

Hearing of the House Committee on Energy and
Commerce
Subcommittee on Oversight and Investigations

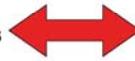
The Role of the
National Institute of Allergy and
Infectious Diseases
in Research Addressing
Zika Virus

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March 2, 2016

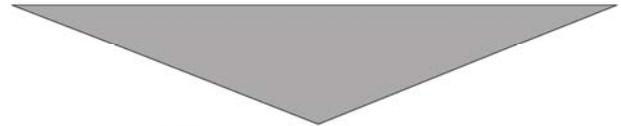


NIAID Research: A Dual Mandate

Maintain and "grow" a
robust basic and applied
research portfolio in
microbiology, infectious
diseases, immunology
and immune-mediated
diseases

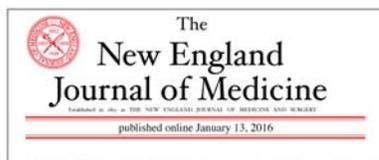


Respond rapidly to
new and emerging
disease threats



New/Improved Interventions

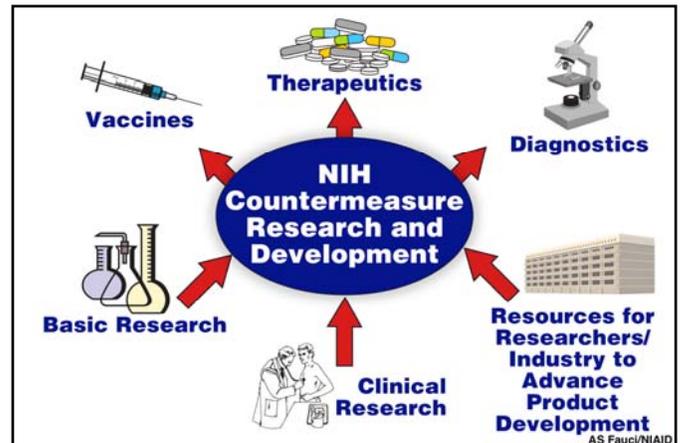
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Zika Virus in the Americas – Yet Another Arbovirus Threat

AS Fauci and DM Morens

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Biomedical Research Response: Epidemiology and Natural History

- Epidemiology and natural history
 - Symptomatic vs. asymptomatic
 - Frequency of sequelae
 - Cohort studies to determine incidence of adverse pregnancy outcomes in Zika-infected pregnant women
- Pathogenesis of microcephaly

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Biomedical Research Response: Basic Science

- Molecular Virology: a) elucidate viral structure; b) compare viruses from different outbreaks
- Pathogenesis of disease
- Studies on immune response (innate and adaptive)
- Establish animal models

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Biomedical Research Response: Vector Control

- Vector competence: Ability of mosquitoes other than *Aedes aegypti* to carry and transmit Zika virus
- Novel insecticides
- Novel vector control methods – genetically modified mosquitoes; *Wolbachia*-infected mosquitoes

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Biomedical Research Response: Diagnostics

- CDC – Diagnostic and Reference Laboratory in Arbovirus Diseases Branch
- RT-PCR assay for Zika, Dengue and Chikungunya
- Antibody assay for acute infection that will not cross-react with other flaviviruses

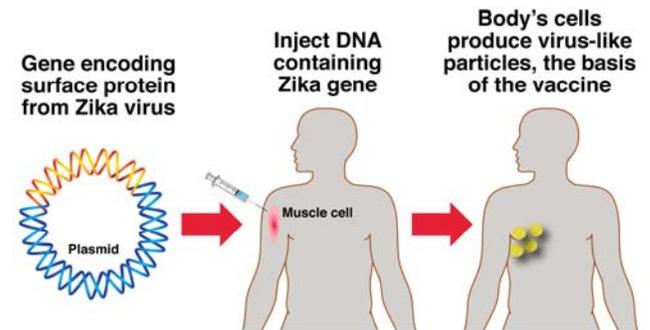
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Biomedical Research Response: Countermeasures – Vaccines

- DNA vaccine – success with West Nile Virus (NIAID)
 - Live-attenuated dengue/Zika chimeric vaccine (for non-obstetric population) – success with dengue alone (NIAID)
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- Whole particle inactivated vaccine (NIAID/BARDA)
 - Vesicular stomatitis virus (VSV) vectored vaccine (Harvard)

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DNA Vaccine Approach

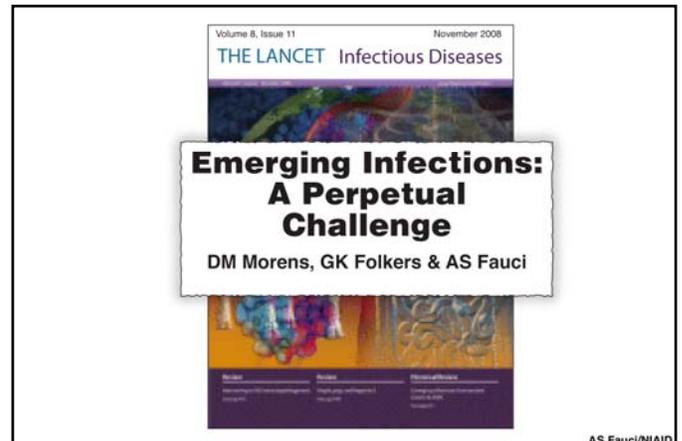


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Biomedical Research Response: Countermeasures – Therapeutics

- Developed *in vitro* antiviral screening assay
- Testing compounds with known activity against other flaviviruses
- Broad screening of compounds without known anti-flavivirus activity
- “Targeted” antiviral approach – similar to HIV and Hepatitis C

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