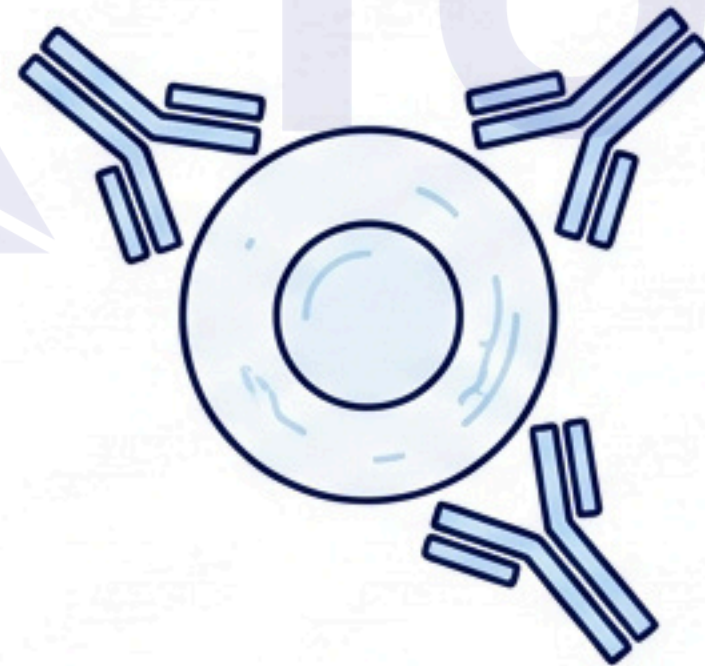


IMMUNOLOGY ESSENTIALS

Auto Immunity: When the Body Attacks Itself

Understanding the failure of self-recognition in higher vertebrates.



The Core Premise: Memory-Based Acquired Immunity

Higher vertebrates evolved a sophisticated immune system based on one fundamental ability: differentiating foreign organisms from **self-cells**. **Two corollaries emerge from this ability:**

SELF

Native Cells

The immune system recognizes the body's own tissues. Under normal biological conditions, these cells are protected and tolerated, not attacked.



NON-SELF

Foreign Organisms & Molecules

The system detects and targets pathogens and foreign molecules.

Note: Most of experimental immunology deals directly with understanding this aspect.





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The Internal Breach: When Differentiation Fails

Occasionally, the highly evolved ability to distinguish 'self' from 'non-self' breaks down, leading to an internal biological crisis.



The Causes

Driven by genetic reasons and other currently unknown factors that disrupt normal immune logic.



The Glitch

The immune system loses its differentiation capability, failing to recognize native tissues as 'self'.



The Response

The body mounts an active immune response, aggressively attacking its own healthy self-cells.

The Consequence: Auto-Immune Disease

This internal attack results in significant physiological damage to the body.

Defining Auto-Immune Disease

A pathological condition resulting directly from tissue damage caused by the body's own immune system attacking self-cells due to a **failure in biological recognition**.

TEXTBOOK EXAMPLE

Rheumatoid Arthritis

A prominent example of an auto-immune disease that affects a large number of people in our society. It demonstrates the profound damage that occurs when the body's natural defense defense system targets its own native tissues.



Core Concepts to Remember

Evolutionary Trait

Memory-based acquired immunity in higher vertebrates is defined by the ability to differentiate 'self' from 'non-self'.

The Core Rule

Normal immunity targets foreign molecules and organisms (the focus of experimental immunology) while protecting self-cells.

The Exception

Due to genetic and unknown reasons, the body can erroneously attack its own self-cells, causing systemic damage.

Standard Example

Rheumatoid arthritis is the primary benchmark example of an auto-immune disease affecting human society.



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