

UNITED STATES: Anti-HIV Antibodies May Spur AIDS Vaccine Development

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According to Barton Haynes, director of the Duke University Human Vaccine Institute at Duke University School of Medicine, Duke researchers may have discovered how to stimulate production of broadly neutralizing antibodies, which could lead to the development of an HIV vaccine. The ability of an African patient to continue producing broadly neutralizing antibodies, even after the virus has mutated, is the basis for the breakthrough. Approximately 20 percent of people infected with HIV generate antibodies that are able to neutralize HIV effectively in its initial and mutated forms. Haynes explained that the first round of broadly neutralizing antibodies appears approximately 14 weeks after the initial HIV infection. This first generation of antibodies binds to a part of the virus that does not change as easily or rapidly, so the antibodies are a potential target for vaccine research. Duke researchers collected blood samples from 400 HIV patients for three years from the time of infection, and mapped the sequential mutations of the virus that stimulated subsequent, weaker generations of antibodies. With this map of antibody development over three years, the research team believes it is possible to stimulate the immune system to produce more of the first generation of broadly neutralizing antibodies, instead of the subsequent iterations the immune system produces in response to HIV mutations. Because each person generates unique versions of broadly neutralizing antibodies that differ in effectiveness, Haynes believes it will be necessary to map individual pathways to broadly neutralizing antibodies and find commonalities that can be used in a vaccine. The full report, Co-evolution of a Broadly Neutralizing HIV-1 Antibody and Founder Virus, was published online in the journal Nature (2013; doi: 10.1038/nature12053).

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