Introduction to Parasitology

OBJECTIVES

By the end of this lecture the student should be able to:

1. **Define common terms describing host-parasite relationship.**
2. **Outline the broad classification of parasites.**
3. **Name examples of protozoan parasites.**
4. **Describe the life-cycle of *Giadia lamblia* as an example of intestinal protozoa.**
5. **Describe the main stages of the life-cycle of *Plasmodium* as an example of blood and tissue protozoa.**

DEFINITIONS

Infection:

The entry , development and multiplication of an infectious agent in the body of humans or animals.

The result may be:

inapparent (asymptomatic) infection, or
manifest (symptomatic) infection..

Host:

A person or other living animal which harbours 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:

A person or animal that harbours a specific infectious agent in the absence of clinical disease and serves as a potential source of infection

pathogenesis:

Production and development of disease.

pathogenicity:

Capability of an infectious agent to cause disease in a susceptible host.

Parasitism:

A relationship in which an organism (the parasite) benefits from the association with another organism (the host) whereas the host is harmed in some way.

commensalism:

Kind of relationship in which one organism , the commensal , is benefited whereas the other organism , the host , is neither harmed or helped 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 .

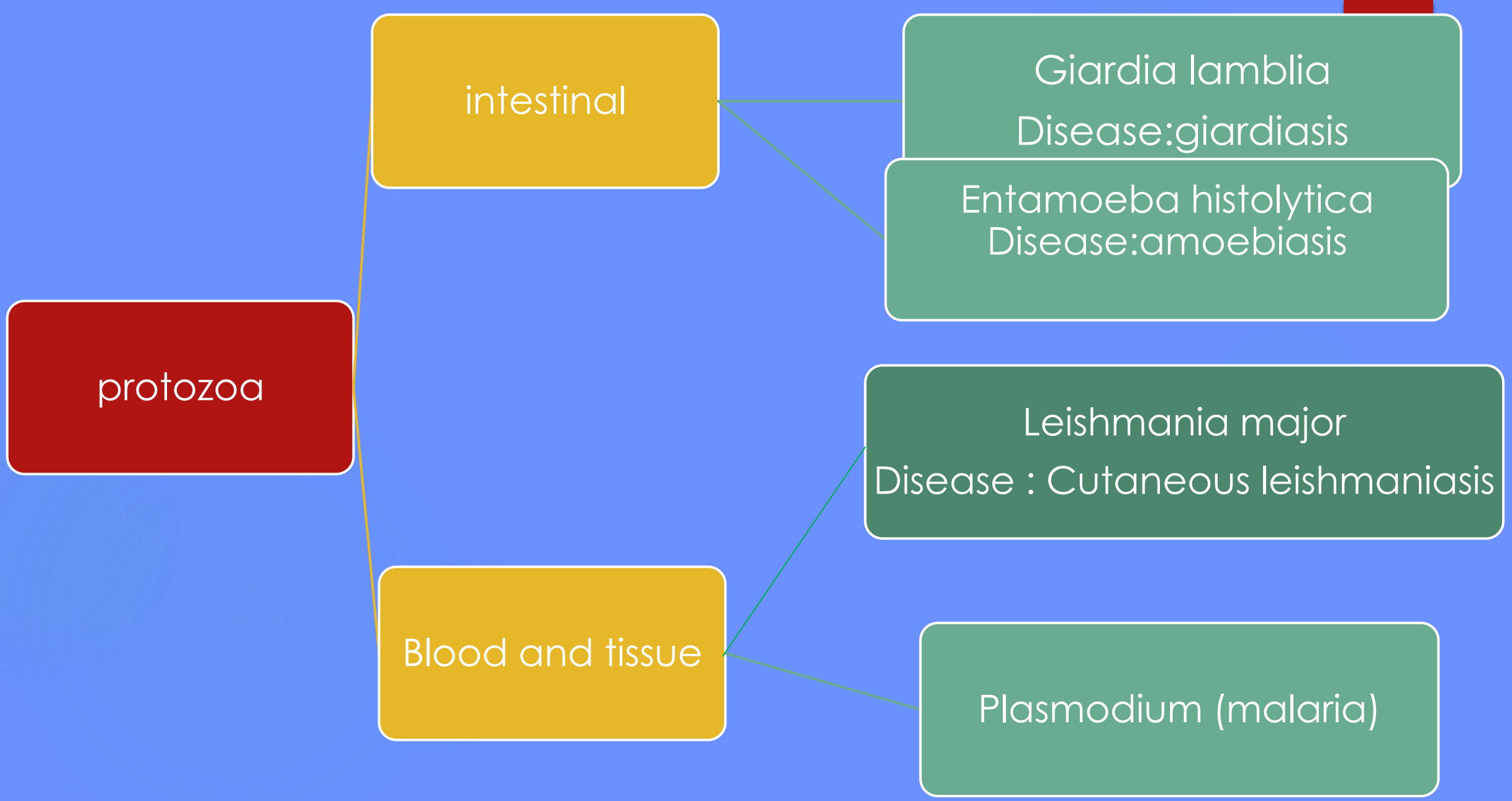
CLASSIFICATION OF PARASITES

PROTOZOA	HELMINTHS
Unicellular Single cell for all functions	Multicellular Specialized cells
1:Amoebae: move by pseudopodia. 2:Flagellates: move by flagella. 3:Ciliates: move by cilia 4:Apicomplexa(Sporozoa) tissue parasites	<u>Round worms (Nematodes):</u> - elongated, cylindrical, unsegmented. <u>Flat worms :</u> - Trematodes: leaf-like, unsegmented. - Cestodes: tape-like, segmented.

Note that protozoa is named according to the movement, helminthes is according to shape

Scientific names of parasites follow Zoological Classification

Scientific names of parasites follow Zoological Classification ending in Genus and Species.

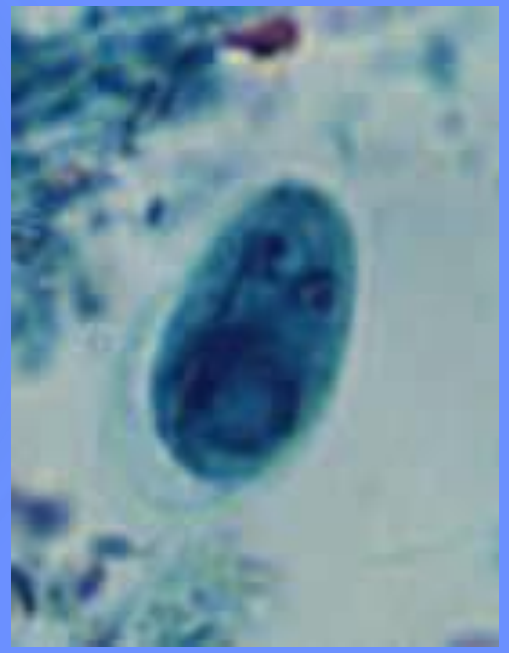

protozoa
intestinal
Blood and tissue
Giardia lamblia
Disease:giardiasis
Entamoeba histolytica
Disease:amoebiasis
Leishmania major
Disease : Cutaneous leishmaniasis
Plasmodium (malaria)

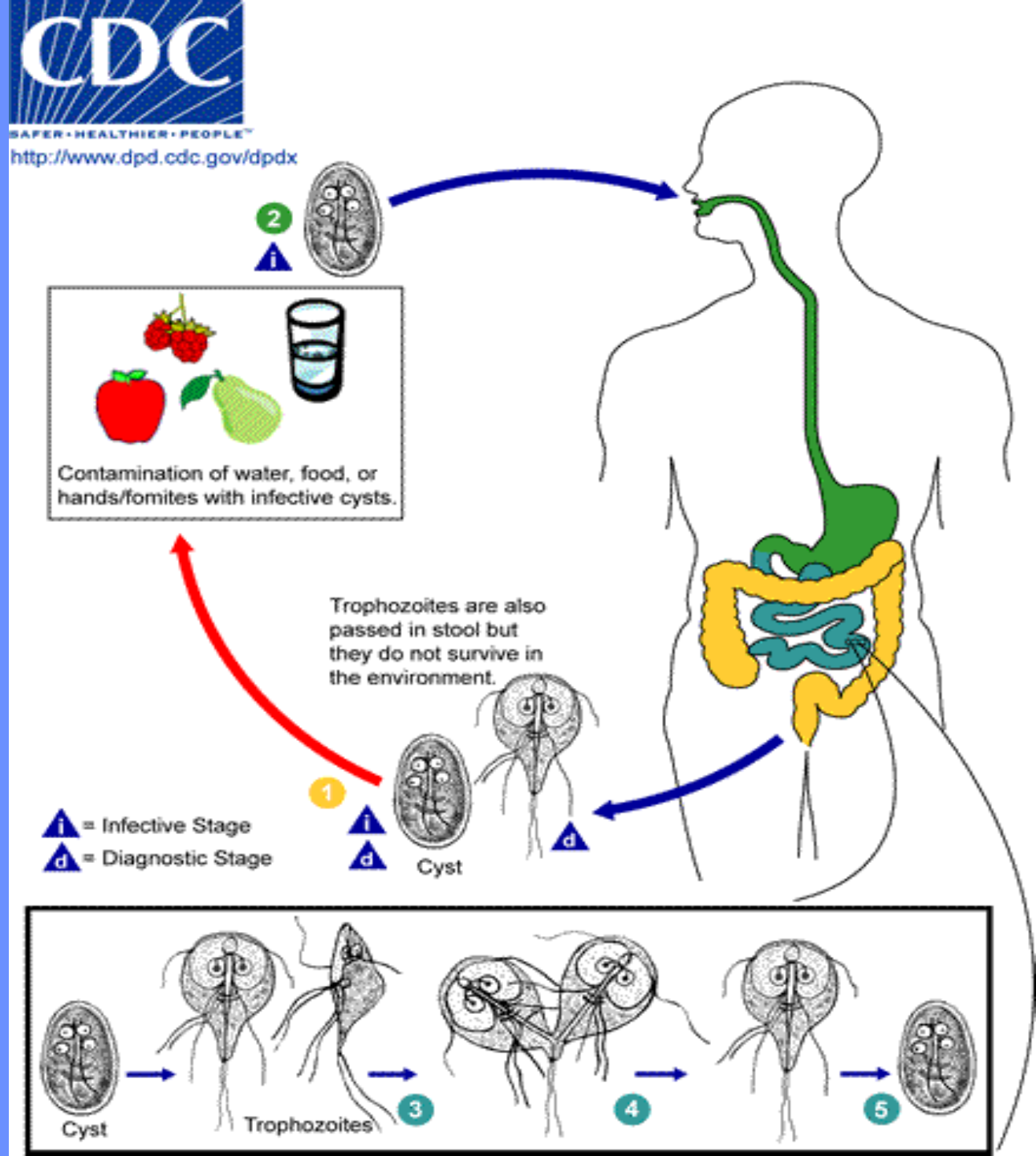
Example of intestinal protozoa:

On the right we have giardia lamblia(intestinal protozoa) life cycle .
It first enters the body in the form of ***Giardia*** **cyst** (lower right) to survive the stomachs acidity.
When it reaches the intestine it starts the infictive stage in the form of ***Giardia*** **trophozoite.** When leaving only the cyst form can survive the outside environment.

Giardia **trophozoite**

Giardia **cyst**



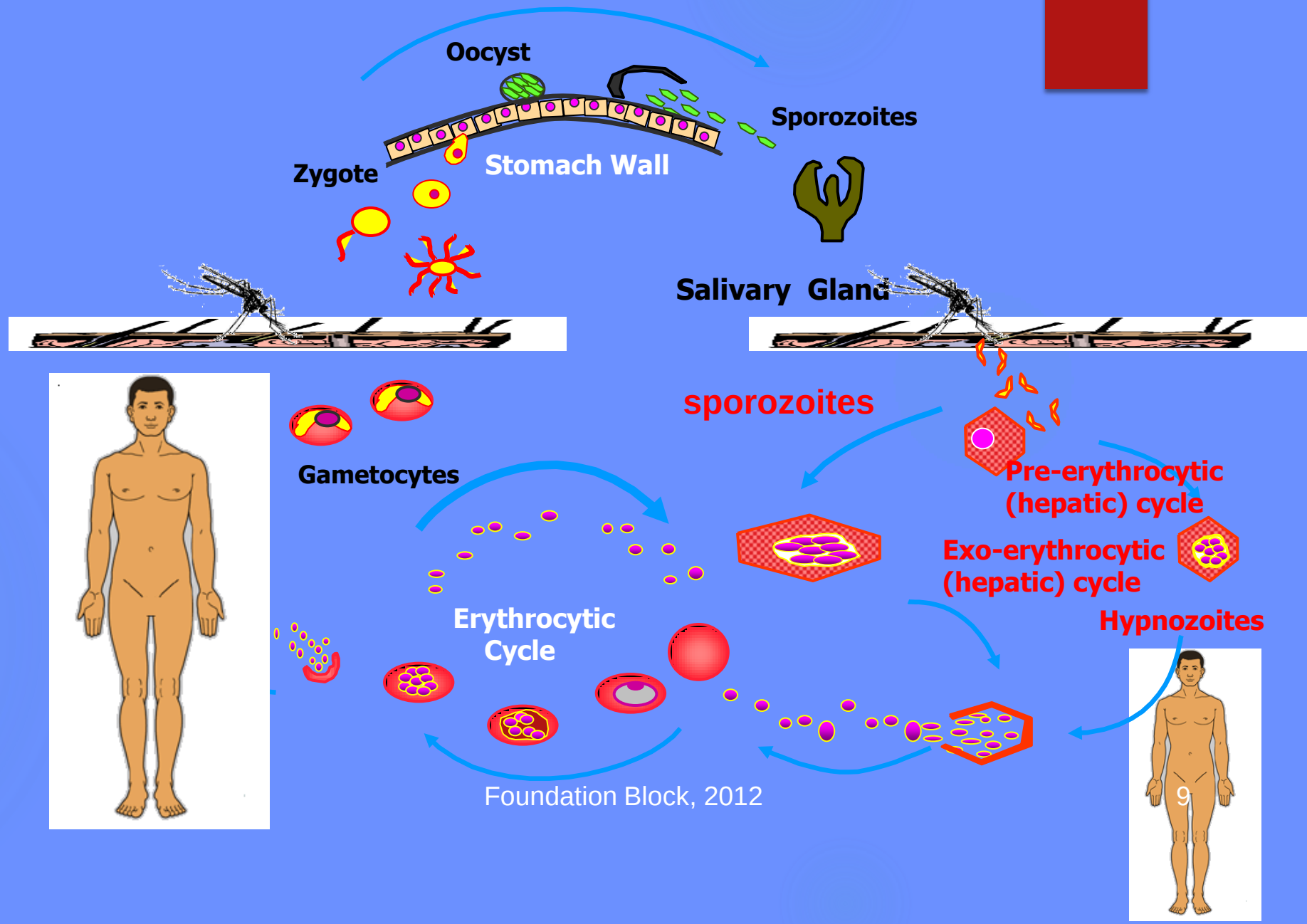


LIFE CYCLE OF MALARIA

Example of blood and tissue protozoa

Four species of malaria :

Plasmodium falciparum
Plasmodium vivax
Plasmodium ovale
Plasmodium malariae



MCQs

1-a host in which the parasite passes it sexual stages is:

a-intermediate host b- Carrier

C-definitive host d- Secondary host

2- The type of relationship which the host isn't harmed or helped by the association:

a- commensalism b- Parasitism

c- Pathogenicity d-infection

3- The parasite that lives on the outer surface of the host is called endoparasite:

a-true b-false

4- The giardiasis disease is caused by:

a- giardia histolytica b-helminths

c-plasmodium species d-giardia lamblia

5-Giardia form inside the body is giardia trophozite:

a-true

b-false

6-The pathogenesis of malaria is mainly due to invasion of:

a-white blood cells

b-red blood cells

c-platelets

d-lymph nodes

Answers:

1-C 2-A 3-B 4-D 5-A 6-B

Thank you