

Consortium to design human trials of mosaic HIV vaccine

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Los Alamos National Laboratory researcher Bette Korber is part of an international team of investigators working to design and implement the first human trial of a mosaic HIV vaccine candidate. The vaccine represents a novel strategy for fighting the virus that causes AIDS by attempting to address one of the most daunting challenges in HIV vaccine design: the virus's extensive genetic diversity.

The team and its efforts are being led by Duke University Medical Center under consortium leader Dr. Barton Haynes, director of the Duke Human [Vaccine](#) Institute and the Center for HIV/AIDS Vaccine Immunology (CHAVI). The newly formed research coalition has begun designing an early phase safety trial to assess mosaic vaccines in humans. The trial will test the mosaic concept and could lead to the next generation of HIV vaccine candidates.

Traditional HIV vaccines are designed to stimulate the body's immune system to recognize naturally occurring stretches of specific amino acids in the virus' proteins. In contrast, mosaic vaccines are composed of many sets of synthetic, computer-generated sequences of proteins that can prompt the immune system to respond to a wide variety of circulating [HIV strains](#).

Such vaccines have already been studied in animals and have shown some success in enhancing the breadth of immune responses. Results of those studies appeared earlier this year in Nature Medicine.

Haynes said the group will use the NYVAC vaccinia vector (derived from the vaccine to protect against smallpox) and DNA that contain a new set of artificial, computer-designed HIV genes in a Phase-I clinical trial to be supported by the Bill & Melinda Gates Foundation and the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health.

Haynes says the consortium hopes to launch human trials by late 2012.

Korber, a senior researcher in Los Alamos National Laboratory's Theoretical Division, led the team that developed the mosaic genes.

"HIV's diversity is vast, and the mosaic gene design represents a novel vaccine design to directly tackle HIV diversity in human clinical trials," said Korber. "Based on computational models, mosaic vaccines were predicted to perform better than natural HIV genes; experimental studies in animals, which directly compared mosaic to natural vaccines, supported that prediction. We are excited to test this concept in humans."

The consortium includes many of the world's leading researchers and organizations committed to finding an effective vaccine to protect against HIV infection, including The Foundation for the National Institutes of Health, the Fred Hutchinson Cancer Research Center and its NIH-funded HIV Vaccine Trials Network, the IPPOX Foundation in Switzerland, Beth Israel Deaconess Medical Center, Los Alamos National Laboratory, the NIH/NIAID Vaccine Research Center, Duke University and its Center for HIV/[AIDS Vaccine](#) Immunology, the Bill & Melinda Gates Foundation and the Division of AIDS of the National Institute of Allergy and Infectious Diseases.

"Each member of this consortium is also a member of the Global HIV Vaccine Enterprise, and this collaboration is truly a global effort to make

progress on [HIV](#) vaccine development," said Haynes.

Provided by Los Alamos National Laboratory

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