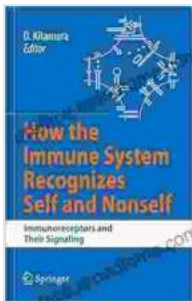


How the Immune System Recognizes Self and Nonself: An Essential Guide

The immune system is a complex network of cells, tissues, and organs that work together to protect the body from infection and disease. A key function of the immune system is to be able to distinguish between the body's own cells (self) and foreign cells (nonself). This process of self-recognition is essential for a healthy immune response.



How the Immune System Recognizes Self and Nonself: Immunoreceptors and Their Signaling by Guan Heng Yeoh

★★★★★ 5 out of 5

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Text-to-Speech: Enabled

Screen Reader: Supported

Print length : 269 pages



How the Immune System Works

The immune system is made up of a variety of specialized cells that work together to identify and destroy foreign invaders. These cells include:

- White blood cells
- Antibodies
- Complement proteins

When the immune system encounters a foreign invader, it launches an immune response. The first step in this response is to identify the invader as nonself. This is done by recognizing specific molecules on the surface of the invader that are not found on the body's own cells.

Once the invader has been identified as nonself, the immune system will mount an attack to destroy it. This attack may involve the production of antibodies, which are proteins that bind to the invader and mark it for destruction. The immune system may also produce complement proteins, which are proteins that help to kill the invader.

Self-Recognition

In order for the immune system to function properly, it must be able to distinguish between self and nonself. This is done by recognizing specific molecules on the surface of cells called MHC molecules.

MHC molecules are proteins that are expressed on all cells in the body. Each cell has a unique set of MHC molecules that distinguishes it from other cells. The immune system uses MHC molecules to identify self-cells and nonself-cells.

Self-cells express MHC molecules that are recognized by the immune system as "self." Nonself-cells express MHC molecules that are not recognized by the immune system as "self." This allows the immune system to distinguish between the body's own cells and foreign cells.

Importance of Self-Recognition

Self-recognition is essential for a healthy immune response. If the immune system is unable to distinguish between self and nonself, it may attack the

body's own cells. This can lead to autoimmune diseases, which are characterized by the immune system attacking the body's own tissues.

Autoimmune diseases can be debilitating and even life-threatening. Some of the most common autoimmune diseases include:

- Type 1 diabetes
- Rheumatoid arthritis
- Multiple sclerosis
- Lupus

By understanding the process of self-recognition, scientists are developing new treatments for autoimmune diseases. These treatments are designed to help the immune system distinguish between self and nonself, and to prevent it from attacking the body's own cells.

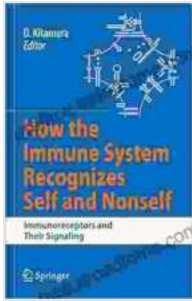
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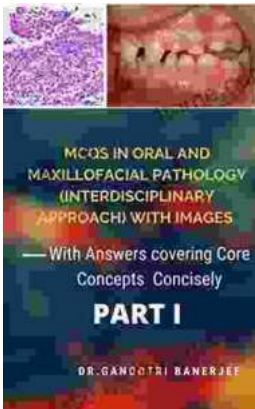
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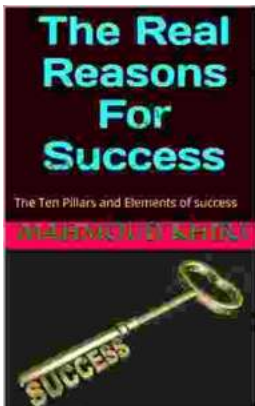


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