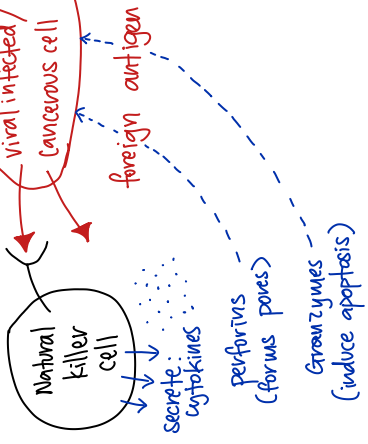


Barrier defence

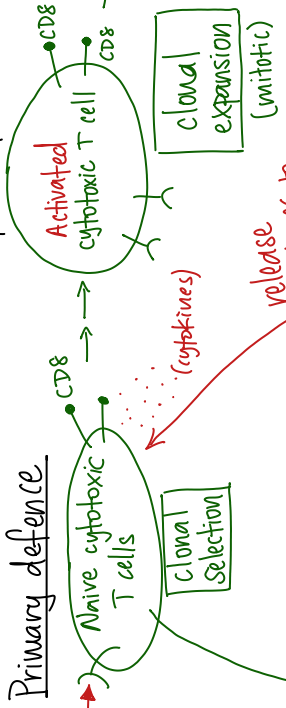
- ① skin, mucous membrane (physical barrier)
- ② mucous traps pathogens
- ③ secretions
 ↳ sweat
 ↳ saliva (chemical deterrent)
 ↳ tears contain lysozyme (hydrolyse peptidoglycan) (cell wall)

Innate (non-specific) immunity → immediate response

Internal defence

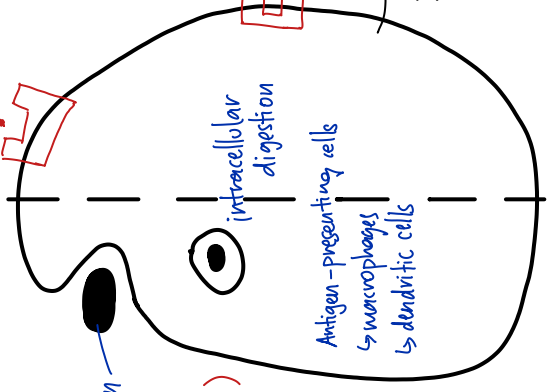
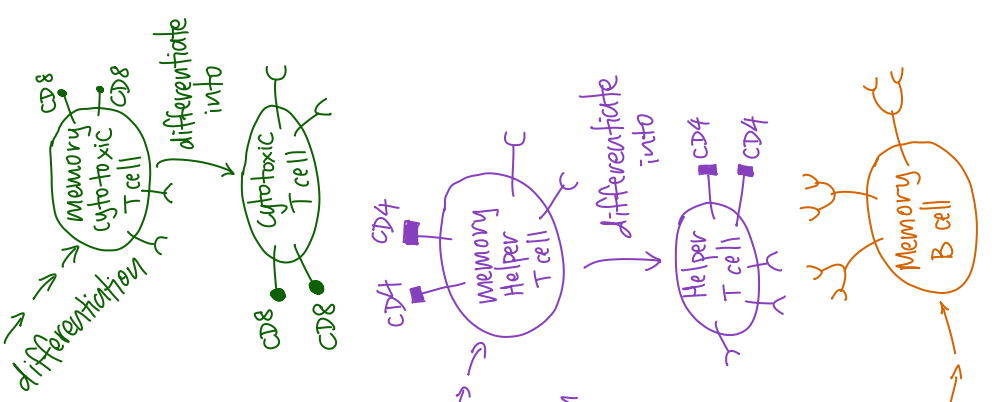


Primary defence



Adaptive (specific) immunity

Secondary response
 ↳ 2nd exposure to same antigen (faster, stronger, prolonged)



Local inflammation (inflammatory)

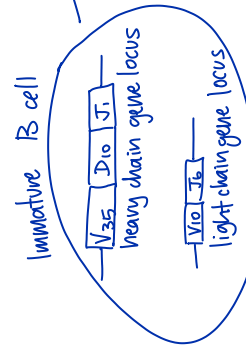
- ① Mast cells → histamine
 ↳ vasodilation
 ↳ blood vessel permeability
- ② Macrophages → cytokines
- ③ Recruit phagocytes
 ↳ phagocytosis
- ④ Pus, swelling, tenderness, fever?

(B) Somatic hypermutation

Activation-Induced Cytidine Deaminase (AID) enzyme
 ⇒ Base mismatch & error-prone DNA repair
 ⇒ affinity maturation

- (c) Class switching
 ⇒ Gene segments coding for C domains removed irreversibly
 ↳ IgG, IgE, etc...
GRADED

- humoral
 secrete antibodies:
 ① neutralisation
 ② Agglutination/Aggregation
 Opsonisation ⇒ facilitate phagocytosis
 ③ Activate complement system
 ⇒ osmotic lysis of target cells



(A) Somatic Recombination

⇒ VDJ recombination
 ⇒ Permanent, random DNA rearrangement

CUT