

A close-up photograph of a mosquito on human skin. The mosquito is positioned on the left side of the frame, with its head and proboscis inserted into the skin. The background is a soft, out-of-focus orange and red gradient.

***Plasmodium* spp.**
(Malaria)

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The Malaria

Is a mosquito-borne infectious disease that affects humans and other animals.

Malaria is caused by single-celled microorganisms of the Plasmodium group. The disease is most commonly spread by an infected female Anopheles mosquito.



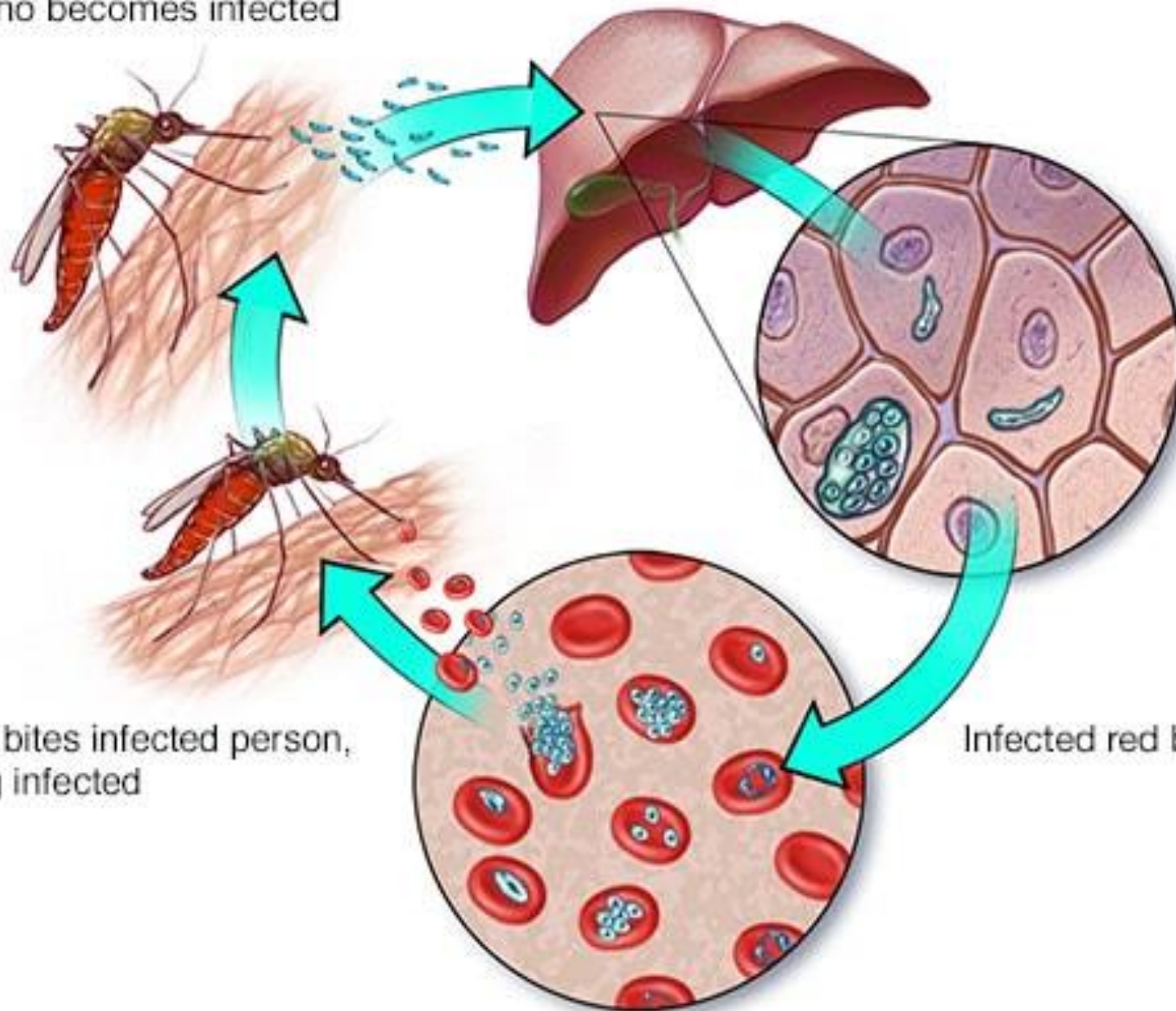


Life cycle

When a female Anopheles mosquito bites a person infected with malaria, it will carry the Plasmodium parasite and can transmit malaria to anyone it bites. Once a human or animal is bitten, the parasite enters the blood stream and begins to attack the red blood cells. This can then lead to extreme illnesses and in most cases death. The mosquito bite introduces the parasites from the mosquito's saliva into a person's blood. The parasites travel to the liver where they mature and reproduce.

Infected mosquito bites
person who becomes infected

Infected liver

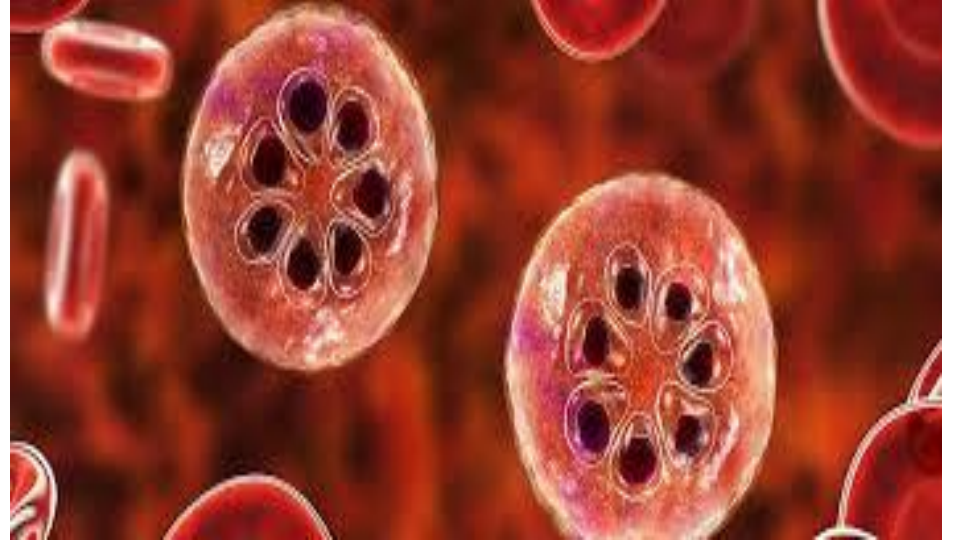
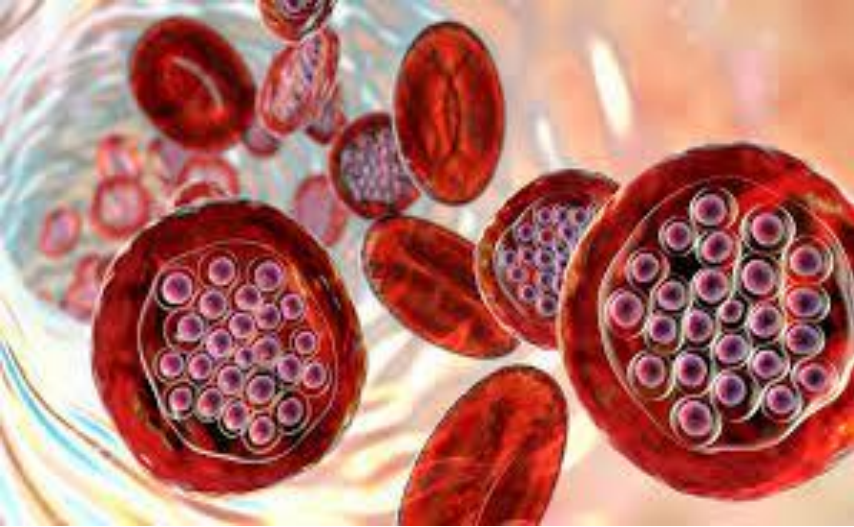


Mosquito bites infected person,
becoming infected

Infected red blood cells

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Five species of *Plasmodium* can infect and be spread by humans. Most deaths are caused by *P. falciparum*, whereas *P. vivax*, *P. ovale*, and *P. malariae* generally cause a milder form of malaria.

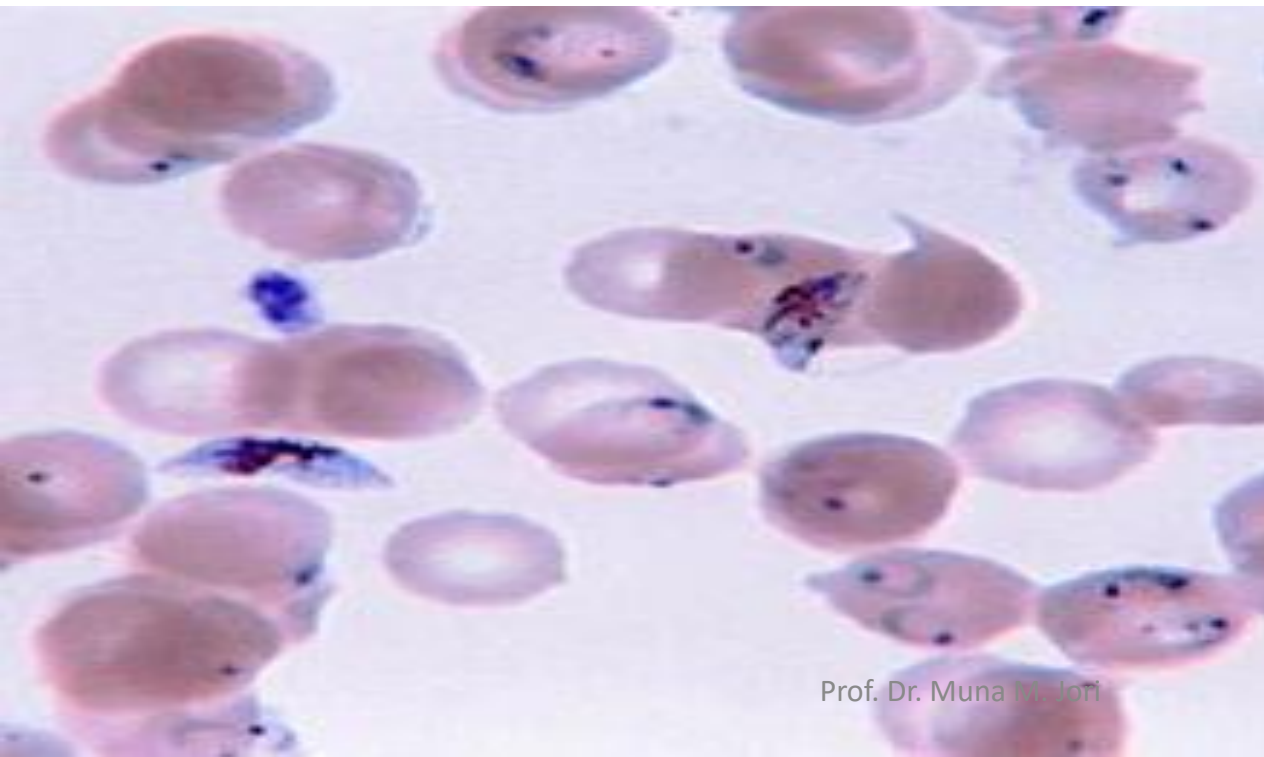
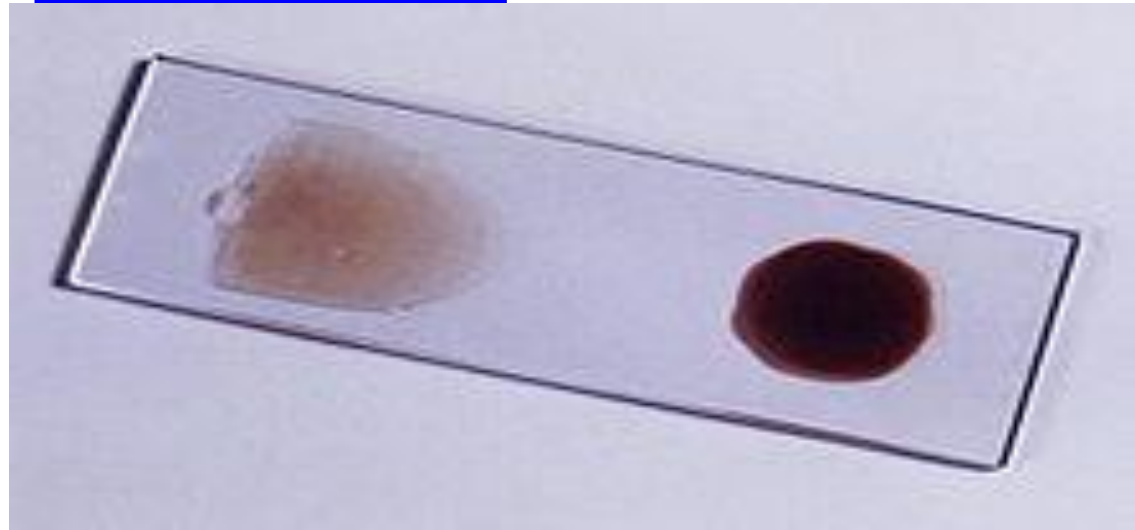


Symptoms

Significant weakness such that the person is unable to walk, Inability to feed , Low blood pressure and low blood glucose, Fever, Breathing problems, vomiting , and headaches. Circulatory shock, In severe cases, it can cause yellow skin, , coma, or death.

Symptoms usually begin ten to fifteen days after being bitten by an infected mosquito. If not properly treated, people may have recurrences of the disease months later. In those who have recently survived an infection, reinfection usually causes milder symptoms.

The blood film is the best standard for malaria diagnosis:



Treatment

There have been many drugs and insecticides used to attack Plasmodium, the parasite that causes malaria.

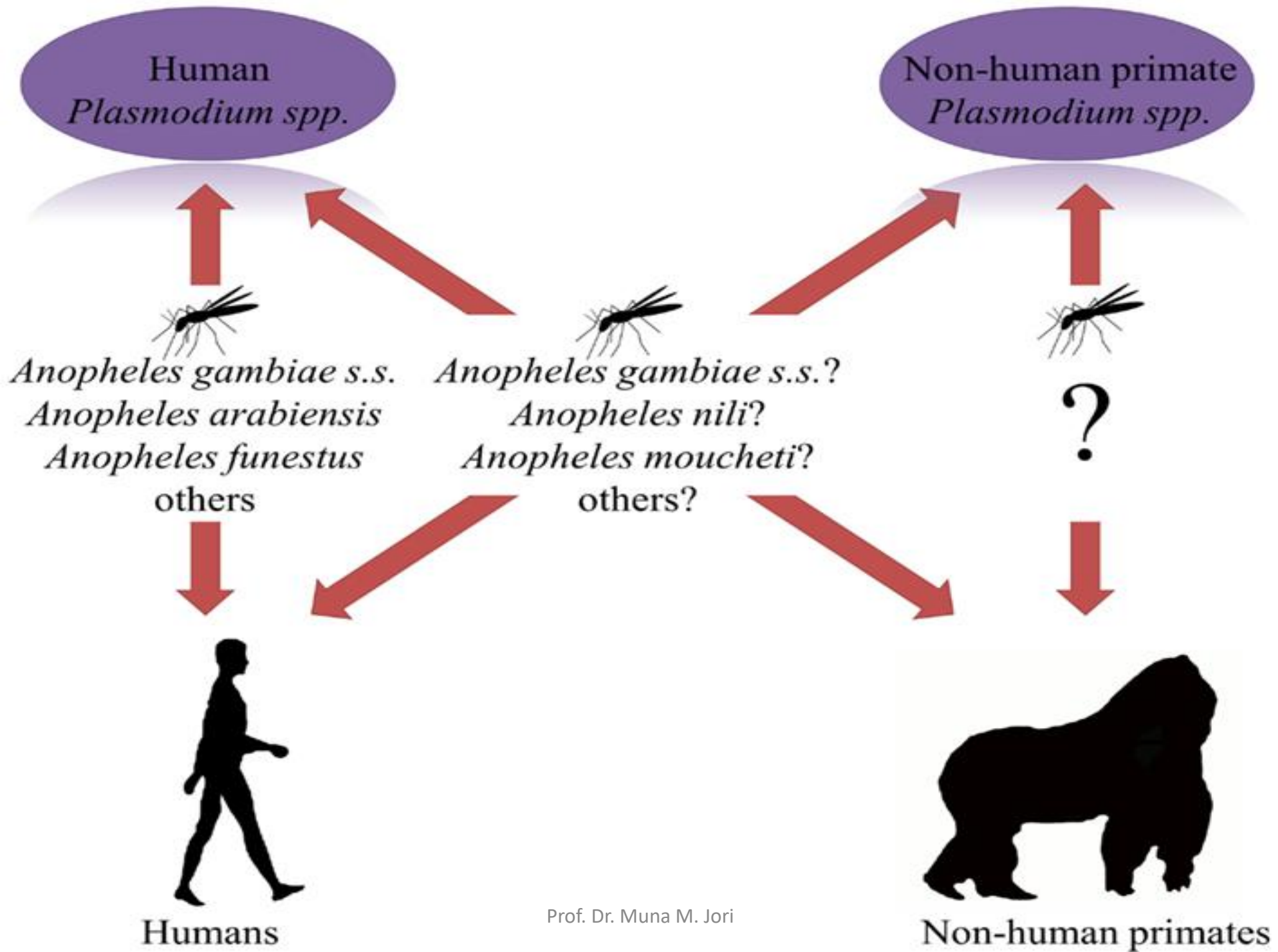
What makes malaria so difficult to overcome? Due to genetic changes over time, these female Anopheles mosquitoes become resistant to many forms of treatments. This causes scientists to constantly be on the hunt for new and better preventative measures and treatments.

Chlorquine and quinine----anti-erythrocytic stage drugs. **Primaquine** and **pyrimethamine**----anti-exoerythrocytic stage drugs.

Malaria in animals

Nearly 200 parasitic *Plasmodium* species have been identified that infect birds, reptiles, and other mammals, and about 30 species naturally infect non-human primates. *P. knowlesi*—a zoonotic species that causes malaria in macaques and human.

Some malaria parasites that affect non-human primates (NHP) serve as model organisms for human malarial parasites, such as *P. coatneyi* (a model for *P. falciparum*) and *P. cynomolgi* (*P. vivax*).



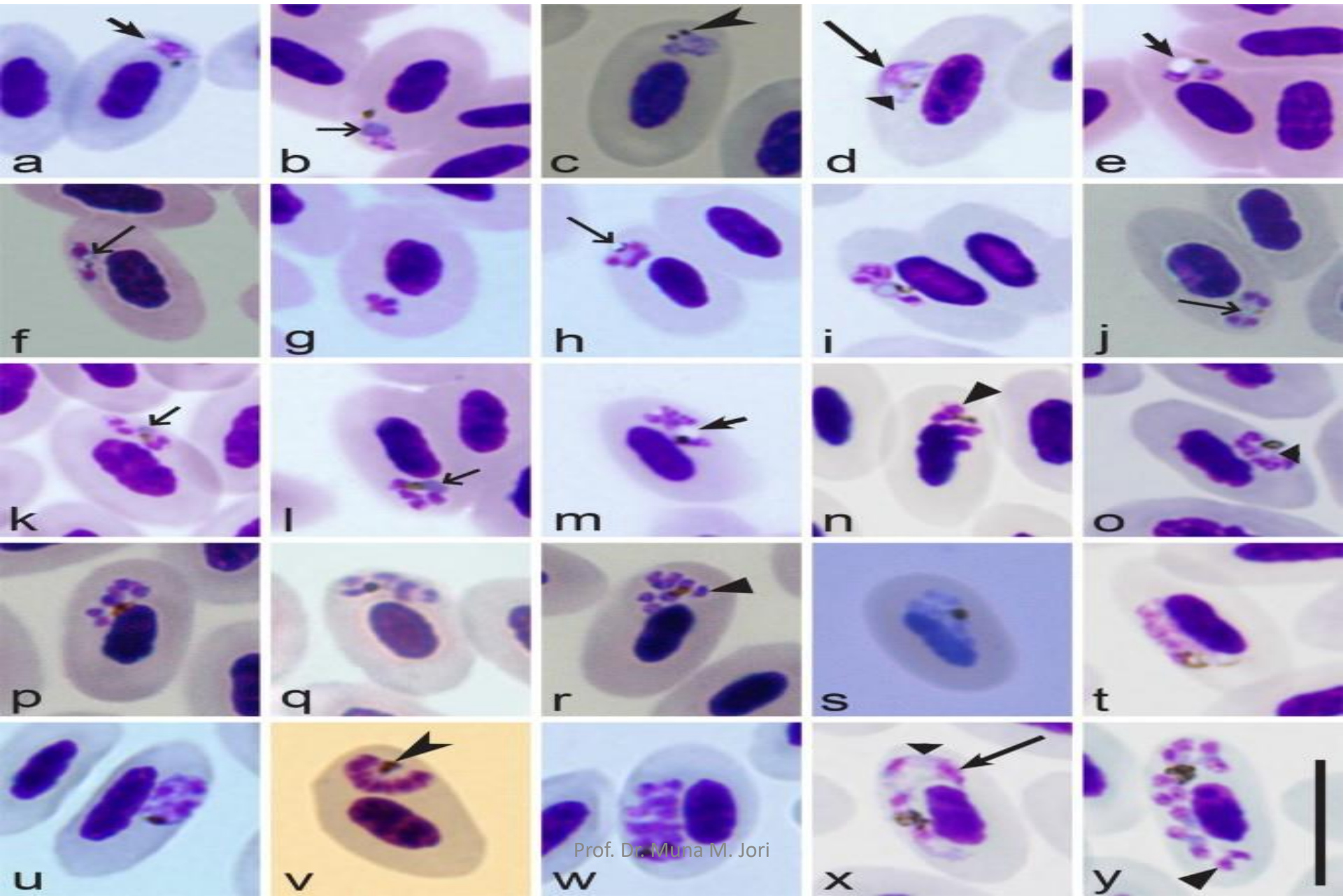
Diagnostic techniques used to detect parasites in NHP are similar to those employed for humans.

Malaria parasites that infect rodents are widely used as models in research.

Avian malaria primarily affects species play a role in limiting the distribution and abundance of endemic Hawaiian birds.

Global warming is expected to increase the prevalence and global distribution of avian malaria, as elevated temperatures provide optimal conditions for parasite reproduction.

Avian Malaria



Prevention

Chemoprophylaxis

-----Chloroquine/ pyrimethamine

used for

prophylaxis of malaria

-----Chemotherapy: 1 week before entry into the endemic area ; for 4 weeks after returning from the endemic area.

Mosquito control

- (1). Reconstruction of environment: eradicate the breeding places of mosquitoes.
- (2). Spry insecticides.
- (3). Use mosquito nets, screen, or mosquito repellents to protect the person from mosquito bites.



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