

TRUE or FALSE?

You will “catch a cold” if you don’t dress warmly when playing outside.

You will get sick if you go outside with wet hair.

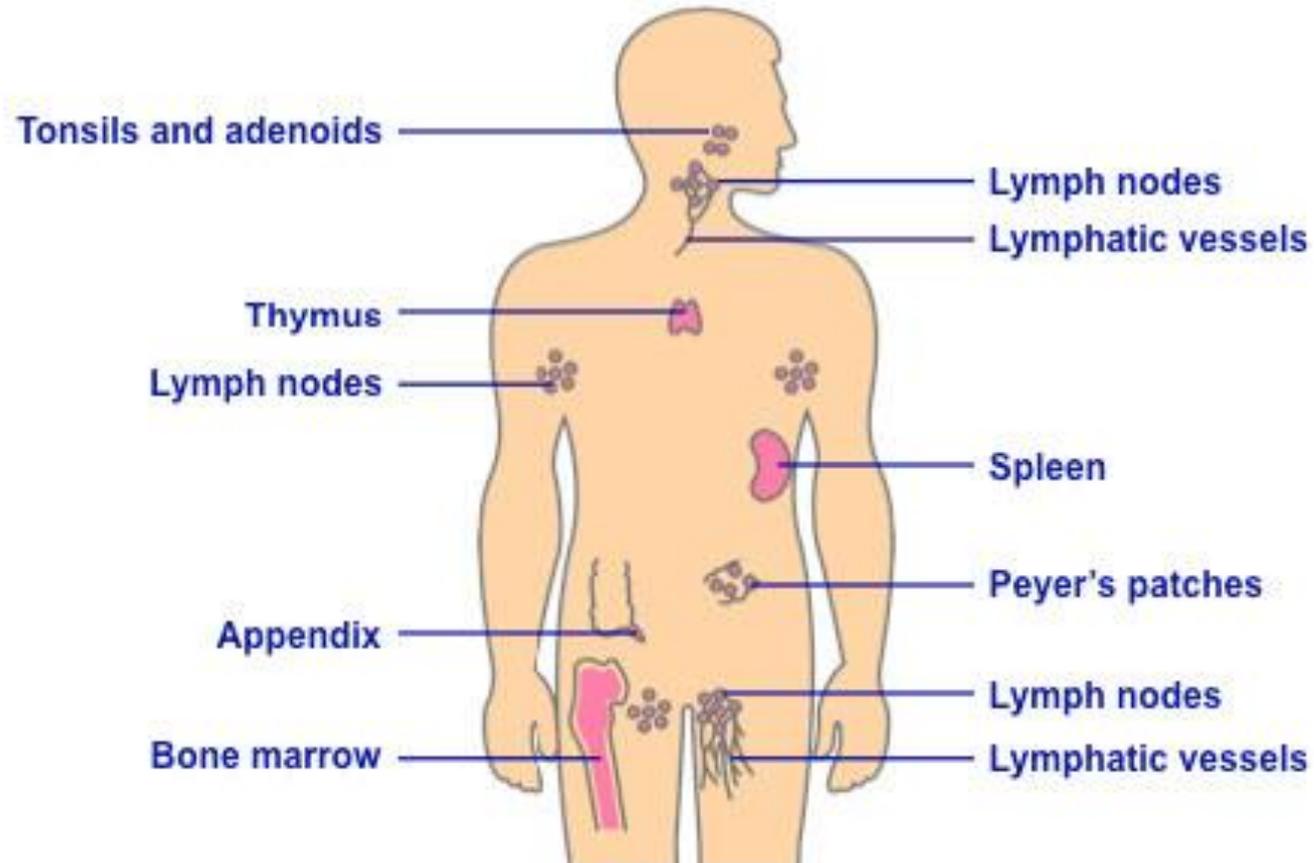


Theories

- Low humidity (cold, dry air) may dry out mucus linings, making you more susceptible to cold viruses
- Chilly environments restrict blood vessels, thus restricting flow of white blood cells
- People spend more time in closed spaces, spreading the viruses easily
- Cold, wet head would be uncomfortable, possibly leading to hypothermia and lowering immune system

3.1 – Immune System Recap

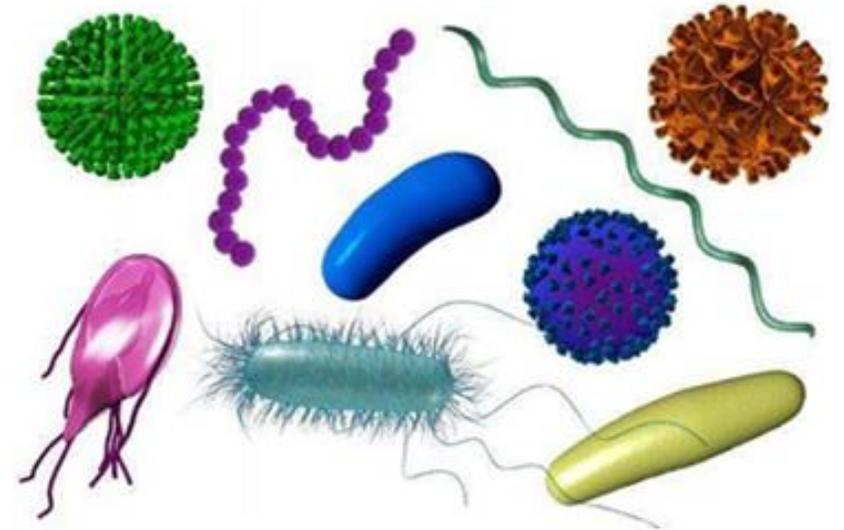
Organs of the Immune System



What is a...

- Pathogen

→ Disease causing invaders of our bodies
(ie. bacteria, viruses, fungi, parasites)



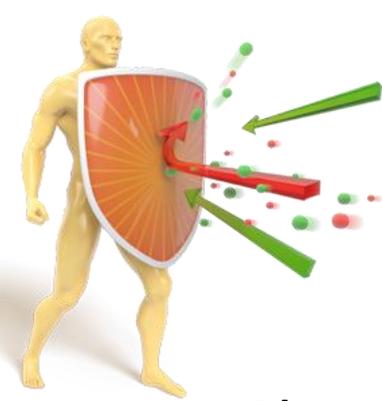
- Antigen

→ Non-living foreign substance that triggers an immune response

How are Infectious Diseases Spread?

1. **Direct Contact** ~ Ex. Shaking hands.
2. **Indirect Contact** ~ Ex. Near a sneezer.
3. **Water and Food** ~ Ex. Drinking water.
4. **Animal Bites** ~ Ex. Rabies

First Line of Defense



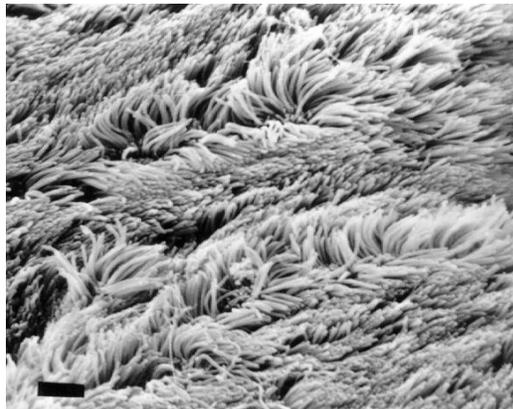
- Skin



- Sweat & oil on skin

- Gastric juice

- Mucus & cilia



saliva
antibacterial
enzymes

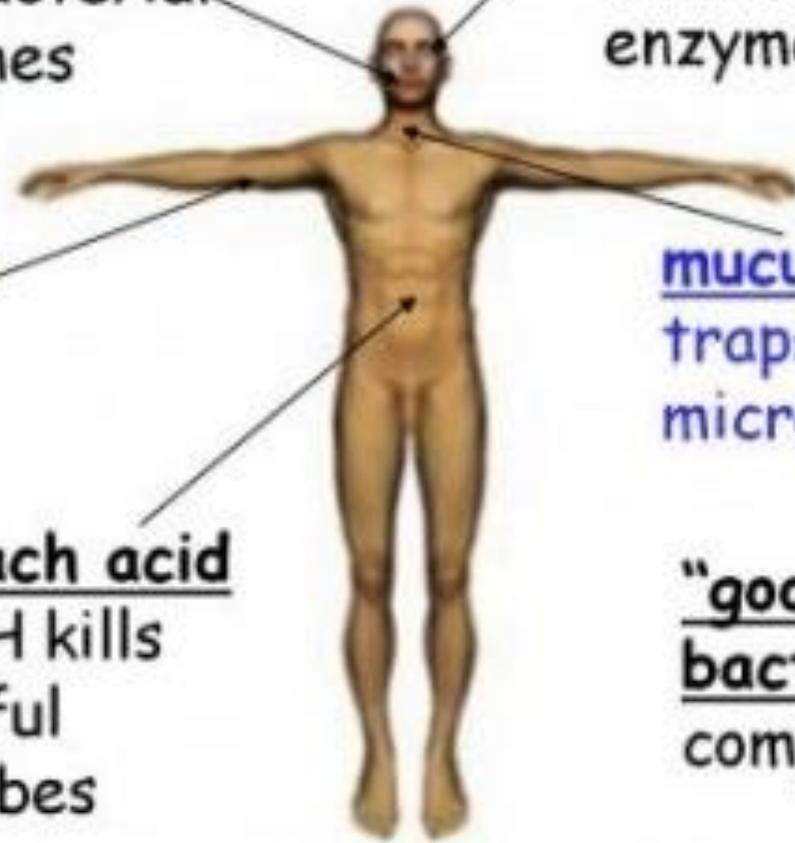
tears
antibacterial
enzymes

skin
prevents
entry

mucus linings
traps dirt and
microbes

stomach acid
low pH kills
harmful
microbes

"good" gut
bacteria out
compete bad



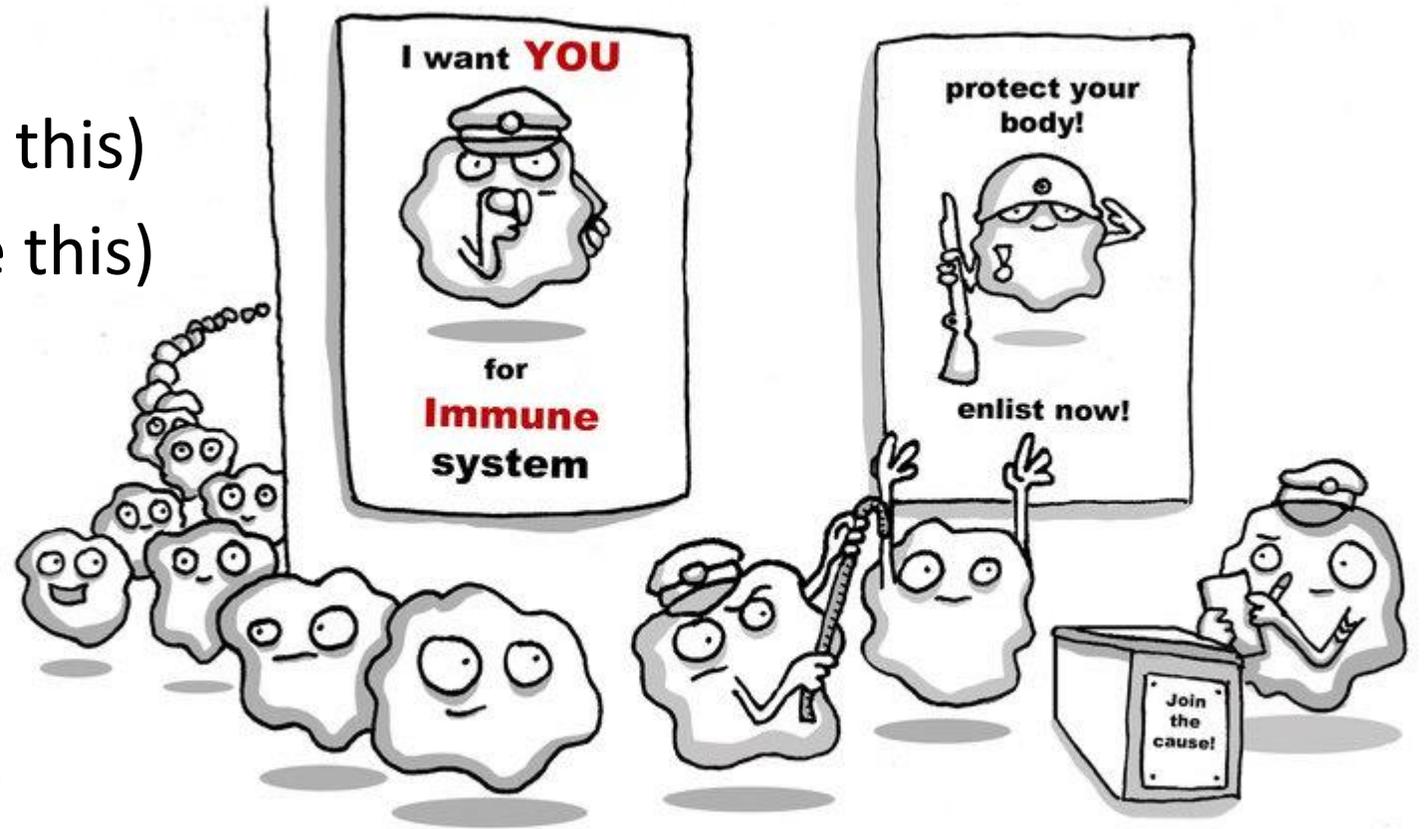
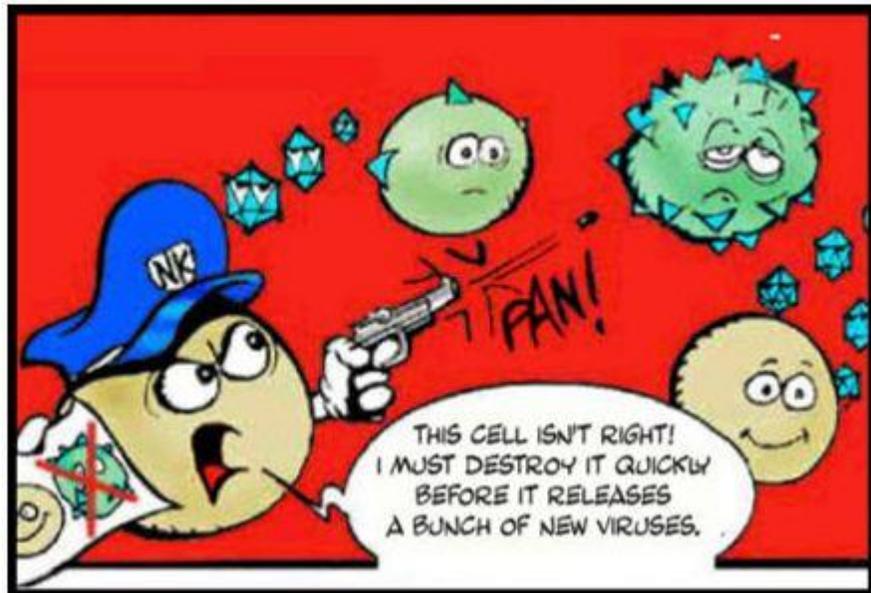
What happens when you get a cut and some bacteria enters the wound?



Second Line of Defense

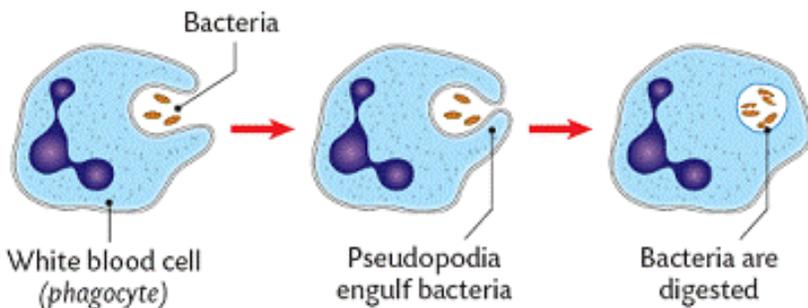
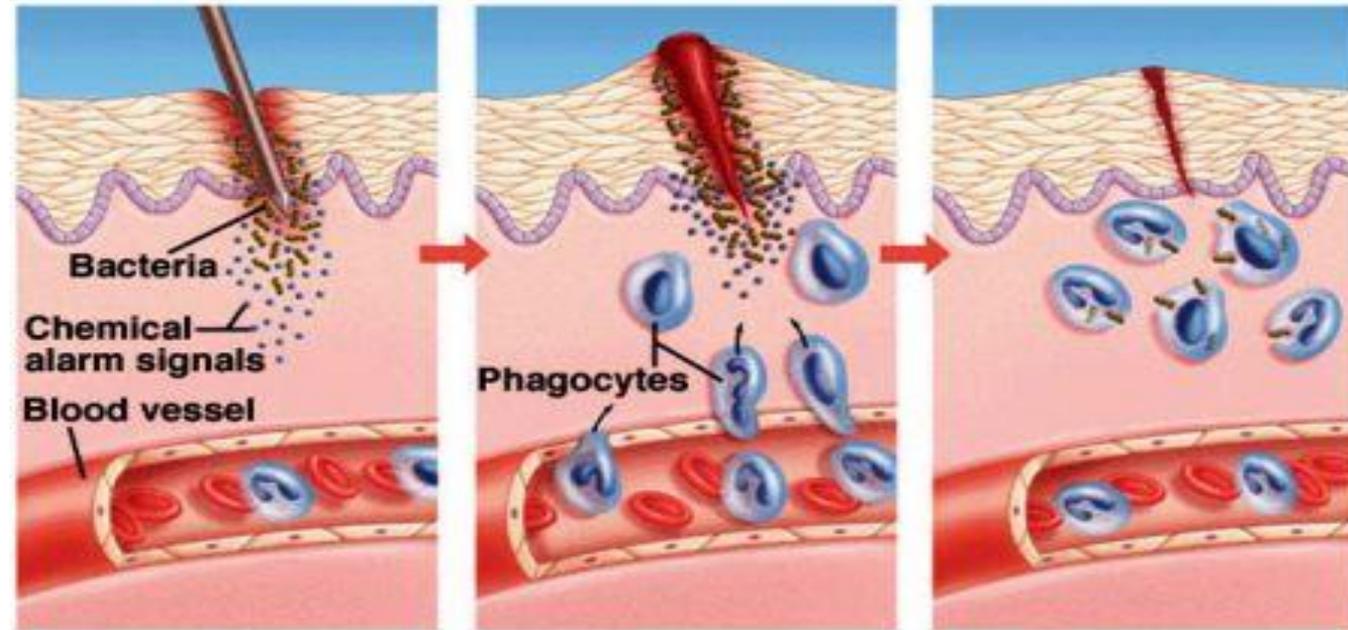
2 Responses:

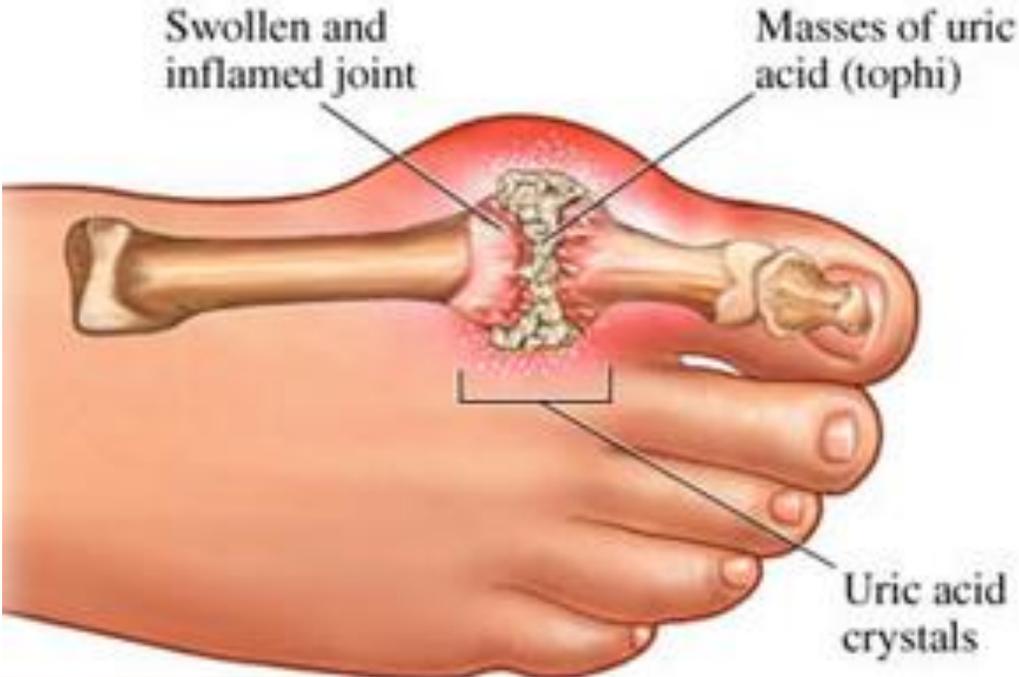
- **Innate** (many animals have this)
- **Acquired** (vertebrates have this)



Innate Immune Response

- Quick & general (same) for all invaders
- **Inflammation** (redness, swelling)
(flow of fluid & cells to the site)
- Numbers of white blood cells called **phagocytes** increase – they swallow invaders





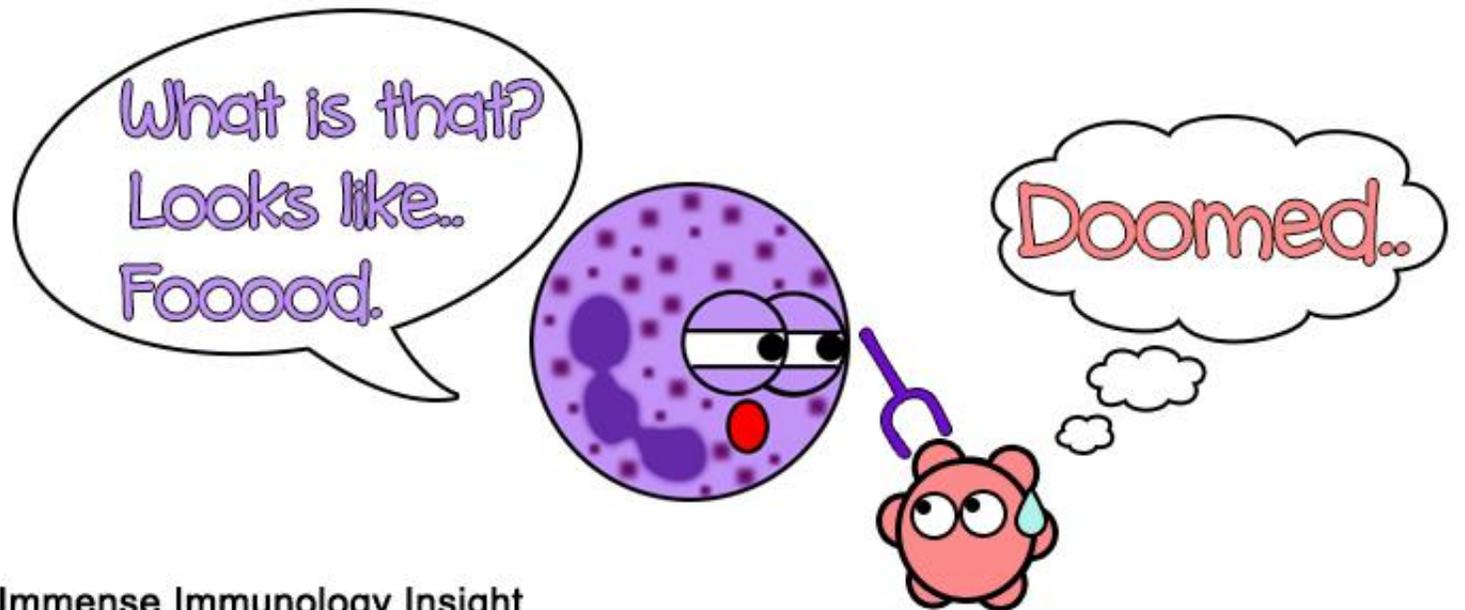
Staph infection – abscess drainage



Abscess forms from buildup of pus at site of inflammation during infection (contains dead white blood cells)

Acquired Immune Response

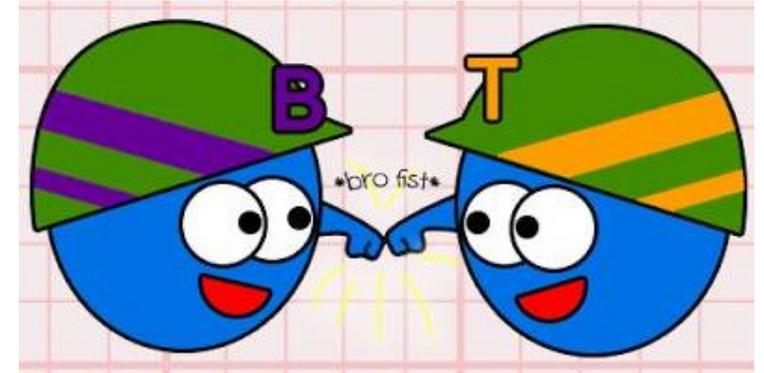
- Slow (but can eventually heal)
- Attacks specific invader (pathogen, antigen, allergen)



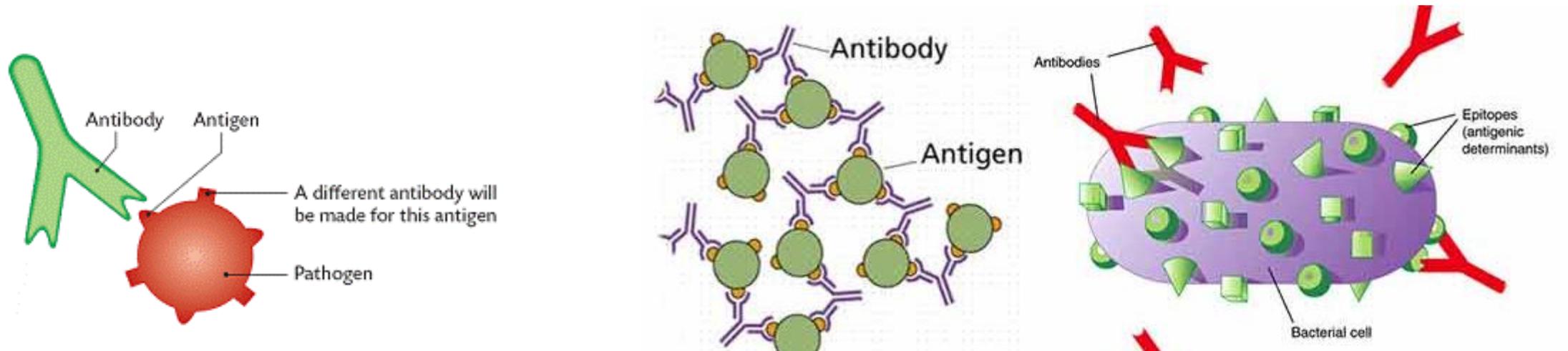
Acquired Immune Response

- **Helper T Cell**

→ recognizes foreign invader & activates B Cells

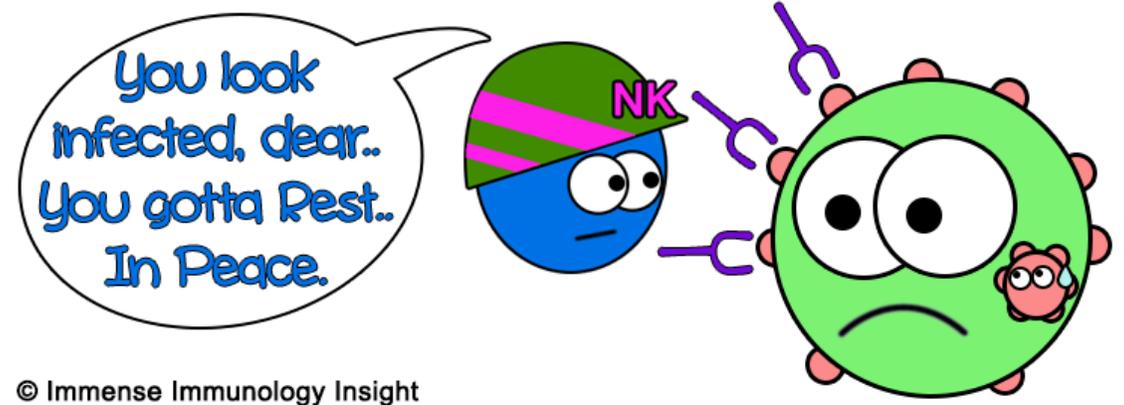


- **B Cell** → produces specific **antibodies** that match an **antigen**
(destroys, mark for destruction, prevent from infecting more cells)

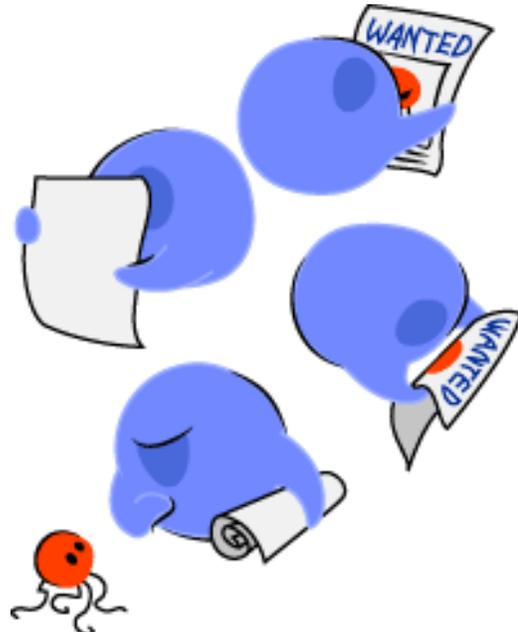


Acquired Immune Response

- **Killer T Cell** → destroys invaders (even cancer cells)



- **Memory B Cell** → stores antibodies to be reactivated quickly (active immunity) (ex. chicken pox)



Comparison

Innate

Acquired/Adapted

Fast

Slow

General

Specific