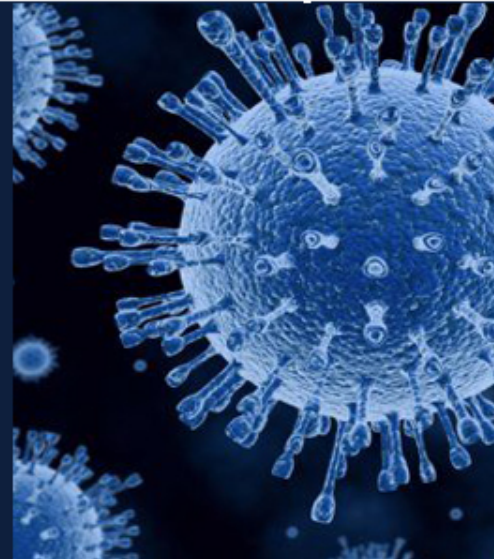
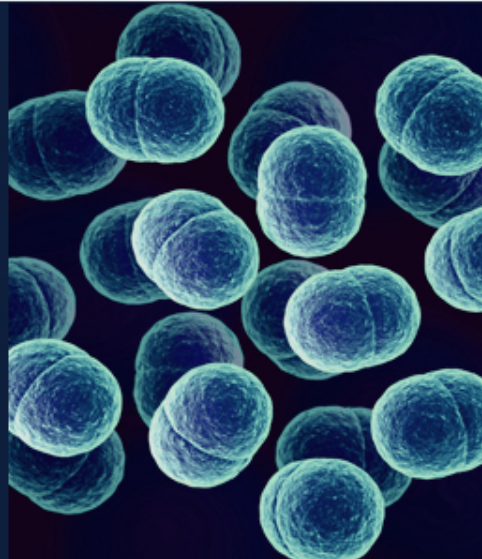


# MICRObiology

TEAM 435

هذا العمل لا يغني عن المرجع الأساسي للمذاكرة



## Lecture 4

# Introduction to Parasitology

● Important

● Term

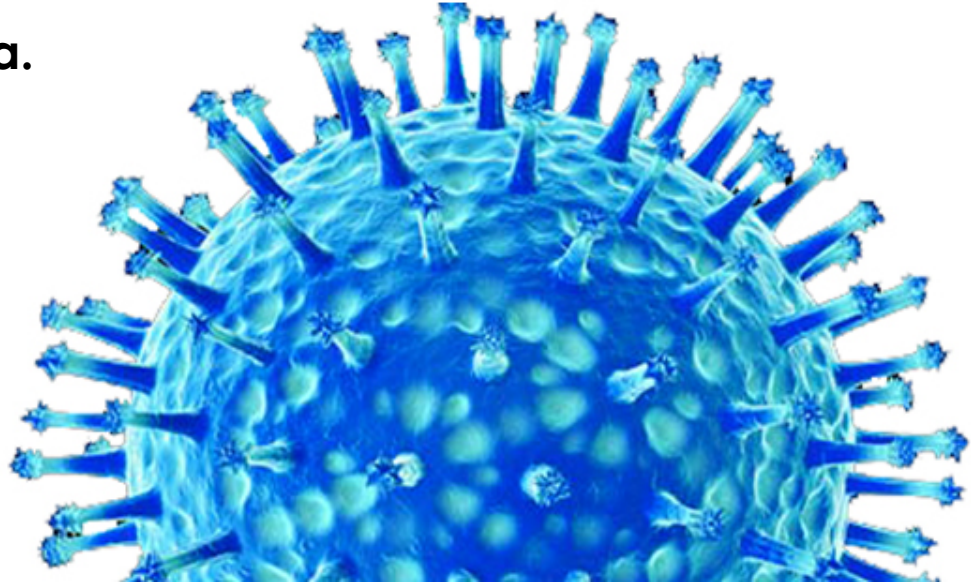
● Extra explanation

● Additional notes

# 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 **Giardia 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:**

**Manifest**  
(symptomatic)  
infection

**Inapparent**  
( asymptomatic)  
infection

## Host

A human or animal which harbors 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 harbors a specific infectious agent in the absence of symptoms and signs of a 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.

## Commensalism

Kind of relationship in which one organism , the commensal , is **benefited** whereas the other organism , the host , is **NOT** harmed or even helped by the association.

## Parasitism

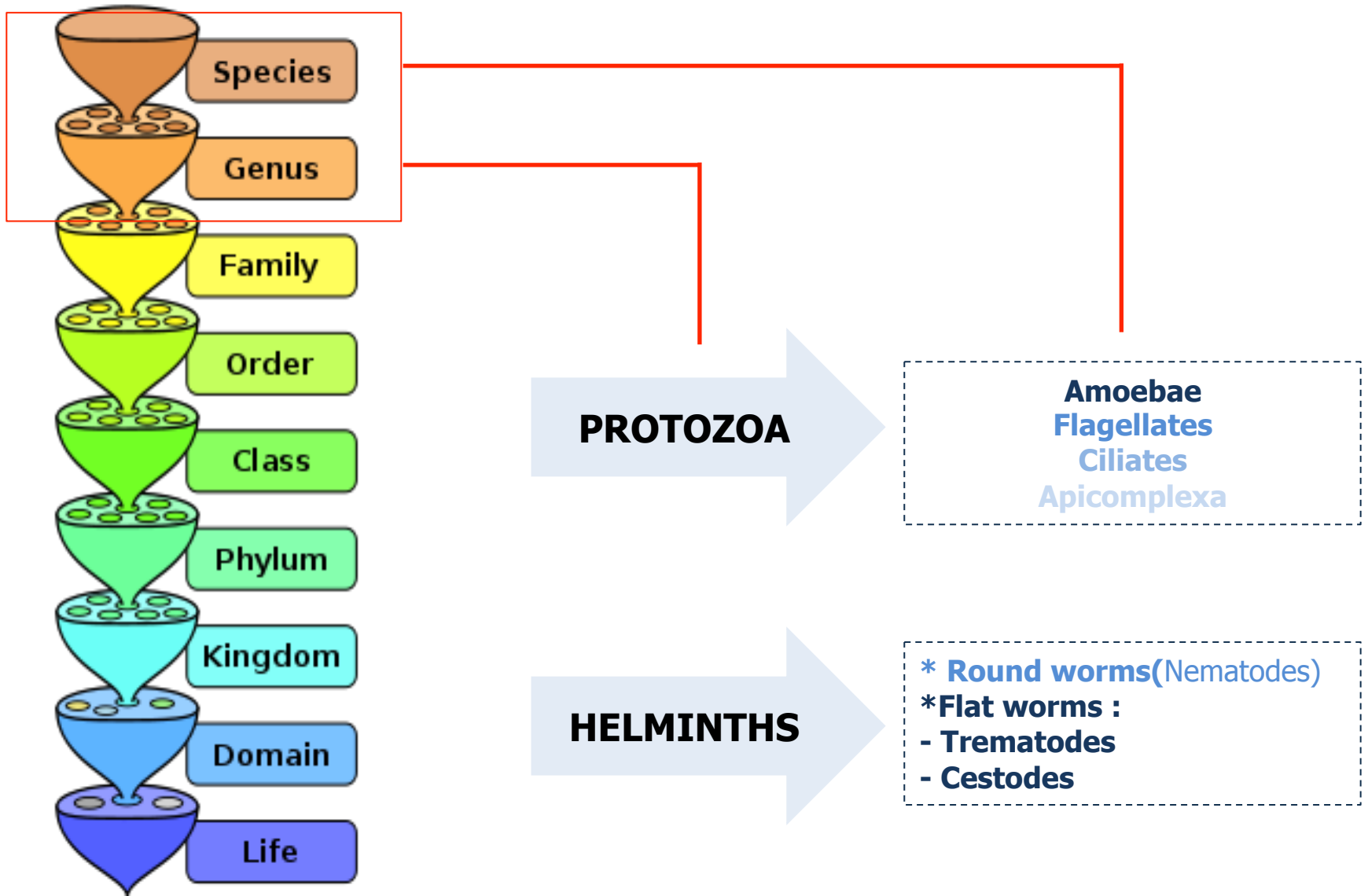
A relationship in which an organism **benefits** from the association with another organism (**the host**) whereas the host is **harmed** in some way.

**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

## Classification of Parasites

### PROTOZOA

**Unicellular**

Single cell for all  
functions

According to the movement

**Amoebae**  
move by **pseudopodia**.

**Flagellates**  
move by **flagella**.

**Ciliates**  
move by **cilia**

**Apicomplexa**  
(Sporozoa)  
tissue parasites

### HELMINTHS

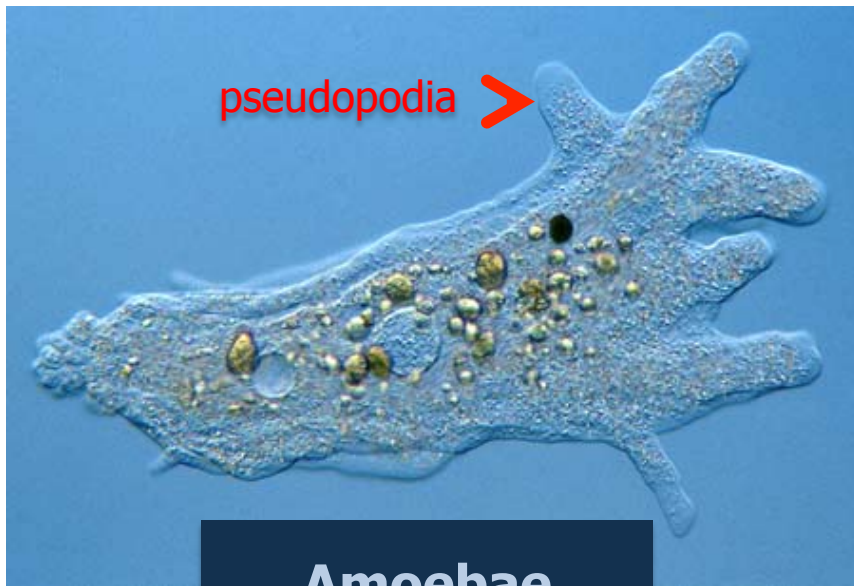
**Multicellular**

Specialized cells

According to the shape

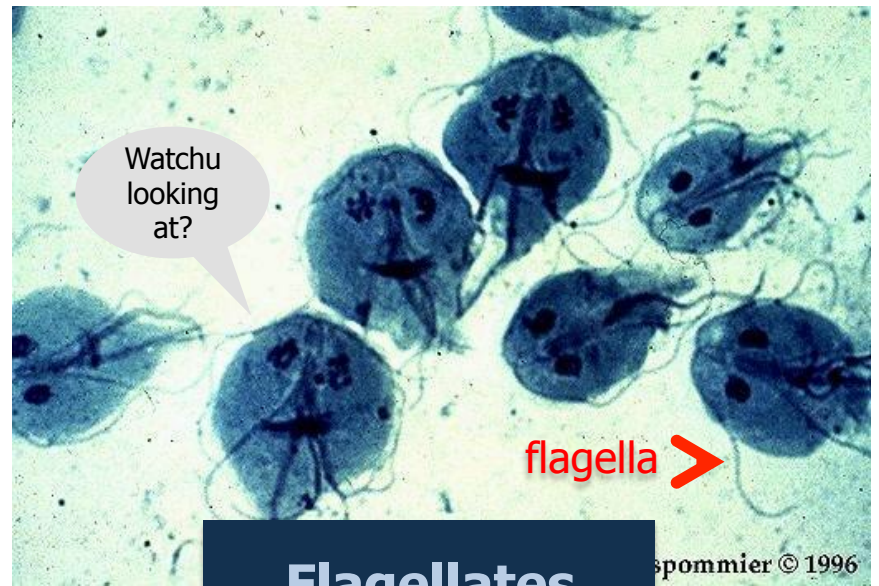
**Round worms(Nematodes):**  
- elongated  
- cylindrical,  
- unsegmented

**Flat worms :**  
- **Trematodes:**  
leaf-like, unsegmented.  
- **Cestodes:**  
tape-like, segmented.



pseudopodia >

**Amoebae**



Watchu looking at?

flagella >

**Flagellates**



cilia >

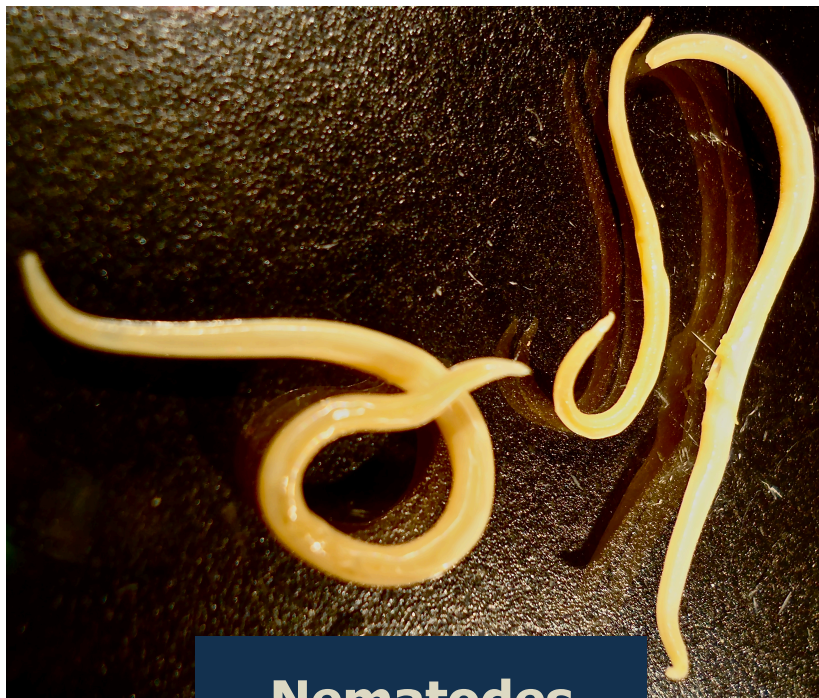
**Ciliates**

© Micropolitan.org

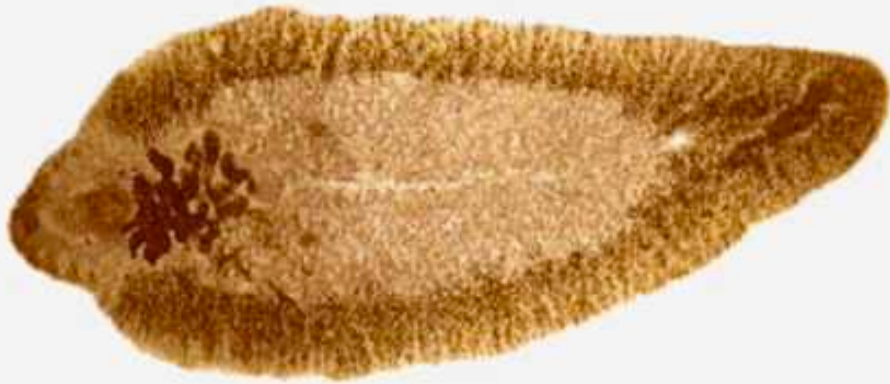


**Apicomplexa**  
(Sporozoa)





**Nematodes**

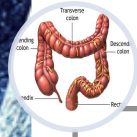


**Trematodes**



**Cestodes**

# Parasitic Protozoa



## Parasitic Protozoa

### Intestinal

### Blood & Tissues

#### Parasite

#### Parasite

Giardia Lamblia

Entamoeba histolytica

Plasmodium spp

Leishmania Major

Disease

Disease

Giardiasis

Amoebiasis

Malaria

Cutaneous Leishmaniasis

Plasmodium falciparum

Plasmodium vivax

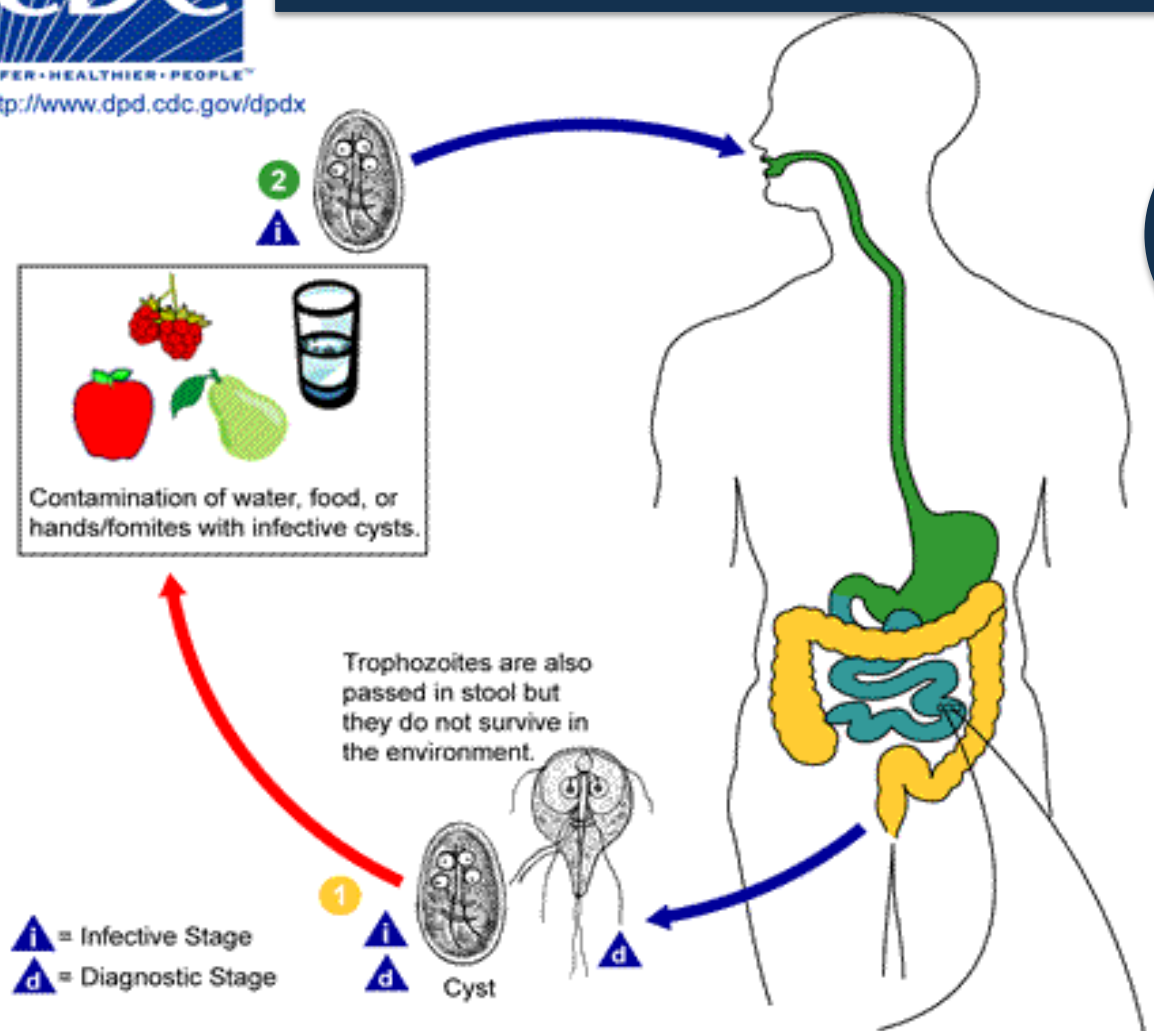
Plasmodium ovale

Plasmodium malariae

1. Giardia **cysts** are the infective stage of *G. intestinalis*. As few as 10 cysts can cause infection, 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.
2. When cysts are ingested, the low pH of the stomach acid produces excystation, in which the activated flagella breaks through the cyst wall. This occurs in the small intestine, specifically the duodenum. Excystation releases **trophozoites**, with each cyst producing two trophozoites.
3. Within the small intestine, the trophozoites reproduce asexually (longitudinal binary fission) and either float free or are attached to the mucosa of the lumen.
4. 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.

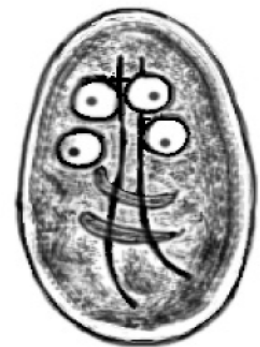


# Parasitic Protozoa

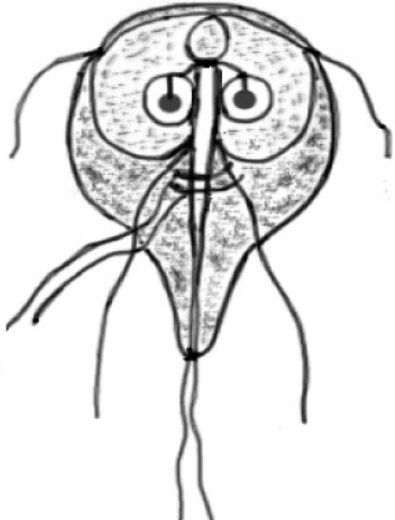


## Giardia Lamblia Life cycle

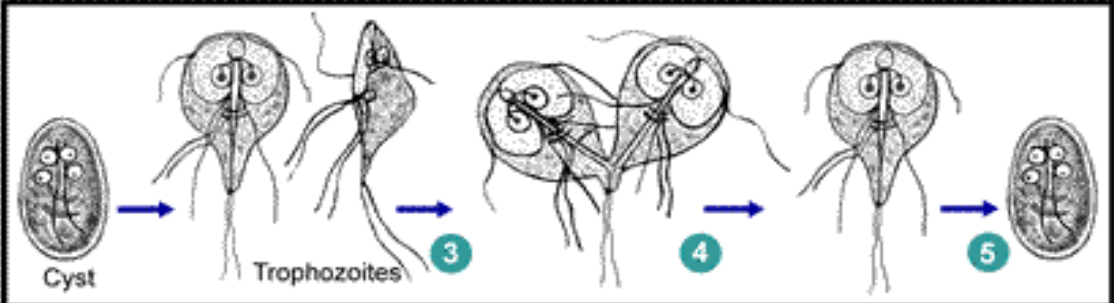
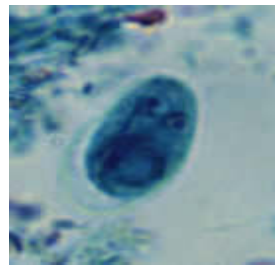
More information & explanation



Giardia cyst (infective stage & diagnostic stage)



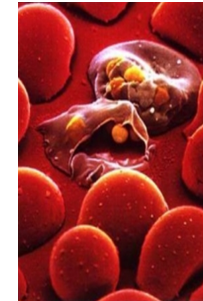
Giardia trophozoite diagnostic stage



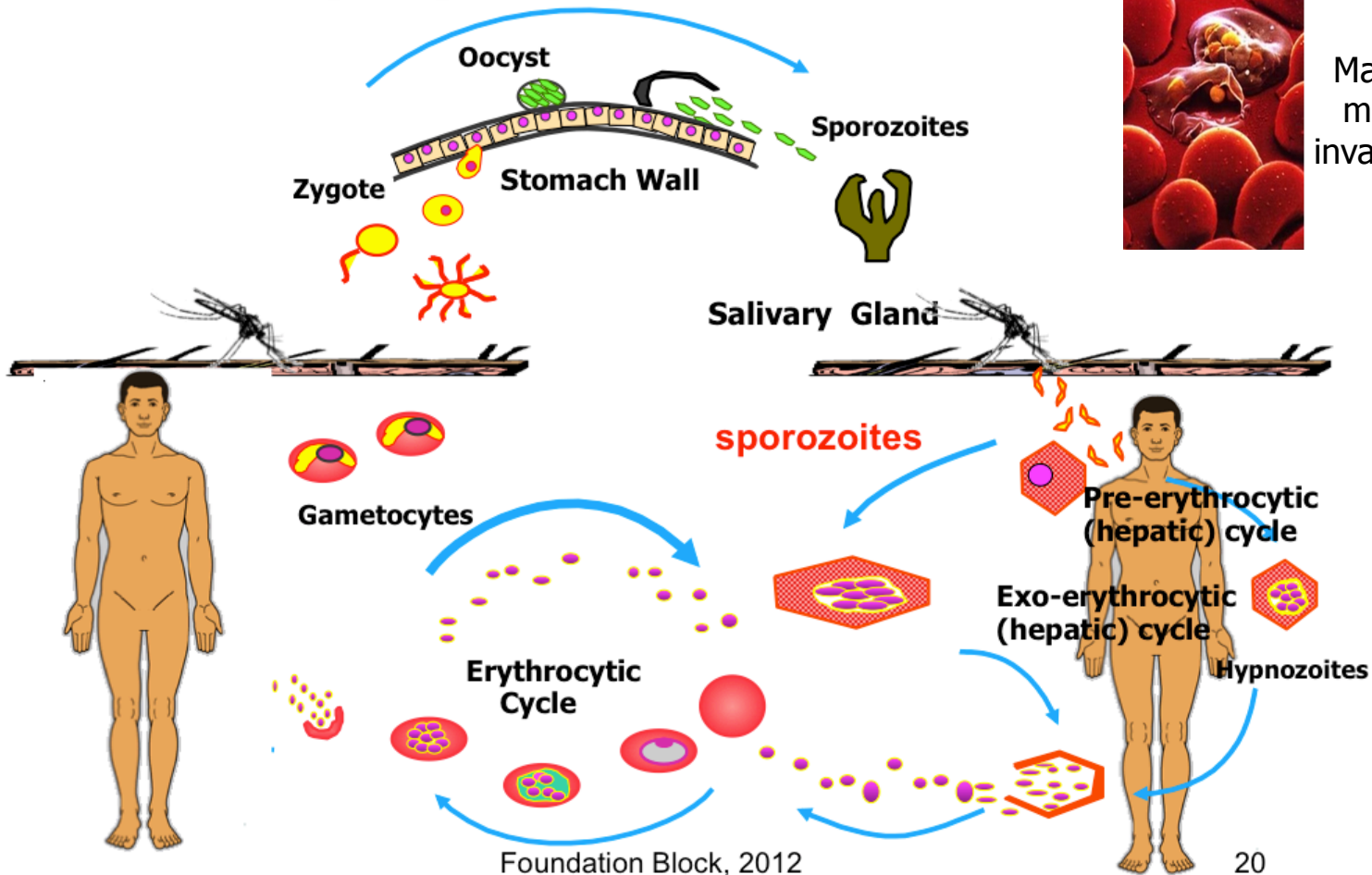
More information  
& explanation



## LIFE CYCLE OF MALARIA



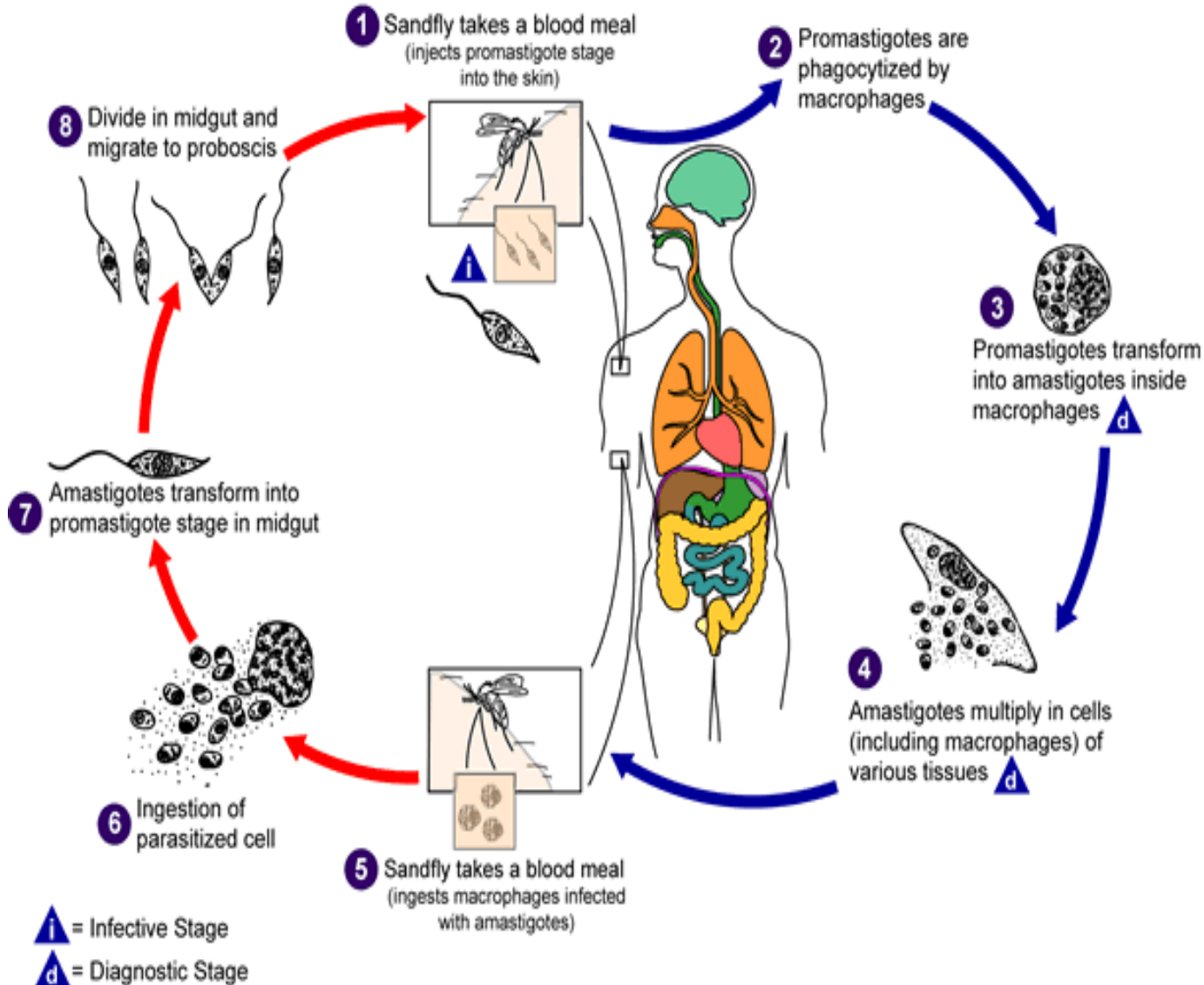
Main pathology of malaria is due to invasion of the RBCs



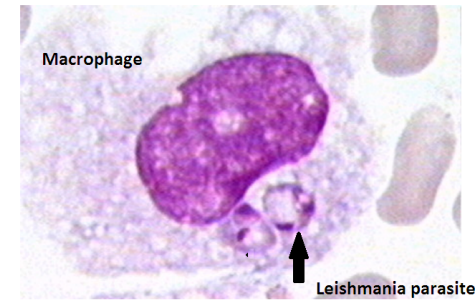
# Parasitic Protozoa

## Sandfly Stages

## Human Stages



More information & explanation

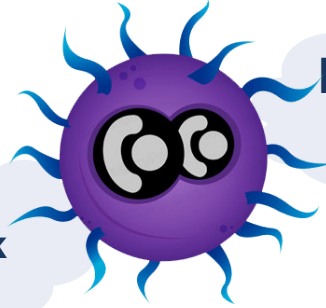


Cutaneous leishmaniasis caused by *Leishmania major*





# Online Quiz



Pull my  
pili!

Fine!  
Just click  
[HERE](#)



## Videos

❖ Malaria

[https://www.youtube.com/watch?v=qMNmOsl5\\_e4](https://www.youtube.com/watch?v=qMNmOsl5_e4)

❖ Giardia lamblia

<https://www.youtube.com/watch?v=Zz-qiG9VDOg>



## Books that could help you

- ❖ Microbiology made ridiculously simple
- ❖ Atlas of medical helminthology and protozoology





# MICRObiology

TEAM 435

We do things better

## Boys Team

- Ali Alzahrani
- Khalid Sharahily
- Ahmad Alzahrani
- Zeyad Alsalem
- Muhammad Dossary
- Meshal Alhazmy
- Hamzah Alfiar

## Girls Team

- Lamya Alsaghan
- Nojood Alhaidri
- Monera Alayuni
- Alanoud AlOmair
- Shahad Alenezi
- Aisha Al-Sabbagh
- Bodour Julaidan
- Noura ALTawil
- Deema AlFaris
- Sara Al-Hussein
- Suha Alenezy
- Latifah Alsukait
- Dalal Alhuzaimi
- Reema Allhaidan

Girls power!



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<http://ask.fm/microbiology435>

Contact us!