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**اسم المادة باللغة العربية: الطفيليات الطبية**

**اسم المادة باللغة الإنكليزية: Medical Parasitology**

**اسم المحاضرة الأولى باللغة العربية: مقدمة عن البروتوزوا**

**اسم المحاضرة الأولى باللغة الإنكليزية: Introduction to Protozoa& definitions**

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# Introduction to Medical Parasitology

# Medical Parasitology

- Medical Parasitology: the branch of medical sciences that deals with parasites that cause or transmit disease to man.

- Parasites: organisms that live in or on a host (temporarily or permanently) deriving food and shelter and causing harm to that host.

- Host :is an organism that serves as a source of food and habitat to a parasite.

# Host-Parasite relationships

**The process by which a host interacts with and responds to parasites that it encounters**

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# Host-Parasite relationships

- **Symbiosis:** "Any two organisms living in close association, commonly one living in or on the body of the other, are symbiotic, as contrasted with free living."

- **Commensalism**: One partner benefits but the other is not hurt.
- **Mutualism:** Both partners benefit.
- **Parasitism:** One partner (the parasite) harms or lives on the expense of the other (host).

# Parasitism

- **Facultative parasitism:** When an organism can live free or establishes a parasitic existence depending on a host like acanthamoeba .

- **Obligatory parasitism:** When an organism establishes a permanent parasitic existence and is completely dependent on the host like toxoplasma gondii .

- **Accidental parasitism:** occasionally an organism parasitizes a species other than its usual host like Hymenolepis diminuta.

# Types of Parasites

- **Endoparasites:** live within the host causing infection like toxoplasma gondii .
- **Ectoparasites:** live on the external surface of the host causing infestation like lice .

- **Temporary parasite:** only visits the host to get its meal like bedbugs .
- **Permanent parasite:** always fixed to the host like Ascaris lumbricoides

# Types of Hosts

- **Definitive host:** in which the adult or sexually reproducing form of the parasite lives.

- **Intermediate host:** in which the parasite lives during its larval stage or asexually reproducing form.

- **Reservoir host:** an animal harboring the same stage of the parasite like in human. Reservoir hosts represent a potential source of infection to man.

- **Vector** "usually an arthropod": transmits parasites (or other pathogens) from infected organisms to other hosts.

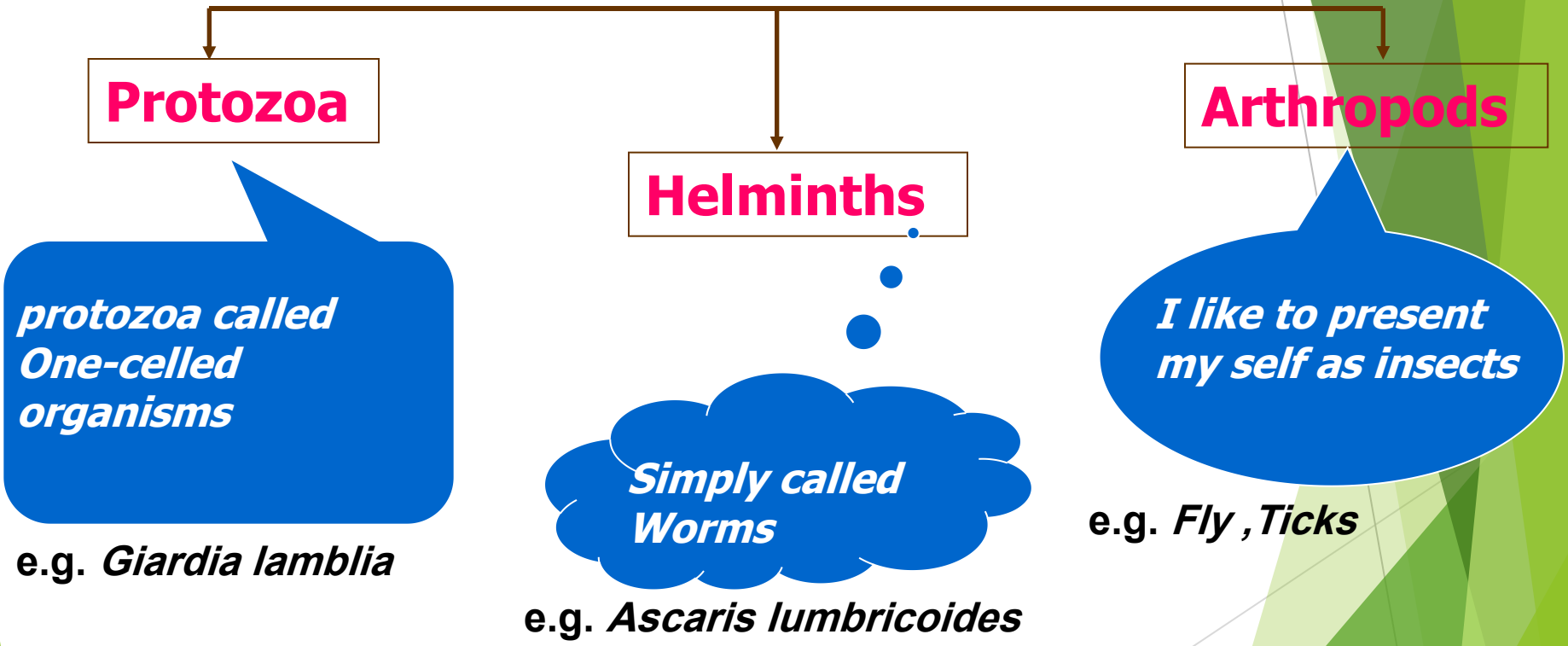
# Sources of parasitic infections

- Water
- Soil
- Raw vegetables & fruits
- Animals
- Fish
- Vector [Arthropods]
- Blood

# Modes of infection

- Ingestion
- Inhalation
- Penetration of skin
- Bite of vector
- Blood transfusion
- Sexual transmission
- Trans-mamary

# Medical Parasitology includes the study of 3 major groups of parasites:



# Modes of Transmission

**The infective stages of various parasites may be transmitted from one host to another in the following ways:**

**1-Oral or feco - oral route: It is the most common mode of transmission of the parasites. Infection is transmitted orally by ingestion of food , water or vegetables contaminated with feces containing the infective stages of the parasite. (e.g., cysts of E. histolytica).**

**2-Penetration of the skin:** like schistosoma .

**3-Inhalation of Airborne eggs:** like enterobius vermicularis

**4-Sexual contact:** like Trichomonas vaginalis .

**5-Bite of Arthropod vectors:** malaria ,filaria.

**6-Congenital Transmission:** Mother to fetus transmission is important for few parasitic infections (transplacental) like *Toxoplasma gondii* .

**7-Blood-borne Transmission:** *like Malaria* .

**8-Autoinfection:**Few intestinal parasites may be transmitted to the same person by contaminated hand like enterobius vermicularis .

# Laboratory diagnosis

# Stool Examination :

- Macroscopic Examination: for consistency ,color , blood ,mucus .
- Stool Used mainly to diagnosis intestinal parasitic infections and helminthic infections of the biliary tract example E.histolytica, G.lamblia, B.coli and Ascaris lumbricoides.
- saline preparation: place adrop of saline on a clean slide ,place a small piece of stool on the slide and mix with saline then cover with a cover slip and examine under 10x and 40x objective lenses .
- Cyst and ova in iodine preparation :drop of iodine stain can be used to examine the nuclei of cysts .
- Stained slide preparation: used for confirmation of species , stain used ex Giemsa ,iron hematoxylin , iodine stain ,specimen should be fixed before staining ,Apply two or three drops pf specimen to the slide and spread and cover with a cover slip .

- Fixation of stool can be done by 10% formalin or PVA (polyvinyl-alcohol) which is the best preservative for diagnosis of parasitic infections , after staining examine under the microscope by using 100x oil lens.
- Urine: the principal parasitological finding in the urine is that of the eggs of *schistosoma haematobium*. *Trichomonas vaginalis* may be detected.
- Blood: blood smear is used to look for parasites that are found in the blood under a microscope such as malaria,filariasis done by placing a drop of blood on a microscope slide then stained and examined.
- Buffy coat preparation like *trypanosoma, leishmania donovani*.

- Culture: Some parasites can be culture now like E. histolytica, Leishmania sp. Balantidim coli, schistosoma .
- Sputum: eggs of paragonimus , larvae of ascaris, hydatid cyst and entamoeba gangivalis. These parasite are suspected in sputum sample.
- Animal inoculation: a few important parasitic disease can be diagnosed by this method like Leishmania donovani .
- Serological diagnosis: this test detect antibodies or antigens in patient serum and other clinical specimens.

- Molecular techniques: various tests methods used are PCR,DNA probe. Molecular tests have been developed to increase the sensitivity and specificity of diagnosis .
- X-ray, Magnetic Resonance Imaging(MRI),Computerized Tomography (CT) scan .

These tests are used to look for some parasitic diseases that may cause lesions in the organs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