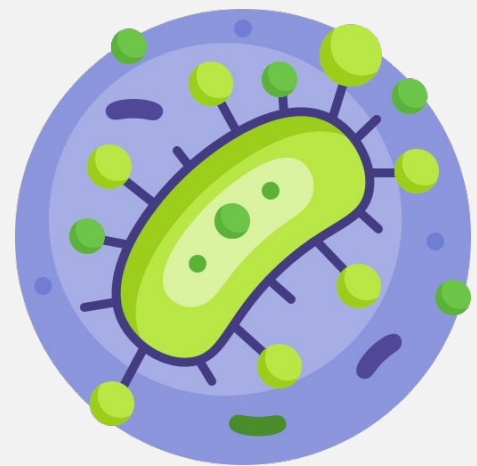
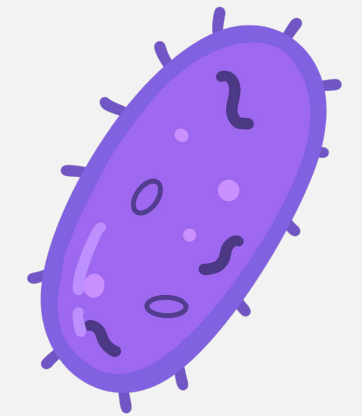


Classifications of Parasites and Protozoa

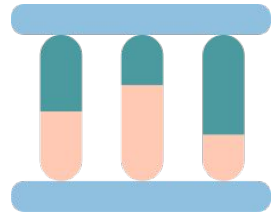


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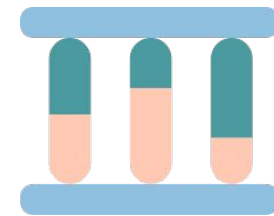
index:

- Main text.
- **Important.**
- In boys slides only.
- In girls slides only.
- Doctors notes.
- Extra info.

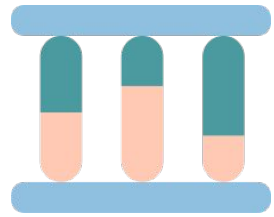
OBJECTIVES



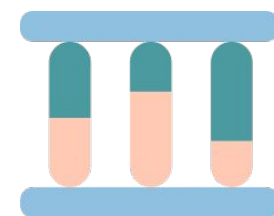
Define common terms describing host-parasite relationship.



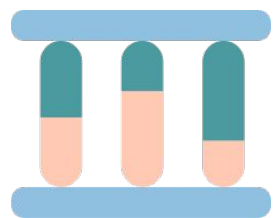
Describe the life-cycle of *Giardia lamblia* as an example of intestinal protozoa.



Outline the broad classification of parasites.



Describe the main stages of the life-cycle of *Plasmodium* as an example of blood and tissue protozoa.



Name examples of protozoan parasites.

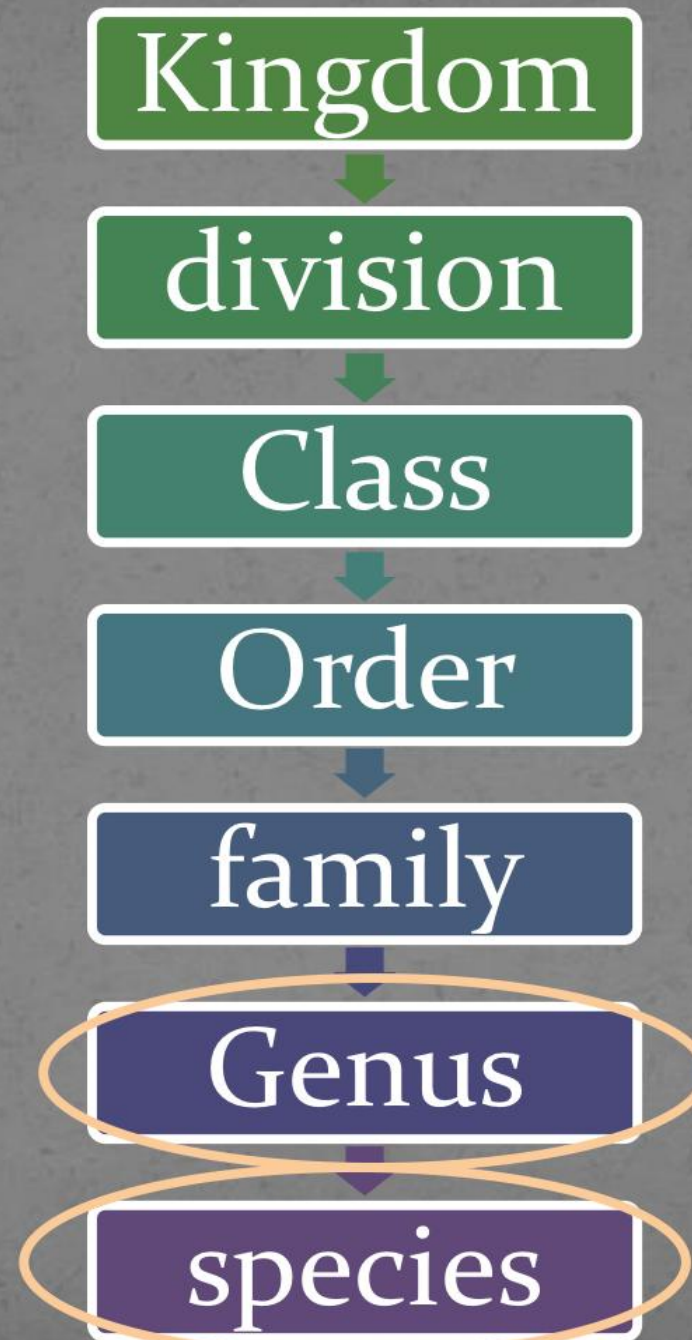
Definitions:

Infection	<p>The entry, development and multiplication of an infectious agent (must be pathogenic) in the body of humans or animals. The may results be:</p>	In apparent (asymptomatic) infection.
		Manifest (symptomatic) infection.
Host	a human or animal which harbors (keeps and shelter) an infectious agent under natural conditions.	
Definitive host (Primary host)	a host in which the parasite passes its sexual stage .	
Intermediate host (Secondary host)	a host in which the parasite passes its larval or Asexual stages .	
Carrier <u>very important</u>	a person or animal that harbors a specific infectious agent in the absence of symptoms and signs of a disease and serves as a potential source of infection, asymptomatic carrier e.g hepatitis B, Entamoeba.	

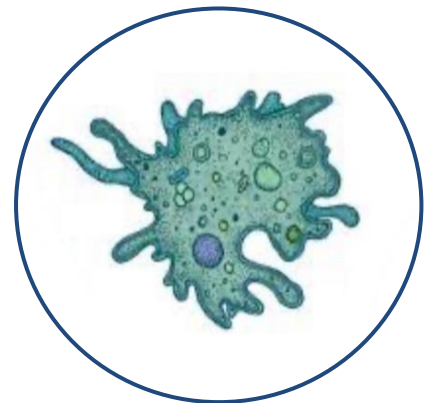
Definitions

Pathogenesis	Production and development of disease .
Pathogenicity	Capability of an infectious agent to cause disease in a susceptible host. <ul style="list-style-type: none">• Highly pathogenic as <i>Giardia lamblia</i> only about 10 cyst can cause the disease.• Low pathogenic as <i>Entamoeba coli</i> needs at least 100 cysts to cause disease.
Parasitism	A relationship in which an organism (the infectious agent, the parasite) benefits from the association with another organism (the host) whereas the host is harmed in some way.
Commensalism <u>very important</u>	Kind of relationship in which one organism(the commensal) is benefited whereas the other organism, the host, is NOT harmed or even benefited by the association.
Ectoparasite	parasite that lives on the outer surface of its host.
Endoparasite	Parasite that lives inside its host.
Zoonosis	Disease of animals that is transmissible to humans.

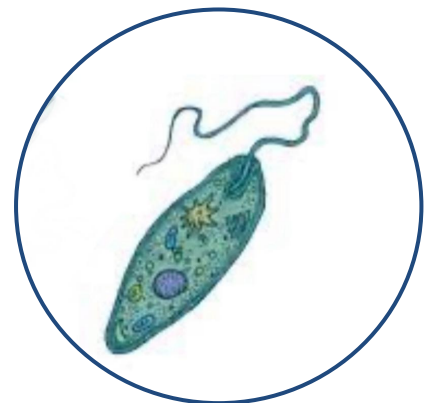
Scientific names of parasites follow Zoological Classification



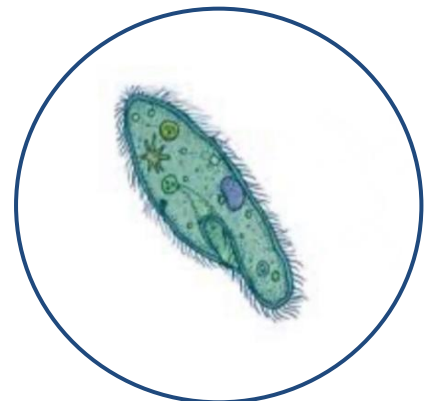
CLASSIFICATION OF PARASITES



Amoebae

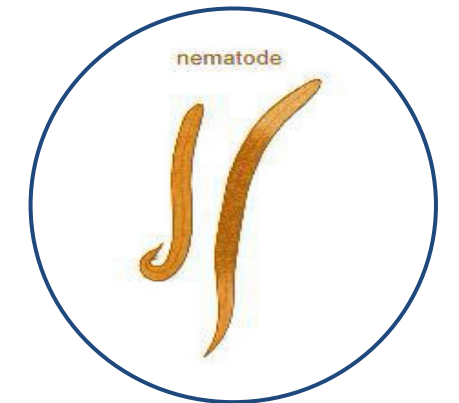


Flagellates



Ciliates

PROTOZOA Don't have Primary hosts	HELMINTHS have Primary hosts
Unicellular Single cell for all functions	Multicellular Specialized cells
<ol style="list-style-type: none"> Amoebae: move by pseudopodia. (الأقدام الكاذبة) Flagellates: move by flagella e.g: Giardia lambila Ciliates: move by cilia Apicomplexa: (Sporozoa) tissue parasites e.g: Plasmodium that causes Malaria. 	Round worms (Nematodes): - elongated, cylindrical, unsegmented, e.g. Ascars Flat worms : - Trematodes: leaf-like, unsegmented. Mnemonic: <u>T</u> rematodes (like tree leafs) - Cestodes: tape-like, segmented. Mnemonic: <u>C</u> estodes (centimetre like tape) مقسمة زي المتر



Nematodes

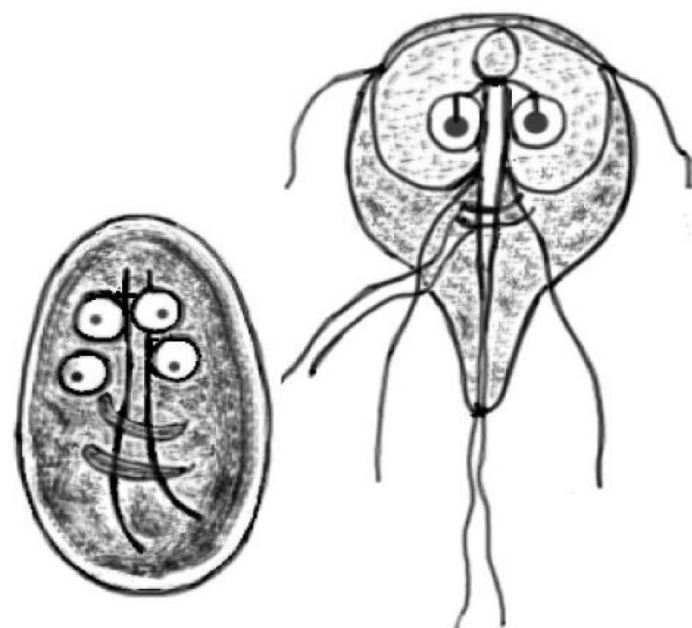
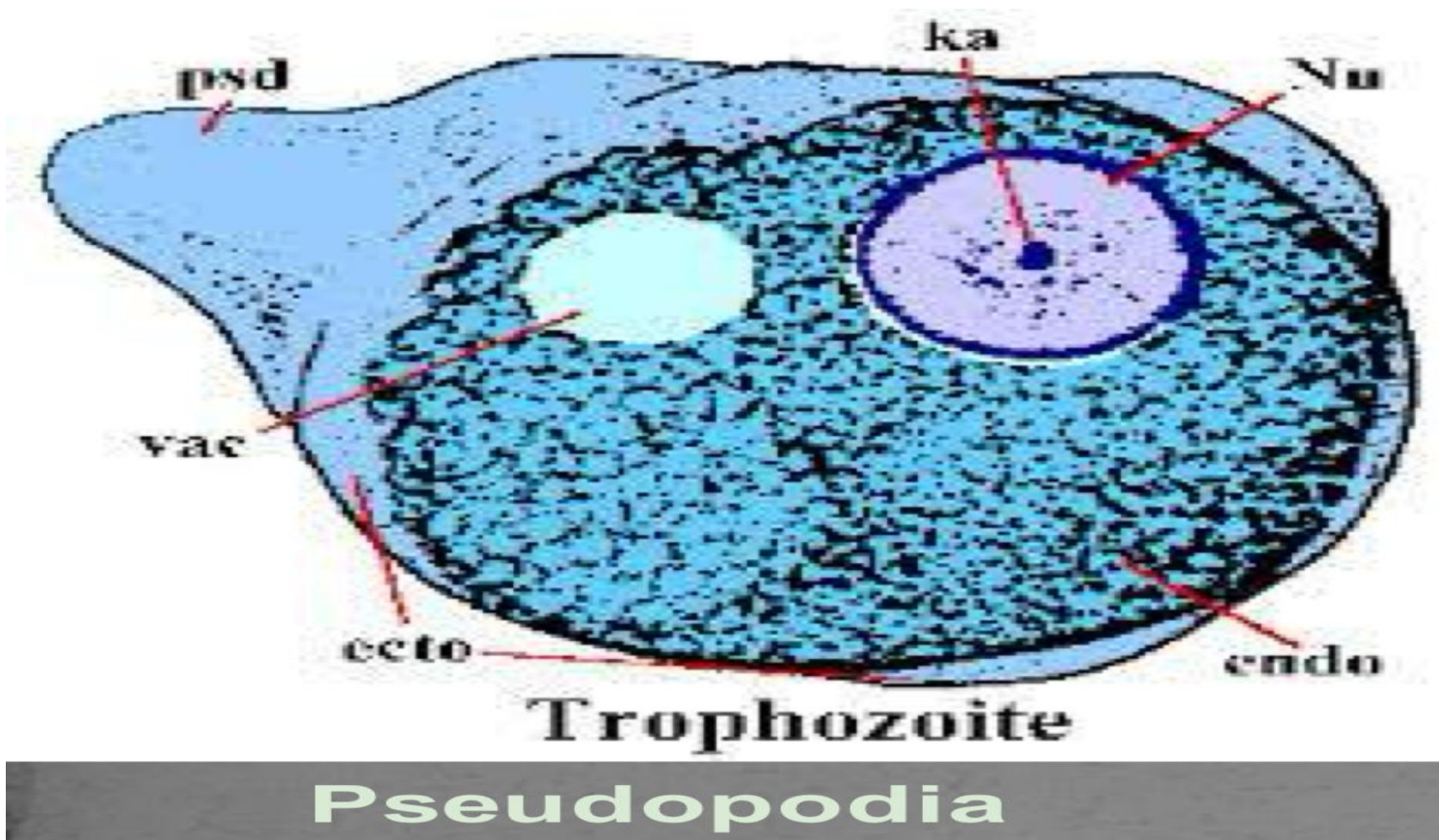


Cestodes

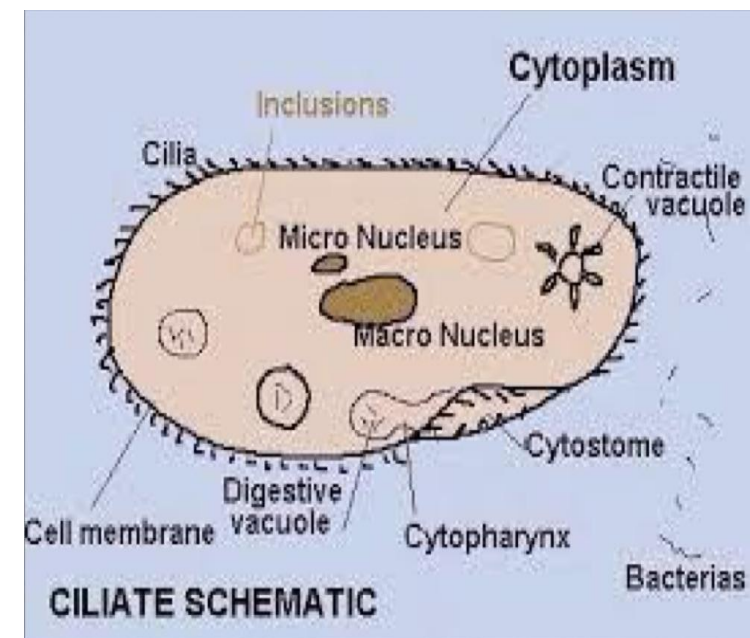


Trematodes

CLASSIFICATION OF PARASITES



Flagella



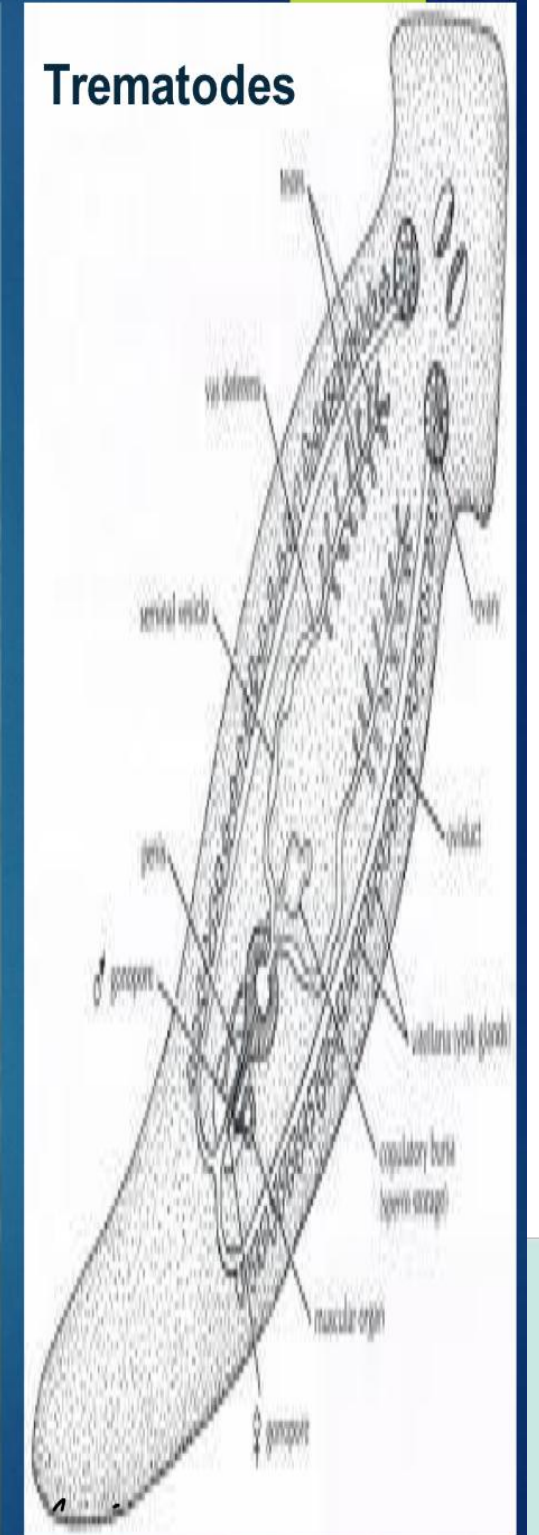
Cilia



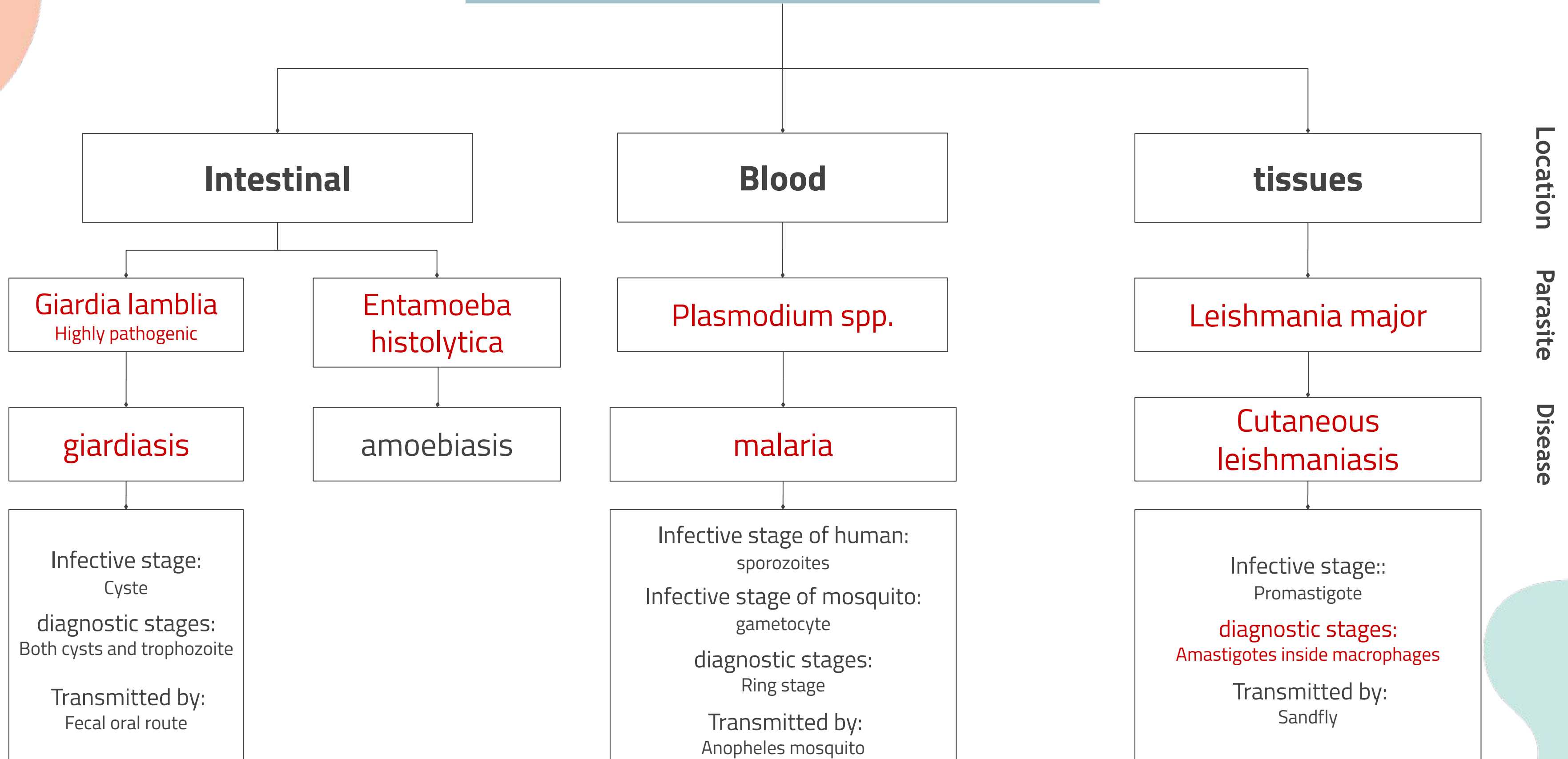
Nematodes



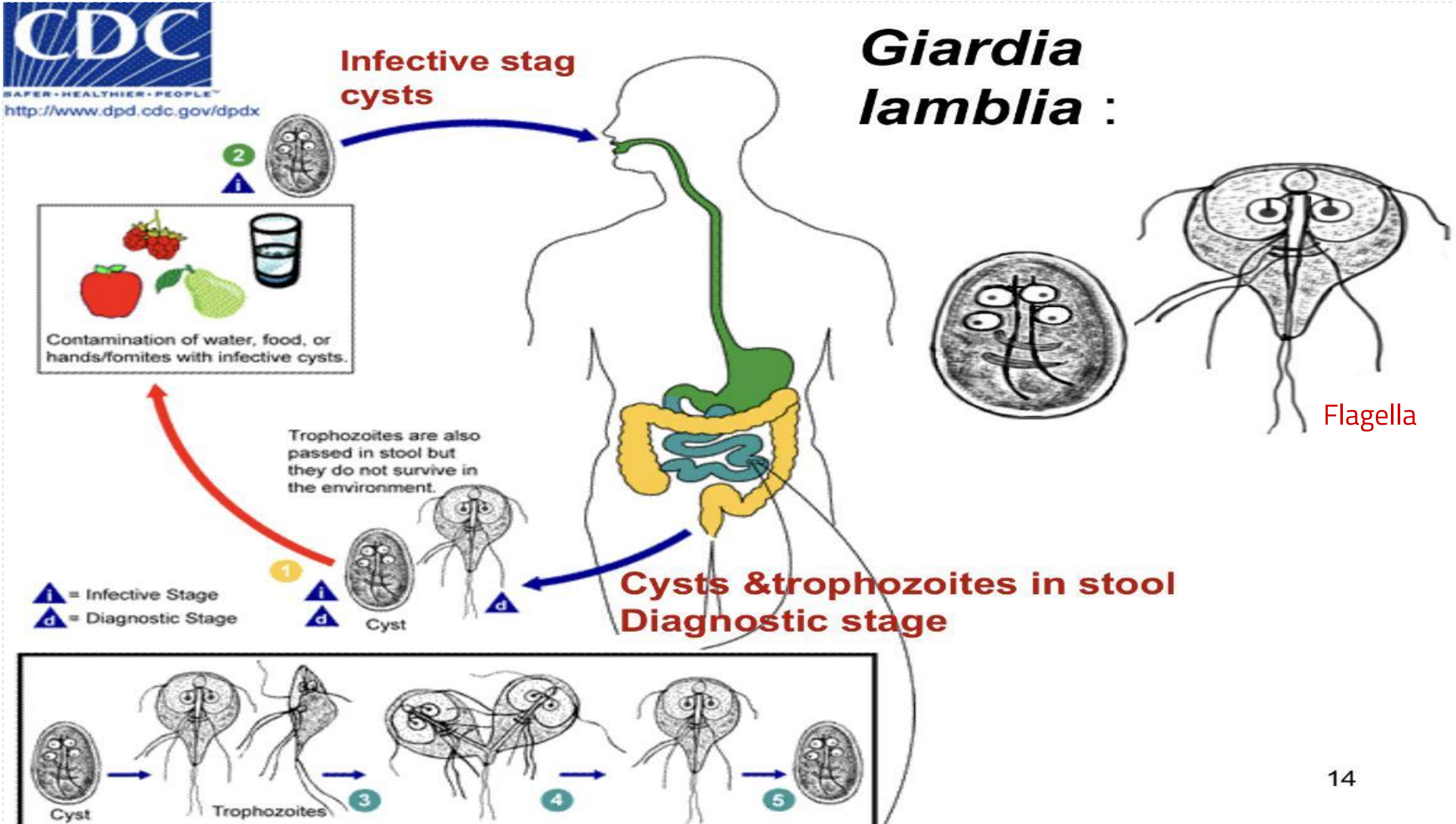
Cestodes



Parasitic Protozoa (unicellular)



Giardia Lamblia



Giardia Lamblia

a.k.a Giardia intestinalis

Life cycle of Giardia lamblia

Giardia cysts are the infective stage of G.lamblia. These cysts are ingested by consuming contaminated food or water, or fecal-orally. They can survive outside the body for several months, and are also relatively resistant to chlorination, UV exposure and freezing.



When cysts are ingested, the low PH of the stomach, the acidity produces excystation. (Excystation means the releases of trophozoites) .. Within the small intestine , the trophozoites reproduce asexually (longitudinal binary fission) and either float free or attached to the mucosa of the lumen .

* Doctor 443 note: Giardia it's not an invasive organism
بتيقي تشتغل على الامعاء من برا ماتدخل جوا

Some trophozoites then encyst in the small intestine, both cysts and trophozoites are then passed in the feces, but only the cyst is infectious, person-to-person transmission is possible, animals can also be infected with Giardia

Giardia lamblia can cause diarrhea with poor absorption of the nutrient, loss of appetite, stomach cramp, vomiting and Giardia infect the cells of the duodenum and jejunum



Giardia cyst
(infective stage)


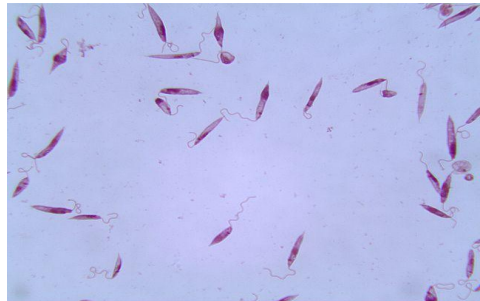


Giardia trophozoite

- can survive outside the body for months. - relatively resistant to chlorination, UV exposure and freezing.

can't survive inside the stomach because it isn't resistant to the acidity of the stomach.

Examples of diseases caused by Blood and Tissue Protozoa:

Parasite	Disease	Picture
PLASMODIUM SPP.	MALARIA	
LEISHMANIA MAJOR	CUTANEOUS LEISHMANIASIS	

Malaria Species

Four Type of Malaria:

Plasmodium falciparum.

Plasmodium vivax.

Plasmodium ovale.

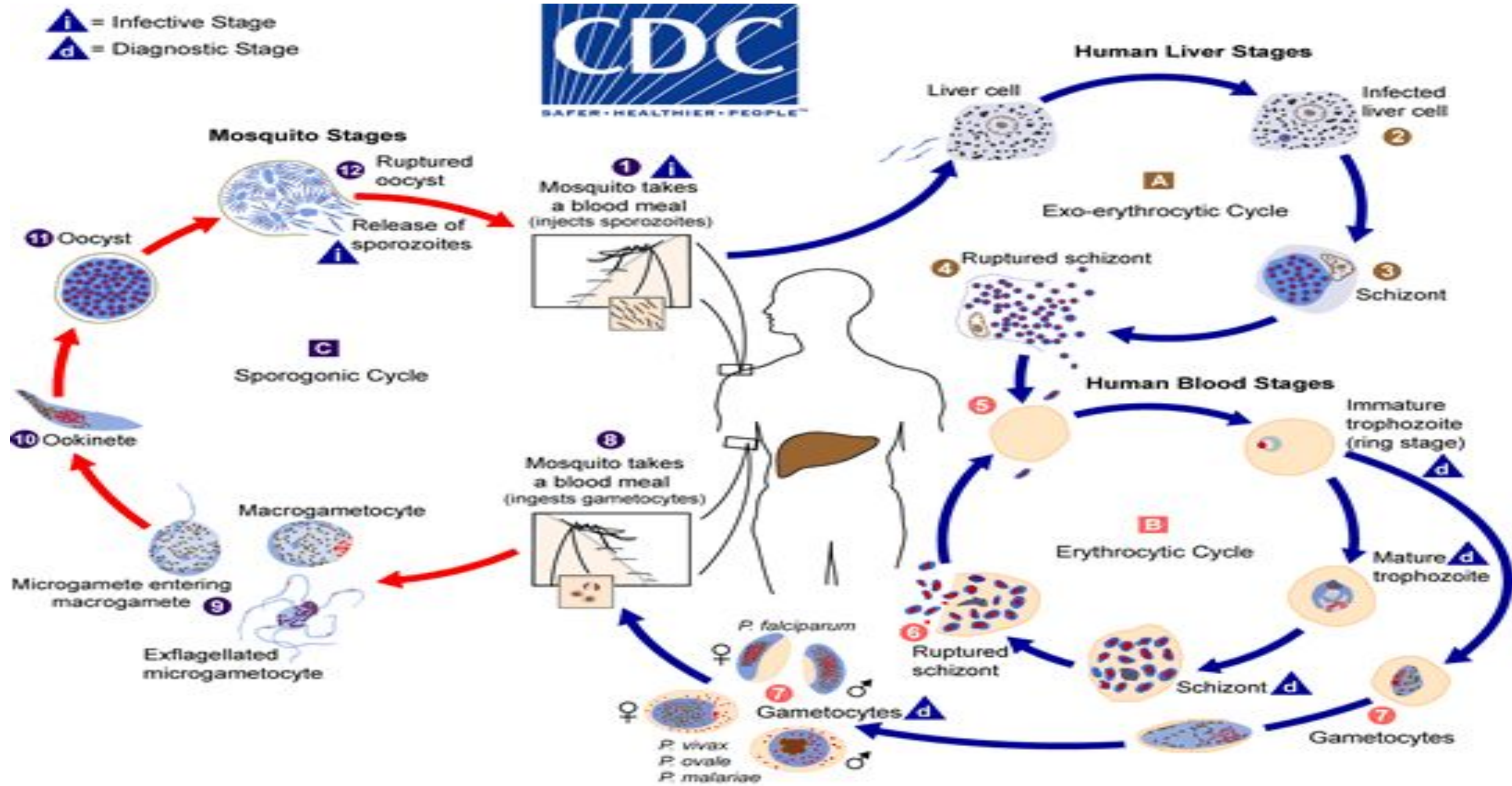
Plasmodium malariae.

❖ All the above species cause malaria but its severity differs

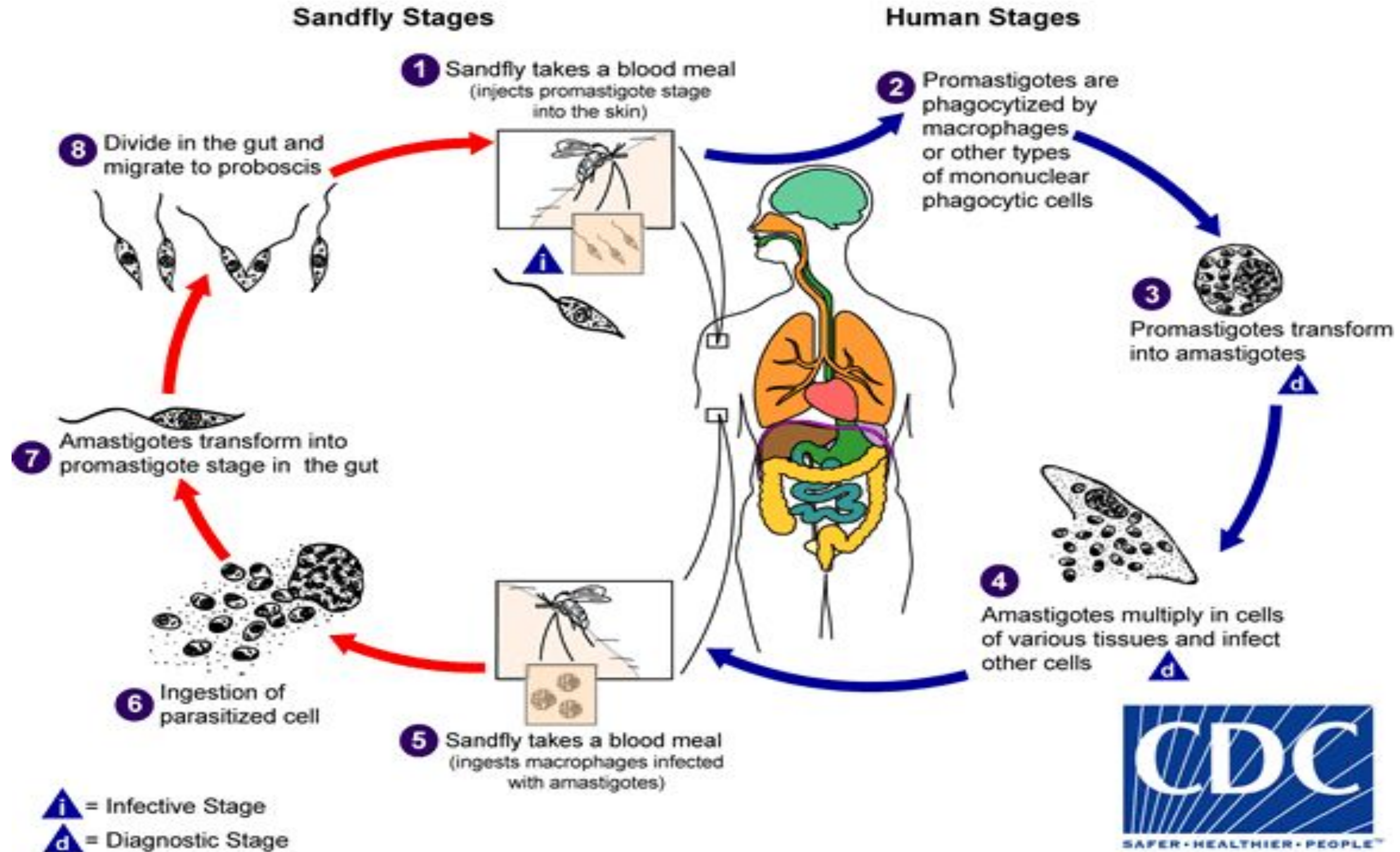
- Important Notes:

The main pathology of malaria is due to **invasion of RBCs** (i.e the symptoms of malaria are due to RBC infection and lysis).

Malaria Life Cycle:



Leishmania Life Cycle:



Summary of Doctor NOTES

Intestinal Protozoa(unicellular) :

- e.g Giardia lamblia & Entamoeba histolytica

Giardia lamblia:

- Is example of intestinal protozoa
- Moves by flagella
- Cause infection when eating or drinking food contaminated with **cysts**
- Can cause watery diarrhea

Very Important Definitions:

- Commensalism
- Carrier
- Definitive(primary) host
- Intermediate(secondary) host

Blood Protozoa(unicellular) :

- Plasmodium that cause Malaria.

Plasmodium spp.:

- Is example of blood protozoa
- Cause Malaria
- Mainly infect(main pathologic) RBCs

Tissue Protozoa(unicellular):

- e.g Leishmania major

Leishmania major:

- Is example of tissue protozoa
- Cause Cutaneous leishmaniasis
- Amastigote(Affects) macrophages

Quiz

Q1: *Giardia lamblia* is transmitted to humans by which of the following?

- A Blood B Fecal oral C Sexual D Insect bites

Q2: What is the infective stage of *Plasmodium* spp. in the female *Anopheles* mosquito that causes malaria in humans?

- A Sporozoites B Gametocytes C Merozoites D Oocytes

Q3: Which of the following is a vector for Cutaneous leishmaniasis?

- A Sandfly B Lice C Mosquitoes D Tsetse fly

Q4: Which disease does plasmodium cause to humans?

- A Giardiasis B Leishmaniasis C Trichomoniasis D Malaria

Q5: What describes best the condition where microorganism benefits while the host is harmed?

- A symbiotic B commensalism C Parasitism D mutualism



MEET THE TEAM

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Abdulaziz Alanazi

Lujain Darraj

Huda bassam

Jenan Al-Sayari

Nora Alturki

Bassmah fahad

Dana Abu Alamah

Madaen Alarifi

Rahaf Alaklabi

Monirah shojaa

AlJawharah alyahya

Layal alkhalifah

Aram alzahrani

Noor AlTalag

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