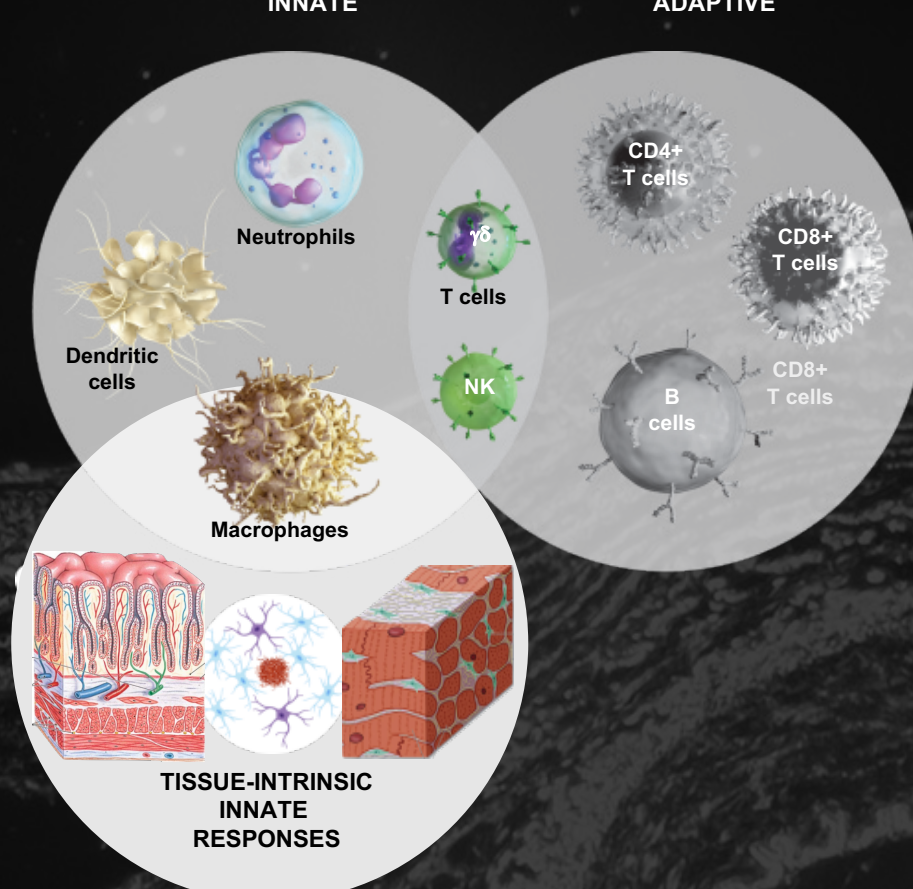


UNDERSTANDING INNATE IMMUNITY

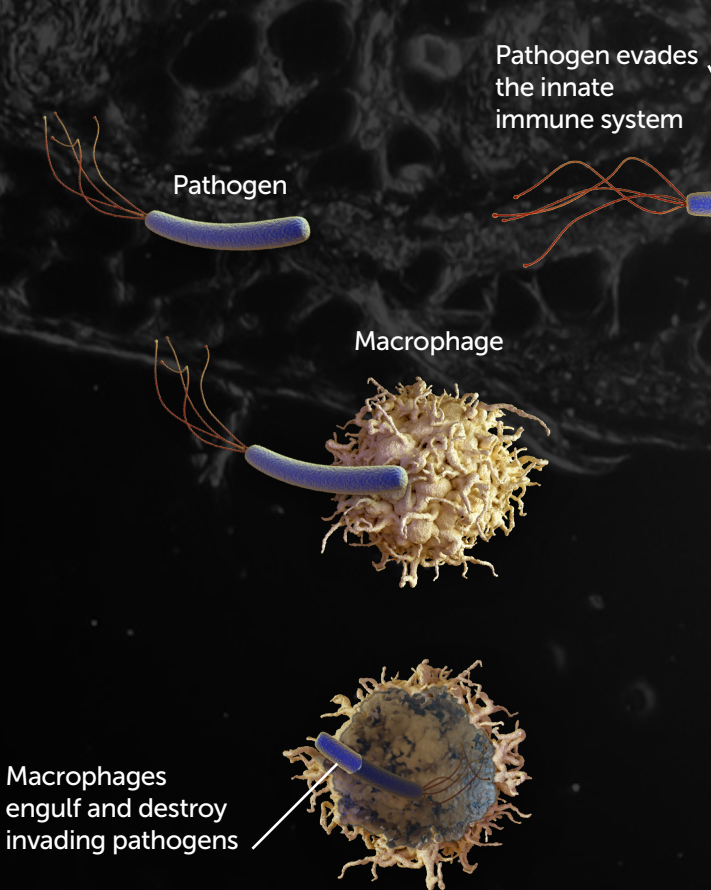
INTRODUCTION

The immune system is comprised of two arms that work together to protect the body – the innate and adaptive immune systems.



INNATE IMMUNITY

Innate immunity is the body's first line of immunological response and reacts quickly to pathogens and other cell stressors and danger signals.



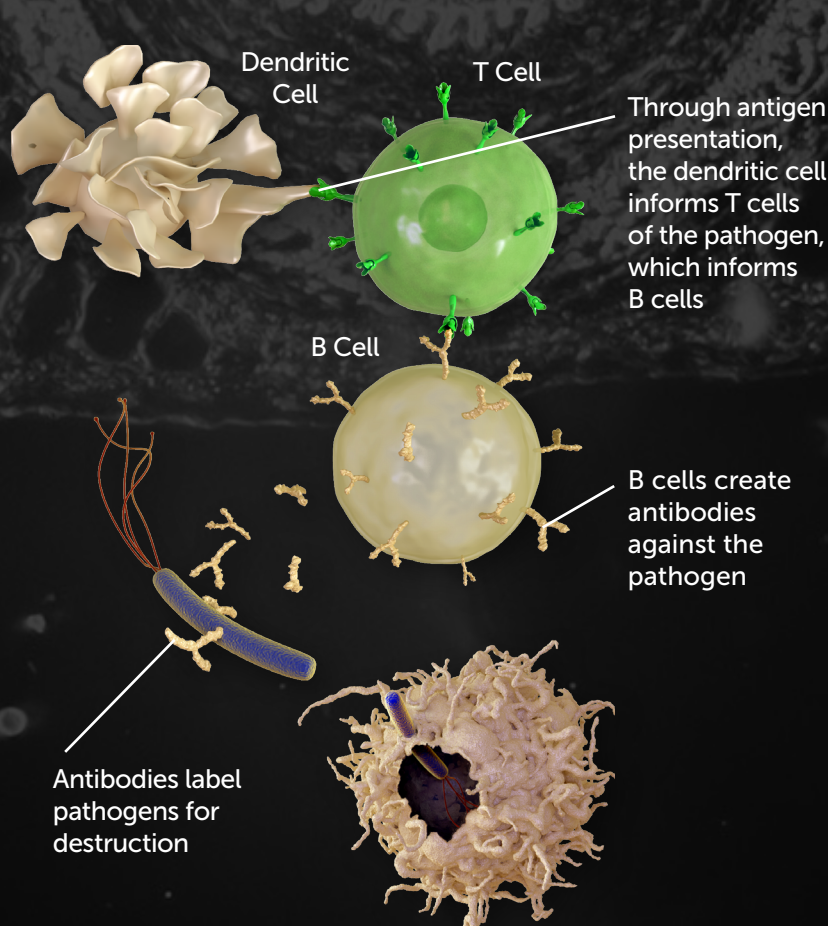
Scientists estimate innate immunity comprises approximately:



80% of the immune system

ADAPTIVE IMMUNITY

The adaptive, or acquired, immune system is activated when the innate immune system is not able to fully address a threat, but responses are slow, taking up to a week to fully respond.

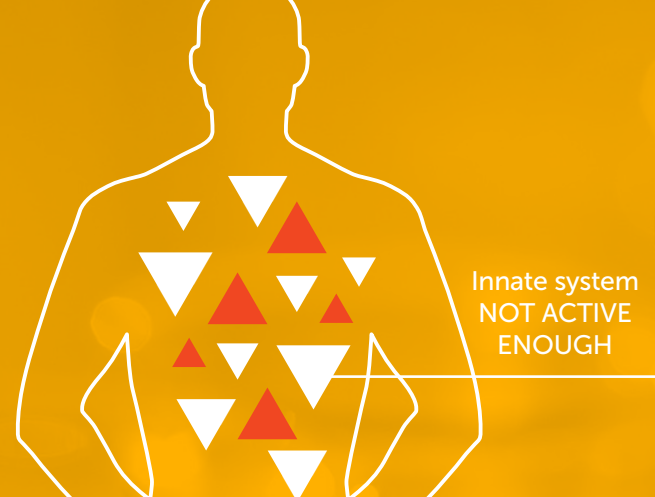


The adaptive immune system creates memories using antibodies produced by the B cell to remember pathogens and protect against repeat invaders.

IMMUNE SYSTEM AND DISEASE

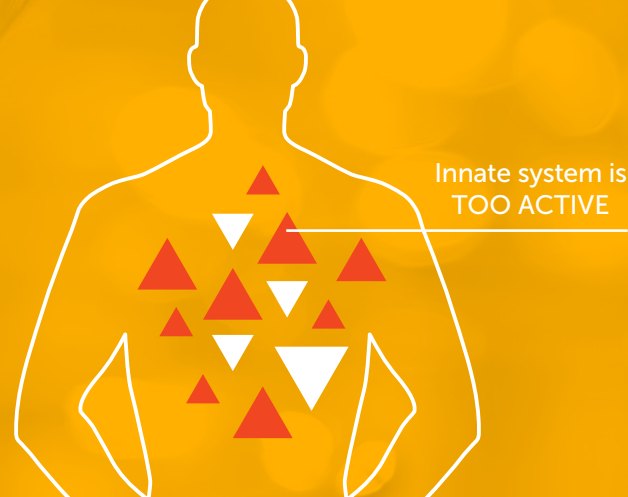
If the immune system consistently under-responds or over-responds, serious diseases can result.

CANCER



Cancers grow and spread when tumor cells evade detection by the immune system. The innate immune system is responsible for detecting cancer cells and signaling to the adaptive immune system for the destruction of the cancer cells.

INFLAMMATION



Certain diseases trigger the innate immune system to unnecessarily respond and cause excessive inflammation. This type of chronic inflammation is associated with autoimmune and auto-inflammatory conditions.

DEEP DIVE INTO INNATE IMMUNITY

A variety of innate immune cell types and tissue-intrinsic innate immune pathways build the first line of defense, surveilling for threats and quickly responding to invading pathogens.

PATTERN RECOGNITION RECEPTORS

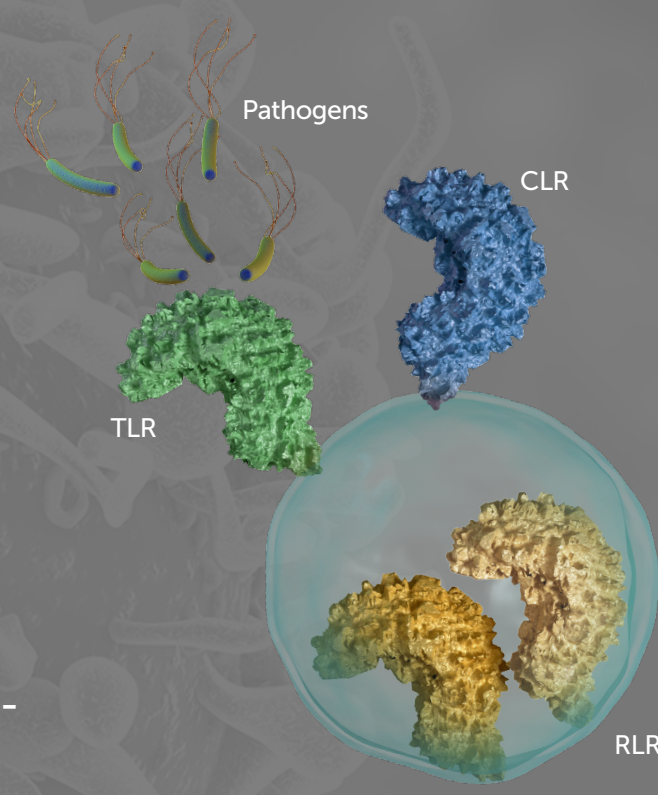
Pathogens are identified by Pattern Recognition Receptors (PRRs) found on the surface or inside specialized immune cells.

SURFACE PRRs:

- Toll-like receptors (TLR)
 - C-type lectin receptors (CLR)
- Identify external threats by pathogen-associated molecular patterns (PAMPs)

INTERNAL PRRs:

- Some TLRs
 - NOD-like receptors (NLR)
 - RIG-I-like receptors (RLR)
- Identify internal threat by PAMPs and damage-associated molecular patterns (DAMPs).



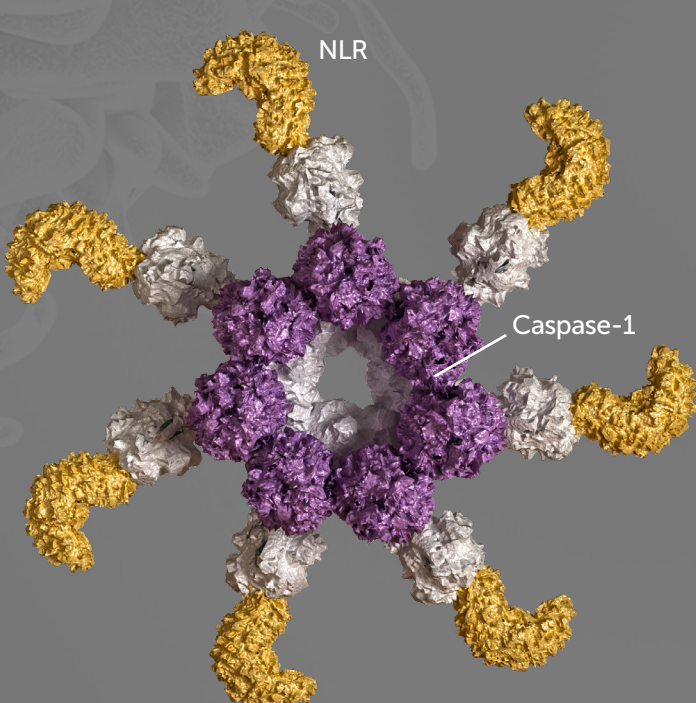
INFLAMMASOMES

PRRs, like NLR, recruit help to overcome threats, using inflammatory responses.

After recognition of a PAMP or DAMP, some NLRs can change shapes to create a multi-protein structure known as an inflammasome.

The inflammasome is a molecular machine that activates inflammatory processes including pyroptosis, an inflammatory programmed cell death triggered by activation of caspase-1 downstream of the inflammasome.

- Pyroptosis can attract other immune cells to the site of activation



Innate immune biology offers a multitude of genetically-validated, clinically-relevant targets and pathways across several therapeutic areas.

Guided by the power of human genetics, **IFM Therapeutics** is developing systemic and targeted small-molecule therapies that targeting of the pathways responsible for disease for better efficacy and safety than current therapies.