Trends in Parasitology | Vector of the Month

Aedes albopictus (Asian Tiger Mosquito)

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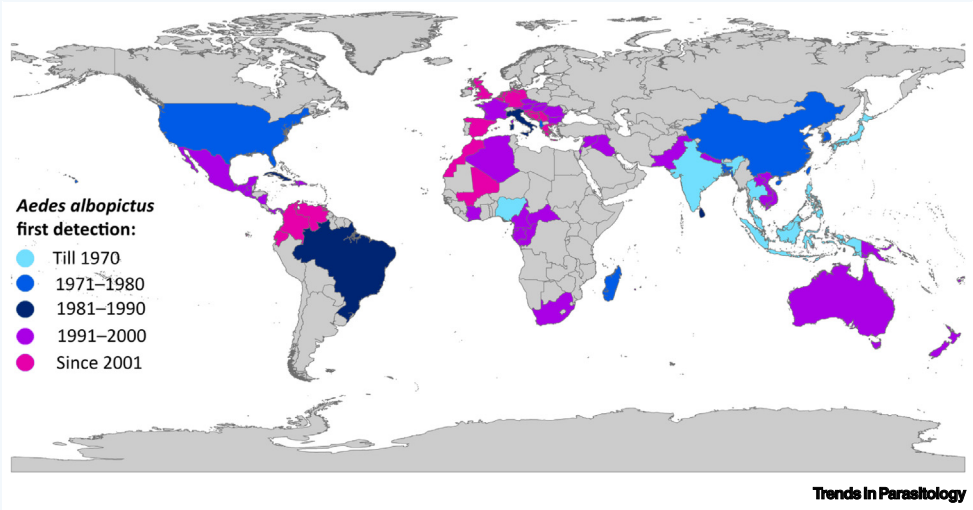
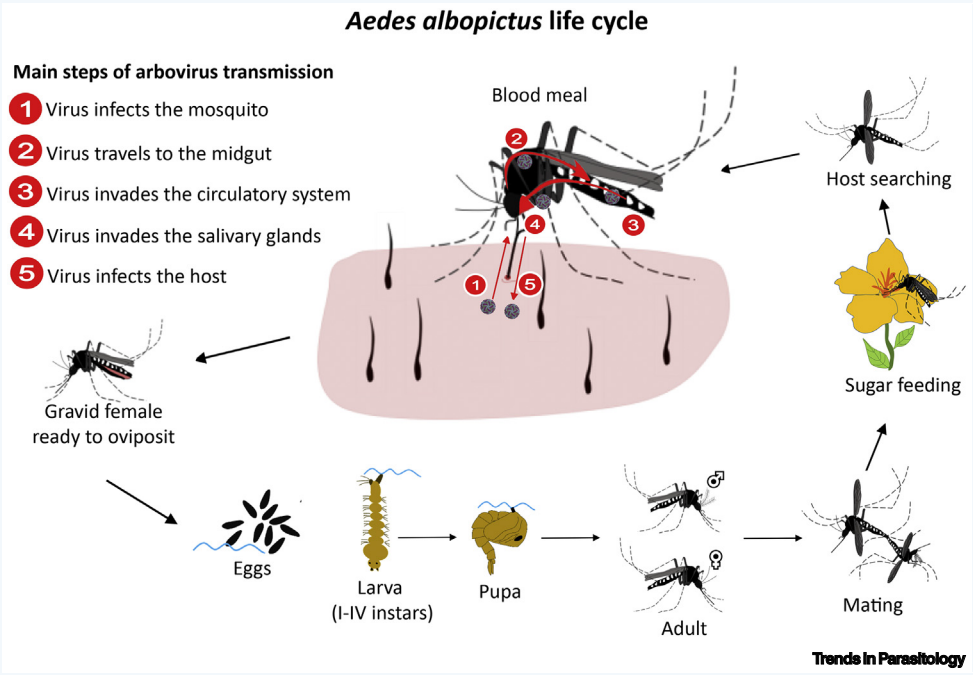


Aedes albopictus originated in the tropical forests of Southeast Asia. It is currently ranked among the top 100 invasive species worldwide and can be found on all continents. It is a vector of chikungunya, dengue, and Zika viruses, and the filarial worms that cause dirofilariasis, among other agents. *Ae. albopictus* is a zoophilic species, but a preference for human blood meals is known. It has high levels of ecological and physiological plasticity (e.g., drought-resistant eggs, cold-acclimated adults exploiting various breeding sites, and 5–17 generations per year), allowing its fast adaptation to urban/suburban environments and colder regions. Notably, trade and travel globalization, climate change, superior competition for food over other *Aedes* species, as well as the lack of reliable surveillance and effective control tools boost its worldwide-scale invasion. Its resistance to commonly used larvicides and adulticides is well recognized, and the development of novel control tools with proven epidemiological impact is challenging.



TRANSMISSION FACTS:
Ae. albopictus transmits >25 arboviruses, including chikungunya, dengue, and Zika viruses, and filarial worms such as *Dirofilaria* spp. It is susceptible to infection by a few *Plasmodium* species (*Plasmodium gallinaceum* and to a lesser extent *Plasmodium relictum*).

Intense day-biting activity, mainly outdoors.

A wide host range, from main host mammals to birds, reptiles, and amphibians, representing a bridge vector of zoonotic pathogens to humans.

Some *Wolbachia* endosymbionts may induce cytoplasmic incompatibility and reduce arbovirus transmission.

CONTROL FACTS:
Conventional control is mainly based on temephos and *Bacillus thuringiensis* subsp. *israelensis* (*Bti*) larvicides. Other biocontrol tools include entomopathogenic fungi and larvivorous natural enemies (e.g., copepods).

If larvicidal control fails, or in emergency situations, space spraying with pyrethroids or organophosphates can be used against adults.

The use of synthetic insecticides is hampered by the quick resistance development in exposed populations.

Removing urban breeding sites is crucial; promising results were obtained with toxic sugar baits.

Insect repellents and insecticide-treated materials help to reduce vector-biting activity on humans and pets.

Control approaches based on the sterile insect technique (SIT) and the incompatible insect technique (IIT)-SIT achieved positive results.

TAXONOMY AND CLASSIFICATION:
PHYLUM: Arthropoda
CLASS: Insecta
ORDER: Diptera
FAMILY: Culicidae
GENUS: *Aedes*
SPECIES: *Ae.* (*Stegomyia*) *albopictus* (Skuse 1894)

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Resources

www.ecdc.europa.eu/en/disease-vectors/facts/mosquito-factsheets/aedes-albopictus
www.cabi.org/isc/datasheet/94897
www.invasivespeciesinfo.gov/profile/asian-tiger-mosquito
www.who.int/news-room/detail/14-11-2019-mosquito-sterilization-offers-new-opportunity-to-control-chikungunya-dengue-and-zika

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