

**New Hope for Malaria**  
**Biomedical Breakthroughs and my Life**  
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Approximately every 30 seconds someone in the world dies of malaria. Thanks to modern medicine, I was not one of them! When I was 2 months old my parents took me to Cameroon, where they worked for six months. Even though I was a baby, I had to take a liquid antimalarial medicine, Paludrine.

Humans contract malaria in only one way: by being bitten by a female *Anopheles* mosquito carrying a malaria parasite. Four different malaria parasite species attack humans: *Plasmodium vivax*, *Plasmodium malariae*, *Plasmodium ovale*, and the most dangerous species, *Plasmodium falciparum*.

When the female *Anopheles* mosquito bites a human, it releases the parasite in its salivary glands into the human's bloodstream. First the parasite multiplies in the liver; then it moves to the red blood cells, killing them and attacking the immune system. When this happens a human experiences flu symptoms such as fever, chills, and headache. Their skin and eyes may take on a yellowish tint from the loss of red blood cells.

Since the discovery of the parasite causing malaria in 1880, malaria treatment has been widely researched. Many antimalarial drugs are now used to treat the symptoms. But the most frequently used drug to treat *P. falciparum*, Artemisinin, has been used for over 1500 years in China. Artemisinin, derived from the leaves of the *Annua* shrub, stops the oxygen radicals released when *P. falciparum* infects a red blood cell, causing life-threatening disease.

Newer options include the drugs Chloroquine, Quinine Sulfate, and Hydroxychloroquine. Unfortunately, the malaria parasite can adapt and

eventually become resistant to the drugs. Current DNA research on malaria parasites attempts to eliminate their resistance to drugs.

My parents showed me pictures of my baby crib draped with a white net in Cameroon. Prevention of malaria can be as simple as sleeping under a mosquito net, using bug repellent, and wearing long clothing. I took Paludrine in Africa because it was safe for an infant; my parents took Chloroquine, the most popular and widely available of the antimalarial drugs. Travelers visiting malarial regions should take antimalarials and use preventive measures.

Here in the United States there are few cases of malaria, but in poorer countries, especially in Africa, malaria is devastating. Humanitarian agencies are working to provide Chloroquine and other drugs to malaria-besieged countries

Why not just develop an antimalarial vaccine? Since 1997 researchers have been pursuing this idea. A group of scientists in Washington DC is feeding malaria-parasite-infested blood to mosquitoes, and then zapping the mosquitoes with gamma rays to kill the mosquitoes. This process weakens the parasite so that it can't cause disease but it can give the person immunity to malaria. This vaccination has been successful in about 50% of the people tested. A research group in Mali created a promising vaccine that stops malaria from entering the red blood cells. A third group is using a virus found in chimpanzees to help build up antibodies that fight malaria parasites. Though no vaccination is being mass-produced yet, research continues.

Malarial research occurs right in our own backyard! Dr. Wesley Van Voorhis, head of the University of Washington division of allergy and infectious diseases, is an expert on malaria. According to Dr. Van Voorhis, animal testing for malaria is difficult because certain malaria parasite species can only live in humans. Therefore, most testing is done on human malaria parasites in blood culture. The downside to this is that by doing studies outside of the body, scientists can't determine what happens when a liver and kidneys try to get rid of the drugs. Animal testing is used for some tests, for example on mice infested with the mouse malaria parasite.

Approximately every 30 seconds someone dies of malaria. Thanks to an antimalarial drug, I thrived as a baby in Africa. With new research on the treatment of malaria and a new vaccine on the horizon, I hope millions more people will also survive.

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March 2, 2008  
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### Reflective Paragraphs

Through writing and researching for this paper, I've learned so much more about malaria. I didn't even know that malaria came from a malaria parasite before I researched! This knowledge is very important now because malaria is such a big problem in many parts of the world. Seeing the statistic, "A child dies from malaria every 30 seconds" really shocked me. How can that be? That means that 90,000 kids die from malaria every day! It's impossible to look at that number and go on living our lives like we never saw it. We have to do something!

I am so glad that so much research is going into the treatment and prevention of malaria! And I hope that much more will happen soon. Think about it, if we can find a vaccine for malaria, we could save 90,000 children every day! That would be making a difference.

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