The Beautiful Cure Summary

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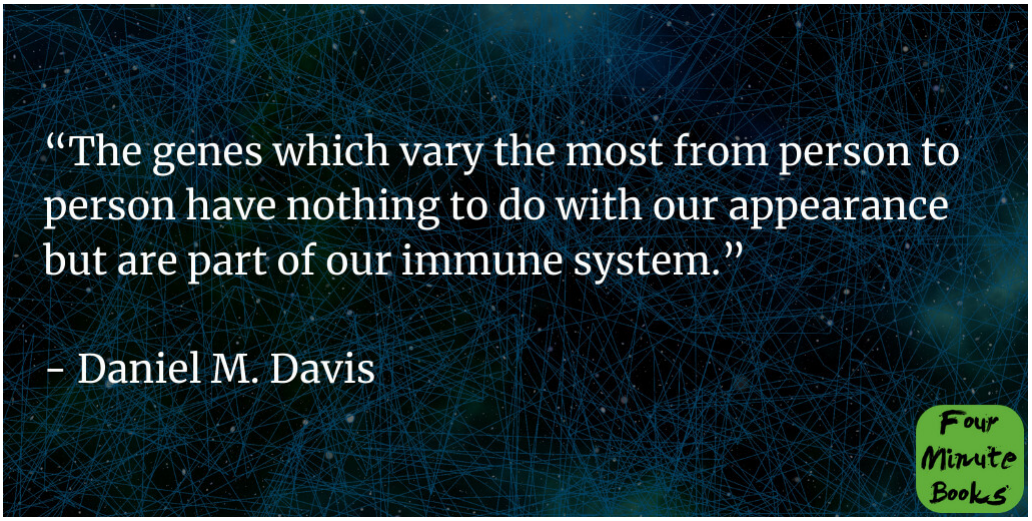
1-Sentence-Summary: *The Beautiful Cure makes you smarter by showing you how your immune system works and how recent advancements in our understanding of it can help us improve our health like never before.*

Read in: 4 minutes

Favorite quote from the author:



When you get a paper cut, how often do you stop and observe? Your body has these extraordinary abilities to stop the bleeding, scab over, and heal all on its own. But you probably don't think much of them.

It may seem simple but this is an example of one of the most complex systems in your body doing its job. One of the most important jobs there is-keeping you alive by protecting you from outside threats.

This is your immune system. It's made up of an incredibly complex system of tissues, cells, proteins, and hormones that work together to protect your body. But we haven't understood this essential system until recently.

In Daniel M. David's book, *The Beautiful Cure: The Revolution of Immunology and What it Means for Your Health*, he delves into the fascinating history of how scientists have and are still uncovering the mysteries of these parts of the body.

It also contains interesting explanations of the inner workings of each component. He explains that by using this knowledge, there is hope we can finally get the upper hand in the fight against devastating diseases like HIV, cancer, and autoimmune diseases.

Here are the 3 most compelling lessons I've learned from this book:

1. We have both an adaptive and innate immune system to fight against threats in the body.
2. Cytokines coordinate the immune system's response.
3. We have the potential to beat all kinds of diseases by harnessing the power of the immune system.

Let's hop on the magic school bus and head into the immune system!

Lesson 1: We need both our adaptive and innate immune system to help fight off foreign invaders in the body.

Vaccines are one of the most important medical advances of the modern era and they have saved countless lives. But did you know that we actually have had them in some form since the 1700s?

After observing milkmaids with cowpox who seemed to have an immunity to smallpox, Edward Jenner came up with the idea to inject cowpox pus in hopes it would protect one from smallpox. It worked, and in 1796, the first vaccine was created.

While Jenner took advantage of our adaptive immune system to create a vaccine, the science behind how it worked didn't emerge until much later.

Two types white blood cells, T and B cells, have receptors that link with other proteins to perform various tasks. When these cells link to something that is foreign to them, the cell gets "turned on" and kills the infected cell or germ. **After this contact, the cell will duplicate into more cells that "remember" that threat and are ready to fight it when they see it again.** This is the *adaptive immune response* and it's what vaccines activate in your body.

But if we attack anything foreign, wouldn't our body have a reaction to every little thing that came in, like a new food? That's where innate immunity helps. Charles Janeway proposed that there must also be a second signal before an immune response is kicked off.

He theorized that there are receptors on the T and B cells that interlock specifically with infected cells and germs. This goes to show that while the adaptive immune response recognizes new threats, our body comes equipped with natural receptors to protect us from certain invaders.

Lesson 2: Cytokines direct your immune system's response.

Cytokines are special proteins made by cells that serve as molecular messengers in the body to coordinate immune responses. There are different kinds, and each has a unique purpose. **They communicate with various cells throughout the body and tell when we should or shouldn't start an immune response.**

They also have a lot of potential to be used in medications. We now are using cytokines to help fight and kill cancer cells as well as treat both hepatitis B and C.

But problems can occur when you have an overproduction of these important messengers, resulting in autoimmune disease. One example of this is rheumatoid arthritis, a condition that causes joint damage and severe pain. Fortunately, we now have a weapon against rheumatoid arthritis, and it's the opposite of a cytokine: the anti-cytokine.

Scientist Sir Marc Feldman discovered an overabundance of a specific cytokine known as TNF in the joints of patients with rheumatoid arthritis and set out to find a way to block it. His anti-cytokine would come in the form of an antibody, but he needed one that would block TNF specifically.

Fortunately, another scientist had already created this anti-cytokine. When he administered the anti-TNF antibody to patients it held off and even reversed the damage!

Lesson 3: Using the power of the human immune system, we have the potential to cure many devastating diseases.

When 22 year old Sharon was diagnosed with stage IV melanoma, she opted for an experimental therapy. Doctors said she had a 50 percent chance of living six more months because it had spread to her lung. After just three months of experimental injections, the tumor had shrunk 60 percent.

The treatment, focusing on the immune response, was made by Dr. Jim Allison. It has revolutionized cancer research and treatment today. The problem that arises with cancer is that T cells come when they detect a threat, but switch off too early, letting the cancer grow. He found a way to stop them from switching off.

It involved finding a receptor on T cells that if blocked with an antibody will allow it to keep attacking. When first given the antibody, patients see a temporary growth in the tumor as immune cells attack. But soon the cells start effectively destroying the tumor. This is now a mainstream cancer treatment known as *immune checkpoint therapy*.

This is just one example of how we can take advantage of the ever increasing knowledge we have about our immune system. **Since this scientists have found more than 20 new receptors to essentially "take the brakes off" of immune cells and allow them**

to keep fighting disease. This is promising not just for the future of treating cancer, but also HIV and other chronic diseases.

The Beautiful Cure Review

The Beautiful Cure is fascinating. There is so much that goes into our immune system that we are just beginning to understand and this gives a lot of hope for the treatment of disease in the future. I would say it gets a little complex at times, and may be harder to understand without a scientific background.

Who would I recommend The Beautiful Cure summary to?

The 62-year-old with a chronic illness that wants to understand their body better, the 34-year-old who is obsessed with health, and anyone that's curious to know what goes on inside when they get sick.