OPINION

Relevant for: Science & Technology | Topic: Biotechnology, Genetics & Health related developments

Someone somewhere was bound to do it. Ever since researchers at the University of Alicante in Spain came up with the revolutionary new gene-editing tool CRISPR, the chance to play god and the temptation to do it have been beckoning scientists. So when Shenzhen-based Chinese researcher He Jiankui claimed, ahead of an international conference on gene editing in Hong Kong, that he had created the world's first genetically edited babies by altering their DNA using CRISPR, it should have come as no surprise. His claim is still unverified and, in fact, Southern University of Science and Technology, which hosts his lab, later said his work "seriously violated academic ethics and standards".

At the heart of He's work is CRISPR (short for Clustered Regularly Interspaced Short Palindromic Repeats), the gene editing tool that allowed geneticists and researchers to edit parts of the genome by removing, adding or altering sections of the DNA sequence, much more efficiently than earlier techniques did.

He claimed the genes of the twins had been edited to resist the HIV virus, which is what makes the framing of the argument against genetic editing much more complex. The announcement caused predictable consternation with many wondering if these experiments have gone too far and arguing that tinkering with the variability of a gene pool can have disastrous consequences given that genes are connected and for one single character many of them have to work in unison.

There is also the issue of human germline editing. The germline is the sequence of cells that develop into eggs and sperm, and any changes made in it are likely to be passed down to future generations. But the issue goes beyond bio-ethics.

A patient suffering a condition like Huntington disease would want to see gene editing used to prevent such genetic diseases, since they don't have any cure. However, as has been argued elsewhere, its use in trying to prevent a deaf person being born is clearly abhorrent, especially since once it becomes prevalent, anyone born with a genetic condition like that runs the risk of being shunned by society.

Scientific experiments have gone awry often enough in the past. The atom bomb is a great example of scientific endeavour gone wrong. What started with the simple statement that a small amount of matter could release a lot of energy built upon Niels Bohr's atomic model morphed into the most destructive discovery mankind has ever seen. As if the horrors of Hiroshima and Nagasaki were not enough, today 73 years later, that one discovery influences our lives and society in massively negative terms. In the race to create defences against nuclear weapons, arms budgets of some of the poorest nations in the world now far exceed their spends on education or health.

But the problem with a moral high ground on this issue is that there remain far too many human problems for which there is simply no cure.

In 1996, when Dolly the sheep became the first mammal ever to be cloned from another individual's body cell, fears were raised that human cloning was inevitable. Since then horses, cats, dogs and livestock have been cloned across the world without creating much of a stir though the announcement of two genetically identical macaques, Zhong Zhong and Hua Hua, early this year at a laboratory in China did stoke fears of human cloning being the inevitable next

step.

And yet it hasn't always been for the worse. When scientists in the 1970s discovered how to fertilise human eggs in test tubes there was the apprehension that this might lead to people cherry-picking only high-quality parents for their children. As it turned out those fears were unfounded and the discovery became one of the greatest boons for people who were infertile and couldn't have children.

Genetics is a bit of a stab in the dark and in strictly game theory terms, evolution is open-ended and, therefore, painful and wasteful. It is multidirectional and not always progressive with many inadvertent mutations as a result of which we are saddled with an imperfect replication mechanism. One fallout of this has been that, instead of Malthusian natural factors to keep populations balanced, we have had statist interventions that snuff out people through genocides and wars.

Social systems are also Darwinian in many ways, making decisions based on incomplete information. Hayekian market proponents would say the market demands genetic interventions. Human civilization has always progressed by interfering with the natural evolutionary process. Of course, our evolved empathy would shun genetic modulation. In fact, India does not have a comprehensive gene editing policy in place, though germline gene editing is banned in line with international norms.

Yet, in the face of persisting diseases and crippling human conditions, divine intervention may sometimes need to be supplemented with genetic ones in a carefully regulated environment.

Should India allow genetic modifications to address incurable diseases? Tell us at iews@livemint.com

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