

# A Crack In Creation Summary

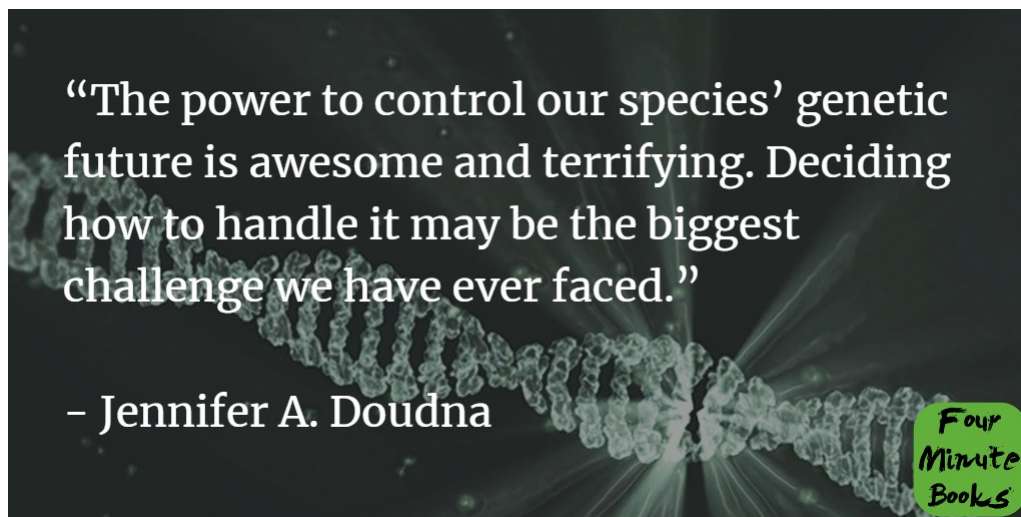
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**1-Sentence-Summary:** *A Crack In Creation* will teach you all about the power of gene editing that is made possible with CRISPR by detailing how it works, the benefits and opportunities it opens up, and the ethical risks of using it on humans.

**Read in:** 4 minutes

**Favorite quote from the author:**



We live in a day of superhero movies where we see scrawny young men go into a machine and come out super soldiers. It seems like science fiction to think that a similar improvement to the human condition could be possible. But we also are in a time of amazing technological and medical advancements that now make the idea of a real-life Captain America not so far-fetched.

CRISPR is a region of repeated DNA in bacteria that, according to new research, has wild possibilities for improving our lives. From eliminating diseases to helping us create healthier food, this new opportunity can help us do it all.

This is what you'll learn about in *A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution*. You're going to be blown away by some of the amazing genetic advances that author Jennifer Doudna's research may allow.

Here are the 3 most amazing lessons this book taught me about gene editing:

1. CRISPR is a process that happens naturally in bacteria, and scientists have found out how to use it on humans.

2. The ability to edit genes can significantly enhance our way of life by how it affects agriculture and the prevalence of diseases common to mankind.
3. As exciting as this new opportunity is, there are some questions and implications that we need to work out before we go further.

Get ready for your mind to be blown by some really fascinating breakthrough science! Let's get started!

## Lesson 1: Scientists have found a way to utilize the natural phenomenon of CRISPR that happens in bacteria.

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The acronym CRISPR stands for clustered regularly interspaced short palindromic repeats. Sounds complex, right? Think of it more simply as a part of bacterial DNA that lets us cut and modify genes as we please.

To understand how this all works, you need to know about three parts that allow these bacteria to cut through virus DNA to fight it:

1. CRISPR-associated, or CAS gene, specifically the Cas9 gene
2. CRISPR RNA
3. tracrRNA

Each of these three components has an important role in what bacteria does to modify DNA. The Cas9 gene lets the bacteria cut through virus DNA to disable its effects. It knows where to slice because CRISPR RNA acts as a messenger to tell Cas9 where to go make the snip. Last we have tracrRNA, which turns on the cutting action.

So we know that this happens naturally in our world, all around us, all the time. **The next question researchers asked was whether they could use CRISPR to cut specific DNA in a lab.** And it turns out this is possible.

When CRISPR makes it's slice, there's a space right afterward that the body begins to repair itself. Utilizing that opportunity, scientists can insert whatever DNA sequence they want to, which modifies the traits of the organism. Thus, we can change whatever we desire to be different about our genes. This can upgrade many aspects of our lives as we're about to see.

## Lesson 2: We can use gene editing to grow healthier crops and eliminate some diseases.

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Let's take a look at some of the practical applications of this tool. The ability to modify genes gives us a chance to create crops that produce more, resist sickness, and are healthier.

The citrus industry, for example, has a problem with what's called yellow dragon disease. Utilizing gene editing, we could end the decimation of plantations in Asia that this plague causes. We can also modify our food to be better for us, like taking trans fats out of soybean oil for example.

Some pigs in Canada have already been genetically modified to have better digestion. This reduces phosphorus in their waste that causes algal blooms that kill aquatic animals.

For humans, we've got over 7,000 diseases that result from a single gene mutation each. All of these could be gone with CRISPR. **Even HIV, which affects millions around the world, may be preventable with gene editing.** It could also find a cure for fatal diseases like muscular dystrophy.

This amazing new tool even has a chance at stopping cancer entirely. Because DNA mutations cause cancer, the ability to cut and modify DNA at will might be able to stop it. All of this sounds amazing, but there are some roadblocks to this nearly sickness-free world you're imagining.

### Lesson 3: Although this new breakthrough sounds all good, we must answer some questions and ethical implications about it.

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The author's breakthrough research was going well in 2014 when an entrepreneur had an interesting pitch to co-author Samuel Sternberg. They wanted him to help create a "CRISPR baby." Sternberg declined this offer, but this began a string of ethical questions about gene editing that we still need to answer.

Is it ethically okay to use something like this to choose a baby's gender or modify it to be stronger or prettier? Concerns began to arise in the author's mind about someone abusing CRISPR. **It got so bad at one point that she once had a dream that she met Adolf Hitler, who asked about the process.** The thought of a psychopath like him getting this technology terrified Doudna.

Doudna suggests reviewing three themes as we figure out the next steps of gene editing technology. The first is safety, which she feels will soon be taken care of as the science of CRISPR advances. Next is the ethical component. While eliminating diseases is amazing, some might wonder why we should stop there. It may not be long before unregulated gene editing allows people, mostly the rich, to buy better bodies for themselves.

Which brings us to her last point of the regulations that governments must make. This has already begun with an International Summit on Human Gene Editing back in 2015. We can only hope that meetings like this one will continue to progress efforts to enforce limits. I for one hope that we will soon see a time when we can use CRISPR to make a better world for all of us.

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## **A Crack In Creation Review**

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Whoa, what a mind-blowing idea! *[A Crack In Creation](#)* is fascinating, exciting, and a little scary all at the same time. I've always been interested in genetics and physiology and knew a little about CRISPR, but this book gave me a lot more in-depth knowledge that I'm sure you'll enjoy too!

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## **Who would I recommend the A Crack In Creation summary to?**

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The 43-year-old lawmaker who is curious about the possibilities and issues surrounding gene editing, the 24-year-old who is majoring in biology and is curious to learn more about CRISPR, and anyone who wants to discover how this amazing breakthrough works.