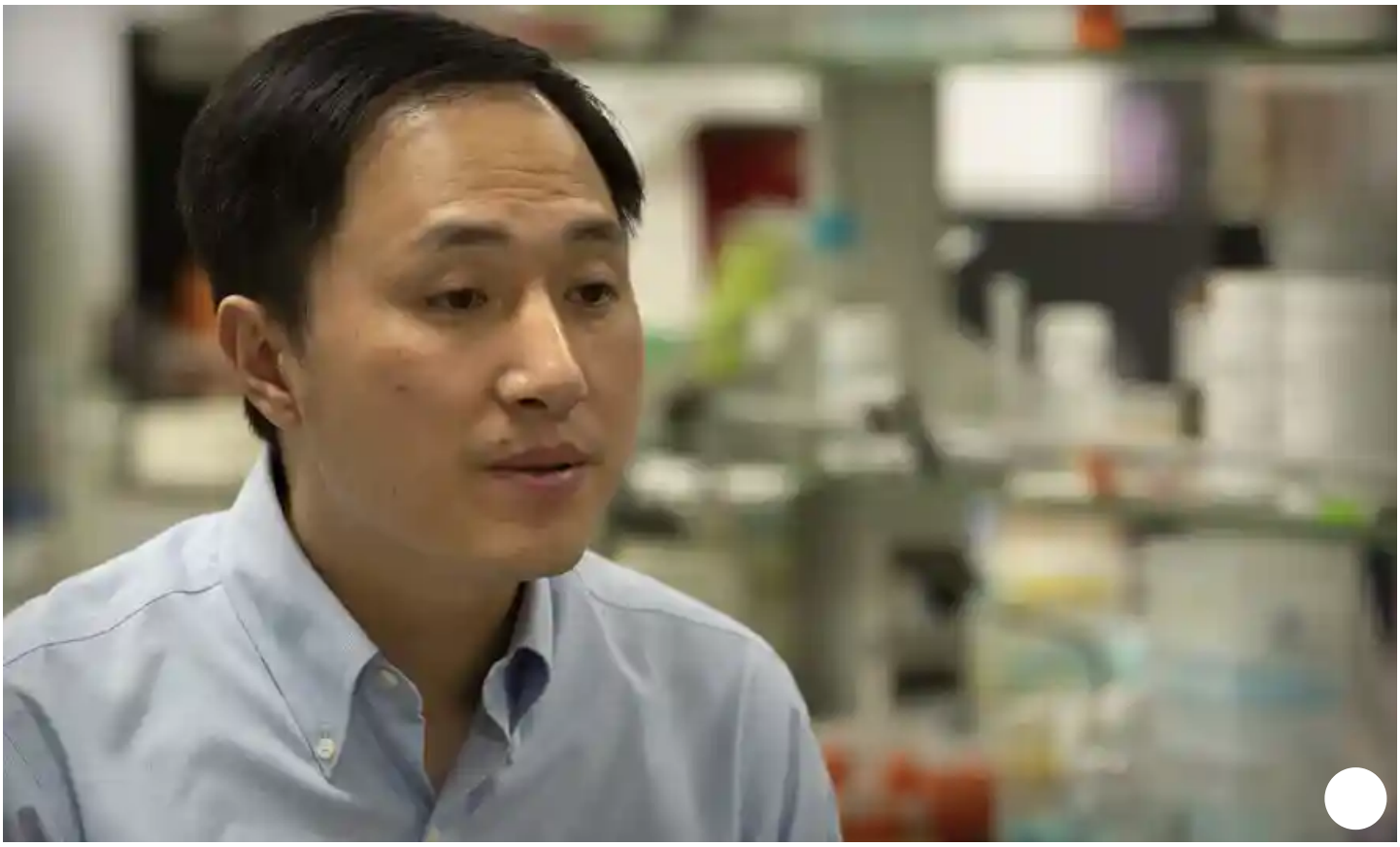

China

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Chinese scientist who edited babies' genes jailed for three years

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A Chinese court has sentenced He Jiankui, the scientist who sparked global controversy last year when he claimed to have created the world's first "gene-edited" children, to three years in prison for violating medical regulations.

He shocked the scientific community when he announced at a conference in Hong Kong that he had created genetically modified twin sisters, dubbed Lulu and Nana, and that a third child was on the way.

The court in Shenzhen found He guilty of "illegal medical practices" and in addition to the prison sentence fined him 3m yuan (£327,360), according to the state news agency, Xinhua. Two others on He's research team received lesser fines and sentences.

"The three accused did not have the proper certification to practise medicine, and in seeking fame and wealth, deliberately violated national regulations in scientific research and medical treatment," the court said, according to Xinhua. "They've crossed the bottom line of ethics in scientific research and medical ethics."

He said he used a gene-editing procedure known as Crispr-Cas9 to rewrite the DNA in the girls' embryos. The scientist claimed the modifications would make the children immune to HIV by turning a gene called CCR5 into a mutant form that prevents the virus from invading cells.

But the court found He had forged documents from an ethics review panel that were used to recruit couples for the research. The couples that enrolled had a man with HIV and a woman without and were offered IVF in return for taking part.

Zhang Renli, who worked with He, was sentenced to two years in prison and fined 1m yuan. Colleague Qin Jinzhou received an 18-month sentence, but with a two-year reprieve, and a 500,000 yuan fine.

He's experiments, which were carried out on seven embryos in late 2018, sent shockwaves through the medical and scientific world. The work was swiftly condemned for deceiving vulnerable patients and using a risky, untested procedure with no medical justification. Earlier this month, MIT Technology Review released excerpts from an early manuscript of He's work. It casts serious doubts on his claims to have made the children immune to HIV.

The HIV virus gets inside cells by latching on to a protein encoded by the CCR5 gene. But a small percentage of people carry a natural mutation that the virus cannot attach to, making them effectively immune to the disease. He attempted to recreate this mutation by rewriting the DNA in the embryos that couples donated. Fyodor Urnov, a researcher at the University of California, Berkeley, told MIT Technology Review that He's claim to have recreated the CCR5 mutation was "a deliberate falsehood". Instead, the team created new mutations in the target gene and apparently elsewhere in the genome, too, the consequences of which are unknown.

Even as the scientific community turned against He, the scientist defended his work and said he was proud of having created Lulu and Nana. A third child has since been born as a result of the experiments.

Robin Lovell-Badge at the Francis Crick Institute in London said it was "far too premature" for anyone to pursue genome editing on embryos that are intended to lead to pregnancies. "At this stage we do not know if the methods will ever be sufficiently safe and efficient, although the relevant science is progressing rapidly, and new methods can look promising. It is also important to have standards established, including detailed regulatory pathways, and appropriate means of governance."

These aspects are being looked at by the Academies Commission and by a WHO committee, both of which are due to report in 2020.