



Chinese Public Attitudes on Gene Editing

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About Key Laboratory of Public Opinion Big Data Analysis & Simulation of Guangdong Province

The Key Laboratory is an interdisciplinary group of 42 researchers across Guangdong, Hong Kong, and Macao focused on comprehensive studies of public sentiment on socially important issues. The laboratory is led by Professor Zhang Zhian, the Dean of the School of Communication and Design at Sun Yat-sen University.

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The prospect of treating heritable diseases by correcting the causative DNA mistakes has been discussed for decades. This therapeutic strategy is now becoming more clinically realistic due to the development of efficient gene editing technologies and early research studies on the safety and feasibility of treating embryos for genetic diseases, including lethal cardiac diseases, beta thalassemia, rare diseases such as Marfan syndrome, and HIV.

Yet, discussions of gene editing in popular media are relatively limited and often mirror the early stage of IVF's development in the 1970's, when misuse was envisioned to create eugenic dystopias. These portrayals may not accurately reflect widespread views on gene editing's ethical use for therapy. For example, for more than 40 years, public morals and worldwide regulations kept pace with IVF technology and ensured its use only for the original intended purpose: to help fertility-challenged couples have healthy children.

Is society today receptive to gene editing's use to treat inherited genetic diseases in adults or children? To what extent is the public familiar with gene editing and, even if unfamiliar, is there still a widely-held, preexisting moral code for acceptable and unacceptable uses?

In a survey of the Chinese general public (sample size: 4,196), the research team at Guangdong Key Laboratory for Big Data Analysis and Simulation of Public Opinion, Sun Yat-Sen University gauged the public's familiarity and opinions about the use and ethical considerations for gene editing in humans. An additional 575 people living with HIV/AIDS were surveyed to probe whether personal experience with a life threatening and serious disease affects opinions about gene editing as a therapeutic option.

Survey Results (Executive Summary)

The survey reveals that the Chinese public broadly supports therapeutic use of gene editing in adults and children (see Figure 1). The vast majority reject gene editing's use for conditions that are not genetic or for non-medical purposes, such as to enhance IQ or athletic abilities. The majority of respondents have 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.**

Prior Western Surveys (Executive Summary)

Initial insights emerged from a 2016 STAT-Harvard survey, which indicates that a majority of U.S. people favor gene therapy for clinical use among patients with serious diseases, but they show a conservative attitude towards therapeutic treatment of unborn babies. According to a Pew Research Center poll in 2018 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. The supportive rating increased by 12% compared with a 2016 survey by the Pew Research Center. These previous research suggests that an individual's attitude towards gene editing is related to his or her religious beliefs. Highly religious people are more likely to view gene editing negatively. A majority of those high in religious commitment disagree with therapeutic use of gene editing. By contrast, most Chinese people show a supportive attitude, probably because a high proportion of Chinese people are atheists, and they tend to pursue direct health benefits for themselves and their family.

Key Chinese Survey Results

Fig. 1 Willingness to use gene editing therapy today to treat a genetic disease

If your children were likely to develop fatal genetic diseases, you would like to use gene editing to modify their gene.

If a genetic test told you that you were likely to develop severe or fatal diseases, you would like to use gene editing to modify the gene.

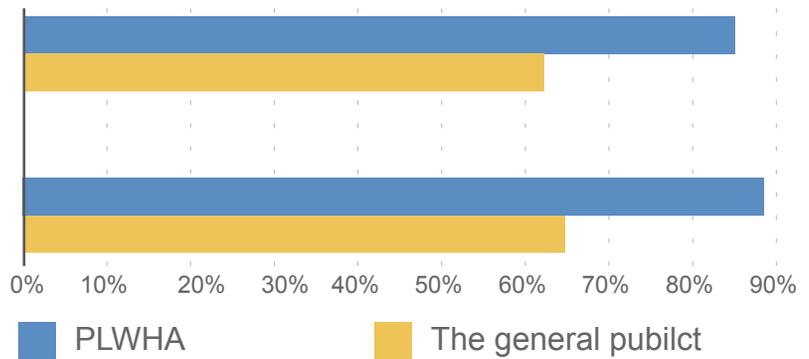


Fig. 2 Acceptable applications for gene editing therapeutics

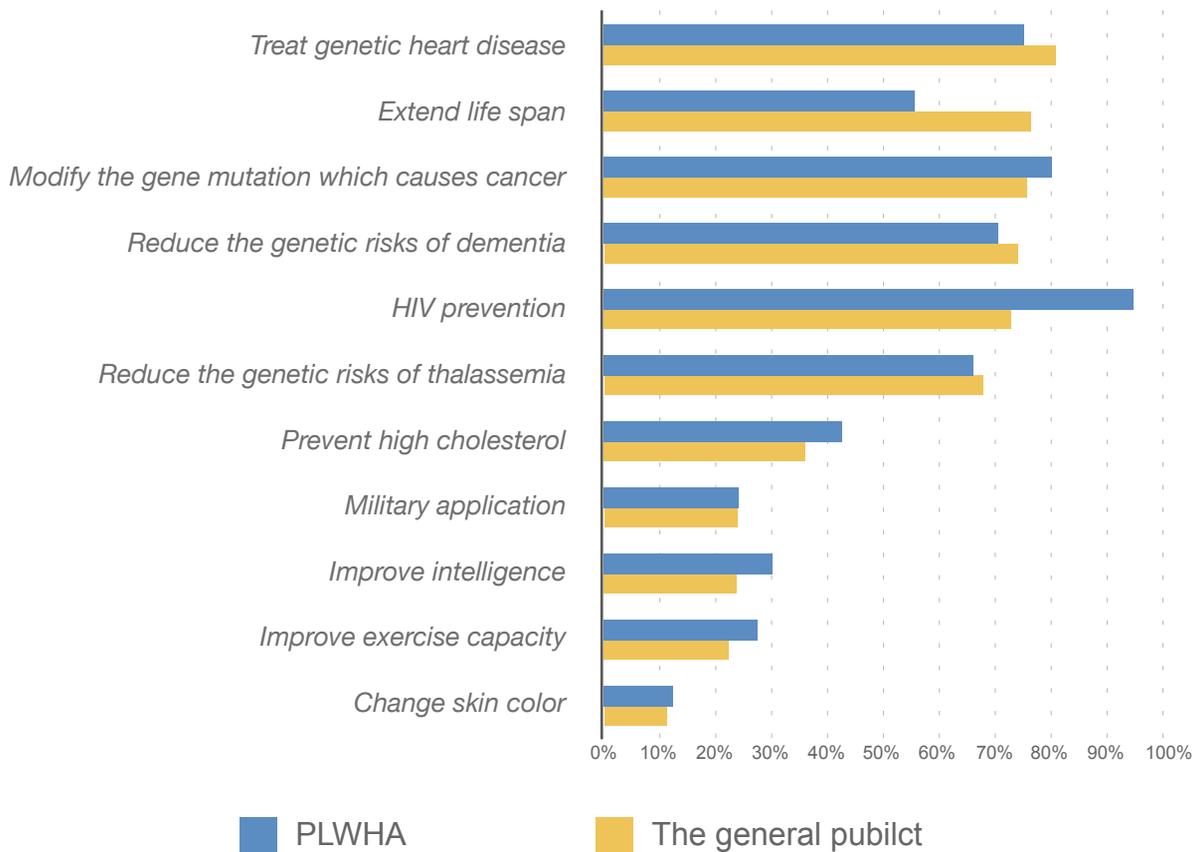
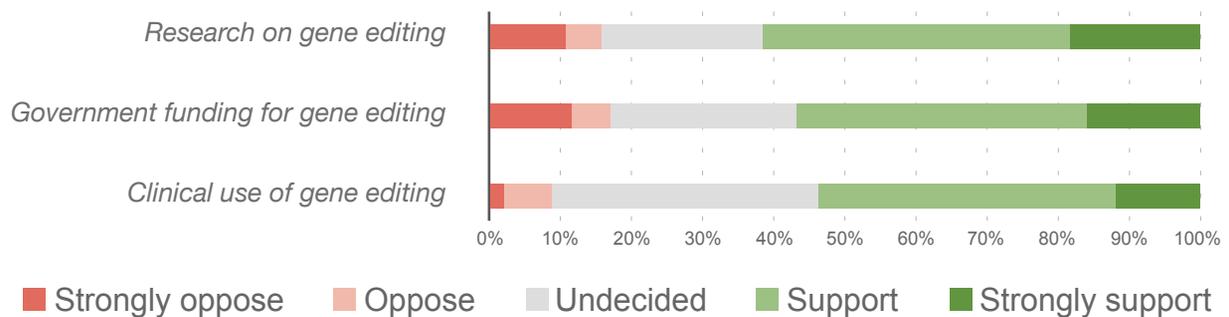


Fig. 3 Approval of gene editing's clinical use

In addition, most 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 (See Figure 2). However, very few people approve gene editing's use for conditions that are not genetic or for non-medical purposes, such as to enhance IQ and athletic abilities or change skin color, which implies that Chinese people have moral and ethical demands in terms of the application of gene editing. Similar to the general public view, PLWHA also agree with the legalization of gene editing to treat and prevent diseases (See Figure 3). Moreover, more than 90% of PLWHA believe that gene editing should be legally permitted in HIV prevention (See Figure 3).

Lastly, a majority of Chinese people report a high intention to use gene editing in treating and preventing genetic diseases, whether for themselves or their children. Similarly, PLWHA also have a high willingness to use gene editing in disease prevention and treatment. Moreover, their desire to use gene editing is much higher than that of the general public (See Figure 1). It is likely that PLWHA exhibit a strong thirst for emerging biomedical technologies to address their disease conditions in order to enable them to have healthy HIV-negative babies.