



# IBBR Investigator to Lead \$3.5M NIH-Funded Project to Study Immune Response to HIV-1

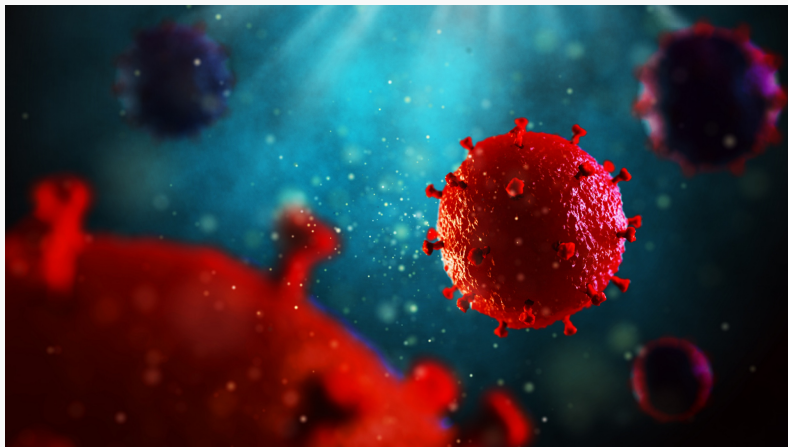


Illustration of HIV virus

## **Funding will support novel vaccine design aimed at improving protective antibody responses**

(Rockville, MD, April 24, 2019) Researchers at the Institute for Bioscience and Biotechnology Research (IBBR) recently received \$3.5M from the National Institutes of Health (NIH) to advance understanding of the complex process by which the immune system produces highly

specialized antibodies. The goal of the project is to design and test novel vaccine candidates that improve the protective antibody response against HIV-1. IBBR Fellow Dr. Yuxing Li (Associate Professor, Department of Microbiology and Immunology, University of Maryland School of Medicine) is principal investigator on the award.

The immune response to natural infection is a complex, step-by-step process that results in the production of progressively better and better antibodies.

“A major challenge to HIV-1 vaccine development has been a lack of understanding of how to direct the immune system down a very specific path towards protective antibody responses,” Dr. Li explains. “We know that the best antibodies recognize the viral surface protein Env [HIV envelope glycoprotein], but, so far, using Env as a vaccine has not elicited such desirable antibodies.”

To study this paradox, researchers have used samples from HIV-infected individuals to trace the pathway by which effective antibodies are produced back to the beginning of the process. Dr. Li and IBBR Fellow Dr. Brian Pierce (Assistant Professor, Department of Cell Biology and Molecular Genetics, University of Maryland, College Park) will use structural and computational biology to design and produce novel variants of Env that

they hypothesize will shepherd the immune system along that pathway.

The new vaccine candidates will be tested in several model systems in collaboration with Dr. David Nemazee (Professor, Department of Immunology and Microbiology, Scripps Research). The team expects to gain insight into the complicated immune response to Env that can be applied to improve vaccine designs and vaccine regimens.

“This project could be a key milestone in the pursuit of an effective HIV-1 vaccine,” said IBBR Director Dr. Thomas Fuerst. “We thank the NIH for their continued support of this important research.”

Drs. Li and Pierce are members of IBBR’s multi-disciplinary structure-based vaccine design team, which is also working to advance immunoadjuvant design and development of vaccines for hepatitis C, Ebola, malaria, and Zika.

Dr. Li’s research lab at IBBR is funded in part by the University of Maryland Strategic Partnership: *MPowering the State*, a program designed to leverage the strengths and missions of the University of Maryland, College Park and the University of Maryland, Baltimore. The lab focuses on HIV antibody and vaccine research in collaboration with researchers at the NIH, academic, and non-profit research organizations.

## **About IBBR**

IBBR is a joint research enterprise of the University of Maryland, College Park, the University of Maryland, Baltimore, and the National Institute of Standards and Technology. IBBR is also financially supported in part by the University of Maryland Strategic Partnership: *MPowering the State*, an initiative designed to achieve innovation and impact through collaboration. The Institute sits at the nexus of academic research and commercial application, bringing together critical elements necessary to inspire transformative discoveries in the field of biotechnology that provide innovative solutions to major scientific and engineering challenges important to society. IBBR researchers seek to advance the fields of disease pathways and biomolecular targets, biomolecular measurement sciences, and biomolecular engineering, including structure-based design of vaccines and therapeutics. The Institute also serves to expand the economic base of science and technology in the state of Maryland. For more information, visit <https://www.ibbr.umd.edu/>.

## **For more information and collaborative opportunities at IBBR, contact:**

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