

Vaccine Activities Update

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National Institute of
Allergy and
Infectious Diseases

Differences in Immune Responses to Vaccination

- Assessed race, sex and immune response to rubella vaccine
- 2 large racially diverse cohorts
- Individuals of African descent have significantly higher antibody response compared to individuals of European descent and/or Hispanic ethnicity

Haralambieva IH *et al.* Associations between race, sex and immune response variations to rubella vaccination in two independent cohorts. *Vaccine.* (2014).

Differences in Immune Responses to Vaccination

- Assessed sex differences and immune response to seasonal influenza vaccine
- 53 women and 34 men
- Women produced antibodies that more effectively neutralized the influenza virus in laboratory tests
- Testosterone-regulated genes may affect vaccine-induced immunity

Furman D *et al.* A systems analysis of sex differences reveals an immunosuppressive role for testosterone in the response to influenza vaccination. *Proceedings of the National Academy of Sciences.* (2013).

WHO/NIAID Call to Action: Vaccines for Sexually Transmitted Infections

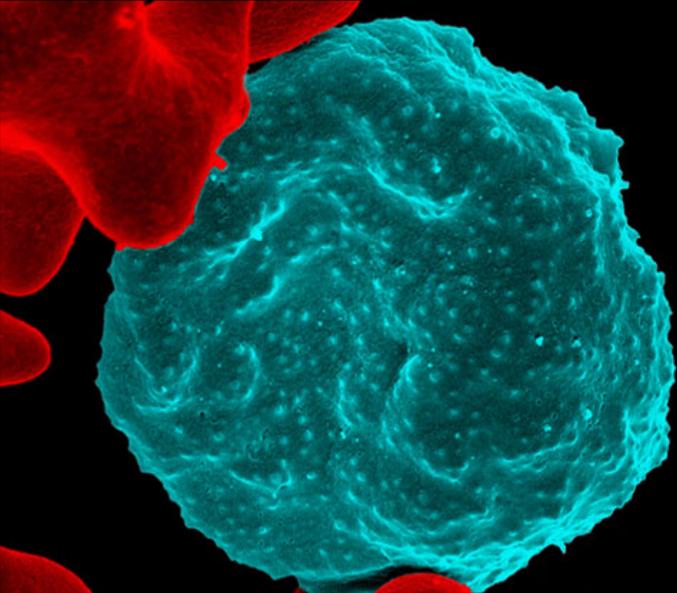


**Sexually transmitted infections:
Vaccine development for global health**

<http://www.sciencedirect.com/science/journal/0264410X/32/14>

NIAID Showcase

Selected NIAID Research Advances of 2013



Testing a Promising Malaria Vaccine

In August 2013, NIAID researchers and their colleagues reported the successful completion of an early-stage clinical trial of PfSPZ Vaccine, a candidate malaria vaccine developed by biotechnology company Sanaria with NIAID support. The vaccine is composed of live but weakened forms of the malaria-causing *Plasmodium falciparum* parasite.

Of the 15 volunteers who received the highest dose of the PfSPZ Vaccine, 12 were protected from malaria infection. Five out of six volunteers who did not receive the vaccine developed the disease. Although the results are promising, more work is needed to evaluate the vaccine in more people, to optimize the dose, schedule, and delivery of PfSPZ, and to assess the breadth and duration of protection against diverse malaria strains.

Red blood cell infected with malaria parasites. Credit: NIAID

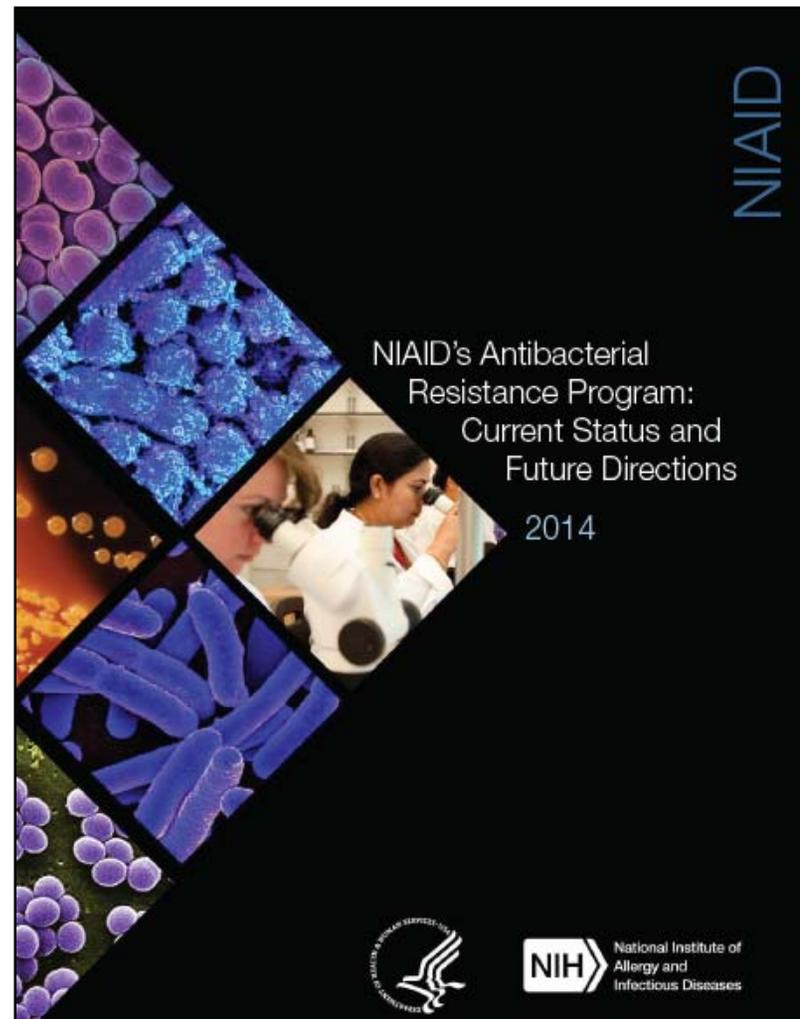
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Vaccine-related examples:

- Dengue
- HIV
- Malaria
- RSV
- Universal flu vaccine

<http://www.niaid.nih.gov/about/Pages/2013.aspx>

NIAID's Antibacterial Resistance Program: Current Status and Future Directions



www.niaid.nih.gov/topics/antimicrobialResistance/Documents/ARstrategicplan2014.pdf

Accelerating Medicines Partnership (AMP)

- Collaboration between NIH, industry, non-profit organizations
- Goal:
 - Increase number of new diagnostics and therapies
 - Reduce time and cost of developing them
- For more information, see <http://www.nih.gov/science/amp/index.htm>

Meetings

- Global Vaccine and Immunization Research Forum (GVIRF): March 4 – 6, 2014
 - Convened jointly by WHO, NIAID, and Bill & Melinda Gates Foundation
- NIAID Meeting Reports
 - Knipe DM, Corey L, Cohen JI, Deal CD. Summary and recommendations from a National Institute of Allergy and Infectious Diseases (NIAID) workshop on "Next Generation Herpes Simplex Virus Vaccines." *Vaccine*. (2014).
 - Mo AX, Augustine AD. NIAID meeting report: Improving malaria vaccine strategies through the application of immunological principles. *Vaccine*. (2014).