

INFECTIOUS DISEASES /

BACTERIA

Typhoid (*Salmonella typhi*)
Pneumonia (*Streptococcus pneumoniae*)

VIRUS

Common Cold (Rhinoviruses)

PROTOZOAN

Malaria (Plasmodium)
Amoebiasis (*Entamoeba histolytica*)

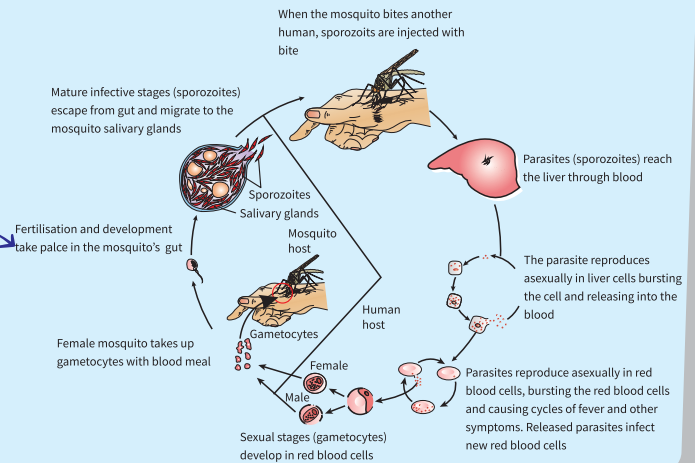
HELMINTH

Ascariasis (Ascaris)
Filariasis - *Wuchereria* (*W. bancrofti* & *W. malayi*)

FUNGAL

Ring Worms (*Microsporum*,
Trichophyton & *Epidermophyton*)

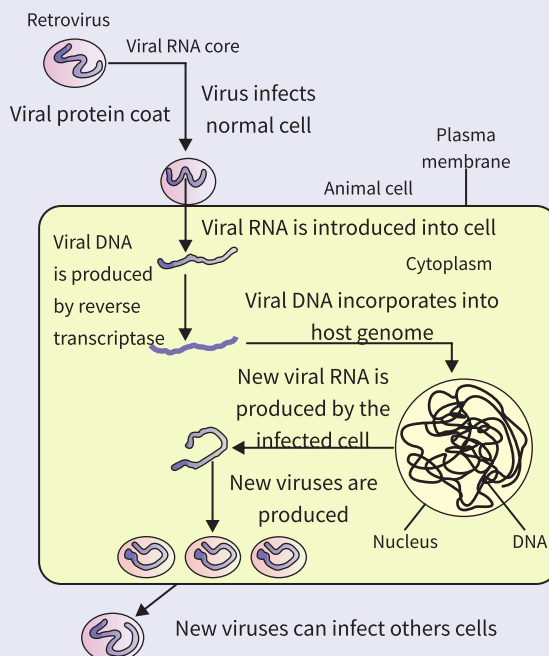
Stages in the life cycle of Plasmodium



7. HUMAN HEALTH AND DISEASE

ACQUIRED IMMUNO-DEFICIENCY SYNDROME (AIDS) /

Cause	HIV(Human immuno deficiency Virus)
Transmission	+ Sexual contact with affected person. + Transfusion of contaminated blood, etc
Diagnosis	ELISA (Enzyme – linked Immunosorbent Assay)
Treatment	Anti – viral drugs to prolong the life
Prevention	+ Educating people about AIDS + Advocating safe use, etc



Treatment of Disease /

The advancements in biological science have armed us to effectively deal with many infectious diseases. Vaccines and immunisation programmes have enabled us to completely eradicate a deadly disease like smallpox. A large number of other infectious diseases like polio, diphtheria, pneumonia and tetanus have been controlled to a large extent by the use of vaccines. Discovery of antibiotics and various other drugs has also enabled us to effectively treat infectious diseases.

CANCER /

Cause - Carcinogens

- + **Physical agents:** Ionizing radiation
- + **Chemical agent:** Tobacco smoke, nicotine, caffeine, etc
- + **Biological agents:** Oncogenic Virus, etc.

Types

- (i) Benign tumors
- (ii) Malignant tumors

Diagnosis

- + Histopathological studies
- + Radiography, (CT scan, MRI)
- + Using specific antibodies

Treatment

- + Radiography
- + Chemotherapy
- + Immunotherapy

IMMUNE SYSTEM

INNATE

Physical Barrier Cellular Barrier Physiological Barrier Cytokine Barrier

LYMPHOID ORGANS

PRIMARY

- + Bone Marrow
- + Thymus

SECONDARY

- + Spleen
- + Lymph Nodes
- + Mucosal Associated Lymphoid Tissue (MALT)

ACQUIRED

ACTIVE

Natural

Exposure to antigen

Artificial

Immunization

Active

Vaccination
eg: Polio Vaccine

Passive

Direct Injection of pre-formed antibody
eg: Snake venom

PASSIVE

Natural

Maternal antibodies

Artificial

Anti-Tetanus Serum (ATS)

Immunity Response

- + B-lymphocytes (B – Cells)
- + T – lymphocytes (T – cells)

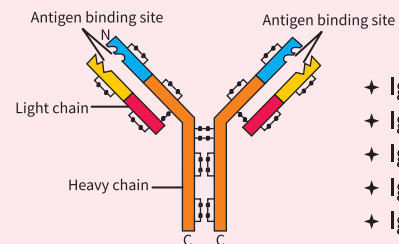
AUTO - IMMUNITY

- + In higher vertebrates body attacks self – cells.
- + Eg: Rheumatoid arthritis

Acquired Immunity Response

- + Humoral Immune Response / Antibody Mediated Immunity (AMI)
- + Cell – Mediated Response/ Cell – Mediated Immunity (CMI)

ANTIBODY



- + Ig G
- + Ig A
- + Ig M
- + Ig E
- + Ig D

ALLERGY

Response of Immune system against certain antigens by producing antibody IgE type.

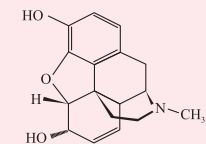
Symptoms: Sneezing, watery eyes, breathing problems, etc.

Treatment: Drugs like antihistamine adrenaline, etc.

SMOKING

- + Tobacco is smoked or chewed
- + Contain nicotine (alkaloid)
- + **Causes**
 - High BP and Heart rate
 - Cancer
 - Increases CO in blood & reduces Oxyhaemoglobin
 - **Emphysema**

DRUGS

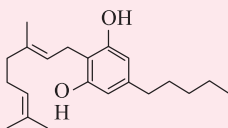


structure of morphine



Opium poppy
(*Papaver somniferum*)

Opioids bind to specific opioid receptors present in central nervous system and gastrointestinal tract.



Cannabinoid molecule



Cannabis sativa

Cannabinoids (group of chemicals) interact with cannabinoid receptors present in the brain. Obtained from the inflorescences, *Cannabis sativa*



Datura

Coca alkaloid or cocaine is obtained from plant *Erythroxylum coca*, native to South America. Excessive dosage causes hallucinations. Other hallucinogens are *Atropa belladonna* and *Datura*.

ALCOHOL ABUSE

Cause

Addiction & Dependency

Effect

- + Reckless behaviour, Violence, etc.
- + Respiratory. Heart failure etc.
- + Damaged nervous system

Side Effect

- In males
- + Reduced testicles
 - + Enlargement of prostate gland
- In females
- + Abnormal menstrual cycle.
 - + Enlargement of clitoris.

Prevention

- + Avoid peer pressure
- + Education and Counselling
- + Professional and medical help