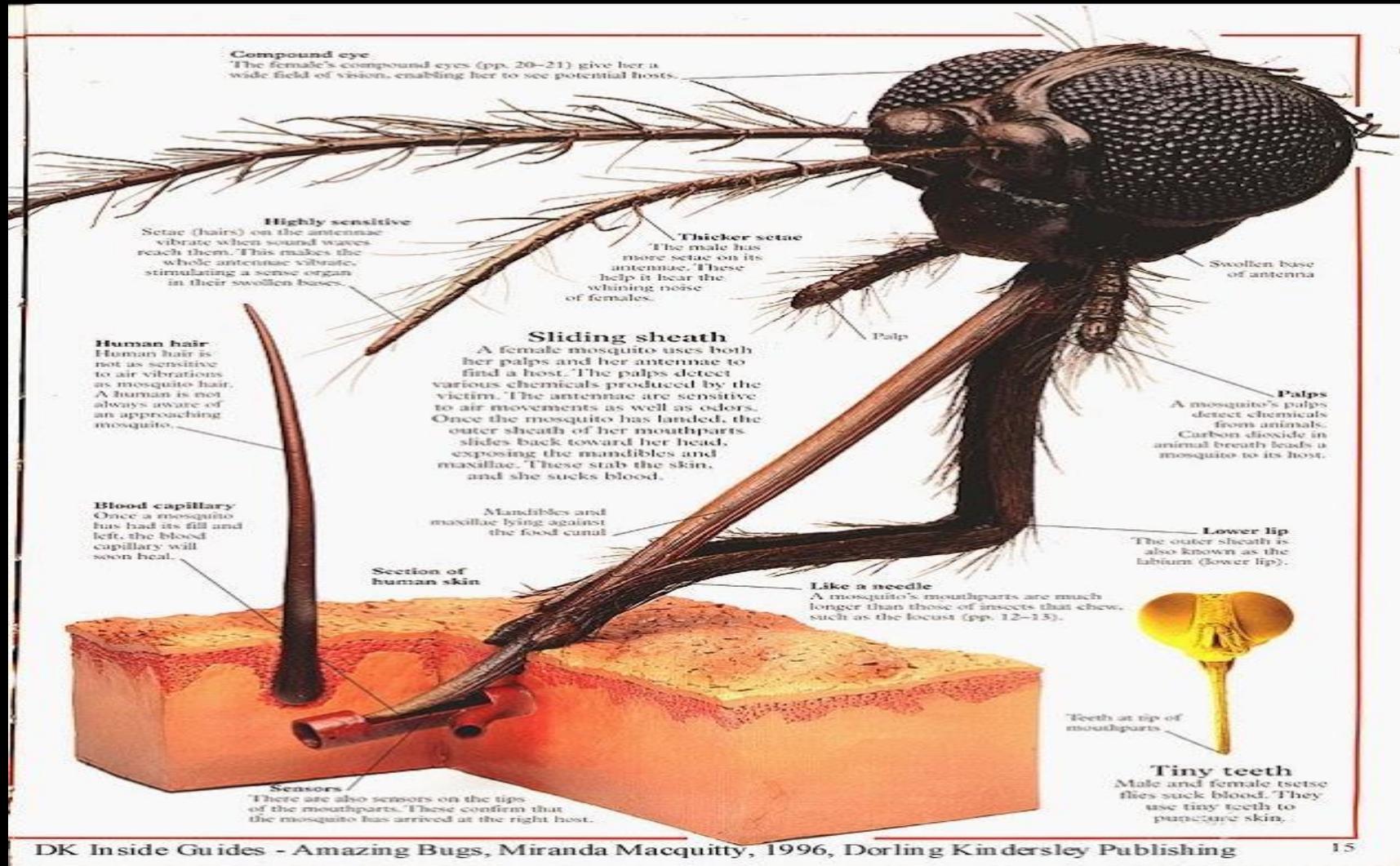


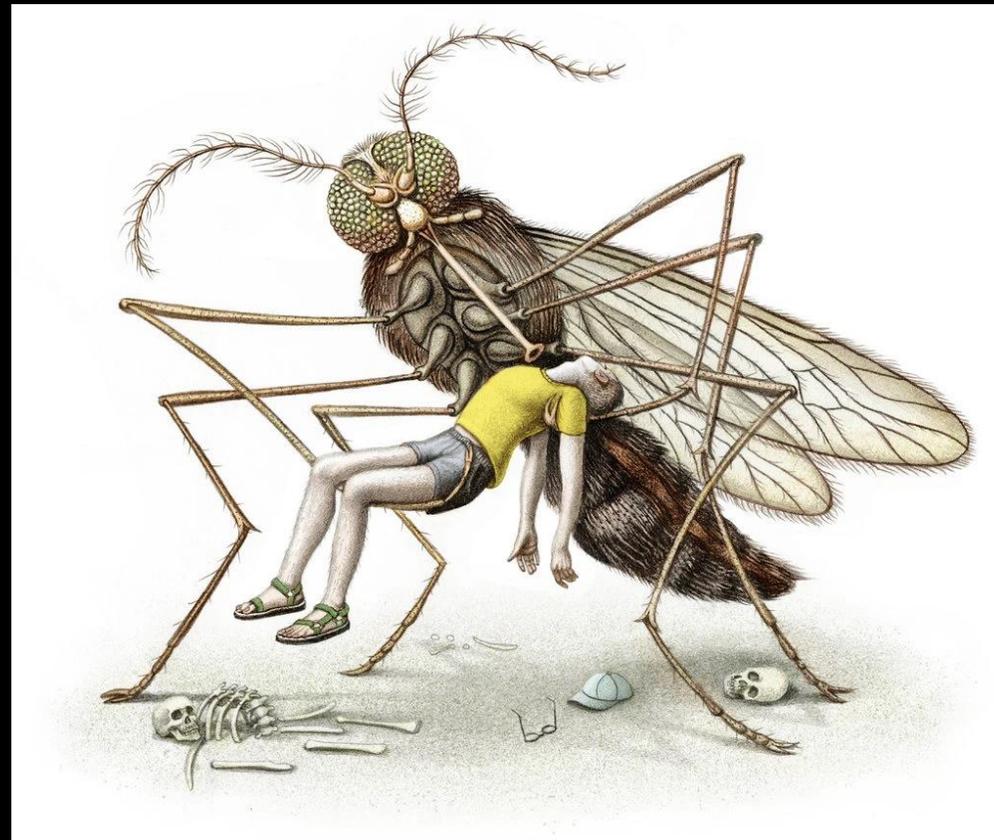
# HOW A MOSQUITO BITES VIDEO

<https://youtu.be/rD8SmacBUcU>

# HOW A MOSQUITO BITES



THE DEADLIEST HUNTER ON EARTH WAS  
NOT THE DINOSAUR BUT A MOSQUITO!



# MOSQUITOS- THE APEX PREDATOR

- Mosquitoes are our apex predator, the deadliest hunter of human beings on the planet. A swarming army of 100 trillion or more mosquitoes patrols nearly every inch of the globe, killing about 700,000 people annually. Researchers suggest that mosquitoes may have killed nearly half of the 108 billion humans who have ever lived across our 200,000-year or more existence

# WHY DOES A MOSQUITO BITE ITCH?



# THEY ITCH BECAUSE...

- As the mosquito extracts this blood, it also pumps its saliva into the bite site, says Jonathan Day, PhD, a professor of medical entomology at the University of Florida. This saliva contains proteins that prevent the bite from clotting, which would slow the outflow of blood and therefore disrupt feeding, Dr. Day explains
- Apart from stopping blood from clotting, these saliva proteins also elicit a reaction from the bite victim's immune system. Specifically, the human immune system releases a compound called histamine, which promotes inflammation and allows wound-repairing white blood cells to flood the area of the injury. It's this histamine-releasing immune reaction that causes all your bug bite symptoms
- The swelling, redness, and itch are the body's responses to those foreign proteins, Day explains

# CAN A MOSQUITO BITE MAKE US SICK?

- Mosquitos, and their bite can transmit a range of diseases — from West Nile virus and dengue fever to Zika — as well as leave the victim with an itchy, inflamed, red welt
- The Centers for Disease Control and Prevention (CDC) found that diseases transmitted by mosquitoes and other biting bugs more than tripled between 2004 and 2016
- Unfortunately, symptoms of West Nile, Zika and Dengue Fever are often nonspecific — meaning they're indicators that can result from a wide variety of health issues, making it hard to know if a mosquito bite is to blame. For example, both Dengue and West Nile can produce headaches, fever, joint pain, and skin rashes. But the same is true of the common flu and many other viruses or infections

# WHY DOES A MOSQUITO CARRY WEST NILE VIRUS?

- Arbovirus is a term used to describe a group of viral infections transmitted to humans from a group of insects known as arthropods. There are many strains of arbovirus
- A mosquito carrying the West Nile Virus bites a bird like a Blue Jay. The Blue Jay gets the virus and gets sick or dies. While the Blue Jay is sick it is bitten by another mosquito which then is infected with the virus
- Mosquitos then can infect humans or horses with the virus. There are 3 mosquitos from the Culex family that can carry the West Nile Virus
- Culex pipiens (common house mosquito or northern house mosquito)
- Culex tarsalis (encephalitis mosquito)
- Culex quinquefasciatus (southern house mosquito)

# CULEX GENUS OF MOSQUITO



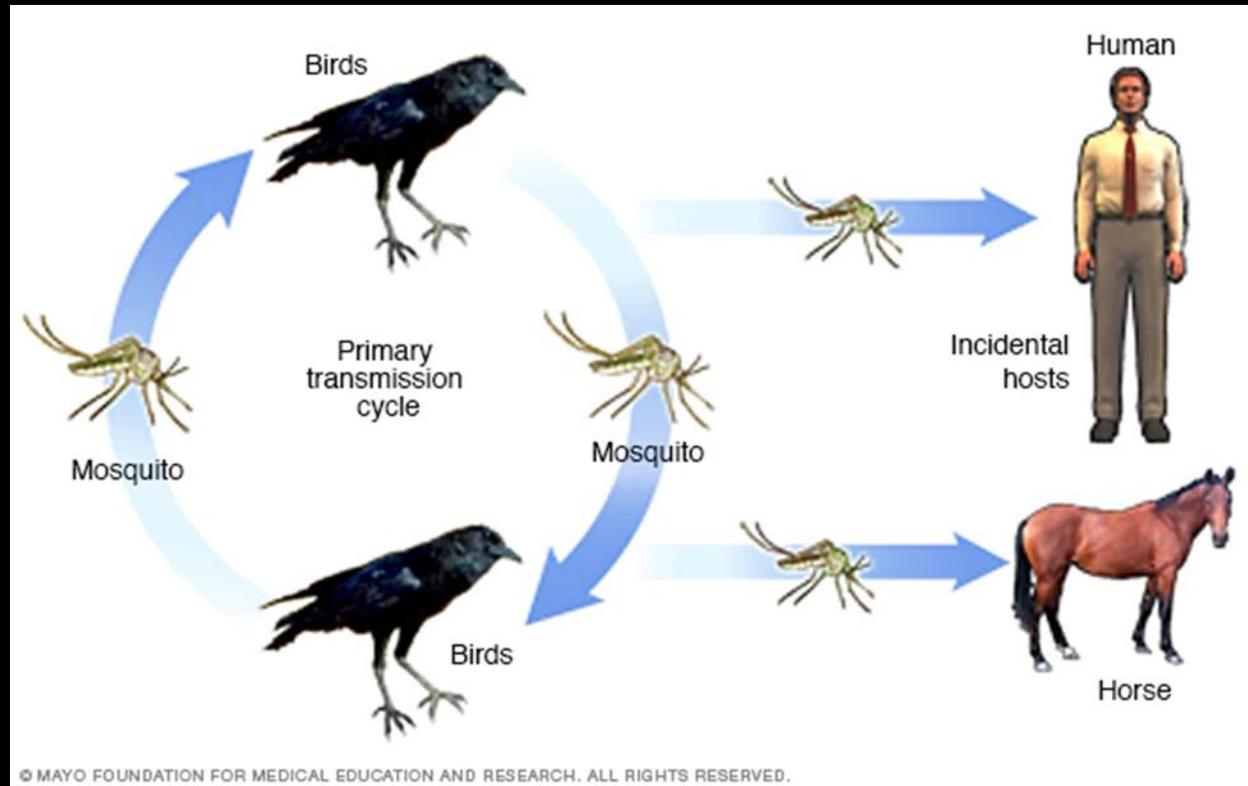
# WEST NILE MOSQUITOS

- Culex Genus of Mosquitoes
  - Culex is a genus of mosquitoes which carries significant diseases of birds, humans and other animals
- Geographic Region
  - Common West Nile and encephalitis vectors, House mosquitoes (*C. pipiens* and *quinquefasciatus*) are found in urban areas, while the encephalitis mosquito (*C. tarsalis*) prefers rural settings
- Natural Habitat
  - Overall, these mosquitoes prefer the tropics, but at least one or many species of Culex mosquito are found across North America and Hawaii
- Behavior
  - Culex mosquitoes typically bite in the evening and at night, and rest during the day in temperatures > 50 degrees Fahrenheit
  - Mosquitos die in freezing weather or lay eggs that hatch when weather warms above 50 degrees

# HOW WEST NILE IS SPREAD

- West Nile Virus is spread via Vector and Host
- Vector = Mosquito      Host = Bird (Members of Jay Family)

# WHICH IS THE VECTOR AND THE HOST?



# WHAT HAPPENS IF I GET BIT BY A MOSQUITO WITH WEST NILE VIRUS ?

- Usually Nothing. Most people (8 out of 10) infected with West Nile virus do not develop any symptoms
- Febrile illness (fever) in some people. About 1 in 5 people who are infected develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash. Most people with this type of West Nile virus disease recover completely, but fatigue and weakness can last for weeks or months
- Serious symptoms in a few people. About 1 in 150 people who are infected develop a severe illness affecting the central nervous system such as encephalitis (inflammation of the brain) or meningitis (inflammation of the membranes that surround the brain and spinal cord)
- Symptoms of severe illness include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis

# WHAT IS THE TREATMENT OR CURE FOR WEST NILE VIRUS?

- No vaccine or specific antiviral treatments for West Nile Virus infection are available
- Over-the-counter pain relievers can be used to reduce fever and relieve some symptoms
- In severe cases, patients often need to be hospitalized to receive supportive treatment, such as intravenous fluids, pain medication, and nursing care
- If you think you or a family member might have West Nile virus disease, talk with your health care provider

# WHO IS LIKELY TO GET WEST NILE VIRUS?

- Severe illness can occur in people of any age; however, people over 60 years of age are at greater risk. People with certain medical conditions, such as cancer, diabetes, hypertension, kidney disease, and people who have received organ transplants, are also at greater risk
- Recovery from severe illness might take several weeks or months. Some effects to the central nervous system might be permanent
- About 1 out of 10 people who develop severe illness affecting the central nervous system die

# HOW IS WEST NILE VIRUS DIAGNOSED?

- See your healthcare provider if you develop the symptoms described above
- Your healthcare provider can order tests to look for West Nile Virus infection
- Serum testing is available but take up to ten days for results

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# HOW DO WE ERADICATE WEST NILE VIRUS?

- Since there is no vaccine for humans, the only way to reduce the spread of this dangerous disease is to raise awareness of prevention measures through public education and to implement mosquito surveillance and control programs in at-risk areas
- Creation of vaccines will require a partnership between the Healthcare/Pharmaceutical Industry and the Federal Government. Reduction in the mosquito population or eradication of this vector altogether will possibly reduce or eradicate West Nile Disease and other mosquito encephalitis diseases

# HOW DO WE PREVENT WEST NILE VIRUS?

- We Educate Ourselves
- We Use Insect Repellents
- We create an environment at home where mosquitos aren't welcome
- We cover up when outside early in the morning or late in the afternoon
- We use natural repellents like plants to keep mosquitos away
- We encourage the development of vaccines and treatment protocols
- We go to the Doctor if we feel bad after a mosquito bite!

# PREVENT THE BITE TIPS!

## Mosquito Bite Prevention (United States)

Not all mosquitoes are the same. Different mosquitoes spread different viruses and bite at different times of the day.

Type of Mosquito	Viruses spread	Biting habits
 <i>Aedes aegypti</i> , <i>Aedes albopictus</i>	Chikungunya, Dengue, Zika	Daytime
 <i>Culex</i> species	West Nile	Dusk (evening) to dawn (morning)

# TIPS TO REMEMBER!

- The most effective way to prevent infection from West Nile virus is to prevent mosquito bites. Mosquitoes bite during the day and night. Use insect repellent, wear long-sleeved shirts and pants, treat clothing and gear, and take steps to control mosquitoes indoors and outdoors
- Use Insect Repellent
- Use Environmental Protection Agency (EPA)-registered insect repellents External with one of the active ingredients below. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breast
- Always follow instructions when applying insect repellent to children
- Do not use insect repellent on babies younger than 2 months old
- Dress in long sleeve shirts and pants if you are playing outside in the evening
- Adults: Spray insect repellent onto your hands and then apply to a child's face

# HOME PREVENTION TIPS TO BITE FREE LIVING

- Take steps to control mosquitoes indoors and outdoors
- Use screens on windows and doors. Repair holes in screens to keep mosquitoes outdoors
- Use air conditioning, if available
- Stop mosquitoes from laying eggs in or near water
- Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers
- Check indoors and outdoors

# “SPREAD THE WORD NOT THE BITE”

Learn More About Prevention and Eradication

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