Q&A ON THE ZIKA VIRUS

- **What is the Zika virus?**
  - Zika virus is an RNA virus similar to dengue, yellow fever and West Nile virus.
- **Where did it come from?**
  - It was first discovered in 1947 in a rhesus monkey that was the subject of yellow fever research by scientists from Rockefeller University (Jordi Casals). It was found in the Aedes mosquitoes in the same region soon after.
- **If the Zika virus was first discovered 70 years ago, why was there not an outbreak until 2007?**
  - The virus was first reported in humans in 1970s in Africa and Asia, but multiple factors have contributed to the recent outbreak.
- **Why has Zika traditionally been considered less of a threat than dengue and chikungunya viruses?**
  - Some cases of Zika might have been misdiagnosed as dengue. Also, 80 percent of those infected have no symptoms. In addition, the virus may not affect adults, instead impacting more vulnerable newborns.
- **What discoveries in the research labs at Florida State University might be useful in slowing or preventing a Zika virus outbreak?**
  - We found that ZIKV can efficiently infect a special type of neural stem cell that gives rise to cortical neurons in the brain. We also showed that ZIKV infection disturbs cell-cycle regulation of these cells and leads to stunted growth. These experimental findings are consistent with, but do not yet prove a link, between ZIKV infection and microcephaly.
  - Our results will help focus research and drug-development efforts on these potentially important target cells for ZIKV biology. We also provide a tractable system to further research the long-term developmental effects of ZIKV infection on brain function, because the cells infected can be differentiated into different layers of neurons.
  - In addition, we found that the infected neural stem cells can produce a more infectious strain of ZIKV. This is a concern clinically because it suggests that once the virus gets to the brain of the fetus (we don’t know how that happens yet) it can get amplified there also.
- **What is it about the virus that poses a particular risk to unborn children of infected women?**
  - First, it must have access to the brain. Once there, it may specifically target cells during neurological development.
- **Why do the majority of people with Zika virus not get sick and never know they are carrying it?**
  - This is commonly known as asymptomatic infection. It also occurs with many other viruses, although the rate can vary.
- **What is the connection between Zika virus and Guillain-Barre’ syndrome?**
  - During the 2014 outbreak in French Polynesia, there were case reports of GBS following ZIKV infection.
  - Guillain-Barre (gee-YAH-buh-RAY) syndrome is the loss of nerve and muscle function due to immune response that is supposed to be directed at the virus attacking the insulation of the nerve cells instead.
• What does science tell us about the possibility of a link between Zika virus infection and microcephaly?
  - All we have to go on, so far, is epidemiology, the case reports and experimental evidence.
• How would Zika virus cause the destruction of neurons in the brain?
  - This could happen by activating apoptosis, which describes programmed cell death – a normal physiological process by which the body eliminates damaged or unwanted cells.
• What do we know about mutations in the virus since it was first discovered?
  - Not much, but the virus has moved from East Africa to settle in at least two additional geographic locations (West Africa and Asia).
• Why is it spreading faster now than previously?
  - Primarily as a result of travel, commercial trade and population growth (crowding).
• Is it possible for someone who has previously been exposed to Zika virus to become infected a second time, or does the body develop immunity?
  - The body most likely develops immunity after initial exposure.
• Is it possible to create a vaccine against this type of virus?
  - Yes. A vaccine for the yellow fever virus is available, as is a vaccine that protects horses from West Nile virus.

Compiled by Florida State University.