or rats.

## **Many Early Attempts Failed**

The process is still very inefficient — it took 127 eggs to get the two babies. So far, it has succeeded only by starting with a monkey fetus.

A fetus is a developing baby that has been in the mother's womb for at least eight weeks. Before eight weeks, the developing baby is called an embryo. Normally, an embryo starts to form after the mother's egg has been fertilized by a male.

The Chinese scientists failed to produce babies by cloning an adult monkey, though they are still trying. Dolly the sheep caused a sensation because she was the first mammal cloned from an adult.

The procedure that did succeed was technically challenging. Essentially, the Chinese scientists removed the DNA-containing nucleus from monkey eggs and replaced it with DNA from a monkey fetus.

The redesigned eggs grew and divided, and some became embryos. The embryos were then placed into female monkeys to grow to birth.

The scientists had to implant 79 embryos to produce the two babies. Still, the approach succeeded where others had failed.

## **Researchers Say Cloning Can Help to Cure Diseases**

The Chinese researchers said their approach could produce large numbers of monkeys with certain genetic defects that cause diseases in people. The animals could then be used to study such diseases and test treatments. The researchers said their initial targets will be Alzheimer's and Parkinson's. Scientists have not yet found a cure for either disease.

Scientist Jose Cibelli said it might be technically possible to clone humans someday. However, he said it would be "criminal" to try now because the process involves a high number of failed pregnancies.

If the procedure became efficient enough in monkeys, he said, society would face a hard decision over whether to adapt it for humans. If perfected, the process could allow doctors to correct genetic disorders in embryos. That would allow babies to be born healthy, he said.

Of course, the familiar image of human cloning involves making a copy of someone already born. That might be possible someday, but "I don't think it should be pursued," said researcher Dieter Egli. "I can't think of a strong benefit."

## **Is There A Good Reason To Clone Humans?**

Henry Greely is a law professor. He is an expert in what biomedical advances, like cloning, mean for society. The strongest argument for cloning someone already born, he said, would be to allow grieving parents to produce a genetic copy of a child who has died.

That would not be a good enough reason to clone humans, said Marcy Darnovsky, director of the Center for Genetics and Society. It would be wrong to subject the new, cloned child to the "psychological and emotional risks" of living under the shadow of the original child, she said.

Scientists in the United States are not currently allowed to make a human baby by cloning because of safety concerns. International scientific groups also oppose it.

The animal rights group People for the Ethical Treatment of Animals (PETA) condemned the new monkey-cloning experiments.

"Cloning is a horror show: a waste of lives, time and money — and the suffering that such experiments cause is unimaginable," PETA Senior Vice President Kathy Guillermo said. "Because cloning has a failure rate of at least 90 percent, these two monkeys represent misery and death on an enormous scale.

**Summary:** Remember to include the author and title of the article in the first sentence. You also need to include textual evidence and all the main points of the article.

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**Directions:** Fill out the boxes below to identify the opinions of different people mentioned in the article.

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| --- | --- | --- | --- |
|  | **Who is the person? What job does he/she have?** | **What is his/her opinion on cloning?** | **How do you know what his/her opinion is?****(Textual Evidence)** |
| Muming Poo |  |  |  |
| Jose Cibelli |  |  |  |
| Henry Greely |  |  |  |
| Marcy Darnovsky |  |  |  |
| Kathy Guillermo |  |  |  |