Hearing of the Senate Health, Education, Labor, and Pensions Committee

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

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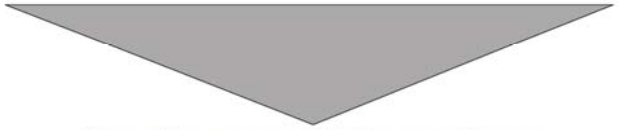
NIH National Institute of Allergy and Infectious Diseases

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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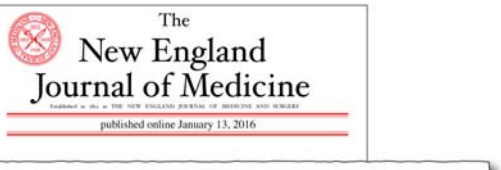

Zika Virus in the Americas — Yet Another Arbovirus Threat

AS Fauci and DM Morens

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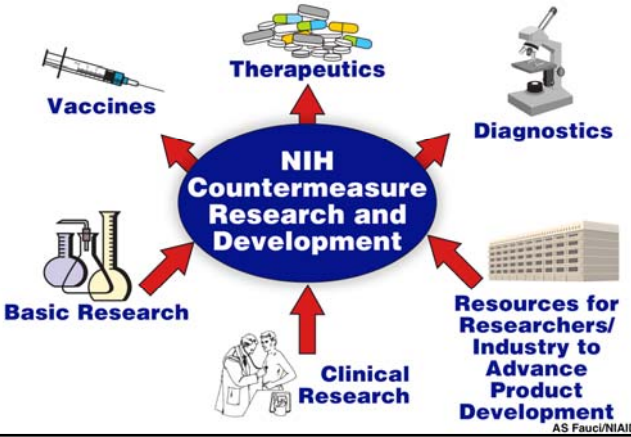

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Biomedical Research Response: Epidemiology and Natural History

- 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: 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)

- Whole particle inactivated vaccine (NIAID/BARDA)
- Vesicular stomatitis virus (VSV) vectored vaccine (Harvard)

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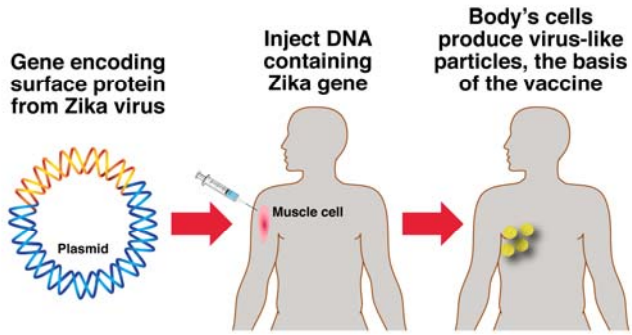
DNA Vaccine Approach



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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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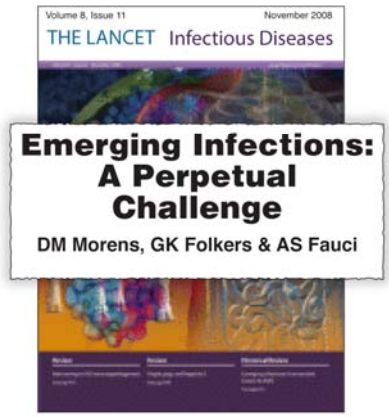

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