



Name: _____

Date: _____

There are many different kinds of *Anopheles* mosquitoes. Only ten percent of them play a role in spreading malaria. Those ten percent can be the host to one of the four kinds of parasites that cause malaria. The most dangerous of these parasites is called *Plasmodium falciparum*. A plasmodium is a one-celled organism. The word falciparum comes from two Greek words: one means "sickle-shaped" and the other means "birth" or "multiple births."

Plasmodium falciparum does indeed have many "births" as it moves back and forth from human and animal hosts to mosquitoes and back again—each serving as a host to the disease that causes severe illness and even death. A host is an animal or plant that supports a parasite and allows it to grow, even if doing so causes the animal or plant great harm.



Step One: SPOROZOITES INVADE THE VICTIM

An *Anopheles* mosquito takes a blood meal, using proteins in her saliva to keep the blood from coagulating and stopping her meal. Parasites (such as *Plasmodium falciparum*) that cause malaria also ride along in the saliva. At this stage in their life, these disease carriers are shaped like stretched-out, pointed ovals. They are called sporozoites.

My notes: _____



Step Two: SPOROZOITES INVADE THE VICTIM'S LIVER AND BECOME MEROZOITES Within 30 minutes, the sporozoites reach the victim's liver. Each tiny sporozoite burrows into an individual liver cell and begins to multiply, becoming many merozoites, or daughter cells. For every one sporozoite that enters the victim's body, around 40,000 merozoites are formed in the liver.

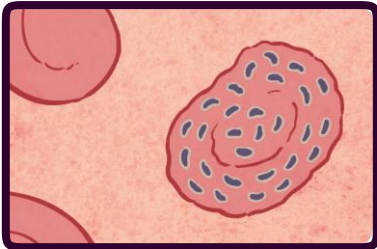
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Step Three: MEROZOITES BURROW INTO RED BLOOD CELLS

Inside a liver cell, merozoites multiply and multiply, until there are so many of them that the liver cell cannot hold them. It explodes. Some of the merozoites move to other liver cells. Other merozoites enter the blood stream and burrow into red blood cells.

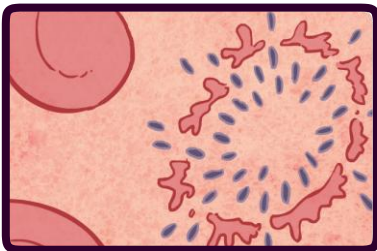
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Step Four: TROPHOZOITES FORM AND DIVIDE INTO THOUSANDS OF MEROZOITES

Inside each red blood cell, the merozoites begin to grow larger. They become ring-shaped forms called trophozoites. The parasite continues to grow, and trophozoites reproduce to form thousands more daughter cells.

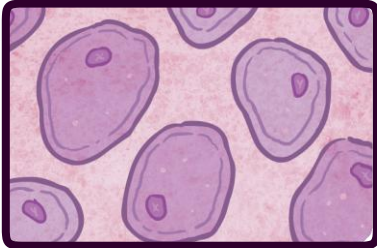
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Step Five: MEROZOITES CAUSE DISEASE

When the merozoites have completely taken over a red blood cell, the cell's membranes explode and thousands of disease-causing plasmodia invade the victim's entire body. During the one or two weeks this process has been going on, the victim does not feel any of the effects of the disease. But once the plasmodia begin to spread throughout the body, problems begin. Victims suffer from symptoms such as fever, chills, and extremely painful joint aches. The parasites can also affect their brains.

My notes: _____



Step Six: THE PARASITES INSURE THAT THEY WILL SURVIVE BY FORMING GAMETOCYSTES These cells will eventually form male and female gametes that, when united, form even more plasmodia. But, gametes cannot unite in humans. They can only unite and create more plasmodia when they are inside a mosquito.

When the mosquito feeds on an infected animal or human, they take in blood that is loaded with plasmodia gametes.

My notes: _____



Step Seven: GAMETES FORM EVEN MORE SPOROZOITES

Once the gametes are back inside the mosquito, they unite in the insect's gut and give rise to even more *Plasmodium falciparum* – which is then shared with another human or animal during the mosquito's next blood meal.

My notes: _____

