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:Dr. Katherine Smith is a cell and molecular biologist with an interest in virus-cell interactions. Her academic research encompassed cell, developmental, and microbiological fields and employed the use of recombinant DNA techniques, antibody production and use, DNA and RNA analysis and quantification, and animal husbandry. She successfully cloned two novel genes during the course of her graduate career and engineered numerous mutant DNA constructs. Dr. Smith received her bachelors' degree in Biology with honors from the University of North Carolina at Chapel Hill and obtained her Ph.D. in Cell Biology at the University of Virginia. After a post-doctorate tenure at the University of Virginia, she worked as a research scientist in the International Technology Assessment division of Battelle Memorial Institute prior to joining Arbovax as a Senior Scientist. At Arbovax, Dr. Smith is working on the production and testing of a novel live-virus vaccine for Dengue fever and other insect-transmitted viruses.

Biography

surprising to me that there were still infectious diseases for which there were no treatments. When I learned about Arbovax's technology and intention to produce a vaccine for the newly re-emerging threat of Dengue Fever, I was immediately on board! In just under four years, we have non-human primate data on a novel Dengue Virus serotype 2 vaccine that looks incredibly promising. With a relatively simple and straight forward design a vaccine candidate was created that yielded very strong neutralizing antibody responses in Green Monkeys, while not generating antibodies that don't neutralize. This neutralizing vs. non-neutralizing antibody generation is a huge problem in the Dengue field, as non-neutralizing antibodies can lead to a more severe and often fatal form of Dengue Fever, Dengue Hemorrhagic Fever. While we were hoping to see such a phenomenon based on the seminal work on Sindbis Virus, actually generating the result in a primate model was incredibly exciting. Now we hope to apply the same technology to other insect-transmitted viral diseases that currently have no vaccine or treatment.

Research Interests

- **MyD88 Signaling Inhibits Protective Immunity to the Gastrointestinal Helminth Parasite *Heligmosomoides polygyrus*.** Reynolds LA, Harcus Y, Smith KA, Webb LM, Hewitson JP, Ross EA, Brown S, Uematsu S, Akira S, Gray D, Gray M, MacDonald AS, Cunningham AF, Maizels RM *J Immunol*, Volume 193, 6 September 2014 pp.2984-2993
- **Blockade of IL-33 release and suppression of type 2 innate lymphoid cell responses by helminth secreted products in airway allergy.** McSorley HJ, Blair NF, Smith KA, McKenzie AN, Maizels RM *Mucosal Immunol*, Volume 7, 5 September 2014 pp.1068-1078
- **Commensal-pathogen interactions in the intestinal tract: Lactobacilli promote infection with, and are promoted by, helminth parasites.** Reynolds LA, Smith KA, Filbey KJ, Harcus Y, Hewitson JP, Redpath SA, Valdez Y, Yebra MJ, Finlay BB, Maizels RM *Gut Microbes*, Volume 5, 4 July 2014 pp.522-532
- **Innate and adaptive type 2 immune cell responses in genetically controlled resistance to intestinal helminth infection.** Filbey KJ, Grainger JR, Smith KA, Boon L, van Rooijen N, Harcus Y, Jenkins S, Hewitson JP, Maizels RM *Immunol Cell Biol*, Volume 92, 5 May 2014 pp.436-448
- **IL-6 controls susceptibility to helminth infection by impeding Th2 responsiveness and altering the Treg phenotype in vivo.** Smith KA, Maizels RM
- *Nematodes and T regulatory cells* April 2013 Edited by Kennedy MW, Harnett W *Eur J Immunol*, Volume 44, 1 January 2014 pp.150-161
- **Type 2 Innate Immunity in Helminth Infection Is Induced Redundantly and Acts Autonomously following CD11c + Cell Depletion.** Smith KA, Harcus Y, Garbi N, Hammerling GJ, MacDonald AS, Maizels RM *Infection And Immunity*, Volume 80, 10 October 2012 pp.3481-3489

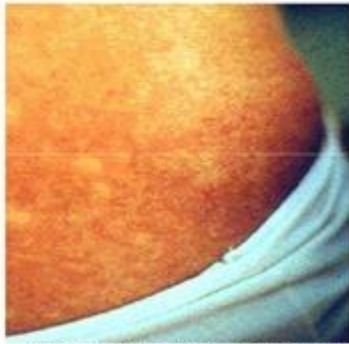
Recent Publications

Dengue (pronounced DENgue) fever is a painful, debilitating mosquito-borne disease caused by any one of four closely related dengue viruses. These viruses are related to the viruses that cause West Nile infection and yellow fever.

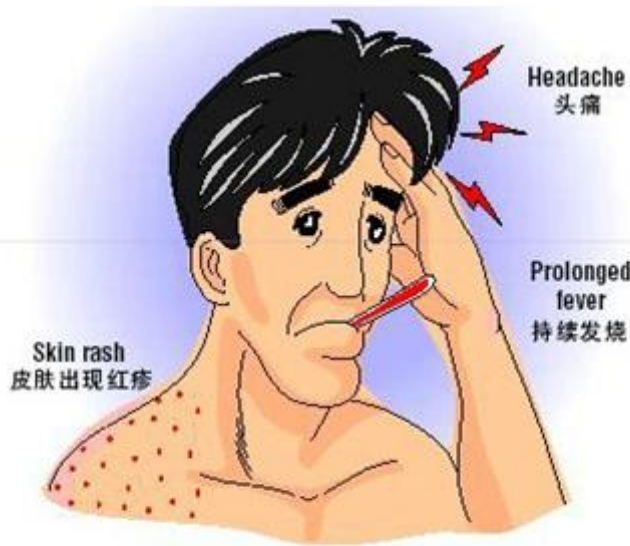
Introduction



Symptoms of Dengue Fever



Example of a skin rash due to dengue fever



Symptoms, which usually begin four to six days after infection and last for up to 10 days, may include

- Sudden, high fever
- Severe headaches
- Pain behind the eyes
- Severe joint and muscle pain
- Nausea
- Vomiting
- Skin rash, which appears three to four days after the onset of fever
- Mild bleeding (such a nose bleed, bleeding gums, or easy bruising)

symptoms

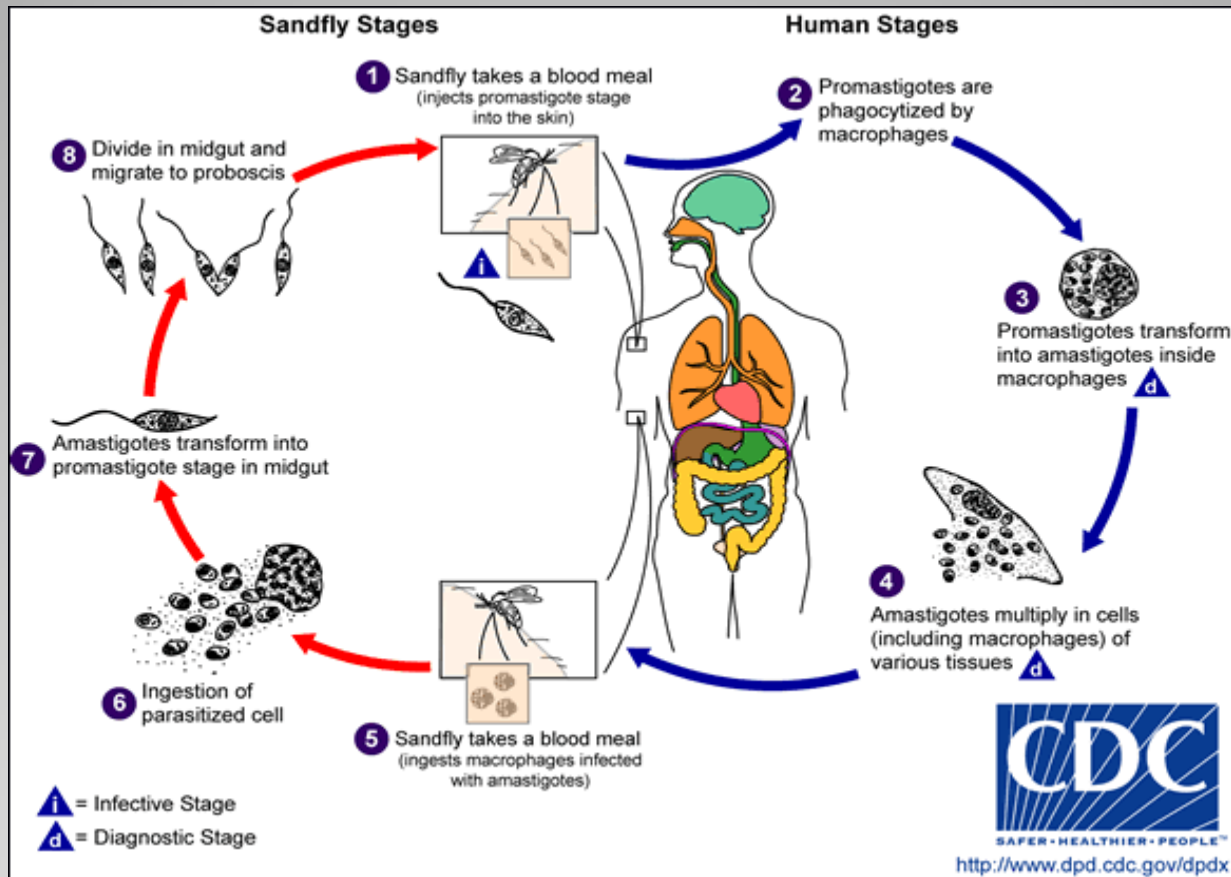
- Four closely related viruses cause dengue fever. The viruses are transmitted from *Aedes aegypti* and *Aedes albopictus* mosquitoes to humans in a viral cycle that requires both humans and these mosquitoes. There is no human-to-human dengue fever transmission. Once a mosquito is infected, it remains infected for its life span. A human can infect mosquitoes when the human has a high number of viruses in the blood (right before symptoms develop). The viruses belong to the *Flaviviridae* family and have an RNA strand as its genetic makeup. Virologists term them dengue virus types 1-4 (DENV 1-4). All four serotypes are closely related. However, there are enough antigenic differences between them that if a person becomes immune to one serotype, the person can still be infected by the other three serotypes.

Causes



prevention

To prevent mosquito bites, wear long pants and long sleeves. For personal protection, use mosquito repellent sprays that contain DEET when visiting places where dengue is endemic. There are no specific risk factors for contracting dengue fever, except living in or traveling to an area where the mosquitoes and virus are endemic. Limiting exposure to mosquitoes by avoiding standing water and staying indoors two hours after sunrise and before sunset will help. The *Aedes aegypti* mosquito is a daytime biter with peak periods of biting around sunrise and sunset. It may bite at any time of the day and is often hidden inside homes or other dwellings, especially in urban areas.



Life cycle

Check for Aedes mosquito breeding in your home
Protect your loved ones from dengue fever

Every other day

- Change water in flower vases
- Change water in water containers
- Change water in water containers
- Change water in water containers
- Change water in water containers

COMMON CORRIDOR
SCUPPER DRAIN



Once a week

- Do not leave the flow of water in scupper drains along common corridors or stairs
- Do not allow uncleaned gutters and other rainwater over the drains

Once a month

- Use insecticide in the common areas
- Use insecticide in the common areas
- Use insecticide in the common areas



- Items not in use:
- Do not use items that are not in use
 - Do not use items that are not in use
 - Do not use items that are not in use
 - Do not use items that are not in use
 - Do not use items that are not in use

- If you are visiting your house on every 1st holiday:
- Cover the total tanks
 - Spray the scupper pipe in the living room
 - Cover all dirty and flow traps

Protect your loved ones from dengue fever

Approved By

E-signature: