

Chinese Survey Reveals Majority Support for Gene Editing Technology

A Chinese scientist recently shocked the world with his claims that he had created the world's first babies genetically edited with CRISPR. He Jiankui, a Chinese researcher, announced at the Human Genome Editing Conference in Hong Kong on 28 November 2018 that he had helped deliver a set of twin girls, not with the aim of creating designer babies but with the aim to eliminate the risk of HIV in the babies. He claimed that another child was also on the way.

Although He Jiankui's experiment has not yet been fully vetted and has received sceptical views from around the world, the development nevertheless created quite a stir. It represents the realisation of fears of a large section of scientists who have always believed that CRISPR is not yet safe to be used in human embryos.

CRISPR is a tool that allows treating of heritable diseases by controlling which genes get expressed in plants, animals, and even humans. The gene editing technology can be used to delete undesirable traits and also holds the potential to add desirable traits as well. There have been several research studies on the safety and feasibility of treating embryos for genetic diseases, including cardiac diseases, beta thalassemia, rare diseases such as Marfan syndrome, and HIV.

Coincidentally, just a few days before He Jiankui announced his startling claims, an online survey carried out by the Sun Yat-Sen University (SYSU) in China had revealed that a majority of Chinese people supported the study of gene editing and its legalization for the purpose of treating diseases. This is the first-ever poll of Chinese people's views on the therapeutic uses of gene editing.

The survey received responses from 4771 Chinese people, 575 of whom have HIV. The research team that belonged to the

Guangdong Key Laboratory for Big Data Analysis and Simulation of Public Opinion at the Sun Yat-Sen University in China gauged the public's familiarity, opinions and receptivity about the use and ethical considerations for gene editing in humans. The respondents were between 12 and 67 years old, with the average being 24. The results show that 68 percent of the people polled support the research, development and application of gene editing technology. The respondents with HIV were 89 percent in favour. However, the vast majority reject the use of gene editing for conditions that are not genetic or for non-medical purposes, such as to enhance IQ or athletic abilities.

With regard to the familiarity of the respondents to the gene editing technologies, the survey found that the majority of the respondents have had relatively little discussion about gene editing recently. Only a minority could correctly answer all the four questions to test their factual knowledge about gene editing. The majority believe that the government should provide more funding for gene editing.

In addition, the survey found that 87 percent of the Chinese people believe that gene editing therapeutics should be legalized, especially with regard to treating cardiovascular disease, extending life span, modifying oncogenes, reducing the genetic risks of dementia and thalassemia, and the prevention of HIV infection. However, only 24 percent people approve the use of gene editing for enhancing IQ, 22 percent for improving athletic abilities and 11 percent for altering physical appearances.

The responses of the 579 people with HIV revealed that they also agree with the legalization of gene editing to treat and prevent diseases with more than 90% believing that gene editing should be legally permitted in HIV prevention. This segment of respondents also revealed a high willingness to use gene editing in disease prevention and treatment. Their agreement with the use of gene editing is much higher than that of the general public, perhaps because of their strong desire to address their disease conditions in order to enable them to have healthy HIV-negative babies.

Elsewhere too surveys have pointed to some degree of agreement with gene editing technologies. A 2016 STAT-Harvard survey revealed that a majority of U.S. people favour

gene therapy for clinical use among patients with serious diseases, but they show a conservative attitude towards therapeutic treatment of unborn babies. In yet another poll in 2018 by the Pew Research Center of 2,537 U.S. adults, 60% believe that changing an unborn baby's genetic characteristics to reduce a baby's risk of developing serious disease conditions over its lifetime is an appropriate application of gene editing. These surveys have also revealed that highly religious people are more likely to view gene editing negatively. The major Chinese public's support to gene editing, as reflected in the most recent Chinese survey, is probably because a high proportion of Chinese people are atheists.

It remains to be seen whether large-scale public support to gene editing technologies would spur more efforts at manipulating genetic characteristics of unborn children. The fears are real.

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