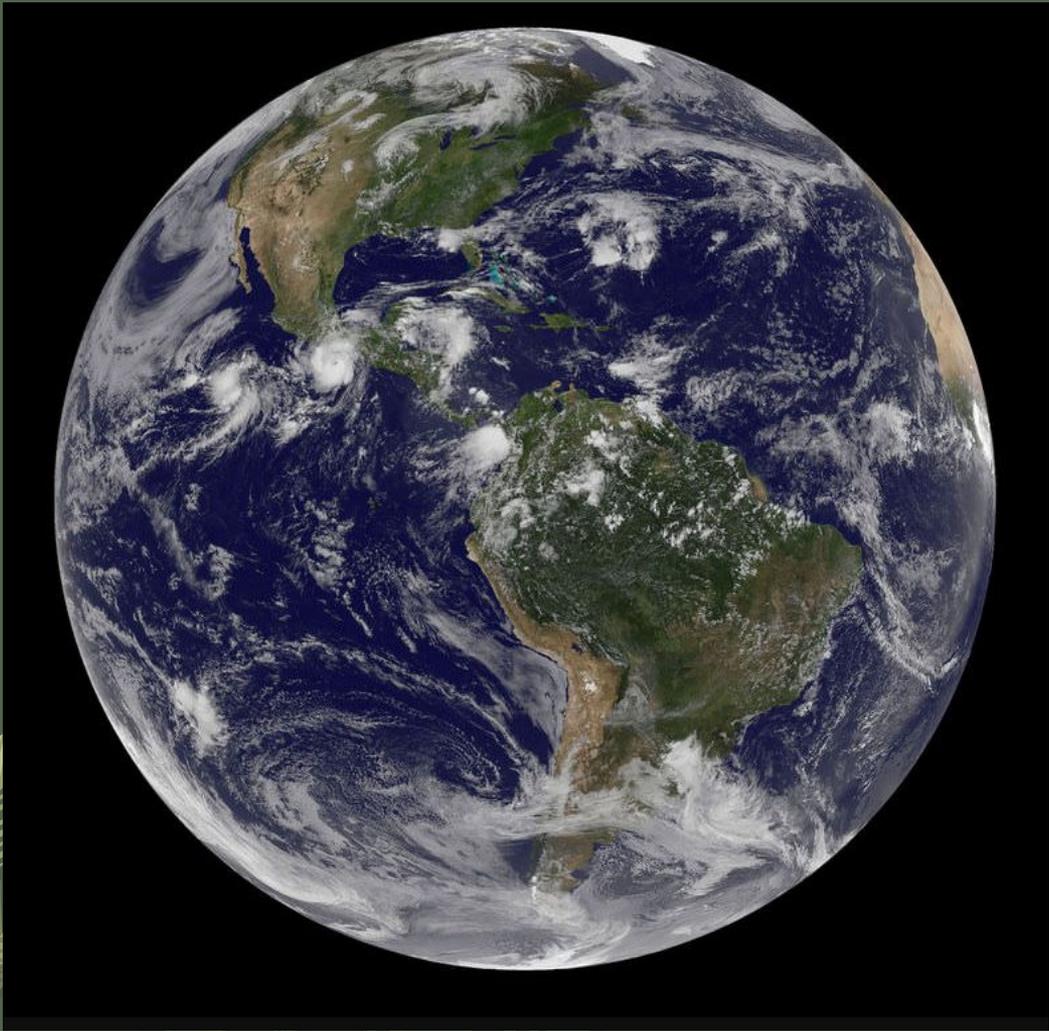


Immunologi

Kråka Larsen 2023





Idag ska vi gå igenom:

- Repetition
 - Kroppens försvar nivå 1 och 2
 - Ospecifikt/Specifikt, Medfött/"Innate"
 - Patogener, Vita Blodkroppar och komplementsystemet
 - Grundläggande funktioner och fysiologi



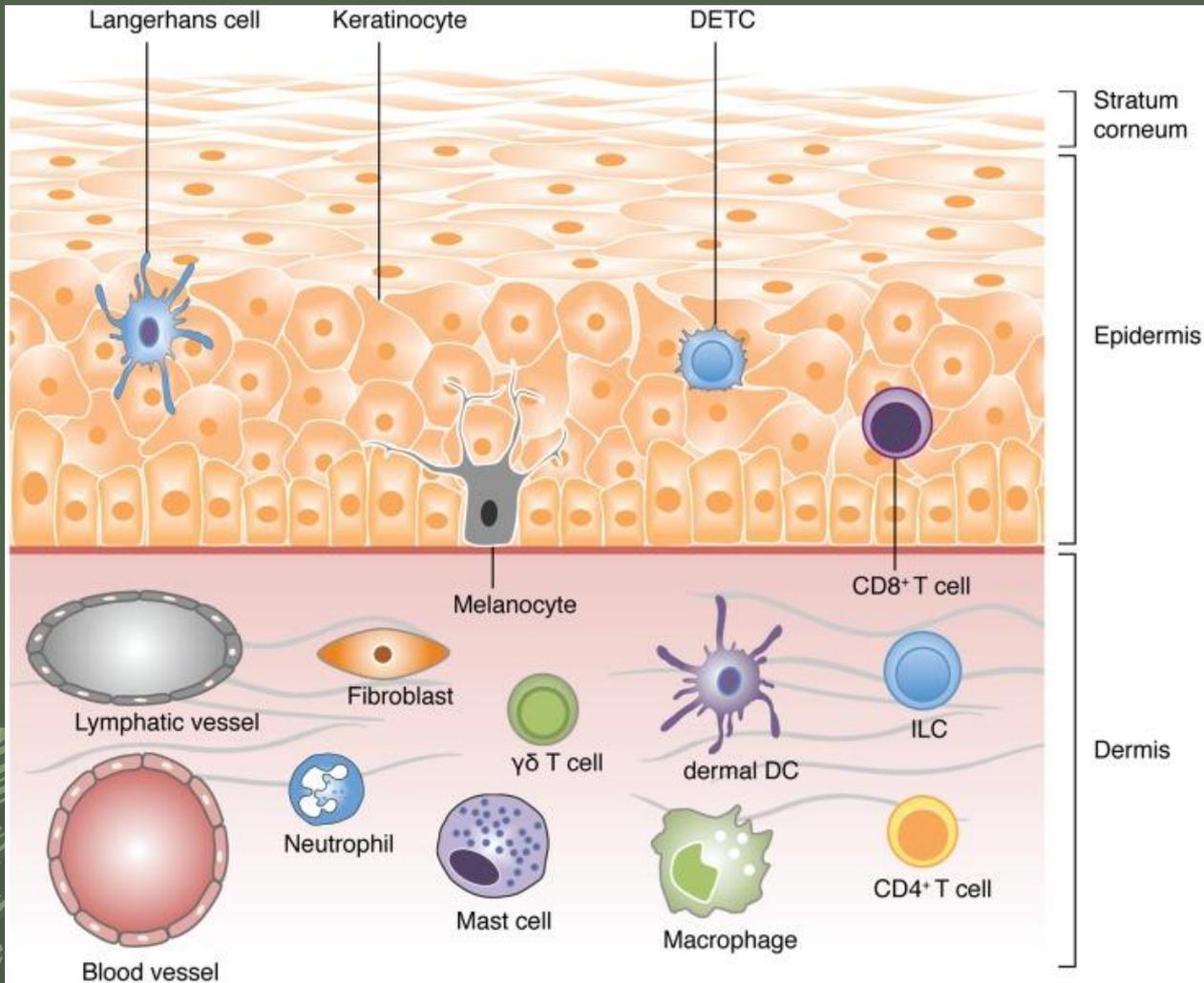
Idag ska vi gå igenom:

- Kroppens Tredje Försvarsnivå

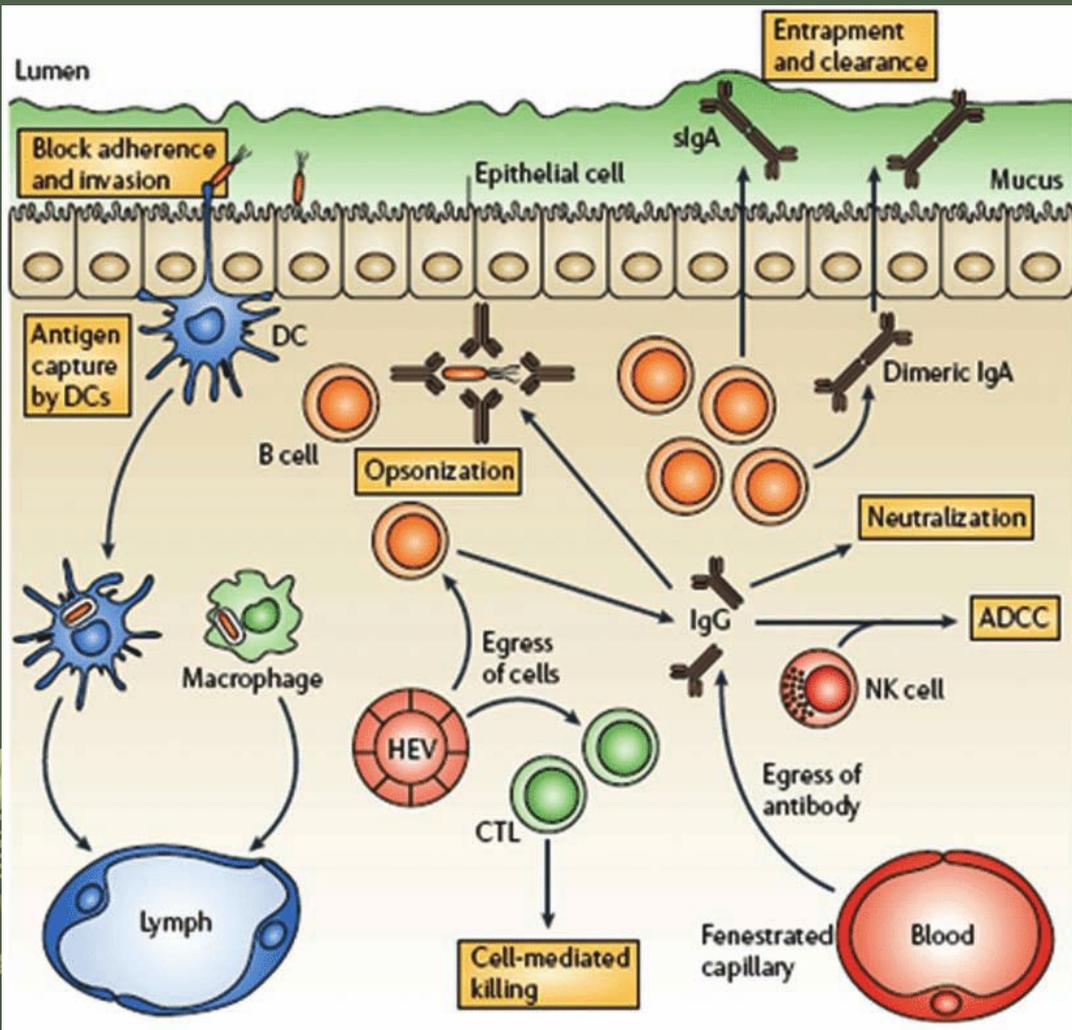
- Kroppens tredje försvar: Det Adaptiva
- Antigener och Antikroppar
- Lymfatiska systemet
- Brässen (Dödsuniversitetet) och Mjälten
- APCs (Antigen presenterande celler, Makrofager, Dendritiska celler, B-Celler)
- T-Lymfocyter
- B-Lymfocyter
- Immunitet (för oss och bakterier)
- Pandemier, nu och då.
- "Framtida problem"







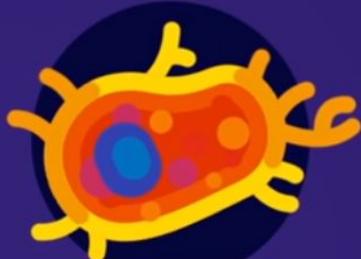




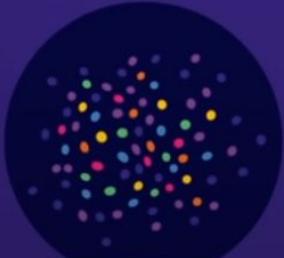
Innate



Neutrophil



Macrophage



Complement

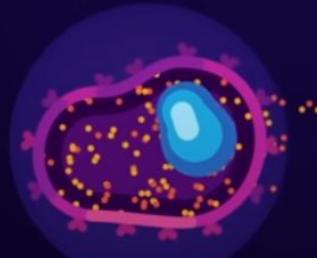


Dendritic Cell

Adaptive



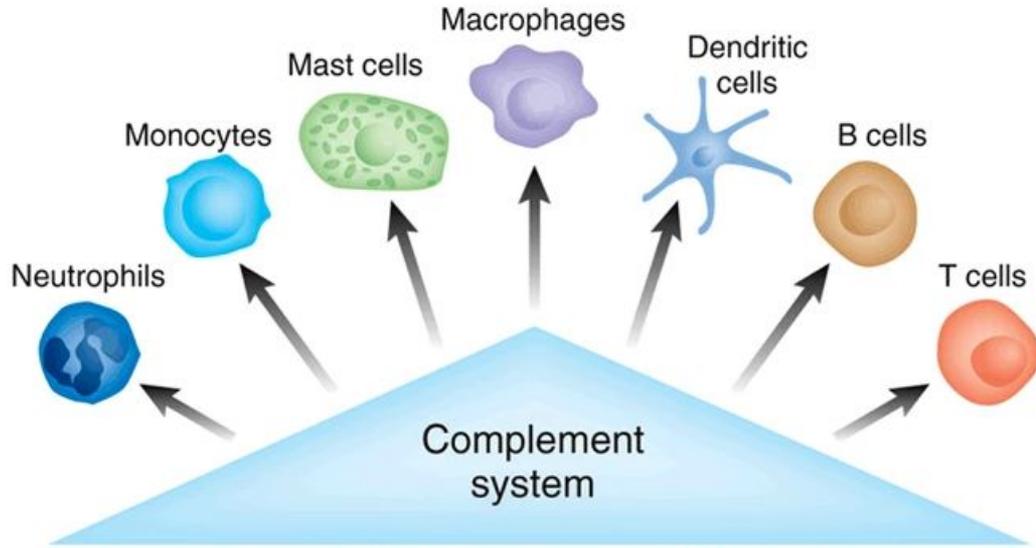
T Cell



B Cell



Antibodies



Innate immunity

- Oponization
- Lysis of pathogens
- Chemotaxis
- Inflammation
- Cell activation

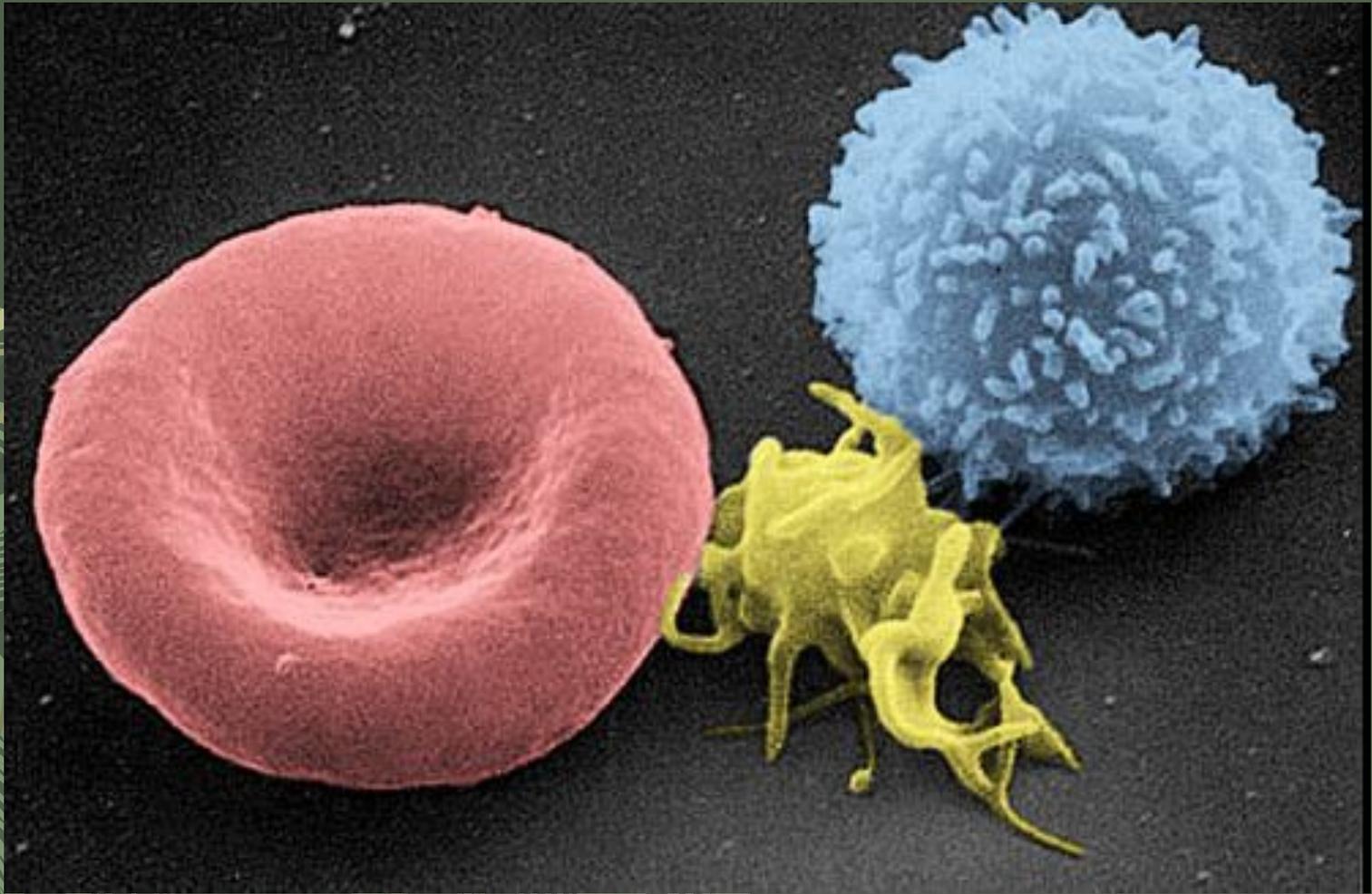
Disposal system

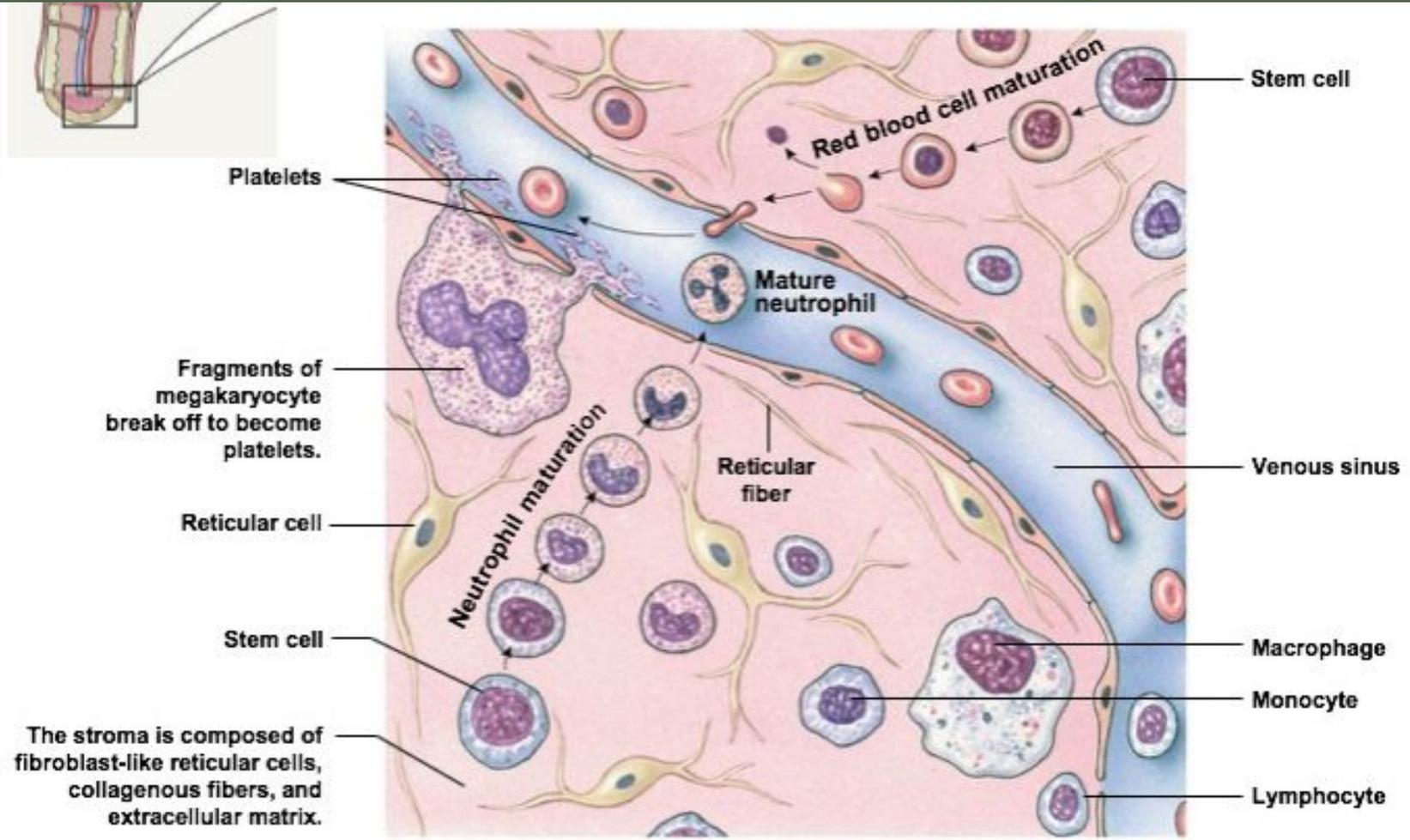
- Clearance of immune complexes and apoptotic cells

Adaptive immunity

- Augmentation of antibody response
- Promotion of T-cell response
- Elimination of self-reactive B cells
- Enhancement of immunologic memory

Katie Ris-Vicari

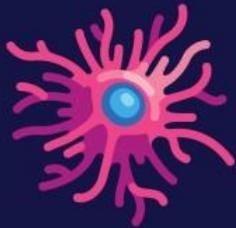




Most Important Players of the Immune System



Macrophage



Dendritic Cell



Neutrophil



Complement



Natural Killer Cell



T Cell



B Cell



Antibodies



Basophil

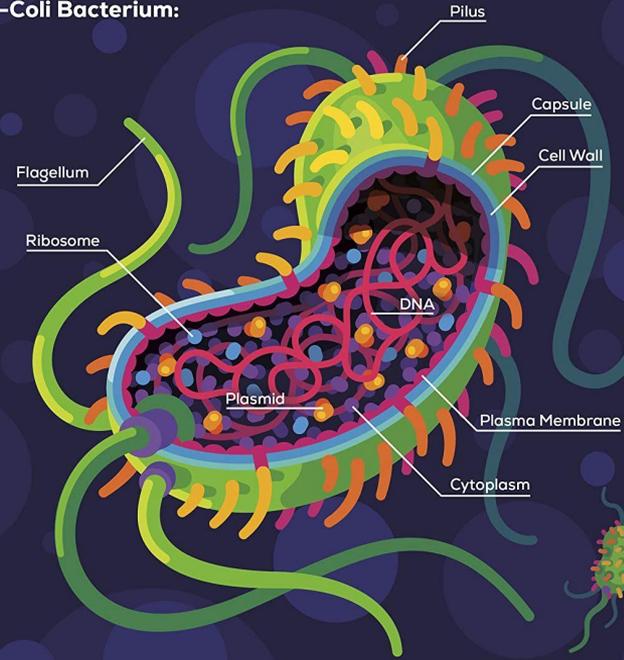


Eosinophil



Mast Cell

E-Coli Bacterium:



Bacterial Morphology:



Cocci

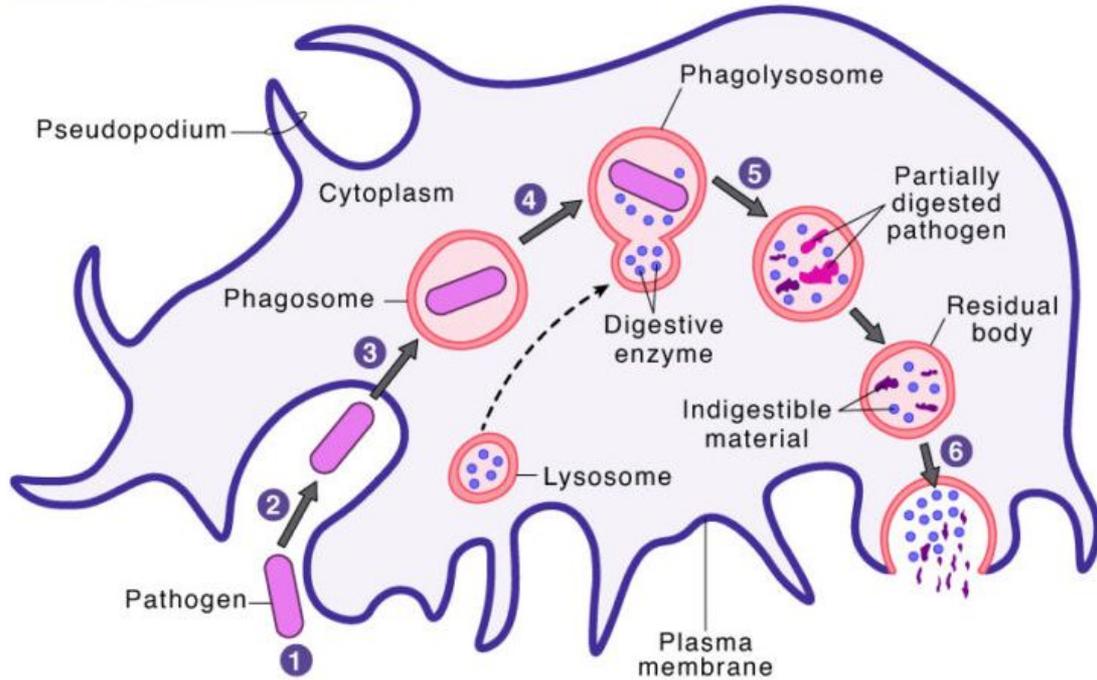


Rods



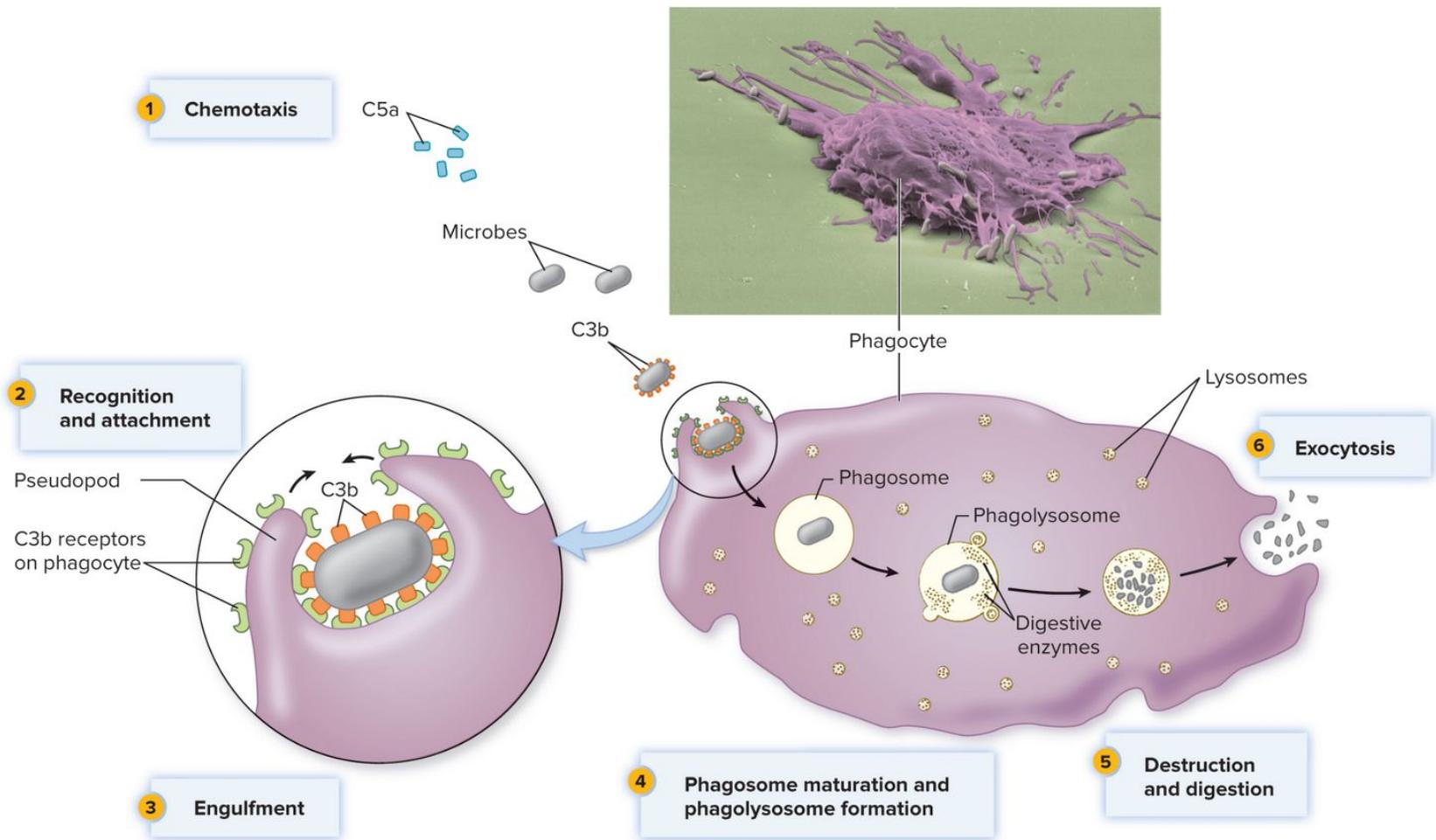
Spirals

Phagocytosis



- 1 Attachment of the phagocyte to the pathogen
- 2 Ingestion of the pathogen
- 3 Formation of phagosome

- 4 Formation of phagolysosome
- 5 Destruction of pathogen and formation of residual body
- 6 Elimination of waste materials



Direction of blood flow →

Neutrophil

1 Rolling

2 Slowing
(via tethers/slings)

3 Adhesion

Adhesion molecules

Endothelium

Interstitial

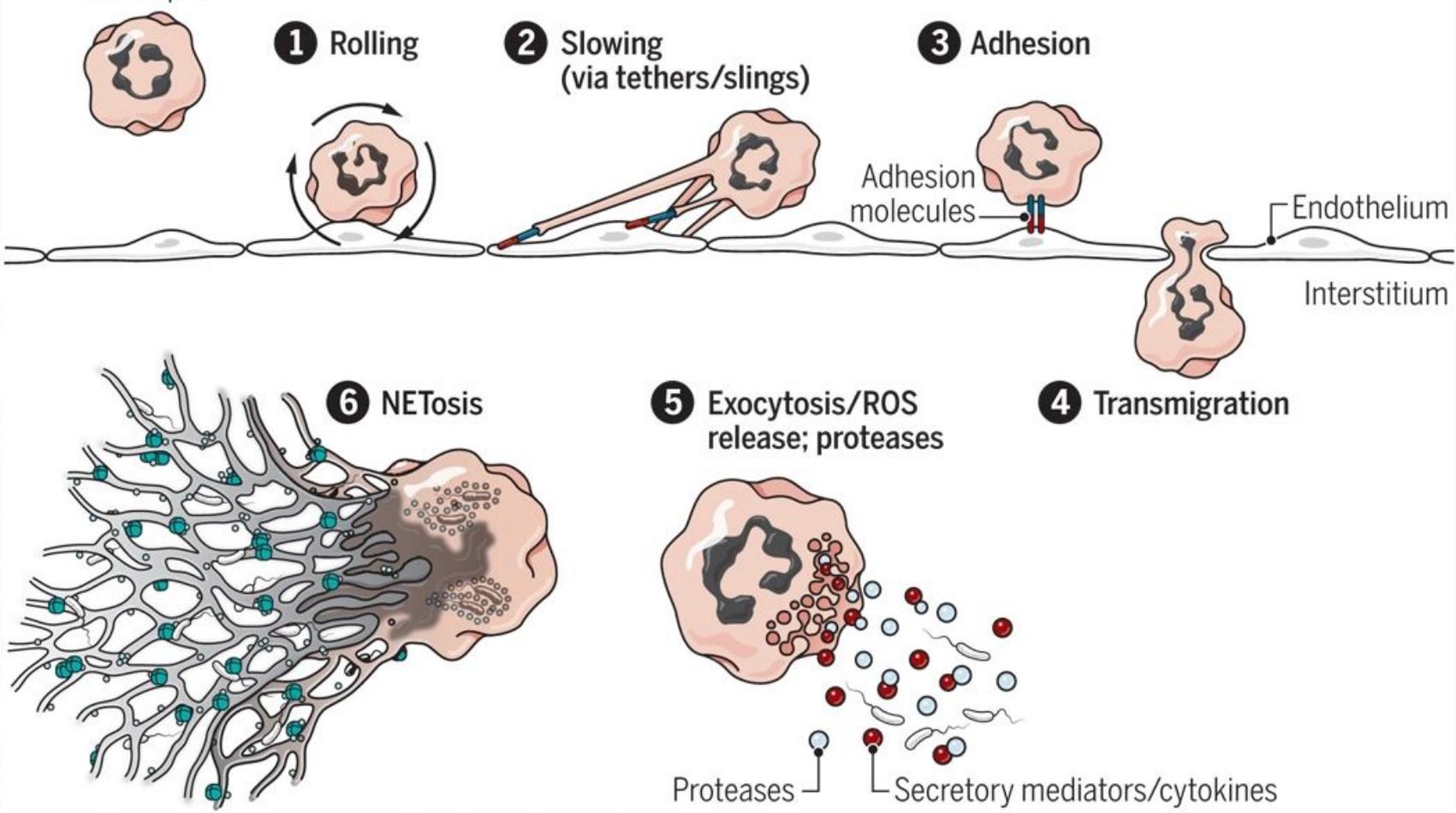
6 NETosis

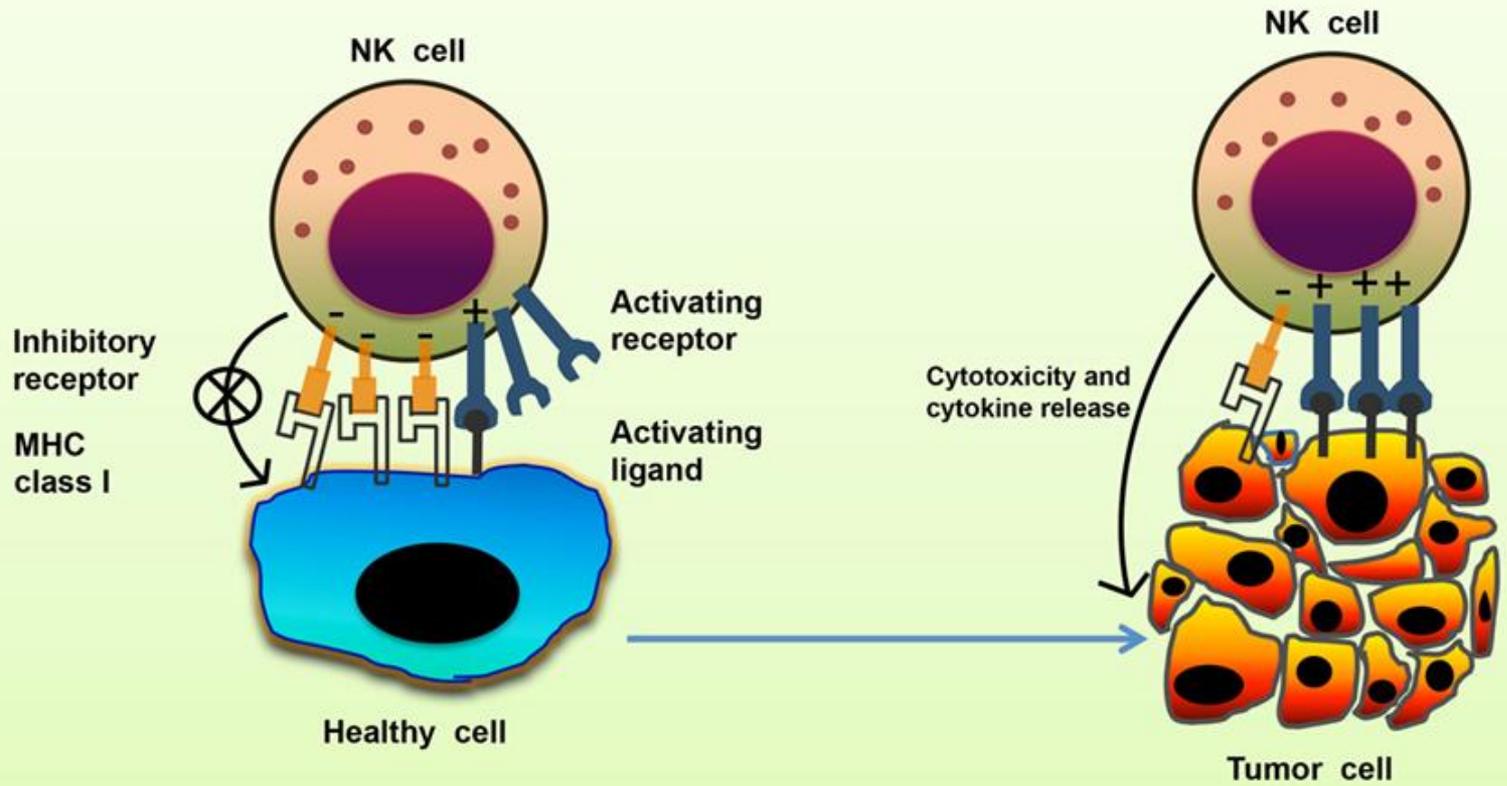
5 Exocytosis/ROS
release; proteases

4 Transmigration

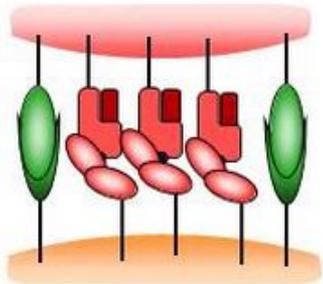
Proteases

Secretory mediators/cytokines

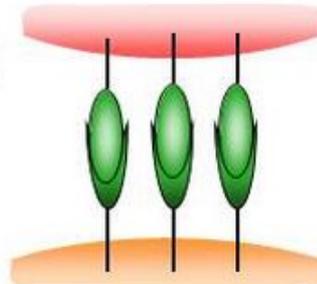




Inhibition

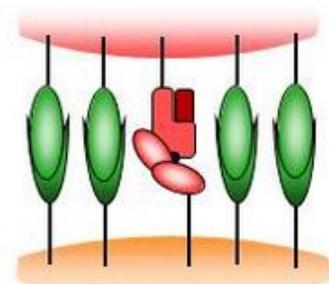


Strong inhibition

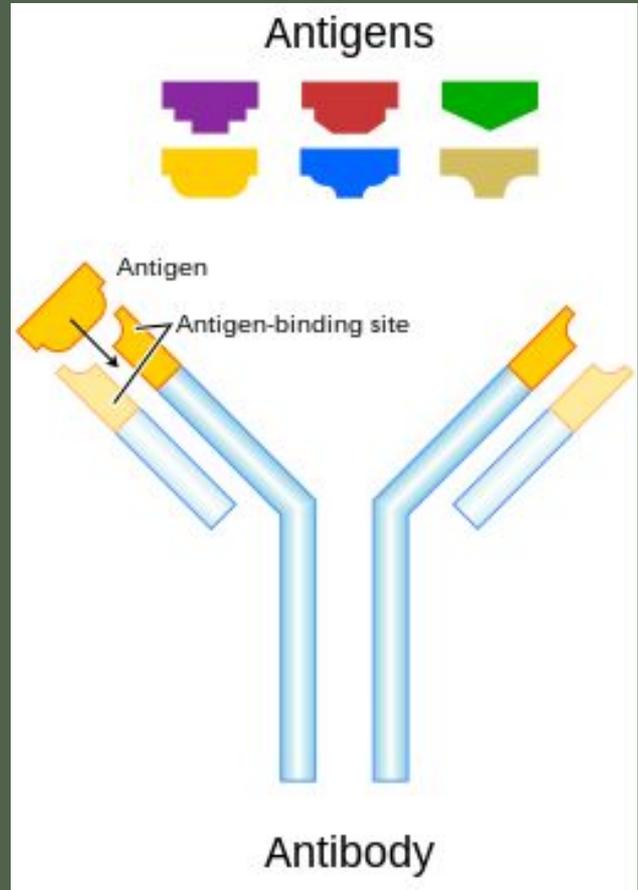
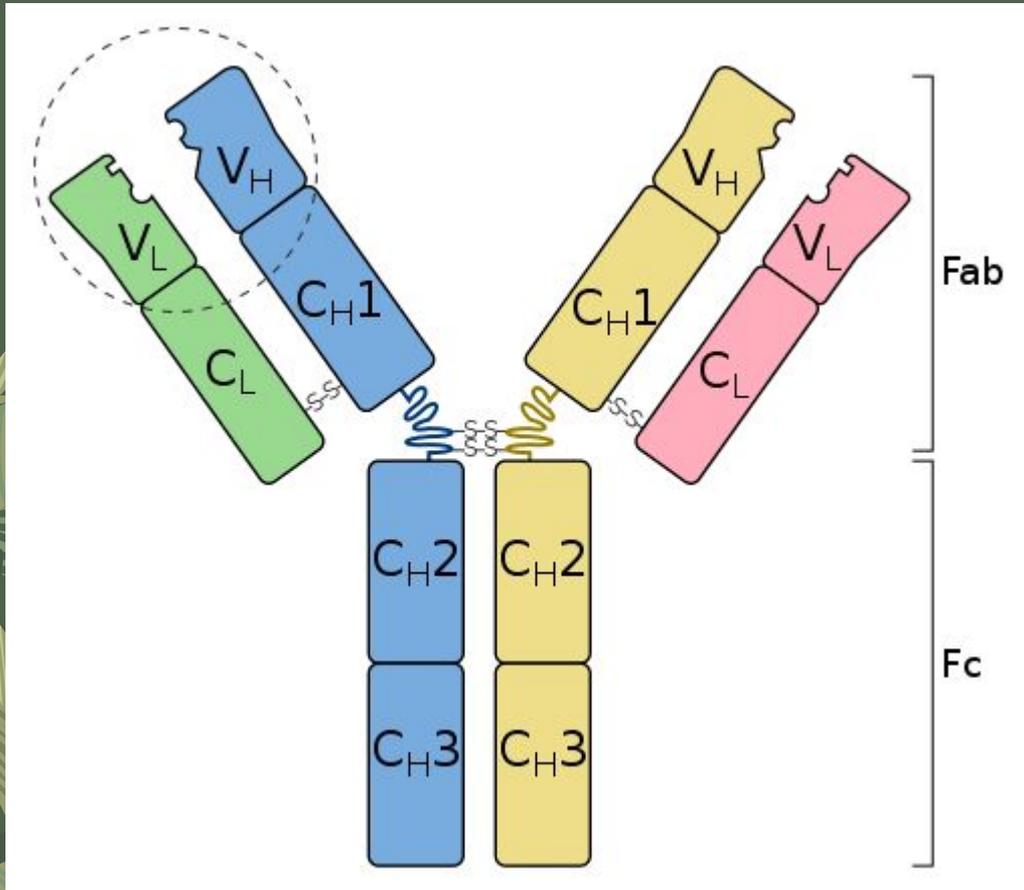


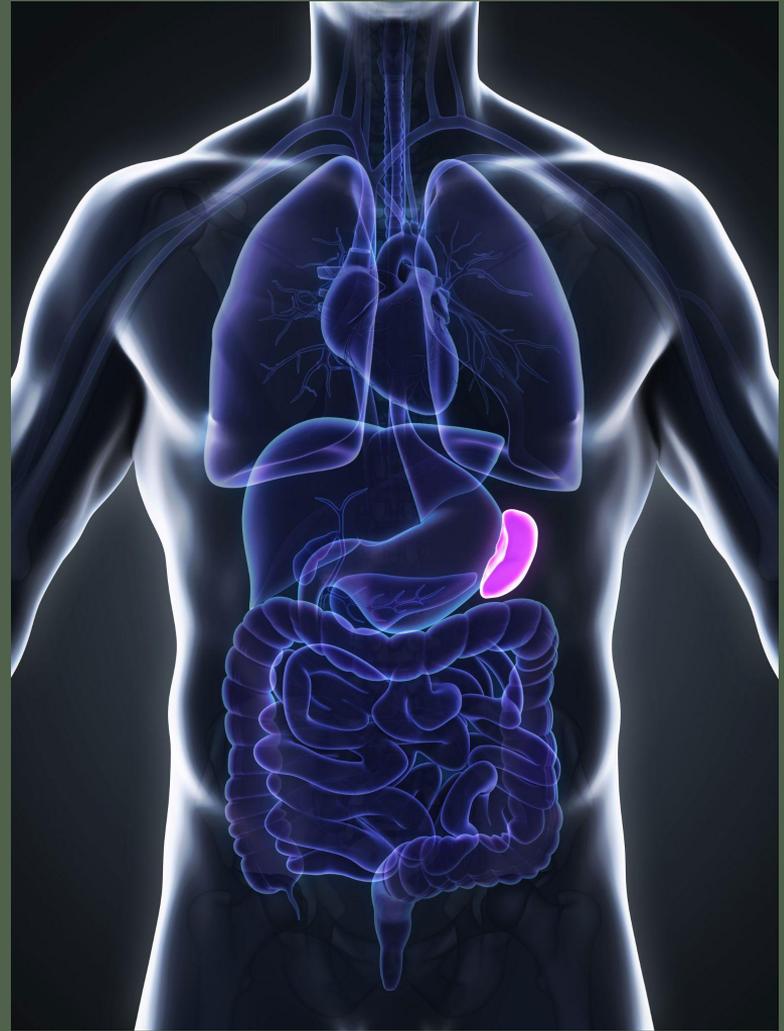
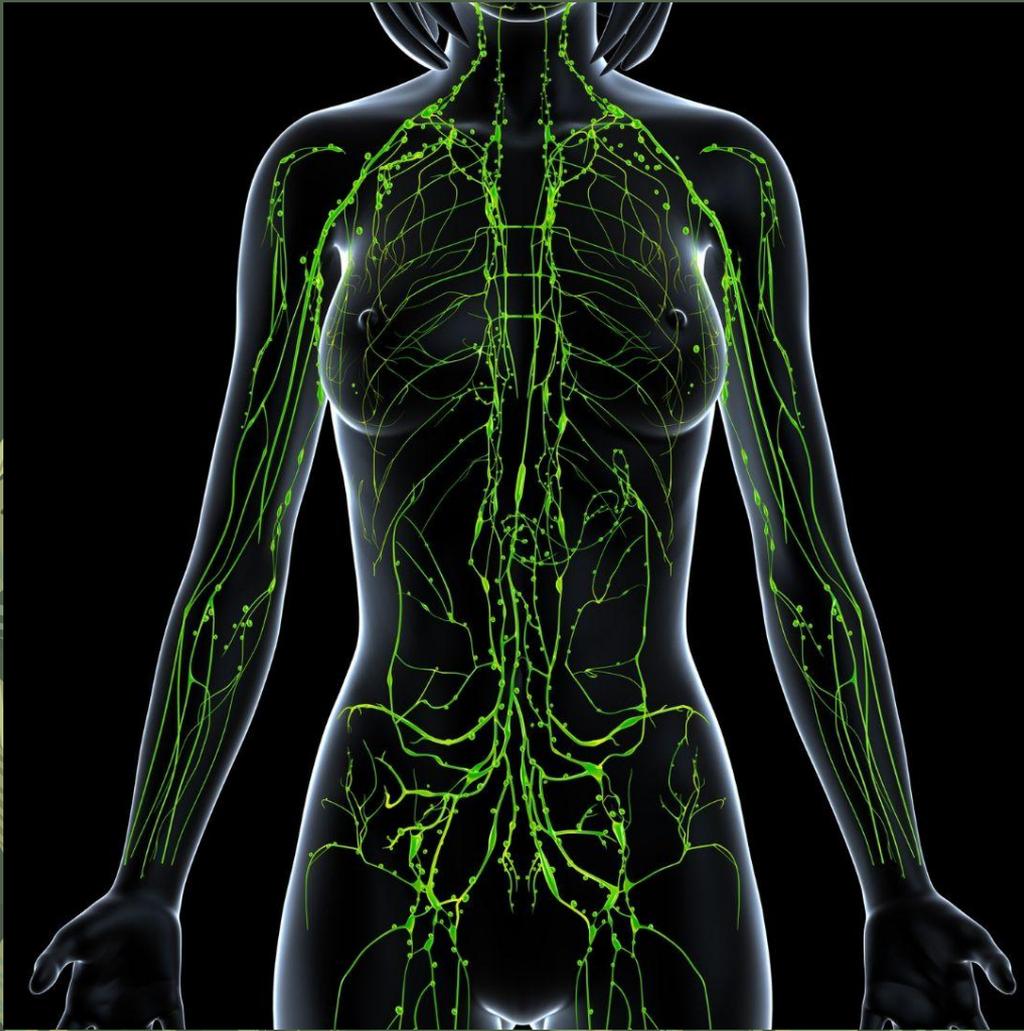
Reduced inhibition

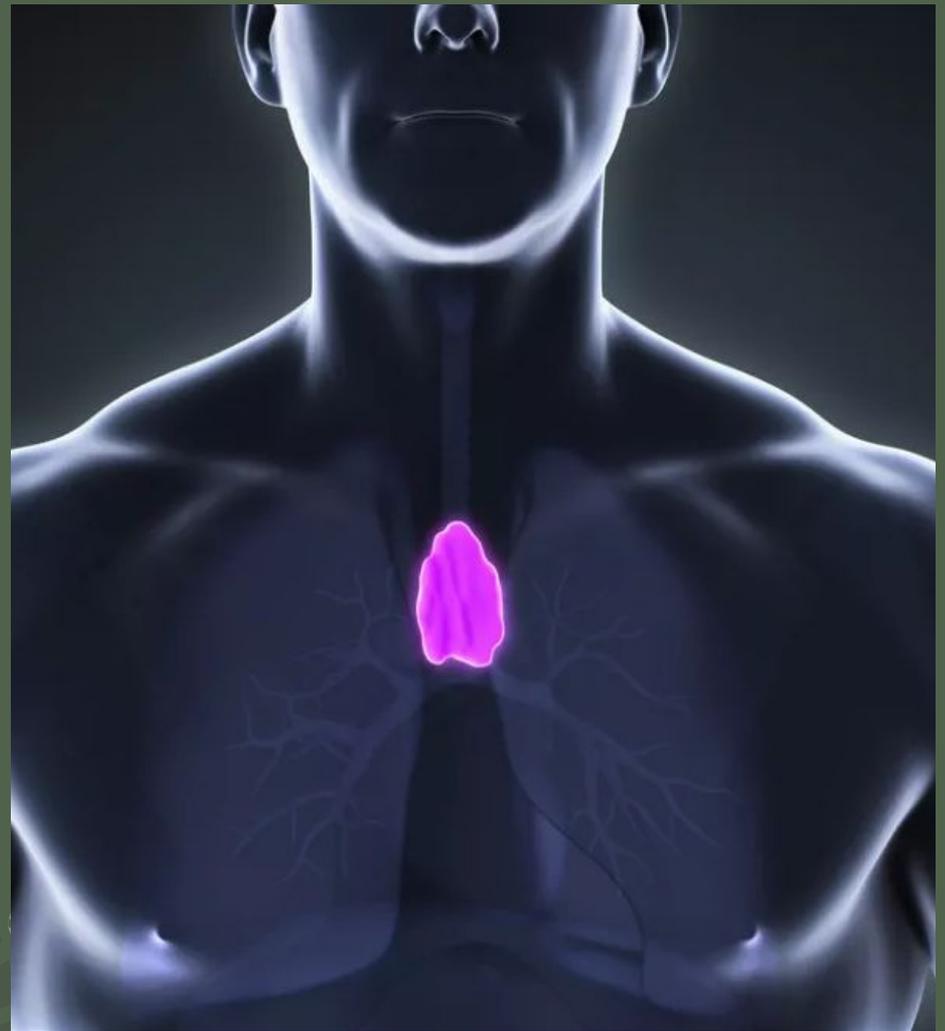
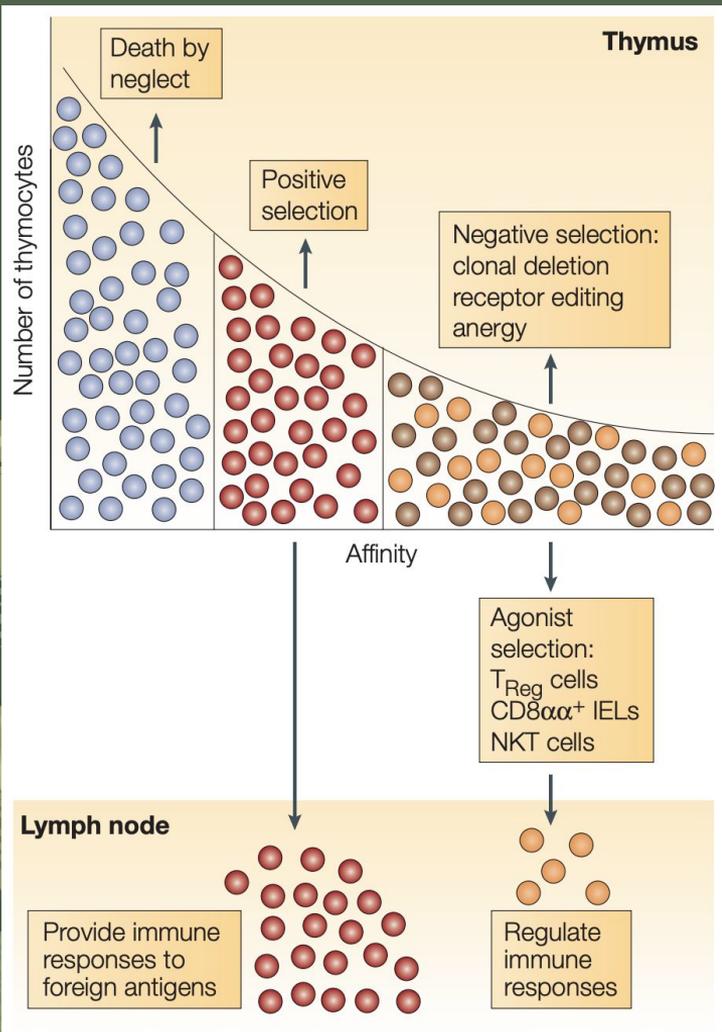
Activation

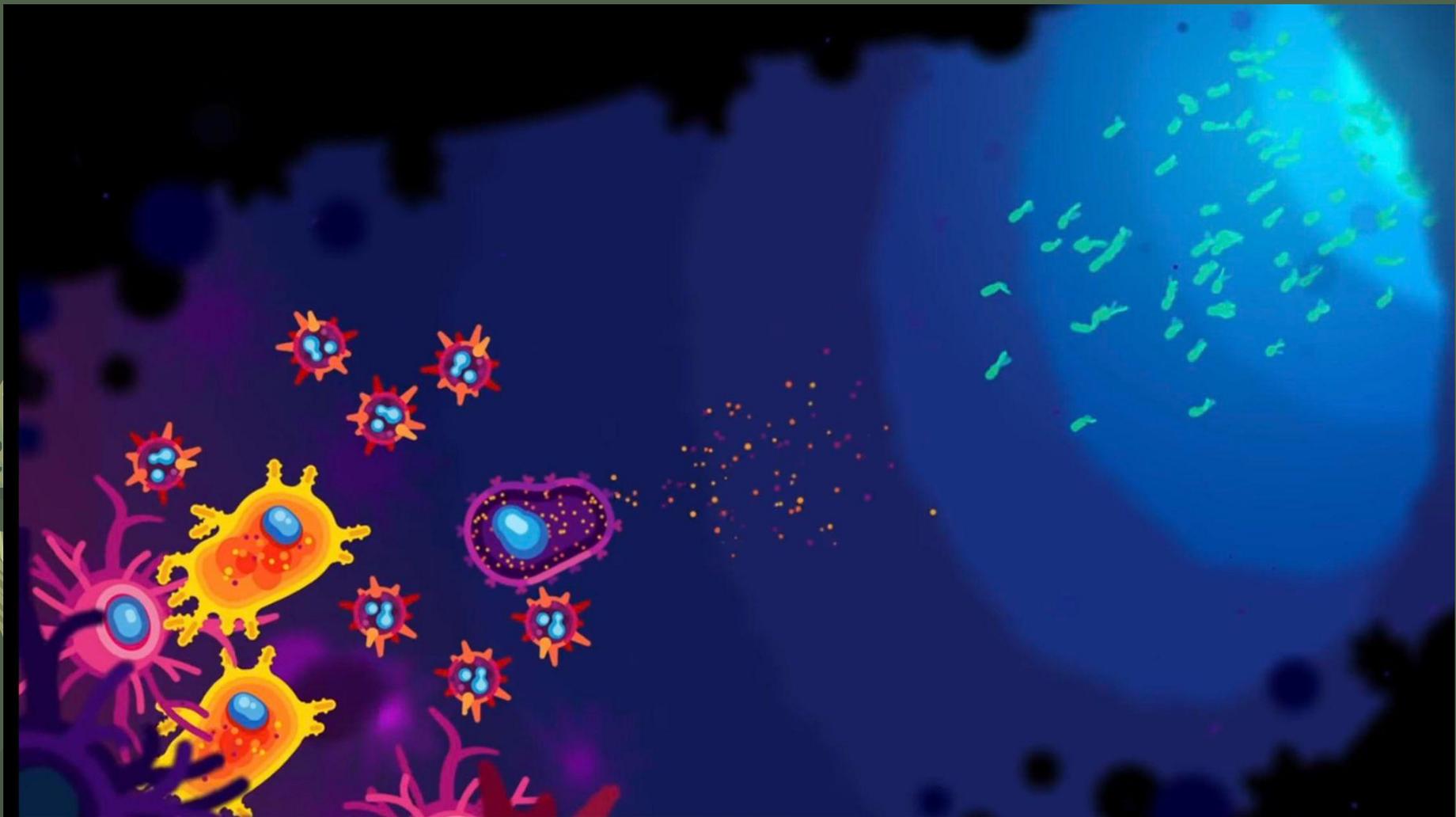


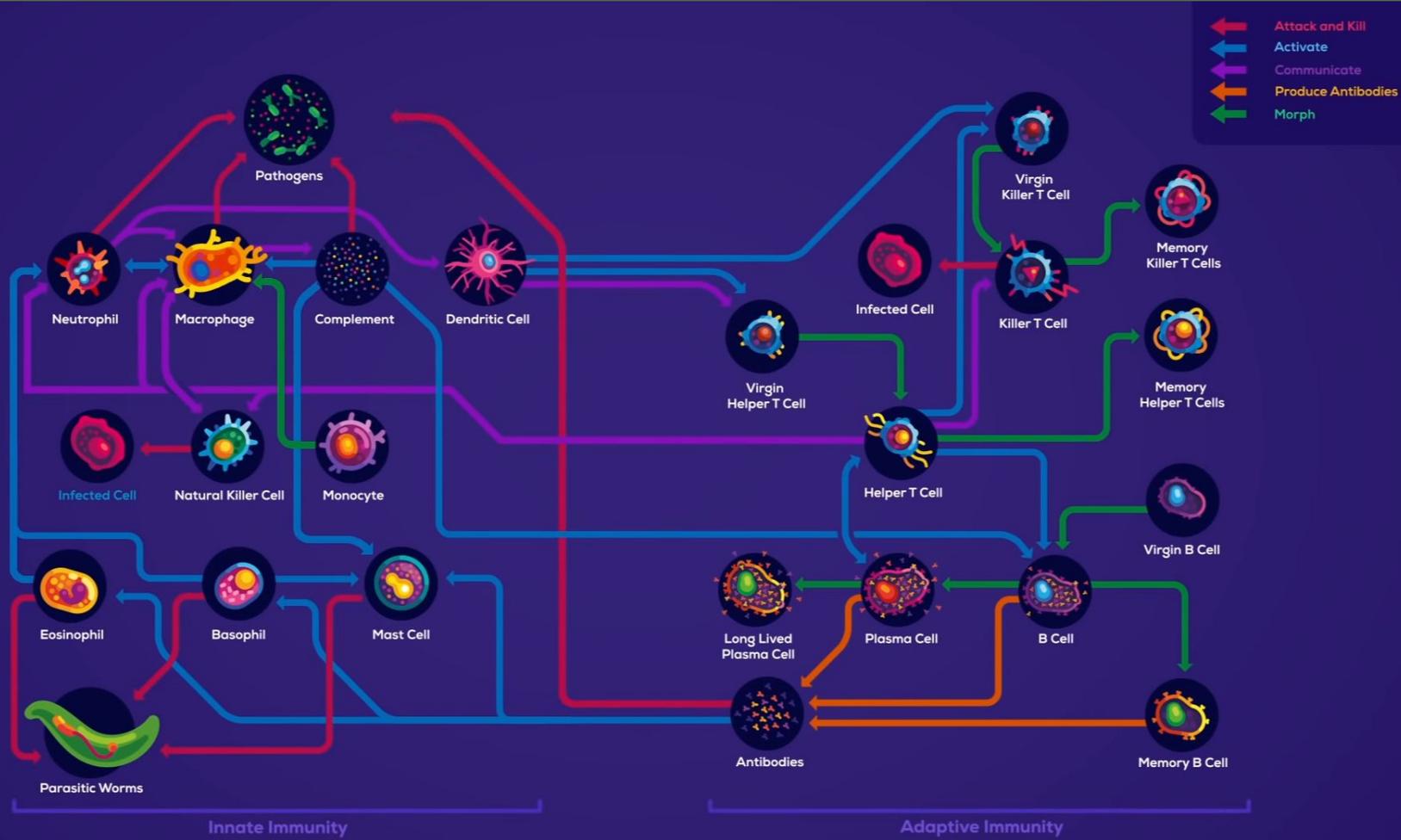
Strong activation

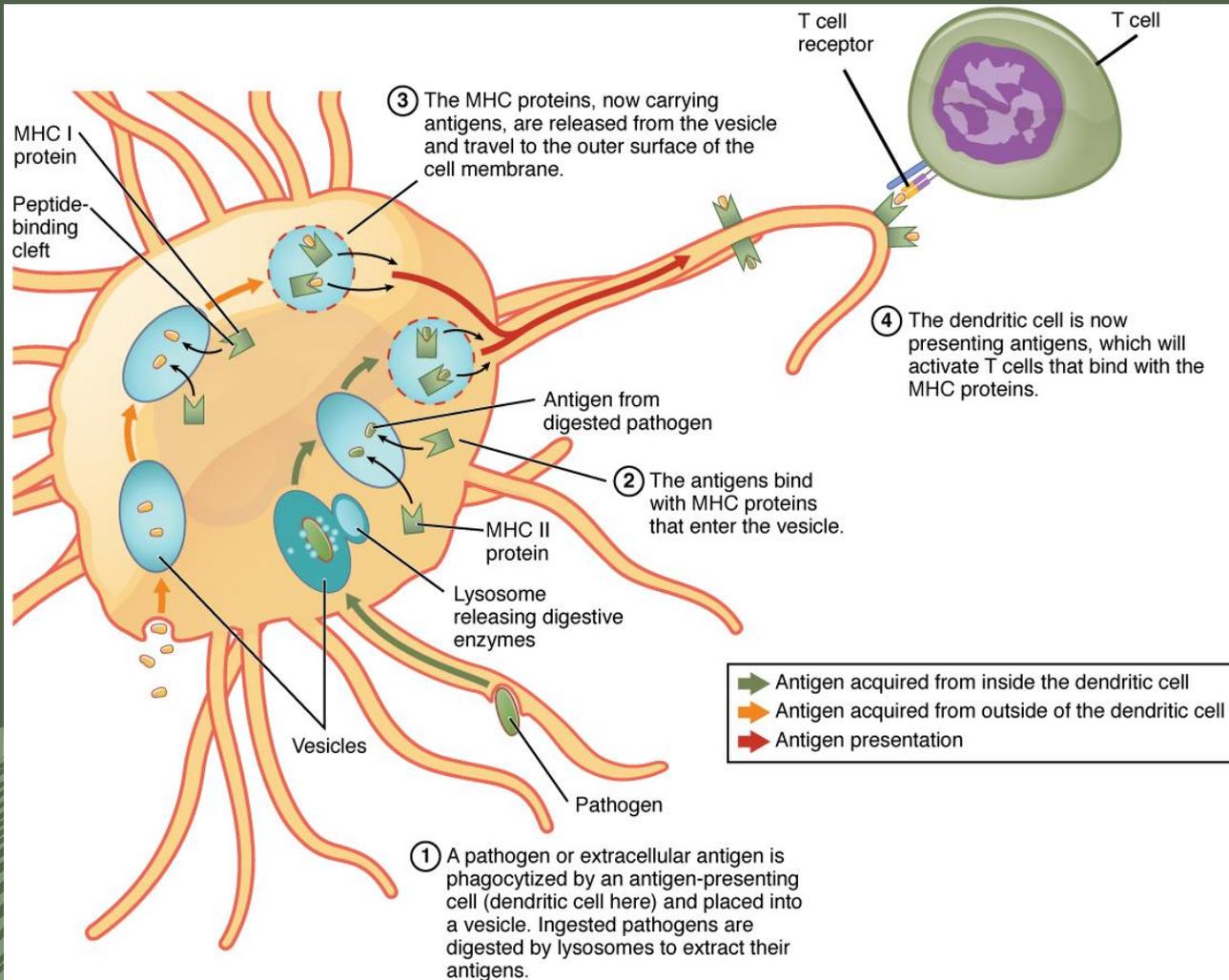




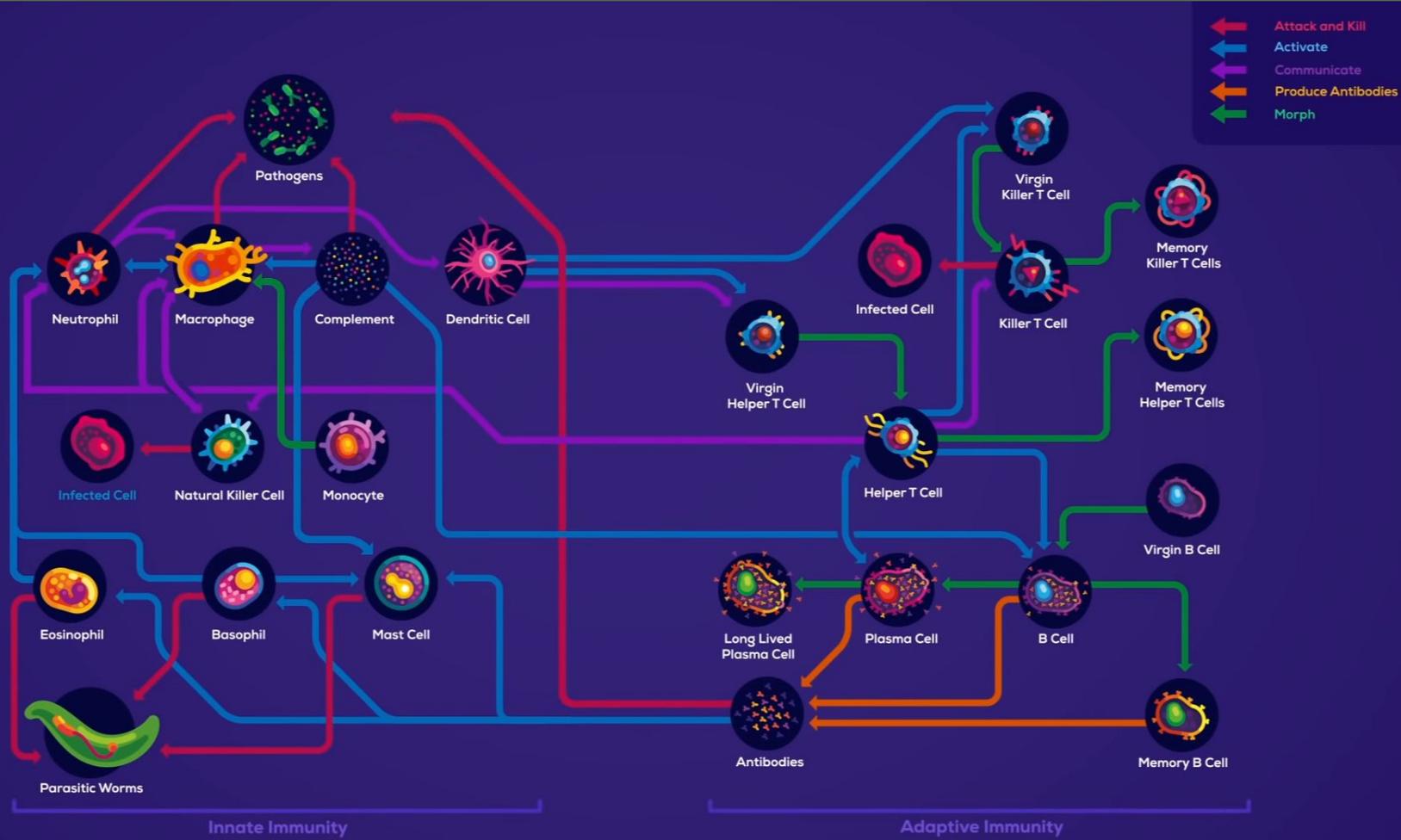




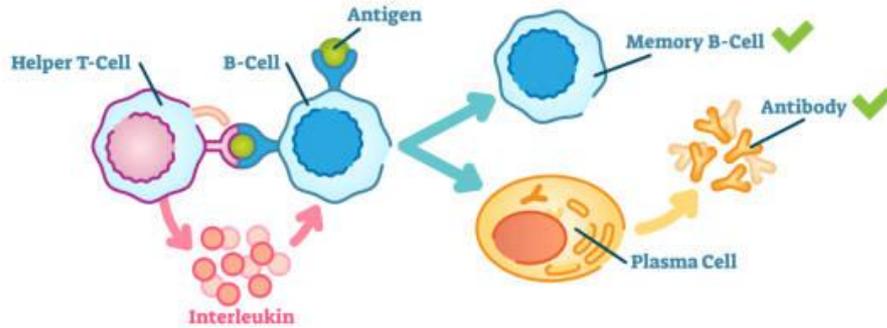




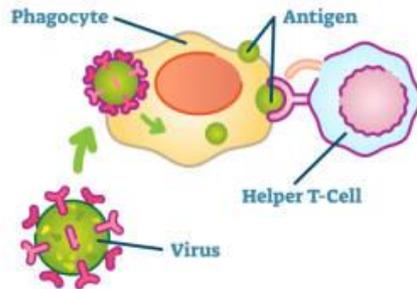




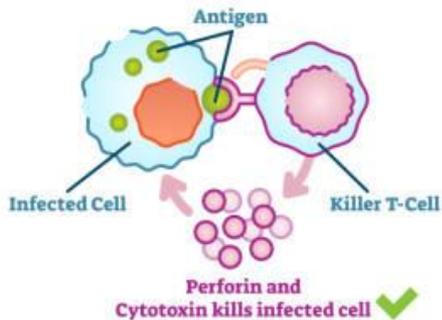
B-Cells and T-Cells



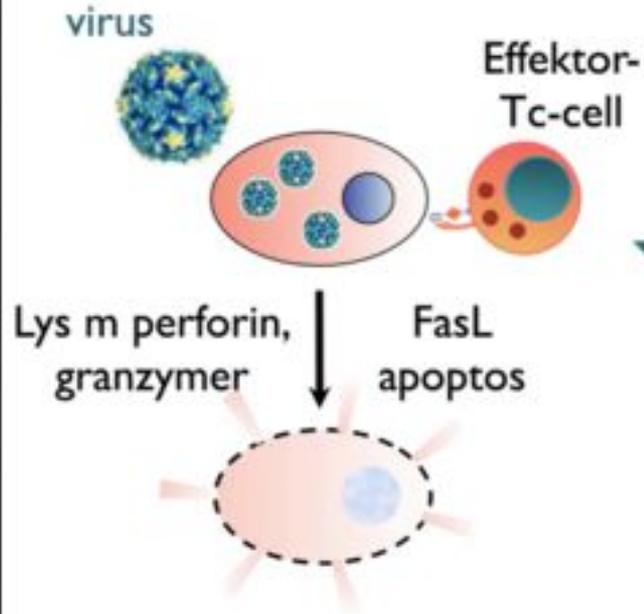
T-cell Activation



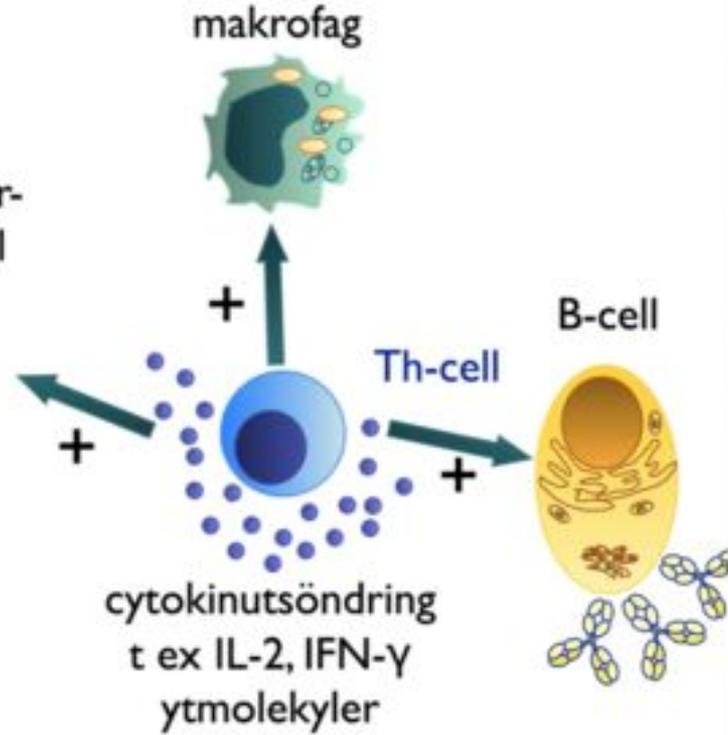
Killing of Infected Cell

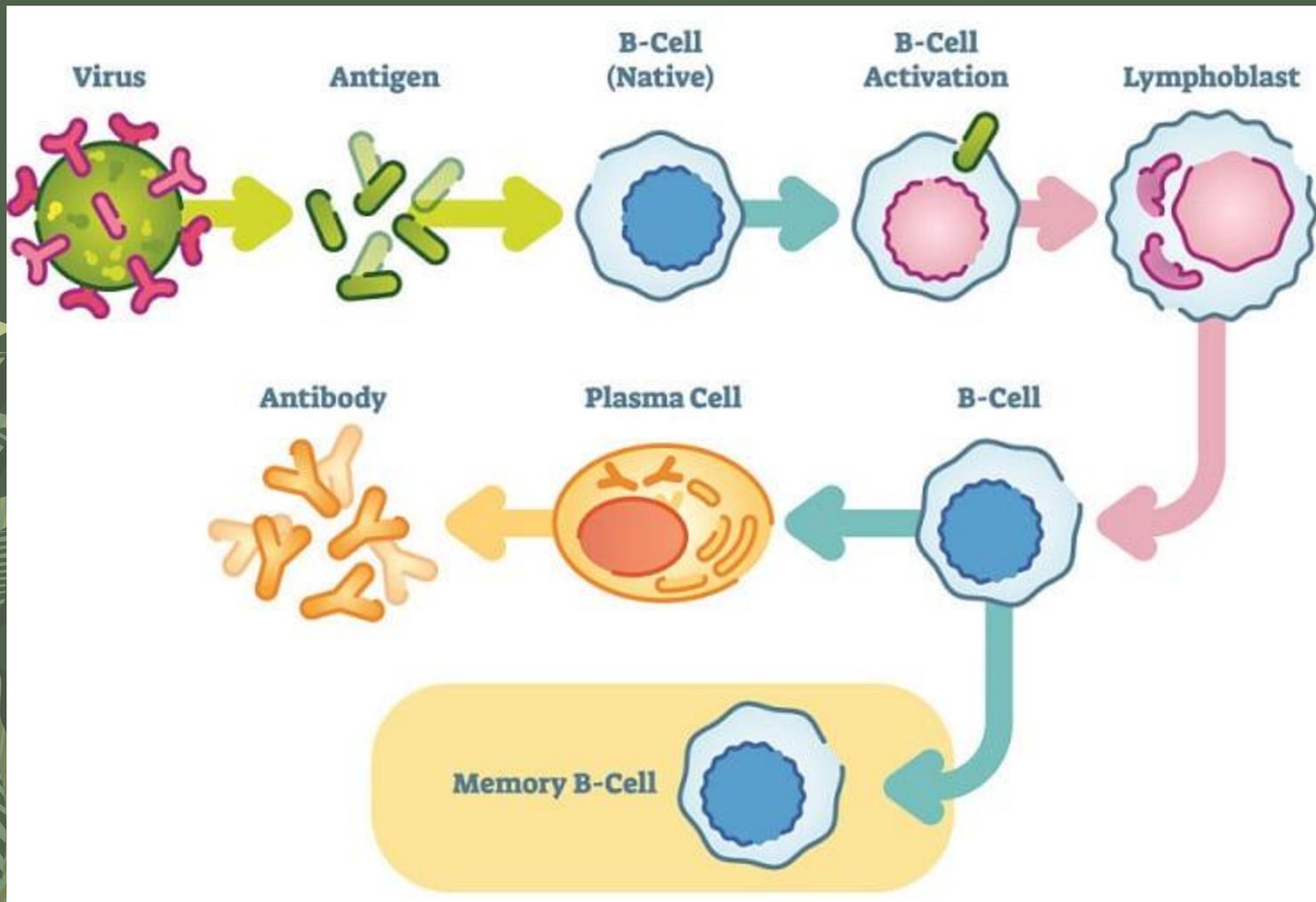


Cytotoxiska T-celler



Hjälpar-T-celler

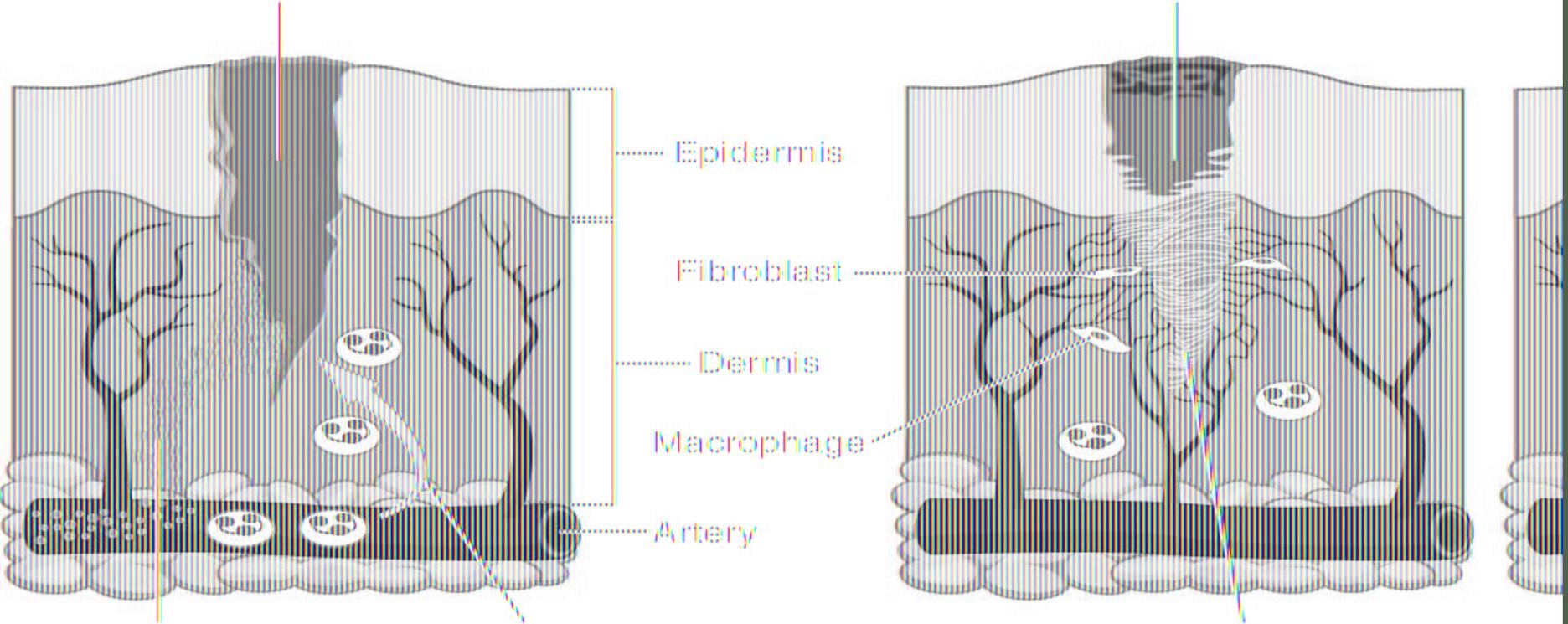




Clotting occurs, caused by clotting proteins and plasma proteins, and a scab is formed

Epithelial cells multiply and fill in over the granulation tissue

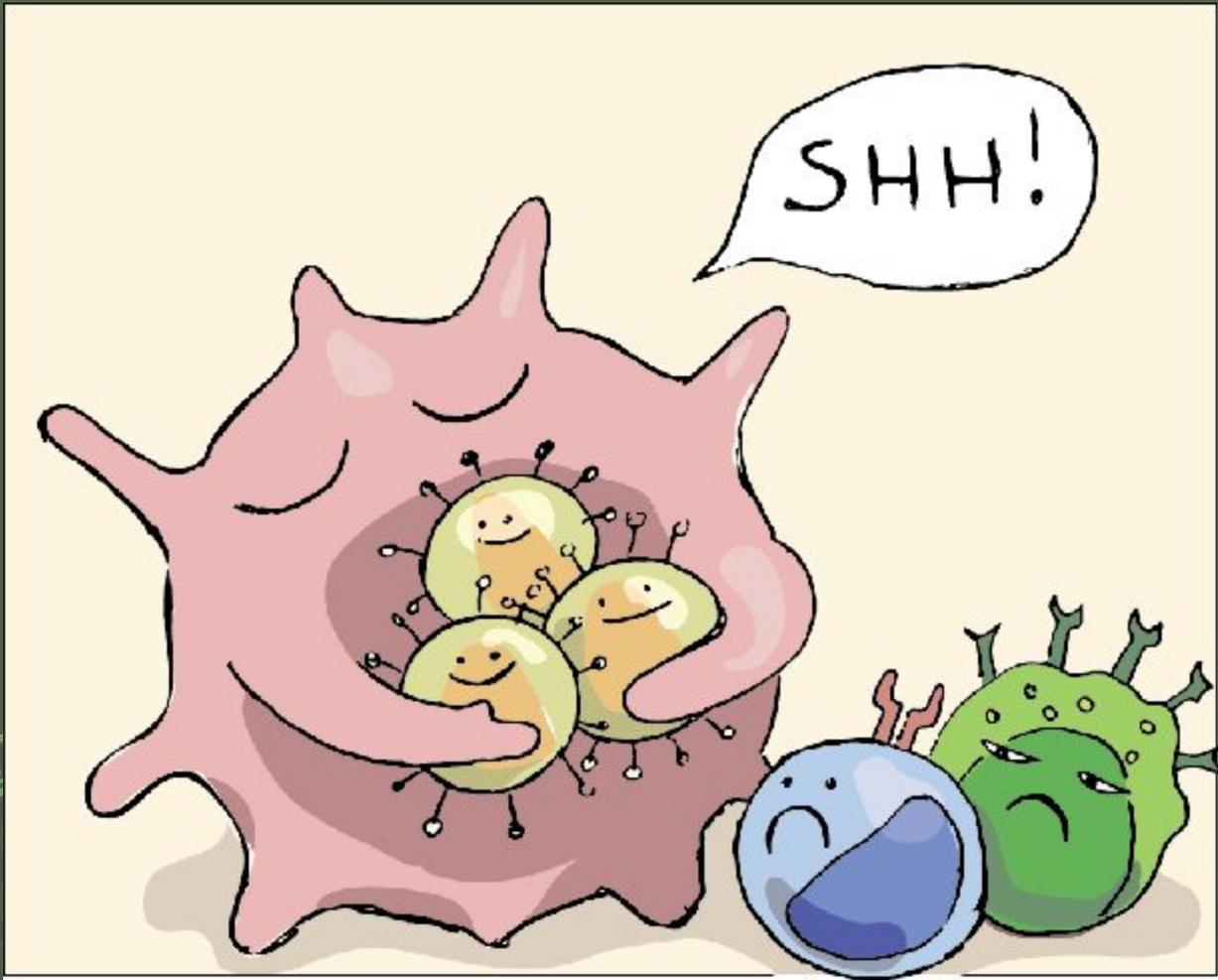
Re-epithelialization occurs



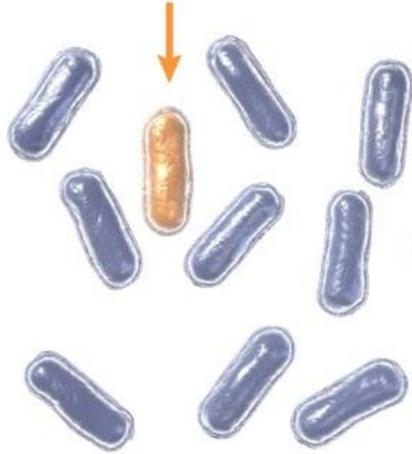
Inflammatory chemicals are released from injury

White blood cells seep into the injured area

Granulation tissue restores the vascular supply

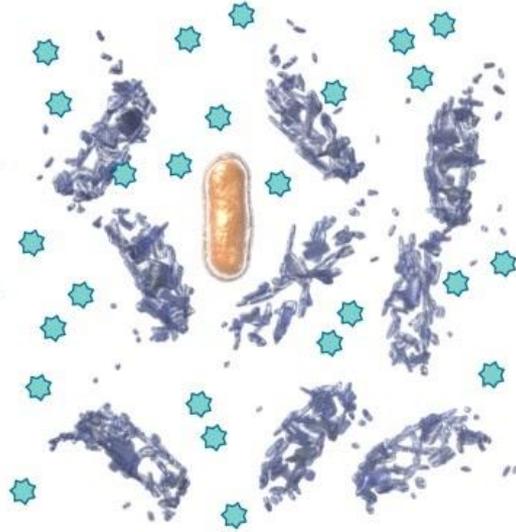


Antibiotic-resistant
organism

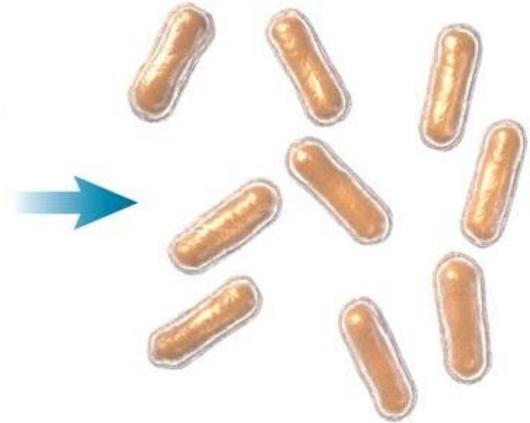


Population of bacteria
with a subset of antibiotic-
resistant organisms.

Antibiotic



In the presence of an
antibiotic, susceptible strains
are killed; the resistant
strain survives.



The resistant strain
proliferates and may be
capable of causing a new
infection.



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Formula - 90 Vcaps

4,9 ★★★★★ 19

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Kort repetition?

- Immunologi viktiga begrepp

- Patogener → Bakterier, Virus, Svampar, Parasiter, Protozoa etc..
- Vita blodkroppar → Makrofager, Neutrofiler, Basofiler, Eosinofiler, Dendritiska Celler, T-Celler, B-Celler, Blodplättar etc..
- Lymfsystemet → Lymfan, Lymfknutar, Brässen (Thymus) och Mjälten (även tonsiller och annan stödjevävnad)
- HLA → Human Leukocyte Antigen (ett sorts MCA → histokompatibilitetskomplex) – En "ID-tag" som reglerar immunförsvaret så att det inte angriper kroppsegna celler.
- Tre försvarsnivåer → Barriärer, Det Medfödda och Det Adaptiva (kan ha andra namn i boken) Antigen icke-specifikt eller specifikt (det adaptiva)
- Antigen → En identifikation från en patogen
- Antikropp → Kroppens vapen, upptäcker och neutraliserar patogener.

