The malignant life cycle of malaria

For some, a mosquito bite is an itchy inconvenience; for others, it can be a kiss of death. *Plasmodium* protozoa cause the tropical disease malaria, and these parasites depend on the interaction between mosquitoes and humans to continue their complex life cycles, which involves passing through several forms and reproductive stages.

1. A malaria-infected female *Anopheles* mosquito bites a human, injecting its saliva full of *Plasmodium* parasites in their sporozoite form into the bloodstream.
2. The sporozoites travel in the blood to the liver, where they enter hepatocytes (liver cells).
3. Inside the hepatocytes, sporozoites divide and multiply thousands of times, reproducing asexually to give rise to large numbers of merozoites.
4. Merozoites are released into the bloodstream, where they enter red blood cells.
5. In the red blood cells, some merozoites turn into trophozoites – the feeding stage of the malaria parasite – which then split to form schizonts. Trophozoites metabolise the haem contained in red blood cells.
6. The schizonts burst the infected red blood cells, releasing more merozoites. This leads to successive cycles of red blood cell entry and bursting.
7. Other merozoites develop into gametocytes, which circulate in the bloodstream until they are taken up by another mosquito taking a blood meal.
8. Male and female gametocytes fuse in the mosquito gut, reproducing sexually and forming an ookinete, which develops into new sporozoites.
9. When enough sporozoites are produced, they migrate to the mosquito’s salivary glands and are ready to move on to infect a larger host when the mosquito takes its next blood meal.