



# Malaria

*(Plasmodium vivax, ovale,  
malariae, and falciparum)*

**Photo by: Dr S.M. Sadjjadi**  
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# Morphology

- Intracellular parasites are usually less than 7 microns in diameter



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# Life Cycle

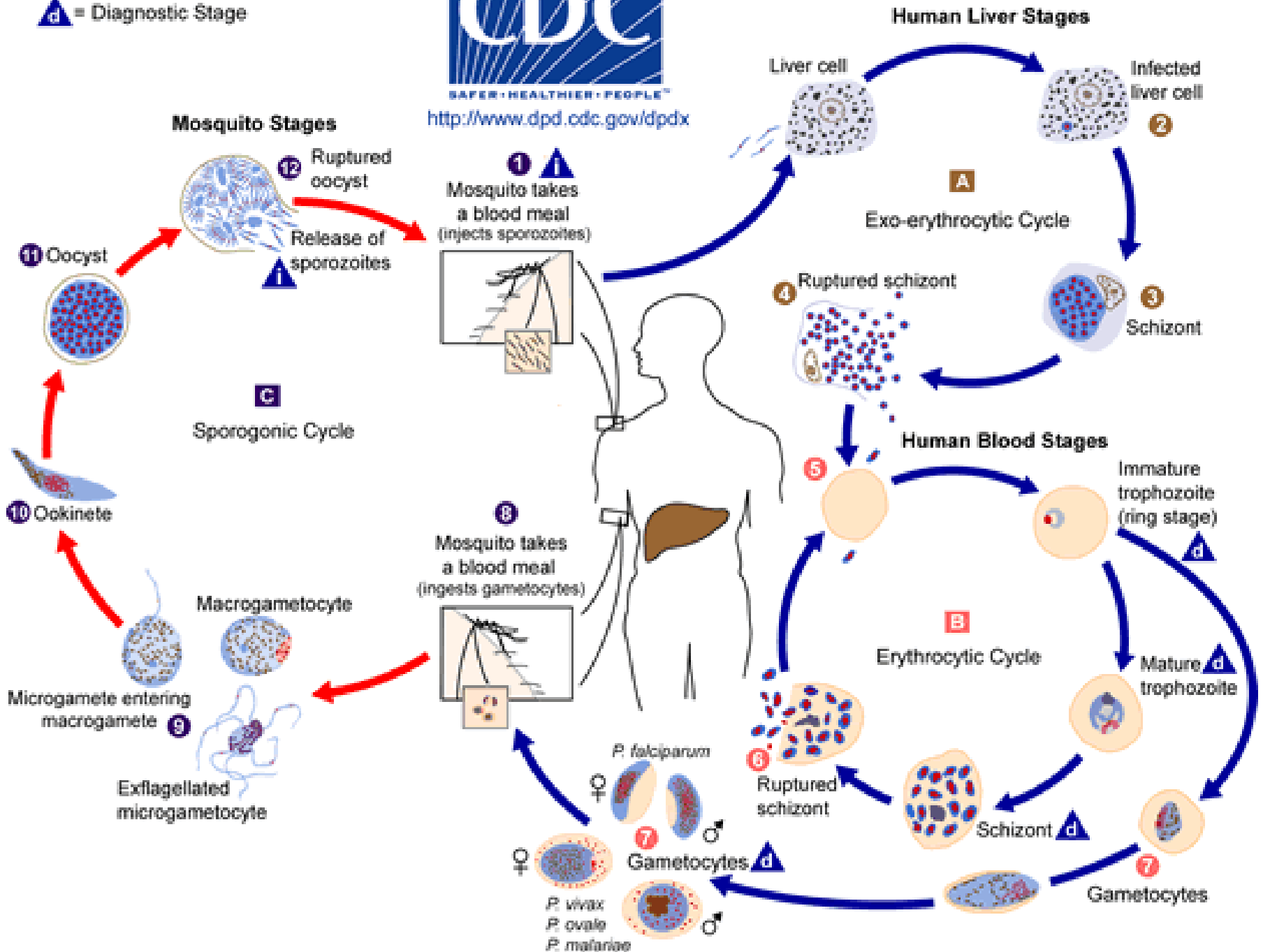
- Infected mosquito bites
  - Sporozoites inoculated to liver cells (merozoites)
    - Break out → to red blood cells (all *Plasmoda* sp.) and to liver again (not *P. falciparum*)
    - Liver → Red blood cell cycle can repeat many times, but not with *P. falciparum*
    - In red blood cells → grow (trophozoites) → multiply (merozoites) → break out → other red blood cells
      - Some trophozoites differentiate into gametocytes which are then infective for mosquitoes
      - Parasites do not go from red blood cells back to liver cells ever.

**i** = Infective Stage  
**d** = Diagnostic Stage



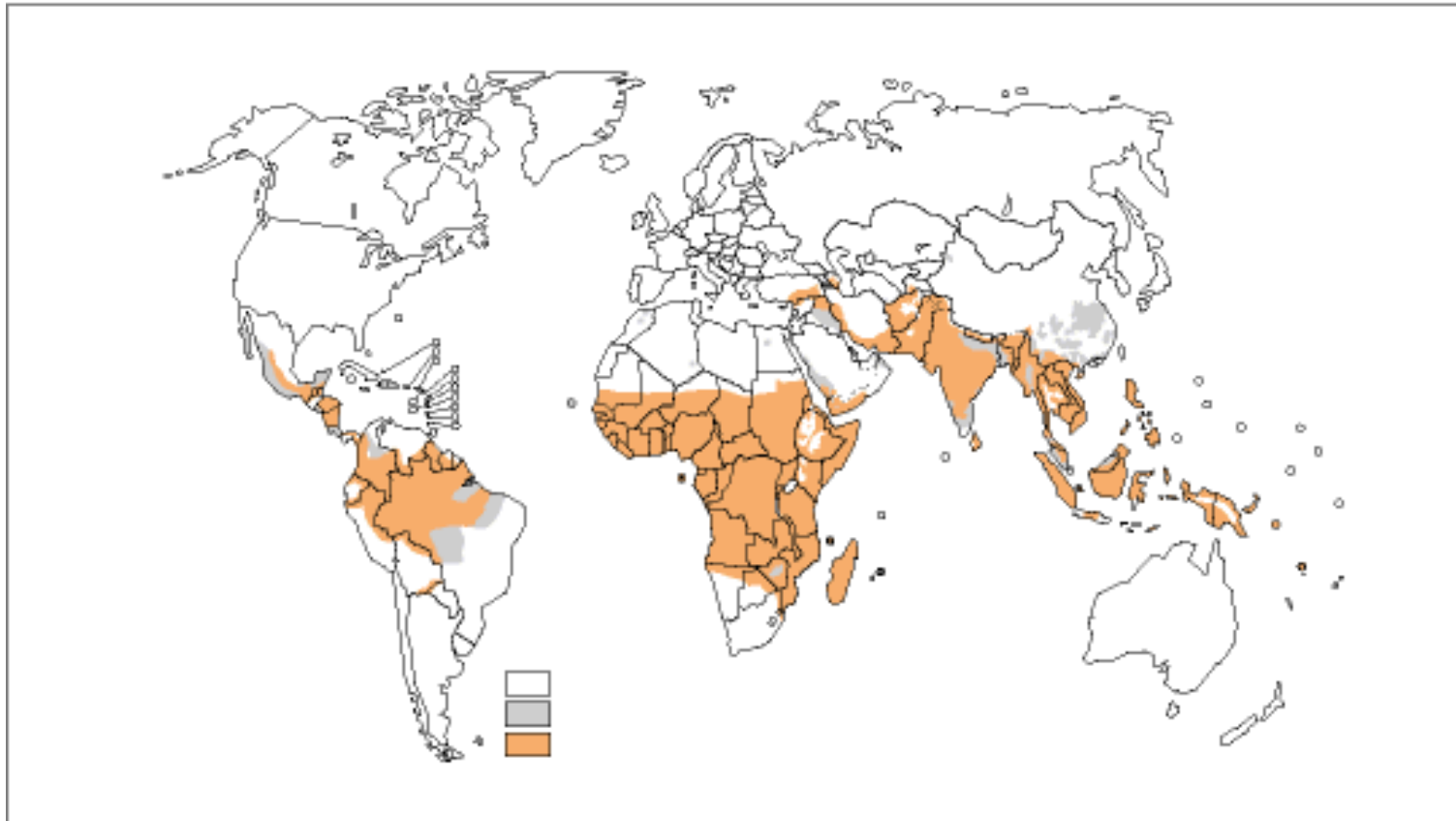
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# Epidemiology

- Worldwide
- Not endemic in the United states, Canada, Europe, Russia, Israel, Cuba



*Above: World malaria situation. Malaria is endemic to tropical and subtropical regions.*



# Diagnosis

- Thick and thin blood smear
- Serology (Fluorescent antibody)

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# Symptomatology

- Rigors, fever, splenomegaly, anemia
- *P. falciparum*: can be malignant leading to cerebral malaria, coma, and death
  - No synchrony, though tendency towards every third day
- *P. vivax* and *ovale*: Chills and fever every third day (every other day)
- *P. malariae*: Chills and fever every fourth day (i.e. two days between febrile episodes)

# Treatment

- Amodiaquine
- Chlorguanide (Proguanil)
- Chloroquine Phosphate
- Chloroquine Sulfate
- Hydroxychloroquine
- Primaquine
- Pyrimethamine
- Pyrimethamine-sulfadoxine





# Prevention

- Treatment of infected persons
- Vector control
- chemoprophylaxis

