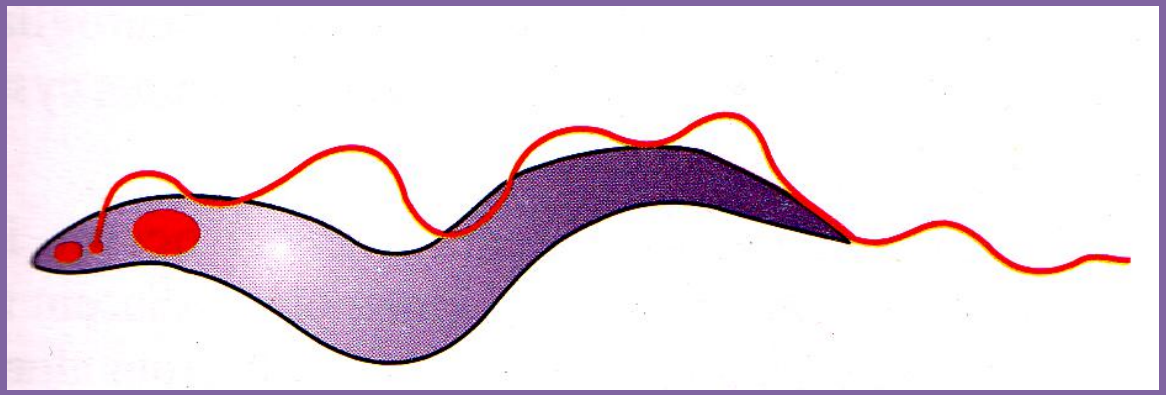
GENERAL PARASITOLOGY



PATHOLOGY DEPARTMENT

PARASITOLOGY is a branch of biology which deals with the phenomenon of dependence of one living organism on another.

MEDICAL PARASITOLOGY deals with parasites which infect man , the disease they produce , the response generated against them and various methods of diagnosis and prevention.

PARASITE

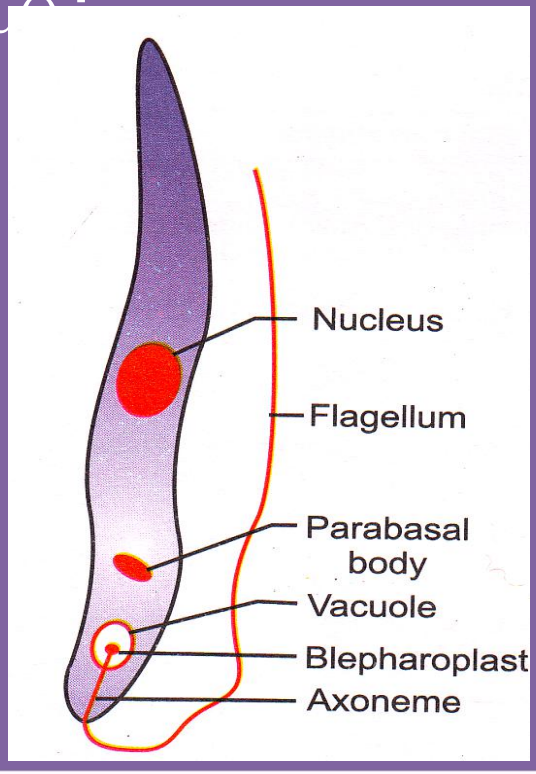
"A parasite is an organism that is entirely dependent on an other organism, referred to as its host "

Microparasite e.g.. virus, bacteria & protozoa.

Macroparasite e.g.. helminths .

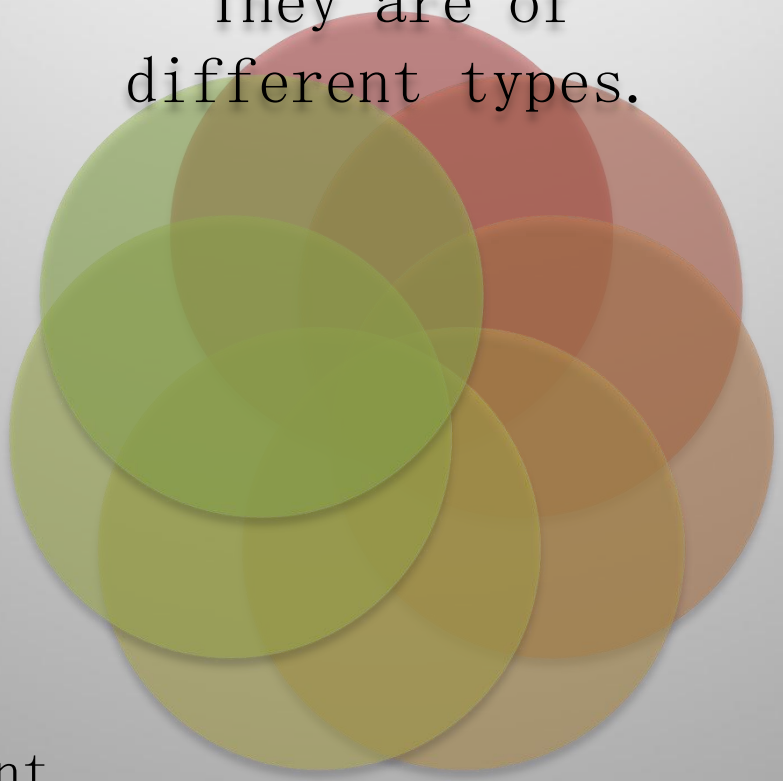
PARASITE (continued)

- On the basis of location of parasite they are divided into:
  - Ecto parasite
  - Endo parasite



parasites

They are of different types.



1) Obligate parasite

2) Facultative parasites

3) Free living parasites

4) Aberrant parasites /wandering parasites

5) Accidental parasites

Host

It is defined as "*an organism which harbours the parasite and provides the nourishment and shelter to the parasite*".

1. Definitive host
2. Intermediate host
3. Paratenic host
4. Reservoir host

ZOONOSIS

"This term is used to describe an animal infection that is naturally transmissible to human either directly or indirectly via a vector".

VECTOR

A vector is an agent that transmits an infection

from one human host to another.

HOST- PARASITE RELATIONSHIPS

1. SYMBIOSIS

2. COMMENSALISM

3. PARASITISM

SOURCES OF INFECTION

1. Contaminated Soil & Water
2. Freshwater fishes
3. Crab & Crayfishes
4. Raw or undercooked Pork
5. Raw or undercooked Beef

SOURCES OF INFECTION

6. Watercress
7. Blood - sucking insects
8. Housefly
9. Dog
10. Cat
11. Man
12. Autoinfection

SCHEME FOLLOWED IN PARASITOLOGICAL STUDIES

- Following steps are followed in parasitological studies,

1. History of discovery of parasite.
2. Geographical distribution.
3. Habitat inside the human host.
4. Morphology & life cycle of parasite.
5. Mode of infection ;
   - Reservoir host
   - Sources of infection
   - Portal of entry ****
   - Vehicle of transmission

SCHEME FOLLOWED IN PARASITOLOGICAL STUDIES

(continued)

6. Pathogenicity ;

Parasite may cause damage to its host like this,

- ✓ Traumatic damage.
- ✓ Lytic necrosis.
- ✓ Competition for specific nutrients.
- ✓ Inflammatory reaction.
- ✓ Allergic manifestation.
- ✓ Neoplasia.
- ✓ Secondary infection.

SCHEME FOLLOWED IN PARASITOLOGICAL STUDIES

7. Clinical manifestations.
8. Methods for specific diagnosis.
9. Approved therapy for eradication of parasitic infection .
10. Prophylactic measures for prevention of the individual as well as of the community.

METHODS FOR DIAGNOSIS

- Demonstration of parasite
- Immunodiagnosis
- Molecular biological methods

- Blood
- Stool
- Urine
- Genital specimen
- CSF
- Sputum
- Tissue biopsy
- Culture
- Animal inoculation

- Immunodiagnosis
  - Skin test
  - Serological test

- Molecular biological methods
  - DNA probe
    - PCR

A HUMAN EMBRYO

OR

FOETUS IS NOT A PARASITE

WHY?

INTRODUCTION TO PROTOZOA

INTRODUCTION TO PROTOZOA

- **Protozoa are,**
  - Uni- cellular eukaryotic cell.
  - They may possess pseudopodia , cilia , or flagella as organelles of locomotion.
  - They have short generation time , high rate of reproduction .
  - Man harbours > 50 species .
  - Some are non pathogenic and some cause major diseases.

CLASSIFICATION OF PROTOZOA

Table 2.1. Classification of protozoa

Phylum	Subphylum	Superclass	Class	Order	Genus
Sarcomastigophora	Mastigophora		Kinetoplastidea	Trypanosomatida	*Leishmania*
					Trypanosoma
				Retortamonadida	*Retortamonas*
					Chilomastix
				Enteromonadida	*Enteromonas*
				Diplomonadida	*Giardia*
				Trichomonadida	*Trichomonas*
					Dientamoeba
	Sarcodina	Rhizopoda	Lobosea	Euamoebida	*Entamoeba*
					Endolimax
					Iodamoeba
				Amoebida	*Acanthamoeba*
					Balamuthia
				Schizopyrenida	*Naegleria*
Apicomplexa			Coccidea	Eimeriida	*Cryptosporidium*
					Cyclospora
					Isospora
					Sarcocystis
					Toxoplasma
			Haematozoea	Haemosporida	*Plasmodium*
				Piroplasmida	*Babesia*
Ciliophora			Litostomatea	Vestibuliferida	*Balantidium*
Microspora				Microsporida	*Encephalitozoon*
					Enterocytozoon
					Pleistophora
					Trachipleistophora
					Vittaforma
					Nosema
					Microsporidium

AMOEBA

Phylum
Sarcomastigophora .

Sub phylum
Sarcodina .

Super class
Rhzopoda .

Class - Lobosea .

Order Euamoebida ,
Amoebida , Schizopyrenida .

AMOEBA (continued)

- Six species of amoeba are found in human mouth and intestine .
  - Entamoeba histolytica (amoebiasis) pathogenic
  - E. hartmanni .
  - E. coli .
  - E. gingivalis .
  - Endolimax nana

Non pathogenic

ENTAMOEBA HISTOLYTICA

(parasite causing diarrhoea, dysentry & liver abscess)

Alexander witch was the first who described the infection with E. histolytica.

He injected amoebae in dog by rectal injection and latter on dog died because of ulcers in colon.

Paitent who died from infection showed ulcers in colon on autopsy.

ENTAMOEBA HISTOLYTICA

- Geographical Distribution;

  It is world wide, but more common in tropical & sub tropical countries .

- Habitat ;

  Trophozoites of E. histolytica reside in mucosa & sub mucosa of large intestine of man .

ENTAMOEBA HISTOLYTICA

- Morphology

  The parasite exist in three forms ;

  - Trophozoite
  - Precyst
  - Cyst