

# [Life cycle of malaria](https://assignbuster.com/life-cycle-of-malaria/)

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28 March The Life Cycle of Malaria i. The Basic Life Cycle The comprehension of the life cycle of Malaria is important for several reasons. One, it aids researchers in the design and implementation of interventions that can be used to hinder transmission, infection and develop Malaria treatments. This is the purposes of this research. Four known plasmodium species are known to cause malaria; Plasmodium vivax, ovale, malariae and falciparum. It has been proved that it is the female anopheline mosquitoes that transmit the Plasmodium.   
a. Sporozoite Stage   
They suck human blood as a meal and in turn inject beings with the sporozoite stage parasites that are infectious. These sporozoite stage plasmodiums enter into the blood circulation (Hall and Fauci, 1640).   
b. Liver Stage   
The sporozites migrate to the liver once they enter into circulation. In the liver, they invade liver cells and go through replications differentiating into merozoites (Hall and Fauci, 1640).   
c. Blood Stage   
The merozoites invade and enter vulnerable erythrocytes from where they go through differentiation and replicate over several days. They are produced in large numbers and soon rupture the erythrocytes. These results in their release back into the circulation to begin the blood stage again (Hall and Fauci, 1640).   
d. Gamete Reproduction   
The parasites may differentiate into gametocytes while in the blood stage. On been taken up by a feeding mosquito, the gametocytes replicate and mature into male and female gametes which fuse forming zygotes that go through differentiation and replication in the mosquito gut to form sporozoites that move to the salivary glands of the mosquito from where they can be transmitted (Hall and Fauci, (1640).   
This research examines these life cycle stages and the unique features that define each stage.   
Keywords: Plasmodium, Sporozite, merozoite, gametocyte   
1. Methods   
i. The use of microscopy   
a. Intravital microscopy that allows direct visualization of the plasmodium cell movement in the host.   
b. Transmission electron microscopy that gives detailed pictures of each phase (Kakkilaya, n. p).   
2. Results   
i. Reproduction of the gametes   
a. Kuehn and Pradel state that reproduction occurs in the mosquito midgut.   
ii. Transmission of the plasmodium cells   
a. Eckhoff (4) found that main features of the adult female mosquito like host seeking and blood feeding are vital features for malaria transmission.   
iii. The Liver Stage   
a. Derbyshire, Mota, and Clardy (n. p.) state that the plasmodium cells move to the liver where they move through the endothelium and invade the hepatocytes.   
iv. Blood stage   
a. Hall and Fauci, (1640) state that merozoites kick off the blood stage by invading the vulnerable erythrocytes.   
3. Discussion and Conclusion   
i. Occurrence of the life cycle of Malaria   
a. Public Library Science (n. p.) states that it is complex and involves distinct stages and habitats.   
ii. Characteristics of each life cycle   
a. Modifications of the plasmodium cells, the infected erythrocytes, and changes in transcript abudance during maturation of the parasite within the erythrocytes as Bozdech, Llinas, Pulliam et al., (n. p.) found out.   
iii. The importance of the research   
a. Understanding drug resistance in malaria as Pongtavornpinyo, Hastings, Dondrop et al. (52 – 61) explained.   
Works Cited   
Bozdech, Zbynek, Manuel Llinas, Brian Pulliam, et. al. “ The Transcriptome of the Intraerythrocytic Developmental Cycle of Plasmodium falciparum.” Plos Biology 1. 1, (2003); n. pag. Web. 24 March 2014.   
Delves, Michael, David Plouffe, Christian Scheurer, Stephan Meister, Sergio Wittlin, Elizabeth A. Weinzler, Robert E. Sinden and Didier Leroy. “ The Activities of Current Antimalarial Drugs on the Life Cycle Stages of Plasmodium: A Comparative Study with Human and Rodent Parasites.” PloS Med 9. 2 (2012): n. pag. Web. 9 March 2014.   
Derbyshire, Emily, Maria Mota and Jon Clardy. “ The Next Opportunity in Anti – Malaria Drug Discovery: The Liver Stage.” PloS Pathog 7. 9 (2011): n. pag. Web. 9 March 2014.   
Eckhoff, Phillip. “ A malaria transmission – directed model of mosquito life cycle and ecology.” Malaria Journal 10. 303 (2011): n. pag. Web. 9 March 2014.   
Hall, Fenton and Anthony Fauci. “ Malaria Control, Elimination, and Eradication: The Role of the Evolving Biomedical Research Agenda.” The Journal of Infectious Diseases 200. 11 (2009): 1639 – 1643. Web. 9 March 2014.   
Kakkilaya, B. S. “ Life Cycle.” Malaria Site, n. p., 9 Apr. 2011. Web. 9 March 2014.   
Kuehn, Andrea and Gabriele Pradel. “ The Coming out of Malaria Gametocytes.” Journal of Biomedicine and Biotechnology 2010. 2010 (2010): n. pag. Web. 9 March 2014.   
Pongtavornpinyo, Wirichada, Ian M. Hastings, Arjen Dondorp, Lisa J. White, Richard J. Maude, Sompob Saralamba, Nicholas P. Day Nicholas J. white and Maciej F. Boni. “ ORIGINAL ARTICLE: Probability of emergence of antimalarial resistance in different stages of the parasite life cycle.” Evolutionary Applictaions 2. 1 (2009): n. pag. Web. 9 March 2014.   
Public Library Science. “ Tracking a Killer; In Vivo Microscopy Reveals Details on the Life Cycle of Malaria Parasites.” Plos Biology 3. 6 (2005): n. pag. Web. 24 March 2014.