

WHAT IS A VECTOR?

A vector is a transmission agent. Certain invertebrates - mainly insects - carry microscopic organisms that cause diseases and transmit them to humans and animals when they feed.

Fortunately, not all biting invertebrates are vectors!

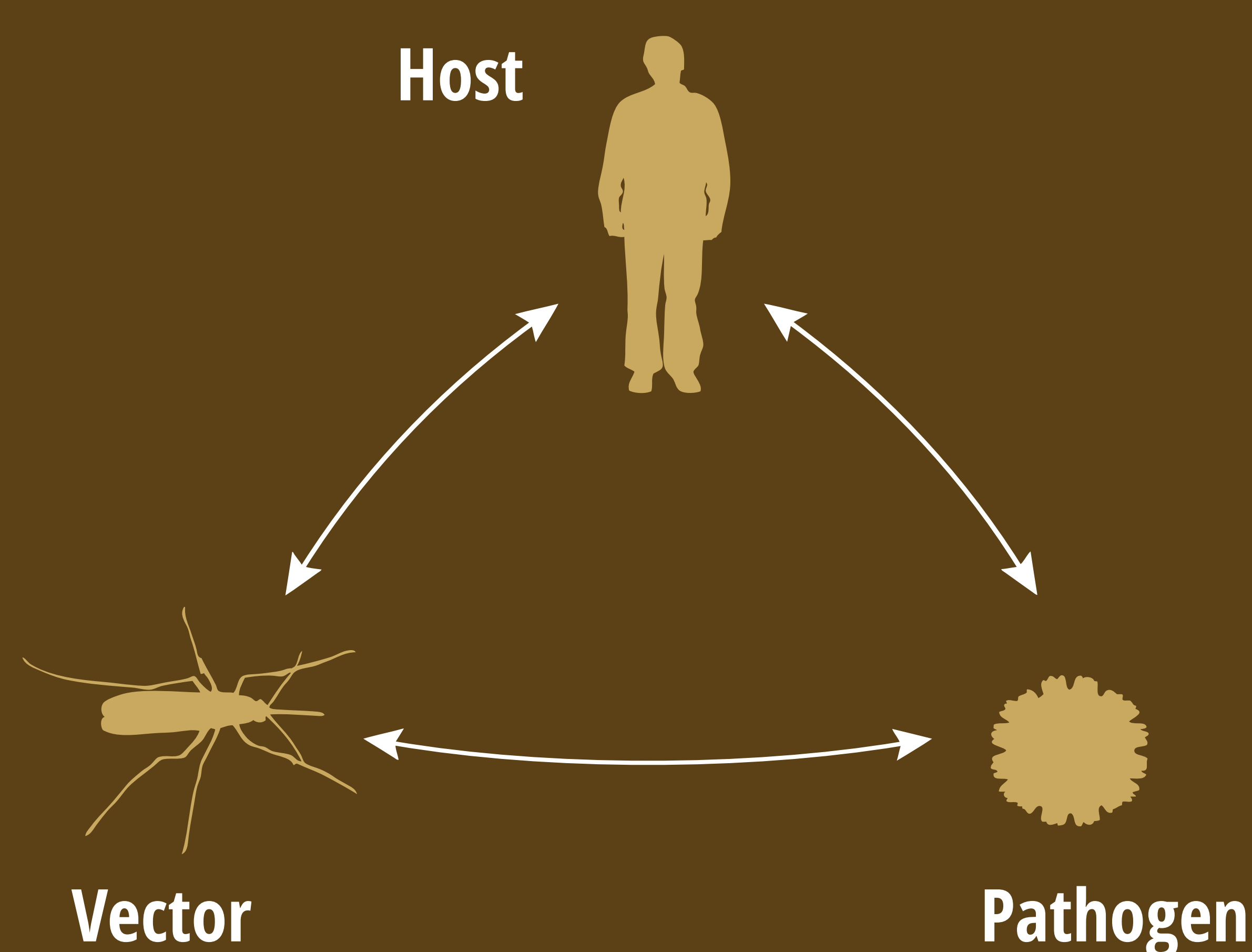
A vast world of vectors

What do **plague**, **malaria** and **chikungunya** have in common? These diseases and many others - or more precisely the causal agents responsible - are spread by certain **arthropodes**, a zoological category that includes flies, scorpions, shrimps, etc. **Arthropod vectors feed on blood** and this very special diet means that they can act as intermediaries.

These haematophagous vectors are themselves infected by pathogens and inject the latter into their hosts when they feed on blood. They are found in the **country, in towns and**

The best-known vectors are mosquitoes but the gang also includes bugs, fleas, ticks, flies, etc.

in forests and between them all cover almost the world from the tropics to temperate latitudes. The list of their 'victims' also shows their diversity: **humans, birds, sheep, cows...**



The infernal triad

Three players are involved in the transmission of what are known as vector diseases: **a vector**, **a host** (the future infected body) and **a pathogen**. The latter member of the trio can be a virus (like those of chikungunya and dengue), a bacterium (plague) or a parasite (malaria and sleeping sickness).

A given pathogen is transmitted by only one or a small number of vectors. Likewise, only one or several vertebrate hosts are at risk from the pathogen.

The precision of these adaptations results from centuries of interactions between the three players.

What are scientists doing?

Some vector diseases have affected humans **for thousands of years** (malaria, yellow fever). Others are **emerging diseases** (chikungunya, dengue) and result from recent global changes and globalisation. Finally, it has been possible **to control** others to a considerable degree (plague, onchocercosis). Today, scientists are continuing to perfect **new anti-vector and prevention strategies** to reduce vector transmission of pathogens and **to lessen the risk of the establishment** of a disease in a region.

