



VIDYAPEETH

BATCH CODE -29-YN201MA



• **Zoology**



- **Chapter Name- Human Diseases**



Lecture No.- 01



By- Aditya Sir

Today's Targets



- 1 Concept of Health
- 2 Diseases & types
- 3 Pathogens
- 4

Health

- Health is a state of complete physical, mental & social well-being. It is affected by genetic disorders, infections, change in life style (food, water, rest, exercise, habits etc).
- Mind influences immune system (through neural and endocrine systems) and thereby health.
- When the functioning of organs or systems of the body is adversely affected, it is called a disease.

→ state of discomfort

① Genetics ✓

dis

ease

② Pathogens ✓

③ Lifestyle ✓

Hygiene → A group of rules/protocols that we follow in order to keep ourselves healthy

Personal ✓ Domestic ✓ Public ✓

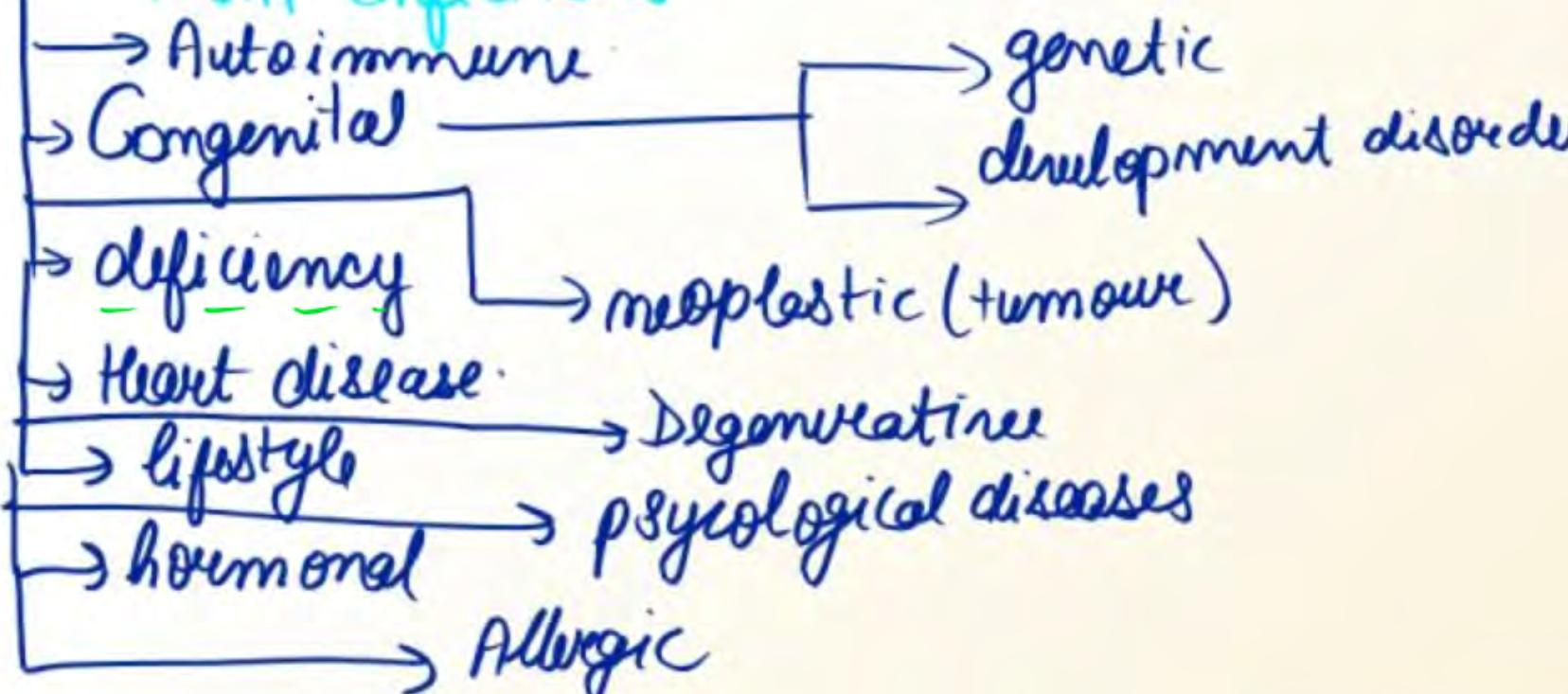


- Diseases may be infectious (transmits from one person to another) or non-infectious (do not transmit. E.g. cancer).

- Disease causing organisms are called Pathogens. Parasites are pathogens as they harm the host.

Disease → state of discomfort that arises due to improper or non functioning of any part, organ, system or process inside the body

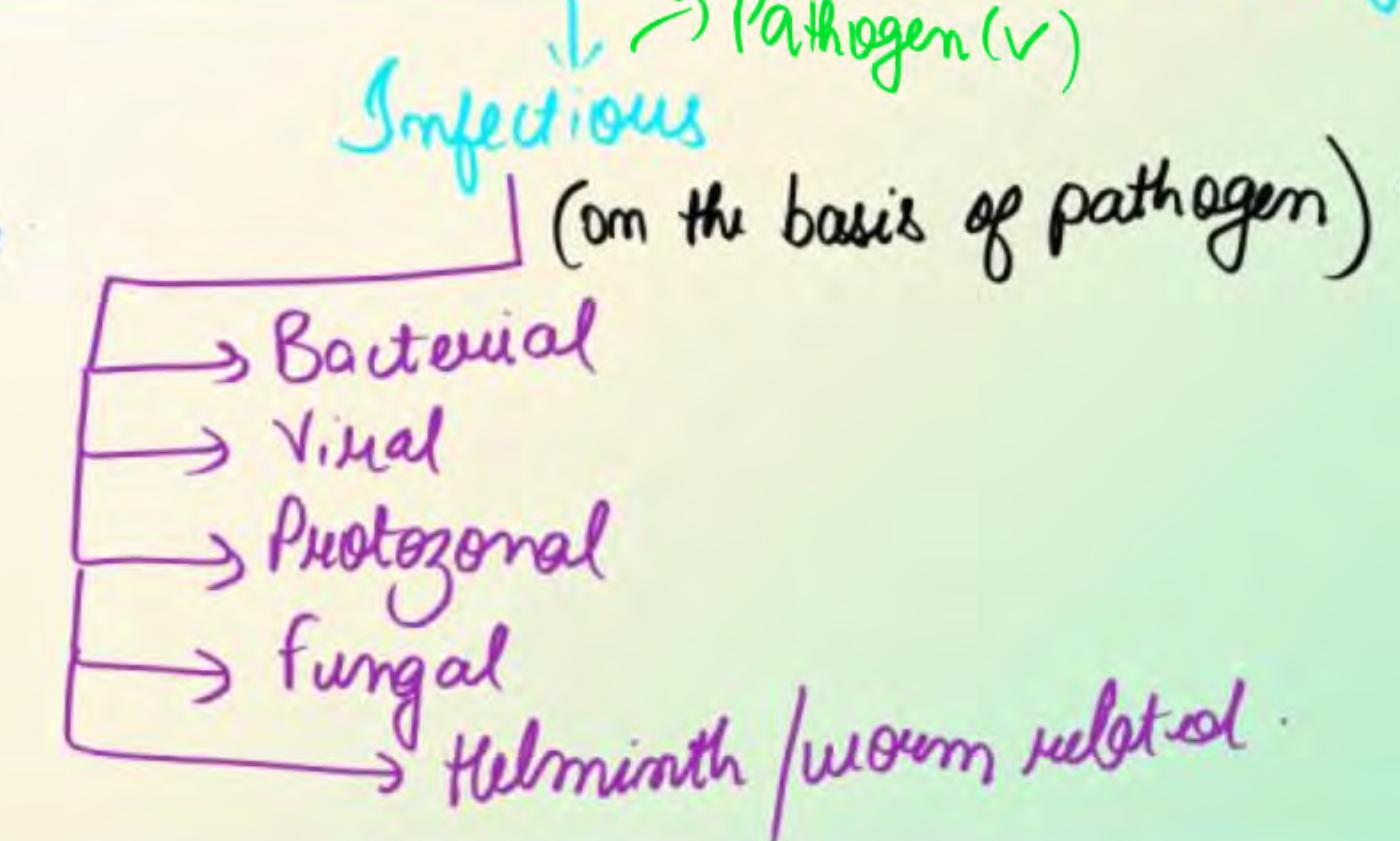
↓
No pathogen
Non Infectious



→ Infectious → which is caused due to a pathogen (Pathogenic)

→ Non Infectious → Pathogens are not responsible for these diseases (Non Pathogenic)

→ Pathogen (✓)





Good humour hypothesis (by Hippocrates & Indian

Ayurveda system): It states that health is a state of body & mind

where there is a balance of certain humours.

Persons with 'black bile' belong to hot personality and would have fevers.

→ गृह्ण तात्त्वीक

Some fluids in the body whose levels & nature in a specific range keep our body healthy



William Harvey disproved this hypothesis. He discovered blood circulation and demonstrated normal body temperature in persons with black bile using thermometer.



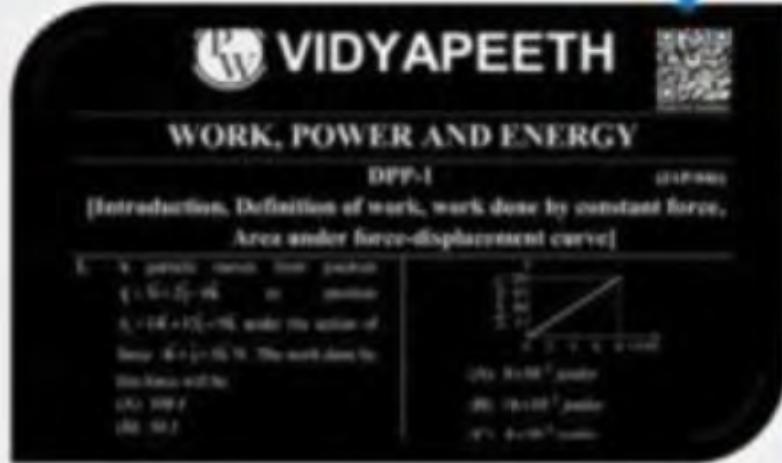
Pathogens

- Biological agents that cause a specific disease inside the body is called a pathogen.
- They usually cause the disease by harming our body for their own survival.
- mechanism of disease caused by pathogen is called pathogenesis.

modes of Entry in the Body

- Through cuts or wounds
- droplet infection
- Consumption of contaminated food & water
- Through direct contact
 - physical contact
 - sexual contact
- phonmites (articles used by the patients).
- vectors & carriers of disease.

Solve the DPP



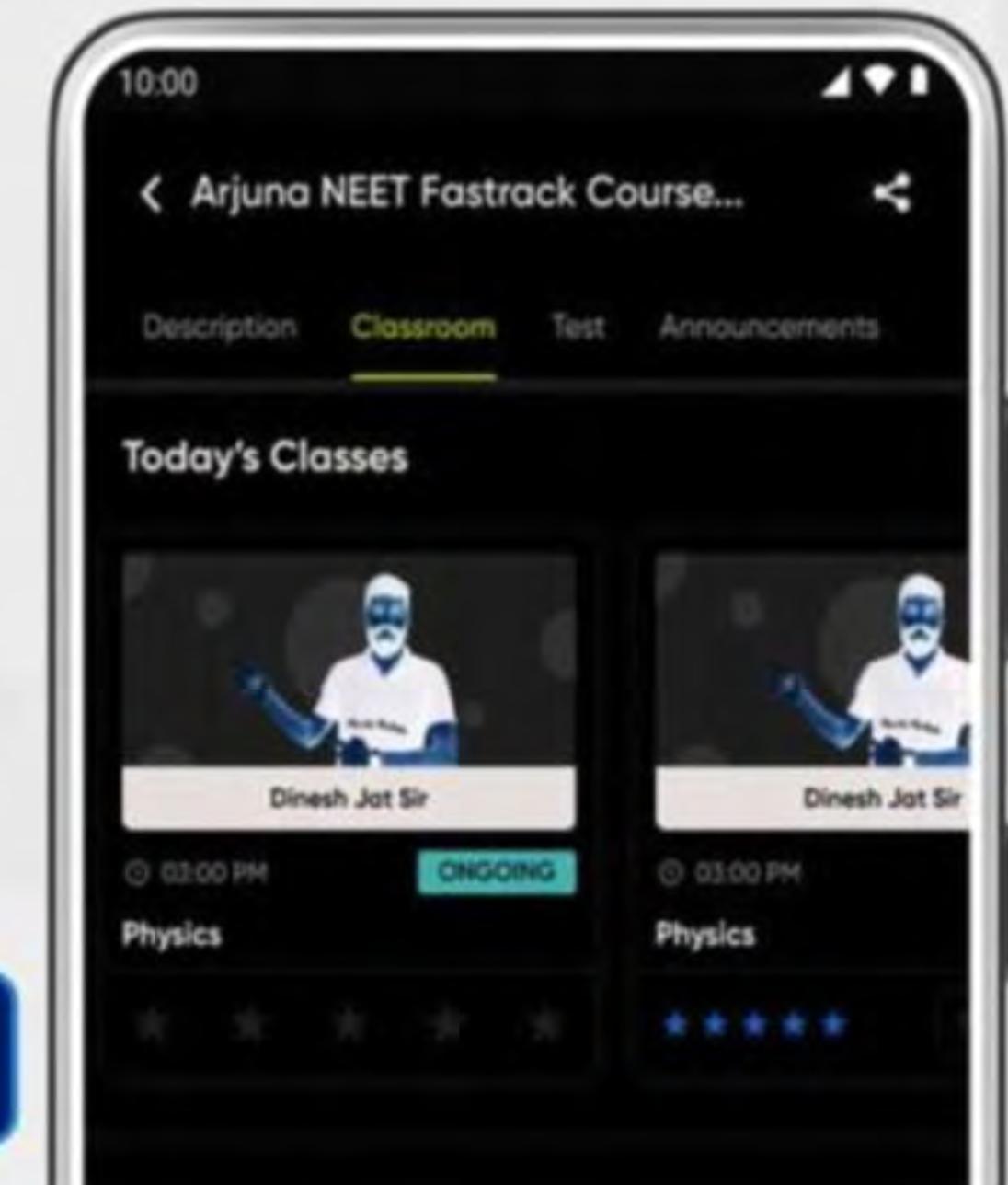
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VIDYAPEETH

BATCH CODE - 29-YN201MA

- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**



Lecture No.- 02



By- Aditya Sir

Today's Targets

A black megaphone icon with blue lightning bolts coming out of it.A blue target icon with a bullseye and concentric rings.

1

BACTERIAL, VIRAL DISEASES

2

PROTOZOA ASSOCIATED
DISEASES .

3

4

- Diseases may be infectious (^{may} transmit) from one person to another) or non-infectious (do not transmit. E.g. cancer).

- Disease causing organisms are called Pathogens. Parasites are pathogens as they harm the host.

Disease → state of discomfort that arises due to improper or non functioning of any part, organ, system or process inside the body

→ Infectious → which is caused due to a pathogen (Pathogenic)

→ Non Infectious → Pathogens are not responsible for these diseases. (Non Pathogenic)

Non Infectious

- Autoimmune
- Congenital
- deficiency
- neoplastic (tumour)
- genetic development disorder
- heart disease
- lifestyle
- psychological diseases
- hormonal
- Allergic

Infectious

- (on the basis of pathogen)
- Bacterial
 - Viral
 - Protozoal
 - Fungal
 - Helminth / worm related



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→ गृह्ण तापीर

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Pathogens

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- mechanism of disease caused by pathogen is called pathogenesis.

Modes of Entry in the Body

- Through cuts or wounds
- droplet infection
- Consumption of contaminated food & water
- Through direct contact
 - physical contact
 - sexual contact
- fomites (articles used by the patients)
- vectors & carriers of disease

CARRIER - Biological agent that carries the pathogen on its body surface

- Carries a wide range of pathogens on the body (non specific)
- Life cycle of the pathogen is not related to the carrier
- Eg → Housefly

VECTOR - Biological agent that carries pathogens

- inside the body
- They carry only specific pathogens
- The pathogen has at least 1 life event inside the body of the vector
- Eg → Female Anopheles mosquito → Plasmodium (malaria)

Sexual reproduction occurs in mosquito gut.

Bacterial Diseases

→ Target organ → Small Intestine
 → Bacteria

→ In some cases, pathogen can become dormant in gall bladder
 → Asymptomatic

* Diagnosis -
 Widal Test

a. Typhoid: Pathogen is Salmonella typhi.

- Enters small intestine through contaminated food and water and migrate to other organs through blood
- Sustained high fever (39-40° C)
- Weakness, constipation, stomach pain
- Headache, loss of appetite, blood stain in stool
- In severe cases intestinal perforation, death
- Widal test

↳ Sepsis

Mary Mallon (Typhoid Mary) was a professional cook.

She was a typhoid carrier who spread typhoid for several years through the food she prepared.



(Stool sample)



FEVER



HEADACHE



MUSCLE ACHES



LOW ENERGY



SWOLLEN LIMPH NODES



SKIN RASH

b. Pneumonia: Pathogen is Streptococcus pneumoniae & Haemophilus influenzae.

It infects lung alveoli. The alveoli get filled with fluid (it is usually said that the person drowns in his own body) leading to respiratory problems.

- Mode of transmission: Inhaling the droplets/aerosols released by an infected person. Sharing glasses and utensils with an infected person. (phonite) ✓
- Symptoms: Respiratory problems, fever, chills, cough, headache. In severe cases, lips and finger nails turn grey to bluish colour.

→ Condition where fluid accumulates in the lungs.
→ certain viral or even non-pathogenic conditions may even lead to pneumonia.



→ Targets the intestine

Dysentery- *Shigella dysenteriae*

- Abdominal pain (Shigellosis)
- Blood & mucus in the stool
- Transmits through faecal oral route

→ Pathological

→ Epidemic in the central Asia & Europe in the past

Plague- *Yersinia pestis*

- High fever, headache (Black death)

Parasite of Xenopsylla

- Enlargement of axillary

lymph nodes. cheopis (Rat flea)

→ spreads plague

Tetanus (Lock jaw)- *Clostridium tetani*

Sustained contraction of body muscles,

spasms, lock jaw, unconsciousness,

Stretching of facial muscle

→ 100%

→ Targets the nervous system



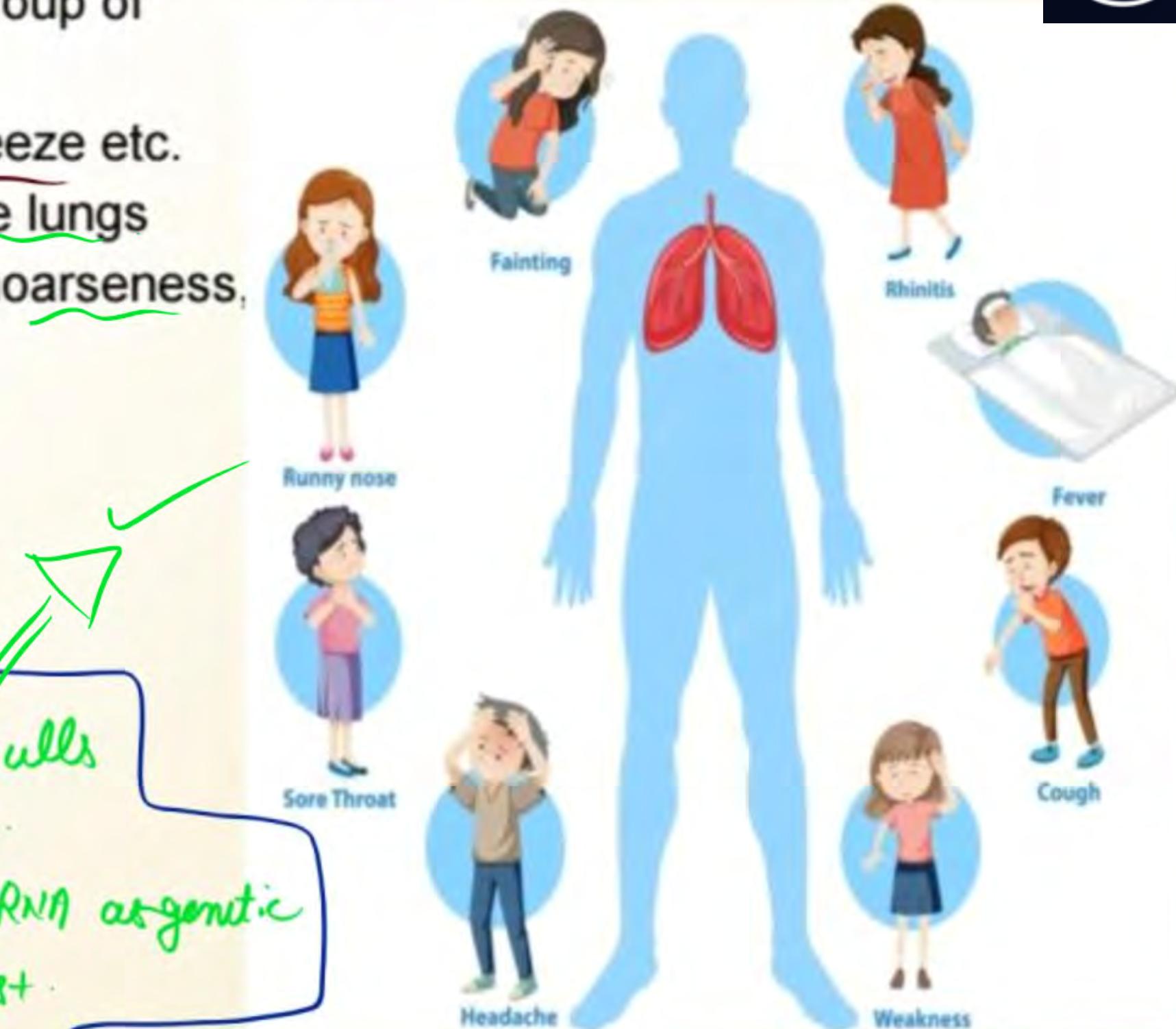
- Obligate Anaerobe naturally found in the intestines of horses
- Spores are highly resistant (dryness & heat)
- Vaccine (DTP vaccine → D+T+Tet)
- After injury, within 24 hrs, ATG must be injected. (Anti-tetanus serum).

~~Common cold - Rhino viruses~~VIRAL DISEASES

- One of the most infectious human ailments (Group of viruses) Affects the upper respiratory tract
- Transmits via droplet resulting from cough, sneeze etc.
- Infect nose and respiratory passage but not the lungs
- Nasal congestion and discharge, sore throat, hoarseness, cough, headache, tiredness
- Usually last for 3-7 days
- Usually there is symptomatic treatment but no cure

viral diseases are difficult to cure

- 1.) Virus usually replicates inside the host cells & therefore they are difficult to target
- 2.) majority of the pathogenic viruses have RNA as genetic material & therefore they mutate very fast



Chikun-gunya- Chikungunya virus (ss-RNA)

- Fever, joint pain, Lymphadenopathy
(Vector :- Aedes-ägeypti mosquito)

High \rightarrow 101 to 104°F

$P_{\text{Count}} = \begin{cases} < 50,000 / \text{mm}^3 - \text{Purpura Disease} \\ < 10,000 / \text{mm}^3 - \text{critical} \end{cases}$

Dengue fever- Flavi-arbo virus

- Fever, severe-frontal-headache,
or (Vector :- Aedes-ägeypti mosquito) muscle
& joint pain Break-bone-fever

- Bleeding from nose, mouth, gums

usually, the cause of death is internal bleeding (critical cases).

inflammation in the lymph nodes



- During the later phases of disease, platelet count will decrease (normal - 2 to 4 lakh/mm³)

Ca^{++} are lost from the bones during the disease.
Hence there is prolonged weakness

Also STD.

Hepatitis-B HBV (ds DNA)

- Severe liver damage, jaundice
- Recombinant DNA-vaccine
- Transmits-through parenteral and sexual-route
- Can cross placenta

Hepatitis

liver inflammation

NEET

It is the 1st disease to have an RDT

doused vaccine

(RDT → Recombinant DNA) Technology

Caused due to accumulation of bile pigments like bilirubin & biliverdin in the blood stream due to improper functioning of liver.



DISEASE CAUSED BY PROTOZOA

Only female mosquitoes bite as they require proteins for the process of egg laying.

Malaria

P. vivax (most common in South Asia)
P. falciparum → deadliest malaria
called cerebral malaria



Pathogen	Species of <i>Plasmodium</i> . (<i>P. vivax</i> , <i>P. malariae</i> and <i>P. falciparum</i>) (NEET 2020)
Mode of transmission	By the bite of a female <i>Anopheles</i> mosquito (vector)
Symptoms	Haemozooin (a toxin released by <i>Plasmodium</i>) causes <u>chill</u> and high fever recurring every 3-4 days <u>NEET</u> ↳ Shivering ↳ Headache ↳ General Weakness.

Plasmodium enters the human body as sporozoites (infectious form) through the bite of infected female *Anopheles* mosquito. They have an anticoagulant called *anophelin* in saliva.

The parasites initially multiply within the liver cells and then attack the red blood cells (RBCs) resulting in their rupture. (+merozoite)

→ (NEET)

The rupture of RBCs is associated with release of a toxic substance, haemozooin, which is responsible for the chill and high fever recurring every three to four days.

- When a female *Anopheles* mosquito bites an infected person, these parasites enter the mosquito's body and undergo further development.

Plasmodium → Endoparasite

Digenic Parasite - uses 2 hosts for completion of life cycle

- * Primary Host - host in which parasite does sexual reproduction
(female anopheles mosquito)
- * Secondary Host - host in which there is asexual reproduction
(Human body)

⇒ Plasmodium reproduces asexually in the liver cells & RBCs of human body.

⇒ They form gametocytes in the blood of human

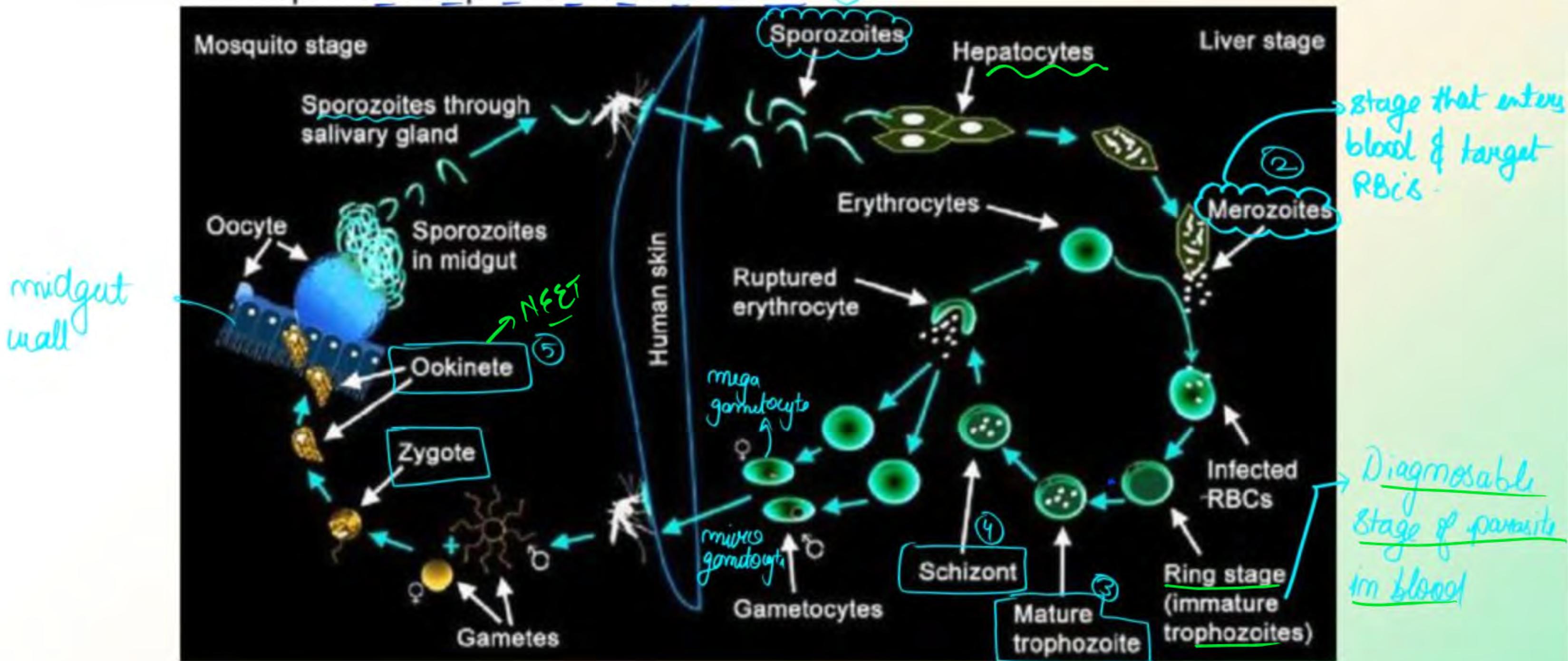
⇒ Gametocytes are transferred to the next mosquito that bites the human (patient)

⇒ Sexual repro. takes place in the mid gut (gizzard) of mosquito

⇒ The sporozoites produced in mosquito gut get transferred to the salivary gland

The parasites multiply within them to form sporozoites that are stored in their salivary glands.

- When these mosquitoes bite a human, the sporozoites are introduced into his/her body. Malarial parasite requires two hosts – human and mosquitoes – to complete its life cycle.
- The female Anopheles mosquito is the vector too.



Amoebiasis (Amoebic dysentery)

Pathogen- *Entamoeba histolytica*

Mode of transmission- Houseflies

(mechanical carriers ,i.e., ~~vector~~) carrier

transmit parasites from faeces to food and water

Symptoms- Affects the large intestine and causes constipation, abdominal pain and cramps, stools with excess mucus and blood clots.

Target organ → Small intestine & Large Intestine
 But in extreme conditions
 liver & brain may also
 get involved

- Fever ✓
 - Anaemia (weakness) ✓
 - Cramps (abdominal) ✓
 - Abdominal bloating
 - Weight loss
 - Diarrhea (मोतावा)
 - Dehydration
 - Blood and mucus in stool
- Red stains in the blood



Entamoeba ≠ Amoeba
 → smaller in size & has
 a definite shape.

WORMS RELATED DISEASES



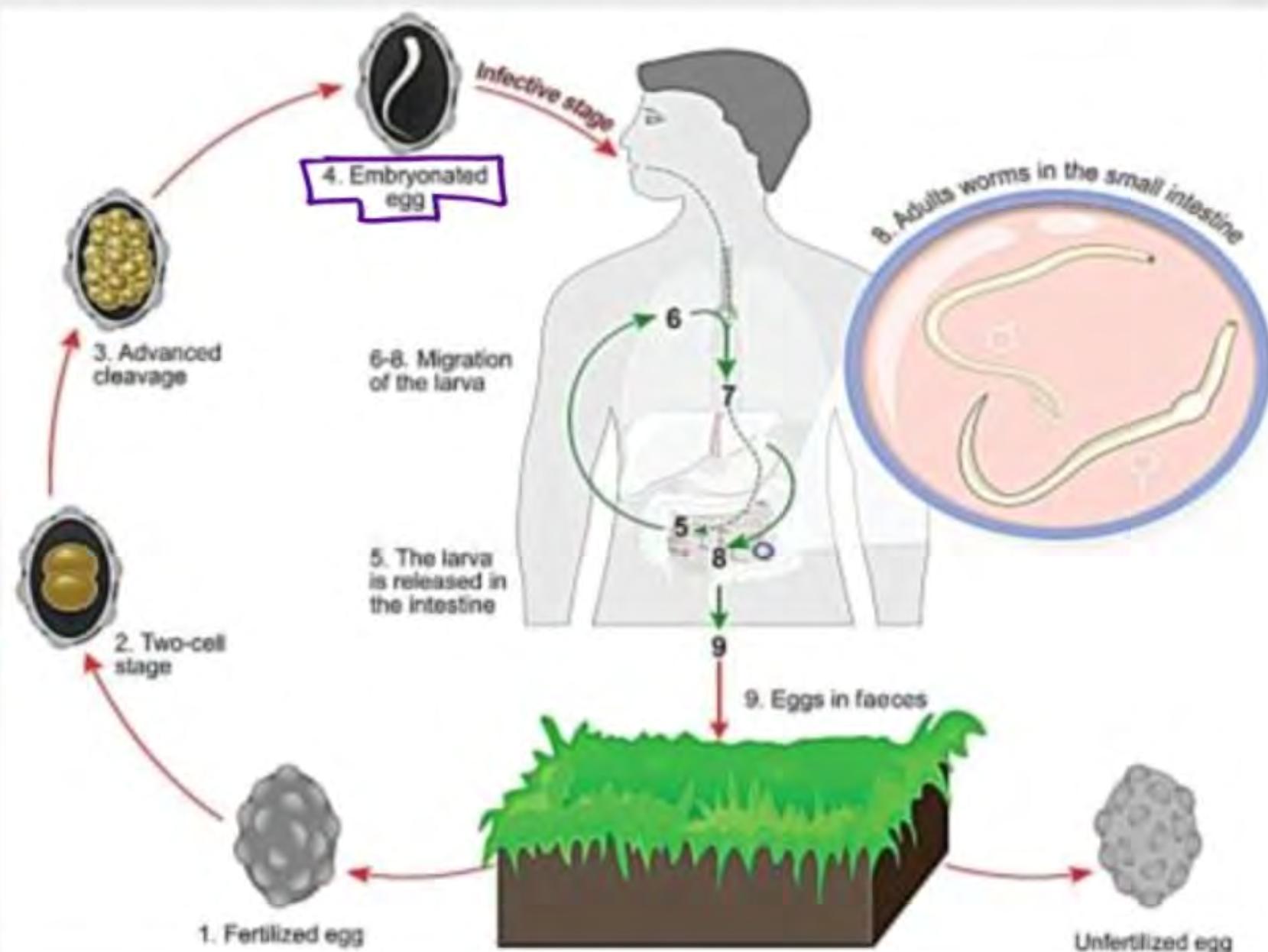
- (1) **Ascariasis** - *Ascaris lumbricoides* (round worm)
- Intestinal parasite (Common Round worm)
 - Internal bleeding, muscular pain, fever, anemia, blockage of the intestinal passage
 - Eggs of the parasite excreted along with the faeces of infected person which contaminate soil, water, plants

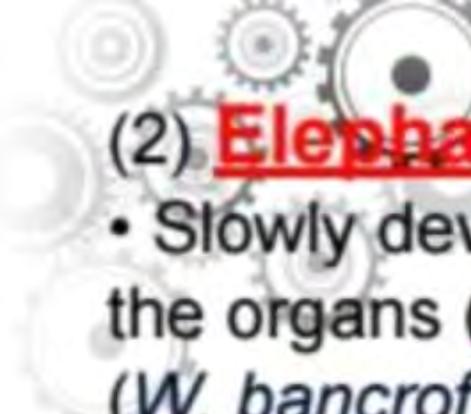
⇒ Enters the body with the help of improperly cooked food which is contaminated with embryonated eggs of ascaris.

⇒ Adult ascaris worms lodge themselves in the alimentary canal.

This will lead to blockage stopping the movement of food.

→ In extreme cases, it can invade bowel.
 → It may lead to intestinal leakage which can lead to spread of infection & death.





(2) Elephantiasis- Wuchereria (filaria)

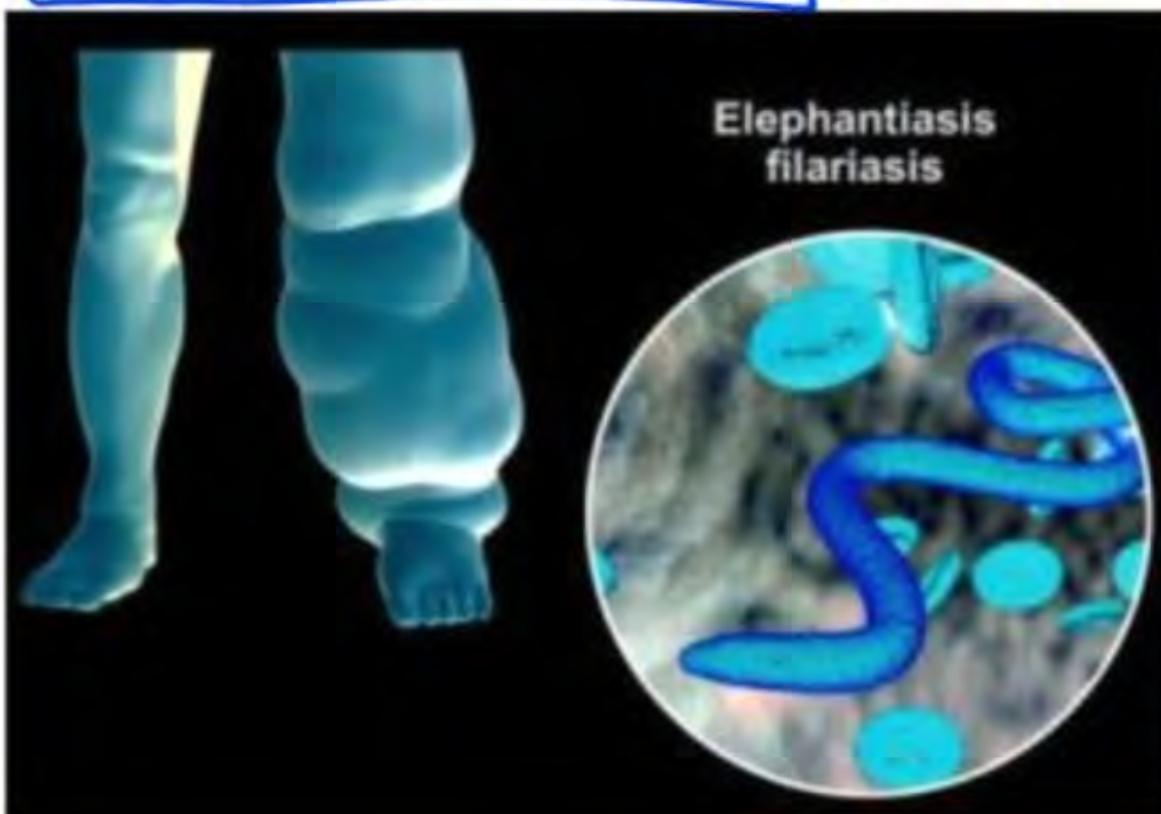
- Slowly developing chronic inflammation of the organs (Filariasis)

(*W. bancrofti* and in which they live for many years (usually lymphatic vessel of Lower Limb).

worm resides in the lymphatic vessels of lower limb. Makes the drainage of lymph poor.

Genital Organs are also involved leading to gross abnormalities. (unpleasant to see)

Transmitted to a healthy person by the bite of a female mosquito (Culex) (vector)



In extreme cases, the affected area may include the scrotum (due to involvement of pelvic lymphatic circulation).

Treatment

- Antihelminthic drugs
- Compression therapy
- Extreme cases - surgery



Ringworm

FUNGAL DISEASES.
usually *bacterial* eating fungi



Pathogen	<u><i>Microsporum, Trichophyton and Epidermophyton</i></u>
Mode of transmission	From soil or by using towels, cloths, comb belonging to infected person. Heat and moisture help fungi to grow
Symptoms	Dry, scaly lesions on the skin, nails, scalp, etc. Intense itching. (<u>reddish in middle</u>) Commonly seen in the groin, between toes, etc.

Target Site → warm moist & dark areas of the body
→ toes, nails, scalp
groin, underarms etc.

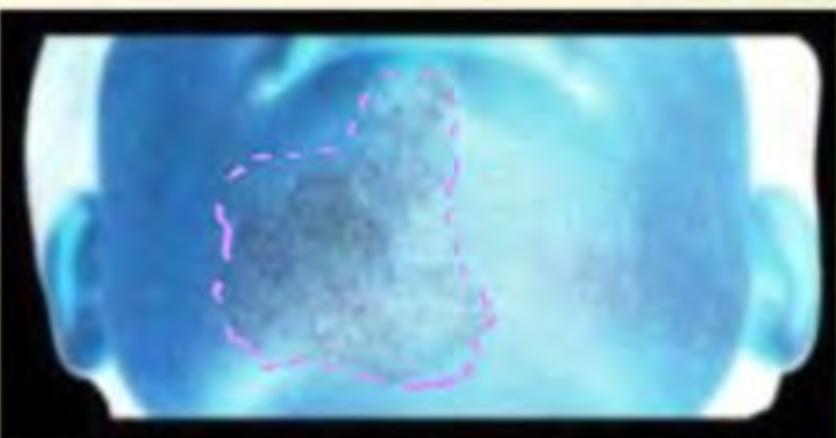
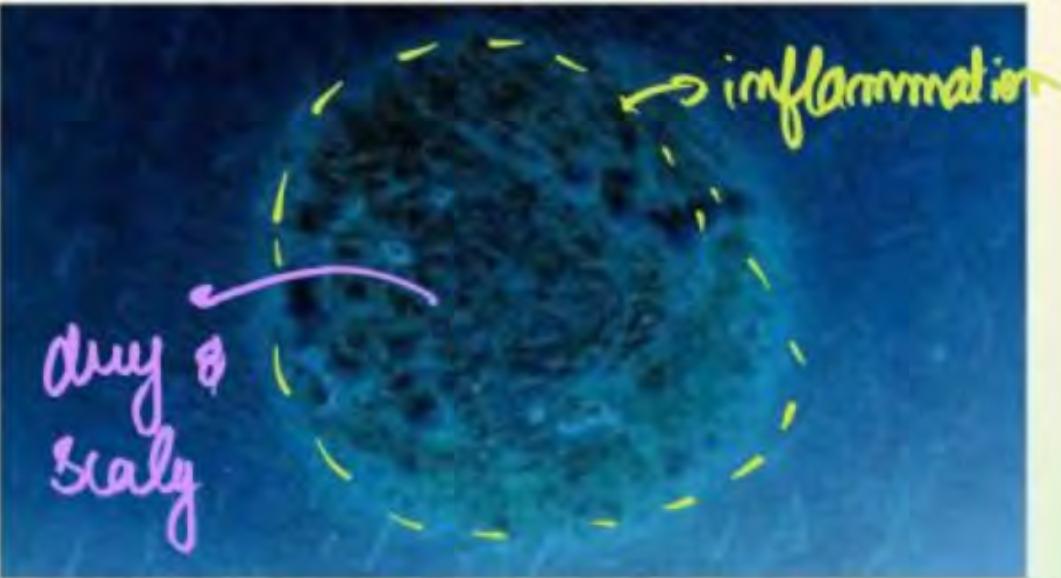


Diagram showing ringworm affected area of the skin

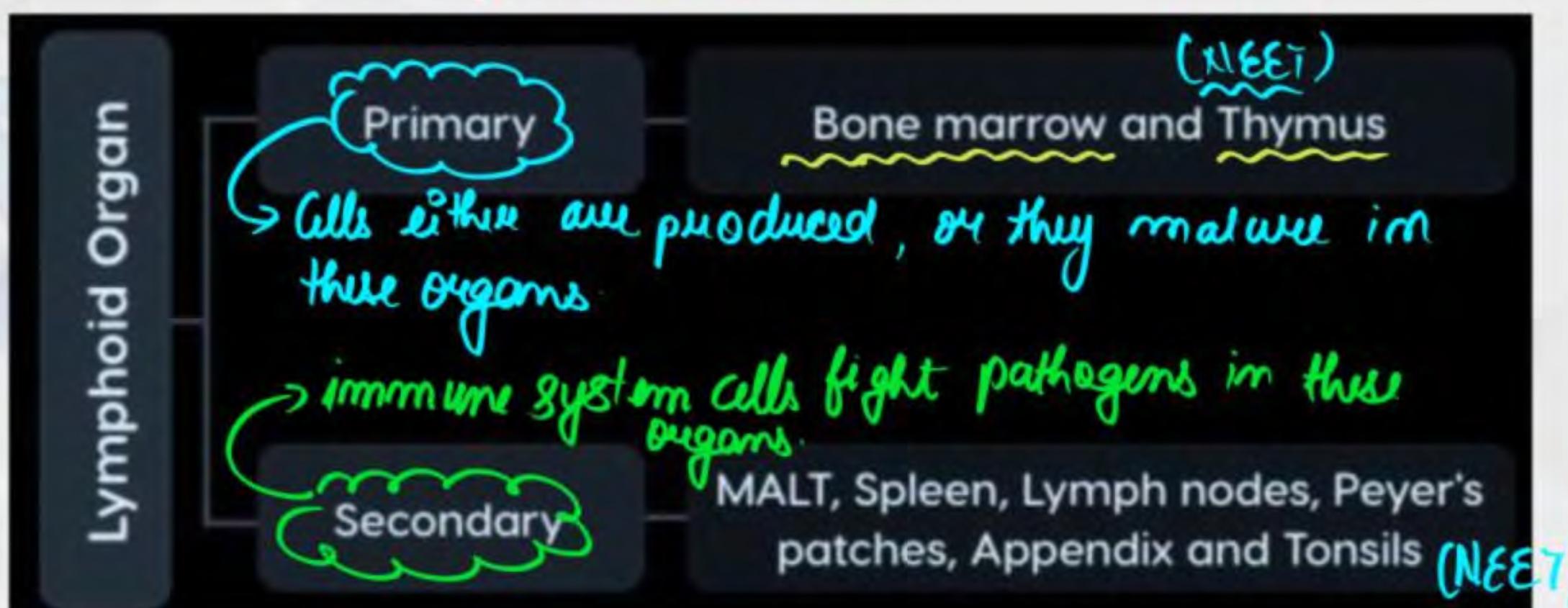
Prevention and Control of Diseases

- Personal Hygiene
- Domestic Hygiene
- Public Hygiene

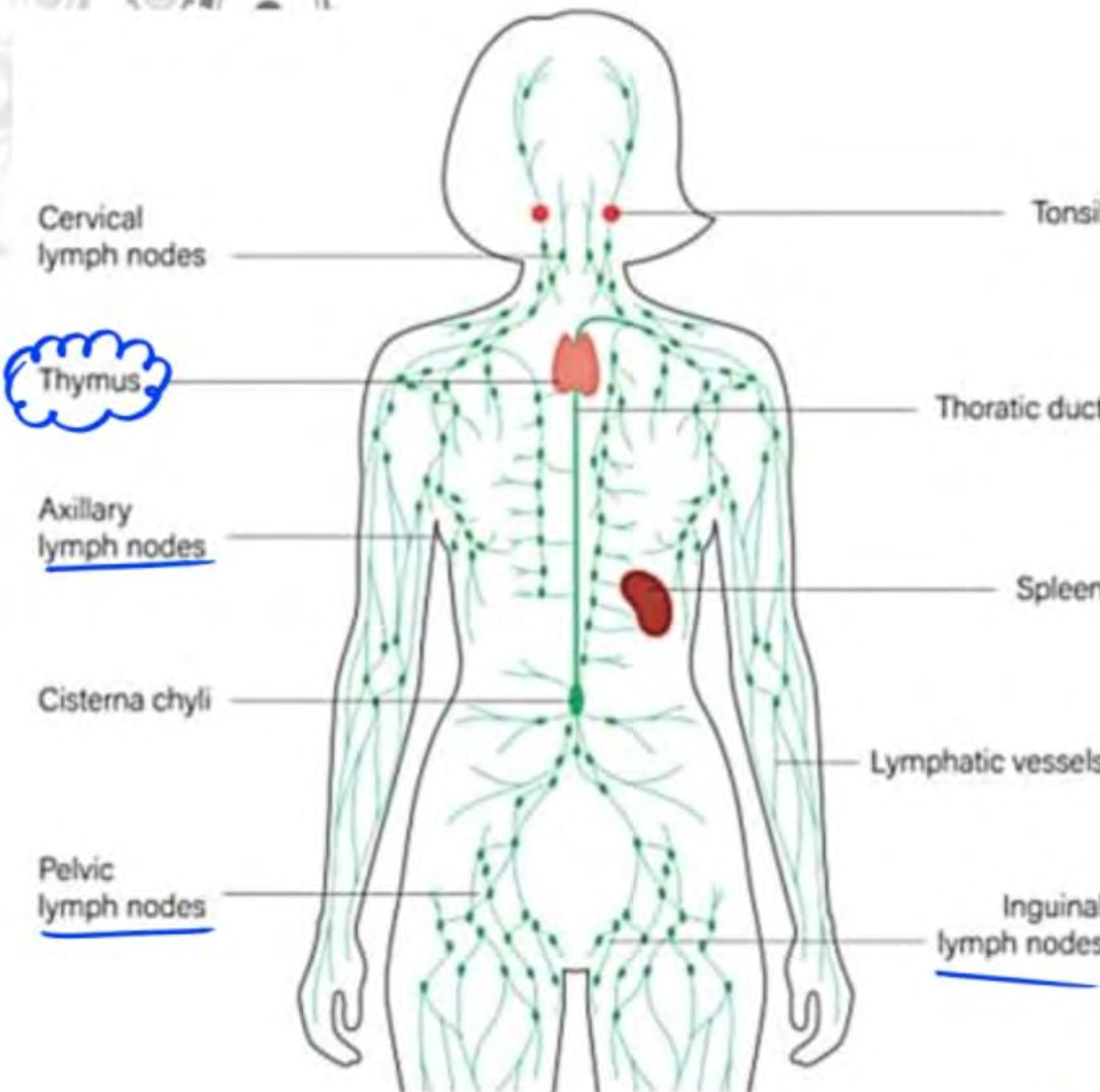
- ↳ Elimination of breeding grounds of pathogen
- ↳ Elimination of carrier & reservoir
- ↳ Prevention of direct contact with the patient.
- ↳ Use of face masks in case of droplet infection
- ↳ Sanitation of frequently touched surfaces.

Immune System

- The system inside the human body, which provides protection from pathogens or any foreign substance and gives immunity to the body is referred as immune system.
- It plays a role in an allergic reaction, auto-immune disease and organ transplantation.
- It includes the lymphoid organs, tissues, WBCs and antibodies.



MALT → Mucosa associated lymphoid tissue



Primary Lymphoid Organs

- Here, immature lymphocytes differentiate into antigen-sensitive lymphocytes, e.g., bone marrow and thymus.
- Bone marrow is the site of formation of the blood cells.
- Thymus is large during birth but gradually reduces in size and becomes very small sized when a person attains puberty.
- T-lymphocytes cells originate in the bone marrow and matures in thymus

ANTIGEN → They are molecules present on the surface of cells that tell about its identity to the immune cells.

IMMUNOGEN → Antigen or a foreign body that can trigger an immune response

Secondary Lymphoid Organs

These are the organs to which matured lymphocytes migrate. Here the lymphocytes interact with antigens and then proliferate to become effector cells (producing antigen-specific antibodies)

→ cells that attack the pathogen.

* Cells that kill by engulfing & digesting the pathogen (PHAGOCYTES)



Secondary lymphoid organs

→ present in the upper left side of abdomen.

Spleen

- Bean-shaped organ
- Contains lymphocytes and phagocytes
- It removes worn-out RBCs therefore, called **graveyard of RBCs**.
- It is a reservoir of erythrocytes in the foetus. (**blood bank of the body**)

Lymph nodes

- Found in the lymphatic system (**filter out the lymph**)
- They trap microorganisms or other antigens. (**envelope cells**)
- Trapped antigens activate lymphocytes and initiate immune response.

(NEET)

Mucosal associated lymphoid tissue (MALT)

- Located within the lining of respiratory, digestive and urinogenital tracts.
- It constitutes 50% of lymphoid tissue in the body. (**NEET 2017**)

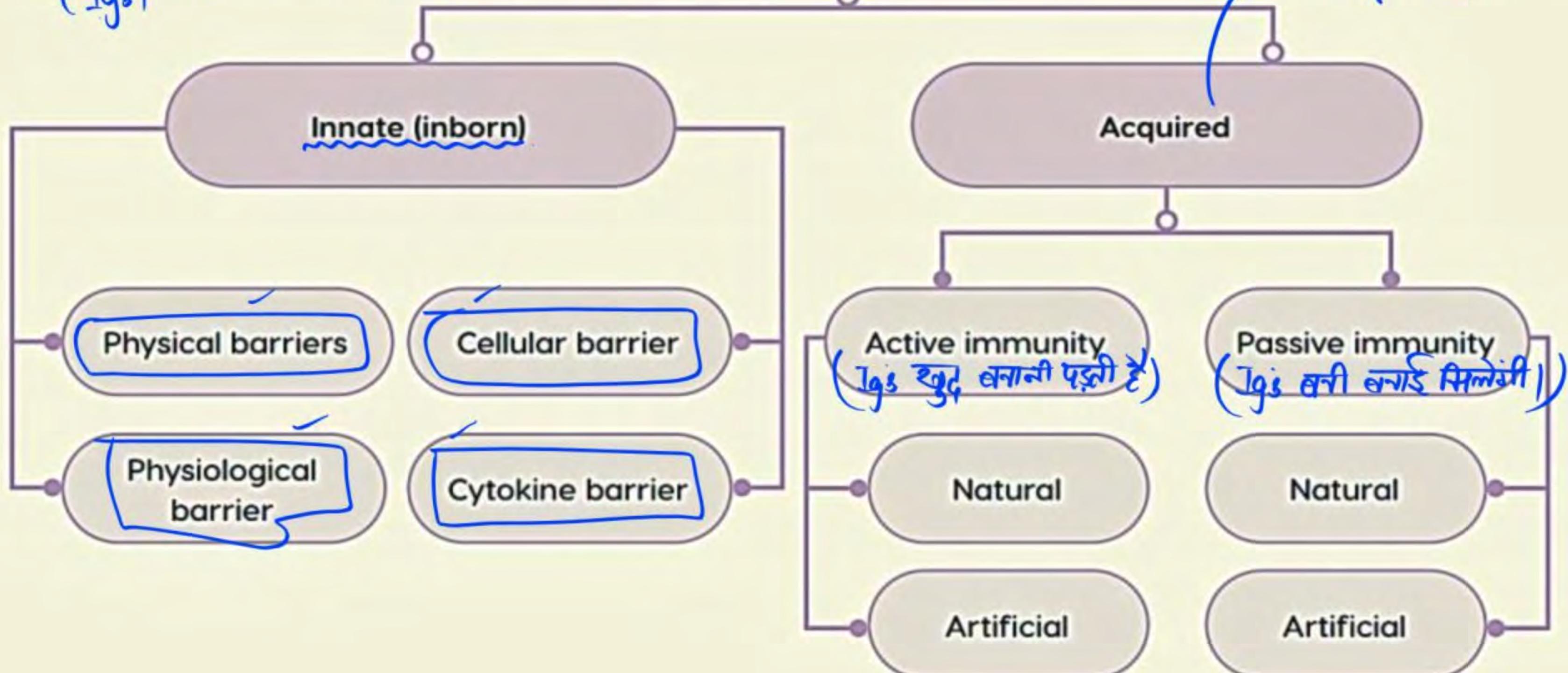
ANTIBODIES - Called immunoglobulins.

→ Y-shaped protein molecules that help to fight against a specific type of antigen.
(Ig's)

Immunity

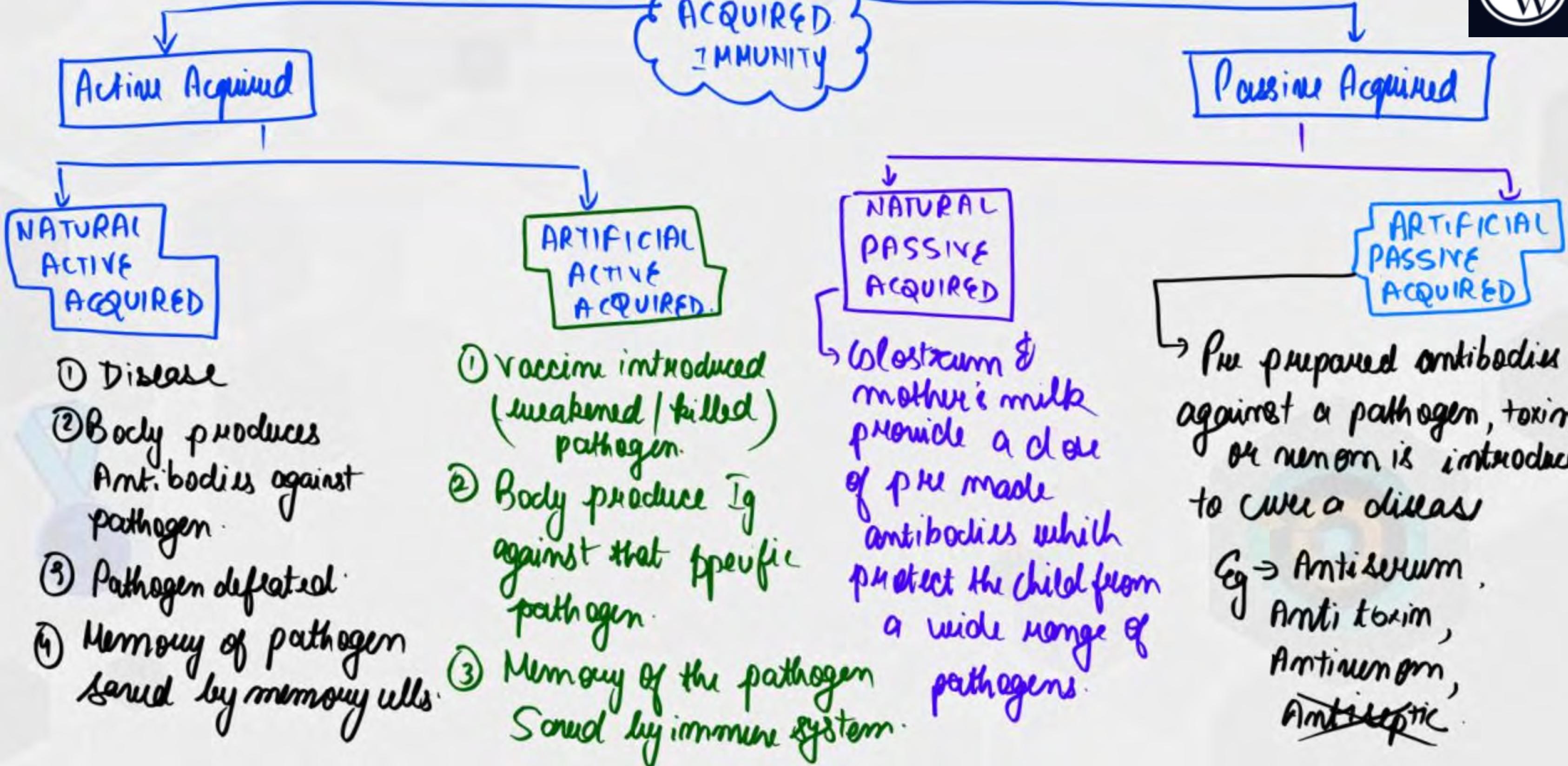
(अज्ञ प्रतिरोधक क्षमता)

that we acquire during the life.

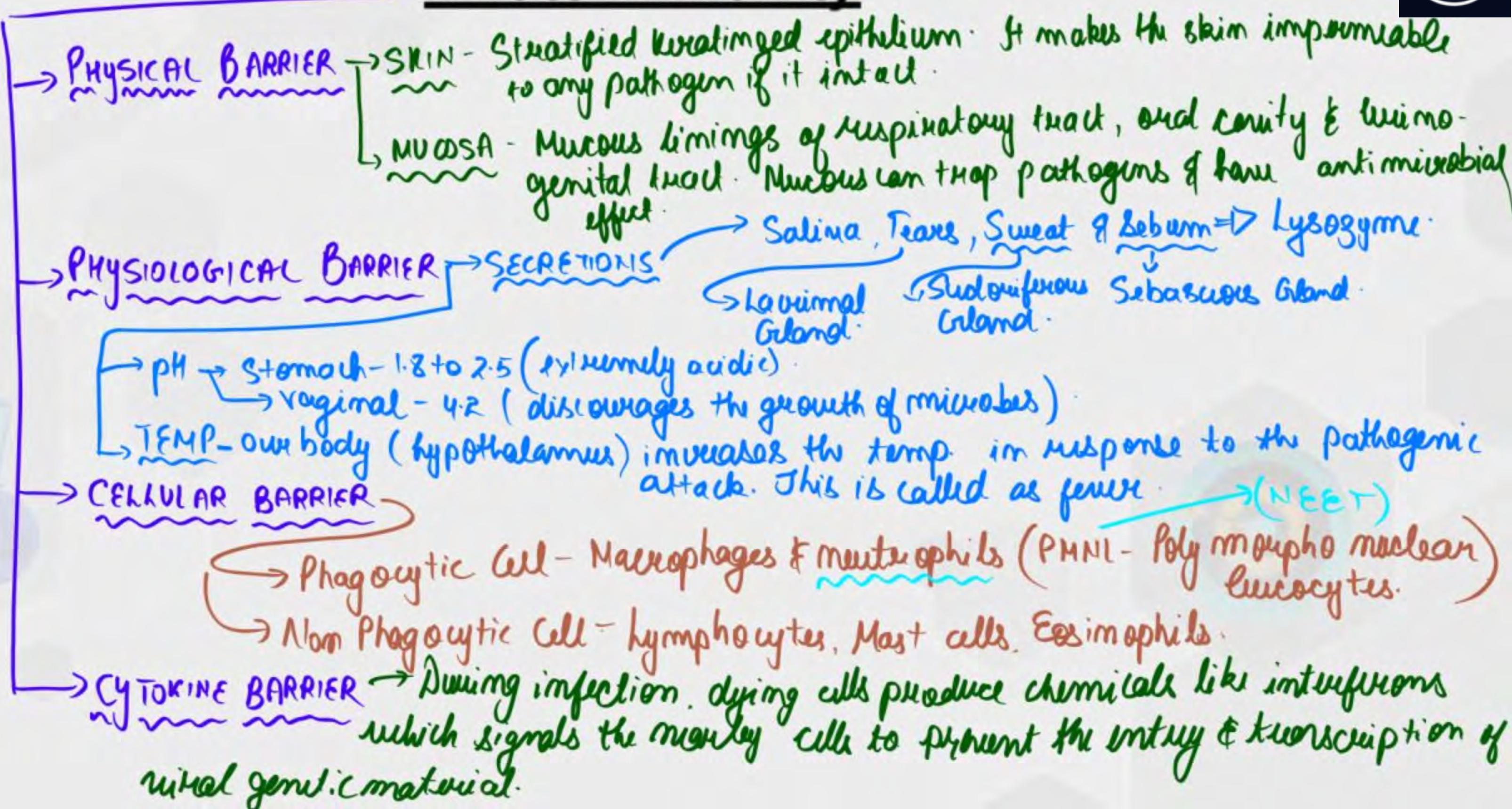




ACQUIRED IMMUNITY



Innate Immunity

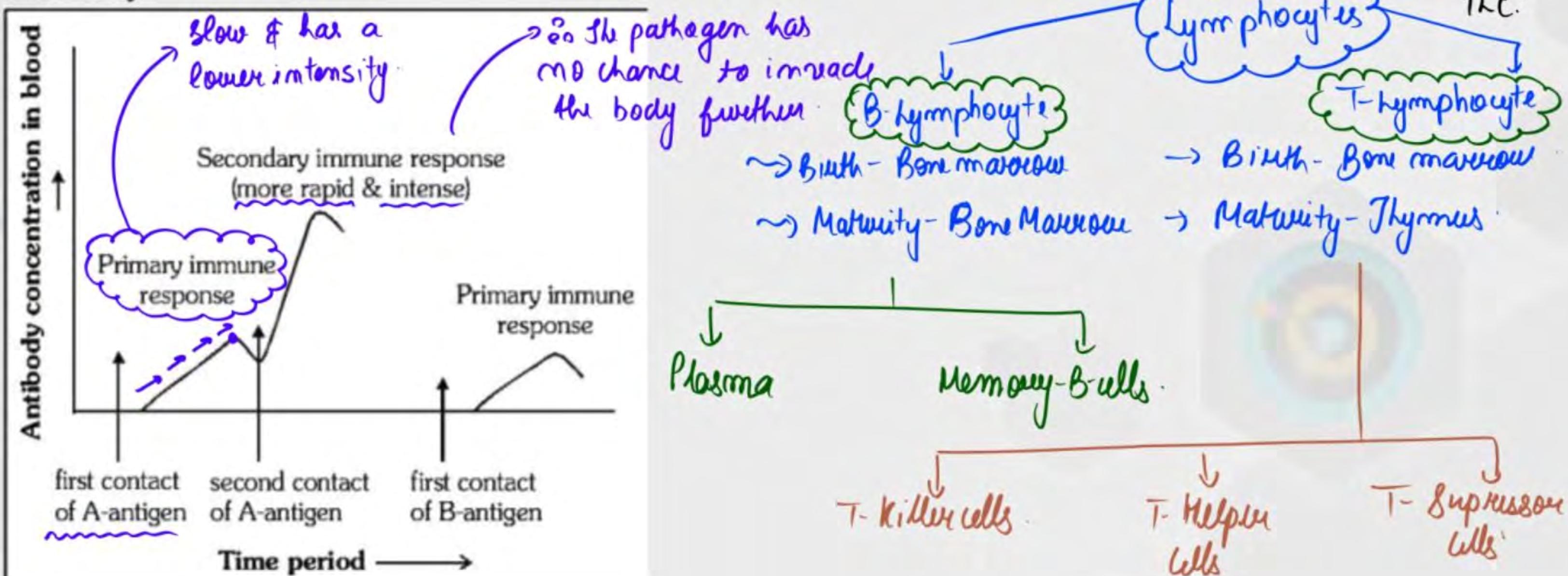


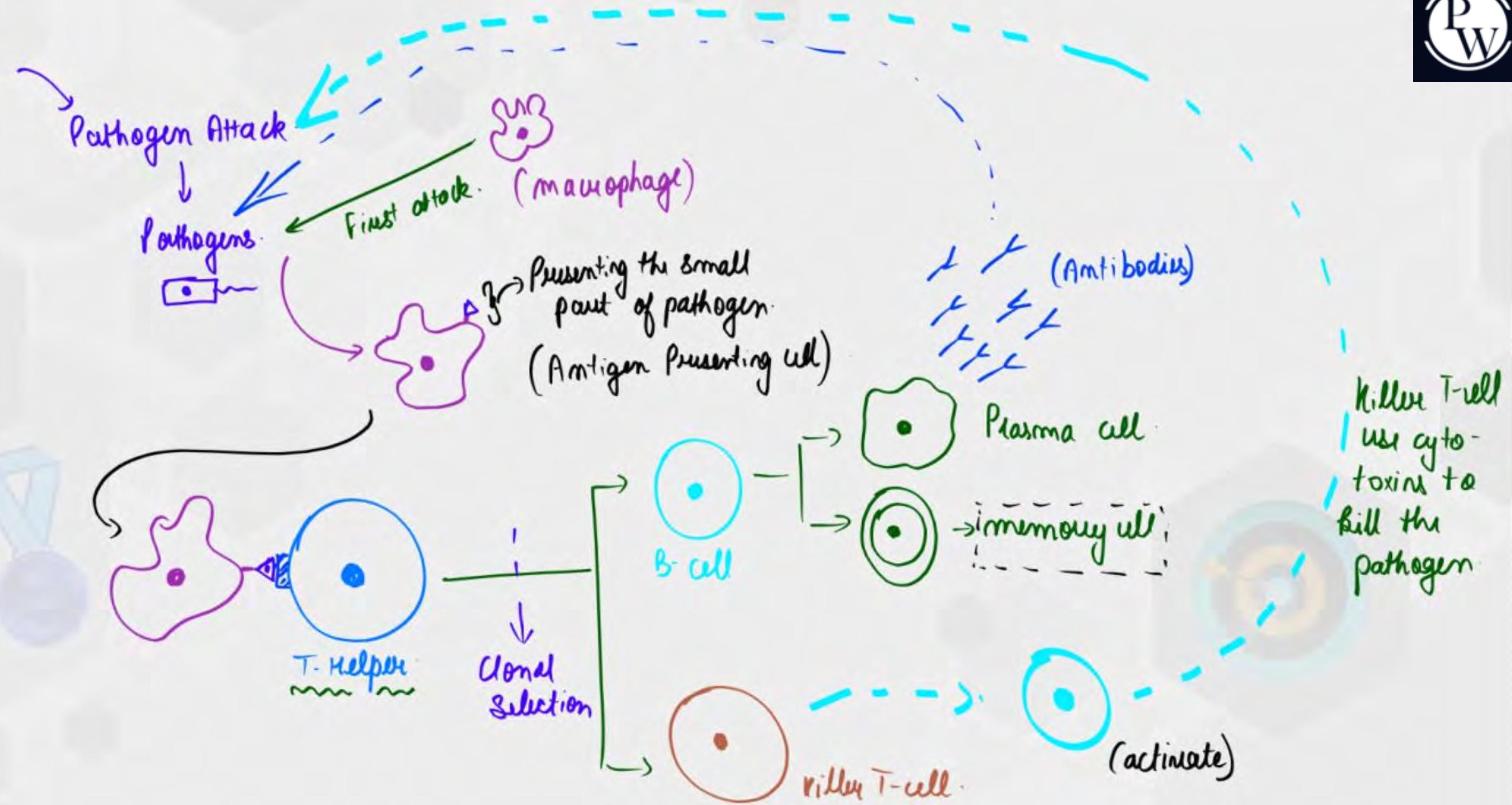
Acquired Immunity

It is pathogen specific immunity developed during a lifetime.

It is characterised by memory, i.e., during the first encounter with a pathogen, the body produces a primary response in low intensity.

Second encounter with the same pathogen causes a secondary (anamnestic) response in high intensity



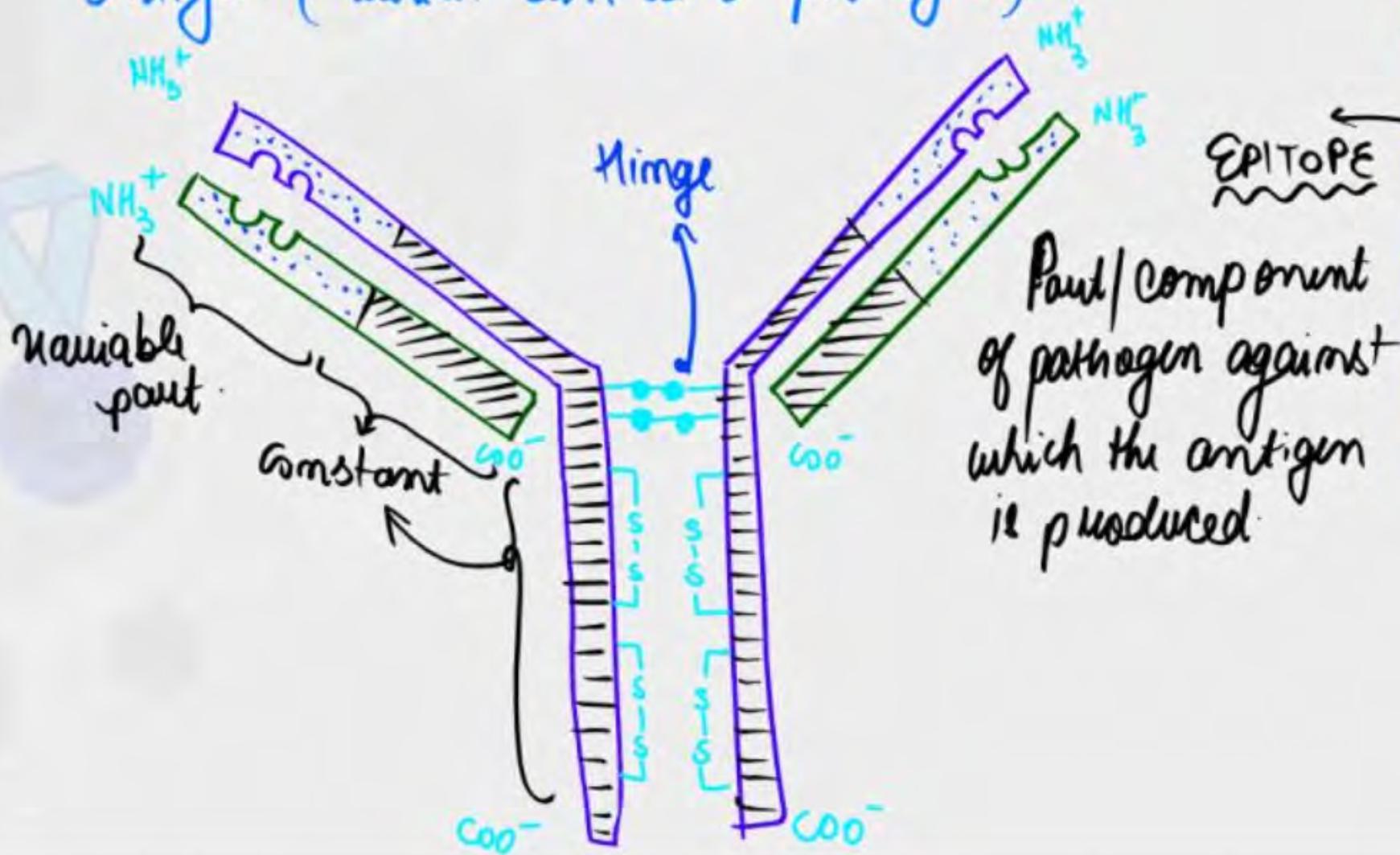


Cell Mediated Immunity

- (i) **Helper T-cell** → This activated helper cell stimulates the killer T-cell and B-cell and these killer T-cell & B-cell start dividing and produce clone (group of similar cells) this phenomenon is called **clonal selection**. They produce *lymphokines* (messenger molecules) which cause accumulation of WBCs to the affected site. T_H -cells also stimulate B-cells to produce antibodies and facilitate the action of other T-cells.
- (ii) **Killer T-cell** : These cell or clone of these cell **destroy the infected cells or target cell** and kill the pathogen and also the **cancerous cells** by secreting lymphotoxic substances and secrete lymphokines which attracts phagocytes. These are responsible for cell-mediated immunity. They also destroy transplanted, tumour cells and other foreign cells. *Only cornea of the eyes can be transplanted w/o the fear of immune rejection*
- (iii) **Suppressor cells (T_s)** :- These suppress the functions of T_C and T_H cells. B-cells and plasma cells are also affected by T_s cells by synthesizing suppressor factors and suppress the entire immune system for attacking the own body
Important for secondary response
- (iv) **Memory T-cell** : They don't kill the pathogen or don't form the antibodies but these cell **retain the memory** of every encounter. They convert into **effector cells** on later encounter with specific antigen even after several years.

HUMORAL IMMUNITY -

- ↳ Antibody mediated immunity
- ↳ Commonly called immunoglobulins
- ↳ proteinous Y-shaped molecules which are produced specifically against a specific antigen (which can be a pathogen)



part / component
of pathogen against
which the antigen
is produced

EPITOPE

Pathogen

PARATOPE

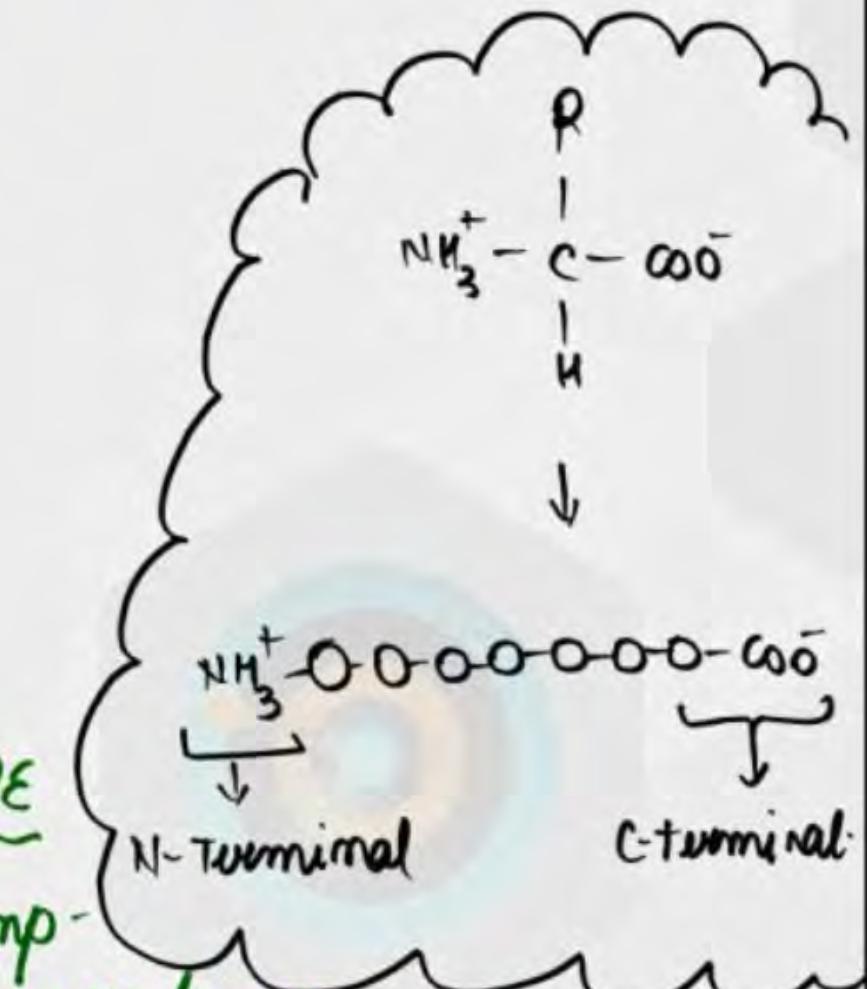
variable comp-

- onent of Ig produced
against the epitope is called
paratope.

Components - 4 polypeptide chains

↳ 2 x Heavy polypeptide

↳ 2 x Light polypeptide chain



Ig - MODE OF ACTION

AGGLUTINATION - Ig binds to the antigen on the surface of pathogen, finally it clumps multiple target cells & trigger cell lysis.

OPSONIZATION - Ig binds to the antigen on the pathogen & labels it for other immune cells to target & kill.

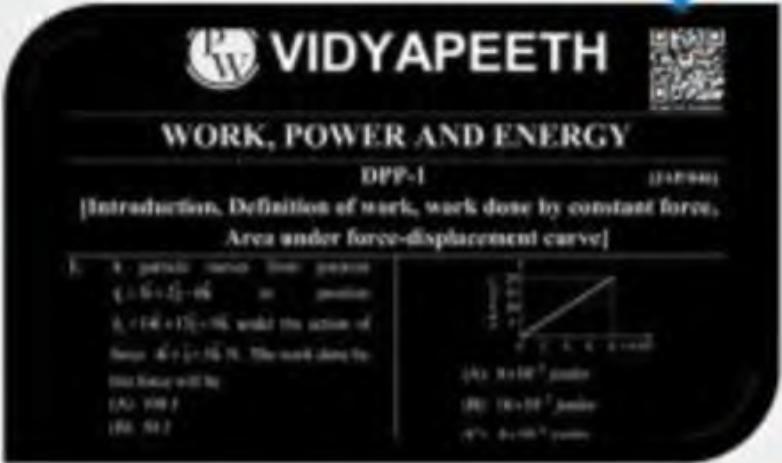
NEUTRALIZATION.

when an Ig targets a toxin molecule inside the body instead of targeting the bacteria producing it.

Eg -> Antitoxins.

Ig	%	Function & Location
Ig-G1 (gamma)	80%	most abundant Ig in the body fluids. It can cross the placenta. Closely associated with the activity of other immune cells like phagocytes.
Ig-A (alpha)	10%	Also called as secretory antibody (Saliva, mucous, milk (colostrum) etc) Protects us from inhaled or ingested pathogens.
Ig-M (mu)	5-10%	oldest & largest antibody Naturally found in blood plasma. Activity increases during strong immunogenic reaction.
Ig-D (delta)	1-3%	Present on the surface of immune cells. Helps in the activation of immune cells.
Ig-E (epsilon)	0.03%	Associated to mast cells. Their activity increases during allergy.

Solve the DPP



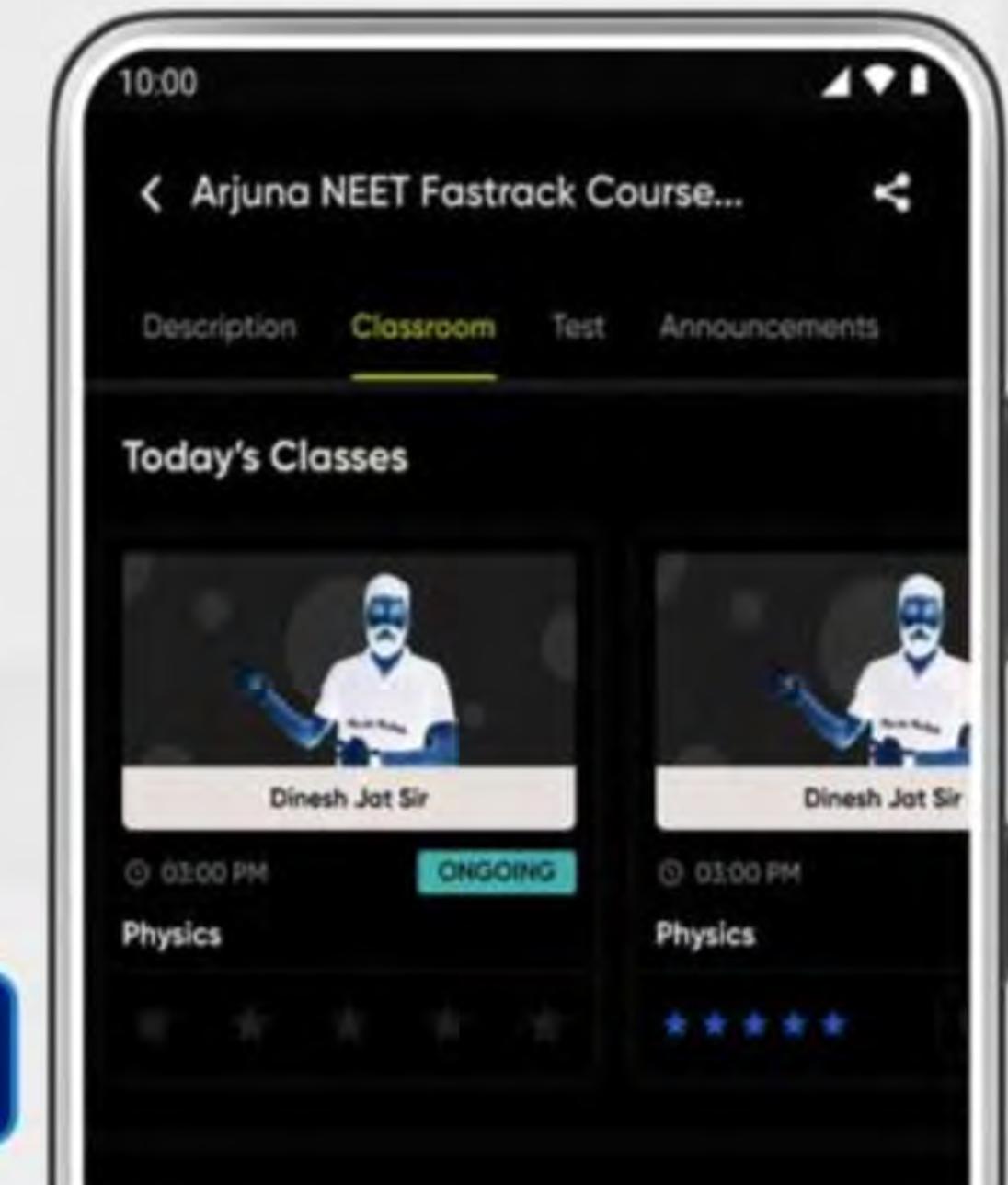
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- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**

Lecture No.-

03



By-Aditya Sir

Today's Targets

A black megaphone icon with yellow lightning bolts coming out of it.A blue target icon with a bullseye and a blue ribbon banner.

1 HELMINTH RELATED DISEASE

2 FUNGAL DISEASE

3 IMMUNE SYSTEM

4

WORMS RELATED DISEASES



(1) **Ascariasis** - *Ascaris lumbricoides* (round worm)

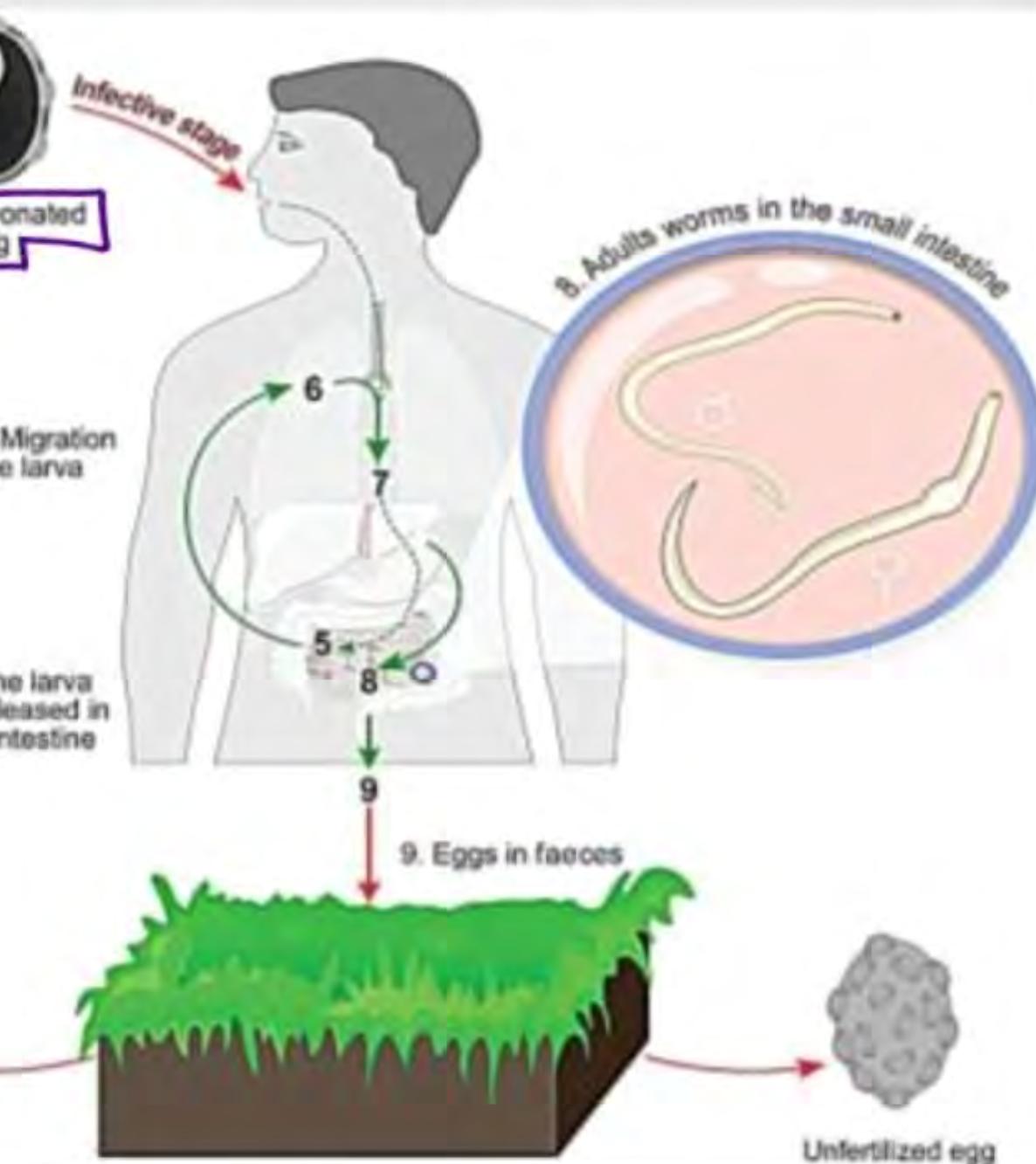
- Intestinal parasite (Common Round worm)
- Internal bleeding, muscular pain, fever, anemia, blockage of the intestinal passage
- Eggs of the parasite excreted along with the faeces of infected person which contaminate soil, water, plants

⇒ Enters the body with the help of improperly cooked food which is contaminated with embryonated eggs of ascaris.

⇒ Adult ascaris worms lodge themselves in the alimentary canal.

This will lead to blockage stopping the movement of food.

→ In extreme cases, it can necrotic bowel.
→ It may lead to intestinal leakage which can lead to spread of infection & death.



(2) **Elephantiasis** - *Wuchereria (filaria)*

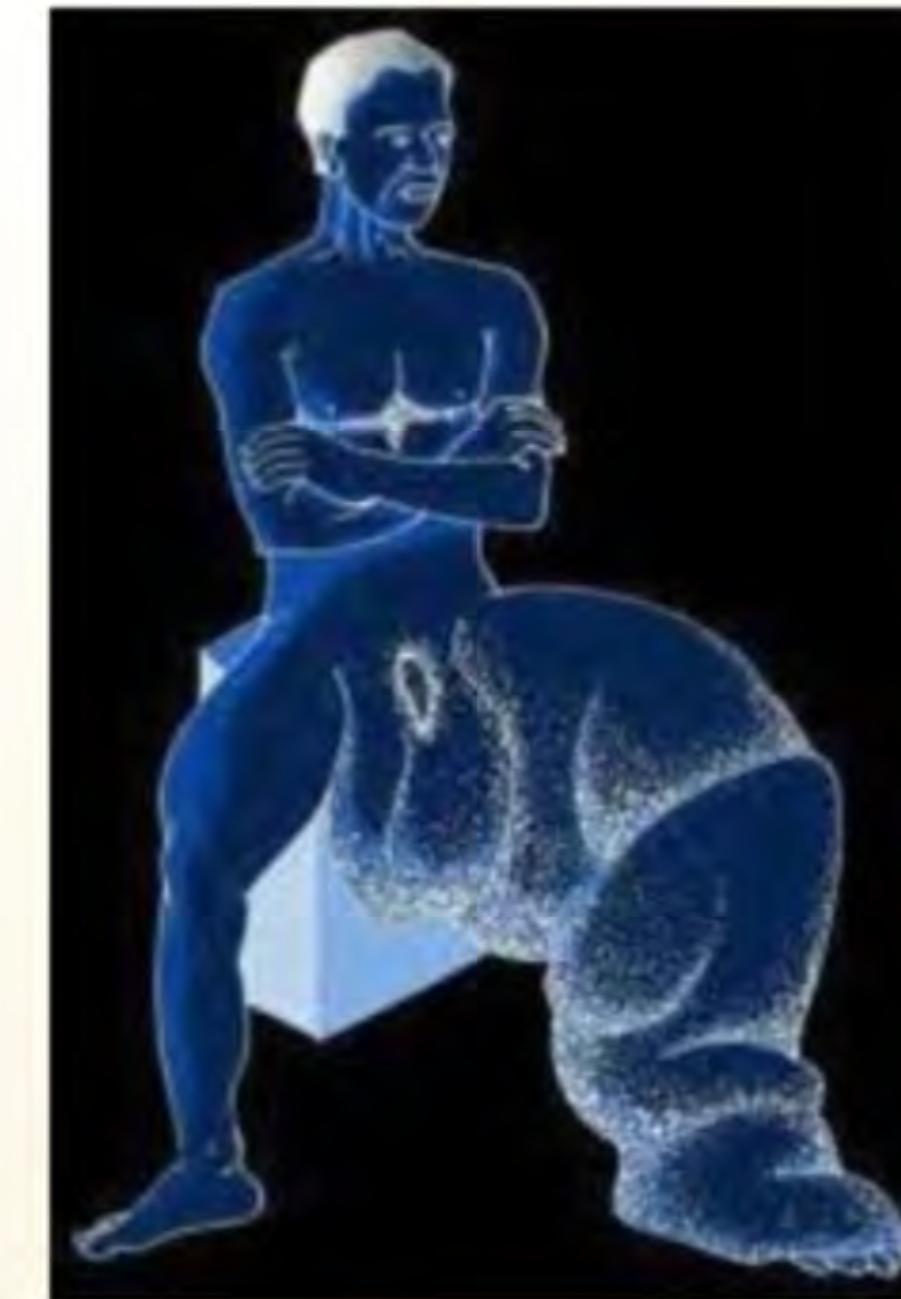
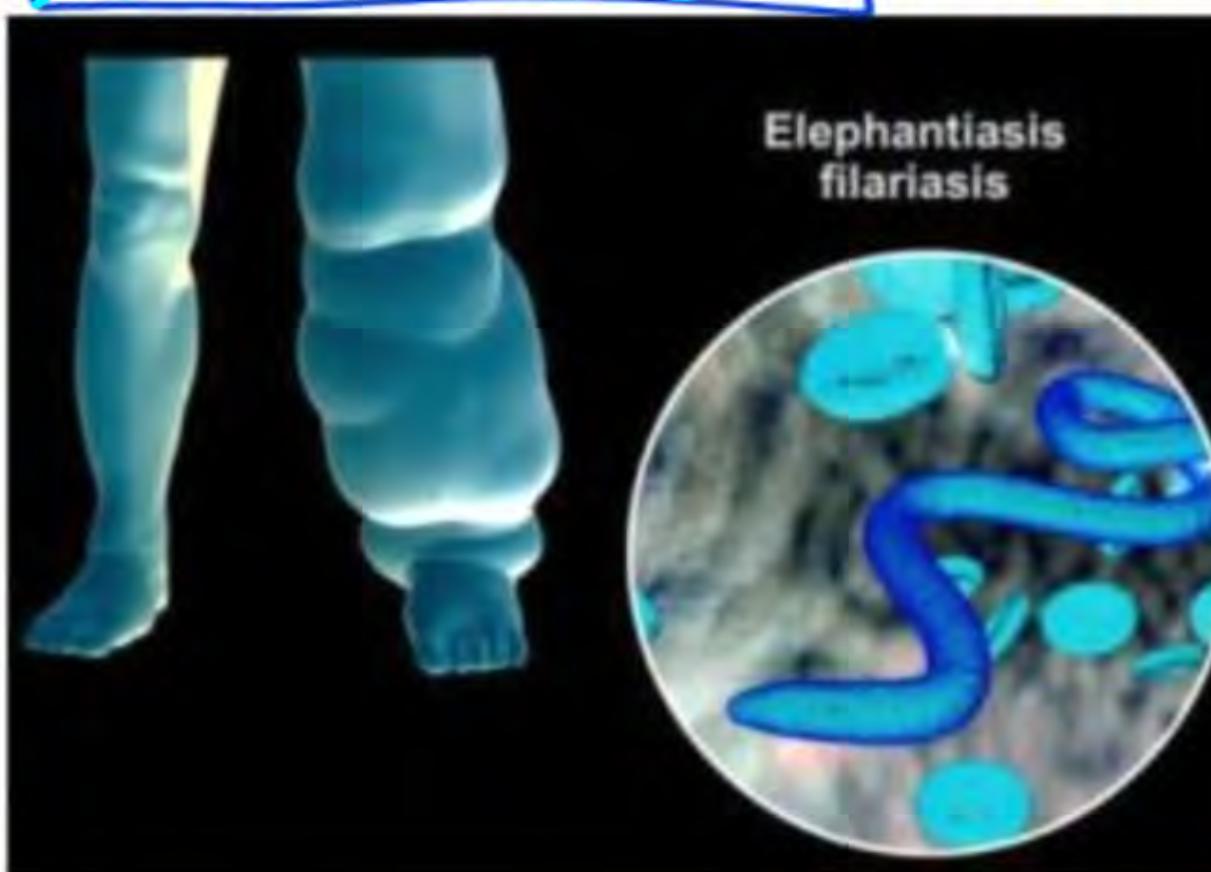
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(*W. bancrofti* and in which they live for many years (usually lymphatic vessel of Lower Limb).

worm resides in the lymphatic vessels of lower limb. blocks the drainage of lymph fluid

Genital Organs are also involved leading to gross abnormalities. (unpleasant to see)

Transmitted to a healthy person by the bite of a female mosquito (Culex) (vector)



In extreme cases, the affected area may include the scrotum (due to involvement of pelvic lymphatic circulation)

Treatment

- Antihelminthic drugs
- Compression therapy
- Extreme cases - Surgery



Ringworm

FUNGAL DISEASES

usually *bacterial* eating fungi



Pathogen	<u><i>Microsporum, Trichophyton and Epidermophyton</i></u>
Mode of transmission	From soil or by using towels, cloths, comb belonging to infected person. Heat and moisture help fungi to grow
Symptoms	Dry, scaly lesions on the skin, nails, scalp, etc. Intense itching. (reddish in middle) Commonly seen in the groin, between toes, etc.

Target Site → warm moist & dark areas of the body
→ toes, nails, scalp
→ groin, underarms etc.

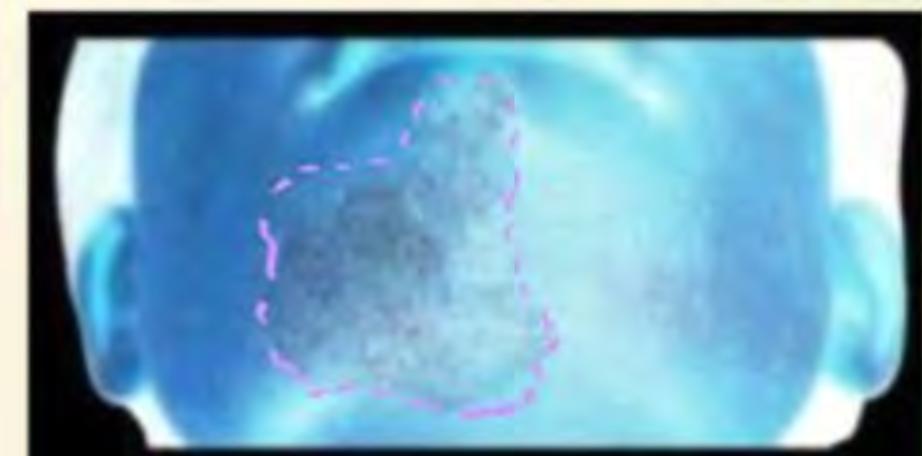
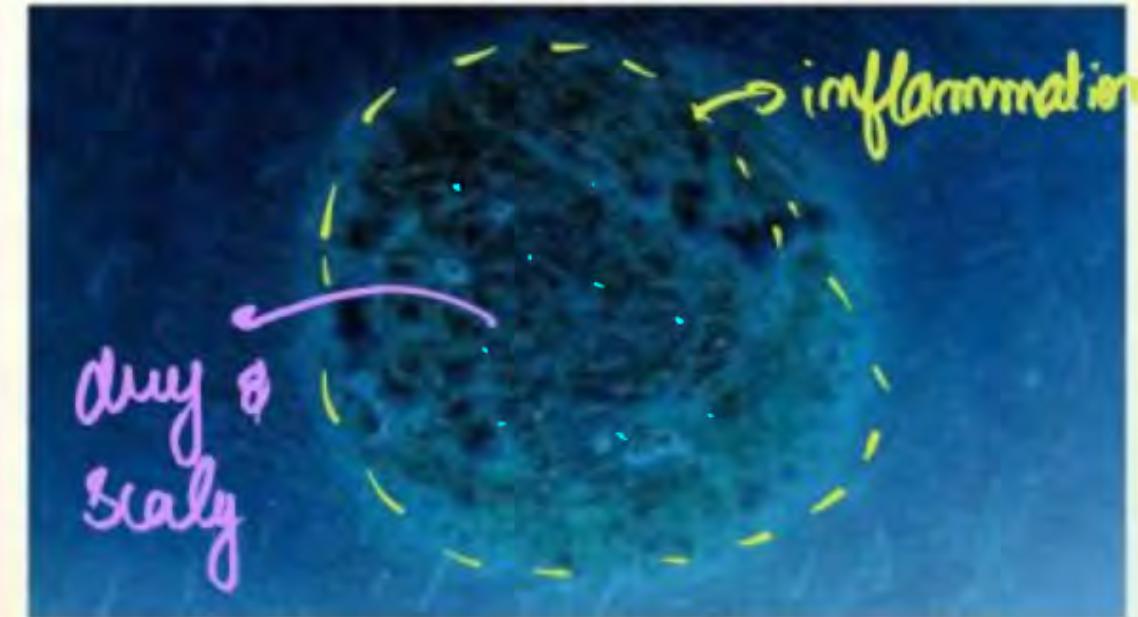


Diagram showing ringworm affected area of the skin

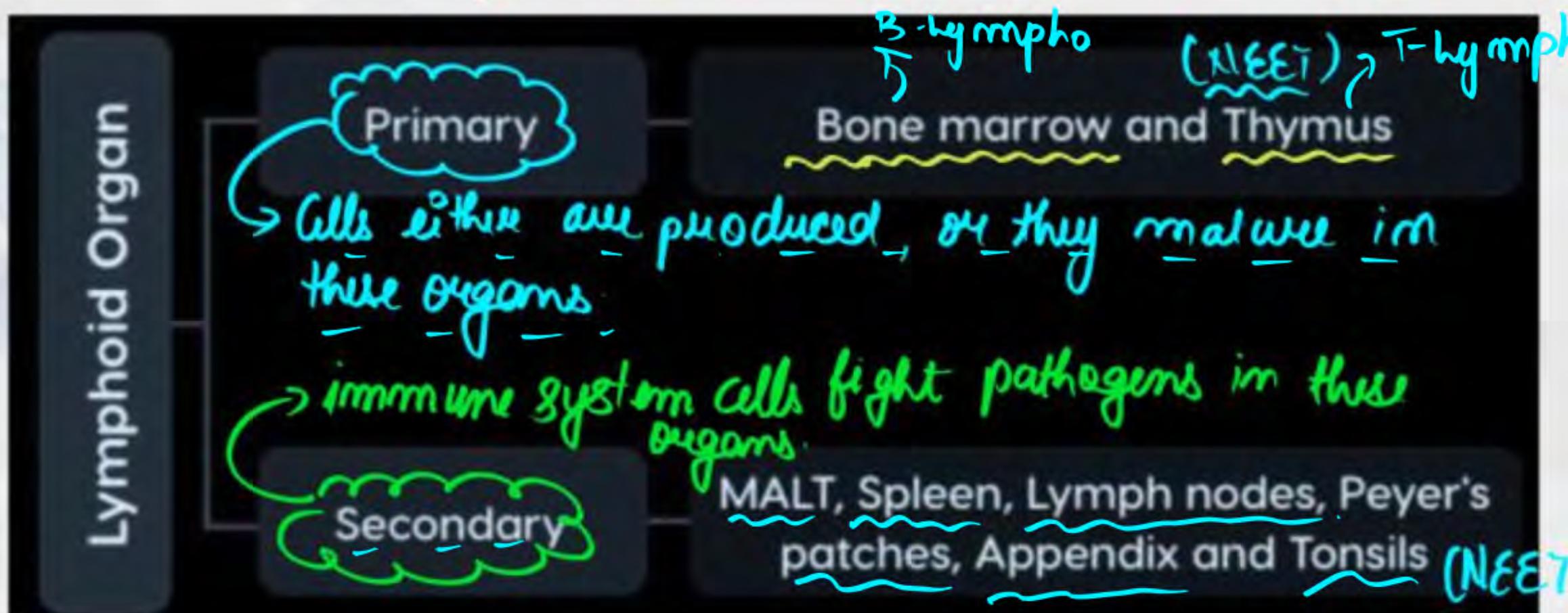
Prevention and Control of Diseases

- Personal Hygiene /
 - ↳ Elimination of breeding grounds of pathogen //
- Domestic Hygiene /
 - ↳ Elimination of carrier & reservoir //
- Public Hygiene ,
 - ↳ Prevention of direct contact with the patient //
 - ↳ use of face masks in case of droplet infection //
 - ↳ Sanitation of frequently touched surfaces //

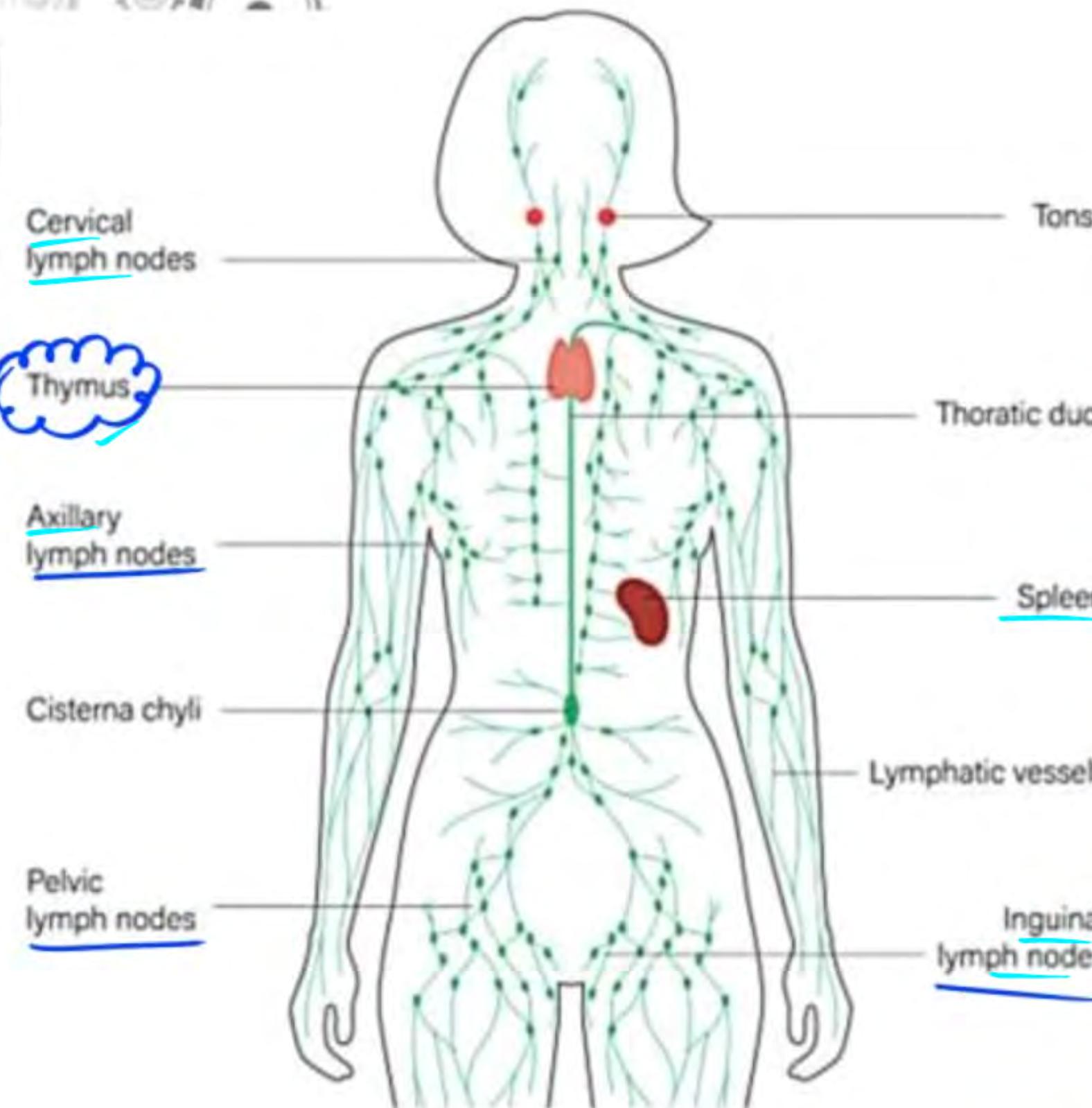
Immune System

Study → Immunology

- The system inside the human body, which provides protection from pathogens or any foreign substance and gives immunity to the body is referred as immune system.
- It plays a role in an allergic reaction, auto-immune disease and organ transplantation.
- It includes the lymphoid organs, tissues, WBCs and antibodies.



MALT → Mucosa associated lymphoid tissue



Primary Lymphoid Organs

- Here, immature lymphocytes differentiate into antigen-sensitive lymphocytes, e.g., bone marrow and thymus.
- Bone marrow is the site of formation of the blood cells.
- Thymus is large during birth but gradually reduces in size and becomes very small sized when a person attains puberty.
- T-lymphocytes cells originate in the bone marrow and matures in thymus

ANTIGEN → They are molecules present on the surface of cells that tell about its identity to the immune cells.

IMMUNOGEN → Antigen or a foreign body that can trigger an immune response



Solve the DPP



VIDYAPEETH

WORK, POWER AND ENERGY

DPP-1 (DPP-01)

[Introduction, Definition of work, work done by constant force, Area under force-displacement curve]

Q. A particle moves from position $x_1 = 3\hat{i} - 4\hat{j}$ m to position $x_2 = 14\hat{i} + 11\hat{j}$ m under the action of force $\vec{F} = 3\hat{i} + 5\hat{j}$ N. The work done by the force will be
 (A) 9×10^2 J
 (B) 16×10^2 J
 (C) 45 J



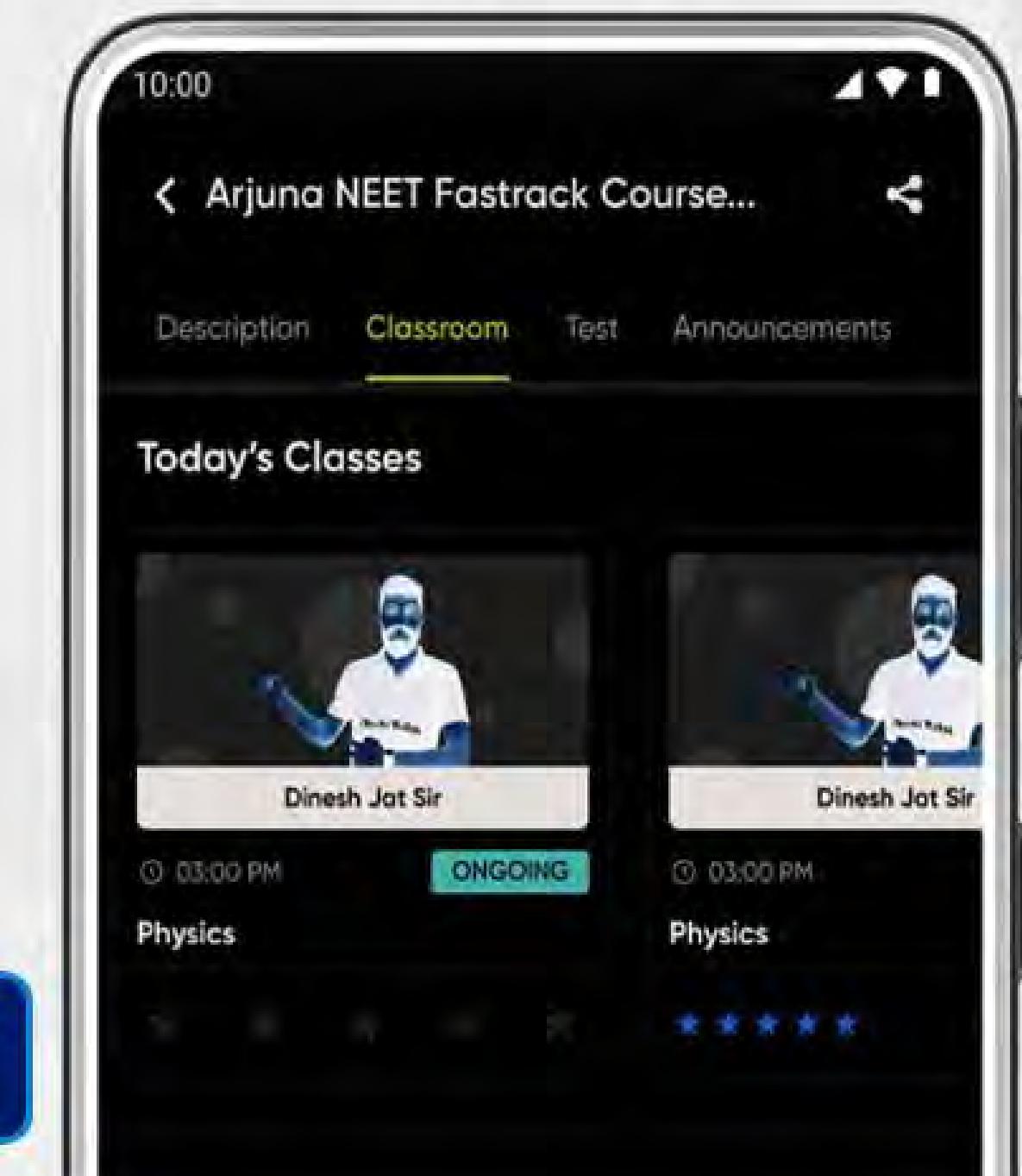
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BATCH CODE -29-YN201MA

- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**



Lecture No.- 04



By- Aditya Sir

Today's Targets

A black megaphone icon with blue lightning bolts emanating from it.A blue target icon with concentric rings and a bullseye.

1 IMMUNITY

2 STRUCTURE OF ANTIBODIES

3 TYPES OF ANTIBODIES

4

Secondary Lymphoid Organs

These are the organs to which matured lymphocytes migrate. Here the lymphocytes interact with antigens and then proliferate to become effector cells (producing antigen-specific antibodies)

→ cells that attack the pathogen.

Secondary lymphoid organs

→ present in the upper left side of abdomen.

Spleen

- Bean-shaped organ
- Contains lymphocytes and phagocytes
- It removes worn-out RBCs therefore, called **graveyard of RBCs**.
- It is a reservoir of erythrocytes in the foetus. (**blood bank of the body**)

Lymph nodes

- Found in the lymphatic system (**filter out the lymph**)
- They trap microorganisms or other antigens. (**envelope cells**)
- Trapped antigens activate lymphocytes and initiate immune response.

(NEET)

Mucosal associated lymphoid tissue (MALT)

- Located within the lining of respiratory, digestive and urinogenital tracts. **?**
- It constitutes 50% of lymphoid tissue in the body. **(NEET 2017)**.

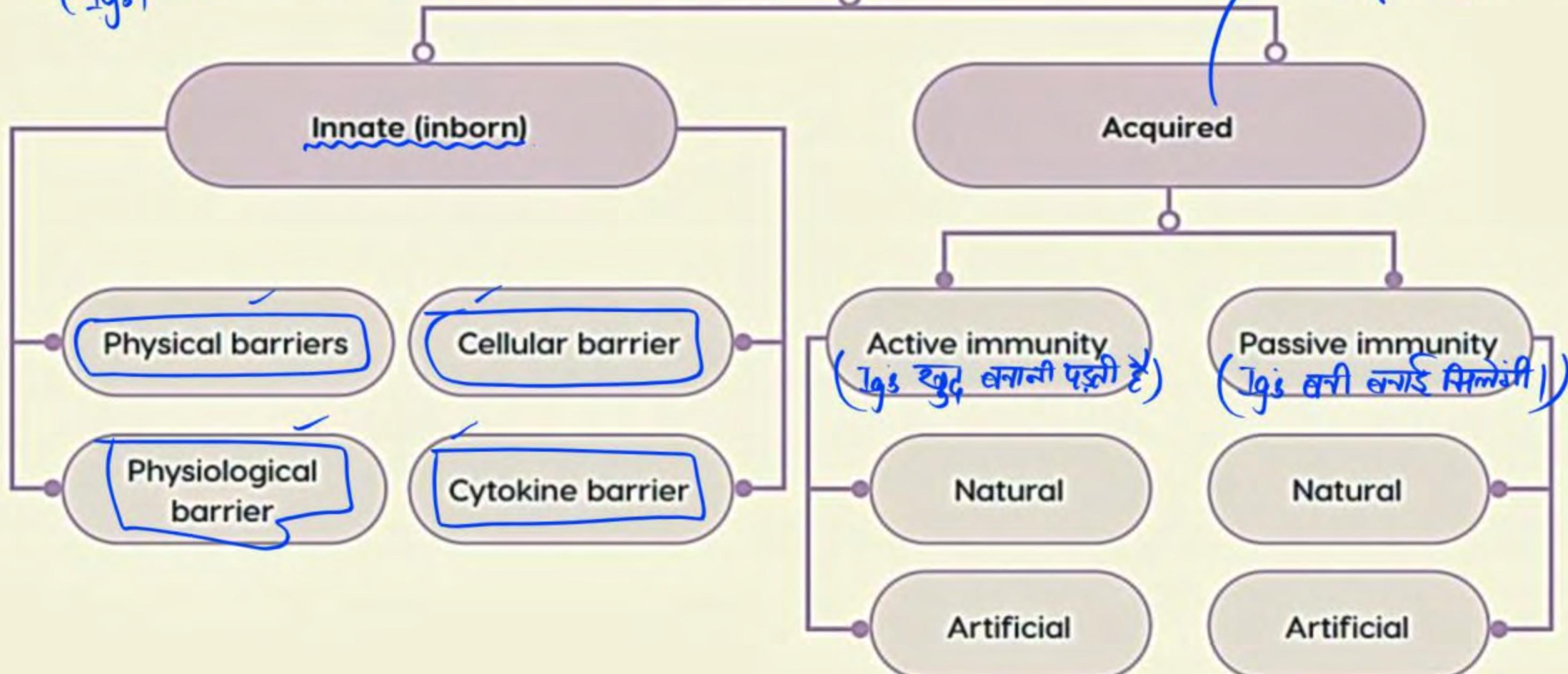
ANTIBODIES - Called immunoglobulins.

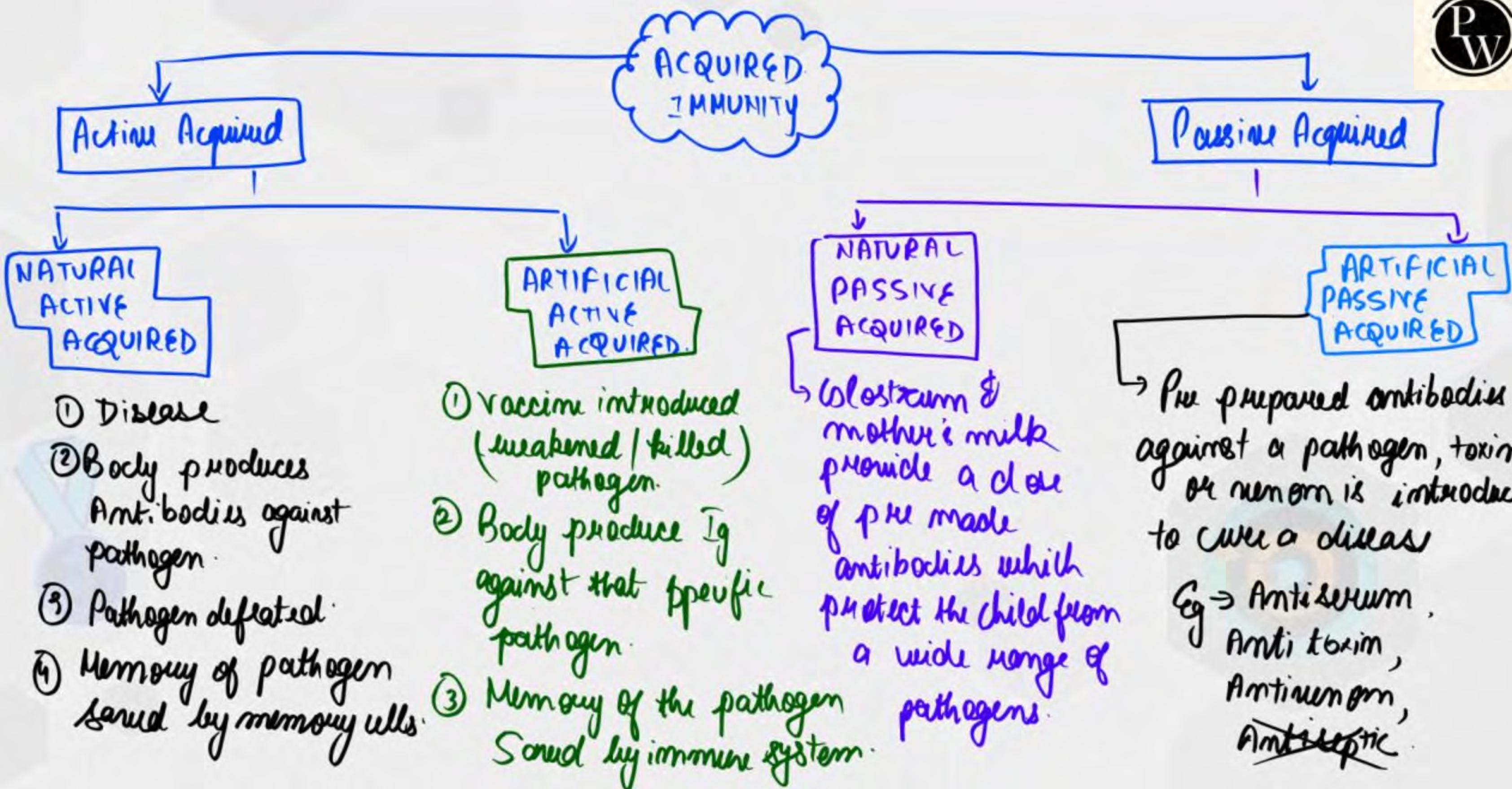
→ Y-shaped protein molecules that help to fight against a specific type of antigen.
(Ig's)

Immunity

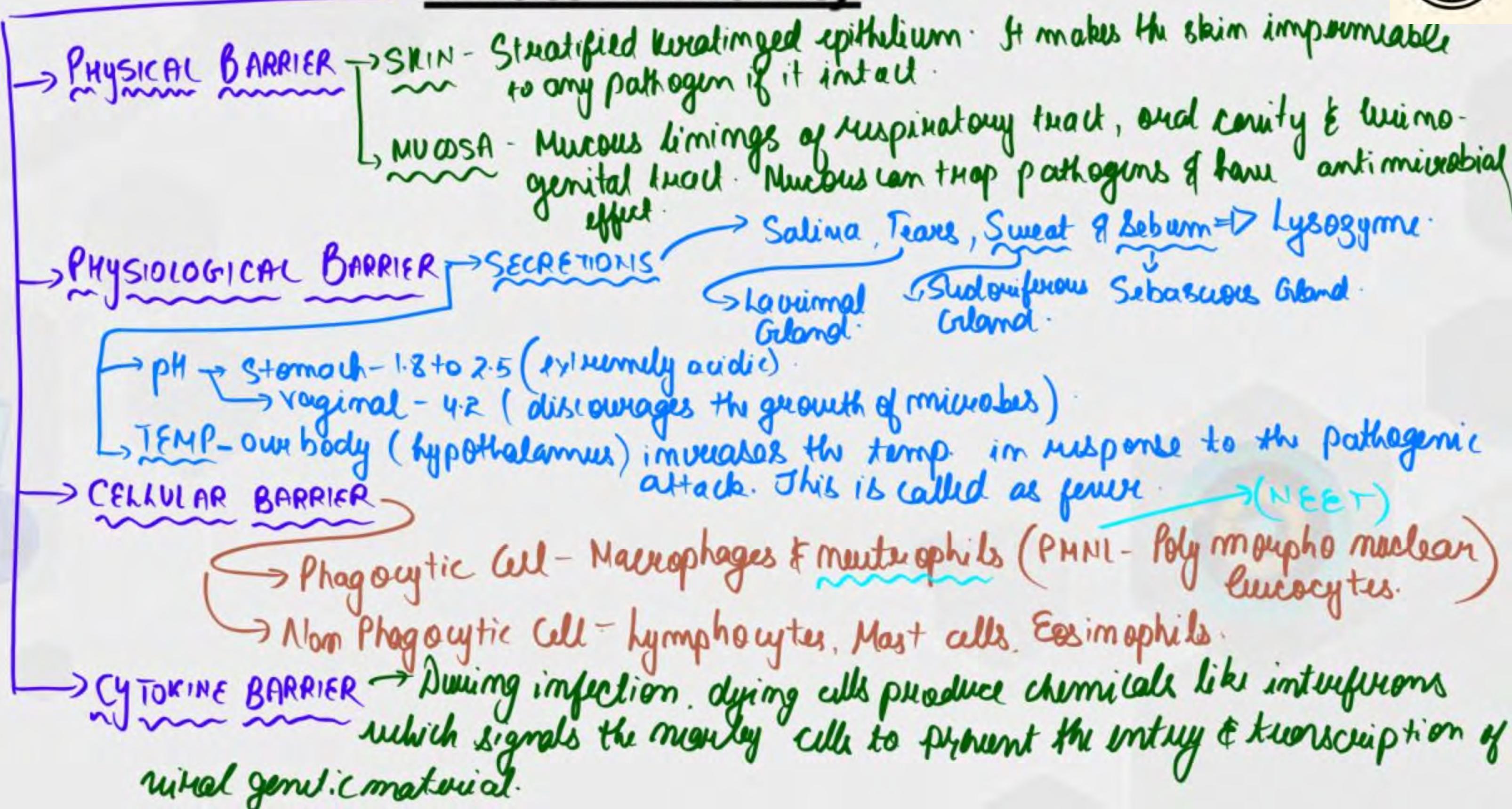
(अज्ञ प्रतिरोधक क्षमता)

that we acquire during the life.





Innate Immunity

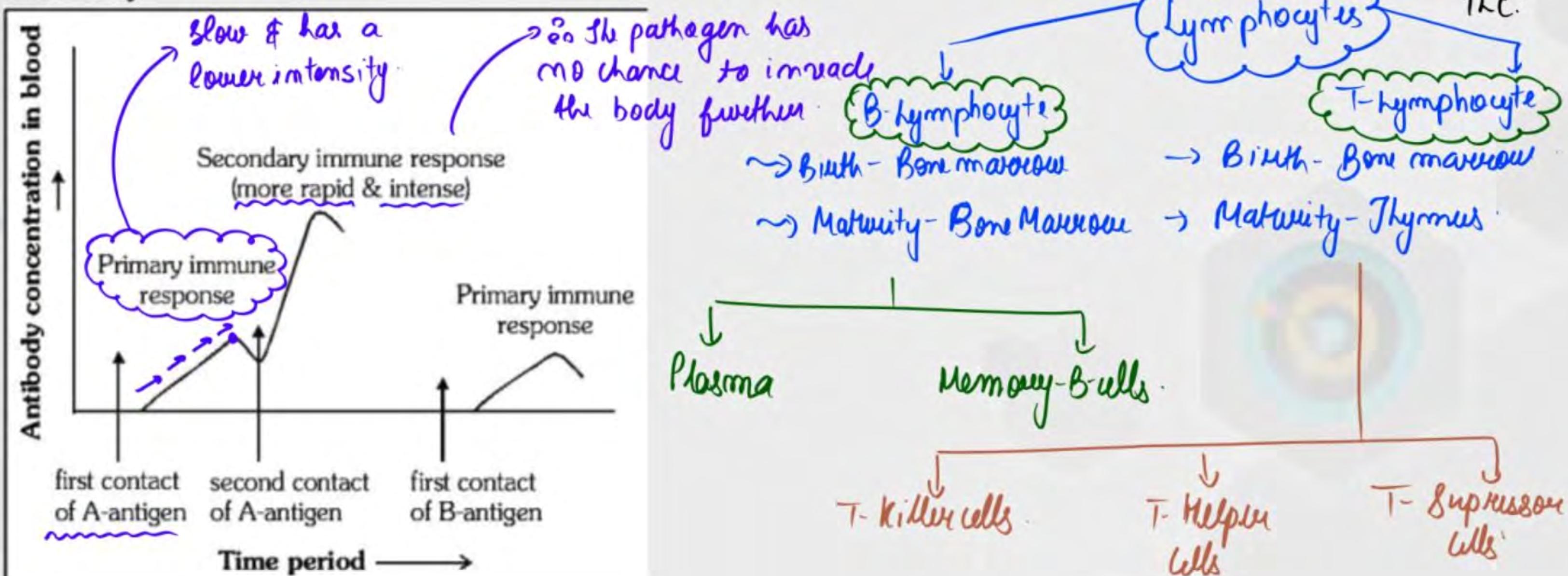


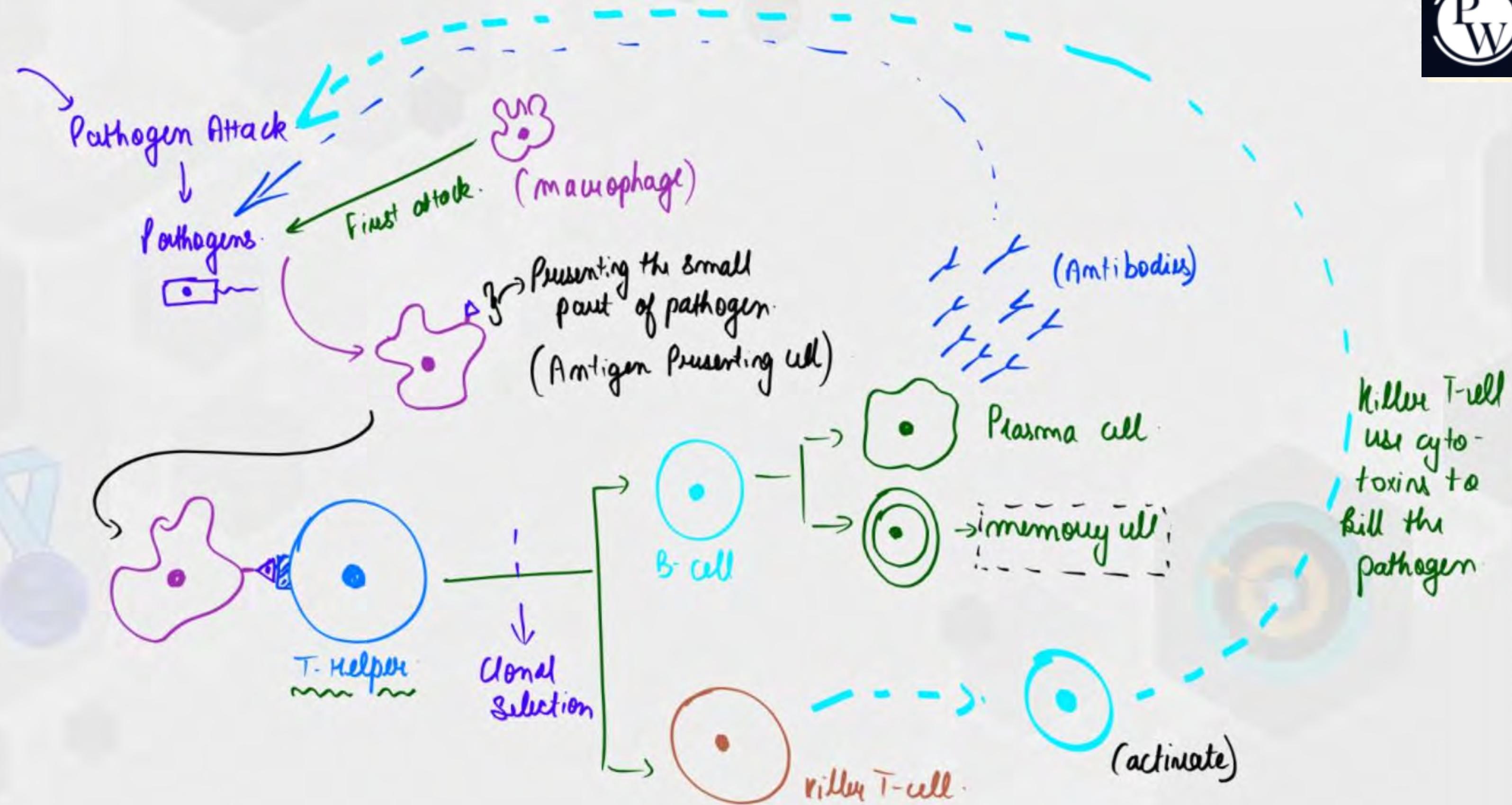
Acquired Immunity

It is pathogen specific immunity developed during a lifetime.

It is characterised by memory, i.e., during the first encounter with a pathogen, the body produces a primary response in low intensity.

Second encounter with the same pathogen causes a secondary (anamnestic) response in high intensity



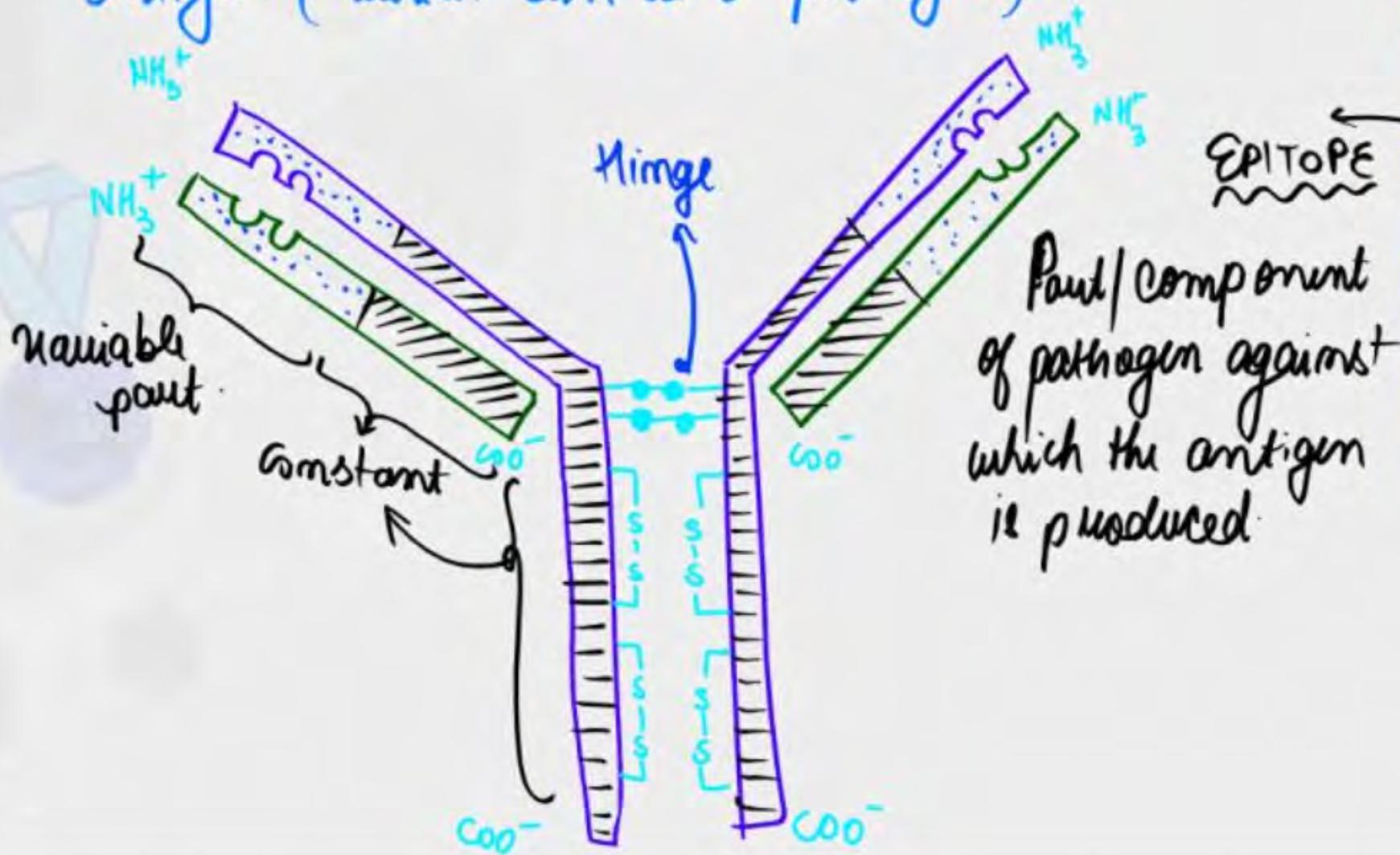


Cell Mediated Immunity

- (i) **Helper T-cell** → This activated helper cell stimulates the killer T-cell and B-cell and these killer T-cell & B-cell start dividing and produce clone (group of similar cells) this phenomenon is called **clonal selection**. They produce *lymphokines* (messenger molecules) which cause accumulation of WBCs to the affected site. T_H -cells also stimulate B-cells to produce antibodies and facilitate the action of other T-cells.
- (ii) **Killer T-cell** : These cell or clone of these cell **destroy the infected cells or target cell** and kill the pathogen and also the **cancerous cells** by secreting lymphotoxic substances and secrete lymphokines which attracts phagocytes. These are responsible for cell-mediated immunity. They also destroy transplanted, tumour cells and other foreign cells. *Only cornea of the eyes can be transplanted w/o the fear of immune rejection*
- (iii) **Suppressor cells (T_s)** :- These suppress the functions of T_C and T_H cells. B-cells and plasma cells are also affected by T_s cells by synthesizing suppressor factors and suppress the entire immune system for attacking the own body
Important for secondary response
- (iv) **Memory T-cell** : They don't kill the pathogen or don't form the antibodies but these cell **retain the memory** of every encounter. They convert into **effector cells** on later encounter with specific antigen even after several years.

HUMORAL IMMUNITY -

- ↳ Antibody mediated immunity
- ↳ Commonly called immunoglobulins
- ↳ proteinous Y-shaped molecules which are produced specifically against a specific antigen (which can be a pathogen)



Components - 4 polypeptide chains

↳ 2 x Heavy polypeptide

↳ 2 x Light polypeptide chain

Pathogen

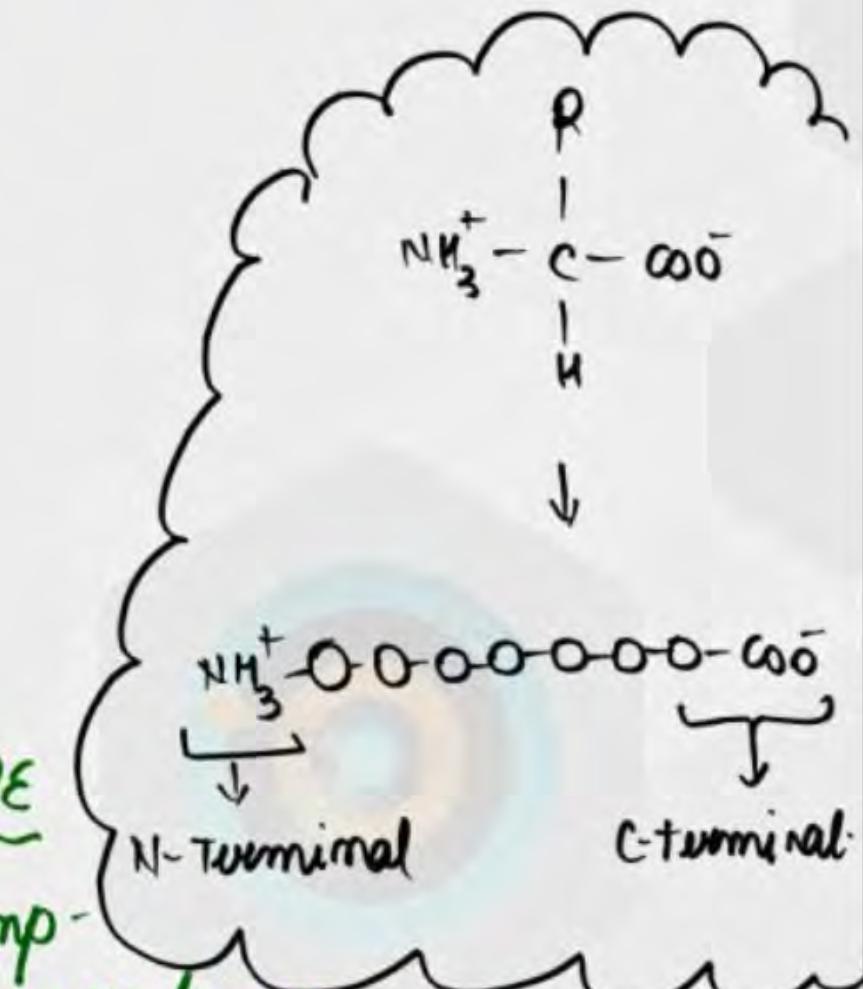
EPITOPE

Part/Component
of pathogen against
which the antigen
is produced

PARATOPE

variable comp-

- onent of Ig produced
against the epitope is called
paratope.



Ig - MODE OF ACTION

AGGLUTINATION - Ig binds to the antigen on the surface of pathogen, finally it clumps multiple target cells & trigger cell lysis.

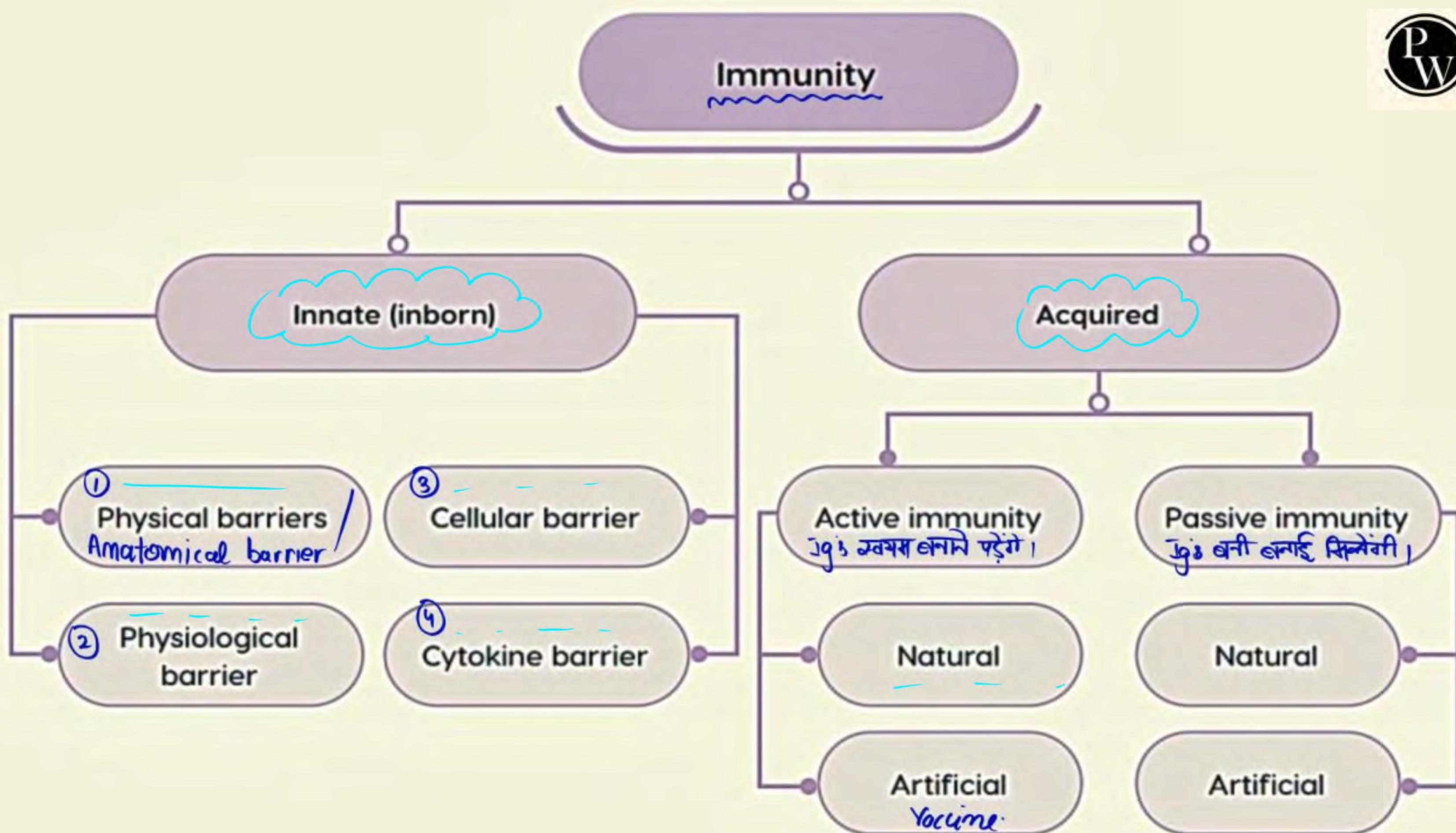
OPSONIZATION - Ig binds to the antigen on the pathogen & labels it for other immune cells to target & kill.

NEUTRALIZATION.

when an Ig targets a toxin molecule inside the body instead of targeting the bacteria producing it.

Eg -> Antitoxins.

Ig	%	Function & Location
Ig-G1 (gamma)	80%	most abundant Ig in the body fluids It can cross the placenta Closely associated with the activity of other immune cells like phagocytes
Ig-A (alpha)	10%	Also called as secretory antibody (Saliva, mucous, milk (colostrum) etc) Protects us from inhaled or ingested pathogens
Ig-M (mu)	5-10%	oldest & largest antibody Naturally found in blood plasma. Activity increases during strong immunogenic reaction.
Ig-D (delta)	1-3%	Present on the surface of immune cells. Helps in the activation of immune cells.
Ig-E (epsilon)	0.03%	Associated to mast cells. Their activity increases during allergy.



(i) PHYSICAL BARRIER-

- **SKIN**

→ Skin is made up of keratinized stratified epithelium. Keratin makes the skin waterproof further making it impervious for pathogens.

- **MUCOSA** → Immune moist lining of alimentary canal, respiratory tract & uro-genital tract.

→ mucus so produced by these surfaces have a presence of Antimicrobial compounds like lysozyme.

→ Cilia in such layers may push the microbes outside the body.

Eg → Trachea

2. PHYSIOLOGICAL BARRIER -

FEVER

→ response of the human body towards microbial activity

↳ Hypothalamus increases the body temp which further increase the activity of WBC's

- pH → Some times the microbes are killed with the help of pH shock

e.g. → Oral cavity (≈ 7) → Stomach ($\approx 1.2 \text{ pH}$) → Small intestine ($\approx 7.8 \text{ pH}$)
 → maximal pH (4.2 pH) inhibits the growth of microbes

SECRETIONS

→ Saliva = salivary glands

→ Sebum = sebaceous glands
(oil)

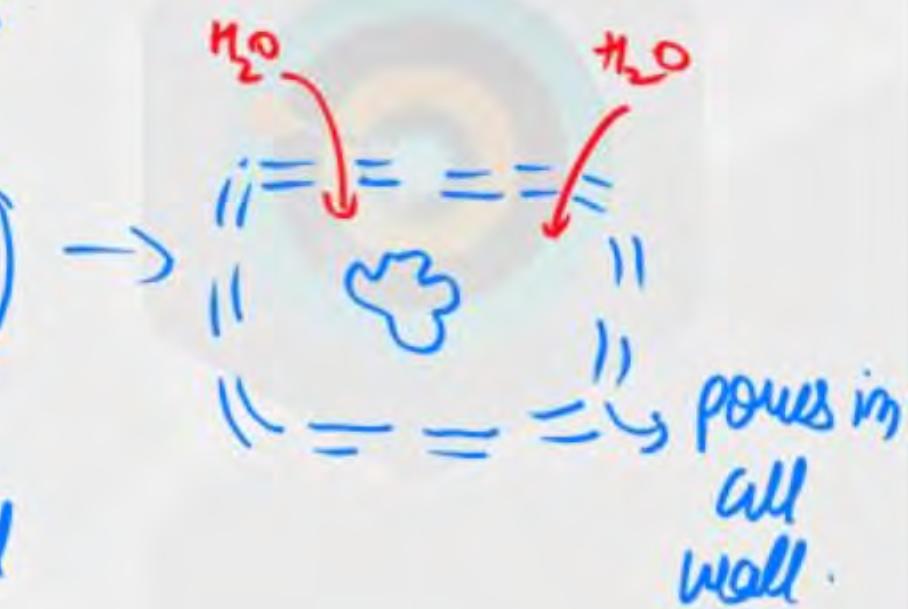
→ Tears = lacrimal glands

→ Cinnamom = cinnamomous glands
(cinn wax)

They contain compounds like lysozyme & perfumins



Bacterial cell wall



3) CELLULAR BARRIER -

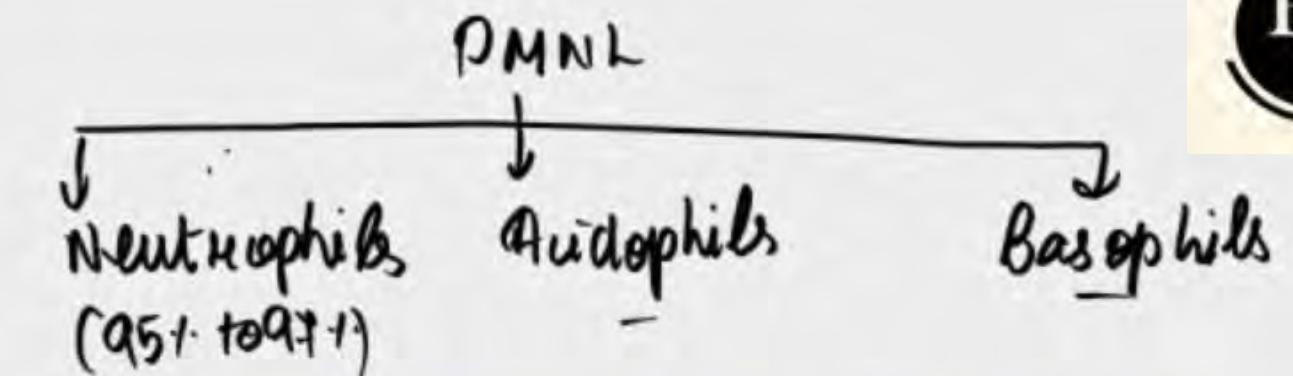
Presence of certain cells which directly target the outside cells.

- PHAGOCYTIC CELL - It includes the monocytes which can later turn into macrophages (big eaters). In addition there is presence of neutrophils (PMNLs - Poly morpho nucleo leucocytes)

- Non PHAGOCYTIC CELL - best example → NK cells. Or Natural Killer cells which makes the cell wall (pathogen) porous with the help of perforins.

4) CYTOKINE BARRIER -

Includes release of emergency chemicals called interferons



- Released by a cell which is infected by viruses.
- Alarms the nearby similar cell to make their membranes impermeable to viruses.
- Promotes the secretion of translation inhibiting protein which further reduce the viral replication.

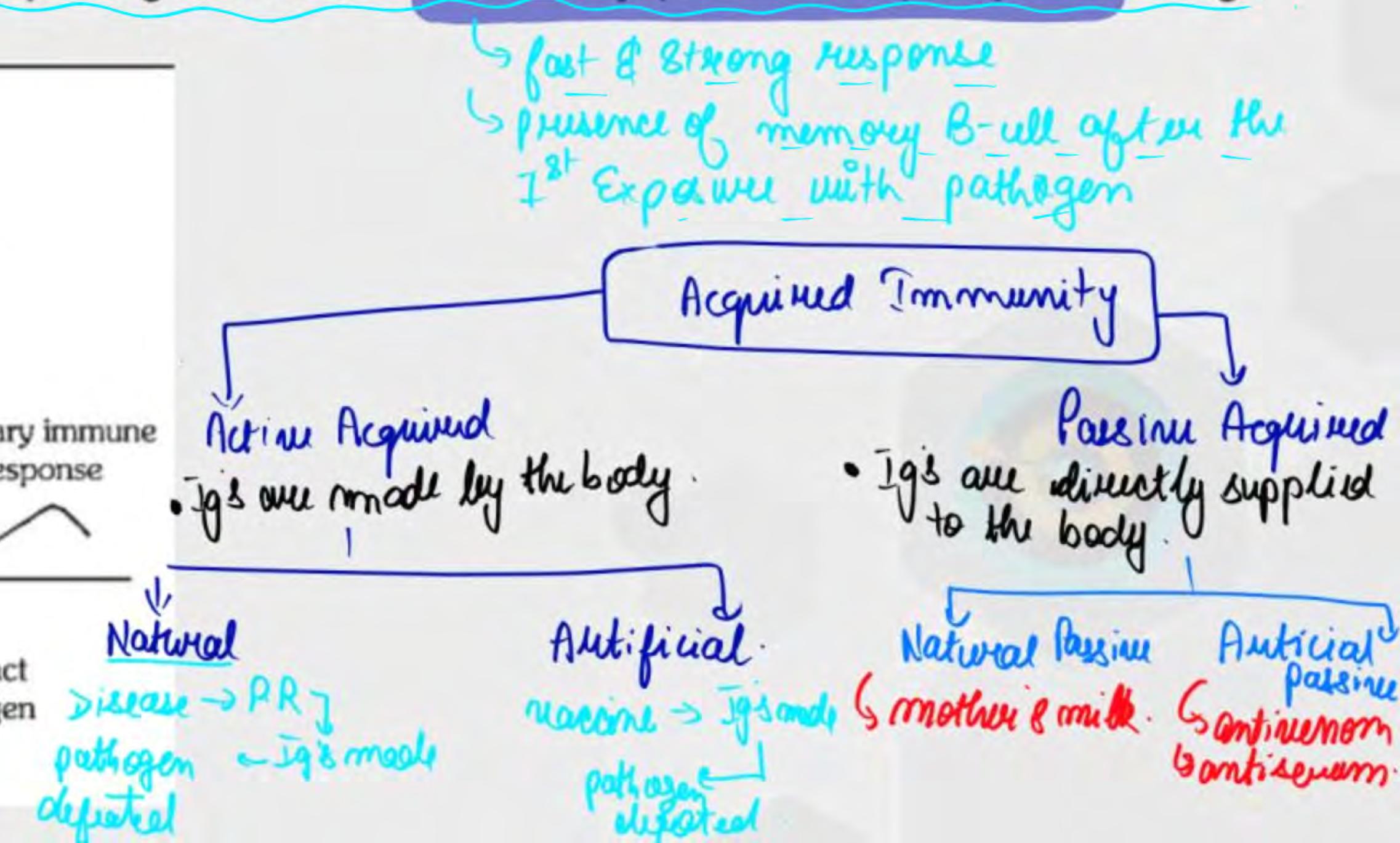
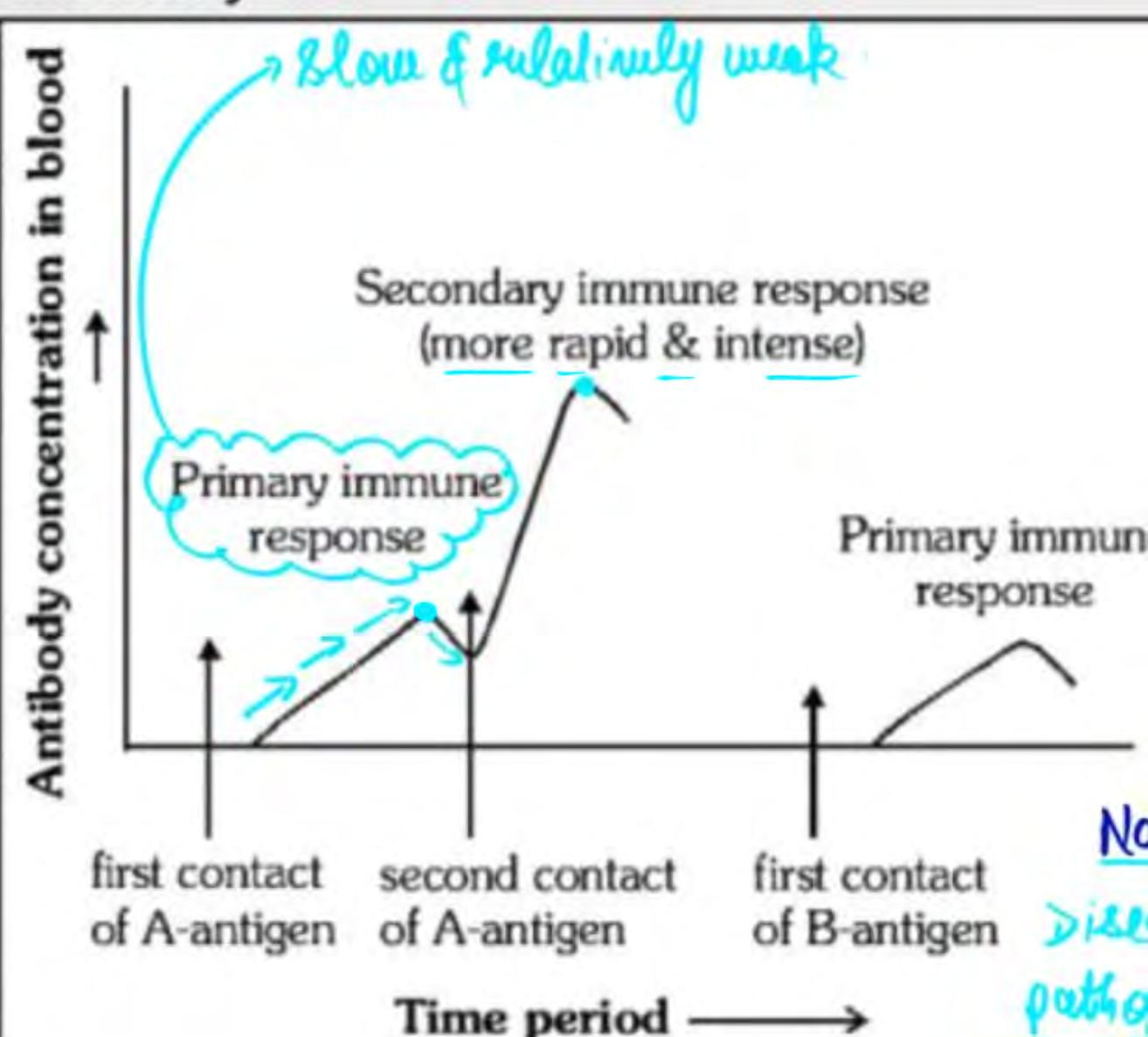
Found effective against certain cancers like Kaposi's sarcoma.

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Second encounter with the same pathogen causes a secondary (anamnestic) response in high intensity

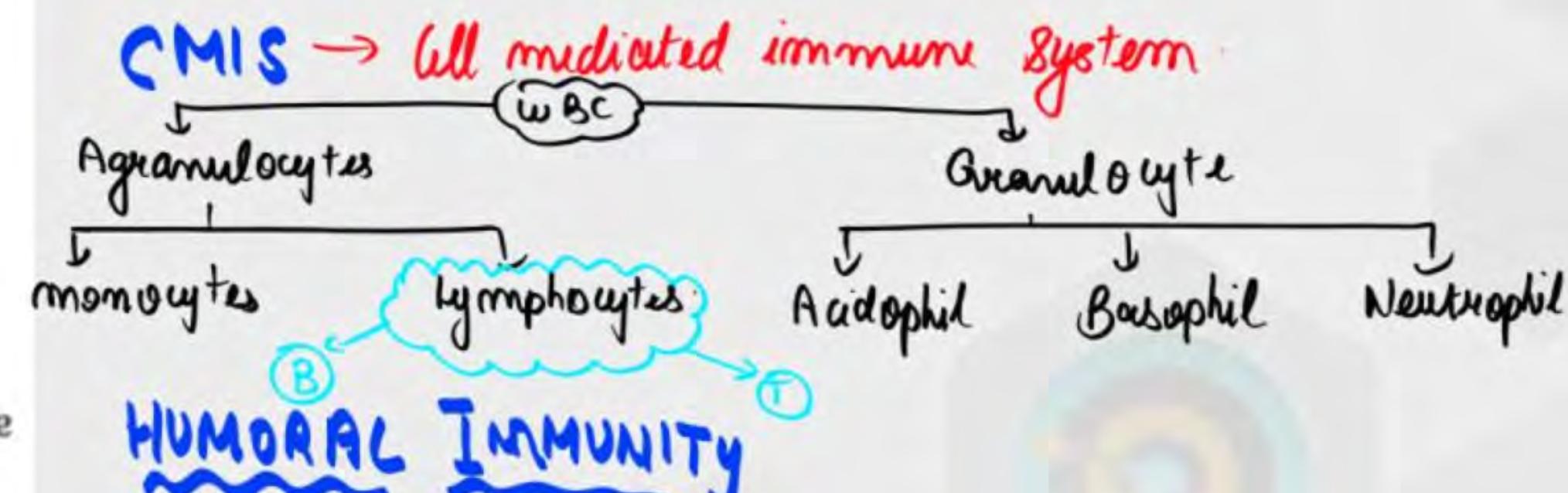
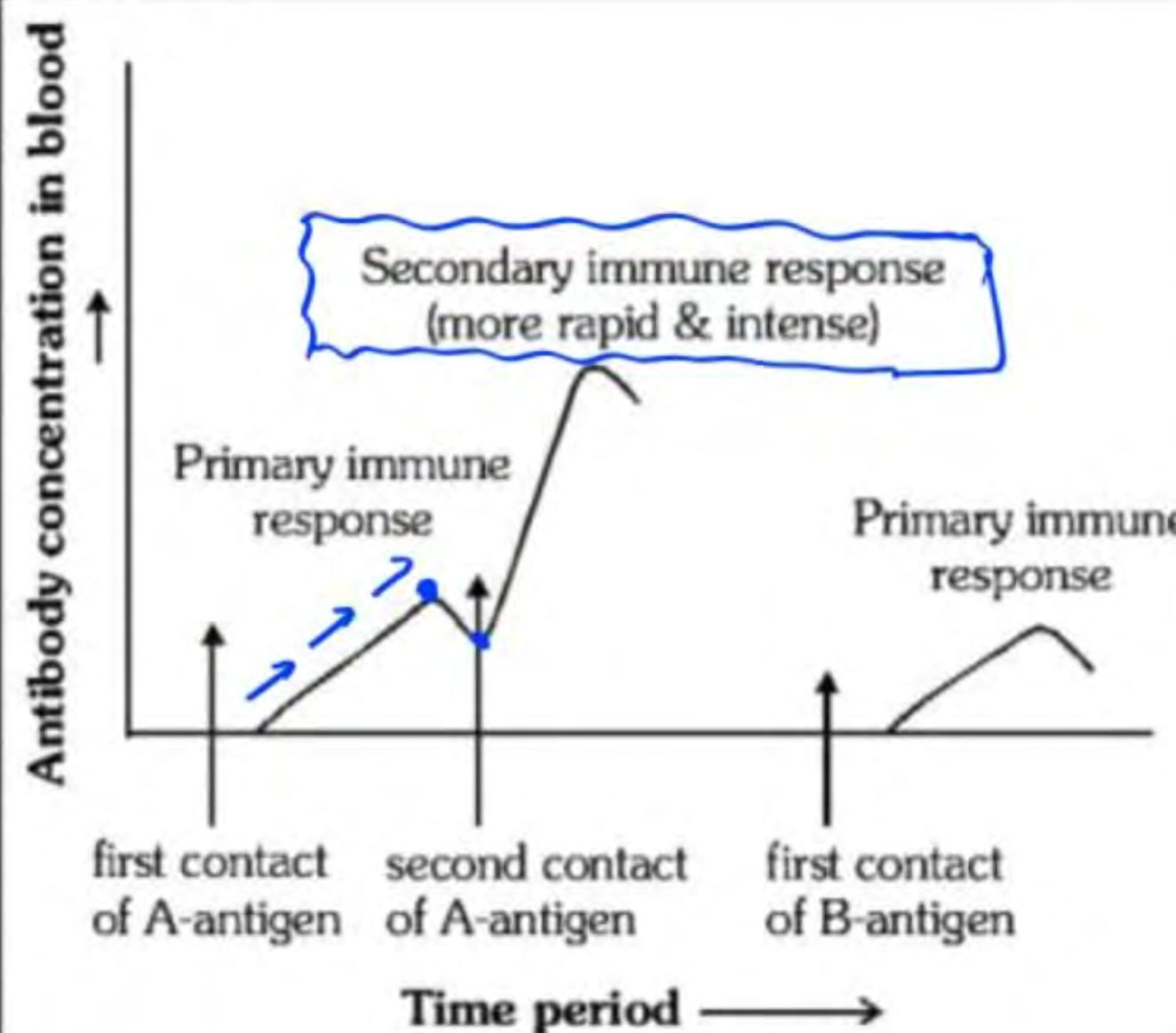


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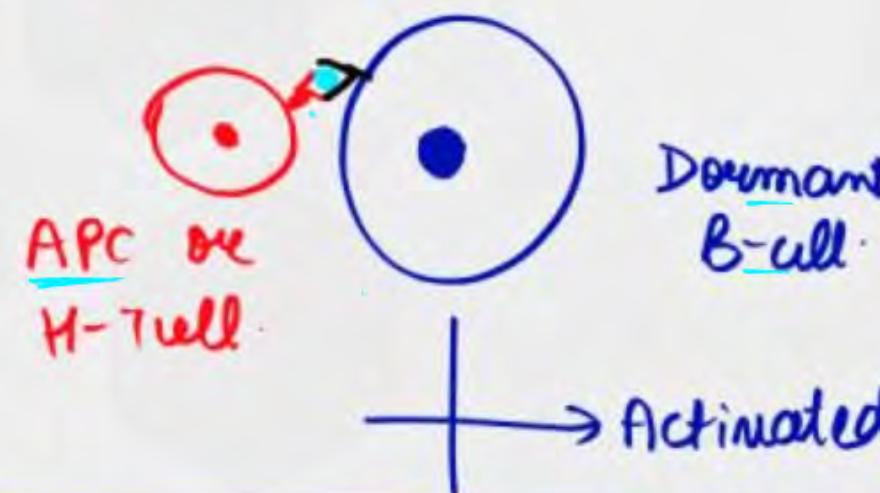


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ACTIVITY OF B-LYMPHOCYTES.

→ B-lymphocyte remain dormant inside the body till any M-T cell or antigen presenting cell attaches with it.



Plasma Cell -
Produce millions of Antibodies per second to kill any specific pathogen inside the body.

Memory-B cell
They remain in our immune system & trigger a secondary response on next exposure of pathogen.

AMIS - ANTI BODY MEDiated IMMUNE SYSTEM.

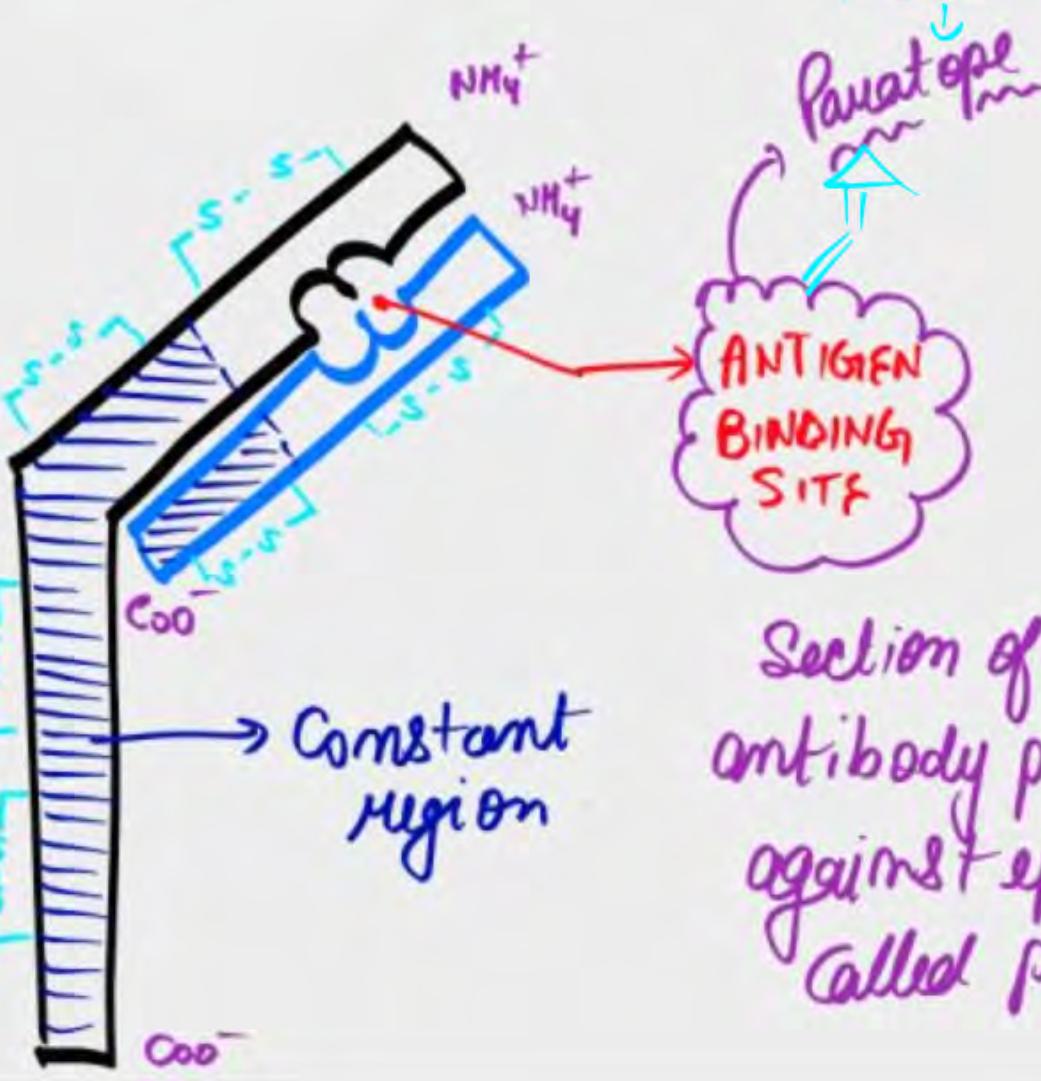
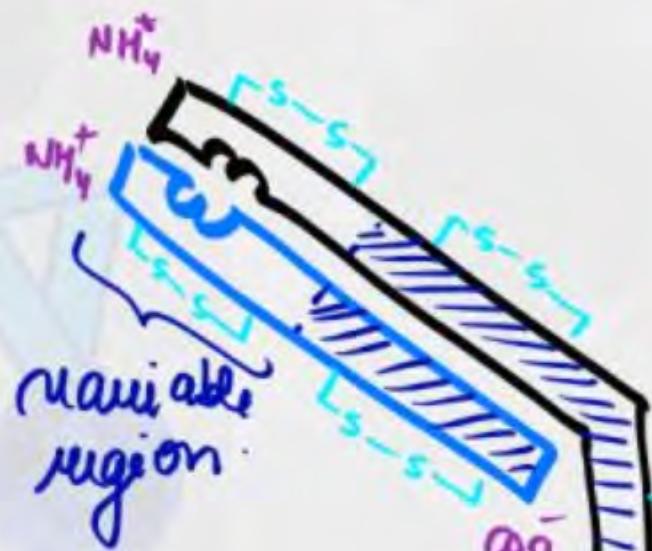
ANTIBODY - It is a Y-shaped protein molecule produced by some types of B-lymphocytes which move in the fluids of the body & provide immunity.
→ Antibodies are now called as Immunoglobulins (Ig's).

→ They are very specific molecules & only target the cells against which they are produced.

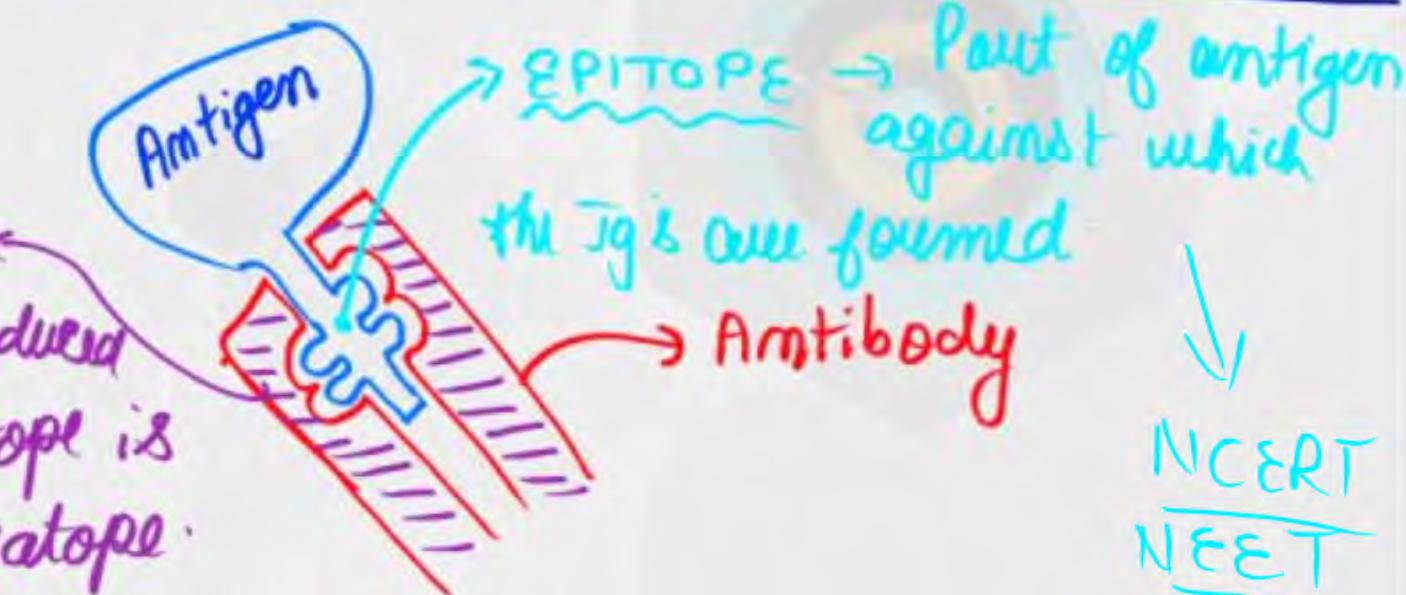
STRUCTURE OF ANTIBODIES

Igs are normally made up of 4 polypeptide chains.

↳ 2 x heavy chains }
 ↳ 2 x light chains } H_2L_2 Antibodies



Section of the antibody produced against epitope is called paratope.



ANTIGEN → They are specific molecules present on the surface of cells which act as site of identification (made of - glycoprotein or glycolipid)

- The antigens along with some other external particles that can trigger the activity of immune system are called IMMUNOGENS.
- IMMUNOGLOBULINS are produced in response to IMMUNOGENS.

ANTIBODIES - MODE OF ACTION -

1) AGGLUTINATION -

When the Ig's attach themselves to the antigen & this is followed by the clumping & lysis of these target cells, it is called as agglutination.

2) OPSONIZATION -

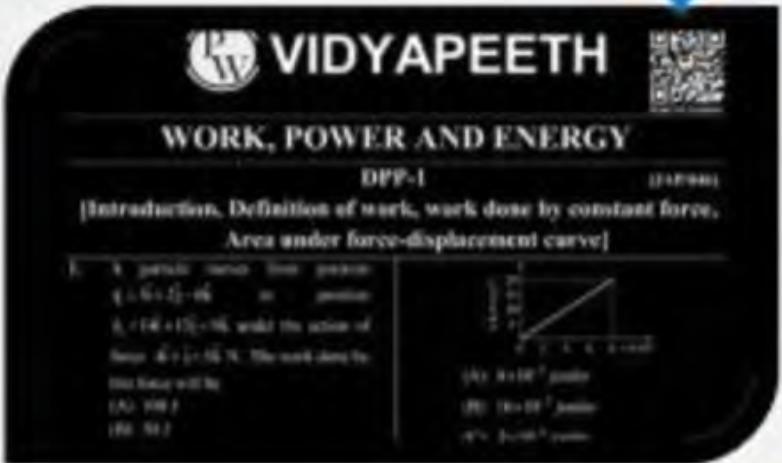
Here the antibody binds to the target cell & tags it for the phagocytic & lytic cells to kill it.

3) NEUTRALIZATION - The antibodies bind & destroy to any toxic molecule Eg → Antivenom & Antitoxin.

Ig	%	Function
Ig-G	75 to 80%	blood, interstitial fluid & can cross placenta. Provides immunity to embryo
Ig-A	10%	Secretory Ig → Mucous, Saliva, Colostrum etc. Protects the mucous membranes from inhaled & ingested pathogens.
Ig-M	5 to 10%	The first antibody to be produced in response to a pathogen. It has strong power of agglutination. Largest antibody → NEET
Ig-D	1 to 3%	Present on the surface of lymphocytes. Helps in the action of B & T lymphocytes.
Ig-E	0.3%	It has specific linkage with mast cells. They play a vital role in allergic responses.



Solve the DPP



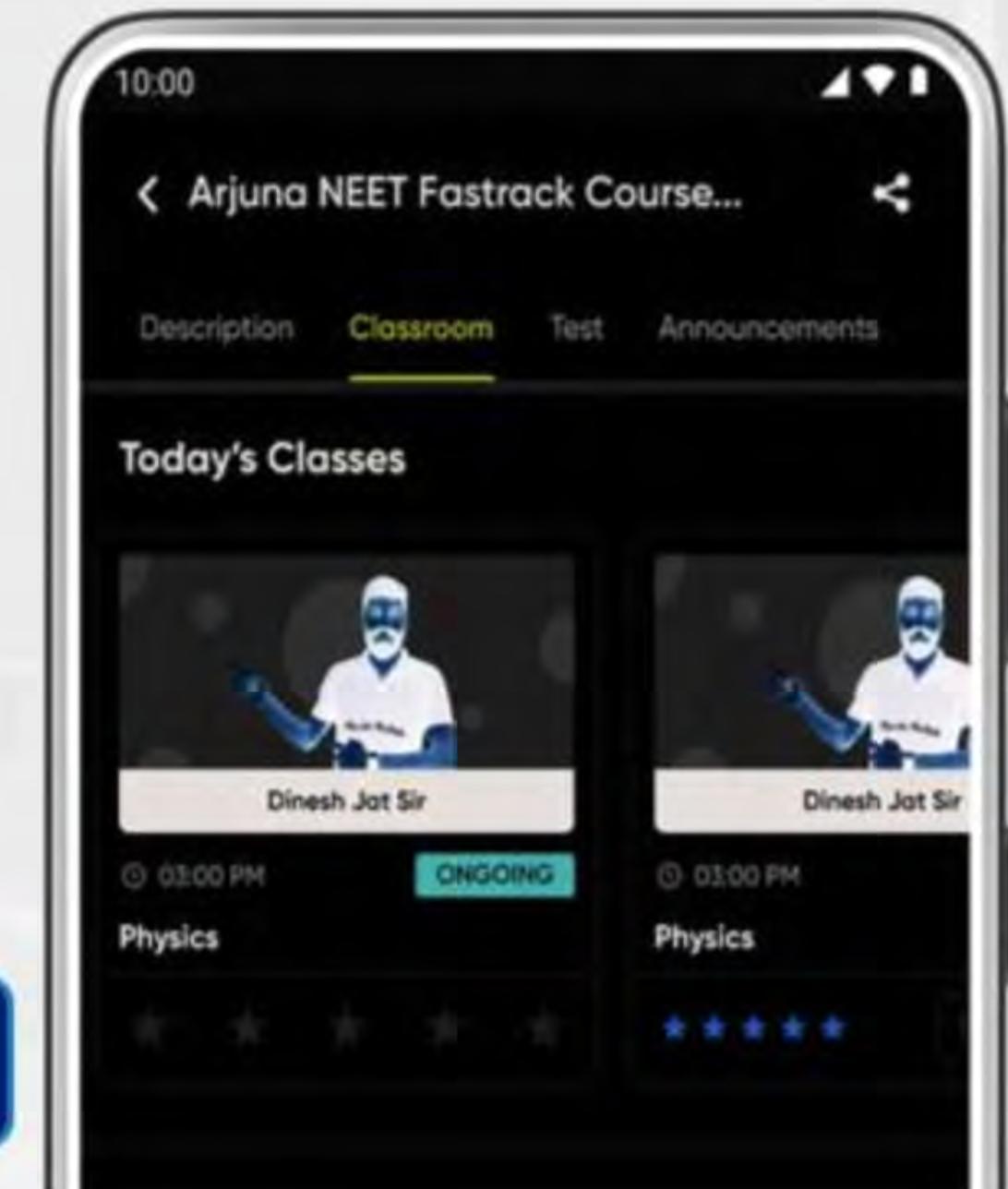
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BATCH CODE -29-YN201MA

- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**



Lecture No.-

05



By-Aditya Sir

Today's Targets



1

DISORDERS OF IMMUNE SYSTEM .

2

3

4

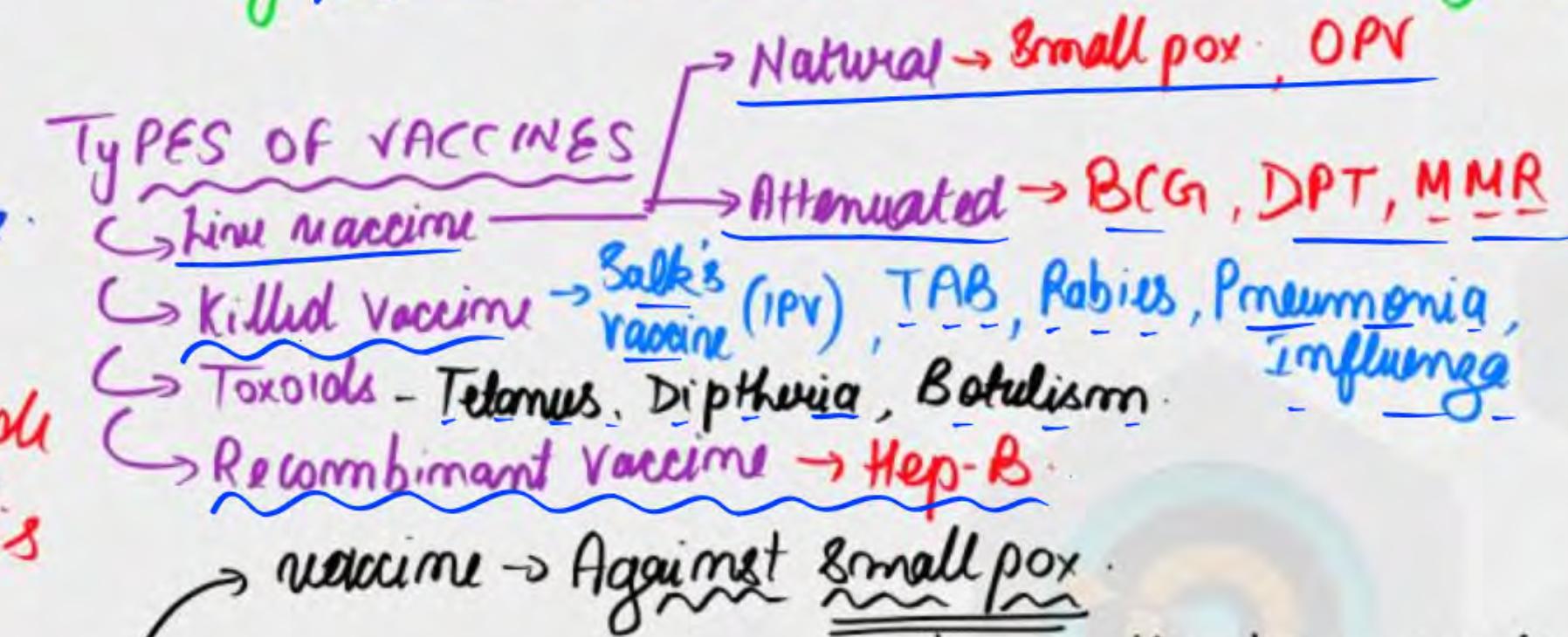
VACCINATION & IMMUNIZATION

VACCINE - A weakened or killed form of a pathogen that is introduced inside our body so that our body can produce immunity against a specific disease.

Introduction of a vaccine inside the body via different means is called vaccination.

* Edward Jenner is considered the father of vaccination.

→ A successful round of vaccination leads to the development of a long term immunity against a disease. This is called immunization.



Has been modified from the world

M.H.A Complex -

↳ Human Leucocyte Antigens (First found on the surface of leucocytes.)

↳ MHC (Major Histocompatibility Complex)

These proteins on the surface of cell are used by immune system to differentiate self from non self cells/tissues

→ Hence, MHC is used for matching tissue between the donor & recipient during organ transplant.

→ Only the identical twins have identical MHC complex.

Organs can be donated w/o the fear of organ rejection.

→ If there is a transplant where the donor is not an identical twin, the recipient will have to consume immuno suppressant for the rest of the life.

DISORDERS OF THE IMMUNE SYSTEM:



These are certain conditions where either the immune system provides a hyper active response or attacks the cells of own body causing discomfort to the body.

They can be allergic or autoimmune responses.

ALLERGIC REACTION

They are defined as conditions where there is an exaggerated response of immune system towards particles that would be normally harmless to the body.

CHANGES DURING ANERGY

→ Activation of mast cells & basophils which leads to over secretion of histamine

Inflammatory Response

- Blood supply (\uparrow)
- Redness
- Swelling
- fluid accumulation
- localized heat
- Pain / irritation.

ASTHMA -

- Allergy in the lower respiratory tract upper
- Leads to contraction of smooth muscles which ultimately leads to Broncho constriction
- Generally characterized by the whispering sound while breathing
- Allergens
 - Dust
 - Pollen
 - Animal Dander
 - Aerosols

MAY FEVER -

Allergy that normally targets the eyes, nose & upper respiratory tract

It is usually triggered by the exposure to pollen grains

ANAPHYLACTIC SHOCK -

More

- generalized & severe allergic reaction to certain allergens (e.g. → Penicillin) where there can be inflammation in pharynx leading to a choked airway
- Due to strong vasodilation, the BP may fall rapidly

AUTOIMMUNE CONDITIONS -

Conditions where the person's immune system attacks their body cells. As a result, it may lead to many problems.

① IDDM - (Insulin dependent Diabetes Mellitus)

- It is also called as Type-I diabetes
- Immune system degrades β -cells of the pancreas
- Decline in the insulin which translates to high blood sugar

② Rheumatoid Arthritis -

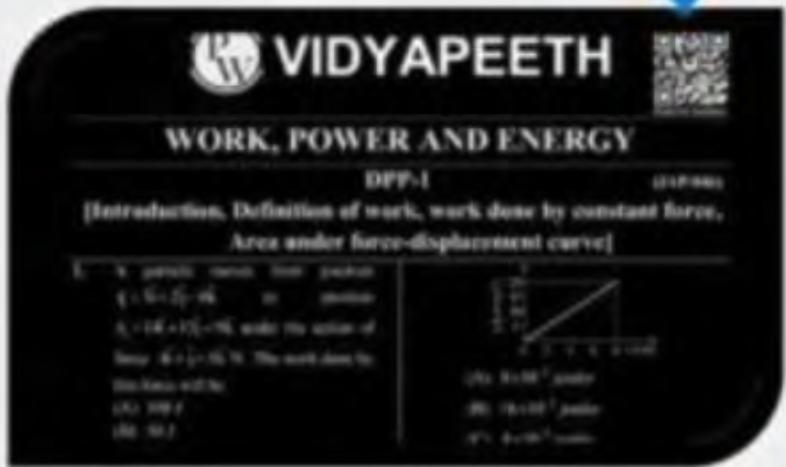
- Condition where the immune system attacks the soft tissue including the joints of the body
- In such condition particles called proteins are produced in the joints which further increase the wear & tear leading to joints degradation
- may cause deformation of joints in old age

③ Pernicious Anaemia -

Immune system attacks Castille's Intrinsic factor. Vit B₁₂ absorption ↓. Anaemia triggered.



Solve the DPP



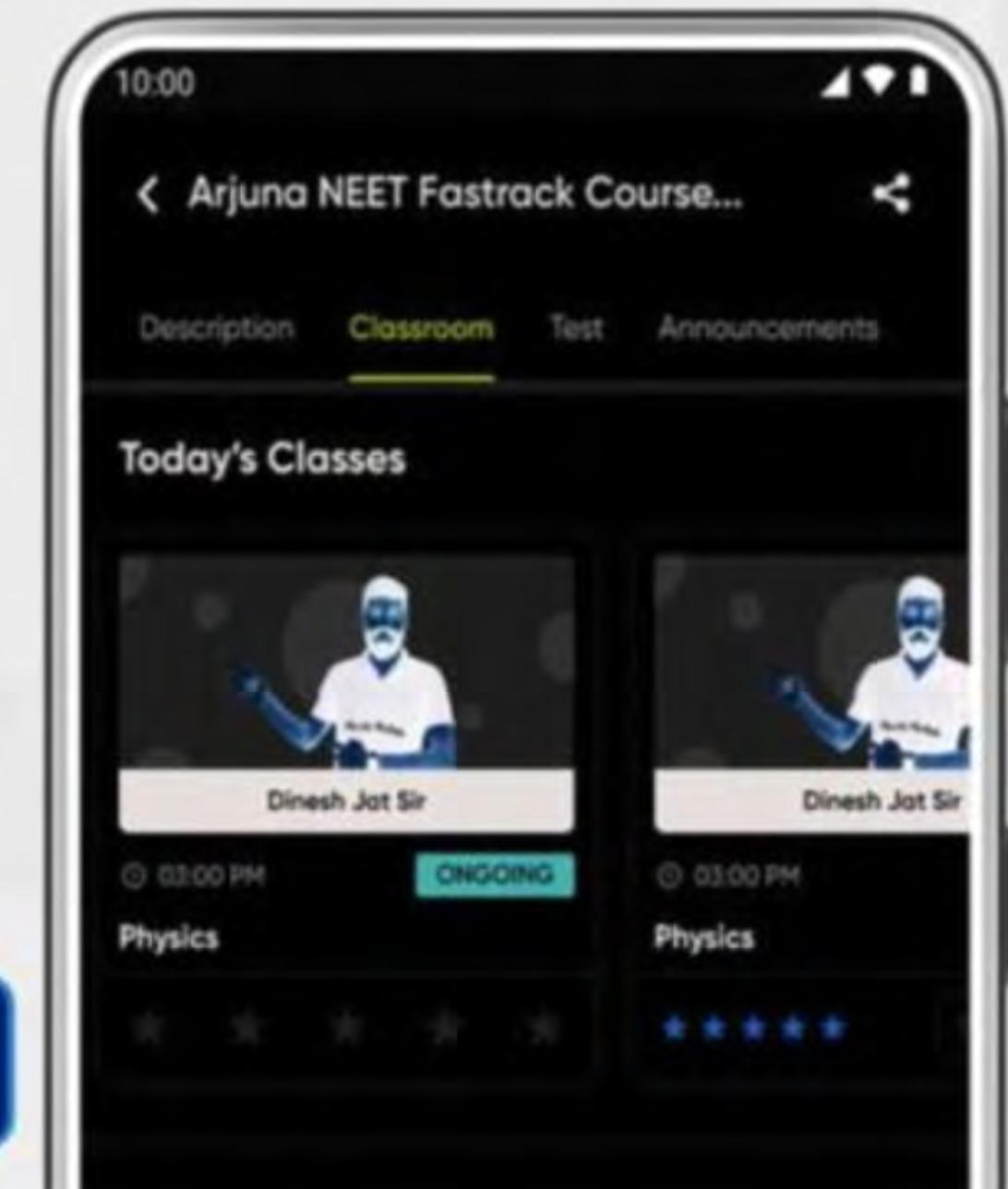
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BATCH CODE - 29-YN201MA

- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**



Lecture No.- 06



By-Aditya Sir

Today's Targets



1

Examples of Allergic Diseases

2

Autoimmune Diseases

3

SCID (Immunodeficiency)

4

AIDS (Intro)

ASTHMA -

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- Leads to contraction of smooth muscles which ultimately leads to Broncho constriction.
- Generally characterized by the wheezing sound while breathing
- Allergens
 - Dust
 - Pollen
 - Animal Dander
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HAY FEVER -

Allergy that normally targets the eyes, nose & upper respiratory tract

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ANAPHYLACTIC SHOCK - More
 generalized & severe allergic reaction to certain allergens (e.g. → Penicillin) where there can be inflammation in pharynx leading to a choked airway

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- may cause deformation of joints in old age

③ Pernicious Anaemia -

Immune system attacks Castle's Intrinsic factor. Vit B₁₂ absorption ↓. Anaemia triggered.

① Hashimoto's Disease -

- Antibodies formed against thyroid gland.
- Attack on thyroid gland leads to hypothyroidism. (less production of thyroid hormones)

5.) MYASTHENIA GRAVIS - ✓

- Immune system attack the acetyl choline receptors on the surface of skeletal muscles.
- This leads to loss of control over the smooth muscles leading to inactivity.

IMMUNODEFICIENCY -

- ① S.C.I.D - (Severe Combined immunodeficiency disorder)
 - Caused due to deficiency of adenosine deaminase enzyme (ADA) (NEET)
 - This enzyme leads to maturity of lymphocytes inside the body.
 - Due to lack of a functional immune system, pathogens can lead to fatal outcomes.

AIDS - ACQUIRED IMMUNO DEFICIENCY SYNDROME

group of symptoms

Caused by HIV \Rightarrow Human Immunodeficiency virus

* LAV - lymphadenopathy virus

* First observed in Atlanta, USA in 1981 & the early patients were homosexual men.

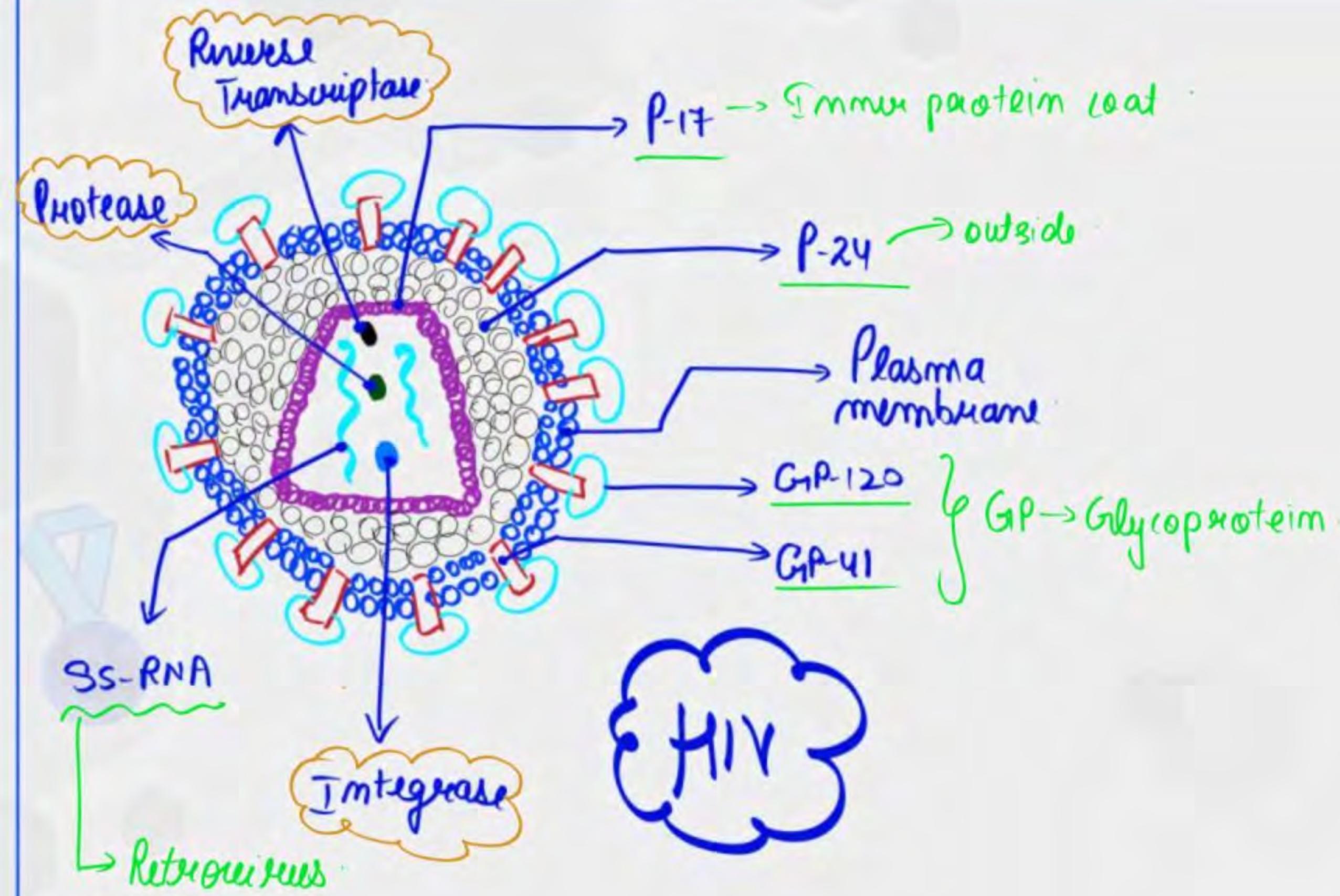
→ 1st name given to disease was - GRID
(Gray Related immune disorder)

* Finally the name HIV was given

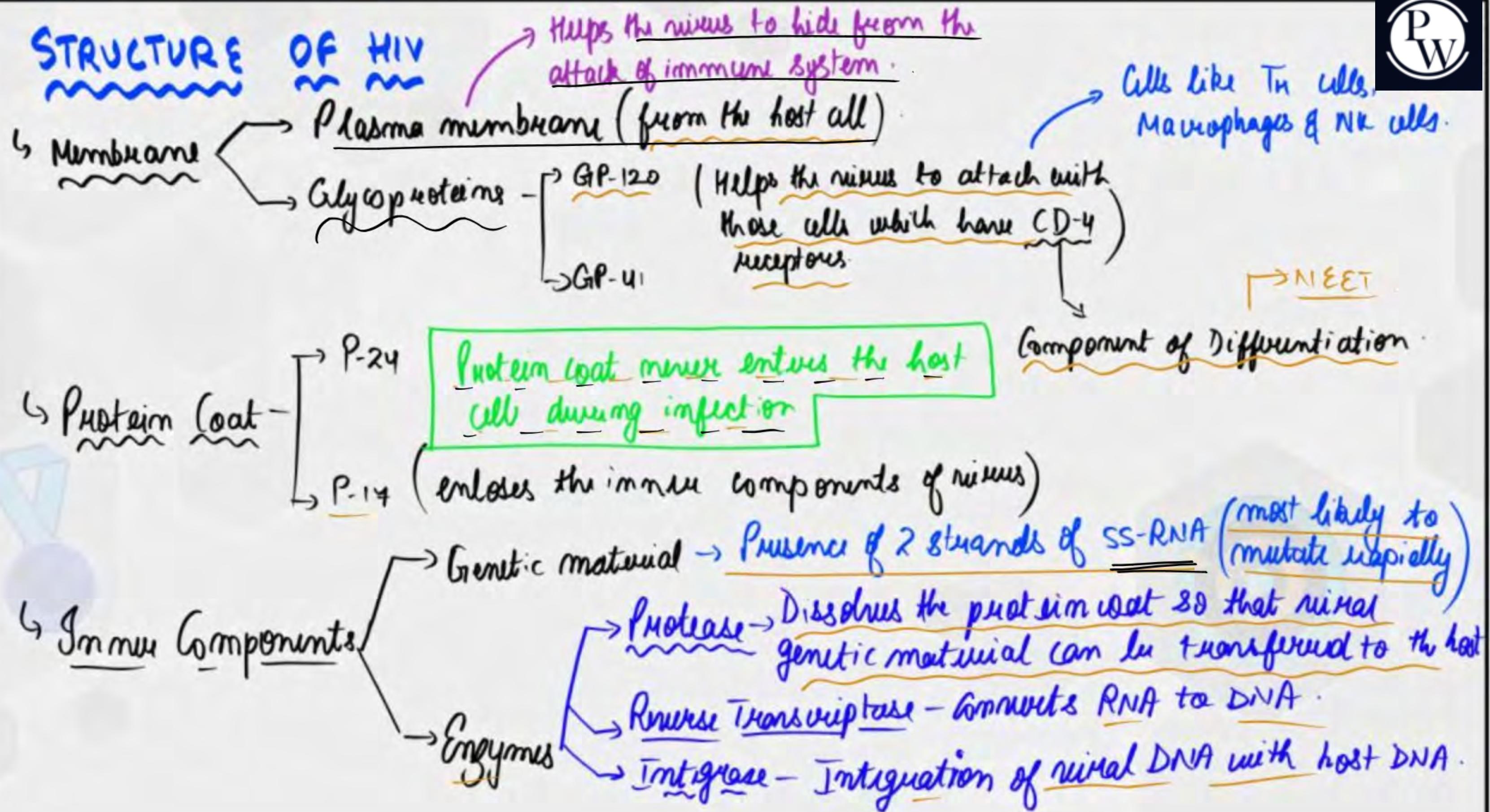
The 1st case of HIV arrived in India in year 1986.

* HCLV - III - Human Cell Leukemia Virus III

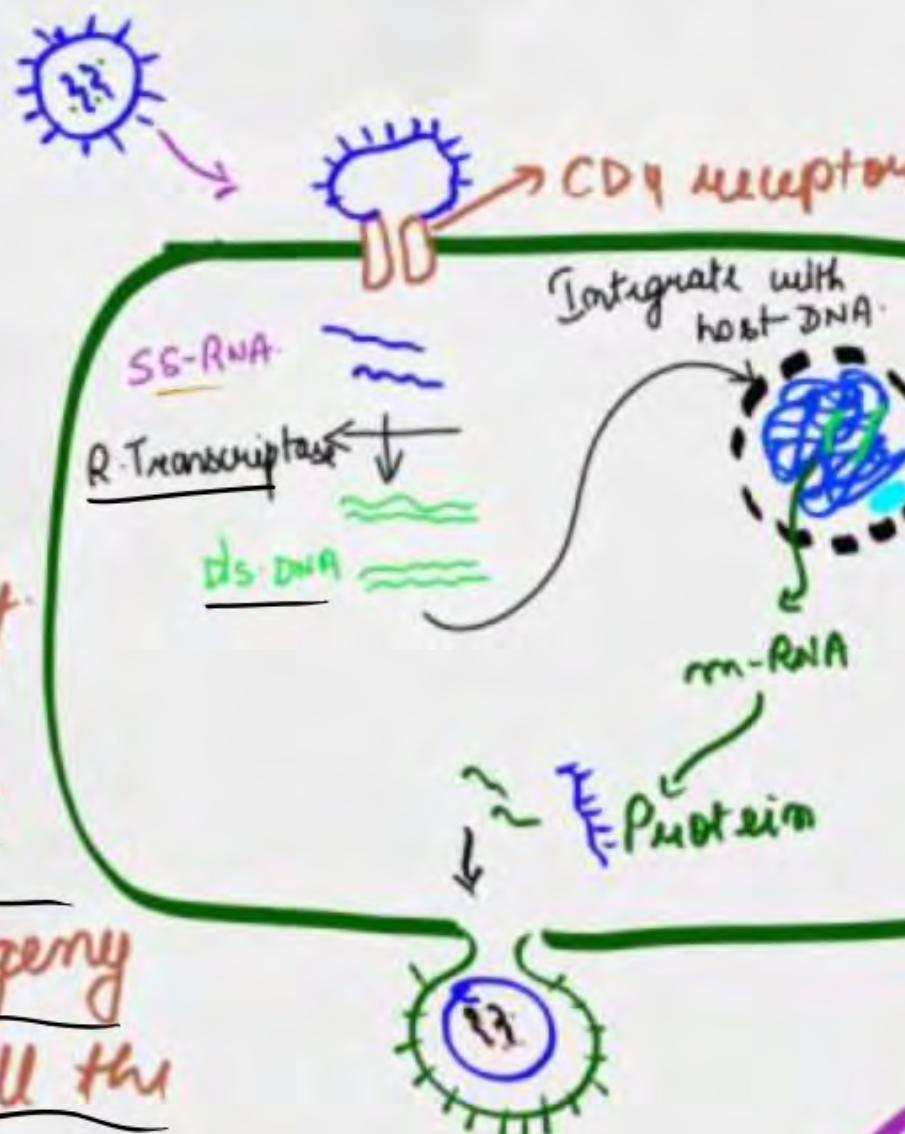
* HTLV III - Human T-lymphotropic Virus III
(Human T-lymphocyte को घाने वाला virus)



STRUCTURE OF HIV



INFECTION MECHANISM (in host cell)



- Host cell is converted into a virus factory.
- Host cell will produce progeny viruses till all the resources of the virus are depleted.

MODES OF PATHOGEN TRANSFER

→ Through unprotected sexual contact (with HIV positive person).

Chances of HIV transfer from male to female is much higher than female to male.

→ Transfusion of infected blood.

→ mother to child

during pregnancy (trans placental route)

during birth

during lactation (NFET)

→ Sharing of surgical items like needles.

→ Patient is contagious

INCUBATION PERIOD -

Time period between entry of pathogen in the body & appearance of symptoms in the patient. (upto 10 years)

WINDOW PERIOD -

Time period between entry of pathogen to the time when it can be detected in the body (3 months to 1 year)

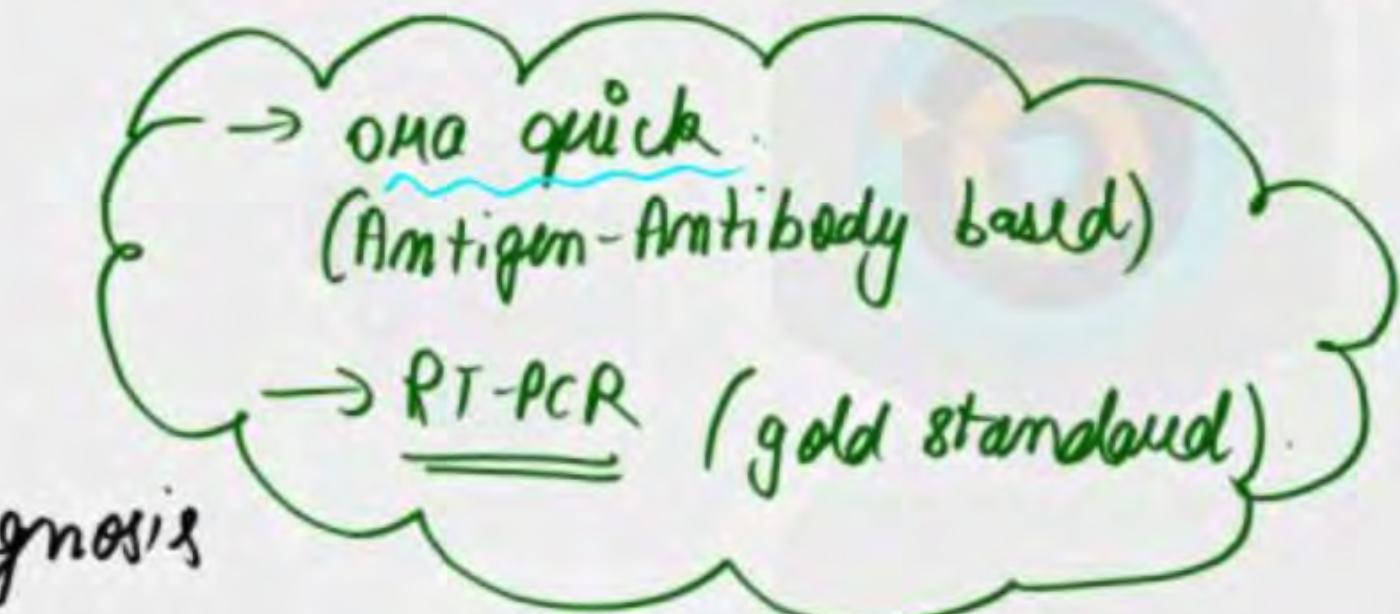
SYMPTOMS

- ① Early Symptoms = After infection, the person may face slight fever or flu like symptoms (mild) and resolve on their own. **[OFTEN NEGLECTED]**
- ② Asymptomatic Phase - There are no visible symptoms → Last for a few months to 5-10 years.
- ③ Early AIDS symptoms - mild headache, repeated episodes of diarrhoea, prolonged cough, swollen lymph nodes.
- ④ Full Blown AIDS

DIAGNOSIS OF HIV

Diagnosed with the help of ELISA test
(Enzyme linked Immuno Sorbent Assay)

→ Once the ELISA gives positive result, the diagnosis confirmed by the use of western blotting



FULL BLOWN AIDS -

↳ There is tremendous loss of body weight

(AIDS → Slangs disease) → Imp

↳ Patients may catch infections

↳ Tuberculosis → Mycobacterium

↳ Candida fungal infection → mouth & oesophagus

↳ Pneumonia - fluid filled lungs

↳ Encephalitis → Toxoplasma
(inflammation in Brain)

↳ maximum AIDS patients die due to tuberculosis

↳ Some cancers like Lymphoma's

(cancer in the lymph nodes) &

Kaposi's Sarcoma (cancer in the inner lining of blood vessel)

can be observed.

All the above lead
to death !!!

TREATMENT -

HIV-AIDS is an incurable disease but the life of patient can be increased by giving certain meds which can inhibit the viral replication.

→ HAART - Highly active anti-retroviral treatment

↳ RT inhibitor - Didanosine

↳ Integrase inhibitor - Raltegravir

↳ Protease inhibitor - Ritonavir

Patient needs to consume ART throughout the life.

→ NACO - National AIDS Control Org

Awareness about HIV AIDS

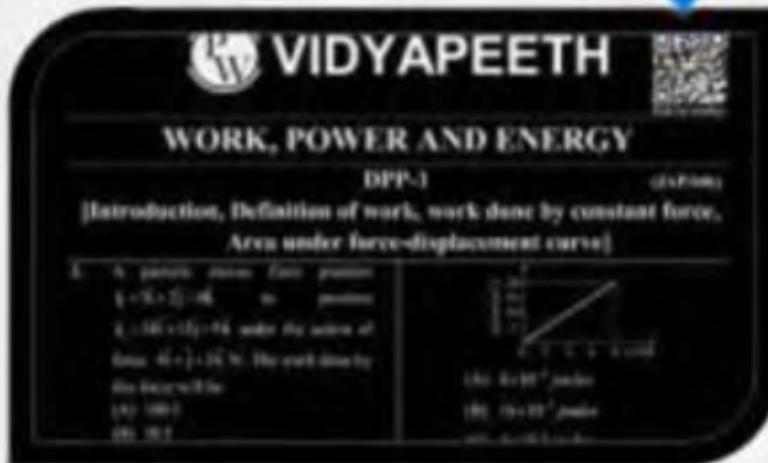
Made the diagnosis free & accessible for every one

Made available birth control

(Condoms) free so that the poor strata of society can also be protected



Solve the DPP



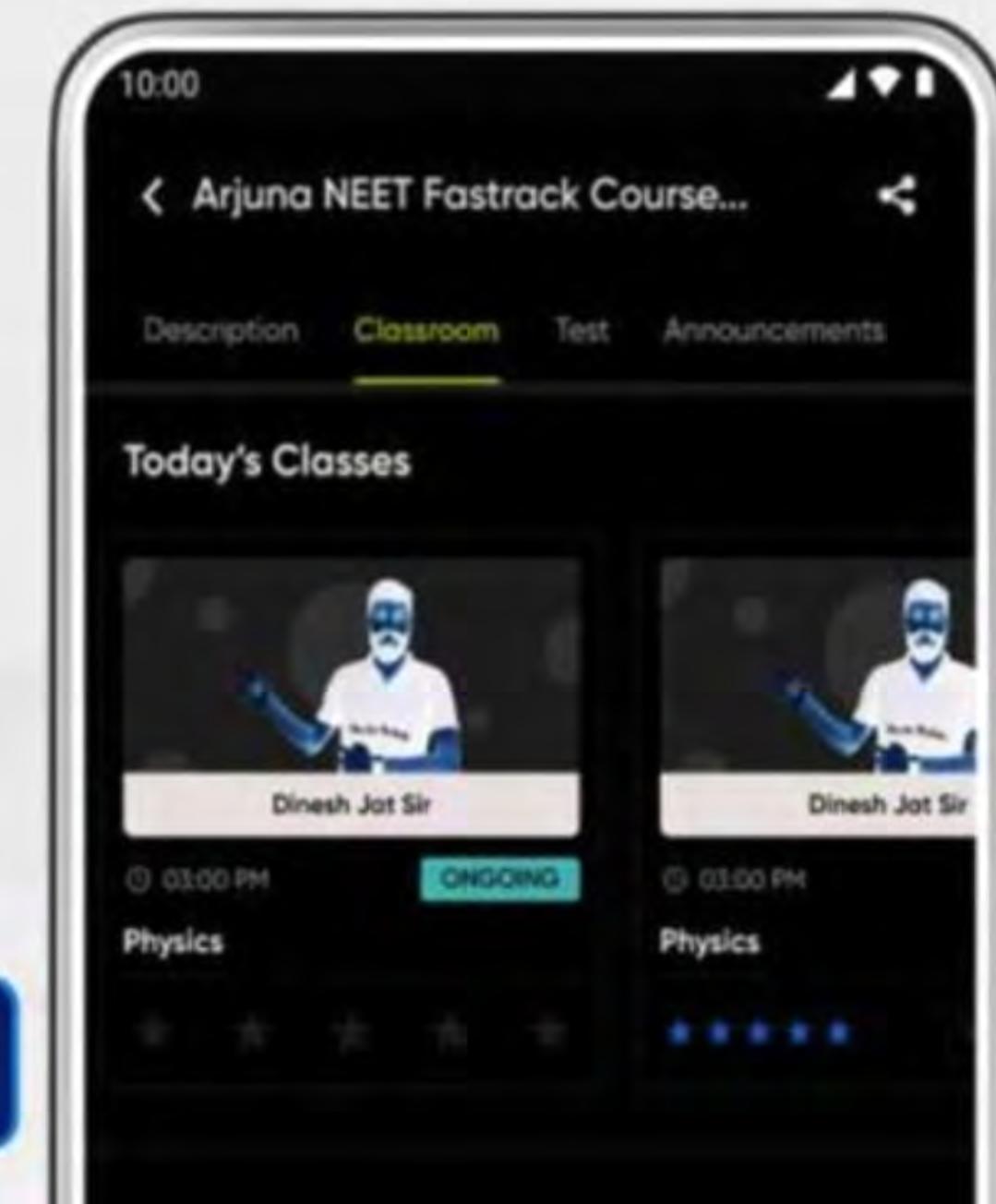
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VIDYAPEETH*

BATCH CODE - 29-YN201MA

- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**

Lecture No.- 07



By-Aditya Sir



Today's Targets



1

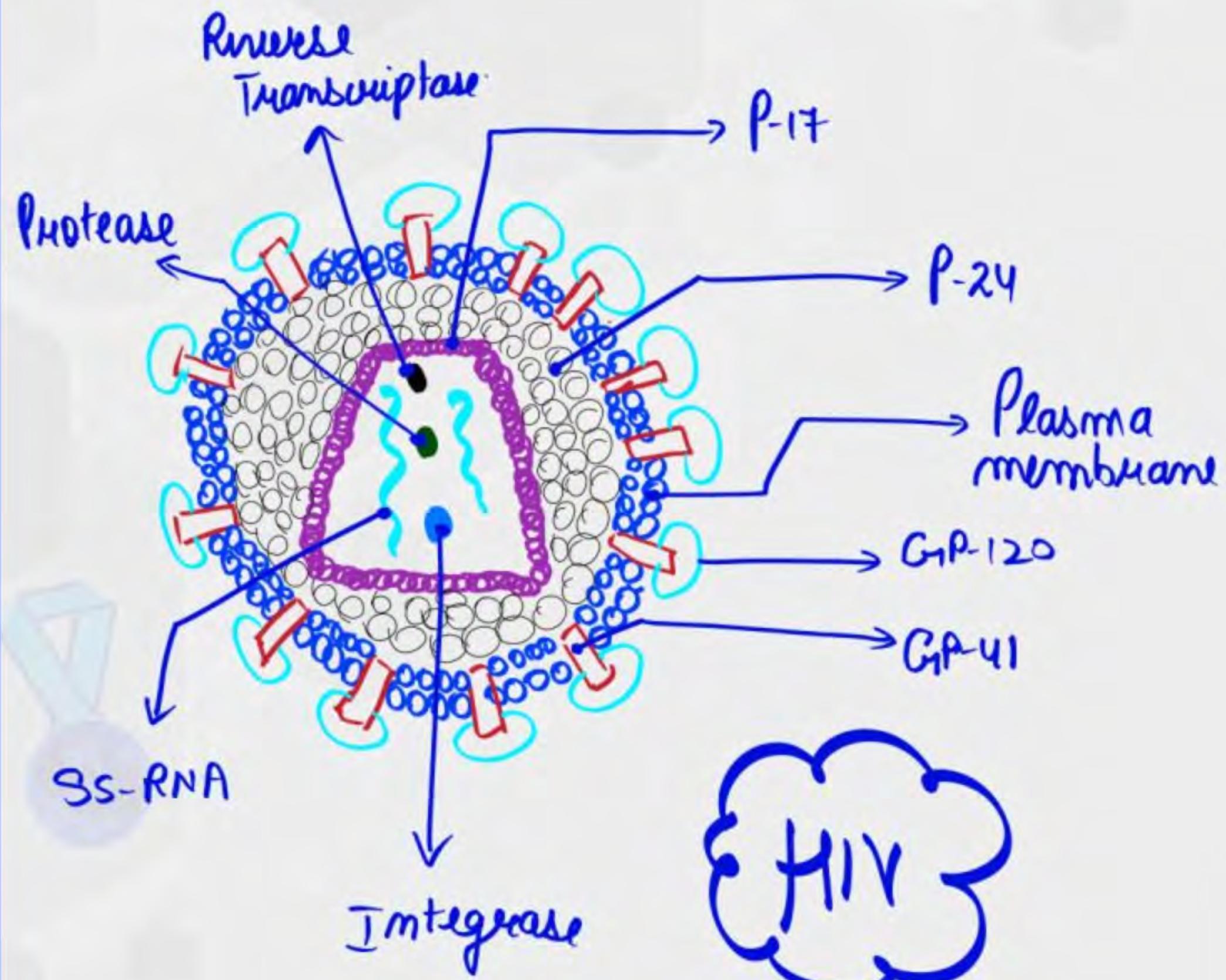
AIDS

2

CANCER .

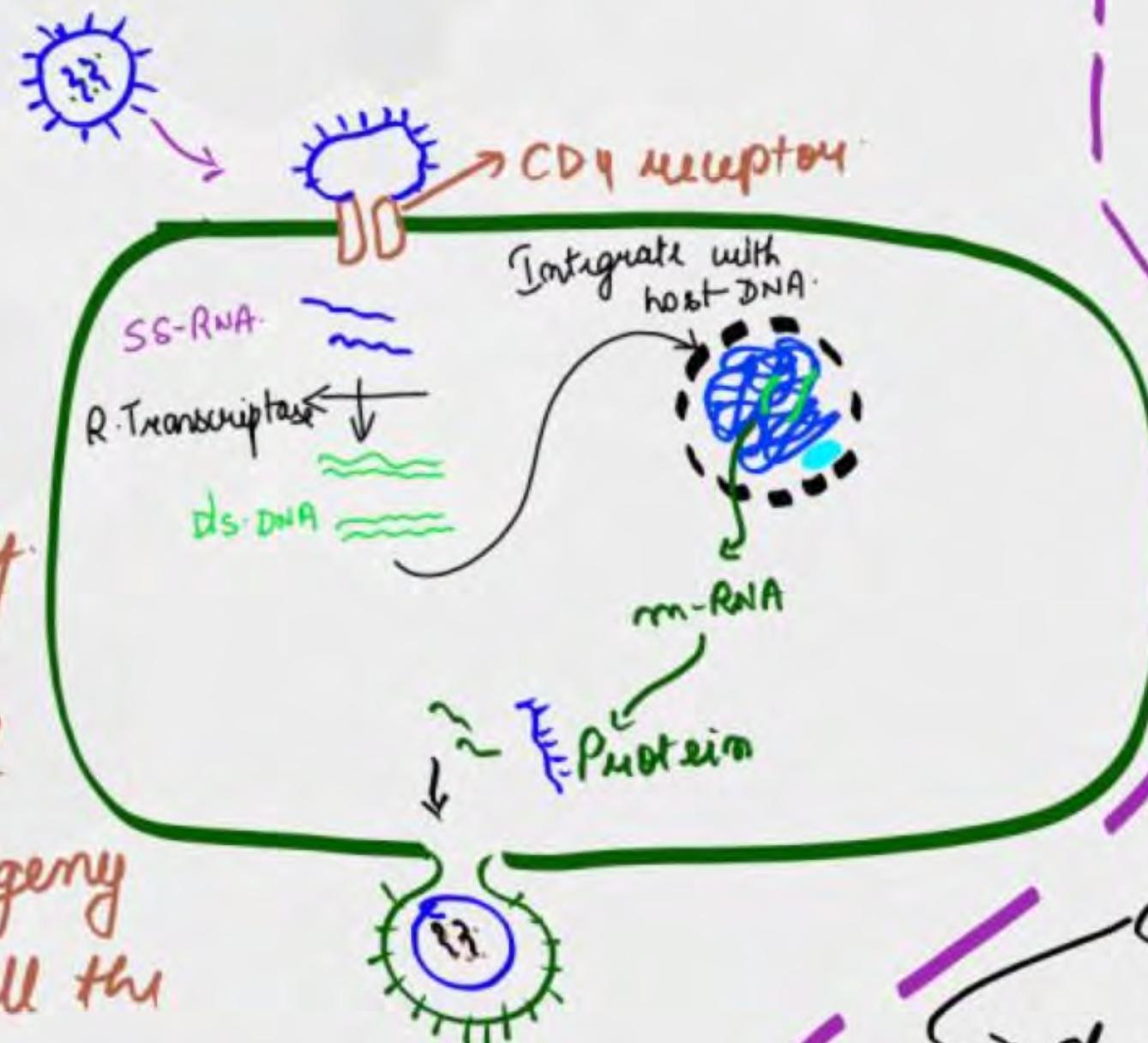
3

4



INFECTION MECHANISM (in host cell)

P
W



- Host cell is converted into a virus factory.
- Host cell will produce progeny viruses till all the resources of the virus are depleted.

MODES OF PATHOGEN TRANSFER

→ Through unprotected sexual contact (with HIV positive person).

Chances of HIV transfer from male to female is much higher than female to male.

→ Transfusion of infected blood.

→ mother to child

during pregnancy (trans placental route)

during birth

during lactation

→ Sharing of surgical items like needles.

INCUBATION PERIOD -

Time period between entry of pathogen in the body & appearance of symptoms in the patient. (upto 10 years).

WINDOW PERIOD -

Time period between entry of pathogen to the time when it can be detected in the body (3 months to 1 year).

SYMPTOMS

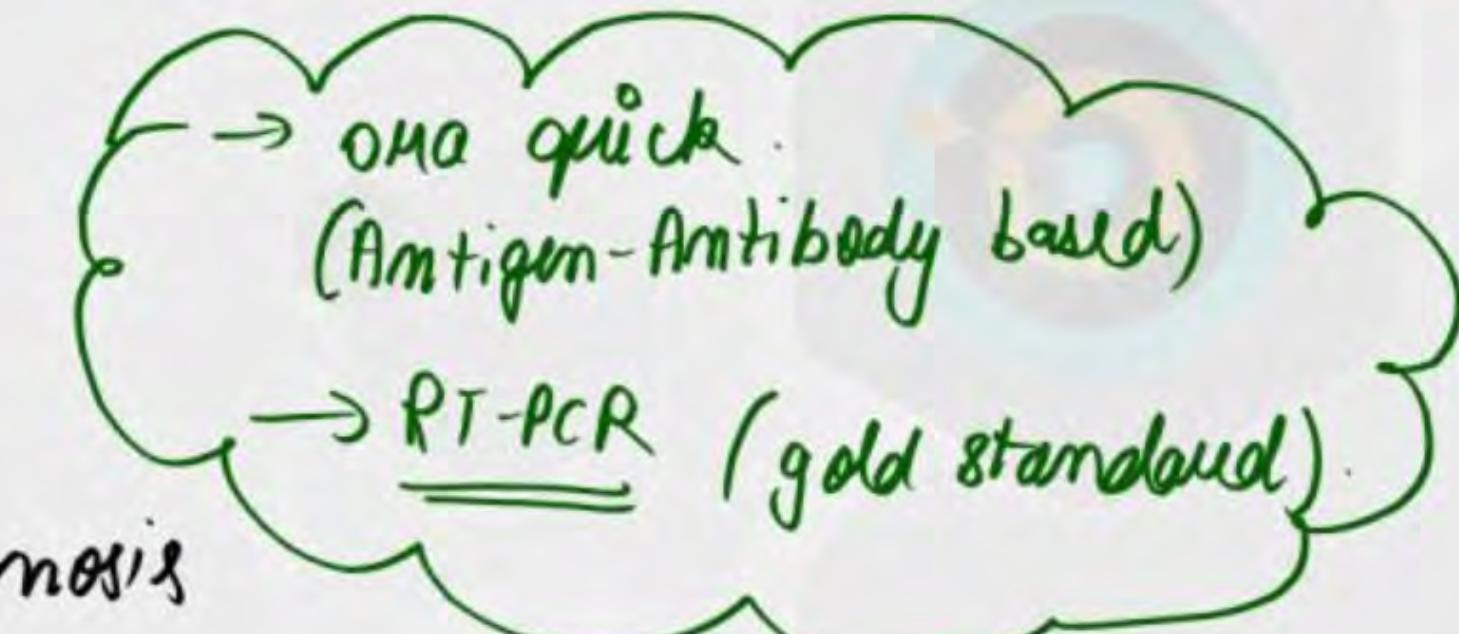
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(cancer in the lymph nodes) &
Kaposi's sarcoma (cancer in the inner lining of blood vessel)
Can be observed.

ALL THE ABOVE LEAD
TO DEATH !!!

TREATMENT -

HIV-AIDS is an incurable disease but the life of patient can be increased by giving certain meds which can inhibit the viral replication.

→ HAART - Highly active anti retroviral treatment

↳ RT inhibitor - Dideoxymidine

↳ Integrase inhibitor - Raltegravir

↳ Protease inhibitor - Ritonavir

Patient needs to consume ART throughout the life

→ NACO - National AIDS Control Org

→ Awareness about HIV AIDS made the diagnosis free & accessible for every one

→ Made available birth control (Condoms) free so that the poor strata of society can also be protected

CANCER (कैंसर)

Related to tumours

→ Defined as a neoplastic disease where there is an abnormal & uncontrolled division of certain cells of the body which is due to breakdown of machinery which regulates cell division.

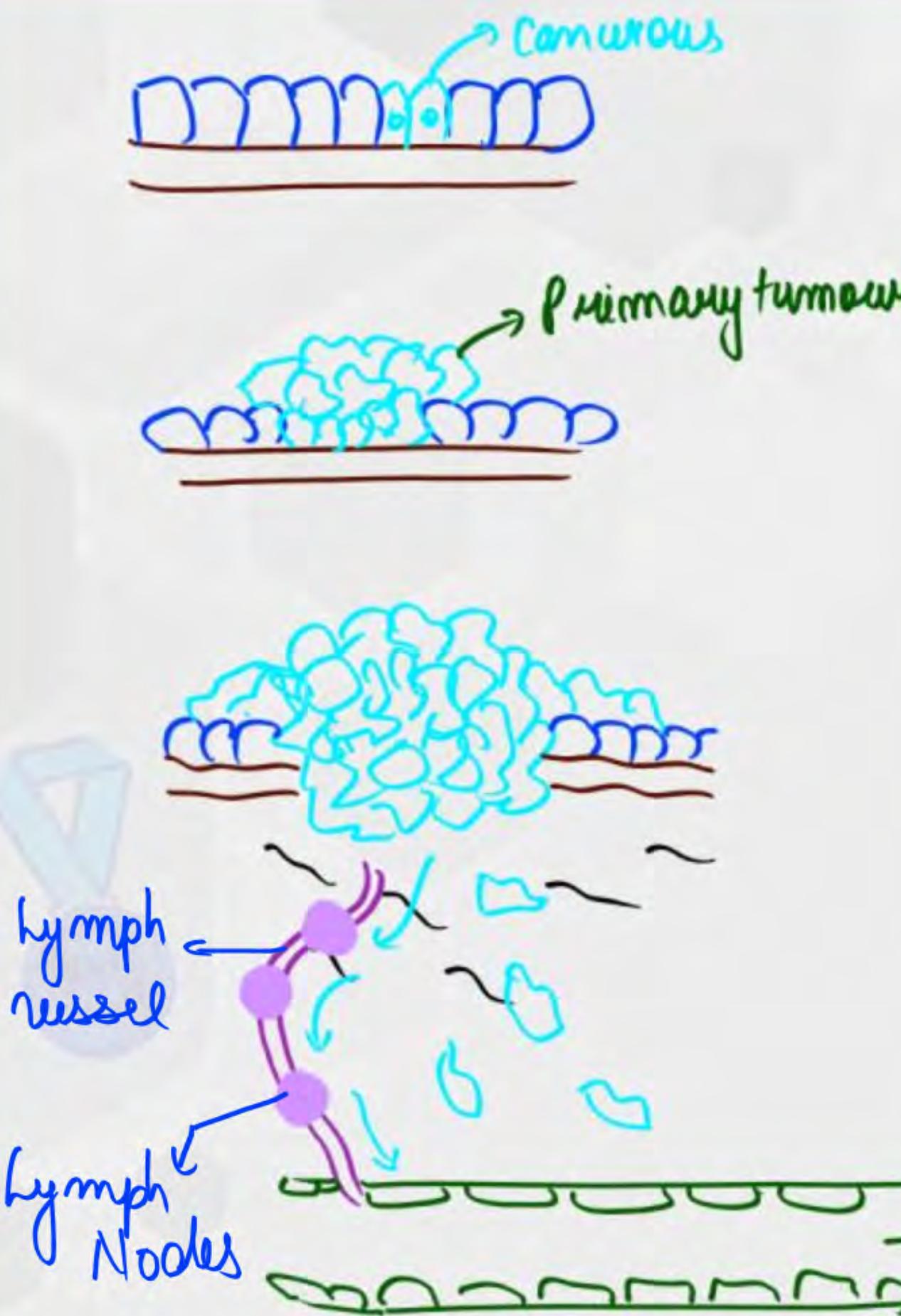
→ When an ordinary cell does not honour the regulatory pathways of cell division it is said to be a conceous cell

Tumour → Benign (non cancerous)
→ Malignant (they are cancerous)

cause damage because -

- 1.) They are invading in nature
- 2.) cause damage to the nearby tissue
- 3.) These tumours can split & spread throughout the body & later cause secondary tumours in vital organs of body (METASTASIS)
- 4.) They do not follow contact inhibition

→ When the cells stop/slow down to divide when their boundary comes in contact with the adjacent cell, it is called contact inhibition.



STAGES

- ↳ Stage I → Cancer is contained in the organ of origination.
- ↳ Stage II - Cancer cells have moved out from the organ to the lymph nodes.
- ↳ Stage III - when secondary tumours are found in the vital & well vascularized organs of body like liver & lungs.
- ↳ Stage IV → when the secondary tumours have grown in other vital organs & now the tumours are threat to life.

FEATURES OF CANCER CELLS

- They are non uniform looking cells (i.e. non uniform in shape & size)
- They have a larger nucleus w.r.t to normal cell of that type
- Dividing cells may not show a symmetrical spindle formation
- many surface proteins & antigens are absent on the cancer cells
- They tend to form tumours with non clear margins

→ Cancer cells are very power hungry cells since these tumours starve the nearby cells

→ They also demonstrate a strange character that is called ANGIOGENESIS

→ The cancerous tumours form their own blood vessels & direct take blood from nearby blood vessels

TYPES OF CANCER

↳ Carcinomas - (85% of the cancers)

↳ Cancers in the epithelial tissue:

- Brain • Lung Carcinoma

- Gastric • Adeno Carcinoma

- Colon (Carcinoma in glands)

- Breast • oral

- Prostate

↳ Sarcomas → muscle tissue cancer

↳ Osteomas → bone tissue

↳ Melanomas → skin

↳ Thyoma → Thymus

↳ Leukemia → blood cancer

↳ Gliomas - brain cancer

↳ most common cancer - Lung Cancer (31%)

↳ natural cancers - most common Breast cancer

(not due to bad habits) Prostate cancer

preventable

CARCINOGENS -

The agents that can trigger a continuous growth by triggering the genes are called as carcinogens.

They trigger mutations in onco-genes or proto-onco-genes which can lead to a cancer.

mechanism by which a cancer is triggered is called carcinogenesis.

Carcinogen

→ PHYSICAL -

↳ Radiations

→ X-Rays (CT scan = 200 X-Ray)

→ UV radiation (UV-B, UV-C)

↳ Responsible for many skin cancers

↳ Heat

→ Consumption of Hot-piping food may trigger mouth cancer.

People in Kashmir keep kangeri near their bellies to keep themselves warm.
Trigger skin cancer - (Kangeri Cancer)

↳ Rubbing tongue against sharp teeth can trigger Tongue cancer.



Solve the DPP



VIDYAPEETH

WORK, POWER AND ENERGY

DPP-1 (DPP-01)

[Introduction, Definition of work, work done by constant force, Area under force-displacement curve]

Q. A particle moves from position $x_1 = 3\hat{i} - 4\hat{j}$ m to position $x_2 = 14\hat{i} + 11\hat{j}$ m under the action of force $\vec{F} = 3\hat{i} + 5\hat{j}$ N. The work done by the force will be
 (A) 9×10^2 J
 (B) 16×10^2 J
 (C) 45 J



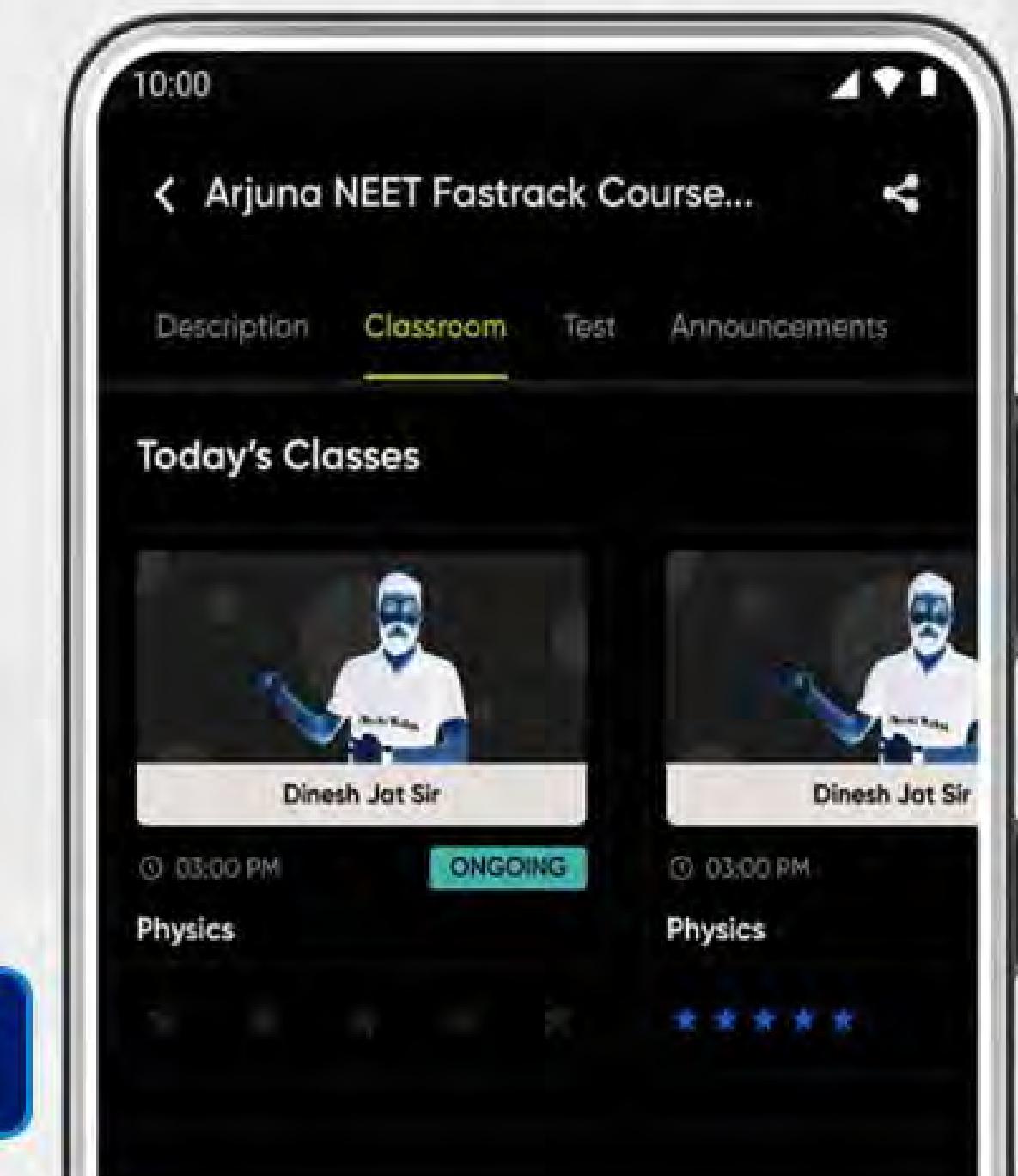
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BATCH CODE -29- YN20IMA

- Subject Name- Zoology
- Chapter Name- Human Health and Diseases

Lecture No.- 8



By-Aditya Sir

Today's Targets



- 1 CANCER TREATMENT
- 2 DRUGS
- 3
- 4

TREATMENT Of CANCER.

- **SURGERY -** If the tumour is localized in an organ & there is no metastasis, then it can be resected out (along with the organ if it is not vital)

RADIATION THERAPY -

Tumour/s are targeted by high energy radiation that destroy the cells.

Sometimes radiation therapy is accompanied by chemotherapy.

CHEMOTHERAPY -

Here the body is injected with chemotherapy agents like vincristine & vinca-alkaloids which target the dividing cells of the body.

DRUG ABUSE -

- They are chemicals that can alter the state of mind and the activity of nervous system.
- They may / may not have clinical use.
- Usually observed that the body quickly develops a dependence on the drugs. Hence the person using it can easily become an addict.

DRUG TYPES

OPIOIDS

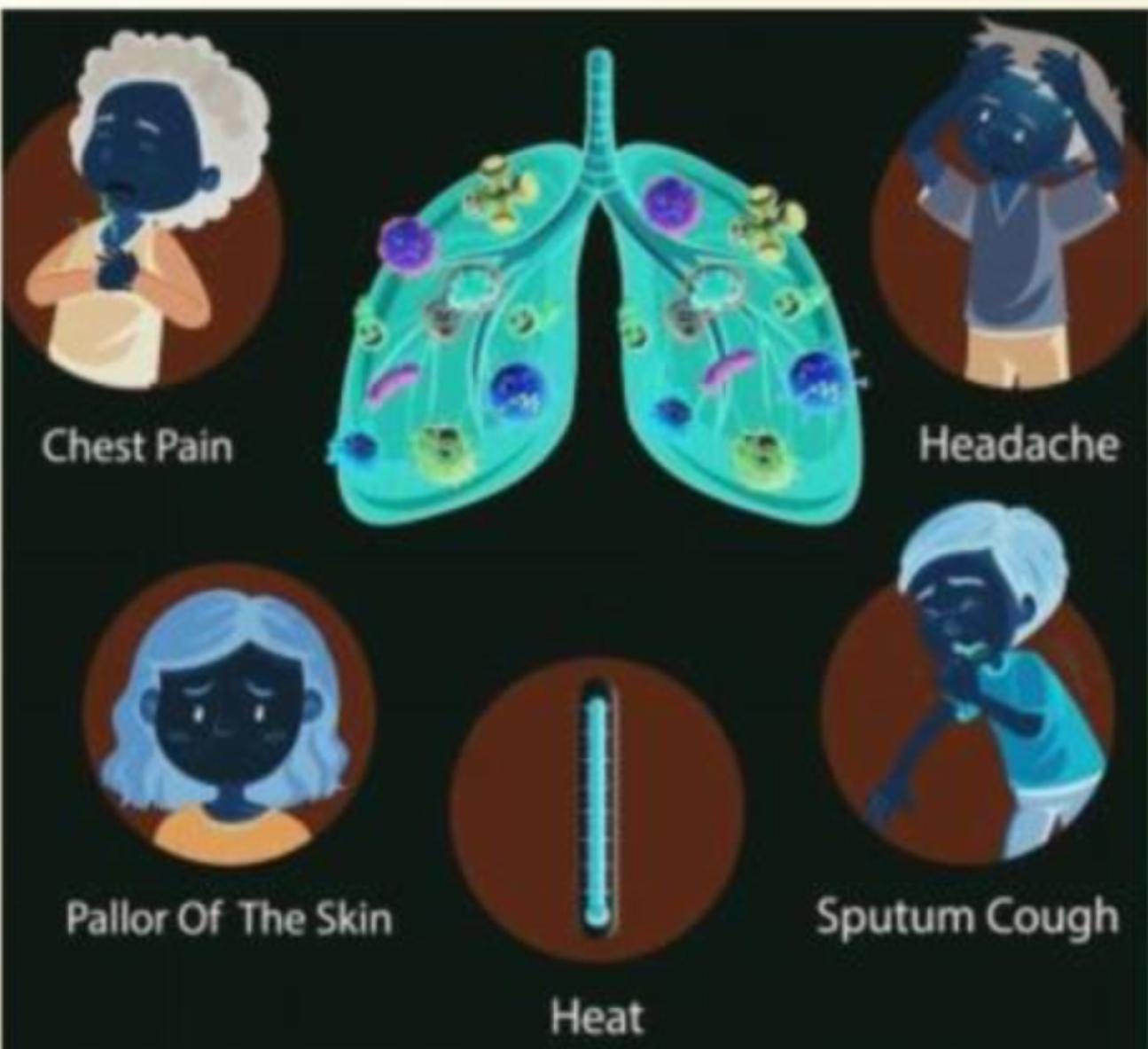
CANNABINOIDS

COCA
ALKALOIDS

b. Pneumonia: Pathogen is *Streptococcus pneumoniae* & *Haemophilus influenzae*.

It infects lung alveoli. The alveoli get filled with fluid leading to respiratory problems.

- Mode of transmission: Inhaling the droplets/aerosols released by an infected person. Sharing glasses and utensils with an infected person.
- Symptoms: Respiratory problems, fever, chills, cough, headache. In severe cases, lips and finger nails turn grey to bluish colour.



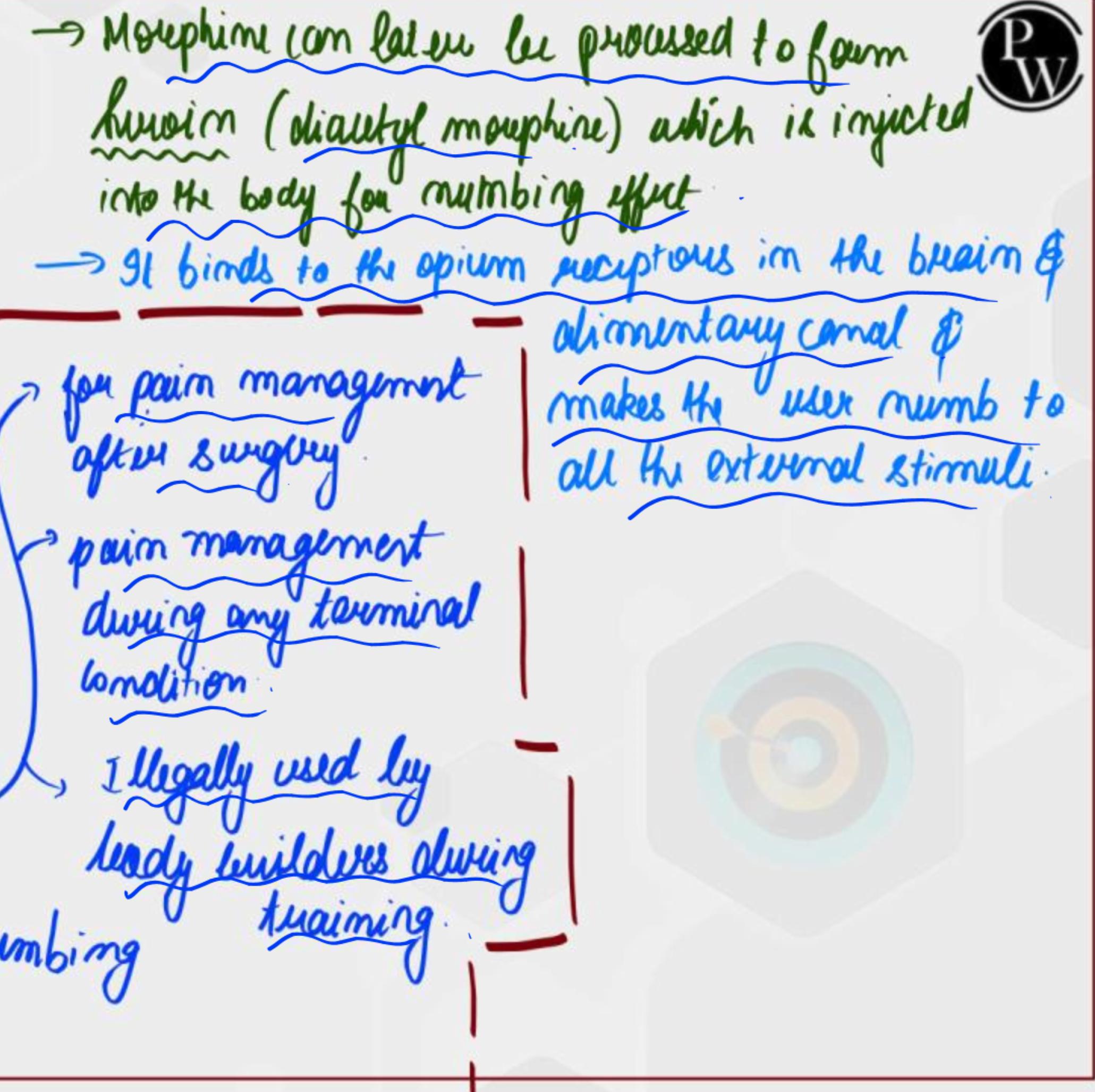
OPIOIDS

- ↳ They are depressant drugs (slow down the body activity)
- ↳ Isolated from opium poppy plant (शिखर)

↳ Papaver somniferum

- ↳ Primary drug → opium
- ↳ opium can later be processed to form morphine

↳ very strong painkiller & numbing agent.



CANNABINOIDS

→ It is halucinogen

↳ Isolated from the inflorescence of Cannabis sativa plant

↳ Commonly called Hemp

गिरि ओर गोड़ी

↳ Used to produce marijuana, hashish, (hash)

↳ Binds to the cannabinoid receptors in the brain & affects the cardiovascular activity

↳ They are generally ingested

• in the form of beverages, snacks & sweets

↳ They are also smoked for the effect

↳ Even the passive smokers may feel light headed after inhalation of smoke.

medical grade marijuana is used to slow down body movements during Parkinson's disease

In USA & Canada

↳ It is considered as a very strong gateway drug

Solve the DPP



VIDYAPEETH

WORK, POWER AND ENERGY

DPP-I

[Introduction, Definition of work, work done by constant force, Area under force-displacement curve]

Q. A particle moves from position $x_1 = 10 + 2t$ to position $x_2 = 10 + 12t + 9t^2$ under the action of force $4t + j + 2t^2 N$. The work done by this force will be
(A) 100 J
(B) 1000 J
(C) 10 J

DPP-II

10:00

Arjuna NEET Fastrack Course...

Description Classroom Test Announcements

Today's Classes

Dinesh Jot Sir

08:00 PM ONGOING Physics

Dinesh Jot Sir

08:00 PM Physics

5 stars

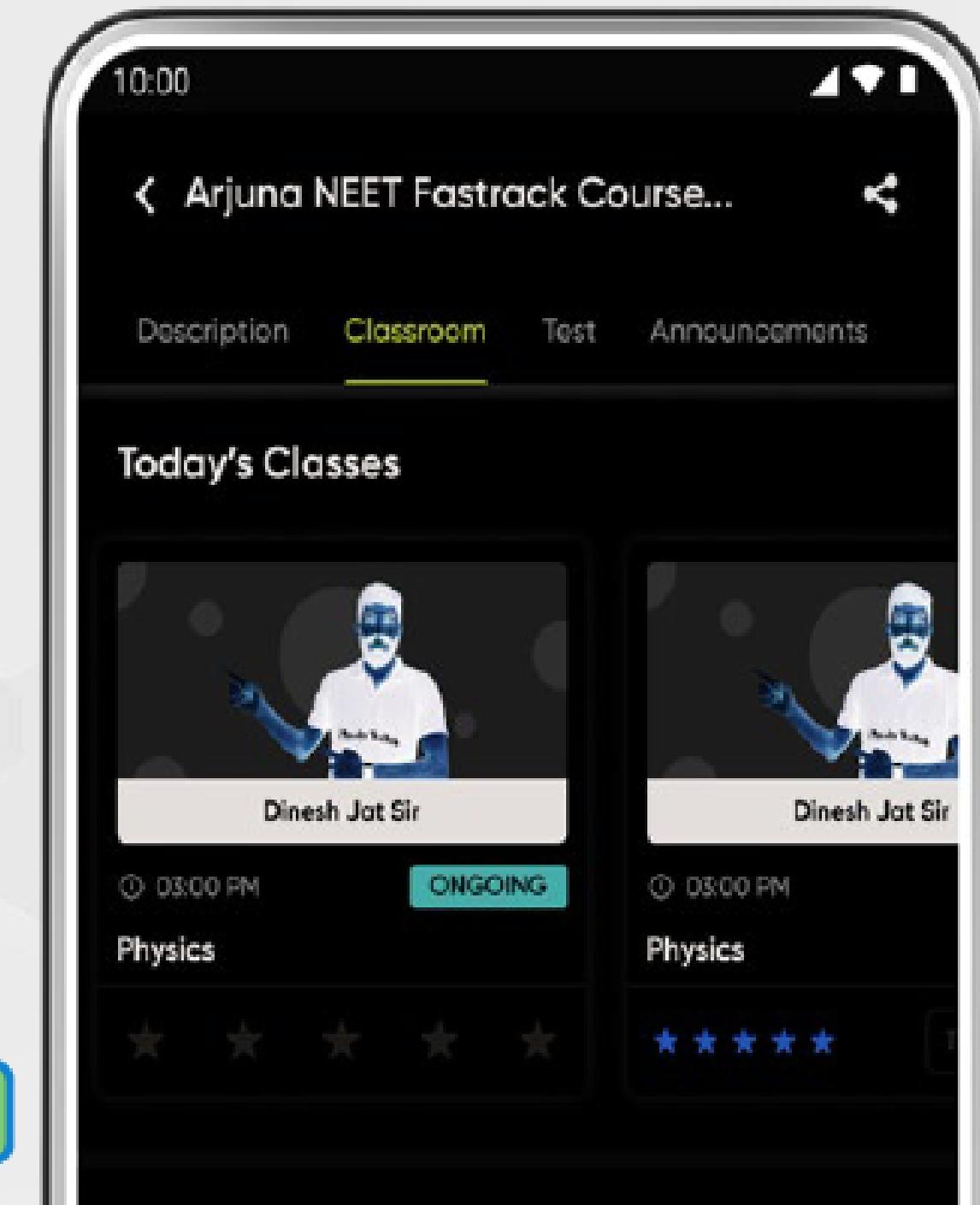


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VIDYAPEETH*

BATCH CODE - 29-YN201MA

- **Subject Name- Zoology**
- **Chapter Name- Human Health and Diseases**

Lecture No.- 09



By-Aditya Sir



Today's Targets



- 1 DRUGS
- 2 ALCOHOL
- 3 TOBACCO
- 4

OPIOIDS

- ↳ They are depressant drugs (slow down the body activity)
- ↳ Isolated from opium poppy plant (शिखर)

↳ Papaver somniferum

- ↳ Primary drug → opium
- ↳ Opium can later be processed to form morphine

↳ very strong painkiller & numbing agent.

→ Morphine can later be processed to form heroin (diacetylmorphine) which is injected into the body for numbing effect

→ GI binds to the opium receptors in the brain &

for pain management after surgery

pain management during any terminal condition

Illegally used by body builders during training.

alimentary canal & makes the user numb to all the external stimuli

CANNABINOID

↳ Isolated from the inflorescence of Cannabis sativa plant

↳ Commonly called Hemp

गिरि और गोदा

↳ Used to produce marijuana, charas, ganja

↳ Binds to the cannabinoid receptor in the brain & affects the cardiovascular activity.

→ It is hallucinogen

↳ They are generally ingested

• in the form of beverages, snacks & sweets

↳ They are also smoked for the effect

↳ Even the passive smokers may feel light headed after inhalation of smoke.

medical grade marijuana is used to slow down body movements during Parkinson's disease

In USA & Canada

↳ It is considered as a very strong gateway drug

→ COCA ALKALOID

- ↳ They are very strong stimulants
- ↳ Isolated from coca (native plant of South America)
- Affects the transport of dopamine in the brain leading to an over excited state.
- feeling of
 - alertness (\uparrow)
 - happiness & euphoria
 - excessive use may lead to hallucinations.

Primary drug → cocaine (Coke)

↓
cheaper street version
crack (it has severe side effects)

makes the user
mentally unstable

NEET
Beladona atropo
also called atatura is also
a hallucinogen.

ADDICTION & DEPENDENCE

- Drugs are mind altering substances
 - over activation of N.S
 - Slowing down the N.S
- Interferes with the natural chemical pathways of N.S
- They often provide a state of numbness or euphoria to the user.
- ultimately lead to a state where the brain demands the drugs again

- Now the user is addicted to the substance.
- There will be dependence of the user on this substance.



- When a person feels withdrawal symptoms if the substance is not available to him/her.
 - Irrational decisions.
 - Restlessness
 - Anxiety
 - Increased heart rate & palpitation.
 - Aggressive behaviour & highly irritable.
 - Chills & sometimes burning sensation.

ALCOHOL -

↳ Chemical formula = C_2H_5OH

↳ fermentation

↳ Types ——————→

↓

Soft

(fermented)
only

• Brew

• Limes

• Tandoi

• Champagne

Hand
(fermented, distilled
& aged)

- Whisky
- Fermy
- Rum
- Vodka
- Gin

Supresses the ability of brain
to lie but also makes it slow to react

↓
Used in social events & gathering

Side Effects -

↳ Affects the balance of body

↳ Slows down reflexes

↳ Depression

↳ May trigger violence

↳ Strong dependence

↳ Adversely affects the heart health

↳ Dehydrates the body

↳ Permanent damage to liver may
be caused

↳ may cause neuropathy, confusion,
lack of coordination

TOBACCO & SMOKING:

↳ Consumed (placed in the nostril)

↳ Smoking → Cigarettes

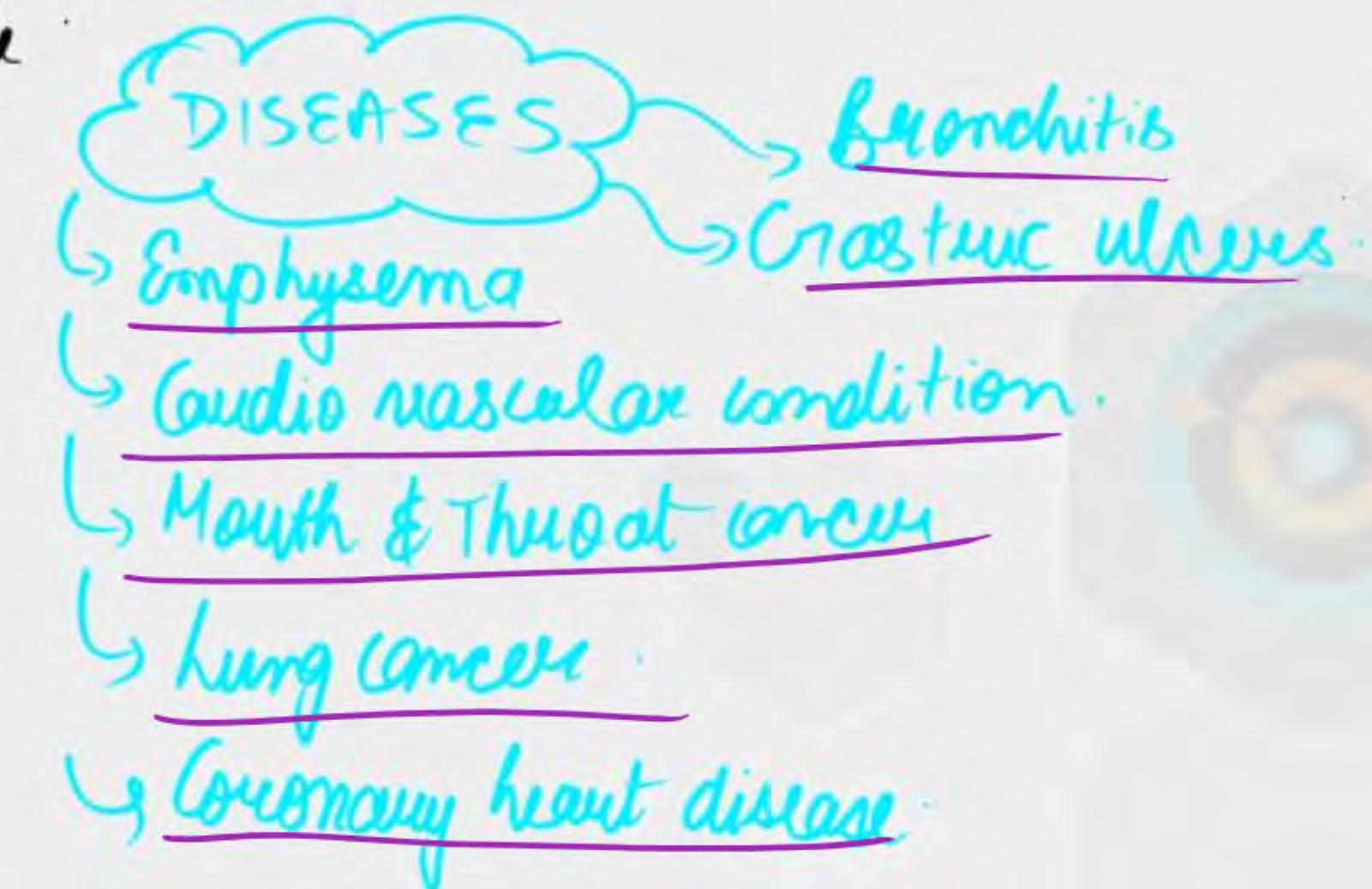
↳ Snuffing → Cigars

↳ Smelling → Pipes

↳ Blowing Bubble → Hubble Bubble

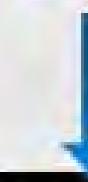
→ Active ingredient → NICOTINE

1 cigar has enough nicotine to kill a human if given via IV.





Solve the DPP



VIDYAPEETH

WORK, POWER AND ENERGY

DPP-1 (DPP-01)

[Introduction, Definition of work, work done by constant force, Area under force-displacement curve]

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