Interrupt cycle here

• Malaria cycle depends on parasite being passed from mosquito to human.  
• Break cycle at transmission point and parasite will not reproduce in humans.  
• This limits number of vectors of malaria because mosquitoes have fewer humans to contract the parasite from.  
• By limiting vectors, malaria has fewer opportunities to infect humans.  
• If we can keep breaking the transmission point, the number of vectors will be so small that malaria will not be a major problem due to huge decrease in infection rate.  
• Disease will evolve toward mildness due to lack of hosts and reproduction.

Need
To determine an effective and affordable way to combat Malaria in Africa.

Why?
• Over 1,000,000 people die of Malaria every year.
• 90% of these deaths occur in Sub-Saharan Africa.
• Every 30 seconds a child dies of Malaria.
• It is predicted 20-80 million people will be living in malaria infested regions by the year 2080 due to global warming.

Approach
1. Evolve malaria towards mildness  
2. By reducing the number of mosquito bites in Africa  
3. By investigating methods of mosquito prevention  
4. Finally, raising awareness as to how people can help through flyers and fundraising

Past Examples
Between 1927 and 1934 there was an explosion of malaria in Northern Alabama. Almost every house in the area was mosquito proofed by 1939 and the malaria rate dropped drastically.

Life Cycle of Malaria
Malaria requires both humans and mosquitoes to survive. There are different strands of the disease, of varying states of virulence. The most virulent strands kill their host the fastest.

Evolving Malaria
• Malaria cycle depends on parasite being passed from mosquito to human.  
• Break cycle at transmission point and parasite will not reproduce in humans.  
• This limits number of vectors of malaria because mosquitoes have fewer humans to contract the parasite from.  
• By limiting vectors, malaria has fewer opportunities to infect humans.  
• If we can keep breaking the transmission point, the number of vectors will be so small that malaria will not be a major problem due to huge decrease in infection rate.  
• Disease will evolve toward mildness due to lack of hosts and reproduction.

Malaria and Drug Resistance in Southeast Asia
• Artemisinin is considered the most effect drug against malaria and has been used in Southeast Asia for the past 30 years.  
• Artemisinin can kill the parasite in less than 72 hours. However, it does not remain in the body. In order to kill any remaining parasites that may have developed resistance, Artemisinin is often taken with another slower acting drug.  
• In Cambodia, Artemisinin is losing its effectiveness due to lack of medical compliance.  
• The parasite has been evolving into an untreatable, deadly disease.

References
Paul Farmer  
Wisconsin Department of Health Services, http://www.dhs.wisconsin.gov/env/health  
Centers for Disease Control and Prevention, http://www.cdc.gov/malaria/facts.htm  
Meta-Analysis of Malaria Clinical Trials for Children with Artesunate,  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2023092/  
Paul Farmer, Indonesia,  
Nothing But Nets,  
http://www.nbn.org/