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Host Genetics played a Role in Vaccine Efficacy in the RV144 HIV Vaccine Trial

July 15, 2012 (SILVER SPRING, Md.) – New findings published today in the journal *Science Translational Medicine* show that host genetics played a role in protection against HIV infection in the landmark RV144 vaccine trial conducted in Thailand.

Researchers at the U.S. Military HIV Research Program (MHRP) tested whether specific variants of immune response genes called HLA were associated with greater protection against the virus.

"We found that antibody responses correlated with increased or decreased risk of acquiring HIV only in the presence of specific host HLA alleles," said senior author Dr. Rasmi Thomas. By identifying this specific allele, or gene variation, researchers hope to more clearly determine the mechanism of protection.

Led by the US Army, the RV144 trial is the only HIV vaccine trial to show efficacy in preventing HIV-1 infection over the course of 42 months. Since researchers can compare data from those protected against HIV to those who were not, RV144 follow-on studies have advanced the understanding of HIV vaccine-induced protective immune responses. Two immune correlates of risk were identified previously, and subsequent studies have analyzed both viral and host genetics for further insights into how the vaccine worked.

HLA class II molecules play an important role in antibody response, so MHRP researchers tested variation in these genes for interactions with the two vaccine-induced correlates of risk identified in RV144. This study showed that particular HLA class II genes modulated the quantity and quality of vaccine-induced antibody responses to affect HIV acquisition and vaccine efficacy.

According to MHRP Director COL Nelson Michael, "This study confirms the importance of host genetics to the interpretation of correlates of protection of HIV vaccines and informs approaches to develop more effective next generation products."

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References:

S. Rerks-Ngarm *et al*., Vaccination with ALVAC and AIDSVAX to Prevent HIV-1 Infection in Thailand. *NEJM* DOI: 10.1056/NEJMoa0908492 (2009).

BF Haynes *et al*. Immune correlates analysis of the ALVAC-AIDSVAX HIV-1 vaccine efficacy trial. *NEJM* DOI: 10.1056/NEJMoa1113425 (2012).

For additional information and photos, please visit www.hivresearch.org.

About RV144:
Results from RV144, an Army-led clinical trial involving more than 16,000 adult volunteers in Thailand, were published in the *New England Journal of Medicine* in 2009. The results showed that the prime-boost combination of ALVAC® HIV and AIDSVAX® B/E was safe and lowered the rate of HIV infection by an estimated 31.2% compared with placebo (p=0.04). These data provided the first evidence in humans that a safe and effective preventive HIV vaccine is possible. The study was funded by the US NIH and the US Army, and conducted by the Thai Ministry of Health.

Results from extensive RV144 laboratory studies were published On April 5, 2012 in the New England Journal of Medicine. These studies showed that antibodies (IgG) specific to a particular region (called V1V2) of the HIV outer coat (envelope protein) correlated with lower infection rates among those who were vaccinated.

About MHRP:
The US Military HIV Research Program (MHRP) at the Walter Reed Army Institute of Research conducts research to develop an effective HIV vaccine and integrates prevention, treatment, diagnosis and monitoring as part of a global effort to protect troops and reduce the impact of HIV worldwide. MHRP has six clinical research sites in the U.S., Africa and Asia. The program successfully collaborates on HIV prevention care and treatment services, funded by the President's Emergency Plan for AIDS Relief (PEPFAR), with African militaries and in the communities where it conducts research. For more information, visit www.hivresearch.org or find MHRP on Facebook, www.facebook.com/hivresearch, and Twitter at @MHRPInfo.