



### BACKGROUND INFORMATION

This image shows the mouthparts of a female mosquito under a powerful microscope. The mosquito uses these mouthparts to drink blood from other animals, called **hosts**. The mouthparts help the mosquito pierce a host's skin and suck out blood, which the mosquito needs to make eggs. The red parts of the image indicate blood cells from the host.

Sometimes, a mosquito drinks blood from a host infected by a **pathogen**: a disease-causing microbe such as a virus, bacterium, or parasite. The pathogen may enter the mosquito and can then be **transmitted**, or passed on, to the mosquito's future hosts.

An organism that transmits pathogens (and the diseases they cause) from one host to another is called a **vector**. Examples of vectors include mosquitoes and other biting arthropods, such as flies, fleas, lice, and ticks. **Vector-borne diseases** are diseases caused by pathogens that are transmitted from one host to another by vectors. Mosquitoes are the main vectors for a variety of vector-borne diseases — including dengue, chikungunya, West Nile fever, and Zika — that lead to the deaths of more than 700,000 people worldwide each year.

Many **emerging diseases**, diseases that are becoming more common or of concern, are transmitted by vectors. Biologists and medical experts work to control the spread of vector-borne diseases by studying vectors, such as mosquitoes. Learning about the biology of a vector — including its life cycle, physiology, and behavior — can help us better understand how diseases spread and how we can develop effective management and control strategies to reduce disease transmission.