



Book Club Guide

# **The Code Breaker**

by Walter Isaacson

## About the Author

Walter Isaacson, a professor of history at Tulane, has been CEO of the Aspen Institute, chair of CNN, and editor of Time. He is the author of Leonardo da Vinci; The Innovators; Steve Jobs; Einstein: His Life and Universe; Benjamin Franklin: An American Life; and Kissinger: A Biography, and the coauthor of The Wise Men: Six Friends and the World They Made. Visit him at [Isaacson.Tulane.edu](http://Isaacson.Tulane.edu).

Retrieved from: <https://www.simonandschuster.com/authors/Walter-Isaacson/697650>

## About the Book

The bestselling author of Leonardo da Vinci and Steve Jobs returns with a “compelling” (The Washington Post) account of how Nobel Prize winner Jennifer Doudna and her colleagues launched a revolution that will allow us to cure diseases, fend off viruses, and have healthier babies.

When Jennifer Doudna was in sixth grade, she came home one day to find that her dad had left a paperback titled *The Double Helix* on her bed. She put it aside, thinking it was one of those detective tales she loved. When she read it on a rainy Saturday, she discovered she was right, in a way. As she sped through the pages, she became enthralled by the intense drama behind the competition to discover the code of life. Even though her high school counselor told her girls didn’t become scientists, she decided she would.

Driven by a passion to understand how nature works and to turn discoveries into inventions, she would help to make what the book’s author, James Watson, told her was the most important biological advance since his codiscovery of the structure of DNA. She and her collaborators turned a curiosity of nature into an invention that will transform the human race: an easy-to-use tool that can edit DNA. Known as CRISPR, it opened a brave new world of medical miracles and moral questions.

The development of CRISPR and the race to create vaccines for coronavirus will hasten our transition to the next great innovation revolution. The past half-century has been a digital age, based on the microchip, computer, and internet. Now we are entering a life-science revolution. Children who study digital coding will be joined by those who study genetic code.

Should we use our new evolution-hacking powers to make us less susceptible to viruses? What a wonderful boon that would be! And what about preventing depression? Hmm...Should we allow parents, if they can afford it, to enhance the height or muscles or IQ of their kids?

After helping to discover CRISPR, Doudna became a leader in wrestling with these moral issues and, with her collaborator Emmanuelle Charpentier, won the Nobel Prize in 2020. Her story is an “enthraling detective story” (Oprah Daily) that involves the most profound wonders of nature, from the origins of life to the future of our species.

Retrieved from: <https://www.simonandschuster.ca/books/The-Code-Breaker/Walter-Isaacson/9781982115869>

## Discussion Questions

1. If your book offers a **cultural portrait**—of life in another country or region of your own country, start with questions a, b, and c ...

- a. What **observations** are made in the book?  
Does the author examine economics and politics, family traditions, the arts, religious beliefs, language or food?
- b. Does the author **criticize or admire** the culture? Does he/she wish to preserve or change the way of life? Either way, what would be risked or gained?
- c. What is **different** from your own culture? What do you find most surprising, intriguing or difficult to understand?

2. What is the **central idea** discussed in the book? What issues or ideas does the author explore? Are they personal, sociological, global, political, economic, spiritual, medical, or scientific

3. Do the issues **affect your life**? How so—directly, on a daily basis, or more generally? Now or sometime in the future?

4. What **evidence** does the author use to support the book's ideas? Is the evidence convincing...definitive or...speculative? Does the author depend on personal opinion, observation, and assessment? Or is the evidence factual—based on science, statistics, historical documents, or quotations from (credible) experts?

5. What kind of **language** does the author use? Is it objective and dispassionate? Or passionate and earnest? Is it biased, inflammatory, sarcastic? Does the language help or undercut the author's premise?

6. What are the **implications** for the future? Are there long- or short-term consequences to the issues raised in the book? Are they positive or negative...affirming or frightening?

7. What **solutions** does the author propose? Are the author's recommendations concrete, sensible, doable? Who would implement those solutions?

8. How **controversial** are the issues raised in the book? Who is aligned on which sides of the issues? Where do you fall in that line-up?

9. Talk about **specific passages** that struck you as significant—or interesting, profound, amusing, illuminating, disturbing, sad...? What was memorable?

10. What have you **learned** after reading this book? Has it broadened your perspective about a difficult issue—personal or societal? Has it introduced you to a culture in another country...or an ethnic or regional culture in your own country?

Retrieved from: <https://www.litlovers.com/run-a-book-club/questions-for-nonfiction>

## Author Interview

Biographer Walter Isaacson has profiled a number of eminent scientists of the past, from Leonardo da Vinci to Albert Einstein. In his latest book, *The Code Breaker*, Isaacson turns his attention to the life and work of a pioneering contemporary scientist—biochemist Jennifer Doudna. I interviewed Isaacson for an editorial we published in this issue that reflects on the unusual occasion of the publication of a book of this prominence that includes so much detail about the culture and inner workings of research and scientific publishing. A review of the book by bioethicist George Annas also appears in this issue of *Science*.

Below are some highlights from our conversation. The interview has been edited for clarity and length.

**Holden Thorp:** Why did you feel you had to start the book with a primer on molecular biology?

**Walter Isaacson:** I wanted to put CRISPR and gene editing in the historical context of Mendel and Darwin laying the ground for what becomes known as a gene, then structural biology helping us figure out how DNA works, and then finally, Jennifer picking up the torch as a structural biologist and biochemist to study RNA, which happened to have a lot of ramifications. I also wanted to make the book a journey of discovery, where the reader and I could know the joy of understanding how life works.

**Holden Thorp:** You've written about Ben Franklin, Albert Einstein, and Leonardo da Vinci. All had died long before your books on them came out. Did you think differently about writing about someone who's still alive?

**Walter Isaacson:** Yes. The good thing about writing about somebody who is alive is that you can report in real time. You can stand by her side in the lab. You can lurk in her Slack channels. You can see moment by moment how history is being made. And Jennifer was extraordinarily open, just allowing me to do anything, talk to anyone, and be in all of her meetings. She never asked for any control of the book, or the right to change anything.

**Holden Thorp:** How did you decide to focus on Doudna, and what does she have in common with the other people that you have written about?

**Walter Isaacson:** I believe there've been three great innovation revolutions of modern time. They are the discovery of the three basic particles of our existence: the atom, the bit—which is information coded in binary digits—and the gene. I wanted to do this third great wave of innovation, and I wanted a central character who was involved in all aspects of it. What first fascinated me was her work on the structure of RNA.

**Holden Thorp:** It was so huge when that structure came out. It was almost as big as CRISPR.

**Walter Isaacson:** The original thrust of my book was how molecules cause the mechanics of life to happen, and RNA seems so key to that. Doudna came to Aspen about 4 years ago, and also talked about CRISPR. And it seemed that easy gene editing tools would be the most important biological advance, but also the most important policy and ethical challenge we would face.

I wanted to show that science is a team sport, so there are many other major players in the book, including Feng Zhang, George Church, Emmanuelle Charpentier, and Jillian Banfield. But I also wanted to show the impact that a stubborn, insightful, dedicated person can have because I think science is a mix of individual initiative and collaborative effort. As I started shaping the book, using Doudna as the central character became more and more appealing. And fortunately, it gets to culminate with her and Emmanuelle winning the Nobel Prize, and with her deploying teams to use CRISPR in the fight against COVID.

**Holden Thorp:** We were pretty excited about the Nobel Prize, as you might imagine, since the 2012 Science paper was so important.

**Walter Isaacson:** It was a spectacular paper, and it was handled expeditiously.

**Holden Thorp:** There's a lot of stuff about journals in the book. Did you know all these things about scientific publishing?

**Walter Isaacson:** No. It was one of the dozens of little things that was a joy to learn, which is the importance of the review process for journals, and how that is central to the advance of science.

**Holden Thorp:** What did you learn specifically about Science that you might want to share?

**Walter Isaacson:** I learned the rigor and honesty of the review process is so crucial to the progress of science. And in an era that's become loose with facts and truths, and skeptical about science, it's useful to have bulwarks that believe that evidence matters, and intellectual honesty is our true north compass point.

**Holden Thorp:** Well, that's music to my ears, and I think that'll resonate with a lot of people. So, thank you for saying that.

**Holden Thorp:** Jim Watson's very important in the book, and I thought it was remarkable that you and Jennifer went to see him. What are you hoping people will leave thinking about Jim Watson, and how should science handle his legacy?

**Walter Isaacson:** What I hope to convey is that human nature is complex. And that, in particular, when it comes to human traits, there's a complexity that starts with having to understand the useful traits somebody like Watson has while denouncing and abhorring his prejudices and stubborn views. Even more complex is realizing that the good and the bad in people may be intertwined. I don't forgive any of Watson's prejudices and unscientific biases, but I find it important to see the person as a whole. Someday somebody's got to figure out how to write all of this up in a way that puts Watson in proper perspective.

[When I later asked Doudna about the visit with Watson, she elaborated: "Walter was hoping there could be a symmetry to the story told in the book, which began with me reading Watson's *The Double Helix* and being inspired by the work and the people it described. It would have been great if that inspiration could have been renewed or extended in some way...but the visit only confirmed that there would be no neat closure



to this part of the storyline. From our meeting, I did not sense that Watson regretted or had reflected on his egregious statements and behavior.”]

**Holden Thorp:** In the book, you write about the unfortunate way Eric Lander wrote up CRISPR in his Cell paper, and the Jim Watson tribute that got him into hot water. But do you think Biden made a good decision making Lander his presidential science adviser and the director of the Office of Science and Technology Policy?

**Walter Isaacson:** Biden made a spectacularly good decision with Eric Lander. His drive, which sometimes leads to clashes with people, is part and parcel of his greatness. And he was a driving force on the human genome project. The Broad Institute is a driving force of miraculous import in translating genetic research into medicine. And his ability to get people to collaborate, and be a magnet for talent, is unsurpassed in America. He could not be a better choice.

Retrieved from: <https://www.science.org/content/blog-post/conversation-walter-isaacson-author-code-breaker>

## Links and Other Resources

Talks at Google: <https://www.youtube.com/watch?v=-LuAuZ09uSs>

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As a group we rated this book:

|      |   |              |   |           |
|------|---|--------------|---|-----------|
| 1    | 2 | 3            | 4 | 5         |
| Ugh! |   | It was OK... |   | Loved it! |

Would we recommend this book to other book clubs?

Yes          No          Undecided

Why/why not?

Our discussion: