

**Responses by Peter Hotez, MD, PhD
to Questions for the Record of the March 2, 2016 Hearing
of the Subcommittee on Oversight and Investigations
of the House Committee on Energy and Commerce:
“Examining the U.S. Public Health Response to the Zika Virus”**

The Honorable Tim Murphy

Q: Now that the Zika Action Plan Summit on April 1, 2016 in Atlanta, GA has passed, do you have any additional concerns or issues that you would like to raise – and that you believe have not been adequately covered thus far – to improve the federal response to mosquito-borne illnesses?

A: Thank you Congressman Murphy for the question on the April 1 Zika Summit. I was not invited to attend the Summit but my understanding is that it represented an initial attempt to bring together state, county, and city public health agencies in order to begin a dialogue about Zika control. This is an important and necessary first step.

But for me, it’s only the beginning. To my knowledge neither DHHS nor the US Public Health Service has developed a comprehensive plan for *Aedes aegypti* control in the affected/infested areas of the southern states, especially the Gulf Coast. Indeed, the track record of DHHS and USPHS is that they have not addressed *Ae aegypti* control for many decades, and in the past they have resisted efforts to move in that direction. A history of the absence of *Ae aegypti* efforts by the US Government was discussed in a sobering 1986 article (Slosek J. *Aedes aegypti* mosquitoes in the Americas: a review of their interactions with the human population. *Soc Sci Med.* 1986; 23(3):249-57). As a result the Gulf Coast has faced dengue and other arbovirus epidemics for decades, including a reported dengue outbreak in Houston in 2003 (Murray KO et al. Identification of dengue fever cases in Houston, Texas, with evidence of autochthonous transmission between 2003 and 2005. *Vector Borne Zoonotic Dis.* 2013 13(12):835-45).

Due to this inactivity, the CDC is essentially starting from scratch in addressing the Zika virus. Because the Gulf Coast and Florida are threatened by Zika virus infection (for reasons articulated in my February testimony), I would recommend immediate focus on the following:

- establishing an interagency initiative at the Federal level that includes CDC, EPA, and HUD, and possibly others, to comprehensively address the environmental clean-up and housing repair that will be required in impoverished neighborhoods on the Gulf Coast, in addition to focused insecticidal spraying and traditional public health efforts – the point here is that effective *Aedes* mosquito control may extend beyond the remit of the CDC/DHHS to involve other branches of government;
- developing a plan to coordinate and harmonize the state-county-city mosquito control authorities in the at-risk areas of the Gulf Coast together with waste-disposal and housing; and
- ensuring that federal activities are linked with state and county initiatives.

I have also testified before Congress previously on the need to establish centers of excellence for neglected tropical diseases (NTDs) to accelerate research and development of diagnostics, treatments and vaccines. This isn’t a new concept: the National Institutes of Health has successfully created and

supported centers of excellence for rare diseases, for instance. Unfortunately, Zika and other tropical diseases are not rare, but like rare diseases they have historically struggled for attention and resources. The End Neglected Tropical Diseases Act (H.R. 1797) would authorize funding for NTD centers of excellence. This provision and others are awaiting action by the Energy & Commerce Committee, and I hope the Committee intends to approve the provisions in its jurisdiction as soon as possible.

The Honorable Joe Barton and the Honorable Michael C. Burgess, MD

Q: Dr. Hotez, an article that appeared in the *Houston Chronicle* on February 23, 2016, highlights the development of a hospital-based rapid test for the Zika virus by doctors at Texas Children's Hospital and Houston Methodist Hospital. Could you please tell the Committee more about how this test was developed and the benefits this test will have on diagnosing, tracking, and treating the Zika virus, as well as ensuring the public has relevant and timely information about the virus on an ongoing basis as we enter the warmer months? As a follow up, can the process you employed to quickly respond to this public health emergency be replicated to meet future threats in the same manner?

A: In responding to your question, I have consulted with James Versalovic, MD, PhD, the Pathologist-In-Chief at Texas Children's Hospital and Director of Texas Children's Microbiome Center. Dr. Versalovic also is the Vice Chair of Pathology & Immunology at Baylor College of Medicine.

The Department of Pathology at Texas Children's Hospital (TCH) and the Department of Pathology and Genomic Medicine at Houston Methodist Hospital collaborated on the initial development of the first hospital-based molecular tests for Zika virus. The collaborative science was then used by each institution's laboratory to design and make a test for use within each respective laboratory's hospital system. The new laboratory developed tests directly detect virus in blood, amniotic fluid and urine and provide results the same day testing is initiated. Results from these rapid tests (interpreted by a licensed professional) provide information to a pregnant woman who is at risk for the infection and consequently inform obstetrical management. The tests may also rapidly detect acute infection in adults or children with symptoms, thereby providing a firm diagnosis and avoiding unnecessary additional testing.

TCH, along with organizations like the Centers for Disease Control and Prevention, recognizes the need for a rapid detection test generally as a matter of preparation and to foster scientific understanding of the virus and its transmission. More rapid detection may facilitate real-time collection of information regarding transmission in regions of the United States infested with *Aedes* mosquitoes and may prevent sexual transmission from an infected adult to an uninfected partner. In addition to efforts by individual institutions or companies, promoting meaningful scientific collaboration among leading research hospitals that leverage cutting-edge technologies within CLIA-certified laboratories staffed by highly trained laboratory personnel, can lead to efficient rapid test development as well as a roadmap for working together in acute circumstances that can be deployed to meet future threats.

The Honorable Marsha Blackburn

Q: In light of the Olympics later this summer, should Brazil be more aggressively deploying innovative solutions, such as genetically modified mosquitoes, to slow the spread of Zika virus?

A: This summer should present cooler and drier months in Brazil, and therefore a reduced risk of Zika transmission from *Ae aegypti* mosquitoes. I believe that if the Brazilians aggressively conduct traditional

Ae aegypti control methods, they could dramatically reduce the risk of Zika transmission. After all, through these approaches the Brazilians actually eradicated *Ae aegypti* and dengue/yellow fever during the 1950s and 1960s. Newer and innovative solutions such as genetically modified mosquitoes appear promising at small scales but they have not yet been proven to be effective at larger scales. Therefore, I suggest aggressively pursuing traditional methods while continuing to conduct tests on new methods at increasingly larger scales.