



ZIKA VIRUS IN THE ENVIRONMENT

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Public Health – Always Working for a Safer and Healthier Washington

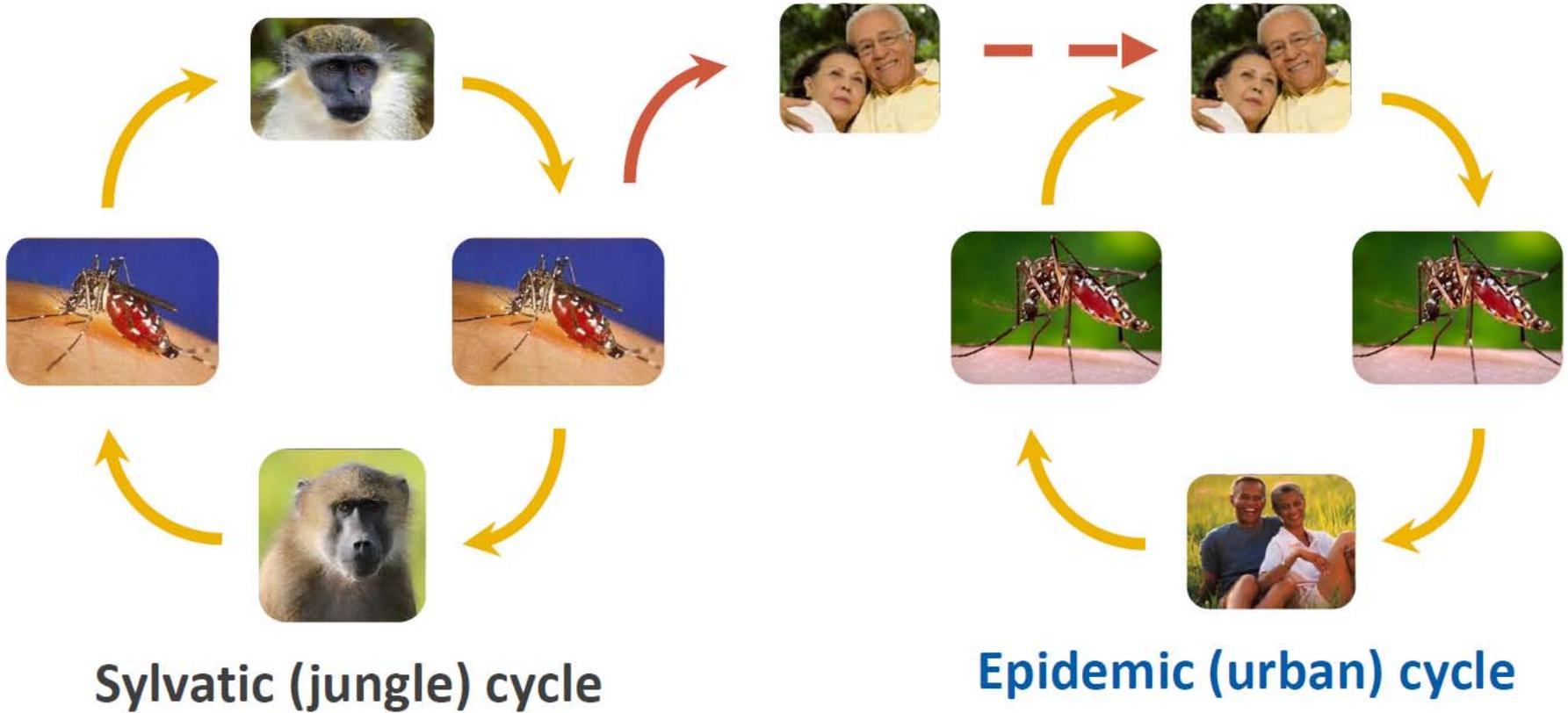
**ZIIKA FOREST.
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Zika Virus Transmission Cycles



Why has Zika virus become a public health crisis in the Americas?

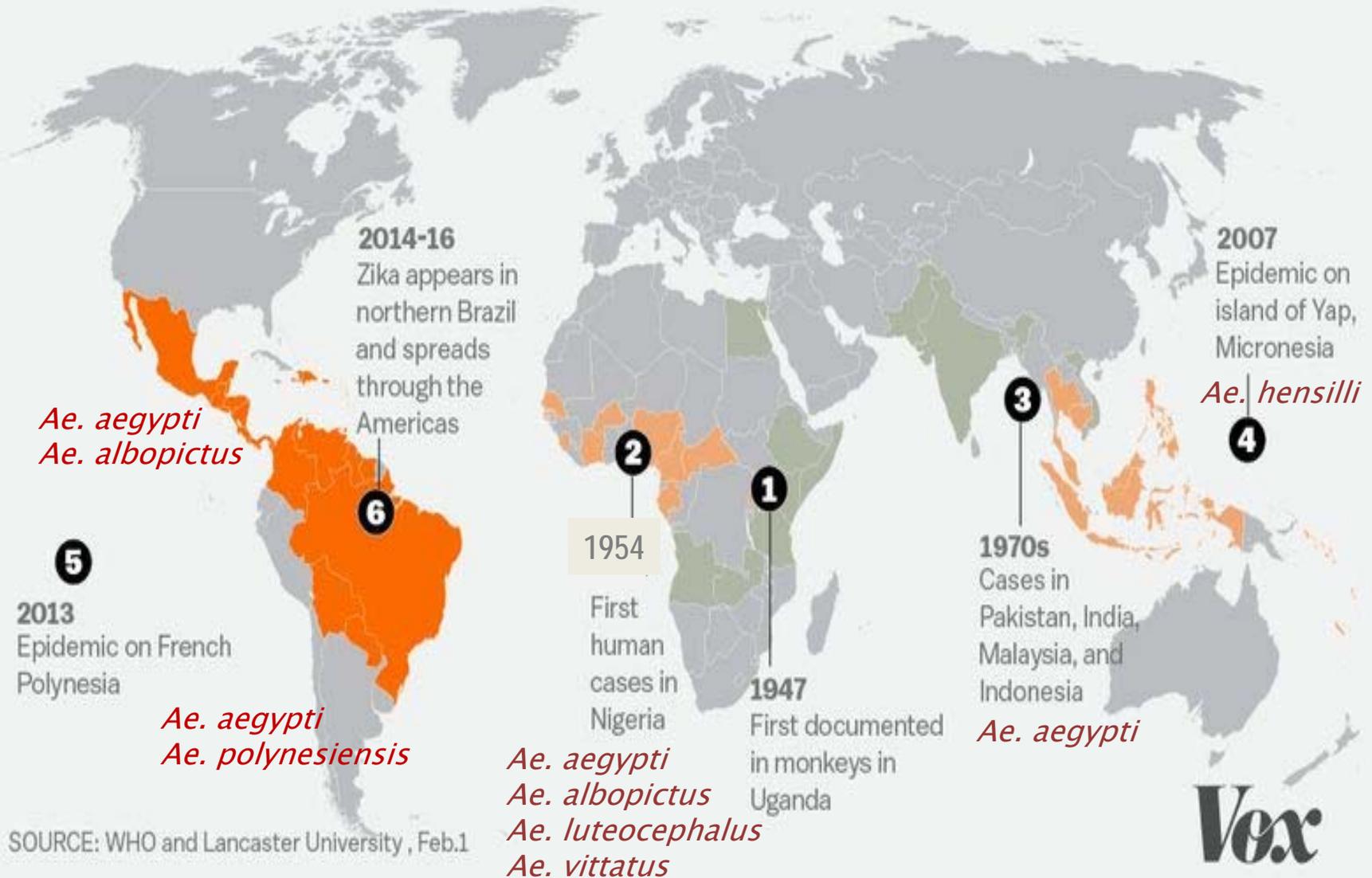
- The virus was *always* neurotropic and teratogenic, but it occurred so infrequently, and in such underdeveloped regions of Africa, that nobody noticed.
- The virus has migrated to new regions where different *environmental factors*, and access to an *immunologically naive population*, have allowed it to flourish.

How the Zika virus spread

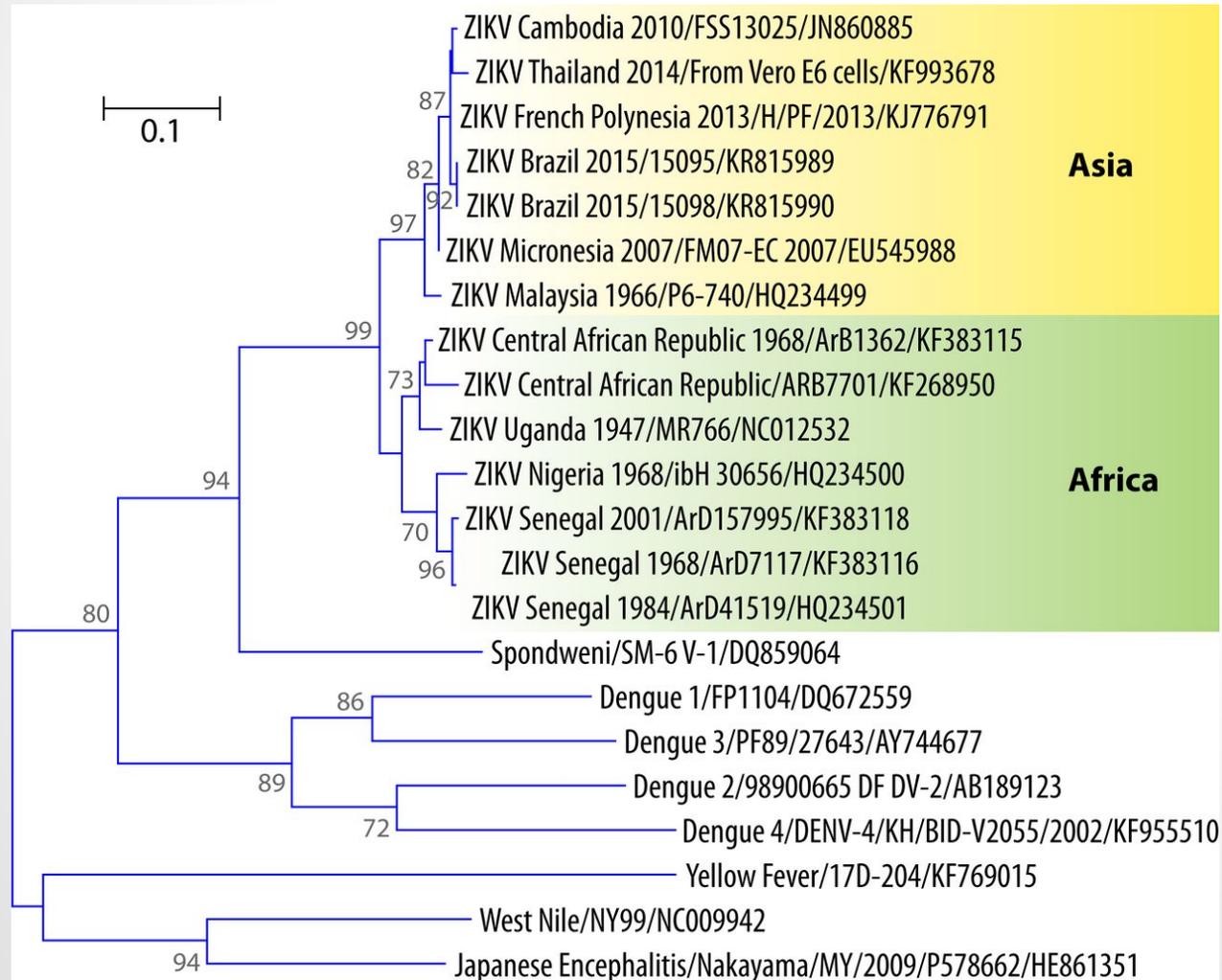
Active transmission

Known previous transmission

Antibodies also detected



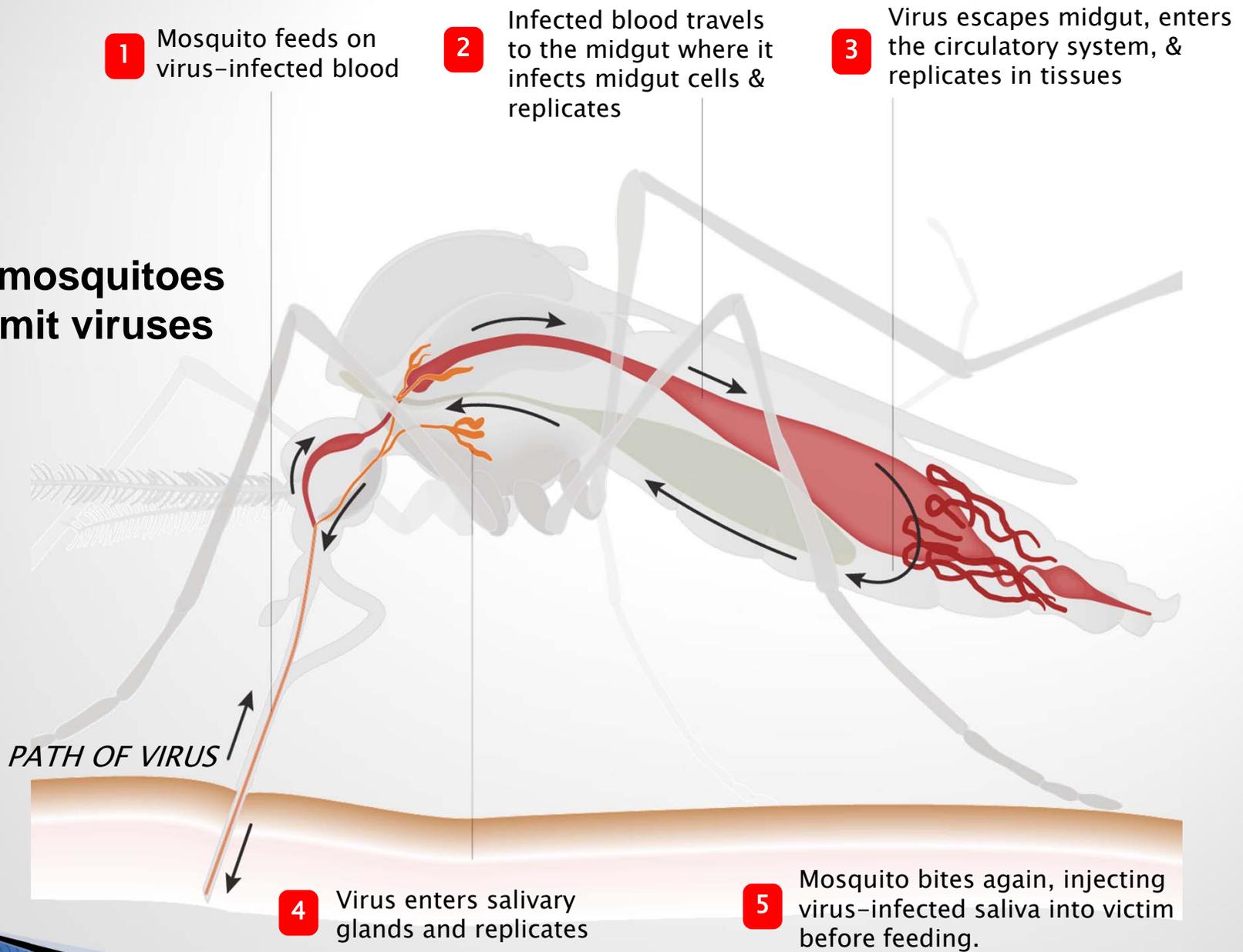
Phylogenetic tree of ZIKV showing the African and Asian lineages, including the strains that recently emerged in the Pacific and Brazil.



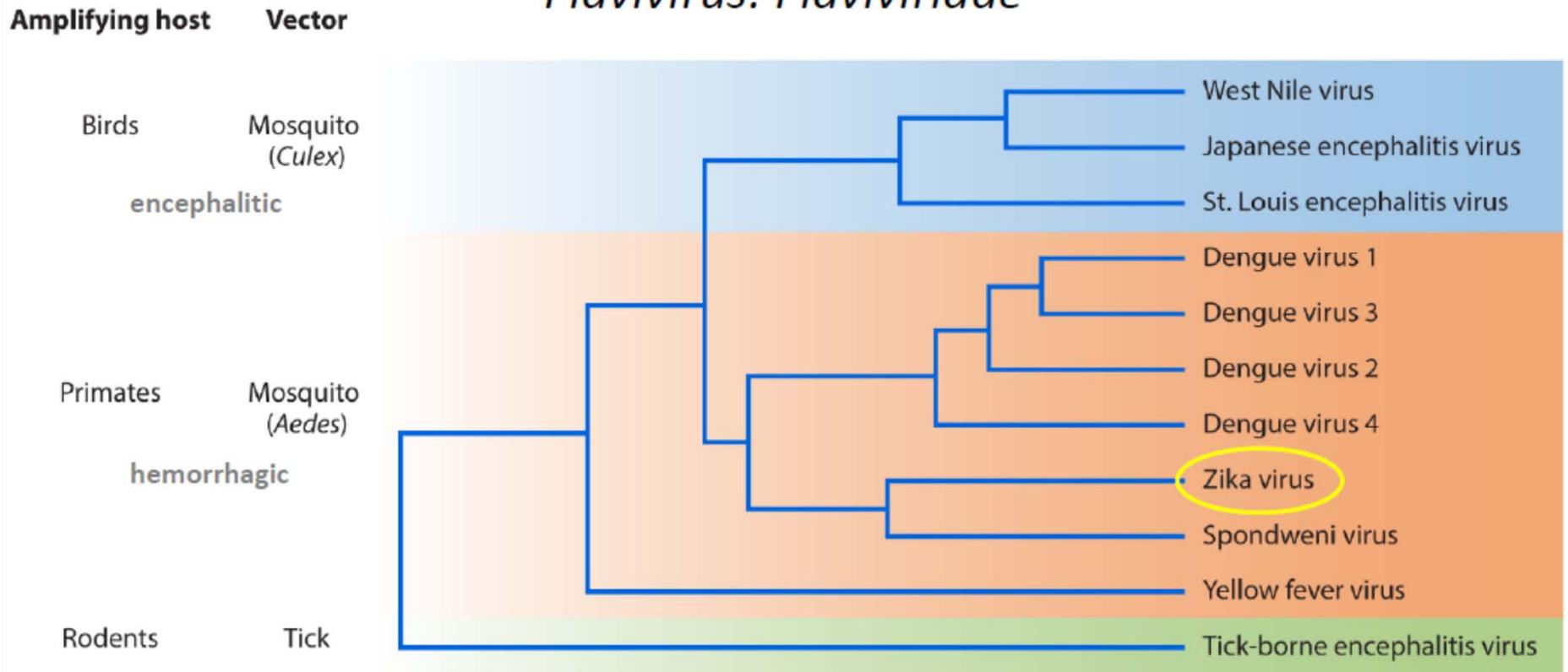
Didier Musso, and Duane J. Gubler *Clin. Microbiol. Rev.* 2016;29:487-524

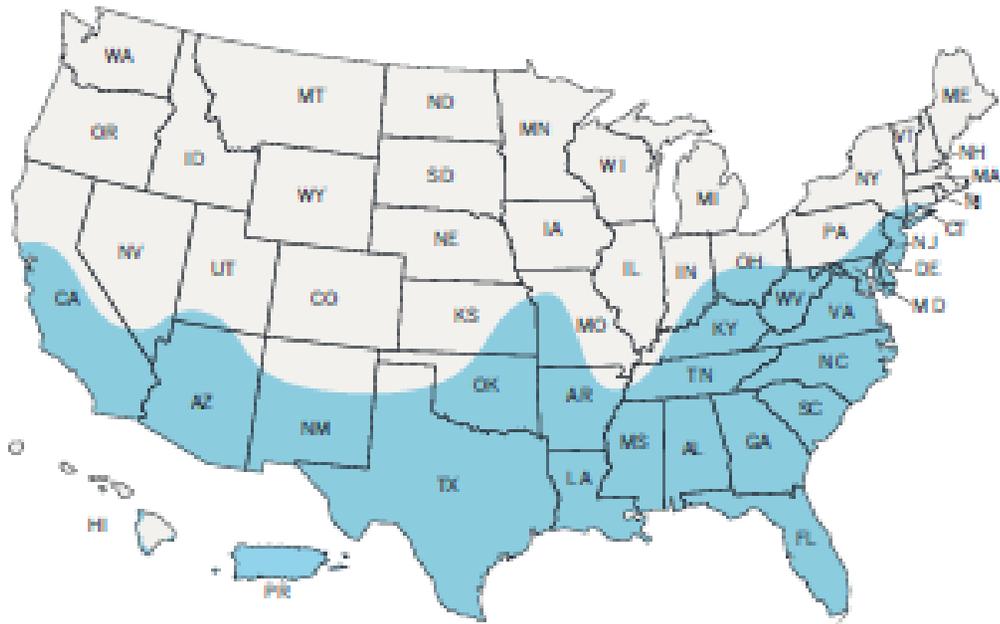
Clinical Microbiology Reviews

How mosquitoes transmit viruses

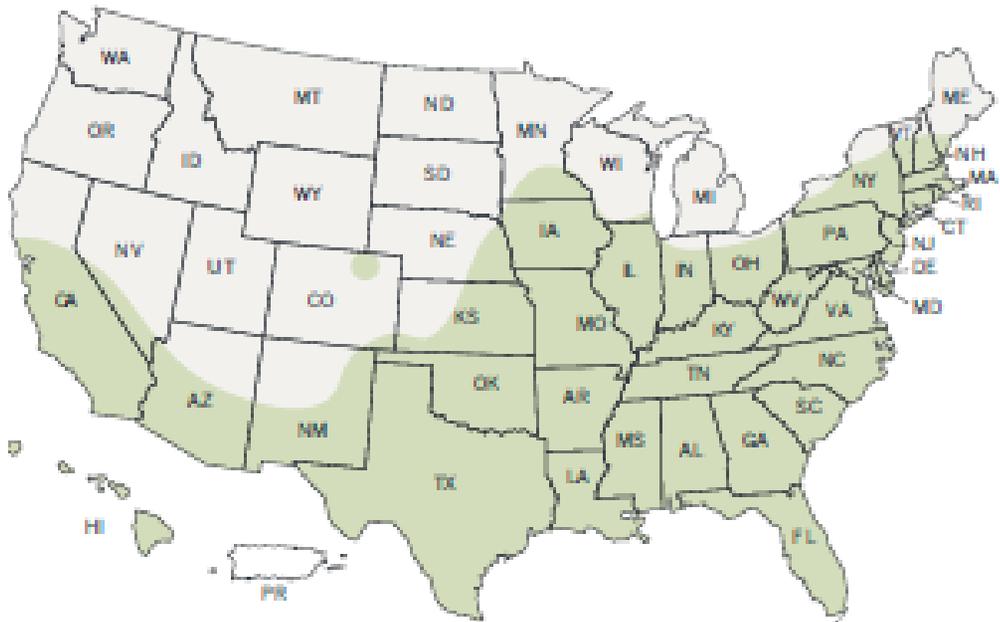


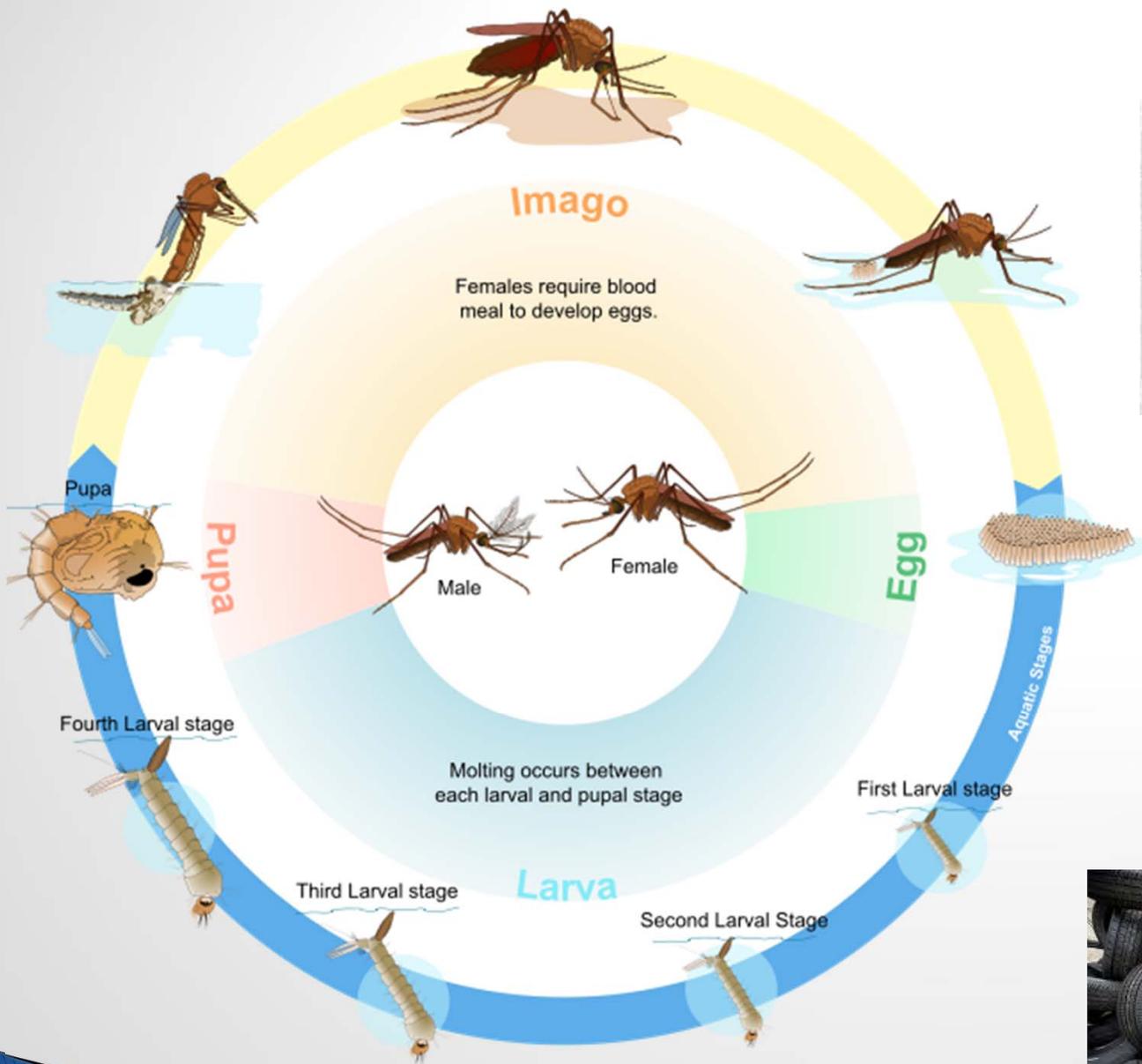
Flavivirus: Flaviviridae





Aedes aegypti
 Aedes albopictus





Aedes aegypti (Yellow Fever Mosquito)



What makes it such a good vector?

- Closely associated with humans
 - Eggs & larvae in containers
 - Adults rest inside houses
 - **Feed frequently and (almost) exclusively on human blood**
- Originally native to forests in West Africa
- Transported in water storage containers on slave ships around the world
- Now – in tropical and subtropical climates worldwide

Aedes albopictus (Asian Tiger Mosquito)

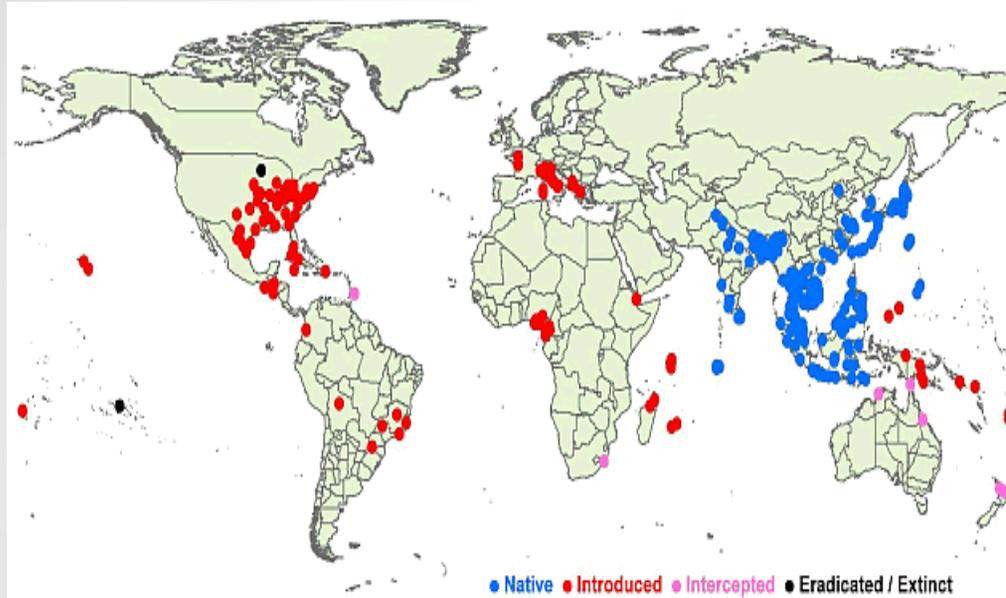
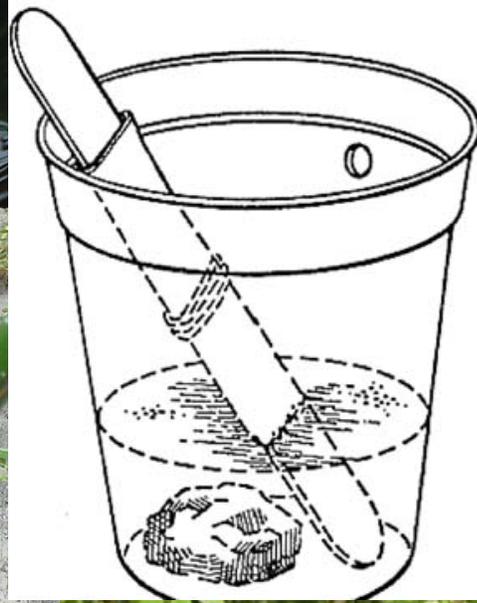


Photo: Armed Forces Pest Management Board CC

- Native to forests in Southeast Asia; gradually ‘domesticated’
- Shipped around the world in used tires, ‘lucky bamboo’
- Tolerates colder temps compared to *Ae. aegypti*
- Diverse habitats – urban, suburban
- Larval breeding sites – natural to artificial
- Prefers mammal blood, but also feeds on reptiles, birds, & amphibians
- Introduced to Texas in 1985

Possible Future Course of Zika Virus in the Americas

- Virus will continue to spread in areas with competent vectors
- Travel-associated cases introduce virus to U.S. states
 - Imported cases will result in some local transmission and outbreaks
 - Air conditioning may limit the size and scope of outbreaks
 - Colder temperatures will interrupt and possibly stop further spread
- Experience from dengue might be predictive
 - From 2010–2014, 1.5 million dengue cases reported per year to PAHO
 - 558 travel-related and 25 locally transmitted cases in U.S. states

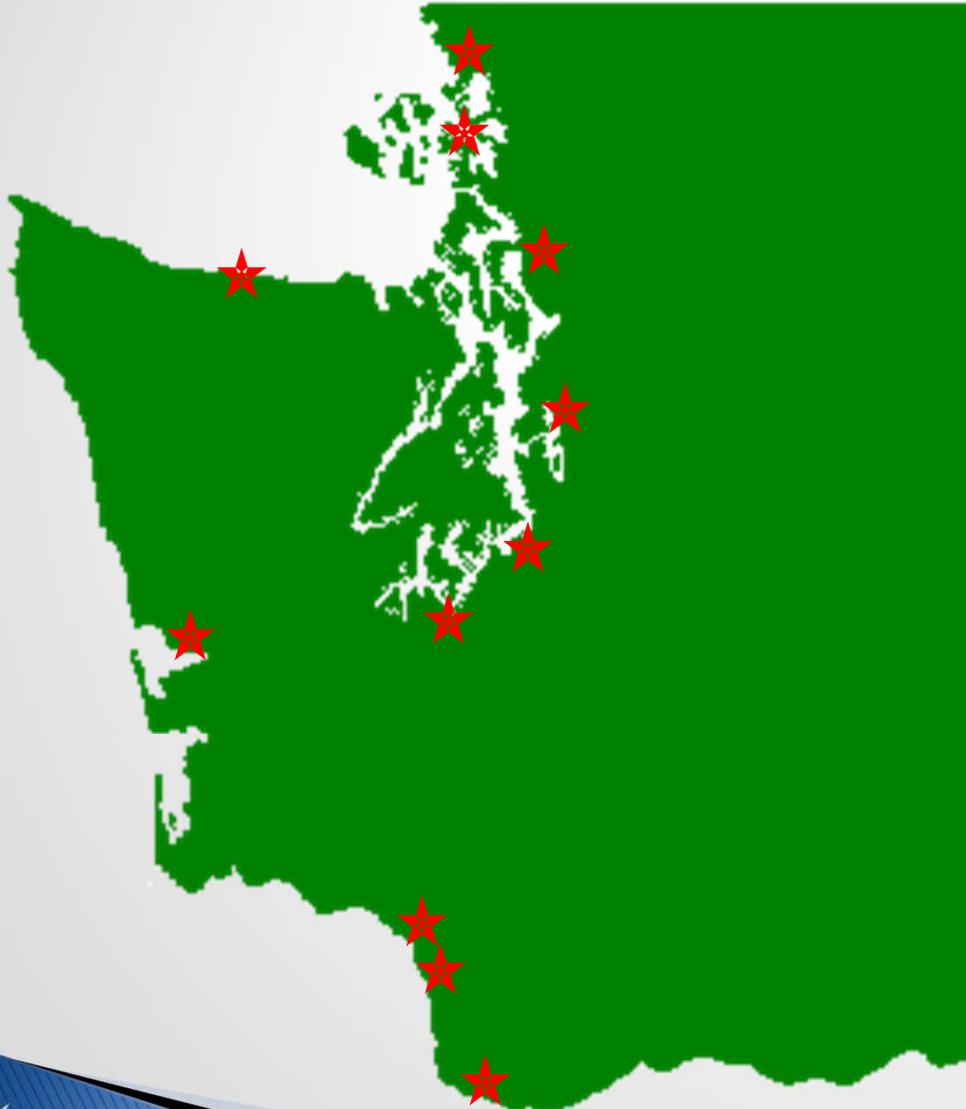


Ovitrap

BG Sentinel



Washington State Ports



Zika is primarily
transmitted through
mosquito bites.
Protect yourself.

Preventing Mosquito Bites



Mosquito prevention starts with you.



Eliminate standing water inside and outside your home.

Wear long-sleeved shirts and pants and treat clothing with permethrin.

Use screens on the exterior of your home to keep mosquitoes outside.



Use an EPA-registered insect repellent.
www.epa.gov/insect-repellents

Repair and seal your septic system.

Work together to eliminate standing water and reduce mosquito populations.

Protect yourself, your family, and your community,
which will...protect her pregnancy.

SOURCE: www.cdc.gov/zika/prevention/index.html

Additional resources

- WA DOH Zika virus information:
<http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/ZikaVirus>
- CDC Zika virus information: <http://www.cdc.gov/zika/>
- PAHO Zika virus pages:
http://www.paho.org/hq/index.php?option=com_topics&view=article&id=427&Itemid=41484&lang=en
- Zika virus information for clinicians:
<http://www.cdc.gov/zika/hc-providers/index.html>
- Zika virus information for travelers and travel health providers:
<http://wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/zika>
- Travel notices: <http://wwwnc.cdc.gov/travel/notices>

Questions?



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Next Up!

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