

Opinion: Gene editing is powerful tool for good but only if used wisely

By Project Syndicate, adapted by Newsela staff on 01.19.16

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Our genes set the pattern for many aspects of our lives, from hair and skin color to our likelihood to contract certain diseases. If we are able to save future generations from illnesses through gene editing, we should use that tool to stop suffering. But we should set limits on how that technology is used. Photo: AP/Allison Joyce

NEW YORK, N.Y. – Genes make us who we are, for good or bad. Made of a substance called DNA, each is responsible for a particular trait. Passed down from parent to child, they are responsible for everything from hair color to a tendency toward a particular disease. Our genetic makeup has been beyond our control. Yet scientists have long wondered: Could harmful genes be altered before they are passed down to the next generation, or while a baby is still in its mother's womb?

There should no longer be any doubt on that score. One day, perhaps very soon, humans will be genetically modified. A new tool -- called CRISPR -- is already being used to edit the genomes of insects and animals. A genome is simply the complete set of genes found in any particular living thing.

CRISPR is essentially a very sharp molecular knife that allows scientists to remove and insert genes precisely and inexpensively. It is only a matter of time before it will be used to engineer our descendants -- eliminating many dangerous hereditary diseases in the process.

To be sure, this eventuality is being hotly debated. The main arguments against genetic modification of human embryos are that it would be unsafe and unfair and that modification would quickly go beyond efforts to reduce the occurrence of inherited illnesses. However, ultimately, none of these reasons is likely to be persuasive enough to stop the technology from being widely used.

Arguments Against Gene Editing Won't Stop Use

Safety is clearly an important factor, but it is unlikely to be a decisive one. The new gene-editing techniques appear to be very accurate. Animal tests and experiments with human embryos that will not leave lab dishes seem to prove there is little risk involved in their application.

Likewise, as important a concern as fairness may be, it has never held back the adoption of technology. Yes, the benefits of CRISPR are likely to be made available primarily through private, profit-seeking companies, giving the rich far better access to the technology than the poor. However, that fact is not likely to lead to a postponement -- much less a ban -- of gene editing.

The world is full of unjust differences between people. The rich send their kids to elite schools, while the poor hope their child's school buildings do not collapse while class is in session. And yet, as unfair as this may be, the rich are not waiting for a level playing field. Instead, they are making wide use of elite private education. The same process will play out with genetic engineering.

A Slippery Slope Toward Eugenics

The critics' most worrisome argument is that opening the door to repairing genetic disorders will also leave the way open for eugenics. Rather than focusing on eliminating diseases, eugenics seeks to introduce desirable traits into the human population. The problem, of course, is who gets to decide which traits are desirable. Furthermore, it is not clear whether doctors should be in the business of performing medical procedures aimed simply at enhancement, rather than eliminating disease.

Nonetheless, the same technology that can be deployed to eliminate hereditary diseases can undoubtedly be used to try to build genetically enhanced children. Inevitably, some will seek to do just that.

However, that is not enough of a reason to give up on the promise of genetic engineering. The world is plagued with hereditary diseases that cause very real misery: sickle cell anemia, hemophilia, type 1 diabetes, cystic fibrosis, mitochondrial diseases, polycystic kidney disease, Tay-Sachs disease, Canavan disease, mucopolysaccharidoses, some forms of breast, prostate, and colon cancer, and the list goes on. It is absurd to think that genetic engineering will not be used to eliminate them.

Pressure from parents seeking to prevent their children and grandchildren from suffering will undoubtedly overwhelm concerns about the possibility that others will use the same technology to attempt to build superkids -- and rightly so. The sick should not be held hostage to worries about possible dangers or abuses.

Instead, Let's Set Up Protections

There is no reason to waste time arguing about whether humans should be genetically engineered. As justifiable as some of the concerns may be, there are simply too many benefits to be gained from preventing hereditary diseases. Those seeking to limit genetic engineering to such efforts would be better off devoting their energies to explaining why eugenics is wrong. They should not attempt to stop the march of progress toward healing the sick and eliminating awful disorders.

Rather than arguing about whether CRISPR should be used in humans, we should refocus the public debate on appropriate safeguards. We should begin determining who decides when CRISPR is safe enough to be deployed, and what counseling should be provided for parents considering its use. We should begin figuring out how to broaden access for the poor.

The more time we spend debating whether to adopt a technology that undoubtedly will be adopted, the less time we will have to consider more important issues. We need to know, for example, how to respond to the for-profit medical community's promise to give us taller, smarter, healthier, cuter, stronger, and more loving children. Marketing campaigns offering us just such wonders will begin rolling out soon enough, like it or not.

Quiz

- 1 Read the sentence from the section "Arguments Against Gene Editing Won't Stop Use."

Safety is clearly an important factor, but it is unlikely to be a decisive one.

What is implied by "decisive" in this case?

- (A) scientific
 - (B) controversial
 - (C) good at making decisions
 - (D) something that settles an issue
- 2 Read the paragraph from the section "A Slippery Slope Toward Eugenics."

Nonetheless, the same technology that can be deployed to eliminate hereditary diseases can undoubtedly be used to try to build genetically enhanced children. Inevitably, some will seek to do just that.

Based on the arguments in this article, what is the BEST substitute for "inevitably" above?

- (A) surely
 - (B) crazily
 - (C) possibly
 - (D) potentially
- 3 Which statement from the article is the BEST example of the author's central claim?
- (A) The critics' most worrisome argument is that opening the door to repairing genetic disorders will also leave the way open for eugenics.
 - (B) Nonetheless, the same technology that can be deployed to eliminate hereditary diseases can undoubtedly be used to try to build genetically enhanced children.
 - (C) Rather than arguing about whether CRISPR should be used in humans, we should refocus the public debate on appropriate safeguards.
 - (D) We need to know, for example, how to respond to the for-profit medical community's promise to give us taller, smarter, healthier, cuter, stronger, and more loving children.

4 Which of the following is the STRONGEST evidence to support the author's central claim?

- (A) Genes make us who we are, for good or bad.
- (B) A new tool -- called CRISPR -- is already being used to edit the genomes of insects and animals.
- (C) The world is full of unjust differences between people.
- (D) Marketing campaigns offering us just such wonders will begin rolling out soon enough, like it or not.

Answer Key

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