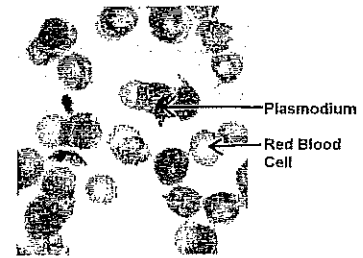


### Dr. Ross & His Malaria Experiments

Ronald Ross was a doctor in Secunderabad, India in 1887. Like many tropical countries India was ravaged by the disease malaria. In India alone malaria was claiming a million lives a year. Doctors already knew that malaria was caused by a parasite plasmodium, which was found in the blood of malaria victims. No one knew how it was transmitted however, so Dr. Ross set out to find out.



Dr. Ross noticed that patients in his field hospital in open wards were more likely to develop malaria than those in closed wards. An "open ward" is one without any windows or



Open Ward  
No Sides

screens. He began to wonder why this was. After noticing this pattern Dr. Ross proposed that mosquitoes might be spreading the disease from patient to patient. Based on the idea that mosquitoes might be spreading the disease Ross predicted that if this was true mosquitoes that had bitten patients with malaria should have live parasites inside them.

Ross then set out to test his hypothesis and prediction. He set up an experiment. He took two sets of patients and separated them, one set with malaria and one without. He then took two sets of newly hatched mosquitoes (who hadn't had a human meal yet) and allowed one set to feed on each group. Ross then dissected the mosquitoes. In the set from the malaria patients he found live parasites in their stomachs. In the set from unaffected patients he found no parasites.

Based on his experiment Dr. Ross published his supported hypothesis (with evidence) and many steps were taken to prevent malaria. Now epidemics can be controlled with mosquito netting, screens, and spraying pesticides to cull mosquito populations. Even with over 100 years of knowledge malaria is still a serious problem in many tropical second and third world countries despite having been virtually eliminated from places like the southern U.S. To date the World Health Organization (WHO) estimates that 300-500 million infections and over 1 million deaths can be attributed to malaria yearly. This makes it the most common and widespread infectious disease on the planet currently with 40% of the world's population being at risk for infection.

- 1) What was Doctor Ross's hypothesis?
- 2) What was one of Dr. Ross's initial observations?
- 3) What did Dr. Ross predict?
- 4) What was the control group for his experiment?
- 5) What was the independent variable?
- 6) What might Ross have found out when he initially researched the problem of malaria in the 1880s?
- 7) What further research might be done today?
- 8) Identify the dependant variable in the experiment.
- 9) After analyzing his experimental data what was Ross able to determine about the transmission (spreading) of malaria between patients?
- 10) Based on the information above can you predict another country that may have trouble with malaria currently?