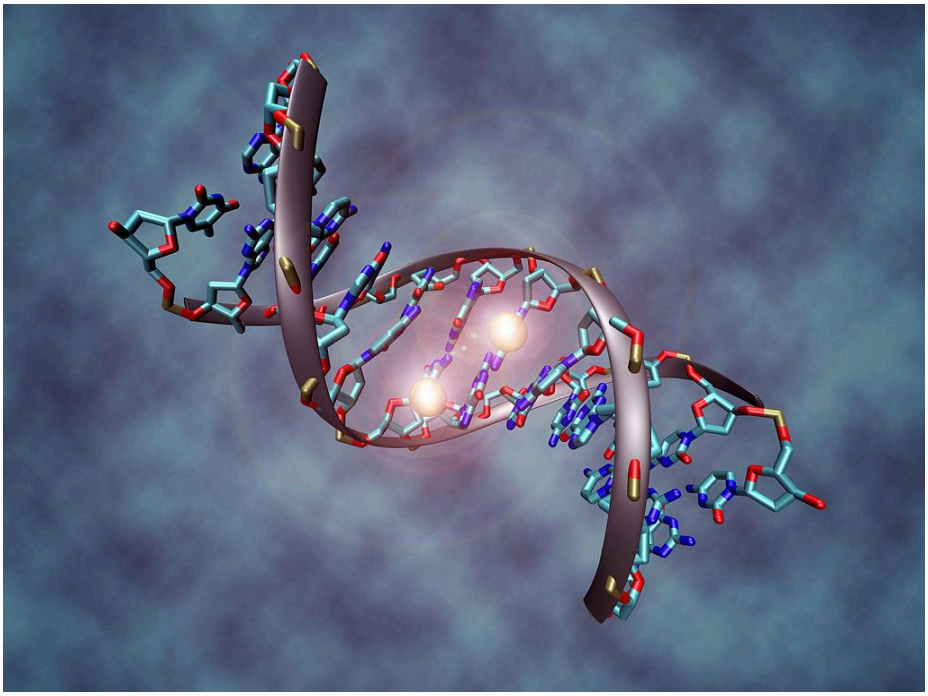
TECHNOLOGY

THE RISE OF CRISPR GENE EDITING

HOW CRISPR IS REVOLUTIONIZING BIOMEDICINE

By Swati Chandra Posted November 21, 2015



Bock, Cristoph, "DNA methylation." 02/18/06 via Wikimedia Commons. Attribution-Share Alike License.

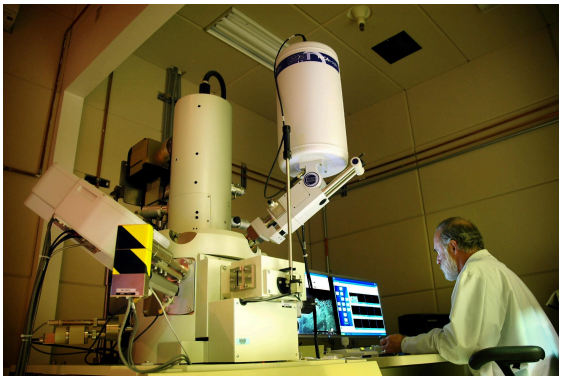
CRISPR, a relatively new gene-editing technology, has made quite the impact on the scientific community recently, and rightfully so. Ever since the notorious Chinese study, in which this technology was used on human embryos, was published, it has become clear that CRISPR has the ability to completely transform the field of biomedical engineering for the better. It has the potential to splice out faulty genes and cure diseases that, until this point, were thought to be incurable. This means diseases like cancer, Down Syndrome, and other genetic disorders could be eliminated before they even begin, all by means of this technology.

Without getting too much into its technicalities, CRISPR essentially has the ability to "cut" out certain faulty genes in an individual's genetic code, thus possibly preventing any negative effects of these faulty genes. This ability to completely get rid of a genetic mutation is cutting edge in and of itself, but it is especially notable because of its relatively low cost

and ease of use. It costs about $30 per use, the cost of three reasonably priced movie tickets or one pair of jeans. This means that scientists around the world can access this technology and research its future use in the biomedical field, which could cause monumental advancements in the discipline, all in the span of a few years.

While this widespread accessibility has raised some potential safety concerns, further research into CRISPR is the only way to see if it is viable for clinical use. In response to the experiment that occurred in China, Dr. Jennifer Doudna, the scientist who invented this technique herself, wrote in an email to *The Huffington Post* that "Although it has attracted a lot of attention, the study simply underscores the point that the technology is not ready for clinical application."

Given that not enough research has occurred, is it fair to use safety concerns as a reason to discontinue this experimentation? Even in the experiment that occurred in China, the scientists themselves admitted that safety is still an issue that must be resolved. Researchers are clearly making safety a priority, and the only way to ensure that this technology is used safely is to pursue further research.



Idaho National Laboratory, "Microscopy lab." 07/28/06 via Wikimedia Commons. Attribution License.

Even more importantly, without this type of experimentation, we will have no way to tell whether this procedure could possibly cure potentially life-threatening diseases. While getting caught up in the criticism, we too often forget the fact that this technology can help us achieve what haven't been able to for years. This technology has the power to eliminate certain diseases that have, up to this point, been incurable. This means that a child who could have been born with a rare form of genetic cancer, the blood disorder beta thalassemia experimented on in China, or even a disorder such as Down Syndrome would never have to experience the physical and emotional trauma that accompanies these diseases.

Keeping this in mind, while people argue for the ethical implications of this technology, isn't it worse to allow life-threatening diseases to carry on when there is a potential way to cure them? Christopher Gyngell, a bioethicist from the University of Oxford, made this point clear in his article published in *The Guardian*, writing that "Ignoring the resource is also risky. We may needlessly subject future generations to an endless cycle of suffering and disease." We have this technology available to us, and it has the potential to prevent disease and suffering. At the end of the day, the potential benefit of this technology greatly outweighs the cons, making it absolutely essential that further research on the technology continues.

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Of course, this technology, as well as this debate, has a long way to go before it is completely resolved, but it is our responsibility to ensure that the technology is given a chance to progress. The technology is still in its early stages, meaning that we still have the power to change its course. We can hinder it and prevent it from saving lives, or we can speak out and show that we are willing to see the benefits of this technology through. As misconceptions regarding this experimentation continue to rise, it is now in our power to inform people of the monumental benefits it could allow. CRISPR is revolutionizing the biomedical field by providing a way to cure countless diseases, and it is time that people are able to see that.