

12. To identify common disease causing organisms like *Plasmodium*, *Entamoeba*, *Ascaris* and Ringworm with the help of permanent slides and or specimens. Comment on symptoms of diseases that they cause.

Date: / /

Plasmodium (Disease-Malaria):

1. *Plasmodium vivax* is an intracellular, blood parasite in human and other vertebrates which causes malaria.
2. The life history of *Plasmodium* is completed in two hosts, partly in definitive host, the man and partly in an intermediate host, the female *Anopheles* mosquito.
3. When an infected female anopheles mosquito bites a man, sporozoites are introduced in the blood stream from where they reach in liver cells and multiply to form merozoite.
4. After a few cycles in the liver, the merozoite enters the RBC and feed on the contents of the RBC.
5. After 2-8 schizogenous changes in the main blood stream, the merozoite assumes different shape and known as gametocyte.
6. Gametocyte cannot develop further in the blood of human therefore they wait for female anopheles mosquito to suck them with the blood.
7. When the gametocytes are sucked in by the female *Anopheles* mosquito they further undergo development.

Symptoms :

1. Symptoms of malaria include fever, shivering, caused by release of haemogoin arthralgia (joint pain), vomiting, anaemia (caused by hemolysis), hemoglobinuria, retinal damage and convulsions.
2. The classic symptom of malaria is cyclical occurrence of sudden coldness followed by rigor and then fever, sweating, lasting for four to six hours, occurring at of 48 hrs or every two days.

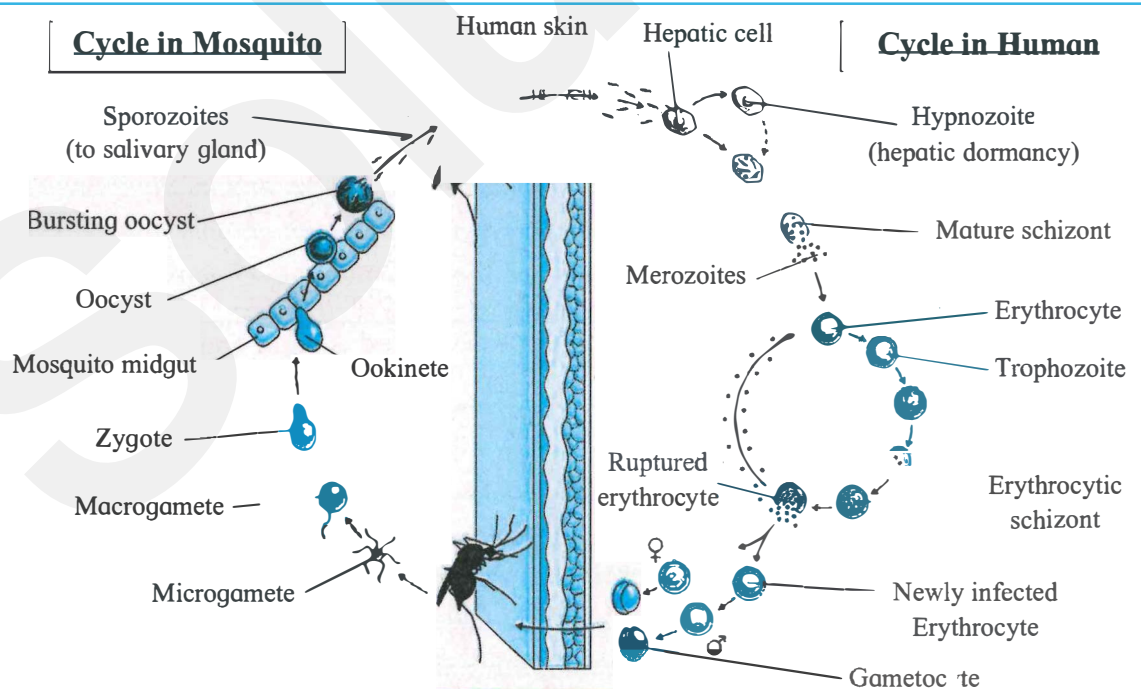


Fig. 10.1 : Stages in the life cycle of *Plasmodium* in mosquito and human

***Entamoeba histolytica* (Disease - Amoebiasis):**

Entamoeba histolytica is a parasite in the large intestine of man. It occurs in three stages

i) Trophozoite ii) Pre-cystic stage and iii) Cystic stage

1. Disease is caused by the trophozoite form.
2. Cytoplasm is differentiated into ectoplasm and endoplasm
3. Ectoplasm forms pseudopodium.
4. Reproduction by binary fission and encystment.

Symptoms :

1. *Entamoeba histolytica* causes amoebiasis in man. Trophozoite lives in mucosa and submucosa layer of large intestine of man.
2. It causes amoebic dysentery, abscess in liver, lungs and brain.
3. The common symptoms are the passing out of stool with blood and mucous.
4. Abdominal pains, nausea and bowel irregularity are common symptoms.

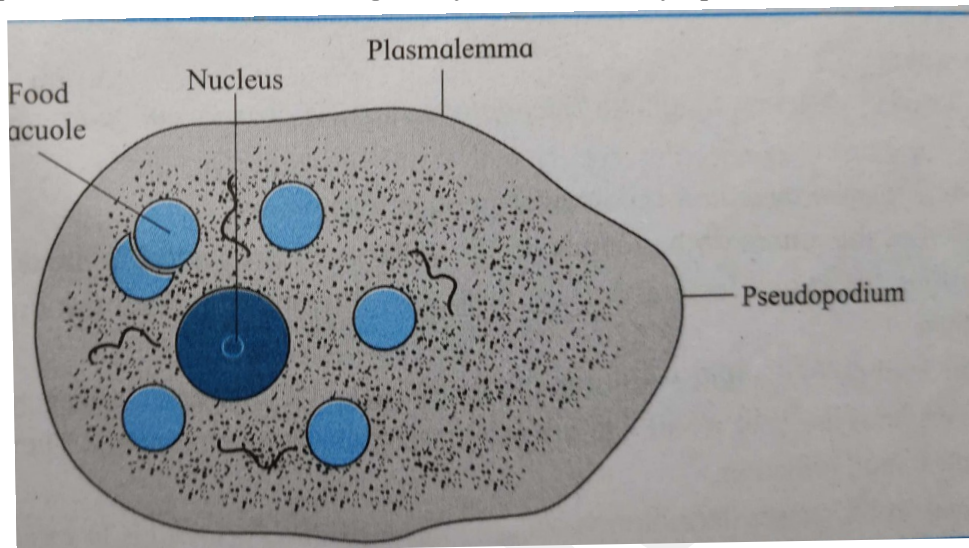


Fig. 10.2 : *Entamoeba histolytica*

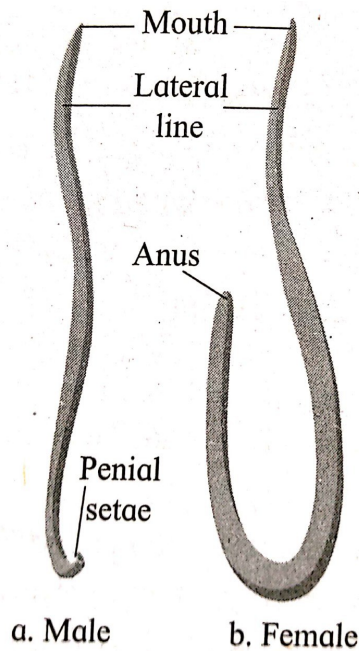
***Ascaris* (Disease - Ascariasis) :**

Ascaris lumbricoides, also known as the giant intestinal roundworm, is one of the several soil-transmitted nematodes that are infectious to humans.

1. Body is elongated, cylindrical in shape, creamy white or pinkish in colour.
2. Sexes are separate and sexual dimorphism is well marked.
3. Male is about 15-31 cm in length, slender and shows penial setae. Posterior end is curved. Female is about average 20-35 cm in length, posterior end is blunt and straight.
4. Body is covered with cuticle.

Symptoms :

1. The disease caused by *Ascaris* is called **ascariasis**.
2. The common symptom is vague abdominal pain.
3. In more severe cases, the patient may experience restlessness, weight loss, anorexia, distended abdomen, intermittent loose stool and occasional vomiting.
4. During the pulmonary stage, there may be a brief period of whooping cough, dyspnea and sub-sternal discomfort. Most symptoms are due to the physical presence of the worm.



Ring worm :

It is caused by different fungi like *Trichophyton* spp, *Microsporum audouinii* and *Epidermophyton* etc.

1. *Microsporum audouinii* is commonly called ring worm.
2. The fine mycelium of the fungus occurs in between the breaks in the dermis.
3. It infects hair and feed on keratin, where hyphae emerge from the sheath and grow up and down.
4. The hyphae in the hair put out to the surface, fine filaments on which spores are born.
5. The spores are very small and are produced in enormous numbers. They are readily detached and spread infection.
6. Ring worm causes dermatomycosis.

Symptoms of ringworm disease :

1. Red ring patches of vesicles on the skin.
2. Intense itching and scaly skin b sclap.

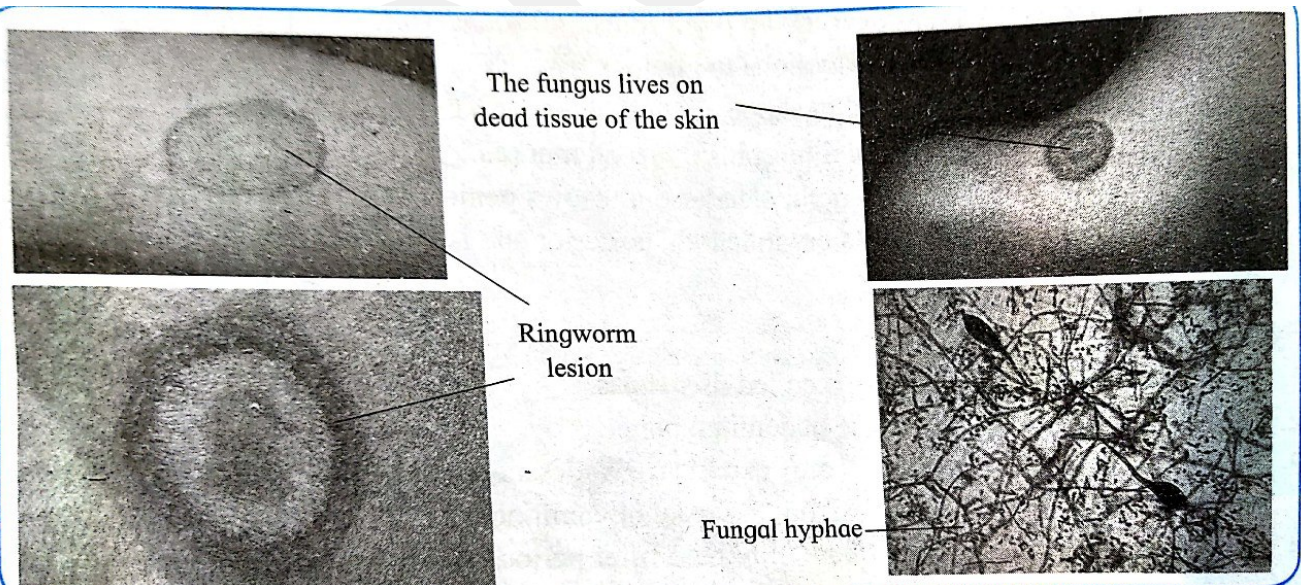
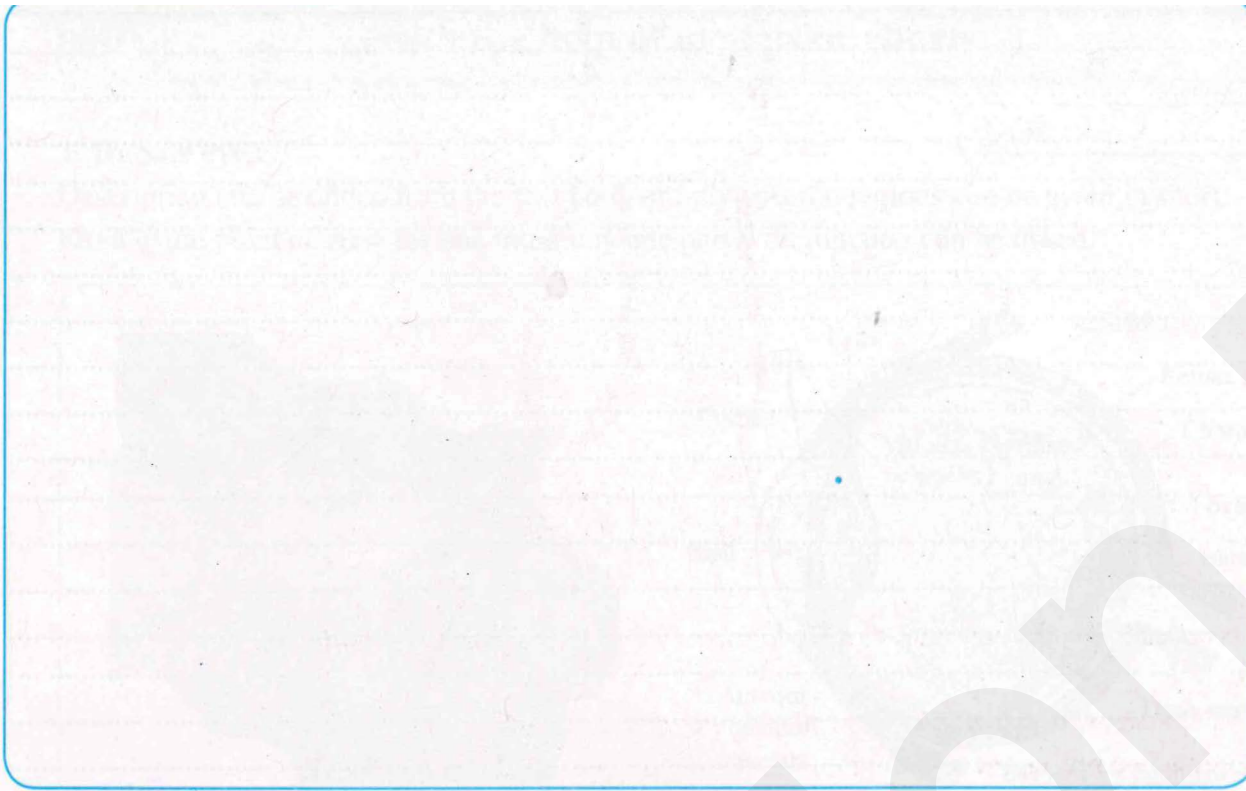


Fig. 10.4 : Ring worm (*Microsporum audouinii*)



Questions

1. Which one is infectious stage of *Plasmodium* for human host ?

The parasite enters the vertebrate host with a vector bite. This life stage is known as sporozoite.

2. Enlist atleast two names of ringworm causing organisms.

The organism causing ringworms in humans are Microsporum/ Trichophyton and Epidermophyton.

3. Give names of any three endoparasitic animals.

Tapeworm

Filariasis

Ascariasis (roundworms)

Dracunculus medinensis (Guinea worm)

4. What is the difference between pathogen and parasite ?

Pathogen is an organism that causes diseases to the host after infection

Parasite is an organism that lives on or in another organism of another species. It usually derives nutrients at the expense of its host

Pathogen

Pathogens usually kill their host through diseases

Pathogens typically do not require a host to complete its life cycle.

Pathogenicity is the ability of an organism to infect another organism (host)

Parasite

Most parasites do not kill their host but do cause some damage

Parasites will have depend on its host to complete its life cycle

Parasitism can be considered as a kind of symbiotism