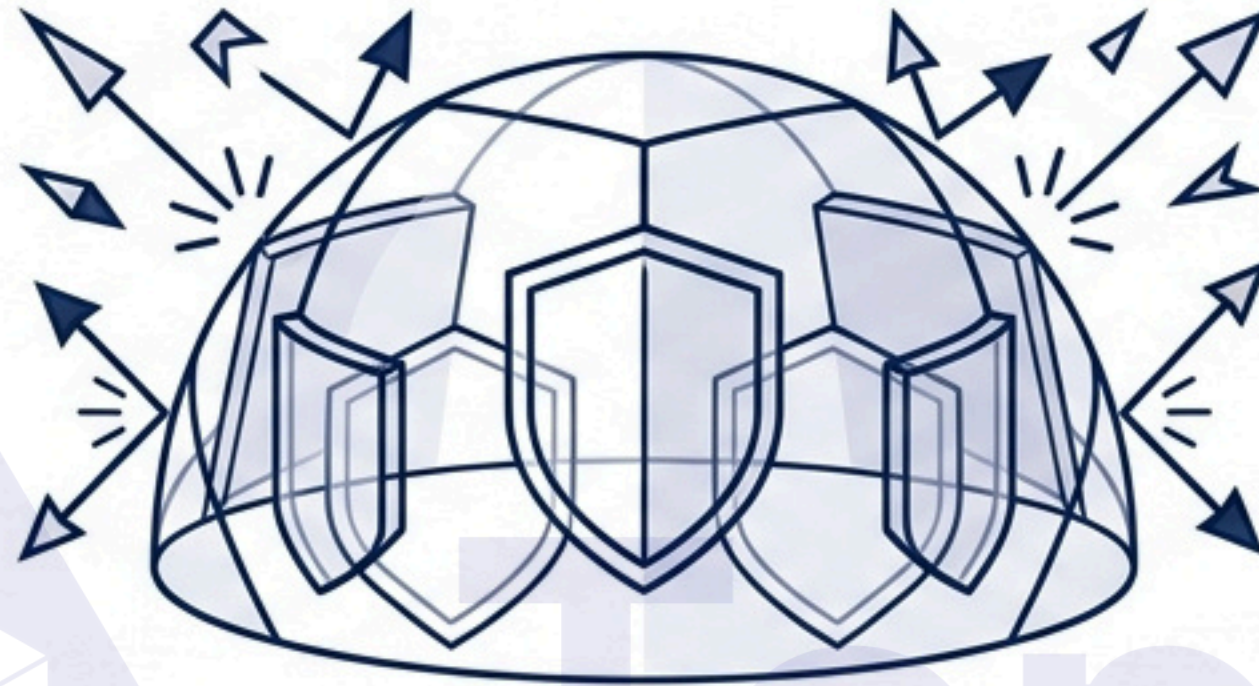


The Architecture of Immunity

A foundational blueprint of human defense systems.

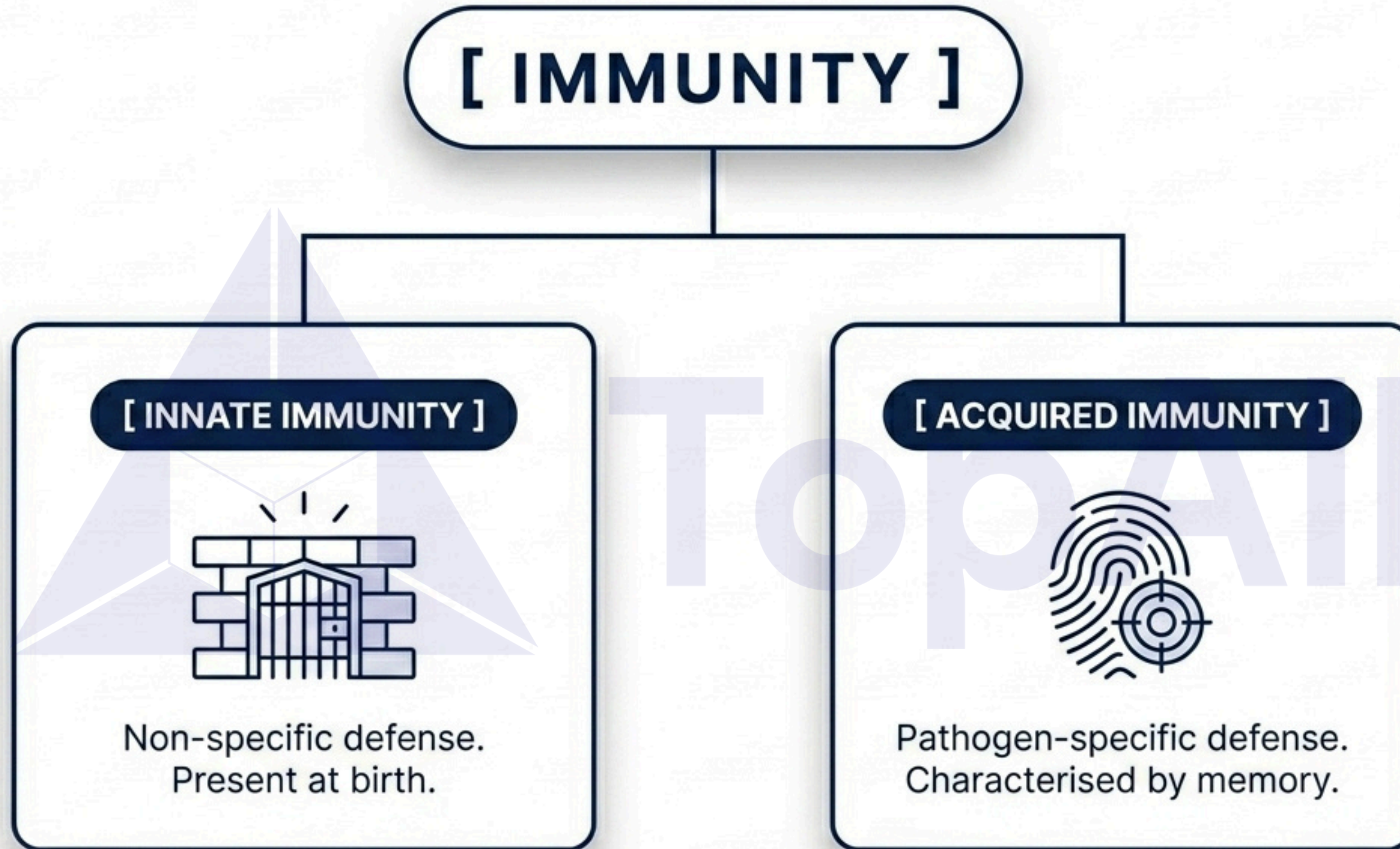




What is Immunity?

**The overall ability of the host to
fight disease-causing organisms.**

Conferred by the host's immune system.



Future study will anchor onto this exact two-part classification.



**You've Learned the Theory.
Let's Test Them Now.**

$$E=mc^2$$



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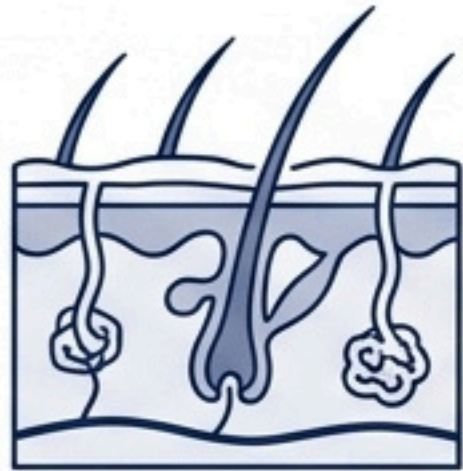


Innate Immunity: The Four Barriers

[INNATE]

[NON-SPECIFIC]

[AT BIRTH]



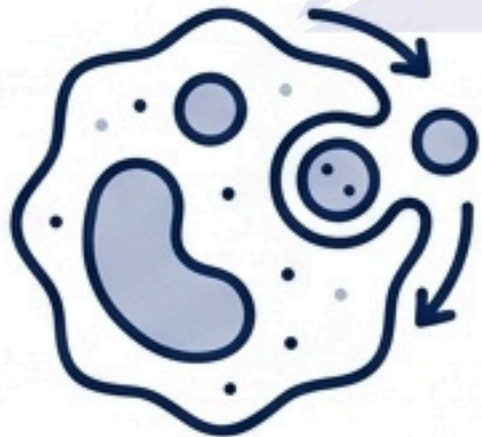
Physical Barriers

Skin (main barrier) and **Mucus** coatings lining respiratory, gastrointestinal, and urogenital tracts to trap microbes.



Physiological Barriers

Acid in the stomach, saliva in the mouth, and **tears** from the eyes prevent microbial growth.



Cellular Barriers

Leukocytes (WBCs) like PMNL-neutrophils, monocytes, and natural killer lymphocytes in blood, plus macrophages in tissues that phagocytose microbes.



Cytokine Barriers

Virus-infected cells secrete **interferons**—proteins that protect surrounding non-infected cells from further viral infection.

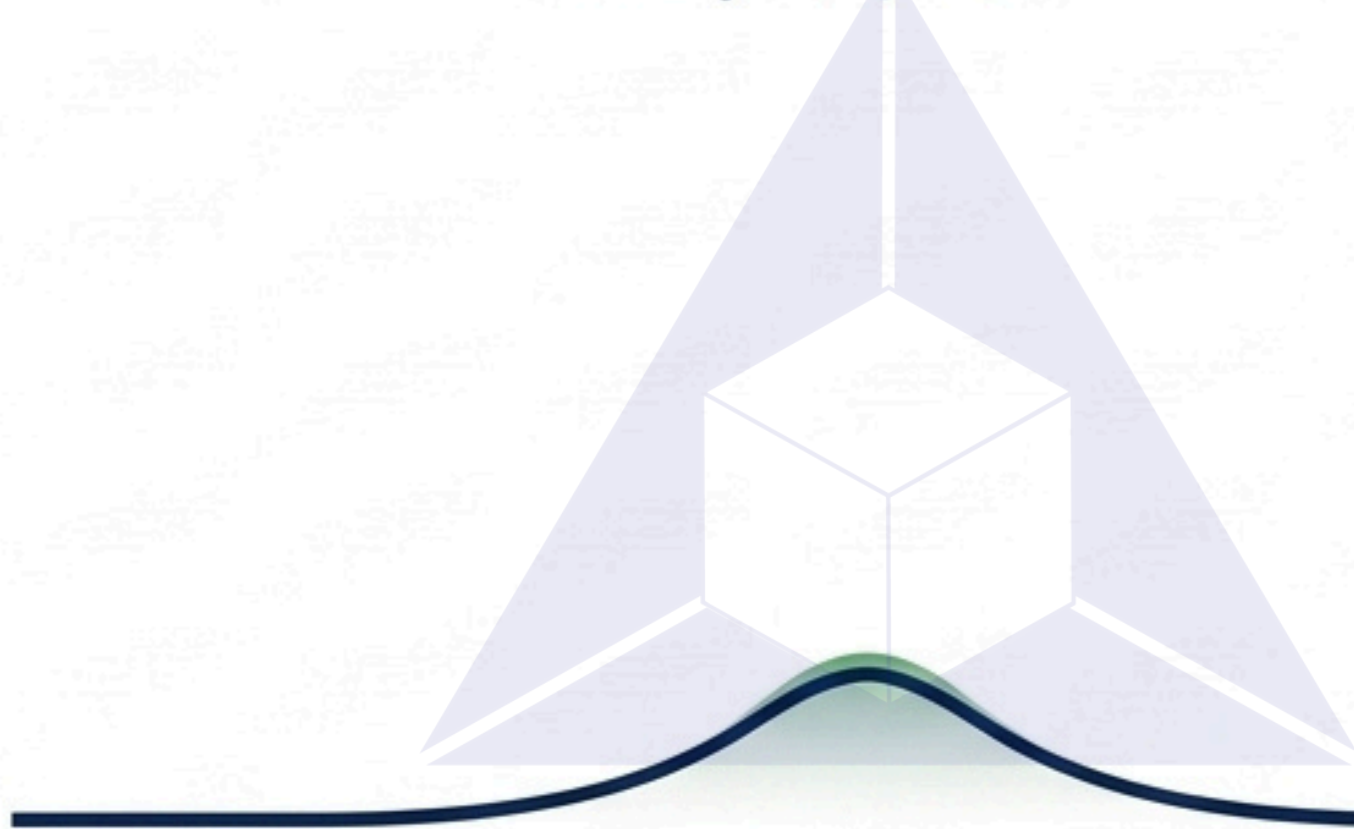
Acquired Immunity: The Memory Response

[ACQUIRED]

[PATHOGEN-SPECIFIC]

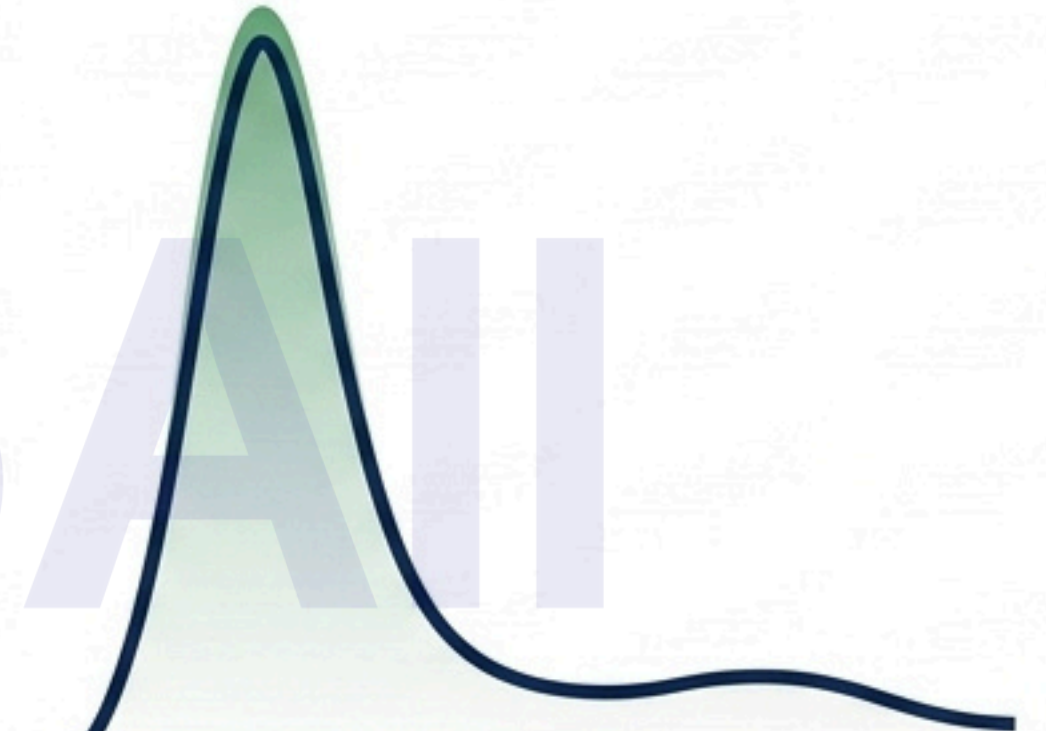


Primary Response



The body encounters a pathogen for the first time, resulting in a response of low intensity.

Secondary (Anamnestic) Response



The same pathogen elicits a highly intensified response because the body has retained a memory of the first encounter.

Carried out by special blood lymphocytes: B-lymphocytes (produce antibodies) and T-lymphocytes (helper cells).

Key Takeaways: The Synthesis Matrix

Dimension	Innate Immunity	Acquired Immunity
Time of Onset	Present at the time of birth	Acquired during lifetime (after exposure)
Specificity	Non-specific (general defense)	Pathogen-specific (targeted defense)
Memory	Absent (responds identically every time)	Present (anamnetic response)
Primary Mechanisms	Physical, physiological, cellular, and cytokine barriers	Primary and secondary responses via B-cells and T-cells



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