



General biology 2
2nd stage

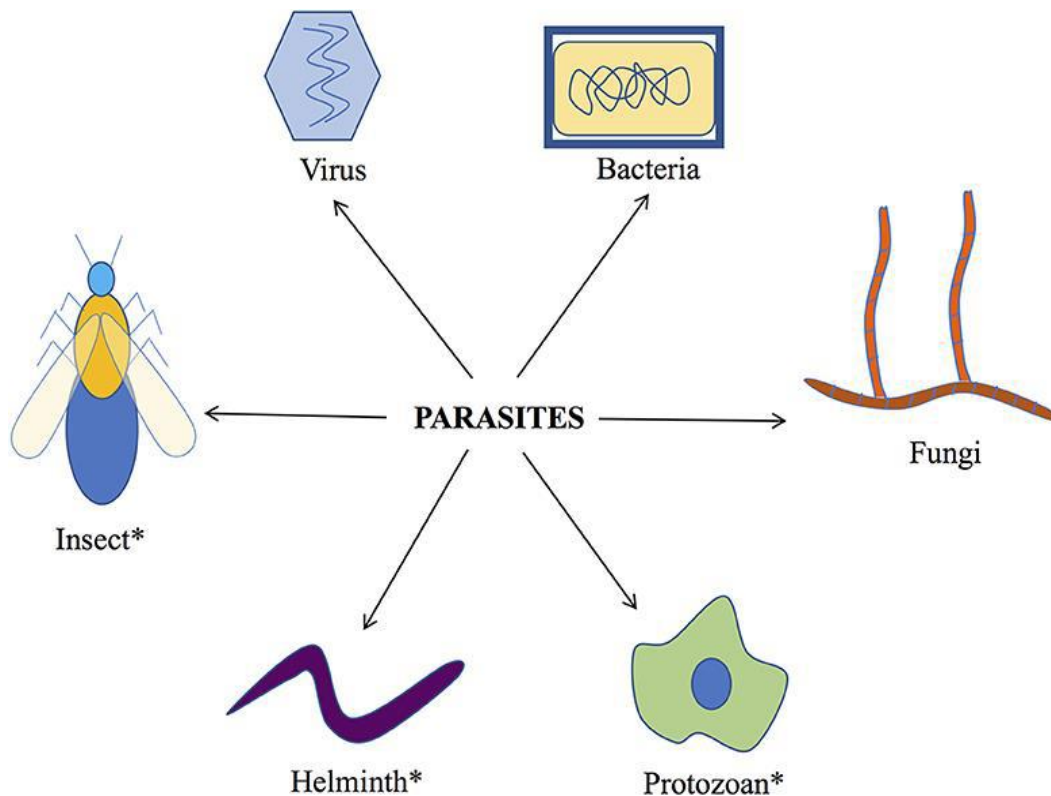
Parasites

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Parasites:

What are parasites?

Parasites are organisms that live in, on or with another organism (host). They feed, grow or multiply in a way that harms their host. However, they need their host for their survival. For this reason, they rarely kill their host, but they often carry diseases that can be life-threatening. The term "parasite" is usually applied to Protozoa (unicellular organisms) and Helminthes (multicellular organisms).



Parasitology: It is a science that deals with parasites.

Medical parasitology: deals with the parasites, which cause human infections and the diseases they produce.

History of parasitology :

The pioneer Dutch microscopist, Antonie van Leeuwenhoek of Holland

in 1681, first introduced single lens microscope and observed Giardia in his own stools.

- Louis Pasteur in 1870, first published scientific study on a protozoa(disease leading to its control and prevention during investigation of an epidemic silk worm disease in South Europe.

A seminal discovery was made in 1878 by Patrick Manson about the role of mosquitoes in filariasis. This was the first evidence of vector transmission.

- Then, Laveran in Algeria discovered the malarial parasite (1880). At that time the

theory of spontaneous generation developed which says: that the organisms generated from

nothing, and they believed that sterilization (using boiling water kill microorganisms), then

they proved that microorganisms generate from organisms.

- By mid 20th century, with dramatic advances in antibiotics and chemotherapy, insecticides and antiparasitic drugs, and improved lifestyles, all infectious diseases seemed able to control

Parasites can also be classified as:

1-Ectoparasite

Ectoparasites inhabit only the body surface of the host without penetrating the tissue. Lice, ticks and mites are examples of ectoparasites.

2-Endoparasite

A parasite, which lives within the body of the host and is said to cause an infection is called an endoparasite. Most of the protozoan and helminthic parasites causing human disease are endoparasites.

3-Free-living parasite

It refers to nonparasitic stages of active existence,

4-Obligate parasite

The parasite, which cannot exist without a host, e.g. *Toxoplasma gondii* and *Plasmodium*.

5-Facultative parasite

Organism which may either live as parasitic form or as free-living form, e.g.

Naegleria fowleri.

6-Accidental parasites

Parasites, which infect an unusual host are known as accidental parasites. *Echinococcus granulosus* infects man accidentally.

Host

Host is defined as an organism, which harbors the parasite and provides nutrients and shelter to latter and is relatively larger than the parasite.

The host may be of the following types:

1- Definitive host: The host, in which the adult parasite lives and undergoes sexual reproduction is called the definitive host, e.g. mosquito acts as definitive host in malaria.

2-Intermediate host: The host, in which the larval stage of the parasite lives or asexual multiplication takes place is called the intermediate host.

3-Paratenic host: A host, in which larval stage of the parasite remain visible without further development is referred as a paratenic host. Such host transmits the infection to another host.

4-Reservoir host (carrier): In an endemic area, a parasitic infection is continuously kept up by the presence of a host, which harbors the parasite and acts as an important source of infection to other susceptible hosts.

Zoonosis:

The word zoonosis include the diseases shared in nature by man and animals. Vector- A vector is an agent, usually an insect, that transmits an infection from one human host to another.

- Sources of infection

1. Contaminated soil and water

2. Freshwater fishes

- Crab and crayfishes
- Raw or undercooked pork
- Raw or undercooked beef
- Watercress-
- Blood sucking insects
- Housefly-Mechanical carrier

Relationships between organisms:

Symbiosis: permanent association between two organisms

Mutualism: two organisms living together, the two organisms benefit.

Commensalism: Two organisms living together, one is benefited and the other is not been affected.

When the other organism become affected, then the relationship turns = Parasitism.

Zoonosis: disease of animals but can be transmitted to a man. Ex: *Hymenolepis nana*.

What foods cause parasites?

Common food sources of parasites include:

Raw or undercooked meat, including fish.

Raw or unwashed fruits and vegetables.

Raw aquatic plants, such as watercress.

Unpasteurized milk and juices.

Symptoms and Causes

What are parasite symptoms in humans?

There are many different types of parasites, so their symptoms can vary. Common parasite symptoms may include:

Diarrhea.

Nausea and vomiting.

Abdominal pain.

Unexplained weight loss.

Increased appetite.

Muscle aches.

Fever.

Chills.

Problems sleeping (insomnia).

Fatigue.

Weakness.

Skin rash.

You may have a parasite and no symptoms, or the symptoms may appear a long time after infection. You may also not have any symptoms and accidentally pass a parasite to another person who develops symptoms.

How do people get parasites?

Common causes of parasitic infections include:

Spending time in areas with known parasites.

Contaminated water, foods, soil, blood or feces (poop).

Not washing your hands before eating or drinking.

Washing or bathing infrequently.

Having a weak immune system.

Contaminated bug bites.

Sexual contact