

## Lab(1)

### Introduction

**Parasitology** : is the study of relationships between parasites and their host , all parasitic organisms are eukaryotes .

**Parasites** : are living organisms, which depend on a living host for their nourishment and survival .parasites can be classified as: (**Ectoparasite** inhabit only the body surface of the host without penetrating the tissue e.g. lice, ticks ,) or (**Endoparasite** which lives within the body of the host e.g. malaria, giardia ). parasites may be simple unicellular protozoa or complex multicellular metazoa.

**Host** : an organism, which harbors the parasite and provides nourishment and is relatively larger than the parasite .

**Definitive host**: the organism in which the adult or sexually mature stage of the parasite lives.

**Intermediate host** : the organism in which the parasite lives during a period of its development only.

**Vector**: a living carrier that transports a pathogenic organism from an infected to non infected host (e.g. the female *Anopheles* mosquito that transmits malaria)

### **Host – parasite relationships :**

-**Symbiosis**: both host and parasite are dependent upon each other, none of them suffers any harm from the association .

-**Commensalism**: only the parasite derives benefit from association without causing any injury to the host .

-**parasitism**: the parasite derives benefites and the host is always harmed due to the association.

### **Transmission of parasites:**

- 1-Food or water contamination (Round worm, *Amoeba*, *Giardia*).
- 2-Vectors (Sand fly *Leishmaniasis*, *Tse tse* fly *Trypanosomiasis*).
- 3-Sexual contact (*Trichomonas*).
- 4-Inhalation of contaminated dust or air (*Pinworm*, *Toxoplasma gondii*).
- 5-Skin penetration (Hook worms, *Schistosomes*, *Strongyloides*).

### **Parasitic damage to host:**

- 1-Trauma (damage to tissues , intestine, liver, eye).
- 2-Lytic action (activity of enzymes elaborated by organism).
- 3-Tissue response (localized inflammation , eosinophilia).
- 4-Blood loss (heavy infection with hookworm may cause anemia).
- 5-Secondary infections (weakened host susceptible to bacterial infection).

### **Types of specimens which can be examined for diagnosis of parasites:**

#### **1-Natural secretions:**

- stool (*Entamoeba histolytica* ),
- sputum (*paragoniumuswestermani* ),
- urin (*Schistosoma heamatobium*).

**2-Blood:** ( *Plasmodium spp.*).

**3-Vaginal secretions:** (*Trichomonas vaginalis*).

**4-Biopsy of liver or spleen:** ( *Leishmania donovani* ).

## Detection of parasites :

1-Clinical diagnosis: depends on symptoms

2-Laboratory diagnosis :

a. Microscopic examination

- wet preparation
- perception
- flotation

b. Serological exam

c. Animal inoculation

d. Intra-dermal sensitivity exam

e. Culture method

f. Tap technique

g. X-ray technique