**Lab (6)**

**Kingdom**: Protista

**Subkingdom**: Protozoa

**Phylum**: Sarcomastigophora

**Class**: Ampicomplexa (sporozoa)

**Order**: Eucoccida

**Family**: Plasmodidae

**Genus**: *Plasmodium vivax* (benign tertian malaria)

*Plasmodium malaria* (quartian malaria)

*Plasmodium ovale* (ovale tertian malaria)

*Plasmodium falsiparm* (malignant tertian malaria)

**Disease name:** Malaria

**Site of infection:** Red blood cell and Liver tissue cell

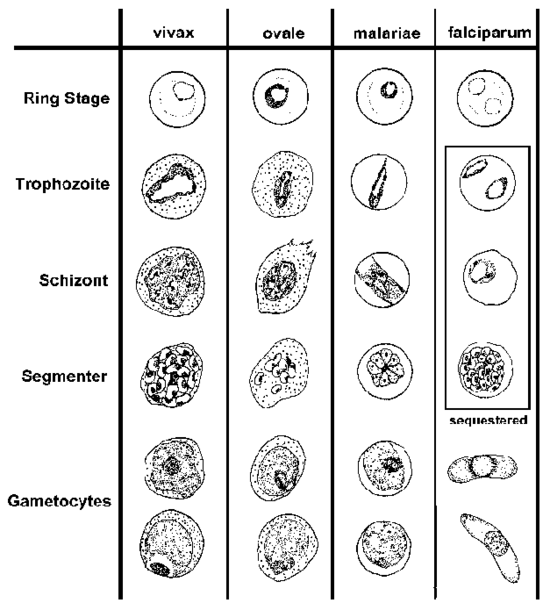
***Plasmodium* requires two hosts:**

-**Definitive invertebrate host:** (vector Anopheles mosquitoes female).

-**Intermediate vertebrate host:** (mammals, birds and lizards).

**Morphology:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P.falciparum | P.malaria | P. vivax | P.ovalae |
| Trophzoite | ring forms | band form | amoeboid form | compact rings in cells |
| **Schizont** | (8 – 36) merozoites. | (6–12) large  merozoites | (16). merozoites | (6-12) merozoites |
| **Microgametocyte** | Larger than RBC,  kidney shaped with blunt round ends | Smaller than RBC, round compact | Fills  enlarged RBC, small round or oval, compact with central nucleus | Of the size of RBC  round, compact |
| **Macrogametocyte** | more slender and longer than the  male | Round or oval with peripheral nucleus | large round or oval with peripheral nucleus | Round or oval with peripheral nucleus |

[](http://www.google.iq/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjw_OCh_8_LAhVDVBQKHa-WBcYQjRwIBw&url=http://tommytoy.typepad.com/tommy-toy-pbt-consultin/diseases-and-infections/&psig=AFQjCNHEFChmmqaFD0k3cyh-0fyXBRA3XA&ust=1458588251435714)

**Life cycle:**

**Sexual cycle**

Occurs in mosquito (9-21 days), fusion of micro and macrogametes are infective for mosquito→ zygote→ Ookinete (~24 houre) → Oocyst

Asexual replication (sporogony) → sporozoites released → migrate through hemocoel→ invade salivary glands

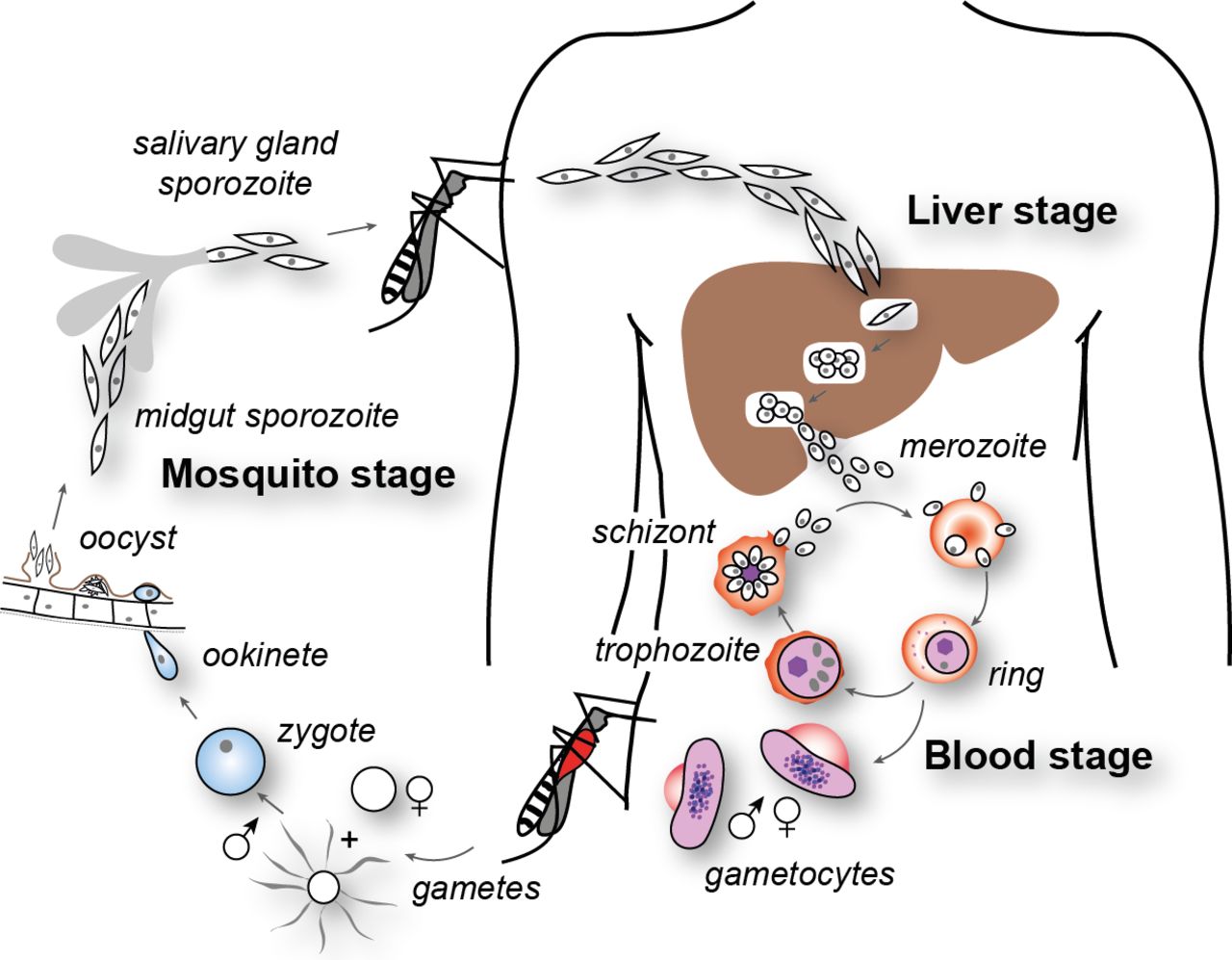
**Asexual cycle**

**1-Exoerythrocytic schizogony (Liver stage)**

Sporozoites injected during mosquito feeding→ merozoites (uninucleate asexual stages) invade liver cells. After this initial replication in the liver (Exo-erythrocytic schizogony) the parasites undergo asexual multiplication in the erythrocytes.

**2-Erythrocytic schizogony (Blood stage)**

Merozoites infect red blood cells and forms the ring stage in it and transform into trophozoites that mature into schizonts (multinucleated asexual stages) , which rupture releasing merozoites . Some parasites differentiate into asexual erythrocytic stages (gametocytes) repeated erythrocytic schizogony (48hr.) in *Pf., Pv, Po.*and (72 hr.) in *Pm.*

[](http://gamespewdaily.com/2016/03/19/asp-net-page-life-cycle/)

**Symptoms:**

- **Fever**: Often irregular. The regular pattern of fever does not occur until the illness has continued for a week or more.

-**Anemia**: The anemia is hemolytic in type. It is more severe in infections with

*P. falciparum* because in this infection cells of all ages can be invaded

-**Splenomegaly**: The spleen enlarges early in the acute attack of malaria.

-**Jaundice**: Amild jaundice due to hemolysis may occur in malaria.

**Diagnosis:**

1- Thin blood films stained with Giemsa stain.

2- Antibody test.