



IDRC FEATURE

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RESEARCH UNDERWAY TO DEVELOP ANTI-MALARIAL VACCINE

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For the first time a continued culture of the malaria parasite has been maintained in the laboratory. This is an important step towards the development of a vaccine against this disease that affects about 200 million people throughout the world.

The culture has been achieved in the laboratory of Professor William Trager of Rockefeller University in New York. The parasite, Plamosdium falciparum, is one of the four parasites transmitted by mosquitoes and capable of causing malaria in man. Plasmodium falciparum is responsible for the severest forms of the disease and is particularly widespread in Africa.

Prof. Trager is a member of a working group of the Special Program of Research and Training in Tropical Diseases, jointly sponsored by the World Health Organization and the United Nations Development Program. The group, made up of experts from several countries, aims to develop a vaccine against malaria, a disease that cannot be eradicated using existing means, such as the fight against the mosquito.

In many regions of the world the mosquito has become resistant to the insecticides used against it and the incidence of the disease is increasing. In India, for instance, the number of cases of malaria has increased from 60 000 in 1962 to more than four million in 1975. In Africa, the problem is even more acute. According to Dr Adetokumbo O. Lucas, former president of the Nigerian Medical Research Council and now director of the Special Program, the infection is so deeply entrenched in the environment that the spraying of insecticides and drug distribution are not sufficient to interrupt transmission of the disease.

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Moreover, in certain regions of Asia, Plasmodium falciparum has become resistant to the major anti-malarial drugs, chloroquine and other related chemicals.

Intensive research is required to mobilize the powerful weapons of modern bio-medical sciences against this disease. This is one of the goals of the Special Program that will focus on six of the principal tropical diseases: malaria, schistosomiasis (or bilharzia), filariasis (which includes river blindness), trypanosomiasis (including sleeping sickness), leprosy, and leishmaniasis (of which a particularly severe form in South America, called espundia, kills by destroying the face.)

Researchers tackling the problem of malaria believe that the development of a vaccine is a realistic goal, since it is known that some people can acquire a degree of immunity against the disease.

The malaria parasite has now been cultured on specially treated blood cells. For the first time, a sufficient amount of pure parasites will be available to researchers who will try to develop a method for boosting man's defense system so that the parasite is destroyed as soon as it is injected into the blood by the mosquito. This is the principle of immunization (or vaccination).

Although it may be several years before a vaccine is developed, the culture method perfected by Prof. Trager represents a major breakthrough.

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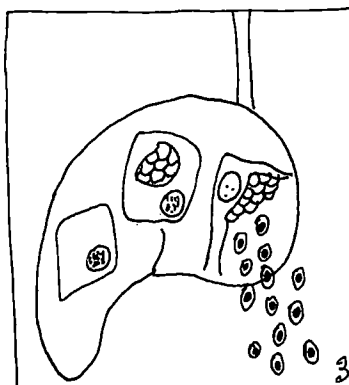
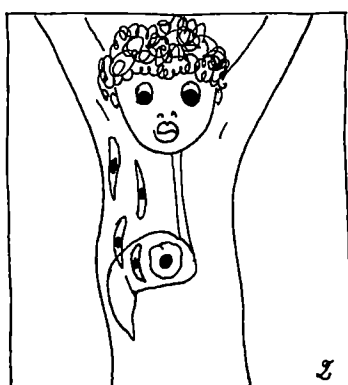
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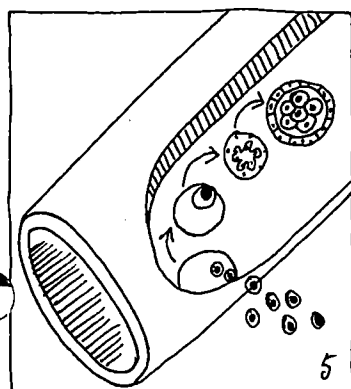
Malaria's cycle of transmission



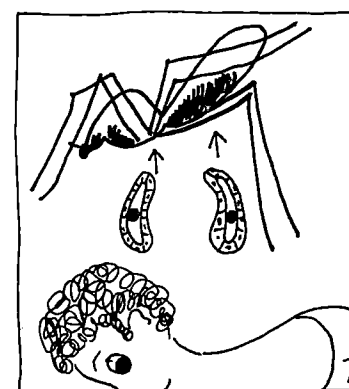
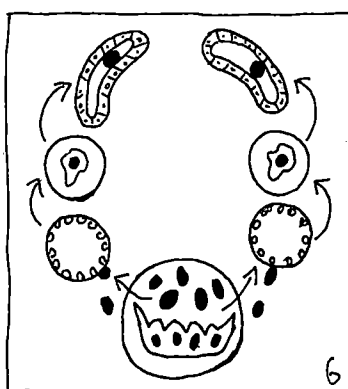
The malaria parasite cells, introduced into the blood of the victim by the bite of a mosquito, enter the liver.



In the liver the parasite cells multiply. As the liver cells burst, another form of the parasite is released into the blood stream.



This new parasite invades red blood cells where it is further transformed. The blood cells burst releasing more parasites.



When a mosquito takes blood from an infected person, it picks up parasites that are then passed on to the next person it bites.

