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15 April 2019

How to Edit the Human Genome

A “godless” scientist somewhere in China changed an allele for a gene in fertilized twin embryos to give them near-perfect HIV resistance, reintroduced the eggs, birth happened, and they are now alive and well and that is not okay. That was and remains the view from most scientists today about the alleged gene editing. This also remains the subject of debate around the informal moratorium on gene editing as biologists in general and the society at large try to grapple on how it should be done. I believe that we should unleash the floodgates and let germline editing--that is, changing inheritable genetic information--open.

The first to point of worry to address with most uninformed on this topic is that DNA cannot be so easily moved around. Horizontal gene transfer is the shifting of genetic information that has happened numerous times and continues to occur between the main three kingdoms of life, Bacteria, Archaea, and Eukaryotes. It more commonly occurs everyday in the digestion systems of many species where the bacteria inside them that breaks down food trade plasmids--snippets of DNA--between each other. Though, it occurs elsewhere in the world, equally in great numbers. DNA is relatively flexible, as the genes it carries are situated in discrete, relatively identifiable sets with promoters, inhibitors, stop codons, and more. Every time a child is born, they are with their own mutations from natural mistakes in DNA replication. Using an enzyme to ensure a child is born with the allele of a gene that protects their immune system cells from HIV is no more identifiable than a “naturally occurring” allele with the same effect.

The second point that most people raise is the democratization of gene editing. That is, how do ensure that not only the wealthy hoard the best geneticists for themselves? Precisely by making gene editing, its tools and all information available and legal will drive down the costs, naturally by themselves. Within the past 30 years, the cost of sequencing and reading a human’s entire genome has gone from the millions of dollars to hundreds of dollars. Other bio-technologies have similarly gone down in price, as well. A good point of comparison is Computer Science, as the field has become more open-source, transparent, and shares information with its own members has allowed for Virtual Reality, Autonomous Vehicles, Drones, progress in Machine Learning, and more possible in just the past few years. Similar to Biology, Computer Science has seen widespread adoption drive down prices to a point that a fully functional computer can be sold for a price equivalent to about four subway sandwiches. Economics of scales works for all industries.

The third point of is that this is a new area of society that will surely bring about its downfall. Luddites and older generations for centuries thought paper would spoil of the minds of children, then it was radio, then it was TV, then it was--and maybe still is now--video games. There have been numerous predicted societal downfalls throughout history, and yet nothing on the scale of the collapse of the Roman Empire has happened in recent times. We all have a vested interest in seeing us and hopefully others succeed. Allowing people and companies to legally operate with genetic editing will prevent it from operating underground, and will instead bring it under everyone’s eye. Without a doubt, though, letting the free market run around in the genetic code in us will be a disaster. I personally welcome all the criticisms on this topic and those vigilant biologists, as they are trying to protect themselves and humanity as a whole. While it might be difficult to implement, the federal government and other government and governmental organizations should be given good power and good insight with biologists and geneticists to regulate the field.

In conclusion, gene editing needs to be brought out fast and accessible, and at least the knowledge of how to do it to everyone. Though, we all need to be careful and understand the risks that gene editing poses. Of course, it’s important not to waste a person’s life, or the lives of their offspring on a failed genetic experiment, but let us not waste time on implementing that almost necessary changes, such as HIV immunity, that would naturally take hundreds of years to propagate throughout the entire human population, and let us do it “artificially” in one fell swoop.

Notes:

Topic: An opinion piece defending a view on any ethical issue.

* **Deadline:** Monday, April 15, 2019.
* Entries should be approx. 500 words – 800 word max.
* Email entries in Word or PDF format to [REDACTED].
* Entries will be judged by Philosophy faculty looking for the BEST ARGUMENT in defense of the most INTERESTING ETHICAL VIEW.
* Winners announced Friday, May 10, 2019 on the Philosophy Department website: <https://www.philosophy.udel.edu>